

Memorandum

To: Alan Sidell, Seattle Iron & Metals

Copies: Romy Freier-Coppinger, Washington State Department of Ecology

From: Lynn Grochala, Floyd|Snider

Date: March 7, 2016

Project No: SIM-730 EDR

Re: 730 S. Myrtle Street Soil and Groundwater Characterization Summary

This memorandum was prepared by Floyd|Snider to describe the results of soil and groundwater sampling conducted at the former Tye Lumber and Manufacturing Company (Tye Lumber) facility located at 730 S. Myrtle Street (hereafter referred to as the property; see Figure 1 for location) in December 2015. Since 1999, Seattle Iron & Metals (SIM) leased the property and in December 2015 purchased the property. The field investigation activities summarized in this memorandum were proposed in the Current Situation Report and Subsurface Investigation Work Plan (CSR/SIWP) prepared by Floyd|Snider at the request of SIM (Floyd|Snider 2015). The scope of work included additional soil and groundwater characterization conducted to fill data gaps at the property. Refer to the CSR/SIWP for additional details regarding data gaps and historical and current use of the property.

FIELD INVESTIGATION OBJECTIVES

The primary objective of this investigation as described in the CSR/SIWP was to fill key data gaps related to potential subsurface impacts prior to execution of the stormwater improvement project scheduled to be installed on the property by SIM in summer 2016. In general, because the stormwater improvements are being constructed on-property, the focus of the investigation was on-property areas and certain areas adjacent to the property. Off-property groundwater impacts will be further investigated in subsequent Remedial Investigation/Feasibility Study (RI/FS) work phases.

The proposed work also addressed a number of secondary objectives:

- Determination of the nature and extent of soil and groundwater contaminant concentrations at the property, focusing on the on-property areas with contaminant concentrations that exceed potentially applicable cleanup levels.

- Evaluation of whether the primary contaminants pentachlorophenol (penta) and dioxins/furans tend to be colocated.
- Evaluation of the potential need for an interim action at the property that would include excavation of contaminated area(s) during construction of the stormwater conveyance system.
- Collection of supplemental data to inform the handling and disposal requirements for materials excavated during the construction of the stormwater quality treatment system and interim action(s).
- In the longer term, support of a future RI/FS at the property that will be required by Ecology under an agreed order after construction of the stormwater conveyance system construction project.

FIELD INVESTIGATION SUMMARY

The field investigation involved collecting soil and groundwater samples for laboratory analyses at the locations shown on Figure 2. The investigation was conducted in accordance with the Sampling and Analysis Plan/Quality Assurance Project Plan (SAP/QAPP) included as part of the CSR/SIWP (Floyd|Snider 2015), with the exception of minor deviations, and is described below.

- **Soil sampling.** Soil and subsurface soil samples at the property and downgradient of the property were collected from 12 boring locations (SB-01 through SB-12). Soil boring logs are presented in Attachment 1. A total of 33 soil samples were submitted to the laboratory. Samples were analyzed in a tiered approach, whereby the samples most impacted based on field indicators were analyzed as the first tier, and archived samples were then analyzed if the first tier samples indicated the presence of analytes at concentrations exceeding the appropriate Model Toxics Control Act (MTCA) Method A or C cleanup levels (CULs). Of the 33 samples, 13 were submitted for analysis of penta and total petroleum hydrocarbons (TPH) as diesel-range organics and heavy oil-range organics. The TPH analysis focused on Stoddard solvent, reported separately, which has historically been found as a contaminant at the property and is analyzed in the diesel-range organics fraction of TPH. An additional four soil samples were analyzed for dioxins/furans, and five soil samples were analyzed for polychlorinated biphenyls (PCBs), semivolatile organic compounds (SVOCs) including polycyclic aromatic hydrocarbons (PAHs), and metals. The remainder of the soil samples were archived at the laboratory. Upon receipt of the first tier results, five additional samples were removed from the archive and analyzed: one sample for dioxins/furans, two samples for Stoddard solvent, and two samples for TPH heavy oil-range organics.
- **Groundwater well installation.** Three new monitoring wells, MW-108 through MW-110, were installed. Well completion logs are presented in Attachment 1.

- **Groundwater sampling.** Groundwater samples were collected from six existing monitoring wells installed by Sound Earth Strategies (SES; MW01, MW02, MW03, MW05, MW06, and MW07), three wells on the property associated with the Fox Avenue Site (MW-7, MW-9, and B-49), two off-property wells associated with the Fox Avenue Site (B-36 and B-38), and the three newly installed wells (MW-108 through MW-110). The samples were analyzed for penta and TPH diesel-range and heavy oil-range organics. Additionally, samples from three selected wells (MW01, MW05, and MW-108) were analyzed for dioxins/furans. Groundwater sample collection forms are presented in Attachment 1.

Field Observations and Documentation

Soils on the property generally consist of coarse gravel used for grading at the ground surface and 1 to 5 feet of sandy fill soils containing gravel and minor amounts of anthropogenic debris such as asphalt fragments. The fill soils are underlain by dark gray, fine sand and silty sand presumed to be native Lower Duwamish Valley alluvial deposits.

The groundwater table was encountered at depths ranging from 9 to 11 feet below ground surface (bgs) during the subsurface investigation in December 2015. Shallow groundwater is presumed to flow from the northeast to the southwest across the property, ultimately discharging to the Lower Duwamish Waterway to the southwest.

Field indications of contamination, including solvent-like odors and elevated concentrations of volatile organic compounds (VOCs) measured in headspace by a photoionization detector (PID), were noted in soils near the groundwater table at soil borings SB-09 and SB-10. A moderately elevated PID reading and staining were also observed in shallow (depth less than 5 feet bgs) soils at soil boring SB-11.

Deviations from Subsurface Investigation Work Plan

- Proposed monitoring well MW-111 was not installed due to the presence of subsurface utilities. A roof drain was damaged during the installation of soil boring SB-04 and required immediate repair. There were numerous other subsurface utilities located in the immediate vicinity of proposed well MW-111; therefore, it was deemed not critical to this investigation and was not installed.
- Monitoring well MW04, located in the southwest portion of the property, could not be located in the field. This well was not surveyed by SES and may have been destroyed as a result of truck and forklift activities on the property. A broken piece of the monitoring well cap was found; therefore, it is possible that the well may still be intact. Additional efforts will be made to locate this well prior to construction. If the well is located and determined to be damaged, it will be abandoned and replaced. If the well remains viable, then the roadbox will be replaced.

- The groundwater sample collected from monitoring well B-38 was not analyzed for dioxins/furans due to the high turbidity of the groundwater. The well was redeveloped, but the post-development water continued to have high measurements for turbidity.
- Samples for dioxin/furan analysis were collected from MW01 (adjacent to the source area), MW05 (downgradient from the source area), and MW-108 (upgradient of the source area) in lieu of B-38 (high turbidity), MW04 (not located), and MW-111 (not installed).

MW-109 was relocated approximately 10 feet north of its target location and the location of soil boring SB-08. The target location was in a large, water-filled depression, and the well was relocated such that it was situated on higher ground and easier to locate during future sampling events.

LABORATORY ANALYSES

Consistent with the SAP/QAPP, samples were submitted to Fremont Analytical and Frontier Analytical Laboratory (dioxins/furans only) for chemical analysis. The samples were analyzed for the following chemicals, by the methods for soil and groundwater indicated below:

- TPH as diesel-range organics by NWTPH-Dx (includes Stoddard solvent)
- TPH-as heavy oil-range organics by NWTPH-Dx
- Penta by USEPA Method 8051 or USEPA Method 8270SIM
- Heavy metals by USEPA Method 6020/7471
- SVOCs by USEPA Method 8270D (includes cPAHs)
- Aroclor PCBs by USEPA Method 8082
- Dioxins/furans by USEPA Method 1613B

Laboratory analytical data are provided in Attachment 2.

SUMMARY OF ANALYTICAL RESULTS

As described in the SAP/QAPP, potential applicable soil and groundwater CULs for the property include the Washington State Department of Ecology (Ecology) MTCA Method A CULs for unrestricted land use and industrial land use and the MTCA Method C cancer and noncancer CULs for contaminants without MTCA Method A CULs (Washington Administrative Code [WAC] 173-340-700 [Ecology 2007]). Therefore, the chemical results for each analyte in both soil and groundwater were compared to these criteria. Soil analytical results and CUL exceedances for soil samples collected during the December 2015 subsurface investigation are presented in Table 1 (TPH, penta, and dioxins/furans) and Table 2 (heavy metals, SVOCs, and PCBs). Table 3

presents all analytical results and CUL exceedances for groundwater samples collected during the December 2015 monitoring event. Figure 3 presents the results for Stoddard solvent, penta, and dioxins/furans in soil samples collected during this investigation and the results for the soil samples collected during prior investigations, showing the known nature and extent of these contaminants at the property. Figure 4 presents the groundwater analytical results for penta and Stoddard solvent in groundwater samples collected during the December 2015 subsurface investigation.

Soil Analytical Results

A brief summary of the soil analytical data generated as part of the December 2015 subsurface investigation is presented in the following subsections.

Total Petroleum Hydrocarbons

Diesel-range organics were detected in 1 of the 18 soil samples analyzed (SB-07 at 12 to 13 feet bgs). The concentration was less than the MTCA Method A CUL of 2,000 milligrams per kilogram (mg/kg).

Heavy oil-range organics were detected in 10 of the 18 soil samples analyzed. Heavy-oil organic concentrations detected in 9 of the 10 samples were less than the MTCA Method CUL of 2,000 mg/kg and ranged from 57.1 to 1,060 mg/kg. Heavy oil was detected in one soil sample (SB-11 at 4 to 5 feet bgs) at a concentration of 22,900 mg/kg, which is greater than the MTCA Method A CUL. SB-11 is located northeast of the underground storage tank (UST)/dip tank area in the general location of a former automobile repair facility that operated in the south-central portion of the property. Three additional samples collected from this soil boring at various depths (0 to 2, 6 to 7, and 10 to 11 feet bgs) had concentrations of heavy oil-range organics less than the MTCA Method A CUL, providing vertical delineation at location SB-11.

Stoddard solvent was detected in 3 of the 18 soil samples analyzed. Two of the three samples with detectable Stoddard solvent (SB-07 and SB-10), exceeded the MTCA Method A CUL of 4,000 mg/kg (using the mineral spirits criterion as a surrogate), with concentrations of 6,550 and 8,500 mg/kg, respectively. The three samples with detectable Stoddard solvent were collected from within the water table interface/smear zone at depths between 12 and 14 feet bgs, and these soil borings (SB-07, SB-09, and SB-10) are located in the vicinity of the penta UST/dip tank area. Because the Stoddard solvent concentrations in these samples exceeded the MTCA Method A CUL, second tier samples from SB-07 and SB-10 at depths of 14 to 15 feet bgs were analyzed. These two samples had concentrations of Stoddard solvent less than the MTCA Method A CUL, thereby fully delineating the vertical extent of Stoddard solvent at these locations.

Pentachlorophenol

Penta was detected in 5 of the 15 soil samples analyzed, at concentrations less than the MTCA Method C cancer CUL of 330 mg/kg. Detected concentrations ranged from 0.13 to 14.9 mg/kg. Four of the five samples with detections (SB-05, SB-07, SB-09, and SB-10) were collected from within the water table interface/smear zone at depths between 9 and 14 feet bgs, and these soil borings are located in the vicinity of the UST/dip tank area. One detection (at SB-01) was in a sample collected from surface soils (0 to 2 feet bgs) on the northwestern property boundary.

Dioxins/Furans

Dioxins/furans were detected in three of the four soil samples analyzed from soil borings SB-05, SB-07, and SB-10. The samples were collected from within the water table interface/smear zone at depths between 9 and 13 feet bgs, and these soil borings are located in the vicinity of the UST/dip tank area. Dioxins/furans toxicity equivalents (TEQs) were calculated for all samples results (Van den Berg et al. 2006). For congeners that were not detected, TEQs were calculated with the congener concentrations set to both zero and one-half their respective detection limits; TEQs calculated using one-half the detection limits are discussed in this section.

The concentration in one of the samples, collected from SB-10 at 12.5 to 13 feet bgs, exceeded the MTCA Method C cancer CUL of 1,680 nanograms per kilogram (ng/kg) TEQ, with a dioxin/furan TEQ concentration of 3,130 ng/kg. The sample collected from SB-05 at 9 to 10 feet bgs and from SB-07 at 12 to 13 feet bgs had TEQ concentrations of 1.98 and 892 ng/kg, respectively. Because the concentration in the sample collected from SB-10 at 12.5 to 13 feet bgs exceeded the MTCA Method C cancer CUL, a second tier sample from a depth of 14 to 15 feet bgs was analyzed. This sample had a dioxin/furan TEQ concentration of 0.669 ng/kg, less than the MTCA Method C CUL, thereby fully delineating the vertical extent of dioxins/furans at location SB-10.

Metals, Semivolatile Organic Compounds, and Polychlorinated Biphenyls

Four surface soil samples (0 to 2 feet bgs) were analyzed for Resource Conservation and Recovery Act 8 metals, PCBs, and SVOCs. Chromium was detected in the samples collected from borings SB-01 and SB-11 at concentrations slightly exceeding the MTCA Method A CUL (and significantly less than MTCA Method C CUL); the concentrations of other seven metals were less than their respective CULs. PCBs and SVOCs were not detected at concentrations greater than their respective MTCA Method A or Method C CULs.

Groundwater Results

A brief summary of the groundwater analytical data generated as part of the December 2015 subsurface investigation is presented in the following subsections.

Total Petroleum Hydrocarbons

Diesel-range organics were detected in groundwater samples collected from two monitoring wells (B-36 and MW-108) at concentrations exceeding the MTCA Method A CUL of 500 micrograms per liter ($\mu\text{g/L}$), with concentrations of 530 and 789 $\mu\text{g/L}$, respectively. B-36 is located outside the western property boundary.

Heavy oil-range organics were detected at one monitoring well (MW-9) at a concentration exceeding the MTCA Method A CUL of 500 $\mu\text{g/L}$ (712 $\mu\text{g/L}$). MW-9 is located in the northwest corner of the property.

Groundwater analytical results for Stoddard solvent were compared to the MTCA Method A CUL for mineral spirits, which is used as a surrogate for Stoddard solvent. Stoddard solvent was detected at concentrations exceeding the MTCA Method A CUL of 500 $\mu\text{g/L}$ in monitoring wells MW01, MW02, and B-38, at concentrations of 703 $\mu\text{g/L}$, 1,270 $\mu\text{g/L}$, and 1,980 $\mu\text{g/L}$, respectively. These monitoring wells are located in the vicinity of the UST/dip tank area.

Pentachlorophenol

Penta was detected in groundwater at concentrations greater than the MTCA Method C cancer CUL of 2.2 $\mu\text{g/L}$ in five monitoring wells (B-38, MW01, MW02, MW-108, and MW-110), with concentrations ranging from 6.56 $\mu\text{g/L}$ (MW-110) to 2,160 $\mu\text{g/L}$ (B-38). Monitoring well B-38 is located in the southwestern portion of the property, in the immediate vicinity of the UST/dip tank area. Monitoring wells MW01 and MW02 are located directly upgradient of the UST/dip tank area, with MW-108 farther upgradient, approximately 120 feet northwest of the UST/dip tank area. Monitoring well MW-110 is located in the vicinity of the refuse burner at the former automobile repair facility.

Dioxins/Furans

Groundwater samples from three locations were analyzed for dioxins/furans. Dioxins/furans were detected in groundwater at concentrations exceeding the MTCA Method C cancer CUL of 6.73 picograms per liter (pg/L) TEQ at well MW01 in the vicinity of the UST/dip tank area and downgradient at well MW05, at TEQ concentrations of 91.3 and 18.7 pg/L, respectively. Dioxins/furans were detected in the groundwater sample collected from well MW-108 (upgradient of the UST/dip tank area) at a TEQ concentration of 1.32 pg/L, less than the MTCA Method C cancer CUL.

DATA VALIDATION

A Compliance Screening, Tier 1, data quality review was performed by Floyd|Snider for TPH, SVOCs, PCBs, and metals (refer to Attachment 3 for the complete Floyd|Snider Data Validation Summary). The analytical data were validated in accordance with the *National Functional*

Guidelines for Superfund Organic Methods Data Review (USEPA 2014a) and the *National Functional Guidelines for Inorganic Superfund Data Review* (USEPA 2014b). All data, as qualified, were acceptable for use.

A Level IV, Tier III, data quality review (full validation) was performed by EcoChem, Inc., for dioxin/furan data (refer to Attachment 3 for the complete EcoChem Data Validation Report). The analytical data were validated in accordance with the *National Functional Guidelines for Chlorinated Dibenzo-p-Dioxins (CDDs) and Chlorinated Dibenzofurans (CDFs) Data Review* (USEPA 2011). All data, as qualified, were acceptable for use.

SUMMARY OF KEY FINDINGS

- Soil and groundwater samples collected from borings within the approximate area of the former penta UST/dip tank contained Stoddard solvent, penta, and dioxins/furans (a byproduct of penta manufacturing) at concentrations exceeding their respective MTCA CULs. These results are consistent with historical releases in this area, and data resulting from previous investigations. Soil contamination in excess of the CULs was generally encountered at depths between 7.5 and 14 feet bgs in the immediate vicinity of the UST/dip tank area, and approximately at the water table interface/smear zone generally between 10 and 13 feet bgs at the upgradient and downgradient boring locations, indicating lateral transport via groundwater. The extents of contamination by these analytes in both soil and groundwater have been well delineated both vertically and horizontally.
- Soil samples collected from borings in the general vicinity of the former automobile repair facility indicated localized contamination with TPH as heavy oil-range organics at concentrations greater than the MTCA CULs in shallow soil from approximately 4 to 5 feet bgs but less than the CULs in soil at depths less than 2 feet bgs and greater than 6 feet bgs. Heavy oil does not migrate readily, and these impacts appear to be limited to a small area of vadose soil. Surface soils are generally more permeable sand and gravels (fill), with less-permeable silty sand and sandy silt below 5 feet. The presence of heavy oil appears to be localized at this transition from fill to native soil and is likely a result of a minor historical surface release.
- Soil impacts have been well characterized in the vicinity of the stormwater conveyance system to be installed on the property. These data inform the understanding of the preliminary conceptual site model, as well as the handling and disposal requirements for the soil that will be excavated during construction.
- The primary contaminants penta and dioxins/furans tend to be colocated. However, there was no apparent direct correlation between penta and dioxins/furans concentrations at these locations.

RECOMMENDATION

Prior to construction, additional soil sample collection is needed to delineate the extents of TPH heavy oil-range organics in the vicinity of soil boring SB-11. Proposed soil boring locations are presented in Figure 5. Localized TPH-contaminated soil is present in the area of proposed stormwater conveyance piping, and an interim action excavation will be proposed concurrently with construction. Additional data will be collected using direct-push methodology in accordance with the SAP/QAPP included in the CSR/SIWP. Direct-push soil borings will be advanced using a tiered approach, with the borings closest to SB-11 representing the first tier. Borings will be advanced to a maximum depth of 10 feet bgs and sampled continuously in disposable liners, logged according to the Unified Soil Classification System, photographed, and field screened for indications of contamination. Samples will be collected from 1-foot intervals extending from 4 to 7 feet bgs, or at least 1 foot below the depth at which field indications of contamination are no longer present. Additional "step-out" boring locations may also be added if field indications of contamination are present in any of the second tier borings.

Samples from the first tier borings will be analyzed immediately for heavy oil-range TPH, and the remaining samples will be archived for potential future analysis. Archived samples will be analyzed as necessary to horizontally and vertically delineate the heavy oil-range TPH in soil, which will allow for adequate delineation of an interim action excavation prior to construction.

REFERENCES

- Floyd|Snider. 2015. *Current Situation Report and Subsurface Investigation Work Plan*. December.
- U.S. Environmental Protection Agency (USEPA). 2014a. *National Functional Guidelines for Superfund Organic Methods Data Review*. EPA-540-R-014-002. August.
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- _____. 2011. *National Functional Guidelines for Chlorinated Dibenzo-p-Dioxins (CDDs) and Chlorinated Dibenzofurans (CDFs) Data Review*. EPA-540-R-11-016. September.
- Van den Berg, M., L.S. Birnbaum, M. Denison, M. De Vito, W. Farland, M. Feeley, H. Fiedler, H. Hakansson, A. Hanberg, L. Haws, M. Rose, S. Safe, D. Schrenk, C. Tohyama, A. Tritscher, J. Tuomisto, M. Tysklind, N. Walker, and R.E. Peterson. 2006. "The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds." *Toxicological Sciences* 93(2):223–241.
- Washington State Department of Ecology (Ecology). 2007. *Model Toxics Control Act Cleanup Regulation, Chapter 173-340 WAC*. Publication No. 94-06. Revised November 2007.

ENCLOSURES

Table 1	Soil Analytical Results for Total Petroleum Hydrocarbons, Pentachlorophenol, and Dioxins/Furans
Table 2	Soil Analytical Results for Metals, Polychlorinated Biphenyls, and Semivolatile Organic Compounds
Table 3	Groundwater Analytical Results
Figure 1	Vicinity Map
Figure 2	Soil Boring and Monitoring Well Locations from December 2015 Sampling Event
Figure 3	Soil Analytical Results for Stoddard Solvent, Pentachlorophenol, and Dioxins/Furans
Figure 4	Groundwater Analytical Results for Stoddard Solvent and Pentachlorophenol
Figure 5	Soil TPH-Heavy Oil Analytical Results and Proposed Delineation
Attachment 1	Field Logs
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Tables

Table 1
Soil Analytical Results for Total Petroleum Hydrocarbons, Pentachlorophenol, and Dioxins/Furans

Location		SB-01		SB-02	SB-03	SB-04	SB-05		SB-06	SB-07					
Sample ID		SB-01-0-2	SB-01-10	SB-02-0-2	SB-03-10-11	SB-04-9-10	SB-05-0-2	SB-05-9-10	SB-06-10-11	SB-07-12-13	SB-07-14-15				
Sample Date		12/07/2015	12/07/2015	12/07/2015	12/07/2015	12/07/2015	12/09/2015	12/09/2015	12/07/2015	12/09/2015	12/09/2015				
Depth (ft bgs)		0 - 2	10	0 - 2	10 - 11	9 - 10	0 - 2	9 - 10	10 - 11	12 - 13	14 - 15				
Analytes	Units	MTCA A Industrial	MTCA A Unrestricted	MTCA C Cancer	MTCA C Noncancer										
Total Petroleum Hydrocarbons															
Diesel-range organics	mg/kg	2,000	2,000	--	--	23.3 U	19.2 U	21.3 U	23.5 U	22.8 U	NA	22.8 U	22.3 U	111	23.0 U
Heavy oil-range organics	mg/kg	2,000	2,000	--	--	1060	48.0 U	445	58.9 U	57.1 U	NA	56.9 U	55.7 U	177	57.6 U
Stoddard solvent ¹	mg/kg	4,000 ²	4,000 ²	--	--	23.3 UJ	19.2 UJ	21.3 UJ	23.5 UJ	22.8 UJ	NA	22.8 UJ	22.3 UJ	6,550 J	23.0 U
Semivolatile Organic Compounds															
Pentachlorophenol	mg/kg	--	--	330	17,500	0.130	0.104 U	0.0217 U	0.0220 U	0.0222 U	0.112 U	0.328	0.0229 U	11.5	NA
Dioxins/Furans															
2,3,7,8-TCDD	ng/kg	--	--	--	--	--	--	--	--	--	--	0.159 U	--	0.159 U	--
1,2,3,7,8-PeCDD	ng/kg	--	--	--	--	--	--	--	--	--	--	0.337 U	--	3.47 J	--
1,2,3,4,7,8-HxCDD	ng/kg	--	--	--	--	--	--	--	--	--	--	0.498 U	--	34.3	--
1,2,3,6,7,8-HxCDD	ng/kg	--	--	--	--	--	--	--	--	--	--	3.28 J	--	1,730	--
1,2,3,7,8,9-HxCDD	ng/kg	--	--	--	--	--	--	--	--	--	--	1.12 J	--	99.3	--
1,2,3,4,6,7,8-HpCDD	ng/kg	--	--	--	--	--	--	--	--	--	--	66.2	--	34,900	--
OCDD	ng/kg	--	--	--	--	--	--	--	--	--	--	1,510	--	270,000	--
2,3,7,8-TCDF	ng/kg	--	--	--	--	--	--	--	--	--	--	0.158 U	--	9.33	--
1,2,3,7,8-PeCDF	ng/kg	--	--	--	--	--	--	--	--	--	--	0.226 U	--	28.6	--
2,3,4,7,8-PeCDF	ng/kg	--	--	--	--	--	--	--	--	--	--	0.238 U	--	31.6	--
1,2,3,4,7,8-HxCDF	ng/kg	--	--	--	--	--	--	--	--	--	--	0.261 U	--	212	--
1,2,3,6,7,8-HxCDF	ng/kg	--	--	--	--	--	--	--	--	--	--	0.286 U	--	133	--
2,3,4,6,7,8-HxCDF	ng/kg	--	--	--	--	--	--	--	--	--	--	0.307 U	--	363	--
1,2,3,7,8,9-HxCDF	ng/kg	--	--	--	--	--	--	--	--	--	--	0.339 U	--	75.1	--
1,2,3,4,6,7,8-HpCDF	ng/kg	--	--	--	--	--	--	--	--	--	--	3.89 J	--	15,500	--
1,2,3,4,7,8,9-HpCDF	ng/kg	--	--	--	--	--	--	--	--	--	--	0.476 U	--	834	--
OCDF	ng/kg	--	--	--	--	--	--	--	--	--	--	19.4	--	64,400	--
Summed Dioxin/Furan TEQ with One-Half of the Detection Limit ^{3,4}	ng/kg	--	--	1,680	4,080	--	--	--	--	--	--	1.98 J	--	892 J	--

Notes:

- Not applicable
- NA Not analyzed
- BOLD** Exceeds one or more cleanup levels
- 1 Stoddard solvent was quantified using the NWTPH-Dx method instead of the NWTPH-Gx Method. An estimated value for Stoddard solvent was quantified based on a 3-point calibration performed after the initial analysis under
- 2 The mineral oil criterion was used as a surrogate for Stoddard solvent.
- 3 World Health Organization 2005 Toxic Equivalency Factors was used for calculation of dioxin/furan TEQ (Van den Berg, et al. 2006).
- 4 Calculated using detected dioxin/furan concentrations plus one-half the detection limit for dioxins/furans that were not detected.

Abbreviations:

HpCDD	Heptachlorooxanthrene	OCDD	Octachlorodibenzodioxin
HpCDF	Heptachlorodibenzofuran	OCDF	Octachlorodibenzofuran
HxCDD	Hexachlorodibenzo-p-dioxin	PeCDD	Pentachlorodibenzo-p-dioxin
HxCDF	Hexchlorodibenzofuran	PeCDF	Pentachlorodibenzofuran
mg/kg	Milligram per kilogram	TCDD	Tetrachlorodibenzodioxin
MTCA	Model Toxics Control Act	TCDF	Tetrachlorodibenzofuran
ng/kg	Nanogram per kilogram	TEQ	Toxicity equivalent

Qualifiers:

- J Analyte was detected, concentration is considered an estimate.
- U Analyte was not detected, concentration given is reporting limit.
- UJ Analyte was not detected, concentration given is reporting limit, which is considered an estimate.

Table 1
Soil Analytical Results for Total Petroleum Hydrocarbons, Pentachlorophenol, and Dioxins/Furans

Location		SB-08				SB-09	SB-10		SB-11				SB-12		
Sample ID		SB-08-0-2	SB-08-10-11	SB-09-13-14	SB-10-12.5-13	SB-10-14-15	SB-11-0-2	SB-11-4-5	SB-11-6-7	SB-11-10-11	SB-12-10-11				
Sample Date		12/07/2015	12/07/2015	12/07/2015	12/07/2015	12/07/2015	12/07/2015	12/07/2015	12/07/2015	12/07/2015	12/07/2015				
Depth (ft bgs)		0 - 2	10 - 11	13 - 14	12.5 - 13	14 - 15	0 - 2	4 - 5	6 - 7	10 - 11	10 - 11				
Analytes	Units	MTCA A Industrial	MTCA A Unrestricted	MTCA C Cancer	MTCA C Noncancer										
Total Petroleum Hydrocarbons															
Diesel-range organics	mg/kg	2,000	2,000	--	--	NA	23.6 U	23.8 U	23.4 U	23.3 U	22.4 UJ	23.5 U	20.9 UJ	21.7 U	20.5 U
Heavy oil-range organics	mg/kg	2,000	2,000	--	--	NA	678	59.5 U	393	58.3 U	295 J	22,900	80.2 J	342	106
Stoddard solvent ¹	mg/kg	4,000 ²	4,000 ²	--	--	NA	23.6 UJ	2,970 J	8,500 J	23.3 U	22.4 UJ	23.5 UJ	20.9 UJ	21.7 UJ	20.5 UJ
Semivolatile Organic Compounds															
Pentachlorophenol	mg/kg	--	--	330	17,500	0.102 U	0.0246 U	2.53	14.9	NA	0.112 U	NA	NA	NA	0.0203 U
Dioxins/Furans															
2,3,7,8-TCDD	ng/kg	--	--	--	--	--	--	--	0.392 J	0.5 U	--	--	--	--	--
1,2,3,7,8-PeCDD	ng/kg	--	--	--	--	--	--	--	9.32	2.5 U	--	--	--	--	--
1,2,3,4,7,8-HxCDD	ng/kg	--	--	--	--	--	--	--	87.2	2.5 U	--	--	--	--	--
1,2,3,6,7,8-HxCDD	ng/kg	--	--	--	--	--	--	--	5,890	15.2	--	--	--	--	--
1,2,3,7,8,9-HxCDD	ng/kg	--	--	--	--	--	--	--	321	1.17 J	--	--	--	--	--
1,2,3,4,6,7,8-HpCDD	ng/kg	--	--	--	--	--	--	--	124,000	321	--	--	--	--	--
OCDD	ng/kg	--	--	--	--	--	--	--	744,000	2,370	--	--	--	--	--
2,3,7,8-TCDF	ng/kg	--	--	--	--	--	--	--	1.59 J	0.5 U	--	--	--	--	--
1,2,3,7,8-PeCDF	ng/kg	--	--	--	--	--	--	--	11.1	2.5 U	--	--	--	--	--
2,3,4,7,8-PeCDF	ng/kg	--	--	--	--	--	--	--	20.5	2.5 U	--	--	--	--	--
1,2,3,4,7,8-HxCDF	ng/kg	--	--	--	--	--	--	--	750	2.45 J	--	--	--	--	--
1,2,3,6,7,8-HxCDF	ng/kg	--	--	--	--	--	--	--	343	1.16 J	--	--	--	--	--
2,3,4,6,7,8-HxCDF	ng/kg	--	--	--	--	--	--	--	808	2.04 J	--	--	--	--	--
1,2,3,7,8,9-HxCDF	ng/kg	--	--	--	--	--	--	--	104	2.5 U	--	--	--	--	--
1,2,3,4,6,7,8-HpCDF	ng/kg	--	--	--	--	--	--	--	68,600	166	--	--	--	--	--
1,2,3,4,7,8,9-HpCDF	ng/kg	--	--	--	--	--	--	--	3,450	9.0	--	--	--	--	--
OCDF	ng/kg	--	--	--	--	--	--	--	329,000	881	--	--	--	--	--
Summed Dioxin/Furan TEQ with One-Half of the Detection Limit ^{2,3}	ng/kg	--	--	1,680	4,080	--	--	--	3,130 J	10.3 J	--	--	--	--	--

Notes:

- Not applicable
- NA Not analyzed
- BOLD** Exceeds one or more cleanup levels
- 1 Stoddard solvent was quantified using the NWTPH-Dx method instead of the NWTPH-Gx Method. An estimated value for Stoddard solvent was quantified based on a 3-point calibration performed after the initial analysis under
- 2 The mineral oil criterion was used as a surrogate for Stoddard solvent.
- 3 World Health Organization 2005 Toxic Equivalency Factors was used for calculation of dioxin/furan TEQ (Van den Berg, et al. 2006).
- 4 Calculated using detected dioxin/furan concentrations plus one-half the detection limit for dioxins/furans that were not detected.

Abbreviations:

HpCDD Heptachlorooxanthrene	OCDD Octachlorodibenzodioxin
HpCDF Heptachlorodibenzofuran	OCDF Octachlorodibenzofuran
HxCDD Hexachlorodibenzo-p-dioxin	PeCDD Pentachlorodibenzo-p-dioxin
HxCDF Hexchlorodibenzofuran	PeCDF Pentachlorodibenzofuran
mg/kg Milligram per kilogram	TCDD Tetrachlorodibenzodioxin
MTCA Model Toxics Control Act	TCDF Tetrachlorodibenzofuran
ng/kg Nanogram per kilogram	TEQ Toxicity equivalent

Qualifiers:

- J Analyte was detected, concentration is considered an estimate.
- U Analyte was not detected, concentration given is reporting limit.
- UJ Analyte was not detected, concentration given is reporting limit, which is considered an estimate.

Table 2
Soil Analytical Results for Metals, Polychlorinated Biphenyls, and Semivolatile Organic Compounds

		Location				SB-01		SB-05	SB-08	SB-11
		Sample ID				SB-01-0-2	SB-01-10	SB-05-0-2	SB-08-0-2	SB-11-0-2
		Sample Date				12/07/2015	12/07/2015	12/09/2015	12/07/2015	12/07/2015
		Sample Depth (ft bgs)				0-2	10	0-2	0-2	0-2
Analytes	Units	MTCA A Industrial	MTCA A Unrestricted	MTCA C Cancer	MTCA C Noncancer					
Metals										
Arsenic	mg/kg	20.0	20.0	88.0	1,100	5.00	1.88	3.18	2.87	8.06
Barium	mg/kg	--	--	--	700,000	41.5	12.8	27.8	20.0	55.7
Cadmium	mg/kg	2.00	--	--	--	0.293	0.170 U	0.199 U	0.16 U	0.389
Chromium ¹	mg/kg	19.0	19.0	--	11,000	20.4	10.4	14.2	10.6	24.0
Lead	mg/kg	1,000	1,000	--	--	29.9 J	0.979	6.18	11.5	35.9
Mercury	mg/kg	2.00	2.00	--	--	0.262 U	0.227 U	0.272 U	0.248 U	0.260 U
Selenium	mg/kg	--	--	--	18,000	1.35	0.818	1.24	0.855	0.844
Silver	mg/kg	--	--	--	18,000	0.0952 U	0.0849 U	0.0994 U	0.0799 U	0.0852 U
Polychlorinated Biphenyls										
PCB Aroclor 1016	mg/kg	--	--	--	--	0.117 U	0.0990 U	0.117 U	0.110 U	0.100 U
PCB Aroclor 1221	mg/kg	--	--	--	--	0.117 U	0.0990 U	0.117 U	0.110 U	0.100 U
PCB Aroclor 1232	mg/kg	--	--	--	--	0.117 U	0.0990 U	0.117 U	0.110 U	0.100 U
PCB Aroclor 1242	mg/kg	--	--	--	--	0.117 U	0.0990 U	0.117 U	0.110 U	0.100 U
PCB Aroclor 1248	mg/kg	--	--	--	--	0.117 U	0.0990 U	0.117 U	0.110 U	0.100 U
PCB Aroclor 1254	mg/kg	--	--	66	70	0.117 U	0.0990 U	0.117 U	0.110 U	0.100 U
PCB Aroclor 1260	mg/kg	--	--	66	--	0.117 U	0.0990 U	0.117 U	0.110 U	0.100 U
PCB Aroclor 1262	mg/kg	--	--	--	--	0.117 U	0.0990 U	0.117 U	0.110 U	0.100 U
PCB Aroclor 1268	mg/kg	--	--	--	--	0.117 U	0.0990 U	0.117 U	0.110 U	0.100 U
PCBs (Total, Aroclors)	mg/kg	10	10	66	--	0.117 U	0.0990 U	0.117 U	0.110 U	0.100 U
Semivolatile Organic Compounds										
1,2,4-Trichlorobenzene	mg/kg	--	--	--	--	0.119 U	0.104 U	0.112 U	0.102 U	0.112 U
1,2-Dichlorobenzene	mg/kg	--	--	--	--	0.119 U	0.104 U	0.112 U	0.102 U	0.112 U
1,3-Dichlorobenzene	mg/kg	--	--	--	--	0.119 U	0.104 U	0.112 U	0.102 U	0.112 U
1,4-Dichlorobenzene	mg/kg	--	--	--	--	0.119 U	0.104 U	0.112 U	0.102 U	0.112 U
1-Methylnaphthalene	mg/kg	--	--	4,500	--	0.0951 U	0.0828 U	0.0895 U	0.0814 U	0.0899 U
2,4,5-Trichlorophenol	mg/kg	--	--	--	--	0.238 U	0.207 U	0.224 U	0.203 U	0.225 U
2,4,6-Trichlorophenol	mg/kg	--	--	12,000	3,500	0.238 U	0.207 U	0.224 U	0.203 U	0.225 U
2,4-Dichlorophenol	mg/kg	--	--	--	--	0.238 U	0.207 U	0.224 U	0.203 U	0.225 U
2,4-Dimethylphenol	mg/kg	--	--	--	--	0.119 U	0.104 U	0.112 U	0.102 U	0.112 U
2,4-Dinitrophenol	mg/kg	--	--	--	--	0.238 U	0.207 U	0.224 U	0.203 U	0.225 U
2,4-Dinitrotoluene	mg/kg	--	--	--	--	0.119 U	0.104 U	0.112 U	0.102 U	0.112 U
2,6-Dinitrotoluene	mg/kg	--	--	--	--	0.119 U	0.104 U	0.112 U	0.102 U	0.112 U
2-Chloronaphthalene	mg/kg	--	--	--	--	0.119 U	0.104 U	0.112 U	0.102 U	0.112 U
2-Chlorophenol	mg/kg	--	--	--	--	0.119 U	0.104 U	0.112 U	0.102 U	0.112 U
2-Methylnaphthalene	mg/kg	--	--	--	14,000	0.0951 U	0.0828 U	0.0895 U	0.0814 U	0.0899 U
2-Methylphenol	mg/kg	--	--	--	--	0.119 U	0.104 U	0.112 U	0.102 U	0.112 U
2-Nitroaniline	mg/kg	--	--	--	--	0.594 U	0.518 U	0.559 U	0.509 U	0.562 U
2-Nitrophenol	mg/kg	--	--	--	--	0.238 U	0.207 U	0.224 U	0.203 U	0.225 U

Table 2
Soil Analytical Results for Metals, Polychlorinated Biphenyls, and Semivolatile Organic Compounds

		Location				SB-01	SB-05	SB-08	SB-11	
		Sample ID				SB-01-0-2	SB-01-10	SB-05-0-2	SB-08-0-2	SB-11-0-2
		Sample Date				12/07/2015	12/07/2015	12/09/2015	12/07/2015	12/07/2015
		Sample Depth (ft bgs)				0-2	10	0-2	0-2	0-2
Analytes	Units	MTCA A Industrial	MTCA A Unrestricted	MTCA C Cancer	MTCA C Noncancer					
Semivolatile Organic Compounds (Cont.)										
4,6-Dinitro-o-cresol	mg/kg	--	--	--	--	0.238 U	0.207 U	0.224 U	0.203 U	0.225 U
4-Bromophenyl phenyl ether	mg/kg	--	--	--	--	0.119 U	0.104 U	0.112 U	0.102 U	0.112 U
4-Chloro-3-methylphenol	mg/kg	--	--	--	--	0.594 U	0.518 U	0.559 U	0.509 U	0.562 U
4-Chloroaniline	mg/kg	--	--	--	--	0.594 U	0.518 U	0.559 U	0.509 U	0.562 U
4-Chlorophenyl phenyl ether	mg/kg	--	--	--	--	0.119 U	0.104 U	0.112 U	0.102 U	0.112 U
4-Methylphenol	mg/kg	--	--	--	--	0.119 U	0.104 U	0.112 U	0.102 U	0.112 U
4-Nitrophenol	mg/kg	--	--	--	--	0.594 U	0.518 U	0.559 U	0.509 U	0.562 U
Acenaphthene	mg/kg	--	--	--	210,000	0.0951 U	0.0828 U	0.0895 U	0.0814 U	0.0899 U
Acenaphthylene	mg/kg	--	--	--	--	0.0951 U	0.0828 U	0.0895 U	0.0814 U	0.0899 U
Anthracene	mg/kg	--	--	--	1,050,000	0.0951 U	0.0828 U	0.0895 U	0.0814 U	0.0899 U
Benzo(a)anthracene	mg/kg	--	--	--	--	0.0951 U	0.0828 U	0.0895 U	0.0814 U	0.463
Benzo(a)pyrene	mg/kg	2.00	2.00	18.0	--	0.0951 U	0.0828 U	0.0895 U	0.0814 U	0.635
Benzo(b)fluoranthene	mg/kg	--	--	--	--	0.0951 U	0.0828 U	0.0895 U	0.0814 U	0.819
Benzo(g,h,i)perylene	mg/kg	--	--	--	--	0.0951 U	0.0828 U	0.0895 U	0.0814 U	0.296
Benzo(k)fluoranthene	mg/kg	--	--	--	--	0.0951 U	0.0828 U	0.0895 U	0.0814 U	0.298
Benzyl alcohol	mg/kg	--	--	--	--	0.119 U	0.104 U	0.112 U	0.102 U	0.112 U
bis(2-chloroethoxy)methane	mg/kg	--	--	--	--	0.119 U	0.104 U	0.112 U	0.102 U	0.112 U
bis(2-chloroethyl)ether	mg/kg	--	--	--	--	0.238 U	0.207 U	0.224 U	0.203 U	0.225 U
bis(2-ethylhexyl)phthalate	mg/kg	--	--	9,400	--	0.142	0.104 U	0.112 U	0.102 U	2.60
Butyl benzyl phthalate	mg/kg	--	--	--	--	0.119 U	0.104 U	0.112 U	0.102 U	0.859
Carbazole	mg/kg	--	--	--	--	0.594 U	0.518 U	0.559 U	0.509 U	0.562 U
Chrysene	mg/kg	--	--	--	--	0.0951 U	0.0828 U	0.0895 U	0.0814 U	0.415
Di(2-ethylhexyl)adipate	mg/kg	--	--	--	--	0.119 U	0.104 U	0.112 U	0.102 U	0.112 U
Dibenzo(a,h)anthracene	mg/kg	--	--	--	--	0.0951 U	0.0828 U	0.0895 U	0.0814 U	0.0899 U
Dibenzofuran	mg/kg	--	--	--	3,500	0.119 U	0.104 U	0.112 U	0.102 U	0.112 U
Diethylphthalate	mg/kg	--	--	--	--	0.119 U	0.104 U	0.112 U	0.102 U	0.112 U
Dimethyl phthalate	mg/kg	--	--	--	--	0.119 U	0.104 U	0.112 U	0.102 U	0.112 U
Di-n-butyl phthalate	mg/kg	--	--	--	350,000	0.119 U	0.104 U	0.112 U	0.102 U	0.112 U
Di-n-octyl phthalate	mg/kg	--	--	--	--	0.119 U	0.104 U	0.112 U	0.102 U	0.112 U
Fluoranthene	mg/kg	--	--	--	140,000	0.0951 U	0.0828 U	0.0895 U	0.0814 U	0.967
Fluorene	mg/kg	--	--	--	140,000	0.0951 U	0.0828 U	0.0895 U	0.0814 U	0.0899 U
Hexachlorobenzene	mg/kg	--	--	--	--	0.119 U	0.104 U	0.112 U	0.102 U	0.112 U
Hexachlorobutadiene	mg/kg	--	--	--	--	0.119 U	0.104 U	0.112 U	0.102 U	0.112 U
Hexachlorocyclopentadiene	mg/kg	--	--	--	--	0.119 U	0.104 U	0.112 U	0.102 U	0.112 U
Hexachloroethane	mg/kg	--	--	--	--	0.119 U	0.104 U	0.112 U	0.102 U	0.112 U
Indeno(1,2,3-cd)pyrene	mg/kg	--	--	--	--	0.0951 U	0.0828 U	0.0895 U	0.0814 U	0.426
Isophorone	mg/kg	--	--	--	--	0.119 U	0.104 U	0.112 U	0.102 U	0.112 U
Naphthalene	mg/kg	5	5	--	--	0.0951 U	0.0828 U	0.0895 U	0.0814 U	0.0899 U

Table 2
Soil Analytical Results for Metals, Polychlorinated Biphenyls, and Semivolatile Organic Compounds

Location						SB-01		SB-05	SB-08	SB-11
Sample ID						SB-01-0-2	SB-01-10	SB-05-0-2	SB-08-0-2	SB-11-0-2
Sample Date						12/07/2015	12/07/2015	12/09/2015	12/07/2015	12/07/2015
Sample Depth (ft bgs)						0-2	10	0-2	0-2	0-2
Analytes	Units	MTCA A Industrial	MTCA A Unrestricted	MTCA C Cancer	MTCA C Noncancer					
Semivolatile Organic Compounds (Cont.)										
Nitrobenzene	mg/kg	--	--	--	--	0.238 U	0.207 U	0.224 U	0.203 U	0.225 U
N-Nitroso-di-n-propylamine	mg/kg	--	--	--	--	0.119 U	0.104 U	0.112 U	0.102 U	0.112 U
Phenanthrene	mg/kg	--	--	--	--	0.0951 U	0.0828 U	0.0895 U	0.0814 U	0.382
Phenol	mg/kg	--	--	--	--	0.238 U	0.207 U	0.224 U	0.203 U	0.225 U
Pyrene	mg/kg	--	--	--	105,000	0.0951 U	0.0828 U	0.0895 U	0.0814 U	0.830

Notes:

- Not applicable
- BOLD** Exceeds one or more cleanup levels
- 1 Cleanup levels are for chromium (VI)

Abbreviations:

- bgs Below ground surface
- ft Feet
- mg/kg Milligram per kilogram
- MTCA Model Toxics Control Act
- PCBs Polychlorinated Biphenyls

Qualifiers:

- J Analyte was detected, concentration is considered an estimate.
- U Analyte was not detected, concentration given is reporting limit.

**Table 3
Groundwater Analytical Results**

Location					MW01	MW02	MW03	MW05	MW06	MW07	
Sample ID					MW-01-121715	MW-02-121715	MW-03-121715	MW-05-121815	MW-06-122115	MW-07-121715	MW-07-121715-D
Sample Date					12/17/2015	12/17/2015	12/17/2015	12/18/2015	12/21/2015	12/17/2015	12/17/2015
Analytes	Units	MTCA A Groundwater	MTCA C Cancer	MTCA C Noncancer							
Total Petroleum Hydrocarbons											
Diesel-range organics	µg/L	500	--	--	50.0 U	50.0 U	49.9 U	49.8 U	49.8 U	50.0 U	50.1 U
Heavy oil-range organics	µg/L	500	--	--	99.9 U	99.9 U	99.9 U	99.6 U	406	100 U	100 U
Stoddard solvent	µg/L	500 ¹	--	--	703 J	1,270 J	49.9 UJ	294 J	49.8 UJ	50.0 UJ	50.1 UJ
Semivolatile Organic Compounds											
Pentachlorophenol	µg/L	--	2.20	175	729	8.77	0.0998 U	1.31	1.47	0.0998 U	0.100 U
Dioxins/Furans											
2,3,7,8-TCDD	pg/L	--	--	--	0.445 U	--	--	0.387 U	--	--	--
1,2,3,7,8-PeCDD	pg/L	--	--	--	1.08 U	--	--	0.626 U	--	--	--
1,2,3,4,7,8-HxCDD	pg/L	--	--	--	3.88 J	--	--	1.46 U	--	--	--
1,2,3,6,7,8-HxCDD	pg/L	--	--	--	73.6	--	--	38.8	--	--	--
1,2,3,7,8,9-HxCDD	pg/L	--	--	--	5.29 J	--	--	3.21 J	--	--	--
1,2,3,4,6,7,8-HpCDD	pg/L	--	--	--	3,940	--	--	555	--	--	--
OCDD	pg/L	--	--	--	73,900 J	--	--	3,060	--	--	--
2,3,7,8-TCDF	pg/L	--	--	--	4.16 J	--	--	1.34 J	--	--	--
1,2,3,7,8-PeCDF	pg/L	--	--	--	2.48 J	--	--	3.66 J	--	--	--
2,3,4,7,8-PeCDF	pg/L	--	--	--	0.776 U	--	--	2.96 J	--	--	--
1,2,3,4,7,8-HxCDF	pg/L	--	--	--	9.41 J	--	--	5.71 J	--	--	--
1,2,3,6,7,8-HxCDF	pg/L	--	--	--	40.9	--	--	13.7 J	--	--	--
2,3,4,6,7,8-HxCDF	pg/L	--	--	--	19.1 J	--	--	9.58 J	--	--	--
1,2,3,7,8,9-HxCDF	pg/L	--	--	--	3.58 J	--	--	2.03 J	--	--	--
1,2,3,4,6,7,8-HpCDF	pg/L	--	--	--	961	--	--	274	--	--	--
1,2,3,4,7,8,9-HpCDF	pg/L	--	--	--	71.1	--	--	14.9 J	--	--	--
OCDF	pg/L	--	--	--	8,280	--	--	1,090	--	--	--
Summed Dioxin/Furan TEQ with One-Half of the Detection Limit ^{2,3}	pg/L	--	6.73	24.5	91.3 J	--	--	18.7 J	--	--	--

Notes:

- Not applicable
- NA Not analyzed
- BOLD** Exceeds one or more criteria
- 1 The mineral oil criterion is used as a surrogate for Stoddard solvent
- 2 World Health Organization 2005 Toxic Equivalency Factors used for calculation of dioxin/furan TEQ (Van den Berg, et al. 2006).
- 3 Calculated using detected dioxin/furan concentrations plus one-half the detection limit for dioxins/furans that were not detected.

Qualifiers:

- J Analyte was detected, concentration is considered an estimate.
- U Analyte was not detected, concentration given is the reporting limit.
- UJ Analyte was not detected, concentration given is the reporting limit, which is considered an estimate.

Abbreviations:

- µg/L Microgram per liter
- pg/L Picogram per liter
- HpCDD Heptachlorooxanthrene
- HpCDF Heptachlorodibenzofuran
- HxCDD Hexachlorodibenzo-p-dioxin
- HxCDF Hexchlorodibenzofuran
- MTCA Model Toxics Control Act
- OCDD Octachlorodibenzodioxin
- OCDF Octachlorodibenzofuran
- PeCDD Pentachlorodibenzo-p-dioxin
- PeCDF Pentachlorodibenzofuran
- TCDD Tetrachlorodibenzodioxin
- TCDF Tetrachlorodibenzofuran
- TEQ Toxicity equivalent

Table 3
Groundwater Analytical Results

Location		B-36	B-38	B-49	MW-7	MW-9	MW-108	MW-109	MW-110			
Sample ID		B-36-121815	B-38-122115	B-49-121715	MW-7-121815	MW-9-122115	MW-108-121715	MW-109-121815	MW-110-121715			
Sample Date		12/18/2015	12/21/2015	12/17/2015	12/18/2015	12/21/2015	12/17/2015	12/18/2015	12/17/2015			
Analytes	Units	MTCA A Groundwater	MTCA C Cancer	MTCA C Noncancer								
Total Petroleum Hydrocarbons												
Diesel-range organics	µg/L	500	--	--	530	49.5 U	49.9 U	55.6	49.9 U	789	50.1 U	49.9 U
Heavy oil-range organics	µg/L	500	--	--	99.4 U	198	99.9 U	100 U	712	99.8 U	100 U	171
Stoddard solvent	µg/L	500 ¹	--	--	49.7 UJ	1,980 J	49.9 UJ	50.1 UJ	49.9 UJ	49.9 UJ	50.1 UJ	49.9 UJ
Semivolatile Organic Compounds												
Pentachlorophenol	µg/L	--	2.20	175	1.38	2,160	0.0999 U	1.08	0.975	7.12	0.0999 U	6.56
Dioxins/Furans												
2,3,7,8-TCDD	pg/L	--	--	--	--	--	--	--	--	0.500 U	--	--
1,2,3,7,8-PeCDD	pg/L	--	--	--	--	--	--	--	--	0.545 U	--	--
1,2,3,4,7,8-HxCDD	pg/L	--	--	--	--	--	--	--	--	1.06 U	--	--
1,2,3,6,7,8-HxCDD	pg/L	--	--	--	--	--	--	--	--	1.07 U	--	--
1,2,3,7,8,9-HxCDD	pg/L	--	--	--	--	--	--	--	--	0.971 U	--	--
1,2,3,4,6,7,8-HpCDD	pg/L	--	--	--	--	--	--	--	--	11.3 J	--	--
OCDD	pg/L	--	--	--	--	--	--	--	--	123	--	--
2,3,7,8-TCDF	pg/L	--	--	--	--	--	--	--	--	0.338 U	--	--
1,2,3,7,8-PeCDF	pg/L	--	--	--	--	--	--	--	--	1.52 J	--	--
2,3,4,7,8-PeCDF	pg/L	--	--	--	--	--	--	--	--	0.412 U	--	--
1,2,3,4,7,8-HxCDF	pg/L	--	--	--	--	--	--	--	--	0.502 U	--	--
1,2,3,6,7,8-HxCDF	pg/L	--	--	--	--	--	--	--	--	2.38 J	--	--
2,3,4,6,7,8-HxCDF	pg/L	--	--	--	--	--	--	--	--	0.560 U	--	--
1,2,3,7,8,9-HxCDF	pg/L	--	--	--	--	--	--	--	--	0.709 U	--	--
1,2,3,4,6,7,8-HpCDF	pg/L	--	--	--	--	--	--	--	--	3.13 J	--	--
1,2,3,4,7,8,9-HpCDF	pg/L	--	--	--	--	--	--	--	--	0.976 U	--	--
OCDF	pg/L	--	--	--	--	--	--	--	--	11.9 J	--	--
Summed Dioxin/Furan TEQ with One-Half of the Detection Limit ^{2,3}	pg/L	--	6.73	24.5	--	--	--	--	--	1.32 J	--	--

Notes:

- Not applicable
- NA Not analyzed
- BOLD** Exceeds one or more criteria
- 1 The mineral oil criterion is used as a surrogate for Stoddard solvent
- 2 World Health Organization 2005 Toxic Equivalency Factors used for calculation of dioxin/furan TEQ (Van den Berg, et al. 2006).
- 3 Calculated using detected dioxin/furan concentrations plus one-half the detection limit for dioxins/furans that were not detected.

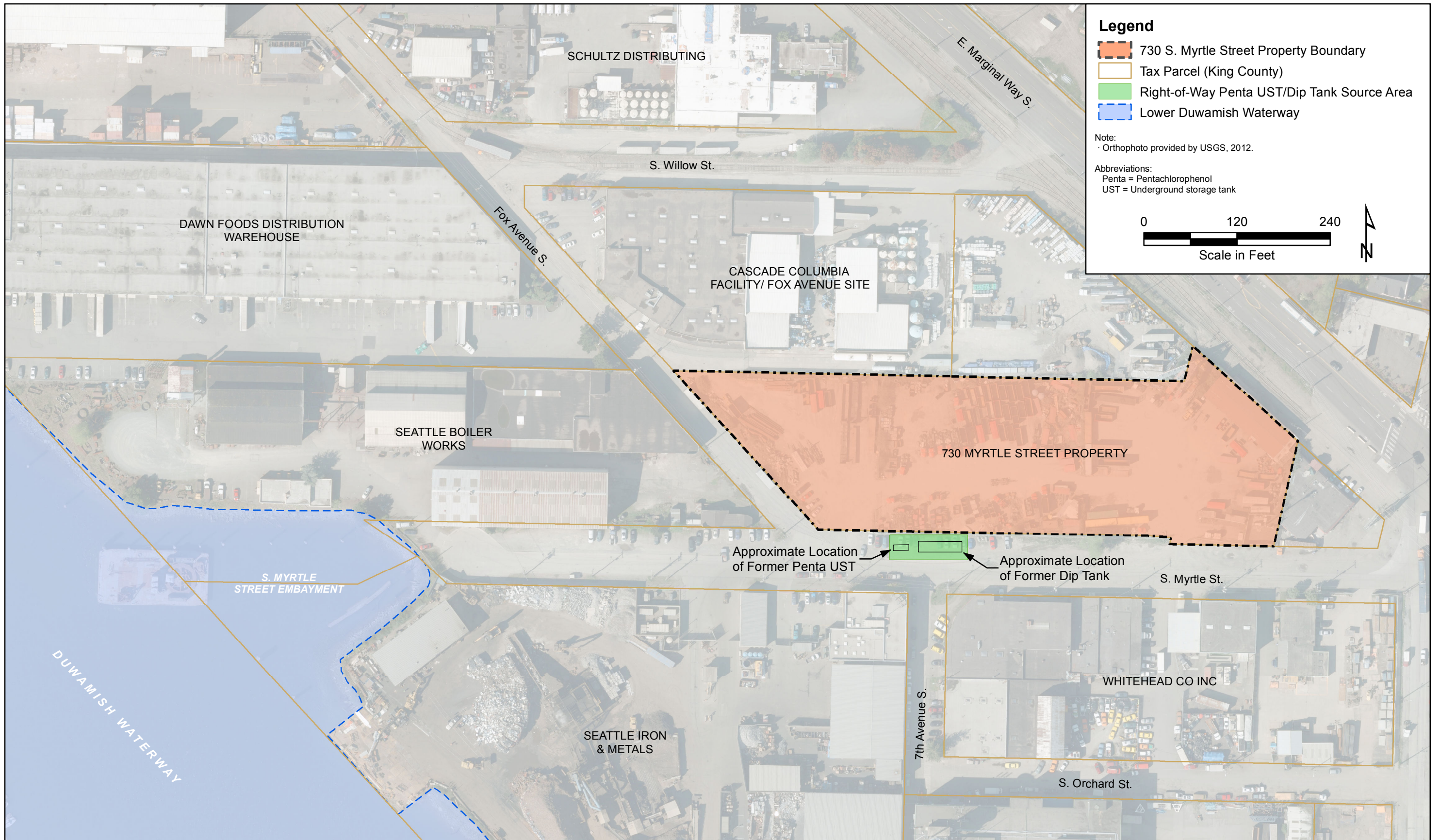
Abbreviations:

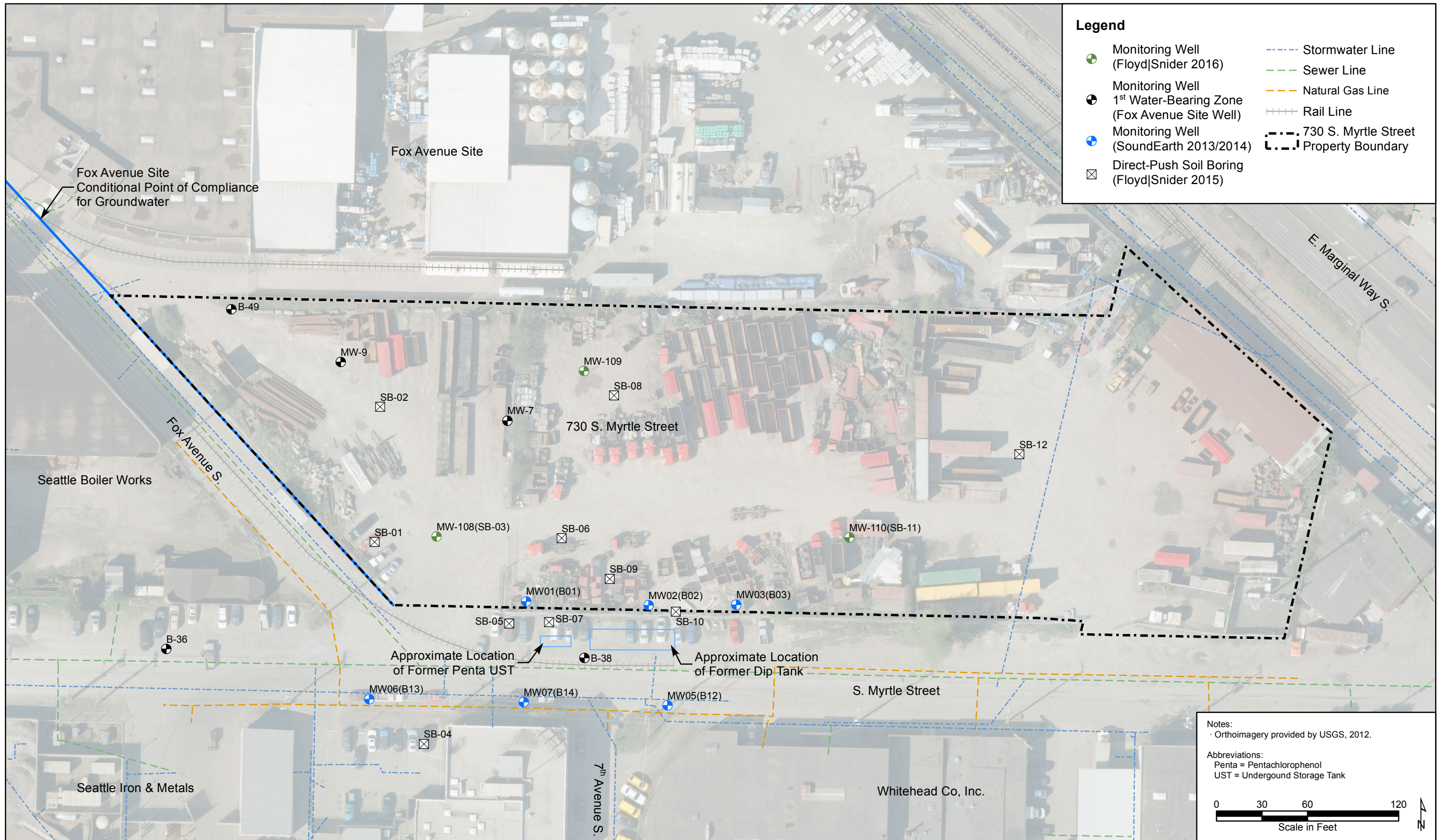
- µg/L Microgram per liter
- pg/L Picogram per liter
- HpCDD Heptachlorooxanthrene
- HpCDF Heptachlorodibenzofuran
- HxCDD Hexachlorodibenzo-p-dioxin
- HxCDF Hexchlorodibenzofuran
- MTCA Model Toxics Control Act
- OCDD Octachlorodibenzodioxin
- OCDF Octachlorodibenzofuran
- PeCDD Pentachlorodibenzo-p-dioxin
- PeCDF Pentachlorodibenzofuran
- TCDD Tetrachlorodibenzodioxin
- TCDF Tetrachlorodibenzofuran
- TEQ Toxicity equivalent
- TEQ Toxicity equivalent

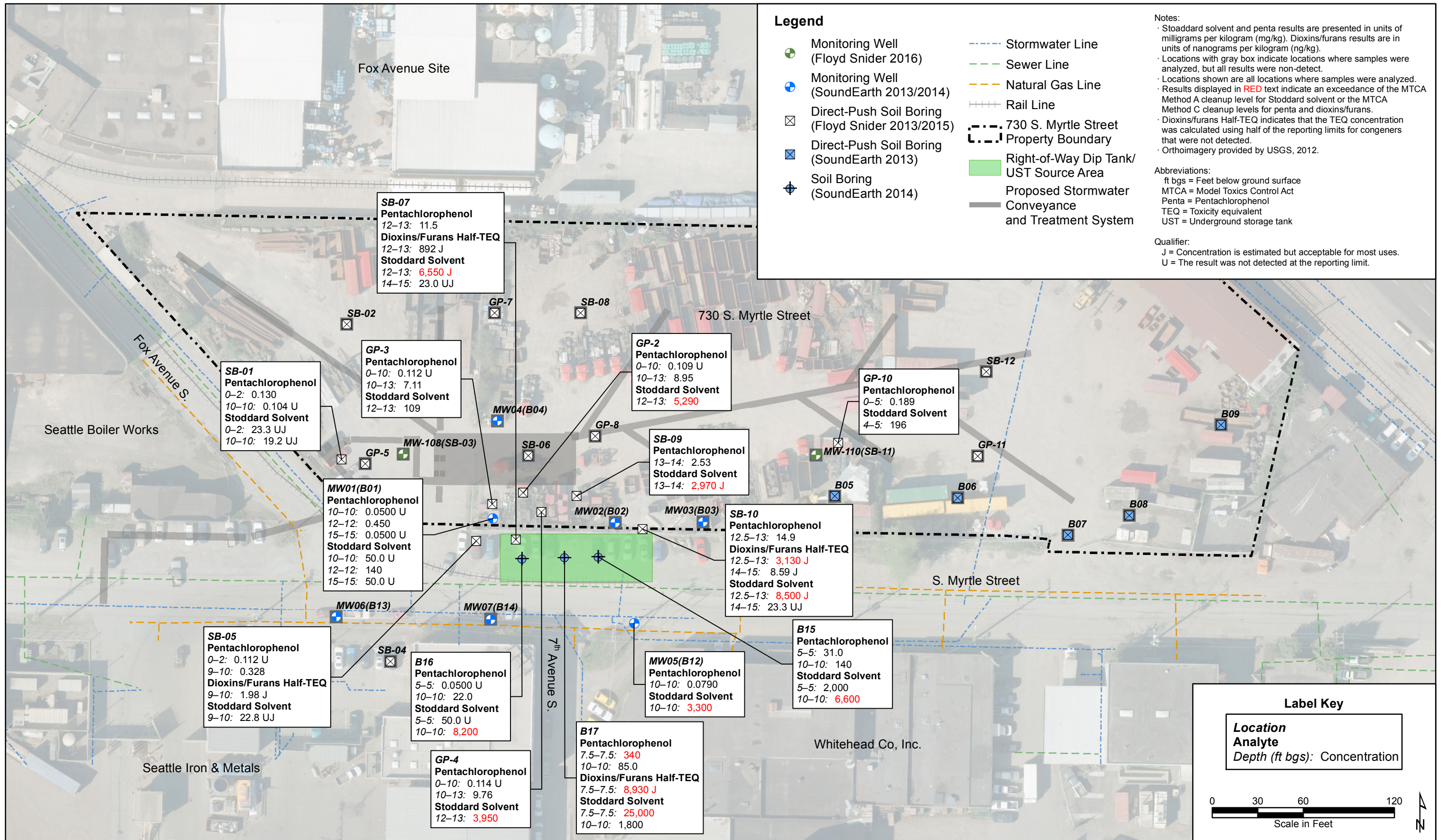
Qualifiers:

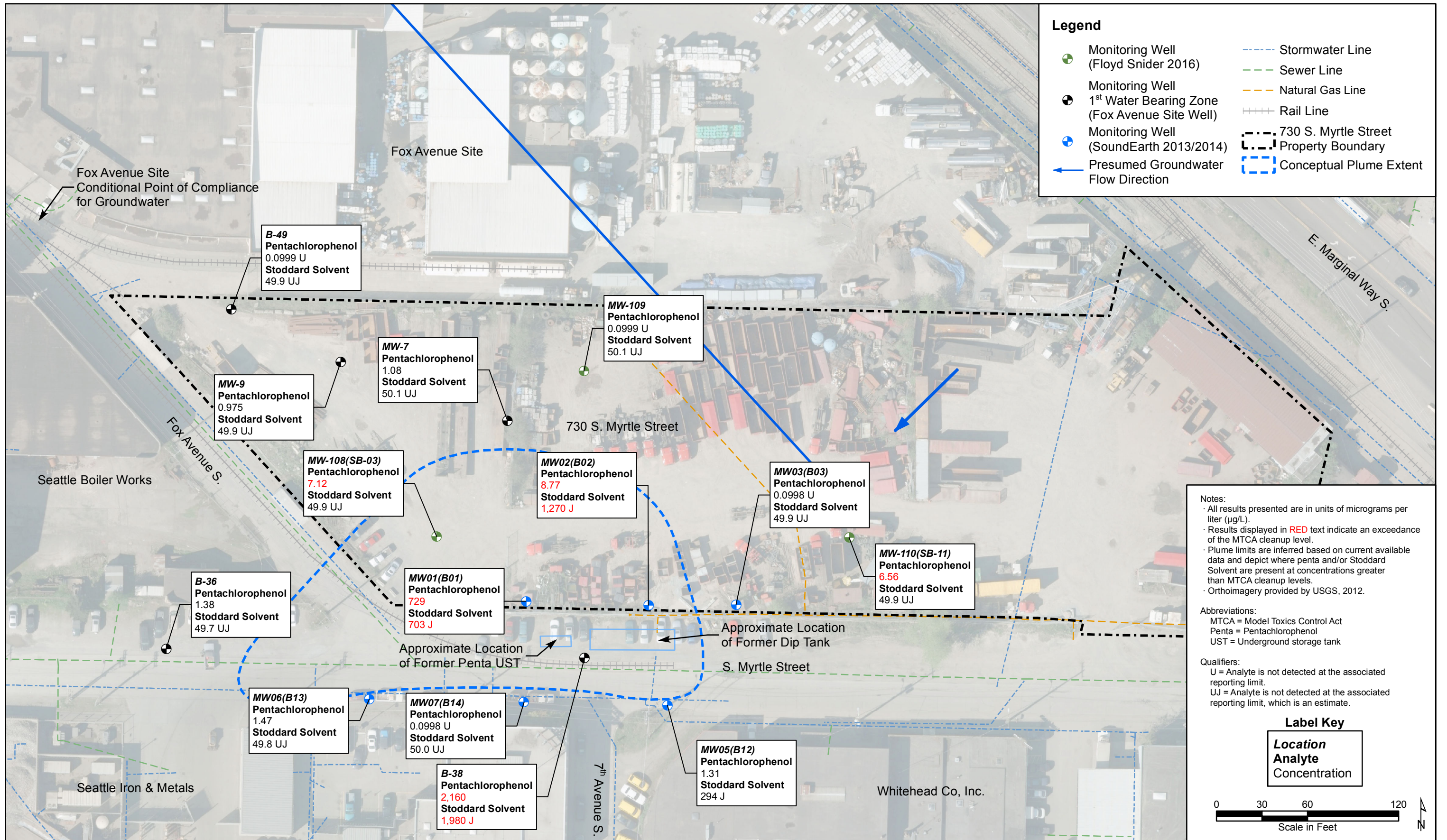
- J Analyte was detected, concentration is considered an estimate.
- U Analyte was not detected, concentration given is the reporting limit.
- UJ Analyte was not detected, concentration given is the reporting limit, which is considered an estimate.

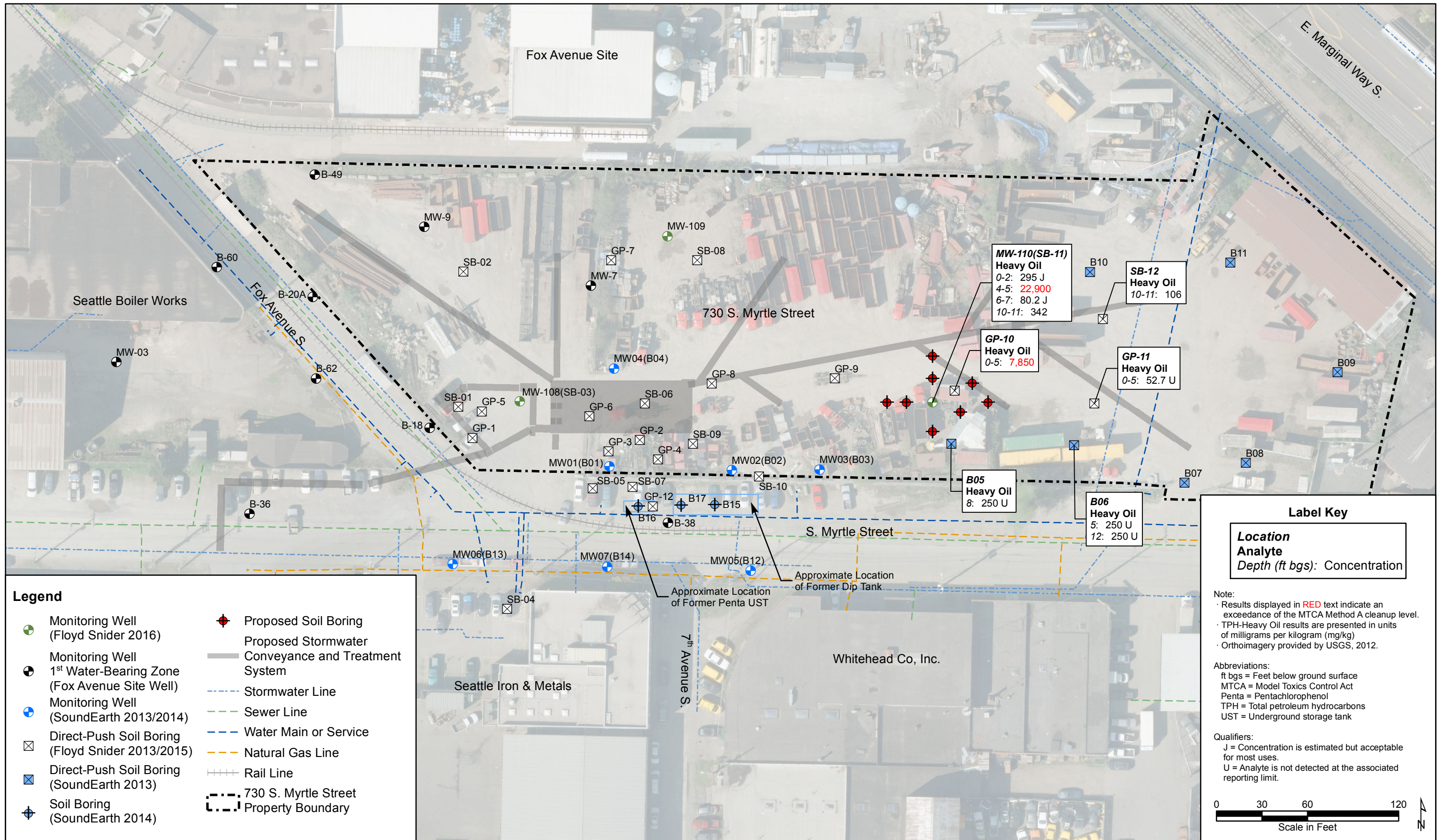
Figures











Legend

	Monitoring Well (Floyd Snider 2016)		Proposed Soil Boring
	Monitoring Well 1 st Water-Bearing Zone (Fox Avenue Site Well)		Proposed Stormwater Conveyance and Treatment System
	Monitoring Well (SoundEarth 2013/2014)		Stormwater Line
	Direct-Push Soil Boring (Floyd Snider 2013/2015)		Sewer Line
	Direct-Push Soil Boring (SoundEarth 2013)		Water Main or Service
	Soil Boring (SoundEarth 2014)		Natural Gas Line
			Rail Line
			730 S. Myrtle Street
			Property Boundary

Label Key

Location	Analyte	Depth (ft bgs): Concentration
MW-110(SB-11)	Heavy Oil	0-2: 295 J 4-5: 22,900 6-7: 80.2 J 10-11: 342
SB-12	Heavy Oil	10-11: 106
GP-10	Heavy Oil	0-5: 7,850
GP-11	Heavy Oil	0-5: 52.7 U
B05	Heavy Oil	8: 250 U
B06	Heavy Oil	5: 250 U 12: 250 U

Note:
 · Results displayed in RED text indicate an exceedance of the MTCA Method A cleanup level.
 · TPH-Heavy Oil results are presented in units of milligrams per kilogram (mg/kg)
 · Orthoimagery provided by USGS, 2012.

Abbreviations:
 ft bgs = Feet below ground surface
 MTCA = Model Toxics Control Act
 Penta = Pentachlorophenol
 TPH = Total petroleum hydrocarbons
 UST = Underground storage tank

Qualifiers:
 J = Concentration is estimated but acceptable for most uses.
 U = Analyte is not detected at the associated reporting limit.

0 30 60 120
 Scale in Feet

H:\GIS\Projects\SIM-730EDR\MXD\Further Delineation\Figure 5 Soil TPH-Heavy Oil Analytical Results and Proposed Delineation.mxd
 3/7/2016

Attachment 1
Field Logs

PROJECT:
SIM-730 EDR

LOCATION: 730 S. Myrtle
Property

BORING ID: **SB-01**

LOGGED BY:
Kristin Anderson

BORING LOCATION:
Dirt lot interior

DRILLED BY:
ESN

NORTHING:

EASTING:

DRILLING EQUIPMENT:
Geoprobe Combo Rig

SURFACE
ELEVATION:

COORDINATE SYSTEM:

DRILLING METHOD:
Direct-push rods

TOTAL DEPTH (ft bgs):
10

DEPTH TO WATER (ft bgs):
NA

SAMPLING METHOD/SAMPLER LENGTH:
2"x5' lined core

BORING DIAMETER:
2"

DRILL DATE:
12/7/2015

Depth (feet)	USCS Symbol	Soil Description and Observations (color, texture, moisture, MAJOR CONSTITUENT, odor, staining, sheen, debris, etc.)	Drive/Recovery	# of Blows	PID (ppm)	Sample ID
0	GW	GRAVEL with sand, asphalt fragments and silt at ground surface.			1.1	
1	SM	Moist, gray and brown silty fine SAND. No odor.				SB-01-0-2
2						
3					1.7	
4		Moist, gray and gray-brown fine SAND.				
5						
6					1.8	
7	SP	At 6.5 feet, becomes dark gray. No odor.				
8						
9					1.8	
10		At 9.5 feet, gravel present and sand becomes more coarse. Bottom of boring = 10 feet bgs.				SB-01-10
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

ABBREVIATIONS:
ft bgs = feet below ground surface USCS = Unified Soil Classification System
ppm = parts per million ▼ = denotes groundwater table

NOTES:

PROJECT:
SIM-730 EDR

LOCATION: 730 S. Myrtle
Property

BORING ID: **SB-02**

LOGGED BY:
Kristin Anderson

BORING LOCATION:
Dirt lot interior

DRILLED BY:
ESN

NORTHING:

EASTING:

DRILLING EQUIPMENT:
Geoprobe Combo Rig

SURFACE
ELEVATION:

COORDINATE SYSTEM:

DRILLING METHOD:
Direct-push rods

TOTAL DEPTH (ft bgs):
5

DEPTH TO WATER (ft bgs):
NA

SAMPLING METHOD/SAMPLER LENGTH:
2"x5' lined core

BORING DIAMETER:
2"

DRILL DATE:
12/7/2015

Depth (feet)	USCS Symbol	Soil Description and Observations (color, texture, moisture, MAJOR CONSTITUENT, odor, staining, sheen, debris, etc.)	Drive/Recovery	# of Blows	PID (ppm)	Sample ID
0		Moist, gray-brown and dark brown poorly graded fine SAND with silt and gravel. Asphalt fragments present.				
1	SP-SM				2.7	SB-02-0-2
2		Moist, poorly graded very fine silty SAND .				
3						
4	SM				6.0	
5		Bottom of boring = 5 feet bgs.				SB-02-4-5
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

ABBREVIATIONS:
ft bgs = feet below ground surface USCS = Unified Soil Classification System
ppm = parts per million ▼ = denotes groundwater table

NOTES:

PROJECT:
SIM-730 EDR

LOCATION: 730 S. Myrtle
Property

BORING ID: **SB-04**

LOGGED BY:
Kristin Anderson

BORING LOCATION:
SIM employee parking lot

DRILLED BY:
ESN

NORTHING:

EASTING:

DRILLING EQUIPMENT:
Geoprobe Combo Rig

SURFACE
ELEVATION:

COORDINATE SYSTEM:

DRILLING METHOD:
Direct-push rods

TOTAL DEPTH (ft bgs):
15

DEPTH TO WATER (ft bgs):
9.5

SAMPLING METHOD/SAMPLER LENGTH:
2"x5' lined core

BORING DIAMETER:
2"

DRILL DATE:
12/7/2015

Depth (feet)	USCS Symbol	Soil Description and Observations (color, texture, moisture, MAJOR CONSTITUENT, odor, staining, sheen, debris, etc.)	Drive/Recovery	# of Blows	PID (ppm)	Sample ID
0	Concrete	Concrete ground surface (~10" thick).				
1		Moist, brown poorly graded fine SAND with silt.			2.1	
2						
3	SP-SM					
4					2.1	
5		Moist, dark gray-brown poorly graded fine SAND . Red and white grains present. No odor.				
6					2.1	
7						
8					2.2	
9						
10	SP	At 9.5 feet, becomes wet.				SB-04-9-10
11						
12						
13		At 13 feet, becomes dark gray. No odor.				
14						
15		Bottom of boring = 15 feet bgs.			2.1	
16						
17						
18						
19						
20						

ABBREVIATIONS:
ft bgs = feet below ground surface USCS = Unified Soil Classification System
ppm = parts per million ▼ = denotes groundwater table

NOTES:
Moved ~5 feet due to potential utilities in parking lot.

PROJECT:
SIM-730 EDR

LOCATION: 730 S. Myrtle
Property

BORING ID:
SB-05

LOGGED BY:
Kristin Anderson

BORING LOCATION:
Dirt lot, south of property fence

DRILLED BY:
ESN

NORTHING:

EASTING:

DRILLING EQUIPMENT:
Geoprobe Combo Rig

**SURFACE
ELEVATION:**

COORDINATE SYSTEM:

DRILLING METHOD:
Direct-push rods

TOTAL DEPTH (ft bgs):
20

DEPTH TO WATER (ft bgs):

SAMPLING METHOD/SAMPLER LENGTH:
2"x5' lined core

BORING DIAMETER:
2"

DRILL DATE:
12/7/2015

Depth (feet)	USCS Symbol	Soil Description and Observations (color, texture, moisture, MAJOR CONSTITUENT, odor, staining, sheen, debris, etc.)	Drive/Recovery	# of Blows	PID (ppm)	Sample ID
0	GW	GRAVEL and asphalt fragments at ground surface (6").				
1		Moist, brown poorly graded fine SAND with silt.				SB-05-0-2
2		At 2 feet, becomes moist to wet.				
3						
4					1.8	
5		At 5 ft, alternating lenses of wet, brown poorly graded very fine sand with silt and and very moist, gray-brown poorly graded fine sand with red and white grains and trace to no silt. No odor.				SB-05-4-5
6					1.8	
7						
8	SP-SM					
9					1.2	
10		At 10 feet, becomes saturated. No odor.				SB-05-9-10
11					1.8	
12						
13					2.3	
14					2.0	
15		Wet, dark gray-brown poorly graded fine SAND . Red and white grains present. No odor.				
16					2.4	
17						
18	SP				5.8	SB-05-17-18
19						
20		Bottom of boring = 20 feet bgs.			3.8	SB-05-19-20

ABBREVIATIONS:
ft bgs = feet below ground surface USCS = Unified Soil Classification System
ppm = parts per million ▼ = denotes groundwater table

NOTES:

PROJECT:
SIM-730 EDR

LOCATION: 730 S. Myrtle
Property

BORING ID:
SB-06

LOGGED BY:
Kristin Anderson

BORING LOCATION:
Dirt lot interior

DRILLED BY:
ESN

NORTHING:

EASTING:

DRILLING EQUIPMENT:
Geoprobe Combo Rig

**SURFACE
ELEVATION:**

COORDINATE SYSTEM:

DRILLING METHOD:
Direct-push rods

TOTAL DEPTH (ft bgs):
15

DEPTH TO WATER (ft bgs):
11

SAMPLING METHOD/SAMPLER LENGTH:
2"x5' lined core

BORING DIAMETER:
2"

DRILL DATE:
12/7/2015

Depth (feet)	USCS Symbol	Soil Description and Observations (color, texture, moisture, MAJOR CONSTITUENT, odor, staining, sheen, debris, etc.)	Drive/Recovery	# of Blows	PID (ppm)	Sample ID
0	SP-SM	Moist, gray-brown and dark brown poorly graded fine SAND with silt and gravel. Few asphalt fragments present.	[Shaded]	[Shaded]	2.3	
1						
2						
3	SP	Moist, poorly graded very fine silty SAND . Few red and gray lenses present.	[Shaded]	[Shaded]	1.9	
4						
5						
6						
7						
8		Moist, gray poorly graded fine SAND with trace silt. No odor.	[Shaded]	[Shaded]	1.8	
9						
10						
11		At 8 feet, coarsens slightly and white grains present. No odor.	[Shaded]	[Shaded]	1.8	SB-06-10-11
12						
13		At 11 feet, becomes wet. Some reddish brown lenses present. No odor.	[Shaded]	[Shaded]	2.9	
14						
15		Bottom of boring = 15 feet bgs.				
16						
17						
18						
19						
20						

ABBREVIATIONS:
ft bgs = feet below ground surface USCS = Unified Soil Classification System
ppm = parts per million ▼ = denotes groundwater table

NOTES:

PROJECT:
SIM-730 EDR

LOCATION: 730 S. Myrtle
Property

BORING ID: **SB-07**

LOGGED BY:
Kristin Anderson

BORING LOCATION:
Dirt lot interior

DRILLED BY:
ESN

NORTHING:

EASTING:

DRILLING EQUIPMENT:
Geoprobe Combo Rig

SURFACE
ELEVATION:

COORDINATE SYSTEM:

DRILLING METHOD:
Direct-push rods

TOTAL DEPTH (ft bgs):
20

DEPTH TO WATER (ft bgs):

SAMPLING METHOD/SAMPLER LENGTH:
2"x5' lined core

BORING DIAMETER:
2"

DRILL DATE:
12/7/2015

Depth (feet)	USCS Symbol	Soil Description and Observations (color, texture, moisture, MAJOR CONSTITUENT, odor, staining, sheen, debris, etc.)	Drive/Recovery	# of Blows	PID (ppm)	Sample ID
0	SP-SM	Moist, dark brown and black-brown poorly graded fine SAND with silt and gravel.	[Shaded]	[Shaded]	1.7	
1		At 1 foot, becomes brown and very fine and gravel disappears.				
2						
3						
4		At 4 feet, becomes gray-brown.				
5		At 4.75 feet, alternating lenses of dark gray poorly graded fine sand with trace to no silt and brown poorly graded fine sand with silt.				
6						
7		Moist, dark gray poorly graded fine SAND with trace silt.			8.5	SB-07-7-8
8						
9					308.0	SB-07-9-10
10		At 9.5 feet, slight solvent odor present.				
11		At 10.5 feet, becomes wet with strong solvent odor.			408.0	
12					614.0	SB-07-12-13
13	SP					
14		At 14 feet, odor begins to dissipate.				SB-07-14-15
15		At 15 feet, sheen present on water at top of core.			16.3	
16					12.7	
17		At 17 feet, moderate solvent odor present.			46.3	
18					7.7	
19		At 19 feet, no solvent odor.				
20		Bottom of boring = 20 feet bgs.				SB-07-19-20

ABBREVIATIONS:
ft bgs = feet below ground surface USCS = Unified Soil Classification System
ppm = parts per million ▼ = denotes groundwater table

NOTES:

PROJECT:
SIM-730 EDR

LOCATION: 730 S. Myrtle
Property

BORING ID: **SB-09**

LOGGED BY:
Kristin Anderson

BORING LOCATION:
Dirt lot interior

DRILLED BY:
ESN

NORTHING:

EASTING:

DRILLING EQUIPMENT:
Geoprobe Combo Rig

SURFACE
ELEVATION:

COORDINATE SYSTEM:

DRILLING METHOD:
Direct-push rods

TOTAL DEPTH (ft bgs):
20

DEPTH TO WATER (ft bgs):
10

SAMPLING METHOD/SAMPLER LENGTH:
2"x5' lined core

BORING DIAMETER:
2"

DRILL DATE:
12/7/2015

Depth (feet)	USCS Symbol	Soil Description and Observations (color, texture, moisture, MAJOR CONSTITUENT, odor, staining, sheen, debris, etc.)	Drive/Recovery	# of Blows	PID (ppm)	Sample ID
0		Moist, gray-brown poorly graded fine SAND with silt and gravel. Some asphalt fragments present.				
1		At 1 foot, gravel disappears. No odor.			2.2	
2	SP-SM					
3						
4		Moist, brown poorly graded very fine silty SAND . No odor.				
5						
6	SM				10.0	
7					50.0	SB-09-7-8
8		Moist, brown poorly graded fine SAND . Slight hydrocarbon odor present.				SB-09-8-9
9						
10		At 10 feet, becomes wet. Strong solvent odor and sheen present on core.				
11						
12					591.0	
13						SB-09-13-14
14	SP				41.0	
15					517.0	
16					5.6	
17		At 17 feet, odor disappears and soft brown silt lense present.				SB-09-17-18
18						SB-09-18-19
19						
20		Bottom of boring = 20 feet bgs.				

ABBREVIATIONS:
ft bgs = feet below ground surface USCS = Unified Soil Classification System
ppm = parts per million ▼ = denotes groundwater table

NOTES:

PROJECT:
SIM-730 EDR

LOCATION: 730 S. Myrtle
Property

BORING ID: **SB-10**

LOGGED BY:
Kristin Anderson

BORING LOCATION:
Dirt lot, South of property fence

DRILLED BY:
ESN

NORTHING:

EASTING:

DRILLING EQUIPMENT:
Geoprobe Combo Rig

SURFACE
ELEVATION:

COORDINATE SYSTEM:

DRILLING METHOD:
Direct-push rods

TOTAL DEPTH (ft bgs):
15

DEPTH TO WATER (ft bgs):
10

SAMPLING METHOD/SAMPLER LENGTH:
2"x5' lined core

BORING DIAMETER:
2"

DRILL DATE:
12/7/2015

Depth (feet)	USCS Symbol	Soil Description and Observations (color, texture, moisture, MAJOR CONSTITUENT, odor, staining, sheen, debris, etc.)	Drive/Recovery	# of Blows	PID (ppm)	Sample ID
0	SP-SM	Moist, gray-brown poorly graded fine SAND with silt and gravel. Some asphalt fragments present.			3.9	
1	SP	Moist, dark gray-brown poorly graded fine SAND .				
2	SM	Moist, brown poorly graded very fine silty SAND .				
3	SM				3.7	
4	ML	Soft, gray SILT .				
5	SP	Moist, dark gray-brown poorly graded fine SAND .			31.0	SB-10-5-6
6	SP				276.0	
7	ML	Soft, gray SILT . Strong solvent odor.				
8	SP	Moist, dark gray-brown poorly graded fine SAND .				
9	SP				557.0	
10	SP	At 10 feet, becomes wet.				
11	SP					
12	SP				695.0	
13	SP	At 12.5 feet, silver staining and strong solvent odor present. At 13 feet, solvent odor begins to dissipate			97.0	SB-10-12.5-13
14	SP	At 14 feet, becomes dark gray-brown with no staining.				
15	SP	At 15 feet, slight to no odor present. Bottom of boring = 15 feet bgs.			4.2	SB-10-14-15
16						
17						
18						
19						
20						

ABBREVIATIONS:
ft bgs = feet below ground surface USCS = Unified Soil Classification System
ppm = parts per million ▼ = denotes groundwater table

NOTES:

PROJECT:
SIM-730 EDR

LOCATION: 730 S. Myrtle
Property

BORING ID: **SB-12**

LOGGED BY:
Kristin Anderson

BORING LOCATION:
Dirt lot interior

DRILLED BY:
ESN

NORTHING:

EASTING:

DRILLING EQUIPMENT:
Geoprobe Combo Rig

SURFACE
ELEVATION:

COORDINATE SYSTEM:

DRILLING METHOD:
Direct-push rods

TOTAL DEPTH (ft bgs):
15

DEPTH TO WATER (ft bgs):
10

SAMPLING METHOD/SAMPLER LENGTH:
2"x5' lined core

BORING DIAMETER:
2"

DRILL DATE:
12/7/2015

Depth (feet)	USCS Symbol	Soil Description and Observations (color, texture, moisture, MAJOR CONSTITUENT, odor, staining, sheen, debris, etc.)	Drive/Recovery	# of Blows	PID (ppm)	Sample ID
0	SP-SM	Moist, dark gray-brown poorly graded fine SAND with silt and gravel.	[Shaded]	[Shaded]	2.1	
1						
2	SP	Moist, dark gray-brown poorly graded fine SAND . Red and white grains present. No odor.	[Shaded]	[Shaded]	2.1	
3						
4						
5						
6						
7	At 7 feet, 6-inch lense of very fine gray silty sand present.	[Shaded]	[Shaded]	2.2		
8						
9						
10	▼	[Shaded]	[Shaded]	2.1	SB-12-10-11	
11	At 11 feet, becomes wet.					
12						
13						
14	Bottom of boring = 15 feet bgs.	[Shaded]	[Shaded]	2.1		
15						
16						
17						
18						
19						
20						

ABBREVIATIONS:
ft bgs = feet below ground surface USCS = Unified Soil Classification System
ppm = parts per million ▼ = denotes groundwater table

NOTES:

PROJECT:
SIM 730 S. Myrtle Property

LOGGED BY:
Kristin Anderson

LOCATION:
730 S. Myrtle Street, Seattle, WA

COORDINATE SYSTEM:
WA SPCS NAD83 N FT

WELL ID:
SB-03/MW-108

ECOLOGY WELL ID:
BJW 742

DRILLED BY:
ESN

NORTHING:

EASTING:

DRILLING EQUIPMENT:
Geoprobe Combo Rig

GROUND SURFACE ELEV.:

TOC ELEVATION:

DRILLING METHOD:
8" dia Hollow-Stem Auger

TOTAL DEPTH (ft bgs):
15

DEPTH TO WATER (ft bgs):
11

SAMPLING METHOD:
5' x 2" lined core

BORING DIAMETER:
8

DRILL DATE:
12/7/2015

Depth (feet)	USCS Symbol	Description	Drive/Recovery	# of Blows	PIID (ppm)	Sample ID	Well Construction
0		Moist, dark gray-brown poorly graded fine SAND with silt and gravel.					
1	SP-SM						
2		Moist, brown fine silty SAND . No odor.					
3							
4	SM						
5		Moist, brown poorly graded very fine SAND with trace silt. No odor.					
6							
7							
8	SP	At 8 feet, sand coarsens and becomes gray-brown.					
9							
10		At 10 feet, coarsens slightly and becomes dark gray with red and white grains. No odor.					
11		At 11 feet, becomes wet.					
12	SP	At 12 feet, 12-inch lense of ver fine brown silty sand present.					
13							
14		At 13.5 feet, 6-inch lesne of very fine gray silty sand present. No odor.					
15		Bottom of boring = 15 feet bgs.					

ABBREVIATIONS:
ft bgs = feet below ground surface USCS = Unified Soil Classification System
ppm = parts per million ▼ = denotes groundwater table

NOTES:

SB-03-10-11

PROJECT:
SIM 730 S. Myrtle Property

LOGGED BY:
Kristin Anderson

LOCATION:
730 S. Myrtle Street, Seattle, WA

COORDINATE SYSTEM:
WA SPCS NAD83 N FT

WELL ID:
SB-08/MW-109

ECOLOGY WELL ID:
BJW 712

DRILLED BY:
ESN

NORTHING:

EASTING:

DRILLING EQUIPMENT:
Geoprobe Combo Rig

GROUND SURFACE ELEV.:

TOC ELEVATION:

DRILLING METHOD:
8" dia Hollow-Stem Auger

TOTAL DEPTH (ft bgs):
15

DEPTH TO WATER (ft bgs):
10

SAMPLING METHOD:
5' x 2" lined core

BORING DIAMETER:
8

DRILL DATE:
12/7/2015

Depth (feet)	USCS Symbol	Description	Drive/Recovery	# of Blows	PID (ppm)	Sample ID	Well Construction
0	SP-SM	Moist, dark gray-brown poorly graded fine SAND with silt and gravel.					
1		Moist, dark gray-brown poorly graded fine SAND . White grains present. No odor.				SB-08-0-2	
2							
3							
4							
5		At 4.5 feet, becomes very fine and brown.				SB-08-4-5	
6		At 5.5 feet, becomes dark gray-brown.					
7							
8	SP	At 8 feet, 6-inch lense of brown silty sand present.					
9							
10		At 10 feet, becomes wet.				SB-08-10-11	
11							
12							
13		At 13 feet, 12-inch lense of silty sand present.					
14							
15		Bottom of boring = 15 feet bgs.					

ABBREVIATIONS:
ft bgs = feet below ground surface USCS = Unified Soil Classification System
ppm = parts per million ▼ = denotes groundwater table

NOTES:

PROJECT:
SIM 730 S. Myrtle Property

LOGGED BY:
Kristin Anderson

LOCATION:
730 S. Myrtle Street, Seattle, WA

COORDINATE SYSTEM:
WA SPCS NAD83 N FT

WELL ID:
SB-11/MW-110

ECOLOGY WELL ID:
BJW 743

DRILLED BY:
ESN

NORTHING:

EASTING:

DRILLING EQUIPMENT:
Geoprobe Combo Rig

GROUND SURFACE ELEV.:

TOC ELEVATION:

DRILLING METHOD:
8" dia Hollow-Stem Auger

TOTAL DEPTH (ft bgs):
15

DEPTH TO WATER (ft bgs):
11

SAMPLING METHOD:
5' x 2" lined core

BORING DIAMETER:
8

DRILL DATE:
12/7/2015

Depth (feet)	USCS Symbol	Description	Drive/Recovery	# of Blows	PID (ppm)	Sample ID	Well Construction
0	SP-SM	Moist, dark gray-brown poorly graded fine SAND with silt and gravel. Dry crushed gravel at 1 foot.					
1		Moist, dark gray-brown poorly graded fine SAND.				SB-11-0-2	
2							
3							
4		At 3.75 feet, 3-inch red-brown lense present. At 4 feet, becomes gray and very fine. Slight hydrocarbon odor present.				SB-11-4-5	
5							
6		At 5.5 feet, becomes dark gray and very fine with no odor.				SB-11-6-7	
7							
8	SP						
9							
10						SB-11-10-11	
11		At 11 feet, becomes wet.					
12							
13							
14							
15		Bottom of boring = 15 feet bgs.					

ABBREVIATIONS:
ft bgs = feet below ground surface USCS = Unified Soil Classification System
ppm = parts per million ▼ = denotes groundwater table

NOTES:

GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM

Project Name: SIM
 Project Number: _____

Date of Collection: 12/21/15
 Field Personnel: M. McLaughlin

Purge Data

Well ID: MW-06 Secure: Yes No Well Condition/Damage Description: cap tight, moment full of H₂O above well casing

Depth Sounder decontaminated Prior to Placement in Well: Yes No One Casing Volume (gal): _____
 Depth of water (from top of well casing): 7.05' Well Casing Type/Diameter/Screened Interval: _____
 After 5 minutes of purging (from top of casing): 7.10'

Begin purge (time): 10:10
 End purge (time): 10:35
 Gallons purged: 2.5L
 Purge water disposal method: Drum

Volume of Schedule 40 PVC Pipe				
Diameter	O.D.	I.D.	Volume (Gal/Linear Ft.)	Weight of Water (Lbs/Linear Ft.)
1 1/4"	1.660"	1.380"	0.08	0.64
2"	2.375"	2.067"	0.17	1.45
3"	3.500"	3.068"	0.38	3.2
4"	4.500"	4.026"	0.66	5.51
6"	6.625"	6.065"	1.5	12.5

Time	Depth to Water	Vol. Purged	pH	DO	Conductivity	Turbidity	Temp	ORP	Comments
10:15	7.10'	1L	5.24	0.94	0.557 mS/cm	65 NTU	10.7°C	154 mV	Dominated flow through cell
10:25	7.10'	1.5L	5.79	1.60	0.507 "	25.8 NTU	10.7°C	69 mV	
10:30	7.09'	2L	5.80	0.60	0.499 "	24.6 NTU	11.5°C	38 mV	
10:35	7.10'	2.5L	5.78	0.55	0.496 "	26.5 NTU	11.2°C	26 mV	

Sampling Data

Sample No: MW-06 Location and Depth: _____

Date Collected (mo/dy/yr): 12/21/15 Time Collected: _____ AM PM Weather: _____

Type: Ground Water Surface Water Other: _____ Sample: Filtered Unfiltered Other: _____

Sample Collected with: Bailor Pump Other: _____ Type: Peristaltic

Water Quality Instrument Data Collected with: Type: Horiba U-22 Horiba U-50 Other: _____

Sample Decon Procedure: Sample collected with (circle one): decontaminated all tubing; disposable and/or dedicated silicon and poly tubing Other: _____

Sample Description (Color, Turbidity, Odor, Other): 0.5 liter yellow tint, clear, slight to mod. petroleum odor. Slight bubbles seen on purge water.

Sample Analyses

TPH-D (HCl) Chlor / Fluor (unpres) COD / TOC (H2SO4) Orthophos (FILTER) Diss. Metals (HNO3)
 TPH-G (HCl) BTEX (HCl) Total Metals (HNO3) TKN/Phos (N2SO4) VOCs (HCl)

Additional Information

Types of Sample Containers:	Quantity:	Duplicate Sample Numbers:	Comments:
<u>500ml Amber</u>	<u>2</u>		
<u>500ml Amber</u>	<u>2</u>		
<u>1 liter</u>			

Signature: [Signature] Date: 12/21/15

GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM

Project Name: SIM
 Project Number: _____

Date of Collection: 12/21/15
 Field Personnel: 12/21/15 G. Cisneros
M. McCallum

Purge Data

Well ID: B-38 Secure: Yes No Well Condition/Damage Description: _____

Depth Sounder decontaminated Prior to Placement in Well: Yes No One Casing Volume (gal): _____

Depth of water (from top of well casing): 8.11' Well Casing Type/Diameter/Screened Interval: TD=12'

After 5 minutes of purging (from top of casing): 8.11'

Begin purge (time): 11:30

End purge (time): 1240

Gallons purged: 4 gallons

Purge water disposal method: Drum

Volume of Schedule 40 PVC Pipe				
Diameter	O.D.	I.D.	Volume (Gal/Linear Ft.)	Weight of Water (Lbs/Linear Ft.)
1 1/2"	1.660"	1.380"	0.08	0.64
2"	2.375"	2.067"	0.17	1.45
3"	3.500"	3.068"	0.38	3.2
4"	4.500"	4.026"	0.66	5.51
6"	6.625"	6.065"	1.5	12.5

Time	Depth to Water	Vol. Purged	pH	DO	Conductivity	Turbidity	Temp	ORP	Comments
<u>11:30</u>	<u>8.11</u>	<u>5g</u>	<u>6.78</u>	<u>3.89</u>	<u>0.116</u>	<u>0.0</u>	<u>807</u>	<u>58</u>	
<u>11:35</u>	<u>8.10</u>	<u>19</u>	<u>6.81</u>	<u>2.66</u>	<u>0.121</u>	<u>0.26</u>	<u>9.47</u>	<u>42</u>	
<u>11:40</u>	<u>8.12</u>	<u>1.5g</u>	<u>6.33</u>	<u>1.85</u>	<u>0.139</u>	<u>0.45</u>	<u>11.19</u>	<u>30</u>	
<u>11:45</u>	<u>8.12</u>	<u>1.5g</u>	<u>6.34</u>	<u>1.74</u>	<u>0.140</u>	<u>0.77</u>	<u>11.84</u>	<u>8</u>	
<u>12:20</u>	<u>8.12</u>	<u>2.5g</u>	<u>6.31</u>	<u>1.97</u>	<u>0.144</u>	<u>2.00</u>	<u>11.73</u>	<u>5</u>	
<u>12:50</u>	<u>8.12</u>	<u>3.1</u>	<u>6.36</u>	<u>2.00</u>	<u>0.142</u>	<u>2.75</u>	<u>10.99</u>	<u>5.0</u>	
<u>1:00</u>	<u>8.0</u>	<u>3.0</u>	<u>6.35</u>	<u>2.00</u>	<u>0.142</u>	<u>2.80</u>	<u>10.0</u>	<u>1</u>	

Sampling Data

Sample No: B-38-122115 Location and Depth: B-38

Date Collected (mo/dy/yr): 12/21/15 Time Collected: 1240 AM PM Weather: _____

Type: Ground Water Surface Water Other: _____ Sample: Filtered Unfiltered Other: _____

Sample Collected with: Bailor Pump Other: _____ Type: Peristaltic

Water Quality Instrument Data Collected with: Type: Horiba U-22 Horiba U-50 Other: _____

Sample Decon Procedure: Sample collected with (circle one): decontaminated all tubing; disposable and/or dedicated silicon and poly tubing Other: _____

Sample Description (Color, Turbidity, Odor, Other): _____

Sample Analyses

TPH-D (HCl) Chlor / Fluor (unpres) COD / TOC (H2SO4) Orthophos (FILTER) Diss. Metals (HNO3)
TPH-G (HCl) BTEX (HCl) Total Metals (HNO3) TKN/Phos (N2SO4) VOCs (HCl)
Penta B Dioxins B

Additional Information

Types of Sample Containers:	Quantity:	Duplicate Sample Numbers:	Comments:
<u>Dx</u> - <u>10 Amber</u>	<u>1</u>		<u>1L Amber - Dx</u>
<u>Penta</u> - <u>10 Amber</u>	<u>1</u>		<u>1L Amber - Penta</u>
<u>Diox</u> - <u>1 Liter Amber</u>	<u>2</u>		<u>1L Amber - Two-Diox</u>

Signature: [Signature] Date: 12/21/15

GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM

Project Name: SIM
 Project Number: SIM

Date of Collection: 12/21/15
 Field Personnel: G. Gibbons

Purge Data

Well ID: MW-9 Secure: Yes No Well Condition/Damage Description: Total 12-64

Depth Sounder decontaminated Prior to Placement in Well: Yes No One Casing Volume (gal): _____

Depth of water (from top of well casing): 9.15 Well Casing Type/Diameter/Screened Interval: 2" 60 - 12-60

After 5 minutes of purging (from top of casing): 9.12

Begin purge (time): 1012

End purge (time): 1043

Collars purged: 2L

Purge water disposal method: Arms

Volume of Schedule 40 PVC Pipe				
Diameter	O.D.	I.D.	Volume (Gal/Linear Ft.)	Weight of Water (Lbs/Linear Ft.)
1 1/2"	1.660"	1.380"	0.08	0.64
2"	2.375"	2.067"	0.17	1.45
3"	3.500"	3.068"	0.38	3.2
4"	4.500"	4.026"	0.66	5.51
6"	6.625"	6.065"	1.5	12.5

2L

*g/c
TDS*

Time	Depth to Water	Vol. Purged	pH	DO	Conductivity	Turbidity	Temp	ORP	Comments
1020	9.12	0.0	6.62	0.00	1.41	92	17.26	-75	0.907
1023	9.12	1.0	6.63	0.00	1.41	73	17.28	-75	-802
1026	9.13	1.2	6.67	0.00	1.41	64.9	17.89	-81	.702
1029	9.13	1.4	6.69	0.00	1.40	59.0	18.34	-86	0.897
1032	9.12	1.60	6.71	0.00	1.39	48.4	18.80	-91	0.890
1035	9.12	1.80	6.71	0.00	1.38	32.7	18.98	-95	0.883
1040	9.13	2.0	6.72	0.00	1.38	32.6	19.02	-96	0.884
1043	9.13	2.2	6.77	0.00	1.38	30.9	19.01	-96	0.883

Sampling Data

Sample No: MW-9-12/21/15 Location and Depth: MW-9

Date Collected (mo/dy/yr): 12/21/15 Time Collected: 1043 AM PM Weather: Rainy

Type: Ground Water Surface Water Other: _____ Sample: Filtered Unfiltered Other: _____

Sample Collected with: Bailer Pump Other: _____ Type: Peristaltic

Water Quality Instrument Data Collected with: Type: Horiba U-22 Horiba U-50 Other: _____

Sample Decon Procedure: Sample collected with (circle one): decontaminated all tubing; disposable and/or dedicated silicon and poly tubing Other: _____

Sample Description (Color, Turbidity, Odor, Other): _____

Sample Analyses

Penta
 TPH-D (HCl) Chlor / Fluor (unpres) COD / TOC (H2SO4) Orthophos (FILTER) Diss. Metals (HNO3)
 TPH-G (HCl) BTEX (HCl) Total Metals (HNO3) TKN/Phos (N2SO4) VOCs (HCl)

Additional Information

Types of Sample Containers:	Quantity:	Duplicate Sample Numbers:	Comments:
<u>1L Amber</u>	<u>3/1</u>		<u>Dx = 12-500ml Amber Penta = 2-500ml Amber</u>
<u>1L Amber</u>	<u>3/1</u>		

*1L
1L*

Signature: [Signature] Date: 12/21/15

GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM

Project Name: SIM-730 EDR

Date of Collection: 12/18/15

Project Number: _____

Field Personnel: A. McKay, K. Anderson

Purge Data

Well ID: MW-7 Secure Yes No

Well Condition/Damage Description: good

Depth Sounder decontaminated Prior to Placement in Well: Yes No

One Casing Volume (gal): _____

Depth of water (from top of well casing): 9.55

Well Casing Type/Diameter/Screened Interval: _____

After 5 minutes of purging (from top of casing): 9.54

Begin purge (time): 13:10

End purge (time): 13:35

Volume purged: ~ 3/4 gal

Purge water disposal method: drum on site

Volume of Schedule 40 PVC Pipe				
Diameter	O.D.	I.D.	Volume (Gal/Linear Ft.)	Weight of Water (Lbs/Linear Ft.)
1 1/4"	1.660"	1.380"	0.08	0.64
2"	2.375"	2.067"	0.17	1.45
3"	3.500"	3.068"	0.38	3.2
4"	4.500"	4.026"	0.66	5.51
6"	6.625"	6.065"	1.5	12.5

Time	Depth to Water	Vol. Purged	pH	DO	Conductivity	Turbidity	Temp	ORP	Comments
13:25	9.60	~ 1/2 gal	6.95	0.00	1.03	8.2	12.97	-81	
13:30	9.59	5/8	6.95	0.00	1.01	6.3	12.70	-79	
13:35	9.59	~ 3/4	6.95	0.00	1.01	6.8	12.74	-78	

Sampling Data

Sample No: MW-7-12/18/15 Location and Depth: MW-7

Date Collected (mo/dy/yr): 12/18/15 Time Collected: 13:35 Weather: cold, cloudy

Type: Ground Water Surface Water Other: _____ Sample: Filtered Unfiltered Other: _____

Sample Collected with: Bailer Pump Other: _____ Type: low-flow

Water Quality Instrument Data Collected with: Type: Horiba U-22 Horiba U-50 Other: _____

Sample Decon Procedure: Sample collected with (circle one): decontaminated all tubing; disposable and/or dedicated silicon and poly tubing Other: _____

Sample Description (Color, Turbidity, Odor, Other): clear

Sample Analyses

- TPH-D (HCl) Chlor / Fluor (unpres) COD / TOC (H2SO4) Orthophos (FILTER) Diss. Metals (HNO3)
- TPH-G (HCl) BTEX (HCl) Total Metals (HNO3) TKN/Phos (N2SO4) VOCs (HCl)

Additional Information

Types of Sample Containers:	Quantity:	Duplicate Sample Numbers:	Comments:
<u>1 L Amber</u>	<u>2</u>		

Signature: _____ Date: 12/18/15

GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM

Project Name: SIM-730 EDR

Date of Collection: 12/18/15

Project Number: _____

Field Personnel: A. McKay

Purge Data

Well ID: MW-05 Secure: Yes No

Well Condition/Damage Description: good

Depth Sounder decontaminated Prior to Placement in Well: Yes No

One Casing Volume (gal): _____

Depth of water (from top of well casing): 7.22

Well Casing Type/Diameter/Screened Interval: _____

After 5 minutes of purging (from top of casing): 7.25

Begin purge (time): 11:15

End purge (time): 12:15

Volume purged: ~ 3 1/2 gal.

Purge water disposal method: drum on site

Volume of Schedule 40 PVC Pipe				
Diameter	O.D.	I.D.	Volume (Gal/Linear Ft.)	Weight of Water (Lbs/Lineal Ft.)
1 1/4"	1.660"	1.380"	0.08	0.64
2"	2.375"	2.067"	0.17	1.45
3"	3.500"	3.068"	0.38	3.2
4"	4.500"	4.026"	0.66	5.51
6"	6.625"	6.065"	1.5	12.5

Time	Depth to Water	Vol. Purged	pH	DO	Conductivity	Turbidity	Temp	ORP	Comments
12:05	7.24	23 gal	6.18	0.00	0.402	13.9	12.66	50	
12:10	7.25	3 1/4	6.15	0.06	0.399	13.1	12.62	49	
12:15	7.25	3 1/2	6.2	0.00	0.398	13.0	12.54	49	

Sampling Data

Sample No: MW-05-12/18/15 Location and Depth: MW-05

Date Collected (mo/dy/yr): 12/18/15 Time Collected: 12:20 Weather: cold, cloudy

Type: Ground Water Surface Water Other: _____ Sample: Filtered Unfiltered Other: _____

Sample Collected with: Bailer Pump Other: _____ Type: low flow

Water Quality Instrument Data Collected with: Type: Horiba U-22 Horiba U-50 Other: _____

Sample Decon Procedure: Sample collected with (circle one): decontaminated all tubing; disposable and/or dedicated silicon and poly tubing Other: _____

Sample Description (Color, Turbidity, Odor, Other): clear, no odor

Sample Analyses

- TPH-D (HCl) Chlor / Fluor (unpres) COD / TOC (H2SO4) Orthophos (FILTER) Diss. Metals (HNO3)
 TPH-G (HCl) BTEX (HCl) Total Metals (HNO3) TKN/Phos (N2SO4) VOCs (HCl)

Additional Information

Types of Sample Containers:	Quantity:	Duplicate Sample Numbers:	Comments:
<u>1L Amber</u>	<u>2</u>		

Signature: _____ Date: 12/18/15

GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM

Project Name: _____

Date of Collection: 12/18/15

Project Number: SEM - 730 FDP

Field Personnel: K. Anderson

Purge Data

Well ID: B-36 Secure: Yes No Well Condition/Damage Description: bolts sheared off @

heads. well cut off too far below ground surface

Depth Sounder decontaminated Prior to Placement in Well: Yes No One Casing Volume (gal): _____

Depth of water (from top of well casing): 7.33 ft Well Casing Type/Diameter/Screened Interval: _____

After 5 minutes of purging (from top of casing): 7.38 ft

Begin purge (time): 0850

End purge (time): _____

Volume purged: _____

Purge water disposal method: _____

Volume of Schedule 40 PVC Pipe				
Diameter	O.D.	I.D.	Volume (Gal/Linear Ft.)	Weight of Water (Lbs/Linear Ft.)
1 1/4"	1.660"	1.380"	0.08	0.64
2"	2.375"	2.067"	0.17	1.45
3"	3.500"	3.068"	0.38	3.2
4"	4.500"	4.026"	0.66	5.51
6"	6.625"	6.065"	1.5	12.5

Time	Depth to Water (ft)	Vol. Purged (L)	pH	DO mg/l	Conductivity $\mu\text{S}/\text{cm}$	Turbidity NTU	Temp $^{\circ}\text{C}$	ORP mV	TDS	Comments
0855	9.02	2	6.16	0.77	0.398	31.6	18.90	4	0.259	
0900	9.05	2	6.19	0.60	0.398	33.6	19.06	-10	0.259	
0905	9.01	3	6.22	0.50	0.398	22.2	19.18	-21	0.259	
0910	9.00	4	6.24	0.44	0.395	11.2	19.35	-30	0.257	
0915	8.96	5	6.26	0.41	0.396	2.3	19.27	-34	0.257	
0920		6								

Sampling Data

Sample No: B-36-121815 Location and Depth: B-36, ~14'

Date Collected (mo/dy/yr): 12/18/15 Time Collected: 0920 Weather: _____

Type: Ground Water Surface Water Other: _____ Sample: Filtered Unfiltered Other: _____

Sample Collected with: Bailor Pump Other: _____ Type: peristaltic

Water Quality Instrument Data Collected with: Type: Horiba U-22 Horiba U-50 Other: _____

Sample Decon Procedure: Sample collected with (circle one): decontaminated all tubing, disposable and/or dedicated silicon and poly tubing Other: _____

Sample Description (Color, Turbidity, Odor, Other): _____

Sample Analyses

TPH-D (HCl) <input checked="" type="checkbox"/>	Chlor / Fluor (unpres) <input type="checkbox"/>	<u>penta</u> COD / TOC (H2SO4) <input type="checkbox"/>	Orthophos (FILTER) <input type="checkbox"/>	Diss. Metals (HNO3) <input type="checkbox"/>
TPH-G (HCl) <input type="checkbox"/>	BTEX (HCl) <input type="checkbox"/>	Total Metals (HNO3) <input type="checkbox"/>	TKN/Phos (N2SO4) <input type="checkbox"/>	VOCs (HCl) <input type="checkbox"/>

Additional Information

Types of Sample Containers:	Quantity:	Duplicate Sample Numbers:	Comments:
1 L amber	2	N/A	

Signature: _____ Date: 12/18/15

9.02
 -7.33
 1.69
 TO
 + 1.69 M
 from rim of measurement. corr. factor =
 * DTW taken TOC

GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM

Project Name: 5111 - 730 EDR

Date of Collection: 12/17/15

Project Number: _____

Field Personnel: A. McKay, K. Anderson

Purge Data

Well ID: MW-110 Secure: Yes No

Well Condition/Damage Description: good

Depth Sounder decontaminated Prior to Placement in Well: Yes No

One Casing Volume (gal): _____

Depth of water (from top of well casing): 9.42 10:00

Well Casing Type/Diameter/Screened Interval: _____

After 5 minutes of purging (from top of casing): 9.42 10:35

Begin purge (time): 10:00

End purge (time): 11:05

Volume purged: ~ 1.25 gal

Purge water disposal method: drum on site

Volume of Schedule 40 PVC Pipe				
Diameter	O.D.	I.D.	Volume (Gal/Linear Ft.)	Weight of Water (Lbs/Lineal Ft.)
1 1/4"	1.660"	1.380"	0.08	0.64
2"	2.375"	2.067"	0.17	1.45
3"	3.500"	3.068"	0.38	3.2
4"	4.500"	4.026"	0.66	5.51
6"	6.625"	6.065"	1.5	12.5

Time	Depth to Water	Vol. gal Purged	pH	DO	Conductivity	Turbidity	Temp	ORP	Comments
10:40	9.42	1/4	4.87	1.37	0.510	21.1	9.94	244	
10:45	9.42	1/4	5.23	1.13	0.452	19.8	11.39	239	
10:50	9.42	1/4	5.29	1.06	0.431	19.4	11.86	238	
10:55	9.42	1/4	5.21	2.10	0.411	16.4	10.95	245	
11:00	9.42	1/4	5.35	2.83	0.413	9.5	10.19	241	

Sampling Data

Sample No: MW-110 - 12/17/15 Location and Depth: ~ 11 ft MW-110

Date Collected (mo/d/yr): 12/17/15 Time Collected: 11:25 Weather: rainy, ~40°

Type: Ground Water Surface Water Other: _____ Sample: Filtered Unfiltered Other: _____

Sample Collected with: Bailer Pump Other: _____ Type: low-flow

Water Quality Instrument Data Collected with: Type: Horiba U-22 Horiba U-50 Other: _____

Sample Decon Procedure: Sample collected with (circle one): decontaminated all tubing; disposable and/or dedicated silicon and poly tubing Other: _____

Sample Description (Color, Turbidity, Odor, Other): clear, no odor

Sample Analyses

TPH-D (HCl) Chlor / Fluor (unpres) COD / TOC (H2SO4) Orthophos (FILTER) Diss. Metals (HNO3)
 TPH-G (HCl) BTEX (HCl) Total Metals (HNO3) TKN/Phos (N2SO4) VOCs (HCl)

Additional Information

Types of Sample Containers:	Quantity:	Duplicate Sample Numbers:	Comments:
<u>2 1L amber</u>	<u>2</u>		

Signature: [Signature]

Date: 12/17/15

GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM

Project Name: _____

Date of Collection: 12/17/15

Project Number: SJM-730 EDR2

Field Personnel: K. Andersen

Purge Data

Well ID: MW-01 Secure: Yes No Well Condition/Damage Description: _____

Depth Sounder decontaminated Prior to Placement in Well: Yes No One Casing Volume (gal): _____

Depth of water (from top of well casing): 9.23 ft Well Casing Type/Diameter/Screened Interval: _____

After 5 minutes of purging (from top of casing): 9.22 ft

Begin purge (time): 1155¹⁴ 1200

End purge (time): _____

Volume purged: _____

Purge water disposal method: drum on-site

Diameter	O.D.	I.D.	Volume (Gal/Linear Ft.)	Weight of Water (Lbs/Lineal Ft.)
1 1/4"	1.660"	1.380"	0.08	0.64
2"	2.375"	2.067"	0.17	1.45
3"	3.500"	3.068"	0.38	3.2
4"	4.500"	4.026"	0.66	5.51
6"	6.625"	6.065"	1.5	12.5

Time	Depth to Water ft	Vol. Purged L	pH	* DO mg/L	Conductivity $\mu\text{S}/\text{cm}$	Turbidity NTU	Temp $^{\circ}\text{C}$	ORP mV	TDS $\mu\text{g}/\text{l}$	Comments
1205	9.22	1	6.78	0.0	0.316	15.2	8.11	-2	0.207	
1210	9.22	2	6.64	0.0	0.324	21.3	7.95 ¹⁴	16	0.211	
1215	9.22	3	6.36	0.0	0.321	14.9	8.07	44	0.208	
1220	9.23	4	6.16	0.0	0.313	11.6	8.21	63	0.204	
1225	9.23	5	6.05	0.0	0.309	11.0	8.28	75	0.200	
1230	9.23	6	5.95	0.0	0.308	9.7	8.34	89	0.200	

* suspect no interaction

Sampling Data

Sample No: MW-01-121715 Location and Depth: MW-01, 12'

Date Collected (mo/dy/yr): 12/17/15 Time Collected: 1235 Weather: cold + rainy

Type: Ground Water Surface Water Other: _____ Sample: Filtered Unfiltered Other: _____

Sample Collected with: Bailer Pump Other: _____ Type: pen3/6 lite

Water Quality Instrument Data Collected with: Type: Horiba U-22 Horiba U-50 Other: _____

Sample Decon Procedure: Sample collected with (circle one): decontaminated all tubing; disposable and/or dedicated silicon and poly tubing Other: _____

Sample Description (Color, Turbidity, Odor, Other): _____

Sample Analyses

TPH-D (HCl) Chlor / Fluor pen3 (unpres) COD / TOC (H2SO4) Orthophos (FILTER) Diss Metals (HNO3)
 TPH-G (HCl) BTEX (HCl) Total Metals (HNO3) TKN/Phos (N2SO4) VOCs (HCl)

Additional Information

Types of Sample Containers:	Quantity:	Duplicate Sample Numbers:	Comments:
<u>1 amber</u>	<u>2</u>	<u>N/A</u>	

Signature: _____

Date: 12/17/15

GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM

Project Name: SIM-730 EDR

Date of Collection: 12/17/15

Project Number: _____

Field Personnel: A. McKay, K. Anderson

Purge Data

Well ID: MW03 Secure: Yes No Well Condition/Damage Description: good

Depth Sounder decontaminated Prior to Placement in Well: Yes No One Casing Volume (gal): _____

Depth of water (from top of well casing): 8.85 Well Casing Type/Diameter/Screened Interval: _____

After 5 minutes of purging (from top of casing): 8.85

Begin purge (time): 13:50

End purge (time): 14:10

Volume purged: ~ 1 gallon

Purge water disposal method: dum onsite

Volume of Schedule 40 PVC Pipe				
Diameter	O.D.	I.D.	Volume (Gal/Linear Ft.)	Weight of Water (Lbs/Lineal Ft.)
1 1/4"	1.660"	1.380"	0.08	0.64
2"	2.375"	2.067"	0.17	1.45
3"	3.500"	3.068"	0.38	3.2
4"	4.500"	4.026"	0.66	5.51
6"	6.625"	6.065"	1.5	12.5

Time	Depth to Water	Vol. Purged	pH	DO	Conductivity	Turbidity	Temp	ORP	Comments
1355	8.85	~1/4	6.27	0.00	0.332	9.2	8.41	46	
1400	8.84	~1/4	6.29	0.00	0.32	7.5	8.53	53	
1405	8.85	~1/4	6.31	0.00	0.318	5.9	8.63	61	
1410	8.85	~1/4	6.30	0.00	0.317	5.6	8.63	63	
				malfunction					

Sampling Data

Sample No: MW03-12/17/15 Location and Depth: MW03

Date Collected (mo/dy/yr): 12/17/15 Time Collected: 14:10 Weather: rainy, cold

Type: Ground Water Surface Water Other: _____ Sample: Filtered Unfiltered Other: _____

Sample Collected with: Bailer Pump Other: _____ Type: low flow

Water Quality Instrument Data Collected with: Type: Horiba U-22 Horiba U-50 Other: _____

Sample Decon Procedure: Sample collected with (circle one): decontaminated all tubing; disposable and/or dedicated silicon and poly tubing Other: _____

Sample Description (Color, Turbidity, Odor, Other): clear, no odor

Sample Analyses

- TPH-D (HCl) Chlor / Fluor (unpres) COD / TOC (H2SO4) Orthophos (FILTER) Diss. Metals (HNO3)
 TPH-G (HCl) BTEX (HCl) Total Metals (HNO3) TKN/Phos (N2SO4) VOCs (HCl)

Additional Information

Types of Sample Containers:	Quantity:	Duplicate Sample Numbers:	Comments:
<u>1 Liter Amber</u>	<u>2</u>		

Signature: _____ Date: 12/17/15

GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM

Project Name: _____ Date of Collection: 12/17/15
 Project Number: STM-730 EDR Field Personnel: K. Anderson

Purge Data

Well ID: MW-07 Secure: Yes No Well Condition/Damage Description: good

Depth Sounder decontaminated Prior to Placement in Well: Yes No One Casing Volume (gal): _____

Depth of water (from top of well casing): 7.01 Well Casing Type/Diameter/Screened Interval: _____

After 5 minutes of purging (from top of casing): _____

Begin purge (time): 1525

End purge (time): _____

Volume purged: _____

Purge water disposal method: drum on-site

Diameter	O.D.	I.D.	Volume (Gal/Linear Ft.)	Weight of Water (Lbs/Linear Ft.)
1 1/4"	1.660"	1.380"	0.08	0.64
2"	2.375"	2.067"	0.17	1.45
3"	3.500"	3.068"	0.38	3.2
4"	4.500"	4.026"	0.66	5.51
6"	6.625"	6.065"	1.5	12.5

Time	Depth to Water	Vol. Purged	pH	DO mg/L	Conductivity	Turbidity	Temp	ORP	Comments
<u>1530</u>	<u>7.83</u>	<u>6.5</u>	<u>6.37</u>	<u>1.77</u>	<u>0.208</u>	<u>0.0</u>	<u>10.80</u>	<u>42</u>	<u>0.133</u>
<u>1538</u>	<u>7.83</u>	<u>6.5</u>	<u>6.39</u>	<u>0.85</u>	<u>0.198</u>	<u>6.6</u>	<u>12.35</u>	<u>4</u>	<u>0.129</u>
<u>1601</u>	<u>7.83</u>	<u>7</u>	<u>6.36</u>	<u>0.69</u>	<u>0.198</u>	<u>3.6</u>	<u>12.47</u>	<u>-3</u>	<u>0.128</u>
<u>1604</u>	<u>7.83</u>	<u>7.5</u>	<u>6.54</u>	<u>0.63</u>	<u>0.204</u>	<u>5.2</u>	<u>12.53</u>	<u>-6</u>	<u>0.132</u>

Sampling Data

Sample No: MW-07-121715 Location and Depth: MW-07 12A

Date Collected (mo/dy/yr): 12/17/15 Time Collected: 1605 Weather: cold + rainy

Type: Ground Water Surface Water Other: _____ Sample: Filtered Unfiltered Other: _____

Sample Collected with: Bailor Pump Other: _____ Type: peristaltic

Water Quality Instrument Data Collected with: Type: Horiba U-22 Horiba U-50 Other: _____

Sample Decon Procedure: Sample collected with (circle one): decontaminated all tubing; disposable and/or dedicated silicon and poly tubing Other: _____

Sample Description (Color, Turbidity, Odor, Other): _____

Sample Analyses

TPH-D (HCl) Chlor / Fluor (unpres) COD / TOC (H2SO4) Orthophos (FILTER) Diss. Metals (HNO3)
 TPH-G (HCl) BTEX (HCl) Total Metals (HNO3) TKN/Phos (N2SO4) VOCs (HCl)

Additional Information

Types of Sample Containers:	Quantity:	Duplicate Sample Numbers:	Comments:
<u>MW-07-121715-D</u>	<u>4</u>		
<u>2 L amber</u>	<u>4</u>	<u>MW-07-121715-D @ 1610</u>	

Signature: [Signature] Date: 12/17/15

GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM

Project Name: _____ Date of Collection: 12/17/15
 Project Number: SPM-730 EDR Field Personnel: R. Anderson

Purge Data

Well ID: B-49 Secure: Yes No Well Condition/Damage Description: bolts sheared, rap missing, very dirty inside casing
 Depth Sounder decontaminated Prior to Placement in Well: Yes No One Casing Volume (gal): _____
 Depth of water (from top of well casing): 9.42 Well Casing Type/Diameter/Screened Interval: _____

After 5 minutes of purging (from top of casing): _____
 Begin purge (time): 13:35 13:40
 End purge (time): _____
 Volume purged: _____
 Purge water disposal method: _____

Diameter	O.D.	I.D.	Volume (Gal/Linear Ft.)	Weight of Water (Lbs/Lineal Ft.)
1 1/2"	1.660"	1.380"	0.08	0.64
2"	2.375"	2.067"	0.17	1.45
3"	3.500"	3.068"	0.38	3.2
4"	4.500"	4.026"	0.66	5.51
6"	6.625"	6.065"	1.5	12.5

Time	Depth to Water ft	Vol. Purged L	pH	DO mg/L	Conductivity $\mu\text{S}/\text{cm}$	Turbidity NTU	Temp $^{\circ}\text{C}$	ORP mV	TDS g/L	Comments
1345	9.44	2	6.09	0.54	0.187	22.4	14.30	53	0.122	
1350	9.44	2	6.12	0.51	0.187	14.7	14.49	34	0.123	
1355	9.44	3	6.13	0.40	0.192	15.3	14.50	23	0.125	
1400	9.44	4	6.09	0.51	0.195	23.4	14.98	15	0.127	
1410	9.44	6	6.12	0.41	0.197	24.4	15.15	8	0.128	
1415	9.44	7	6.18	0.40	0.199	29.2	15.18	4	0.129	
1420	9.44	8	6.21	0.45	0.214	31.1	13.29	1	0.139	cannot get turbidity below 10 NTU

Sampling Data

Sample No: B-49-121715 Location and Depth: B-49, 211'
 Date Collected (mo/dy/yr): 12/17/15 Time Collected: 1425 Weather: _____
 Type: Ground Water Surface Water Other: _____ Sample: Filtered Unfiltered Other: _____
 Sample Collected with: Bailor Pump Other: _____ Type: peristaltic
 Water Quality Instrument Data Collected with: Type: Horiba U-22 Horiba U-50 Other: _____
 Sample Decon Procedure: Sample collected with (circle one): decontaminated all tubing; disposable and/or dedicated silicon and poly tubing Other: _____
 Sample Description (Color, Turbidity, Odor, Other): _____

Sample Analyses

TPH-D (HCl) Chlor / Fluor (unpres) COD / TOC (H2SO4) Orthophos (FILTER) Diss. Metals (HNO3)
 TPH-G (HCl) BTEX (HCl) Total Metals (HNO3) TKN/Phos (N2SO4) VOCs (HCl)

Additional Information

Types of Sample Containers:	Quantity:	Duplicate Sample Numbers:	Comments:
<u>1 L amber</u>	<u>2</u>	<u>N/A</u>	

Signature: _____ Date: 12/17/15

GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM

Project Name: SIM-730 EDR

Date of Collection: 12/17/15

Project Number: _____

Field Personnel: A. McKay, K Anderson

Purge Data

Well ID: MW02 Secure: Yes No

Well Condition/Damage Description: good

Depth Sounder decontaminated Prior to Placement in Well: Yes No

One Casing Volume (gal): _____

Depth of water (from top of well casing): 8.82

Well Casing Type/Diameter/Screened Interval: _____

After 5 minutes of purging (from top of casing): 8.82

Begin purge (time): 12:15

End purge (time): 12:55

Volume purged: ~ 2 3/4 gal

Purge water disposal method: drum on site

Volume of Schedule 40 PVC Pipe				
Diameter	O.D.	I.D.	Volume (Gal/Linear Ft.)	Weight of Water (Lbs/Lineal Ft.)
1 1/4"	1.660"	1.380"	0.08	0.64
2"	2.375"	2.067"	0.17	1.45
3"	3.500"	3.068"	0.38	3.2
4"	4.500"	4.026"	0.66	5.51
6"	6.625"	6.065"	1.5	12.5

Time	Depth to Water	Vol. Purged	pH	DO	Conductivity	Turbidity	Temp	ORP	Comments
12:20	8.82	~1/4	6.16	10.16	0.00	234	6.17	227	
12:25	8.82	~1/4	6.13	10.17	0.00	235	6.07	224	
12:30	8.82	~1/4	5.97	10.31	0.00	236	5.98	226	
12:40	8.82	~1/4	6.09	10.2	0.00	236	5.98	226	NTU high so
12:45	8.82	~1/4	9.06	0.0	0.342	11.4	8.93	21	changed
12:50	8.83	~1/4	9.13	0.0	0.324	9.6	9.14	19	flow thru
12:55	8.82	~1/4	9.25	0.0	0.316	10.1	9.27	15	

Sampling Data

Sample No: MW02-12/17/15 Location and Depth: MW02

Date Collected (mo/dy/yr): 12/17/15 Time Collected: 12:55 Weather: _____

Type: Ground Water Surface Water Other: _____ Sample: Filtered Unfiltered Other: _____

Sample Collected with: Bailor Pump Other: _____ Type: low flow

Water Quality Instrument Data Collected with: Type: Horiba U-22 Horiba U-50 Other: _____

Sample Decon Procedure: Sample collected with (circle one): decontaminated all tubing; disposable and/or dedicated silicon and poly tubing Other: _____

Sample Description (Color, Turbidity, Odor, Other): clear, no odor

Sample Analyses

- TPH-D (HCl) Chlor / Fluor (unpres) COD / TOC (H2SO4) Orthophos (FILTER) Diss. Metals (HNO3)
- TPH-G (HCl) BTEX (HCl) Total Metals (HNO3) TKN/Phos (N2SO4) VOCs (HCl)

Additional Information

Types of Sample Containers:	Quantity:	Duplicate Sample Numbers:	Comments:
<u>1 L amber</u>	<u>2</u>		<u>water quality meter needed to be recalibrated. Used the other starting 12:45 to get accurate readings</u>

Signature: _____ Date: 12/17/15

GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM

Project Name: _____

Date of Collection: 12/17/15

Project Number: SIIM - 730 ERK

Field Personnel: K. Anderson

Purge Data

Well ID: MW-108 Secure: Yes No

Well Condition/Damage Description: new

Depth Sounder decontaminated Prior to Placement in Well: Yes No

One Casing Volume (gal): _____

Depth of water (from top of well casing): 9.39 M

Well Casing Type/Diameter/Screened Interval: 2" PVC, 6-16ft

After 5 minutes of purging (from top of casing): 9.39 ft

Begin purge (time): 1030

End purge (time): _____

Volume purged: _____

Purge water disposal method: drum on-site

Volume of Schedule 40 PVC Pipe				
Diameter	O.D.	I.D.	Volume (Gal/Linear Ft)	Weight of Water (Lbs/Linear Ft.)
1 1/4"	1.660"	1.380"	0.08	0.64
2"	2.375"	2.067"	0.17	1.45
3"	3.500"	3.068"	0.38	3.2
4"	4.500"	4.026"	0.66	5.51
6"	6.625"	6.065"	1.5	12.5

Time	Depth to Water ft	Vol. Purged L	pH	DO mg/L	Conductivity MS/cm	Turbidity NTU	Temp °C	ORP mV	Comments TDS g/L
1035	9.39	1	6.66	0.0	1.20	36.4	15.59	-60	0.764
1040	9.39	2	6.65	0.0	1.18	33.7	15.88	-62	0.755
1045	9.41	3	6.66	0.0	1.18	29.7	16.06	-64	0.752
1050	9.41	4	6.67	0.0	1.16	20.5	16.02	-64	0.745
1055	9.41	5	6.66	0.0	1.16	10.16	15.88	-64	0.745
1100	9.41	6	6.65	0.0	1.14	6.2	15.77	-64	0.732
	*	suspect	0	malfunction					

Sampling Data

Sample No: MW-108-12/17/15 Location and Depth: MW-108, 12 ft

Date Collected (mo/dy/yr): 12/17/15 Time Collected: 1105 Weather: cold, rainy

Type: Ground Water Surface Water Other: _____ Sample: Filtered Unfiltered Other: _____

Sample Collected with: Bailor Pump Other: _____ Type: peristaltic

Water Quality Instrument Data Collected with: Type: Horiba U-22 Horiba U-50 Other: _____

Sample Decon Procedure: Sample collected with (circle one): decontaminated all tubing; disposable and/or dedicated silicon and poly tubing Other: _____

Sample Description (Color, Turbidity, Odor, Other): _____

Sample Analyses

TPH-D (HCl) Chlor / Fluor (unpres) COD / TOC (H2SO4) Orthophos (FILTER) Diss. Metals (HNO3)
 TPH-G (HCl) BTEX (HCl) Total Metals (HNO3) TKN/Phos (N2SO4) VOCs (HCl)

Additional Information

Types of Sample Containers:	Quantity:	Duplicate Sample Numbers:	Comments:
<u>500 ml amber glass</u>	<u>2</u>	<u>N/A</u>	
<u>11</u>			

Signature: _____ Date: _____

GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM

Project Name: SIM-730 EDR

Date of Collection: 12/18/15

Project Number: _____

Field Personnel: A. McKay

Purge Data

Well ID: MW-109 Secure: Yes No

Well Condition/Damage Description: good

Depth Sounder decontaminated Prior to Placement in Well: Yes No

One Casing Volume (gal): _____

Depth of water (from top of well casing): 9.60

Well Casing Type/Diameter/Screened Interval: _____

After 5 minutes of purging (from top of casing): 9.70

Begin purge (time): 14:30

End purge (time): 15:20

Volume purged: ~ 1 1/4 gal

Purge water disposal method: drum onsite

Volume of Schedule 40 PVC Pipe				
Diameter	O.D.	I.D.	Volume (Gal/Linear Ft.)	Weight of Water (Lbs/Linear Ft.)
1 1/4"	1.660"	1.380"	0.08	0.64
2"	2.375"	2.067"	0.17	1.45
3"	3.500"	3.068"	0.38	3.2
4"	4.500"	4.026"	0.66	5.51
6"	6.625"	6.065"	1.5	12.5

Time	Depth to Water	Vol. Purged	pH	DO	Conductivity	Turbidity	Temp	ORP	Comments
<u>14:45</u>	<u>9.70</u>	<u>~ 1/4</u>	<u>6.71</u>	<u>0.67</u>	<u>0.472</u>	<u>14.5</u>	<u>12.68</u>	<u>73</u>	<u>turb not ↓ so cleaned flow thru</u>
<u>15:10</u>	<u>9.60</u>	<u>~ 1 gal</u>	<u>6.43</u>	<u>0.45</u>	<u>0.479</u>	<u>10.0</u>	<u>12.42</u>	<u>-19</u>	
<u>15:15</u>	<u>9.61</u>	<u>~ 1 1/8</u>	<u>6.44</u>	<u>0.44</u>	<u>0.478</u>	<u>7.9</u>	<u>12.47</u>	<u>-20</u>	
<u>15:20</u>	<u>9.61</u>	<u>~ 1 1/4</u>	<u>6.44</u>	<u>0.43</u>	<u>0.479</u>	<u>7.6</u>	<u>12.46</u>	<u>-20</u>	
15:25									

Sampling Data

Sample No: MW-109-12/18/15 Location and Depth: MW-109

Date Collected (mo/dy/yr): 12/18/15 Time Collected: 15:25 Weather: cold, cloudy

Type: Ground Water Surface Water Other: _____ Sample: Filtered Unfiltered Other: _____

Sample Collected with: Bailor Pump Other: _____ Type: low-flow

Water Quality Instrument Data Collected with: Type: Horiba U-22 Horiba U-50 Other: _____

Sample Decon Procedure: Sample collected with (circle one): decontaminated all tubing; disposable and/or dedicated silicon and poly tubing Other: _____

Sample Description (Color, Turbidity, Odor, Other): clear, no odor

Sample Analyses

- TPH-D (HCl) Chlor / Fluor (unpres) COD / TOC (H2SO4) Orthophos (FILTER) Diss. Metals (HNO3)
 TPH-G (HCl) BTEX (HCl) Total Metals (HNO3) TKN/Phos (N2SO4) VOCs (HCl)

Additional Information

Types of Sample Containers:	Quantity:	Duplicate Sample Numbers:	Comments:
<u>1 L Amber</u>	<u>2</u>		

Signature: _____ Date: 12/18/15

Attachment 2
Laboratory Analytical Data



January 11, 2016

Mr. Michael Ridgeway
Fremont Analytical, Inc.
3600 Fremont Ave., N.
Seattle, WA 98103

Dear Mr. Ridgeway,

The following results are for Frontier Analytical Laboratory project **9486**. This corresponds to your project number **1512092**. Two soil samples were received on 12/11/2015 in good condition. Both samples were extracted and analyzed by EPA Method 1613 for tetra through octa chlorinated dibenzo dioxins and furans. The Toxic Equivalency (TEQ) for your samples has been calculated using the 2005 World Health Organization's (WHO's) toxic equivalency factors (TEFs). Please note if a congener was not detected the data sheets reflects a value of zero for that congener when determining the TEQ. Fremont Analytical, Inc. requested a turnaround time of fifteen business days for project **9486**.

Please note that due to high levels of OCDD, sample 9486-001-SA (Fremont Analytical ID: SB-07-12-13) required dilution and reanalysis. All values taken from the dilution reanalysis are noted with the "*" qualifier.

The following Level IV report consists of an Analytical Data section, a Sample Receipt section, a Laboratory Raw Data section, and an Instrument Raw Data section. The Analytical Data section contains our project-sample tracking log and the analytical results. The Sample Receipt section contains your original chain of custody, our sample login form and a sample photo. The Laboratory Raw Data section contains our project request sheet, a percent solids sheet, an extraction bench sheet and the cleanup bench sheet. The instrument raw data section contains three sub-sections; the sample results section, the initial calibration section and the continuing/ending calibration section. The sample results sub-section consists of the quantitation summary forms and chromatograms for all samples and QC. The initial calibration sub-section consists of the individual quantitation summary forms and chromatograms for each point of the initial calibration curve as well as an overall quantitation summary form of the initial calibration curve. The continuing/ending calibration sub-section consists of the quantitation summary forms and chromatograms for all beginning and ending calibration injections associated with the samples and QC. A portable document format (PDF) file of the Level I data package and EDD have been emailed to you. A compact disk of the Level IV data package along with the Electronic Data Deliverable (EDD) has been sent to you via overnight courier. The enclosed results are specifically for the samples referenced in this report only. These results meet all National Environmental Laboratory Accreditation Program (NELAP) requirements and shall not be reproduced except in full. Frontier Analytical Laboratory's State of Oregon NELAP certificate number is **4041** and our State of Washington certificate number is **C844**.

If you have any questions regarding project **9486**, please feel free to contact me at (916) 934-0900. Thank you for choosing Frontier Analytical Laboratory for your analytical testing needs.

Sincerely,

A handwritten signature in black ink that reads "Daniel P. Vickers".

Daniel P. Vickers
Vice President

Frontier Analytical Laboratory

Sample Tracking Log

FAL Project ID: 9486

Received on: 12/11/2015

Project Due: 01/06/2016 Storage: R2

FAL Sample ID	Dup	Client Project ID	Client Sample ID	Requested Method	Matrix	Sampling Date	Sampling Time	Hold Time Due Date
9486-001-SA	0	1512092	SB-07-12-13	EPA 1613 D/F	Soil	12/09/2015	08:35 am	12/08/2016
9486-002-SA	0	1512092	SB-05-9-10	EPA 1613 D/F	Soil	12/09/2015	10:10 am	12/08/2016

EPA Method 1613
PCDD/F



FAL ID: 9486-001-MB
Client ID: Method Blank
Matrix: Soil
Batch No: X3543

Date Extracted: 01-05-2016
Date Received: NA
Amount: 5.00 g


ICal: PCDDFAL4-12-29-15-7PT
GC Column: DB5
Units: pg/g


Acquired: 01-07-2016
2005 WHO TEQ: 0.00
Basis: Dry Weight

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.172		-	0.0143				
1,2,3,7,8-PeCDD	ND	0.448		-	0.0256				
1,2,3,4,7,8-HxCDD	ND	0.468		-	0.0300				
1,2,3,6,7,8-HxCDD	ND	0.495		-	0.0329	Total TCDD	ND	0.172	
1,2,3,7,8,9-HxCDD	ND	0.429		-	0.0287	Total PeCDD	ND	0.448	
1,2,3,4,6,7,8-HpCDD	ND	0.614		-	0.0463	Total HxCDD	ND	0.495	
OCDD	ND	2.41		-	0.115	Total HpCDD	ND	0.614	
2,3,7,8-TCDF	ND	0.137		-	0.0115				
1,2,3,7,8-PeCDF	ND	0.322		-	0.0184				
2,3,4,7,8-PeCDF	ND	0.339		-	0.0172				
1,2,3,4,7,8-HxCDF	ND	0.340		-	0.0171				
1,2,3,6,7,8-HxCDF	ND	0.369		-	0.0181				
2,3,4,6,7,8-HxCDF	ND	0.429		-	0.0198				
1,2,3,7,8,9-HxCDF	ND	0.457		-	0.0240	Total TCDF	ND	0.137	
1,2,3,4,6,7,8-HpCDF	ND	0.491		-	0.0263	Total PeCDF	ND	0.339	
1,2,3,4,7,8,9-HpCDF	ND	0.595		-	0.0338	Total HxCDF	ND	0.457	
OCDF	ND	1.52		-	0.0565	Total HpCDF	ND	0.595	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	94.0	25.0 - 164	
13C-1,2,3,7,8-PeCDD	88.4	25.0 - 181	
13C-1,2,3,4,7,8-HxCDD	92.3	32.0 - 141	
13C-1,2,3,6,7,8-HxCDD	91.4	28.0 - 130	
13C-1,2,3,4,6,7,8-HpCDD	92.3	23.0 - 140	
13C-OCDD	83.9	17.0 - 157	
13C-2,3,7,8-TCDF	92.7	24.0 - 169	
13C-1,2,3,7,8-PeCDF	86.2	24.0 - 185	
13C-2,3,4,7,8-PeCDF	88.9	21.0 - 178	
13C-1,2,3,4,7,8-HxCDF	95.8	26.0 - 152	
13C-1,2,3,6,7,8-HxCDF	95.1	26.0 - 123	
13C-2,3,4,6,7,8-HxCDF	90.9	28.0 - 136	
13C-1,2,3,7,8,9-HxCDF	89.9	29.0 - 147	
13C-1,2,3,4,6,7,8-HpCDF	89.2	28.0 - 143	
13C-1,2,3,4,7,8,9-HpCDF	98.1	26.0 - 138	
13C-OCDF	83.7	17.0 - 157	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	90.9	35.0 - 197	

- A Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
- B Analyte is present in Method Blank
- C Chemical Interference
- D Presence of Diphenyl Ethers
- DNQ Analyte concentration is below calibration range
- E Analyte concentration is above calibration range
- F Analyte confirmation on secondary column
- J Analyte concentration is below calibration range
- M Maximum possible concentration
- ND Analyte Not Detected at Detection Limit Level
- NP Not Provided
- P Pre-filtered through a Whatman 0.7um GF/F filter
- S Sample acceptance criteria not met
- X Matrix interferences
- * Result taken from dilution or reinjection

Analyst: 
Date: 1/8/2016

Reviewed By: 
Date: 1/8/2016

EPA Method 1613
PCDD/F



FAL ID: 9486-001-OPR
Client ID: OPR
Matrix: Soil
Batch No: X3543


Date Extracted: 01-05-2016
Date Received: NA
Amount: 5.00 g


ICal: PCDDFAL4-12-29-15-7PT
GC Column: DB5
Units: ng/ml

Acquired: 01-07-2016
2005 WHO TEQ: NA

Compound	Conc	QC Limits	Qual
2,3,7,8-TCDD	10.1	6.70 - 15.8	
1,2,3,7,8-PeCDD	52.0	35.0 - 71.0	
1,2,3,4,7,8-HxCDD	51.0	35.0 - 82.0	
1,2,3,6,7,8-HxCDD	52.9	38.0 - 67.0	
1,2,3,7,8,9-HxCDD	49.2	32.0 - 81.0	
1,2,3,4,6,7,8-HpCDD	47.7	35.0 - 70.0	
OCDD	101	78.0 - 144	
2,3,7,8-TCDF	9.54	7.50 - 15.8	
1,2,3,7,8-PeCDF	49.6	40.0 - 67.0	
2,3,4,7,8-PeCDF	50.5	34.0 - 80.0	
1,2,3,4,7,8-HxCDF	49.1	36.0 - 67.0	
1,2,3,6,7,8-HxCDF	49.4	42.0 - 65.0	
2,3,4,6,7,8-HxCDF	50.0	35.0 - 78.0	
1,2,3,7,8,9-HxCDF	50.2	39.0 - 65.0	
1,2,3,4,6,7,8-HpCDF	50.7	41.0 - 61.0	
1,2,3,4,7,8,9-HpCDF	51.6	39.0 - 69.0	
OCDF	102	63.0 - 170	
Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	90.7	20.0 - 175	
13C-1,2,3,7,8-PeCDD	85.7	21.0 - 227	
13C-1,2,3,4,7,8-HxCDD	99.3	21.0 - 193	
13C-1,2,3,6,7,8-HxCDD	99.1	25.0 - 163	
13C-1,2,3,4,6,7,8-HpCDD	96.6	26.0 - 166	
13C-OCDD	85.4	13.0 - 198	
13C-2,3,7,8-TCDF	93.9	22.0 - 152	
13C-1,2,3,7,8-PeCDF	88.1	21.0 - 192	
13C-2,3,4,7,8-PeCDF	90.0	13.0 - 328	
13C-1,2,3,4,7,8-HxCDF	102	19.0 - 202	
13C-1,2,3,6,7,8-HxCDF	102	21.0 - 159	
13C-2,3,4,6,7,8-HxCDF	97.8	22.0 - 176	
13C-1,2,3,7,8,9-HxCDF	92.9	17.0 - 205	
13C-1,2,3,4,6,7,8-HpCDF	93.9	21.0 - 158	
13C-1,2,3,4,7,8,9-HpCDF	95.7	20.0 - 186	
13C-OCDF	85.0	13.0 - 198	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	89.9	31.0 - 191	

- A Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
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- C Chemical Interference
- D Presence of Diphenyl Ethers
- DNQ Analyte concentration is below calibration range
- E Analyte concentration is above calibration range
- F Analyte confirmation on secondary column
- J Analyte concentration is below calibration range
- M Maximum possible concentration
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- NP Not Provided
- P Pre-filtered through a Whatman 0.7um GF/F filter
- S Sample acceptance criteria not met
- X Matrix interferences
- * Result taken from dilution or reinjection

Analyst: 
Date: 1/8/2016

Reviewed By: 
Date: 1/8/2016

EPA Method 1613
PCDD/F



FAL ID: 9486-001-SA
Client ID: SB-07-12-13
Matrix: Soil
Batch No: X3543

Date Extracted: 01-05-2016
Date Received: 12-11-2015
Amount: 5.11 g
% Solids: 83.17


ICal: PCDDFAL4-12-29-15-7PT
GC Column: DB5
Units: pg/g


Acquired: 01-08-2016
2005 WHO TEQ: 892
Basis: Dry Weight

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.159		-	0.0143				
1,2,3,7,8-PeCDD	3.47	-	J	3.47	0.0256				
1,2,3,4,7,8-HxCDD	34.3	-		3.43	0.0300				
1,2,3,6,7,8-HxCDD	1730	-		173	0.0329	Total TCDD	1.05	-	
1,2,3,7,8,9-HxCDD	99.3	-		9.93	0.0287	Total PeCDD	24.0	-	
1,2,3,4,6,7,8-HpCDD	34900	-		349	0.0463	Total HxCDD	3700	-	
OCDD	270000	-	*	81.0	0.115	Total HpCDD	51400	-	
2,3,7,8-TCDF	9.33	-	F	0.933	0.0115				
1,2,3,7,8-PeCDF	28.6	-		0.858	0.0184				
2,3,4,7,8-PeCDF	31.6	-		9.48	0.0172				
1,2,3,4,7,8-HxCDF	212	-		21.2	0.0171				
1,2,3,6,7,8-HxCDF	133	-		13.3	0.0181				
2,3,4,6,7,8-HxCDF	363	-		36.3	0.0198				
1,2,3,7,8,9-HpCDF	75.1	-		7.51	0.0240	Total TCDF	117	-	D,M
1,2,3,4,6,7,8-HpCDF	15500	-		155	0.0263	Total PeCDF	561	-	D,M
1,2,3,4,7,8,9-HpCDF	834	-		8.34	0.0338	Total HxCDF	20200	-	D,M
OCDF	64400	-		19.3	0.0565	Total HpCDF	75400	-	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	91.8	25.0 - 164	
13C-1,2,3,7,8-PeCDD	89.0	25.0 - 181	
13C-1,2,3,4,7,8-HxCDD	94.2	32.0 - 141	
13C-1,2,3,6,7,8-HxCDD	98.5	28.0 - 130	
13C-1,2,3,4,6,7,8-HpCDD	102	23.0 - 140	
13C-OCDD	114	17.0 - 157	*
13C-2,3,7,8-TCDF	95.1	24.0 - 169	
13C-1,2,3,7,8-PeCDF	92.8	24.0 - 185	
13C-2,3,4,7,8-PeCDF	93.9	21.0 - 178	
13C-1,2,3,4,7,8-HxCDF	89.4	26.0 - 152	
13C-1,2,3,6,7,8-HxCDF	88.5	26.0 - 123	
13C-2,3,4,6,7,8-HxCDF	85.5	28.0 - 136	
13C-1,2,3,7,8,9-HpCDF	85.6	29.0 - 147	
13C-1,2,3,4,6,7,8-HpCDF	88.5	28.0 - 143	
13C-1,2,3,4,7,8,9-HpCDF	93.6	26.0 - 138	
13C-OCDF	99.4	17.0 - 157	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	90.8	35.0 - 197	

- A Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
- B Analyte is present in Method Blank
- C Chemical Interference
- D Presence of Diphenyl Ethers
- DNQ Analyte concentration is below calibration range
- E Analyte concentration is above calibration range
- F Analyte confirmation on secondary column
- J Analyte concentration is below calibration range
- M Maximum possible concentration
- ND Analyte Not Detected at Detection Limit Level
- NP Not Provided
- P Pre-filtered through a Whatman 0.7um GF/F filter
- S Sample acceptance criteria not met
- X Matrix interferences
- * Result taken from dilution or reinjection

Analyst: 
Date: 1/8/2016

Reviewed By: 
Date: 1/8/2016

EPA Method 1613
PCDD/F



FAL ID: 9486-002-SA
Client ID: SB-05-9-10
Matrix: Soil
Batch No: X3543

Date Extracted: 01-05-2016
Date Received: 12-11-2015
Amount: 5.03 g
% Solids: 86.80

ICal: PCDDFAL4-12-29-15-7PT
GC Column: DB5
Units: pg/g

Acquired: 01-07-2016
2005 WHO TEQ: 1.60
Basis: Dry Weight

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.159		-	0.0143				
1,2,3,7,8-PeCDD	ND	0.337		-	0.0256				
1,2,3,4,7,8-HxCDD	ND	0.498		-	0.0300				
1,2,3,6,7,8-HxCDD	3.28	-	J	0.328	0.0329	Total TCDD	ND	0.159	
1,2,3,7,8,9-HxCDD	1.12	-	J	0.112	0.0287	Total PeCDD	ND	0.337	
1,2,3,4,6,7,8-HpCDD	66.2	-		0.662	0.0463	Total HxCDD	9.97	-	
OCDD	1510	-		0.453	0.115	Total HpCDD	111	-	
2,3,7,8-TCDF	ND	0.158		-	0.0115				
1,2,3,7,8-PeCDF	ND	0.226		-	0.0184				
2,3,4,7,8-PeCDF	ND	0.238		-	0.0172				
1,2,3,4,7,8-HxCDF	ND	0.261		-	0.0171				
1,2,3,6,7,8-HxCDF	ND	0.286		-	0.0181				
2,3,4,6,7,8-HxCDF	ND	0.307		-	0.0198				
1,2,3,7,8,9-HpCDF	ND	0.339		-	0.0240	Total TCDF	ND	0.158	
1,2,3,4,6,7,8-HpCDF	3.89	-	J	0.0389	0.0263	Total PeCDF	ND	0.238	
1,2,3,4,7,8,9-HpCDF	ND	0.476		-	0.0338	Total HxCDF	3.32	-	J
OCDF	19.4	-		0.00582	0.0565	Total HpCDF	16.1	-	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	90.9	25.0 - 164	
13C-1,2,3,7,8-PeCDD	92.1	25.0 - 181	
13C-1,2,3,4,7,8-HxCDD	95.3	32.0 - 141	
13C-1,2,3,6,7,8-HxCDD	94.2	28.0 - 130	
13C-1,2,3,4,6,7,8-HpCDD	99.1	23.0 - 140	
13C-OCDD	92.8	17.0 - 157	
13C-2,3,7,8-TCDF	92.2	24.0 - 169	
13C-1,2,3,7,8-PeCDF	91.4	24.0 - 185	
13C-2,3,4,7,8-PeCDF	96.7	21.0 - 178	
13C-1,2,3,4,7,8-HxCDF	98.2	26.0 - 152	
13C-1,2,3,6,7,8-HxCDF	97.4	26.0 - 123	
13C-2,3,4,6,7,8-HxCDF	96.3	28.0 - 136	
13C-1,2,3,7,8,9-HxCDF	96.2	29.0 - 147	
13C-1,2,3,4,6,7,8-HpCDF	96.1	28.0 - 143	
13C-1,2,3,4,7,8,9-HpCDF	104	26.0 - 138	
13C-OCDF	92.1	17.0 - 157	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	90.0	35.0 - 197	

- A Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
- B Analyte is present in Method Blank
- C Chemical Interference
- D Presence of Diphenyl Ethers
- DNQ Analyte concentration is below calibration range
- E Analyte concentration is above calibration range
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- NP Not Provided
- P Pre-filtered through a Whatman 0.7um GF/F filter
- S Sample acceptance criteria not met
- X Matrix interferences
- * Result taken from dilution or reinjection

Analyst: 

Date: 1/8/2016

Reviewed By: 

Date: 1/8/2016



CHAIN OF CUSTODY RECORD

Omega COCID 195

PAGE: 1

OF: 1

ADDRESS

Fremont Analytical, Inc.
 3600 Fremont Ave. N.
 Seattle, WA 98103
 TEL: 206-352-3790
 FAX: 206-352-7178

Website: www.fremontanalytical.com

9486
 02

SUB CONTRACTOR: Frontier Analytical La COMPANY: Frontier Analytical Laboratory		SPECIAL INSTRUCTIONS / COMMENTS: Please email results to Michael Ridgeway and Chelsea Ward - mridgeway@fremontanalytical.com; cward@fremontanalytical.com
ADDRESS: 5172 Hillsdale Circle		
CITY, STATE, ZIP: El Dorado Hills, CA 95762		
PHONE: (916) 934-0900 FAX: (916) 934-0999 EMAIL:		
ACCOUNT #:		

ITEM #	SAMPLE ID	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	DATE COLLECTED	NUMBER OF CONTAINERS	COMMENTS: Methanol Preserved Weights HOT Sample Notation, Additional Sample Description.
1	1512092-003B	SB-07-12-13	AMBER JAR 4OZ	Soil	12/9/2015 8:35:00 AM	1	
	O-DIOXIN (SW8290) EPA 1613						
2	1512092-008B	SB-05-9-10	AMBER JAR 4OZ	Soil	12/9/2015 10:10:00 AM	1	
	O-DIOXIN (SW8290) EPA 1613 <i>JK 12/15</i>						

Mike to Kathy - L4 data package, 1512092 for project name & use Client sample ID. Elm or Equis EDD

Relinquished By: <i>[Signature]</i>	Date: 12/9/15	Time: 11:48	Received By: UPS	Date: _____	Time: _____	REPORT TRANSMITTAL DESIRED: <input type="checkbox"/> HARD COPY (extra cost) <input type="checkbox"/> FAX <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> ONLINE FOR LAB USE ONLY Temp of samples _____ °C Attempt to Cool? _____ Comments: _____ _____ 000007 of 000348
Relinquished By: UPS	Date: _____	Time: _____	Received By: <i>[Signature]</i>	Date: 12-11-15	Time: 10:15AM	
Relinquished By:	Date:	Time:	Received By:	Date:	Time:	

TAT: Standard RUSH Next BD 2nd BD 3rd BD

Note: RUSH requests will incur surcharges!

Frontier Analytical Laboratory

Sample Login Form

FAL Project ID: **9486**

Client:	Fremont Analytical
Client Project ID:	1512092
Date Received:	12/11/2015
Time Received:	10:15 am
Received By:	KH
Logged In By:	KZ
# of Samples Received:	2
Duplicates:	0
Storage Location:	R2

Method of Delivery:	UPS
Tracking Number:	1ZX6192X0324639747
Shipping Container Received Intact	Yes
Custody seals(s) present?	Yes
Custody seals(s) intact?	Yes
Sample Arrival Temperature (C)	0
Cooling Method	Blue Ice
Chain Of Custody Present?	Yes
Return Shipping Container To Client	Yes
Test aqueous sample for residual Chlorine	No
Sodium Thiosulfate Added	No
Adequate Sample Volume	Yes
Appropriate Sample Container	Yes
pH Range of Aqueous Sample	N/A
Anomalies or additional comments:	

9486
OAL

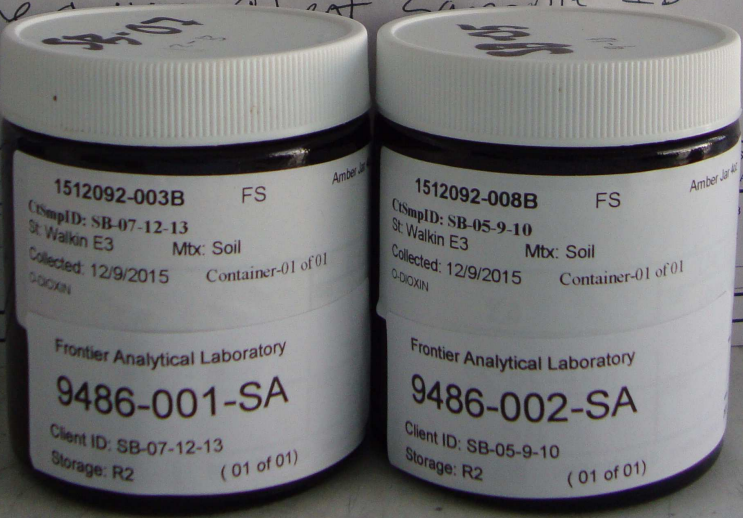
3600 Fremont Ave. N.
Seattle, WA 98103
TEL: 206-352-3790
FAX: 206-352-7178
Website: www.frontieranalytical.com

SUB CONTRACTOR: Frontier Analytical La COMPANY: Frontier Analytical Laboratory		SPECIAL INSTRUCTIONS / COMMENTS: Please email results to Michael Ridgeway and Chelsea Ward - mridgeway@frontieranalytical.com; eward@frontieranalytical.com	
ADDRESS: 5172 Hillsdale Circle			
CITY, STATE, ZIP: El Dorado Hills, CA 95762			
PHONE: (916) 934-0900	FAX: (916) 934-0999	EMAIL:	
ACCOUNT #:			

ITEM #	SAMPLE ID	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	DATE COLLECTED	NUMBER OF CONTAINERS	COMMENTS: Methanol Preserved Weights HOT Sample Notation, Additional Sample Description.
1	1512092-003B C-DIOXIN (SW6290) EPA 1613	SB-07-12-13	AMBER JAR 4OZ	Soil	12/9/2015 8:35:00 AM	1	
2	1512092-008B C-DIOXIN (SW6290) EPA 1613	SB-05-9-10	AMBER JAR 4OZ	Soil	12/9/2015 10:10:00 AM	1	

Mike to Kathy - L4 data package, 1512092 for
project name... client sample ID. Elm or Equis EDD.

Relinquished To: <i>[Signature]</i>	Date: 12/9/15
Relinquished By: UPS	Date:
TAT:	Standard <input checked="" type="checkbox"/>



EMITTAL DESIRED:	<input checked="" type="checkbox"/> FAX	<input checked="" type="checkbox"/> EMAIL	<input type="checkbox"/> ONLINE
USE ONLY	Attempt to Cool? _____		

2015/12/11

Frontier Analytical Laboratory
PROJECT REQUEST SHEET

Project #: 9486 Sample #: 1-2 Client Manager: BS
Client: Fremont Analytical Hold Time: 12/08/2016
Matrix: Soil Extraction Batch: 3543 Due Date: 01/06/2016
Method: EPA 1613 D/F Storage: R2
SOP: SOPs: EP2A Rev.12 IP2A Rev.13 ¹⁴
01/12-14-15

COMMENTS/INSTRUCTIONS:

Results: 9486
9486TCDF

Instrument:
DB5 FAC-4
DB225 FAC-3
DB1 _____
Other _____

Extract/s located in box: "Springs-Springs"

Standards: 9486

L4 Data Package + EIMOV
EQUIS EDD

Frontier Analytical Laboratory Percent Solids

FAL Project: 9486

	Sample ID	Chemist	Date	Wet Sample Weight (g)	Dry Sample Weight (g)	% Solids	⁵⁵ 40g 20	Equiv	^{1.5/16}	Wet Wt Oven Temp	Dry Wt Oven Temp
1.30	9486-001-0001-SA	KH	12-15-15	8.97g	7.46g	83.17%	6.01g			112°C	110°C
1.30	9486-002-0001-SA	↓	↓	8.94g	7.76g	86.80%	5.76g			↓	↓

% Solids Summary:

Non-Filtered Determination

1. Place an aliquot of sample into a pre-weighed aluminum weighing boat. Use approximately two to ten grams for solid samples, approximately 10 mL for aqueous samples.
2. Record the weight.
3. Dry sample overnight at approximately 110 C.

Filtered Determination

1. Pre-weigh a glass fiber filter of appropriate pore size and pressure filter a sample aliquot (200-1000mL) through it.
2. Air dry the filter and record the dry weight.

% Solids calculation

$$\% \text{ solids} = \text{aliquot after drying} / \text{aliquot before drying} \times 100$$

- Samples containing one percent solids or less are prepared as aqueous samples.
- Samples containing greater than one percent solids prepared as solid samples.

Frontier Analytical Laboratory
EXTRACTION SHEET

Project #: 9486 Extraction Date: 2016-01-05 Extraction Chemist: DV

Method/Analysis: EPA 1613 D/F

Procedure: SOX/SDS Solvent: Toluene

Sample ID	Wet wt. (g/L)	Dry wt. (g/L)	IS	NS	CSS
			Amt: 10.0uL ID: 151209A Vial: 1 Chemist/Witness/Date	Amt: 10.0uL ID: 151209B Vial: 1 Chemist/Witness/Date	Amt: 10.0uL ID: 151209C Vial: 1 Chemist/Witness/Date
3543-001-0001-MB	(5.00g)	(5.00g)	DN 1.5.16	N/A	DN KH 1.6.16
3543-001-0001-OPR	(5.00g)	(5.00g)	↓	DN 1.5.16	↓
9486-001-0001-SA	6.14g	5.11g	↓	N/A	↓
9486-002-0001-SA	5.80g	5.03g	↓	↓	↓

AX-21 Charcoal Cleaned	130410	Acetone	156453	Acid Alumina	A0325890	Hexane	156309
Methanol	154307	Methylene Chloride (DCM)	156647	Silica Gel	TA1975634	Sodium Hydroxide 1N	151965
Sodium Sulfate	XF27A	Sulfuric Acid	153943	Tetradecane	147332	Toluene	55282
Water	55152	C-18 Empore Discs	320819D	Cyclohexane	54303		

Comments:

Frontier Analytical Laboratory CLEANUP SHEET

Project #: 9486

Method/Analysis: EPA 1613 D/F

Splits: 0 Split Date: N/A Final Volume: 20.0uL

Sample ID	Cleanup 1	Cleanup 2	Cleanup 3	RS
	MSG.AA	CC	N/A	Amt: 10.0uL ID: 151209D Vial: 1
	Chemist/Date	Chemist/Date	Chemist/Date	Chemist/Witness/Date
3543-001-0001-MB	<u>DN 1.6.16</u>	<u>DN 1.6.16</u>	<u>N/A</u>	<u>DN KH 1.6.16</u>
3543-001-0001-OPR	↓	↓	↓	↓
9486-001-0001-SA	↓	↓	↓	↓
9486-002-0001-SA	↓	↓	↓	↓

AX-21 Charcoal Cleaned	130410	Acetone	156453	Acid Alumina	A0325890	Hexane	156309
Methanol	154307	Methylene Chloride (DCM)	156647	Silica Gel	TA1975634	Sodium Hydroxide 1N	151965
Sodium Sulfate	XF27A	Sulfuric Acid	153943	Tetradecane	147332	Toluene	55282
Water	55152	C-18 Empore Discs	320819D	Cyclohexane	54303		

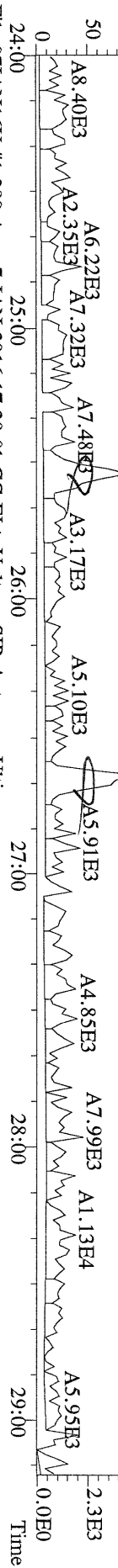
Comments:

Name	Resp	RA	RT	RRF	Conc	Qual	Fac Noise-1	Noise-2	DL	#Hom	
2,3,7,8-TCDD	*	n	NotFnd	1.08	*		2.50	578	652	0.172	
1,2,3,7,8-PeCDD	*	n	NotFnd	0.90	*		2.50	841	756	0.448	
1,2,3,4,7,8-HxCDD	*	n	NotFnd	0.98	*		2.50	721	493	0.468	
1,2,3,6,7,8-HxCDD	*	n	NotFnd	1.00	*		2.50	721	493	0.495	
1,2,3,7,8,9-HxCDD	*	n	NotFnd	1.11	*		2.50	721	493	0.429	
1,2,3,4,6,7,8-HpCDD	*	n	NotFnd	1.09	*		2.50	826	745	0.614	
OCDD	*	n	NotFnd	1.04	*		2.50	1790	1830	2.41	
2,3,7,8-TCDF	*	n	NotFnd	1.05	*		2.50	533	710	0.137	
1,2,3,7,8-PeCDF	*	n	NotFnd	0.98	*		2.50	945	1090	0.322	
2,3,4,7,8-PeCDF	*	n	NotFnd	1.01	*		2.50	945	1090	0.339	
1,2,3,4,7,8-HxCDF	*	n	NotFnd	1.23	*		2.50	1110	689	0.340	
1,2,3,6,7,8-HxCDF	*	n	NotFnd	1.17	*		2.50	1110	689	0.369	
2,3,4,6,7,8-HxCDF	*	n	NotFnd	1.12	*		2.50	1110	689	0.429	
1,2,3,7,8,9-HxCDF	*	n	NotFnd	1.15	*		2.50	1110	689	0.457	
1,2,3,4,6,7,8-HpCDF	*	n	NotFnd	1.36	*		2.50	1010	981	0.491	
1,2,3,4,7,8,9-HpCDF	*	n	NotFnd	1.23	*		2.50	1010	981	0.595	
OCDF	*	n	NotFnd	1.13	*		2.50	1390	1790	1.52	
Rec											
13C-2,3,7,8-TCDD	2.92e+07	0.79	y	27:23	1.07	376				94.0	
13C-1,2,3,7,8-PeCDD	1.99e+07	1.59	y	33:13	0.78	354				88.4	
13C-1,2,3,4,7,8-HxCDD	1.61e+07	1.31	y	38:32	0.87	369				92.3	
13C-1,2,3,6,7,8-HxCDD	1.54e+07	1.31	y	38:43	0.84	366				91.4	
13C-1,2,3,4,6,7,8-HpCDD	1.59e+07	1.07	y	44:07	0.85	369				92.3	
13C-OCDD	2.35e+07	0.92	y	49:38	0.70	672				83.9	
13C-2,3,7,8-TCDF	3.85e+07	0.81	y	26:38	1.03	371				92.7	
13C-1,2,3,7,8-PeCDF	3.09e+07	1.64	y	31:29	0.89	345				86.2	
13C-2,3,4,7,8-PeCDF	2.94e+07	1.63	y	32:49	0.82	356				88.9	
13C-1,2,3,4,7,8-HxCDF	2.43e+07	0.53	y	37:11	1.26	383				95.8	
13C-1,2,3,6,7,8-HxCDF	2.45e+07	0.53	y	37:22	1.28	380				95.1	
13C-2,3,4,6,7,8-HxCDF	2.31e+07	0.54	y	38:19	1.27	364				90.9	
13C-1,2,3,7,8,9-HxCDF	2.10e+07	0.54	y	39:45	1.16	360				89.9	
13C-1,2,3,4,6,7,8-HpCDF	1.90e+07	0.47	y	42:14	1.06	357				89.2	
13C-1,2,3,4,7,8,9-HpCDF	1.83e+07	0.46	y	45:04	0.93	392				98.1	
13C-OCDF	3.20e+07	0.90	y	50:02	0.95	670				83.7	
37Cl-2,3,7,8-TCDD	9.46e+06			27:24	0.90	145				90.9	
13C-1,2,3,4-TCDD	2.90e+07	0.81	y	26:48	-	15.8					
13C-1,2,3,4-TCDF	4.01e+07	0.80	y	25:33	-	16.7					
13C-1,2,3,7,8,9-HxCDD	2.01e+07	1.30	y	39:10	-	14.8					
Total Tetra-Dioxins	*		NotFnd	1.08	*		2.50	578	652	0.172	0
Total Penta-Dioxins	*		NotFnd	0.90	*		2.50	841	756	0.448	0
Total Hexa-Dioxins	*		NotFnd	1.03	*		2.50	721	493	0.495	0
Total Hepta-Dioxins	*		NotFnd	1.09	*		2.50	826	745	0.614	0
Total Tetra-Furans	*		NotFnd	1.05	*		2.50	533	710	0.137	0
1st Fn. Tot Penta-Furans	*		NotFnd	0.99	*		2.50	945	1090	0.339	PeCDF 0
Total Penta-Furans	*		NotFnd	0.99	*		2.50	945	1090	0.339	0.00 0
Total Hexa-Furans	*		NotFnd	1.16	*		2.50	1110	689	0.457	0
Total Hepta-Furans	*		NotFnd	1.30	*		2.50	1010	981	0.595	0

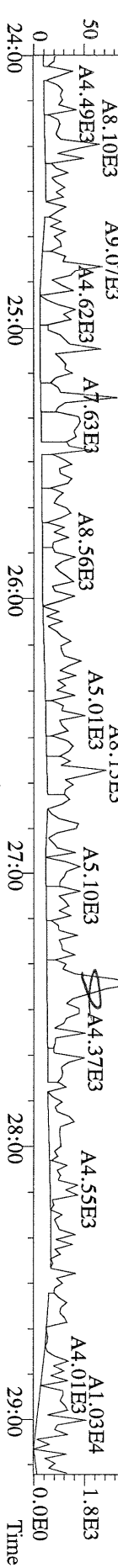
Analyst: J

Date: 1/8/16

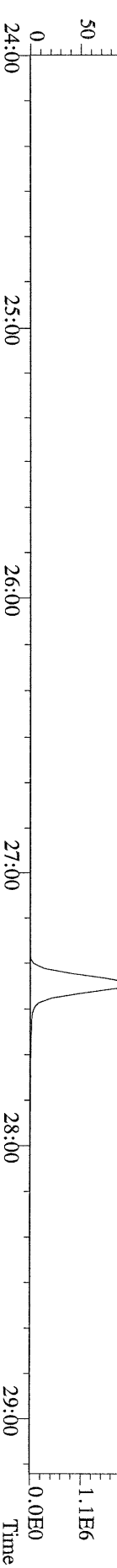
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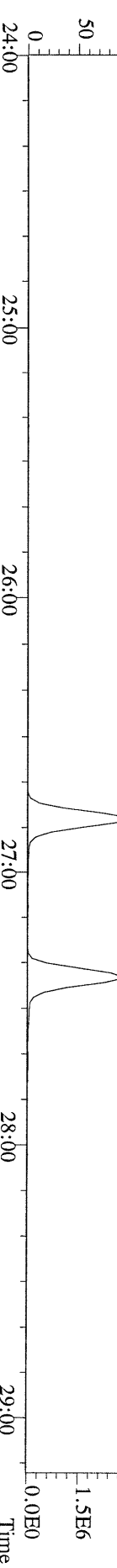
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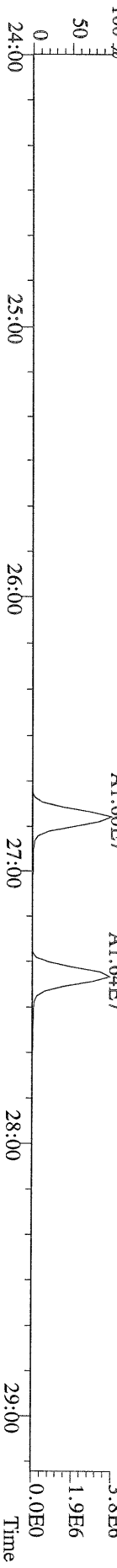
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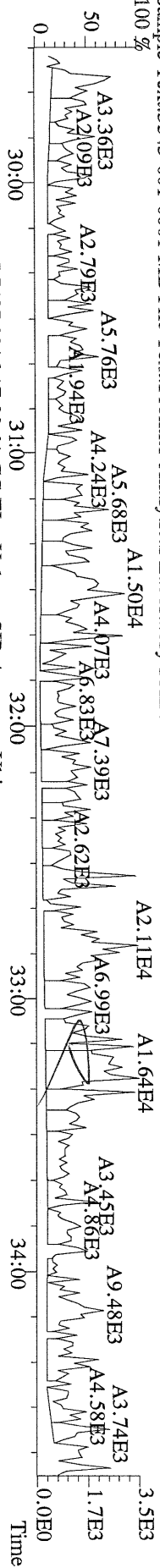
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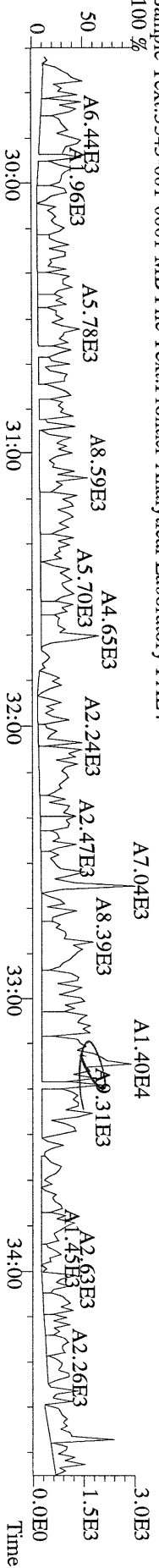
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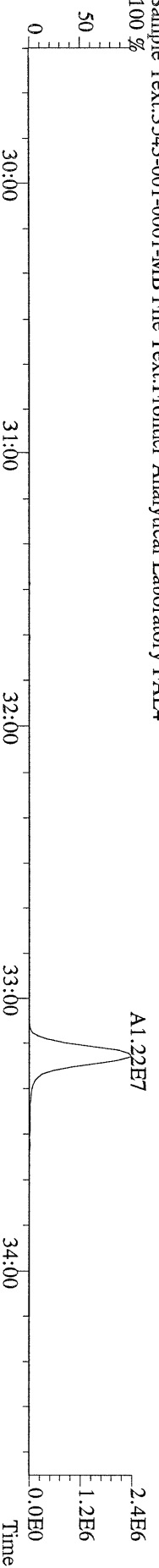
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 355.8546 S:3 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
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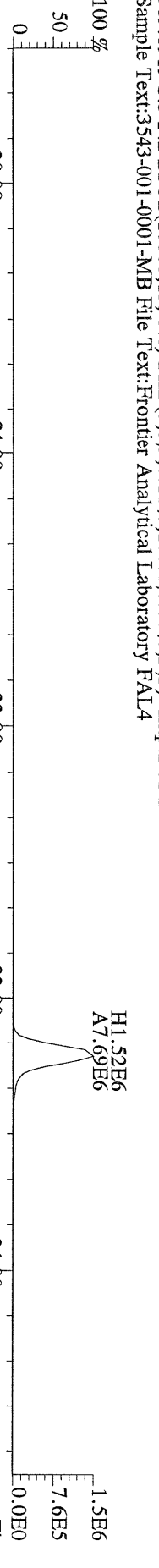
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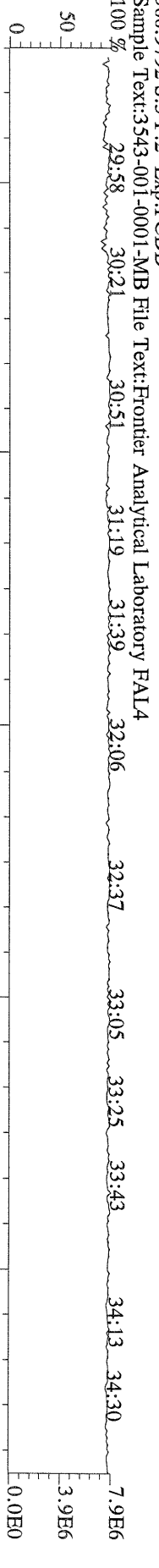
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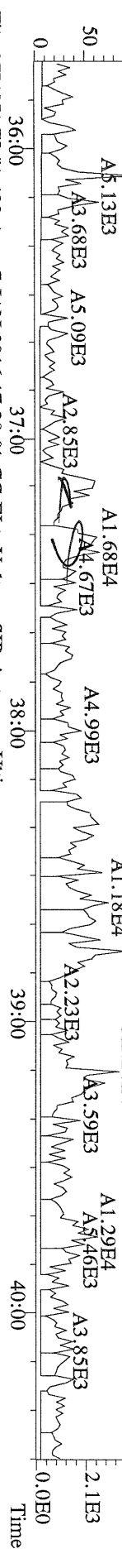
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 369.8919 S:3 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
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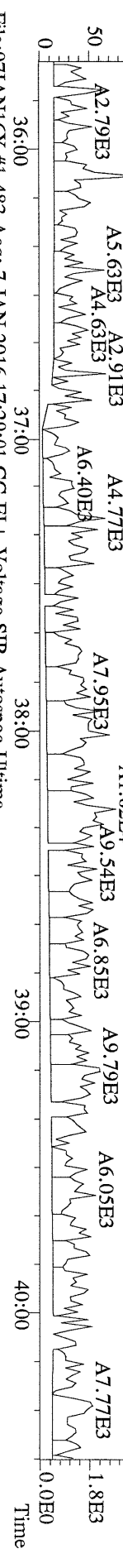
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 366.9792 S:3 F:2 Exp:PCDD
 Sample Text:3543-001-0001-MB File Text:Frontier Analytical Laboratory FALL4



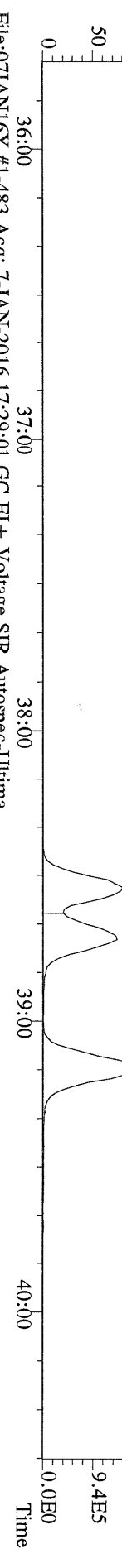
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 389.8156 S.3 F.3 BSUB(10000,15,-3,0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
 Sample Text:3543-001-0001-MB File Text:Frontier Analytical Laboratory FAL4
 100 % A9.80E3



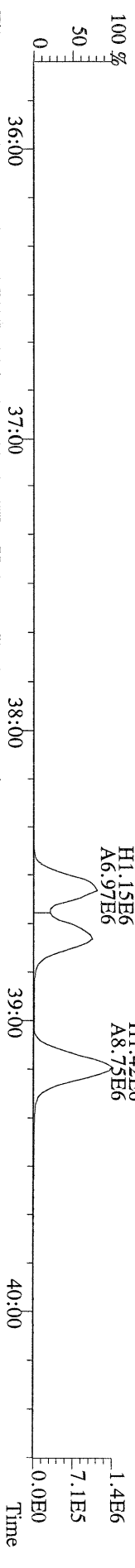
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 391.8127 S.3 F.3 BSUB(10000,15,-3,0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
 Sample Text:3543-001-0001-MB File Text:Frontier Analytical Laboratory FAL4
 100 % A7.57E3



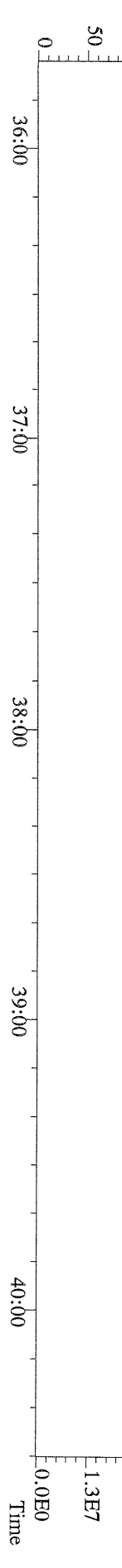
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 Sample Text:3543-001-0001-MB File Text:Frontier Analytical Laboratory FAL4
 100 %



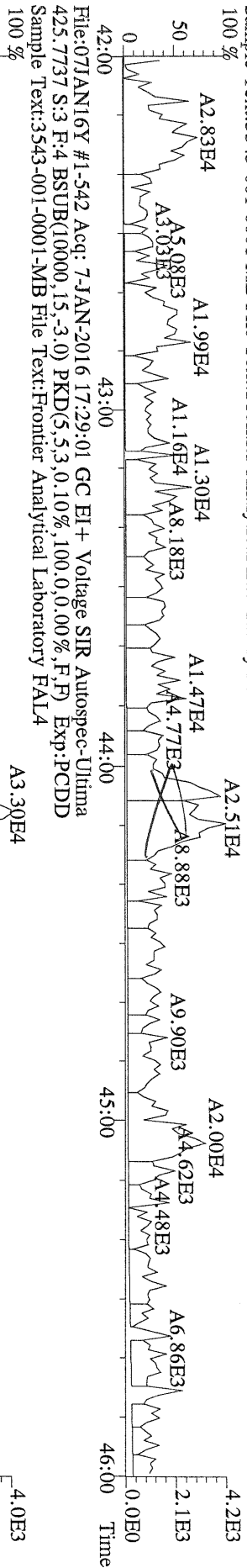
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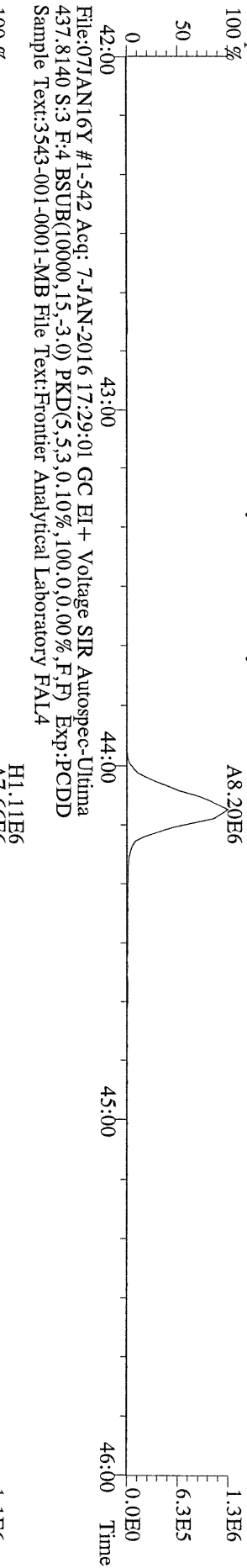
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 380.9760 S.3 F.3 Exp:PCDD
 Sample Text:3543-001-0001-MB File Text:Frontier Analytical Laboratory FAL4
 100 % 35:51 36:09 36:58 37:24 37:45 38:13 38:30 39:07 39:32 40:02



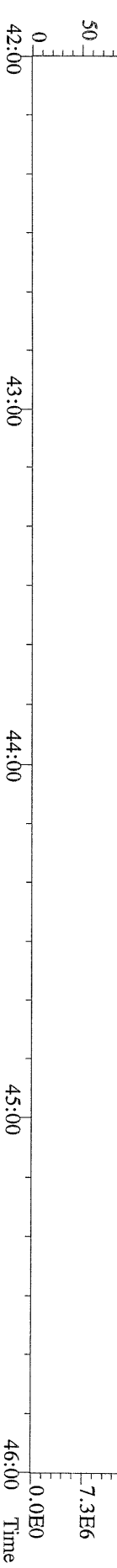
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423.7767 S:3 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,P) Exp.:PCDD
Sample Text:3543-001-0001-MB File Text:Frontier Analytical Laboratory FAL4



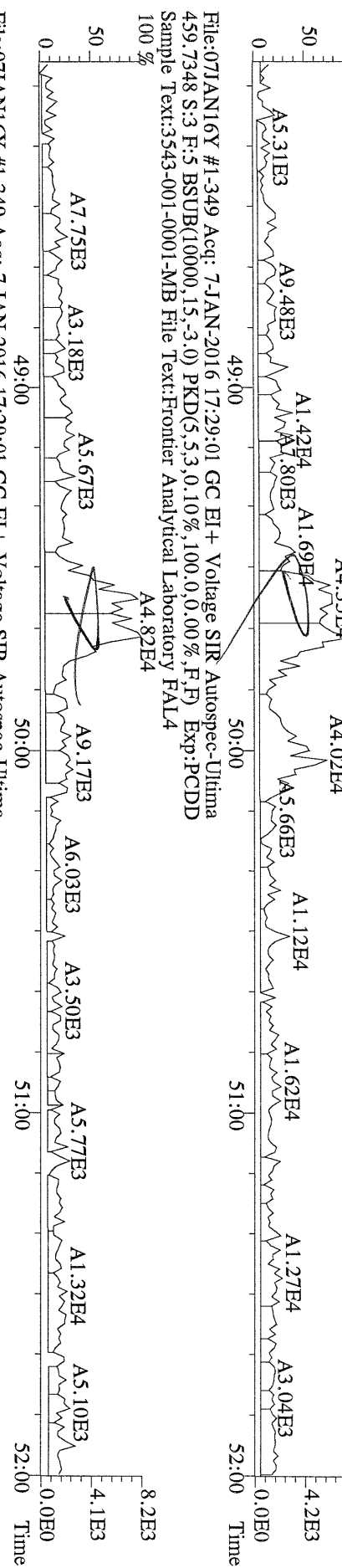
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435.8169 S:3 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,P) Exp.:PCDD
Sample Text:3543-001-0001-MB File Text:Frontier Analytical Laboratory FAL4



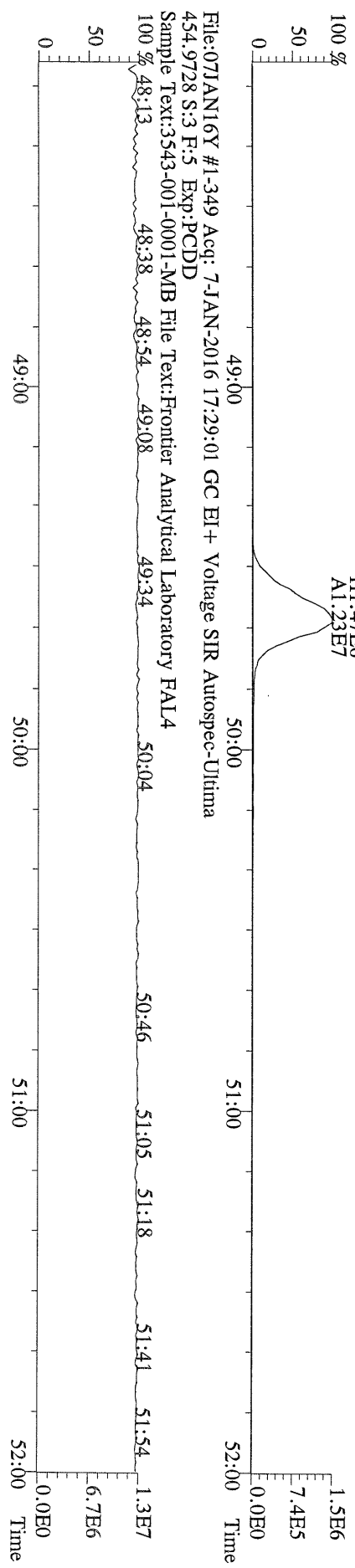
File:07JAN16Y #1-542 Acq: 7-JAN-2016 17:29:01 GC EI+ Voltage SIR Autospec-Ultima
430.9728 S:3 F:4 Exp.:PCDD
Sample Text:3543-001-0001-MB File Text:Frontier Analytical Laboratory FAL4



File:07JAN16Y #1-349 Acq: 7-JAN-2016 17:29:01 GC EI+ Voltage SIR Autospec-Utima
457.7377 S.3 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0.00%,F,I) Exp:PCDD
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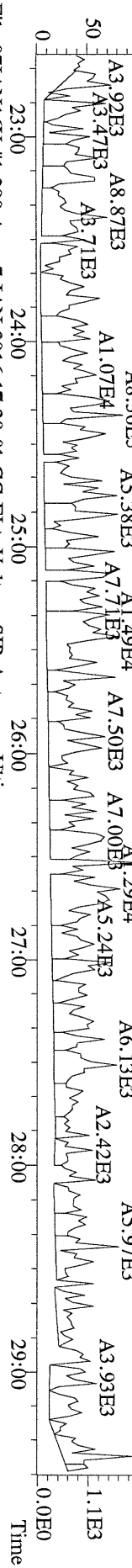


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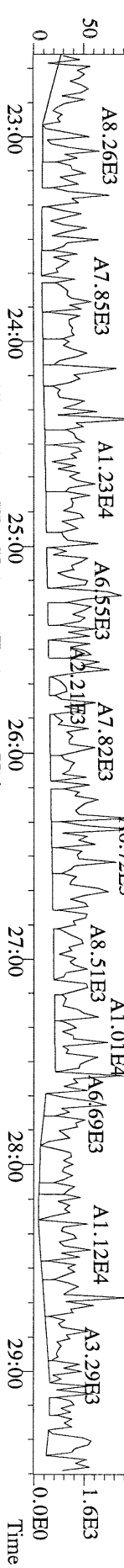


File:07JAN16Y #1-349 Acq: 7-JAN-2016 17:29:01 GC EI+ Voltage SIR Autospec-Utima
454.9728 S.3 F:5 Exp:PCDD
Sample Text:3543-001-0001-MB File Text:Frontier Analytical Laboratory FAL4
100% 48:13 48:38 48:54 49:08 49:34 50:04 50:46 51:05 51:18 51:41 51:54 1.3E7
6.7E6
0.0E0

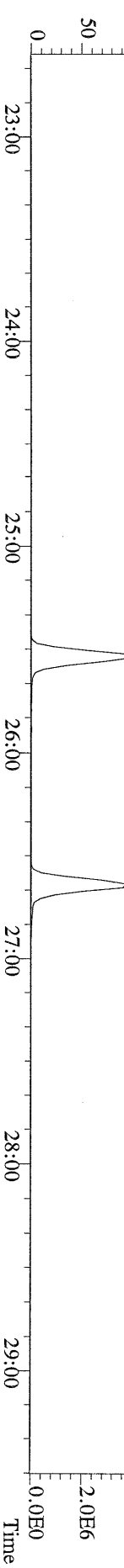
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Sample Text:3543-001-0001-MB File Text:Fronter Analytical Laboratory FAL4



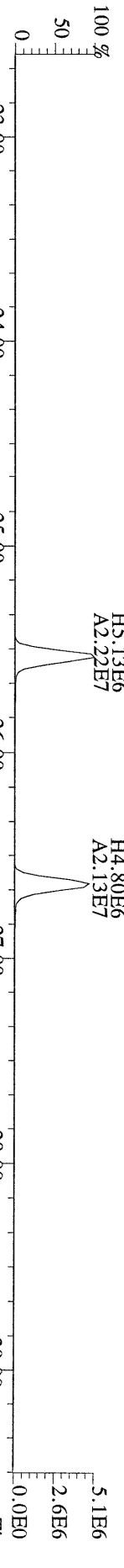
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305.8987 S.3 BSUB(10000,15,-3,0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
Sample Text:3543-001-0001-MB File Text:Fronter Analytical Laboratory FAL4



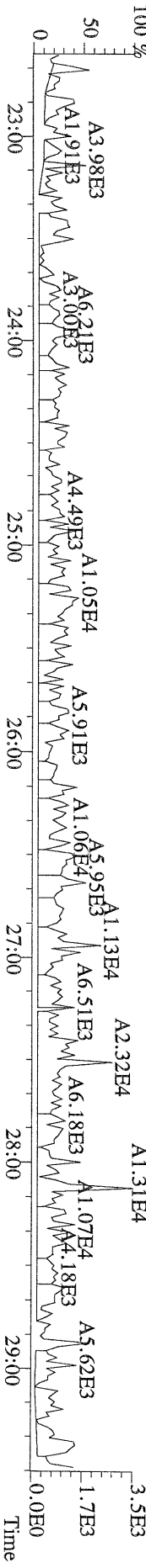
File:07JAN16Y #1-390 Acq: 7-JAN-2016 17:29:01 GC EI+ Voltage SIR Autospec-Utima
315.9419 S.3 BSUB(10000,15,-3,0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
Sample Text:3543-001-0001-MB File Text:Fronter Analytical Laboratory FAL4



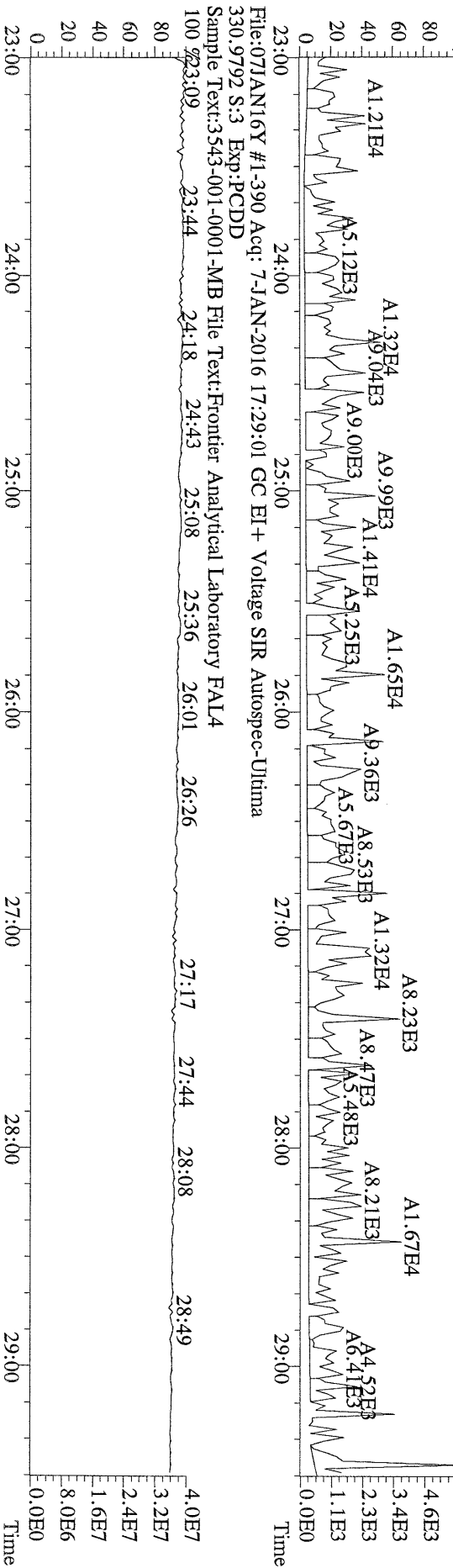
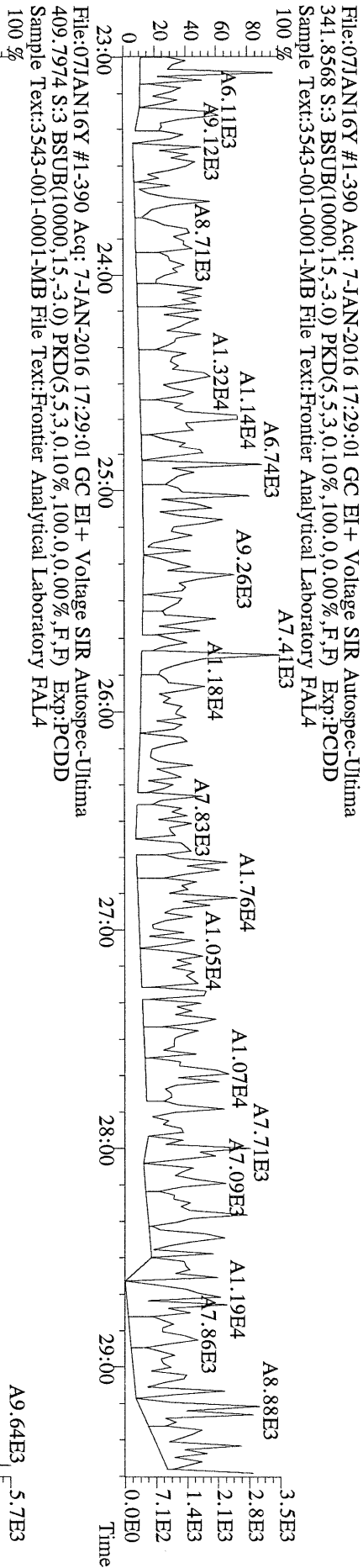
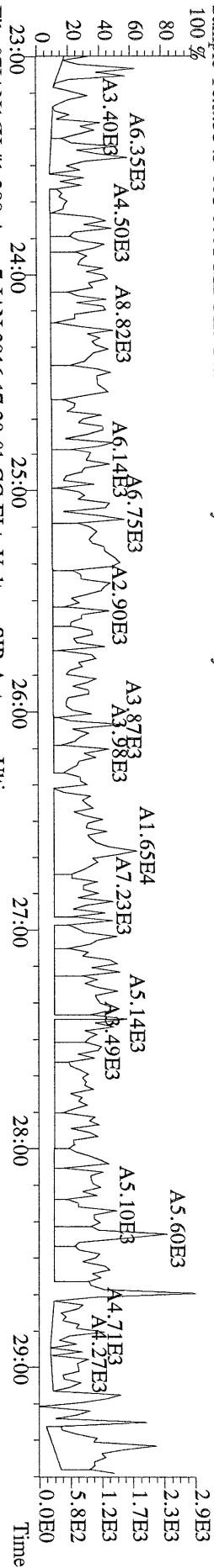
File:07JAN16Y #1-390 Acq: 7-JAN-2016 17:29:01 GC EI+ Voltage SIR Autospec-Utima
317.9389 S.3 BSUB(10000,15,-3,0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
Sample Text:3543-001-0001-MB File Text:Fronter Analytical Laboratory FAL4



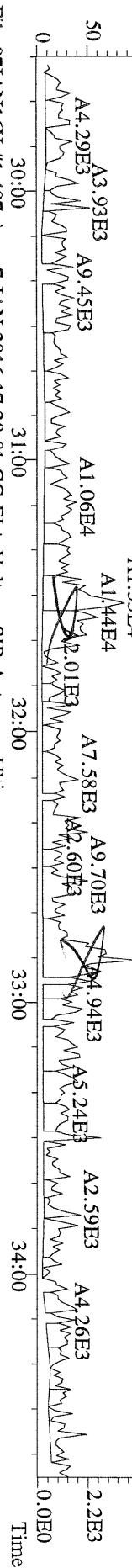
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375.8364 S.3 BSUB(10000,15,-3,0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
Sample Text:3543-001-0001-MB File Text:Fronter Analytical Laboratory FAL4



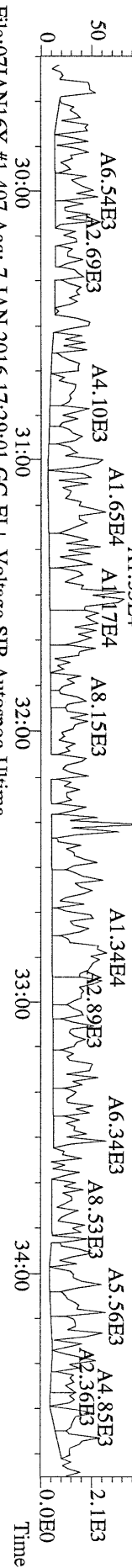
File:07JAN16Y #1-390 Acq: 7-JAN-2016 17:29:01 GC EI+ Voltage SIR Autospec-Utima
 339.8597 S:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:3543-001-0001-MB File Text:Frontier Analytical Laboratory FAL4



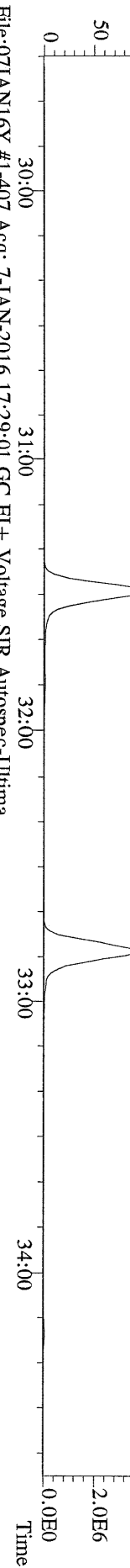
File:07JIAN16Y #1-407 Acq: 7-JAN-2016 17:29:01 GC EI+ Voltage SIR Autospec-Ultima
339.8597 S:3 F:2 BSUB(10000.15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,I) Exp:PCDD
Sample Text:3543-001-0001-MB File Text:Frontier Analytical Laboratory FAL4



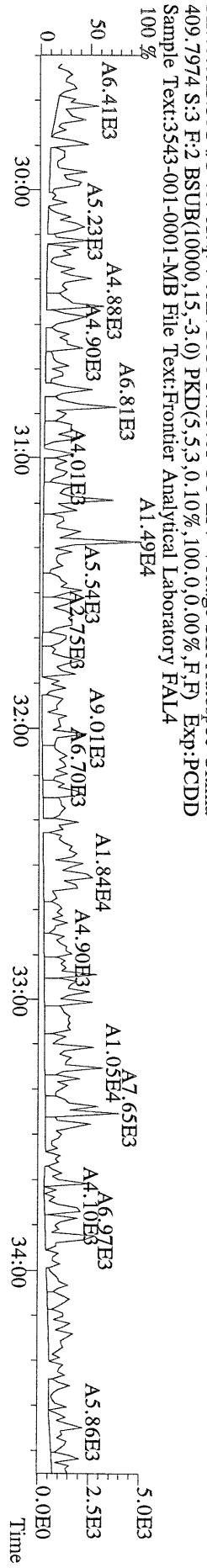
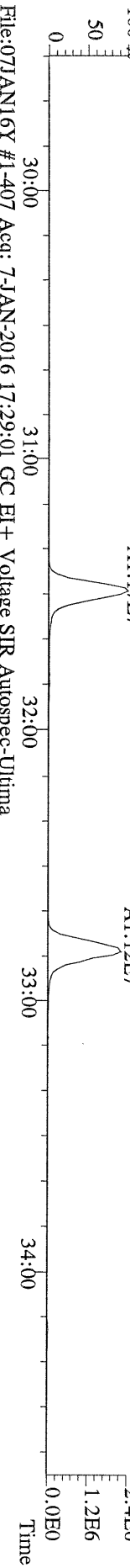
File:07JIAN16Y #1-407 Acq: 7-JAN-2016 17:29:01 GC EI+ Voltage SIR Autospec-Ultima
341.8568 S:3 F:2 BSUB(10000.15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,I) Exp:PCDD
Sample Text:3543-001-0001-MB File Text:Frontier Analytical Laboratory FAL4



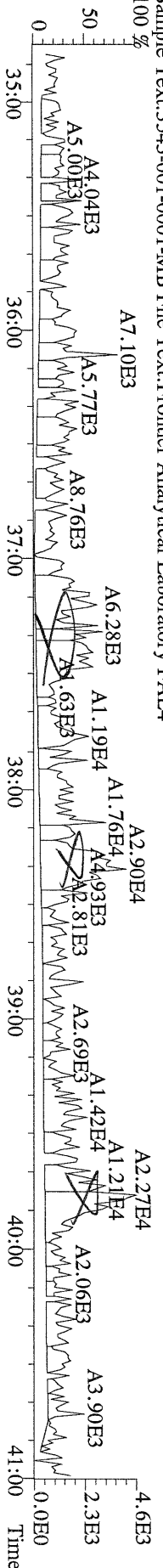
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351.9000 S:3 F:2 BSUB(10000.15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,I) Exp:PCDD
Sample Text:3543-001-0001-MB File Text:Frontier Analytical Laboratory FAL4



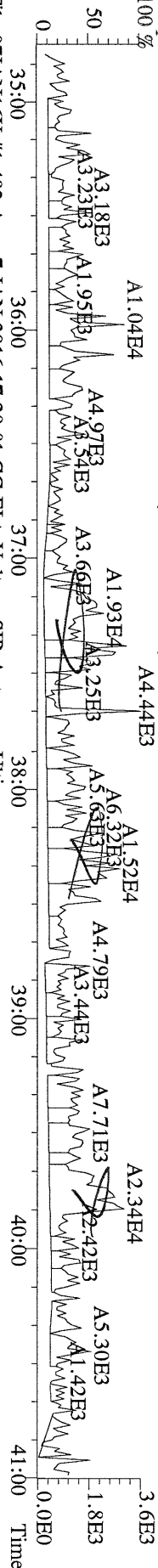
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409.7974 S:3 F:2 BSUB(10000.15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,I) Exp:PCDD
Sample Text:3543-001-0001-MB File Text:Frontier Analytical Laboratory FAL4



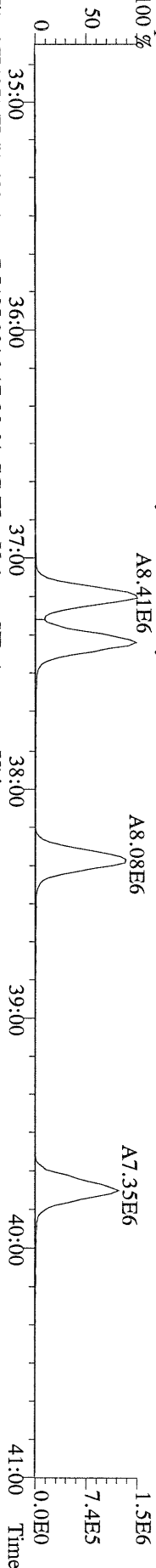
File:07JIAN16Y #1-483 Acq: 7-JAN-2016 17:29:01 GC EI+ Voltage SIR Autospec-Utima
373.8207 S:3 F:3 BSUB(10000.15-.3.0) PKD(5.5,3.0,100.0,0.00%,F,I) Exp:PCDD
Sample Text:3543-001-0001-MB File Text:Fronter Analytical Laboratory FAL4



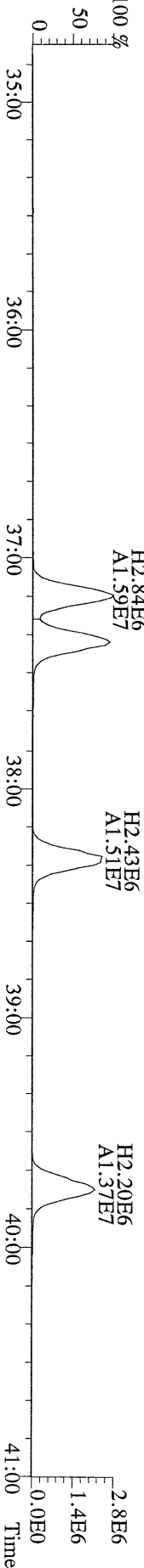
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375.8178 S:3 F:3 BSUB(10000.15-.3.0) PKD(5.5,3.0,100.0,0.00%,F,I) Exp:PCDD
Sample Text:3543-001-0001-MB File Text:Fronter Analytical Laboratory FAL4



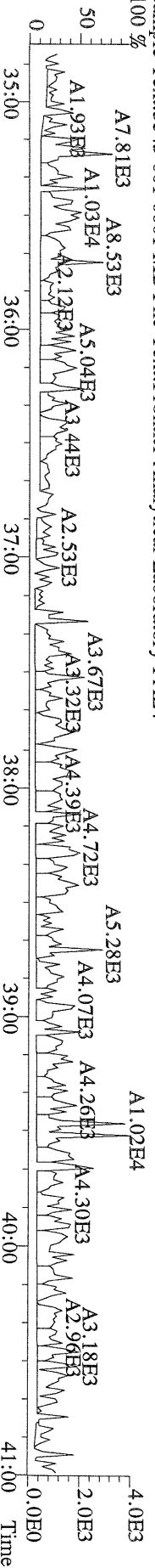
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383.8639 S:3 F:3 BSUB(10000.15-.3.0) PKD(5.5,3.0,100.0,0.00%,F,I) Exp:PCDD
Sample Text:3543-001-0001-MB File Text:Fronter Analytical Laboratory FAL4



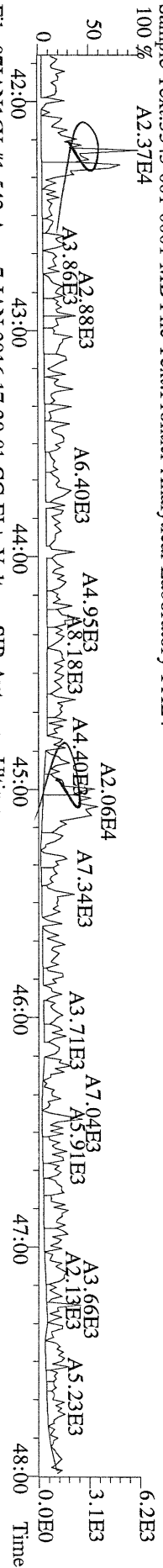
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385.8610 S:3 F:3 BSUB(10000.15-.3.0) PKD(5.5,3.0,100.0,0.00%,F,I) Exp:PCDD
Sample Text:3543-001-0001-MB File Text:Fronter Analytical Laboratory FAL4



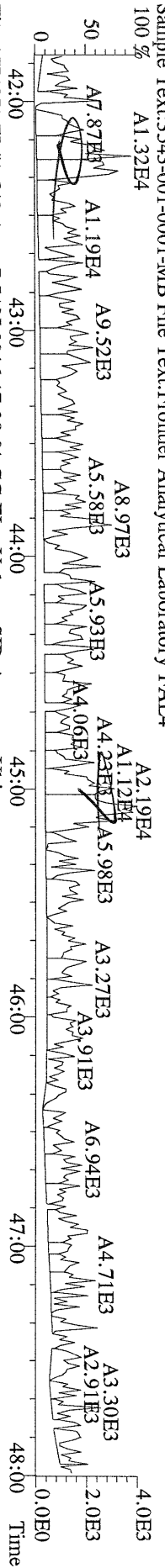
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Sample Text:3543-001-0001-MB File Text:Fronter Analytical Laboratory FAL4



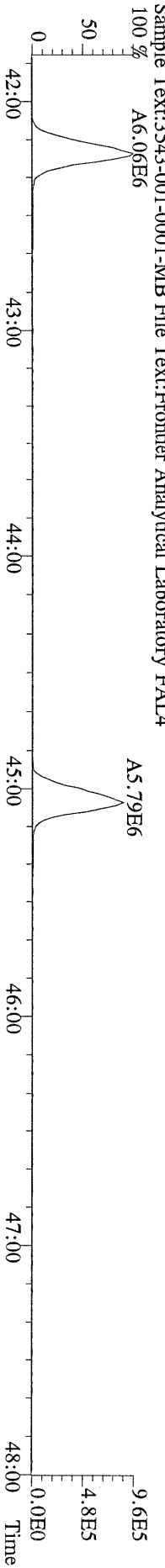
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407.7818 S:3 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,P) Exp:PCDD
Sample Text:3543-001-0001-MIB File Text:Frontier Analytical Laboratory FAL4



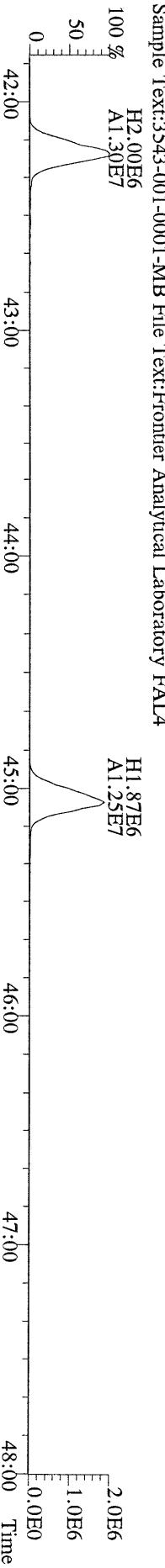
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409.7788 S:3 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,P) Exp:PCDD
Sample Text:3543-001-0001-MIB File Text:Frontier Analytical Laboratory FAL4



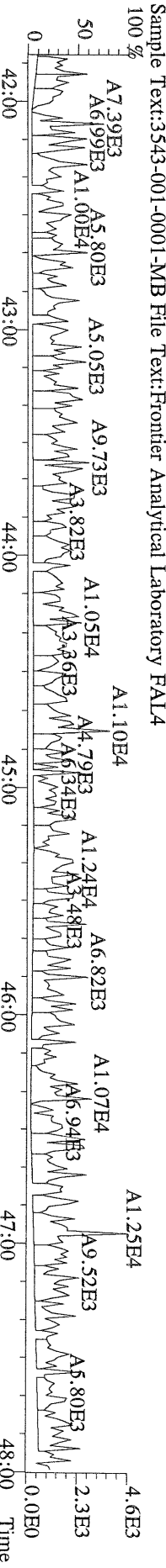
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417.8253 S:3 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,P) Exp:PCDD
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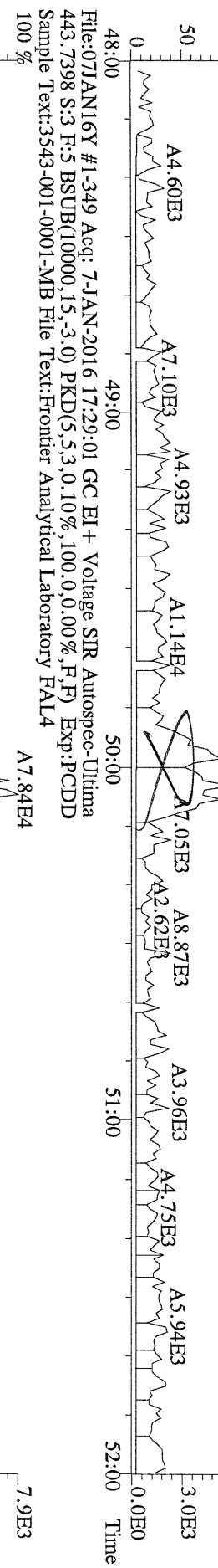
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419.8220 S:3 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,P) Exp:PCDD
Sample Text:3543-001-0001-MIB File Text:Frontier Analytical Laboratory FAL4



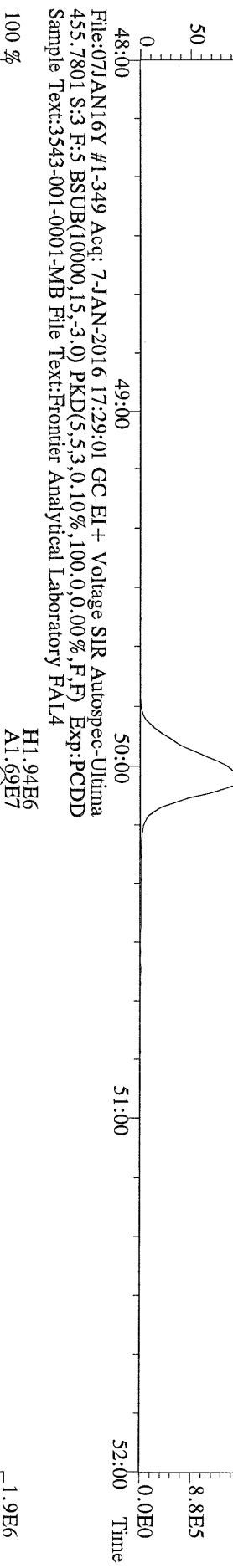
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479.7165 S:3 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,P) Exp:PCDD
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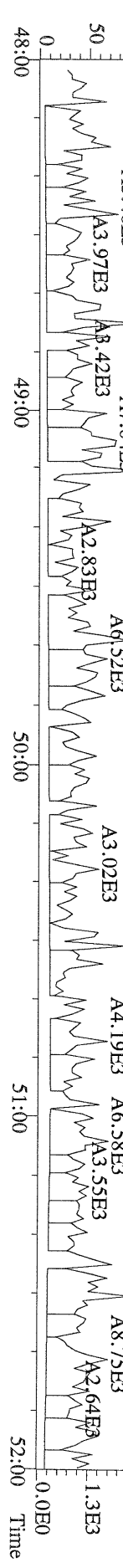
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441.7428 S:3 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,P) Exp:PCDD
Sample Text:3543-001-0001-MB File Text:Frontier Analytical Laboratory FAL4
100 %



File:071JAN16Y #1-349 Acq: 7-JAN-2016 17:29:01 GC EI+ Voltage SIR Autospec-Utima
453.7831 S:3 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,P) Exp:PCDD
Sample Text:3543-001-0001-MB File Text:Frontier Analytical Laboratory FAL4
100 %



File:071JAN16Y #1-349 Acq: 7-JAN-2016 17:29:01 GC EI+ Voltage SIR Autospec-Utima
513.6775 S:3 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,P) Exp:PCDD
Sample Text:3543-001-0001-MB File Text:Frontier Analytical Laboratory FAL4
100 %



3543-001-0001-OPR

USEPA - ITD

FORM 8A
PCDD/PCDF ONGOING PRECISION AND RECOVERY (OPR)

Lab Name: Frontier Analytical Laboratory Episode No.:

Contract No.: SAS No.:

Matrix (aqueous/solid/leachate): Soil OPR Data Filename: 07JAN16Y Sam:2

Ext. Date: 1/5/16 Shift: Day Analysis Date: 7-JAN-16 16:34:12

ALL CONCENTRATIONS REPORTED ON THIS FORM ARE CONCENTRATIONS IN EXTRACT.

	SPIKE CONC. (ng/mL)	CONC. FOUND (ng/mL)	OPR CONC. LIMITS (1) (ng/mL)
NATIVE ANALYTES			
2,3,7,8-TCDD	10	10.1	6.70 - 15.8
1,2,3,7,8-PeCDD	50	52.0	35.0 - 71.0
1,2,3,4,7,8-HxCDD	50	51.0	35.0 - 82.0
1,2,3,6,7,8-HxCDD	50	52.9	38.0 - 67.0
1,2,3,7,8,9-HxCDD	50	49.2	32.0 - 81.0
1,2,3,4,6,7,8-HpCDD	50	47.7	35.0 - 70.0
OCDD	100	101	78.0 - 144
2,3,7,8-TCDF	10	9.54	7.50 - 15.8
1,2,3,7,8-PeCDF	50	49.6	40.0 - 67.0
2,3,4,7,8-PeCDF	50	50.5	34.0 - 80.0
1,2,3,4,7,8-HxCDF	50	49.1	36.0 - 67.0
1,2,3,6,7,8-HxCDF	50	49.4	42.0 - 65.0
2,3,4,6,7,8-HxCDF	50	50.0	35.0 - 78.0
1,2,3,7,8,9-HxCDF	50	50.2	39.0 - 65.0
1,2,3,4,6,7,8-HpCDF	50	50.7	41.0 - 61.0
1,2,3,4,7,8,9-HpCDF	50	51.6	39.0 - 69.0
OCDF	100	102	63.0 - 170

(1) Contract-required concentration limits for OPR as specified in Table 6, Method 1613

Analyst:  Date: 1/5/16

USEPA - ITD

FORM 8B
PCDD/PCDF ONGOING PRECISION AND RECOVERY (OPR)

Lab Name: Frontier Analytical Laboratory Episode No.:

Contract No.: SAS No.:

Matrix (aqueous/solid/leachate): Soil OPR Data Filename: 07JAN16Y Sam:2

Ext. Date: 1/5/16 Shift: Day Analysis Date: 7-JAN-16 16:34:12

ALL CONCENTRATIONS REPORTED ON THIS FORM ARE CONCENTRATIONS IN EXTRACT.

	SPIKE CONC. (ng/mL)	CONC. FOUND (ng/mL)	OPR CONC. LIMITS (1) (ng/mL)
LABELED COMPOUNDS			
13C-2,3,7,8-TCDD	100	90.7	20.0 - 175
13C-1,2,3,7,8-PeCDD	100	85.7	21.0 - 227
13C-1,2,3,4,7,8-HxCDD	100	99.3	21.0 - 193
13C-1,2,3,6,7,8-HxCDD	100	99.1	25.0 - 163
13C-1,2,3,4,6,7,8-HpCDD	100	96.6	26.0 - 166
13C-OCDD	200	171	26.0 - 397
13C-2,3,7,8-TCDF	100	93.9	22.0 - 152
13C-1,2,3,7,8-PeCDF	100	88.1	21.0 - 192
13C-2,3,4,7,8-PeCDF	100	90.0	13.0 - 328
13C-1,2,3,4,7,8-HxCDF	100	102	19.0 - 202
13C-1,2,3,6,7,8-HxCDF	100	102	21.0 - 159
13C-2,3,4,6,7,8-HxCDF	100	97.8	22.0 - 176
13C-1,2,3,7,8,9-HxCDF	100	92.9	17.0 - 205
13C-1,2,3,4,6,7,8-HpCDF	100	93.9	21.0 - 158
13C-1,2,3,4,7,8,9-HpCDF	100	95.7	20.0 - 186
13C-OCDF	200	170	26.0 - 397
CLEANUP STANDARD			
37Cl-2,3,7,8-TCDD	40	35.9	12.4 - 76.4

(1) Contract-required concentration limits for OPR as specified in Table 6, Method 1613
Labeled compound concentration limits are based on required percent recovery of 25%-150%.

Analyst: _____

Date: _____

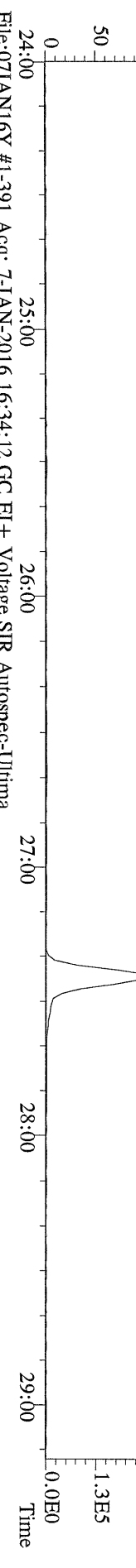
Results: GC Column: DB5 Amount: 1.000 NATO 1989 Tox: 102 WHO 1998 Tox: 127 WHO 2005 Tox: 116

Name	Resp	RA	RT	RRF	Conc	Qual	Fac Noise-1	Noise-2	DL	#Hom
2,3,7,8-TCDD	2.96e+06	0.79 y	27:24	1.08	10.1		2.50	-	*	
1,2,3,7,8-PeCDD	8.73e+06	1.57 y	33:15	0.90	52.0		2.50	-	*	
1,2,3,4,7,8-HxCDD	7.51e+06	1.27 y	38:35	0.98	51.0		2.50	-	*	
1,2,3,6,7,8-HxCDD	7.67e+06	1.24 y	38:45	1.00	52.9		2.50	-	*	
1,2,3,7,8,9-HxCDD	8.07e+06	1.24 y	39:12	1.11	49.2		2.50	-	*	
1,2,3,4,6,7,8-HpCDD	7.44e+06	1.05 y	44:10	1.09	47.7		2.50	-	*	
OCDD	1.10e+07	0.90 y	49:40	1.04	101		2.50	-	*	
2,3,7,8-TCDF	3.58e+06	0.82 y	26:40	1.05	9.54		2.50	-	*	
1,2,3,7,8-PeCDF	1.41e+07	1.58 y	31:31	0.98	49.6		2.50	-	*	
2,3,4,7,8-PeCDF	1.40e+07	1.59 y	32:51	1.01	50.5		2.50	-	*	
1,2,3,4,7,8-HxCDF	1.34e+07	1.26 y	37:12	1.23	49.1		2.50	-	*	
1,2,3,6,7,8-HxCDF	1.31e+07	1.24 y	37:24	1.17	49.4		2.50	-	*	
2,3,4,6,7,8-HxCDF	1.20e+07	1.25 y	38:21	1.12	50.0		2.50	-	*	
1,2,3,7,8,9-HxCDF	1.08e+07	1.26 y	39:47	1.15	50.2		2.50	-	*	
1,2,3,4,6,7,8-HpCDF	1.20e+07	1.08 y	42:15	1.36	50.7		2.50	-	*	
1,2,3,4,7,8,9-HpCDF	9.75e+06	1.08 y	45:05	1.23	51.6		2.50	-	*	
OCDF	1.62e+07	0.92 y	50:04	1.13	102		2.50	-	*	
13C-2,3,7,8-TCDD	2.72e+07	0.78 y	27:23	1.07	90.7				90.7	
13C-1,2,3,7,8-PeCDD	1.85e+07	1.59 y	33:13	0.78	85.7				85.7	
13C-1,2,3,4,7,8-HxCDD	1.50e+07	1.32 y	38:33	0.87	99.3				99.3	
13C-1,2,3,6,7,8-HxCDD	1.45e+07	1.27 y	38:43	0.84	99.1				99.1	
13C-1,2,3,4,6,7,8-HpCDD	1.44e+07	1.07 y	44:08	0.85	96.6				96.6	
13C-OCDD	2.07e+07	0.92 y	49:39	0.70	171				85.4	
13C-2,3,7,8-TCDF	3.59e+07	0.81 y	26:39	1.03	93.9				93.9	
13C-1,2,3,7,8-PeCDF	2.91e+07	1.63 y	31:29	0.89	88.1				88.1	
13C-2,3,4,7,8-PeCDF	2.74e+07	1.64 y	32:49	0.82	90.0				90.0	
13C-1,2,3,4,7,8-HxCDF	2.23e+07	0.54 y	37:11	1.26	102				102	
13C-1,2,3,6,7,8-HxCDF	2.28e+07	0.54 y	37:23	1.28	102				102	
13C-2,3,4,6,7,8-HxCDF	2.15e+07	0.53 y	38:19	1.27	97.8				97.8	
13C-1,2,3,7,8,9-HxCDF	1.88e+07	0.54 y	39:45	1.16	92.9				92.9	
13C-1,2,3,4,6,7,8-HpCDF	1.73e+07	0.47 y	42:15	1.06	93.9				93.9	
13C-1,2,3,4,7,8,9-HpCDF	1.54e+07	0.46 y	45:04	0.93	95.7				95.7	
13C-OCDF	2.81e+07	0.90 y	50:02	0.95	170				85.0	
37Cl-2,3,7,8-TCDD	9.00e+06		27:24	0.90	35.9				89.9	
13C-1,2,3,4-TCDD	2.79e+07	0.78 y	26:49	-	76.1				-	
13C-1,2,3,4-TCDF	3.69e+07	0.80 y	25:32	-	76.8				-	
13C-1,2,3,7,8,9-HxCDD	1.74e+07	1.29 y	39:10	-	63.9				-	
Total Tetra-Dioxins	3.26e+06		22:59	1.08	11.1		2.50	-	*	28
Total Penta-Dioxins	8.80e+06		32:34	0.90	52.4		2.50	-	*	7
Total Hexa-Dioxins	2.34e+07		35:11	1.03	154		2.50	-	*	26
Total Hepta-Dioxins	7.77e+06		42:03	1.09	49.9		2.50	-	*	31
Total Tetra-Furans	3.91e+06		23:04	1.05	10.4		2.50	-	*	26
1st Fn. Tot Penta-Furans	2.20e+05		22:53	0.99	0.783		2.50	-	*	PeCDF 26
Total Penta-Furans	2.87e+07		30:14	0.99	102		2.50	-	*	103 21
Total Hexa-Furans	4.97e+07		35:31	1.16	199		2.50	-	*	17
Total Hepta-Furans	2.19e+07		41:47	1.30	103		2.50	-	*	21

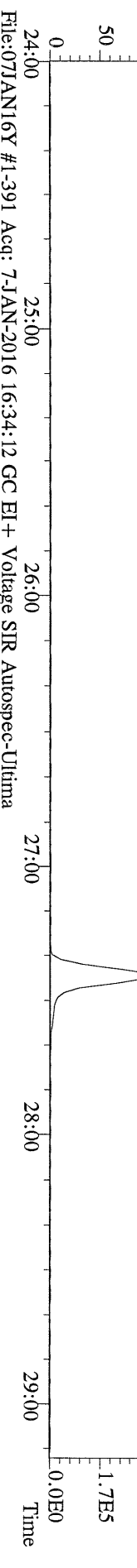
Analyst:

Date: 1/8/16

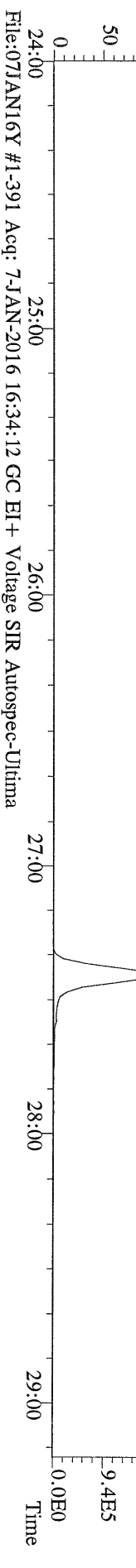
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319.8965 S.2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:3543-001-0001-OPR File Text:Frontier Analytical Laboratory FAL4
100 %



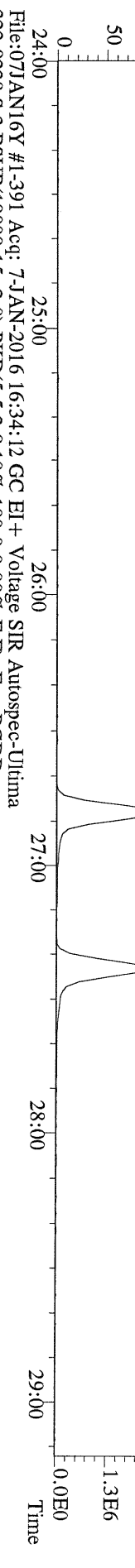
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321.8936 S.2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:3543-001-0001-OPR File Text:Frontier Analytical Laboratory FAL4
100 %



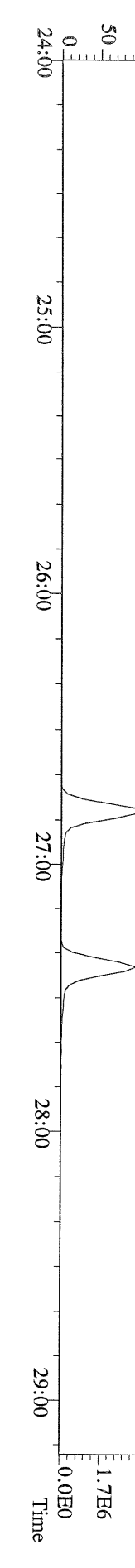
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327.8847 S.2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
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100 %



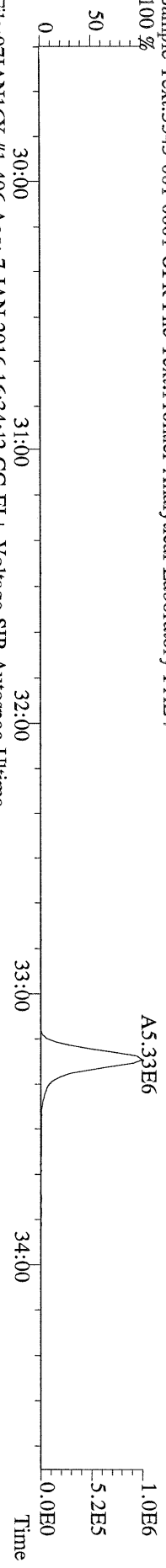
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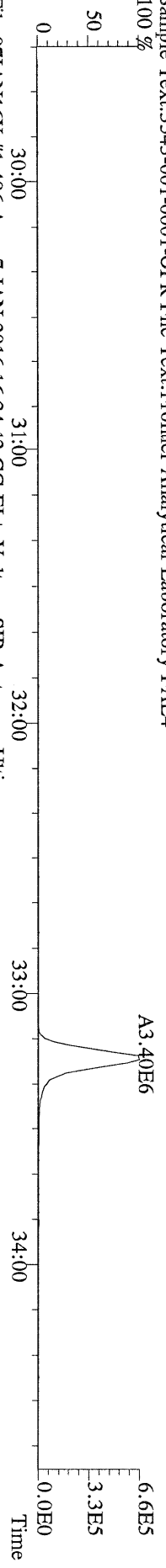
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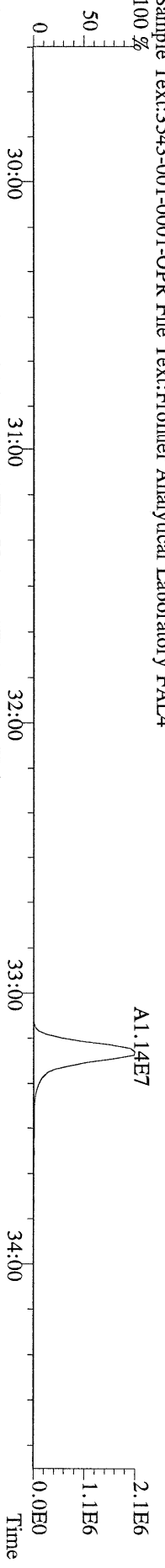
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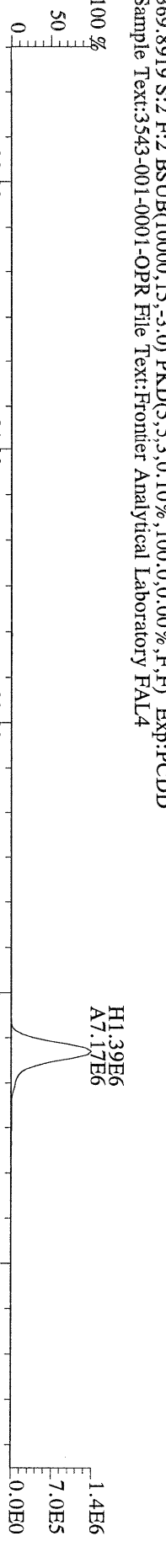
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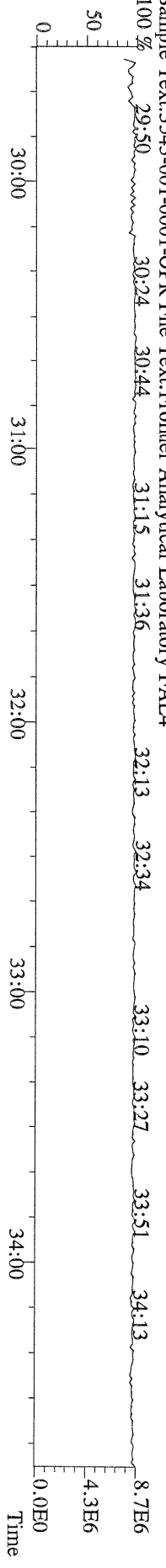
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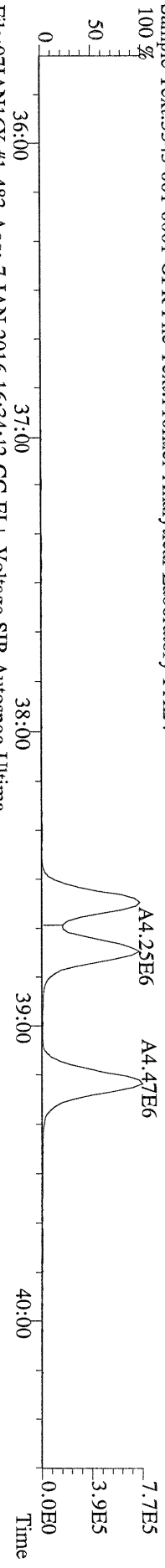
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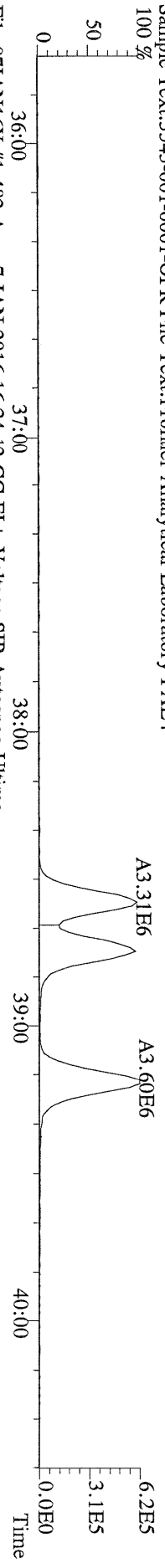
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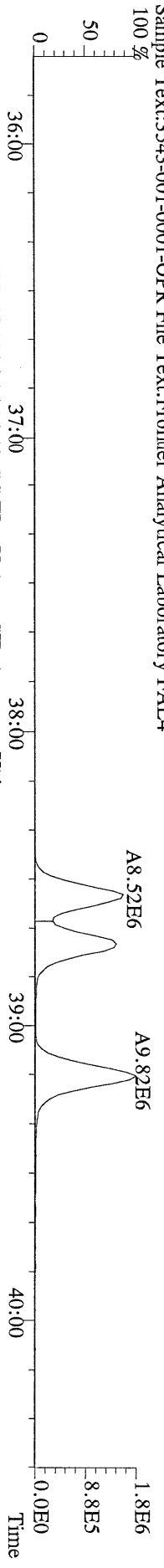
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 100 %



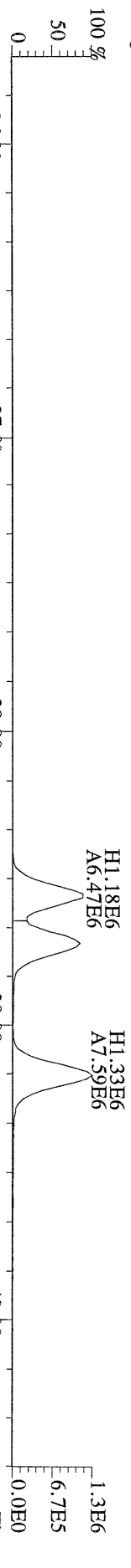
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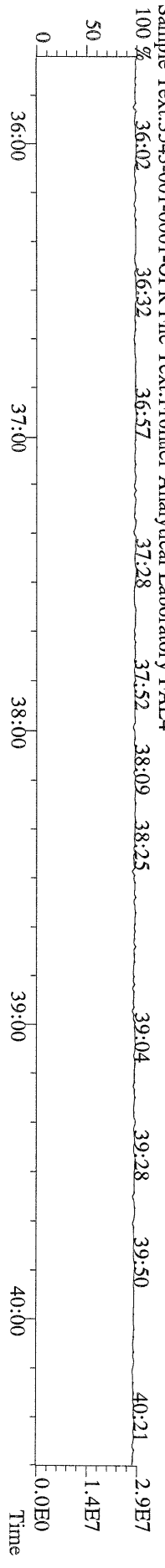
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 100 %



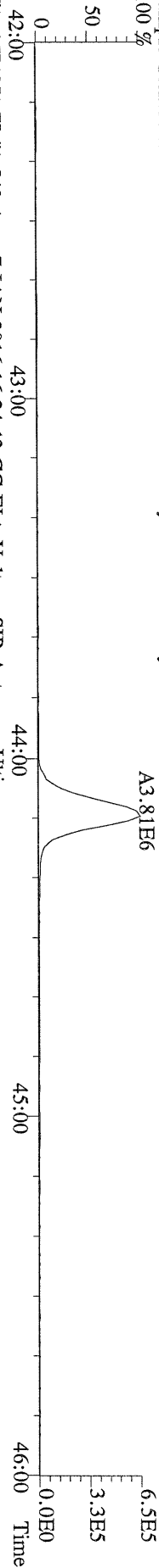
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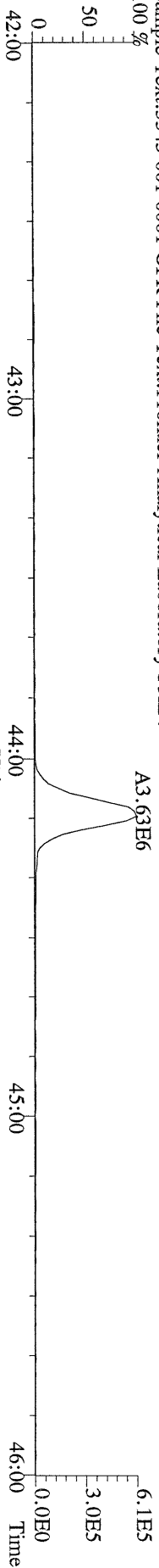
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 100 %



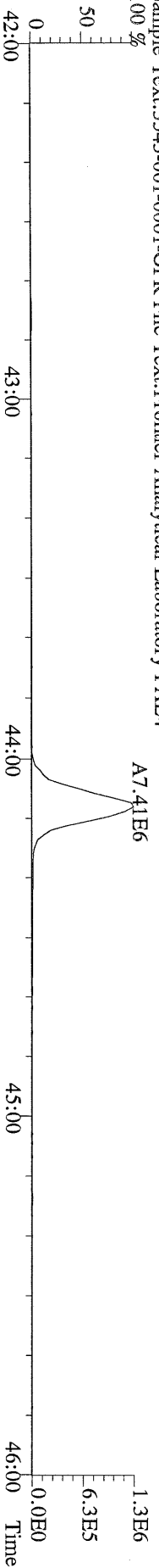
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Sample Text:3543-001-0001-OPR File Text:Frontier Analytical Laboratory FAL4
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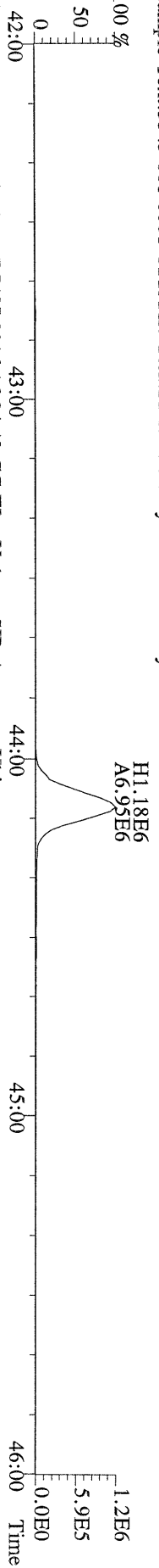
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100 %



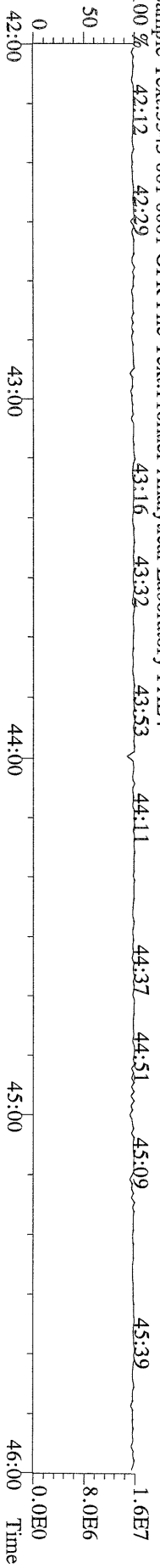
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100 %



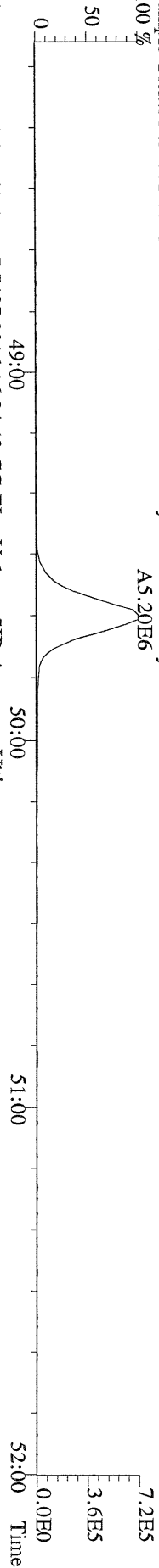
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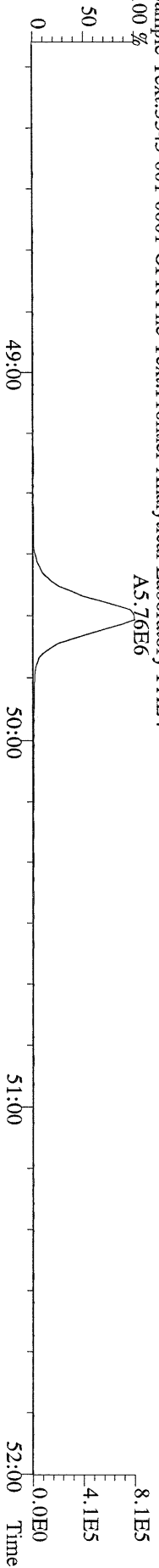
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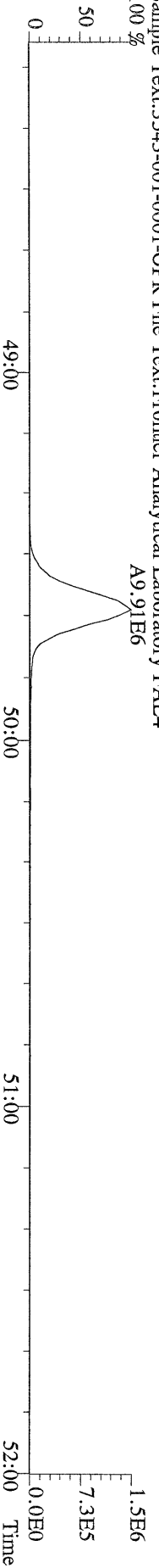
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Sample Text:3543-001-0001-OPR File Text:Frontier Analytical Laboratory FAL4
100 %



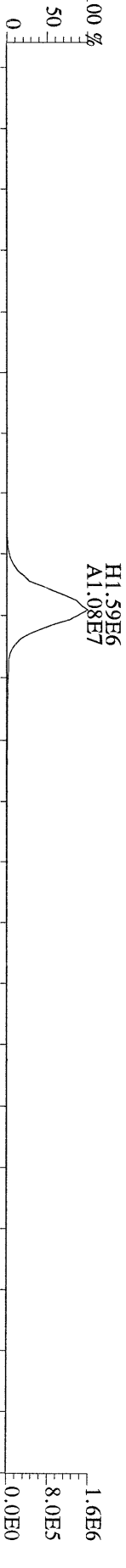
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Sample Text:3543-001-0001-OPR File Text:Frontier Analytical Laboratory FAL4
100 %



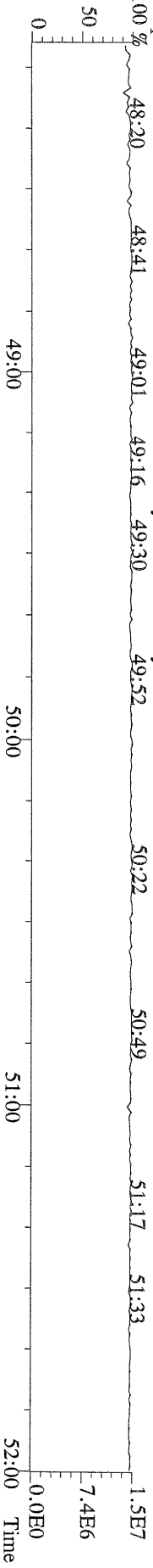
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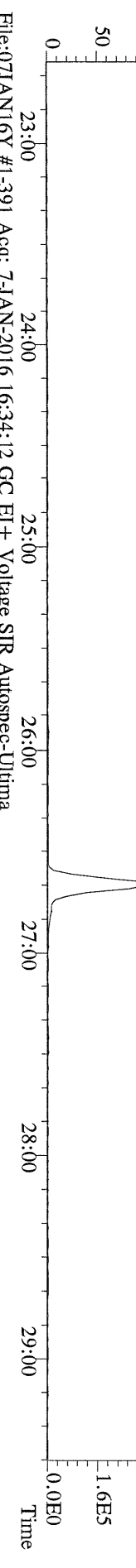
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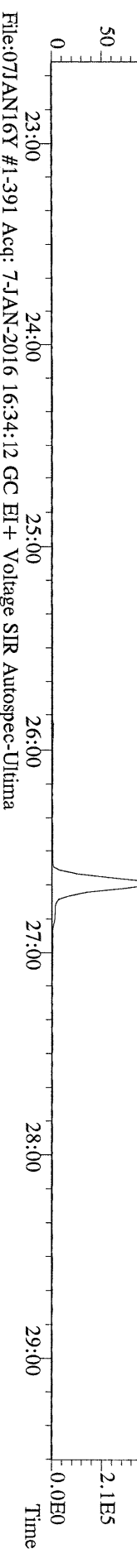
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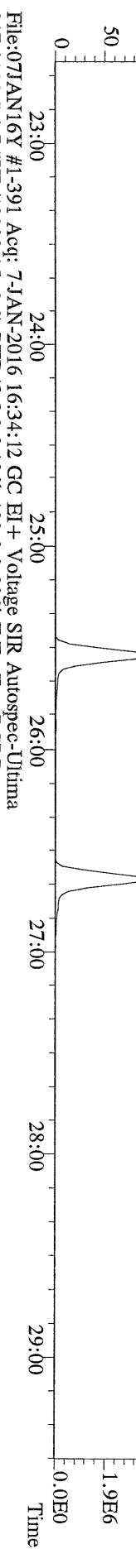
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Sample Text:3543-001-0001-OPR File Text:Frontier Analytical Laboratory FAL4
100 %



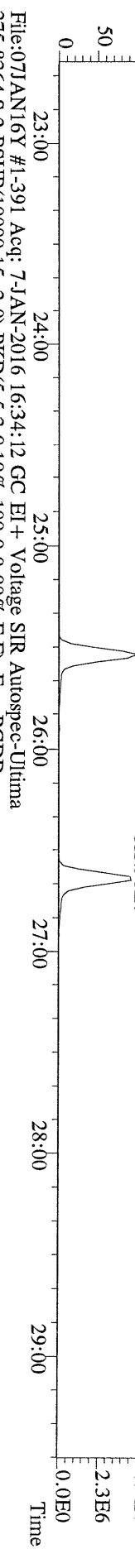
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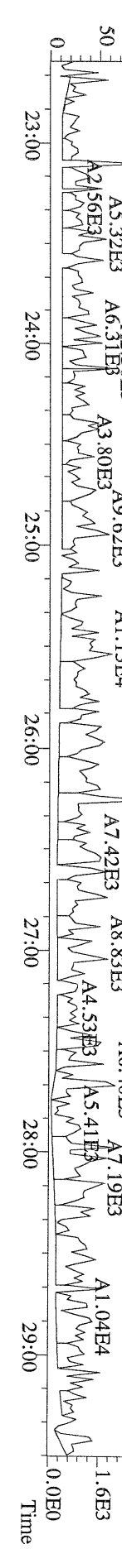
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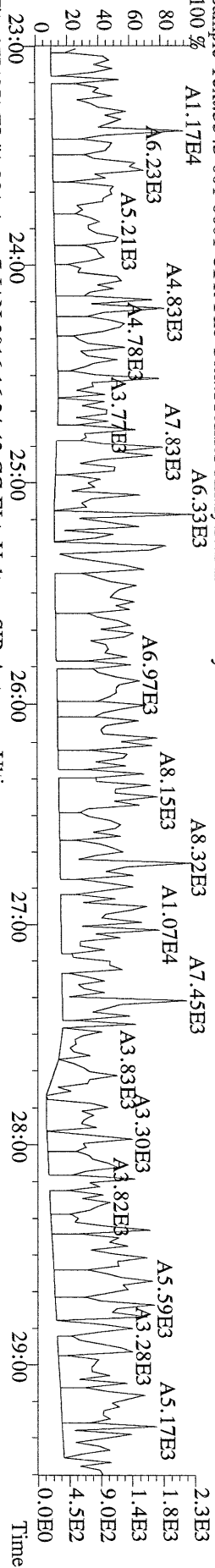
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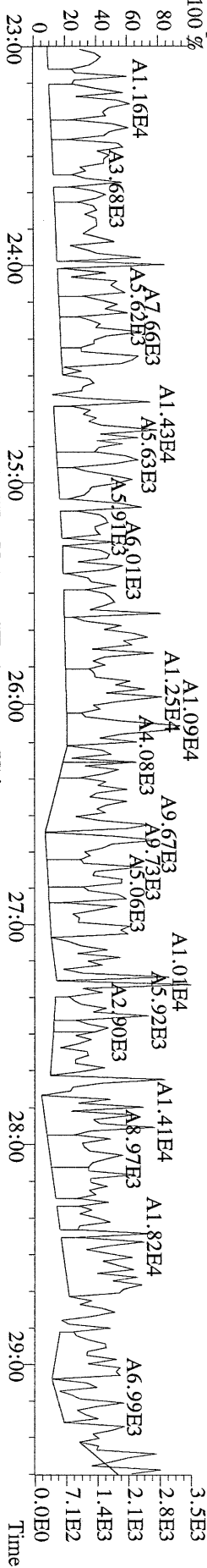
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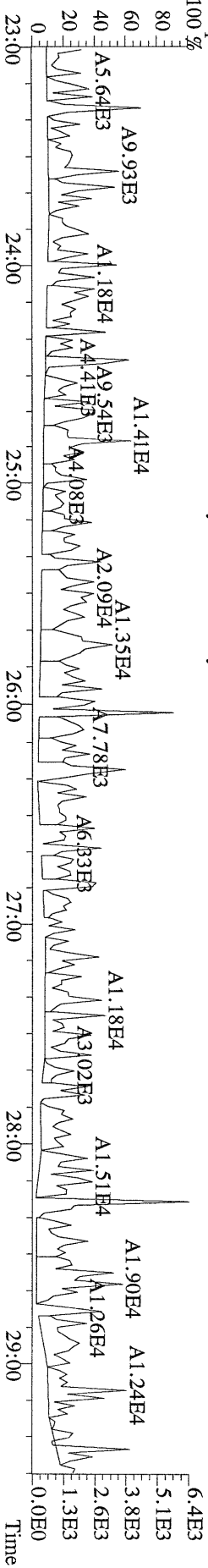
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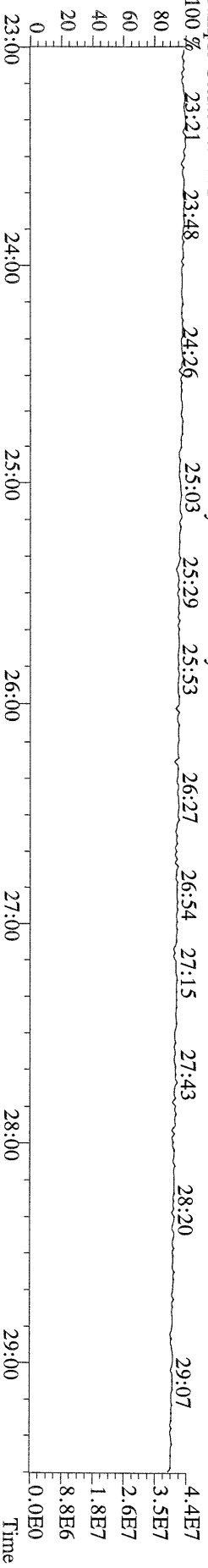
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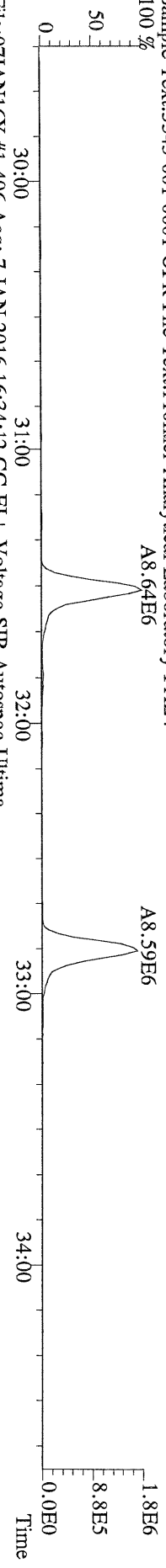
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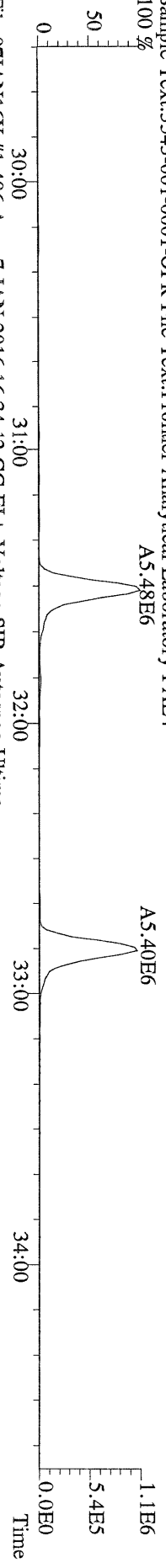
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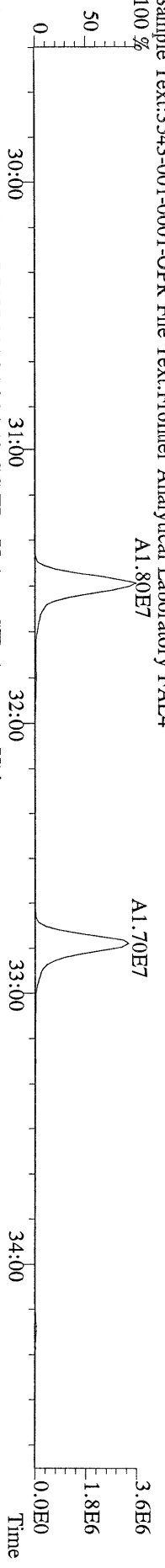
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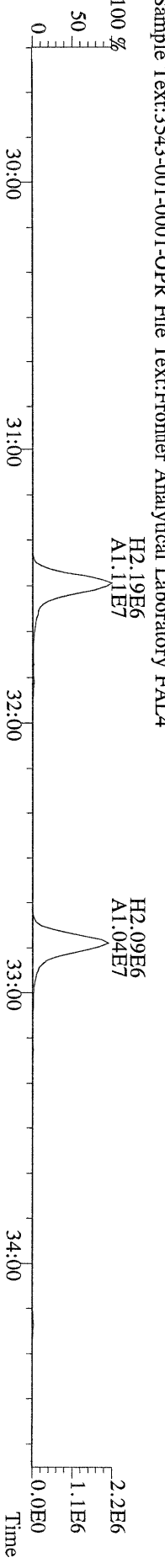
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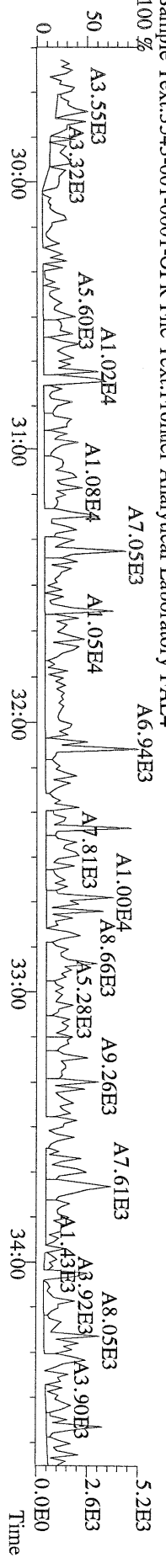
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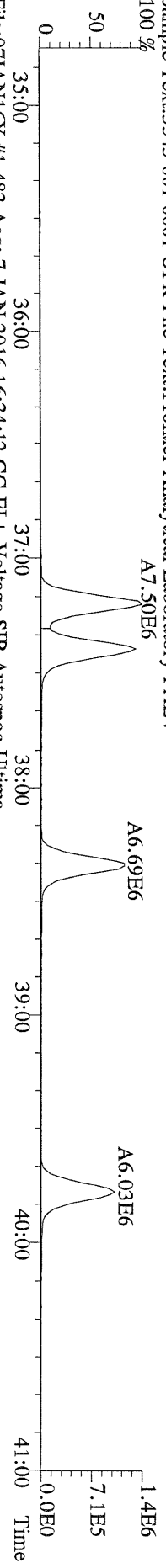
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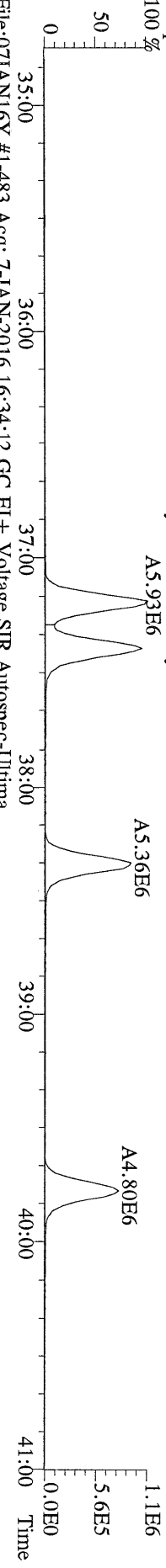
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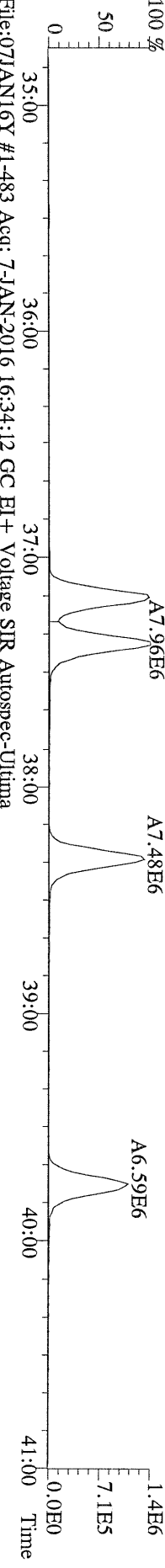
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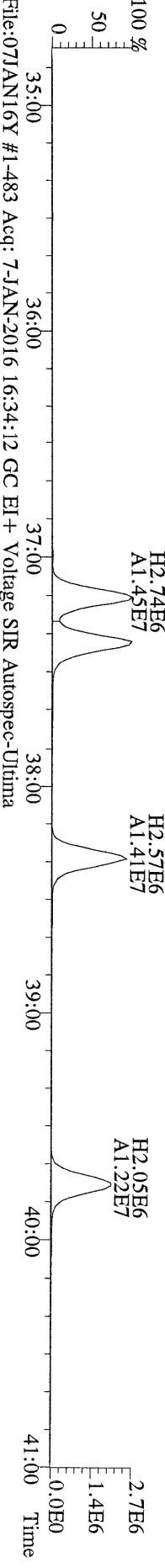
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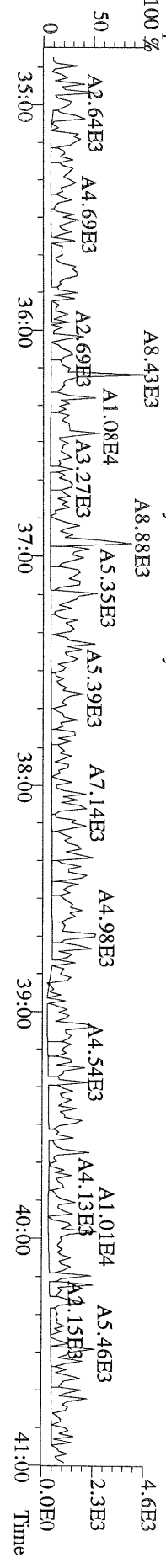
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383.8639 S:2 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
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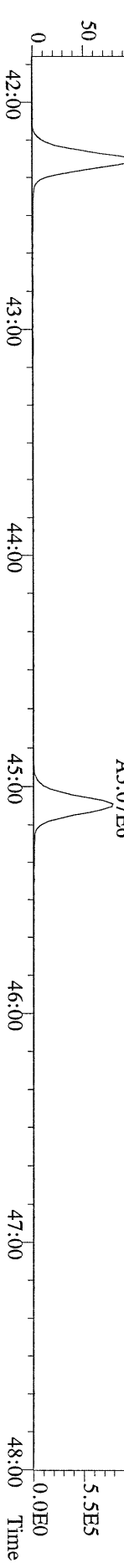
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385.8610 S:2 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:3543-001-0001-OPR File Text:Fronter Analytical Laboratory FAL4



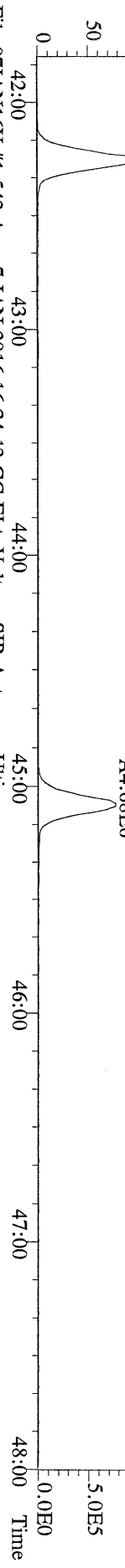
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445.7555 S:2 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:3543-001-0001-OPR File Text:Fronter Analytical Laboratory FAL4



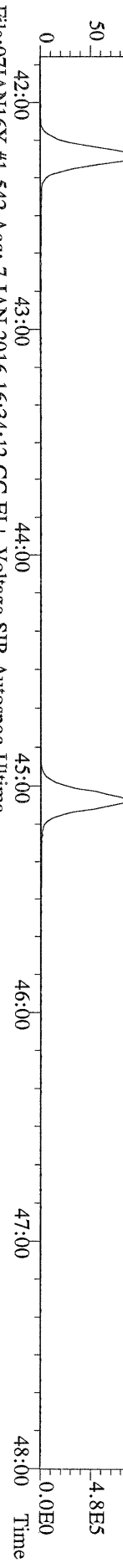
File:071AN16Y #1-542 Acq: 7-JAN-2016 16:34:12 GC EI+ Voltage SIR Autospec-Ultima
 407.7818 S:2 F:4 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,H) Exp:PCDD
 Sample Text:3543-001-0001-OPR File Text:Fronter Analytical Laboratory FAL4
 100 %



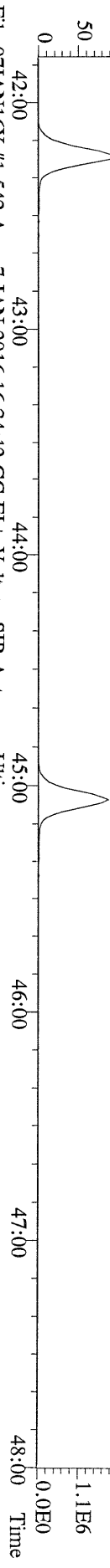
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 409.7788 S:2 F:4 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,H) Exp:PCDD
 Sample Text:3543-001-0001-OPR File Text:Fronter Analytical Laboratory FAL4
 100 %



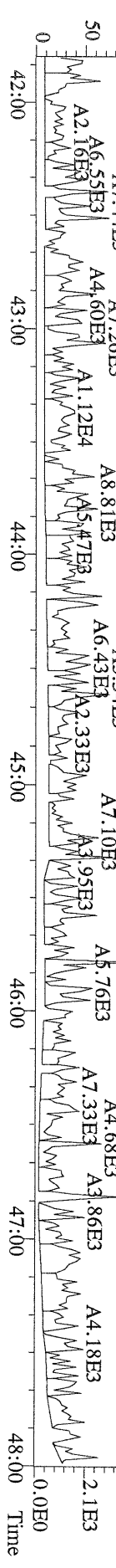
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 417.8253 S:2 F:4 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,H) Exp:PCDD
 Sample Text:3543-001-0001-OPR File Text:Fronter Analytical Laboratory FAL4
 100 %



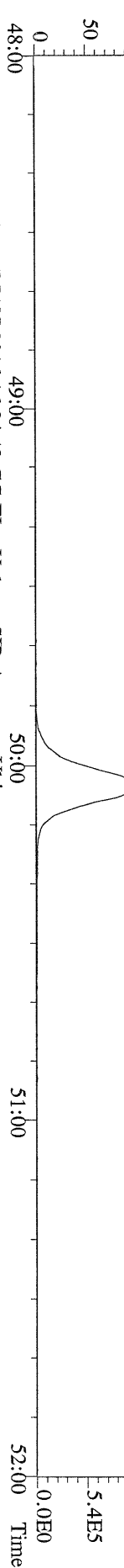
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 419.8220 S:2 F:4 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,H) Exp:PCDD
 Sample Text:3543-001-0001-OPR File Text:Fronter Analytical Laboratory FAL4
 100 %



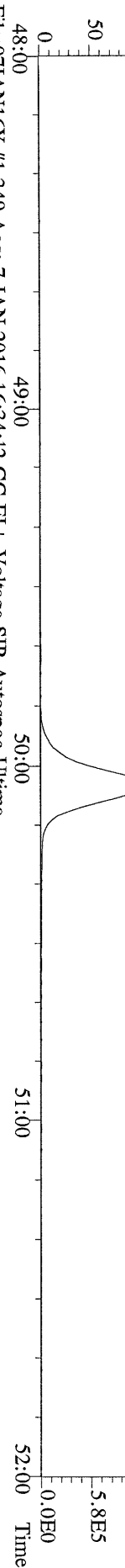
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 479.7165 S:2 F:4 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,H) Exp:PCDD
 Sample Text:3543-001-0001-OPR File Text:Fronter Analytical Laboratory FAL4
 100 %



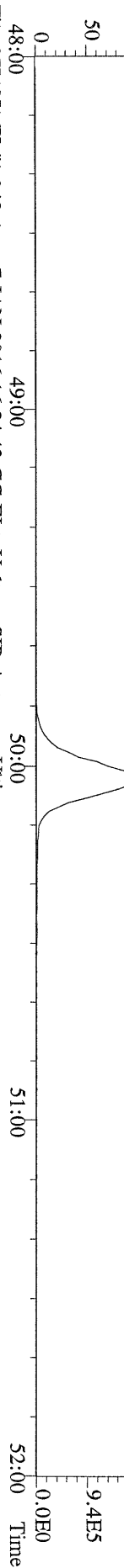
File:07JAN16Y #1-349 Acq: 7-JAN-2016 16:34:12 GC EI+ Voltage SIR Autospec-Ultima
441.7428 S:2 F:5 BSUB(10000,15,3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:3543-001-0001-OPR File Text:Frontier Analytical Laboratory FAL4
100 %



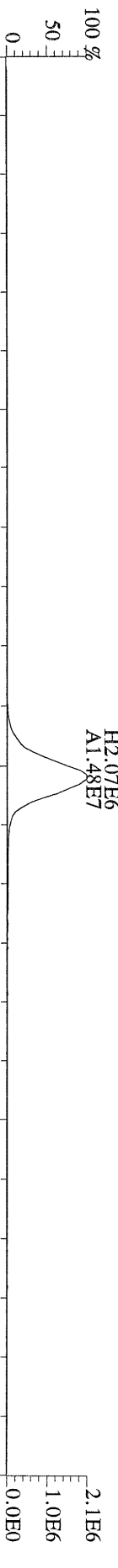
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443.7398 S:2 F:5 BSUB(10000,15,3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:3543-001-0001-OPR File Text:Frontier Analytical Laboratory FAL4
100 %



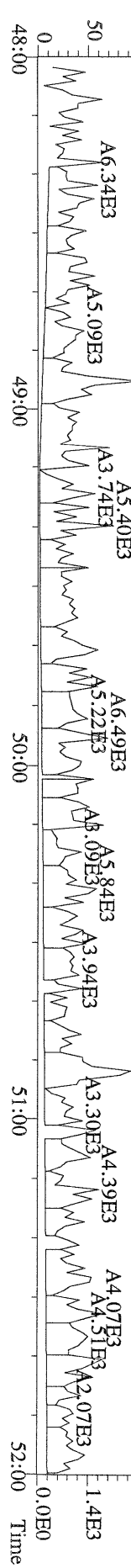
File:07JAN16Y #1-349 Acq: 7-JAN-2016 16:34:12 GC EI+ Voltage SIR Autospec-Ultima
453.7831 S:2 F:5 BSUB(10000,15,3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:3543-001-0001-OPR File Text:Frontier Analytical Laboratory FAL4
100 %



File:07JAN16Y #1-349 Acq: 7-JAN-2016 16:34:12 GC EI+ Voltage SIR Autospec-Ultima
455.7801 S:2 F:5 BSUB(10000,15,3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:3543-001-0001-OPR File Text:Frontier Analytical Laboratory FAL4



File:07JAN16Y #1-349 Acq: 7-JAN-2016 16:34:12 GC EI+ Voltage SIR Autospec-Ultima
513.6775 S:2 F:5 BSUB(10000,15,3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:3543-001-0001-OPR File Text:Frontier Analytical Laboratory FAL4
100 %



Totals class: Total Tetra-Dioxins

Entry #: 38

Run: 9

File: 08JAN16Z

S: 2 I: 1 F: 1

Acquired: 8-JAN-16 11:13:44

Total Concentration: 1.05

Unnamed Concentration: 1.05

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
24:23	5.17e+04	7.27e+04	0.71 y	1.24e+05	1.05	

Totals class: Total Penta-Dioxins

Entry #: 39

Run: 9

File: 08JAN16Z

S: 2 I: 1 F: 2

Acquired: 8-JAN-16 11:13:44

Total Concentration: 24.0

Unnamed Concentration: 20.6

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
30:15	1.56e+05	1.04e+05	1.51 y	2.60e+05	3.74	
31:29	2.15e+05	1.39e+05	1.55 y	3.54e+05	5.10	
31:43	7.22e+04	4.08e+04	1.77 y	1.13e+05	1.63	
31:50	9.86e+04	6.27e+04	1.57 y	1.61e+05	2.32	
32:08	1.04e+05	6.40e+04	1.63 y	1.68e+05	2.42	
32:38	1.37e+05	8.33e+04	1.64 y	2.20e+05	3.17	
33:14	1.53e+05	8.83e+04	1.73 y	2.41e+05	3.47	1,2,3,7,8-PeCDD
33:20	4.55e+04	3.43e+04	1.33 y	7.99e+04	1.15	
33:49	4.56e+04	2.57e+04	1.77 y	7.14e+04	1.03	

Totals class: Total Hexa-Dioxins

Entry #: 40

Run: 9

File: 08JAN16Z

S: 2 I: 1 F: 3

Acquired: 8-JAN-16 11:13:44

Total Concentration: 3700

Unnamed Concentration: 1840

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
36:06	1.47e+07	1.18e+07	1.25 y	2.65e+07	380	
37:02	2.79e+06	2.26e+06	1.23 y	5.06e+06	72.5	
37:28	5.21e+07	4.14e+07	1.26 y	9.35e+07	1340	
37:39	9.84e+05	7.81e+05	1.26 y	1.76e+06	25.3	
38:34	1.25e+06	1.01e+06	1.24 y	2.26e+06	34.3	1,2,3,4,7,8-HxCDD
38:44	6.54e+07	5.22e+07	1.25 y	1.18e+08	1730	1,2,3,6,7,8-HxCDD
39:02	8.76e+05	6.16e+05	1.42 y	1.49e+06	21.4	
39:11	4.20e+06	3.26e+06	1.29 y	7.47e+06	99.3	1,2,3,7,8,9-HxCDD

Totals class: Total Hepta-Dioxins

Entry #: 41

Run: 9

File: 08JAN16Z

S: 2 I: 1 F: 4

Acquired: 8-JAN-16 11:13:44

Total Concentration: 51400

Unnamed Concentration: 16400

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
42:48	6.55e+08	6.22e+08	1.05 y	1.28e+09	16400	
44:11	1.39e+09	1.32e+09	1.05 y	2.71e+09	34900	1,2,3,4,6,7,8-HpCDD

Totals class: Total Tetra-Furans

Entry #: 42

Run: 9

File: 08JAN16Z

S: 2 I: 1 F: 1

Acquired: 8-JAN-16 11:13:44

Total Concentration: 117

Unnamed Concentration: 107

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
23:04	4.16e+04	6.27e+04	0.66 y	1.04e+05	0.723	
23:24	2.68e+05	3.34e+05	0.80 y	6.02e+05	4.17	
23:46	7.38e+04	9.14e+04	0.81 y	1.65e+05	1.15	
24:06	1.95e+06	2.45e+06	0.80 y	4.40e+06	30.5	
24:25	2.08e+06	2.64e+06	0.79 y	4.72e+06	32.7	
24:43	1.65e+05	2.19e+05	0.76 y	3.84e+05	2.66	
24:57	6.58e+04	8.75e+04	0.75 y	1.53e+05	1.06	
25:18	4.51e+04	6.50e+04	0.69 y	1.10e+05	0.763	
25:33	7.04e+05	8.91e+05	0.79 y	1.60e+06	11.1	
25:45	3.39e+04	4.97e+04	0.68 y	8.37e+04	0.580	
25:55	4.65e+05	6.04e+05	0.77 y	1.07e+06	7.41	
26:18	7.86e+04	1.03e+05	0.77 y	1.81e+05	1.26	
26:28	1.47e+05	2.02e+05	0.73 y	3.49e+05	2.42	
26:34	1.71e+05	2.24e+05	0.77 y	3.95e+05	2.74	
26:39	5.84e+05	7.62e+05	0.77 y	1.35e+06	9.33	2,3,7,8-TCDF
26:59	4.03e+04	4.79e+04	0.84 y	8.81e+04	0.611	
27:51	1.62e+05	2.05e+05	0.79 y	3.67e+05	2.54	
28:04	4.63e+04	6.24e+04	0.74 y	1.09e+05	0.753	
28:27	1.88e+05	2.54e+05	0.74 y	4.42e+05	3.06	
28:35	7.04e+04	1.04e+05	0.68 y	1.74e+05	1.21	

Totals class: 1st Fn. Tot Penta-Furans Entry #: 43

Run: 9 File: 08JAN16Z S: 2 I: 1 F: 1
Acquired: 8-JAN-16 11:13:44

Total Concentration: 320 Unnamed Concentration: 320

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
28:27	2.17e+07	1.40e+07	1.55 y	3.58e+07	320	

Totals class: Total Penta-Furans

Entry #: 44

Run: 9 File: 08JAN16Z S: 2 I: 1 F: 2
Acquired: 8-JAN-16 11:13:44

Total Concentration: 241

Unnamed Concentration: 181

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
30:05	3.34e+05	2.24e+05	1.49 y	5.58e+05	4.99	
30:14	4.62e+06	3.03e+06	1.53 y	7.65e+06	68.5	
30:44	6.43e+04	4.43e+04	1.45 y	1.09e+05	0.972	
30:57	1.59e+06	1.05e+06	1.52 y	2.63e+06	23.6	
31:15	9.63e+05	6.49e+05	1.48 y	1.61e+06	14.4	
31:30	1.96e+06	1.29e+06	1.52 y	3.25e+06	28.6	1,2,3,7,8-PeCDF
31:45	3.86e+05	2.37e+05	1.63 y	6.24e+05	5.59	
31:51	1.57e+06	1.01e+06	1.55 y	2.59e+06	23.2	
32:04	1.95e+05	1.29e+05	1.51 y	3.25e+05	2.91	
32:41	7.14e+04	4.12e+04	1.73 y	1.13e+05	1.01	
32:51	2.20e+06	1.27e+06	1.73 y	3.47e+06	31.6	2,3,4,7,8-PeCDF
32:53	1.85e+06	1.27e+06	1.46 y	3.13e+06	28.0	
34:06	1.87e+05	1.15e+05	1.63 y	3.02e+05	2.70	
34:14	3.25e+05	2.36e+05	1.38 y	5.61e+05	5.02	

Totals class: Total Hexa-Furans

Entry #: 45

Run: 9

File: 08JAN16Z

S: 2 I: 1 F: 3

Acquired: 8-JAN-16 11:13:44

Total Concentration: 20200

Unnamed Concentration: 19400

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
35:14	2.67e+07	2.12e+07	1.26 y	4.79e+07	461	
35:30	2.35e+08	1.87e+08	1.26 y	4.22e+08	4060	
36:06	2.86e+06	2.31e+06	1.24 y	5.18e+06	49.8	
36:26	8.53e+08	6.80e+08	1.25 y	1.53e+09	14700	
37:02	9.23e+05	7.20e+05	1.28 y	1.64e+06	15.8	
37:11	1.33e+07	1.08e+07	1.23 y	2.42e+07	212	1,2,3,4,7,8-HxCDF
37:23	8.07e+06	6.49e+06	1.24 y	1.46e+07	133	1,2,3,6,7,8-HxCDF
37:51	1.32e+06	1.06e+06	1.25 y	2.37e+06	22.8	
38:04	1.99e+06	1.58e+06	1.26 y	3.57e+06	34.3	
38:20	2.01e+07	1.60e+07	1.26 y	3.61e+07	363	2,3,4,6,7,8-HxCDF
39:49	3.92e+06	3.13e+06	1.25 y	7.05e+06	75.1	1,2,3,7,8,9-HxCDF

Totals class: Total Hepta-Furans

Entry #: 46

Run: 9

File: 08JAN16Z

S: 2 I: 1 F: 4

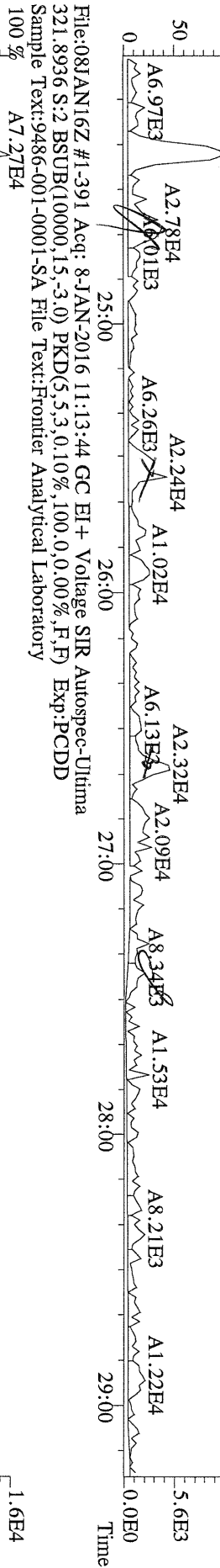
Acquired: 8-JAN-16 11:13:44

Total Concentration: 75400

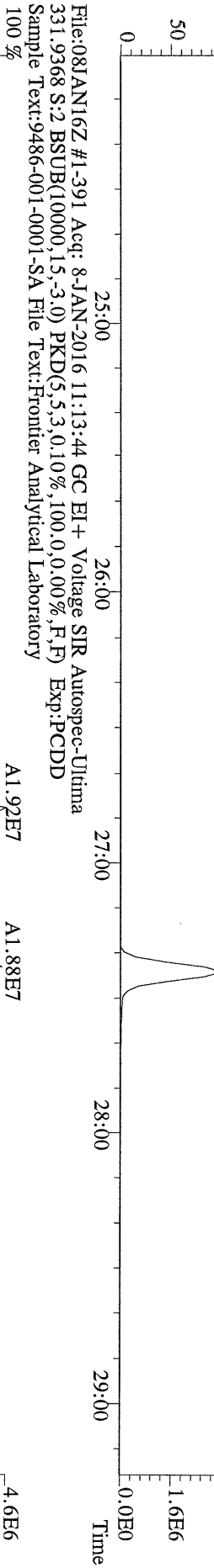
Unnamed Concentration: 59100

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
42:16	8.29e+08	7.97e+08	1.04 y	1.63e+09	15500	1,2,3,4,6,7,8-HpCDF
42:48	8.47e+06	8.92e+06	0.95 y	1.74e+07	180	
43:08	2.90e+09	2.78e+09	1.05 y	5.68e+09	58900	
45:05	3.72e+07	3.57e+07	1.04 y	7.29e+07	834	1,2,3,4,7,8,9-HpCDF

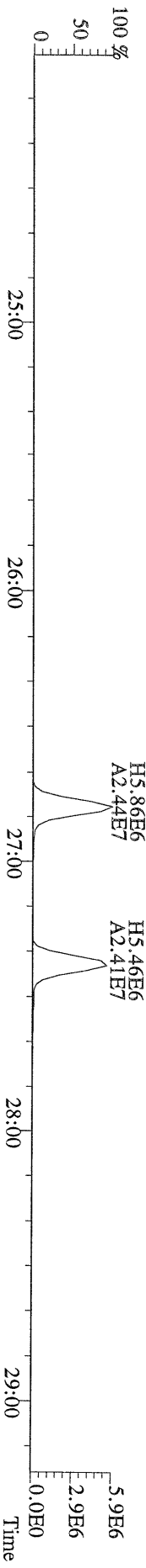
File:08JAN16Z #1-391 Acq: 8-JAN-2016 11:13:44 GC EI+ Voltage SIR Autospec-Ultima
319.8965 S.2: BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory
100 % A5.17E4



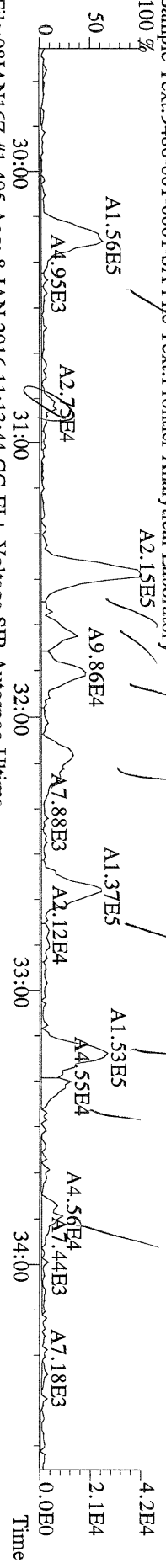
File:08JAN16Z #1-391 Acq: 8-JAN-2016 11:13:44 GC EI+ Voltage SIR Autospec-Ultima
327.8847 S.2: BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory
100 % A1.42E7



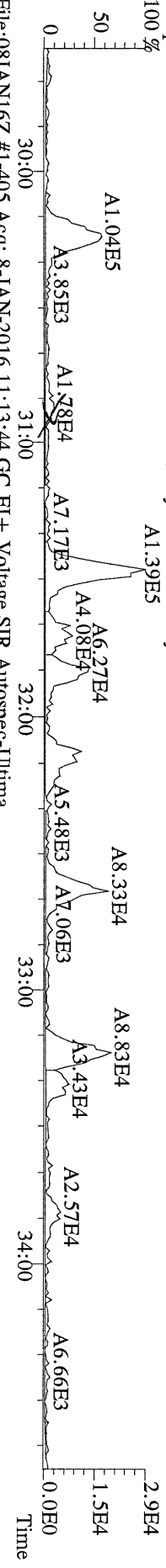
File:08JAN16Z #1-391 Acq: 8-JAN-2016 11:13:44 GC EI+ Voltage SIR Autospec-Ultima
333.9339 S.2: BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory
100 % H5.86E6
A2.44E7
H5.46E6
A2.41E7
5.99E6
2.99E6
0.0E0



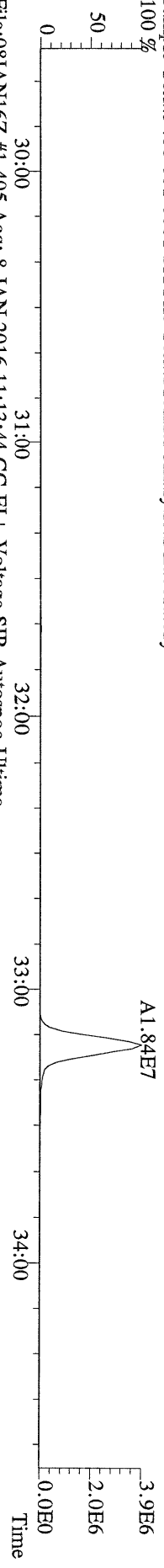
File:08JAN16Z #1-405 Acq: 8-JAN-2016 11:13:44 GC EI+ Voltage SIR Autospec-Ultima
 355.8546 S:2 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory



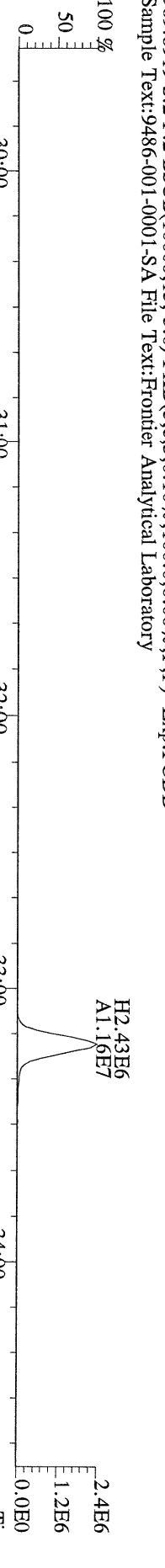
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 357.8517 S:2 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory



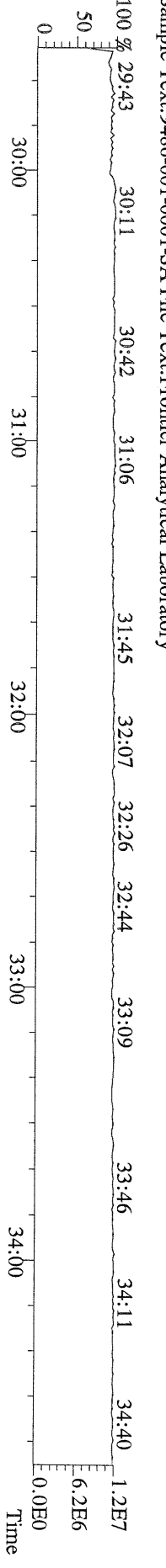
File:08JAN16Z #1-405 Acq: 8-JAN-2016 11:13:44 GC EI+ Voltage SIR Autospec-Ultima
 367.8949 S:2 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory



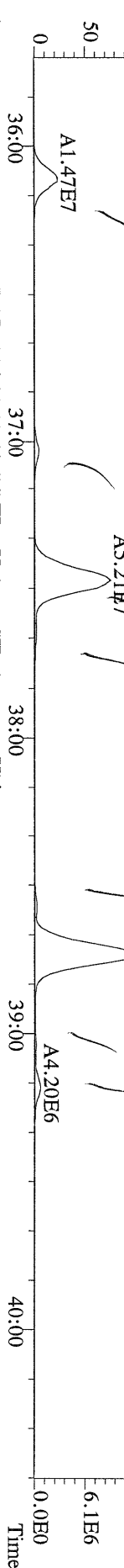
File:08JAN16Z #1-405 Acq: 8-JAN-2016 11:13:44 GC EI+ Voltage SIR Autospec-Ultima
 369.8919 S:2 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory



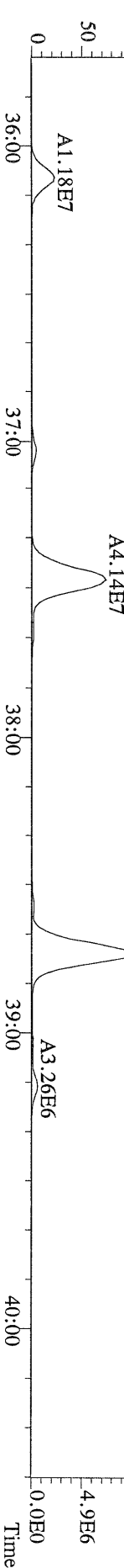
File:08JAN16Z #1-405 Acq: 8-JAN-2016 11:13:44 GC EI+ Voltage SIR Autospec-Ultima
 366.9792 S:2 F:2 Exp:PCDD
 Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory



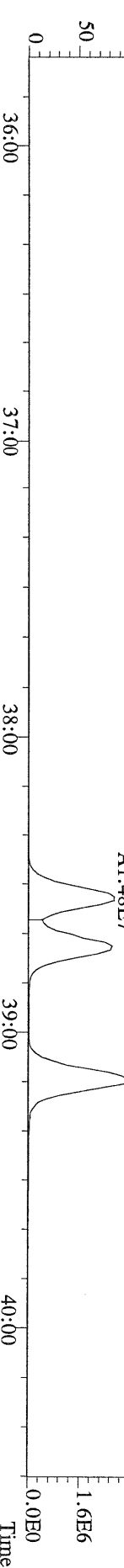
File:08JAN16Z #1-484 Acq: 8-JAN-2016 11:13:44 GC EI+ Voltage SIR Autospec-Ultima
 389.8156 S:2 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory FALA
 100 %



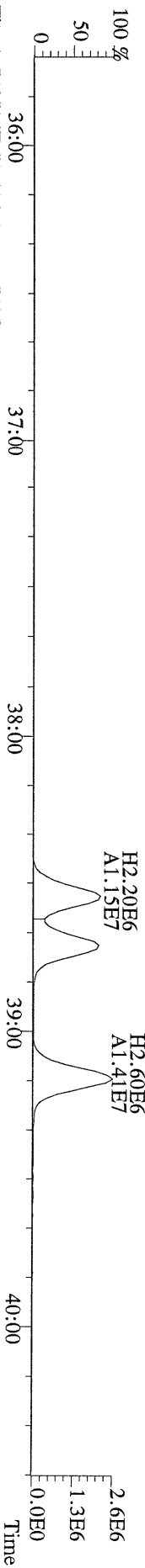
File:08JAN16Z #1-484 Acq: 8-JAN-2016 11:13:44 GC EI+ Voltage SIR Autospec-Ultima
 391.8127 S:2 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory FALA
 100 %



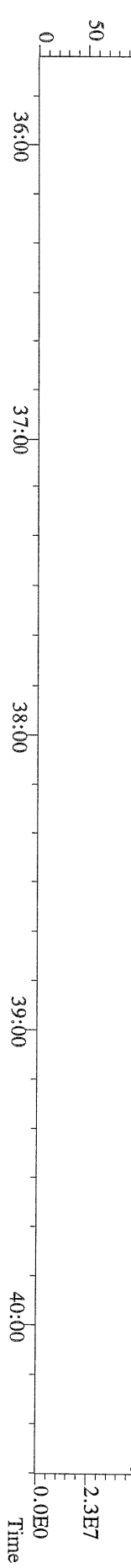
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 401.8559 S:2 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory FALA
 100 %



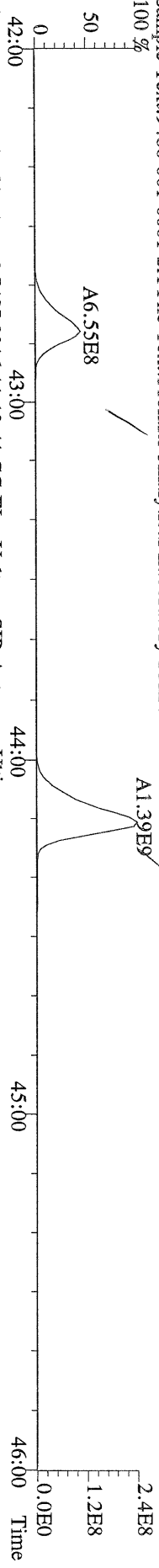
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 403.8530 S:2 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory FALA



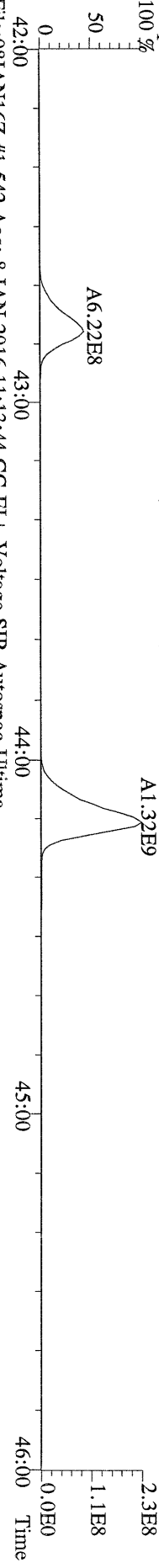
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 380.9760 S:2 F:3 Exp:PCDD
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 100 %



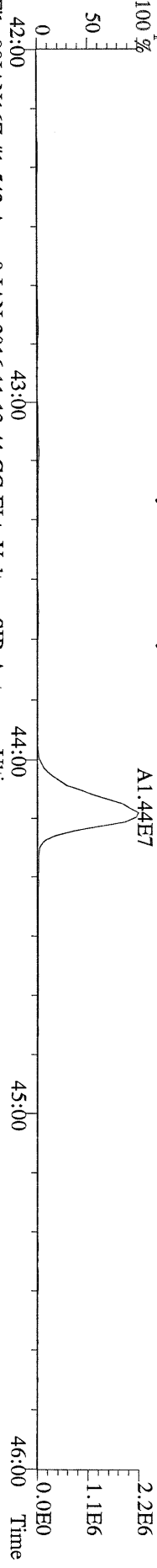
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423.7767 S:2 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory FAL4
100 %



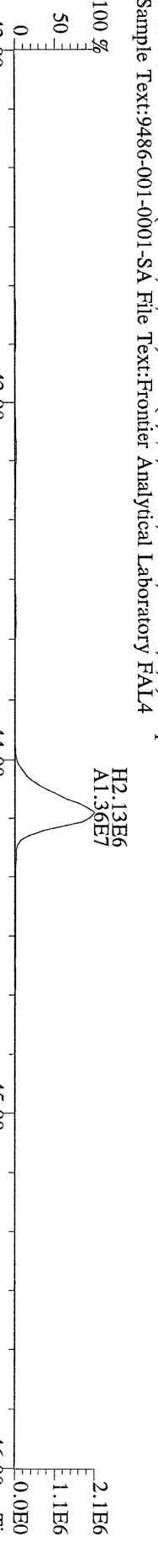
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425.7737 S:2 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
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100 %



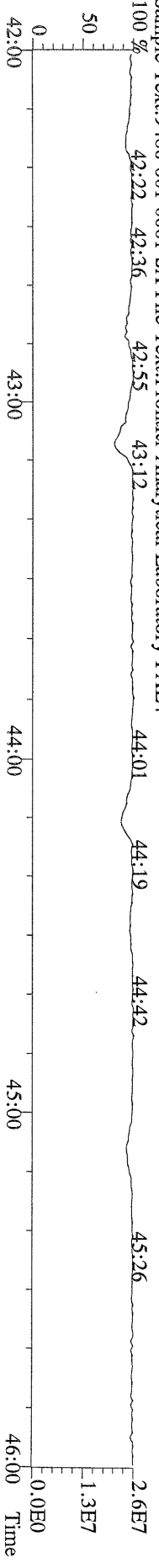
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435.8169 S:2 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory FAL4
100 %



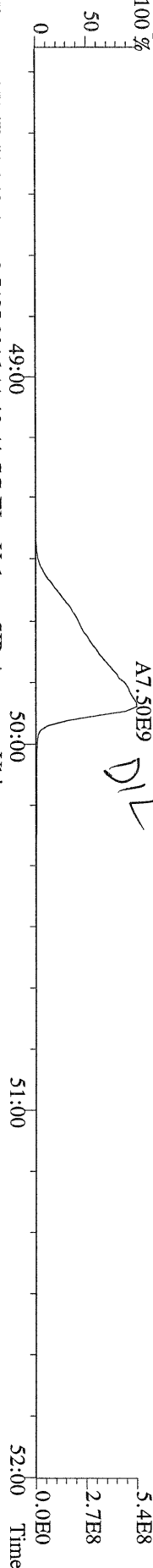
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Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory FAL4



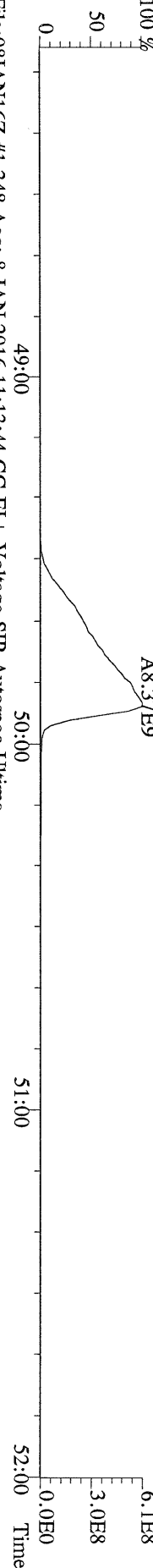
File:08JAN16Z #1-542 Acq: 8-JAN-2016 11:13:44 GC EI+ Voltage SIR Autospec-Utima
430.9728 S:2 F:4 Exp:PCDD
Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory FAL4
100 %



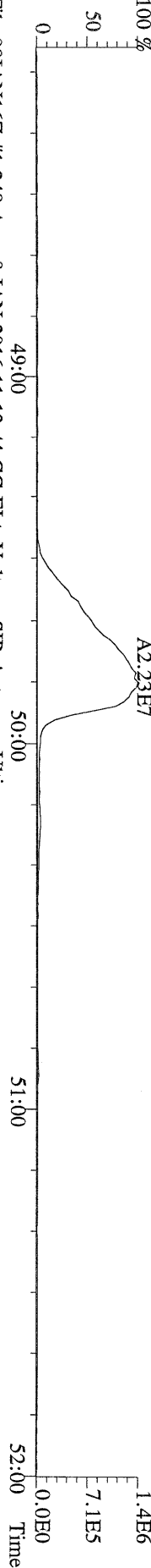
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457.7377 S:2 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,100,0,0,00%,F,F) Exp:PCDD
Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory PAL4
100 % A7.50E9



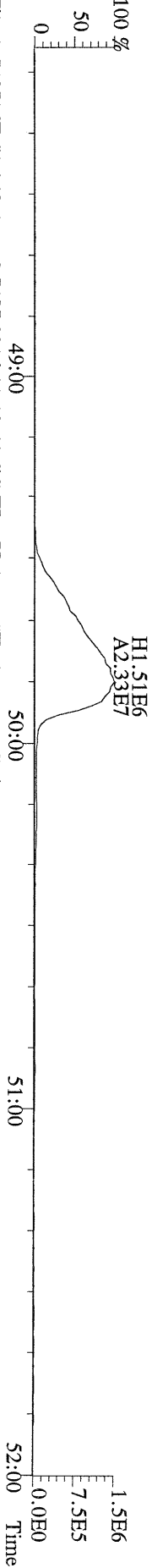
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459.7348 S:2 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,100,0,0,00%,F,F) Exp:PCDD
Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory PAL4
100 % A8.37E9



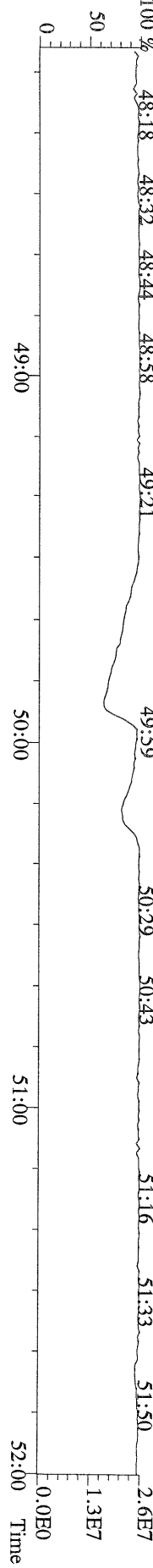
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469.7780 S:2 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,100,0,0,00%,F,F) Exp:PCDD
Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory PAL4
100 % A2.23E7



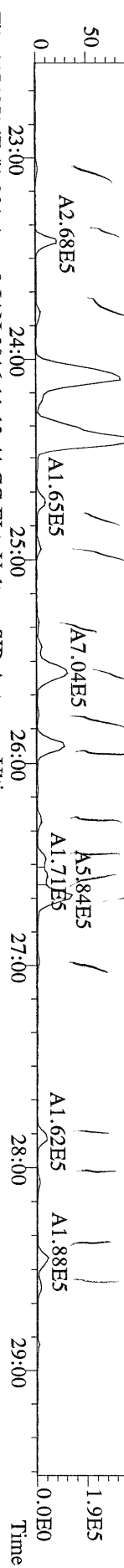
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471.7750 S:2 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,100,0,0,00%,F,F) Exp:PCDD
Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory PAL4



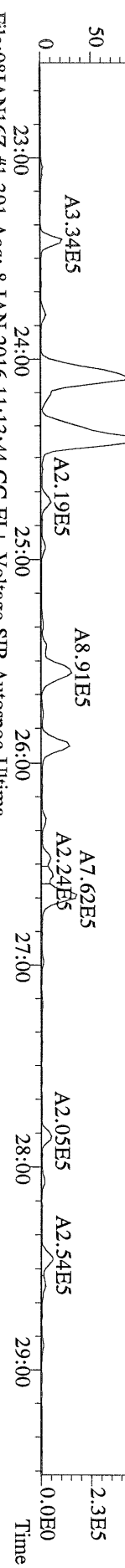
File:08JAN16Z #1-348 Acq: 8-JAN-2016 11:13:44 GC EI+ Voltage SIR Autospec-Ultima
454.9728 S:2 F:5 Exp:PCDD
Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory PAL4
100 %



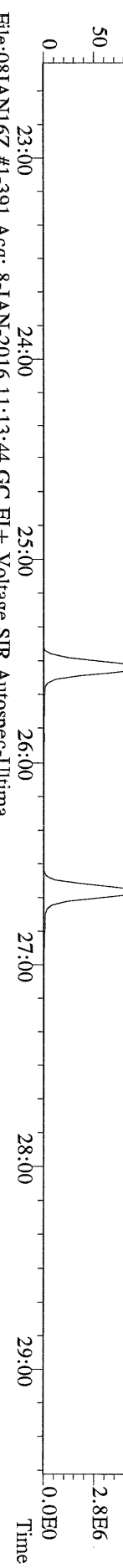
File:08JAN16Z #1-391 Acq: 8-JAN-2016 11:13:44 GC EI+ Voltage SIR Autospec-Utima
303.9016 S.2: BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory



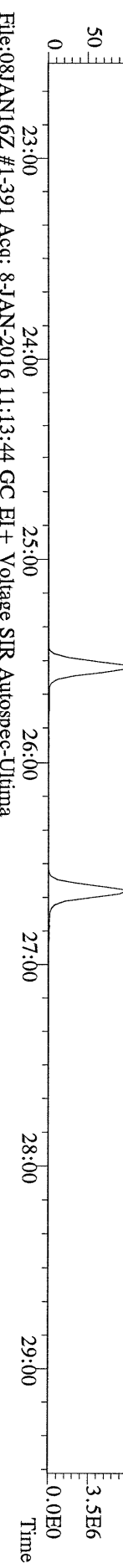
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305.8987 S.2: BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory



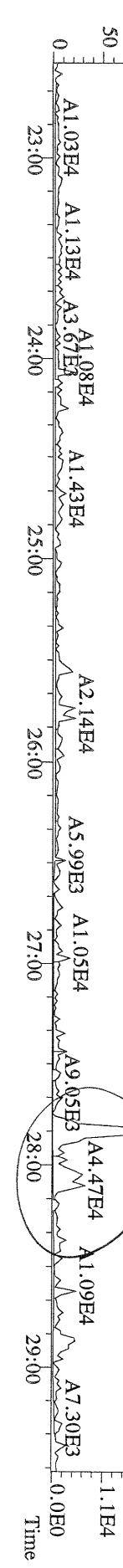
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315.9419 S.2: BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory



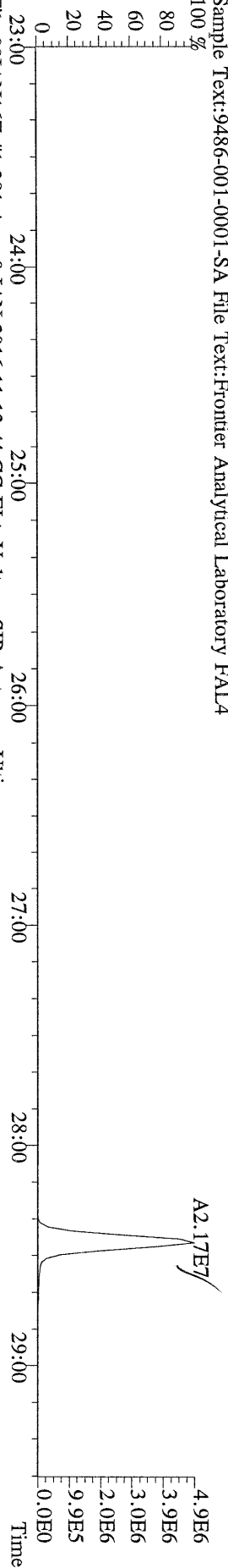
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317.9389 S.2: BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory



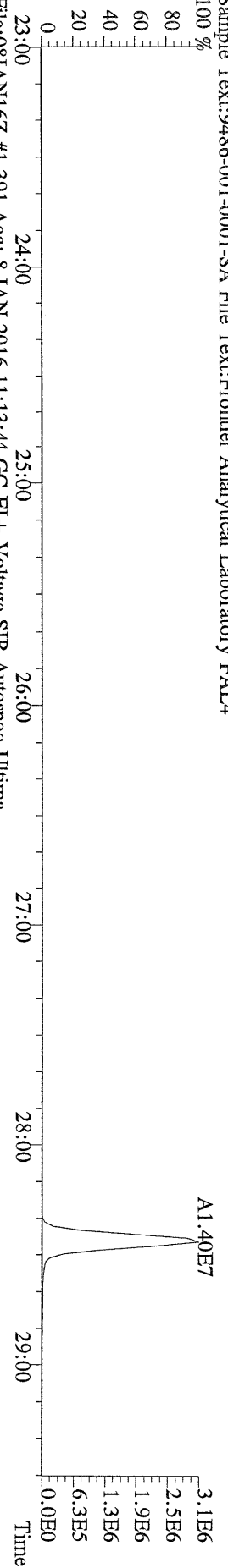
File:08JAN16Z #1-391 Acq: 8-JAN-2016 11:13:44 GC EI+ Voltage SIR Autospec-Utima
375.8364 S.2: BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory



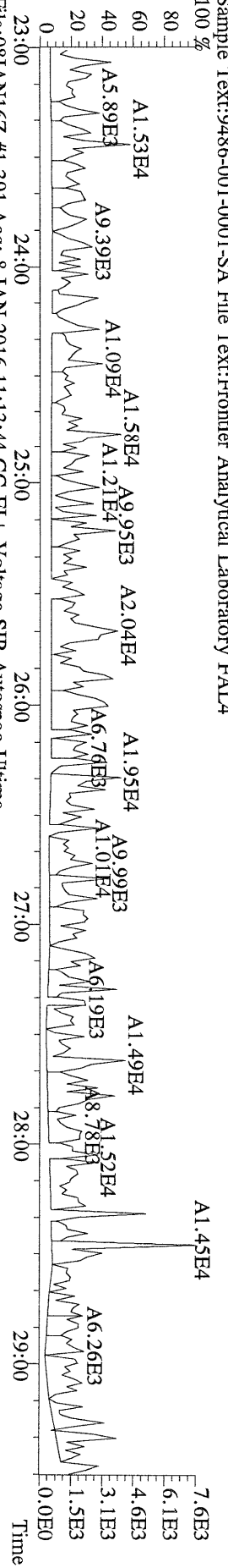
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 339.8597 S:2 BSUB(10000,15,-3,0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
 Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory FAL4
 100 %



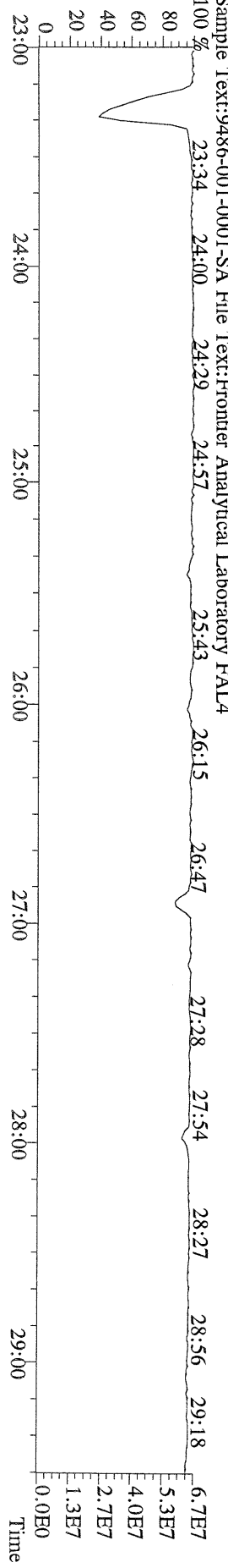
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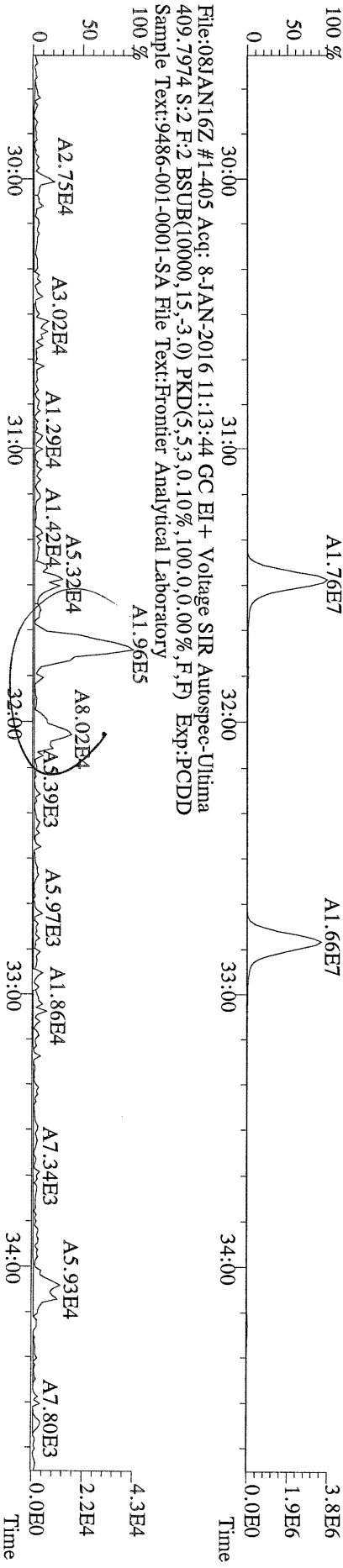
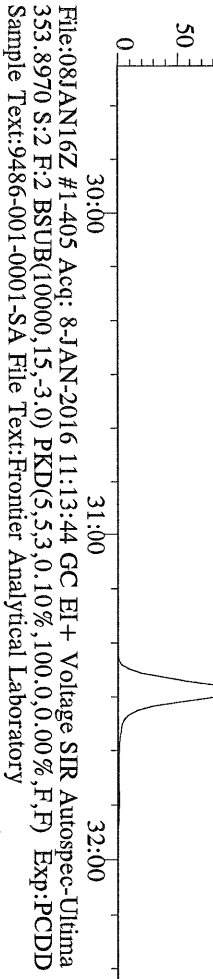
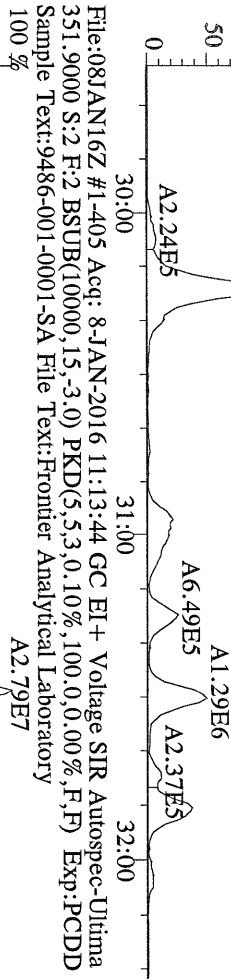
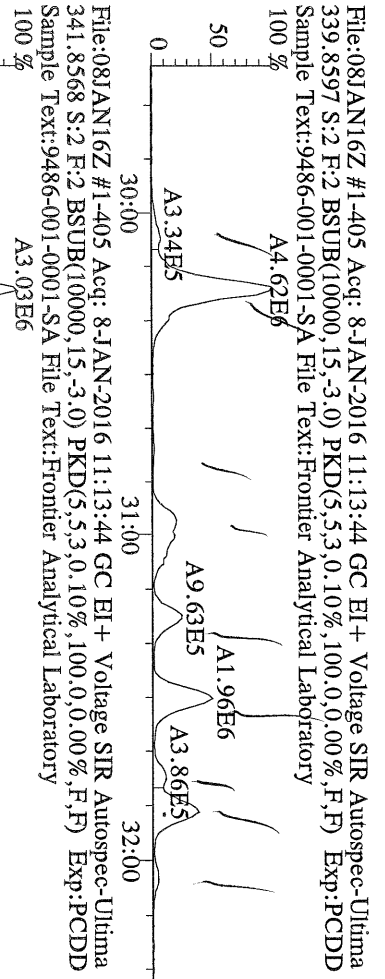


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 409.7974 S:2 BSUB(10000,15,-3,0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
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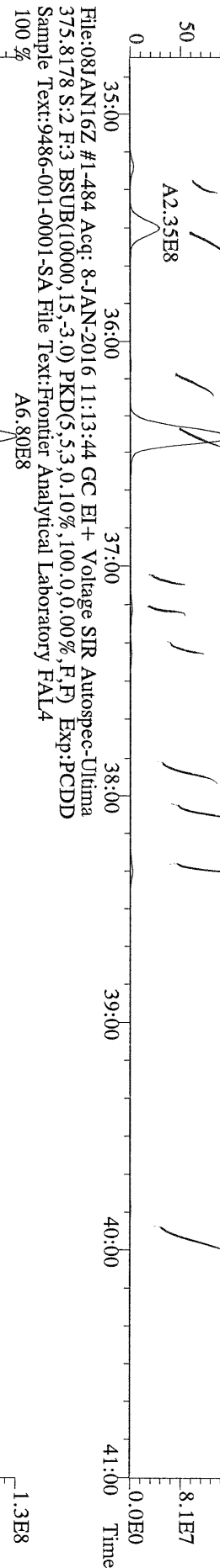


File:08JAN16Z #1-391 Acq: 8-JAN-2016 11:13:44 GC EI+ Voltage SIR Autospec-Utima
 330.9792 S:2 Exp:PCDD
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 100 %

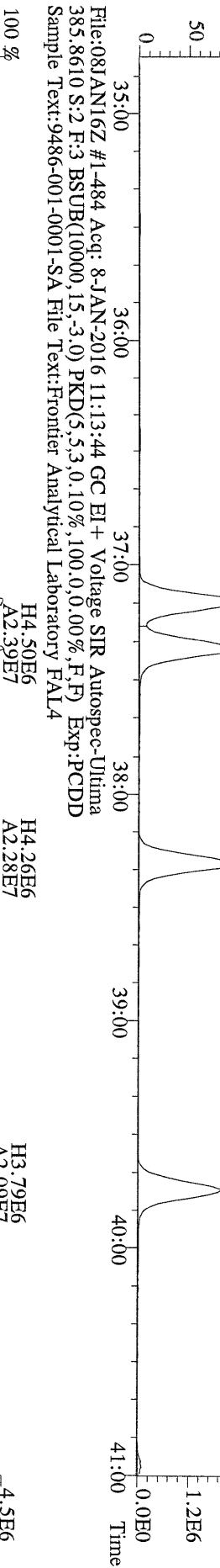




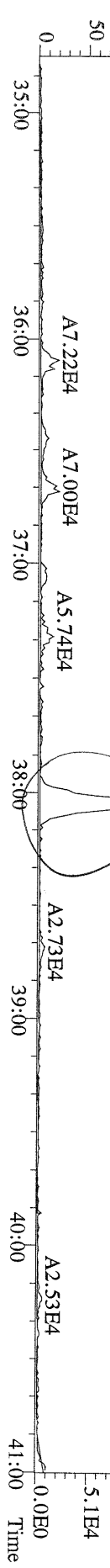
File:08JAN16Z #1-484 Acq: 8-JAN-2016 11:13:44 GC EI+ Voltage SIR Autospec-Ultima
373.8207 S:2 F:3 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory FAL4



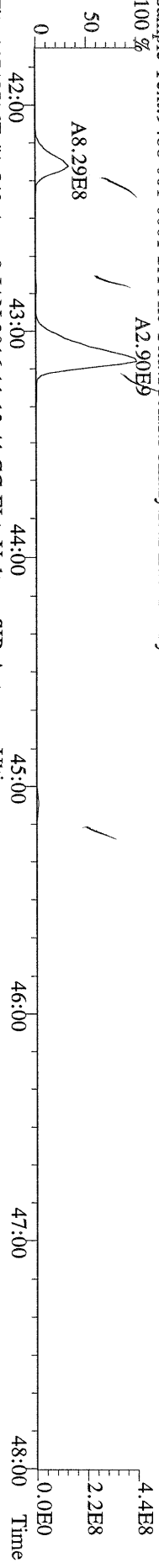
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383.8639 S:2 F:3 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory FAL4



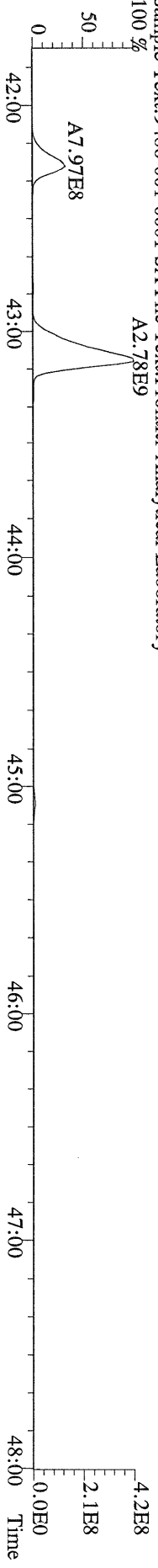
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445.7555 S:2 F:3 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory FAL4



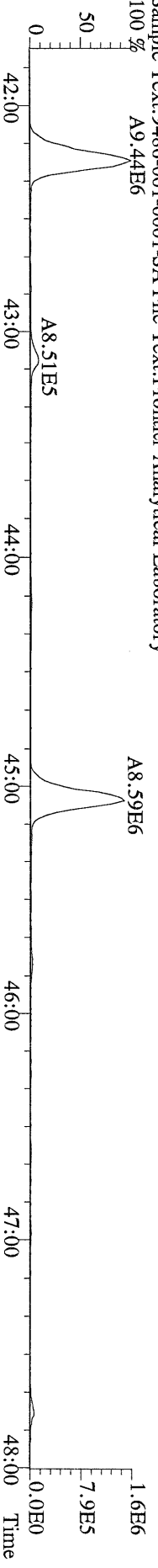
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407.7818 S:2 F:4 BSUB(10000,15,-3.0) Exp:PCDD
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100 %



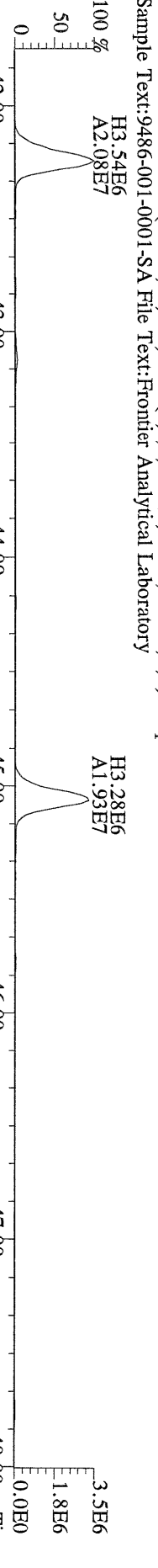
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409.7788 S:2 F:4 BSUB(10000,15,-3.0) Exp:PCDD
Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory
100 %



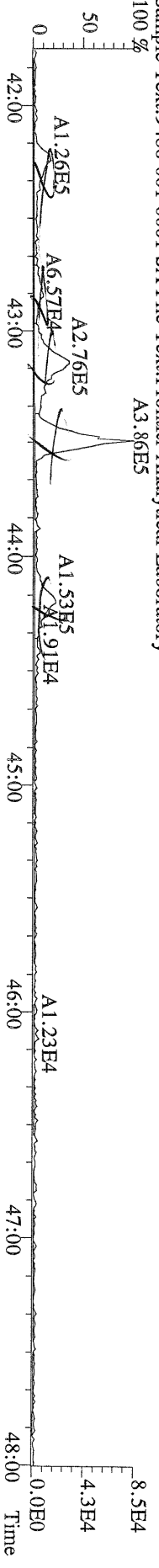
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417.8253 S:2 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory
100 %



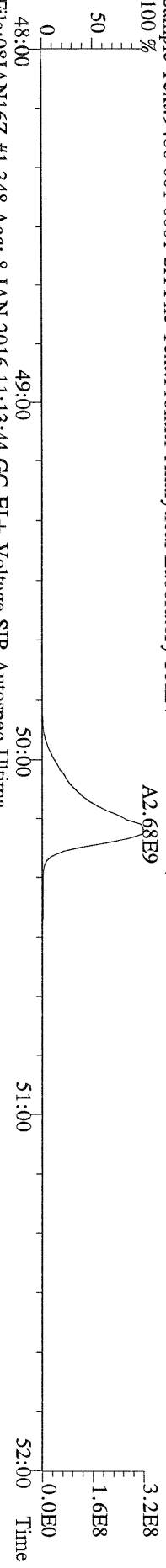
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419.8220 S:2 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory
100 %



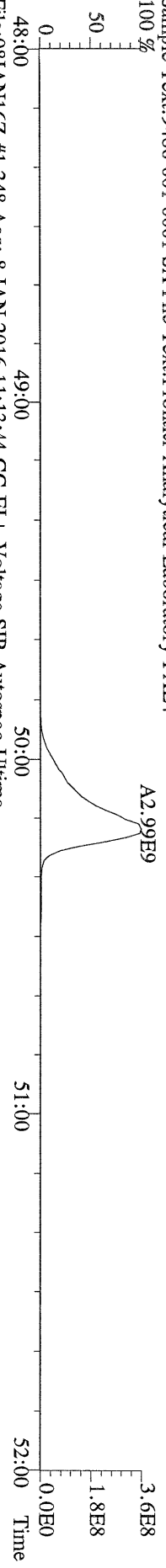
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479.7165 S:2 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory
100 %



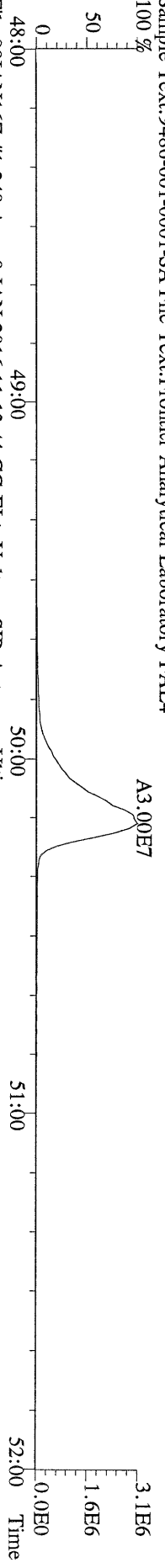
File:08JAN16Z #1-348 Acq: 8-JAN-2016 11:13:44 GC EI+ Voltage SIR Autospec-Ultima
441.7428 S:2 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD
Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory FALA
100 %



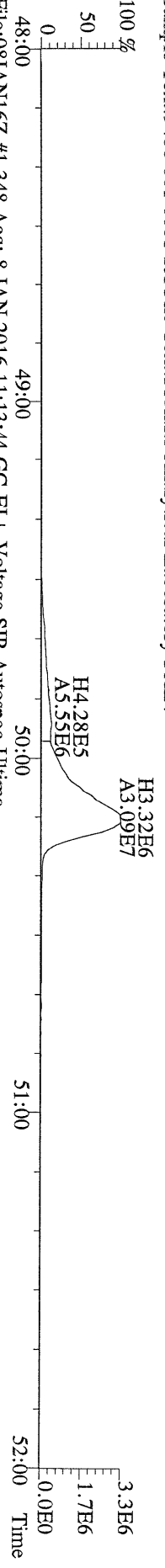
File:08JAN16Z #1-348 Acq: 8-JAN-2016 11:13:44 GC EI+ Voltage SIR Autospec-Ultima
443.7398 S:2 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD
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100 %



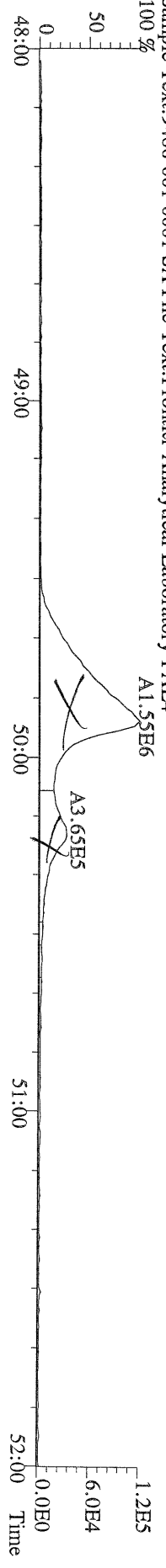
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453.7831 S:2 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD
Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory FALA
100 %



File:08JAN16Z #1-348 Acq: 8-JAN-2016 11:13:44 GC EI+ Voltage SIR Autospec-Ultima
455.7801 S:2 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD
Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory FALA




File:08JAN16Z #1-348 Acq: 8-JAN-2016 11:13:44 GC EI+ Voltage SIR Autospec-Ultima
513.6775 S:2 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD
Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory FALA
100 %



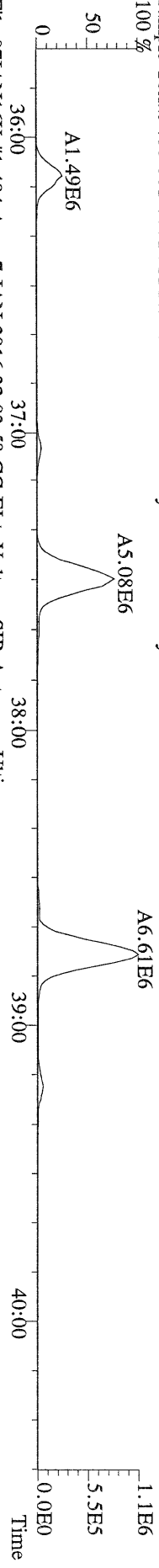
FAL ID: 9486-001-0001-SA Filename: 07JAN16Y Sam:8 Acquired: 7-JAN-16 22:02:58 ICal: PCDDFAL4-12-29-15-7PT
 Client ID: SB-07-12-13 1:10 Dil ConCal: ST010716Y1 EndCal: ST010716Y2
 Results: 9514 GC Column: DB5 Amount: 5.110

Name	Resp	RA	RT	RRF	Conc	Qual	Fac	Noise-1	Noise-2	DL
OCDD	1.86e+09	0.90 y	49:45	1.04	270000		2.50	-	-	*
13C-OCDD	5.18e+06	0.95 y	49:43	0.697	890					Rec 114
37Cl-2,3,7,8-TCDD	1.52e+06	1.24 y	27:25	0.897	152					97.3
13C-1,2,3,7,8,9-HxCDD	3.26e+06		39:11	-	2.35					

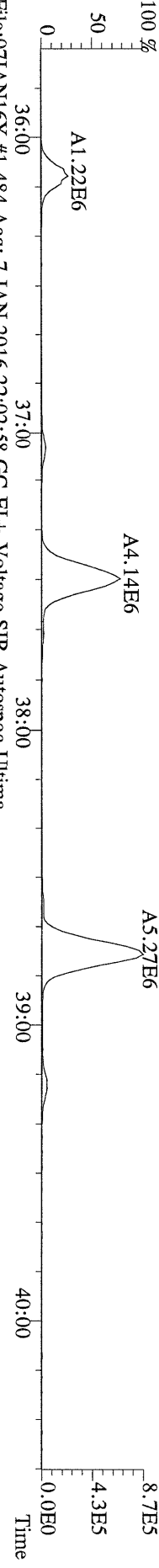
Analyst: 

Date: 1/8/16

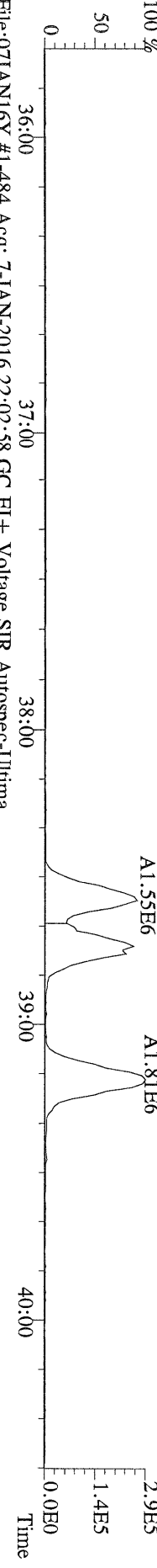
File:07JAN16Y #1-484 Acq: 7-JAN-2016 22:02:58 GC EI+ Voltage SIR Autospec-Ultima
 389.8156 S:8 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD
 Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory FAL4
 100 %



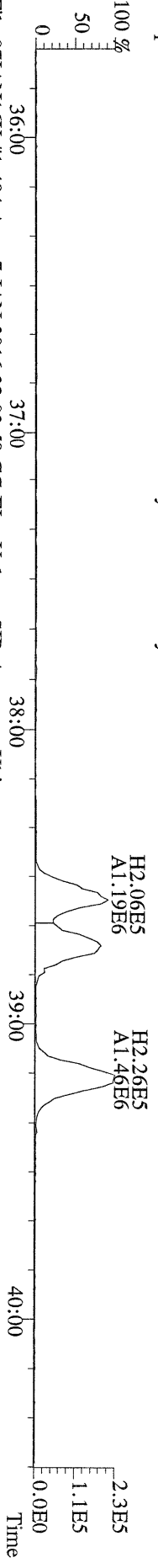
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 391.8127 S:8 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD
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 100 %



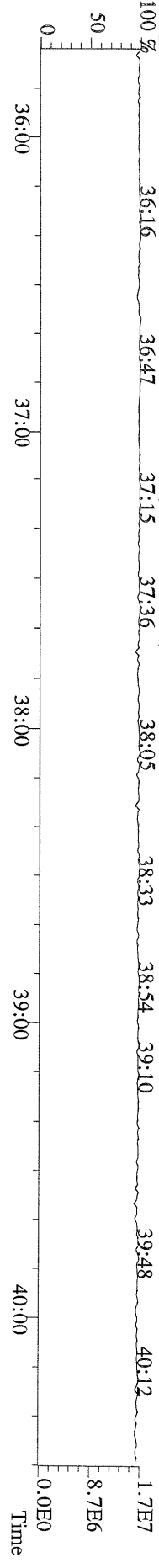
File:07JAN16Y #1-484 Acq: 7-JAN-2016 22:02:58 GC EI+ Voltage SIR Autospec-Ultima
 401.8559 S:8 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD
 Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory FAL4
 100 %



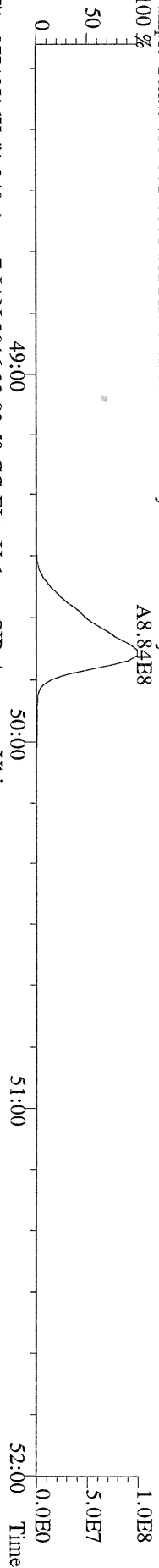
File:07JAN16Y #1-484 Acq: 7-JAN-2016 22:02:58 GC EI+ Voltage SIR Autospec-Ultima
 403.8530 S:8 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD
 Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory FAL4



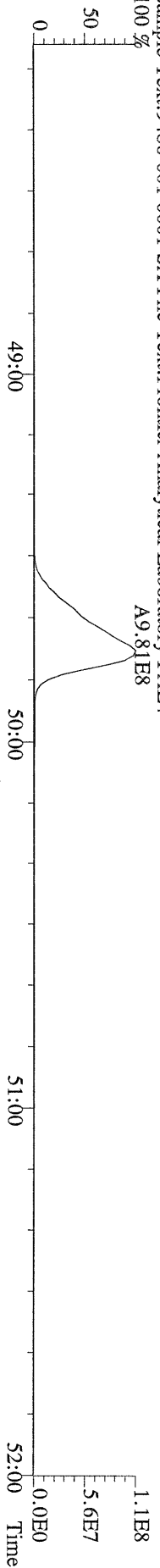
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 380.9760 S:8 F:3 Exp:PCDD
 Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory FAL4
 100 %



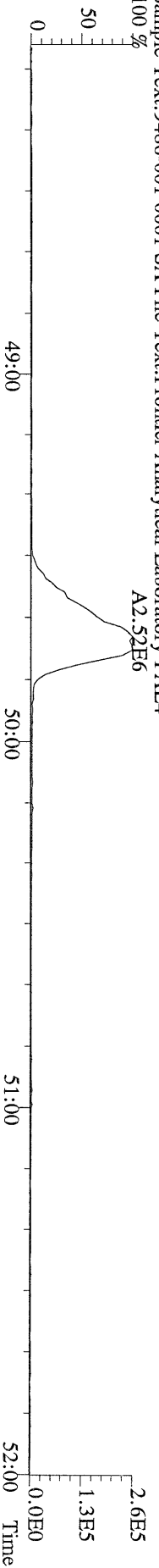
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457.7377 S:8 F:5 BSUB(10000,15,3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory FAL4



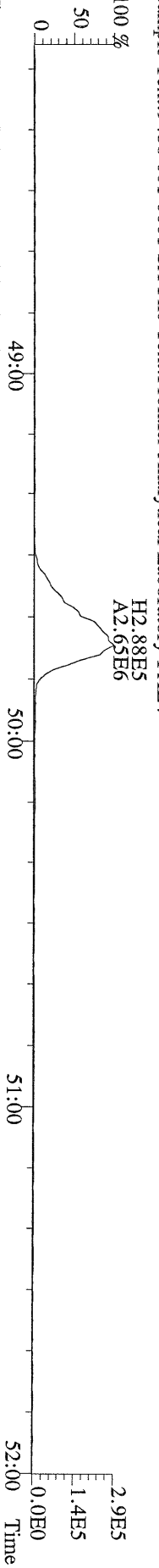
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459.7348 S:8 F:5 BSUB(10000,15,3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory FAL4



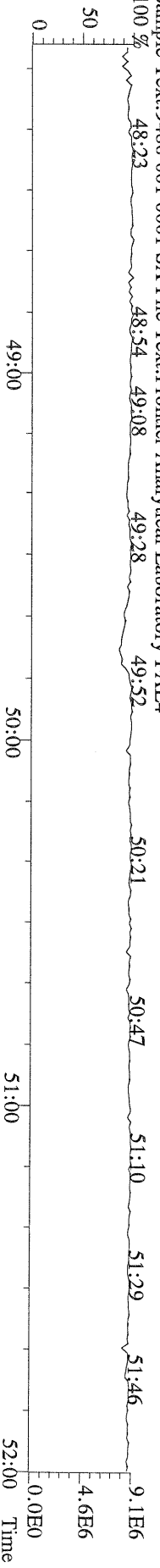
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469.7780 S:8 F:5 BSUB(10000,15,3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory FAL4



File:07JAN16Y #1-349 Acq: 7-JAN-2016 22:02:58 GC EI+ Voltage SIR Autospec-Ultima
471.7750 S:8 F:5 BSUB(10000,15,3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory FAL4



File:07JAN16Y #1-349 Acq: 7-JAN-2016 22:02:58 GC EI+ Voltage SIR Autospec-Ultima
454.9728 S:8 F:5 Exp:PCDD
Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory FAL4



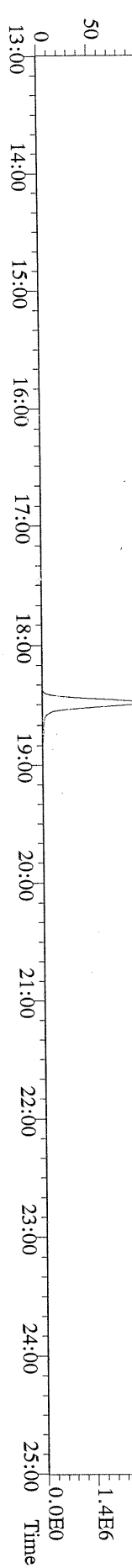
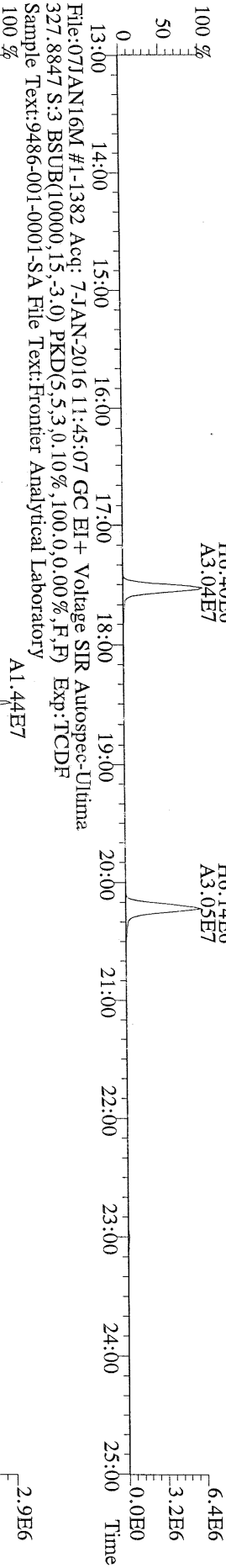
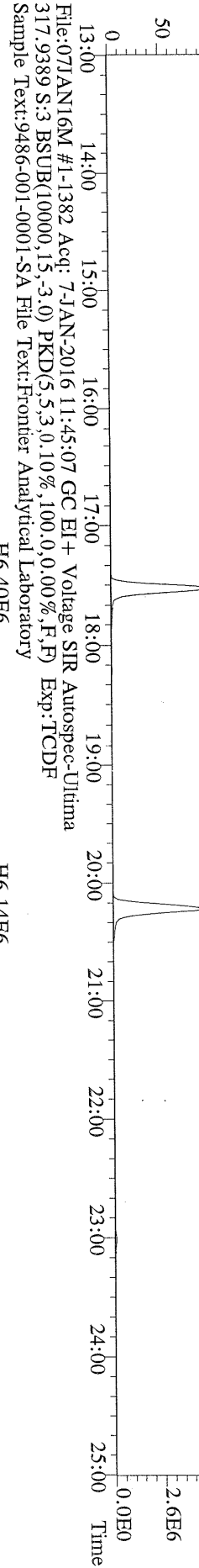
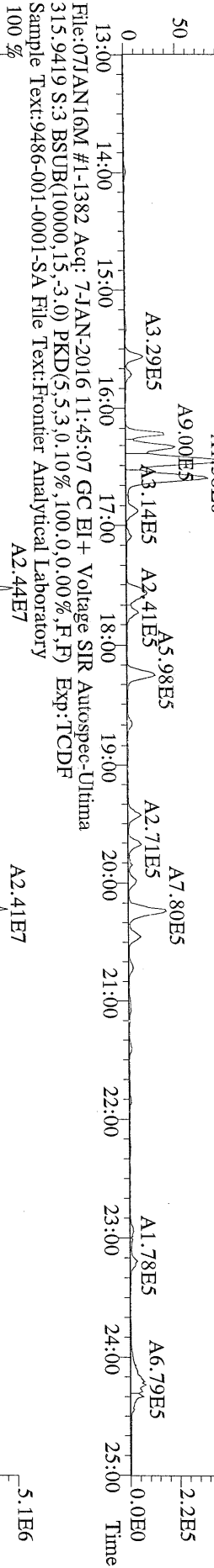
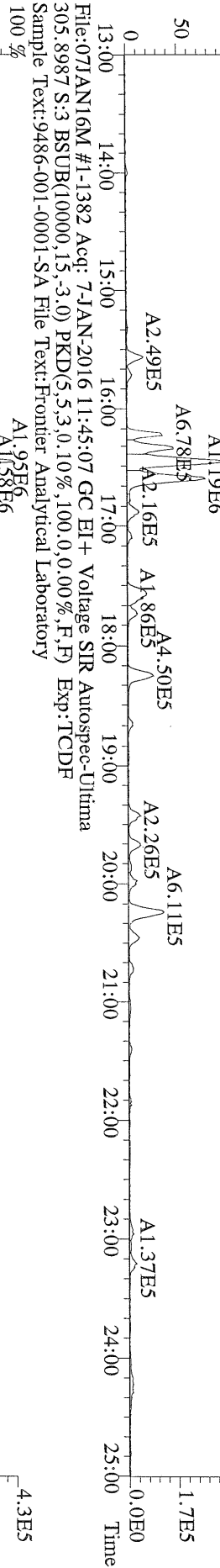
FAL ID: 9486-001-0001-SA Filename: 07JAN16M Sam:3 Acquired: 7-JAN-16 11:45:07 ICal: TCDFFAL3-1-4-16
Client ID: SB-07-12-13 ConCal: ST010716M1 EndCal: ST010716M2
Results: 9486TCDF GC Column: DB225 Amount: 5.110

Name	Resp	RA	RT	RRF	Conc	Qual	Fac	Noise	DL	#Hom	Rec
2,3,7,8-TCDF	1.39e+06	0.78 y	20:14	0.90	11.0		2.50	-	-	1	
13C-2,3,7,8-TCDF	5.46e+07	0.79 y	20:13	1.01	387						98.8
13C-1,2,3,4-TCDF	5.47e+07	0.80 y	17:32	-	11.6						
37Cl-2,3,7,8-TCDD	1.44e+07		18:29	0.64	160						103

Analyst: 

Date: 1/7/16

File:07JAN16M #1-1382 Acq: 7-JAN-2016 11:45:07 GC EI+ Voltage SIR Autospec-Ultima
303.9016 S.3 BSUB(10000,15,-3,0) PKD(5,5,3,0,100,0,0,00%,F,F) Exp:TCDF
Sample Text:9486-001-0001-SA File Text:Frontier Analytical Laboratory
100 %



FAL ID: 9486-002-0001-SA Filename: 07JAN16Y Sam:7 Acquired: 7-JAN-16 21:08:11 ICal: PCDDFAL4-12-29-15-7PT
 Client ID: SB-05-9-10 ConCal: ST010716Y1 EndCal: ST010716Y2
 Results: 9514 GC Column: DB5 Amount: 5.030

NATO 1989 Tox: 2.67
 WHO 1998 Tox: 1.29 WHO 2005 Tox: 1.60
 Conc Qual Fac Noise-1 Noise-2 DL

Name	Resp	RA	RT	RRF	Conc	Qual	Fac Noise-1	Noise-2	DL	Rec	#Hom
2,3,7,8-TCDD	*	* n	NotFnd	1.08	*		2.50	443	464	0.159	0
1,2,3,7,8-PeCDD	*	* n	NotFnd	0.90	*		2.50	521	516	0.337	0
1,2,3,4,7,8-HxCDD	*	* n	NotFnd	0.98	*		2.50	529	656	0.498	
1,2,3,6,7,8-HxCDD	1.10e+05	1.30 y	38:45	1.00	3.28	J	2.50	-	-	*	
1,2,3,7,8,9-HxCDD	4.28e+04	1.25 y	39:13	1.11	1.12	J	2.50	-	-	*	
1,2,3,4,6,7,8-HpCDD	2.57e+06	1.06 y	44:10	1.09	66.2		2.50	-	-	*	
OCDD	4.31e+07	0.91 y	49:42	1.04	1510		2.50	-	-	*	
2,3,7,8-TCDF	*	* n	NotFnd	1.05	*		2.50	467	689	0.158	
1,2,3,7,8-PeCDF	*	* n	NotFnd	0.98	*		2.50	524	725	0.226	
2,3,4,7,8-PeCDF	*	* n	NotFnd	1.01	*		2.50	524	725	0.238	
1,2,3,4,7,8-HxCDF	*	* n	NotFnd	1.23	*		2.50	652	587	0.261	
1,2,3,6,7,8-HxCDF	*	* n	NotFnd	1.17	*		2.50	652	587	0.286	
2,3,4,6,7,8-HxCDF	*	* n	NotFnd	1.12	*		2.50	652	587	0.307	
1,2,3,7,8,9-HxCDF	*	* n	NotFnd	1.15	*		2.50	652	587	0.339	
1,2,3,4,6,7,8-HpCDF	2.28e+05	0.97 y	42:17	1.36	3.89	J	2.50	-	-	*	
1,2,3,4,7,8,9-HpCDF	*	* n	NotFnd	1.23	*		2.50	748	795	0.476	
OCDF	8.11e+05	0.85 y	50:06	1.13	19.4		2.50	-	-	*	
13C-2,3,7,8-TCDD	2.31e+07	0.81 y	27:24	1.07	361					90.9	
13C-1,2,3,7,8-PeCDD	1.70e+07	1.58 y	33:14	0.78	366					92.1	
13C-1,2,3,4,7,8-HxCDD	1.39e+07	1.30 y	38:35	0.87	379					95.3	
13C-1,2,3,6,7,8-HxCDD	1.33e+07	1.28 y	38:45	0.84	375					94.2	
13C-1,2,3,4,6,7,8-HpCDD	1.42e+07	1.08 y	44:10	0.85	394					99.1	
13C-OCDD	2.18e+07	0.90 y	49:41	0.70	738					92.8	
13C-2,3,7,8-TCDF	3.08e+07	0.81 y	26:40	1.03	367					92.2	
13C-1,2,3,7,8-PeCDF	2.64e+07	1.63 y	31:31	0.89	364					91.4	
13C-2,3,4,7,8-PeCDF	2.57e+07	1.61 y	32:51	0.82	385					96.7	
13C-1,2,3,4,7,8-HxCDF	2.08e+07	0.54 y	37:12	1.26	391					98.2	
13C-1,2,3,6,7,8-HxCDF	2.10e+07	0.54 y	37:24	1.28	387					97.4	
13C-2,3,4,6,7,8-HxCDF	2.05e+07	0.54 y	38:20	1.27	383					96.3	
13C-1,2,3,7,8,9-HxCDF	1.88e+07	0.54 y	39:47	1.16	382					96.2	
13C-1,2,3,4,6,7,8-HpCDF	1.71e+07	0.46 y	42:16	1.06	382					96.1	
13C-1,2,3,4,7,8,9-HpCDF	1.61e+07	0.46 y	45:05	0.93	412					104	
13C-OCDF	2.94e+07	0.92 y	50:05	0.95	732					92.1	
37Cl-2,3,7,8-TCDD	7.67e+06		27:25	0.90	143					90.0	
13C-1,2,3,4-TCDD	2.37e+07	0.79 y	26:50	-	12.9						
13C-1,2,3,4-TCDF	3.23e+07	0.81 y	25:34	-	13.3						
13C-1,2,3,7,8,9-HxCDD	1.68e+07	1.32 y	39:12	-	12.3						
Total Tetra-Dioxins	*		NotFnd	1.08	*		2.50	443	464	0.159	0
Total Penta-Dioxins	*		NotFnd	0.90	*		2.50	521	516	0.337	0
Total Hexa-Dioxins	3.49e+05		36:08	1.03	9.97		2.50	-	-	*	4
Total Hepta-Dioxins	4.30e+06		42:48	1.09	111		2.50	-	-	*	2
Total Tetra-Furans	*		NotFnd	1.05	*		2.50	467	689	0.158	0
1st Fn. Tot Penta-Furans	*		NotFnd	0.99	*		2.50	524	725	0.238	0
Total Penta-Furans	*		NotFnd	0.99	*		2.50	524	725	0.238	0
Total Hexa-Furans	1.97e+05		35:31	1.16	3.32	J	2.50	-	-	*	2
Total Hepta-Furans	8.91e+05		42:17	1.30	16.1		2.50	-	-	*	2

Analyst: J Date: 1/8/16

Totals class: Total Hexa-Dioxins

Entry #: 40

Run: 15

File: 07JAN16Y

S: 7 I: 1 F: 3

Acquired: 7-JAN-16 21:08:11

Total Concentration: 9.97

Unnamed Concentration: 5.56

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
36:08	2.70e+04	2.13e+04	1.27 y	4.82e+04	1.37	
37:31	8.56e+04	6.23e+04	1.37 y	1.48e+05	4.19	
38:45	6.20e+04	4.79e+04	1.30 y	1.10e+05	3.28	1,2,3,6,7,8-HxCDD
39:13	2.37e+04	1.90e+04	1.25 y	4.28e+04	1.12	1,2,3,7,8,9-HxCDD

Totals class: Total Hepta-Dioxins

Entry #: 41

Run: 15

File: 07JAN16Y

S: 7 I: 1 F: 4

Acquired: 7-JAN-16 21:08:11

Total Concentration: 111

Unnamed Concentration: 44.5

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
42:48	8.81e+05	8.49e+05	1.04 y	1.73e+06	44.5	
44:10	1.32e+06	1.25e+06	1.06 y	2.57e+06	66.2	1,2,3,4,6,7,8-HpCDD

Totals class: Total Hexa-Furans

Entry #: 45

Run: 15

File: 07JAN16Y

S: 7 I: 1 F: 3

Acquired: 7-JAN-16 21:08:11

Total Concentration: 3.32

Unnamed Concentration: 3.32

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
35:31	3.32e+04	2.44e+04	1.36 y	5.76e+04	0.969	
36:26	7.92e+04	6.03e+04	1.31 y	1.40e+05	2.35	

Totals class: Total Hepta-Furans

Entry #: 46

Run: 15

File: 07JAN16Y

S: 7 I: 1 F: 4

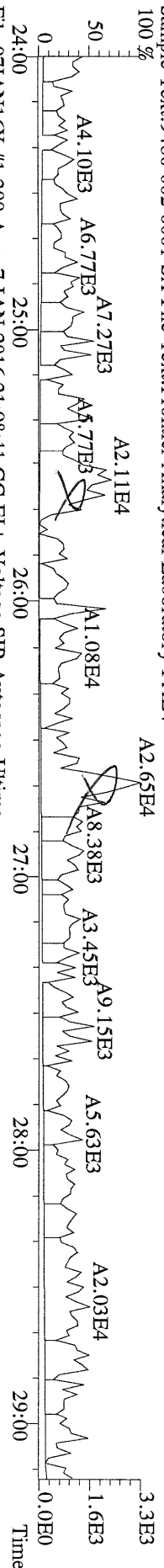
Acquired: 7-JAN-16 21:08:11

Total Concentration: 16.1

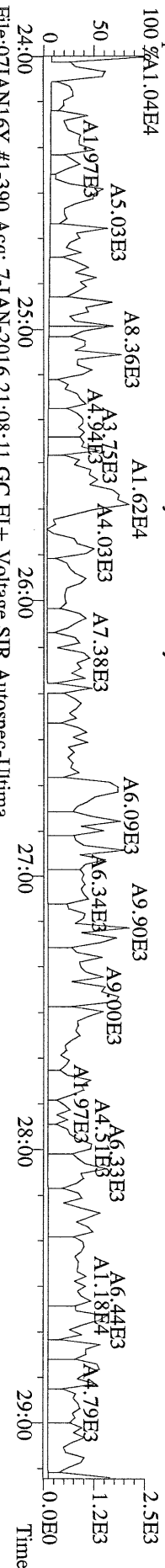
Unnamed Concentration: 12.2

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
42:17	1.12e+05	1.16e+05	0.97 y	2.28e+05	3.89	1,2,3,4,6,7,8-HpCDF
43:06	3.44e+05	3.19e+05	1.08 y	6.63e+05	12.2	

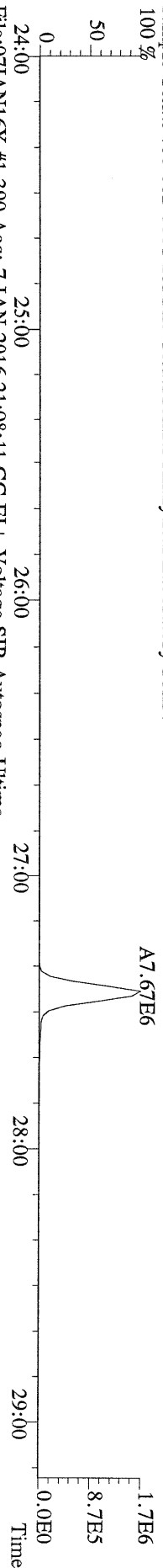
File:07JAN16Y #1-390 Acq: 7-JAN-2016 21:08:11 GC EI+ Voltage SIR Autospec-Ultima
319.8965 S:7 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
Sample Text:9486-002-0001-SA File Text:Frontier Analytical Laboratory FAL4



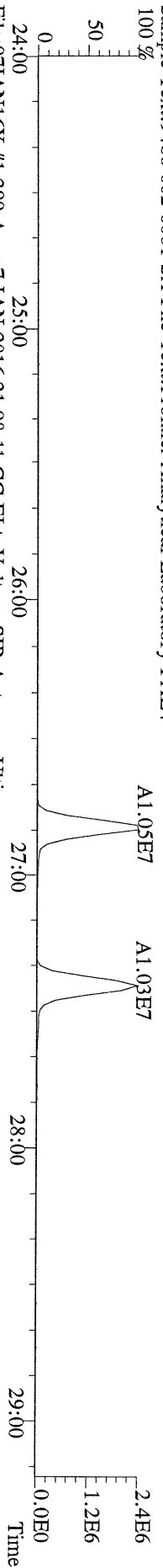
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321.8936 S:7 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
Sample Text:9486-002-0001-SA File Text:Frontier Analytical Laboratory FAL4



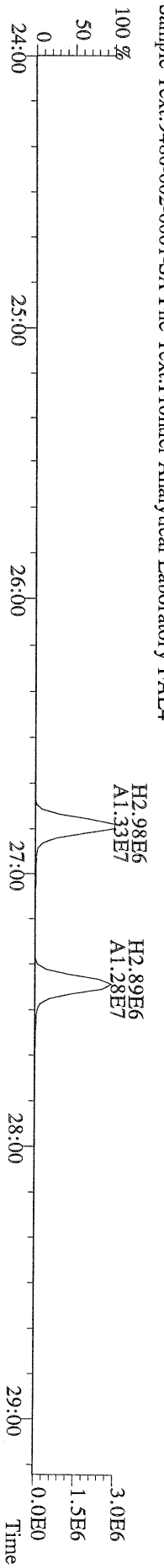
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327.8847 S:7 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
Sample Text:9486-002-0001-SA File Text:Frontier Analytical Laboratory FAL4



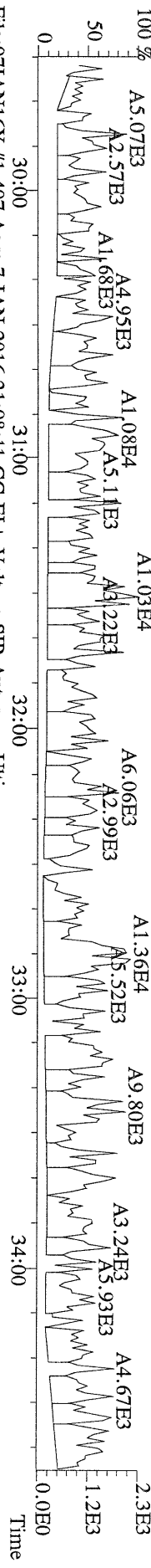
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331.9368 S:7 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
Sample Text:9486-002-0001-SA File Text:Frontier Analytical Laboratory FAL4



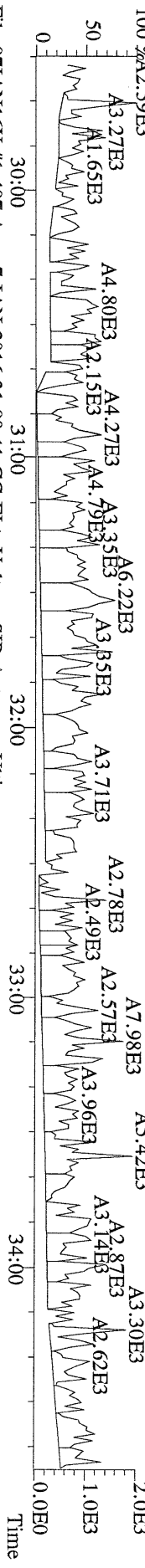
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333.9339 S:7 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
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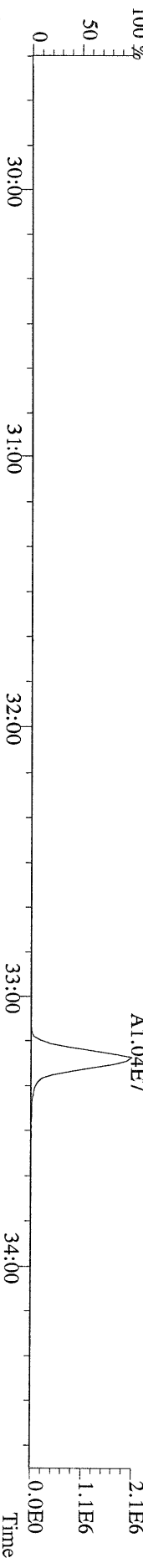
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 355.8546 S:7 F:2 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:9486-002-0001-SA File Text:Frontier Analytical Laboratory FALA4



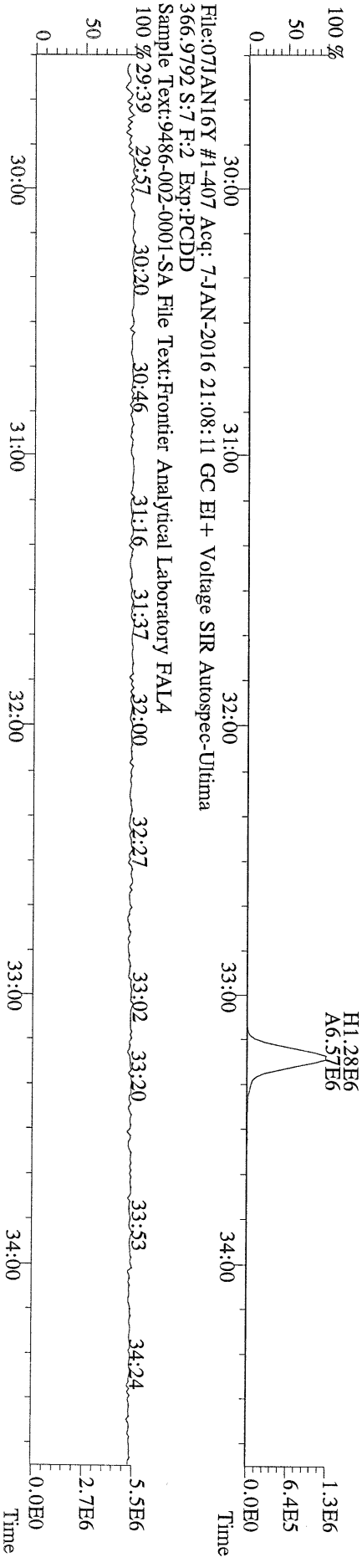
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 357.8517 S:7 F:2 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:9486-002-0001-SA File Text:Frontier Analytical Laboratory FALA4



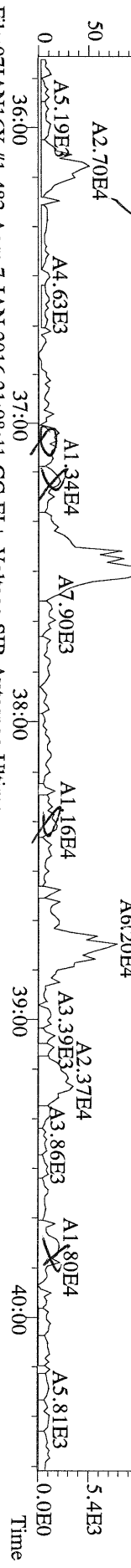
File:07JAN16Y #1-407 Acq: 7-JAN-2016 21:08:11 GC EI+ Voltage SIR Autospec-Ultima
 367.8949 S:7 F:2 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:9486-002-0001-SA File Text:Frontier Analytical Laboratory FALA4



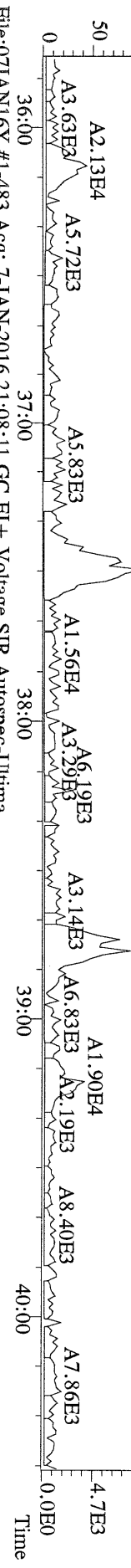
File:07JAN16Y #1-407 Acq: 7-JAN-2016 21:08:11 GC EI+ Voltage SIR Autospec-Ultima
 369.8919 S:7 F:2 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:9486-002-0001-SA File Text:Frontier Analytical Laboratory FALA4



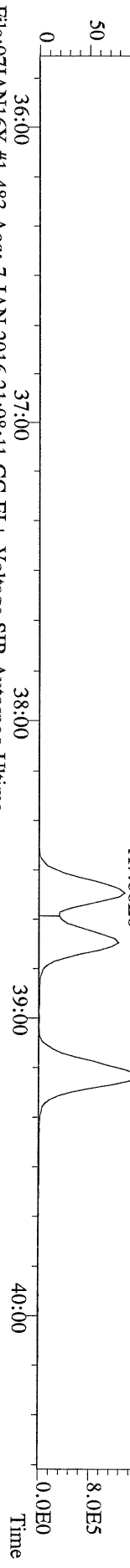
File:07JAN16Y #1-483 Acq: 7-JAN-2016 21:08:11 GC EI+ Voltage SIR Autospec-Ultima
 389.8156 S:7 F:3 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:9486-002-0001-SA File Text:Frontier Analytical Laboratory



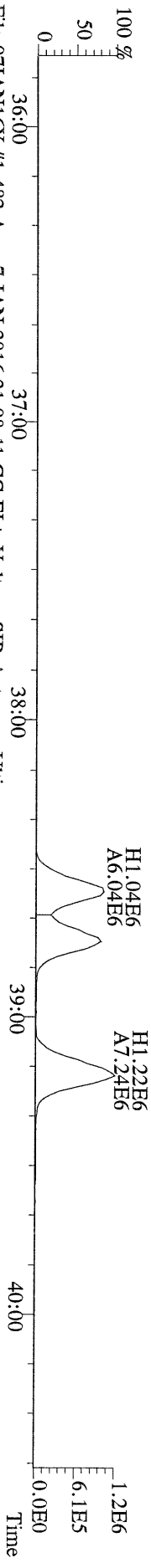
File:07JAN16Y #1-483 Acq: 7-JAN-2016 21:08:11 GC EI+ Voltage SIR Autospec-Ultima
 391.8127 S:7 F:3 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:9486-002-0001-SA File Text:Frontier Analytical Laboratory



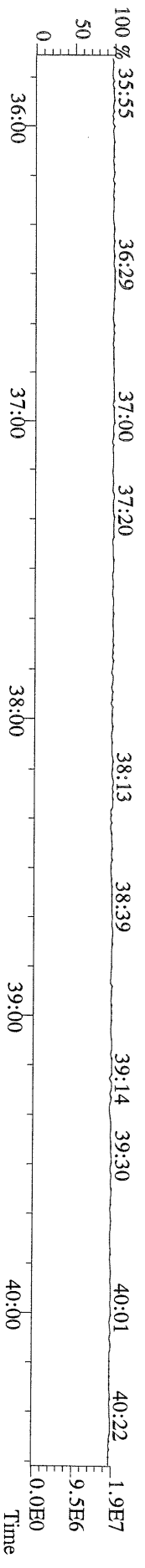
File:07JAN16Y #1-483 Acq: 7-JAN-2016 21:08:11 GC EI+ Voltage SIR Autospec-Ultima
 401.8559 S:7 F:3 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:9486-002-0001-SA File Text:Frontier Analytical Laboratory



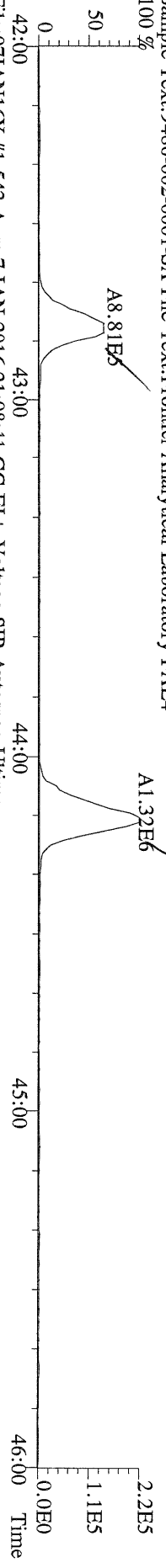
File:07JAN16Y #1-483 Acq: 7-JAN-2016 21:08:11 GC EI+ Voltage SIR Autospec-Ultima
 403.8530 S:7 F:3 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:9486-002-0001-SA File Text:Frontier Analytical Laboratory



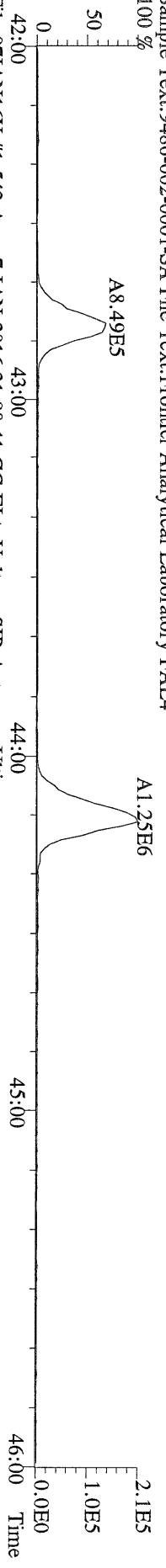
File:07JAN16Y #1-483 Acq: 7-JAN-2016 21:08:11 GC EI+ Voltage SIR Autospec-Ultima
 380.9760 S:7 F:3 Exp:PCDD
 Sample Text:9486-002-0001-SA File Text:Frontier Analytical Laboratory



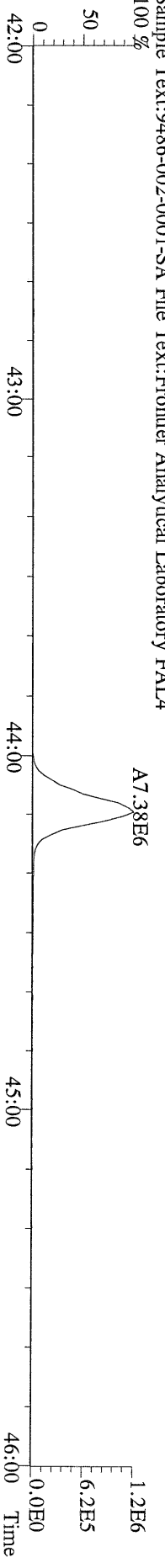
File:07JAN16Y #1-543 Acq: 7-JAN-2016 21:08:11 GC EI+ Voltage SIR Autospec-Ultima
423.7767 S:7 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:9486-002-0001-SA File Text:Frontier Analytical Laboratory FAL4
100 %



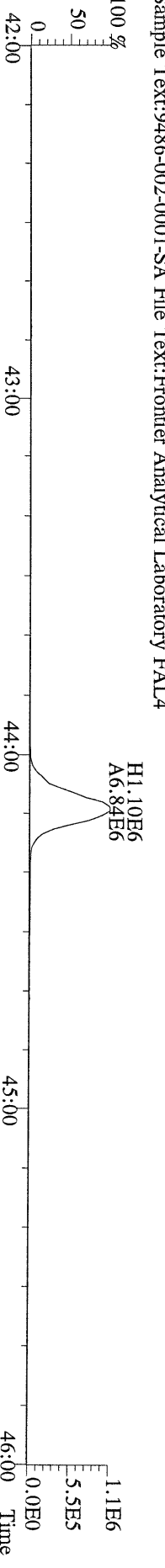
File:07JAN16Y #1-543 Acq: 7-JAN-2016 21:08:11 GC EI+ Voltage SIR Autospec-Ultima
425.7737 S:7 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:9486-002-0001-SA File Text:Frontier Analytical Laboratory FAL4
100 %



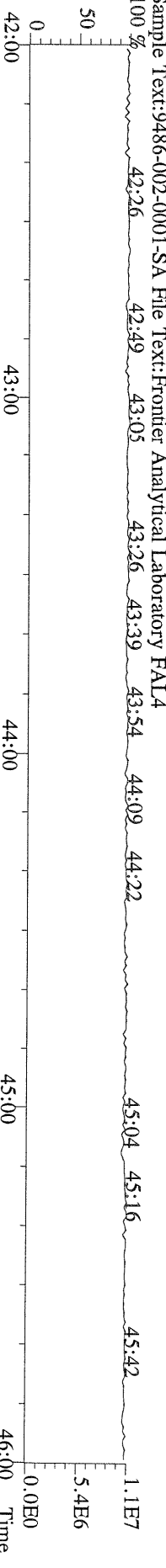
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435.8169 S:7 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:9486-002-0001-SA File Text:Frontier Analytical Laboratory FAL4
100 %



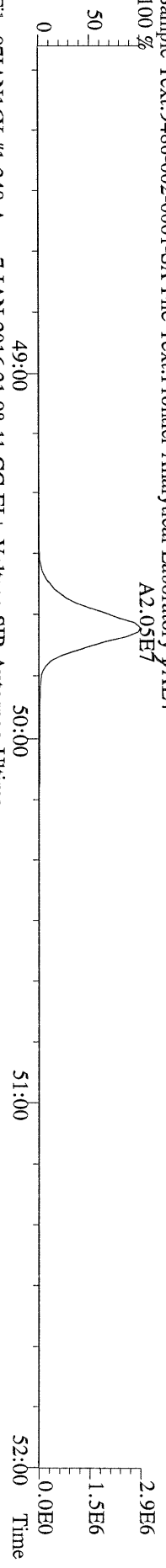
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437.8140 S:7 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:9486-002-0001-SA File Text:Frontier Analytical Laboratory FAL4



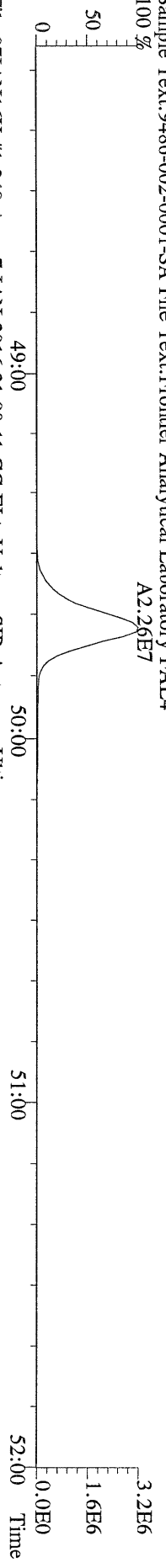
File:07JAN16Y #1-543 Acq: 7-JAN-2016 21:08:11 GC EI+ Voltage SIR Autospec-Ultima
430.9728 S:7 F:4 Exp:PCDD
Sample Text:9486-002-0001-SA File Text:Frontier Analytical Laboratory FAL4
100 %



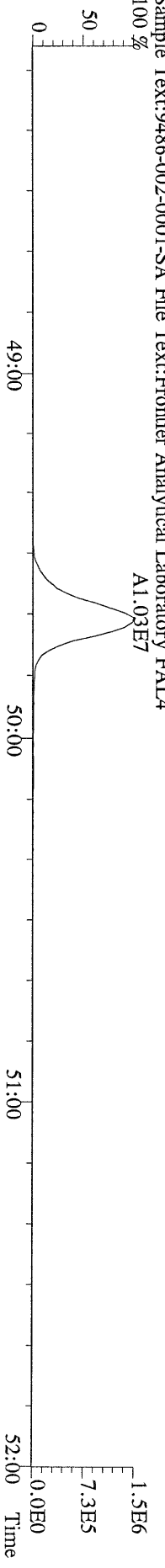
File:07JAN16Y #1-348 Acq: 7-JAN-2016 21:08:11 GC EI+ Voltage SIR Autospec-Ultima
457.7377 S:7 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9486-002-0001-SA File Text:Frontier Analytical Laboratory FAL4



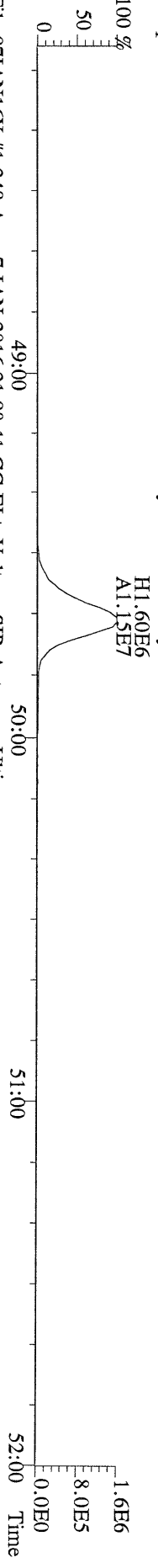
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459.7348 S:7 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9486-002-0001-SA File Text:Frontier Analytical Laboratory FAL4



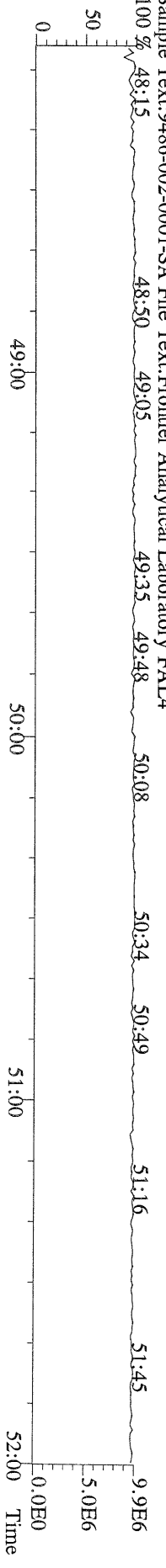
File:07JAN16Y #1-348 Acq: 7-JAN-2016 21:08:11 GC EI+ Voltage SIR Autospec-Ultima
469.7780 S:7 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9486-002-0001-SA File Text:Frontier Analytical Laboratory FAL4



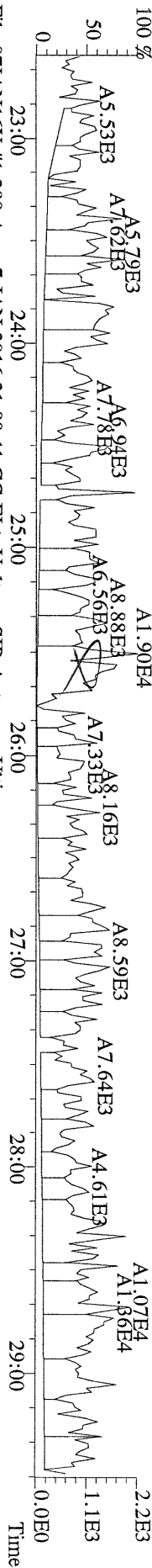
File:07JAN16Y #1-348 Acq: 7-JAN-2016 21:08:11 GC EI+ Voltage SIR Autospec-Ultima
471.7750 S:7 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9486-002-0001-SA File Text:Frontier Analytical Laboratory FAL4



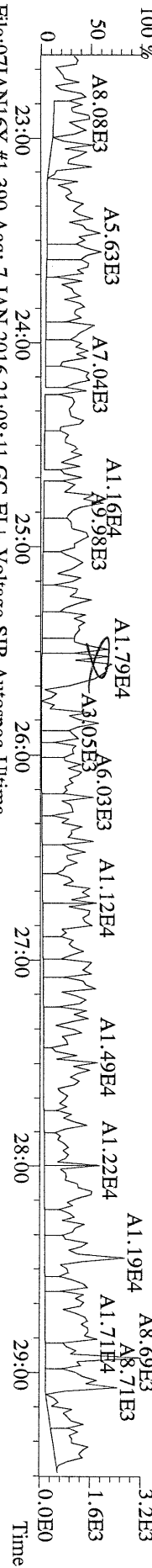
File:07JAN16Y #1-348 Acq: 7-JAN-2016 21:08:11 GC EI+ Voltage SIR Autospec-Ultima
454.9728 S:7 F:5 Exp:PCDD
Sample Text:9486-002-0001-SA File Text:Frontier Analytical Laboratory FAL4



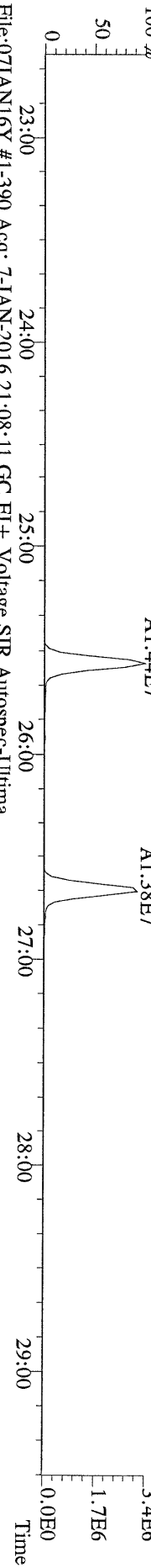
File:071AN16Y #1-390 Acq: 7-JAN-2016 21:08:11 GC EI+ Voltage SIR Autospec-Ultima
303.9016 S:7 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9486-002-0001-SA File Text:Frontier Analytical Laboratory FAL4



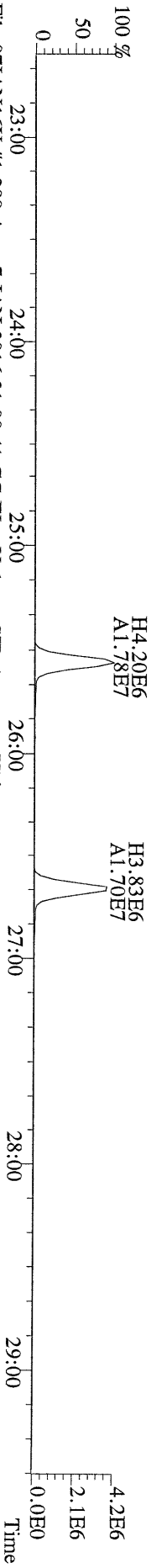
File:071AN16Y #1-390 Acq: 7-JAN-2016 21:08:11 GC EI+ Voltage SIR Autospec-Ultima
305.8987 S:7 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9486-002-0001-SA File Text:Frontier Analytical Laboratory FAL4



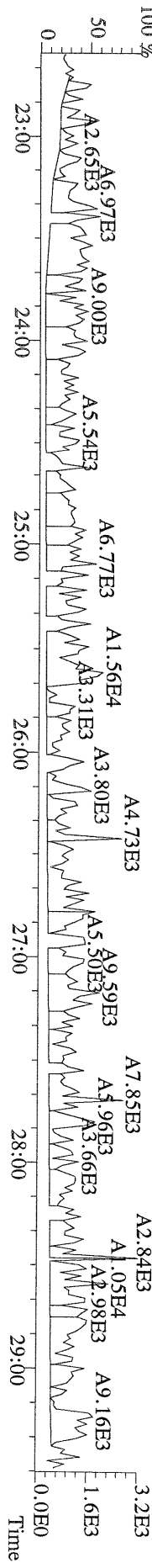
File:071AN16Y #1-390 Acq: 7-JAN-2016 21:08:11 GC EI+ Voltage SIR Autospec-Ultima
315.9419 S:7 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9486-002-0001-SA File Text:Frontier Analytical Laboratory FAL4



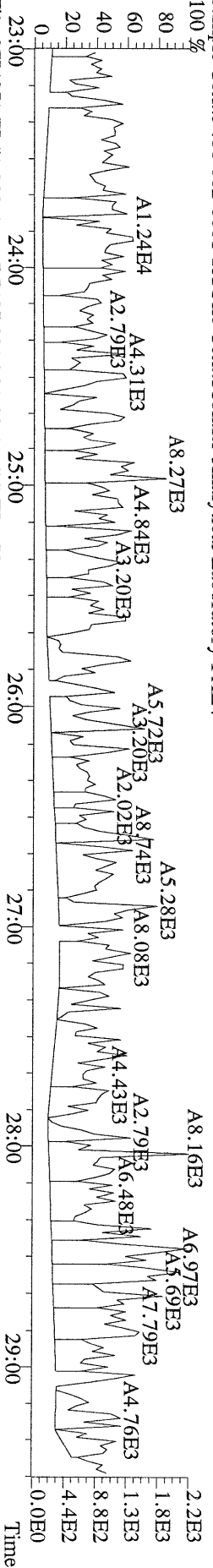
File:071AN16Y #1-390 Acq: 7-JAN-2016 21:08:11 GC EI+ Voltage SIR Autospec-Ultima
317.9389 S:7 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9486-002-0001-SA File Text:Frontier Analytical Laboratory FAL4



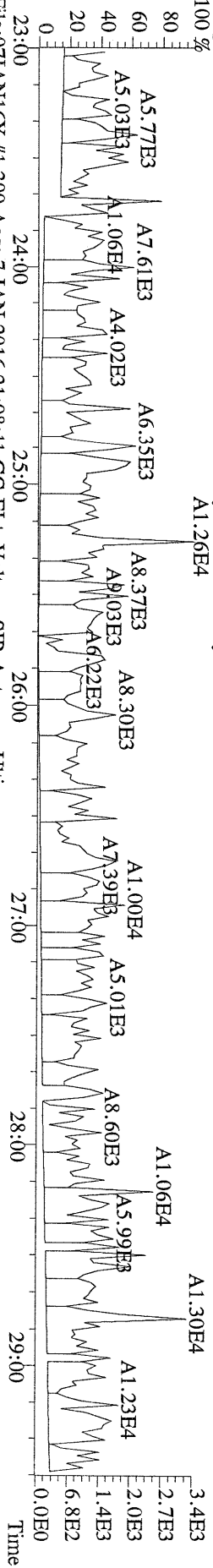
File:071AN16Y #1-390 Acq: 7-JAN-2016 21:08:11 GC EI+ Voltage SIR Autospec-Ultima
375.8364 S:7 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9486-002-0001-SA File Text:Frontier Analytical Laboratory FAL4



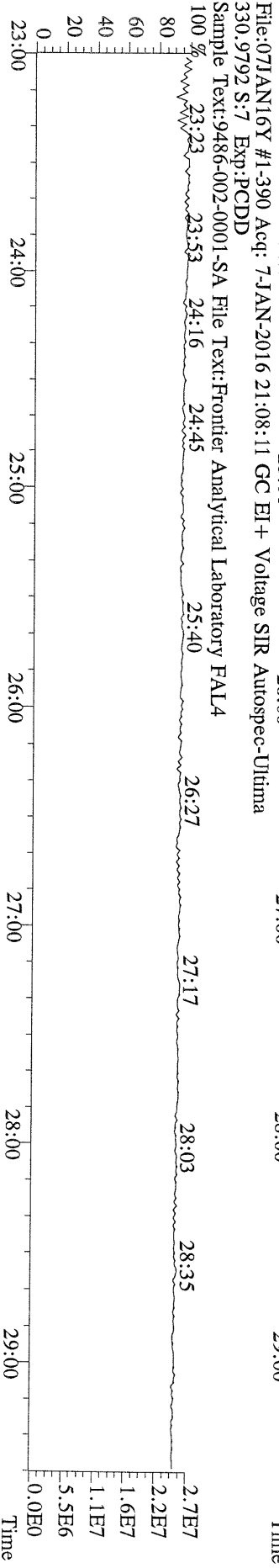
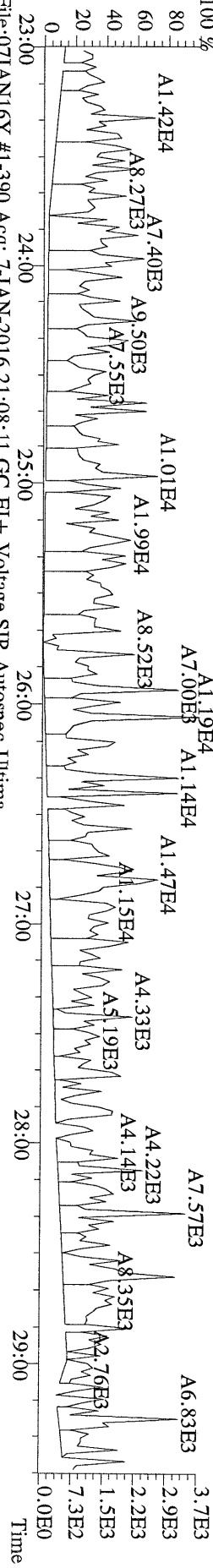
File:07JAN16Y #1-390 Acq: 7-JAN-2016 21:08:11 GC EI+ Voltage SIR Autospec-Ultima
339.8597 S:7 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9486-002-0001-SA File Text:Frontier Analytical Laboratory FAL4



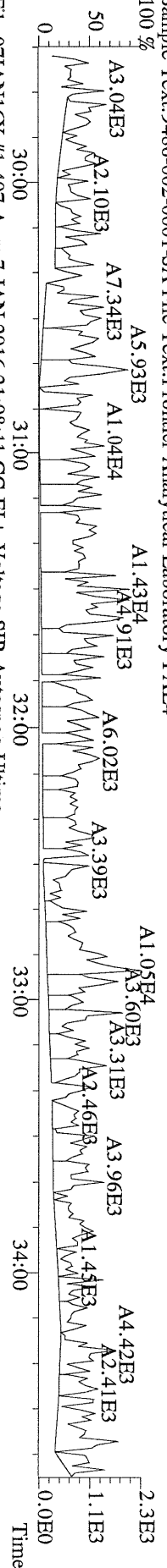
File:07JAN16Y #1-390 Acq: 7-JAN-2016 21:08:11 GC EI+ Voltage SIR Autospec-Ultima
341.8568 S:7 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9486-002-0001-SA File Text:Frontier Analytical Laboratory FAL4



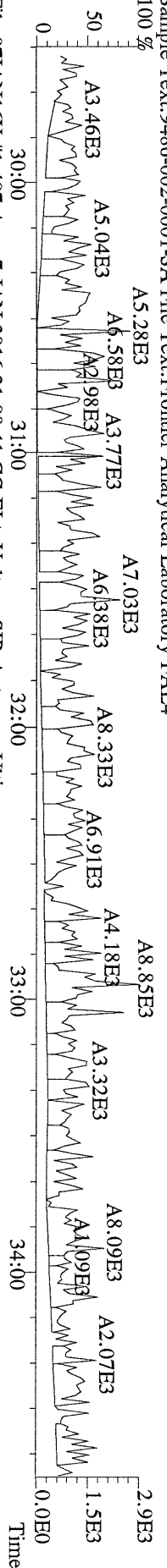
File:07JAN16Y #1-390 Acq: 7-JAN-2016 21:08:11 GC EI+ Voltage SIR Autospec-Ultima
409.7974 S:7 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9486-002-0001-SA File Text:Frontier Analytical Laboratory FAL4



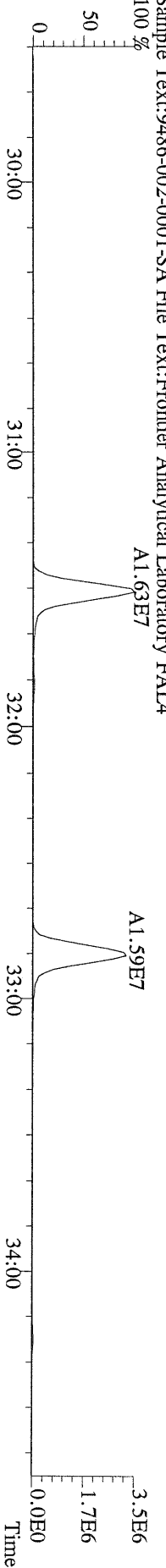
File:07JAN16Y #1-407 Acq: 7-JAN-2016 21:08:11 GC EI+ Voltage SIR Autospec-Ultima
339.8597 S:7 F:2 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9486-002-0001-SA File Text:Frontier Analytical Laboratory FAL4



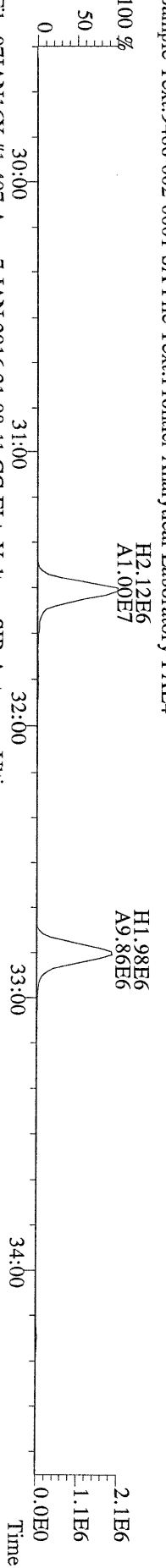
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341.8568 S:7 F:2 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9486-002-0001-SA File Text:Frontier Analytical Laboratory FAL4



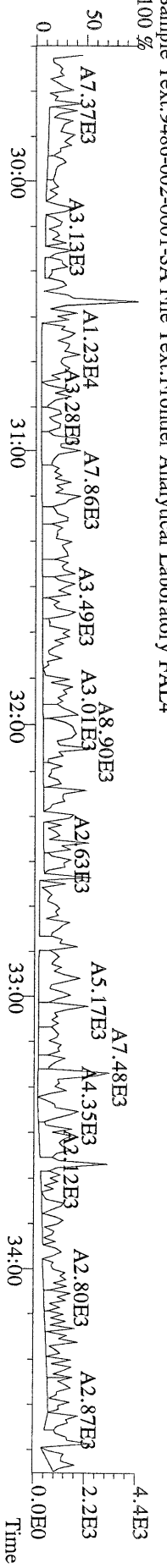
File:07JAN16Y #1-407 Acq: 7-JAN-2016 21:08:11 GC EI+ Voltage SIR Autospec-Ultima
351.9000 S:7 F:2 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9486-002-0001-SA File Text:Frontier Analytical Laboratory FAL4



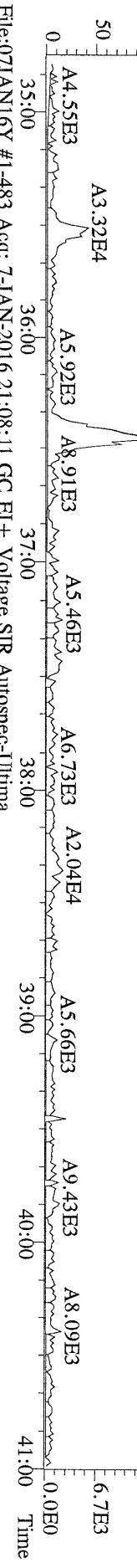
File:07JAN16Y #1-407 Acq: 7-JAN-2016 21:08:11 GC EI+ Voltage SIR Autospec-Ultima
353.8970 S:7 F:2 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9486-002-0001-SA File Text:Frontier Analytical Laboratory FAL4



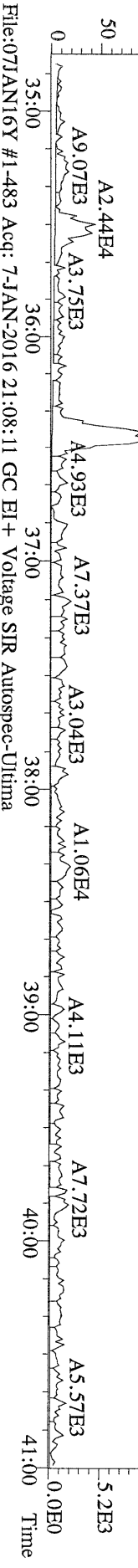
File:07JAN16Y #1-407 Acq: 7-JAN-2016 21:08:11 GC EI+ Voltage SIR Autospec-Ultima
409.7974 S:7 F:2 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9486-002-0001-SA File Text:Frontier Analytical Laboratory FAL4



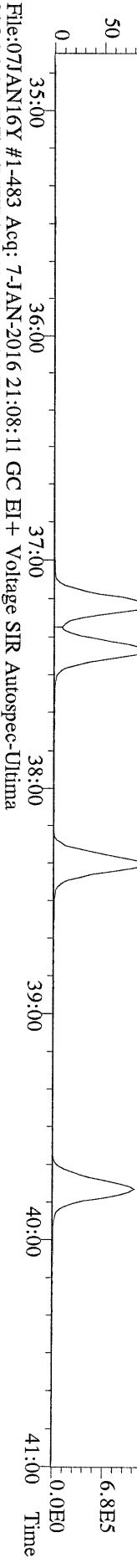
File:07JAN16Y #1-483 Acq: 7-JAN-2016 21:08:11 GC EI+ Voltage SIR Autospec-Ultima
373.8207 S:7 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:9486-002-0001-~~SA~~ File Text:Frontier Analytical Laboratory FAL4



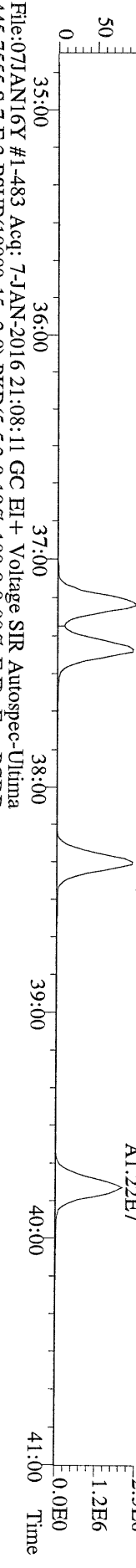
File:07JAN16Y #1-483 Acq: 7-JAN-2016 21:08:11 GC EI+ Voltage SIR Autospec-Ultima
375.8178 S:7 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:9486-002-0001-~~SA~~ File Text:Frontier Analytical Laboratory FAL4



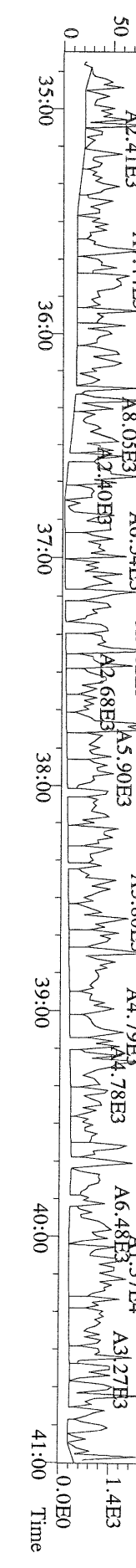
File:07JAN16Y #1-483 Acq: 7-JAN-2016 21:08:11 GC EI+ Voltage SIR Autospec-Ultima
383.8639 S:7 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:9486-002-0001-~~SA~~ File Text:Frontier Analytical Laboratory FAL4



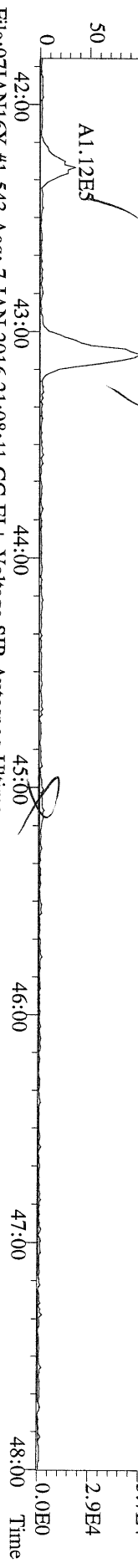
File:07JAN16Y #1-483 Acq: 7-JAN-2016 21:08:11 GC EI+ Voltage SIR Autospec-Ultima
385.8610 S:7 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:9486-002-0001-~~SA~~ File Text:Frontier Analytical Laboratory FAL4



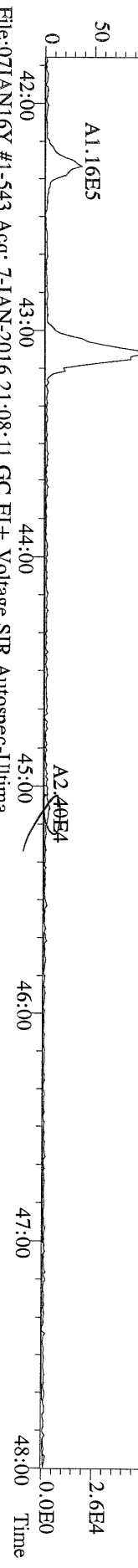
File:07JAN16Y #1-483 Acq: 7-JAN-2016 21:08:11 GC EI+ Voltage SIR Autospec-Ultima
445.7555 S:7 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:9486-002-0001-~~SA~~ File Text:Frontier Analytical Laboratory FAL4



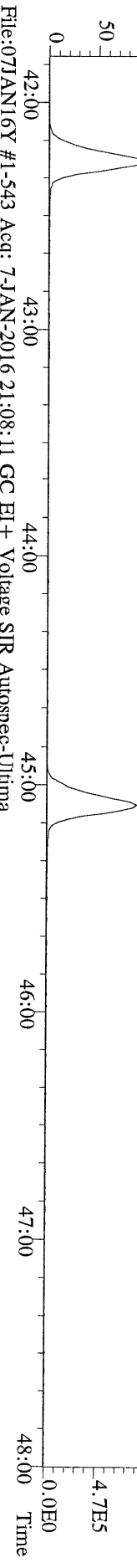
File:07JAN16Y #1-543 Acq: 7-JAN-2016 21:08:11 GC EI+ Voltage SIR Autospec-Ultima
407.7818 S:7 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9486-002-0001-SA File Text:Frontier Analytical Laboratory FAL4



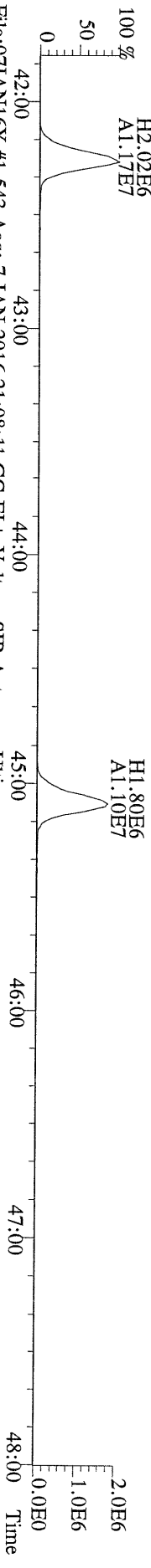
File:07JAN16Y #1-543 Acq: 7-JAN-2016 21:08:11 GC EI+ Voltage SIR Autospec-Ultima
409.7788 S:7 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9486-002-0001-SA File Text:Frontier Analytical Laboratory FAL4



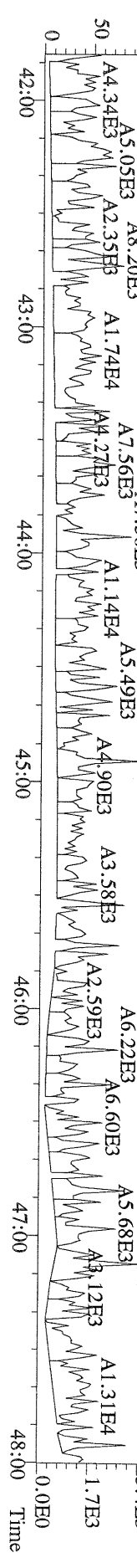
File:07JAN16Y #1-543 Acq: 7-JAN-2016 21:08:11 GC EI+ Voltage SIR Autospec-Ultima
417.8253 S:7 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9486-002-0001-SA File Text:Frontier Analytical Laboratory FAL4



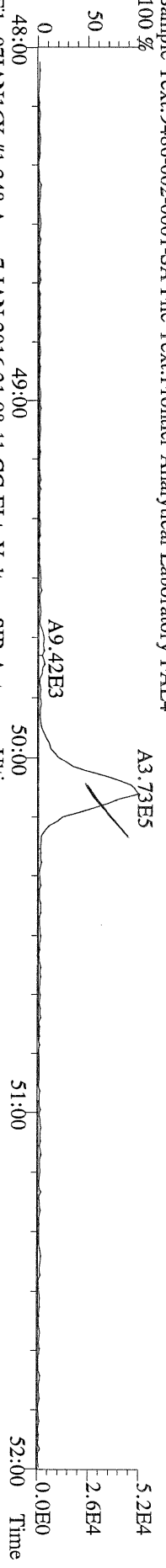
File:07JAN16Y #1-543 Acq: 7-JAN-2016 21:08:11 GC EI+ Voltage SIR Autospec-Ultima
419.8220 S:7 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9486-002-0001-SA File Text:Frontier Analytical Laboratory FAL4



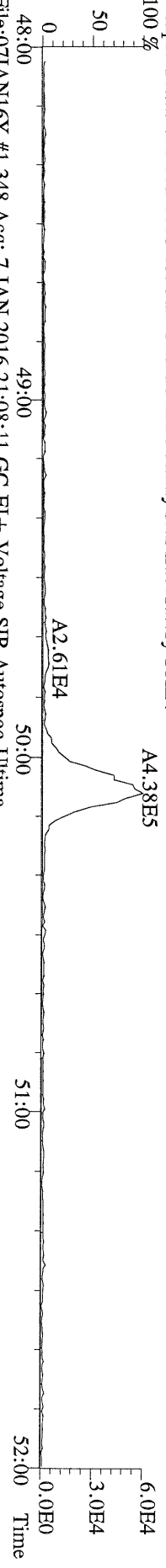
File:07JAN16Y #1-543 Acq: 7-JAN-2016 21:08:11 GC EI+ Voltage SIR Autospec-Ultima
479.7165 S:7 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9486-002-0001-SA File Text:Frontier Analytical Laboratory FAL4



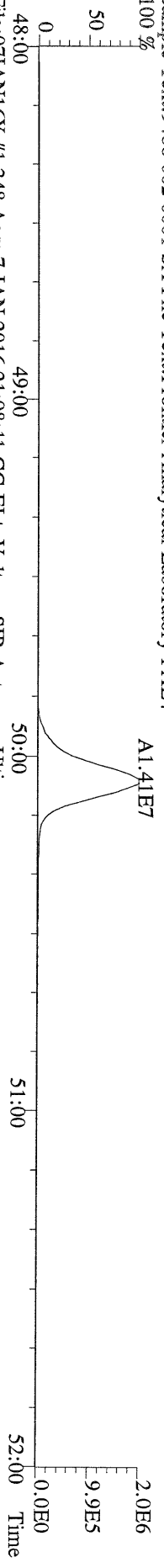
File:071JAN16Y #1-348 Acq: 7-JAN-2016 21:08:11 GC EI+ Voltage SIR Autospec-Ultima
 441.7428 S:7 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:9486-002-0001-SA File Text:Frontier Analytical Laboratory FALA



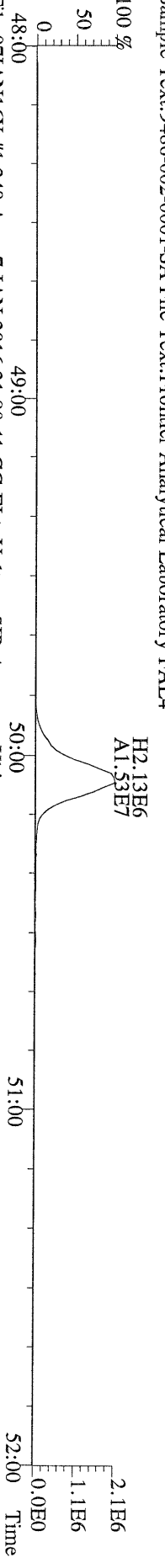
File:071JAN16Y #1-348 Acq: 7-JAN-2016 21:08:11 GC EI+ Voltage SIR Autospec-Ultima
 443.7398 S:7 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:9486-002-0001-SA File Text:Frontier Analytical Laboratory FALA



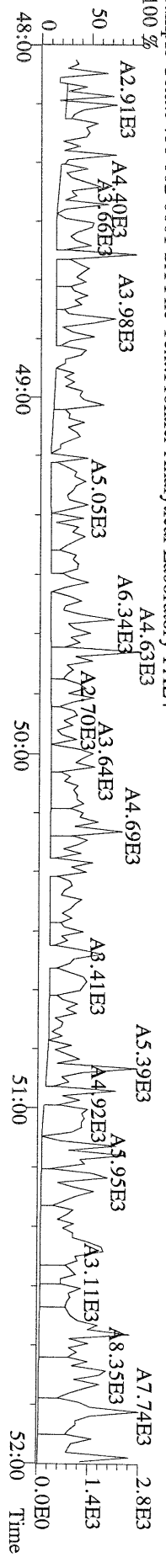
File:071JAN16Y #1-348 Acq: 7-JAN-2016 21:08:11 GC EI+ Voltage SIR Autospec-Ultima
 453.7831 S:7 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:9486-002-0001-SA File Text:Frontier Analytical Laboratory FALA



File:071JAN16Y #1-348 Acq: 7-JAN-2016 21:08:11 GC EI+ Voltage SIR Autospec-Ultima
 455.7801 S:7 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:9486-002-0001-SA File Text:Frontier Analytical Laboratory FALA



File:071JAN16Y #1-348 Acq: 7-JAN-2016 21:08:11 GC EI+ Voltage SIR Autospec-Ultima
 513.6775 S:7 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:9486-002-0001-SA File Text:Frontier Analytical Laboratory FALA



Frontier Analytical Laboratory

Data Filename: 07JAN16Z

Analyte: PCDDFAL4-12-29-15-7PT Cal: PCDDFAL4-12-29-15-7PT

Name	RRF	S. D.	%RSD	S1 RRF#1	S2 RRF#2	S3 RRF#3	S4 RRF#4	S5 RRF#5	S6 RRF#6	S1 RRF#7
2,3,7,8-TCDD	1.08	0.0710	6.57 %	1.16	1.10	1.08	1.11	0.99	0.99	1.15
1,2,3,7,8-PeCDD	0.90	0.0496	5.49 %	0.93	0.91	0.90	0.88	0.86	0.85	1.00
1,2,3,4,7,8-HxCDD	0.98	0.0591	6.02 %	1.07	1.02	0.97	0.94	0.93	0.91	1.03
1,2,3,6,7,8-HxCDD	1.00	0.0582	5.81 %	1.08	0.98	1.04	0.99	0.95	0.92	1.06
1,2,3,7,8,9-HxCDD	1.11	0.0518	4.65 %	1.17	1.14	1.11	1.11	1.05	1.04	1.17
1,2,3,4,6,7,8-HpCDD	1.09	0.0526	4.85 %	1.18	1.10	1.09	1.07	1.03	1.02	1.11
OCDD	1.04	0.0539	5.16 %	1.13	1.06	1.05	1.03	0.99	0.97	1.07
2,3,7,8-TCDF	1.05	0.0872	8.33 %	1.21	1.10	1.04	1.00	0.96	0.96	1.06
1,2,3,7,8-PeCDF	0.98	0.0349	3.56 %	1.05	0.98	0.98	0.98	0.95	0.94	0.97
2,3,4,7,8-PeCDF	1.01	0.0408	4.04 %	1.09	1.02	1.02	1.00	0.97	0.96	1.01
1,2,3,4,7,8-HxCDF	1.23	0.0538	4.38 %	1.31	1.26	1.21	1.20	1.18	1.16	1.27
1,2,3,6,7,8-HxCDF	1.17	0.0483	4.14 %	1.23	1.19	1.17	1.15	1.11	1.11	1.22
2,3,4,6,7,8-HxCDF	1.12	0.0474	4.24 %	1.16	1.13	1.13	1.10	1.07	1.05	1.18
1,2,3,7,8,9-HxCDF	1.15	0.0494	4.31 %	1.20	1.16	1.16	1.13	1.10	1.08	1.20
1,2,3,4,6,7,8-HpCDF	1.36	0.0481	3.53 %	1.42	1.37	1.37	1.35	1.31	1.30	1.41
1,2,3,4,7,8,9-HpCDF	1.23	0.0532	4.34 %	1.32	1.23	1.25	1.20	1.18	1.16	1.24
OCDF	1.13	0.0530	4.69 %	1.21	1.18	1.14	1.11	1.08	1.06	1.14
13C-2,3,7,8-TCDD	1.07	0.0234	2.18 %	1.06	1.07	1.07	1.06	1.11	1.05	1.10
13C-1,2,3,7,8-PeCDD	0.78	0.0383	4.93 %	0.77	0.76	0.76	0.74	0.79	0.76	0.85
13C-1,2,3,4,7,8-HxCDD	0.87	0.0202	2.33 %	0.88	0.86	0.88	0.87	0.90	0.84	0.85
13C-1,2,3,6,7,8-HxCDD	0.84	0.0232	2.77 %	0.82	0.85	0.84	0.85	0.87	0.82	0.81
13C-1,2,3,4,6,7,8-HpCDD	0.85	0.0242	2.84 %	0.86	0.87	0.85	0.83	0.88	0.82	0.87
13C-OCDD	0.70	0.0277	3.97 %	0.69	0.69	0.68	0.69	0.72	0.66	0.74
13C-2,3,7,8-TCDF	1.03	0.0172	1.66 %	1.02	1.03	1.03	1.02	1.06	1.02	1.06
13C-1,2,3,7,8-PeCDF	0.89	0.0226	2.52 %	0.87	0.89	0.88	0.88	0.94	0.89	0.91
13C-2,3,4,7,8-PeCDF	0.82	0.0391	4.74 %	0.81	0.80	0.80	0.79	0.83	0.83	0.91
13C-1,2,3,4,7,8-HxCDF	1.26	0.0374	2.96 %	1.23	1.24	1.28	1.22	1.31	1.25	1.31
13C-1,2,3,6,7,8-HxCDF	1.28	0.0348	2.71 %	1.24	1.28	1.29	1.26	1.33	1.25	1.32
13C-2,3,4,6,7,8-HxCDF	1.27	0.0308	2.44 %	1.23	1.26	1.27	1.25	1.31	1.23	1.30
13C-1,2,3,7,8,9-HxCDF	1.16	0.0341	2.93 %	1.13	1.17	1.15	1.16	1.22	1.13	1.20
13C-1,2,3,4,6,7,8-HpCDF	1.06	0.0419	3.95 %	1.03	1.04	1.06	1.04	1.09	1.02	1.14
13C-1,2,3,4,7,8,9-HpCDF	0.93	0.0512	5.53 %	0.89	0.92	0.90	0.91	0.96	0.87	1.03
13C-OCDF	0.95	0.0505	5.31 %	0.93	0.95	0.91	0.94	0.98	0.90	1.05
37Cl-2,3,7,8-TCDD	0.90	0.0647	7.21 %	0.95	0.89	0.79	0.90	0.88	0.87	1.00
13C-1,2,3,4-TCDD	-	-	- %	-	-	-	-	-	-	-
13C-1,2,3,4-TCDF	-	-	- %	-	-	-	-	-	-	-
13C-1,2,3,7,8,9-HxCDD	-	-	- %	-	-	-	-	-	-	-
Total Tetra-Dioxins	1.08	0.0710	6.57 %	1.16	1.10	1.08	1.11	0.99	0.99	1.15
Total Penta-Dioxins	0.90	0.0496	5.49 %	0.93	0.91	0.90	0.88	0.86	0.85	1.00
Total Hexa-Dioxins	1.03	0.0540	5.23 %	1.11	1.05	1.04	1.01	0.98	0.96	1.09
Total Hepta-Dioxins	1.09	0.0526	4.85 %	1.18	1.10	1.09	1.07	1.03	1.02	1.11
Total Tetra-Furans	1.05	0.0872	8.33 %	1.21	1.10	1.04	1.00	0.96	0.96	1.06
1st Fn. Tot Penta-Furans	0.99	0.0375	3.77 %	1.07	1.00	1.00	0.99	0.96	0.95	0.99
Total Penta-Furans	0.99	0.0375	3.77 %	1.07	1.00	1.00	0.99	0.96	0.95	0.99
Total Hexa-Furans	1.16	0.0487	4.18 %	1.22	1.18	1.17	1.14	1.11	1.10	1.22
Total Hepta-Furans	1.30	0.0492	3.79 %	1.37	1.31	1.31	1.28	1.25	1.24	1.33

Analyst: 6

Date: 1/7/16

USEPA - ITD

FORM 3A

PCDD/PCDF INITIAL CALIBRATION RELATIVE RESPONSES

Lab Name: Frontier Analytical Laboratory Episode No.:

Contract No.: SAS No.:

Initial Calibration Date: 12/29/15

Instrument ID: FAL4 GC Column ID: db5

CS0 Data Filename: 07JAN16Z S4 CS1 Data Filename: 29DEC15Z S1

CS2 Data Filename: 29DEC15Z S2 CS3 Data Filename: 29DEC15Z S3

CS4 Data Filename: 29DEC15Z S4 CS5 Data Filename: 29DEC15Z S5

CS6 Data Filename: 29DEC15Z S6

	RELATIVE RESPONSE (RR)							MEAN RR	Cv (%RSD)
	CS0	CS1	CS2	CS3	CS4	CS5	CS6		
NATIVE ANALYTES									
2,3,7,8-TCDD	22.10	1.16	1.10	1.08	1.11	0.99	0.99	1.08	6.57
1,2,3,7,8-PeCDD	17.58	0.93	0.91	0.90	0.88	0.86	0.85	0.90	5.49
1,2,3,4,7,8-HxCDD	18.89	1.07	1.02	0.97	0.94	0.93	0.91	0.98	6.02
1,2,3,6,7,8-HxCDD	19.88	1.08	0.98	1.04	0.99	0.95	0.92	1.00	5.81
1,2,3,7,8,9-HxCDD	22.11	1.17	1.14	1.11	1.11	1.05	1.04	1.11	4.65
1,2,3,4,6,7,8-HpCDD	21.39	1.18	1.10	1.09	1.07	1.03	1.02	1.09	4.85
OCDD	20.65	1.13	1.06	1.05	1.03	0.99	0.97	1.04	5.16
2,3,7,8-TCDF	20.00	1.21	1.10	1.04	1.00	0.96	0.96	1.05	8.33
1,2,3,7,8-PeCDF	19.70	1.05	0.98	0.98	0.98	0.95	0.94	0.98	3.56
2,3,4,7,8-PeCDF	20.06	1.09	1.02	1.02	1.00	0.97	0.96	1.01	4.04
1,2,3,4,7,8-HxCDF	24.02	1.31	1.26	1.21	1.20	1.18	1.16	1.23	4.38
1,2,3,6,7,8-HxCDF	23.01	1.23	1.19	1.17	1.15	1.11	1.11	1.17	4.14
2,3,4,6,7,8-HxCDF	21.94	1.16	1.13	1.13	1.10	1.07	1.05	1.12	4.24
1,2,3,7,8,9-HxCDF	22.51	1.20	1.16	1.16	1.13	1.10	1.08	1.15	4.31
1,2,3,4,6,7,8-HpCDF	26.97	1.42	1.37	1.37	1.35	1.31	1.30	1.36	3.53
1,2,3,4,7,8,9-HpCDF	23.96	1.32	1.23	1.25	1.20	1.18	1.16	1.23	4.34
OCDF	22.23	1.21	1.18	1.14	1.11	1.08	1.06	1.13	4.69

Analyst: Date: 1/7/16

USEPA - ITD

FORM 3B

PCDD/PCDF INITIAL CALIBRATION RELATIVE RESPONSES

Lab Name: Frontier Analytical Laboratory Episode No.:

Contract No.: SAS No.:

Initial Calibration Date: 12/29/15

Instrument ID: FAL4 GC Column ID: db5

CS0 Data Filename: 29DEC15Z S4 CS1 Data Filename: 29DEC15Z S1

CS2 Data Filename: 29DEC15Z S2 CS3 Data Filename: 29DEC15Z S3

CS4 Data Filename: 29DEC15Z S4 CS5 Data Filename: 29DEC15Z S5

CS6 Data Filename: 07JAN16Z S6

Labeled Compounds	RELATIVE RESPONSE (RR)							MEAN RR	Cv (%RSD)
	CS0	CS1	CS2	CS3	CS4	CS5	CS6		
13C-2,3,7,8-TCDD	1.06	1.06	1.07	1.07	1.06	1.11	1.05	1.07	2.18
13C-1,2,3,7,8-PeCDD	0.74	0.77	0.76	0.76	0.74	0.79	0.76	0.78	4.93
13C-1,2,3,4,7,8-HxCDD	0.87	0.88	0.86	0.88	0.87	0.90	0.84	0.87	2.33
13C-1,2,3,6,7,8-HxCDD	0.85	0.82	0.85	0.84	0.85	0.87	0.82	0.84	2.77
13C-1,2,3,4,6,7,8-HpCDD	0.83	0.86	0.87	0.85	0.83	0.88	0.82	0.85	2.84
13C-OCDD	0.69	0.69	0.69	0.68	0.69	0.72	0.66	0.70	3.97
13C-2,3,7,8-TCDF	1.02	1.02	1.03	1.03	1.02	1.06	1.02	1.03	1.66
13C-1,2,3,7,8-PeCDF	0.88	0.87	0.89	0.88	0.88	0.94	0.89	0.89	2.52
13C-2,3,4,7,8-PeCDF	0.79	0.81	0.80	0.80	0.79	0.83	0.83	0.82	4.74
13C-1,2,3,4,7,8-HxCDF	1.22	1.23	1.24	1.28	1.22	1.31	1.25	1.26	2.96
13C-1,2,3,6,7,8-HxCDF	1.26	1.24	1.28	1.29	1.26	1.33	1.25	1.28	2.71
13C-2,3,4,6,7,8-HxCDF	1.25	1.23	1.26	1.27	1.25	1.31	1.23	1.27	2.44
13C-1,2,3,7,8,9-HxCDF	1.16	1.13	1.17	1.15	1.16	1.22	1.13	1.16	2.93
13C-1,2,3,4,6,7,8-HpCDF	1.04	1.03	1.04	1.06	1.04	1.09	1.02	1.06	3.95
13C-1,2,3,4,7,8,9-HpCDF	0.91	0.89	0.92	0.90	0.91	0.96	0.87	0.93	5.53
13C-OCDF	0.94	0.93	0.95	0.91	0.94	0.98	0.90	0.95	5.31
CLEANUP STANDARD									
37Cl-2,3,7,8-TCDD	0.90	0.95	0.89	0.79	0.90	0.88	0.87	0.90	7.21

Analyst: *J* Date: 1/7/16

USEPA - ITD

FORM 3C

PCDD/PCDF INITIAL CALIBRATION ION ABUNDANCE RATIOS

Lab Name: Frontier Analytical Laboratory Episode No.:

Contract No.: SAS No.:

Initial Calibration Date: 12/29/15

Instrument ID: FAL4 GC Column ID: db5

CS0 Data Filename: 29DEC15Z S4 CS1 Data Filename: 29DEC15Z S1

CS2 Data Filename: 29DEC15Z S2 CS3 Data Filename: 29DEC15Z S3

CS4 Data Filename: 29DEC15Z S4 CS5 Data Filename: 29DEC15Z S5

CS6 Data Filename: 07JAN16Z S6

NATIVE ANALYTES	M/Z'S FORMING RATIO	ION ABUNDANCE RATIOS							QC LIMITS
		CS0	CS1	CS2	CS3	CS4	CS5	CS6	
2,3,7,8-TCDD	M/M+2	0.78	0.87	0.83	0.78	0.78	0.79	0.79	0.65-0.89
1,2,3,7,8-PeCDD	M+2/M+4	1.57	1.52	1.58	1.56	1.57	1.58	1.58	1.32-1.78
1,2,3,4,7,8-HxCDD	M+2/M+4	1.25	1.24	1.21	1.25	1.25	1.27	1.25	1.05-1.43
1,2,3,6,7,8-HxCDD	M+2/M+4	1.24	1.21	1.28	1.27	1.24	1.26	1.25	1.05-1.43
1,2,3,7,8,9-HxCDD	M+2/M+4	1.27	1.30	1.25	1.26	1.27	1.26	1.26	1.05-1.43
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.06	1.04	1.07	1.07	1.06	1.05	1.06	0.88-1.20
OCDD	M+2/M+4	0.90	0.86	0.94	0.91	0.90	0.90	0.91	0.76-1.02
2,3,7,8-TCDF	M/M+2	0.81	0.79	0.73	0.86	0.81	0.81	0.79	0.65-0.89
1,2,3,7,8-PeCDF	M+2/M+4	1.54	1.47	1.49	1.49	1.54	1.55	1.56	1.32-1.78
2,3,4,7,8-PeCDF	M+2/M+4	1.54	1.37	1.51	1.49	1.54	1.54	1.54	1.32-1.78
1,2,3,4,7,8-HxCDF	M+2/M+4	1.26	1.28	1.32	1.25	1.26	1.28	1.26	1.05-1.43
1,2,3,6,7,8-HxCDF	M+2/M+4	1.26	1.28	1.27	1.25	1.26	1.28	1.26	1.05-1.43
2,3,4,6,7,8-HxCDF	M+2/M+4	1.26	1.26	1.28	1.27	1.26	1.26	1.26	1.05-1.43
1,2,3,7,8,9-HxCDF	M+2/M+4	1.27	1.32	1.31	1.26	1.27	1.27	1.26	1.05-1.43
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.05	1.09	1.02	1.07	1.05	1.06	1.07	0.88-1.20
1,2,3,4,7,8,9-HpCDF	M+2/M+4	1.08	1.09	1.13	1.07	1.08	1.07	1.05	0.88-1.20
OCDF	M+2/M+4	0.92	0.86	0.91	0.91	0.92	0.91	0.91	0.76-1.02

Analyst: Date: 1/7/16

USEPA - ITD

FORM 3D

PCDD/PCDF INITIAL CALIBRATION ION ABUNDANCE RATIOS

Lab Name: Frontier Analytical Laboratory Episode No.:

Contract No.: SAS No.:

Initial Calibration Date: 12/29/15

Instrument ID: FAL4 GC Column ID: db5

CS0 Data Filename: 29DEC15Z S4 CS1 Data Filename: 29DEC15Z S1

CS2 Data Filename: 29DEC15Z S2 CS3 Data Filename: 29DEC15Z S3

CS4 Data Filename: 29DEC15Z S4 CS5 Data Filename: 29DEC15Z S5

CS6 Data Filename: 07JAN16Z S6

Labeled Compounds	M/Z'S FORMING RATIO	ION ABUNDANCE RATIOS							QC LIMITS
		CS0	CS1	CS2	CS3	CS4	CS5	CS6	
13C-2,3,7,8-TCDD	M/M+2	0.80	0.80	0.79	0.80	0.80	0.78	0.80	0.65-0.89
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.57	1.57	1.59	1.61	1.57	1.58	1.58	1.32-1.78
13C-1,2,3,4,7,8-HxCDD	M+2/M+4	1.27	1.28	1.27	1.27	1.27	1.27	1.25	1.05-1.43
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.27	1.26	1.27	1.27	1.27	1.25	1.26	1.05-1.43
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.09	1.06	1.07	1.07	1.09	1.08	1.08	0.88-1.20
13C-OCDD	M+2/M+4	0.90	0.91	0.90	0.90	0.90	0.91	0.91	0.76-1.02
13C-2,3,7,8-TCDF	M/M+2	0.80	0.79	0.80	0.81	0.80	0.80	0.81	0.65-0.89
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.59	1.57	1.59	1.59	1.59	1.60	1.57	1.32-1.78
13C-2,3,4,7,8-PeCDF	M+2/M+4	1.60	1.60	1.57	1.59	1.60	1.59	1.60	1.32-1.78
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.53	0.53	0.53	0.52	0.53	0.54	0.54	0.43-0.59
13C-1,2,3,6,7,8-HxCDF	M/M+2	0.54	0.53	0.53	0.54	0.54	0.53	0.54	0.43-0.59
13C-2,3,4,6,7,8-HxCDF	M/M+2	0.54	0.53	0.53	0.54	0.54	0.54	0.54	0.43-0.59
13C-1,2,3,7,8,9-HxCDF	M/M+2	0.53	0.53	0.54	0.53	0.53	0.53	0.54	0.43-.059
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.45	0.46	0.46	0.47	0.45	0.46	0.46	0.37-0.51
13C-1,2,3,4,7,8,9-HpCDF	M/M+2	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.37-0.51
13C-OCDF	M+2/M+4	0.90	0.91	0.91	0.91	0.90	0.90	0.93	0.76-1.02

Analyst: J

Date: 1/7/16

USEPA - ITD

FORM 4A

PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: Frontier Analytical Laboratory Episode No.:
Contract No.: SAS No.:
Initial Calibration Date: 12/29/15
Instrument ID: FAL4 GC Column ID: db5
VER Data Filename: 29DEC15Z Sam:4 Analysis Date: 29-DEC-15 13:15:57

NATIVE ANALYTES	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	ACCEPT	CONC. FOUND	CONC. RANGE (ng/mL) (3)
2,3,7,8-TCDD	M/M+2	0.78	0.65-0.89	y	10.2	7.80 - 12.9
1,2,3,7,8-PeCDD	M+2/M+4	1.57	1.32-1.78	y	48.6	39.0 - 65.0
1,2,3,4,7,8-HxCDD	M+2/M+4	1.25	1.05-1.43	y	48.1	39.0 - 64.0
1,2,3,6,7,8-HxCDD	M+2/M+4	1.24	1.05-1.43	y	49.6	39.0 - 64.0
1,2,3,7,8,9-HxCDD	M+2/M+4	1.27	1.05-1.43	y	49.6	41.0 - 61.0
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.06	0.88-1.20	y	49.3	43.0 - 58.0
OCDD	M+2/M+4	0.90	0.76-1.02	y	98.9	79.0 - 126
2,3,7,8-TCDF	M/M+2	0.81	0.65-0.89	y	9.55	8.40 - 12.0
1,2,3,7,8-PeCDF	M+2/M+4	1.54	1.32-1.78	y	50.3	41.0 - 60.0
2,3,4,7,8-PeCDF	M+2/M+4	1.54	1.32-1.78	y	49.6	41.0 - 60.0
1,2,3,4,7,8-HxCDF	M+2/M+4	1.26	1.05-1.43	y	49.0	45.0 - 56.0
1,2,3,6,7,8-HxCDF	M+2/M+4	1.26	1.05-1.43	y	49.3	44.0 - 57.0
2,3,4,6,7,8-HxCDF	M+2/M+4	1.26	1.05-1.43	y	49.1	44.0 - 57.0
1,2,3,7,8,9-HxCDF	M+2/M+4	1.27	1.05-1.43	y	49.1	45.0 - 56.0
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.05	0.88-1.20	y	49.5	45.0 - 55.0
1,2,3,4,7,8,9-HpCDF	M+2/M+4	1.08	0.88-1.20	y	48.9	43.0 - 58.0
OCDF	M+2/M+4	0.92	0.76-1.02	y	98.3	63.0 - 159

- (1) See Table 8, Method 1613, for m/z specifications.
- (2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613.
- (3) Contract-required concentration range as specified in Table 6, Method 1613.

Analyst: [Signature] Date: 1/7/16

USEPA - ITD

FORM 4B
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: Frontier Analytical Laboratory

Episode No.:

Contract No.:

SAS No.:

Initial Calibration Date: 12/29/15

Instrument ID: FAL3

GC Column ID: db5

VER Data Filename: 29DEC15Z Sam:4

Analysis Date: 29-DEC-15 13:15:57

LABELLED COMPOUNDS	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	ACCEPT	CONC. FOUND	CONC. RANGE (ng/mL) (3)
13C-2,3,7,8-TCDD	M/M+2	0.80	0.65-0.89	y	98.5	82.0 - 121
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.57	1.32-1.78	y	94.8	62.0 - 160
13C-1,2,3,4,7,8-HxCDD	M+2/M+4	1.27	1.05-1.43	y	100	85.0 - 117
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.27	1.05-1.43	y	101	85.0 - 118
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.09	0.88-1.20	y	97.0	72.0 - 138
13C-OCDD	M+2/M+4	0.90	0.76-1.02	y	199	96.0 - 415
13C-2,3,7,8-TCDF	M/M+2	0.80	0.65-0.89	y	99.0	71.0 - 140
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.59	1.32-1.78	y	98.4	76.0 - 130
13C-2,3,4,7,8-PeCDF	M+2/M+4	1.60	1.32-1.78	y	95.9	77.0 - 130
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.53	0.43-0.59	y	96.8	76.0 - 131
13C-1,2,3,6,7,8-HxCDF	M/M+2	0.54	0.43-0.59	y	98.2	70.0 - 143
13C-2,3,4,6,7,8-HxCDF	M/M+2	0.54	0.43-0.59	y	98.8	73.0 - 137
13C-1,2,3,7,8,9-HxCDF	M/M+2	0.53	0.43-0.59	y	99.5	74.0 - 135
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.45	0.37-0.51	y	97.7	78.0 - 129
13C-1,2,3,4,7,8,9-HpCDF	M/M+2	0.46	0.37-0.51	y	98.4	77.0 - 129
13C-OCDF	M+2/M+4	0.90	0.76-1.02	y	199	96.0 - 415
CLEANUP STANDARD (4)						
37Cl-2,3,7,8-TCDD					10.0	7.90 - 12.7

(1) See Table 8, Method 1613, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613.

(3) Contract-required concentration range as specified in Table 6, Method 1613.

(4) No ion abundance ratio; report concentration found.

Analyst:

Date: 1/7/16

FORM 5
PCDD/PCDF RT WINDOW AND ISOMER SPECIFICITY STANDARDS

Lab Name: Frontier Analytical Laboratory Episode No.:
Contract No.: SAS No.:
Instrument ID: FAL4 Initial Calibration Date: 12/29/15
RT Window Data Filename: 29DEC15Z Sam:4 Analysis Date: 29-DEC-15 Time: 13:15:57
DB-5 IS Data Filename: 29DEC15Z Sam:4 Analysis Date: 29-DEC-15 Time: 13:15:57
DB-225 IS Data Filename: Analysis Date: Time:

DB-5 RT WINDOW DEFINING STANDARDS RESULTS

ISOMERS	ABSOLUTE RT	ISOMERS	ABSOLUTE RT
1,3,6,8-TCDD (F)	24:20	1,3,6,8-TCDF (F)	22:59
1,2,8,9-TCDD (L)	28:20	1,2,8,9-TCDF (L)	28:34
1,2,4,7,9-PeCDD (F)	30:14	1,3,4,6,8-PeCDF (F)	28:23
1,2,3,8,9-PeCDD (L)	33:48	1,2,3,8,9-PeCDF (L)	34:14
1,2,4,6,7,9-HxCDD (F)	36:06	1,2,3,4,6,8-HxCDF (F)	35:14
1,2,3,7,8,9-HxCDD (L)	39:10	1,2,3,7,8,9-HxCDF (L)	39:45
1,2,3,4,6,7,9-HpCDD (F)	42:45	1,2,3,4,6,7,8-HpCDF (F)	42:14
1,2,3,4,6,7,8-HpCDD (L)	44:07	1,2,3,4,7,8,9-HpCDF (L)	45:03

(F) = First eluting isomer (DB-5); (L) = Last eluting isomer (DB-5)

=====

ISOMER SPECIFICITY (IS) TEST STANDARD RESULTS

% VALLEY HEIGHT
BETWEEN
COMPARED PEAKS (1)

<25%

(1) To meet contract requirement, %Valley Height Between Compared Peaks shall not exceed 25% (section 15.4.2.2, Method 1613).

Analyst: _____

Date: 12/30/15

USEPA - ITD

FORM 6A

PCDD/PCDF RELATIVE RETENTION TIMES

Lab Name: Frontier Analytical Laboratory

Episode No.:

Contract No.:

SAS No.:

Init. Cal. Date: 12/29/15

Instrument ID: FAL4

GC Column ID: db5

Analysis Date: 29-DEC-15 13:15:57

CS3 or VER Data Filename: 29DEC15Z

Sam:4

NATIVE ANALYTES	RETENTION TIME REFERENCE	RRT	RRT QC LIMITS (1)
2,3,7,8-TCDD	13C-2,3,7,8-TCDD	1.001	0.999-1.002
2,3,7,8-TCDF	13C-2,3,7,8-TCDF	1.001	0.999-1.003
1,2,3,7,8-PeCDD	13C-1,2,3,7,8-PeCDD	1.001	0.999-1.002
1,2,3,7,8-PeCDF	13C-1,2,3,7,8-PeCDF	1.000	0.999-1.002
2,3,4,7,8-PeCDF	13C-2,3,4,7,8-PeCDF	1.001	0.999-1.002
LABELED COMPOUNDS			
37Cl-2,3,7,8-TCDD	13C-1,2,3,4-TCDD	1.023	0.989-1.052
13C-2,3,7,8-TCDD		1.022	0.976-1.043
13C-2,3,7,8-TCDF		0.994	0.923-1.103
13C-1,2,3,7,8-PeCDD		1.240	1.000-1.567
13C-1,2,3,7,8-PeCDF		1.176	0.923-1.203
13C-2,3,4,7,8-PeCDF		1.225	0.923-1.303

(1) Contract-required limits for Relative Retention Times (RRT) as specified in Table 2, Method 1613.

Analyst: _____

Date: _____

USEPA - ITD

FORM 6B

PCDD/PCDF RELATIVE RETENTION TIMES

Lab Name: Frontier Analytical Laboratory

Episode No.:

Contract No.:

SAS No.:

Init. Cal. Date: 12/29/15

Instrument ID: FAL4

GC Column ID: db5


Analysis Date: 29-DEC-15 13:15:57

CS3 or VER Data Filename: 29DEC15Z

Sam:4

NATIVE ANALYTES	RETENTION TIME REFERENCE	RRT	RRT QC LIMITS (1)
1,2,3,4,7,8-HxCDD	13C-1,2,3,4,7,8-HxCDD	1.000	0.999-1.001
1,2,3,6,7,8-HxCDD	13C-1,2,3,6,7,8-HxCDD	1.000	0.998-1.004
1,2,3,7,8,9-HxCDD	13C-1,2,3,6,7,8-HxCDD	1.012	1.000-1.019
1,2,3,4,7,8-HxCDF	13C-1,2,3,4,7,8-HxCDF	1.001	0.999-1.001
1,2,3,6,7,8-HxCDF	13C-1,2,3,6,7,8-HxCDF	1.000	0.997-1.005
2,3,4,6,7,8-HxCDF	13C-2,3,4,6,7,8-HxCDF	1.001	0.999-1.001
1,2,3,7,8,9-HxCDF	13C-1,2,3,7,8,9-HxCDF	1.000	0.999-1.001
1,2,3,4,6,7,8-HpCDD	13C-1,2,3,4,6,7,8-HpCDD	1.001	0.999-1.001
1,2,3,4,6,7,8-HpCDF	13C-1,2,3,4,6,7,8-HpCDF	1.000	0.999-1.001
1,2,3,4,7,8,9-HpCDF	13C-1,2,3,4,7,8,9-HpCDF	1.000	0.999-1.001
OCDD	13C-OCDD	1.001	0.999-1.001
OCDF	13C-OCDF	1.001	0.999-1.001
LABELED COMPOUNDS			
13C-1,2,3,4,7,8-HxCDD	13C-1,2,3,7,8,9-HxCDD	0.985	0.977-1.000
13C-1,2,3,6,7,8-HxCDD		0.989	0.981-1.003
13C-1,2,3,4,7,8-HxCDF		0.949	0.944-0.970
13C-1,2,3,6,7,8-HxCDF		0.954	0.949-0.975
13C-2,3,4,6,7,8-HxCDF		0.978	0.959-1.021
13C-1,2,3,7,8,9-HxCDF		1.015	0.977-1.047
13C-1,2,3,4,6,7,8-HpCDD		1.126	1.086-1.130
13C-1,2,3,4,6,7,8-HpCDF		1.078	1.043-1.085
13C-1,2,3,4,7,8,9-HpCDF		1.150	1.057-1.154
13C-OCDD		1.267	1.032-1.311
13C-OCDF		1.277	1.000-1.311

(1) Contract-required limits for Relative Retention Times (RRT) as specified in Table 2, Method 1613.

Analyst: 

Date: 1/7/16

Run #1 Filename 29DEC15Z
 Client ID: ST122915Z0

S: 1 Acquired: 29-DEC-15 10:31:38 Cal: PCDDFAL4-12-29-15
 Analyte: FAL ID: 1613 CSO 151209G

Typ	Name	Amount	Resp	RA	RT	RRF
1	Unk 2,3,7,8-TCDD	0.25	1.35e+05	0.87 y	27:25	1.16 y
2	Unk 1,2,3,7,8-PeCDD	1.25	3.93e+05	1.52 y	33:15	0.931 y
3	Unk 1,2,3,4,7,8-HxCDD	1.25	3.96e+05	1.24 y	38:36	1.07 y
4	Unk 1,2,3,6,7,8-HxCDD	1.25	3.72e+05	1.21 y	38:45	1.08 y
5	Unk 1,2,3,7,8,9-HxCDD	1.25	4.19e+05	1.30 y	39:13	1.17 y
6	Unk 1,2,3,4,6,7,8-HpCDD	1.25	4.25e+05	1.04 y	44:10	1.18 y
7	Unk OCDD	2.50	6.60e+05	0.86 y	49:42	1.13 y
8	Unk 2,3,7,8-TCDF	0.25	1.75e+05	0.79 y	26:40	1.21 y
9	Unk 1,2,3,7,8-PeCDF	1.25	6.47e+05	1.47 y	31:31	1.05 y
10	Unk 2,3,4,7,8-PeCDF	1.25	6.24e+05	1.37 y	32:51	1.09 y
11	Unk 1,2,3,4,7,8-HxCDF	1.25	6.80e+05	1.28 y	37:13	1.31 y
12	Unk 1,2,3,6,7,8-HxCDF	1.25	6.47e+05	1.28 y	37:24	1.23 y
13	Unk 2,3,4,6,7,8-HxCDF	1.25	6.03e+05	1.26 y	38:21	1.16 y
14	Unk 1,2,3,7,8,9-HxCDF	1.25	5.74e+05	1.32 y	39:48	1.20 y
15	Unk 1,2,3,4,6,7,8-HpCDF	1.25	6.19e+05	1.09 y	42:17	1.42 y
16	Unk 1,2,3,4,7,8,9-HpCDF	1.25	4.98e+05	1.09 y	45:06	1.32 y
17	Unk OCDF	2.50	9.52e+05	0.86 y	50:04	1.21 y
18	IS/RT 13C-2,3,7,8-TCDD	100.00	4.66e+07	0.80 y	27:24	1.06 y
19	IS 13C-1,2,3,7,8-PeCDD	100.00	3.38e+07	1.57 y	33:14	0.765 y
20	IS 13C-1,2,3,4,7,8-HxCDD	100.00	2.96e+07	1.28 y	38:35	0.875 y
21	IS 13C-1,2,3,6,7,8-HxCDD	100.00	2.77e+07	1.26 y	38:45	0.818 y
22	IS 13C-1,2,3,4,6,7,8-HpCDD	100.00	2.89e+07	1.06 y	44:10	0.855 y
23	IS 13C-OCDD	200.00	4.65e+07	0.91 y	49:41	0.688 y
24	IS 13C-2,3,7,8-TCDF	100.00	5.79e+07	0.79 y	26:39	1.02 y
25	IS 13C-1,2,3,7,8-PeCDF	100.00	4.94e+07	1.57 y	31:30	0.872 y
26	IS 13C-2,3,4,7,8-PeCDF	100.00	4.59e+07	1.60 y	32:50	0.809 y
27	IS 13C-1,2,3,4,7,8-HxCDF	100.00	4.15e+07	0.53 y	37:11	1.23 y
28	IS 13C-1,2,3,6,7,8-HxCDF	100.00	4.21e+07	0.53 y	37:23	1.24 y
29	IS 13C-2,3,4,6,7,8-HxCDF	100.00	4.17e+07	0.53 y	38:20	1.23 y
30	IS 13C-1,2,3,7,8,9-HxCDF	100.00	3.82e+07	0.53 y	39:46	1.13 y
31	IS 13C-1,2,3,4,6,7,8-HpCDF	100.00	3.48e+07	0.46 y	42:15	1.03 y
32	IS 13C-1,2,3,4,7,8,9-HpCDF	100.00	3.02e+07	0.46 y	45:05	0.892 y
33	IS 13C-OCDF	200.00	6.28e+07	0.91 y	50:04	0.929 y
34	C/Up 37Cl-2,3,7,8-TCDD	0.25	1.05e+05		27:25	0.949 y
35	RS 13C-1,2,3,4-TCDD	100.00	4.42e+07	0.79 y	26:49	- n
36	RS 13C-1,2,3,4-TCDF	100.00	5.67e+07	0.80 y	25:34	- n
37	RS/RT 13C-1,2,3,7,8,9-HxCDD	100.00	3.38e+07	1.27 y	39:12	- n
38	Tot Total Tetra-Dioxins	0.00	-	- n	-	1.16 y
39	Tot Total Penta-Dioxins	0.00	-	- n	-	0.931 y
40	Tot Total Hexa-Dioxins	0.00	-	- n	-	1.11 y
41	Tot Total Hepta-Dioxins	0.00	-	- n	-	1.18 y
42	Tot Total Tetra-Furans	0.00	-	- n	-	1.21 y
43	Tot 1st Fn. Tot Penta-Furans	0.00	-	- n	-	1.07 y
44	Tot Total Penta-Furans	0.00	-	- n	-	1.07 y
45	Tot Total Hexa-Furans	0.00	-	- n	-	1.22 y
46	Tot Total Hepta-Furans	0.00	-	- n	-	1.37 y

Analyst: J

Date: 12/30/15

Typ	Name	Amount	Resp	RA	RT	RRF
1	Unk	2,3,7,8-TCDD	0.50	2.51e+05	0.83 y 27:24	1.10 y
2	Unk	1,2,3,7,8-PeCDD	2.50	7.46e+05	1.58 y 33:14	0.911 y
3	Unk	1,2,3,4,7,8-HxCDD	2.50	7.04e+05	1.21 y 38:34	1.02 y
4	Unk	1,2,3,6,7,8-HxCDD	2.50	6.69e+05	1.28 y 38:44	0.979 y
5	Unk	1,2,3,7,8,9-HxCDD	2.50	7.84e+05	1.25 y 39:10	1.14 y
6	Unk	1,2,3,4,6,7,8-HpCDD	2.50	7.67e+05	1.07 y 44:09	1.10 y
7	Unk	OCDD	5.00	1.18e+06	0.94 y 49:39	1.06 y
8	Unk	2,3,7,8-TCDF	0.50	3.17e+05	0.73 y 26:38	1.10 y
9	Unk	1,2,3,7,8-PeCDF	2.50	1.22e+06	1.49 y 31:30	0.979 y
10	Unk	2,3,4,7,8-PeCDF	2.50	1.15e+06	1.51 y 32:49	1.02 y
11	Unk	1,2,3,4,7,8-HxCDF	2.50	1.25e+06	1.32 y 37:11	1.26 y
12	Unk	1,2,3,6,7,8-HxCDF	2.50	1.21e+06	1.27 y 37:23	1.19 y
13	Unk	2,3,4,6,7,8-HxCDF	2.50	1.15e+06	1.28 y 38:18	1.13 y
14	Unk	1,2,3,7,8,9-HxCDF	2.50	1.08e+06	1.31 y 39:45	1.16 y
15	Unk	1,2,3,4,6,7,8-HpCDF	2.50	1.15e+06	1.02 y 42:14	1.37 y
16	Unk	1,2,3,4,7,8,9-HpCDF	2.50	9.06e+05	1.13 y 45:04	1.23 y
17	Unk	OCDF	5.00	1.78e+06	0.91 y 50:03	1.18 y
18	IS/RT	13C-2,3,7,8-TCDD	100.00	4.58e+07	0.79 y 27:22	1.07 y
19	IS	13C-1,2,3,7,8-PeCDD	100.00	3.27e+07	1.59 y 33:12	0.764 y
20	IS	13C-1,2,3,4,7,8-HxCDD	100.00	2.76e+07	1.27 y 38:33	0.861 y
21	IS	13C-1,2,3,6,7,8-HxCDD	100.00	2.73e+07	1.27 y 38:43	0.853 y
22	IS	13C-1,2,3,4,6,7,8-HpCDD	100.00	2.79e+07	1.07 y 44:07	0.870 y
23	IS	13C-OCDD	200.00	4.44e+07	0.90 y 49:38	0.694 y
24	IS	13C-2,3,7,8-TCDF	100.00	5.74e+07	0.80 y 26:38	1.03 y
25	IS	13C-1,2,3,7,8-PeCDF	100.00	4.97e+07	1.59 y 31:29	0.888 y
26	IS	13C-2,3,4,7,8-PeCDF	100.00	4.49e+07	1.57 y 32:48	0.803 y
27	IS	13C-1,2,3,4,7,8-HxCDF	100.00	3.96e+07	0.53 y 37:10	1.24 y
28	IS	13C-1,2,3,6,7,8-HxCDF	100.00	4.08e+07	0.53 y 37:22	1.28 y
29	IS	13C-2,3,4,6,7,8-HxCDF	100.00	4.04e+07	0.53 y 38:18	1.26 y
30	IS	13C-1,2,3,7,8,9-HxCDF	100.00	3.74e+07	0.54 y 39:44	1.17 y
31	IS	13C-1,2,3,4,6,7,8-HpCDF	100.00	3.34e+07	0.46 y 42:13	1.04 y
32	IS	13C-1,2,3,4,7,8,9-HpCDF	100.00	2.94e+07	0.46 y 45:04	0.919 y
33	IS	13C-OCDF	200.00	6.07e+07	0.91 y 50:01	0.948 y
34	C/Up	37Cl-2,3,7,8-TCDD	0.50	1.90e+05	27:23	0.890 y
35	RS	13C-1,2,3,4-TCDD	100.00	4.28e+07	0.80 y 26:48	- n
36	RS	13C-1,2,3,4-TCDF	100.00	5.59e+07	0.80 y 25:31	- n
37	RS/RT	13C-1,2,3,7,8,9-HxCDD	100.00	3.20e+07	1.26 y 39:09	- n
38	Tot	Total Tetra-Dioxins	0.00	-	- n -	1.10 y
39	Tot	Total Penta-Dioxins	0.00	-	- n -	0.911 y
40	Tot	Total Hexa-Dioxins	0.00	-	- n -	1.05 y
41	Tot	Total Hepta-Dioxins	0.00	-	- n -	1.10 y
42	Tot	Total Tetra-Furans	0.00	-	- n -	1.10 y
43	Tot	1st Fn. Total Penta-Furans	0.00	-	- n -	1.00 y
44	Tot	Total Penta-Furans	0.00	-	- n -	1.00 y
45	Tot	Total Hexa-Furans	0.00	-	- n -	1.18 y
46	Tot	Total Hepta-Furans	0.00	-	- n -	1.31 y

Analyst: JDate: 12/30/15

Typ	Name	Amount	Resp	RA	RT	RRF	
1	Unk	2,3,7,8-TCDD	2.00	1.08e+06	0.78 y	27:23	1.08 y
2	Unk	1,2,3,7,8-PeCDD	10.00	3.21e+06	1.56 y	33:13	0.900 y
3	Unk	1,2,3,4,7,8-HxCDD	10.00	2.90e+06	1.25 y	38:34	0.967 y
4	Unk	1,2,3,6,7,8-HxCDD	10.00	2.97e+06	1.27 y	38:43	1.04 y
5	Unk	1,2,3,7,8,9-HxCDD	10.00	3.26e+06	1.26 y	39:10	1.11 y
6	Unk	1,2,3,4,6,7,8-HpCDD	10.00	3.18e+06	1.07 y	44:08	1.09 y
7	Unk	OCDD	20.00	4.87e+06	0.91 y	49:40	1.05 y
8	Unk	2,3,7,8-TCDF	2.00	1.32e+06	0.86 y	26:38	1.04 y
9	Unk	1,2,3,7,8-PeCDF	10.00	5.29e+06	1.49 y	31:29	0.977 y
10	Unk	2,3,4,7,8-PeCDF	10.00	5.01e+06	1.49 y	32:49	1.02 y
11	Unk	1,2,3,4,7,8-HxCDF	10.00	5.26e+06	1.25 y	37:11	1.21 y
12	Unk	1,2,3,6,7,8-HxCDF	10.00	5.14e+06	1.25 y	37:23	1.17 y
13	Unk	2,3,4,6,7,8-HxCDF	10.00	4.89e+06	1.27 y	38:19	1.13 y
14	Unk	1,2,3,7,8,9-HxCDF	10.00	4.55e+06	1.26 y	39:45	1.16 y
15	Unk	1,2,3,4,6,7,8-HpCDF	10.00	4.95e+06	1.07 y	42:15	1.37 y
16	Unk	1,2,3,4,7,8,9-HpCDF	10.00	3.83e+06	1.07 y	45:04	1.25 y
17	Unk	OCDF	20.00	7.04e+06	0.91 y	50:02	1.14 y
18	IS/RT	13C-2,3,7,8-TCDD	100.00	5.01e+07	0.80 y	27:22	1.07 y
19	IS	13C-1,2,3,7,8-PeCDD	100.00	3.57e+07	1.61 y	33:11	0.759 y
20	IS	13C-1,2,3,4,7,8-HxCDD	100.00	2.99e+07	1.27 y	38:32	0.880 y
21	IS	13C-1,2,3,6,7,8-HxCDD	100.00	2.87e+07	1.27 y	38:43	0.843 y
22	IS	13C-1,2,3,4,6,7,8-HpCDD	100.00	2.90e+07	1.07 y	44:07	0.854 y
23	IS	13C-OCDD	200.00	4.63e+07	0.90 y	49:38	0.681 y
24	IS	13C-2,3,7,8-TCDF	100.00	6.35e+07	0.81 y	26:37	1.03 y
25	IS	13C-1,2,3,7,8-PeCDF	100.00	5.41e+07	1.59 y	31:28	0.880 y
26	IS	13C-2,3,4,7,8-PeCDF	100.00	4.93e+07	1.59 y	32:48	0.801 y
27	IS	13C-1,2,3,4,7,8-HxCDF	100.00	4.34e+07	0.52 y	37:10	1.28 y
28	IS	13C-1,2,3,6,7,8-HxCDF	100.00	4.39e+07	0.54 y	37:21	1.29 y
29	IS	13C-2,3,4,6,7,8-HxCDF	100.00	4.31e+07	0.54 y	38:18	1.27 y
30	IS	13C-1,2,3,7,8,9-HxCDF	100.00	3.91e+07	0.53 y	39:44	1.15 y
31	IS	13C-1,2,3,4,6,7,8-HpCDF	100.00	3.61e+07	0.47 y	42:13	1.06 y
32	IS	13C-1,2,3,4,7,8,9-HpCDF	100.00	3.07e+07	0.46 y	45:03	0.903 y
33	IS	13C-OCDF	200.00	6.18e+07	0.91 y	50:02	0.908 y
34	C/Up	37Cl-2,3,7,8-TCDD	2.00	7.45e+05		27:24	0.793 y
35	RS	13C-1,2,3,4-TCDD	100.00	4.70e+07	0.79 y	26:47	- n
36	RS	13C-1,2,3,4-TCDF	100.00	6.15e+07	0.80 y	25:32	- n
37	RS/RT	13C-1,2,3,7,8,9-HxCDD	100.00	3.40e+07	1.26 y	39:10	- n
38	Tot	Total Tetra-Dioxins	0.00	-	- n	-	1.08 y
39	Tot	Total Penta-Dioxins	0.00	-	- n	-	0.900 y
40	Tot	Total Hexa-Dioxins	0.00	-	- n	-	1.04 y
41	Tot	Total Hepta-Dioxins	0.00	-	- n	-	1.09 y
42	Tot	Total Tetra-Furans	0.00	-	- n	-	1.04 y
43	Tot	1st Fn. Tot Penta-Furans	0.00	-	- n	-	0.997 y
44	Tot	Total Penta-Furans	0.00	-	- n	-	0.997 y
45	Tot	Total Hexa-Furans	0.00	-	- n	-	1.17 y
46	Tot	Total Hepta-Furans	0.00	-	- n	-	1.31 y

Analyst: Date: 12/30/15

Run #4 Filename 29DEC15Z
Client ID: ST122915Z3

S: 4 Acquired: 29-DEC-15 13:15:57 Cal:
Analyte:

FAL ID: 1613 CS3 151209J

Typ	Name	Amount	Resp	RA	RT	RRF	
1	Unk 2,3,7,8-TCDD	10.00	4.44e+06	0.78 y	27:23	1.11	y
2	Unk 1,2,3,7,8-PeCDD	50.00	1.23e+07	1.57 y	33:14	0.879	y
3	Unk 1,2,3,4,7,8-HxCDD	50.00	1.11e+07	1.25 y	38:33	0.944	y
4	Unk 1,2,3,6,7,8-HxCDD	50.00	1.14e+07	1.24 y	38:43	0.994	y
5	Unk 1,2,3,7,8,9-HxCDD	50.00	1.28e+07	1.27 y	39:10	1.11	y
6	Unk 1,2,3,4,6,7,8-HpCDD	50.00	1.20e+07	1.06 y	44:07	1.07	y
7	Unk OCDD	100.00	1.94e+07	0.90 y	49:38	1.03	y
8	Unk 2,3,7,8-TCDF	10.00	5.07e+06	0.81 y	26:38	1.000	y
9	Unk 1,2,3,7,8-PeCDF	50.00	2.14e+07	1.54 y	31:29	0.985	y
10	Unk 2,3,4,7,8-PeCDF	50.00	1.96e+07	1.54 y	32:49	1.00	y
11	Unk 1,2,3,4,7,8-HxCDF	50.00	1.99e+07	1.26 y	37:10	1.20	y
12	Unk 1,2,3,6,7,8-HxCDF	50.00	1.97e+07	1.26 y	37:22	1.15	y
13	Unk 2,3,4,6,7,8-HxCDF	50.00	1.86e+07	1.26 y	38:19	1.10	y
14	Unk 1,2,3,7,8,9-HxCDF	50.00	1.76e+07	1.27 y	39:45	1.13	y
15	Unk 1,2,3,4,6,7,8-HpCDF	50.00	1.89e+07	1.05 y	42:14	1.35	y
16	Unk 1,2,3,4,7,8,9-HpCDF	50.00	1.48e+07	1.08 y	45:03	1.20	y
17	Unk OCDF	100.00	2.84e+07	0.92 y	50:01	1.11	y
18	IS/RT 13C-2,3,7,8-TCDD	100.00	4.02e+07	0.80 y	27:22	1.06	y
19	IS 13C-1,2,3,7,8-PeCDD	100.00	2.80e+07	1.57 y	33:12	0.735	y
20	IS 13C-1,2,3,4,7,8-HxCDD	100.00	2.35e+07	1.27 y	38:32	0.868	y
21	IS 13C-1,2,3,6,7,8-HxCDD	100.00	2.30e+07	1.27 y	38:42	0.847	y
22	IS 13C-1,2,3,4,6,7,8-HpCDD	100.00	2.24e+07	1.09 y	44:06	0.828	y
23	IS 13C-OCDD	200.00	3.76e+07	0.90 y	49:37	0.694	y
24	IS 13C-2,3,7,8-TCDF	100.00	5.07e+07	0.80 y	26:37	1.02	y
25	IS 13C-1,2,3,7,8-PeCDF	100.00	4.36e+07	1.59 y	31:29	0.880	y
26	IS 13C-2,3,4,7,8-PeCDF	100.00	3.92e+07	1.60 y	32:47	0.791	y
27	IS 13C-1,2,3,4,7,8-HxCDF	100.00	3.31e+07	0.53 y	37:09	1.22	y
28	IS 13C-1,2,3,6,7,8-HxCDF	100.00	3.42e+07	0.54 y	37:21	1.26	y
29	IS 13C-2,3,4,6,7,8-HxCDF	100.00	3.39e+07	0.54 y	38:18	1.25	y
30	IS 13C-1,2,3,7,8,9-HxCDF	100.00	3.14e+07	0.53 y	39:44	1.16	y
31	IS 13C-1,2,3,4,6,7,8-HpCDF	100.00	2.81e+07	0.45 y	42:13	1.04	y
32	IS 13C-1,2,3,4,7,8,9-HpCDF	100.00	2.47e+07	0.46 y	45:02	0.911	y
33	IS 13C-OCDF	200.00	5.12e+07	0.90 y	49:60	0.944	y
34	C/Up 37Cl-2,3,7,8-TCDD	10.00	3.41e+06		27:23	0.898	y
35	RS 13C-1,2,3,4-TCDD	100.00	3.80e+07	0.81 y	26:46	-	n
36	RS 13C-1,2,3,4-TCDF	100.00	4.95e+07	0.78 y	25:30	-	n
37	RS/RT 13C-1,2,3,7,8,9-HxCDD	100.00	2.71e+07	1.25 y	39:09	-	n
38	Tot Total Tetra-Dioxins	0.00	-	- n	-	1.11	y
39	Tot Total Penta-Dioxins	0.00	-	- n	-	0.879	y
40	Tot Total Hexa-Dioxins	0.00	-	- n	-	1.01	y
41	Tot Total Hepta-Dioxins	0.00	-	- n	-	1.07	y
42	Tot Total Tetra-Furans	0.00	-	- n	-	1.000	y
43	Tot 1st Fn. Tot Penta-Furans	0.00	-	- n	-	0.993	y
44	Tot Total Penta-Furans	0.00	-	- n	-	0.993	y
45	Tot Total Hexa-Furans	0.00	-	- n	-	1.14	y
46	Tot Total Hepta-Furans	0.00	-	- n	-	1.28	y

Analyst: 

Date: 12/30/15

Run #5 Filename 29DEC15Z
 Client ID: ST12291524

S: 5 Acquired: 29-DEC-15 14:10:45 Cal:
 Analyte:

FAL ID: 1613 CS4 151209K

Typ	Name	Amount	Resp	RA	RT	RRF	
1	Unk	2,3,7,8-TCDD	40.00	1.70e+07	0.79 y	27:23	0.986 y
2	Unk	1,2,3,7,8-PeCDD	200.00	5.31e+07	1.58 y	33:13	0.865 y
3	Unk	1,2,3,4,7,8-HxCDD	200.00	4.76e+07	1.27 y	38:33	0.934 y
4	Unk	1,2,3,6,7,8-HxCDD	200.00	4.70e+07	1.26 y	38:43	0.948 y
5	Unk	1,2,3,7,8,9-HxCDD	200.00	5.29e+07	1.26 y	39:10	1.05 y
6	Unk	1,2,3,4,6,7,8-HpCDD	200.00	5.15e+07	1.05 y	44:07	1.03 y
7	Unk	OCDD	400.00	8.10e+07	0.90 y	49:38	0.988 y
8	Unk	2,3,7,8-TCDF	40.00	2.08e+07	0.81 y	26:38	0.962 y
9	Unk	1,2,3,7,8-PeCDF	200.00	9.07e+07	1.55 y	31:30	0.948 y
10	Unk	2,3,4,7,8-PeCDF	200.00	8.28e+07	1.54 y	32:48	0.972 y
11	Unk	1,2,3,4,7,8-HxCDF	200.00	8.77e+07	1.28 y	37:10	1.18 y
12	Unk	1,2,3,6,7,8-HxCDF	200.00	8.40e+07	1.28 y	37:22	1.11 y
13	Unk	2,3,4,6,7,8-HxCDF	200.00	7.94e+07	1.26 y	38:18	1.07 y
14	Unk	1,2,3,7,8,9-HxCDF	200.00	7.57e+07	1.27 y	39:44	1.10 y
15	Unk	1,2,3,4,6,7,8-HpCDF	200.00	8.07e+07	1.06 y	42:14	1.31 y
16	Unk	1,2,3,4,7,8,9-HpCDF	200.00	6.38e+07	1.07 y	45:03	1.18 y
17	Unk	OCDF	400.00	1.19e+08	0.91 y	50:01	1.08 y
18	IS/RT	13C-2,3,7,8-TCDD	100.00	4.30e+07	0.78 y	27:22	1.11 y
19	IS	13C-1,2,3,7,8-PeCDD	100.00	3.07e+07	1.58 y	33:12	0.791 y
20	IS	13C-1,2,3,4,7,8-HxCDD	100.00	2.55e+07	1.27 y	38:32	0.901 y
21	IS	13C-1,2,3,6,7,8-HxCDD	100.00	2.48e+07	1.25 y	38:42	0.874 y
22	IS	13C-1,2,3,4,6,7,8-HpCDD	100.00	2.50e+07	1.08 y	44:06	0.883 y
23	IS	13C-OCDD	200.00	4.10e+07	0.91 y	49:37	0.723 y
24	IS	13C-2,3,7,8-TCDF	100.00	5.42e+07	0.80 y	26:37	1.06 y
25	IS	13C-1,2,3,7,8-PeCDF	100.00	4.78e+07	1.60 y	31:28	0.936 y
26	IS	13C-2,3,4,7,8-PeCDF	100.00	4.26e+07	1.59 y	32:47	0.834 y
27	IS	13C-1,2,3,4,7,8-HxCDF	100.00	3.72e+07	0.54 y	37:08	1.31 y
28	IS	13C-1,2,3,6,7,8-HxCDF	100.00	3.78e+07	0.53 y	37:21	1.33 y
29	IS	13C-2,3,4,6,7,8-HxCDF	100.00	3.72e+07	0.54 y	38:17	1.31 y
30	IS	13C-1,2,3,7,8,9-HxCDF	100.00	3.45e+07	0.53 y	39:44	1.22 y
31	IS	13C-1,2,3,4,6,7,8-HpCDF	100.00	3.09e+07	0.46 y	42:12	1.09 y
32	IS	13C-1,2,3,4,7,8,9-HpCDF	100.00	2.72e+07	0.46 y	45:02	0.959 y
33	IS	13C-OCDF	200.00	5.54e+07	0.90 y	50:00	0.978 y
34	C/Up	37Cl-2,3,7,8-TCDD	40.00	1.37e+07		27:23	0.881 y
35	RS	13C-1,2,3,4-TCDD	100.00	3.88e+07	0.79 y	26:47	- n
36	RS	13C-1,2,3,4-TCDF	100.00	5.11e+07	0.80 y	25:30	- n
37	RS/RT	13C-1,2,3,7,8,9-HxCDD	100.00	2.83e+07	1.25 y	39:08	- n
38	Tot	Total Tetra-Dioxins	0.00	-	- n	-	0.986 y
39	Tot	Total Penta-Dioxins	0.00	-	- n	-	0.865 y
40	Tot	Total Hexa-Dioxins	0.00	-	- n	-	0.978 y
41	Tot	Total Hepta-Dioxins	0.00	-	- n	-	1.03 y
42	Tot	Total Tetra-Furans	0.00	-	- n	-	0.962 y
43	Tot	1st Fn. Tot Penta-Furans	0.00	-	- n	-	0.959 y
44	Tot	Total Penta-Furans	0.00	-	- n	-	0.959 y
45	Tot	Total Hexa-Furans	0.00	-	- n	-	1.11 y
46	Tot	Total Hepta-Furans	0.00	-	- n	-	1.25 y

Analyst:

Date: 12/30/15

Typ	Name	Amount	Resp	RA	RT	RRF	
1 Unk	2,3,7,8-TCDD	200.00	7.48e+07	0.79 y	27:23	0.986	y
2 Unk	1,2,3,7,8-PeCDD	1000.00	2.34e+08	1.58 y	33:13	0.850	y
3 Unk	1,2,3,4,7,8-HxCDD	1000.00	2.02e+08	1.25 y	38:34	0.908	y
4 Unk	1,2,3,6,7,8-HxCDD	1000.00	1.99e+08	1.25 y	38:44	0.922	y
5 Unk	1,2,3,7,8,9-HxCDD	1000.00	2.29e+08	1.26 y	39:11	1.04	y
6 Unk	1,2,3,4,6,7,8-HpCDD	1000.00	2.20e+08	1.06 y	44:09	1.02	y
7 Unk	OCDD	2000.00	3.39e+08	0.91 y	49:40	0.973	y
8 Unk	2,3,7,8-TCDF	200.00	9.20e+07	0.79 y	26:38	0.959	y
9 Unk	1,2,3,7,8-PeCDF	1000.00	3.96e+08	1.56 y	31:30	0.941	y
10 Unk	2,3,4,7,8-PeCDF	1000.00	3.75e+08	1.54 y	32:49	0.963	y
11 Unk	1,2,3,4,7,8-HxCDF	1000.00	3.83e+08	1.26 y	37:11	1.16	y
12 Unk	1,2,3,6,7,8-HxCDF	1000.00	3.66e+08	1.26 y	37:23	1.11	y
13 Unk	2,3,4,6,7,8-HxCDF	1000.00	3.43e+08	1.26 y	38:20	1.05	y
14 Unk	1,2,3,7,8,9-HxCDF	1000.00	3.20e+08	1.26 y	39:46	1.08	y
15 Unk	1,2,3,4,6,7,8-HpCDF	1000.00	3.50e+08	1.07 y	42:14	1.30	y
16 Unk	1,2,3,4,7,8,9-HpCDF	1000.00	2.69e+08	1.05 y	45:03	1.16	y
17 Unk	OCDF	2000.00	5.05e+08	0.91 y	50:02	1.06	y
18 IS/RT	13C-2,3,7,8-TCDD	100.00	3.79e+07	0.80 y	27:22	1.05	y
19 IS	13C-1,2,3,7,8-PeCDD	100.00	2.75e+07	1.58 y	33:13	0.762	y
20 IS	13C-1,2,3,4,7,8-HxCDD	100.00	2.23e+07	1.25 y	38:33	0.843	y
21 IS	13C-1,2,3,6,7,8-HxCDD	100.00	2.16e+07	1.26 y	38:43	0.818	y
22 IS	13C-1,2,3,4,6,7,8-HpCDD	100.00	2.16e+07	1.08 y	44:07	0.816	y
23 IS	13C-OCDD	200.00	3.48e+07	0.91 y	49:38	0.658	y
24 IS	13C-2,3,7,8-TCDF	100.00	4.80e+07	0.81 y	26:36	1.02	y
25 IS	13C-1,2,3,7,8-PeCDF	100.00	4.20e+07	1.57 y	31:28	0.894	y
26 IS	13C-2,3,4,7,8-PeCDF	100.00	3.90e+07	1.60 y	32:48	0.829	y
27 IS	13C-1,2,3,4,7,8-HxCDF	100.00	3.30e+07	0.54 y	37:09	1.25	y
28 IS	13C-1,2,3,6,7,8-HxCDF	100.00	3.31e+07	0.54 y	37:22	1.25	y
29 IS	13C-2,3,4,6,7,8-HxCDF	100.00	3.26e+07	0.54 y	38:18	1.23	y
30 IS	13C-1,2,3,7,8,9-HxCDF	100.00	2.98e+07	0.54 y	39:45	1.13	y
31 IS	13C-1,2,3,4,6,7,8-HpCDF	100.00	2.70e+07	0.46 y	42:13	1.02	y
32 IS	13C-1,2,3,4,7,8,9-HpCDF	100.00	2.31e+07	0.46 y	45:03	0.874	y
33 IS	13C-OCDF	200.00	4.76e+07	0.93 y	50:01	0.900	y
34 C/Up	37Cl-2,3,7,8-TCDD	200.00	6.28e+07		27:23	0.871	y
35 RS	13C-1,2,3,4-TCDD	100.00	3.61e+07	0.80 y	26:46	-	n
36 RS	13C-1,2,3,4-TCDF	100.00	4.70e+07	0.80 y	25:30	-	n
37 RS/RT	13C-1,2,3,7,8,9-HxCDD	100.00	2.64e+07	1.25 y	39:10	-	n
38 Tot	Total Tetra-Dioxins	0.00	-	- n	-	0.986	y
39 Tot	Total Penta-Dioxins	0.00	-	- n	-	0.850	y
40 Tot	Total Hexa-Dioxins	0.00	-	- n	-	0.957	y
41 Tot	Total Hepta-Dioxins	0.00	-	- n	-	1.02	y
42 Tot	Total Tetra-Furans	0.00	-	- n	-	0.959	y
43 Tot	1st Fn. Total Penta-Furans	0.00	-	- n	-	0.952	y
44 Tot	Total Penta-Furans	0.00	-	- n	-	0.952	y
45 Tot	Total Hexa-Furans	0.00	-	- n	-	1.10	y
46 Tot	Total Hepta-Furans	0.00	-	- n	-	1.24	y

Analyst: Date: 12/30/15

Typ	Name	Amount	Resp	RA	RT	RRF	
1	Unk	2,3,7,8-TCDD	2000.00	2.46e+08	0.80 y	27:22	1.15 y
2	Unk	1,2,3,7,8-PeCDD	10000.00	8.24e+08	1.60 y	33:14	0.998 y
3	Unk	1,2,3,4,7,8-HxCDD	10000.00	7.70e+08	1.29 y	38:35	1.03 y
4	Unk	1,2,3,6,7,8-HxCDD	10000.00	7.63e+08	1.29 y	38:45	1.06 y
5	Unk	1,2,3,7,8,9-HxCDD	10000.00	8.56e+08	1.28 y	39:11	1.17 y
6	Unk	1,2,3,4,6,7,8-HpCDD	10000.00	8.52e+08	1.07 y	44:09	1.11 y
7	Unk	OCDD	20000.00	1.40e+09	0.91 y	49:42	1.07 y
8	Unk	2,3,7,8-TCDF	2000.00	3.26e+08	0.81 y	26:36	1.06 y
9	Unk	1,2,3,7,8-PeCDF	10000.00	1.28e+09	1.51 y	31:30	0.968 y
10	Unk	2,3,4,7,8-PeCDF	10000.00	1.33e+09	1.52 y	32:50	1.01 y
11	Unk	1,2,3,4,7,8-HxCDF	10000.00	1.46e+09	1.27 y	37:12	1.27 y
12	Unk	1,2,3,6,7,8-HxCDF	10000.00	1.42e+09	1.28 y	37:24	1.22 y
13	Unk	2,3,4,6,7,8-HxCDF	10000.00	1.36e+09	1.28 y	38:20	1.18 y
14	Unk	1,2,3,7,8,9-HxCDF	10000.00	1.27e+09	1.27 y	39:47	1.20 y
15	Unk	1,2,3,4,6,7,8-HpCDF	10000.00	1.43e+09	1.06 y	42:15	1.41 y
16	Unk	1,2,3,4,7,8,9-HpCDF	10000.00	1.13e+09	1.07 y	45:05	1.24 y
17	Unk	OCDF	20000.00	2.11e+09	0.91 y	50:06	1.14 y
18	IS/RT	13C-2,3,7,8-TCDD	100.00	1.07e+07	0.81 y	27:20	1.10 y
19	IS	13C-1,2,3,7,8-PeCDD	100.00	8.25e+06	1.61 y	33:13	0.855 y
20	IS	13C-1,2,3,4,7,8-HxCDD	100.00	7.48e+06	1.28 y	38:33	0.845 y
21	IS	13C-1,2,3,6,7,8-HxCDD	100.00	7.17e+06	1.28 y	38:43	0.810 y
22	IS	13C-1,2,3,4,6,7,8-HpCDD	100.00	7.71e+06	1.09 y	44:08	0.872 y
23	IS	13C-OCDD	200.00	1.31e+07	0.91 y	49:40	0.742 y
24	IS	13C-2,3,7,8-TCDF	100.00	1.54e+07	0.82 y	26:35	1.06 y
25	IS	13C-1,2,3,7,8-PeCDF	100.00	1.33e+07	1.58 y	31:30	0.911 y
26	IS	13C-2,3,4,7,8-PeCDF	100.00	1.32e+07	1.58 y	32:49	0.906 y
27	IS	13C-1,2,3,4,7,8-HxCDF	100.00	1.16e+07	0.56 y	37:10	1.31 y
28	IS	13C-1,2,3,6,7,8-HxCDF	100.00	1.17e+07	0.55 y	37:22	1.32 y
29	IS	13C-2,3,4,6,7,8-HxCDF	100.00	1.15e+07	0.55 y	38:19	1.30 y
30	IS	13C-1,2,3,7,8,9-HxCDF	100.00	1.06e+07	0.57 y	39:45	1.20 y
31	IS	13C-1,2,3,4,6,7,8-HpCDF	100.00	1.01e+07	0.49 y	42:14	1.14 y
32	IS	13C-1,2,3,4,7,8,9-HpCDF	100.00	9.07e+06	0.49 y	45:02	1.03 y
33	IS	13C-OCDF	200.00	1.86e+07	0.93 y	50:04	1.05 y
34	C/Up	37Cl-2,3,7,8-TCDD	200.00	1.93e+07		27:22	1.00 y
35	RS	13C-1,2,3,4-TCDD	100.00	9.65e+06	0.80 y	26:45	- n
36	RS	13C-1,2,3,4-TCDF	100.00	1.46e+07	0.80 y	25:27	- n
37	RS/RT	13C-1,2,3,7,8,9-HxCDD	100.00	8.85e+06	1.27 y	39:11	- n
38	Tot	Total Tetra-Dioxins	0.00	-	- n	-	1.15 y
39	Tot	Total Penta-Dioxins	0.00	-	- n	-	0.998 y
40	Tot	Total Hexa-Dioxins	0.00	-	- n	-	1.09 y
41	Tot	Total Hepta-Dioxins	0.00	-	- n	-	1.11 y
42	Tot	Total Tetra-Furans	0.00	-	- n	-	1.06 y
43	Tot	1st Fn. Tot Penta-Furans	0.00	-	- n	-	0.987 y
44	Tot	Total Penta-Furans	0.00	-	- n	-	0.987 y
45	Tot	Total Hexa-Furans	0.00	-	- n	-	1.22 y
46	Tot	Total Hepta-Furans	0.00	-	- n	-	1.33 y

Analyst: J

Date: 1/7/16

Frontier Analytical Laboratory - Acquisition Log

Run Name: 29DEC15Z

Instrument: FAL4

GC: DB5

Experiment: PCDD

Data File S	FAL ID	Client ID	Acquired	ConCal	EndCal	Analyst	
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29DEC15Z	2	ST122915Z1	1613 CS1 151209H	29-DEC-15 11:26:24	NA	NA	BS
29DEC15Z	3	ST122915Z2	1613 CS2 151209I	29-DEC-15 12:21:09	NA	NA	BS
29DEC15Z	4	ST122915Z3	1613 CS3 151209J	29-DEC-15 13:15:57	NA	NA	BS
29DEC15Z	5	ST122915Z4	1613 CS4 151209K	29-DEC-15 14:10:45	NA	NA	BS
29DEC15Z	6	ST122915Z5	1613 CS5 151209L	29-DEC-15 15:05:33	NA	NA	BS
29DEC15Z	7	SB122915Z1	Solvent Blank	29-DEC-15 16:00:22	NA	NA	BS
29DEC15Z	8	SS122915Z1	2nd Source	29-DEC-15 16:55:09	NA	NA	BS

Δ 12/30/15

Data Backed Up: _____

Date: _____

Frontier Analytical Laboratory - Acquisition Log

Run Name:07JAN16Z

Instrument: FAL4

GC: DB5

Experiment:PCDD

Data File S FAL ID

Client ID

Acquired

ConCal

EndCal

Analyst

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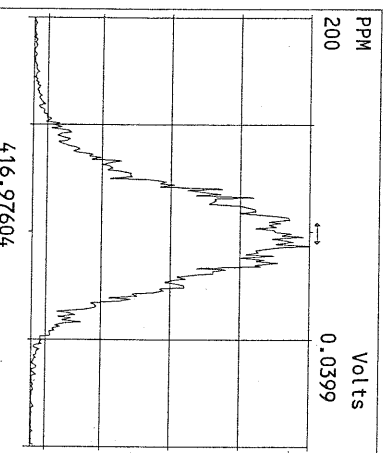
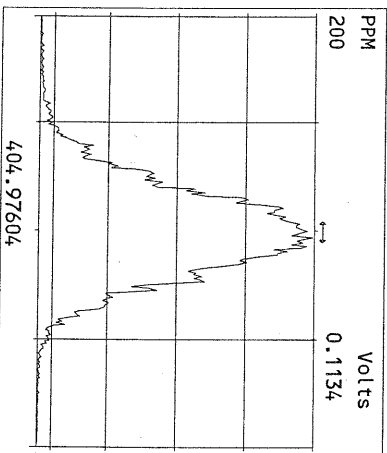
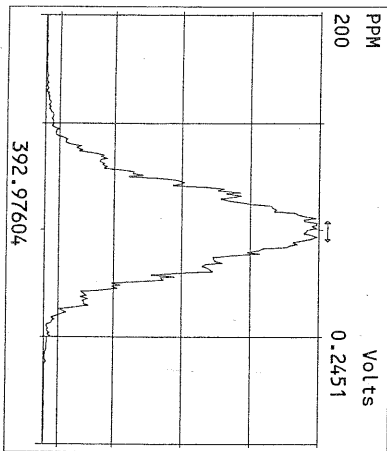
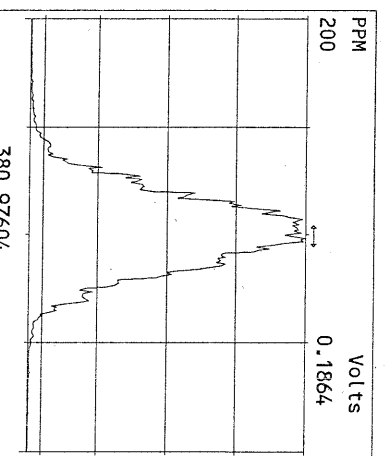
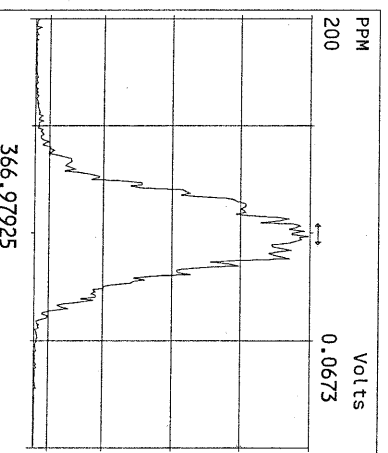
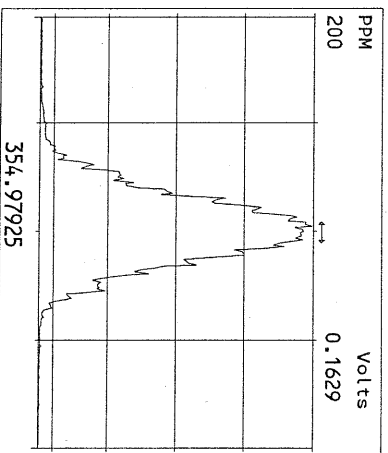
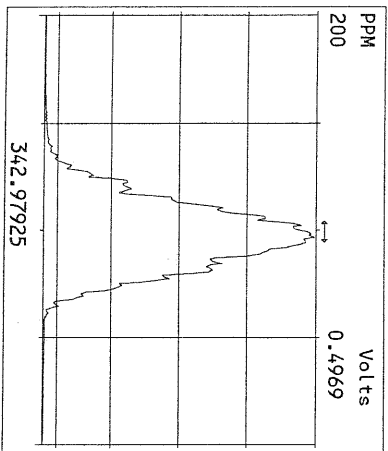
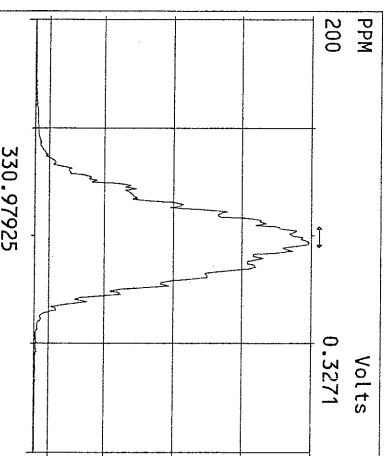
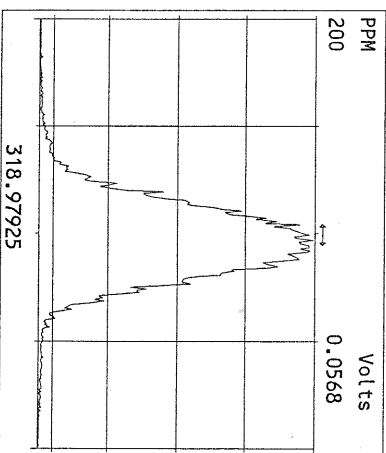
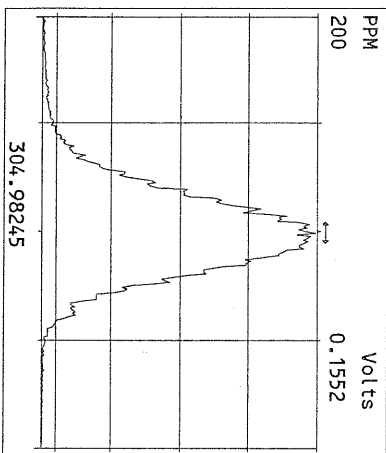
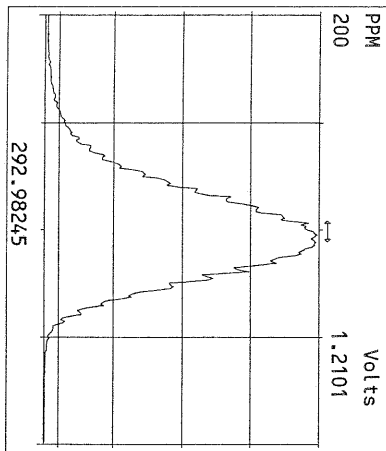
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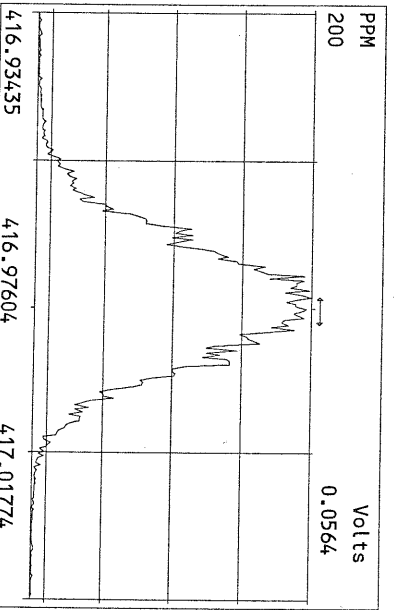
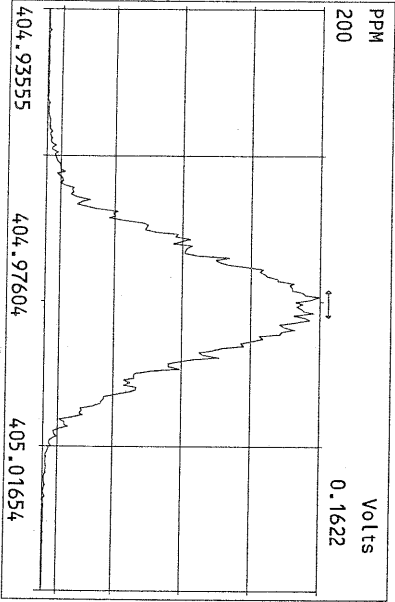
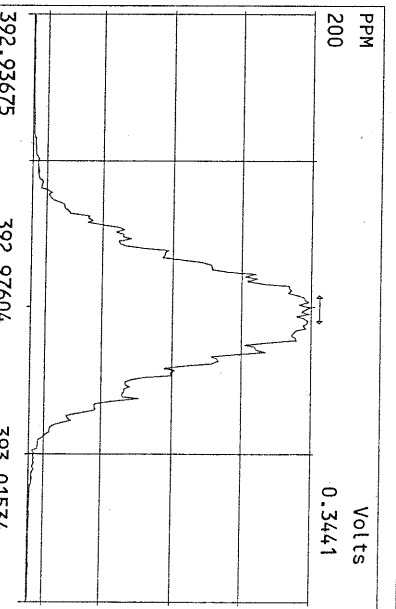
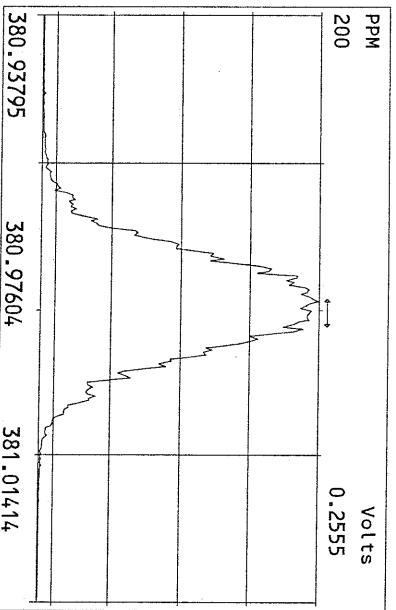
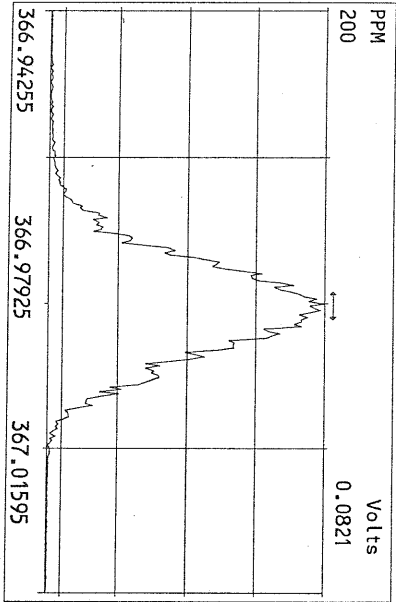
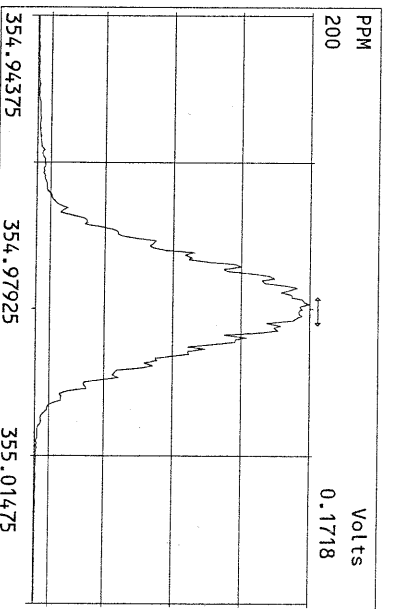
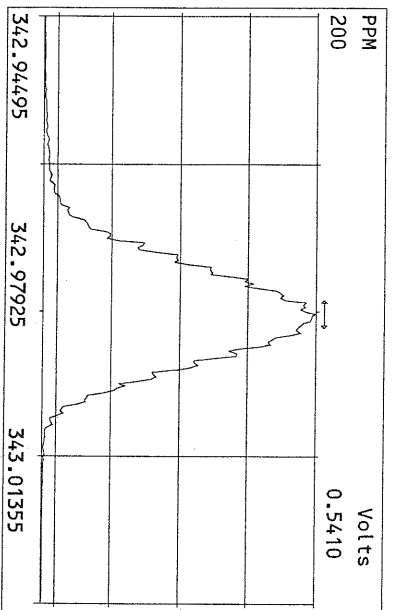
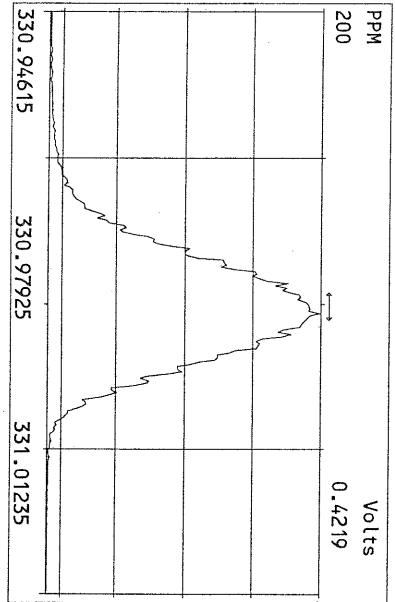
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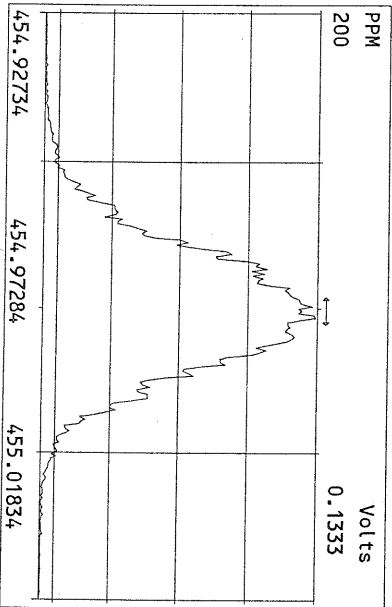
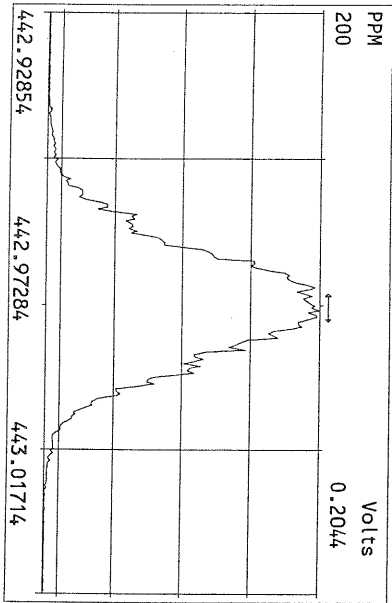
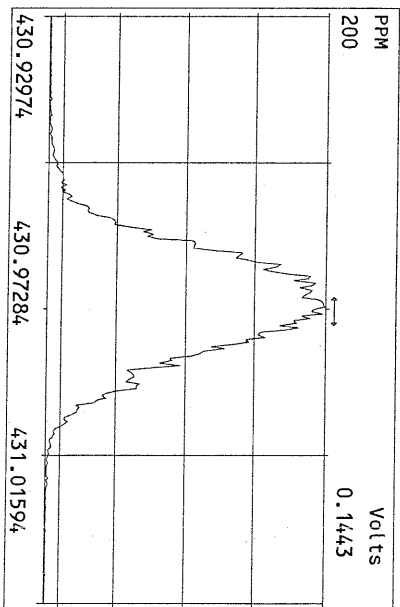
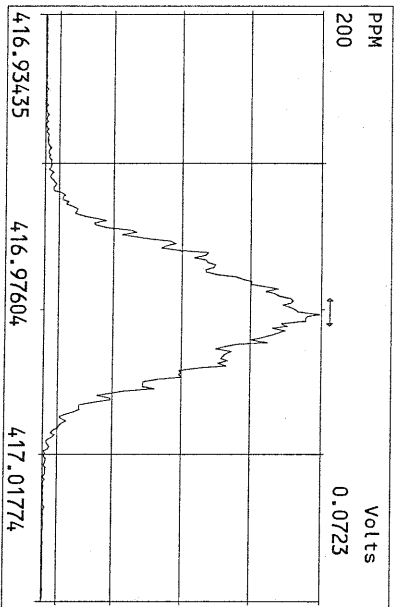
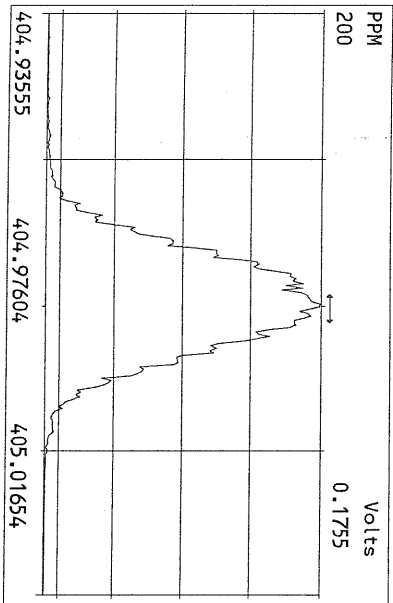
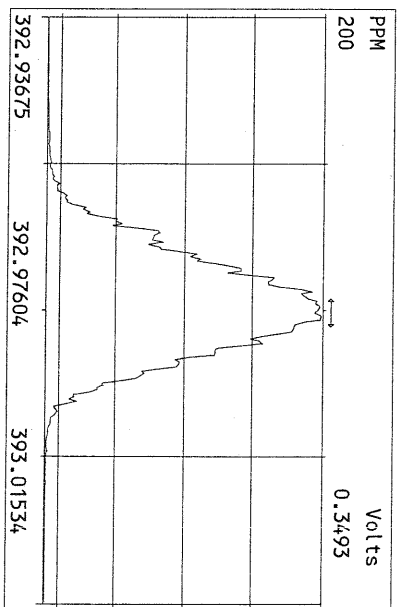
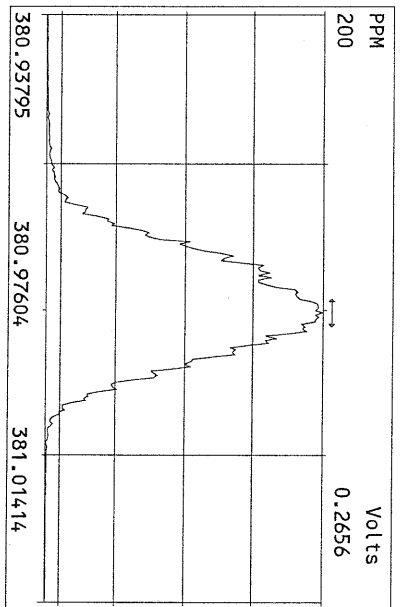
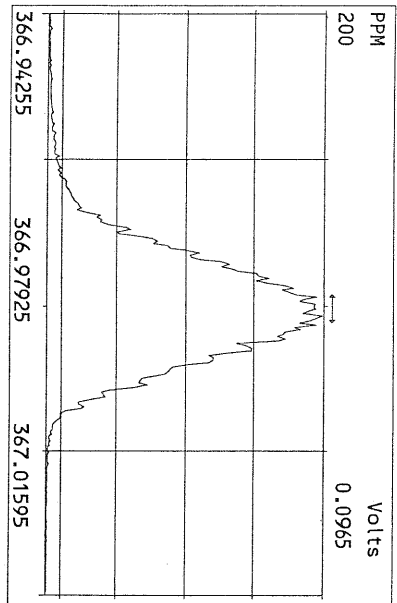
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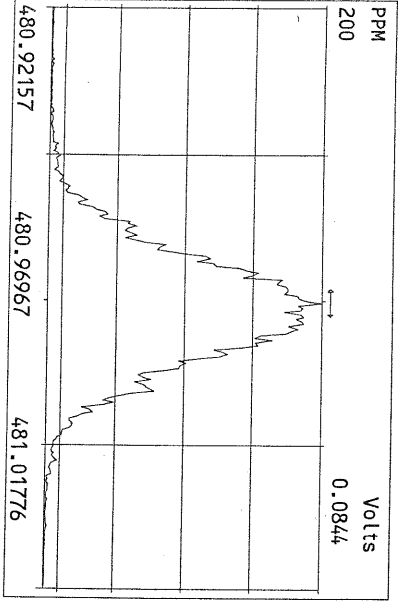
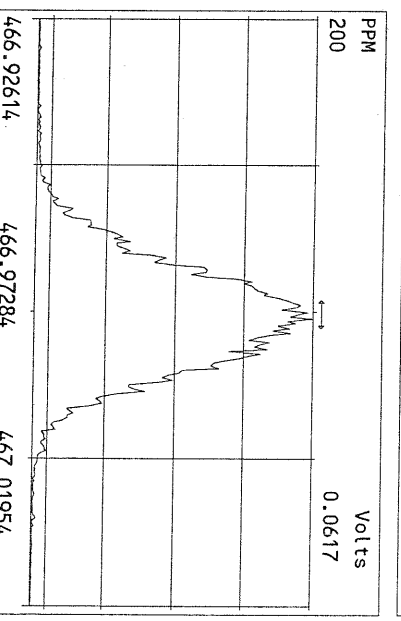
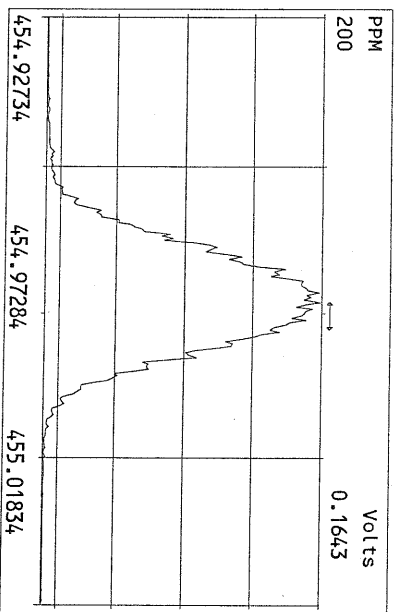
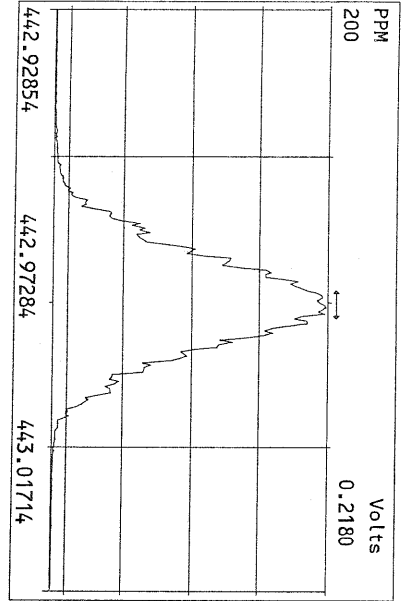
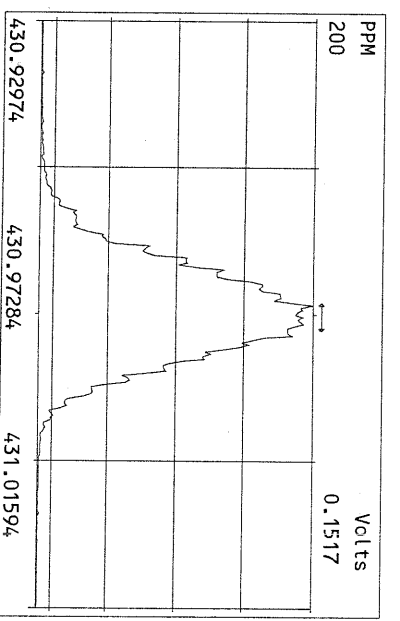
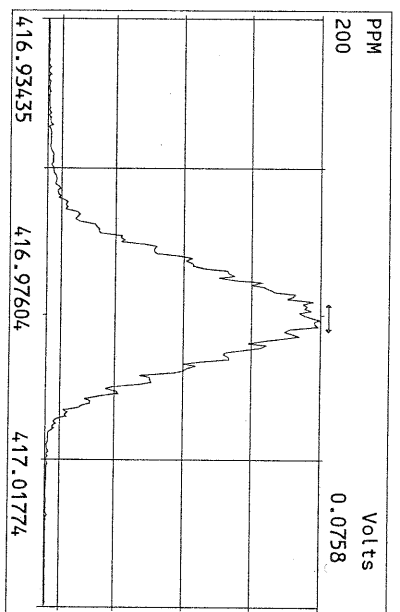
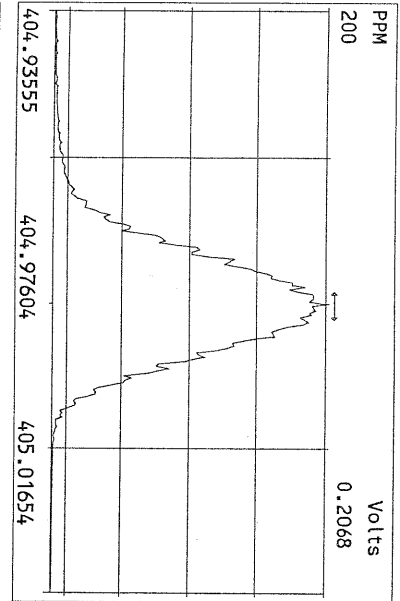
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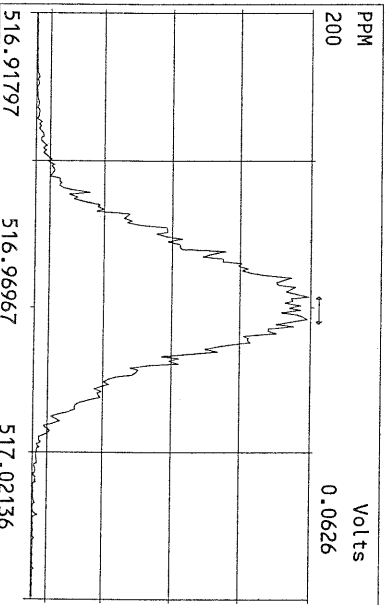
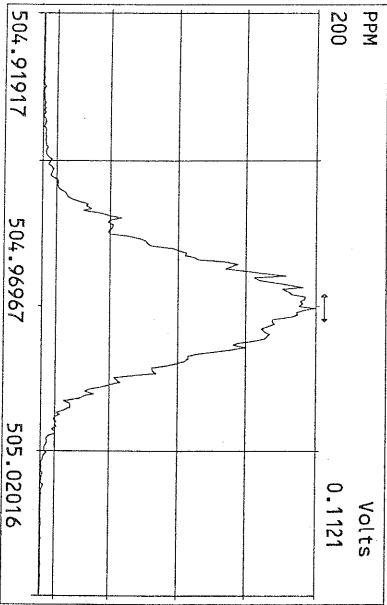
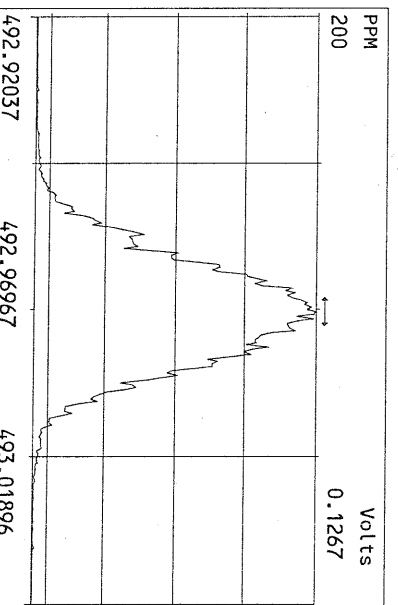
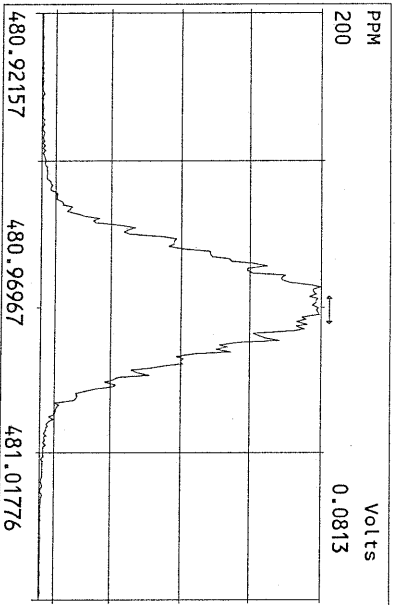
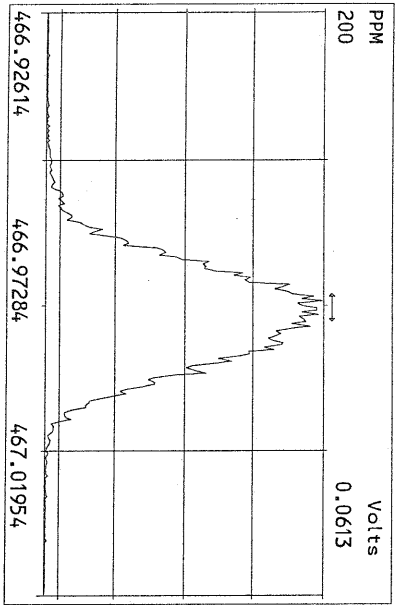
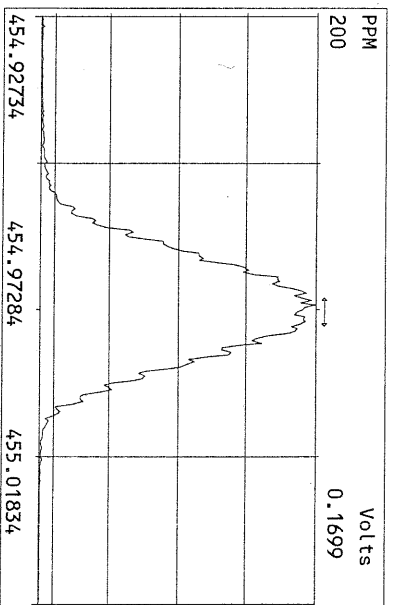
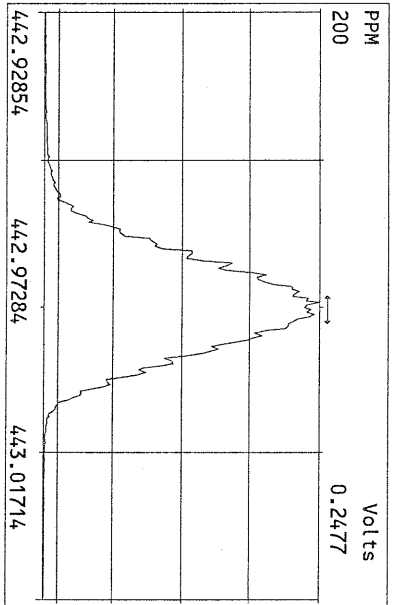
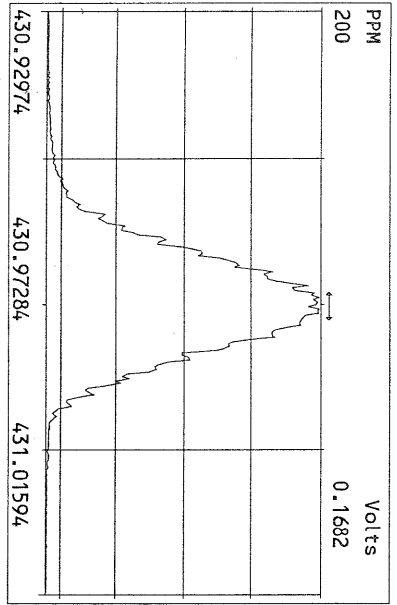
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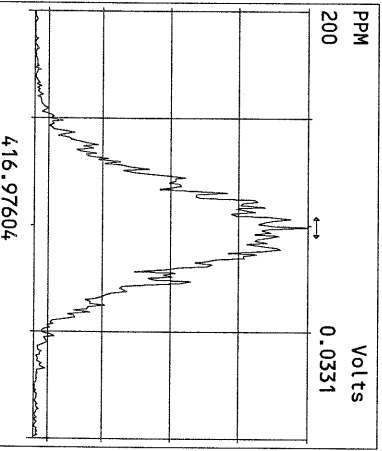
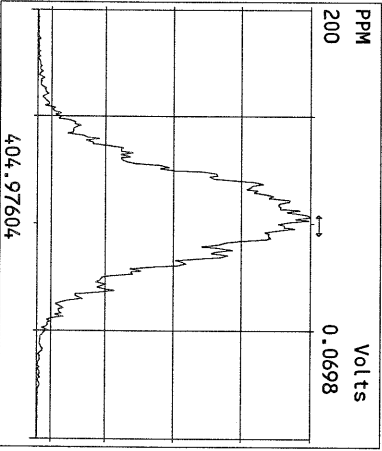
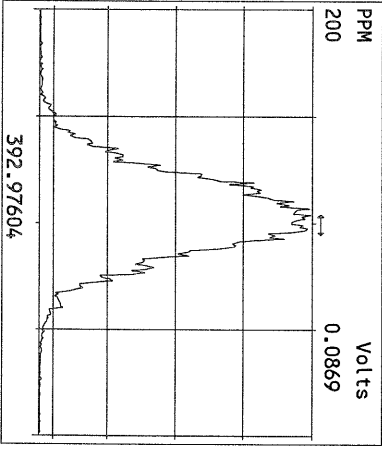
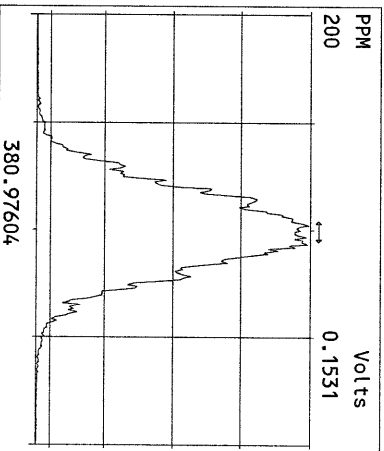
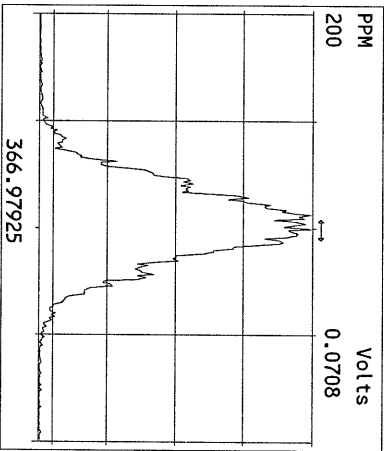
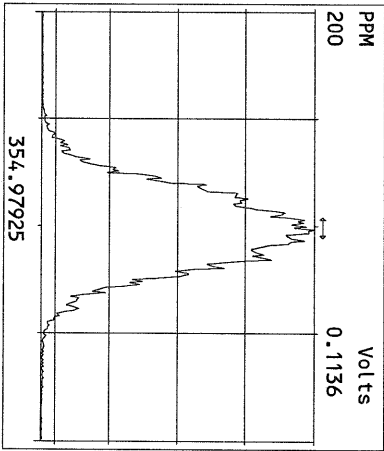
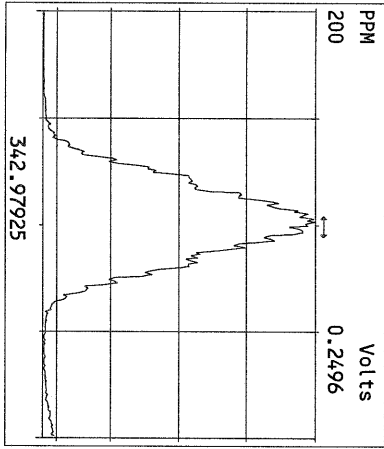
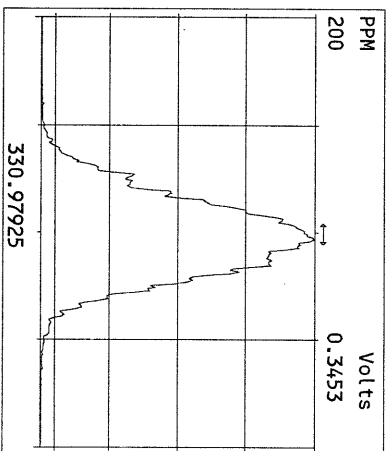
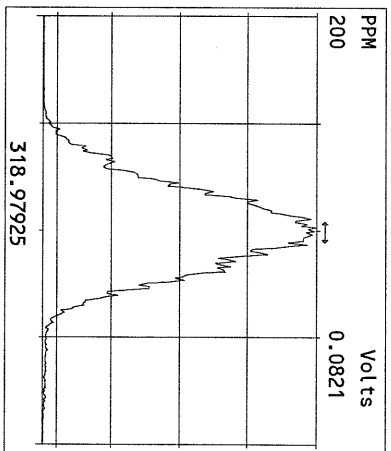
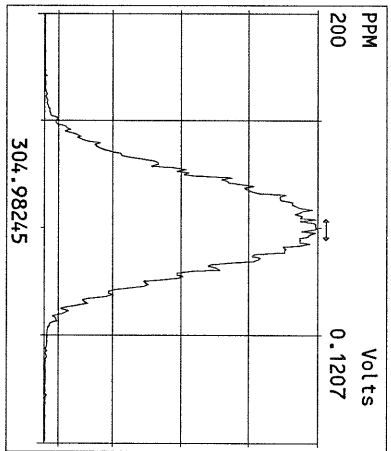
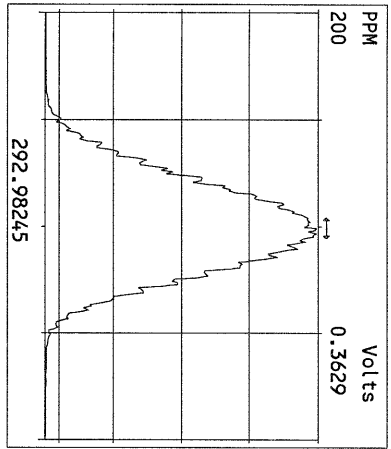




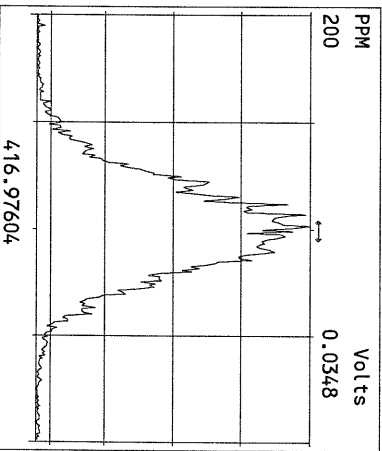
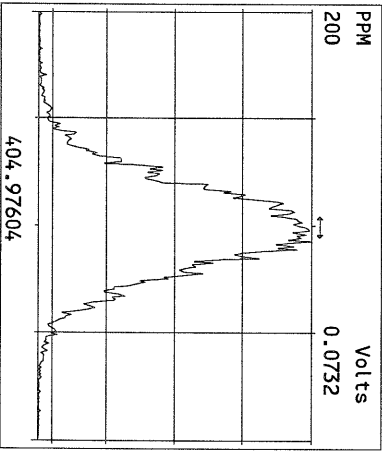
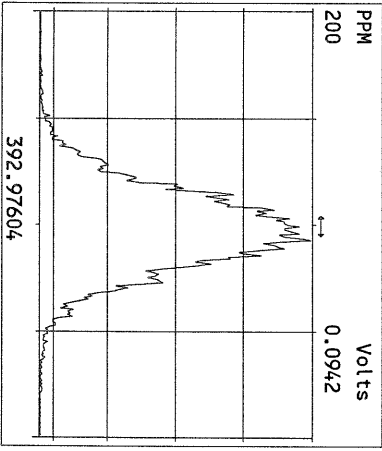
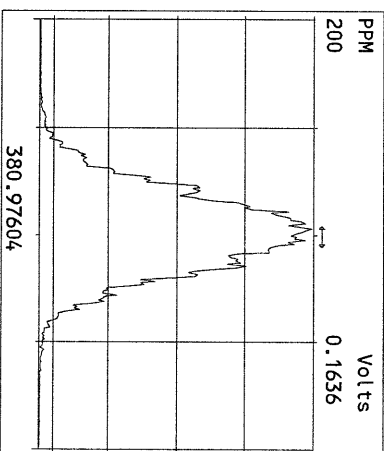
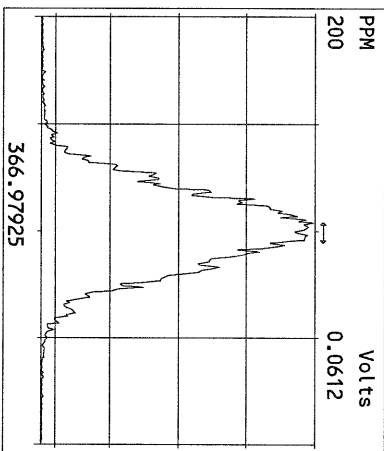
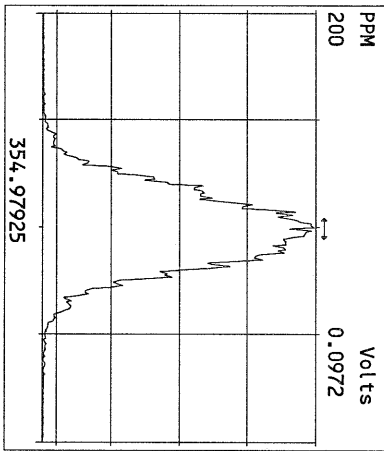
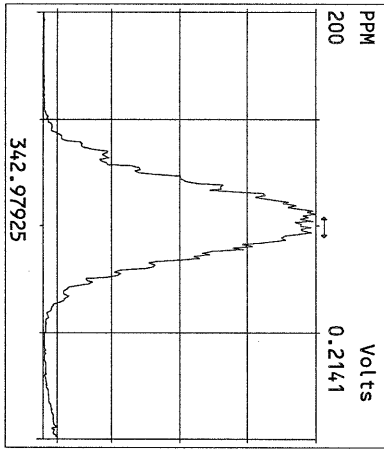
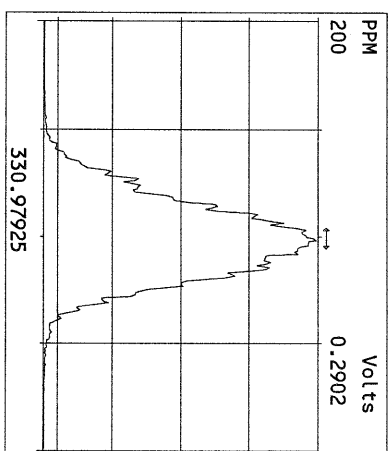
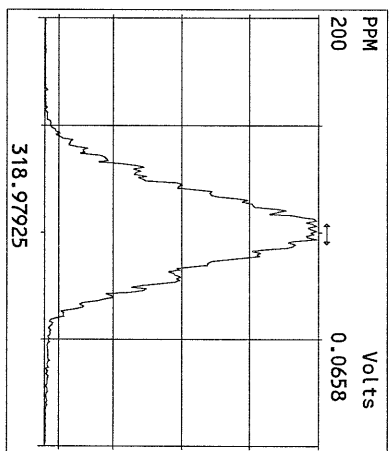
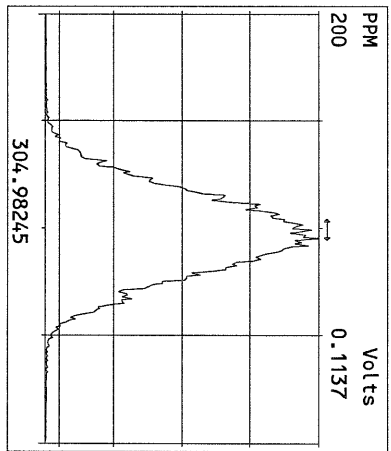
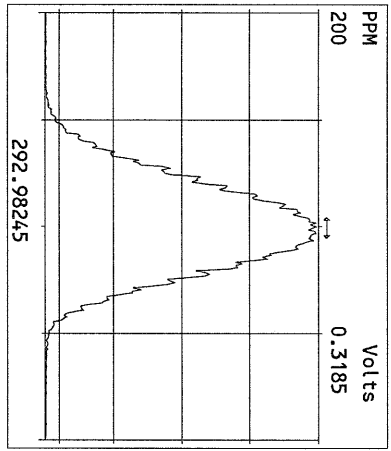


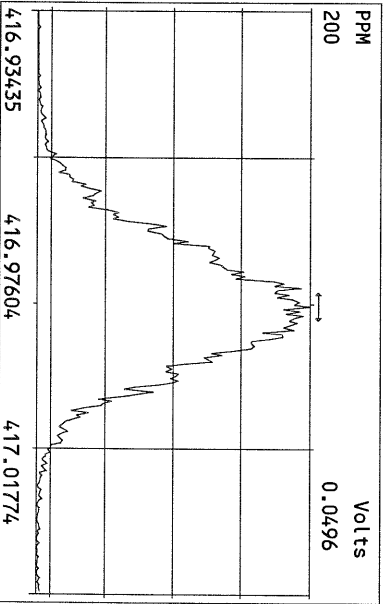
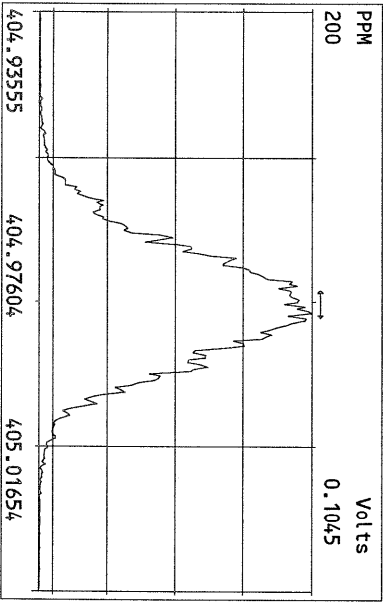
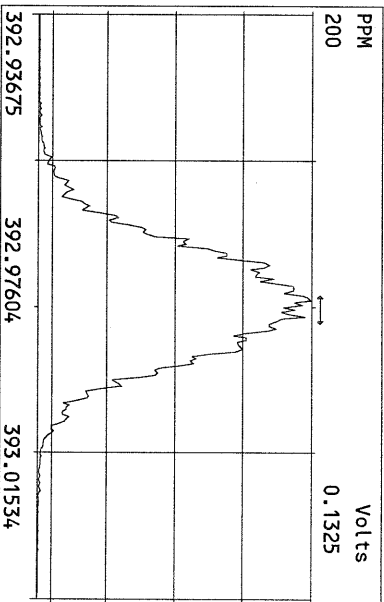
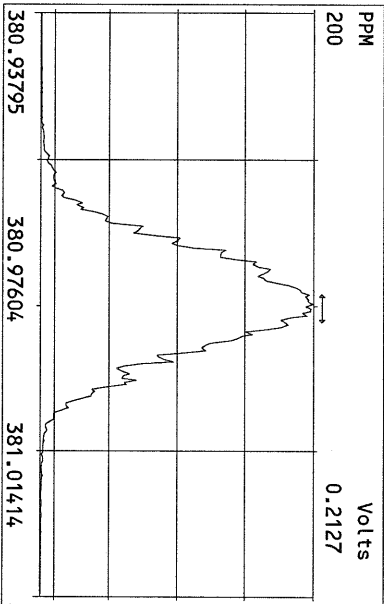
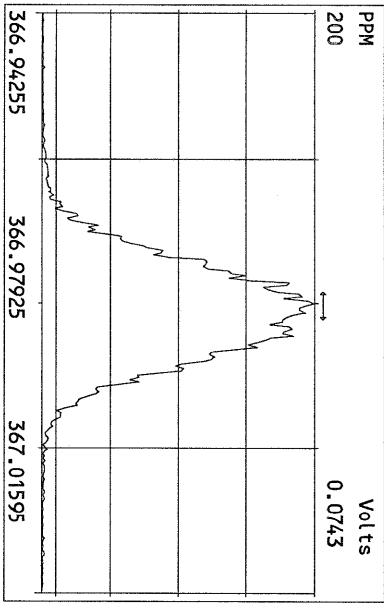
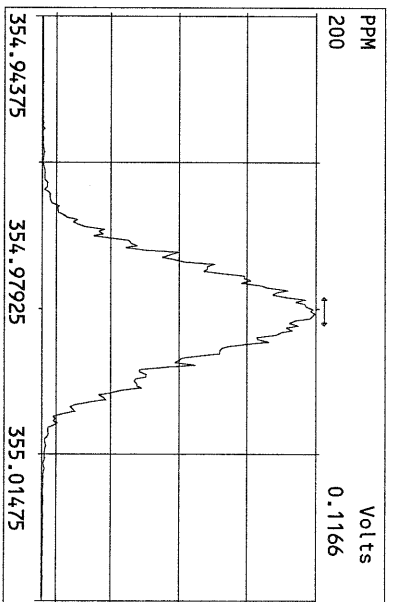
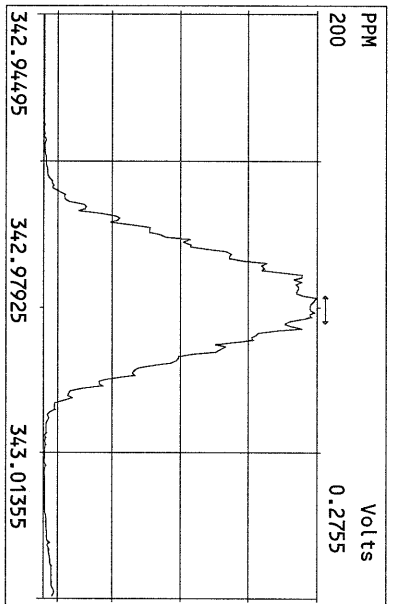
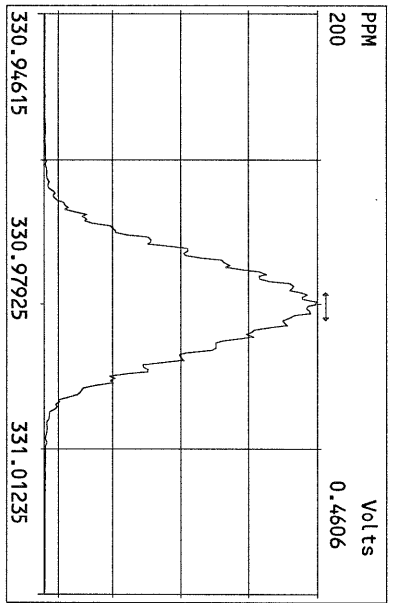




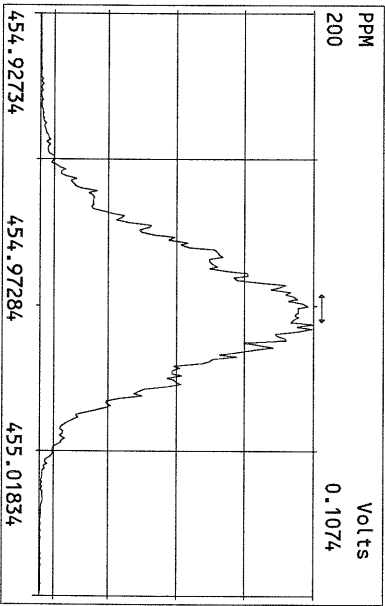
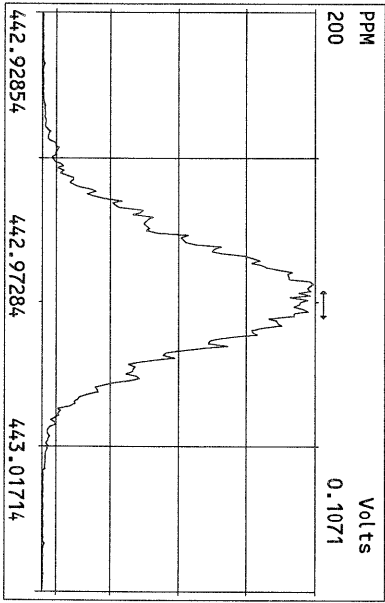
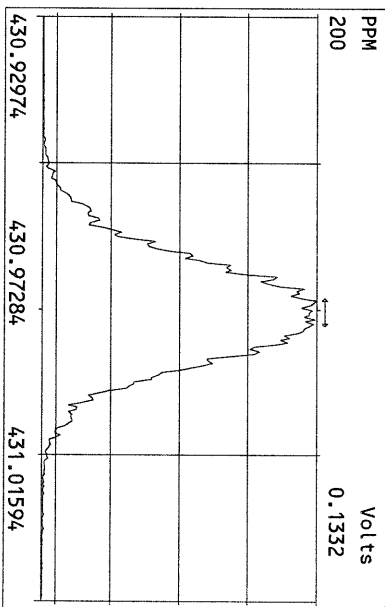
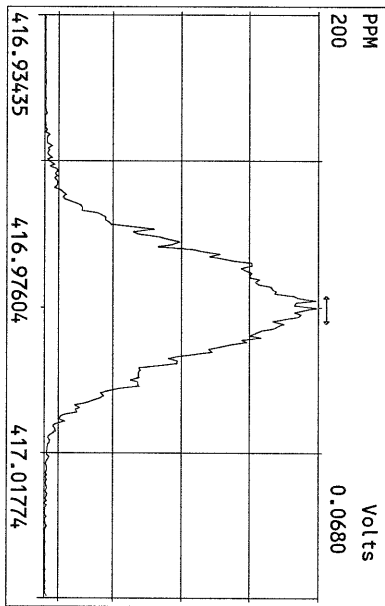
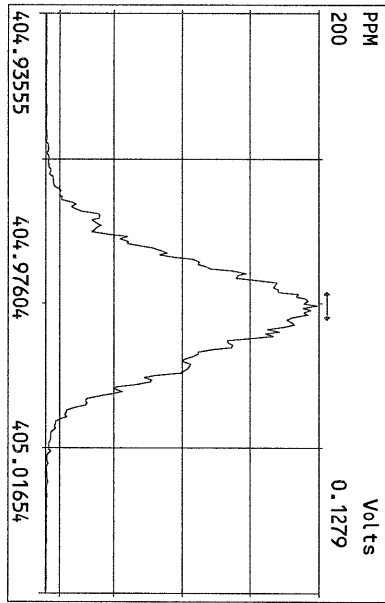
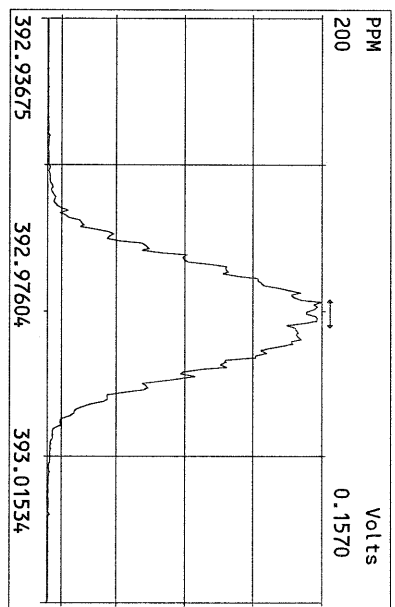
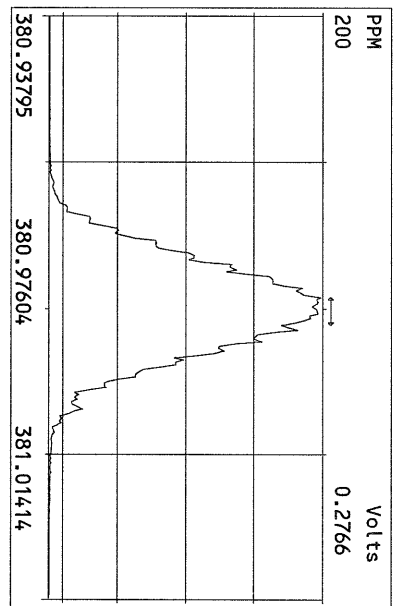
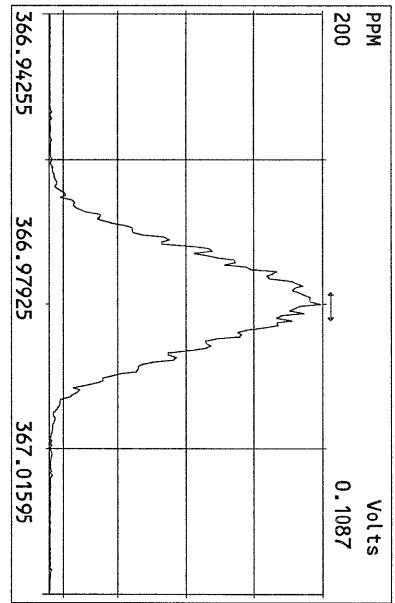


Peak Locate Examination: 7-JAN-2016:12:01 File:07JAN16Z
Experiment:PCDD Function:1 Reference:PFK

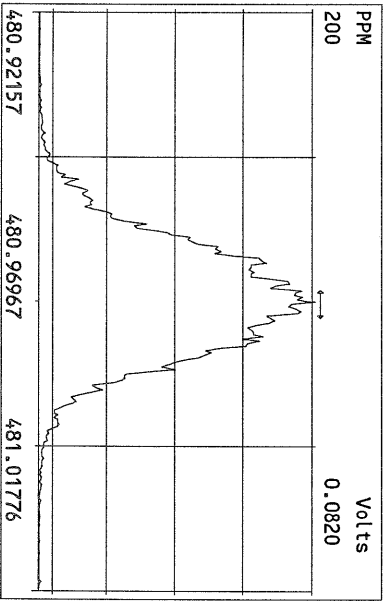
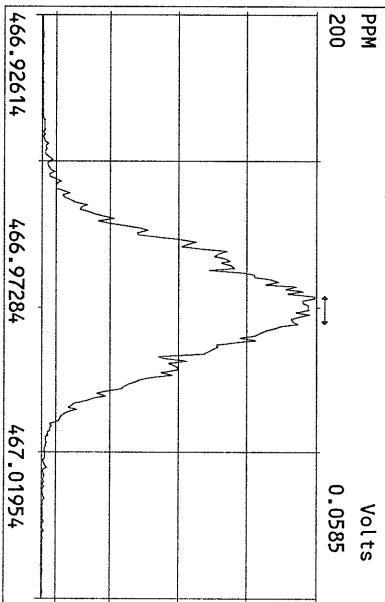
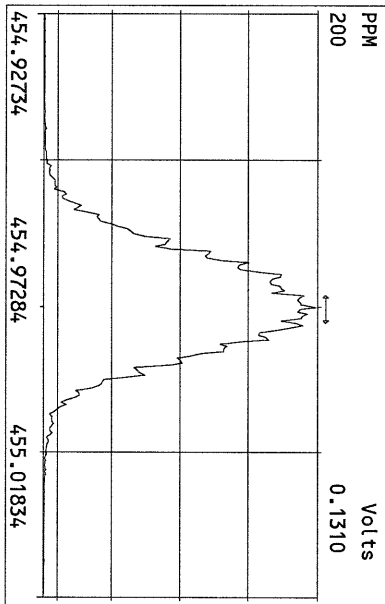
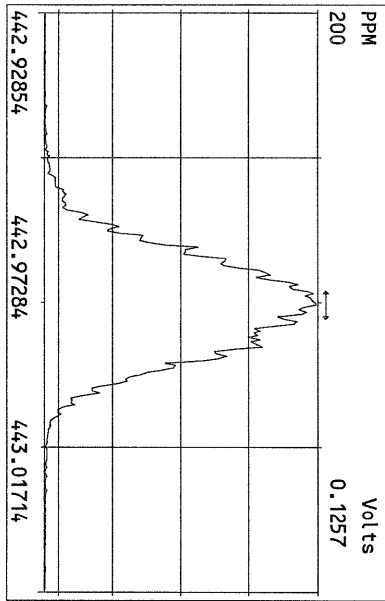
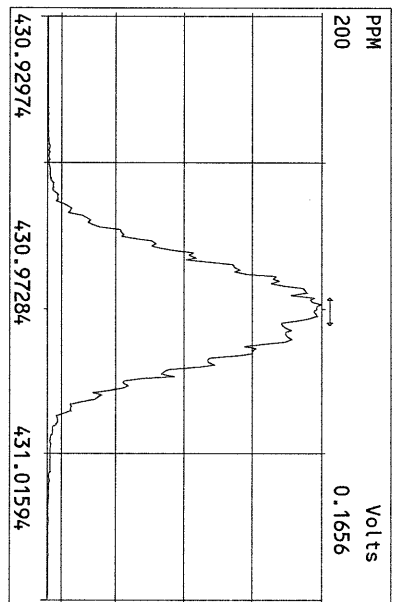
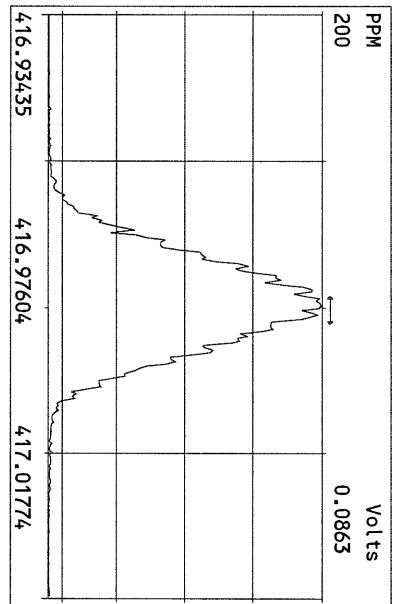
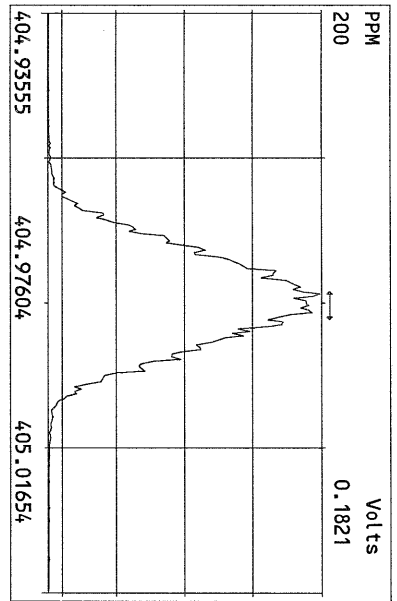




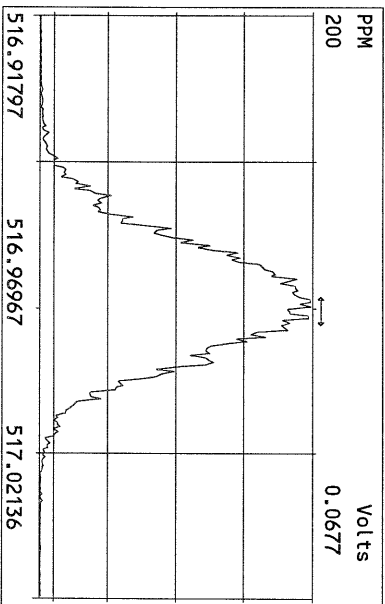
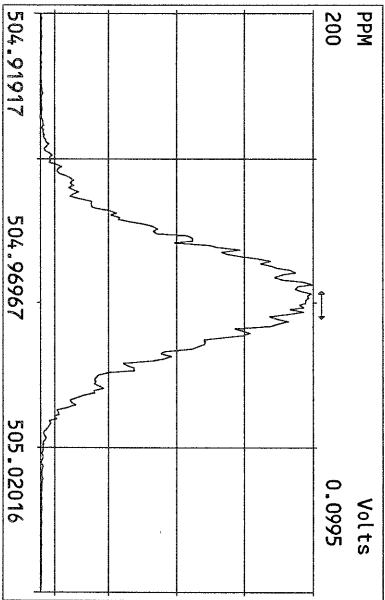
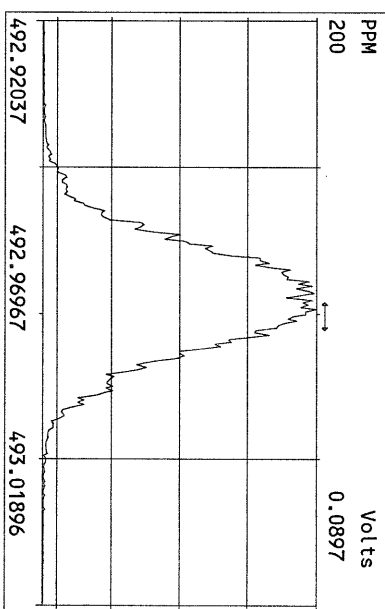
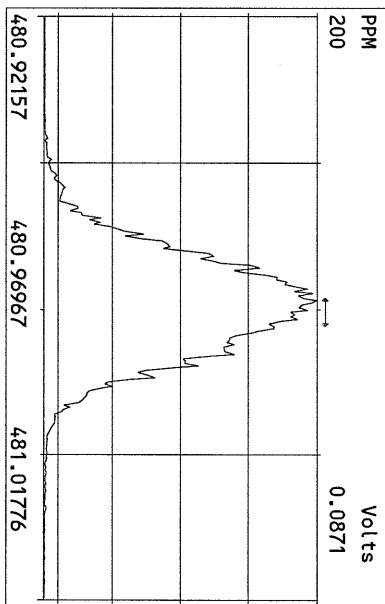
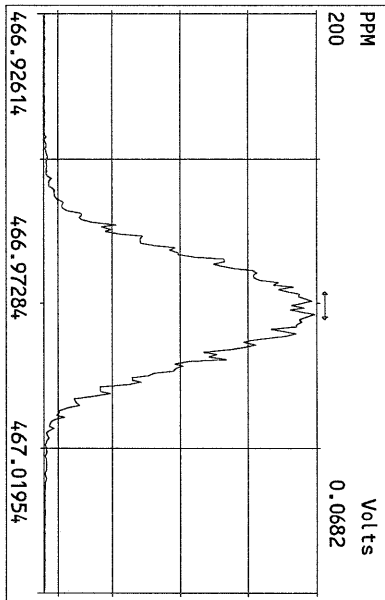
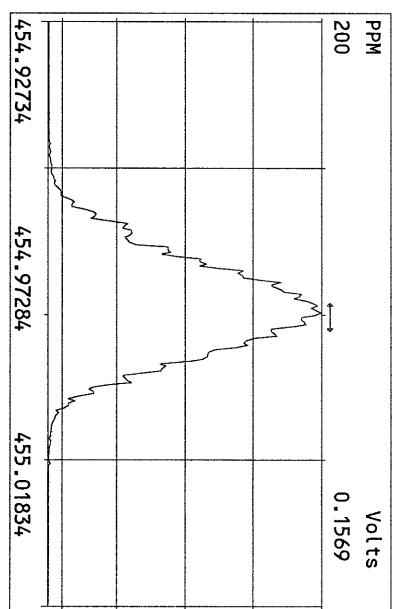
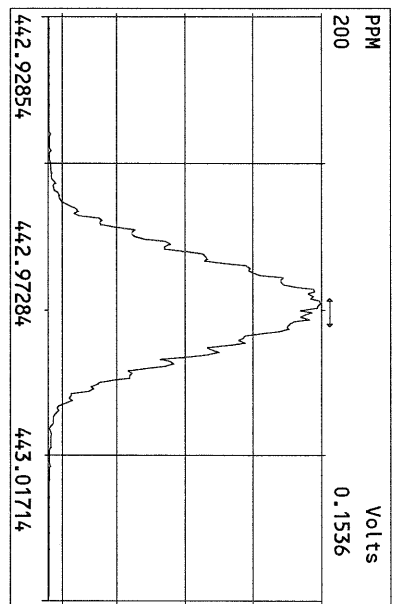
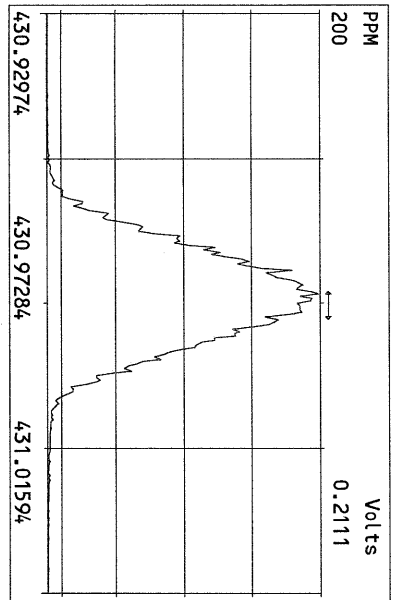
Peak Locate Examination: 7-JAN-2016:12:02 File:07JAN16Z
Experiment:PCDD Function:3 Reference:PFK



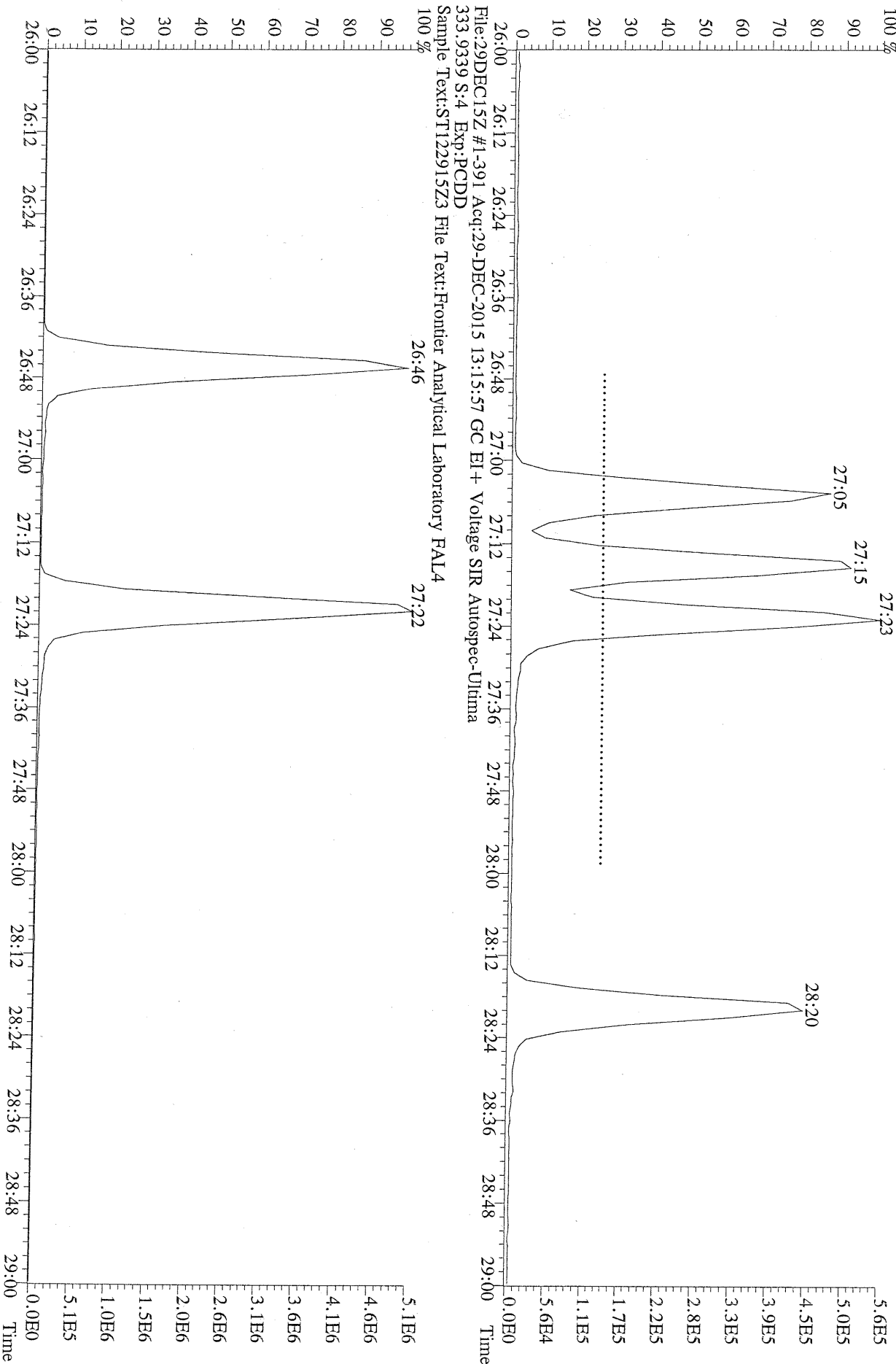
Peak Locate Examination: 7-JAN-2016:12:02 File:07JAN16Z
Experiment:PCDD Function:4 Reference:PFK



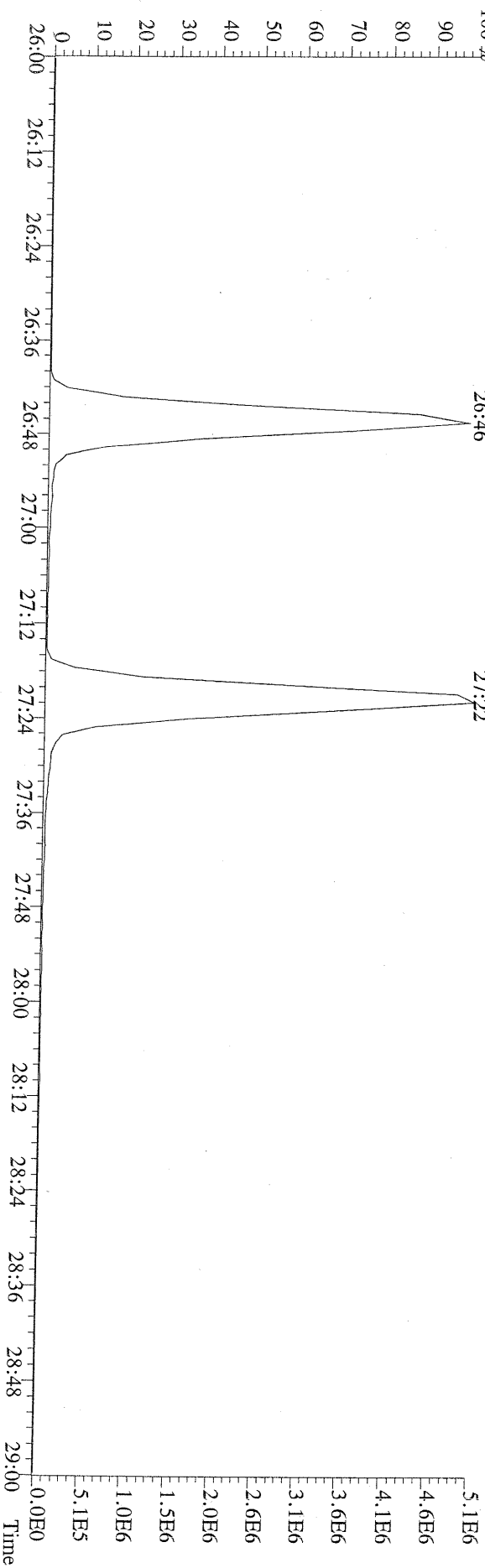
Peak Locate Examination: 7-JAN-2016:12:03 File:07JAN16Z
Experiment:PCDD Function:5 Reference:PFK



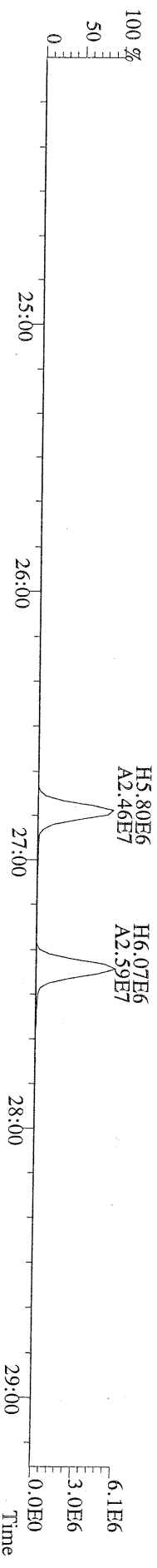
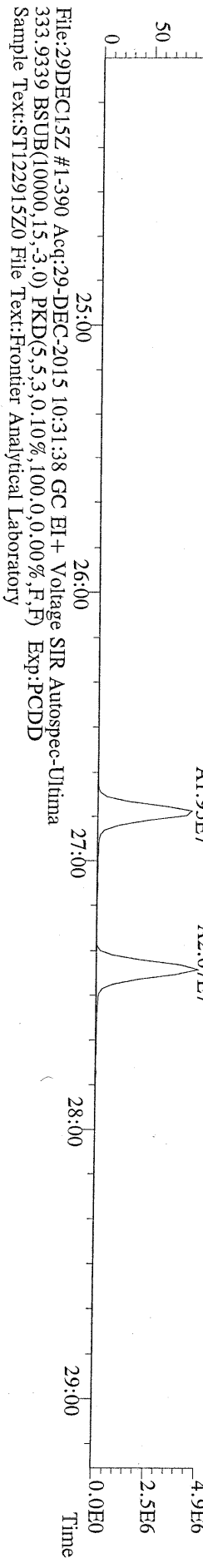
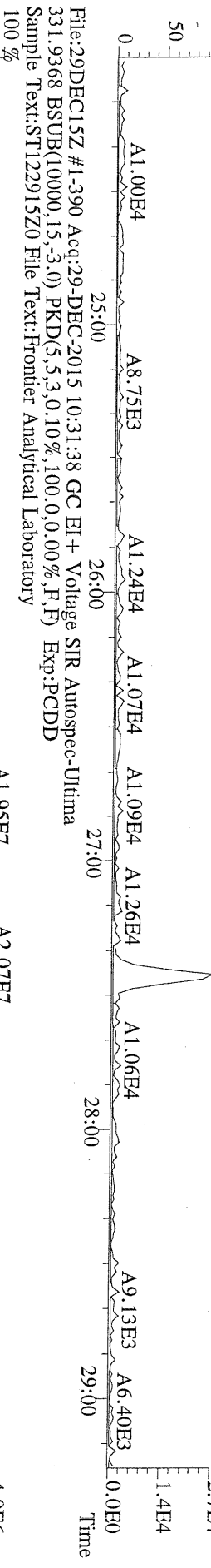
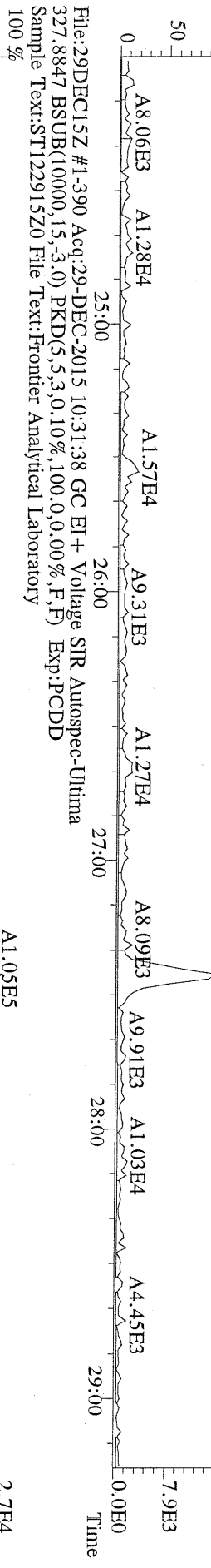
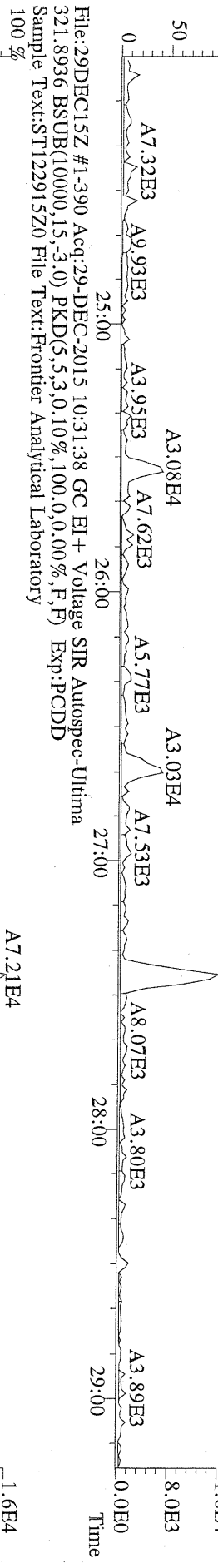
File:29DEC15Z #1-391 Acq:29-DEC-2015 13:15:57 GC EI+ Voltage SIR Autospec-Ultima
321.8936 S:4 Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4



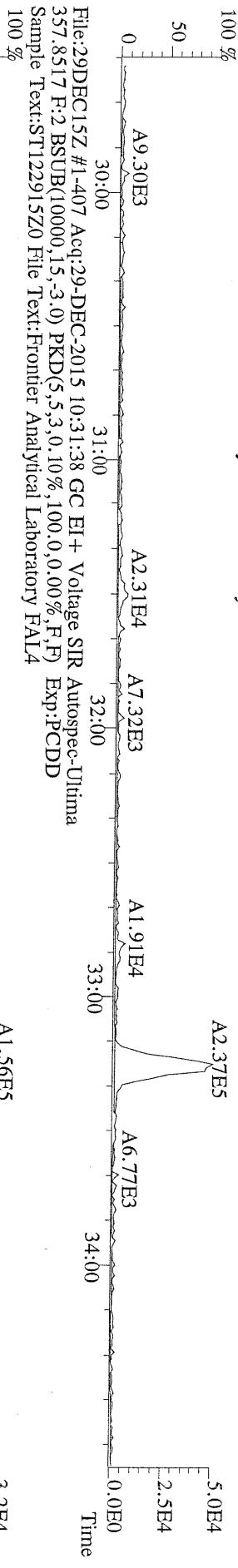
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333.9339 S:4 Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4



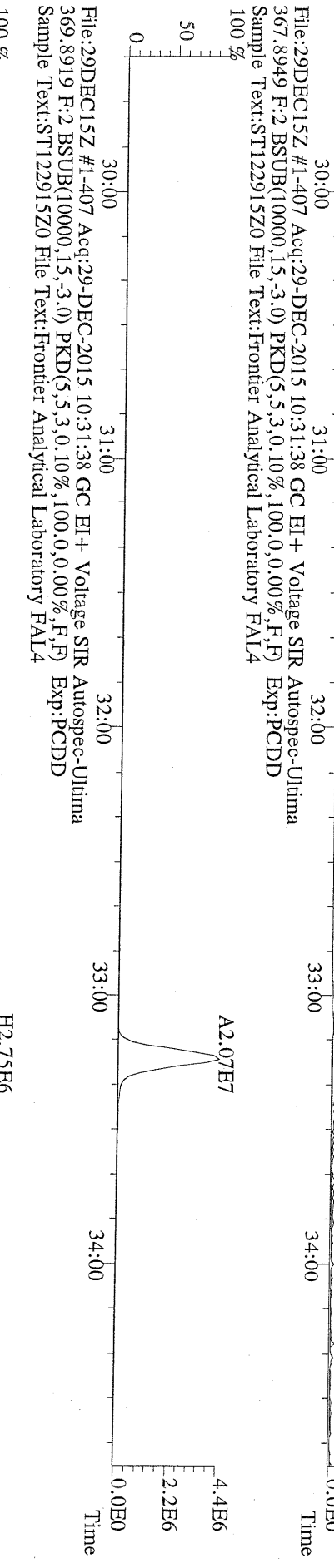
File:29DEC15Z #1-390 Acq:29-DEC-2015 10:31:38 GC EI+ Voltage SIR Autospec-Ultima
319.8965 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory



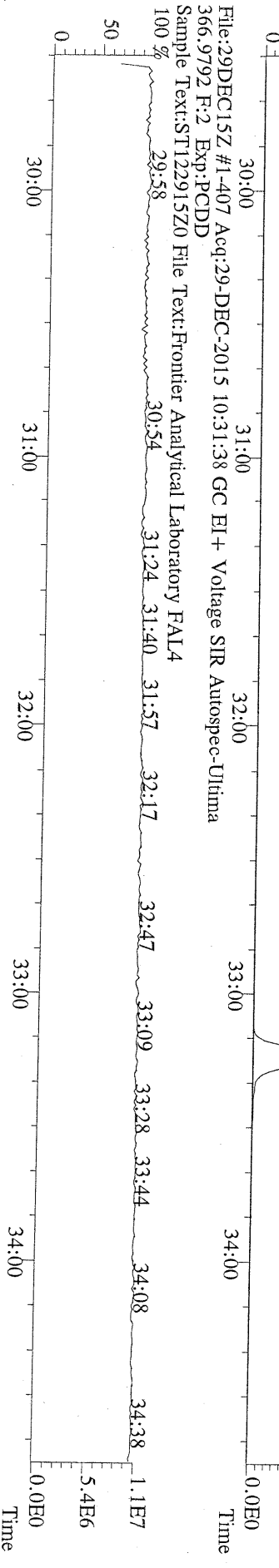
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355.8546 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory FAL4



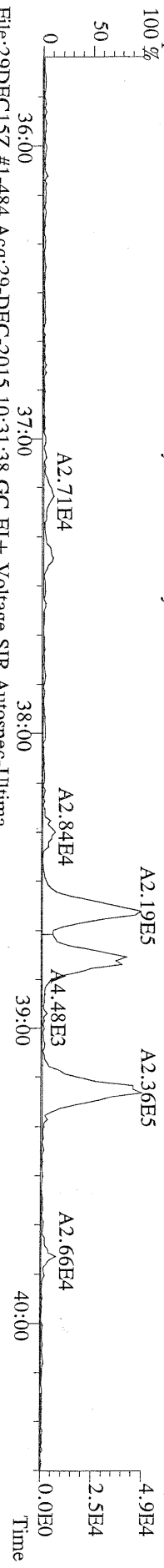
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367.8949 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory FAL4



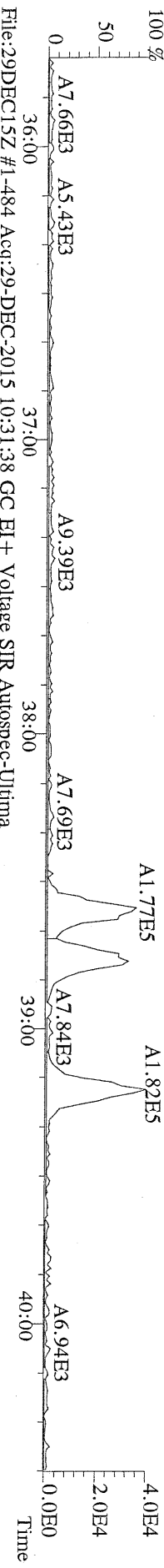
File:29DEC15Z #1-407 Acq:29-DEC-2015 10:31:38 GC EI+ Voltage SIR Autospec-Utima
366.9792 F:2 Exp:PCDD
Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory FAL4



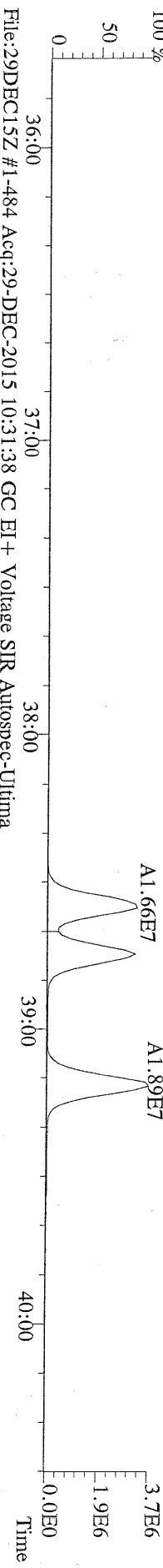
File:29DEC15Z #1-484 Acq:29-DEC-2015 10:31:38 GC EI+ Voltage SIR Autospec-Utima
 389.8156 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory FAL4
 100 %



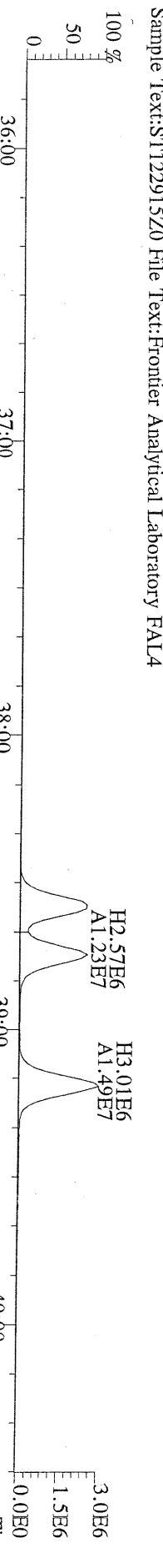
File:29DEC15Z #1-484 Acq:29-DEC-2015 10:31:38 GC EI+ Voltage SIR Autospec-Utima
 391.8127 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory FAL4
 100 %



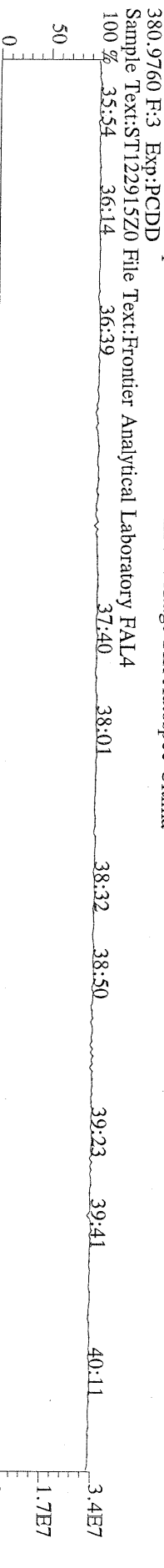
File:29DEC15Z #1-484 Acq:29-DEC-2015 10:31:38 GC EI+ Voltage SIR Autospec-Utima
 401.8559 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory FAL4
 100 %



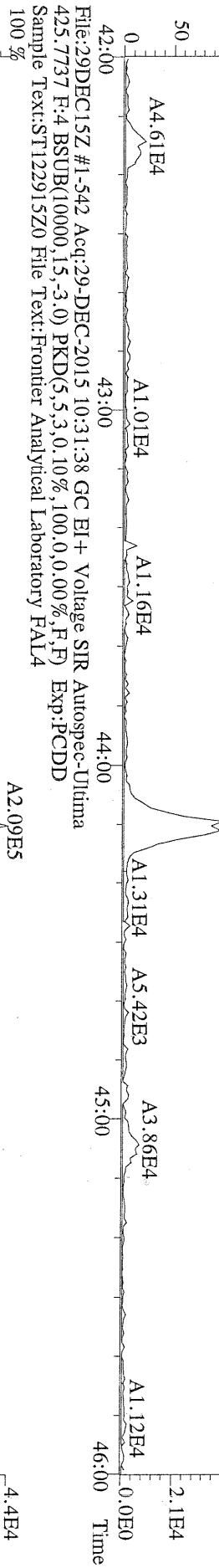
File:29DEC15Z #1-484 Acq:29-DEC-2015 10:31:38 GC EI+ Voltage SIR Autospec-Utima
 403.8530 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory FAL4
 100 %



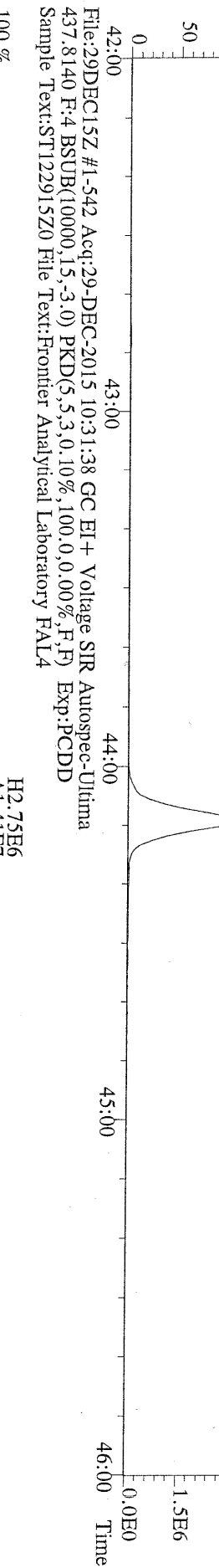
File:29DEC15Z #1-484 Acq:29-DEC-2015 10:31:38 GC EI+ Voltage SIR Autospec-Utima
 380.9760 F:3 Exp:PCDD
 Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory FAL4
 100 %



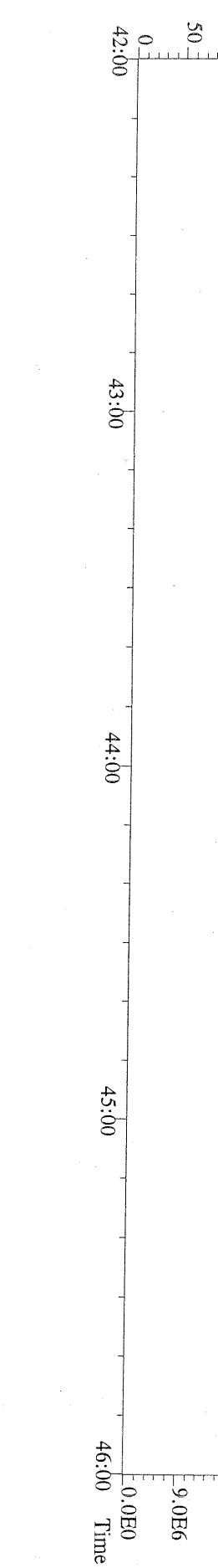
File:29DEC15Z #1-542 Acq:29-DEC-2015 10:31:38 GC EI+ Voltage SIR Autospec-Ultima
 423.7767 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:ST122915Z0 File Text:Fronter Analytical Laboratory FAL4
 100 %



File:29DEC15Z #1-542 Acq:29-DEC-2015 10:31:38 GC EI+ Voltage SIR Autospec-Ultima
 435.8169 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:ST122915Z0 File Text:Fronter Analytical Laboratory FAL4
 100 %



File:29DEC15Z #1-542 Acq:29-DEC-2015 10:31:38 GC EI+ Voltage SIR Autospec-Ultima
 430.9728 F:4 Exp:PCDD
 Sample Text:ST122915Z0 File Text:Fronter Analytical Laboratory FAL4
 100 %



File:29DEC15Z #1-348 Acq:29-DEC-2015 10:31:38 GC EI+ Voltage SIR Autospec-Ultima
457.7377 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z0 File Text:Fronter Analytical Laboratory FAL4
100 % A3.05E5

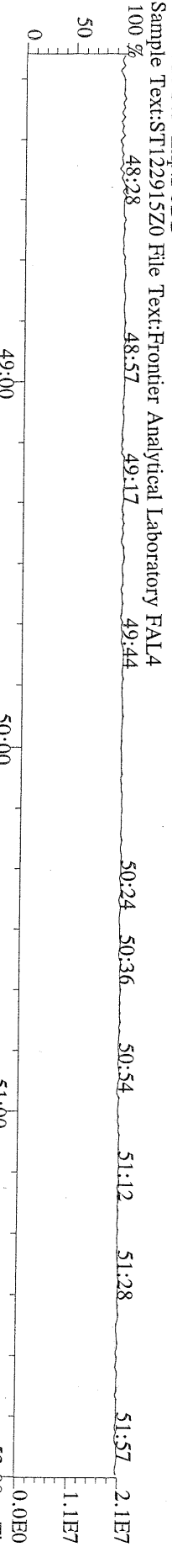
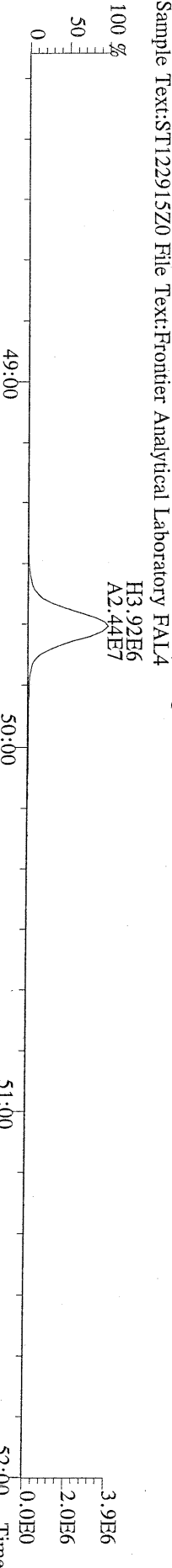
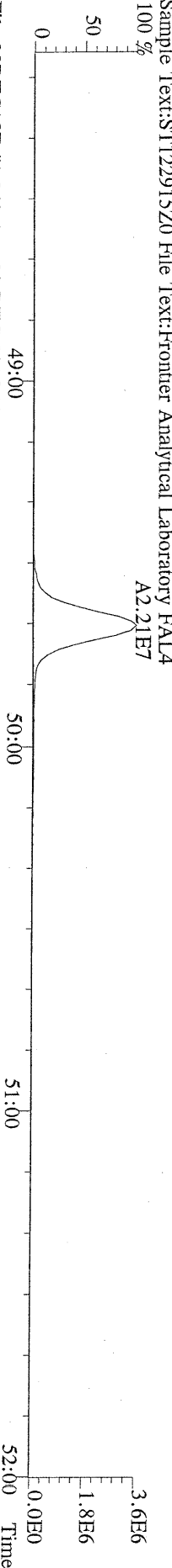
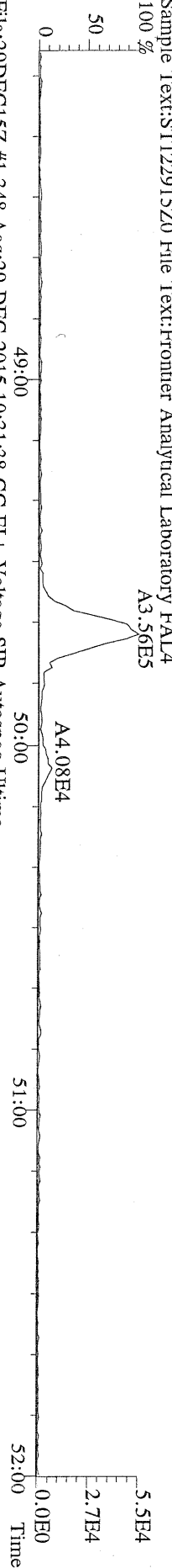
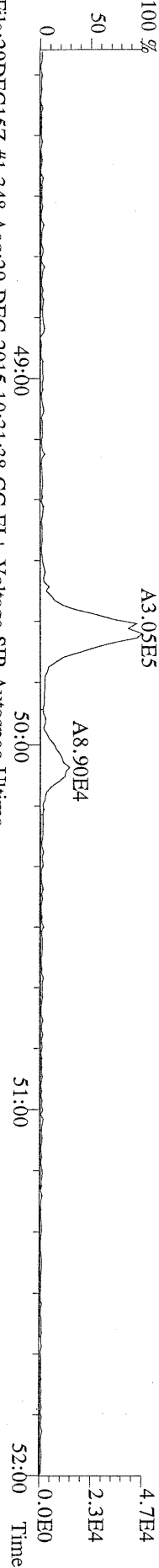
File:29DEC15Z #1-348 Acq:29-DEC-2015 10:31:38 GC EI+ Voltage SIR Autospec-Ultima
459.7348 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z0 File Text:Fronter Analytical Laboratory FAL4
100 % A3.56E5

File:29DEC15Z #1-348 Acq:29-DEC-2015 10:31:38 GC EI+ Voltage SIR Autospec-Ultima
469.7780 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z0 File Text:Fronter Analytical Laboratory FAL4
100 % A2.21E7

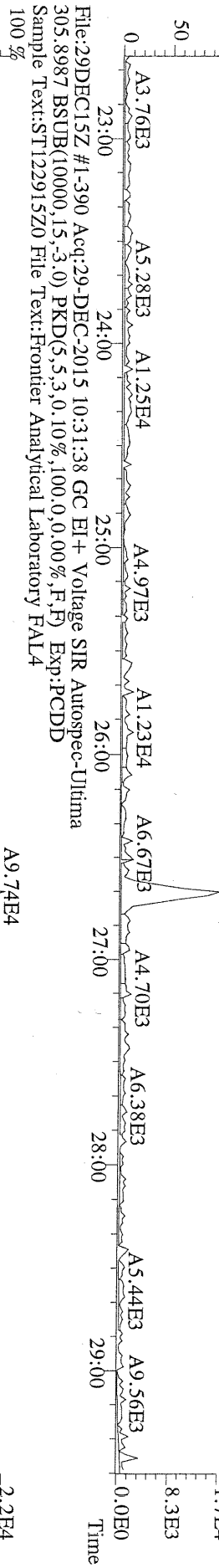
File:29DEC15Z #1-348 Acq:29-DEC-2015 10:31:38 GC EI+ Voltage SIR Autospec-Ultima
471.7750 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z0 File Text:Fronter Analytical Laboratory FAL4

File:29DEC15Z #1-348 Acq:29-DEC-2015 10:31:38 GC EI+ Voltage SIR Autospec-Ultima
454.9728 F:5 Exp:PCDD
Sample Text:ST122915Z0 File Text:Fronter Analytical Laboratory FAL4

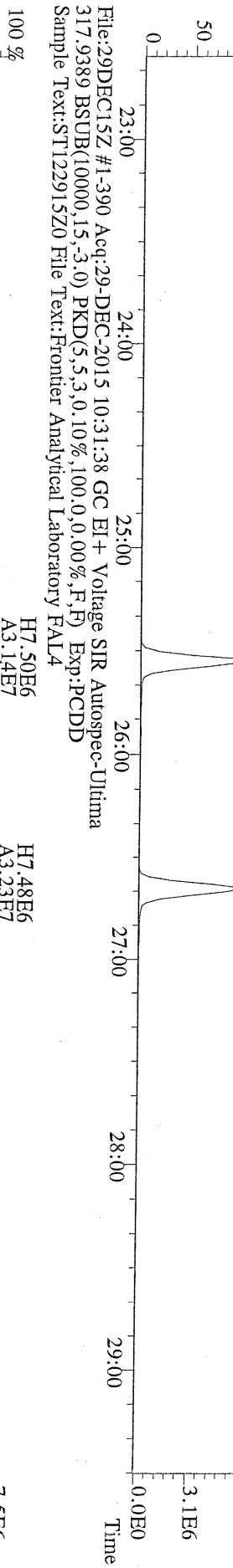
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454.9728 F:5 Exp:PCDD
Sample Text:ST122915Z0 File Text:Fronter Analytical Laboratory FAL4



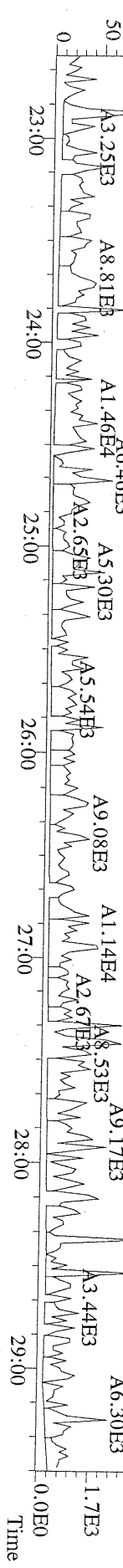
File:29DEC15Z #1-390 Acq:29-DEC-2015 10:31:38 GC EI+ Voltage SIR Autospec-Utima
303.9016 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory FAL4



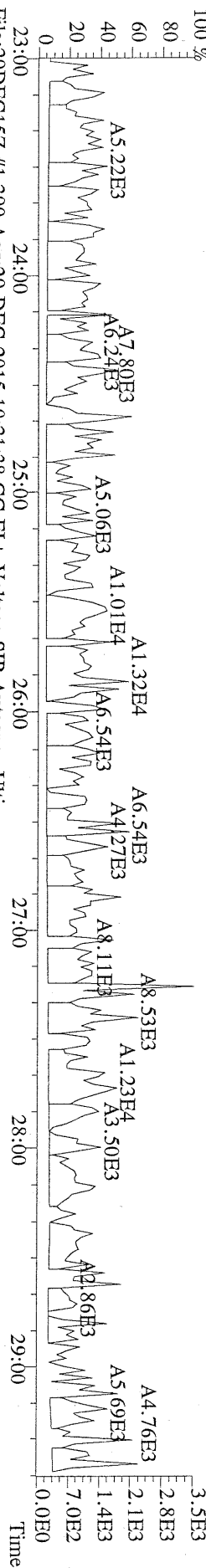
File:29DEC15Z #1-390 Acq:29-DEC-2015 10:31:38 GC EI+ Voltage SIR Autospec-Utima
315.9419 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory FAL4



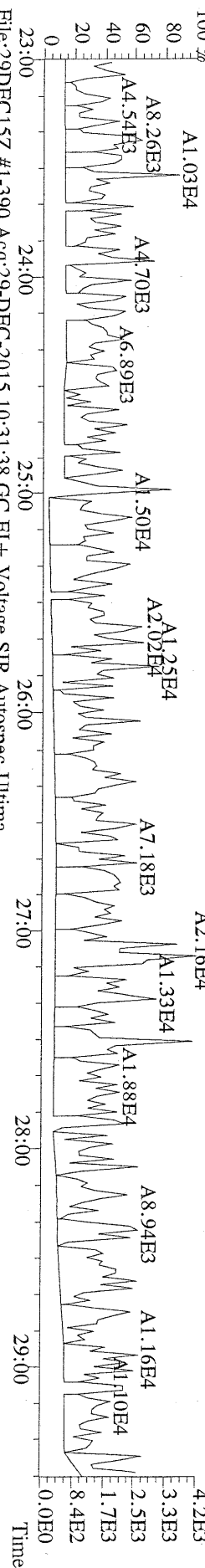
File:29DEC15Z #1-390 Acq:29-DEC-2015 10:31:38 GC EI+ Voltage SIR Autospec-Utima
375.8364 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory FAL4



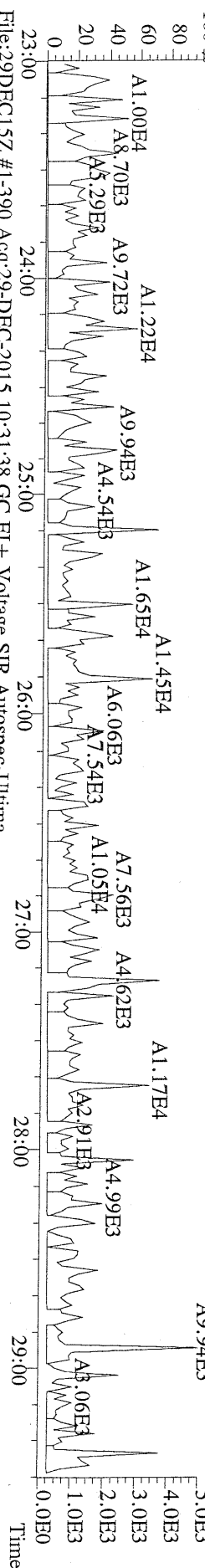
File:29DEC15Z #1-390 Acq:29-DEC-2015 10:31:38 GC EI+ Voltage SIR Autospec-Utima
 339.8597 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
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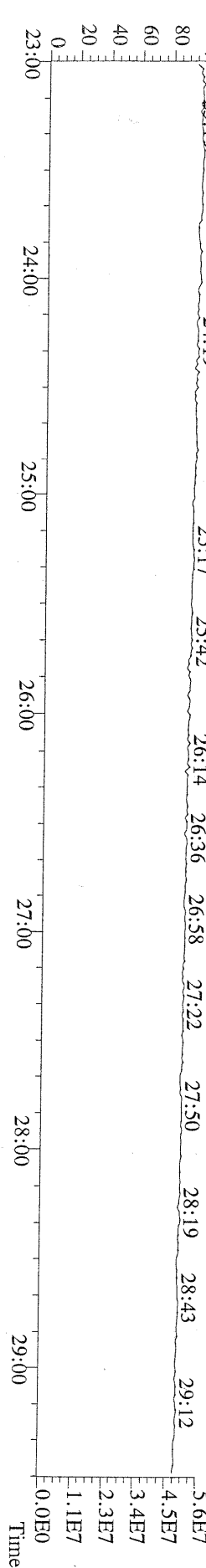
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 341.8568 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory FAL4



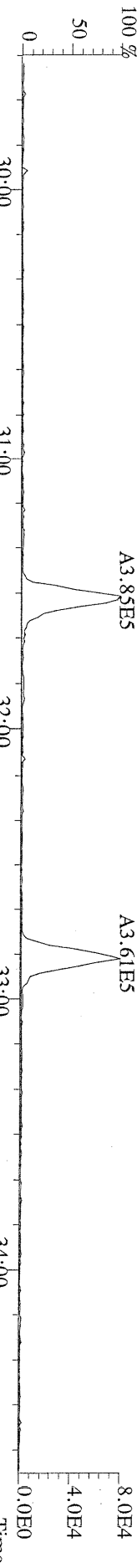
File:29DEC15Z #1-390 Acq:29-DEC-2015 10:31:38 GC EI+ Voltage SIR Autospec-Utima
 409.7974 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory FAL4



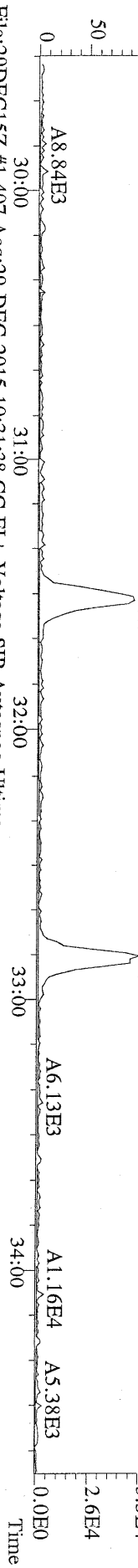
File:29DEC15Z #1-390 Acq:29-DEC-2015 10:31:38 GC EI+ Voltage SIR Autospec-Utima
 330.9792 Exp:PCDD
 Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory FAL4



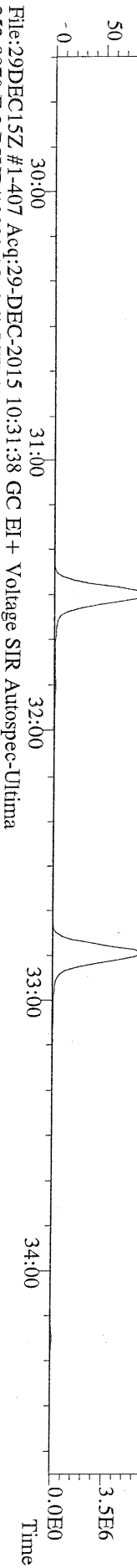
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 339.8597 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp.:PCDD
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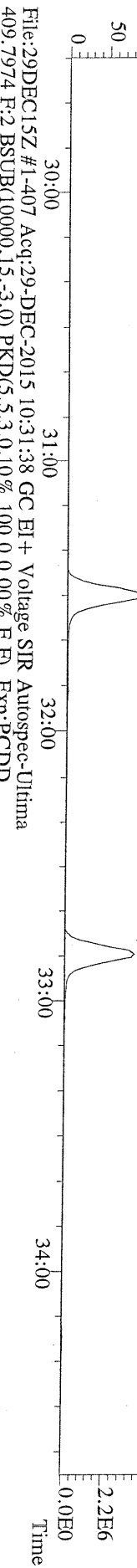
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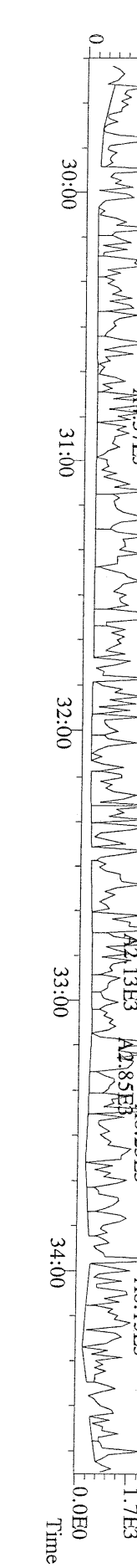
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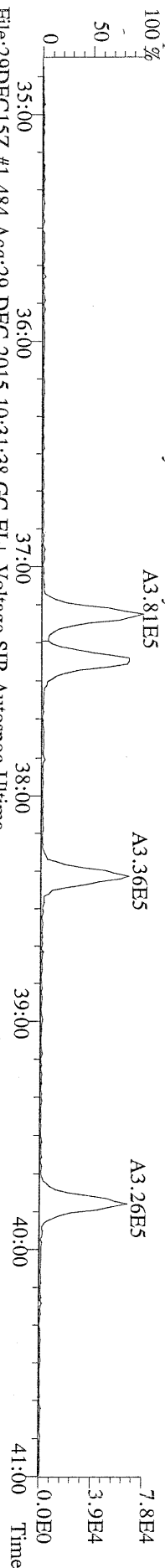
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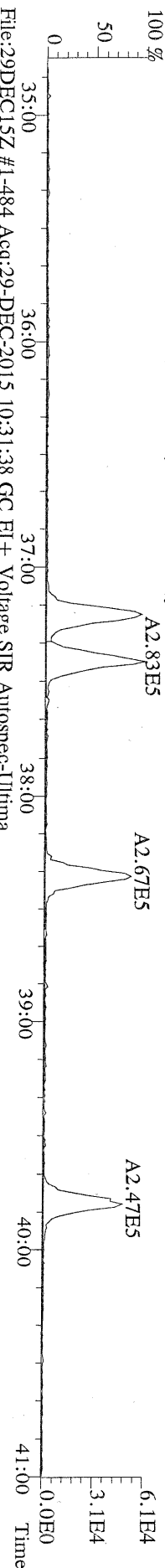
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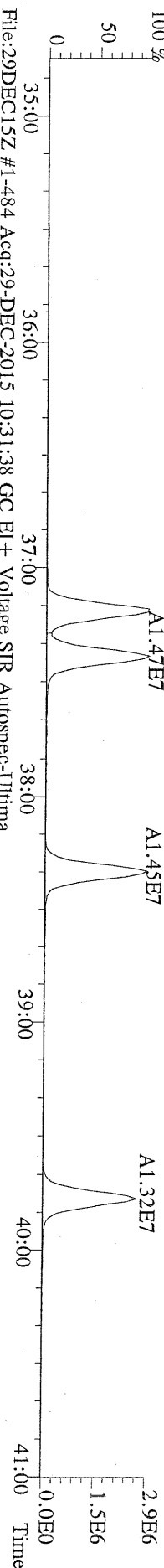
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373.8207 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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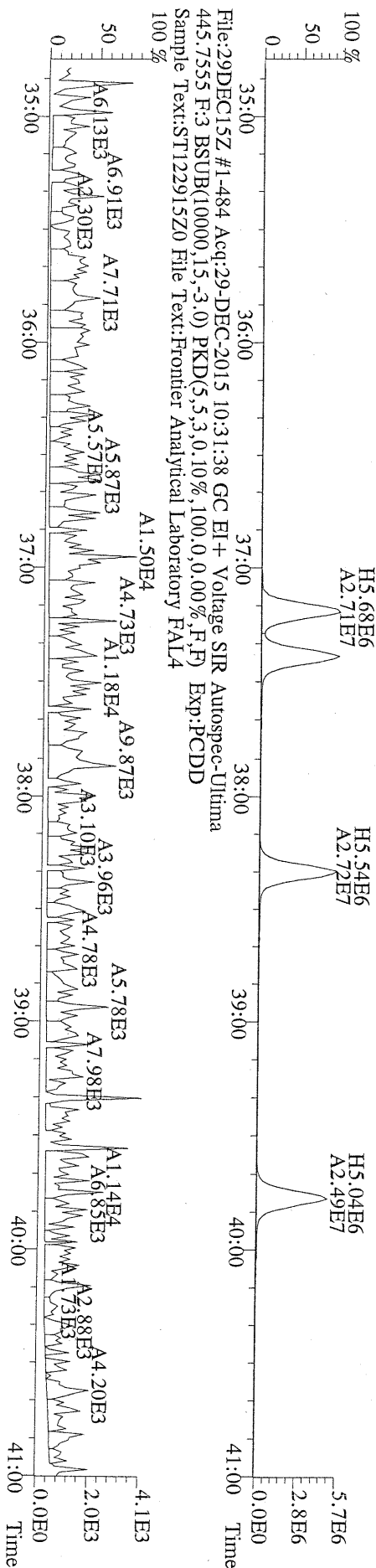
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375.8178 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory FAL4



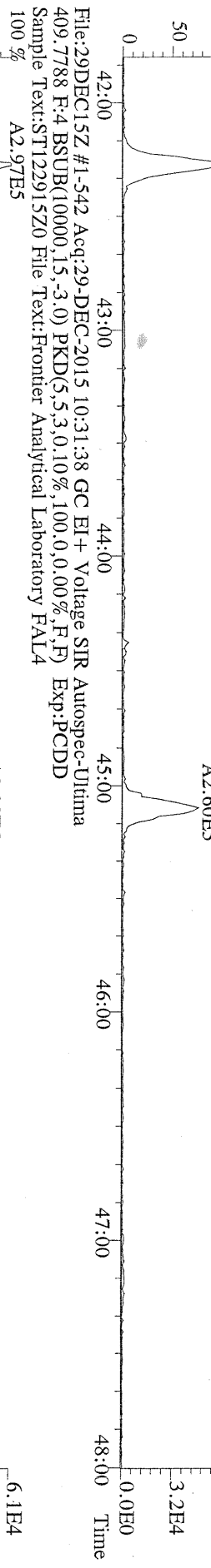
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383.8639 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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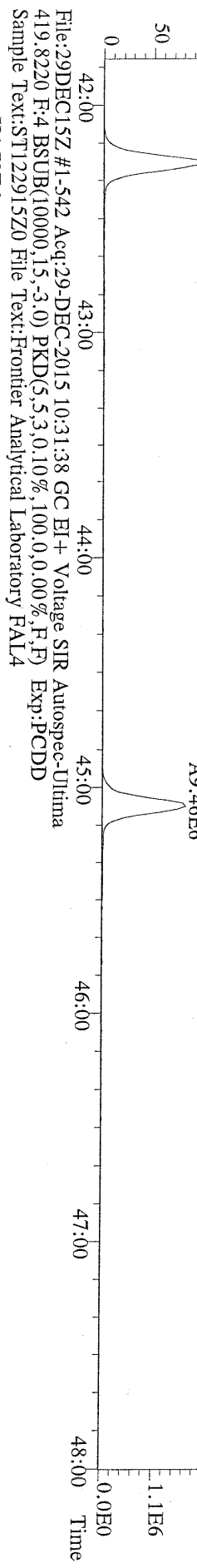
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445.7555 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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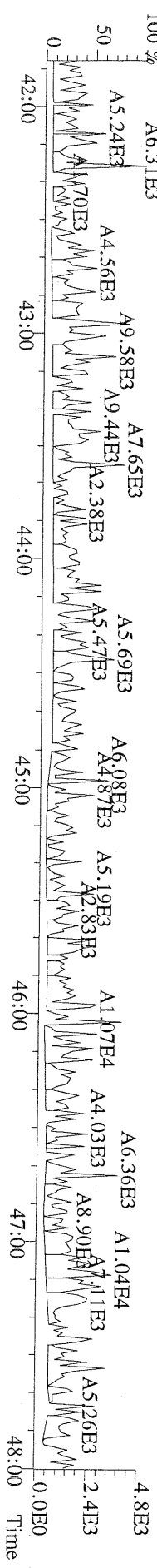
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407.7818 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory FAL4
100% A3.22E5



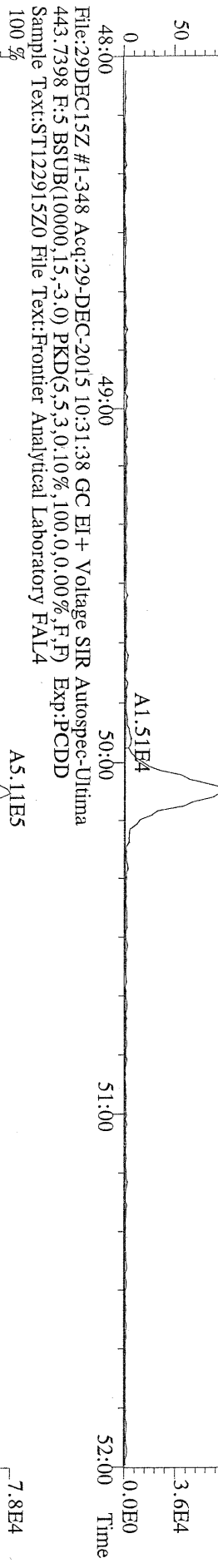
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417.8253 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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100% A1.09E7



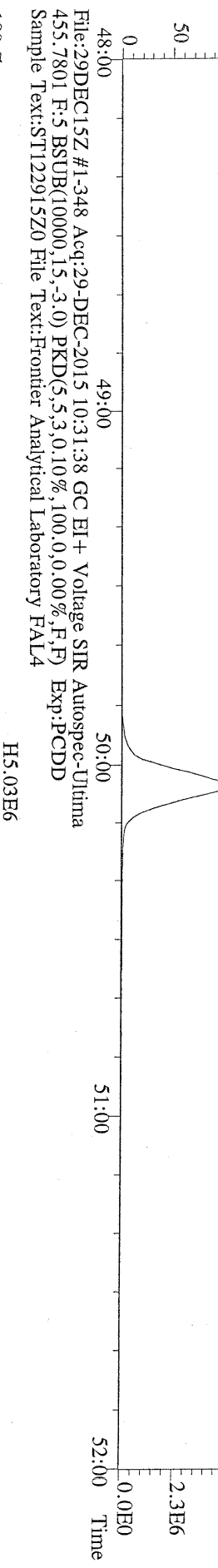
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419.8220 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory FAL4
100% H4.73E6
A2.39E7



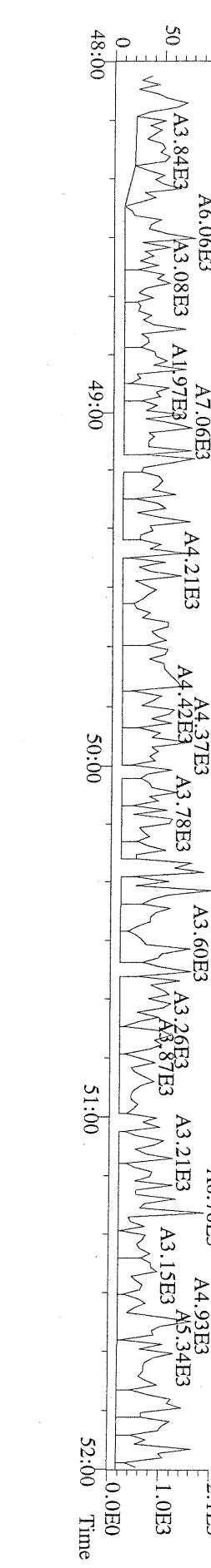
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441.7428 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory FAL4
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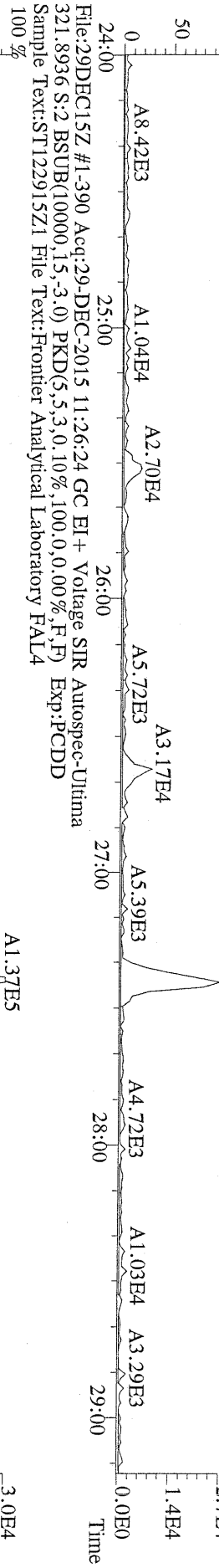
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453.7831 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory FAL4
100 %



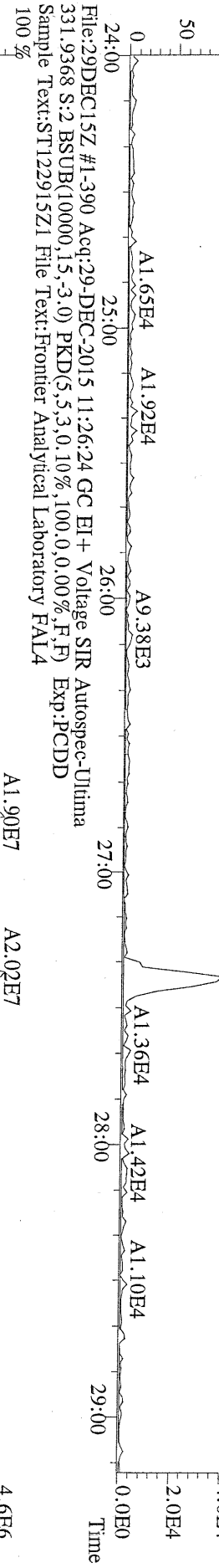
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513.6775 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory FAL4
100 %



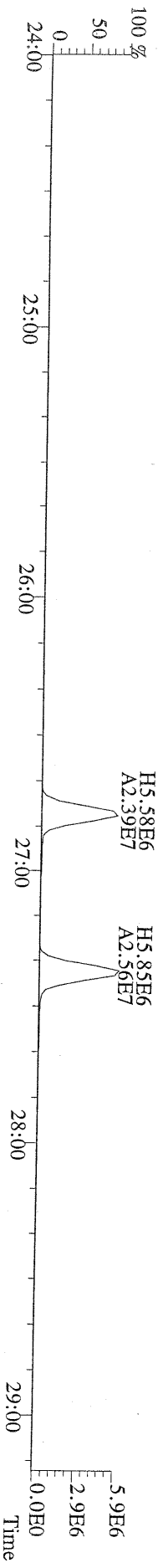
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 319.8965 S:2.BSUB(10000,15,-3.0) PKD(5,5,3,0,100,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4
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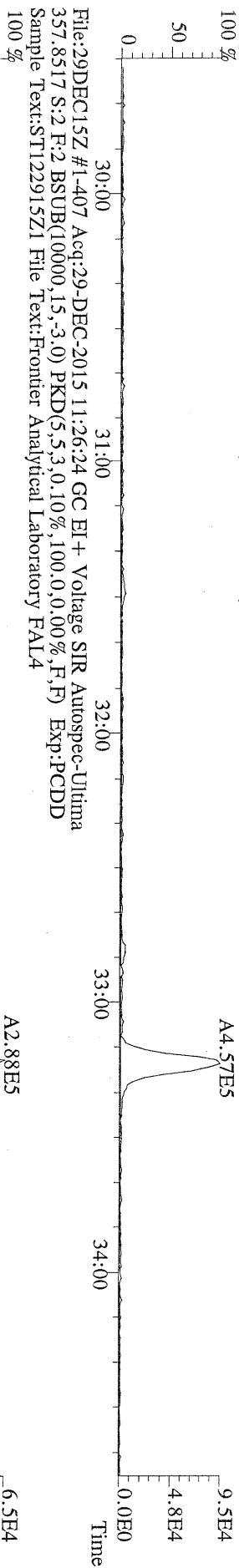
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 Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4
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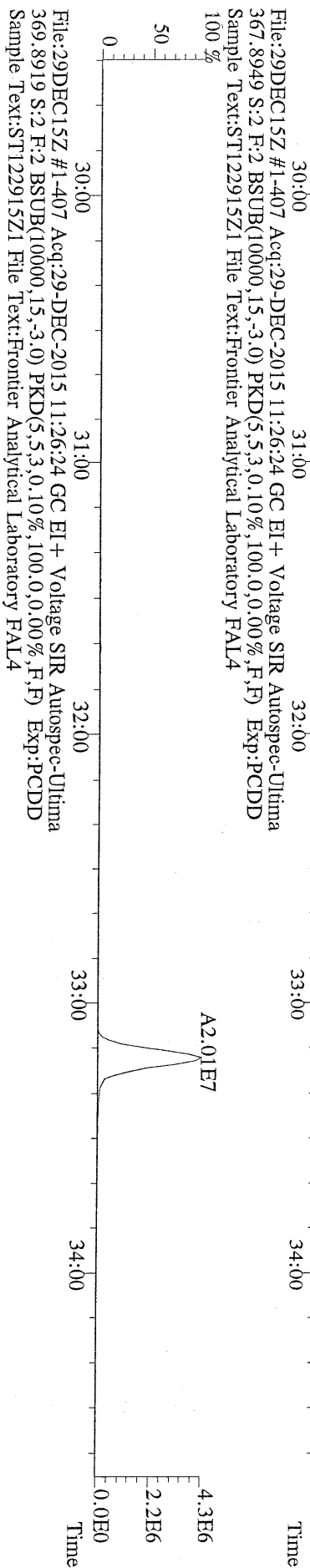
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 333.9339 S:2.BSUB(10000,15,-3.0) PKD(5,5,3,0,100,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4
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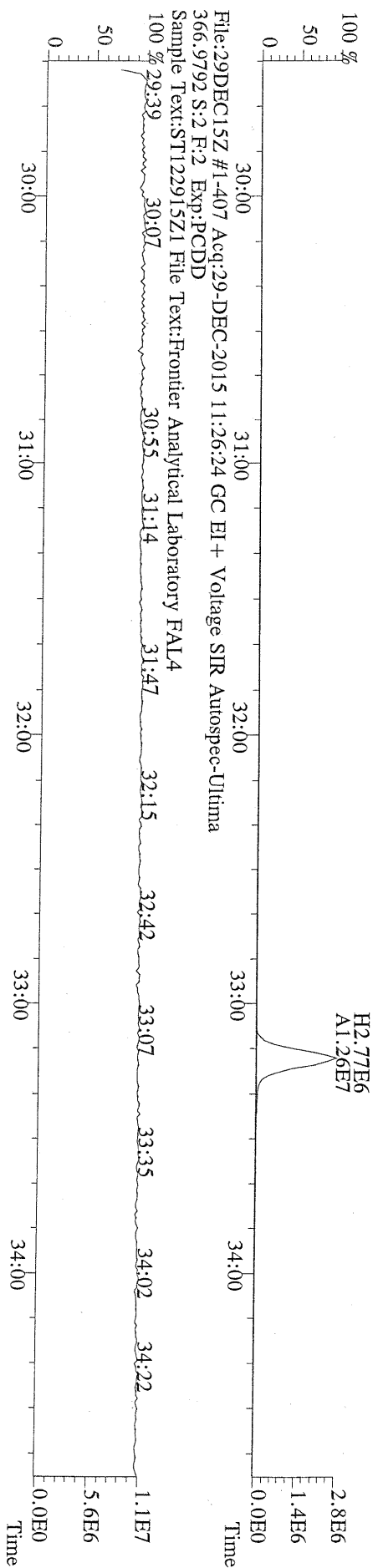
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355.8546 S:2 F:2 BSUB(10000,15,-3.0) PKD(5.5,3,0,10%,100,0,0,0,0) Exp:PCDD
Sample Text: ST122915Z1 File Text: Frontier Analytical Laboratory FAL4
100 %



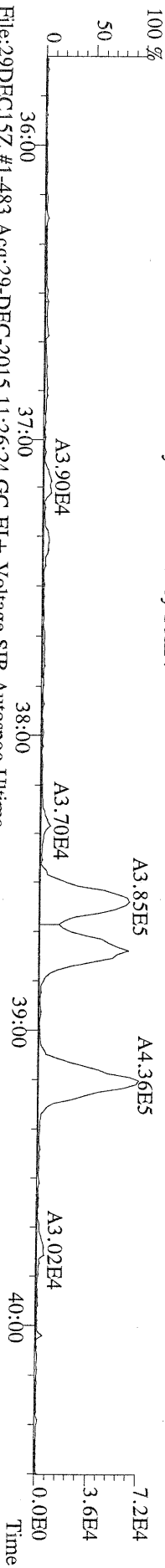
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367.8949 S:2 F:2 BSUB(10000,15,-3.0) PKD(5.5,3,0,10%,100,0,0,0,0) Exp:PCDD
Sample Text: ST122915Z1 File Text: Frontier Analytical Laboratory FAL4
100 %



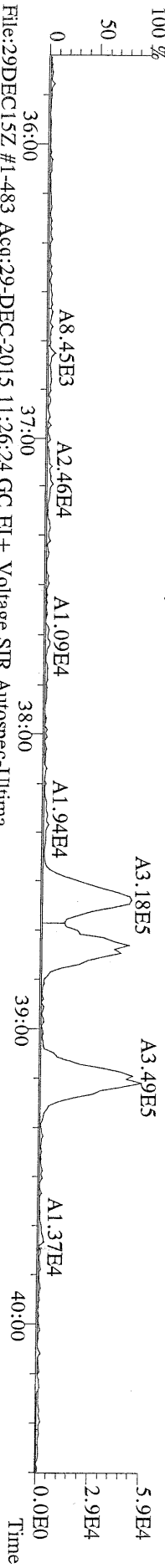
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366.9792 S:2 F:2 Exp:PCDD
Sample Text: ST122915Z1 File Text: Frontier Analytical Laboratory FAL4
100 %



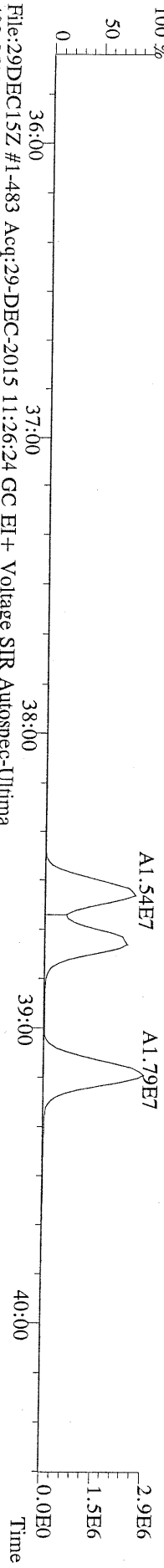
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 389.8156 S:2 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4



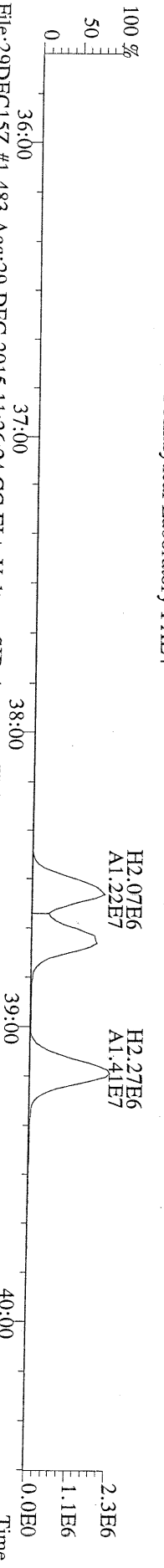
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 391.8127 S:2 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4



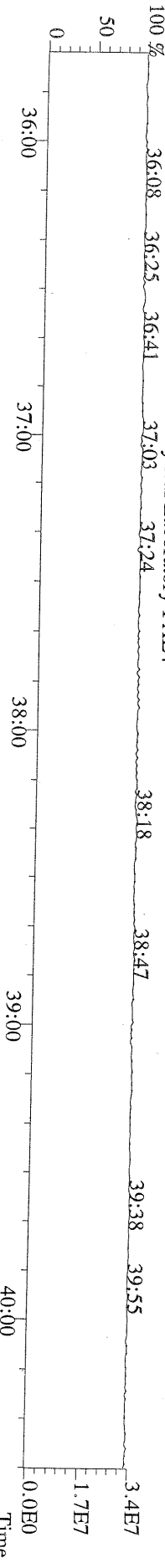
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 401.8559 S:2 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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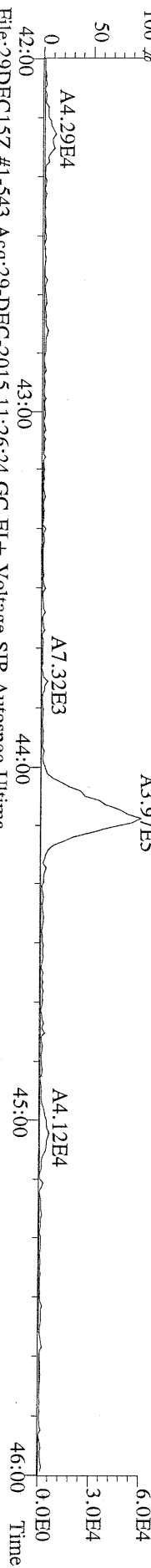
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 403.8530 S:2 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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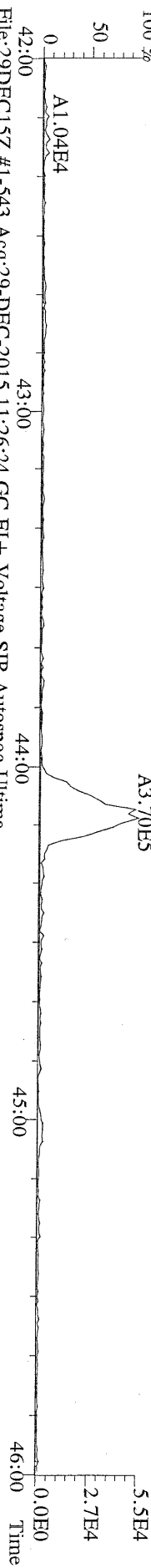
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 380.9760 S:2 F:3 Exp:PCDD
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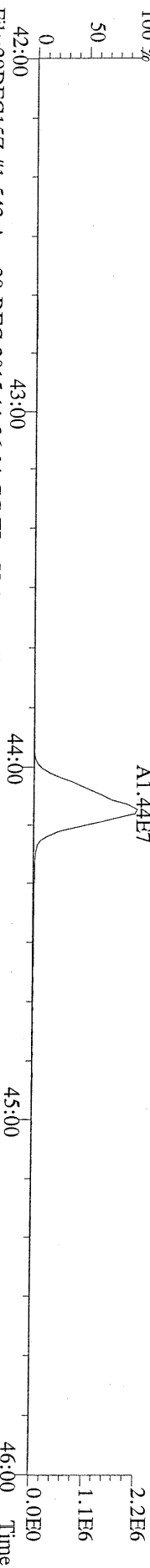
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423.7767 S: 2 F: 4 BSUB(10000,15,-3,0) PKD(5.5,3,0,10%,100,0,0,0.00%,F,F) Exp.: PCDD
Sample Text: ST122915Z1 File Text: Frontier Analytical Laboratory FAL4
100 %



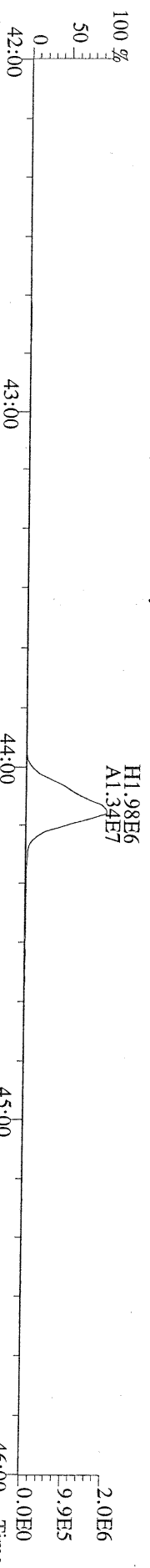
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425.7737 S: 2 F: 4 BSUB(10000,15,-3,0) PKD(5.5,3,0,10%,100,0,0,0.00%,F,F) Exp.: PCDD
Sample Text: ST122915Z1 File Text: Frontier Analytical Laboratory FAL4
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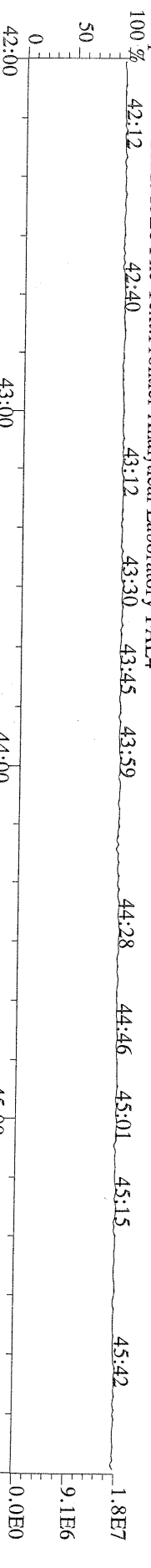
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437.8140 S: 2 F: 4 BSUB(10000,15,-3,0) PKD(5.5,3,0,10%,100,0,0,0.00%,F,F) Exp.: PCDD
Sample Text: ST122915Z1 File Text: Frontier Analytical Laboratory FAL4
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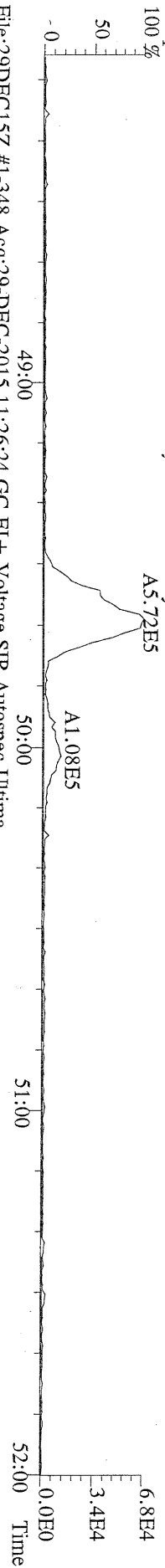
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437.8140 S: 2 F: 4 BSUB(10000,15,-3,0) PKD(5.5,3,0,10%,100,0,0,0.00%,F,F) Exp.: PCDD
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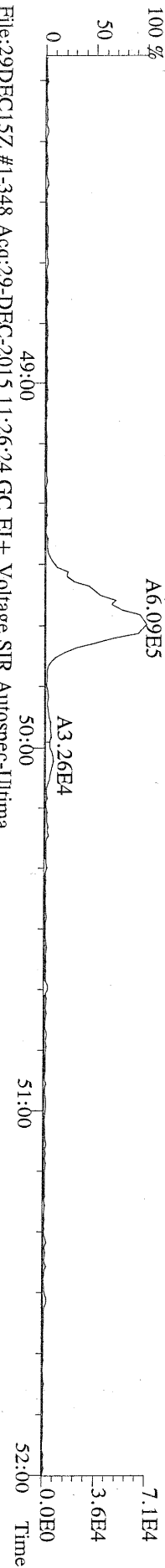
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430.9728 S: 2 F: 4 Exp.: PCDD
Sample Text: ST122915Z1 File Text: Frontier Analytical Laboratory FAL4
100 %



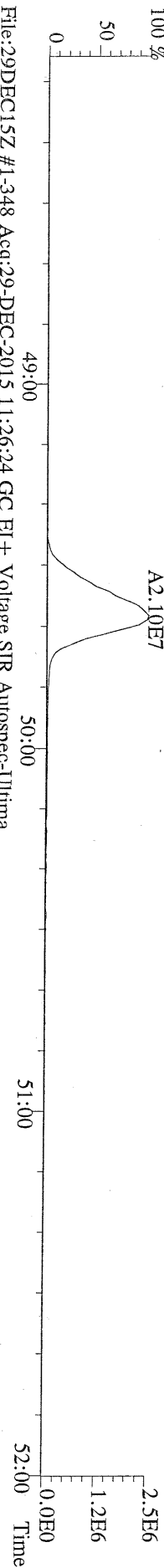
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457.7377 S:2 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0%) Exp.:PCDD
Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4



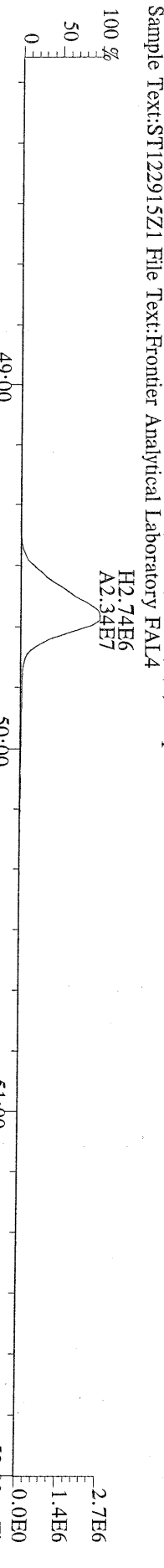
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459.7348 S:2 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0%) Exp.:PCDD
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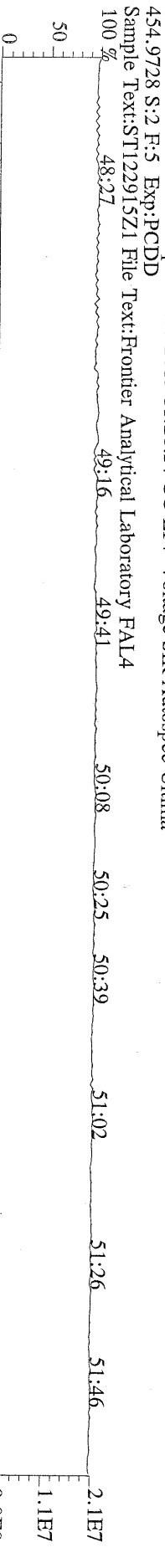
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469.7780 S:2 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0%) Exp.:PCDD
Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4



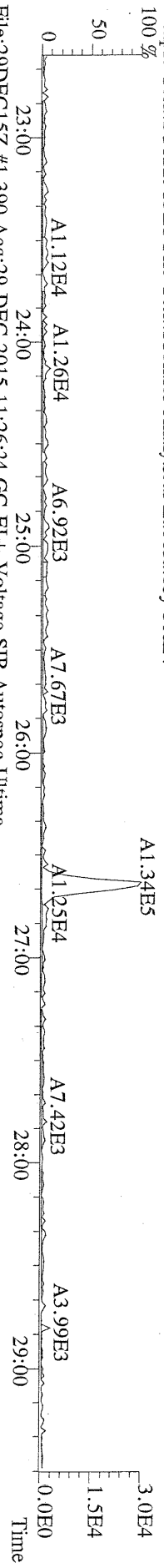
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471.7750 S:2 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0%) Exp.:PCDD
Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4



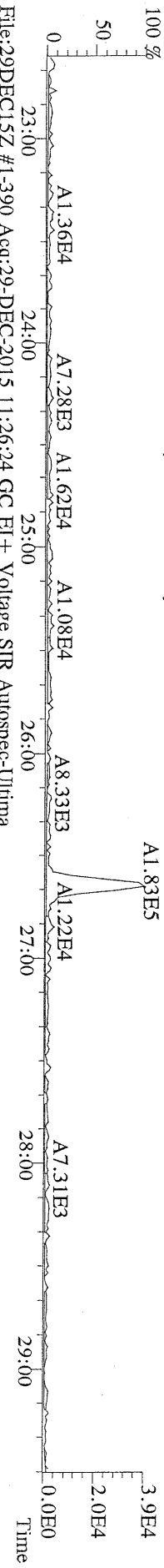
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454.9728 S:2 F:5 Exp:PCDD
Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4



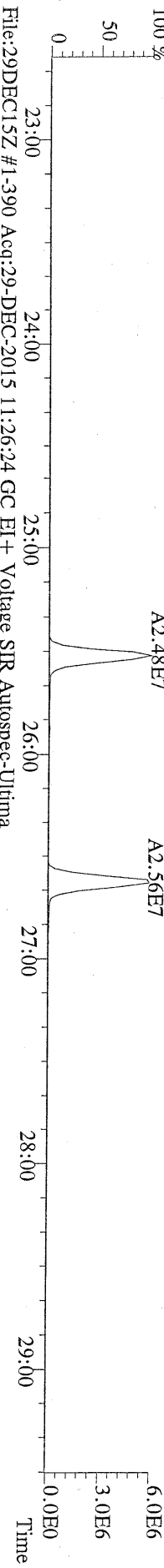
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303.9016 S:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



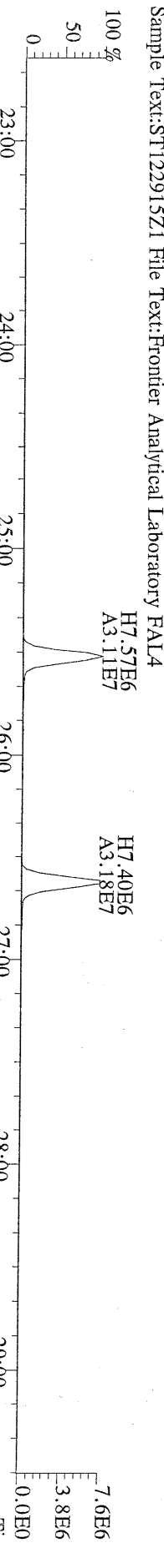
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305.8987 S:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4
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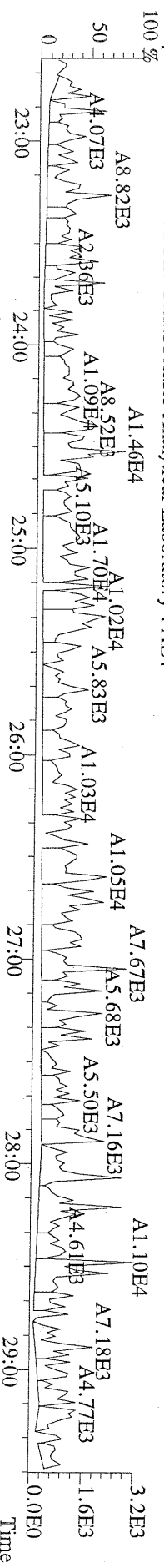
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315.9419 S:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



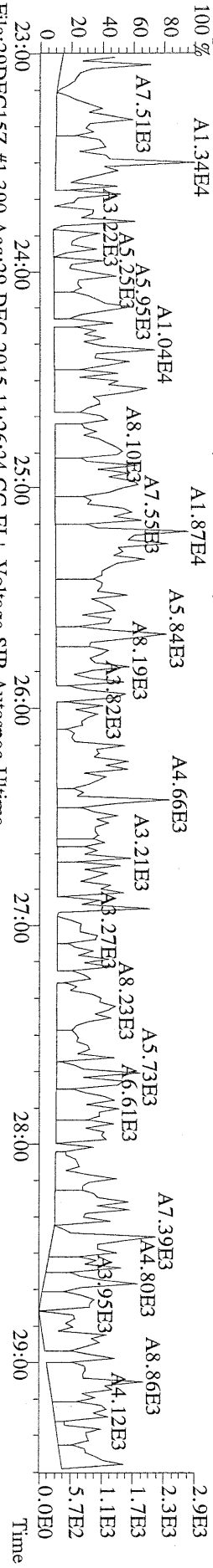
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317.9389 S:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
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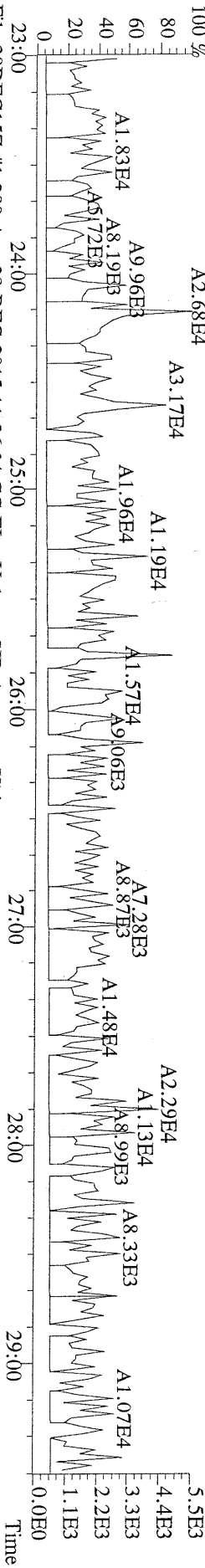
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375.8364 S:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



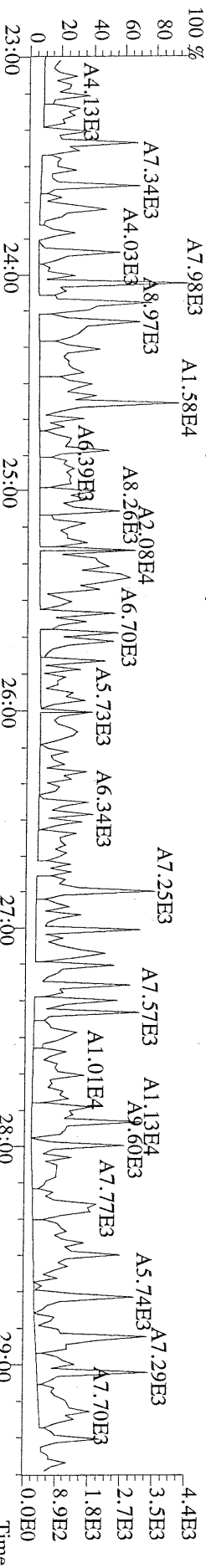
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 339.8597 S:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0,0) Exp:PCDD
 Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4



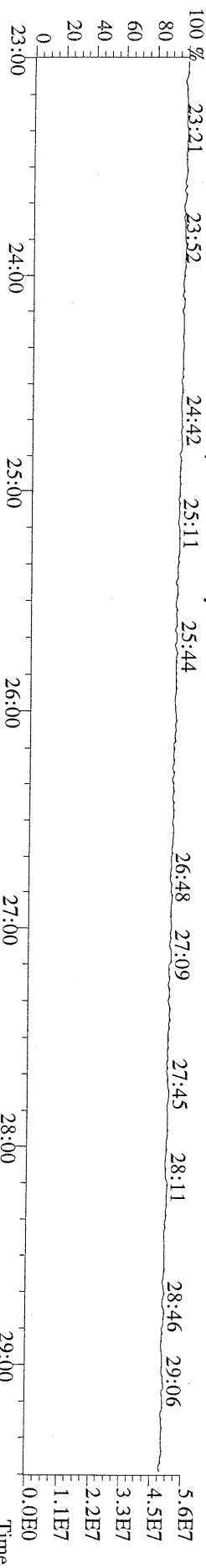
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 341.8568 S:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0) Exp:PCDD
 Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4



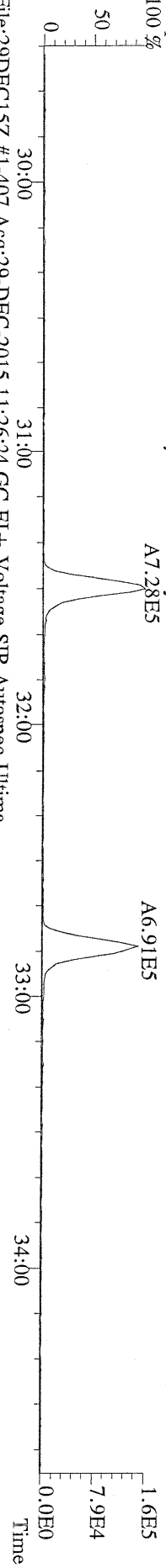
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 409.7974 S:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0) Exp:PCDD
 Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4



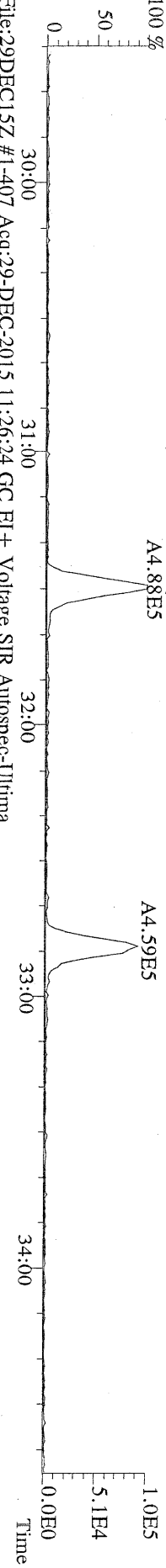
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 330.9792 S:2 Exp:PCDD
 Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4



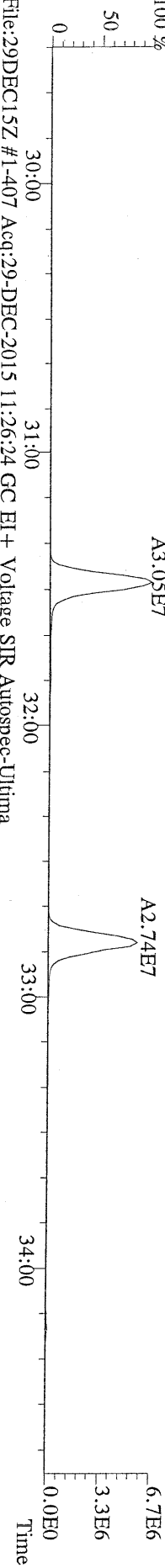
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339.8597 S:2 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0) Exp:PCDD
Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4



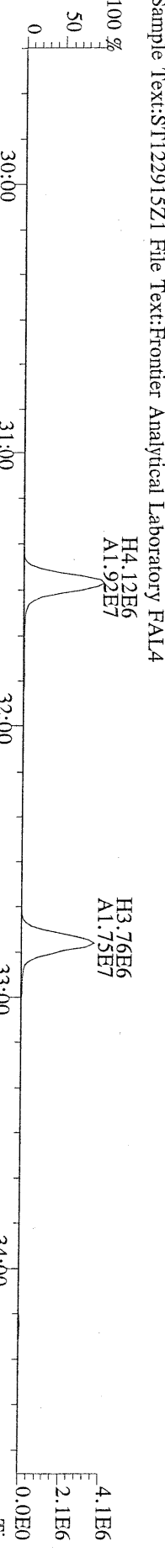
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341.8568 S:2 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0) Exp:PCDD
Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4



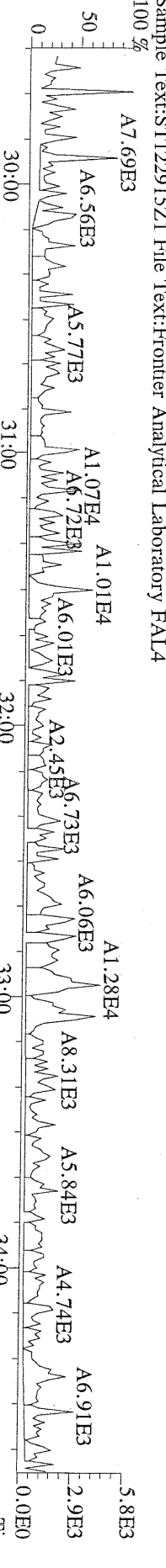
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351.9000 S:2 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0) Exp:PCDD
Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4



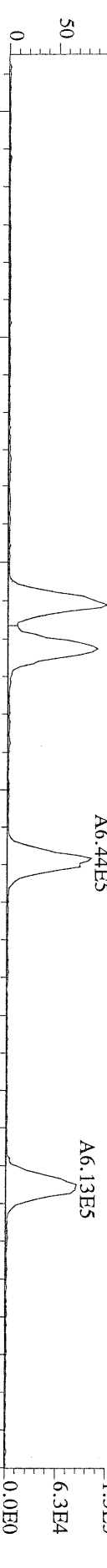
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Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4



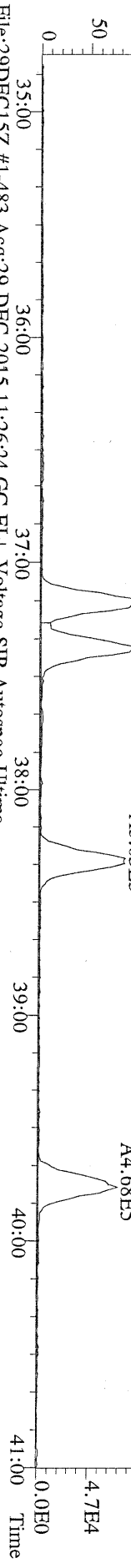
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409.7974 S:2 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0) Exp:PCDD
Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4



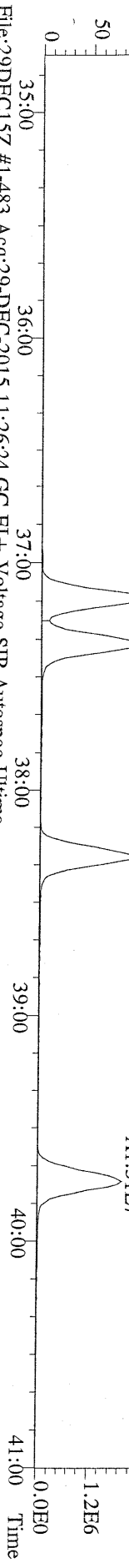
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 373.8207 S:2 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4



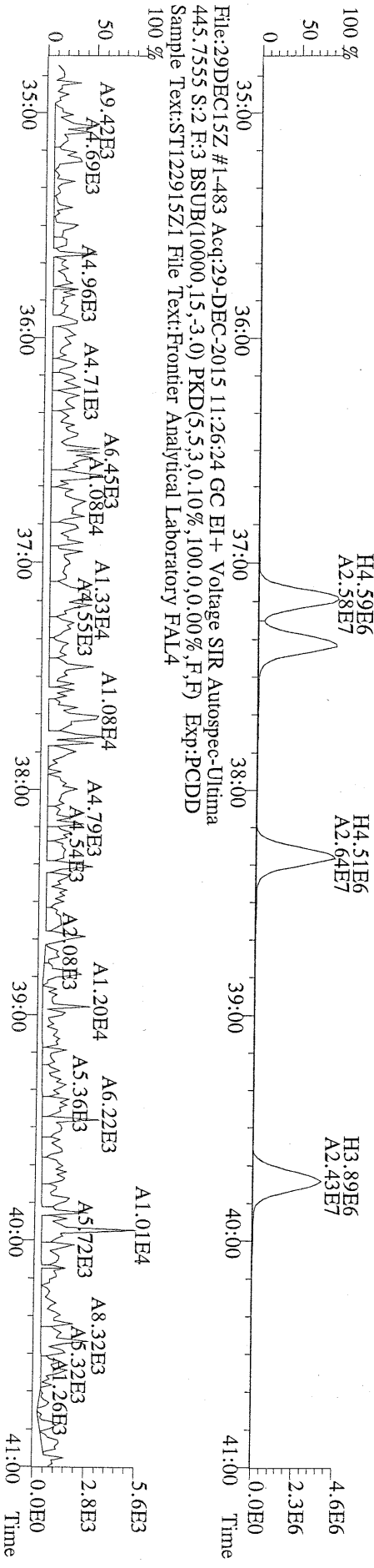
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 375.8178 S:2 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4



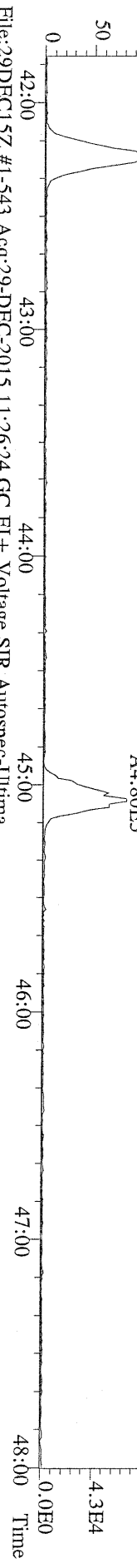
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 383.8639 S:2 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4



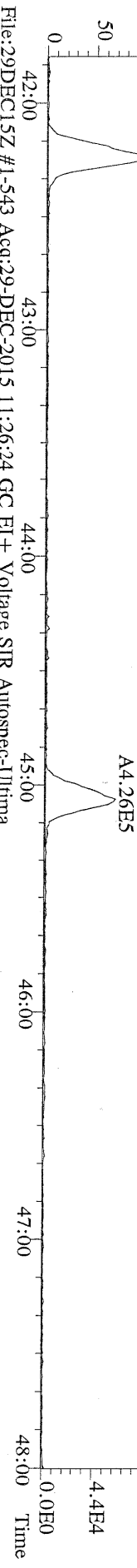
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 445.7555 S:2 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4



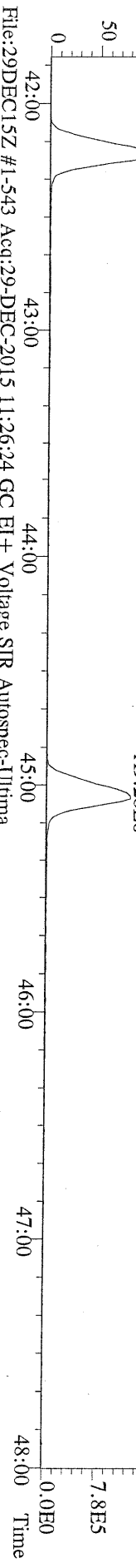
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 407.7818 S:2 F:4 BSUB(10000,15,-3.0) PKD(5.5,3,0,10%,100,0,0,0,0,0,0) Exp:P:PCDD
 Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4
 100 % A5.80E5



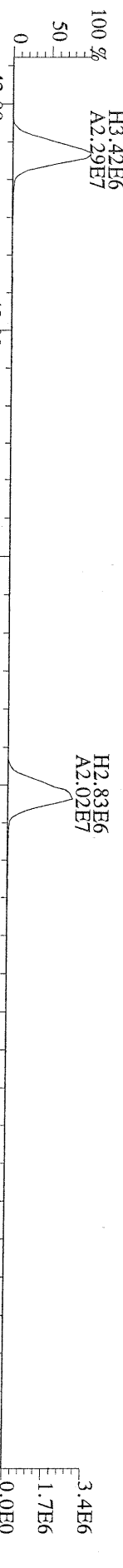
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 409.7788 S:2 F:4 BSUB(10000,15,-3.0) PKD(5.5,3,0,10%,100,0,0,0,0,0,0) Exp:P:PCDD
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 100 % A5.68E5



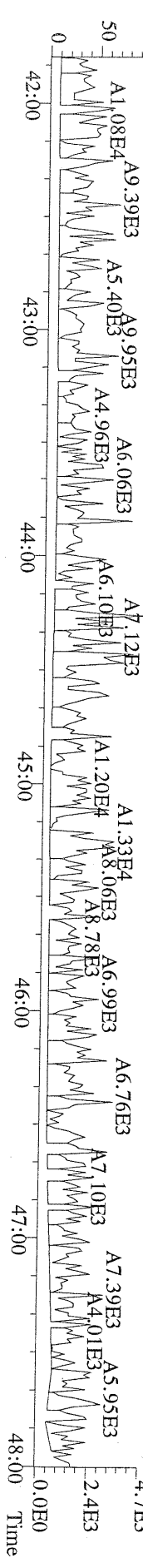
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 417.8253 S:2 F:4 BSUB(10000,15,-3.0) PKD(5.5,3,0,10%,100,0,0,0,0,0,0) Exp:P:PCDD
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 100 % A1.05E7



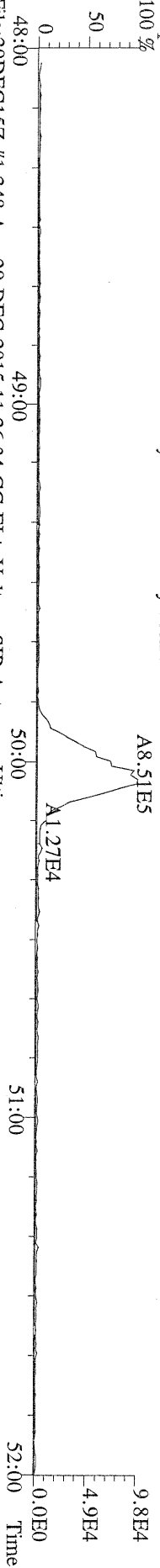
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 419.8220 S:2 F:4 BSUB(10000,15,-3.0) PKD(5.5,3,0,10%,100,0,0,0,0,0,0) Exp:P:PCDD
 Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4



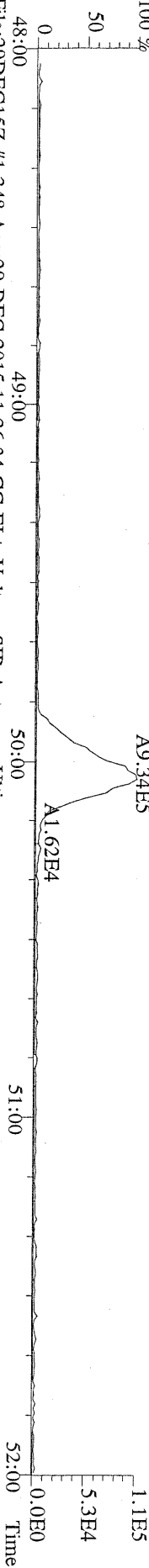
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 479.7165 S:2 F:4 BSUB(10000,15,-3.0) PKD(5.5,3,0,10%,100,0,0,0,0,0,0) Exp:P:PCDD
 Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4
 100 %



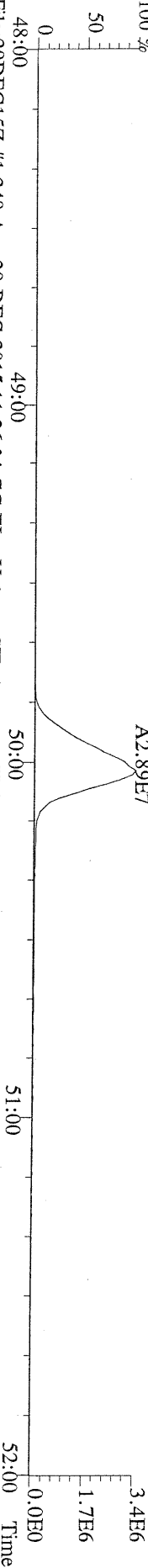
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441.7428 S:2 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0,0) Exp:PCDD
Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



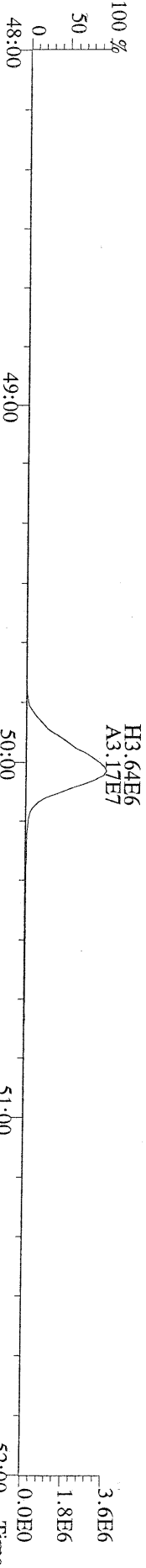
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443.7398 S:2 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0,0) Exp:PCDD
Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



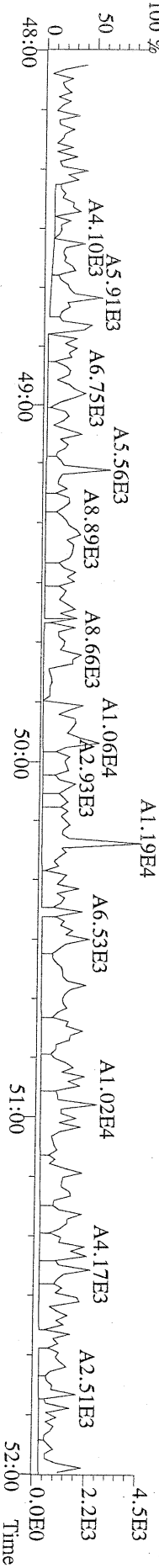
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453.7831 S:2 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0,0) Exp:PCDD
Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



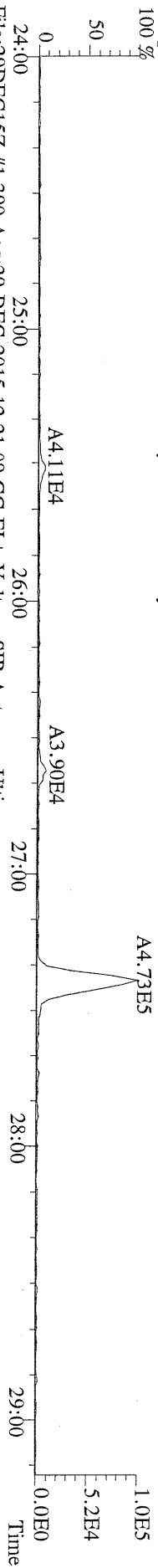
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455.7801 S:2 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0,0) Exp:PCDD
Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4



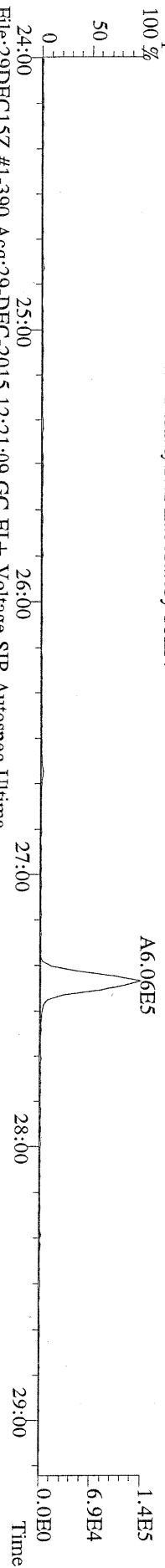
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513.6775 S:2 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0,0) Exp:PCDD
Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



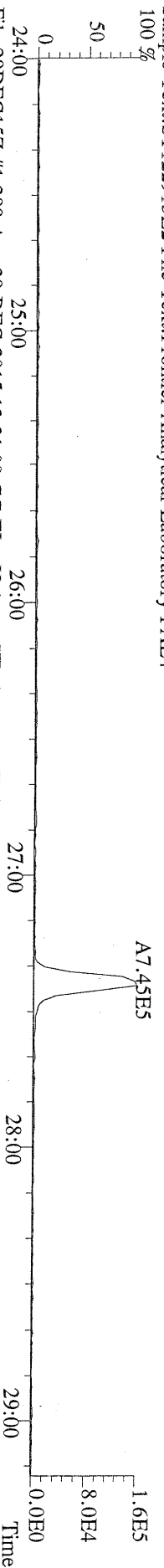
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319.8965 S:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100 %



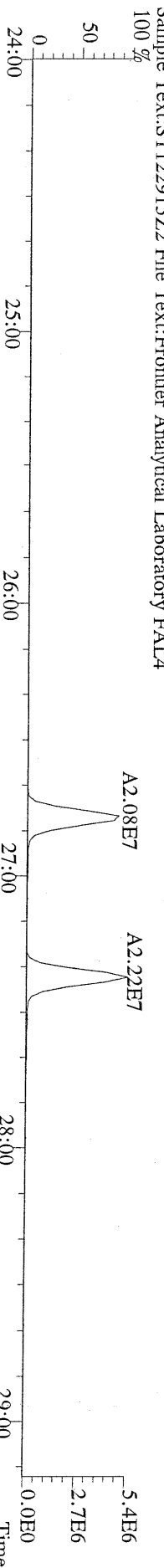
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321.8936 S:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100 %



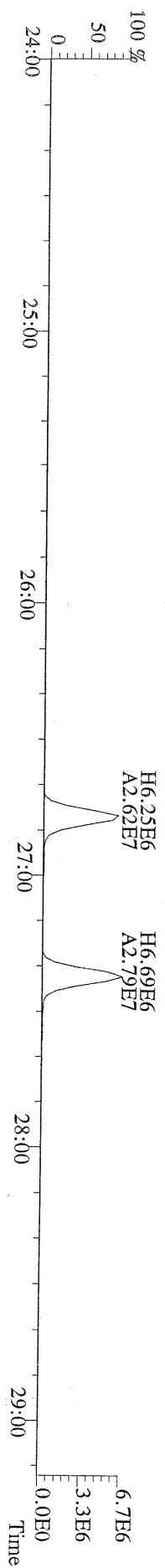
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327.8847 S:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100 %



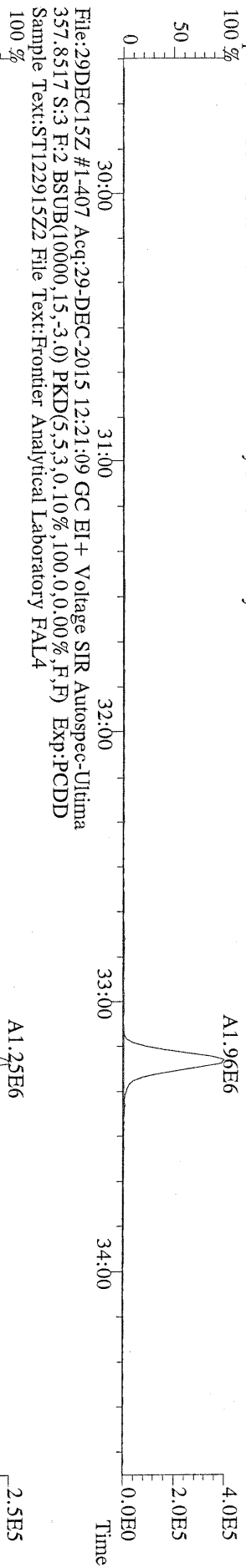
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331.9368 S:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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100 %



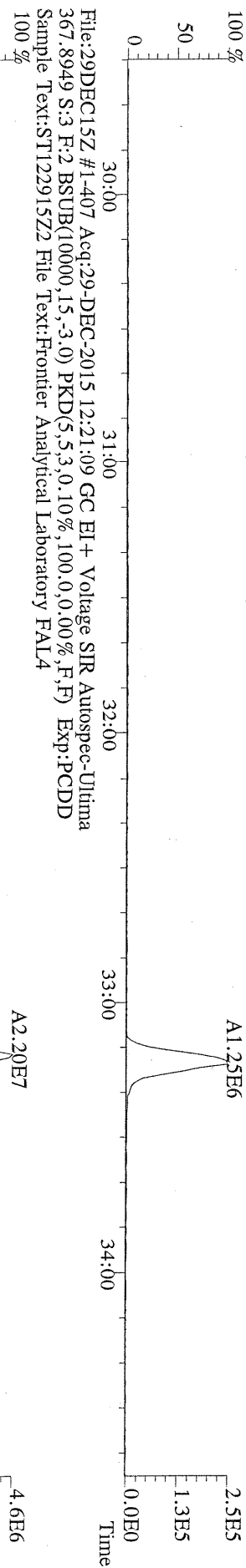
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333.9339 S:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4



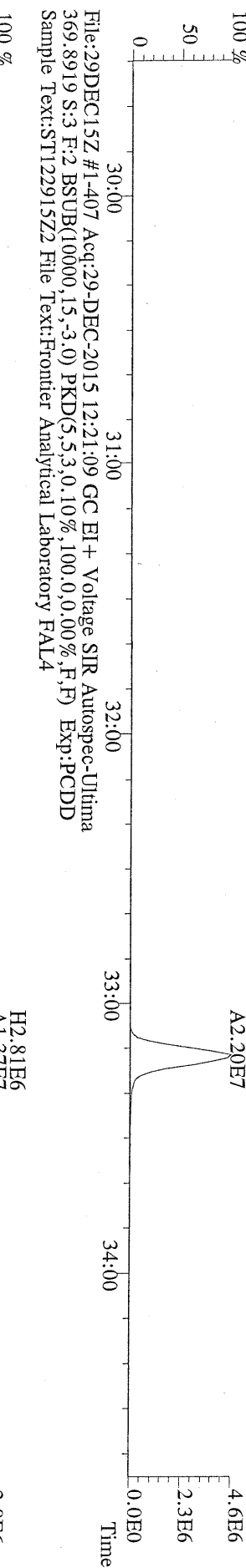
File:29DEC15Z #1-407 Acq:29-DEC-2015 12:21:09 GC EI+ Voltage SIR Autospec-Utima
357.8517 S:3 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0) Exp.:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100 %



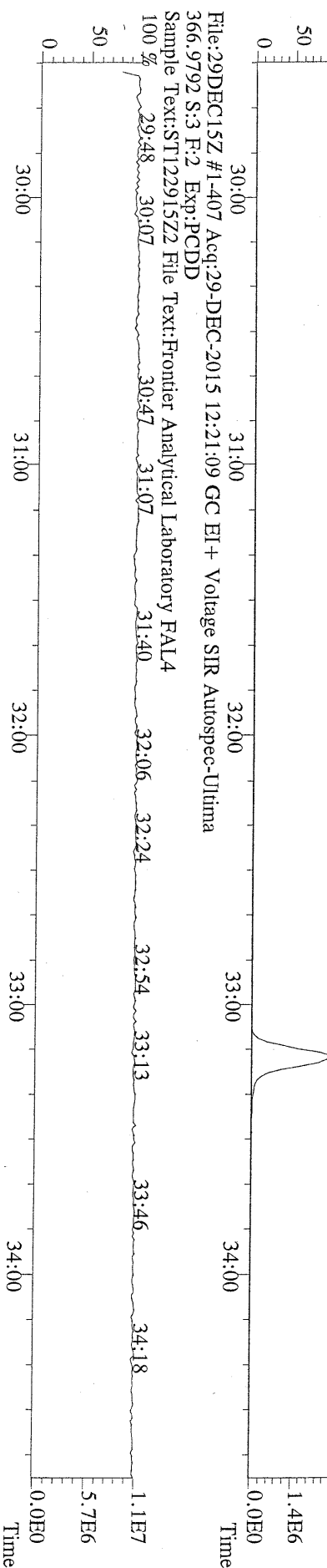
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367.8919 S:3 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0) Exp.:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100 %



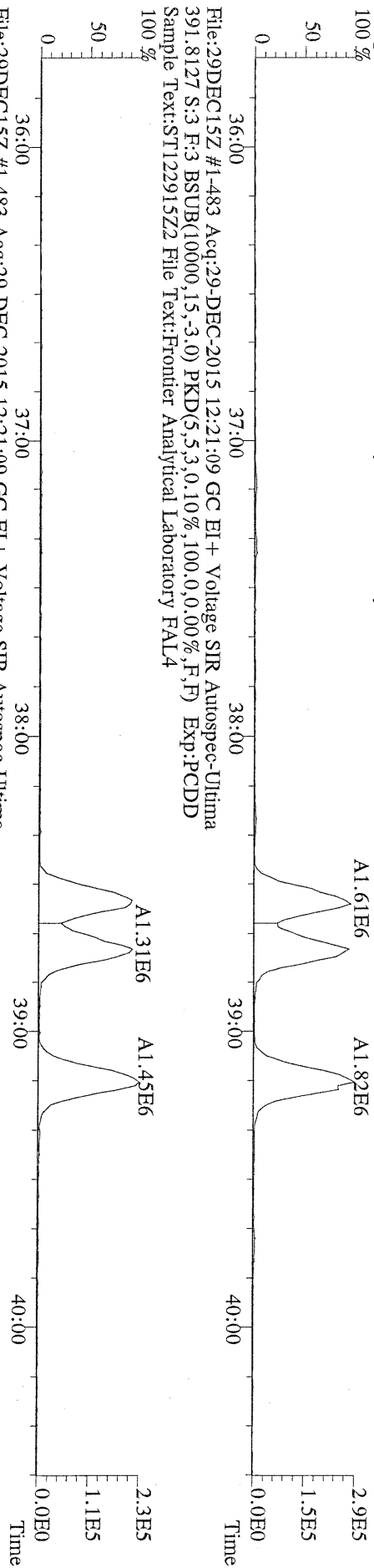
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369.8919 S:3 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0) Exp.:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100 %



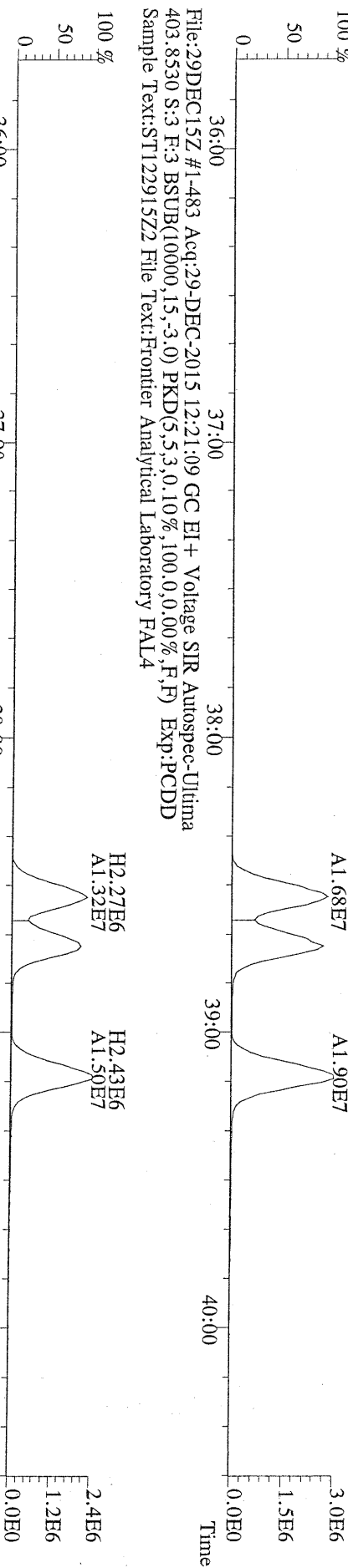
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366.9792 S:3 F:2 Exp.:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100 %



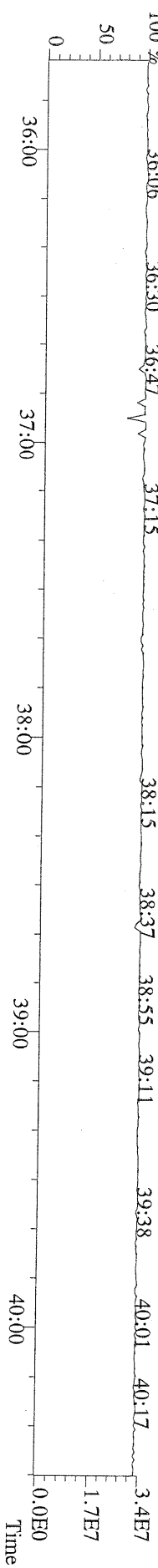
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389.8156 S:3 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0%) Exp.:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100 %



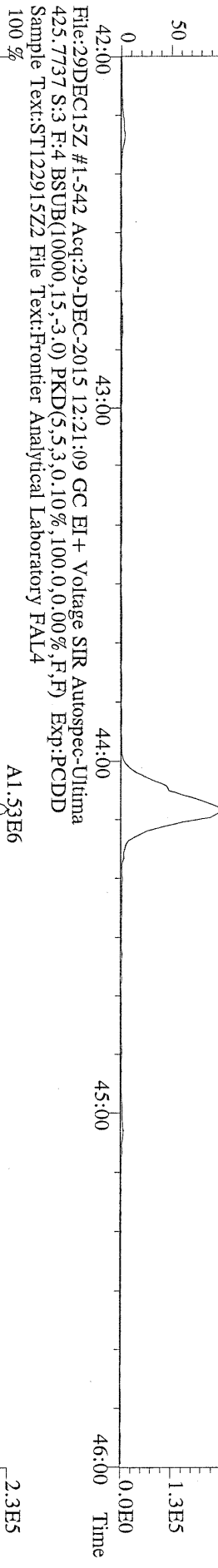
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401.8559 S:3 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0%) Exp.:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100 %



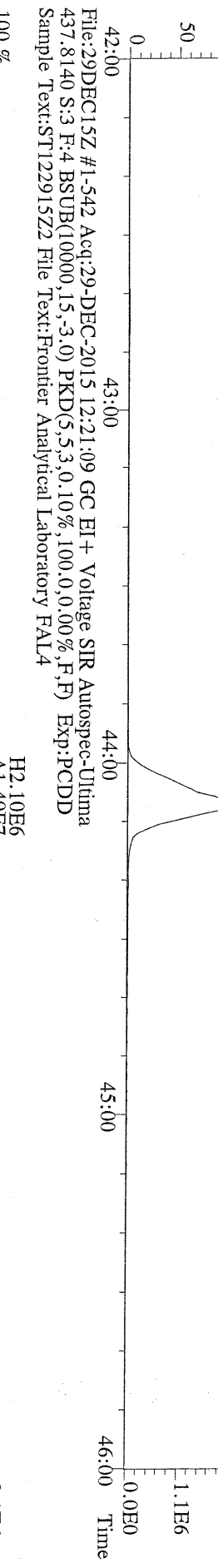
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380.9760 S:3 F:3 Exp.:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100 %



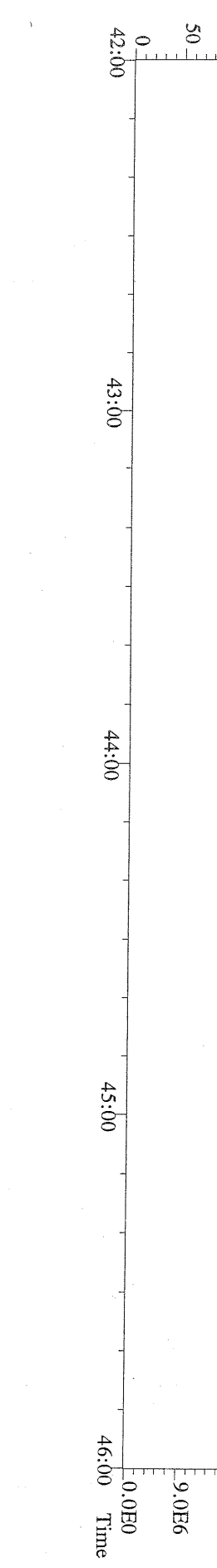
File:29DEC15Z #1-542 Acq:29-DEC-2015 12:21:09 GC EI+ Voltage SIR Autospec-Ultima
423.7767 S:3 F:4 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100 %



File:29DEC15Z #1-542 Acq:29-DEC-2015 12:21:09 GC EI+ Voltage SIR Autospec-Ultima
435.8169 S:3 F:4 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100 %



File:29DEC15Z #1-542 Acq:29-DEC-2015 12:21:09 GC EI+ Voltage SIR Autospec-Ultima
430.9728 S:3 F:4 Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100 %



File:29DEC15Z #1-349 Acq:29-DEC-2015 12:21:09 GC EI+ Voltage SIR Autospec-Utima
457.7377 S:3 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100 % A2.32E6

File:29DEC15Z #1-349 Acq:29-DEC-2015 12:21:09 GC EI+ Voltage SIR Autospec-Utima
459.7348 S:3 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100 % A2.55E6

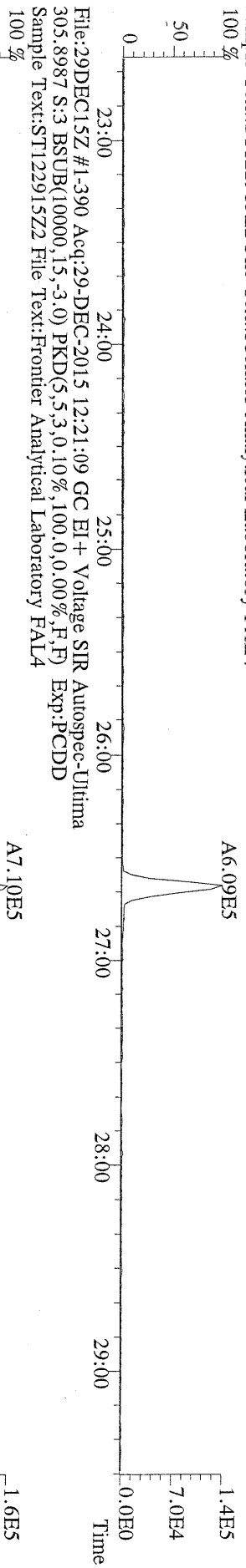
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469.7780 S:3 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100 % A2.20E7

File:29DEC15Z #1-349 Acq:29-DEC-2015 12:21:09 GC EI+ Voltage SIR Autospec-Utima
471.7750 S:3 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100 % H2.98E6
A2.43E7

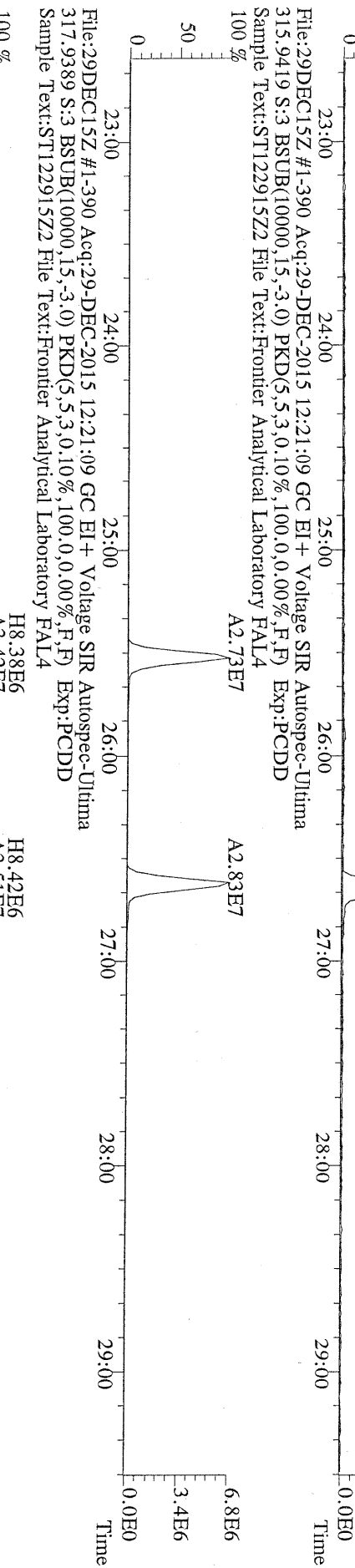
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454.9728 S:3 F:5 Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100 % 48:16 48:43 49:01 49:18 49:31 49:58 50:10 50:26 50:50 51:22 51:39

49:00 50:00 51:00 52:00 Time
0 50 100 %
0.0E0 1.1E7 2.1E7
0.0E0 1.3E6 2.7E6
0.0E0 1.5E5 3.1E5
0.0E0 1.4E5 2.8E5
0.0E0 1.5E6 3.0E6

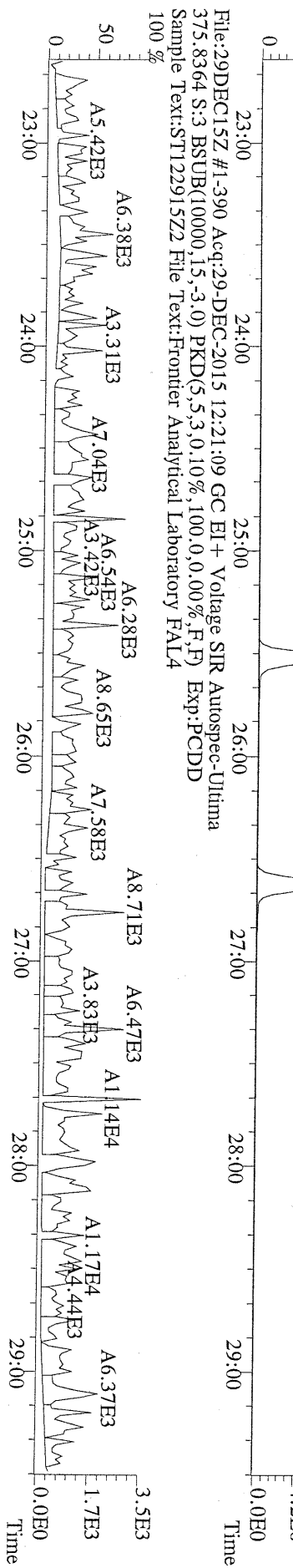
File:29DEC15Z #1-390 Acq:29-DEC-2015 12:21:09 GC EI+ Voltage SIR Autospec-Ultima
303.9016 S:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100 %



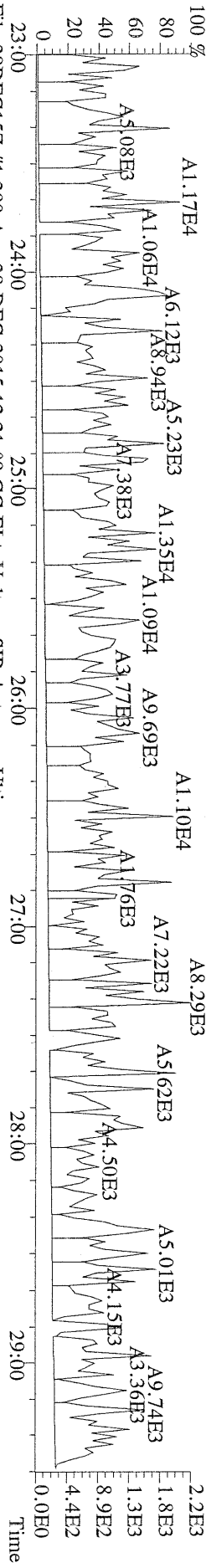
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315.9419 S:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100 %



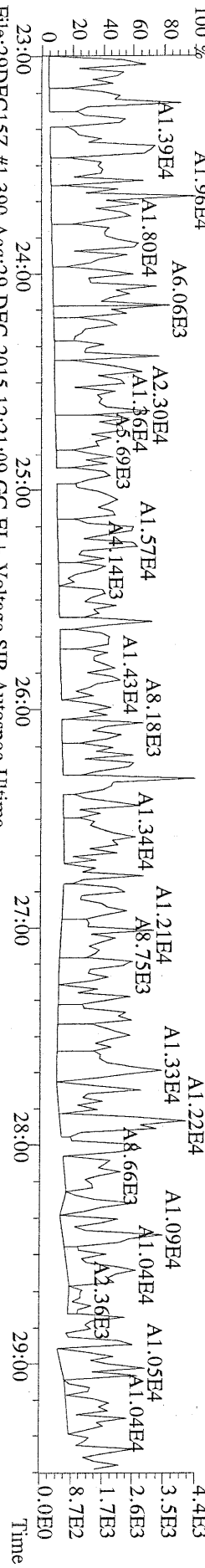
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375.8364 S:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100 %



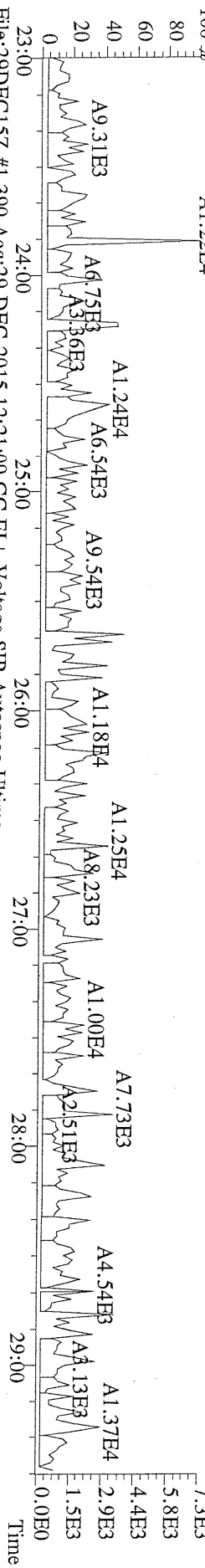
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339.8597 S:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4



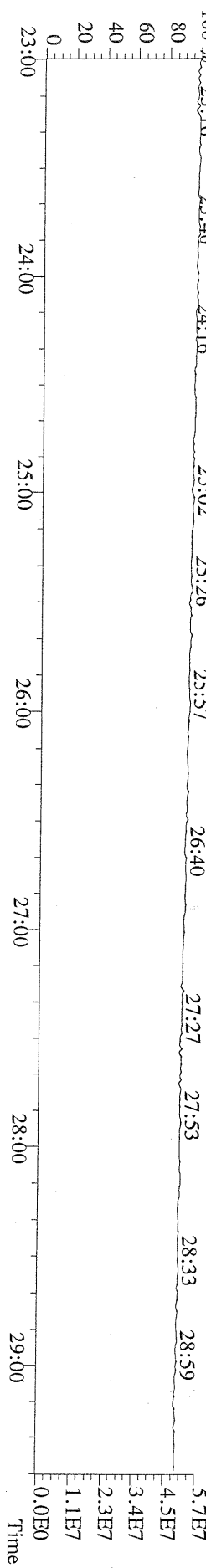
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341.8568 S:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4



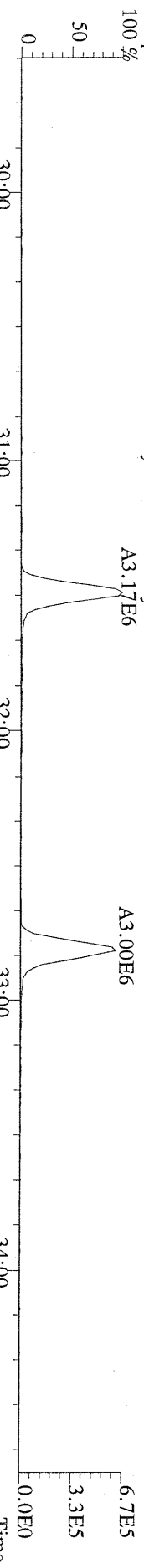
File:29DEC15Z #1-390 Acq:29-DEC-2015 12:21:09 GC EI+ Voltage SIR Autospec-Ultima
409.7974 S:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4



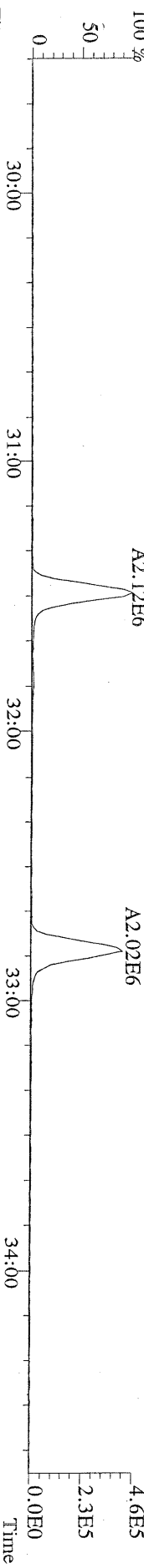
File:29DEC15Z #1-390 Acq:29-DEC-2015 12:21:09 GC EI+ Voltage SIR Autospec-Ultima
330.9792 S:3 Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4



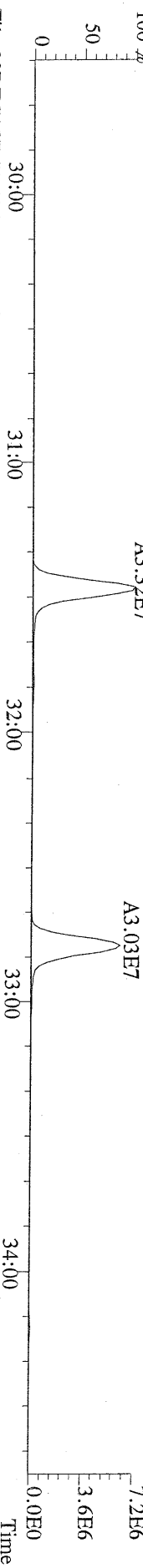
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339.8597 S:3 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST1122915Z2 File Text:Frontier Analytical Laboratory FAL4
100 %



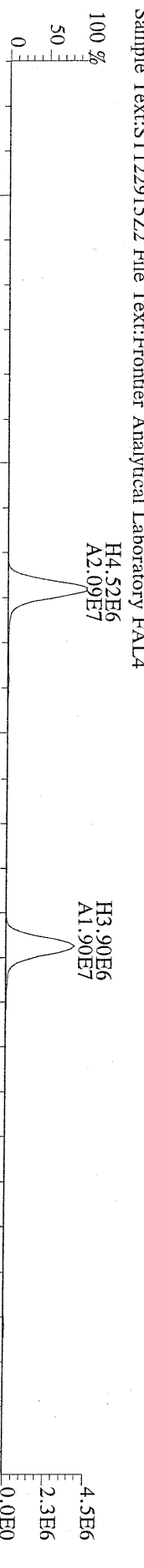
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341.8568 S:3 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST1122915Z2 File Text:Frontier Analytical Laboratory FAL4
100 %



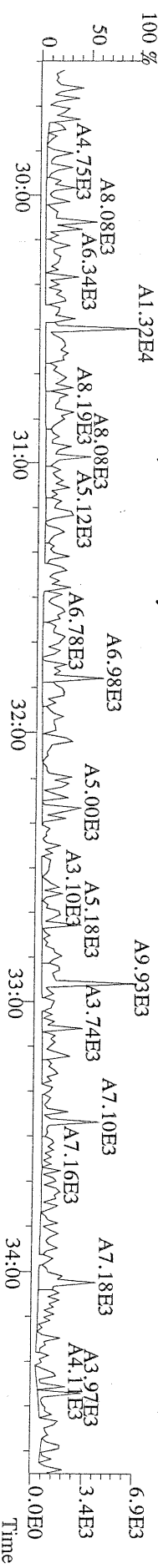
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351.9000 S:3 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST1122915Z2 File Text:Frontier Analytical Laboratory FAL4
100 %



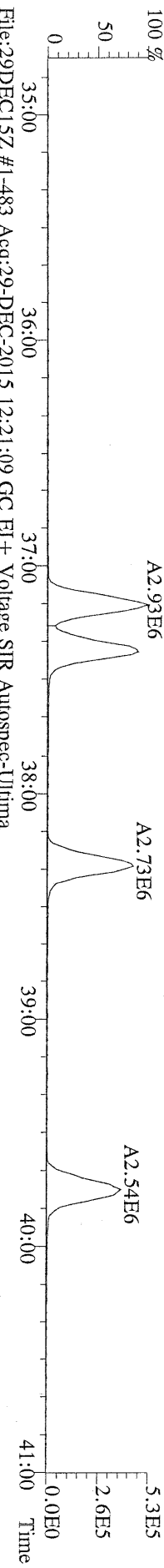
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353.8970 S:3 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST1122915Z2 File Text:Frontier Analytical Laboratory FAL4



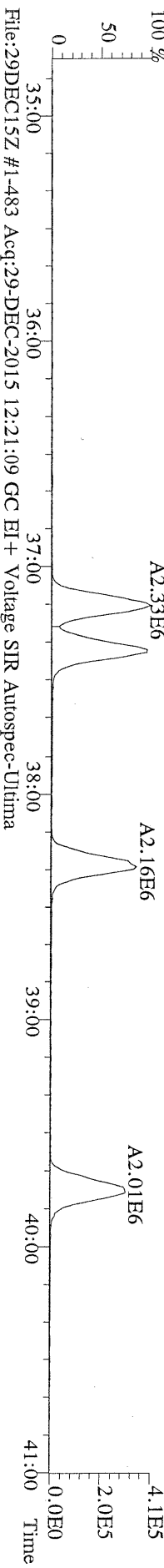
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409.7974 S:3 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST1122915Z2 File Text:Frontier Analytical Laboratory FAL4
100 %



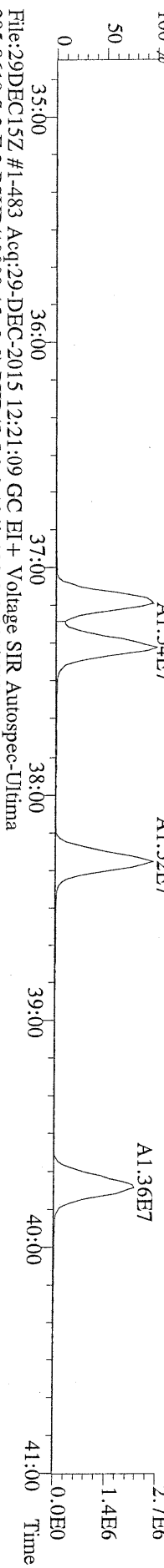
File:29DEC15Z #1-483 Acq:29-DEC-2015 12:21:09 GC EI+ Voltage SIR Autospec-Ultima
 373.8207 S:3 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4



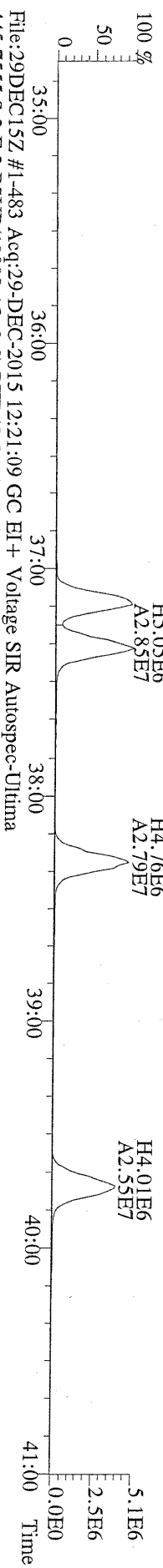
File:29DEC15Z #1-483 Acq:29-DEC-2015 12:21:09 GC EI+ Voltage SIR Autospec-Ultima
 375.8178 S:3 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4



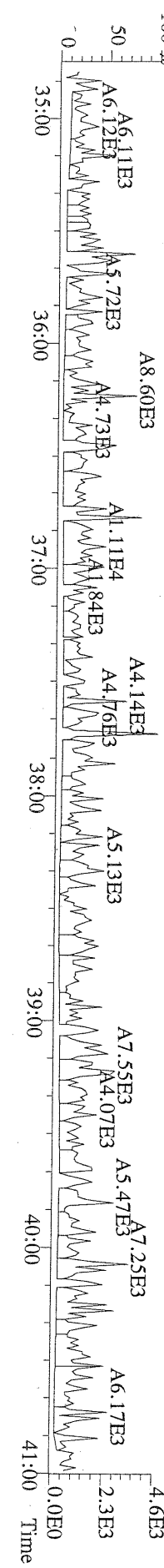
File:29DEC15Z #1-483 Acq:29-DEC-2015 12:21:09 GC EI+ Voltage SIR Autospec-Ultima
 383.8639 S:3 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4



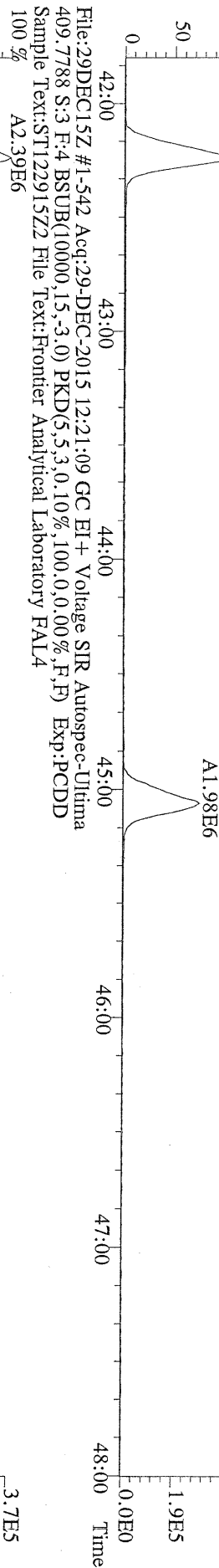
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 385.8610 S:3 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4



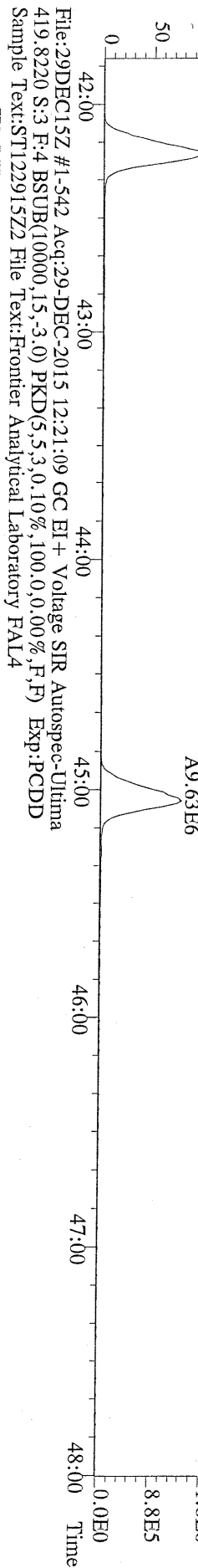
File:29DEC15Z #1-483 Acq:29-DEC-2015 12:21:09 GC EI+ Voltage SIR Autospec-Ultima
 445.7555 S:3 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4



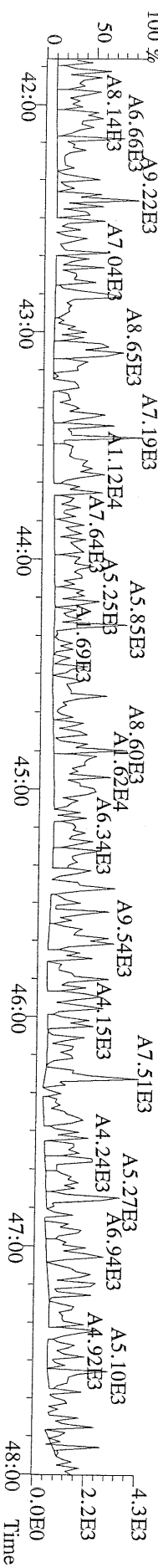
File:29DEC15Z #1-542 Acq:29-DEC-2015 12:21:09 GC EI+ Voltage SIR Autospec-Ulima
407.7818 S:3 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100 % A2.56E6



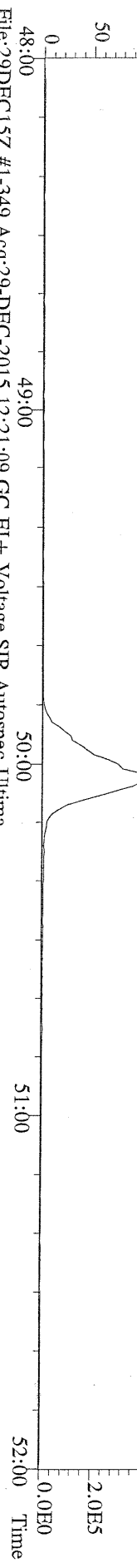
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417.8253 S:3 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100 % A1.15E7



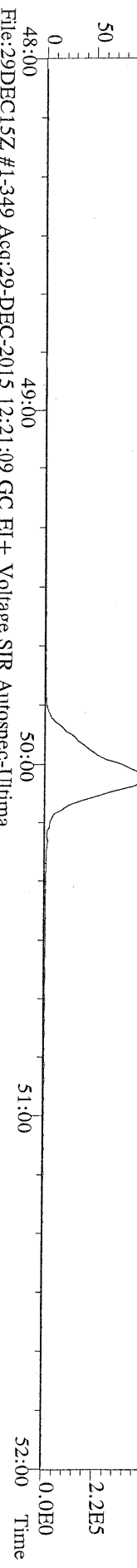
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419.8220 S:3 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100 % H3.75E6
A2.46E7



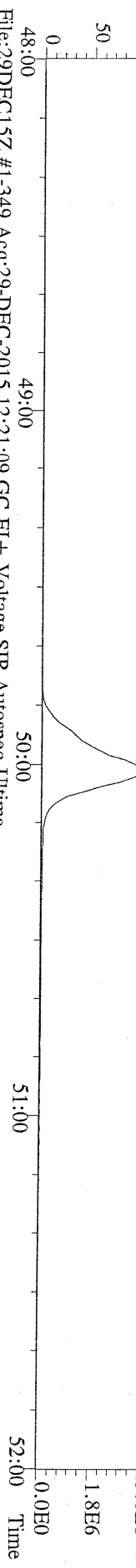
File:29DEC15Z #1-349 Acq:29-DEC-2015 12:21:09 GC EI+ Voltage SIR Autospec-Utima
441.7428 S:3 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100%



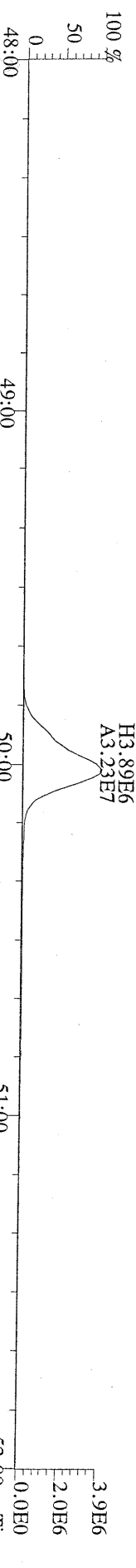
File:29DEC15Z #1-349 Acq:29-DEC-2015 12:21:09 GC EI+ Voltage SIR Autospec-Utima
443.7398 S:3 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100%



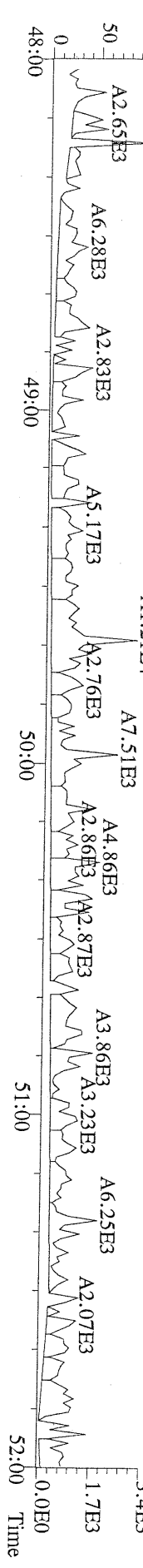
File:29DEC15Z #1-349 Acq:29-DEC-2015 12:21:09 GC EI+ Voltage SIR Autospec-Utima
453.7831 S:3 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100%



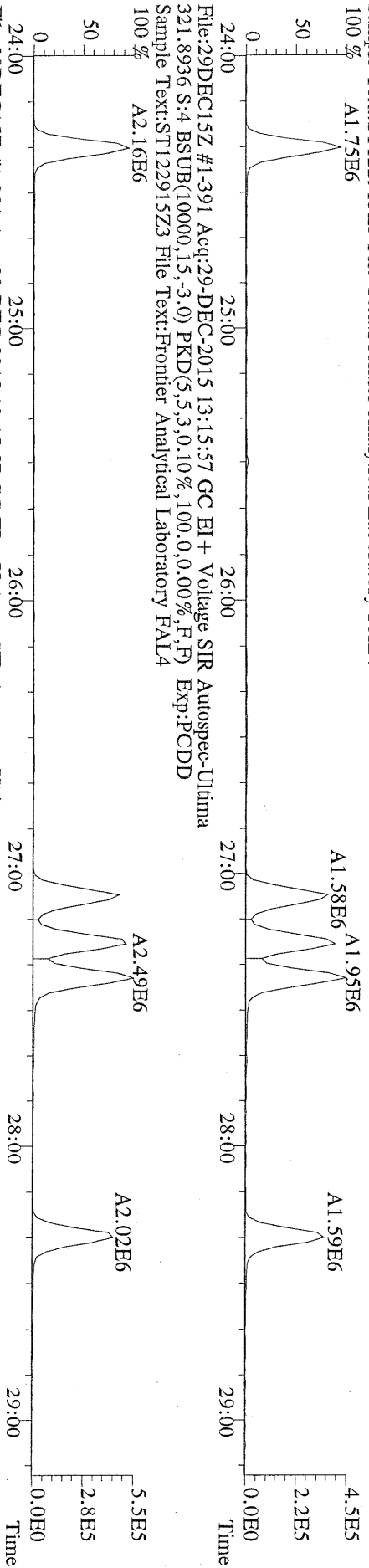
File:29DEC15Z #1-349 Acq:29-DEC-2015 12:21:09 GC EI+ Voltage SIR Autospec-Utima
455.7801 S:3 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4



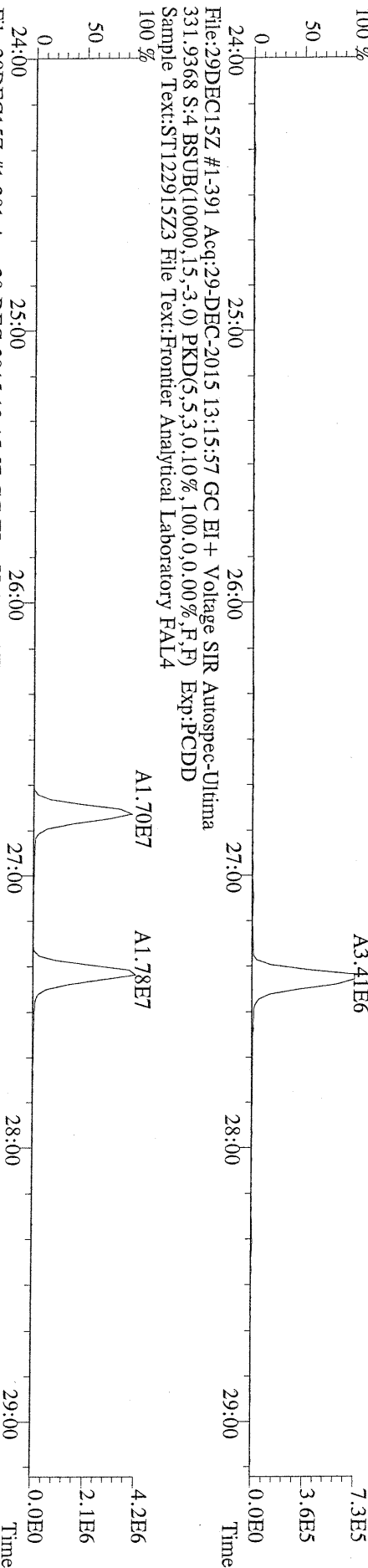
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513.6775 S:3 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100%



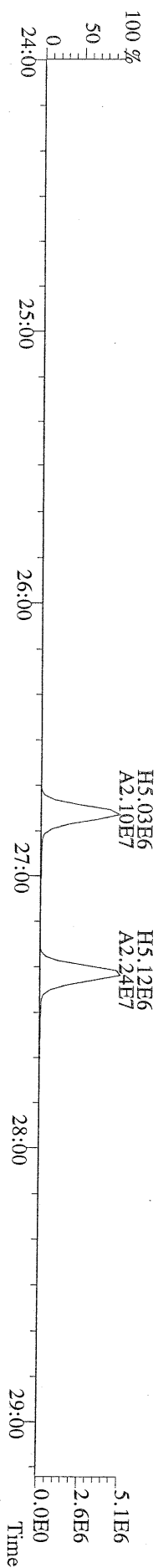
File:29DEC15Z #1-391 Acq:29-DEC-2015 13:15:57 GC EI+ Voltage SIR Autospec-Ultima
319.8965 S:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4
100% A1.75E6



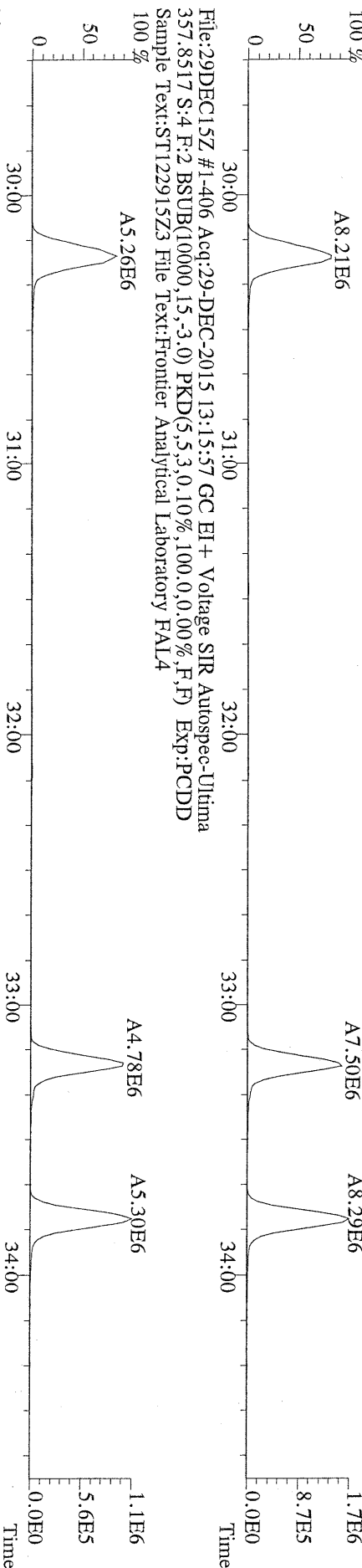
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327.8847 S:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4
100% A2.16E6



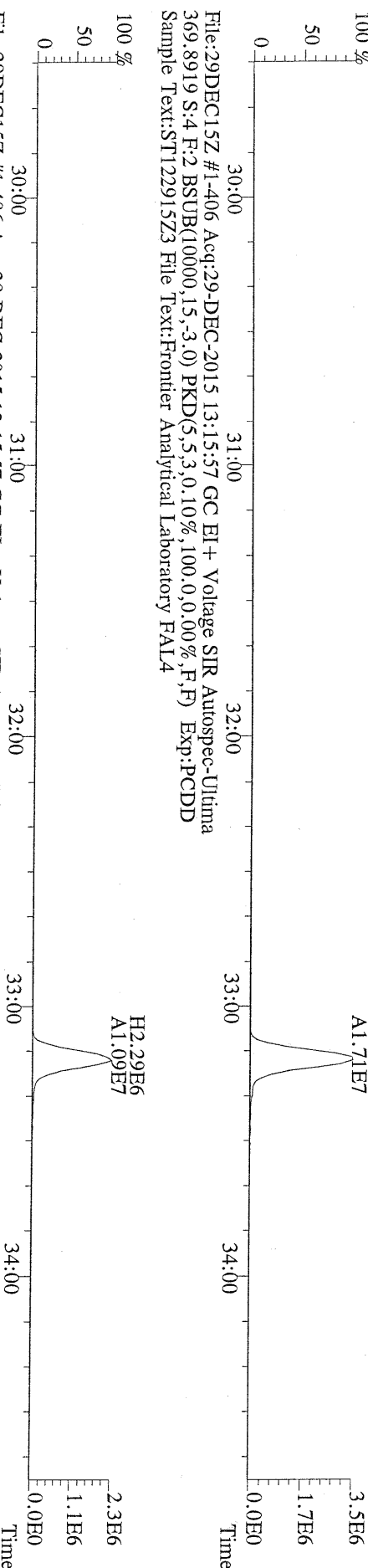
File:29DEC15Z #1-391 Acq:29-DEC-2015 13:15:57 GC EI+ Voltage SIR Autospec-Ultima
333.9339 S:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4



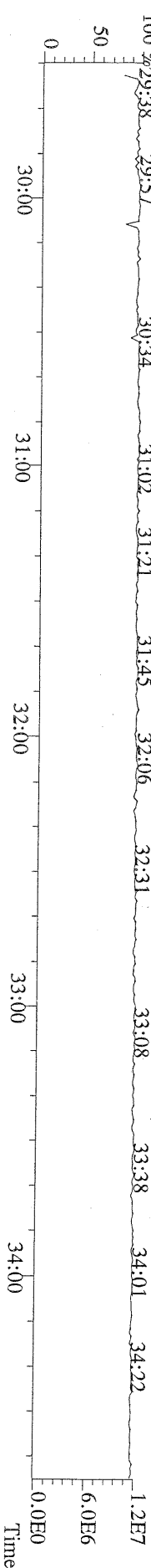
File:29DEC15Z #1-406 Acq:29-DEC-2015 13:15:57 GC EI+ Voltage SIR Autospec-Ultima
355.8546 S:4 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4
100 %



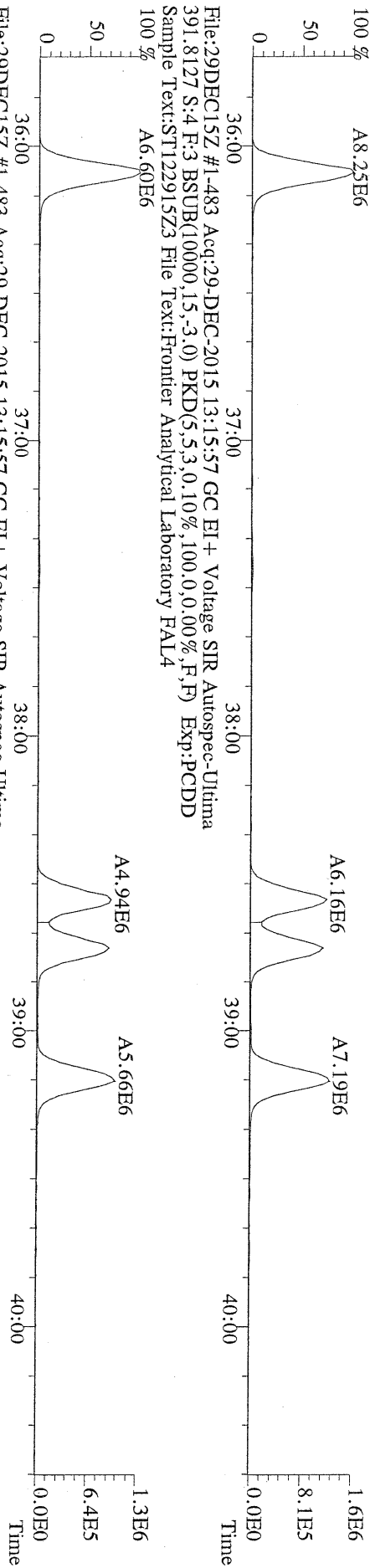
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367.8949 S:4 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4
100 %



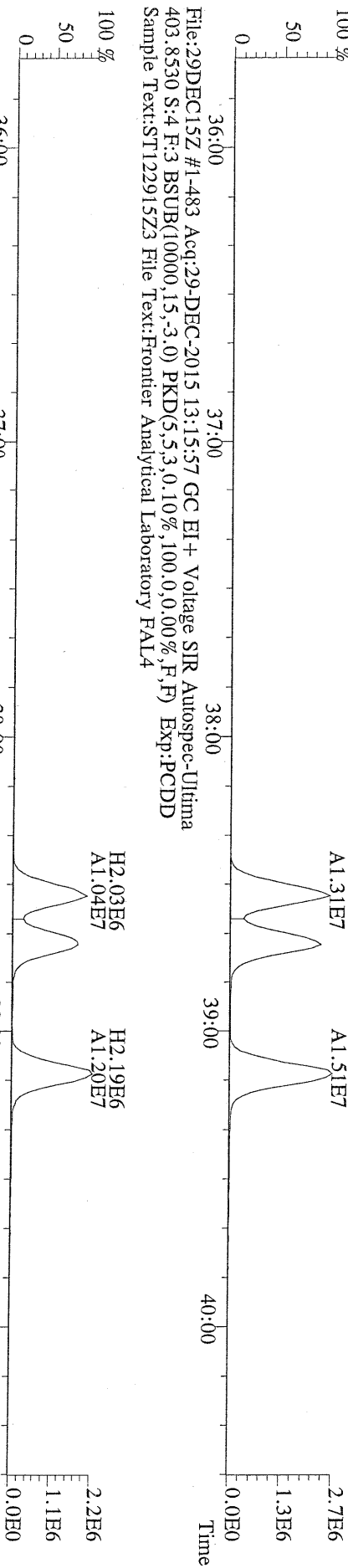
File:29DEC15Z #1-406 Acq:29-DEC-2015 13:15:57 GC EI+ Voltage SIR Autospec-Ultima
366.9792 S:4 F:2 Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4
100 %



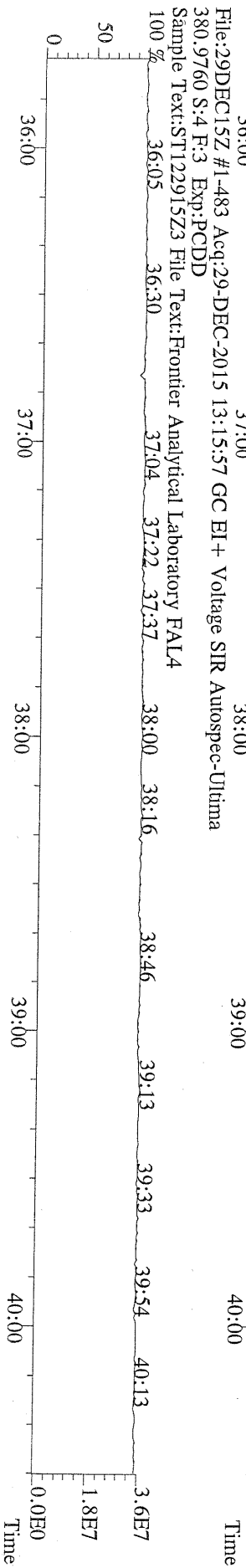
File: 29DEC15Z #1-483 Acq: 29-DEC-2015 13:15:57 GC EI+ Voltage SIR Autospec-Utima
389.8156 S:4 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD
Sample Text: ST122915Z3 File Text: Frontier Analytical Laboratory FAL4
100 % A8.25E6



File: 29DEC15Z #1-483 Acq: 29-DEC-2015 13:15:57 GC EI+ Voltage SIR Autospec-Utima
401.8559 S:4 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD
Sample Text: ST122915Z3 File Text: Frontier Analytical Laboratory FAL4
100 %

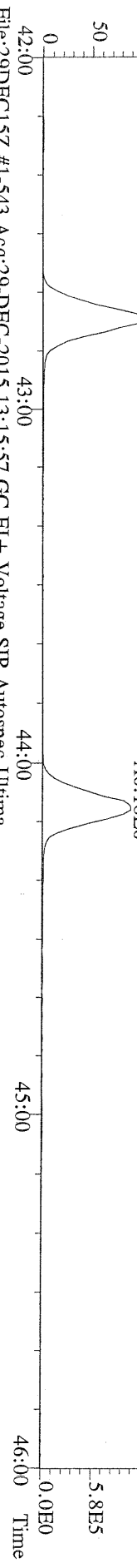


File: 29DEC15Z #1-483 Acq: 29-DEC-2015 13:15:57 GC EI+ Voltage SIR Autospec-Utima
403.8530 S:4 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD
Sample Text: ST122915Z3 File Text: Frontier Analytical Laboratory FAL4

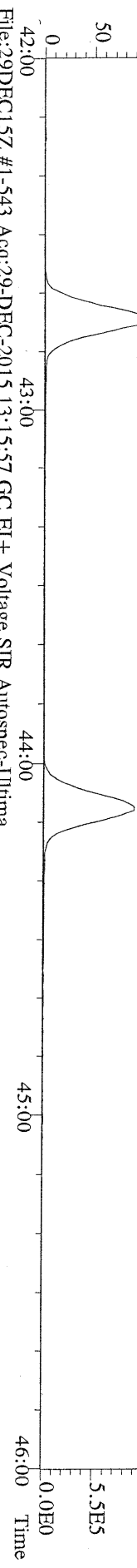


File: 29DEC15Z #1-483 Acq: 29-DEC-2015 13:15:57 GC EI+ Voltage SIR Autospec-Utima
380.9760 S:4 F:3 Exp:PCDD
Sample Text: ST122915Z3 File Text: Frontier Analytical Laboratory FAL4
100 %

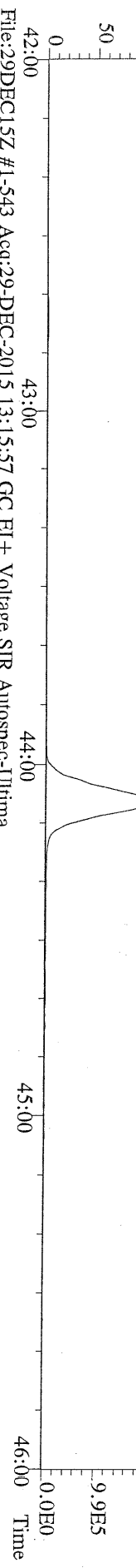
File:29DEC15Z #1-543 Acq:29-DEC-2015 13:15:57 GC EI+ Voltage SIR Autospec-Utima
423.7767 S:4 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4
100 %



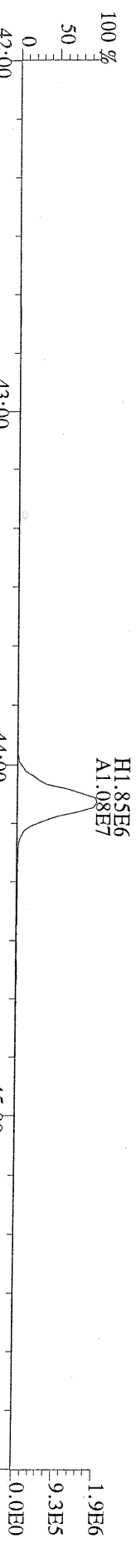
File:29DEC15Z #1-543 Acq:29-DEC-2015 13:15:57 GC EI+ Voltage SIR Autospec-Utima
425.7737 S:4 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4
100 %



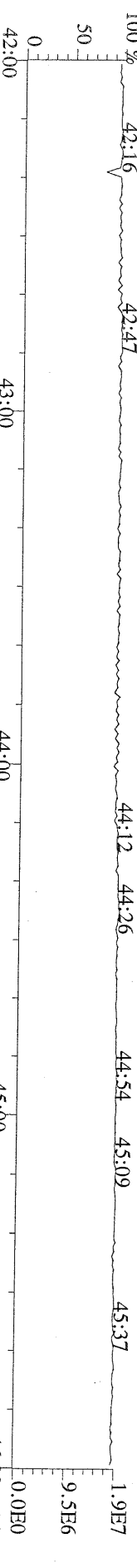
File:29DEC15Z #1-543 Acq:29-DEC-2015 13:15:57 GC EI+ Voltage SIR Autospec-Utima
435.8169 S:4 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4
100 %



File:29DEC15Z #1-543 Acq:29-DEC-2015 13:15:57 GC EI+ Voltage SIR Autospec-Utima
437.8140 S:4 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4



File:29DEC15Z #1-543 Acq:29-DEC-2015 13:15:57 GC EI+ Voltage SIR Autospec-Utima
430.9728 S:4 F:4 Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4



File:29DEC15Z #1-348 Acq:29-DEC-2015 13:15:57 GC EI+ Voltage SIR Autospec-Utima
457.7377 S:4 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4
100 % A9.20E6

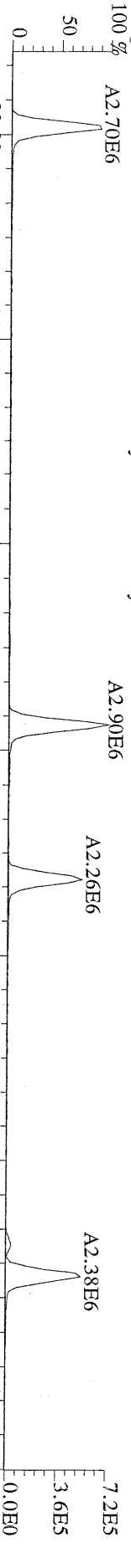
File:29DEC15Z #1-348 Acq:29-DEC-2015 13:15:57 GC EI+ Voltage SIR Autospec-Utima
459.7348 S:4 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4
100 % A1.02E7

File:29DEC15Z #1-348 Acq:29-DEC-2015 13:15:57 GC EI+ Voltage SIR Autospec-Utima
469.7780 S:4 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4
100 % A1.78E7

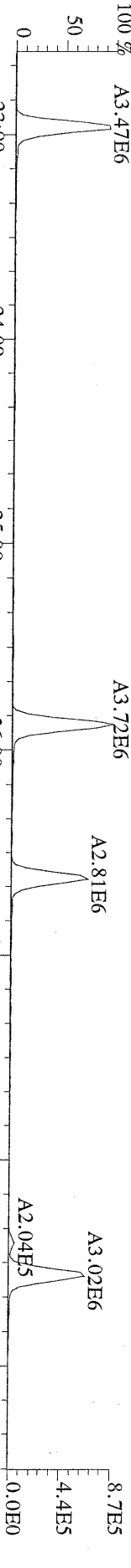
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471.7750 S:4 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4
100 % H2.78E6
A1.98E7

File:29DEC15Z #1-348 Acq:29-DEC-2015 13:15:57 GC EI+ Voltage SIR Autospec-Utima
454.9728 S:4 F:5 Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4
100 % 48.23 48.44 49.07 49.23 49.35 49.51 50.05 50.22 50.34 50.54 51.17 51.37 2.2E7

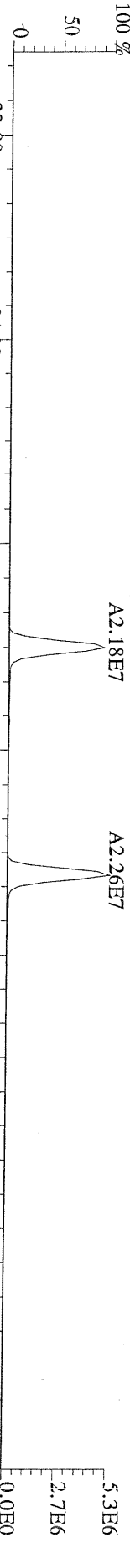
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303.9016 S:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0,0) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4
100 % A2.70E6



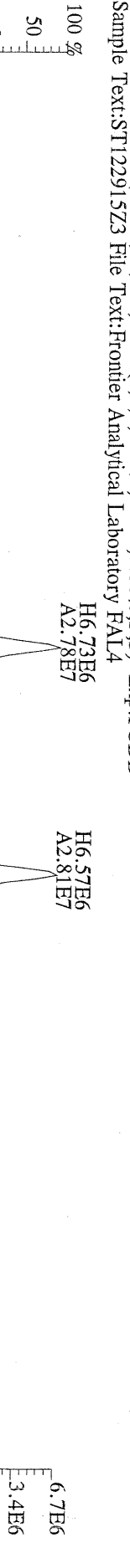
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305.8987 S:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4
100 % A3.47E6



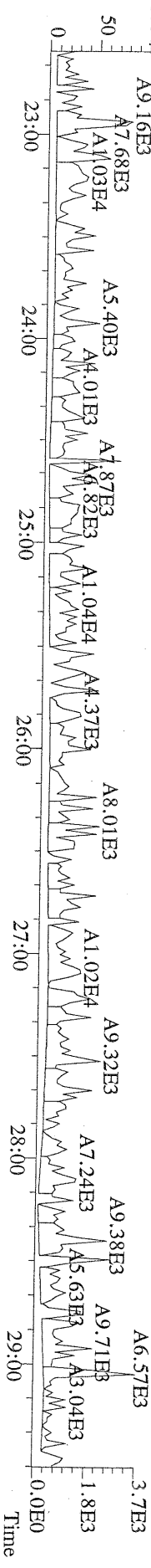
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315.9419 S:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4
100 % A2.18E7



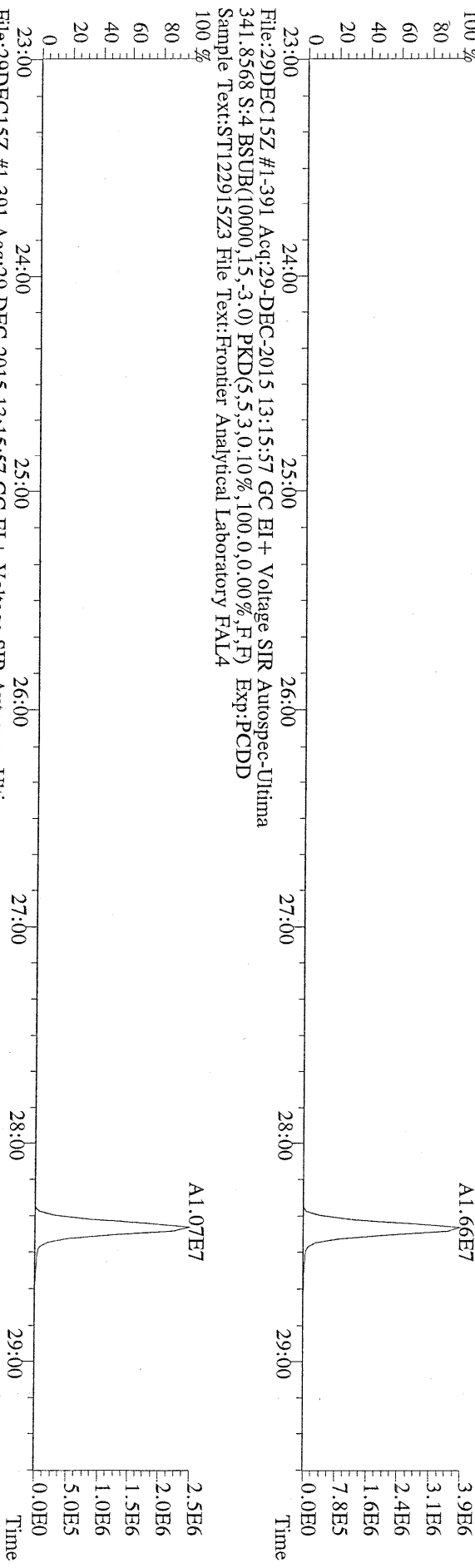
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317.9389 S:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4



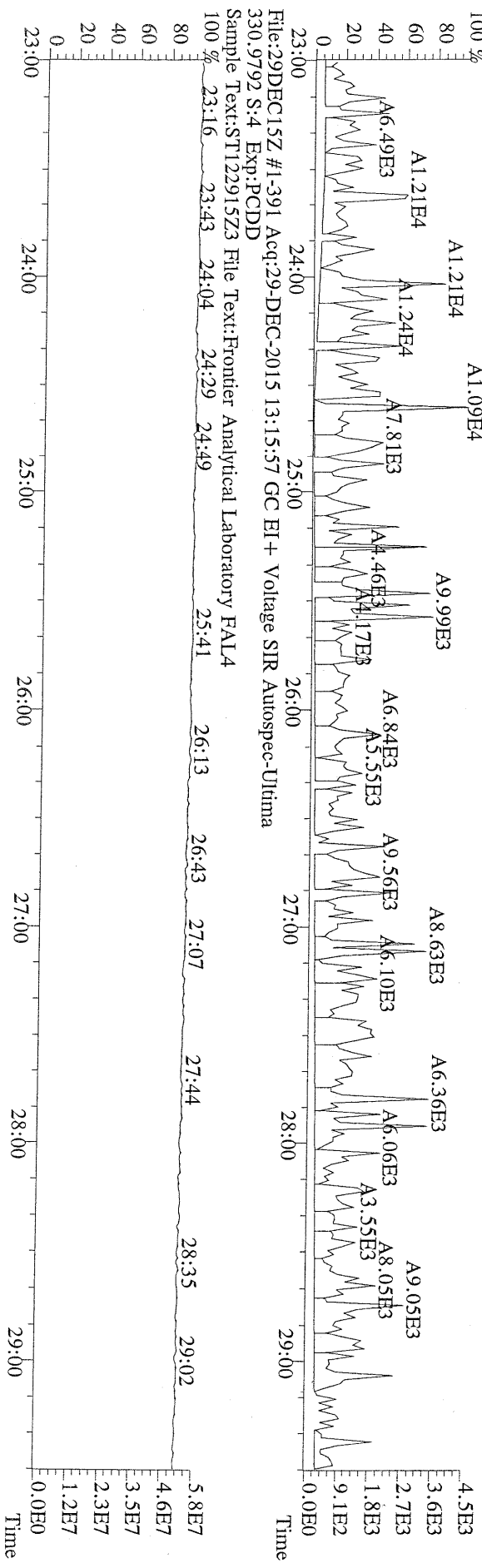
File:29DEC15Z #1-391 Acq:29-DEC-2015 13:15:57 GC EI+ Voltage SIR Autospec-Ultima
375.8364 S:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4
100 % A9.16E3



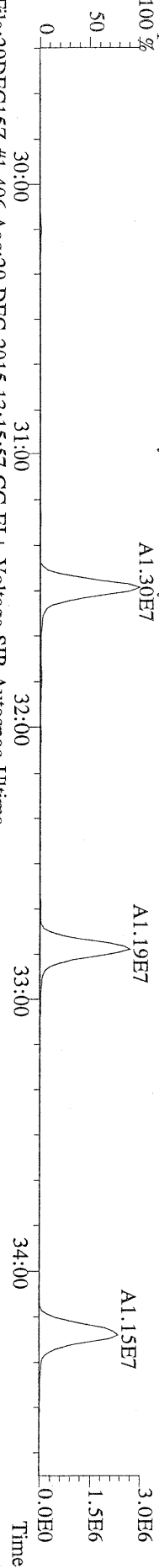
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 339.8597 S:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4



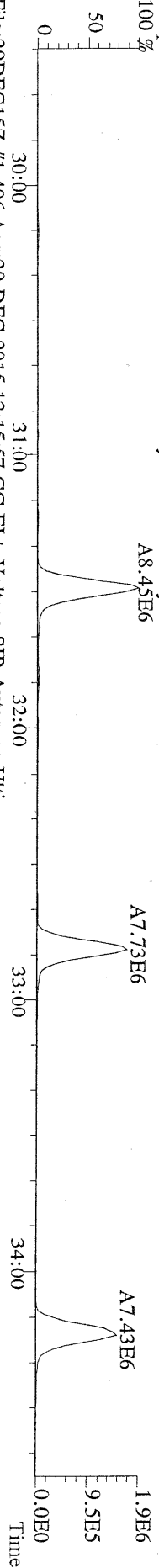
File:29DDEC15Z #1-391 Acq:29-DEC-2015 13:15:57 GC EI+ Voltage SIR Autospec-Utima
 409.7974 S:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4



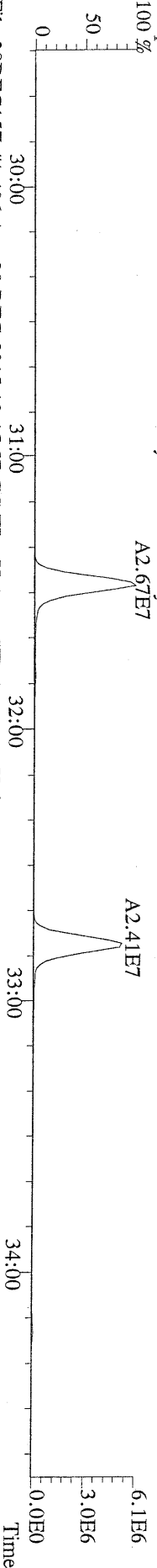
File:29DEC15Z #1-406 Acq:29-DEC-2015 13:15:57 GC EI+ Voltage SIR Autospec-Ultima
339.8597 S:4 F:2 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4



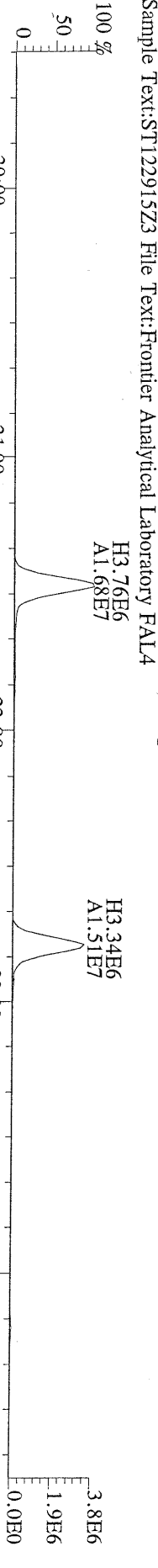
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341.8568 S:4 F:2 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4



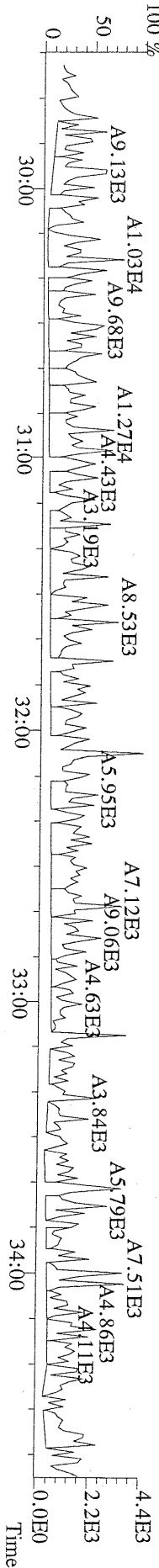
File:29DEC15Z #1-406 Acq:29-DEC-2015 13:15:57 GC EI+ Voltage SIR Autospec-Ultima
351.9000 S:4 F:2 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4



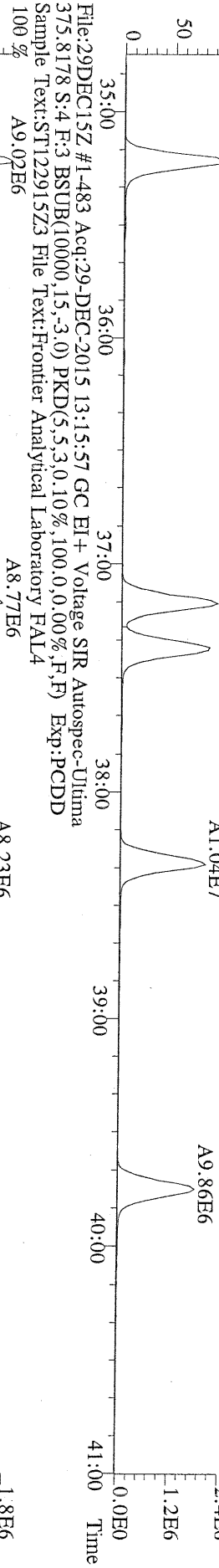
File:29DEC15Z #1-406 Acq:29-DEC-2015 13:15:57 GC EI+ Voltage SIR Autospec-Ultima
353.8970 S:4 F:2 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4



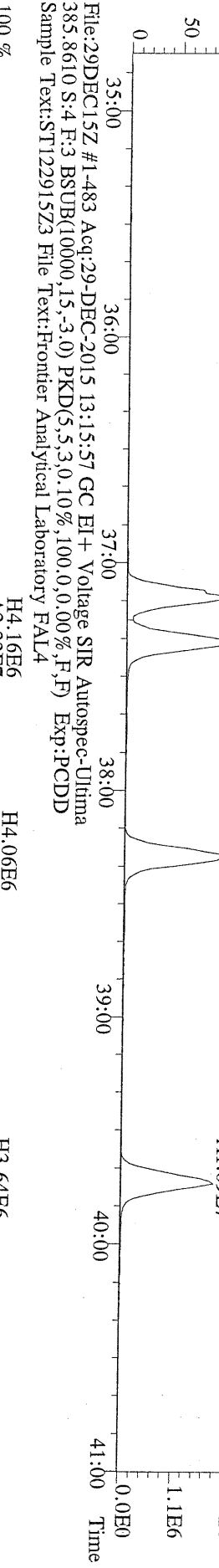
File:29DEC15Z #1-406 Acq:29-DEC-2015 13:15:57 GC EI+ Voltage SIR Autospec-Ultima
409.7974 S:4 F:2 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4



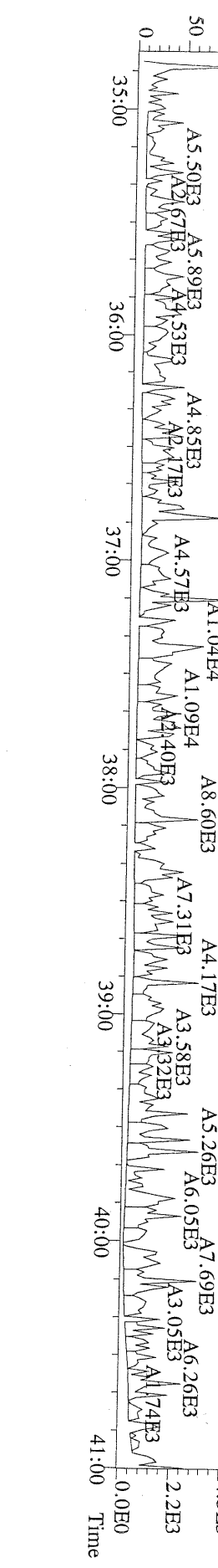
File:29DEC15Z #1-483 Acq:29-DEC-2015 13:15:57 GC EI+ Voltage SIR Autospec-Utima
 373.8207 S:4 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4



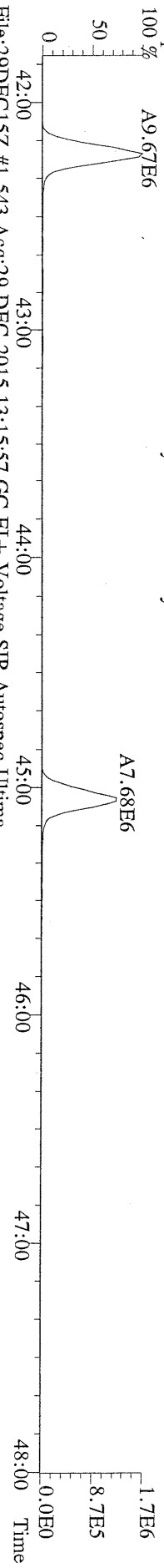
File:29DEC15Z #1-483 Acq:29-DEC-2015 13:15:57 GC EI+ Voltage SIR Autospec-Utima
 383.8639 S:4 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4



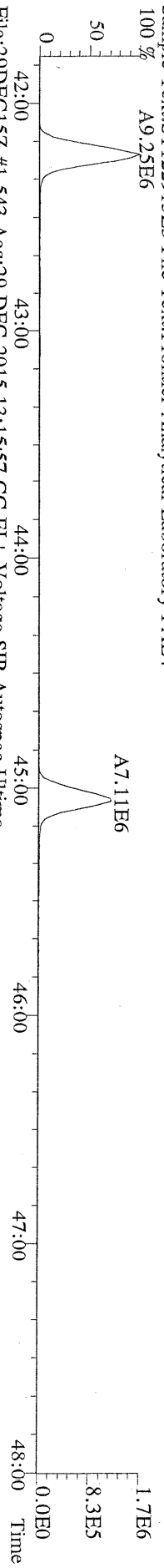
File:29DEC15Z #1-483 Acq:29-DEC-2015 13:15:57 GC EI+ Voltage SIR Autospec-Utima
 445.7555 S:4 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4



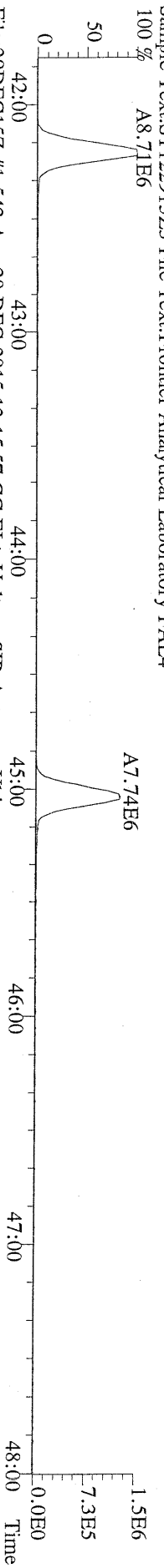
File:29DEC15Z #1-543 Acq:29-DEC-2015 13:15:57 GC EI+ Voltage SIR Autospec-Ultima
 407.7818 S:4 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0,0) Exp:PCDD
 Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory PAL4
 100 % A9.67E6



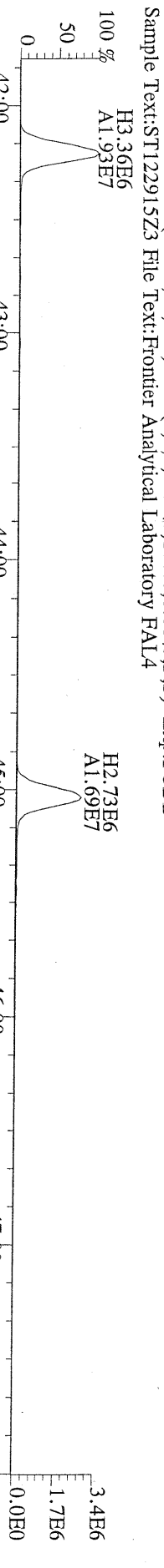
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 409.7788 S:4 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0,0) Exp:PCDD
 Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory PAL4
 100 % A9.25E6



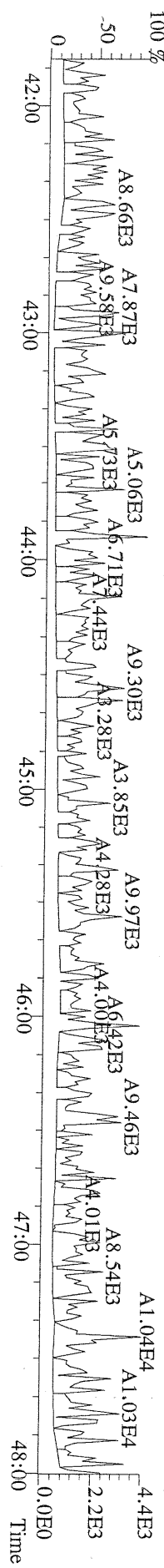
File:29DEC15Z #1-543 Acq:29-DEC-2015 13:15:57 GC EI+ Voltage SIR Autospec-Ultima
 417.8253 S:4 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0,0) Exp:PCDD
 Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory PAL4
 100 % A8.71E6



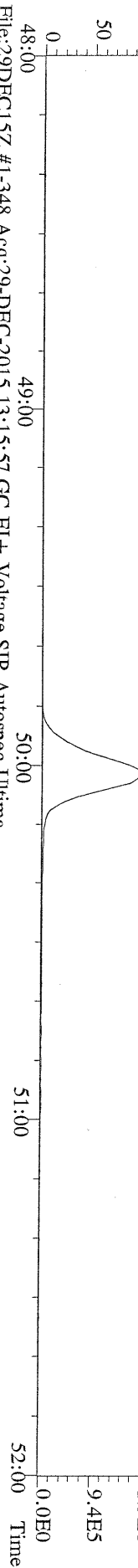
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 419.8220 S:4 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0,0) Exp:PCDD
 Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory PAL4



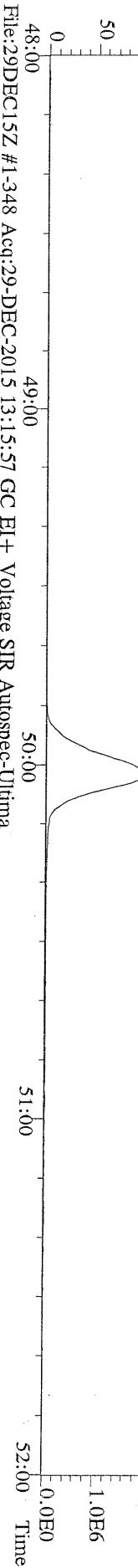
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 479.7165 S:4 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0,0) Exp:PCDD
 Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory PAL4



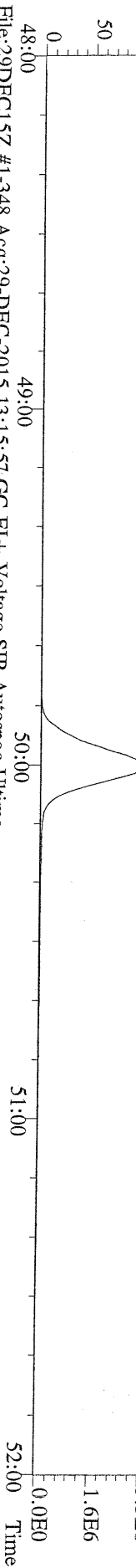
File:29DEC15Z #1-348 Acq:29-DEC-2015 13:15:57 GC EI+ Voltage SIR Autospec-Ultima
441.7428 S:4 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4
100%



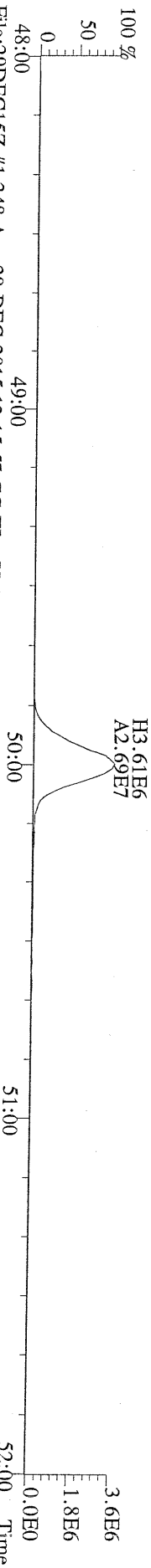
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443.7398 S:4 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4
100%



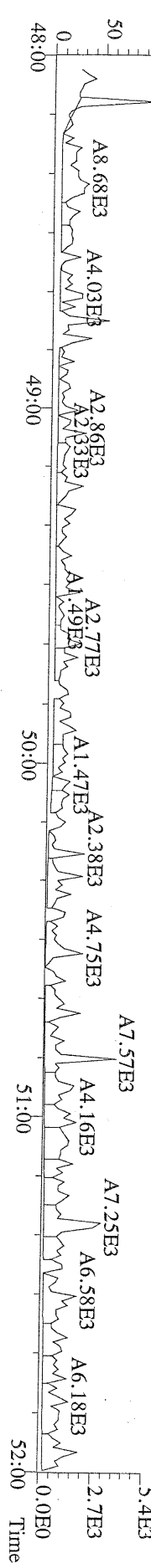
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453.7831 S:4 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4
100%



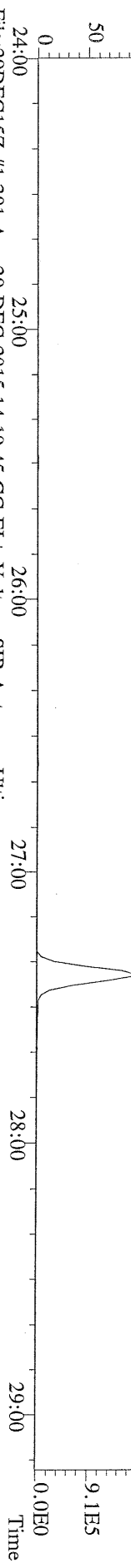
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455.7801 S:4 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4



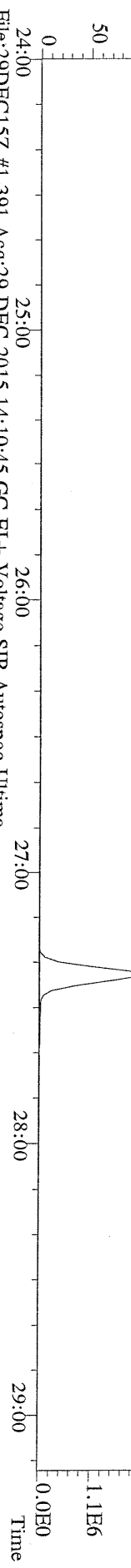
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513.6775 S:4 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4
100%



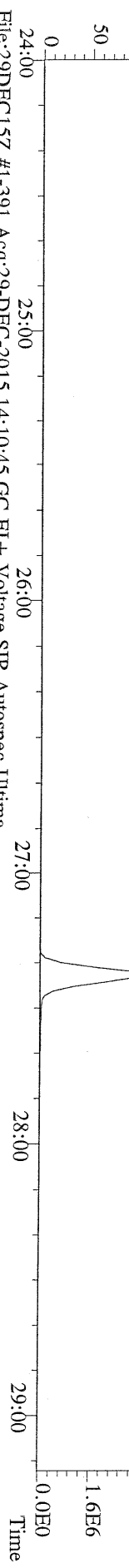
File:29DEC15Z #1-391 Acq:29-DEC-2015 14:10:45 GC EI+ Voltage SIR Autospec-Utima
319.8965 S:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z4 File Text:Frontier Analytical Laboratory FAL4
100 %



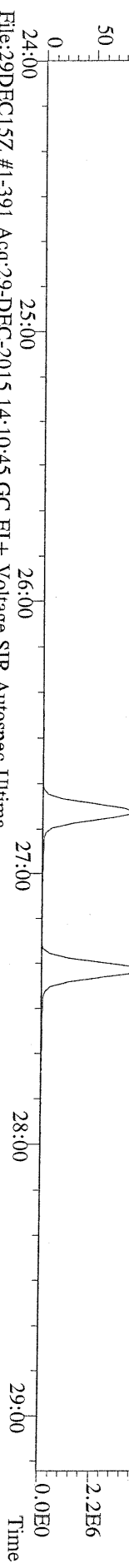
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321.8936 S:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z4 File Text:Frontier Analytical Laboratory FAL4
100 %



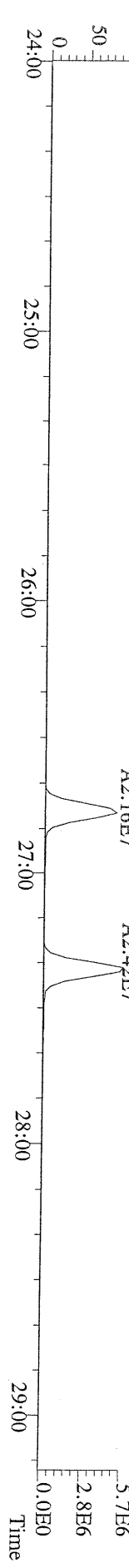
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327.8847 S:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z4 File Text:Frontier Analytical Laboratory FAL4
100 %



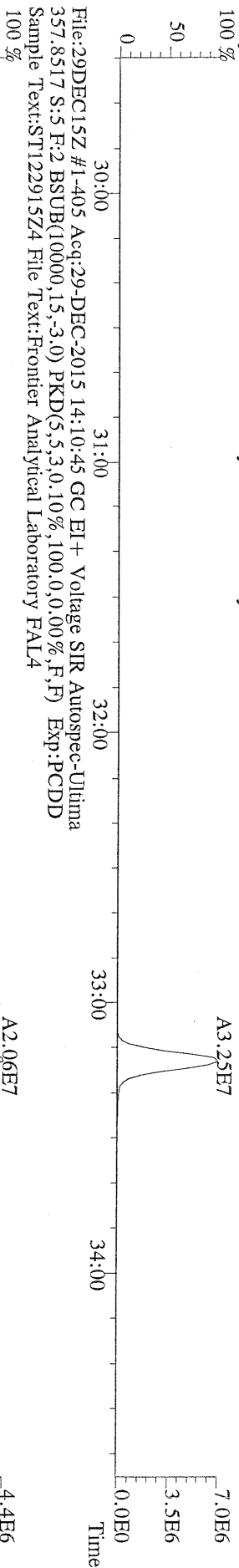
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331.9368 S:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z4 File Text:Frontier Analytical Laboratory FAL4
100 %



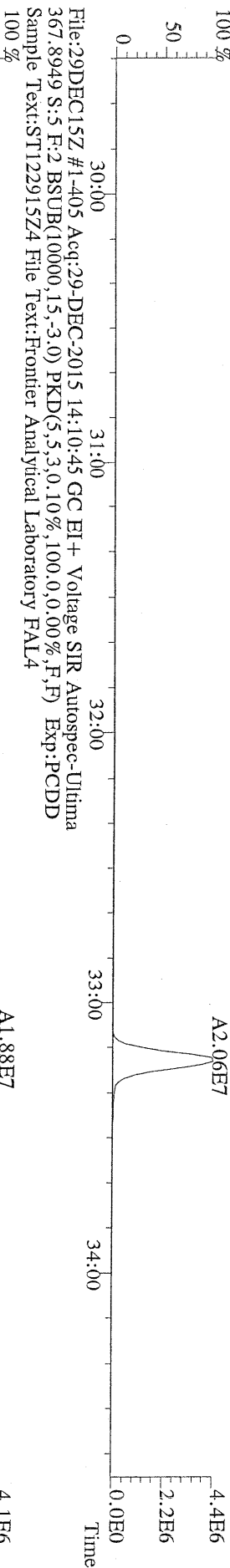
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333.9339 S:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z4 File Text:Frontier Analytical Laboratory FAL4



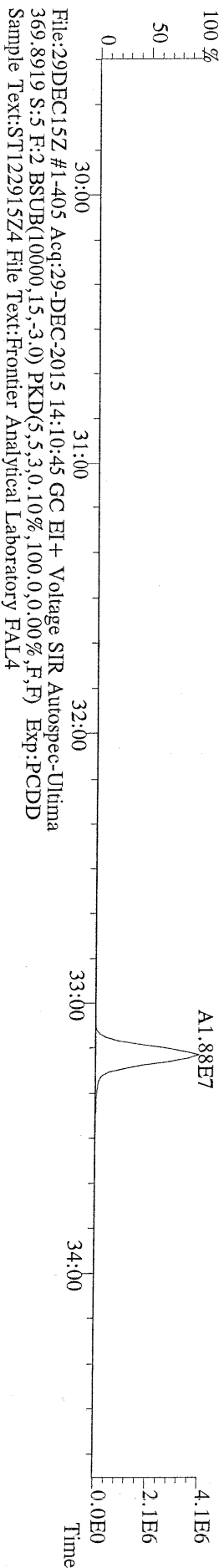
File:29DEC15Z #1-405 Acq:29-DEC-2015 14:10:45 GC EI+ Voltage SIR Autospec-Ultima
355.8546 S:5 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z4 File Text:Frontier Analytical Laboratory FAL4
100 %



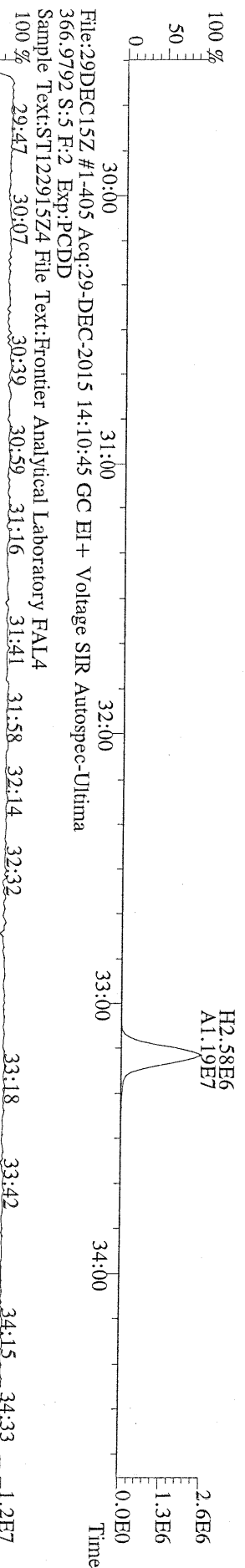
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357.8517 S:5 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z4 File Text:Frontier Analytical Laboratory FAL4
100 %



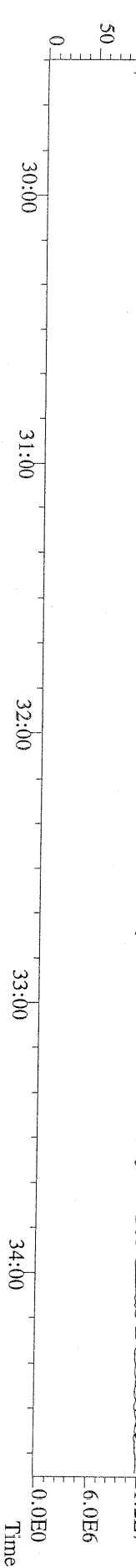
File:29DEC15Z #1-405 Acq:29-DEC-2015 14:10:45 GC EI+ Voltage SIR Autospec-Ultima
367.8949 S:5 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z4 File Text:Frontier Analytical Laboratory FAL4
100 %



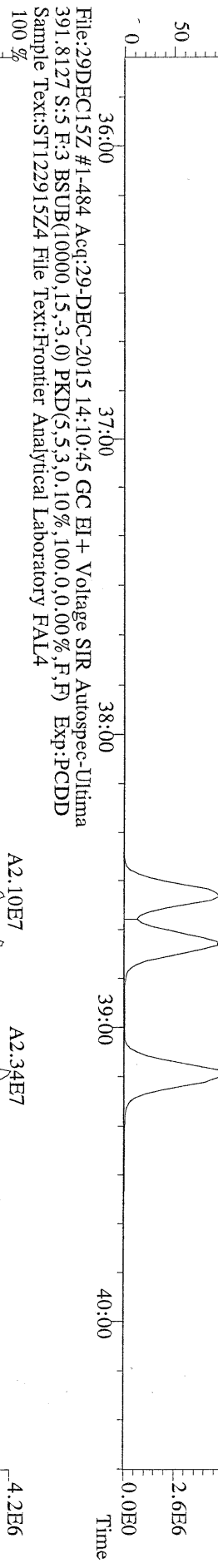
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369.8919 S:5 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z4 File Text:Frontier Analytical Laboratory FAL4



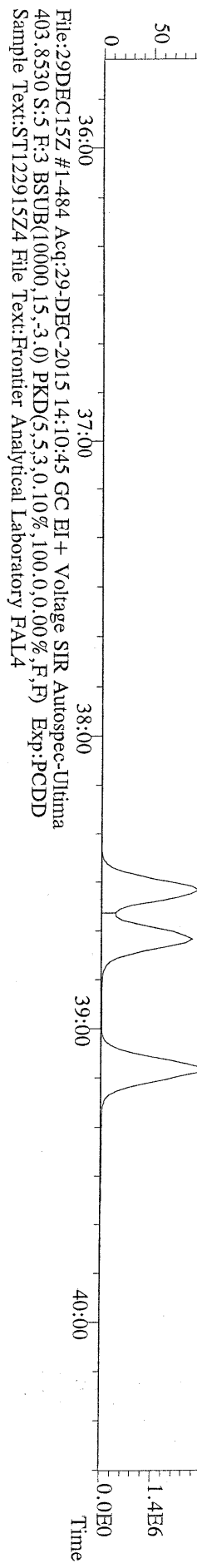
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366.9792 S:5 F:2 Exp:PCDD
Sample Text:ST122915Z4 File Text:Frontier Analytical Laboratory FAL4
100 %



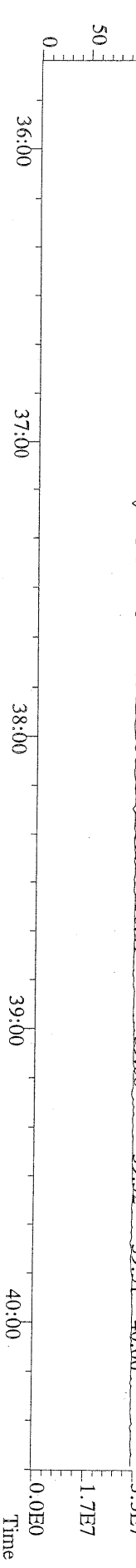
File:29DEC15Z #1-484 Acq:29-DEC-2015 14:10:45 GC EI+ Voltage SIR Autospec-Ultima
 389.8156 S:5 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:ST122915Z4 File Text:Frontier Analytical Laboratory FAL4
 100 %



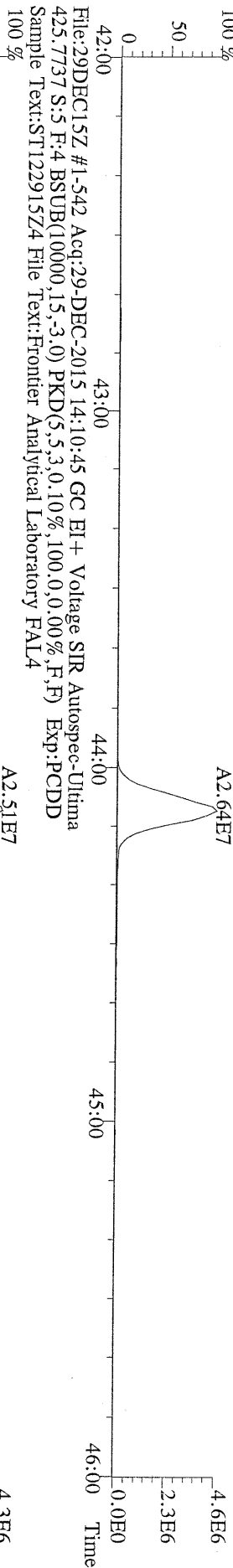
File:29DEC15Z #1-484 Acq:29-DEC-2015 14:10:45 GC EI+ Voltage SIR Autospec-Ultima
 401.8559 S:5 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:ST122915Z4 File Text:Frontier Analytical Laboratory FAL4
 100 %



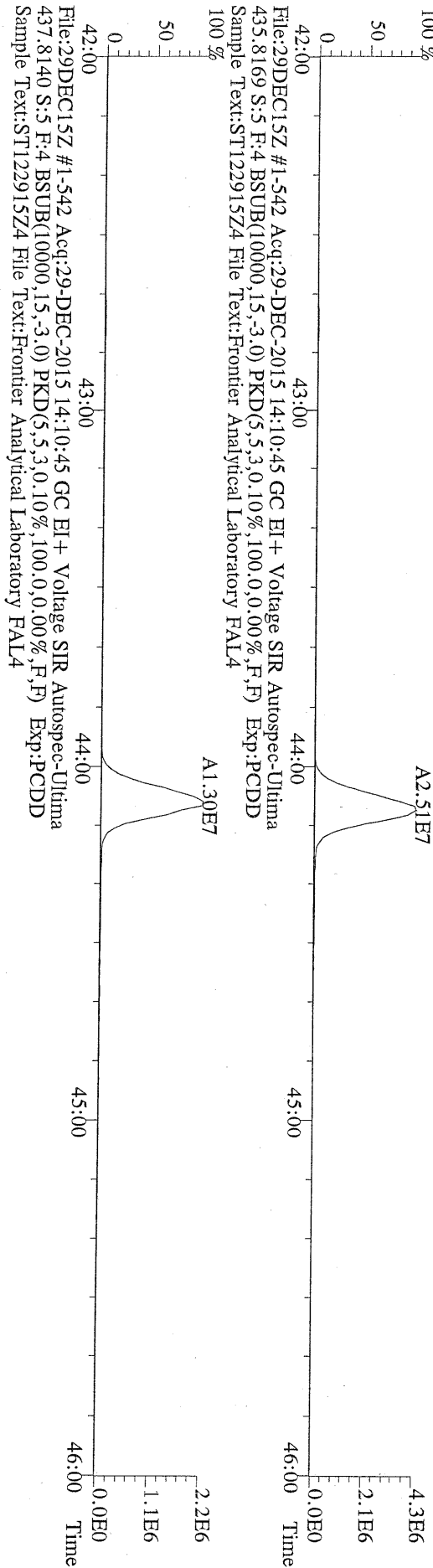
File:29DEC15Z #1-484 Acq:29-DEC-2015 14:10:45 GC EI+ Voltage SIR Autospec-Ultima
 380.9760 S:5 F:3 Exp:PCDD
 Sample Text:ST122915Z4 File Text:Frontier Analytical Laboratory FAL4
 100 %



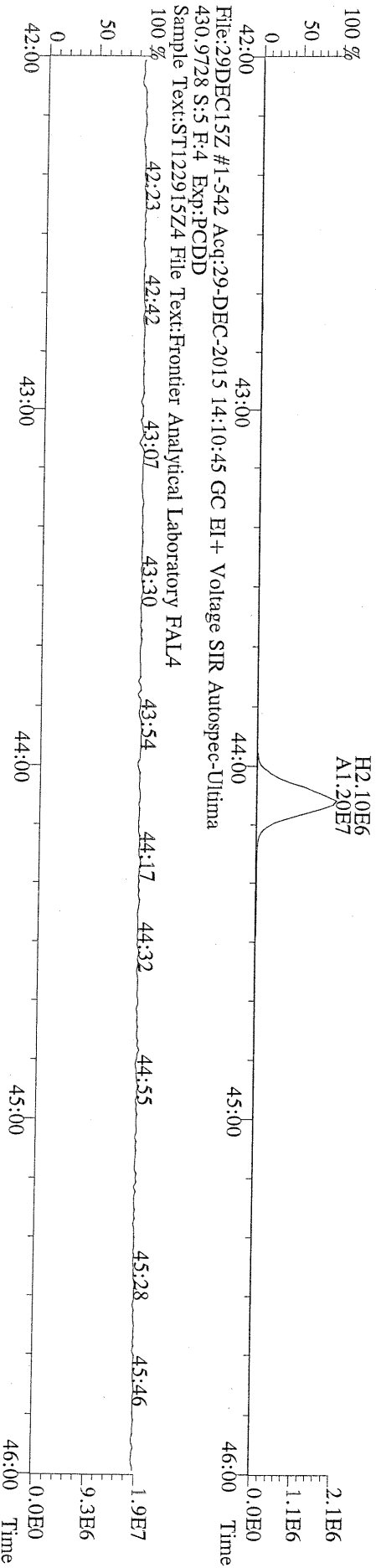
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423.7767 S:5 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
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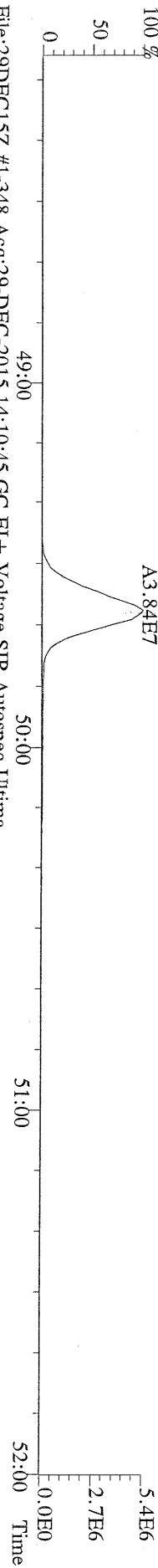
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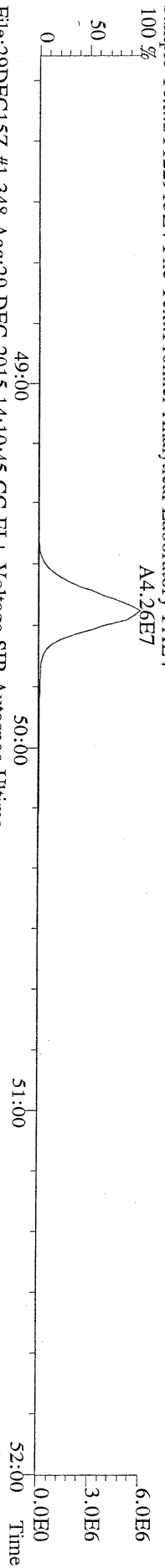
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430.9728 S:5 F:4 Exp:PCDD
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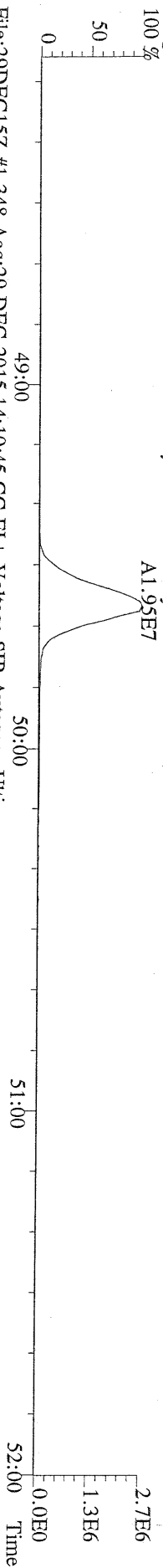
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457.7377 S:5 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp.:PCDD
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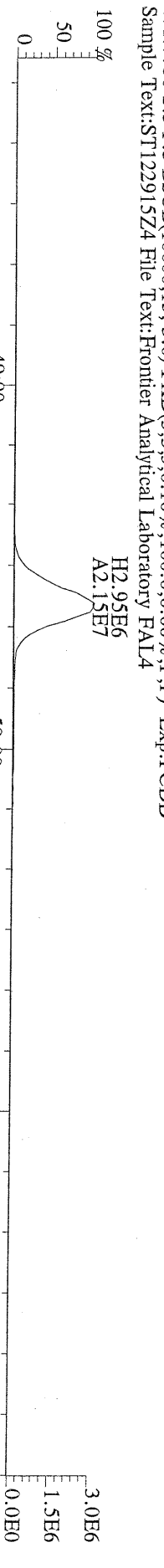
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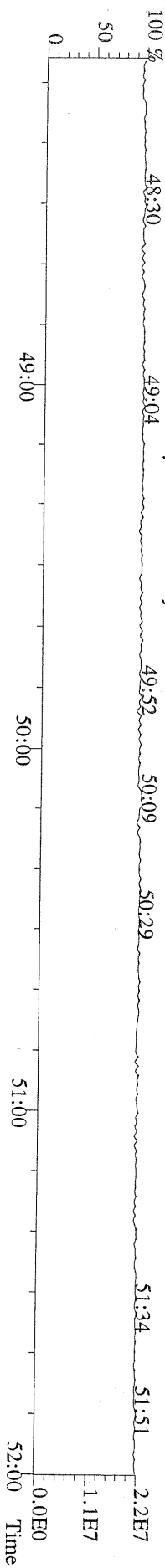
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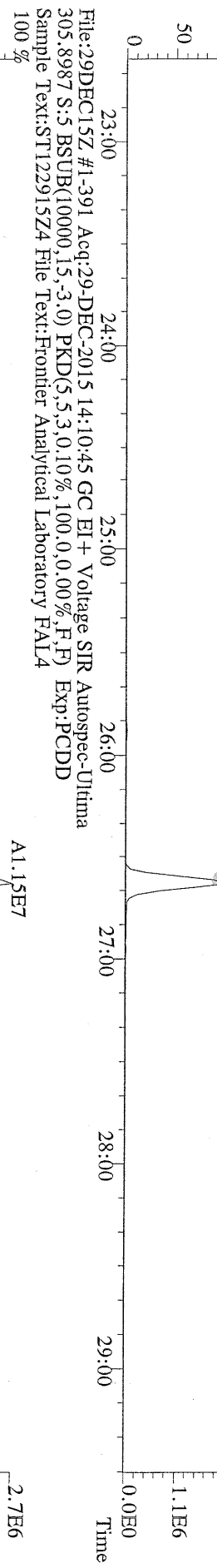
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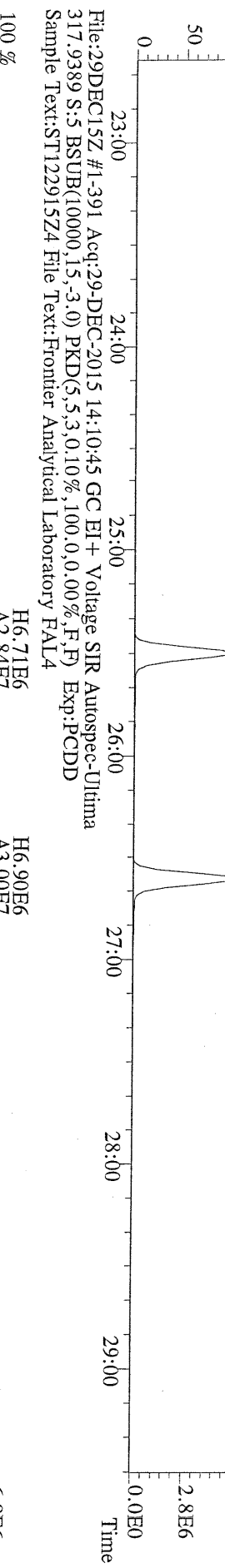
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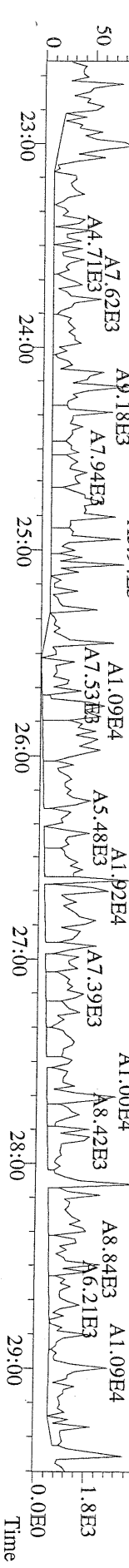
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 Sample Text: ST122915Z4 File Text: Frontier Analytical Laboratory FAL4



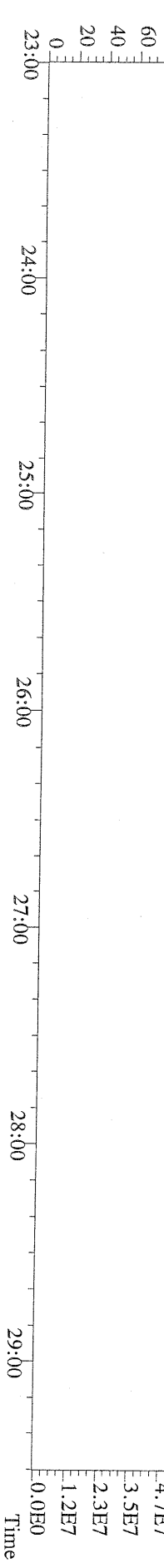
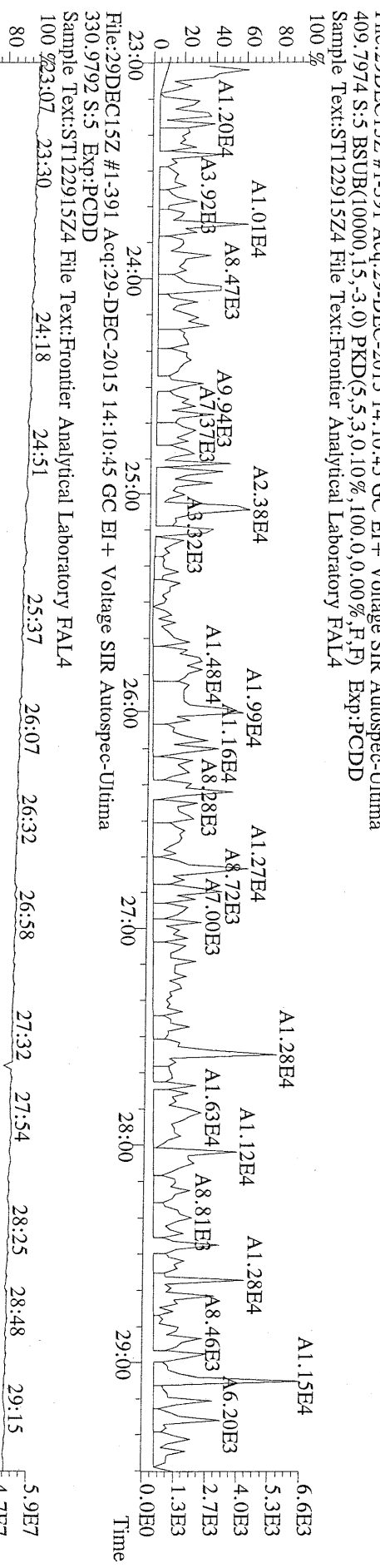
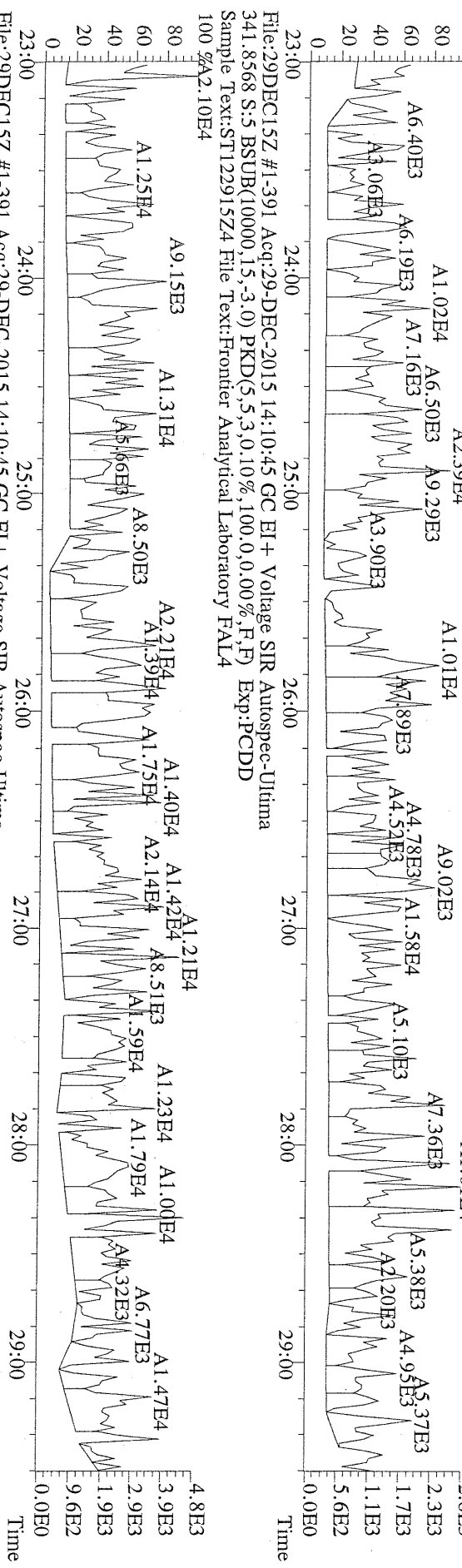
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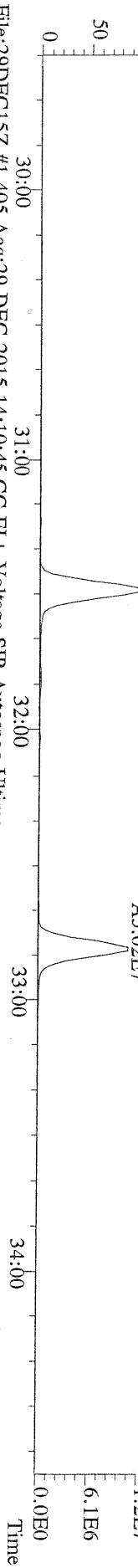
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 Sample Text: ST122915Z4 File Text: Frontier Analytical Laboratory FAL4



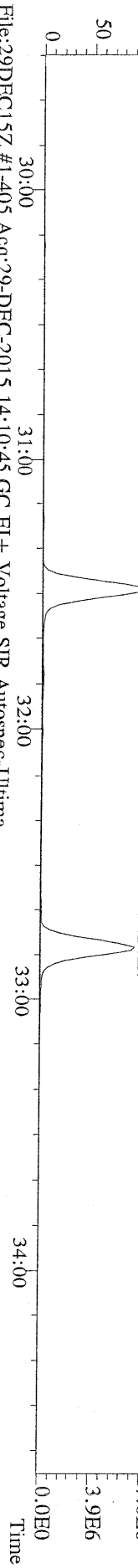
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 339.8597 S.5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST122915Z4 File Text:Frontier Analytical Laboratory FAL4



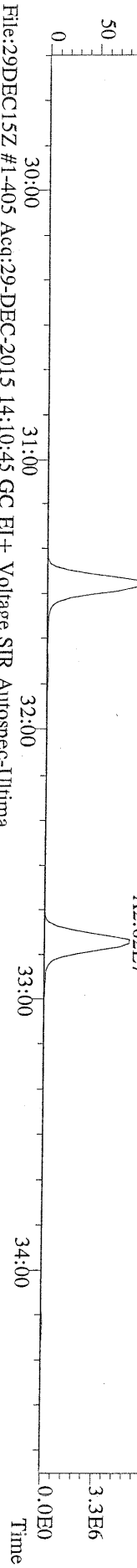
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Sample Text:ST122915Z4 File Text:Frontier Analytical Laboratory FAL4
100 %



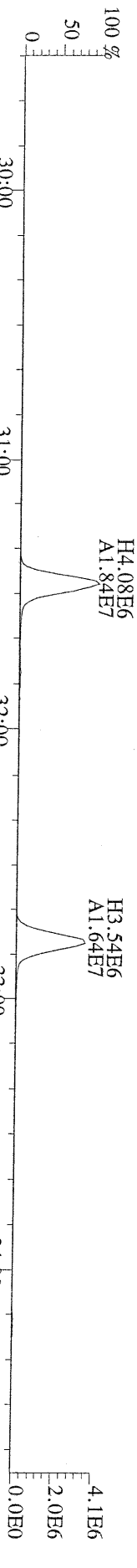
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Sample Text:ST122915Z4 File Text:Frontier Analytical Laboratory FAL4
100 %



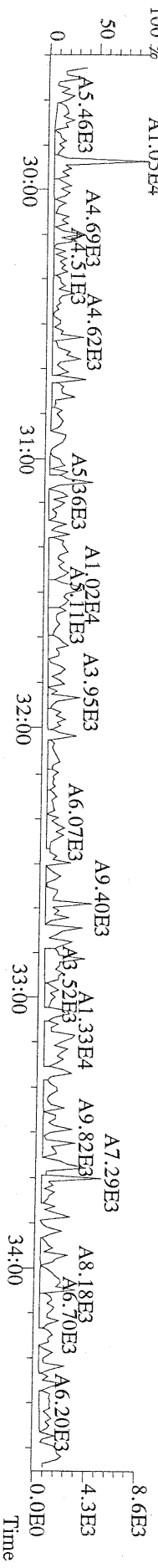
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Sample Text:ST122915Z4 File Text:Frontier Analytical Laboratory FAL4
100 %



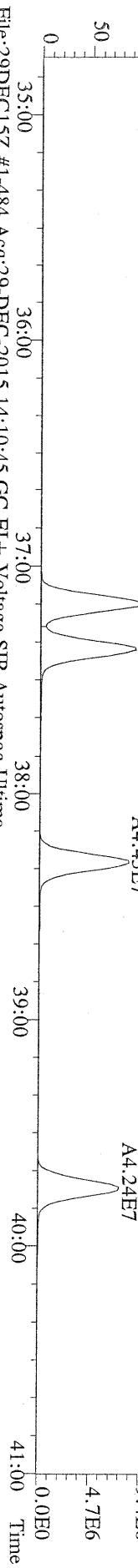
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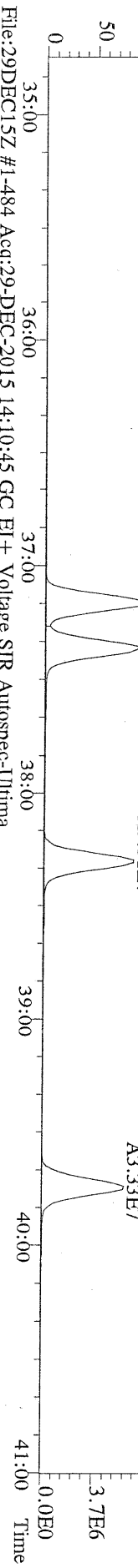
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Sample Text:ST122915Z4 File Text:Frontier Analytical Laboratory FAL4
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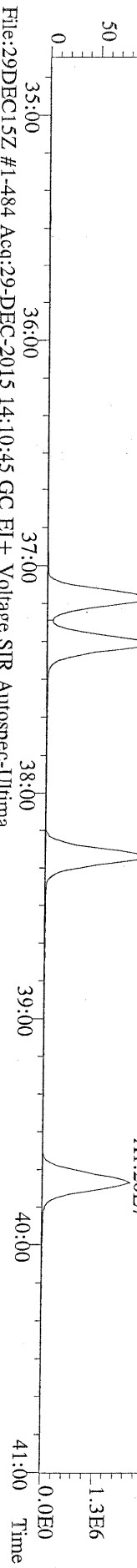
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373.8207 S:5 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z4 File Text:Frontier Analytical Laboratory FAL4



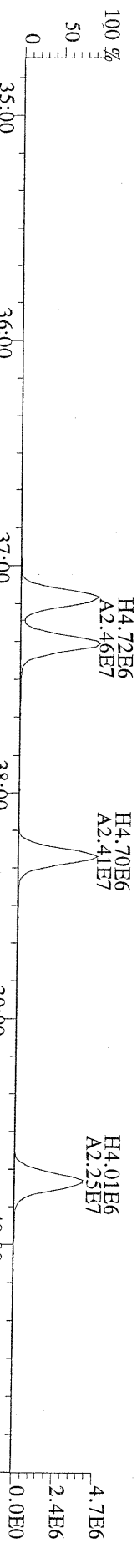
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375.8178 S:5 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z4 File Text:Frontier Analytical Laboratory FAL4



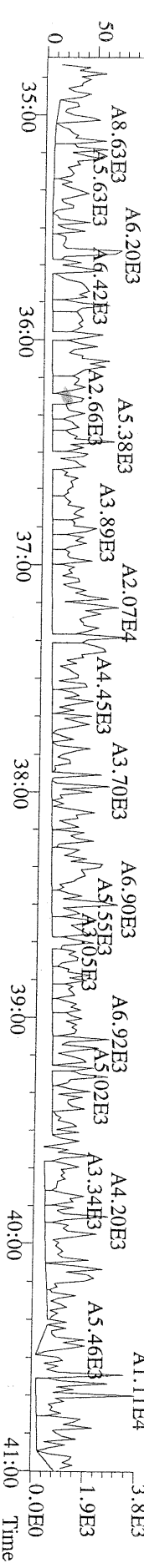
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383.8639 S:5 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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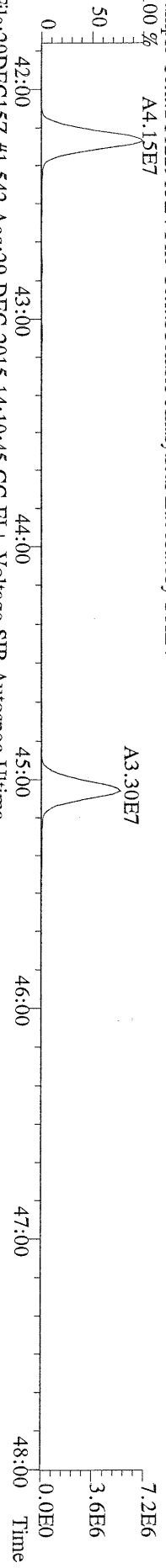
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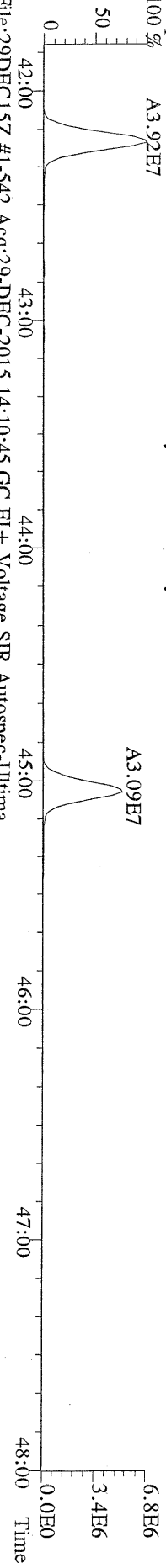
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445.7555 S:5 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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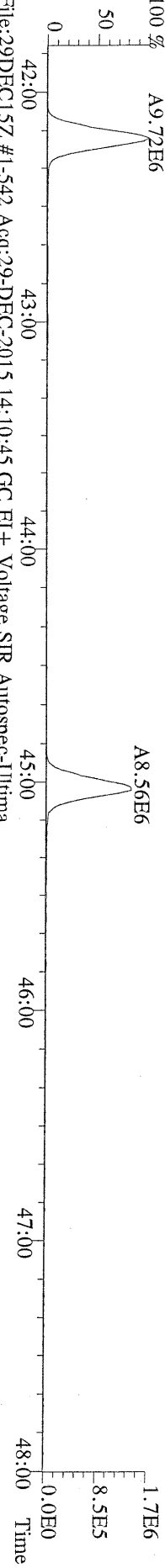
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 407.7818 S:5 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
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 100 % A4.15E7



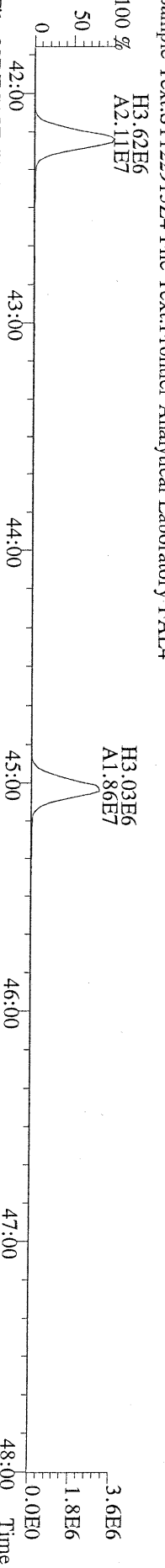
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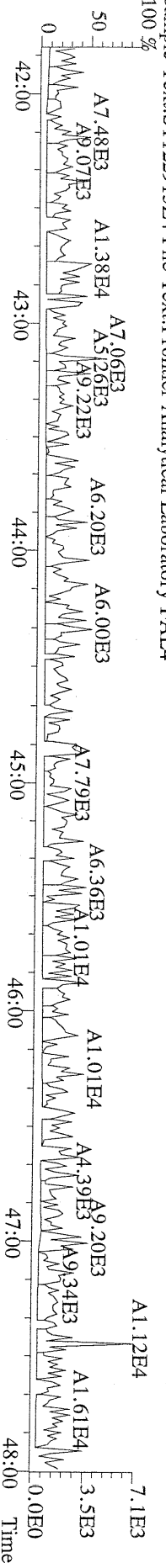
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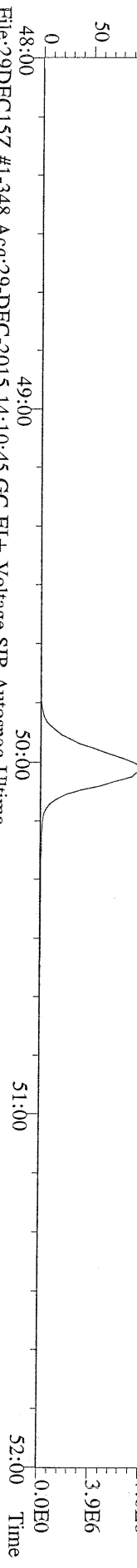
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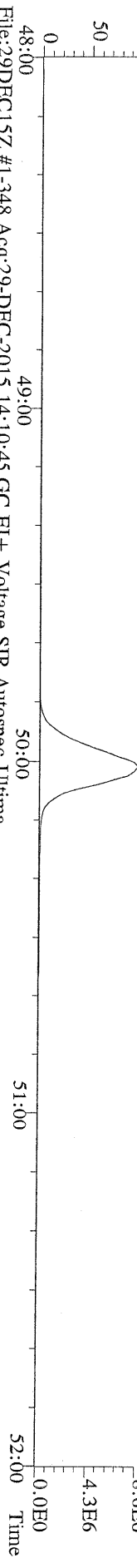
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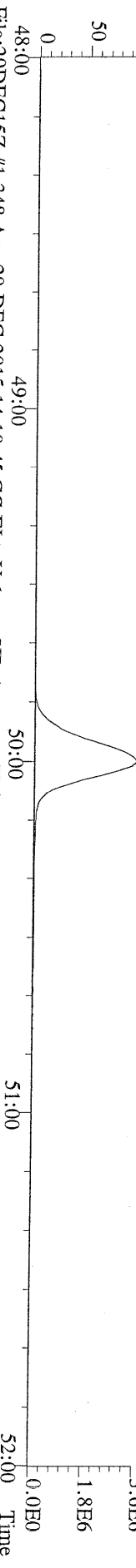
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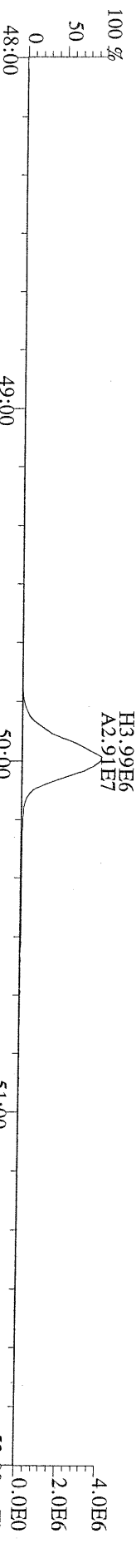
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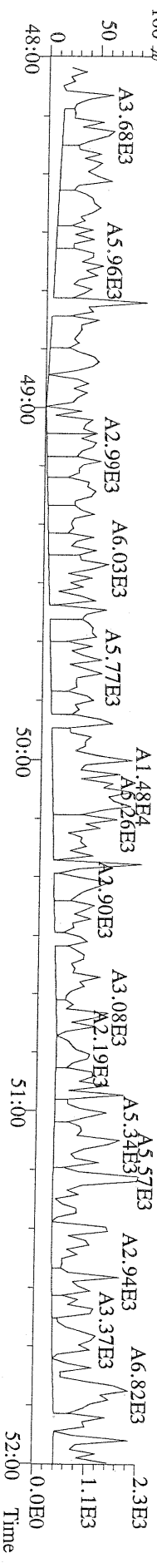
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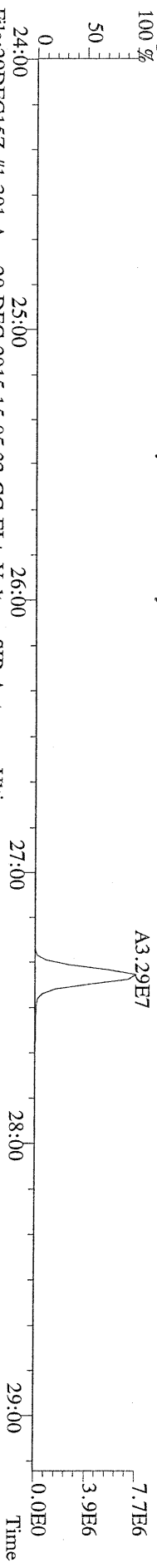
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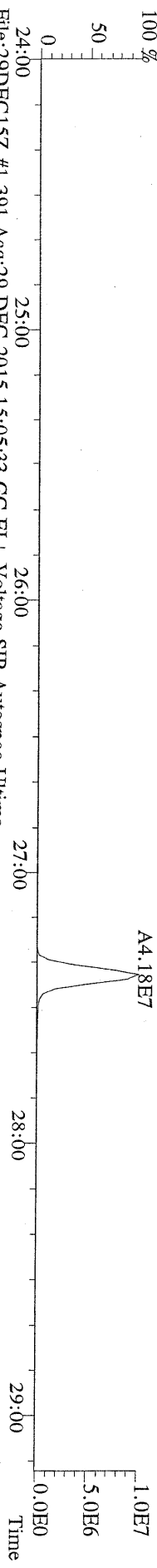
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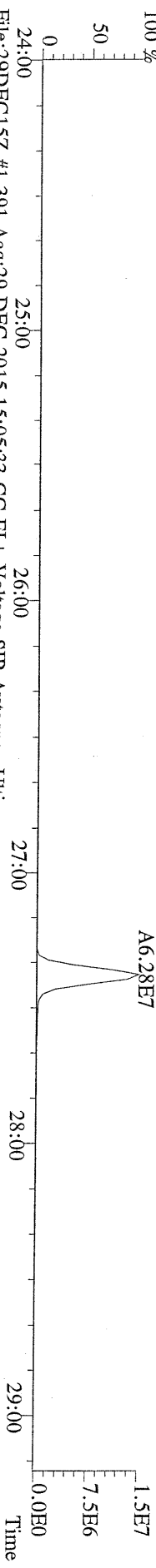
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319.8965 S:6 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z5 File Text:Frontier Analytical Laboratory FAL4
100 %



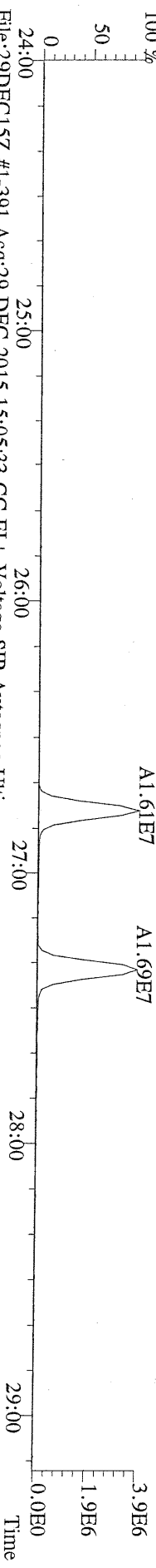
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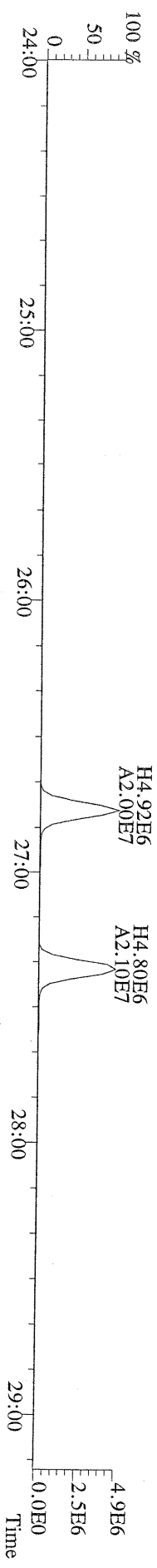
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327.8847 S:6 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z5 File Text:Frontier Analytical Laboratory FAL4
100 %



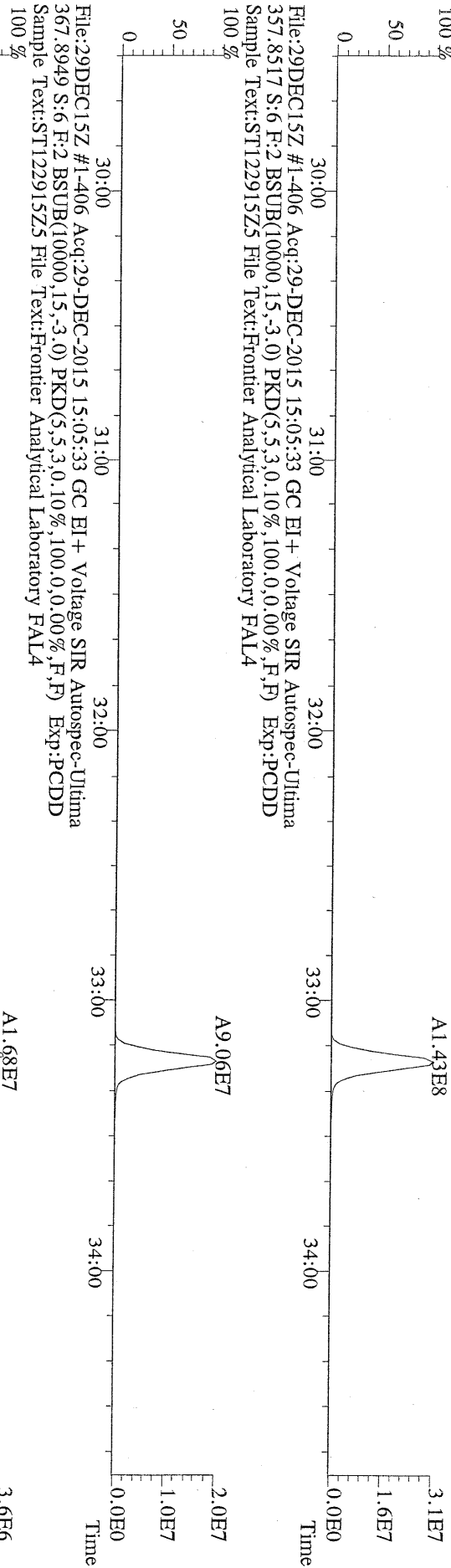
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331.9368 S:6 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z5 File Text:Frontier Analytical Laboratory FAL4
100 %



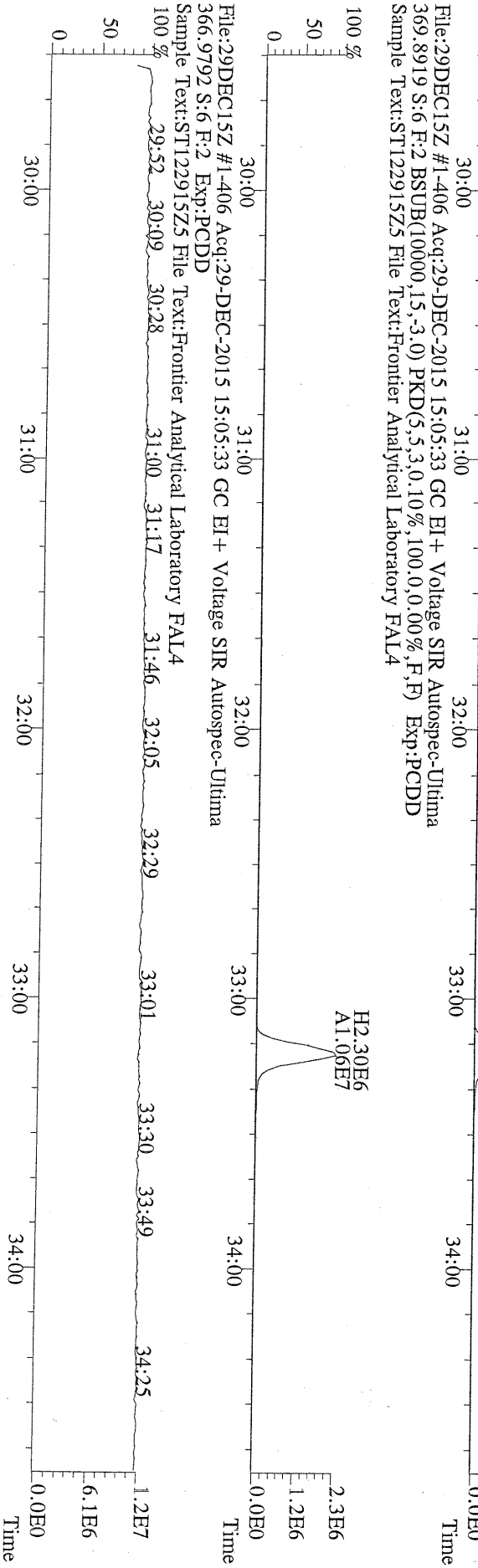
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File:29DEC15Z #1-406 Acq:29-DEC-2015 15:05:33 GC EI+ Voltage SIR Autospec-Ultima
355.8546 S:6 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z5 File Text:Frontier Analytical Laboratory FAL4
100 %



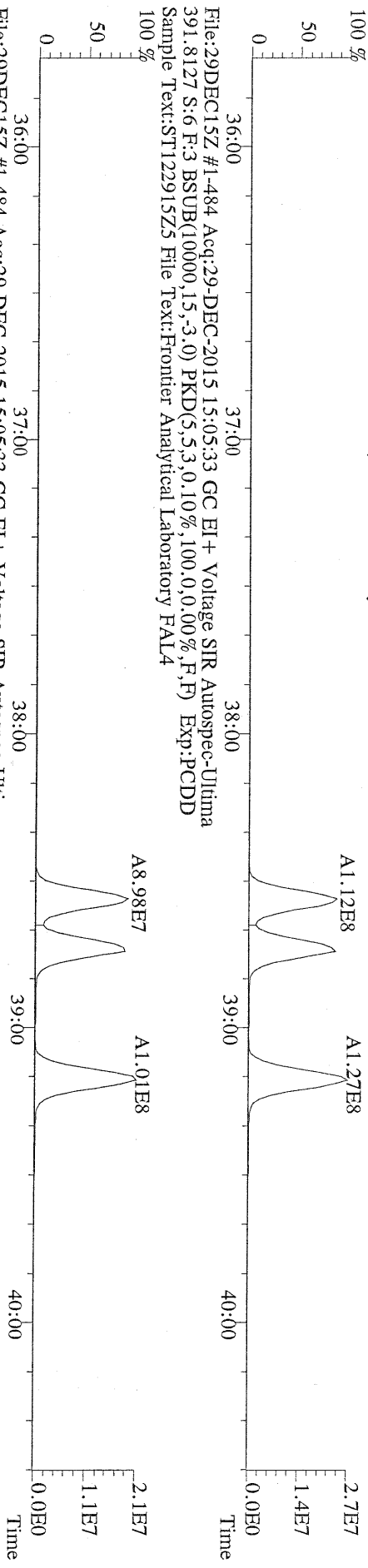
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367.8949 S:6 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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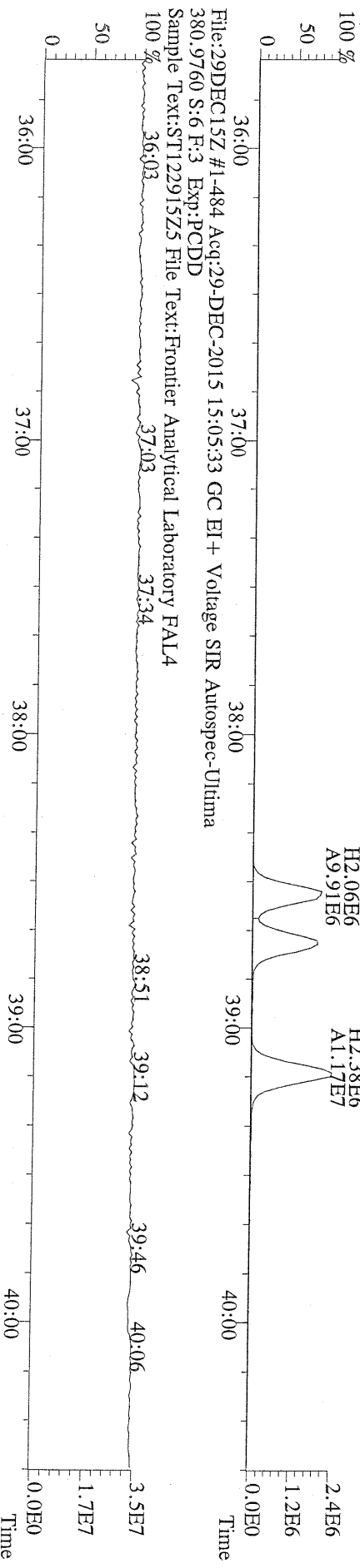
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366.9792 S:6 F:2 Exp:PCDD
Sample Text:ST122915Z5 File Text:Frontier Analytical Laboratory FAL4
100 %



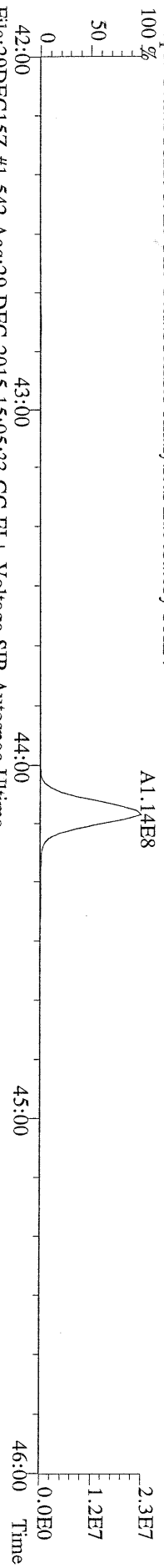
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Sample Text: ST122915Z5 File Text: Frontier Analytical Laboratory FAL4



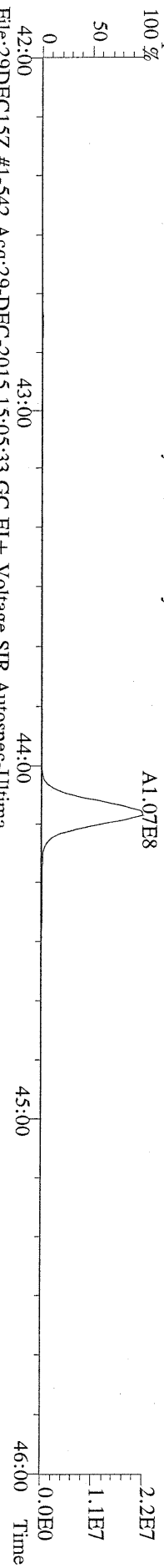
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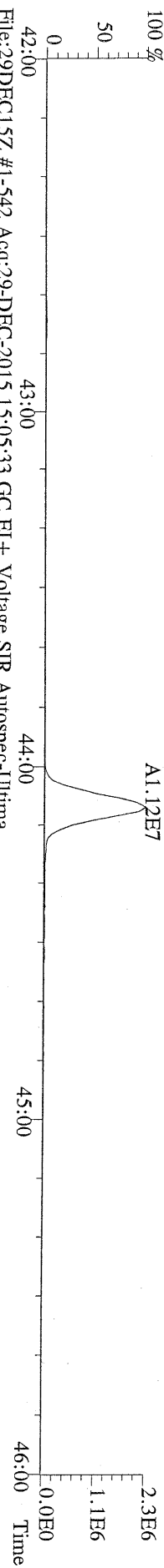
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Sample Text:ST122915Z5 File Text:Frontier Analytical Laboratory FAL4
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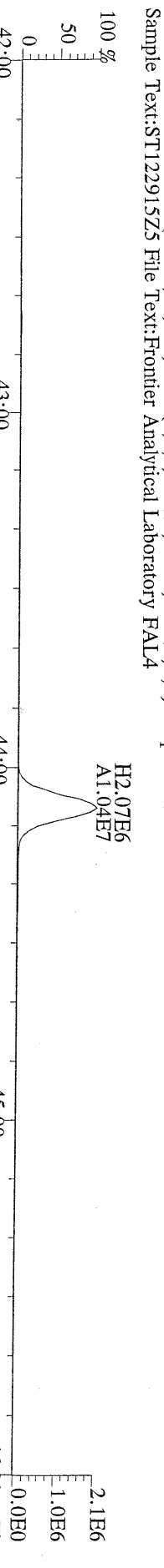
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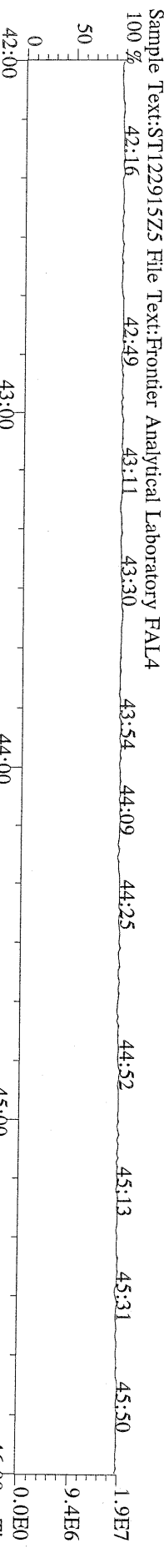
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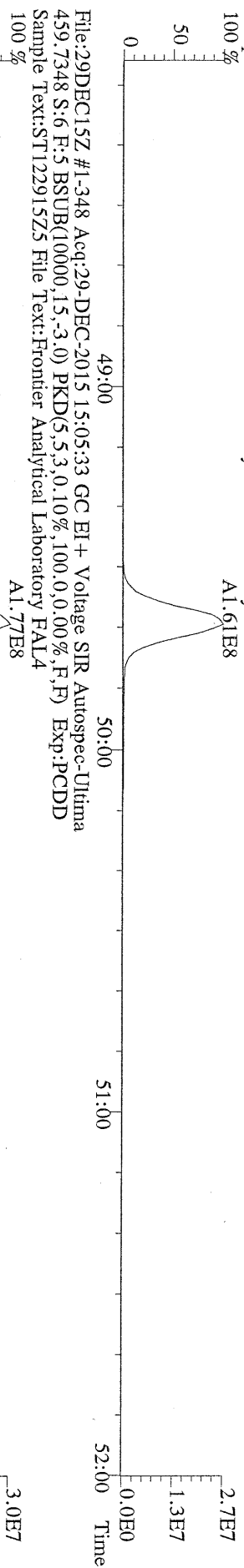
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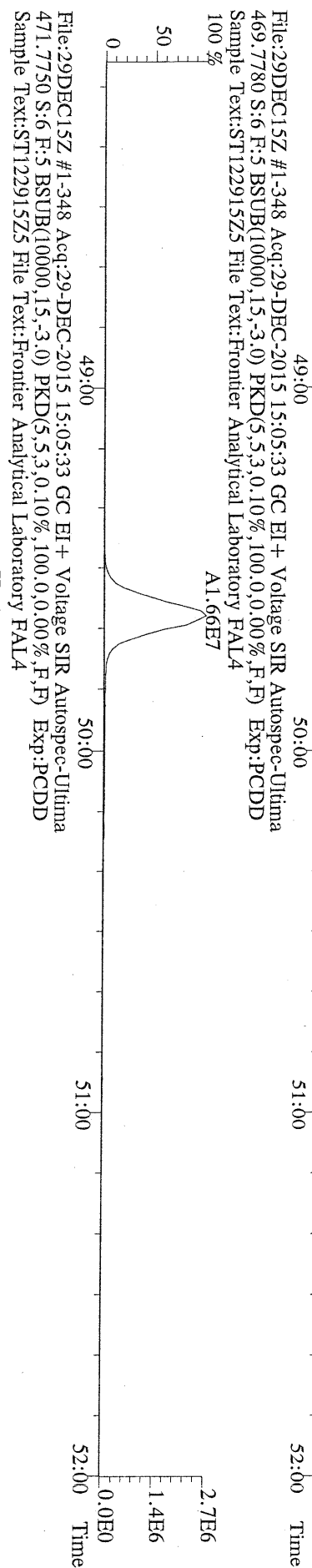
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100 %



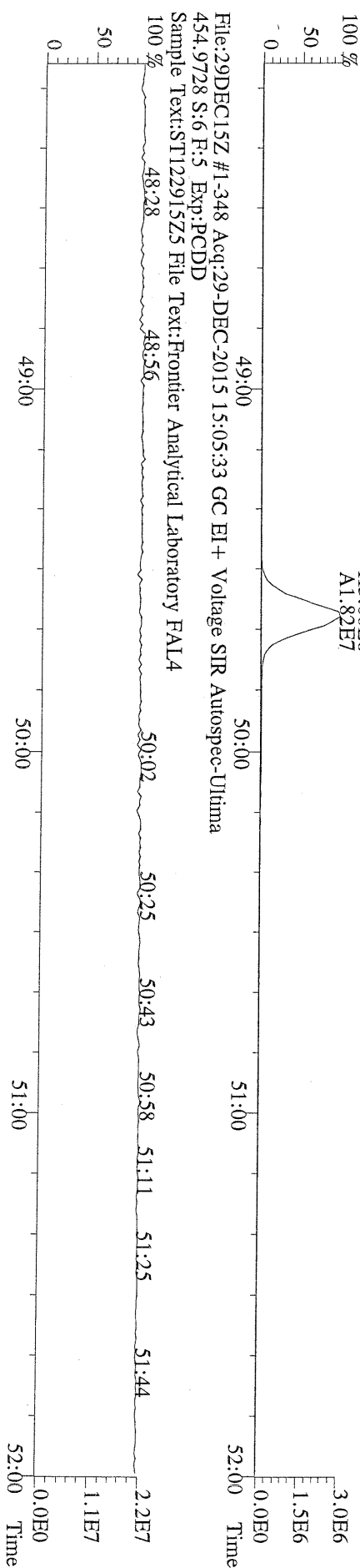
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100 %



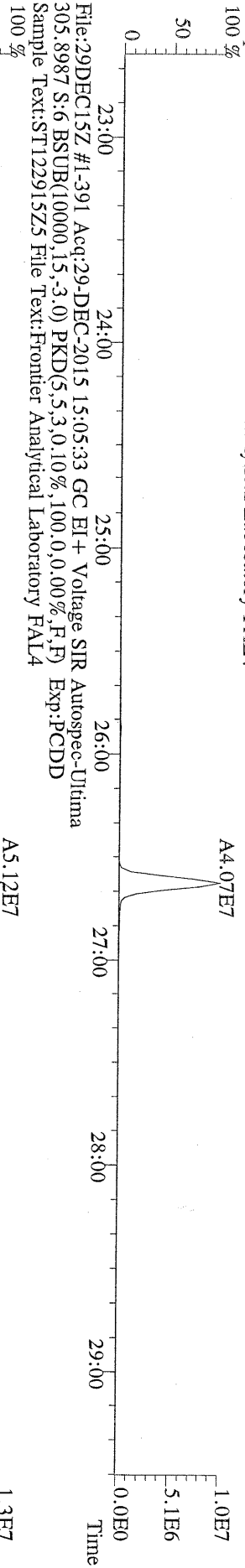
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Sample Text:ST122915Z5 File Text:Frontier Analytical Laboratory FAL4
100 %



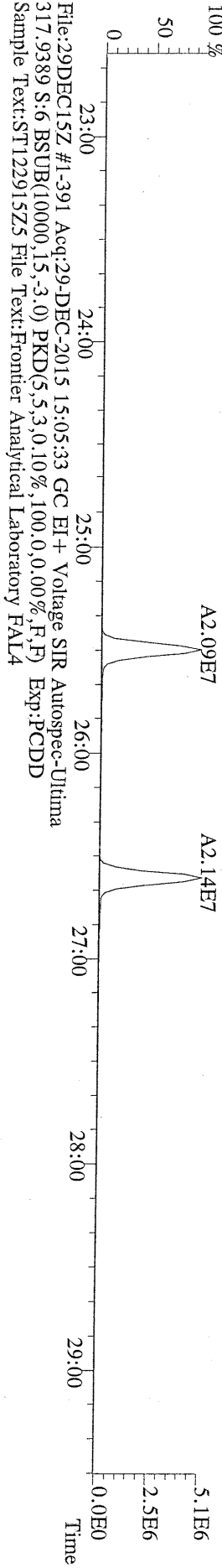
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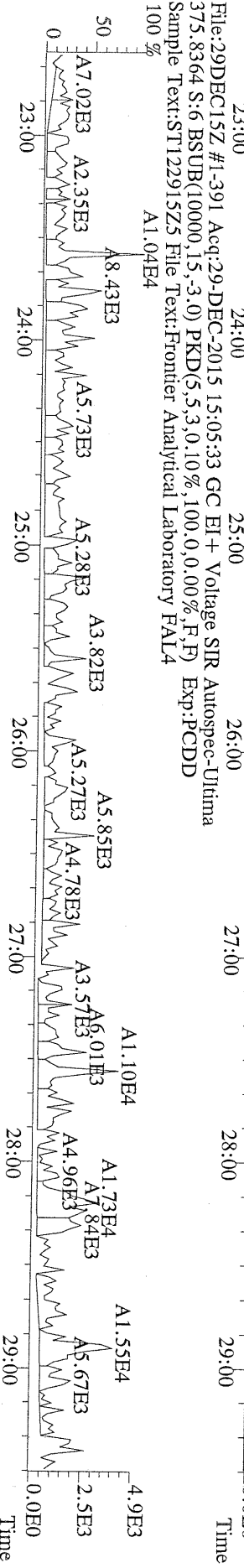
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Sample Text:ST122915Z5 File Text:Frontier Analytical Laboratory FAL4



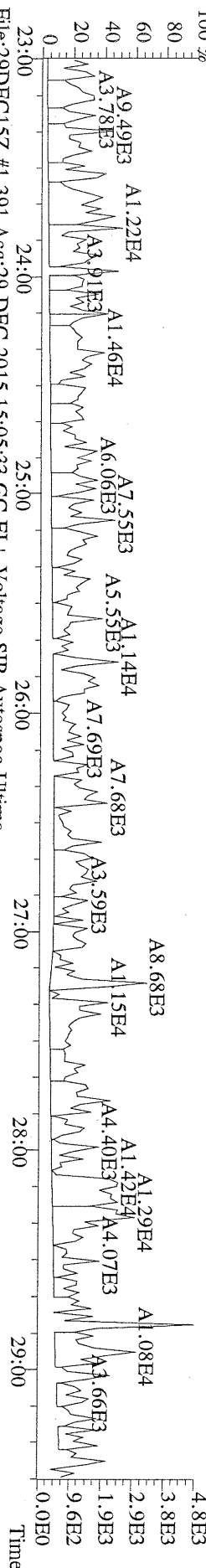
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Sample Text:ST122915Z5 File Text:Frontier Analytical Laboratory FAL4



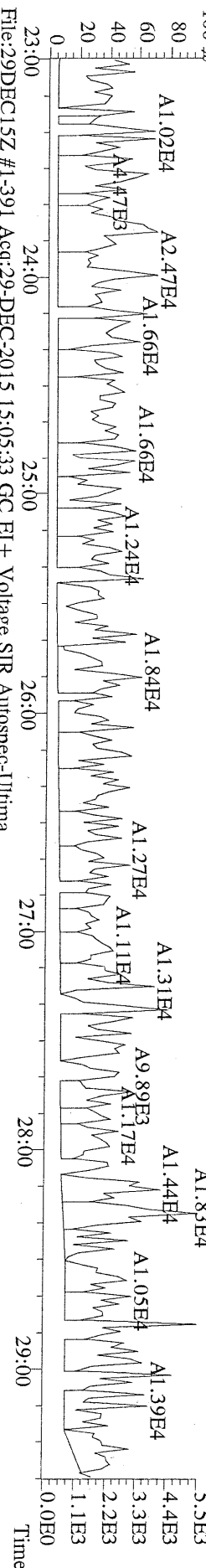
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Sample Text:ST122915Z5 File Text:Frontier Analytical Laboratory FAL4



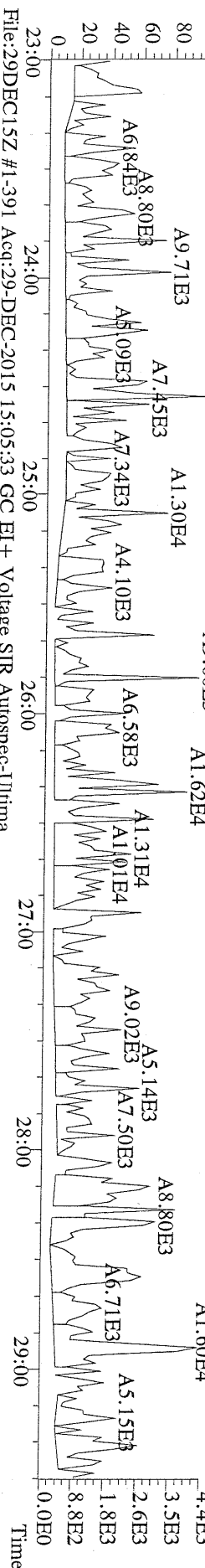
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 339.8597 S:6 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST122915Z5 File Text:Frontier Analytical Laboratory FAL4
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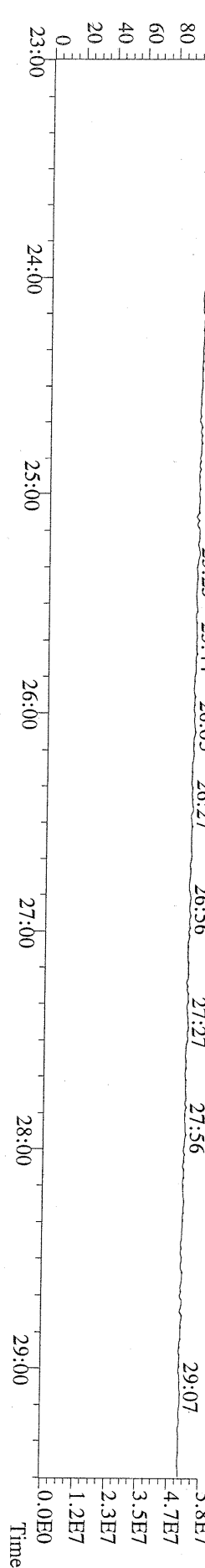
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 Sample Text:ST122915Z5 File Text:Frontier Analytical Laboratory FAL4
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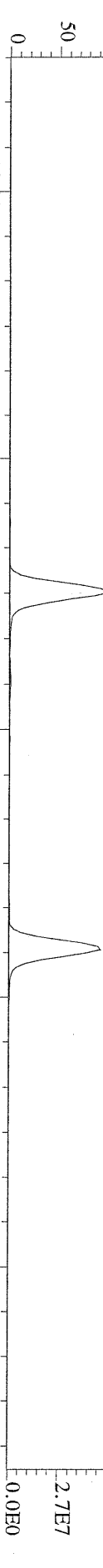
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 Sample Text:ST122915Z5 File Text:Frontier Analytical Laboratory FAL4
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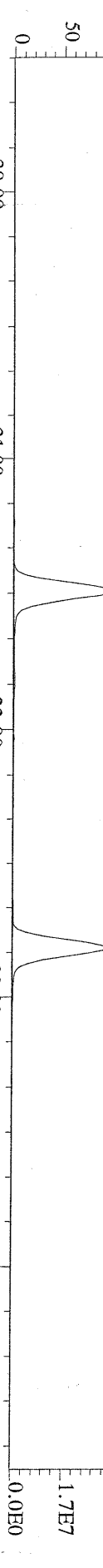
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 Sample Text:ST122915Z5 File Text:Frontier Analytical Laboratory FAL4
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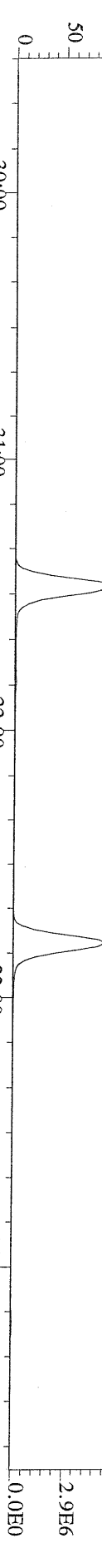
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Sample Text:ST122915Z5 File Text:Frontier Analytical Laboratory FALA
100 %



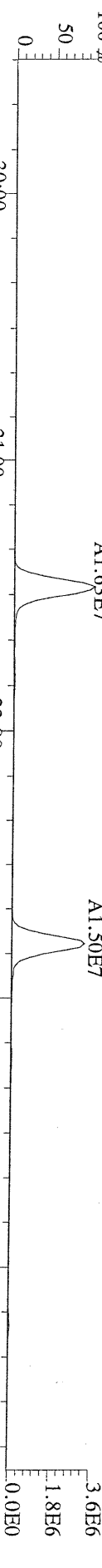
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Sample Text:ST122915Z5 File Text:Frontier Analytical Laboratory FALA
100 %



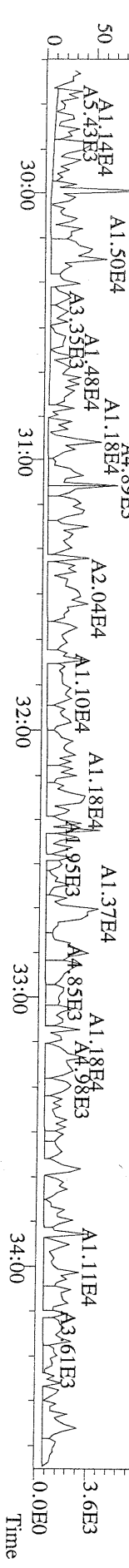
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Sample Text:ST122915Z5 File Text:Frontier Analytical Laboratory FALA
100 %



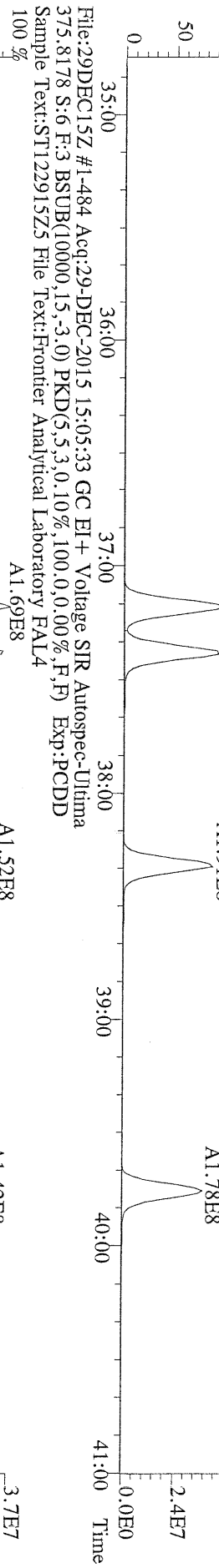
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100 %



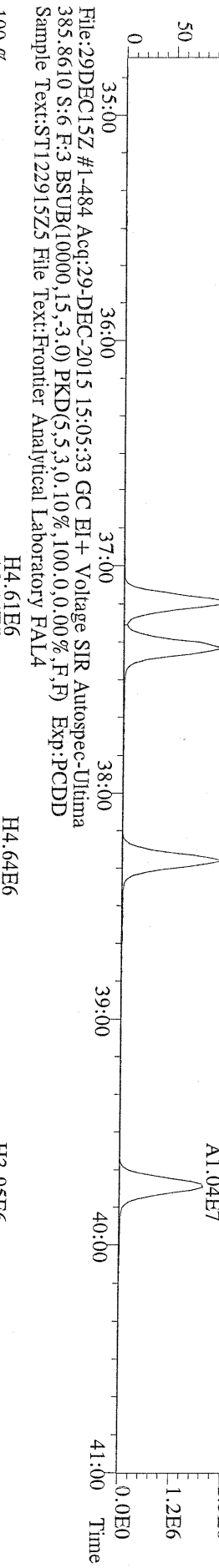
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409.7974 S:6 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0%) Exp:PCDD
Sample Text:ST122915Z5 File Text:Frontier Analytical Laboratory FALA
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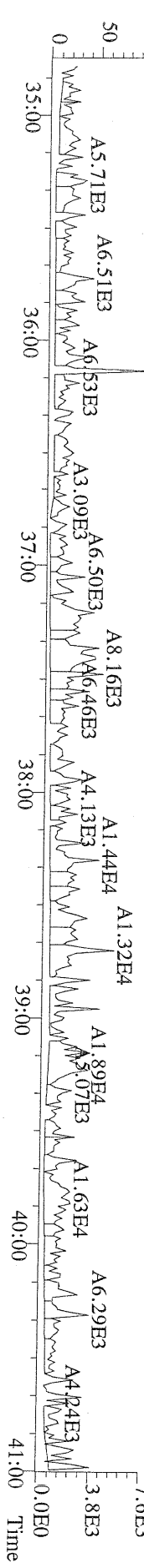
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373.8207 S:6 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z5 File Text:Frontier Analytical Laboratory FAL4



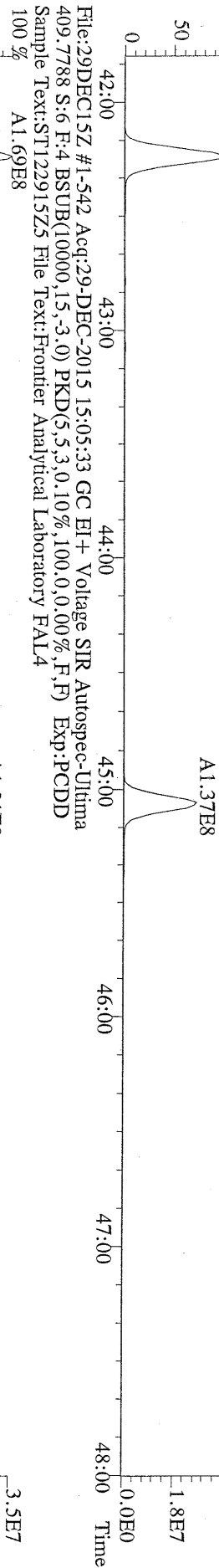
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383.8639 S:6 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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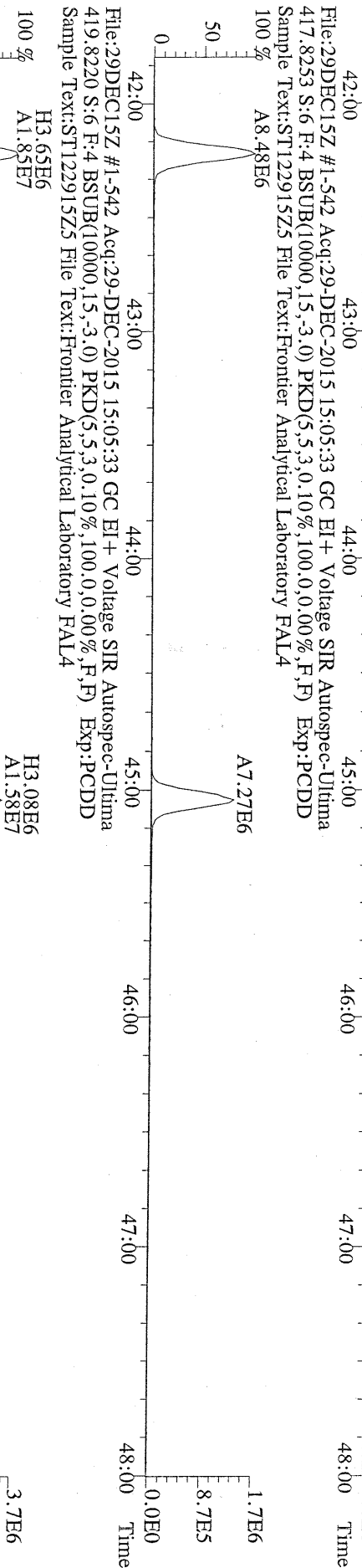
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445.7555 S:6 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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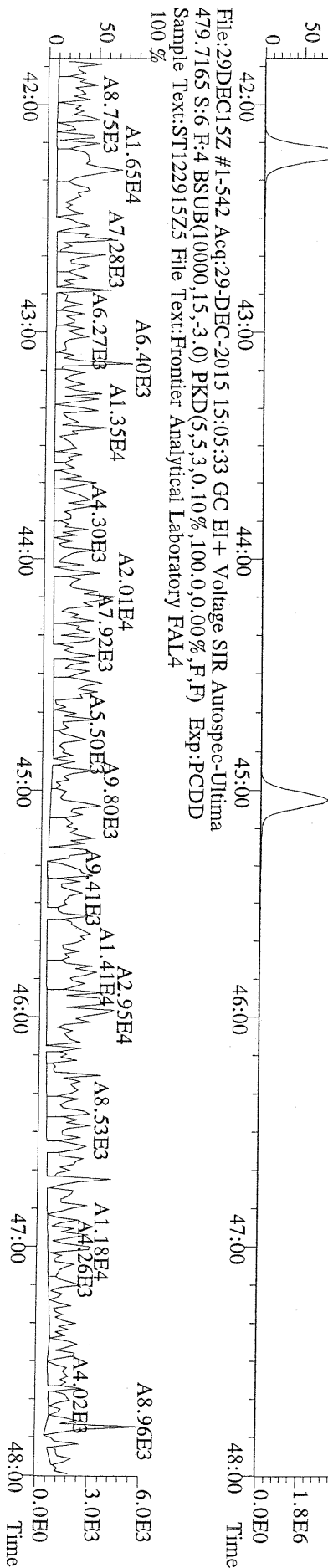
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407.7818 S:6 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0,0,0,0) Exp:PCDD
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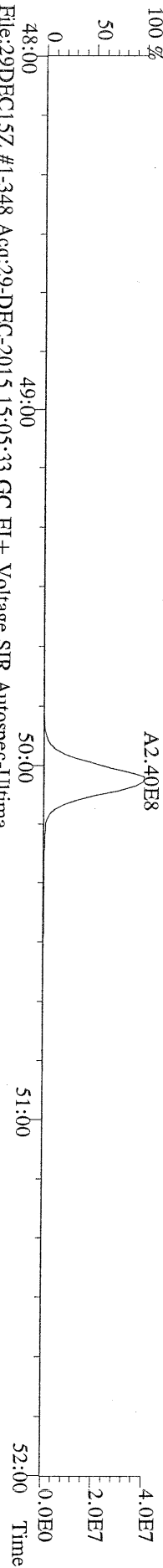
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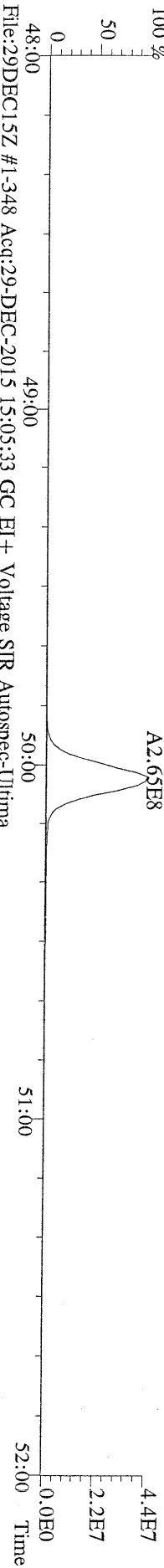
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419.8220 S:6 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0,0,0) Exp:PCDD
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100 % H3.65E6
A1.85E7



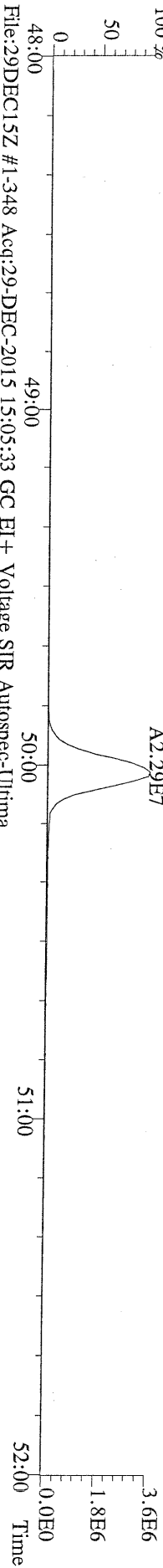
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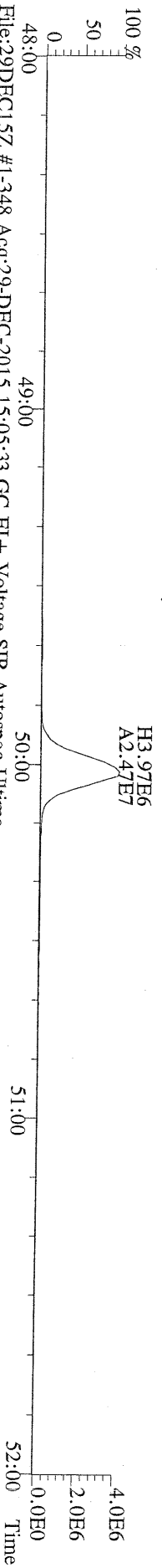
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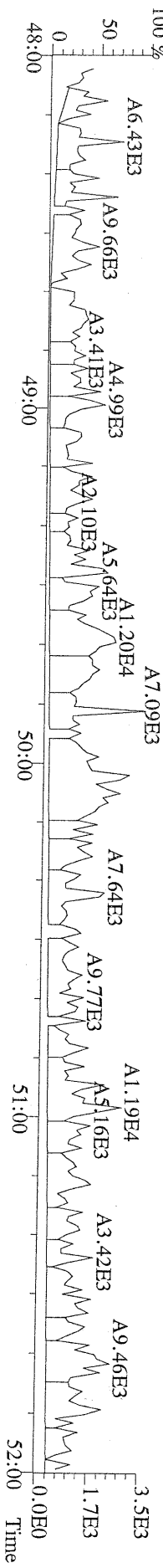
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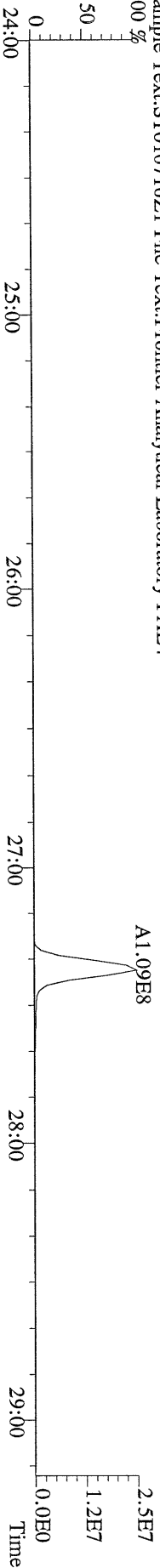
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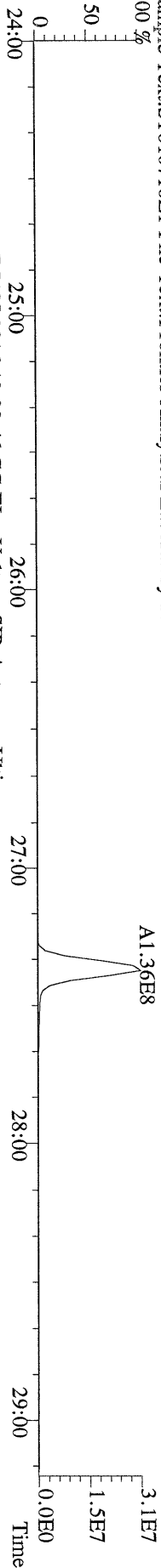
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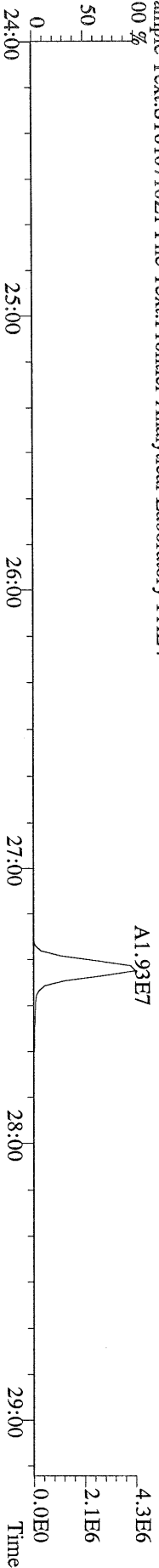
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319.8965 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100.0,0,0.00%,F,F) Exp:PCDD
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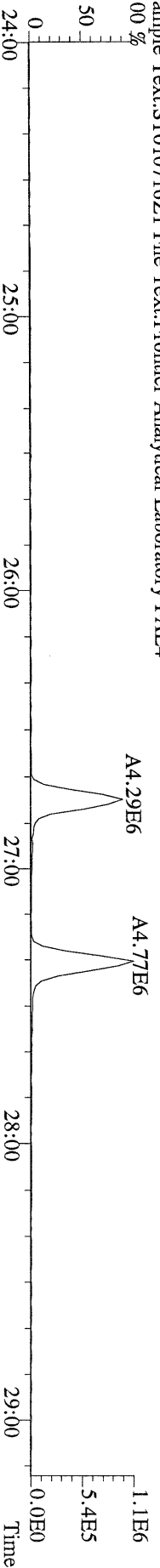
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100 %



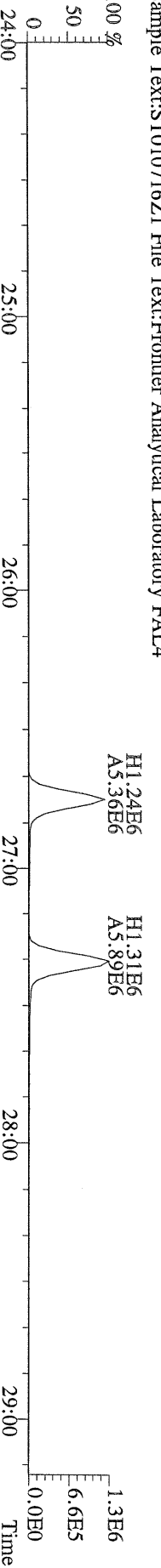
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327.8847 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100.0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



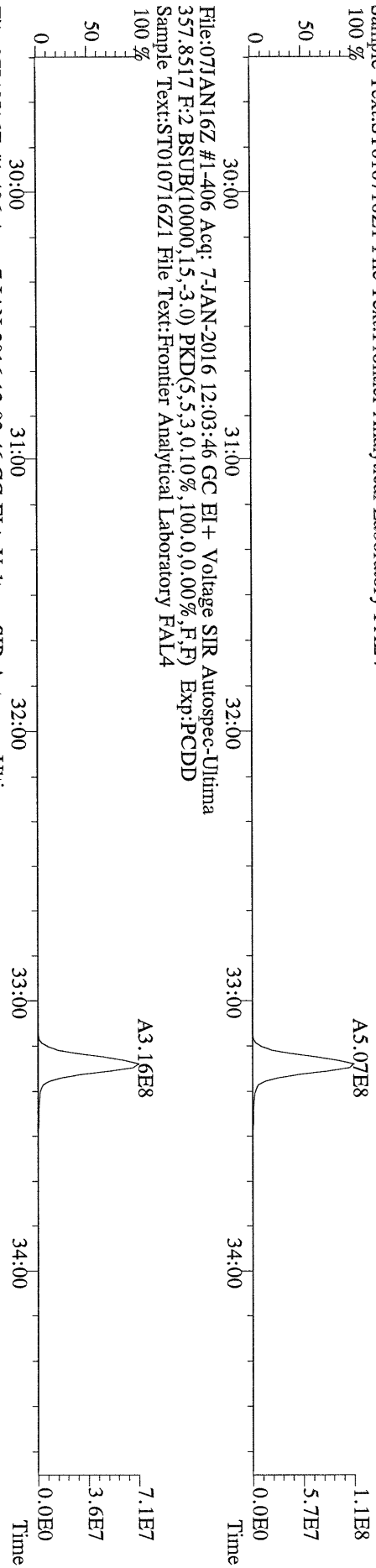
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331.9368 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100.0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



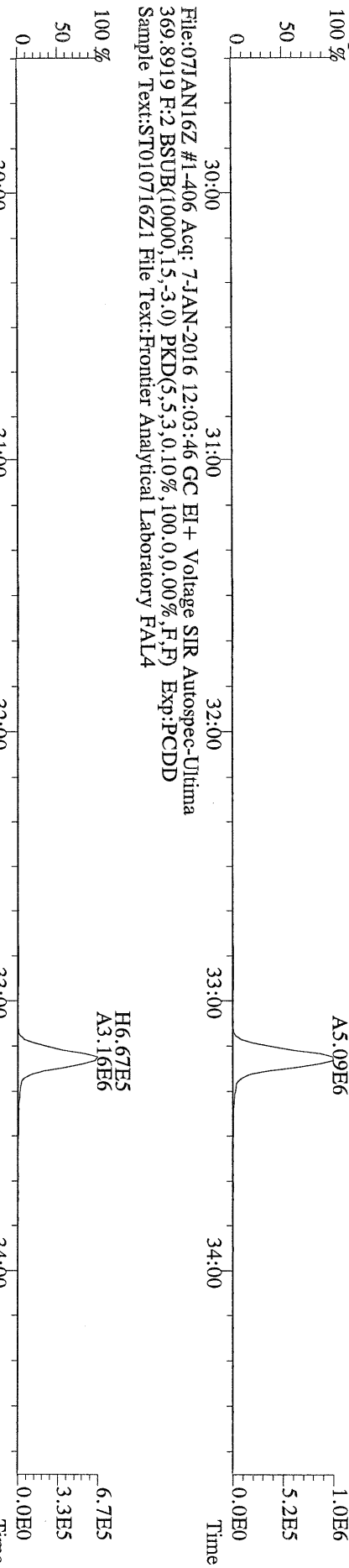
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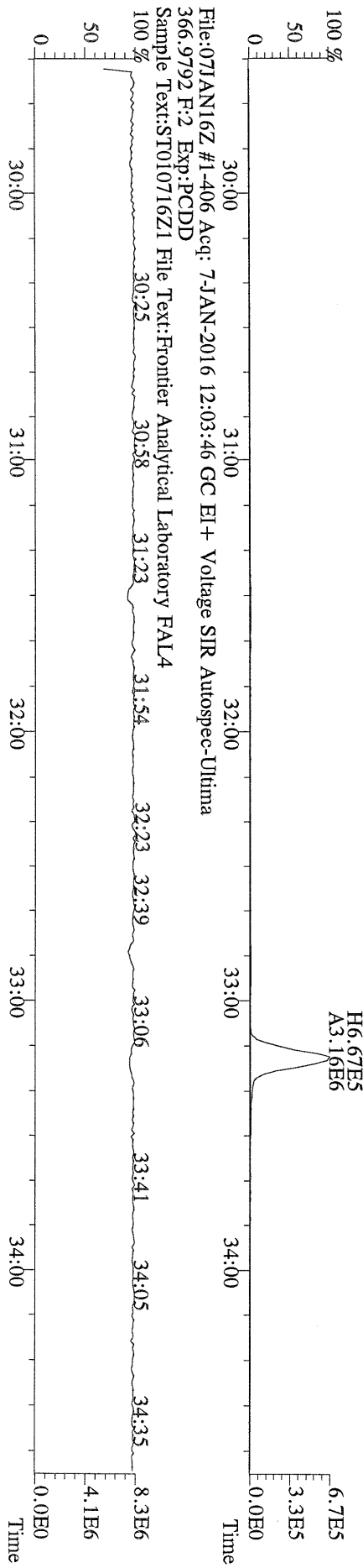
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Sample Text:ST010716Z1 File Text:Frontier Analytical Laboratory FAL4



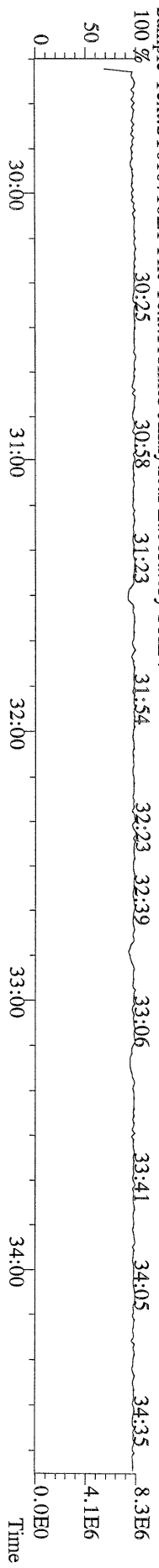
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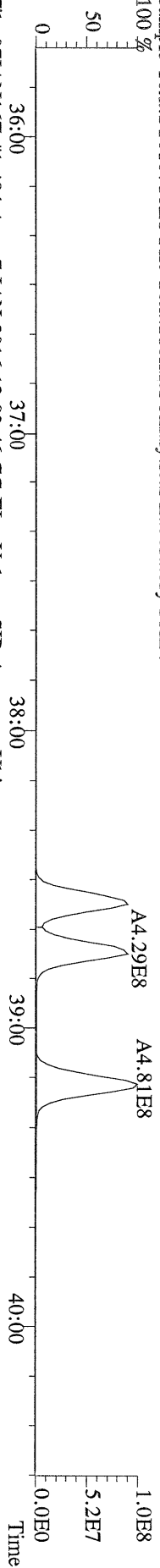
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369.8919 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
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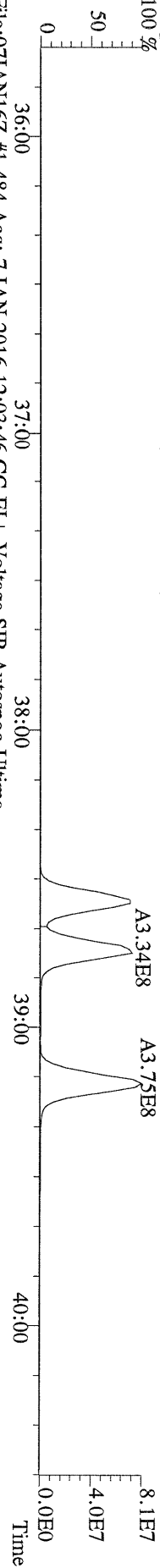
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366.9792 F:2 Exp:PCDD
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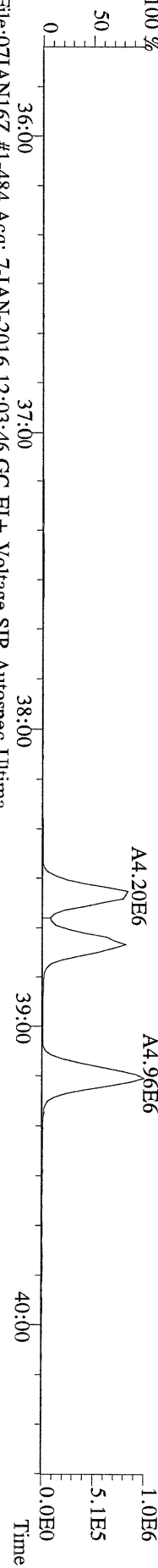
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389.8156 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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100 %



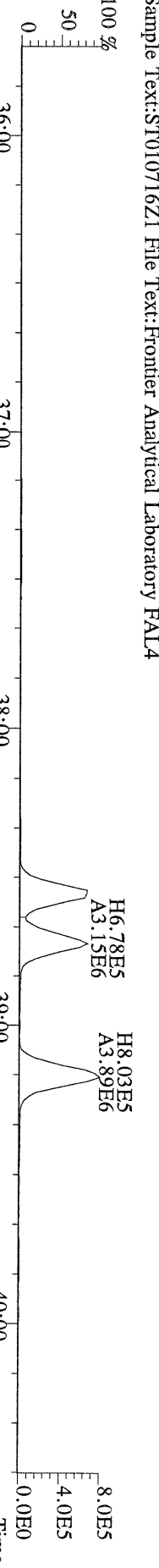
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100 %



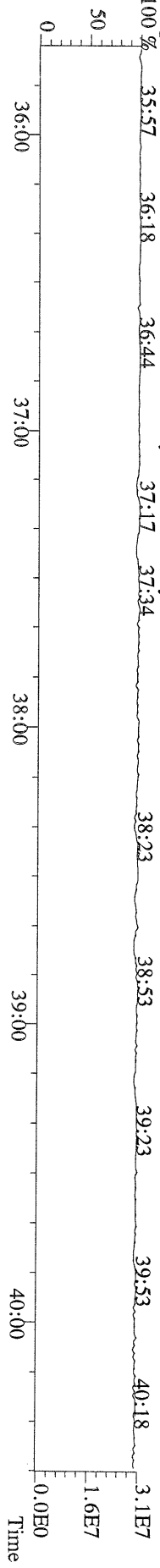
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401.8559 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010716Z1 File Text:Frontier Analytical Laboratory FAL4
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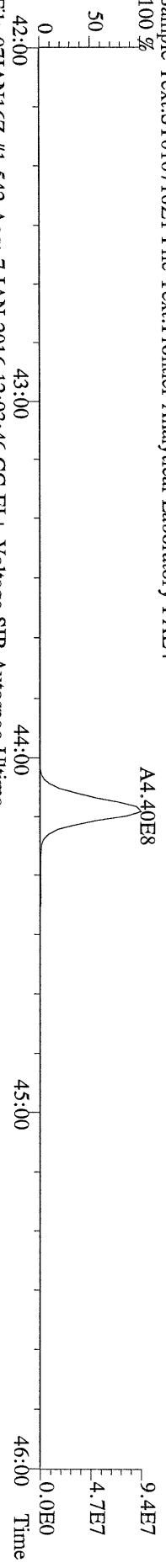
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Sample Text:ST010716Z1 File Text:Frontier Analytical Laboratory FAL4



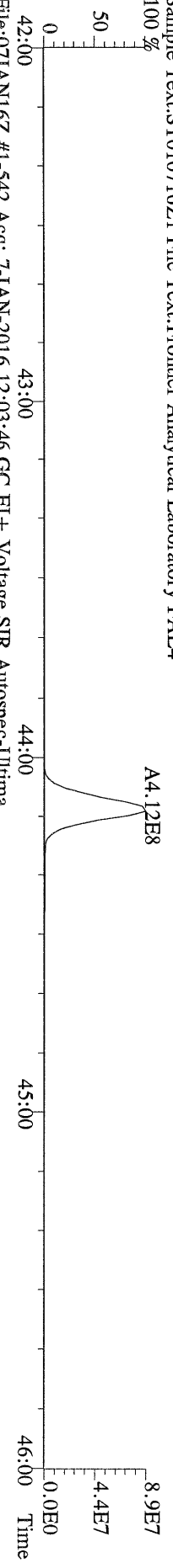
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100 %



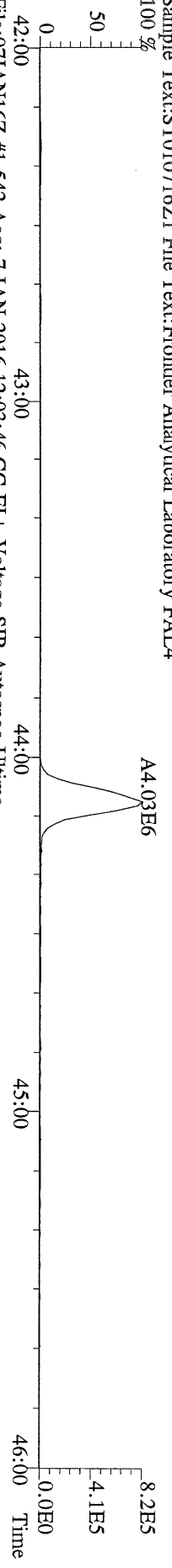
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423.7767 F:4 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



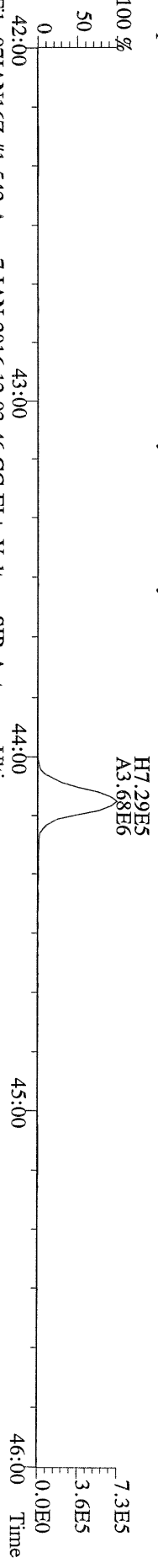
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100 %



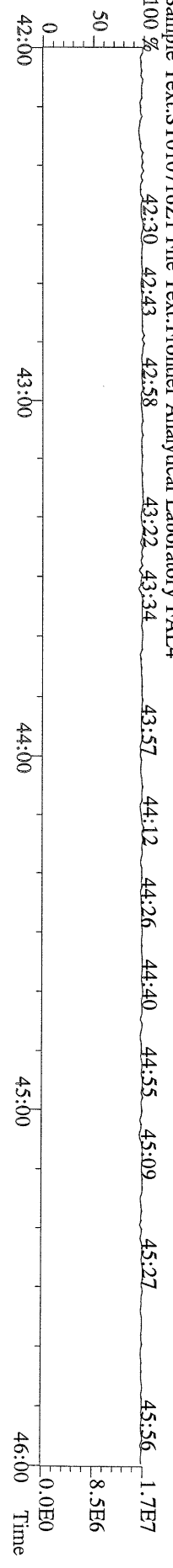
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100 %



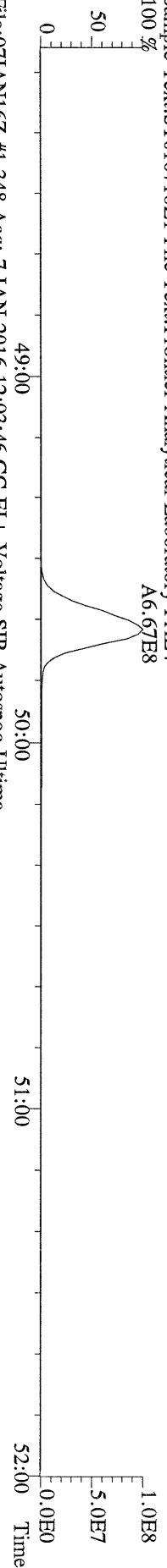
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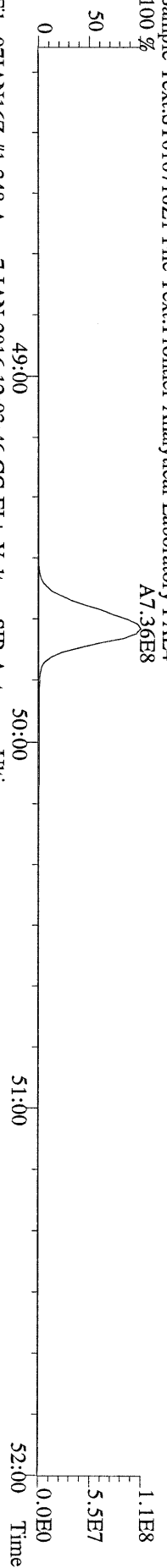
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100 %



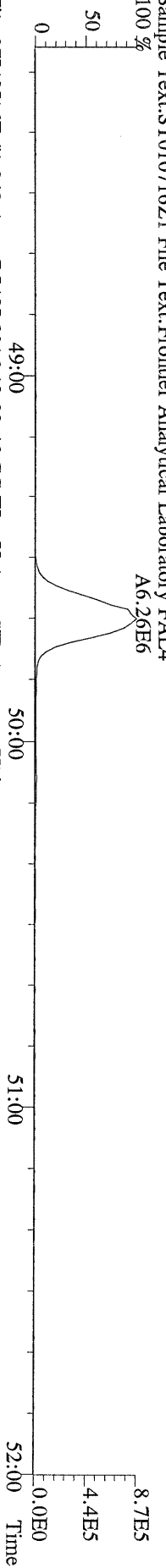
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457.7377 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



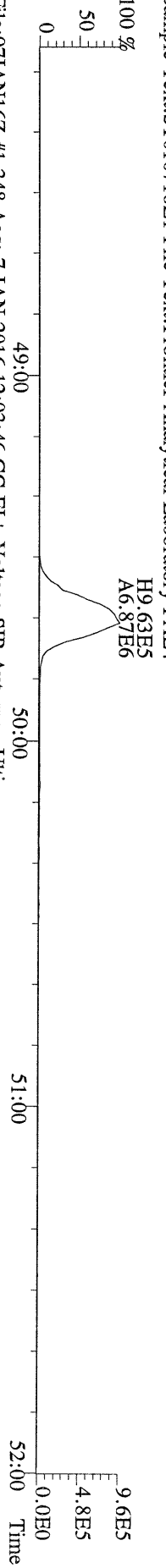
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Sample Text:ST010716Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



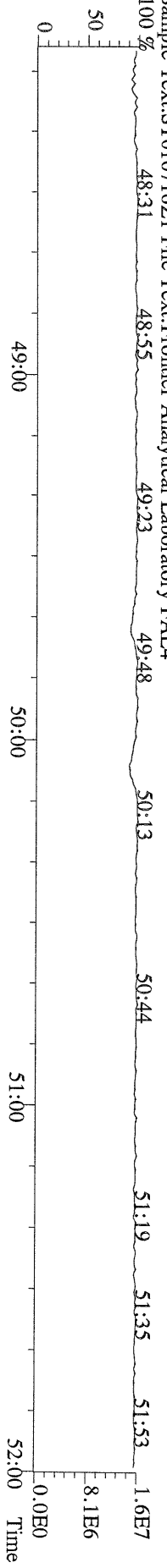
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100 %



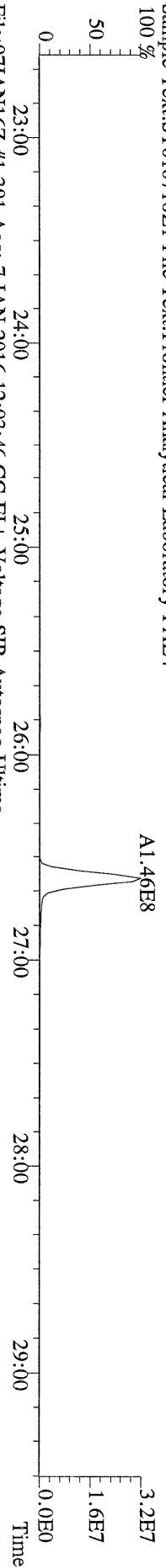
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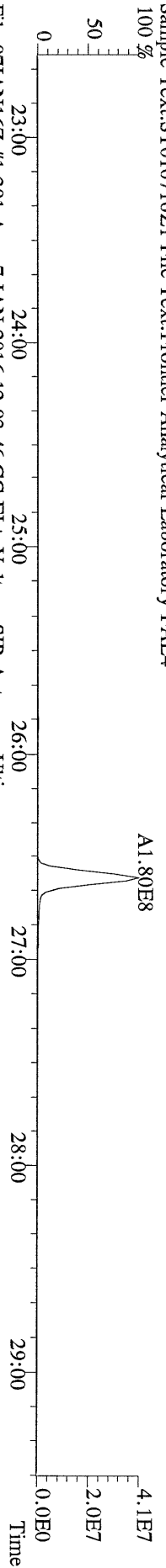
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454.9728 F:5 Exp:PCDD
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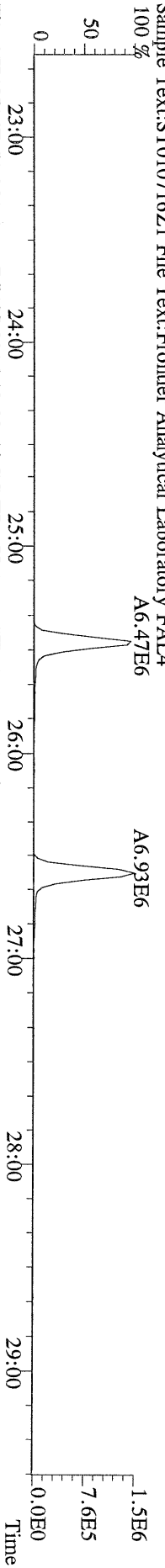
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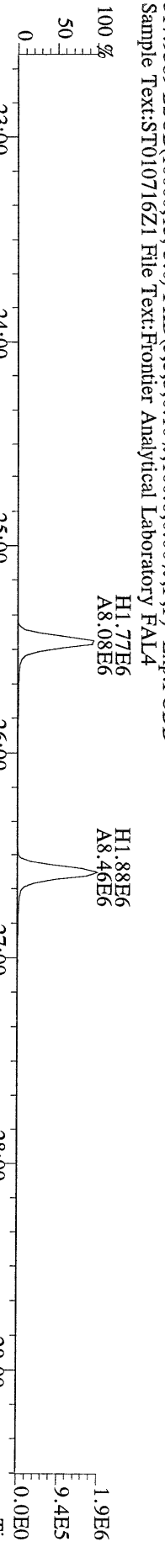
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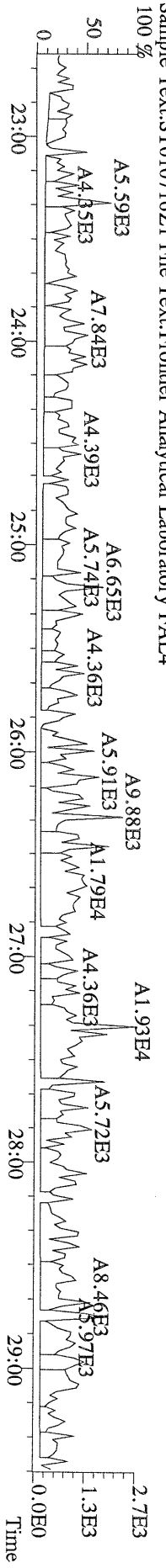
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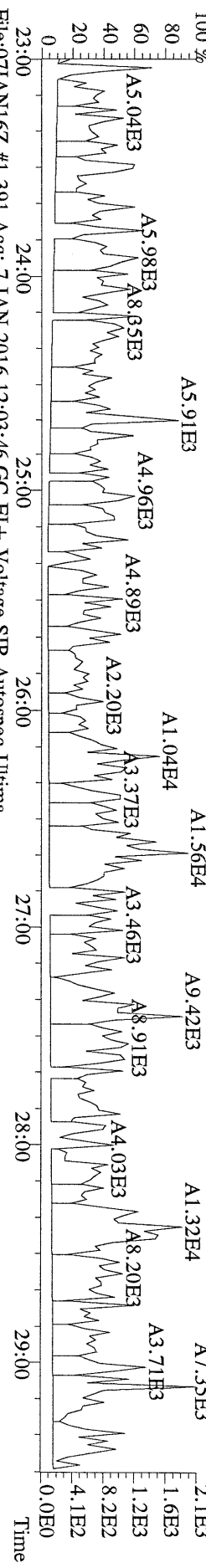
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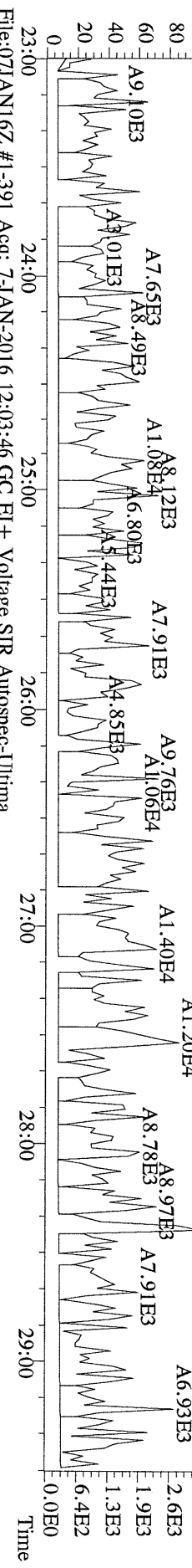
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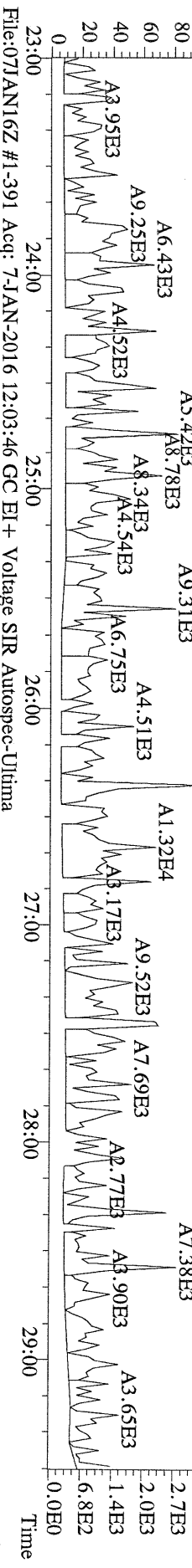
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 339.8597 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
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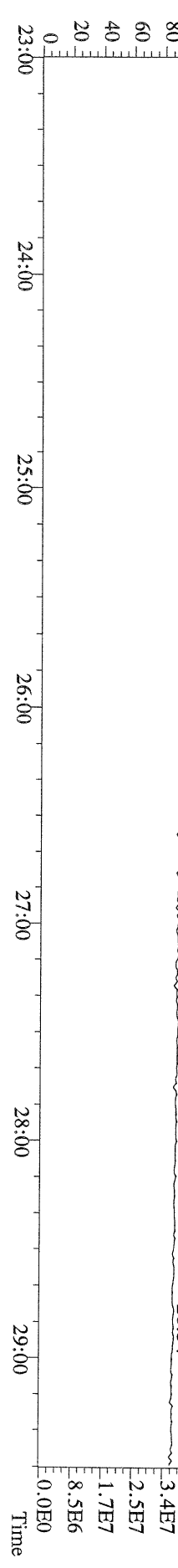
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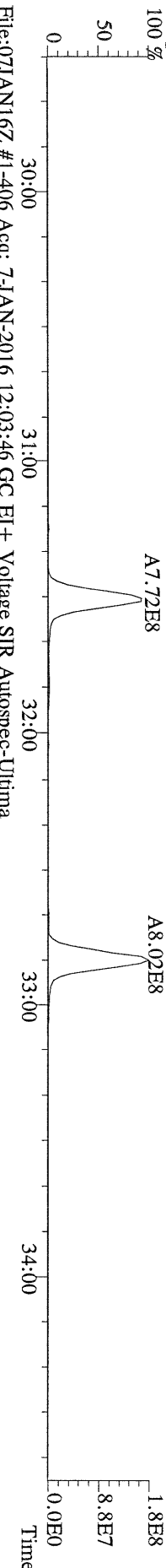
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 409.7974 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
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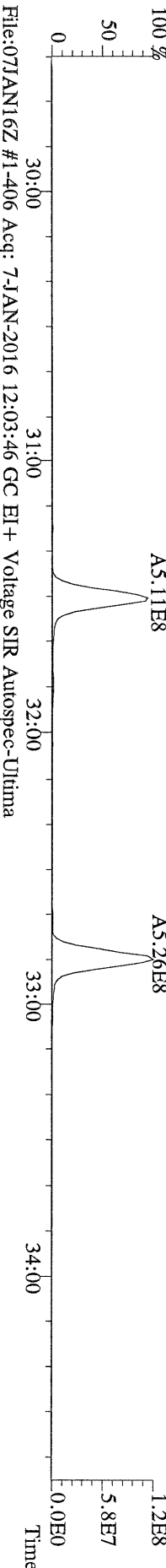
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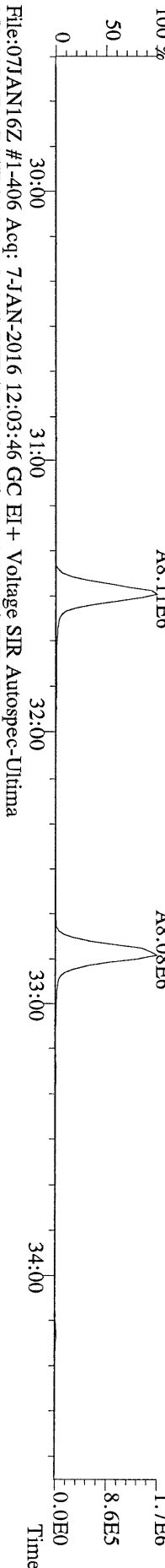
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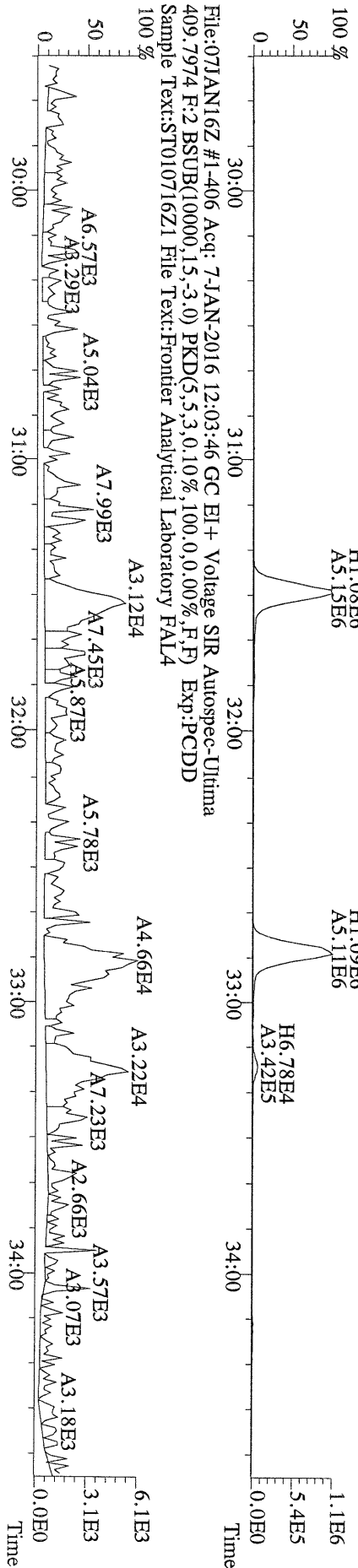
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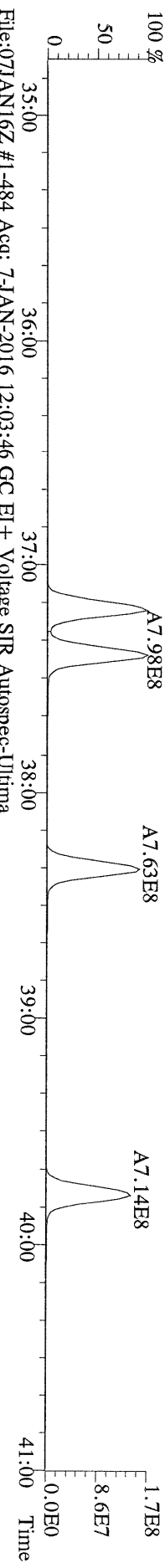
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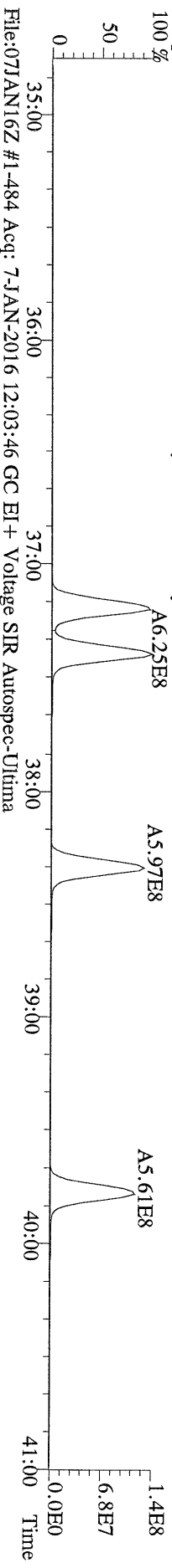
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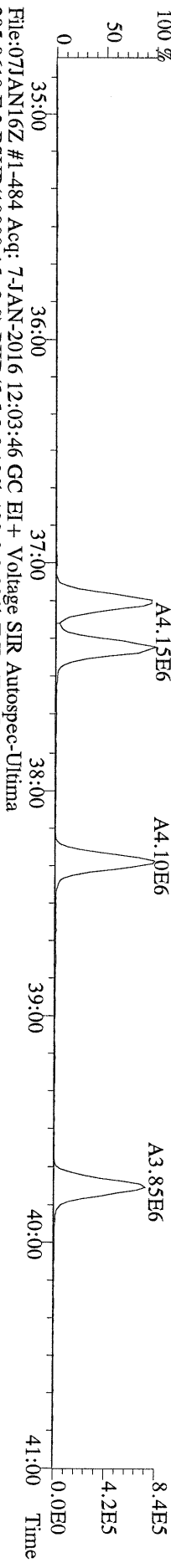
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 373.8207 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
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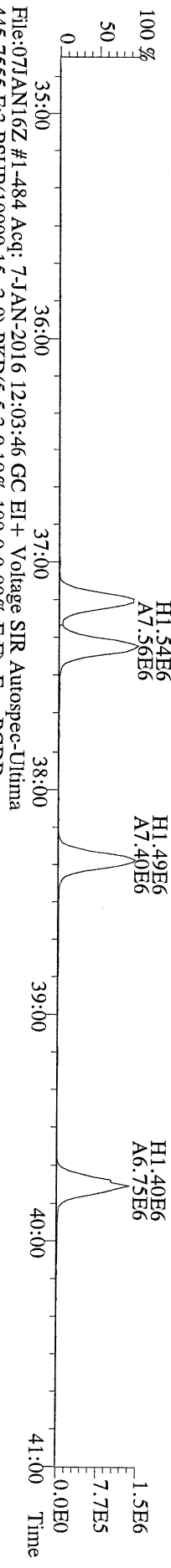
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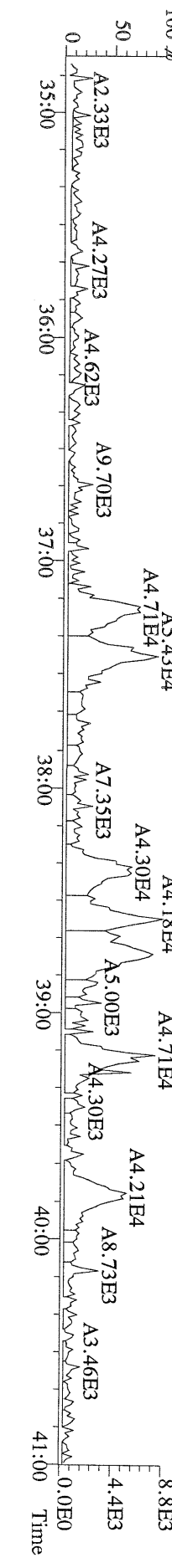
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 383.8639 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
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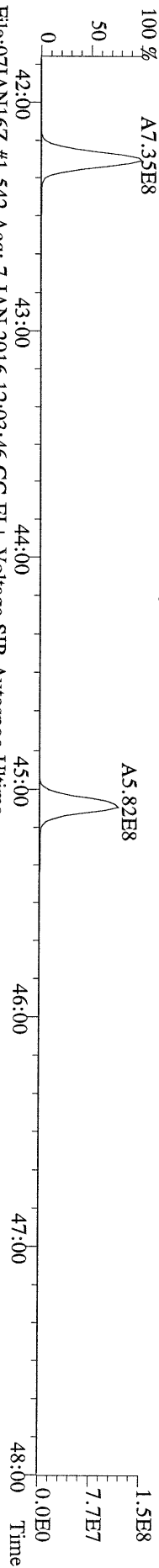
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 385.8610 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
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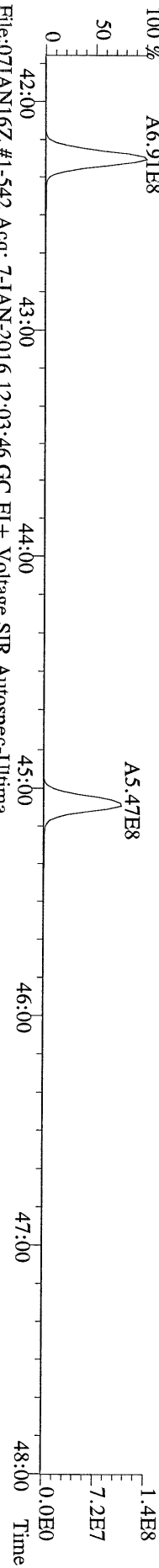
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 445.7555 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
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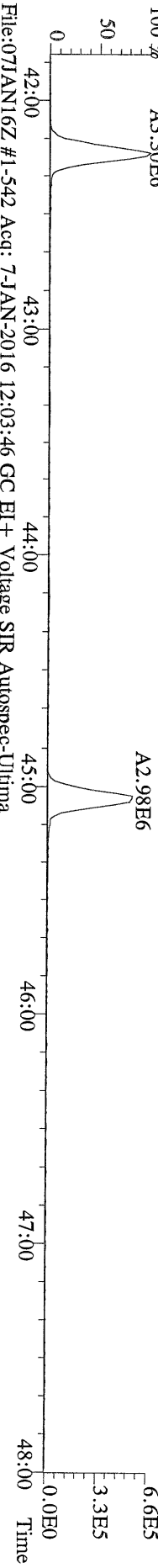
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407.7818 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
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100 % A7.35E8



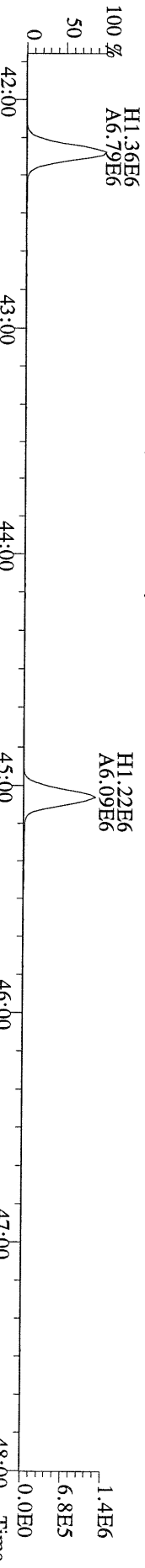
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409.7788 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Z1 File Text:Frontier Analytical Laboratory FAL4
100 % A6.91E8



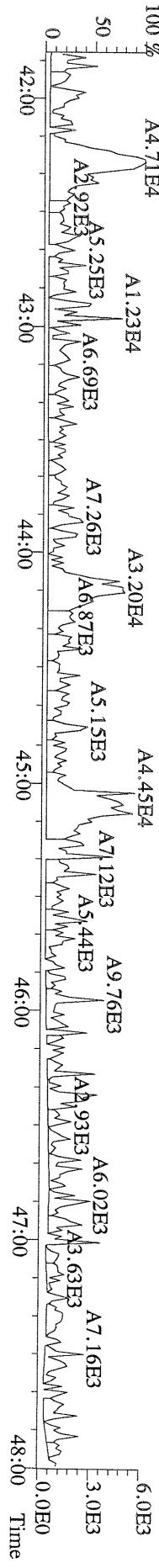
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417.8253 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
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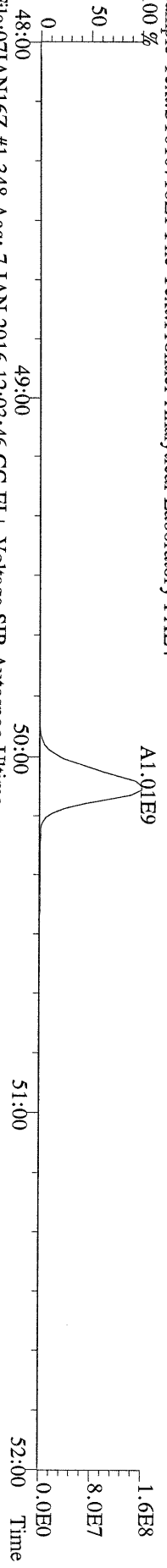
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419.8220 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Z1 File Text:Frontier Analytical Laboratory FAL4



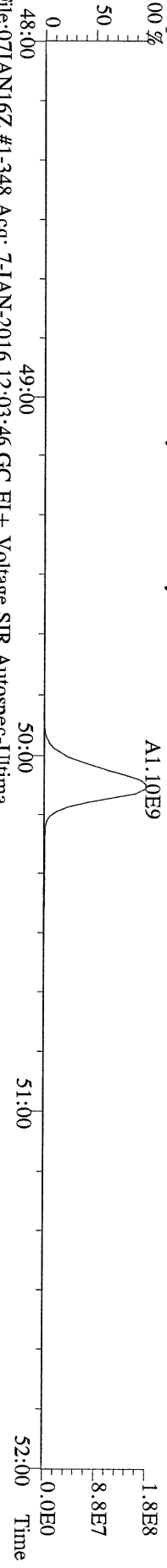
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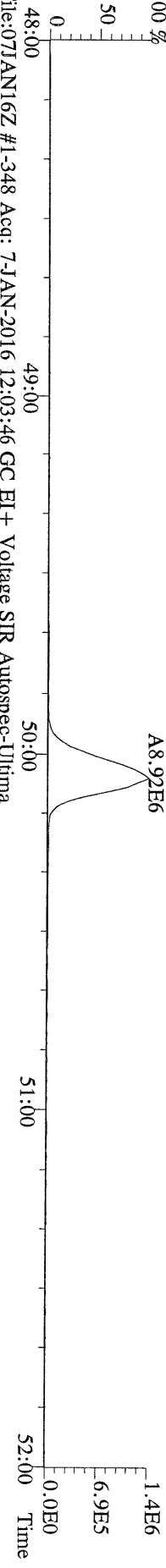
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441.7428 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
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100 %



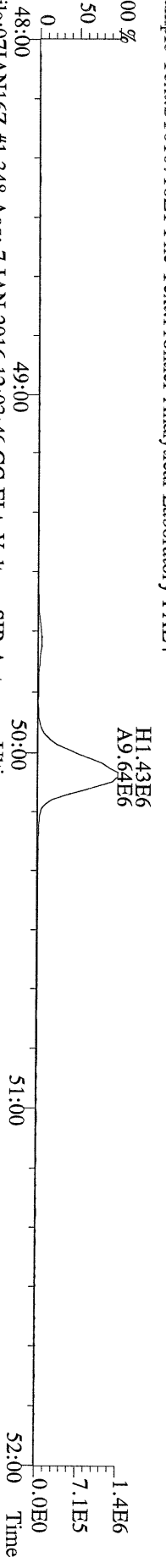
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443.7398 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



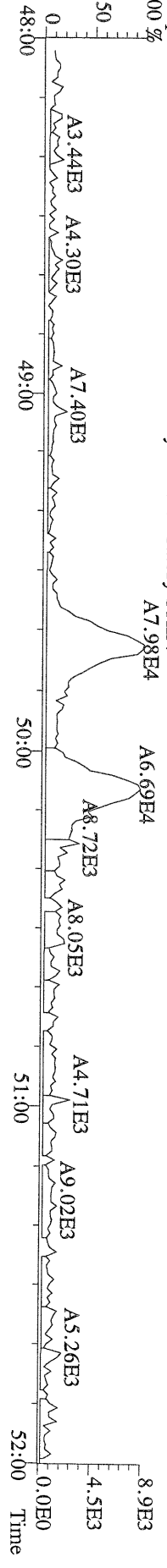
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453.7831 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Z1 File Text:Frontier Analytical Laboratory FAL4
100 %

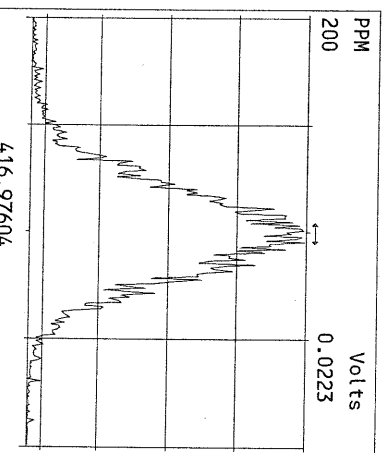
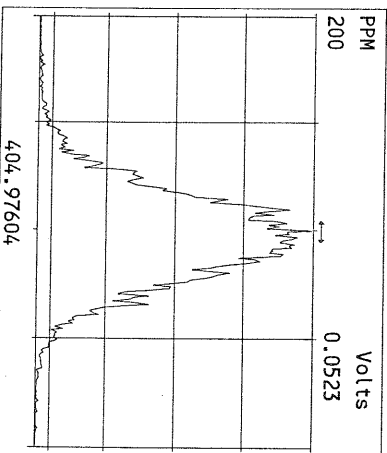
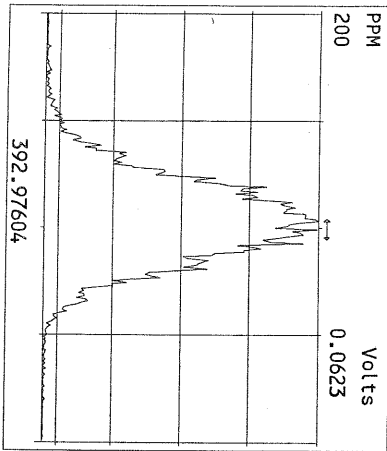
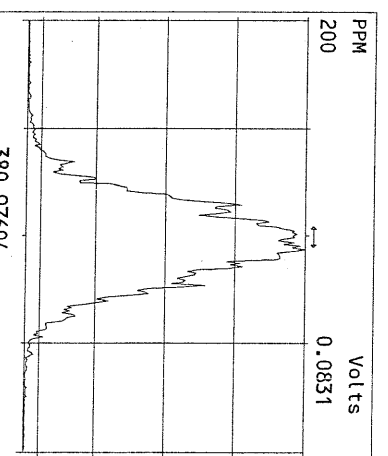
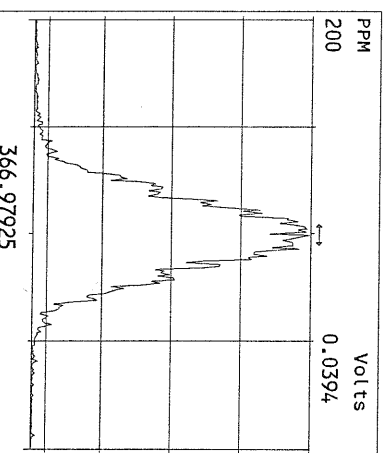
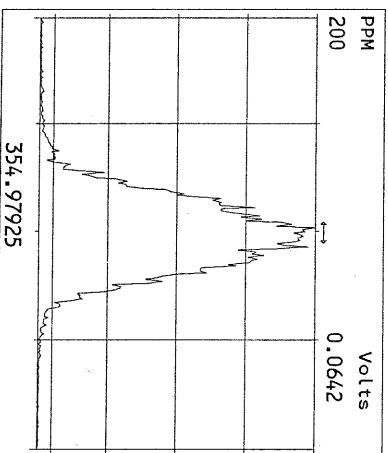
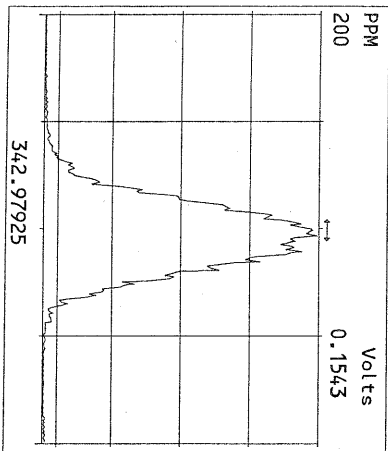
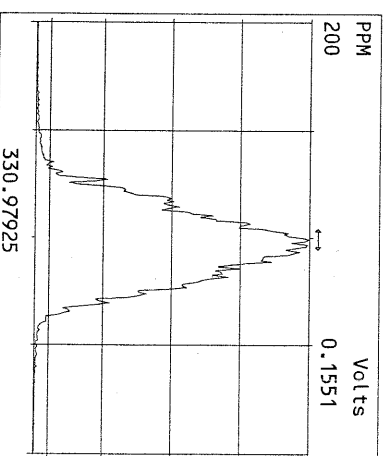
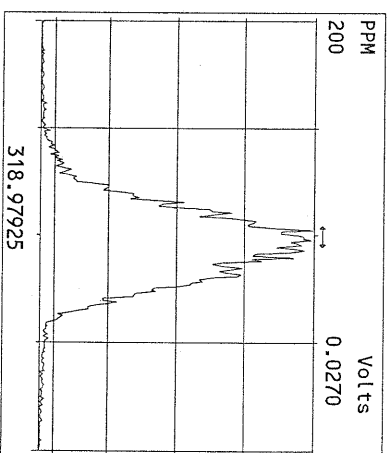
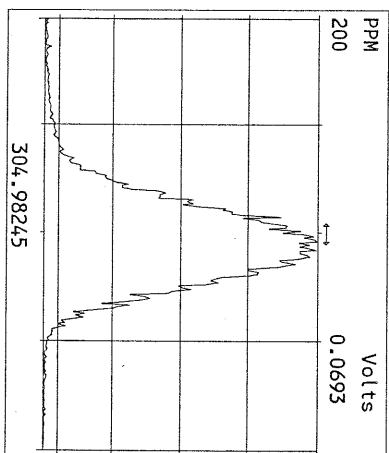
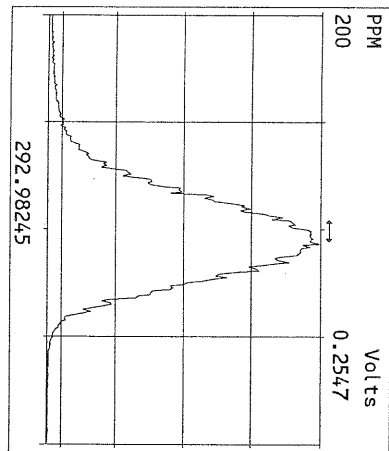


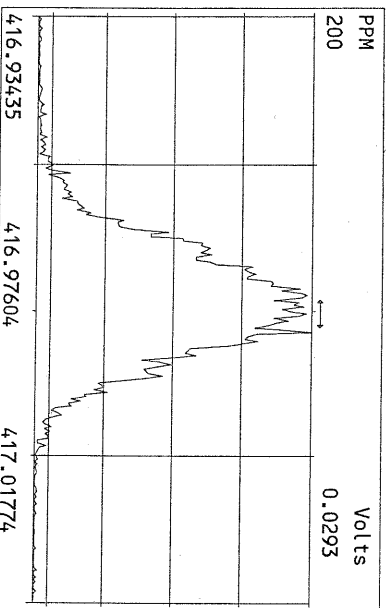
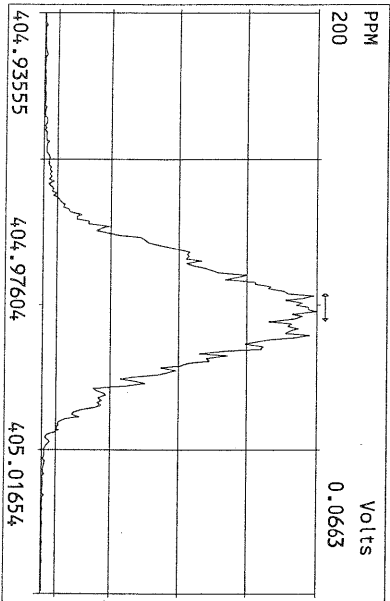
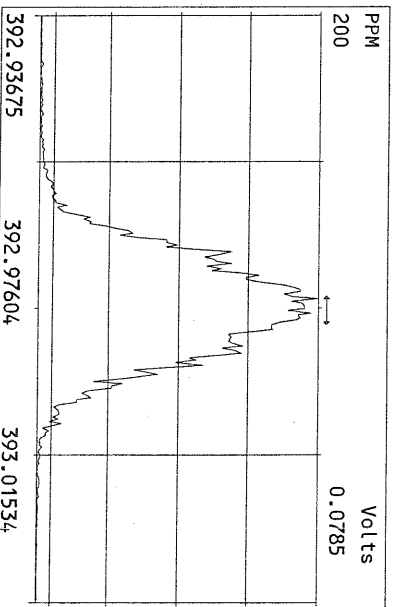
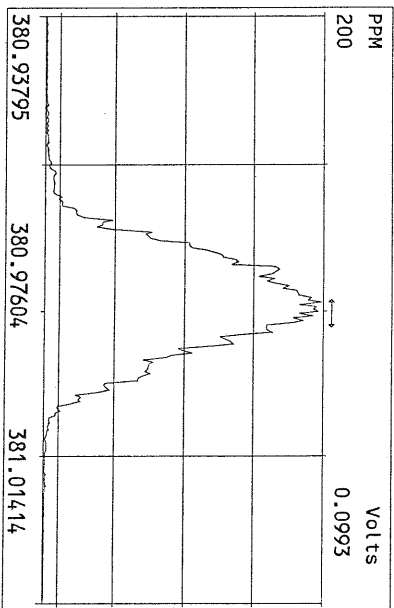
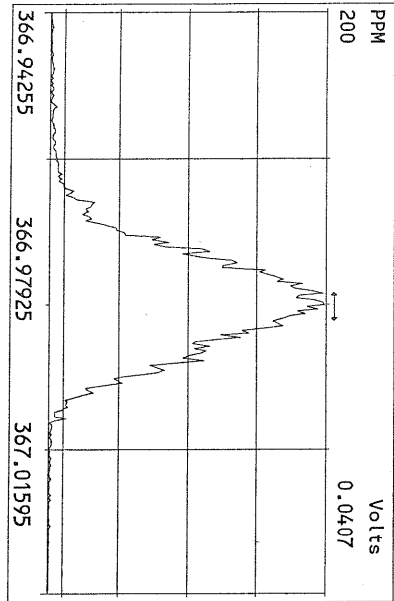
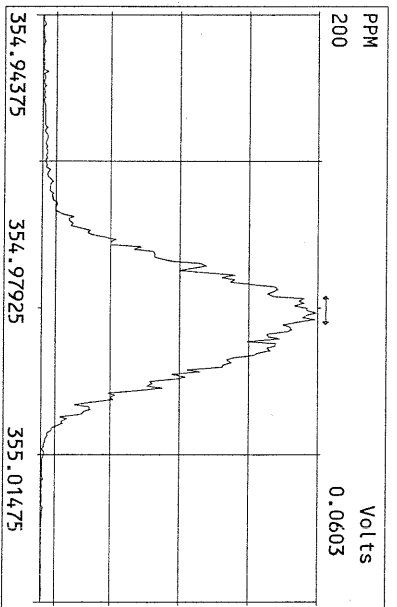
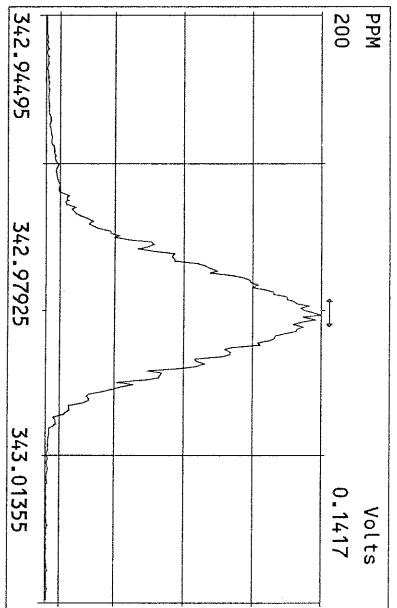
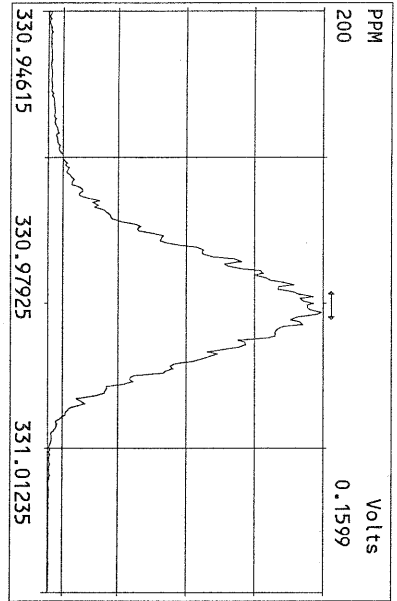
File:07JAN16Z #1-348 Acq: 7-JAN-2016 12:03:46 GC EI+ Voltage SIR Autospec-Ultima
455.7801 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Z1 File Text:Frontier Analytical Laboratory FAL4

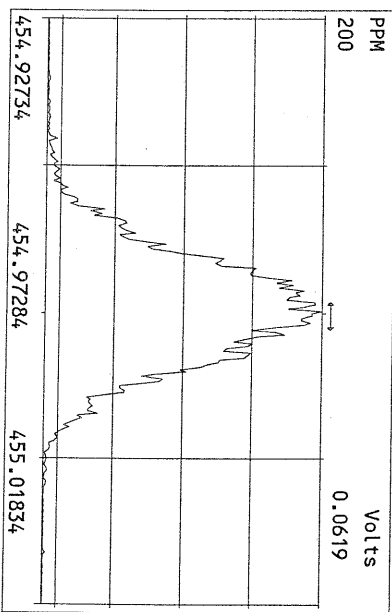
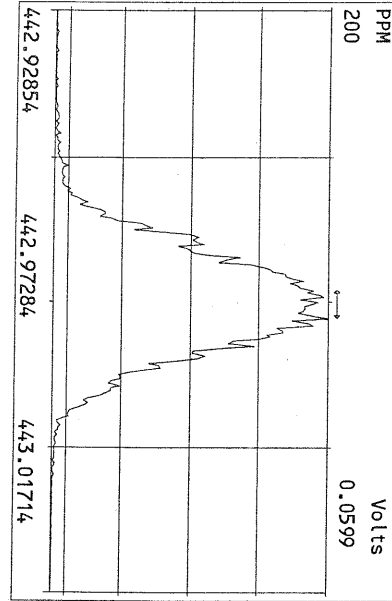
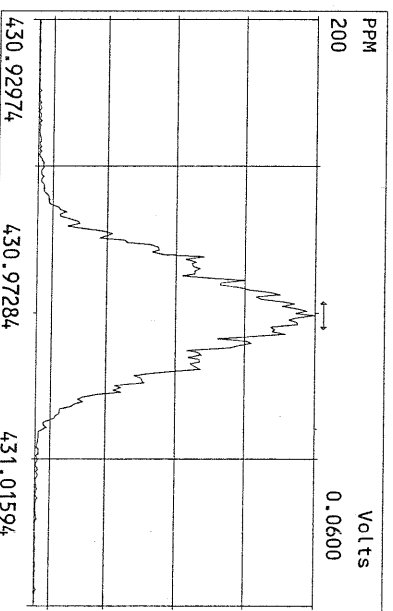
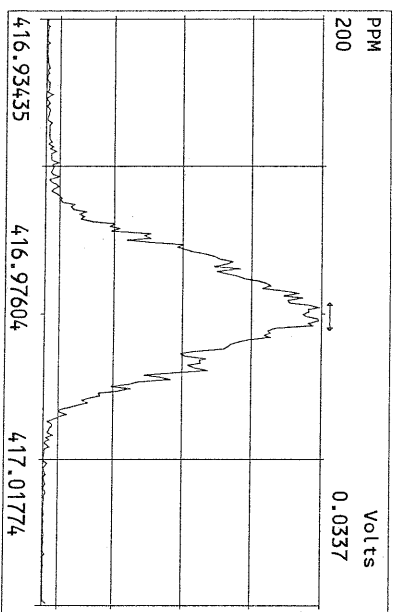
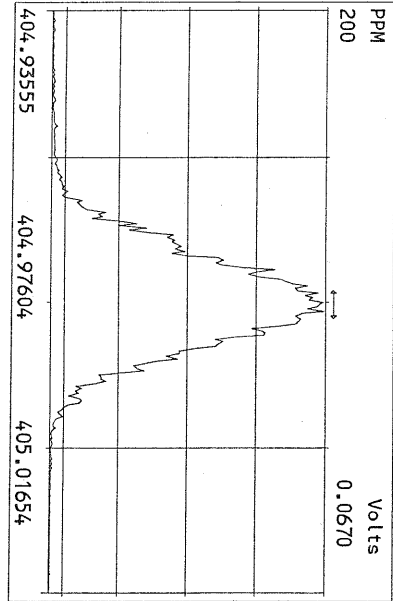
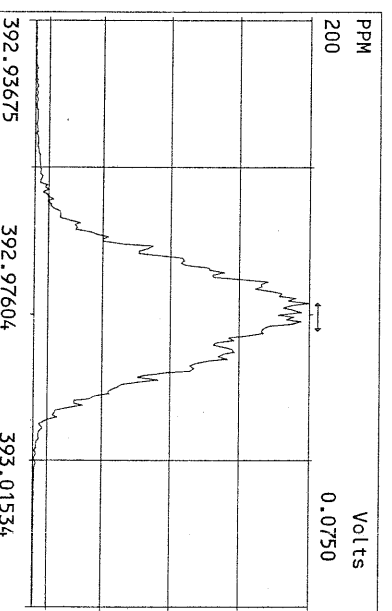
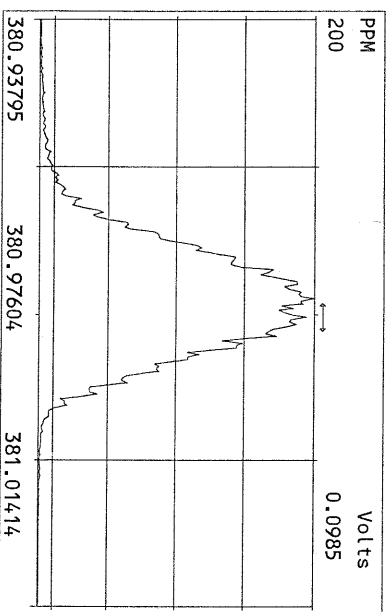
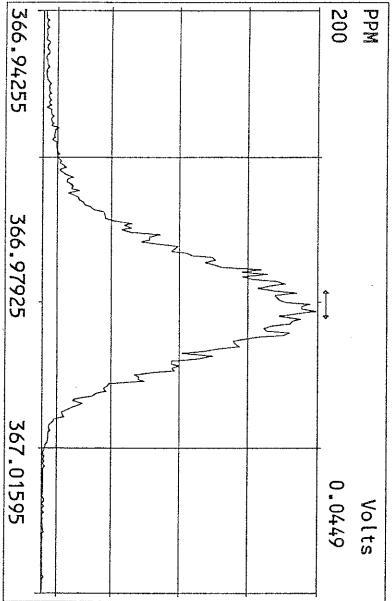


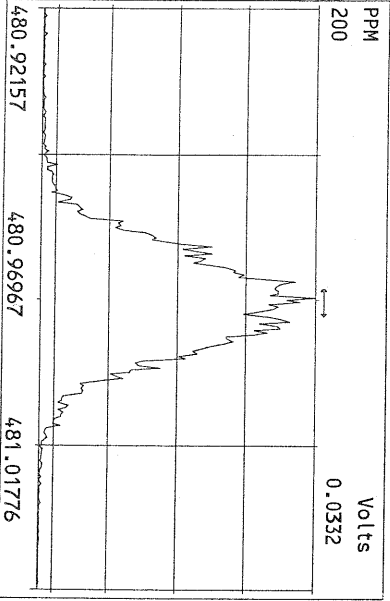
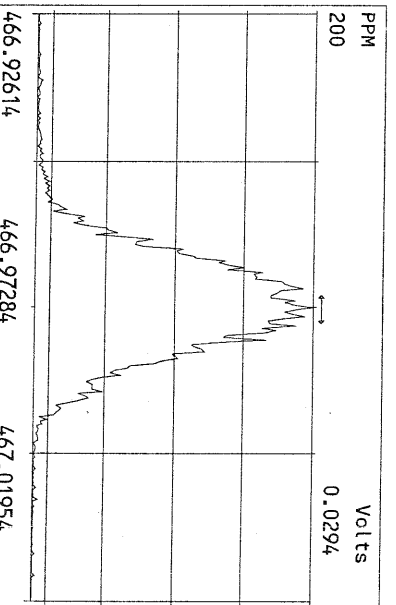
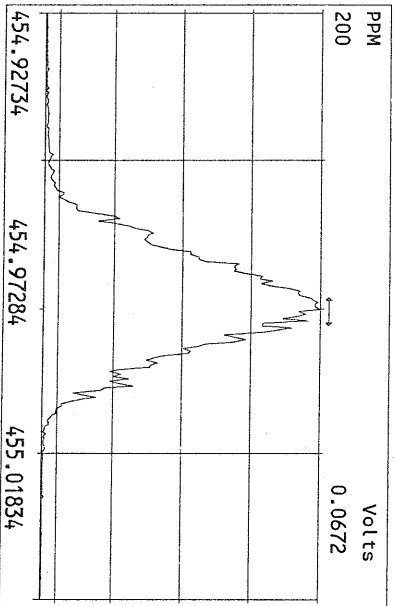
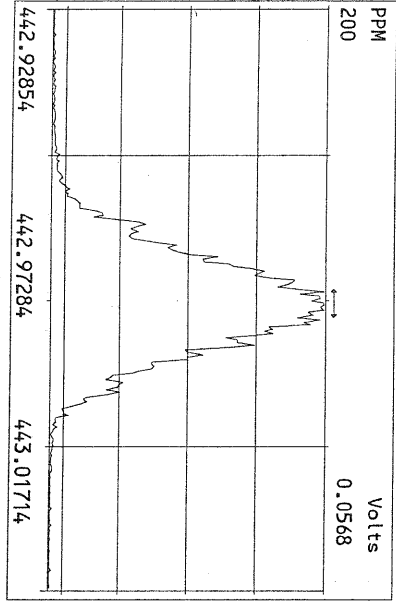
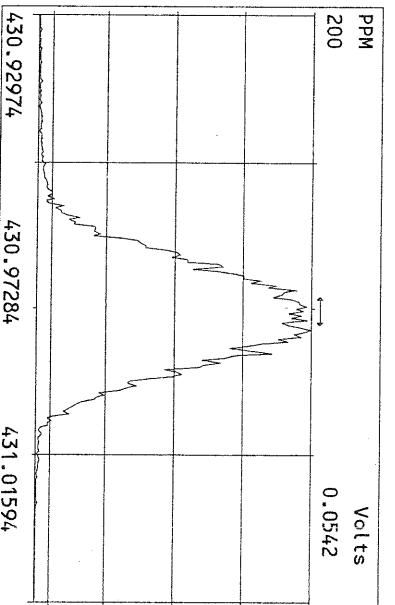
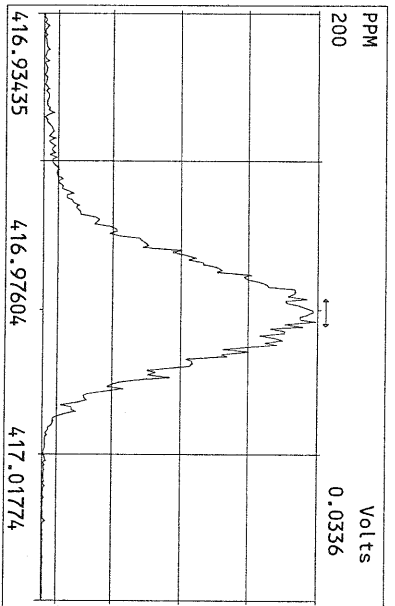
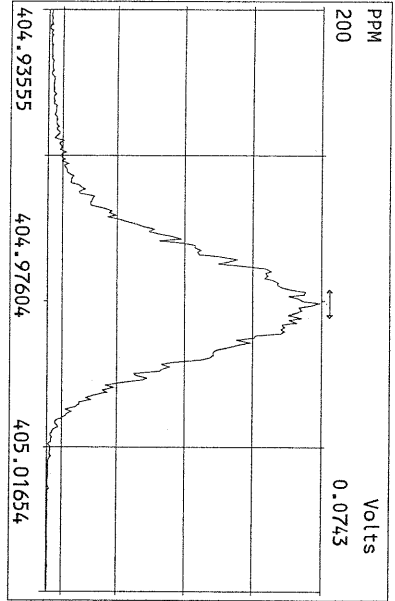
File:07JAN16Z #1-348 Acq: 7-JAN-2016 12:03:46 GC EI+ Voltage SIR Autospec-Ultima
513.6775 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Z1 File Text:Frontier Analytical Laboratory FAL4
100 %

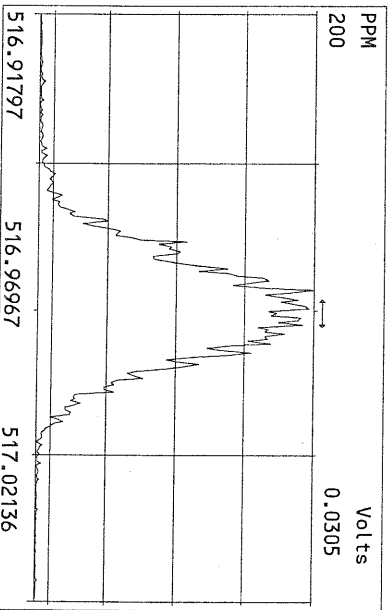
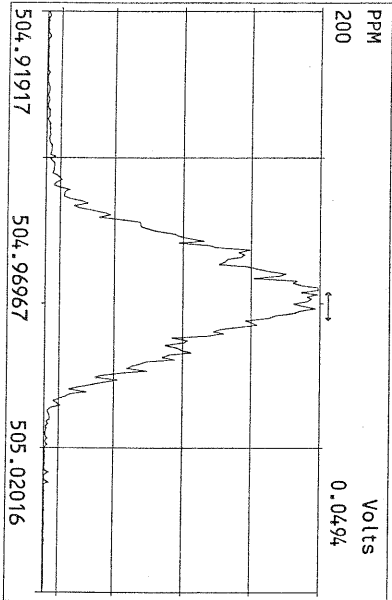
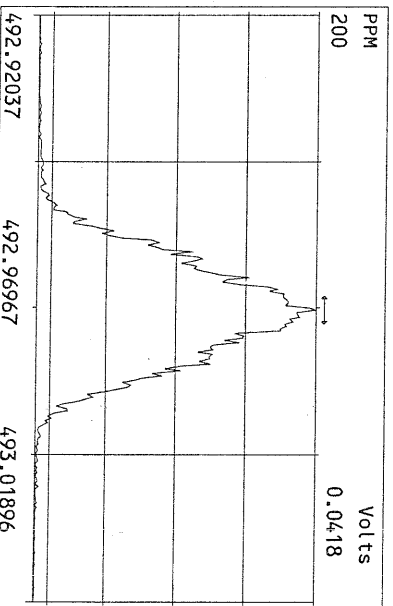
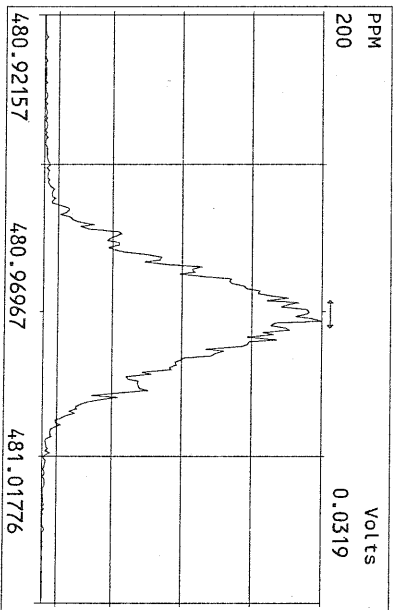
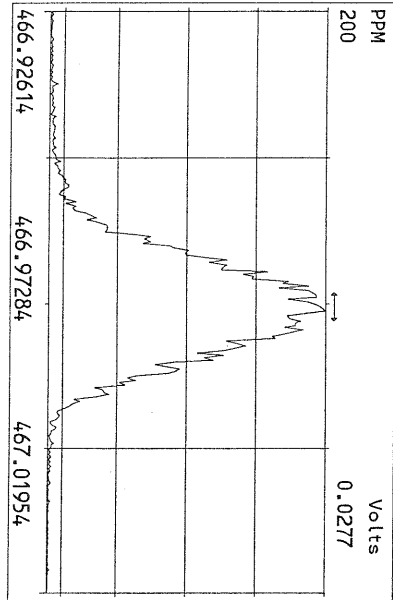
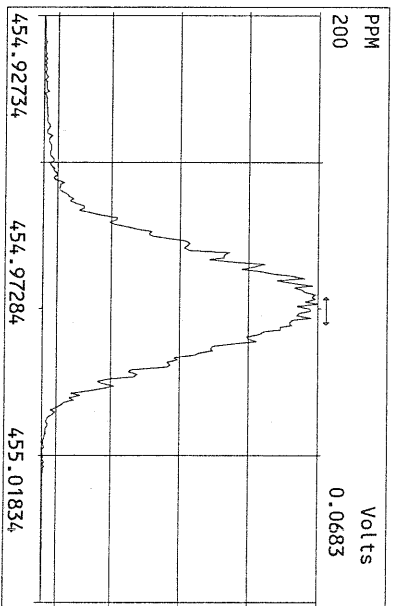
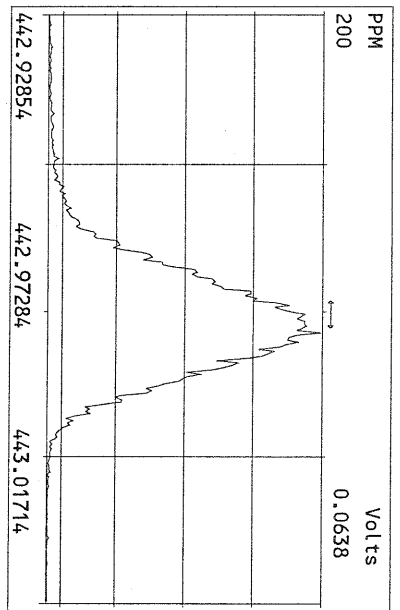
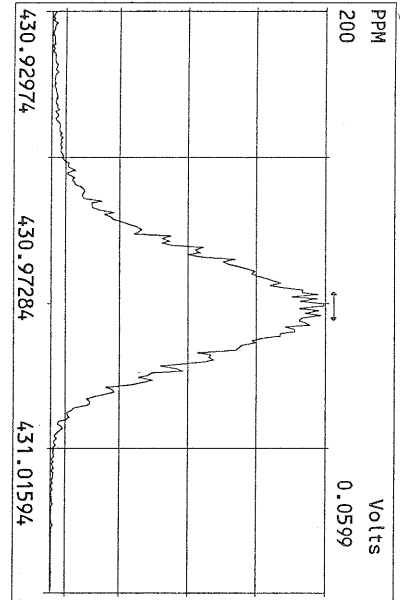




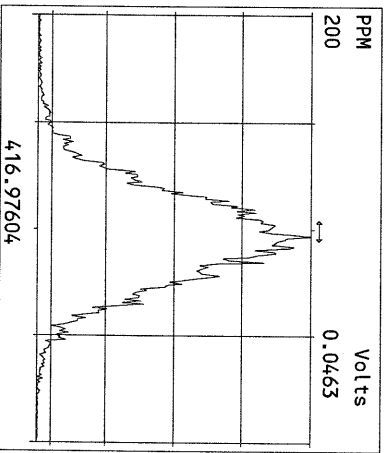
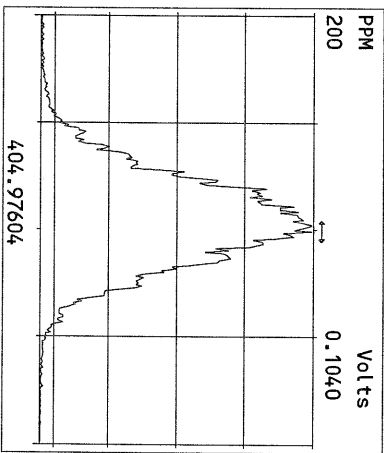
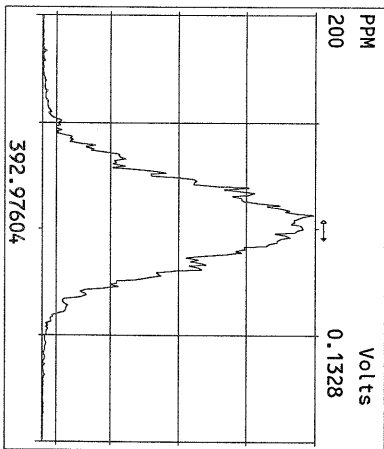
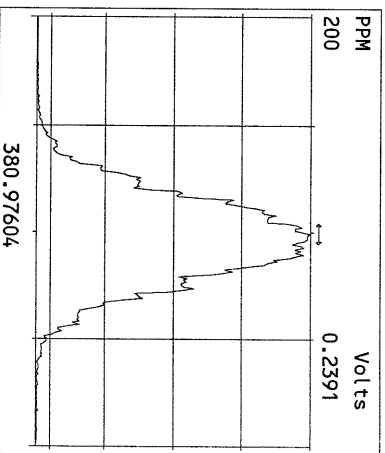
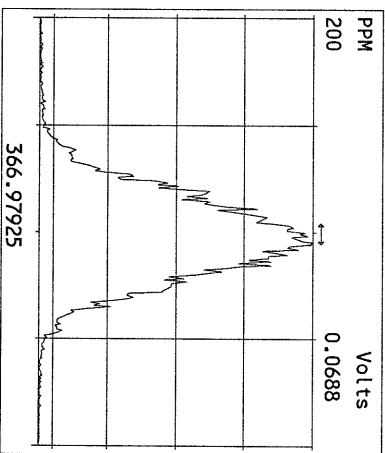
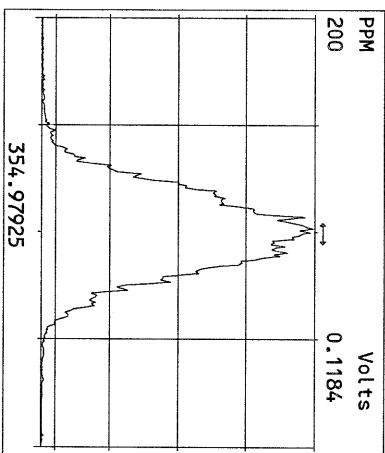
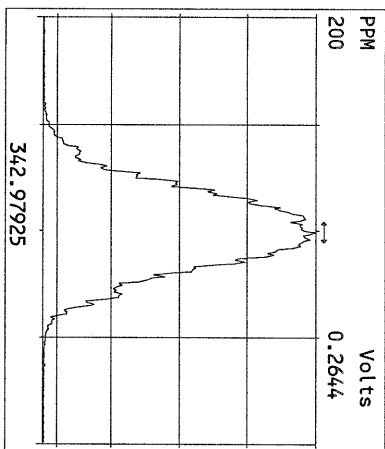
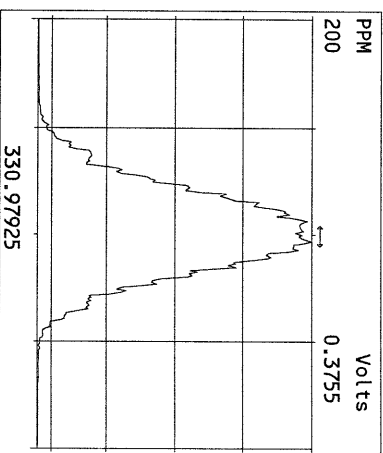
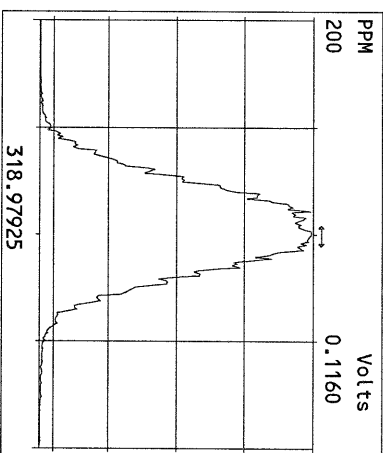
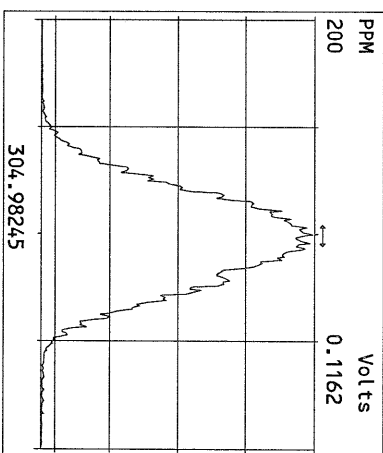
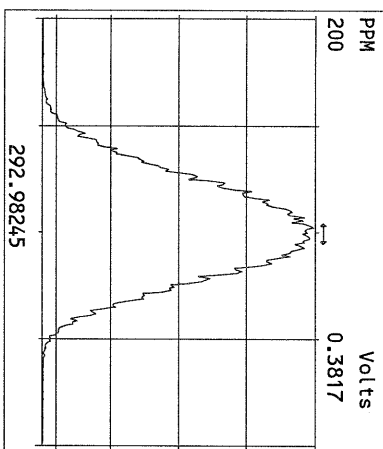


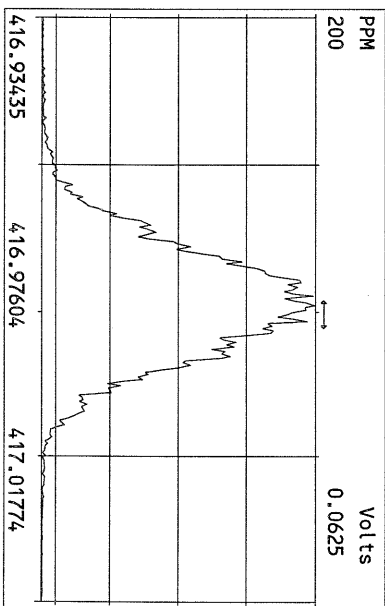
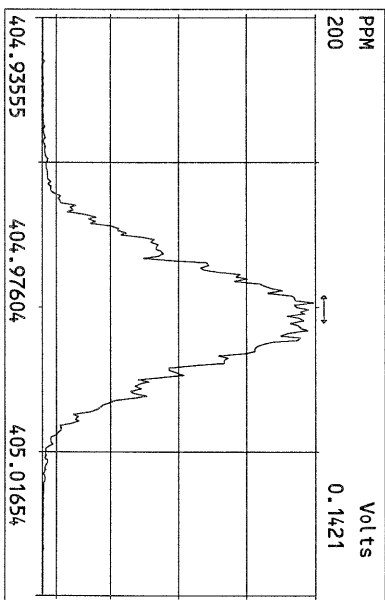
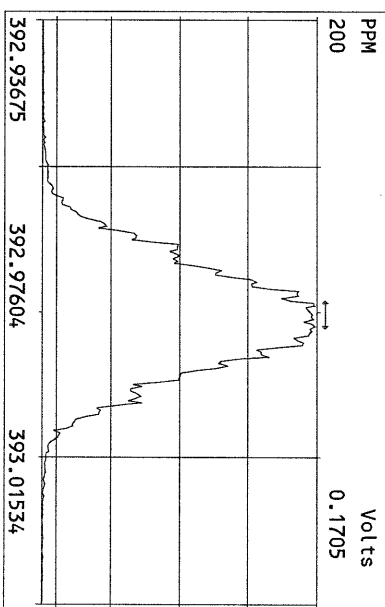
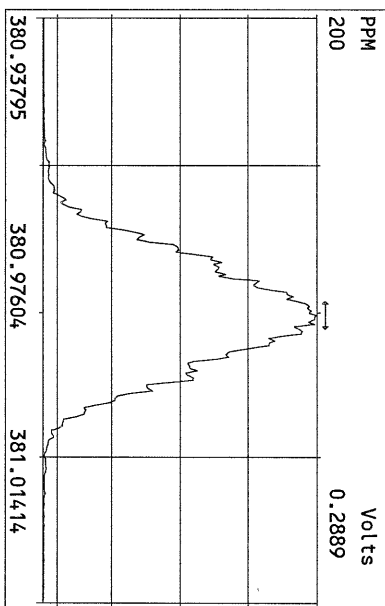
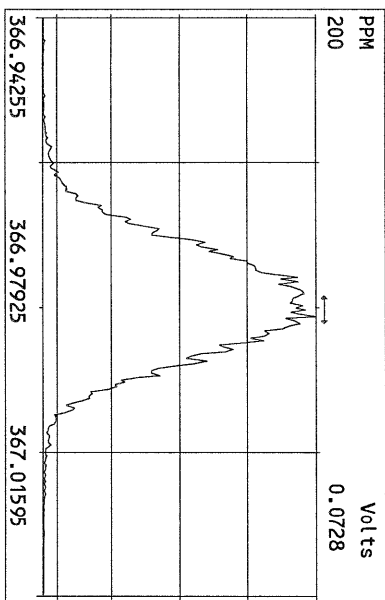
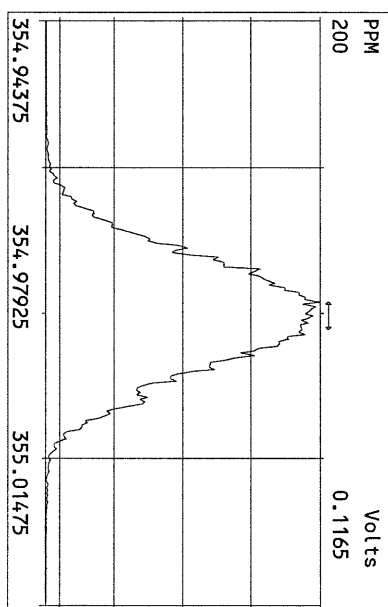
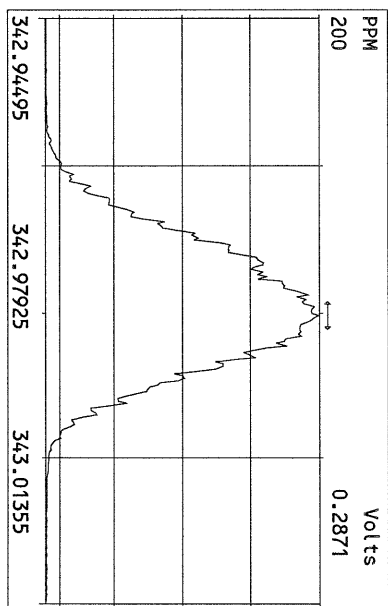
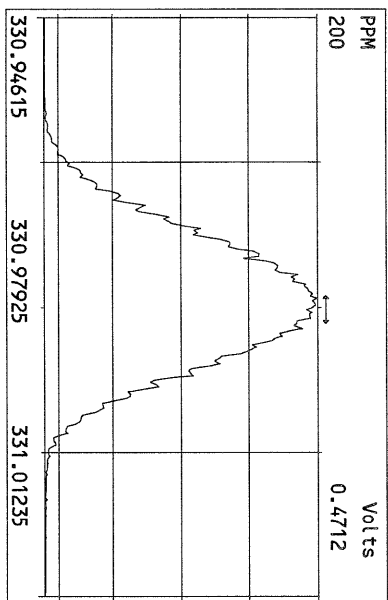




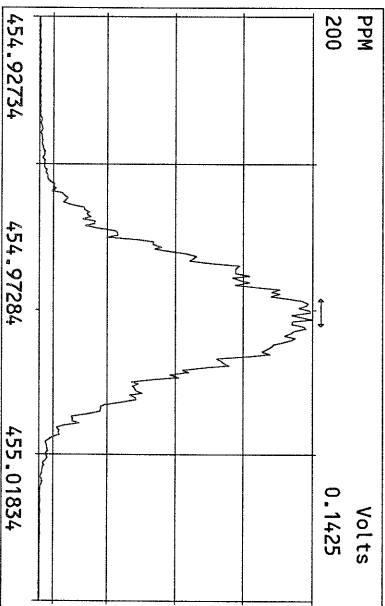
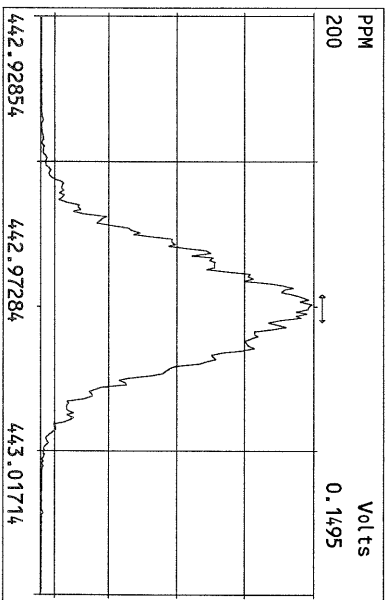
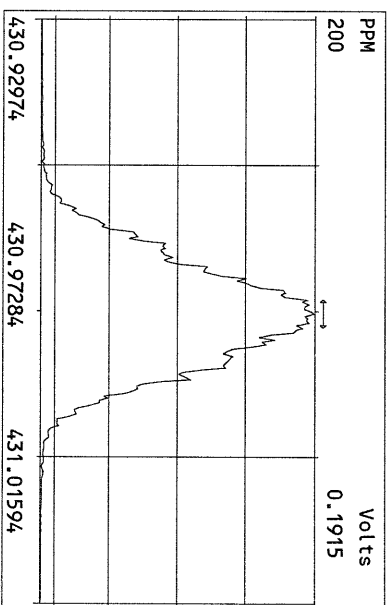
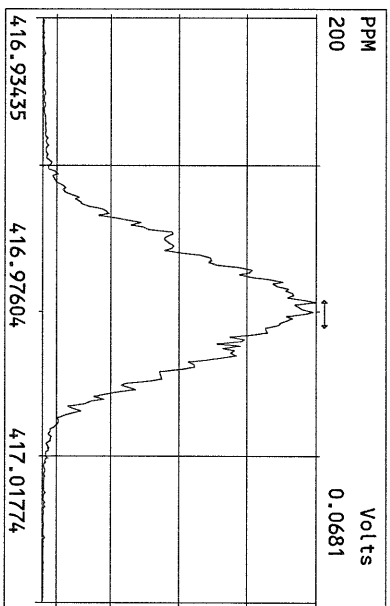
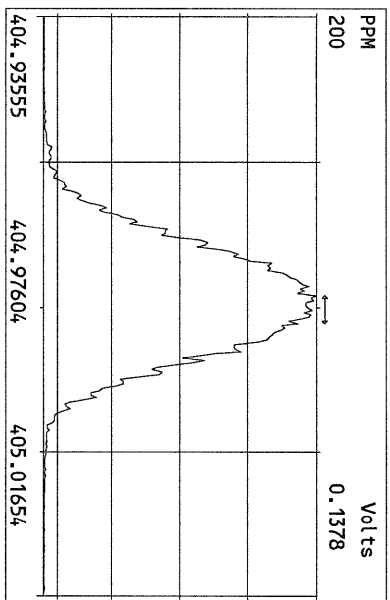
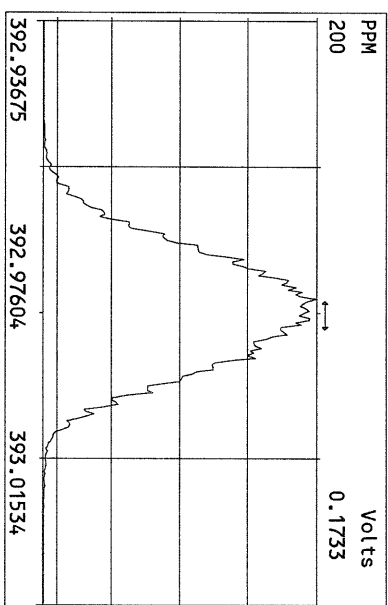
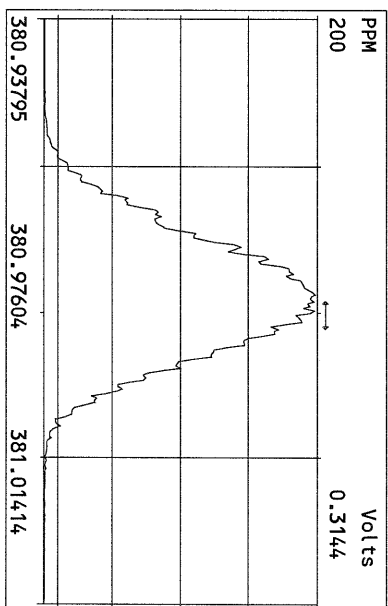
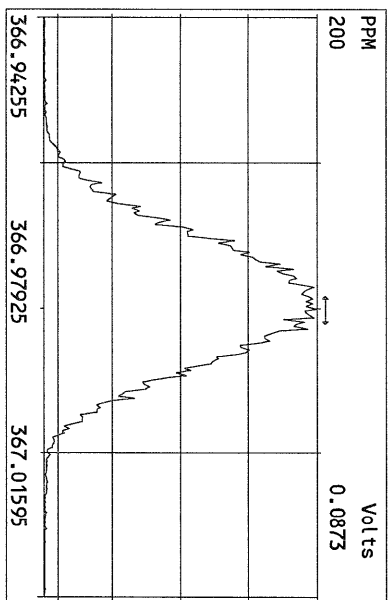


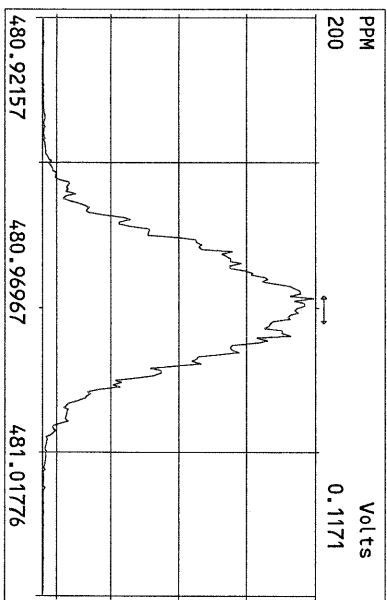
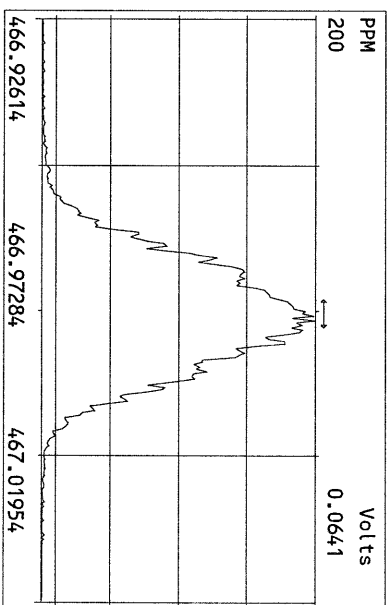
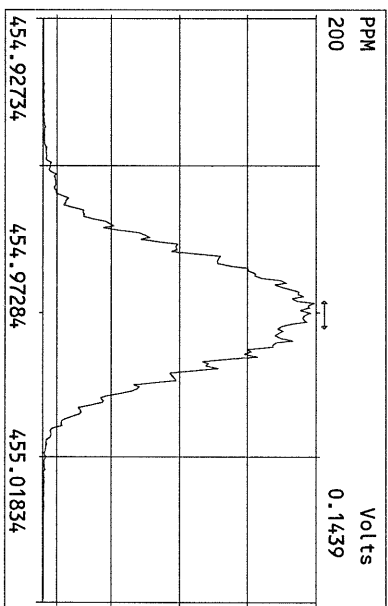
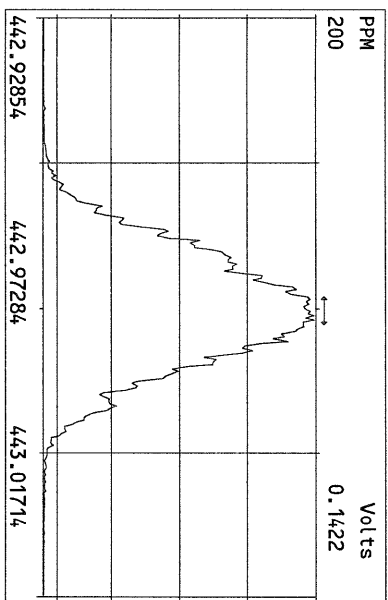
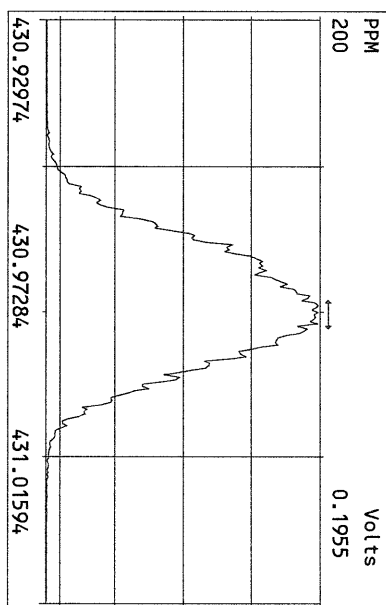
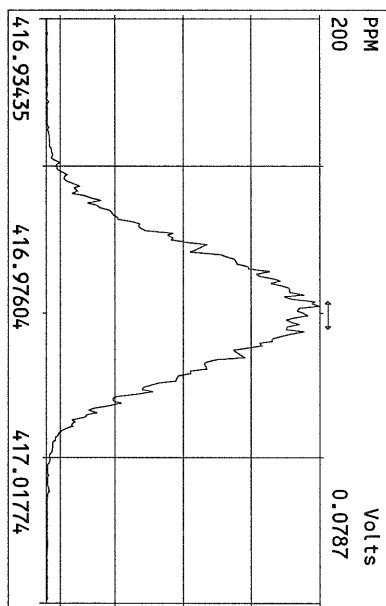
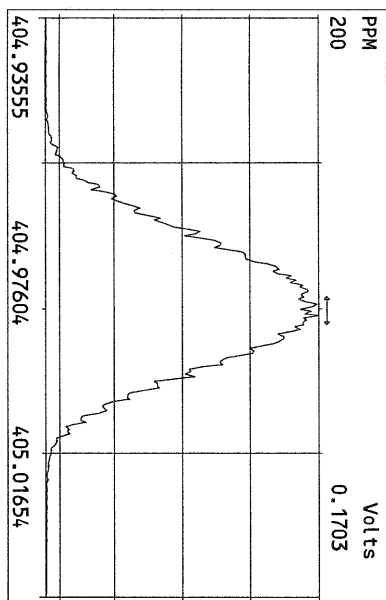
Peak Locate Examination: 7-JAN-2016:13:12 File:07JAN16Z_RES_CHECK
Experiment:PPDD Function:1 Reference:PFK

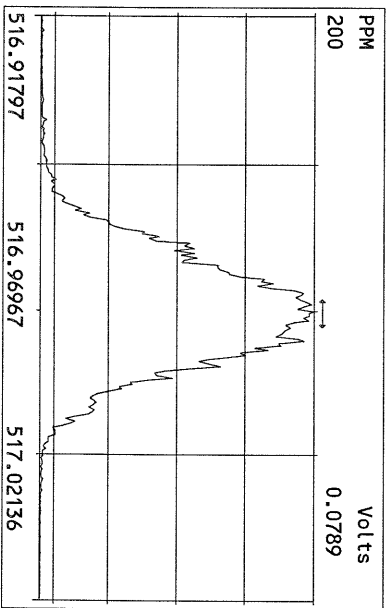
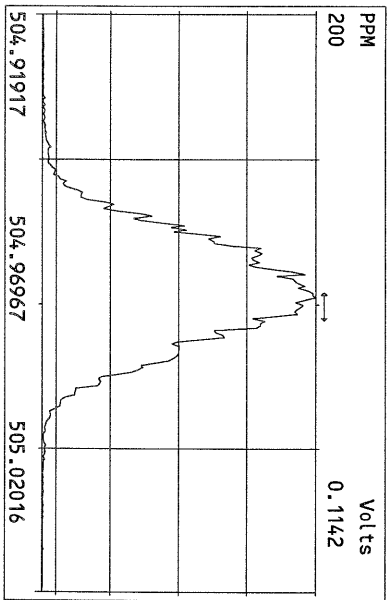
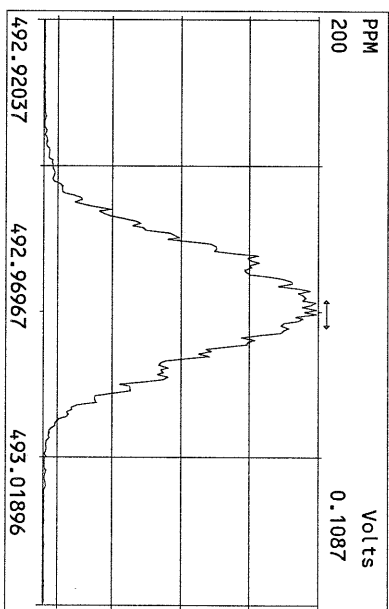
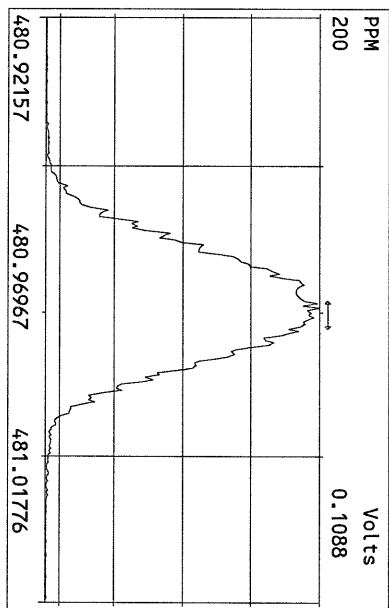
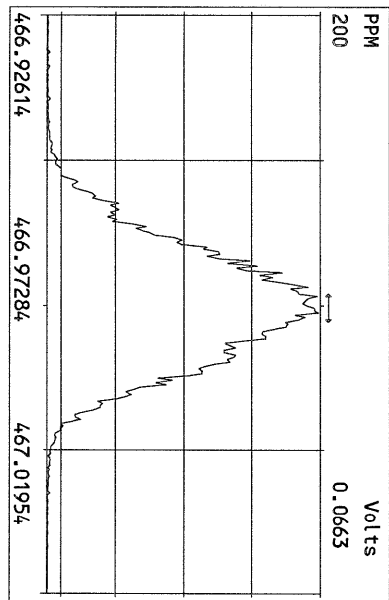
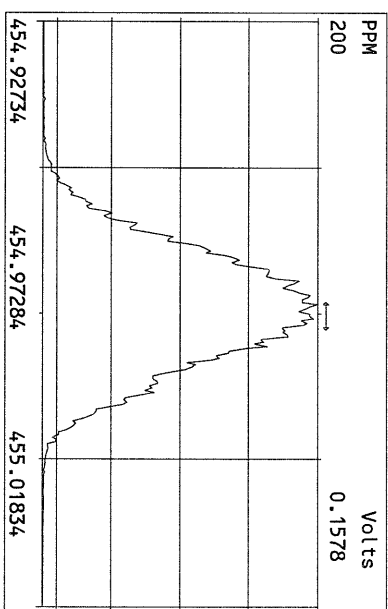
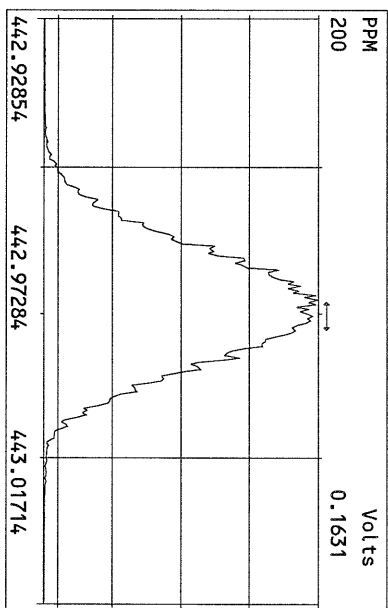
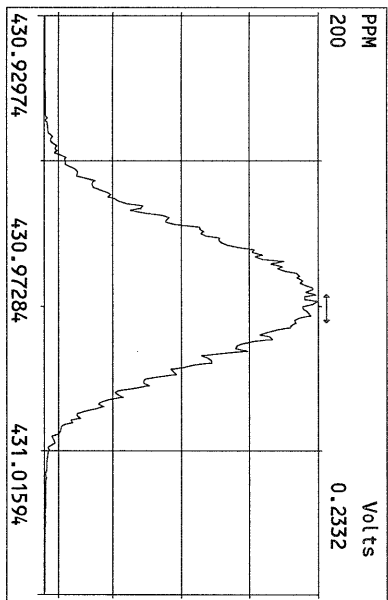




Peak Locate Examination: 7-JAN-2016:13:12 File:07JAN16Z_RES_CHECK
Experiment:PCDD Function:3 Reference:PK







Frontier Analytical Laboratory

Data Filename: 04JAN16M

Analyte: TCDF

Cal: TCDFFAL3-1-4-16

Name	RRF	S. D.	%RSD	S2	S3	S4	S5	S6
				RRF#1	RRF#2	RRF#3	RRF#4	RRF#5
2,3,7,8-TCDF	0.90	0.0489	5.41 %	0.96	0.94	0.91	0.85	0.85
13C-2,3,7,8-TCDF	1.01	0.0275	2.72 %	0.96	1.03	1.02	1.03	1.01
13C-1,2,3,4-TCDF	-	-	- %	-	-	-	-	-
37Cl-2,3,7,8-TCDD	0.64	0.0205	3.21 %	0.63	0.61	0.66	0.64	0.66

Analyst: 

Date: 1/5/16

Run #1 Filename 04JAN16M
Client ID: ST010416M1

S: 2 Acquired: 4-JAN-16 15:02:38 Cal: TCDFFAL3-1-4-16
Analyte: FAL ID: 1613 CS1 151209H

	Typ	Name	Amount	Resp	RA	RT	RF	RRF	
1	Unk	2,3,7,8-TCDF	0.50	4.53e+05	0.71 y	20:28	-	0.956	y
2	IS	13C-2,3,7,8-TCDF	100.00	9.49e+07	0.80 y	20:26	-	0.963	y
3	RS	13C-1,2,3,4-TCDF	100.00	9.85e+07	0.79 y	17:46	9.85e+05	-	n
4	C/Up	37Cl-2,3,7,8-TCDD	0.50	3.11e+05		18:43	-	0.632	y

Analyst: 

Date: 1/5/16

Run #2 Filename 04JAN16M
Client ID: ST010416M2

S: 3 Acquired: 4-JAN-16 15:40:02 Cal: TCDFFAL3-1-4-16
Analyte: FAL ID: 1613 CS2 151209I

	Typ	Name	Amount	Resp	RA	RT	RF	RRF	
1	Unk	2,3,7,8-TCDF	2.00	1.60e+06	0.78 y	20:27	-	0.945	y
2	IS	13C-2,3,7,8-TCDF	100.00	8.49e+07	0.79 y	20:25	-	1.03	y
3	RS	13C-1,2,3,4-TCDF	100.00	8.24e+07	0.80 y	17:44	8.24e+05	-	n
4	C/Up	37Cl-2,3,7,8-TCDD	2.00	1.01e+06		18:42	-	0.612	y

Analyst: 

Date: 1/5/16

Run #3 Filename 04JAN16M
Client ID: ST010416M3

S: 4 Acquired: 4-JAN-16 16:17:28 Cal: TCDFFAL3-1-4-16
Analyte: FAL ID: 1613 CS3 151209J

	Type	Name	Amount	Resp	RA	RT	RF	RRF	
1	Unk	2,3,7,8-TCDF	10.00	8.17e+06	0.75 y	20:25	-	0.909	y
2	IS	13C-2,3,7,8-TCDF	100.00	8.98e+07	0.80 y	20:24	-	1.02	y
3	RS	13C-1,2,3,4-TCDF	100.00	8.85e+07	0.78 y	17:43	8.85e+05	-	n
4	C/Up	37Cl-2,3,7,8-TCDD	10.00	5.86e+06		18:40	-	0.662	y

Analyst: 

Date: 1/5/16

Run #4 Filename 04JAN16M
Client ID: ST010416M4

S: 5 Acquired: 4-JAN-16 16:54:53 Cal: TCDFFAL3-1-4-16
Analyte: FAL ID: 1613 CS4 151209K

	Type	Name	Amount	Resp	RA	RT	RF	RRF	
1	Unk	2,3,7,8-TCDF	40.00	3.72e+07	0.76 y	20:25	-	0.855	y
2	IS	13C-2,3,7,8-TCDF	100.00	1.09e+08	0.79 y	20:24	-	1.03	y
3	RS	13C-1,2,3,4-TCDF	100.00	1.06e+08	0.79 y	17:44	1.06e+06	-	n
4	C/Up	37Cl-2,3,7,8-TCDD	40.00	2.70e+07		18:41	-	0.638	y

Analyst: 

Date: 1/5/16

Run #5 Filename 04JAN16M
Client ID: ST010416M5

S: 6 Acquired: 4-JAN-16 17:32:18 Cal: TCDFFAL3-1-4-16
Analyte: TCDF FAL ID: 1613 CS5 151209L

	Type	Name	Amount	Resp	RA	RT	RF	RRF	
1	Unk	2,3,7,8-TCDF	200.00	1.50e+08	0.75 y	20:25	-	0.851	y
2	IS	13C-2,3,7,8-TCDF	100.00	8.78e+07	0.79 y	20:23	-	1.01	y
3	RS	13C-1,2,3,4-TCDF	100.00	8.66e+07	0.78 y	17:43	8.66e+05	-	n
4	C/Up	37Cl-2,3,7,8-TCDD	200.00	1.14e+08		18:39	-	0.659	y

Analyst:

Date: 1/5/16

USEPA - ITD

FORM 3A
TCDF INITIAL CALIBRATION RELATIVE RESPONSES

Lab Name: Frontier Analytical Laboratory Episode No.:

Contract No.: SAS No.:

Initial Calibration Date: 1/4/16


Instrument ID: FAL3 GC Column ID: DB225

CS1 Data Filename: 04JAN16M S2 CS4 Data Filename: 04JAN16M S5

CS2 Data Filename: 04JAN16M S3 CS5 Data Filename: 04JAN16M S6

CS3 Data Filename: 04JAN16M S4

	RELATIVE RESPONSE (RR)					MEAN RR	Cv (%RSD)
	CS1	CS2	CS3	CS4	CS5		
NATIVE ANALYTES							
2,3,7,8-TCDF	0.96	0.94	0.91	0.85	0.85	0.90	5.41
13C-2,3,7,8-TCDF	0.96	1.03	1.02	1.03	1.01	1.01	2.72
13C-1,2,3,4-TCDF	-	-	-	-	-	-	-
37Cl-2,3,7,8-TCDD	0.63	0.61	0.66	0.64	0.66	0.64	3.21

Analyst: Date: 1/5/16

USEPA - ITD

FORM 4A
TCDF CALIBRATION VERIFICATION

Lab Name: Frontier Analytical Laboratory Episode No.:

Contract No.: SAS No.:

Initial Calibration Date: 1/4/16

Instrument ID: FAL3

GC Column ID: DB225

VER Data Filename: 04JAN16M Sam:4

Analysis Date: 4-JAN-16 Time: 16:17:28

	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	ACCEPT	CONC. FOUND	CONC. RANGE (ng/mL) (3)
NATIVE ANALYTES						
2,3,7,8-TCDF	M/M+2	0.75	0.65-0.89	y	10.1	8.40 - 12.0
LABELED COMPOUNDS						
13C-2,3,7,8-TCDF	M/M+2	0.80	0.65-0.89	y	100	71.0 - 140
CLEANUP STANDARDS						
37Cl-2,3,7,8-TCDD					10.3	8.30 - 12.1

(1) See Table 8, Method 1613, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613.

(3) Contract-required concentration range as specified in Table 6A, Method 1613

Analyst: Date: 1/5/16

FAL ID: ST010416M3 Filename: 04JAN16M Sam:4 Acquired: 4-JAN-16 16:17:28 ICal: TCDFFAL3-1-4-16
Client ID: 1613 CS3 151209J ConCal: ST010416M3 EndCal: ST010416M6
Results: GC Column: DB225 Amount: 1.000

Name	Resp	RA	RT	RRF	Conc	Qual	Fac	Noise	DL	#Hom	Rec
2,3,7,8-TCDF	8.17e+06	0.75 y	20:25	0.90	10.1		2.50	-	-	1	
13C-2,3,7,8-TCDF	8.98e+07	0.80 y	20:24	1.01	100						100
13C-1,2,3,4-TCDF	8.85e+07	0.78 y	17:43	-	95.8						
37Cl-2,3,7,8-TCDD	5.86e+06		18:40	0.64	10.3						103

Analyst: 

Date: 1/5/16

Frontier Analytical Laboratory - Acquisition Log

Run Name:04JAN16M

Instrument: FAL3

GC: DB225

Experiment:TCDF

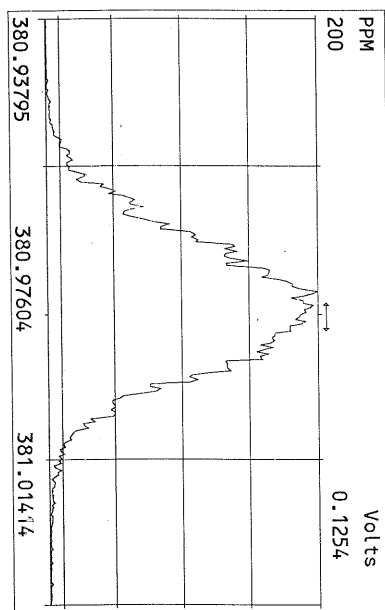
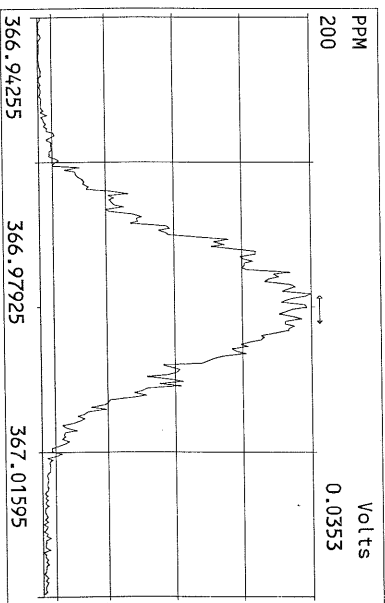
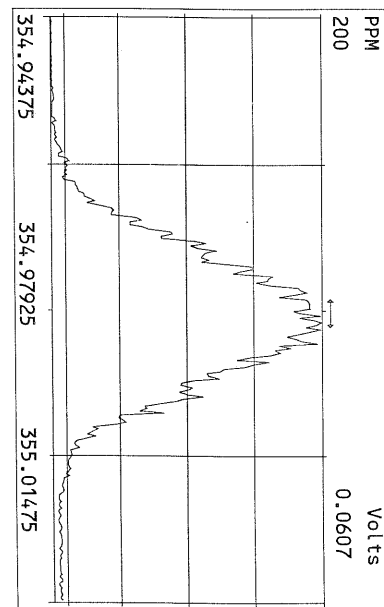
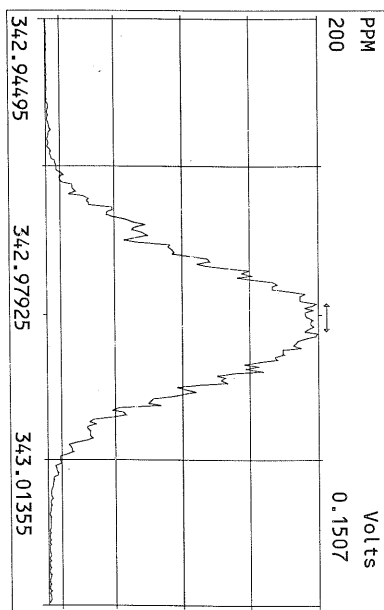
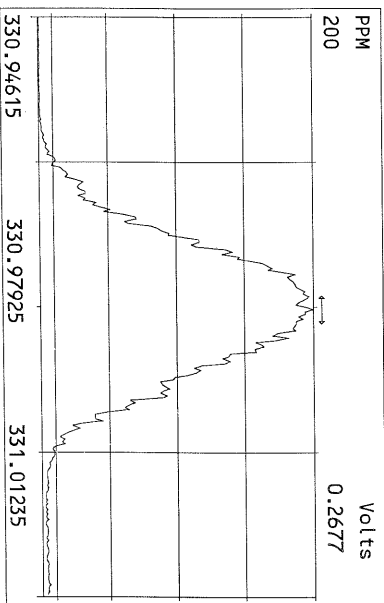
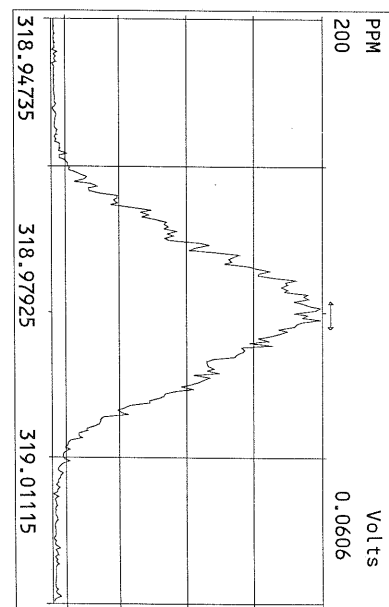
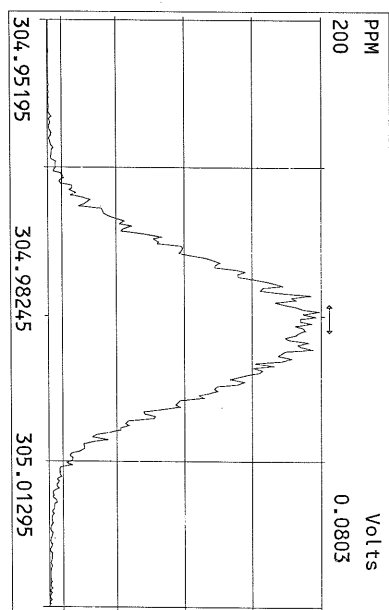
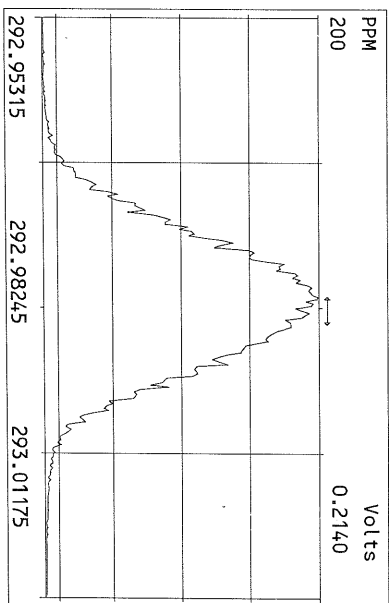
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04JAN16M	2	ST010416M1	1613 CS1 151209H	4-JAN-16 15:02:38	NA	NA	TC
04JAN16M	3	ST010416M2	1613 CS2 151209I	4-JAN-16 15:40:02	NA	NA	TC
04JAN16M	4	ST010416M3	1613 CS3 151209J	4-JAN-16 16:17:28	ST010416M3	ST010416M6	TC
04JAN16M	5	ST010416M4	1613 CS4 151209K	4-JAN-16 16:54:53	NA	NA	TC
04JAN16M	6	ST010416M5	1613 CS5 151209L	4-JAN-16 17:32:18	NA	NA	TC
04JAN16M	7	SB010416M1	Solvent Blank	4-JAN-16 18:09:43	NA	NA	TC
04JAN16M	8	SS010416M1	2nd Source	4-JAN-16 18:47:08	NA	NA	TC
04JAN16M	9	SB010416M1	Solvent Blank	4-JAN-16 19:24:34	NA	NA	TC
04JAN16M	10	9480-001-0001-SA	P822361	4-JAN-16 20:01:59	ST010416M3	ST010416M6	TC
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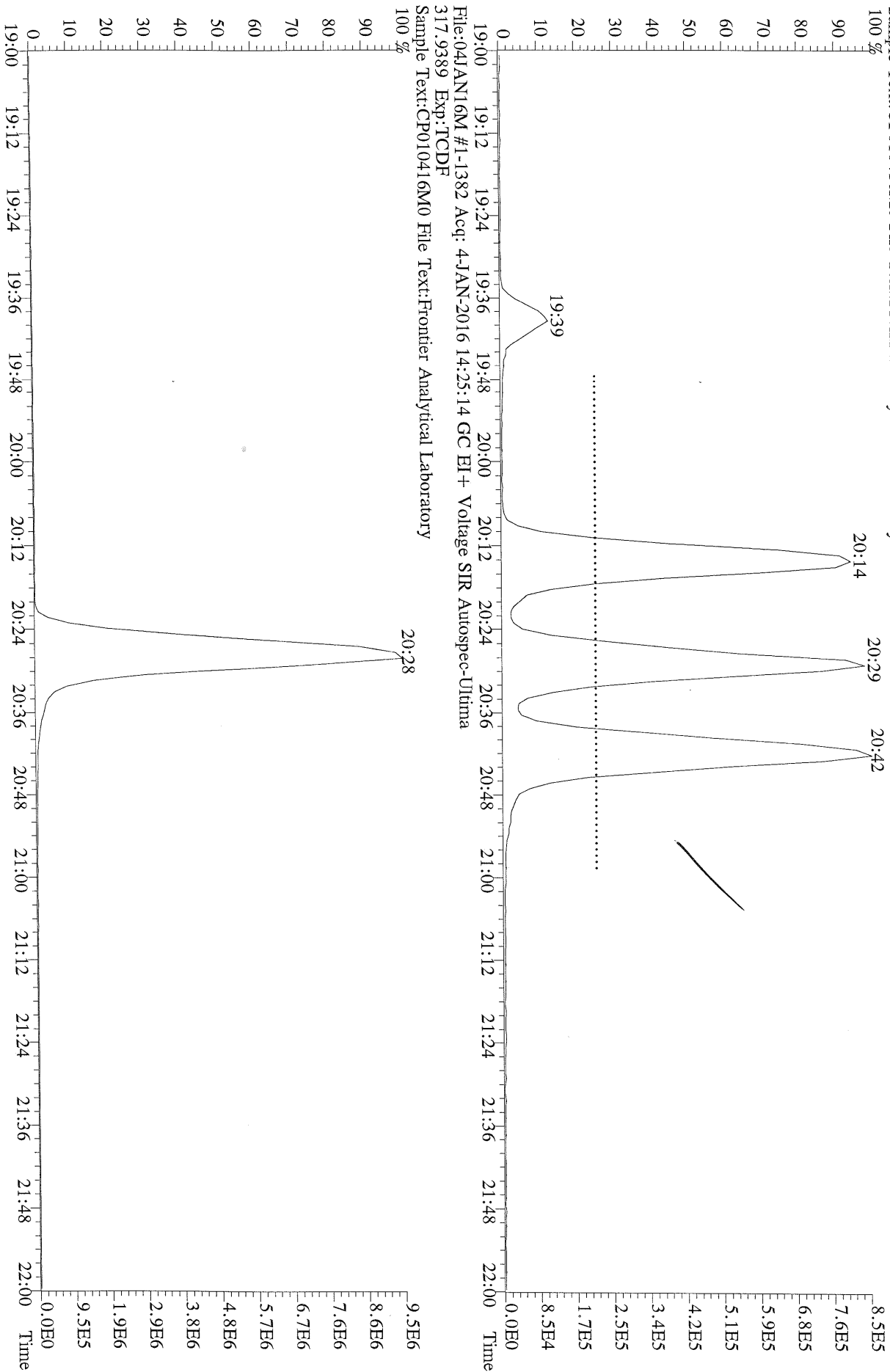
1/5/16

Data Backed Up: _____

Date: _____

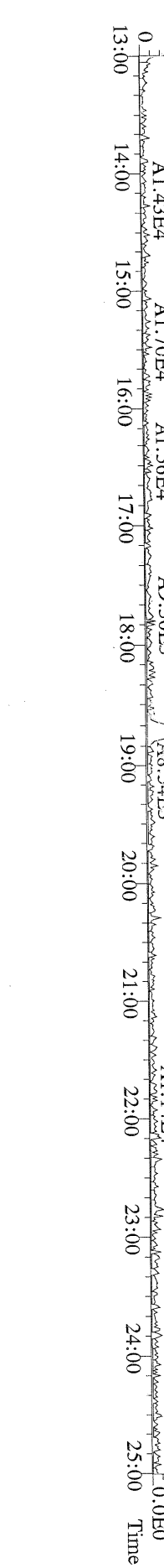
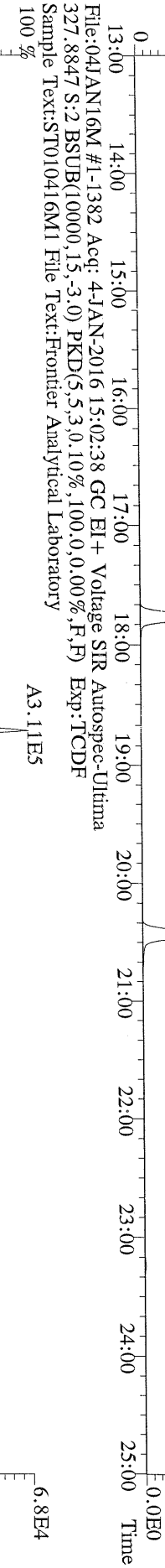
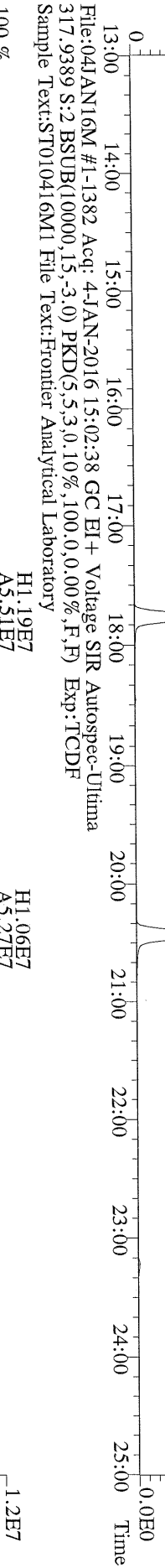
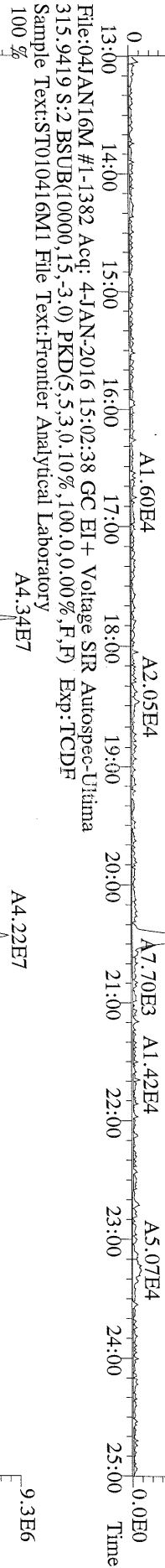
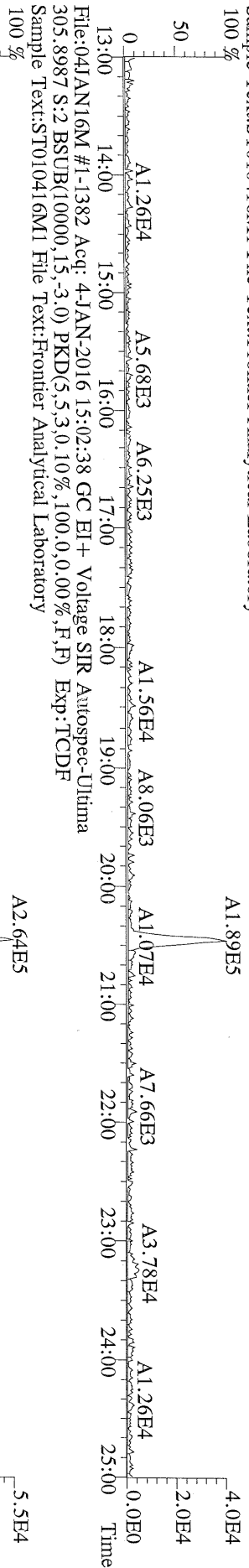


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100 %

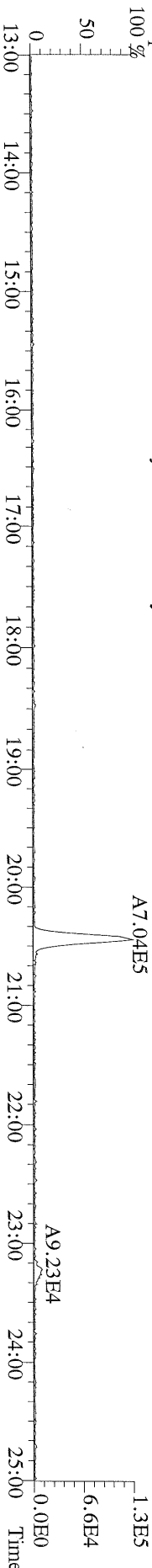


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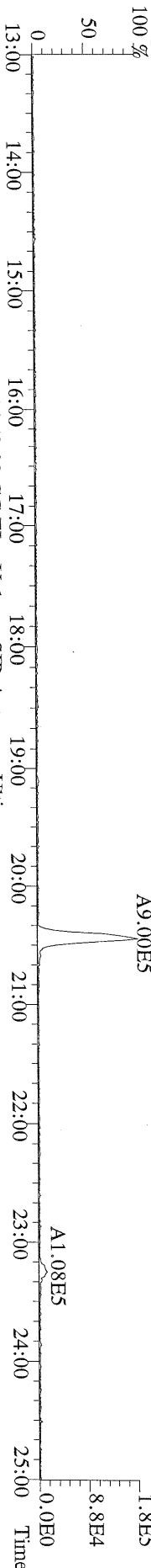
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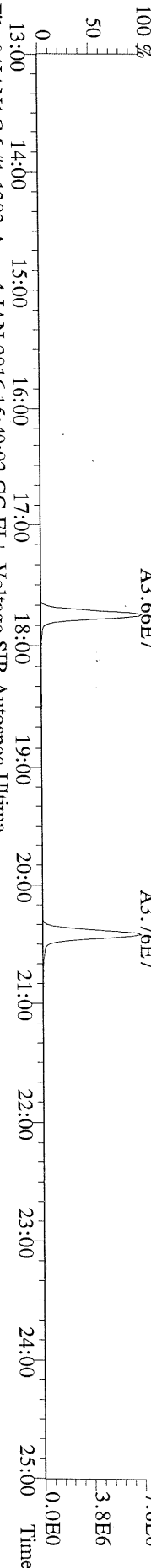
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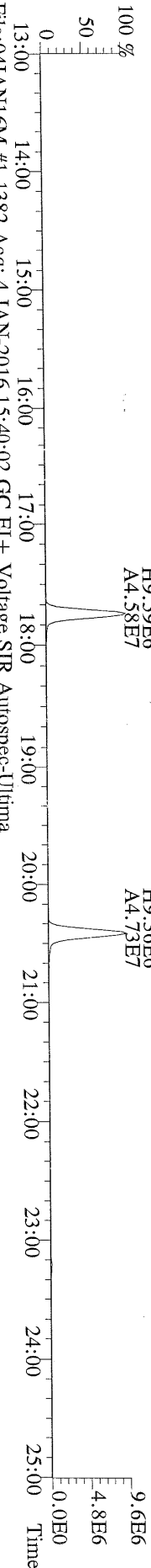
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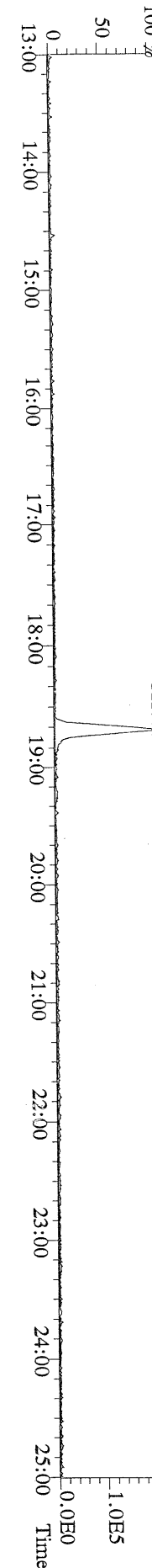
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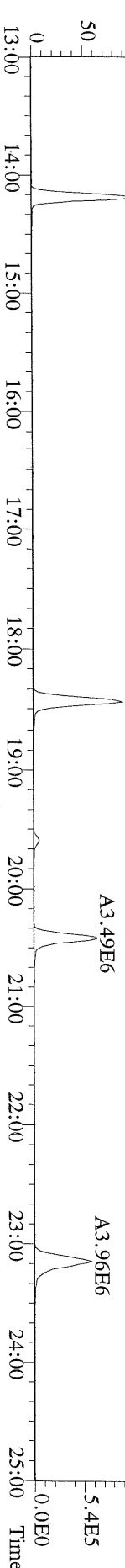
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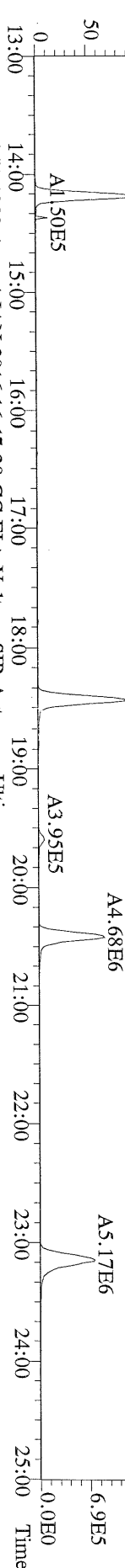
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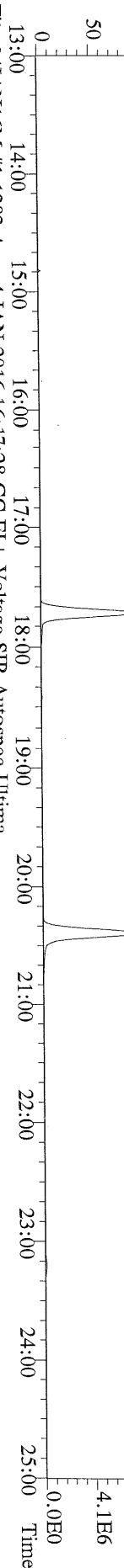
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100 %



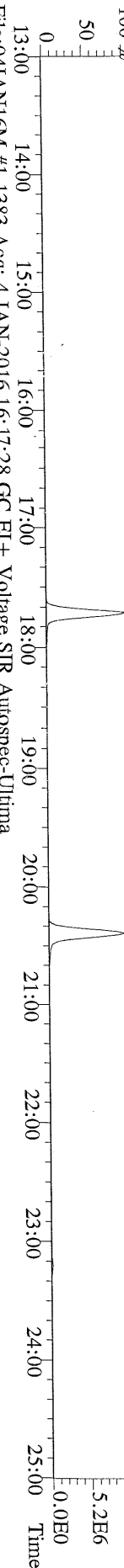
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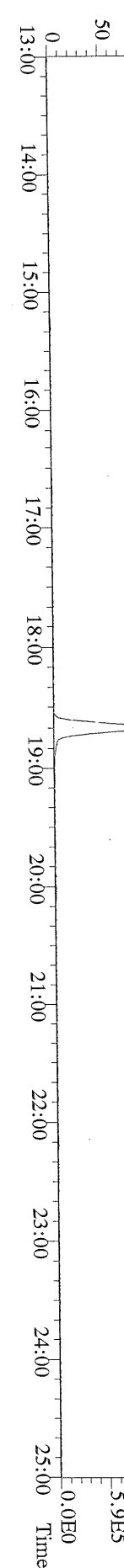
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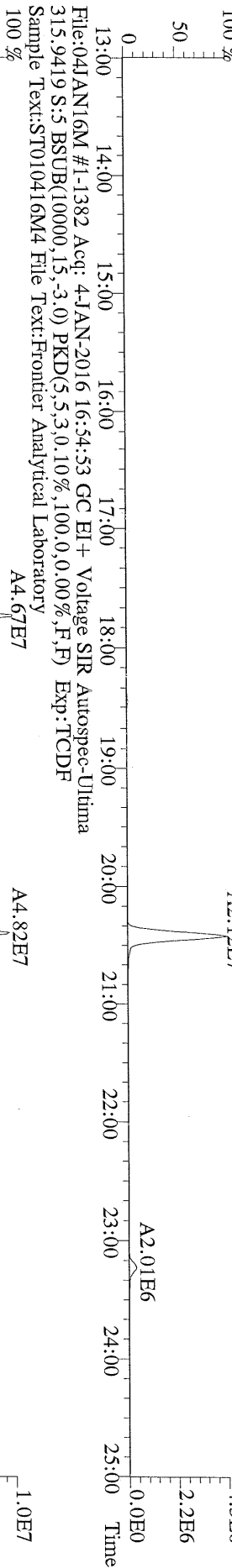
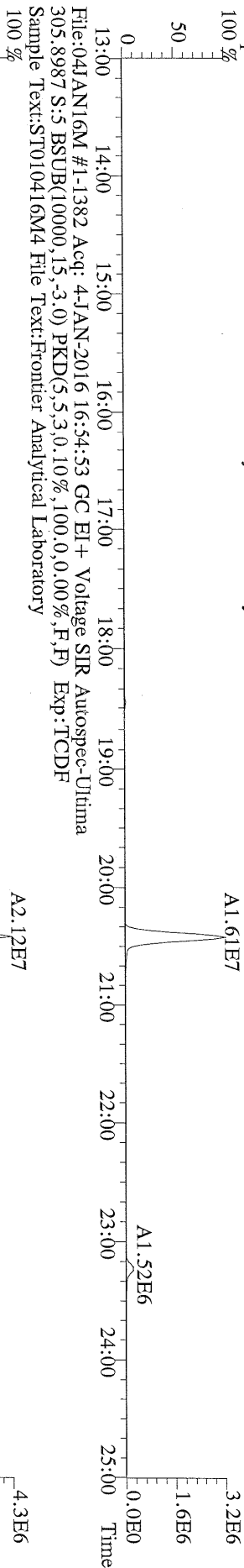
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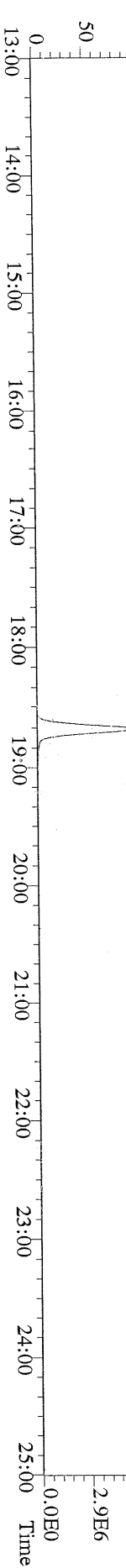
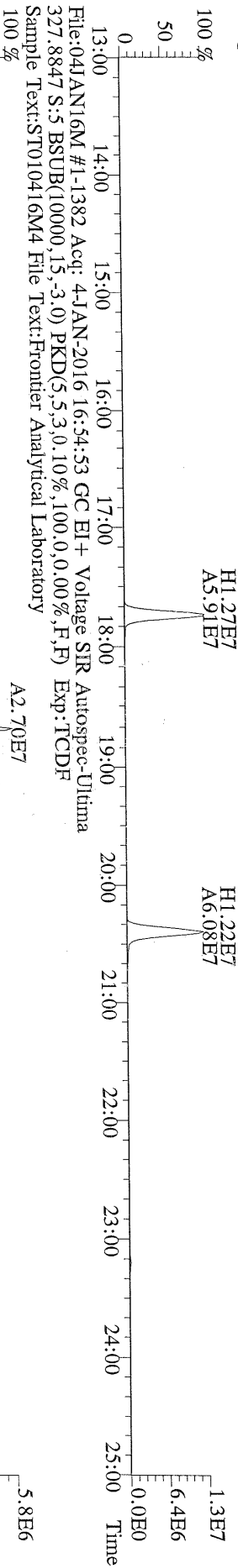
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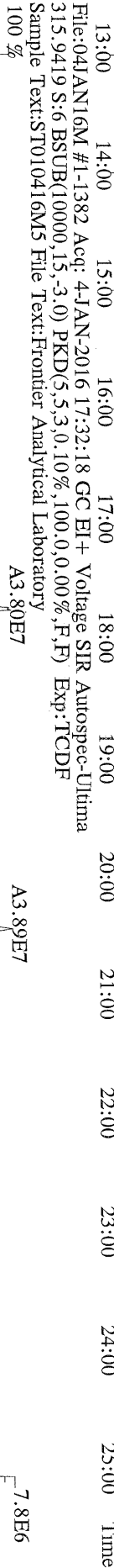
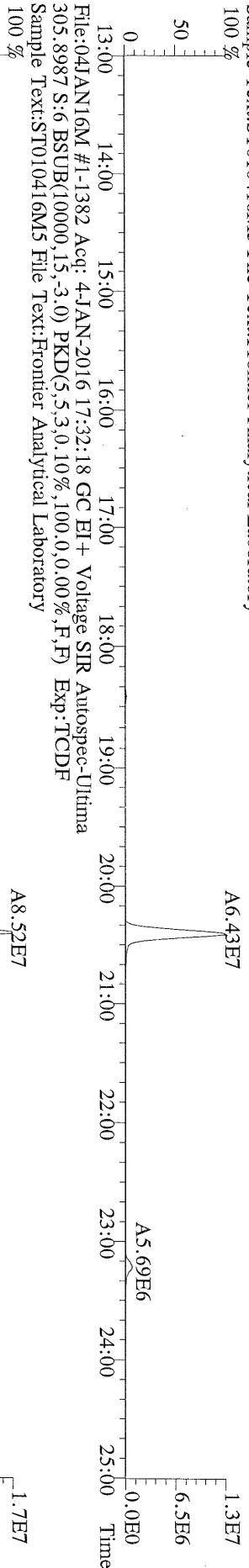
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Sample Text:ST010416M4 File Text:Frontier Analytical Laboratory
100 %



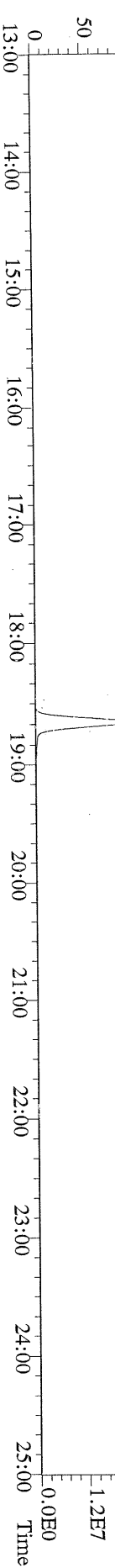
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Sample Text:ST010416M4 File Text:Frontier Analytical Laboratory
100 %

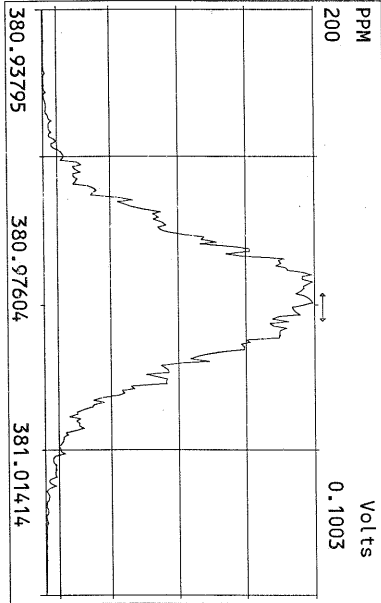
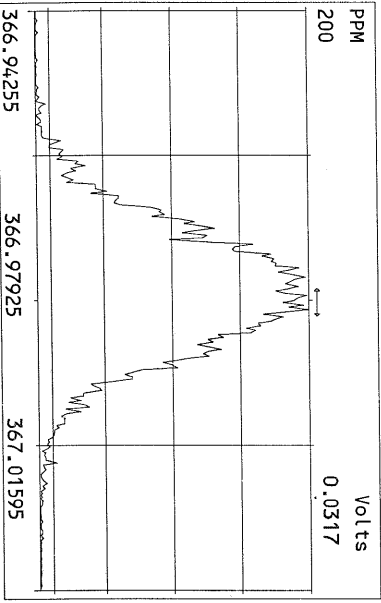
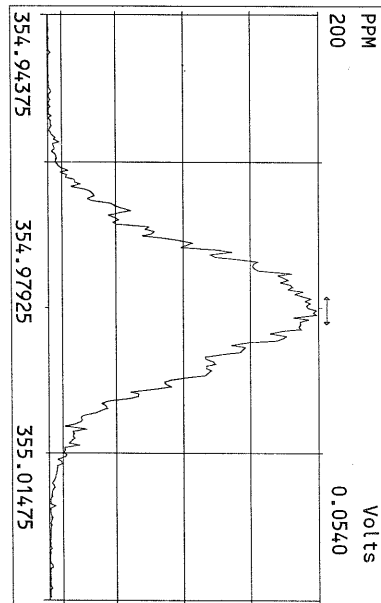
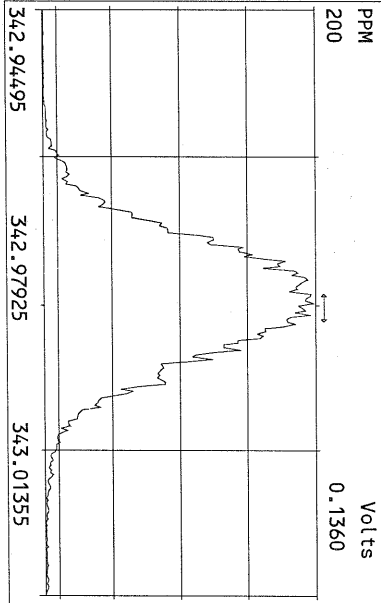
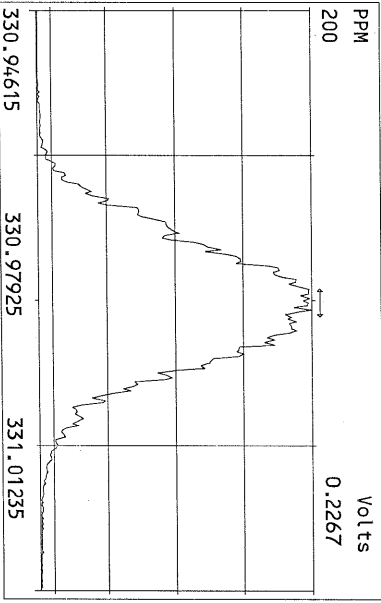
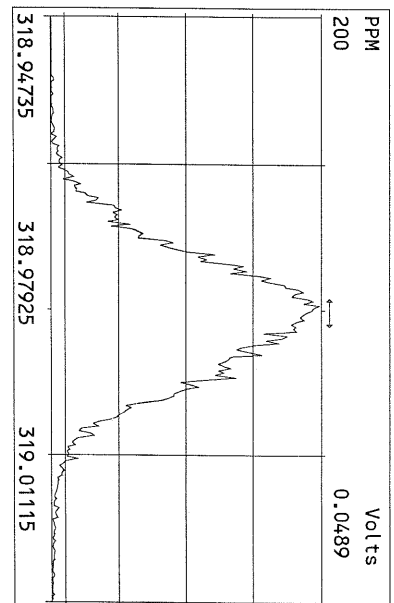
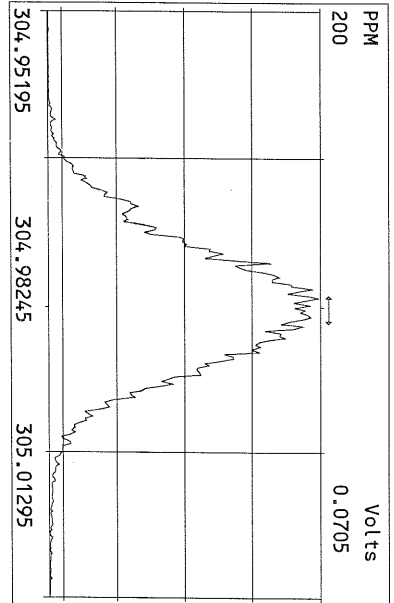
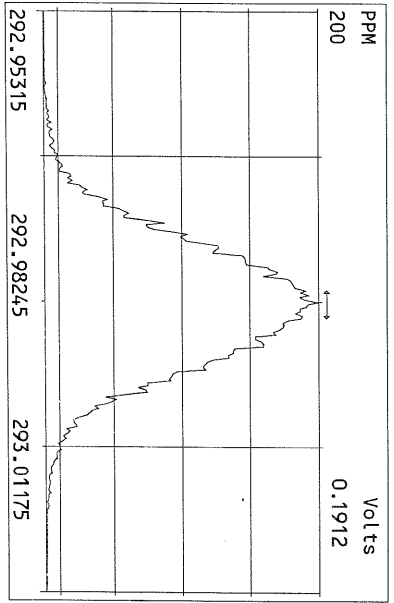


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303.9016 S:6 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:TCDF
Sample Text:ST010416M5 File Text:Frontier Analytical Laboratory



File:04JAN16M #1-1382 Acq: 4-JAN-2016 17:32:18 GC EI+ Voltage SIR Autospec-Ultima
327.8847 S:6 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:TCDF
Sample Text:ST010416M5 File Text:Frontier Analytical Laboratory





USEPA - ITD

FORM 4A
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: Frontier Analytical Laboratory Episode No.:

Contract No.: SAS No.:

Initial Calibration Date: 12/29/15

Instrument ID: FAL4

GC Column ID: DB5

VER Data Filename: 07JAN16Y Sam:1

Analysis Date: 7-JAN-16 15:34:29

NATIVE ANALYTES	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	ACCEPT	CONC. FOUND	CONC. RANGE (ng/mL) (3)
2,3,7,8-TCDD	M/M+2	0.80	0.65-0.89	y	10.6	7.80 - 12.9 ✓
1,2,3,7,8-PeCDD	M+2/M+4	1.59	1.32-1.78	y	53.5	39.0 - 65.0 ✓
1,2,3,4,7,8-HxCDD	M+2/M+4	1.25	1.05-1.43	y	51.5	39.0 - 64.0 ✓
1,2,3,6,7,8-HxCDD	M+2/M+4	1.26	1.05-1.43	y	50.6	39.0 - 64.0 ✓
1,2,3,7,8,9-HxCDD	M+2/M+4	1.24	1.05-1.43	y	50.0	41.0 - 61.0 ✓
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.05	0.88-1.20	y	47.5	43.0 - 58.0 ✓
OCDD	M+2/M+4	0.90	0.76-1.02	y	100	79.0 - 126 ✓
2,3,7,8-TCDF	M/M+2	0.79	0.65-0.89	y	9.61	8.40 - 12.0 ✓
1,2,3,7,8-PeCDF	M+2/M+4	1.52	1.32-1.78	y	48.3	41.0 - 60.0 ✓
2,3,4,7,8-PeCDF	M+2/M+4	1.52	1.32-1.78	y	47.3	41.0 - 60.0 ✓
1,2,3,4,7,8-HxCDF	M+2/M+4	1.24	1.05-1.43	y	48.7	45.0 - 56.0 ✓
1,2,3,6,7,8-HxCDF	M+2/M+4	1.25	1.05-1.43	y	48.5	44.0 - 57.0 ✓
2,3,4,6,7,8-HxCDF	M+2/M+4	1.25	1.05-1.43	y	49.3	44.0 - 57.0 ✓
1,2,3,7,8,9-HxCDF	M+2/M+4	1.27	1.05-1.43	y	49.4	45.0 - 56.0 ✓
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.07	0.88-1.20	y	50.0	45.0 - 55.0 ✓
1,2,3,4,7,8,9-HpCDF	M+2/M+4	1.05	0.88-1.20	y	51.0	43.0 - 58.0 ✓
OCDF	M+2/M+4	0.92	0.76-1.02	y	99.4	63.0 - 159 ✓

(1) See Table 8, Method 1613, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613.

(3) Contract-required concentration range as specified in Table 6, Method 1613.

Analyst: 

Date: 1/8/16

USEPA - ITD

FORM 4B
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: Frontier Analytical Laboratory

Episode No.:

Contract No.:

SAS No.:

Initial Calibration Date: 12/29/15

Instrument ID: FAL4

GC Column ID: DB5

VER Data Filename: 07JAN16Y Sam:1

Analysis Date: 7-JAN-16 15:34:29

LABELLED COMPOUNDS	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	ACCEPT	CONC. FOUND	CONC. RANGE (ng/mL) (3)
13C-2,3,7,8-TCDD	M/M+2	0.78	0.65-0.89	y	95.8	82.0 - 121✓
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.60	1.32-1.78	y	89.3	62.0 - 160✓
13C-1,2,3,4,7,8-HxCDD	M+2/M+4	1.29	1.05-1.43	y	102	85.0 - 117✓
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.28	1.05-1.43	y	107	85.0 - 118✓
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.08	0.88-1.20	y	105	72.0 - 138✓
13C-OCDD	M+2/M+4	0.92	0.76-1.02	y	203	96.0 - 415✓
13C-2,3,7,8-TCDF	M/M+2	0.80	0.65-0.89	y	98.6	71.0 - 140✓
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.60	1.32-1.78	y	95.2	76.0 - 130✓
13C-2,3,4,7,8-PeCDF	M+2/M+4	1.58	1.32-1.78	y	98.7	77.0 - 130✓
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.55	0.43-0.59	y	106	76.0 - 131✓
13C-1,2,3,6,7,8-HxCDF	M/M+2	0.53	0.43-0.59	y	107	70.0 - 143✓
13C-2,3,4,6,7,8-HxCDF	M/M+2	0.53	0.43-0.59	y	107	73.0 - 137✓
13C-1,2,3,7,8,9-HxCDF	M/M+2	0.54	0.43-0.59	y	103	74.0 - 135✓
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.46	0.37-0.51	y	106	78.0 - 129✓
13C-1,2,3,4,7,8,9-HpCDF	M/M+2	0.45	0.37-0.51	y	97.3	77.0 - 129✓
13C-OCDF	M+2/M+4	0.90	0.76-1.02	y	195	96.0 - 415✓
CLEANUP STANDARD (4)						
37Cl-2,3,7,8-TCDD					9.54	7.90 - 12.7✓

(1) See Table 8, Method 1613, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613.

(3) Contract-required concentration range as specified in Table 6, Method 1613.

(4) No ion abundance ratio; report concentration found.

Analyst: 

Date: 1/8/16

USEPA - ITD

FORM 6A

PCDD/PCDF RELATIVE RETENTION TIMES

Lab Name: Frontier Analytical Laboratory

Episode No.:

Contract No.:

SAS No.:

Init. Cal. Date: 12/29/15

Instrument ID: FAL4

GC Column ID: DB5

Analysis Date: 7-JAN-16 15:34:29

CS3 or VER Data Filename: 07JAN16Y

Sam:1

NATIVE ANALYTES	RETENTION TIME REFERENCE	RRT	RRT QC LIMITS (1)
2,3,7,8-TCDD	13C-2,3,7,8-TCDD	1.001	0.999-1.002 ✓
2,3,7,8-TCDF	13C-2,3,7,8-TCDF	1.001	0.999-1.003 ✓
1,2,3,7,8-PeCDD	13C-1,2,3,7,8-PeCDD	1.000	0.999-1.002 ✓
1,2,3,7,8-PeCDF	13C-1,2,3,7,8-PeCDF	1.001	0.999-1.002 ✓
2,3,4,7,8-PeCDF	13C-2,3,4,7,8-PeCDF	1.001	0.999-1.002 ✓
LABELED COMPOUNDS			
37Cl-2,3,7,8-TCDD	13C-1,2,3,4-TCDD	1.023	0.989-1.052 ✓
13C-2,3,7,8-TCDD		1.021	0.976-1.043 ✓
13C-2,3,7,8-TCDF		0.994	0.923-1.103 ✓
13C-1,2,3,7,8-PeCDD		1.239	1.000-1.567 ✓
13C-1,2,3,7,8-PeCDF		1.175	0.923-1.203 ✓
13C-2,3,4,7,8-PeCDF		1.225	0.923-1.303 ✓

(1) Contract-required limits for Relative Retention Times (RRT) as specified in Table 2, Method 1613.

Analyst: _____

Date: _____

USEPA - ITD

FORM 6B
PCDD/PCDF RELATIVE RETENTION TIMES

Lab Name: Frontier Analytical Laboratory

Episode No.:

Contract No.:

SAS No.:

Init. Cal. Date: 12/29/15

Instrument ID: FAL4

GC Column ID: DB5

Analysis Date: 7-JAN-16 15:34:29

CS3 or VER Data Filename: 07JAN16Y

Sam:1

NATIVE ANALYTES	RETENTION TIME REFERENCE	RRT	RRT QC LIMITS (1)
1,2,3,4,7,8-HxCDD	13C-1,2,3,4,7,8-HxCDD	1.001	0.999-1.001 ✓
1,2,3,6,7,8-HxCDD	13C-1,2,3,6,7,8-HxCDD	1.001	0.998-1.004 ✓
1,2,3,7,8,9-HxCDD	13C-1,2,3,6,7,8-HxCDD	1.012	1.000-1.019 ✓
1,2,3,4,7,8-HxCDF	13C-1,2,3,4,7,8-HxCDF	1.001	0.999-1.001 ✓
1,2,3,6,7,8-HxCDF	13C-1,2,3,6,7,8-HxCDF	1.000	0.997-1.005 ✓
2,3,4,6,7,8-HxCDF	13C-2,3,4,6,7,8-HxCDF	1.000	0.999-1.001 ✓
1,2,3,7,8,9-HxCDF	13C-1,2,3,7,8,9-HxCDF	1.000	0.999-1.001 ✓
1,2,3,4,6,7,8-HpCDD	13C-1,2,3,4,6,7,8-HpCDD	1.001	0.999-1.001 ✓
1,2,3,4,6,7,8-HpCDF	13C-1,2,3,4,6,7,8-HpCDF	1.001	0.999-1.001 ✓
1,2,3,4,7,8,9-HpCDF	13C-1,2,3,4,7,8,9-HpCDF	1.000	0.999-1.001 ✓
OCDD	13C-OCDD	1.001	0.999-1.001 ✓
OCDF	13C-OCDF	1.001	0.999-1.001 ✓
LABELED COMPOUNDS			
13C-1,2,3,4,7,8-HxCDD	13C-1,2,3,7,8,9-HxCDD	0.984	0.977-1.000 ✓
13C-1,2,3,6,7,8-HxCDD		0.988	0.981-1.003 ✓
13C-1,2,3,4,7,8-HxCDF		0.949	0.944-0.970 ✓
13C-1,2,3,6,7,8-HxCDF		0.954	0.949-0.975 ✓
13C-2,3,4,6,7,8-HxCDF		0.978	0.959-1.021 ✓
13C-1,2,3,7,8,9-HxCDF		1.015	0.977-1.047 ✓
13C-1,2,3,4,6,7,8-HpCDD		1.126	1.086-1.130 ✓
13C-1,2,3,4,6,7,8-HpCDF		1.078	1.043-1.085 ✓
13C-1,2,3,4,7,8,9-HpCDF		1.150	1.057-1.154 ✓
13C-OCDD		1.267	1.032-1.311 ✓
13C-OCDF		1.277	1.000-1.311 ✓

(1) Contract-required limits for Relative Retention Times (RRT) as specified in Table 2, Method 1613.


Analyst: Date: 1/8/16

FAL ID: ST010716Y1 Filename: 07JAN16Y Sam:1 Acquired: 7-JAN-16 15:34:29 ICal: PCDDFAL4-12-29-15-7PT

Client ID: 1613 CS3 151209J ConCal: ST010716Y1 EndCal: ST010716Y2

Results: GC Column: DB5 Amount: 1.000 NATO 1989 Tox: 101 WHO 1998 Tox: 127 WHO 2005 Tox: 117

Name	Resp	RA	RT	RRF	Conc	Qual	Fac Noise-1	Noise-2	DL	Rec	#Hom
2,3,7,8-TCDD	3.52e+06	0.80 y	27:25	1.08	10.6		2.50	-	-	*	
1,2,3,7,8-PeCDD	1.00e+07	1.59 y	33:14	0.90	53.5		2.50	-	-	*	
1,2,3,4,7,8-HxCDD	8.58e+06	1.25 y	38:35	0.98	51.5		2.50	-	-	*	
1,2,3,6,7,8-HxCDD	8.68e+06	1.26 y	38:45	1.00	50.6		2.50	-	-	*	
1,2,3,7,8,9-HxCDD	9.48e+06	1.24 y	39:12	1.11	50.0		2.50	-	-	*	
1,2,3,4,6,7,8-HpCDD	8.84e+06	1.05 y	44:09	1.09	47.5		2.50	-	-	*	
OCDD	1.42e+07	0.90 y	49:40	1.04	100		2.50	-	-	*	
2,3,7,8-TCDF	4.03e+06	0.79 y	26:40	1.05	9.61		2.50	-	-	*	
1,2,3,7,8-PeCDF	1.58e+07	1.52 y	31:32	0.98	48.3		2.50	-	-	*	
2,3,4,7,8-PeCDF	1.53e+07	1.52 y	32:51	1.01	47.3		2.50	-	-	*	
1,2,3,4,7,8-HxCDF	1.53e+07	1.24 y	37:13	1.23	48.7		2.50	-	-	*	
1,2,3,6,7,8-HxCDF	1.49e+07	1.25 y	37:24	1.17	48.5		2.50	-	-	*	
2,3,4,6,7,8-HxCDF	1.43e+07	1.25 y	38:21	1.12	49.3		2.50	-	-	*	
1,2,3,7,8,9-HxCDF	1.30e+07	1.27 y	39:47	1.15	49.4		2.50	-	-	*	
1,2,3,4,6,7,8-HpCDF	1.46e+07	1.07 y	42:16	1.36	50.0		2.50	-	-	*	
1,2,3,4,7,8,9-HpCDF	1.08e+07	1.05 y	45:05	1.23	51.0		2.50	-	-	*	
OCDF	2.00e+07	0.92 y	50:04	1.13	99.4		2.50	-	-	*	
13C-2,3,7,8-TCDD	3.08e+07	0.78 y	27:23	1.07	95.8					95.8	
13C-1,2,3,7,8-PeCDD	2.07e+07	1.60 y	33:14	0.78	89.3					89.3	
13C-1,2,3,4,7,8-HxCDD	1.69e+07	1.29 y	38:34	0.87	102					102	
13C-1,2,3,6,7,8-HxCDD	1.71e+07	1.28 y	38:44	0.84	107					107	
13C-1,2,3,4,6,7,8-HpCDD	1.71e+07	1.08 y	44:08	0.85	105					105	
13C-OCDD	2.71e+07	0.92 y	49:39	0.70	203					102	
13C-2,3,7,8-TCDF	4.01e+07	0.80 y	26:39	1.03	98.6					98.6	
13C-1,2,3,7,8-PeCDF	3.34e+07	1.60 y	31:30	0.89	95.2					95.2	
13C-2,3,4,7,8-PeCDF	3.19e+07	1.58 y	32:50	0.82	98.7					98.7	
13C-1,2,3,4,7,8-HxCDF	2.56e+07	0.55 y	37:11	1.26	106					106	
13C-1,2,3,6,7,8-HxCDF	2.64e+07	0.53 y	37:23	1.28	107					107	
13C-2,3,4,6,7,8-HxCDF	2.59e+07	0.53 y	38:20	1.27	107					107	
13C-1,2,3,7,8,9-HxCDF	2.29e+07	0.54 y	39:46	1.16	103					103	
13C-1,2,3,4,6,7,8-HpCDF	2.14e+07	0.46 y	42:14	1.06	106					106	
13C-1,2,3,4,7,8,9-HpCDF	1.72e+07	0.45 y	45:04	0.93	97.3					97.3	
13C-OCDF	3.56e+07	0.90 y	50:02	0.95	195					97.7	
37Cl-2,3,7,8-TCDD	2.56e+06		27:25	0.90	9.54					95.4	
13C-1,2,3,4-TCDD	2.99e+07	0.79 y	26:48	-	81.7						
13C-1,2,3,4-TCDF	3.93e+07	0.80 y	25:32	-	81.7						
13C-1,2,3,7,8,9-HxCDD	1.91e+07	1.27 y	39:11	-	70.3						
Total Tetra-Dioxins	1.55e+07		23:01	1.08	46.7		2.50	-	-	*	25
Total Penta-Dioxins	3.34e+07		30:16	0.90	178		2.50	-	-	*	11
Total Hexa-Dioxins	3.89e+07		35:08	1.03	221		2.50	-	-	*	29
Total Hepta-Dioxins	1.89e+07		42:15	1.09	101		2.50	-	-	*	31
Total Tetra-Furans	1.88e+07		23:01	1.05	45.0		2.50	-	-	*	23
1st Fn. Tot Penta-Furans	2.16e+07		28:25	0.99	66.7		2.50	-	-	*	PeCDF 3
Total Penta-Furans	4.64e+07		29:45	0.99	143		2.50	-	-	*	209 16
Total Hexa-Furans	7.41e+07		35:15	1.16	253		2.50	-	-	*	11
Total Hepta-Furans	2.56e+07		42:16	1.30	102		2.50	-	-	*	13

Analyst: 

Date: 1/8/16

Frontier Analytical Laboratory - Acquisition Log

Run Name:07JAN16Y

Instrument: FAL4

GC: DB5

Experiment:PCDD

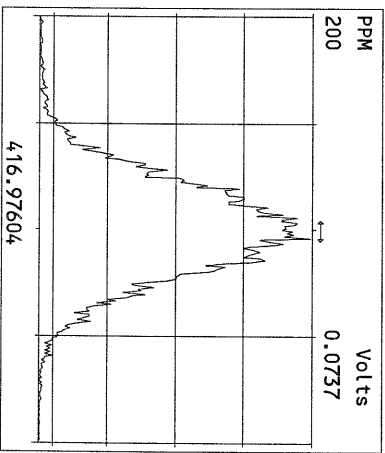
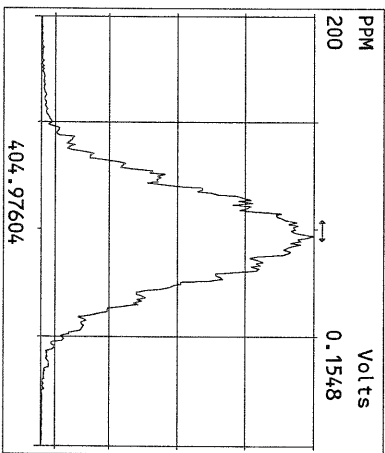
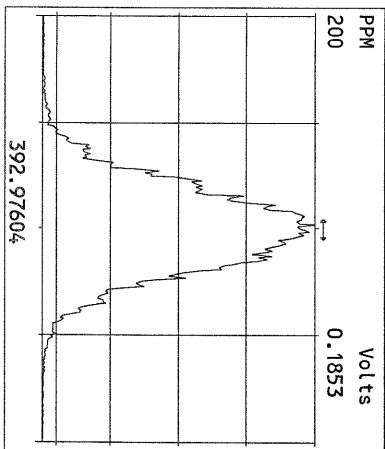
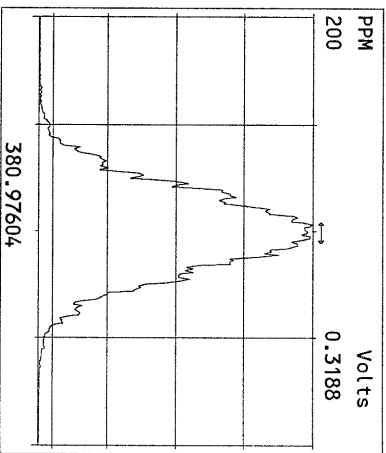
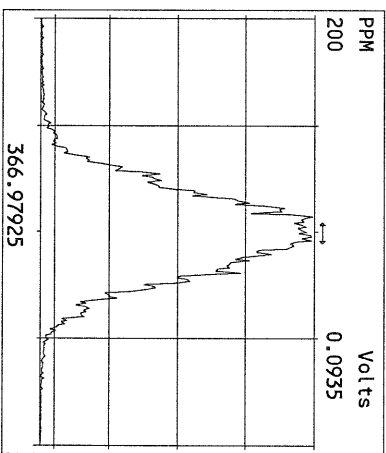
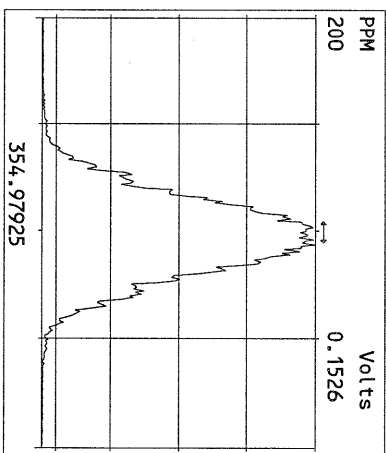
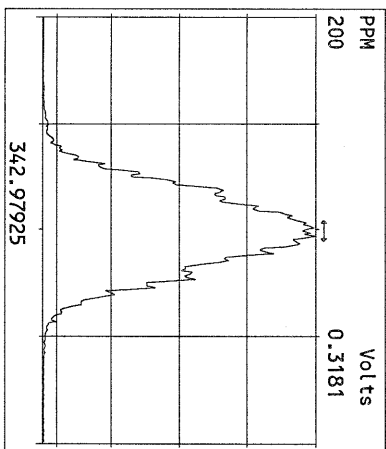
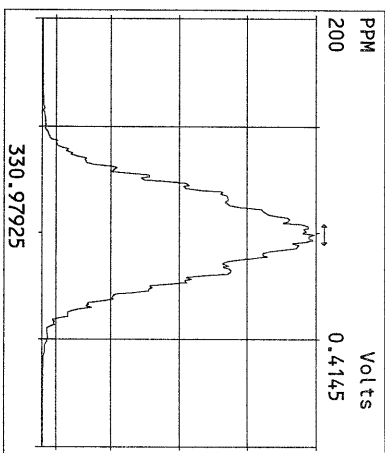
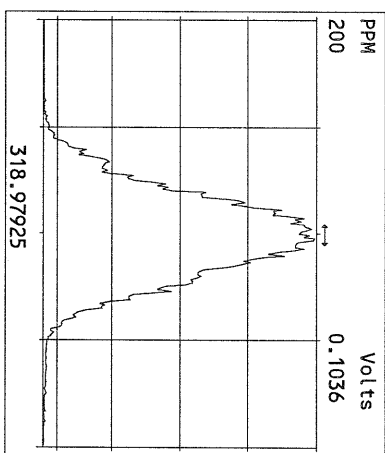
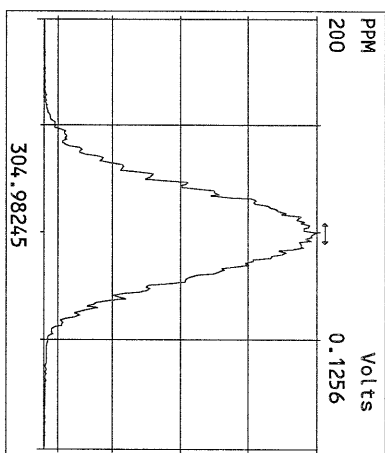
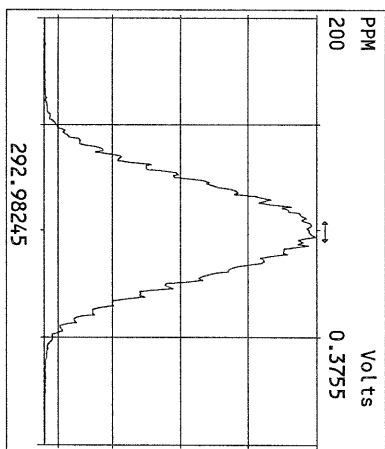
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07JAN16Y 2	3543-001-0001-OPR	OPR	7-JAN-16 16:34:12	ST010716Y1	ST010716Y2	BS
07JAN16Y 3	3543-001-0001-MB	Method Blank	7-JAN-16 17:29:01	ST010716Y1	ST010716Y2	BS
07JAN16Y 4	9514-001-0001-SA	NAWS-CL ASC-01	7-JAN-16 18:23:49	ST010716Y1	ST010716Y2	BS
07JAN16Y 5	9488-001-0001-SA	1531060-14	7-JAN-16 19:18:36	ST010716Y1	ST010716Y2	BS
07JAN16Y 6	9505-001-0001-SA	DDSD DIGESTER CAKE 12/5-9/20 ₁₁	7-JAN-16 20:13:23	ST010716Y1	ST010716Y2	BS
07JAN16Y 7	9486-002-0001-SA	SB-05-9-10	7-JAN-16 21:08:11	ST010716Y1	ST010716Y2	BS
07JAN16Y 8	9486-001-0001-SA	SB-07-12-13 1:10 Dil	7-JAN-16 22:02:58	ST010716Y1	ST010716Y2	BS
07JAN16Y 9	9528-003-0001-SA	SP-R-DU-2C	7-JAN-16 22:57:45	ST010716Y1	ST010716Y2	BS
07JAN16Y 10	9528-001-0001-SA	SP-FA-1 1:5 Dil	7-JAN-16 23:52:32	ST010716Y1	ST010716Y2	BS
07JAN16Y 11	9528-002-0001-SA	SP-1H/7H	8-JAN-16 00:47:19	ST010716Y1	ST010716Y2	BS
07JAN16Y 12	9487-001-0001-SA	SB-10-12.5-13 1:20 Dil	8-JAN-16 01:42:05	ST010716Y1	ST010716Y2	BS
07JAN16Y 13	SB010716Y1	Solvent Blank	8-JAN-16 02:36:52	ST010716Y1	ST010716Y2	BS
07JAN16Y 14	QC010716Y1	QC1	8-JAN-16 03:31:38	ST010716Y1	ST010716Y2	BS
07JAN16Y 15	QC010716Y2	QC2	8-JAN-16 04:26:24	ST010716Y1	ST010716Y2	BS
07JAN16Y 16	ST010716Y2	1613 CS3 151209J	8-JAN-16 05:21:12	ST010716Y1	ST010716Y2	BS
07JAN16Y 17	QC010716Y3	QC3	8-JAN-16 06:15:57	ST010716Y1	ST010716Y2	BS
07JAN16Y 18	QC010716Y4	QC4	8-JAN-16 07:10:41	ST010716Y1	ST010716Y2	BS
07JAN16Y 19	QC010716Y5	QC5	8-JAN-16 08:05:27	ST010716Y1	ST010716Y2	BS
07JAN16Y 20	QC010716Y6	QC6	8-JAN-16 09:00:13	ST010716Y1	ST010716Y2	BS

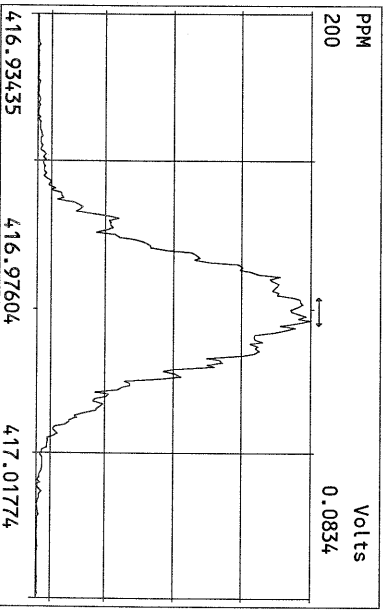
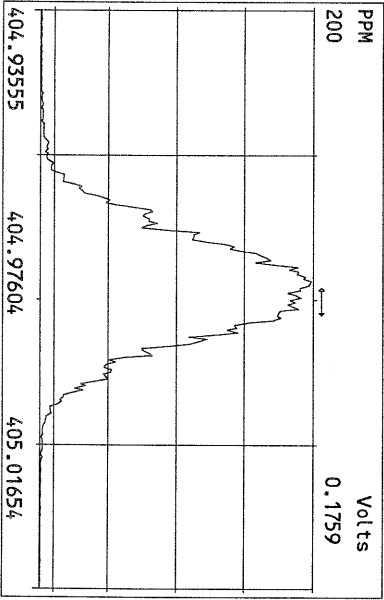
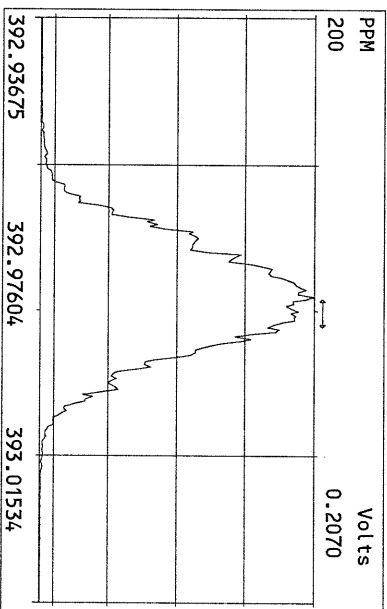
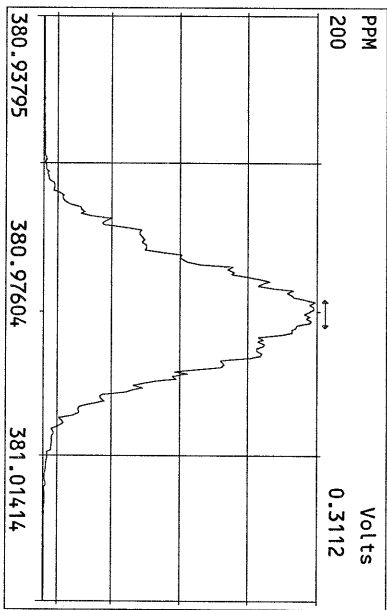
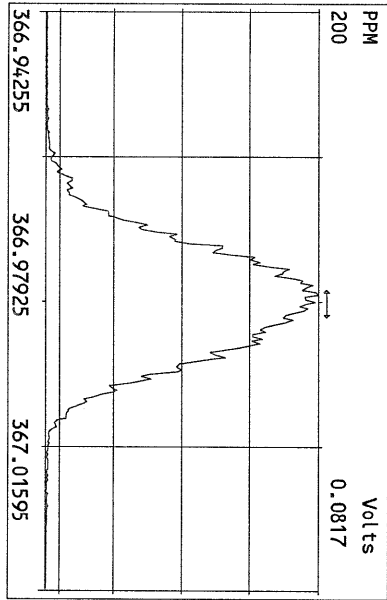
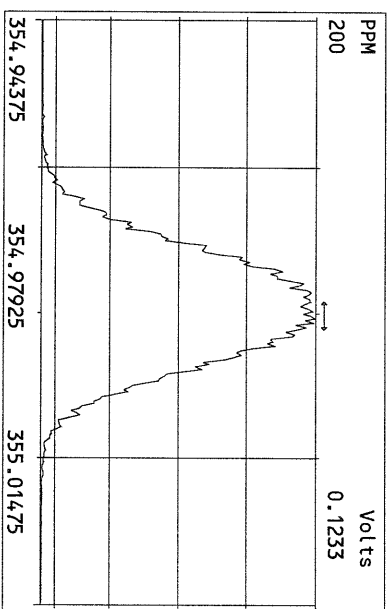
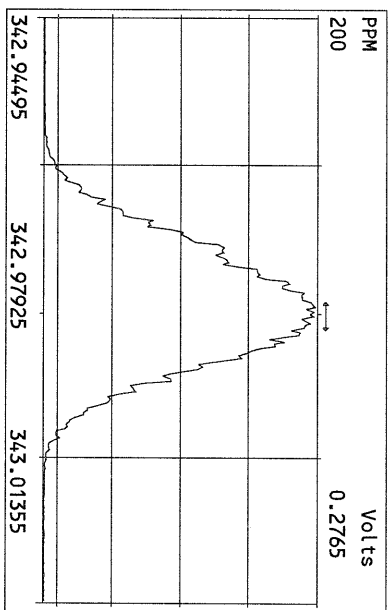
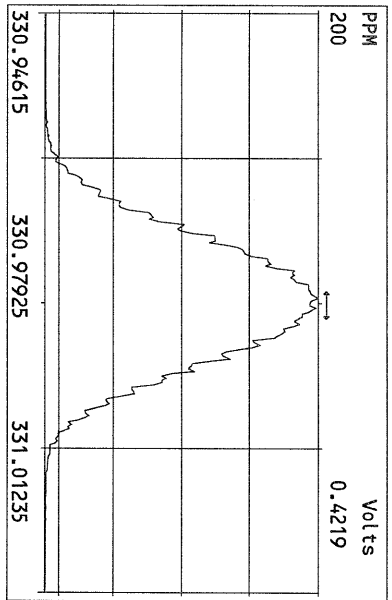


1/8/16

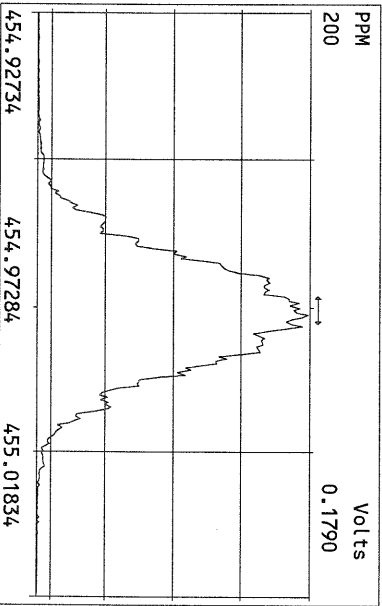
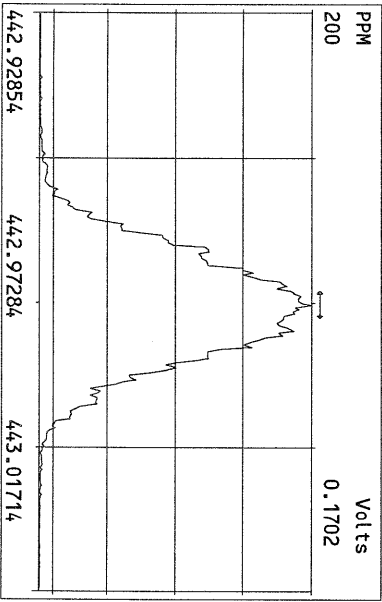
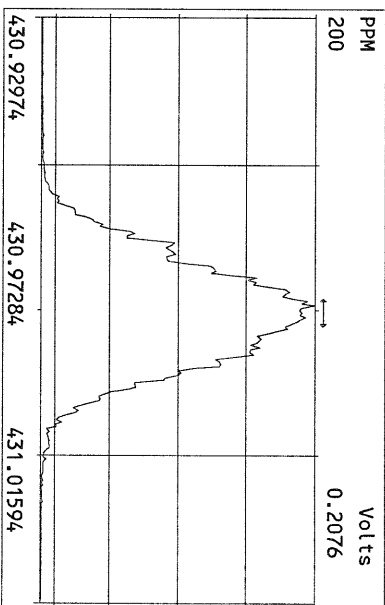
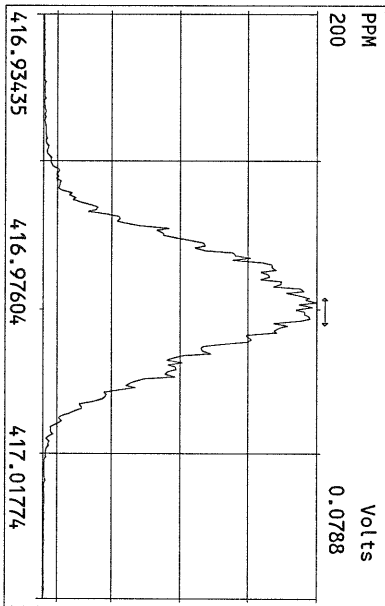
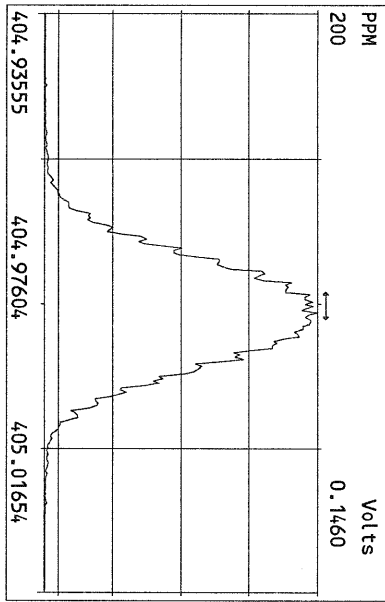
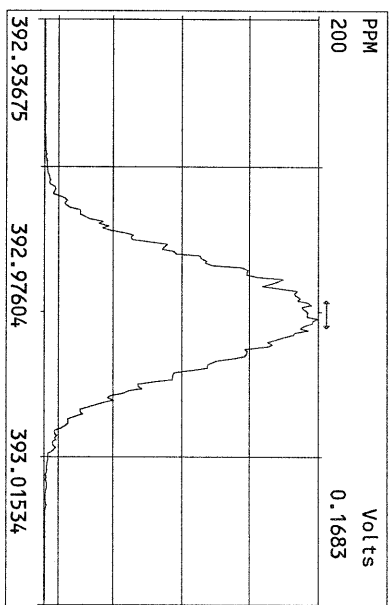
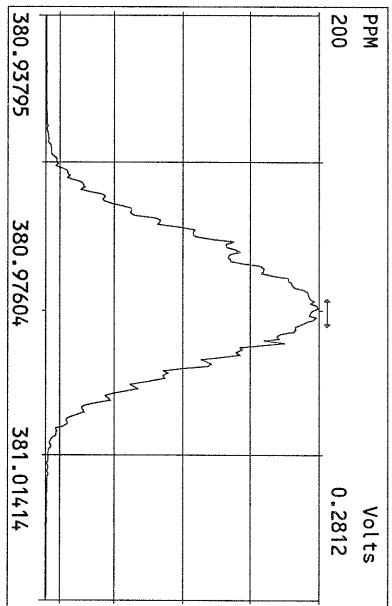
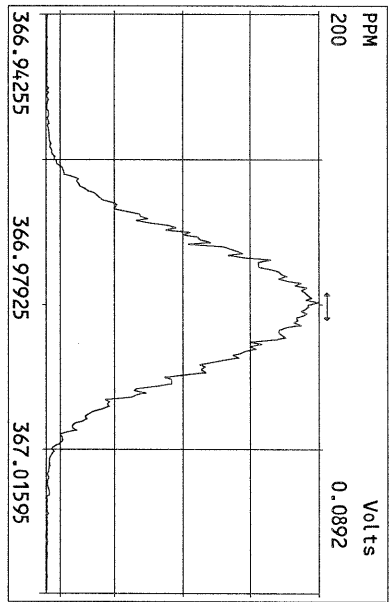
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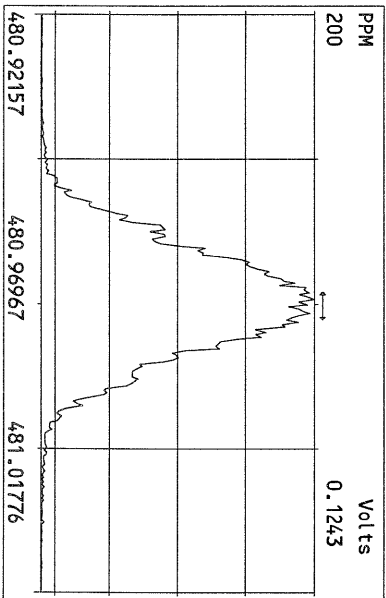
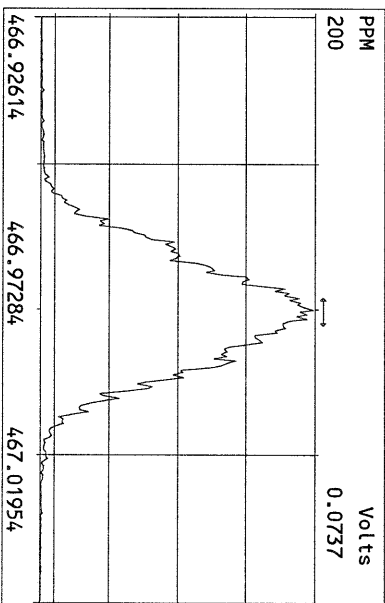
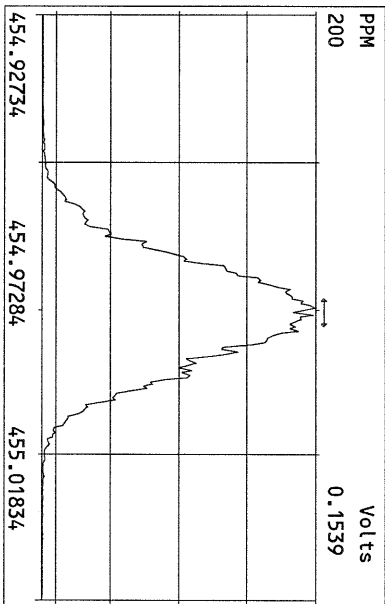
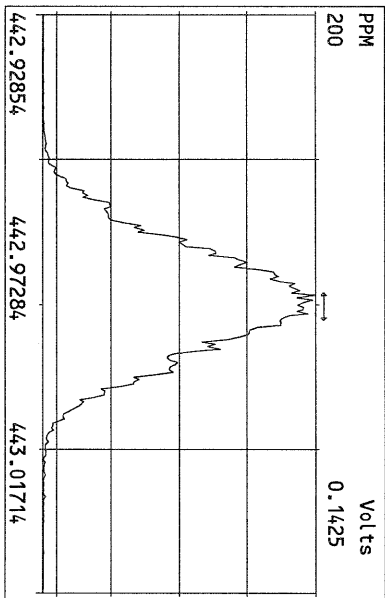
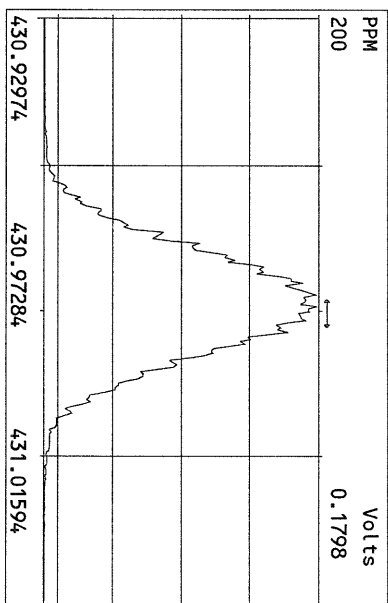
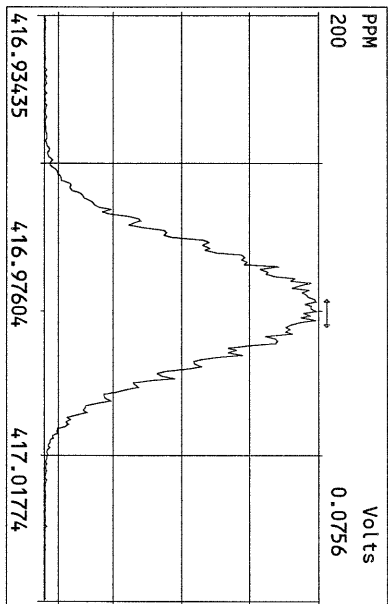
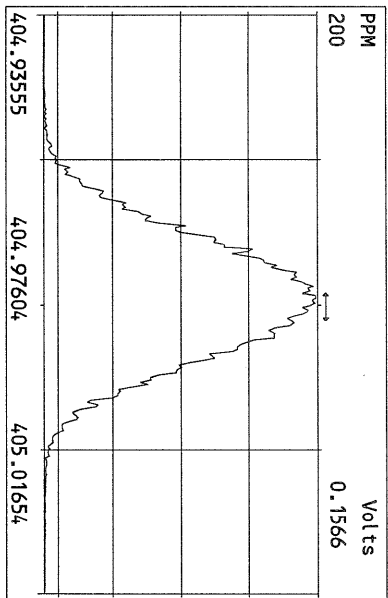


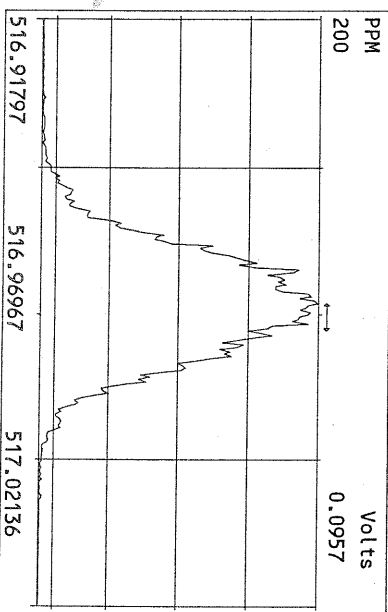
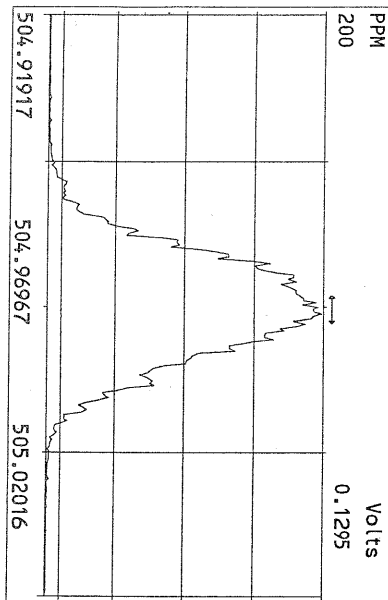
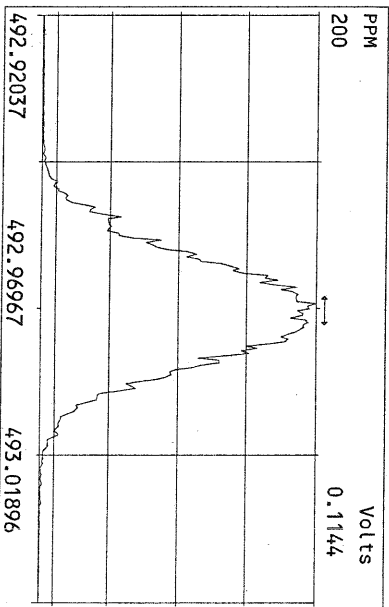
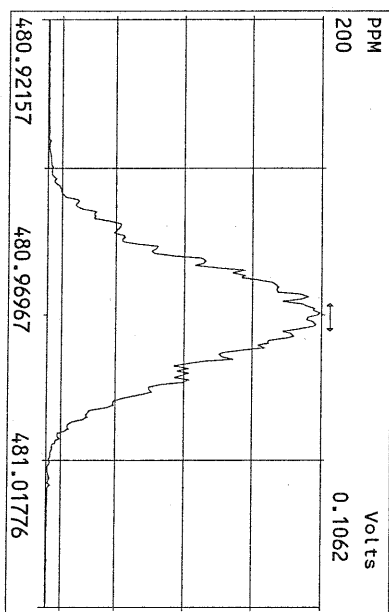
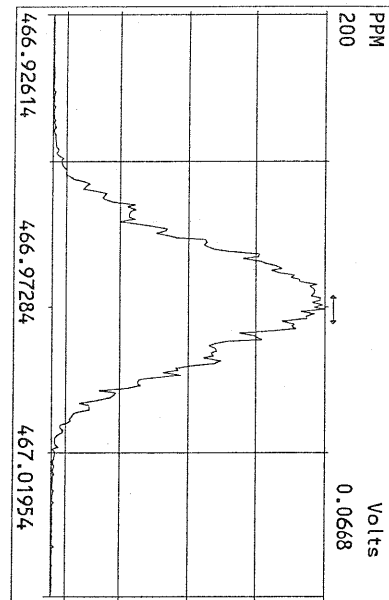
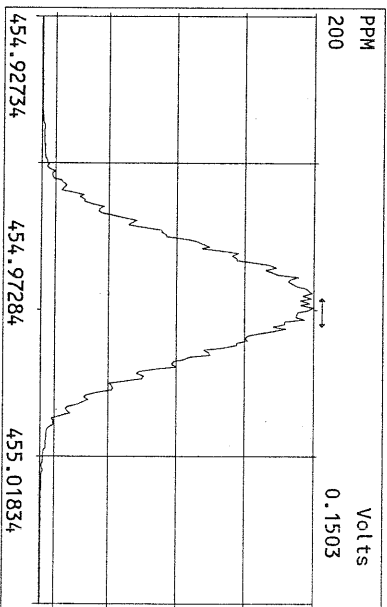
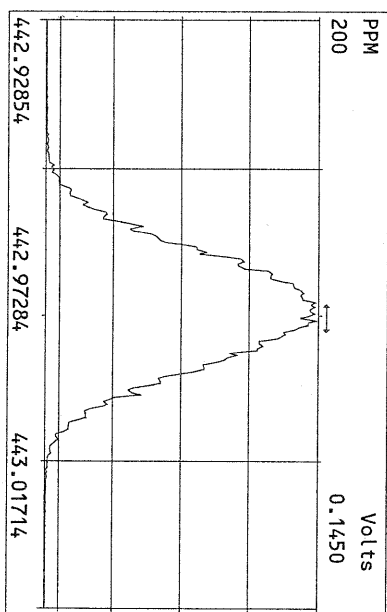
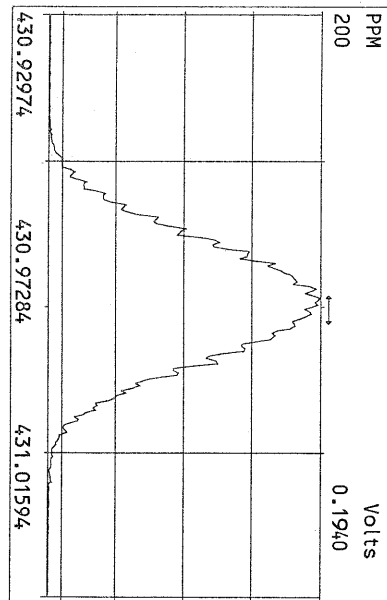


Peak Locate Examination: 7-JAN-2016:15:33 File:07JAN16Y
Experiment:PCDD Function:3 Reference:PK

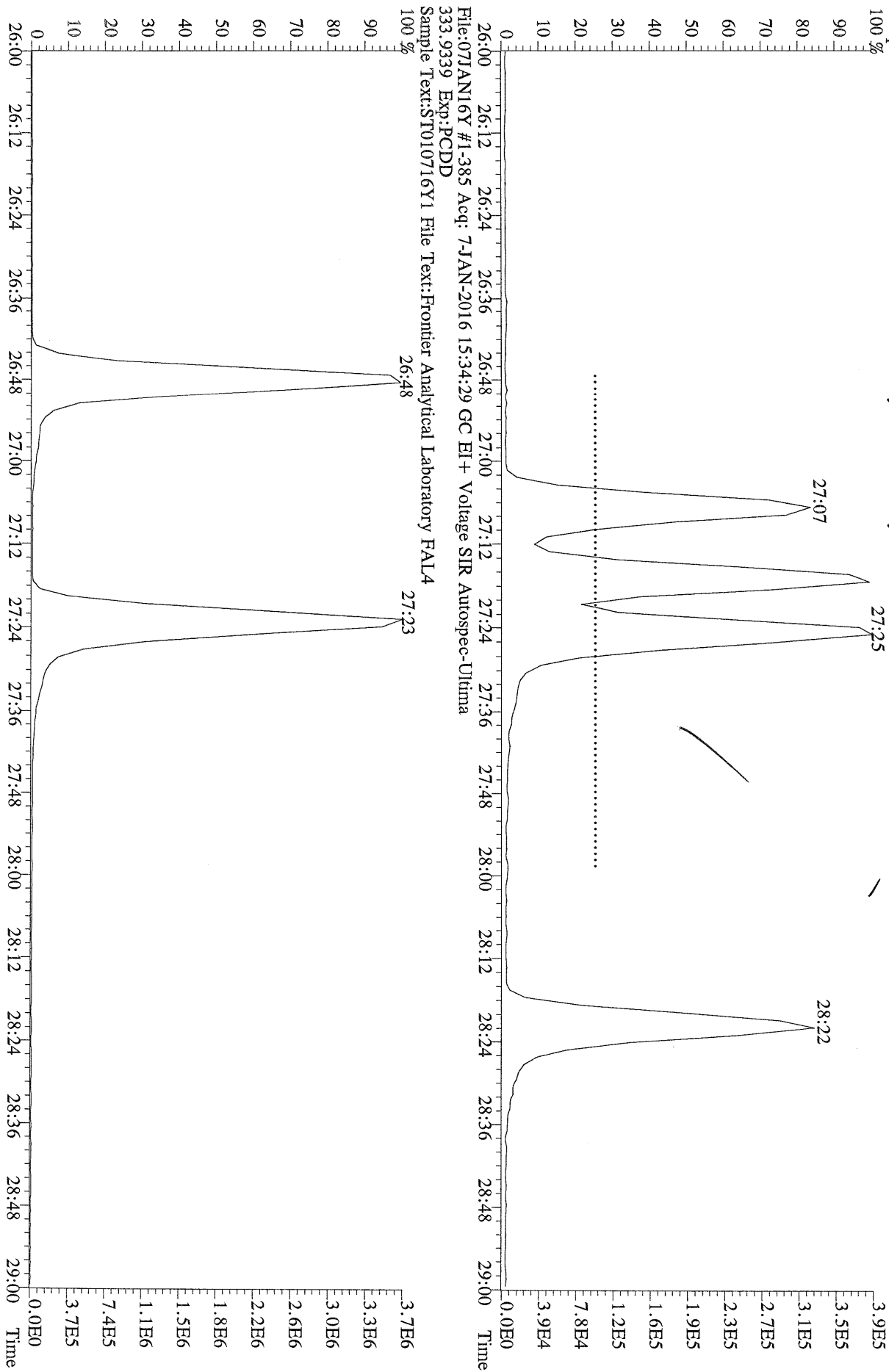


Peak Locate Examination: 7-JAN-2016:15:33 File:07JAN16Y
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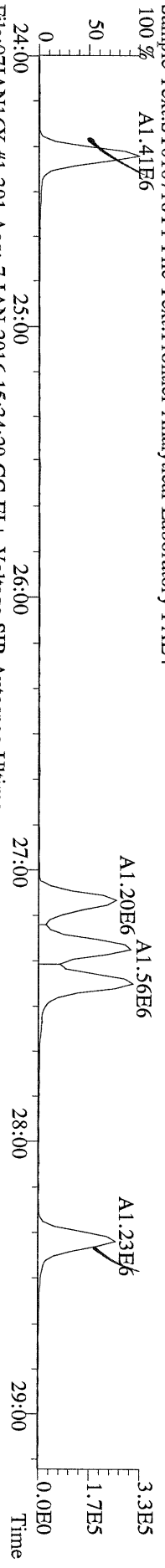




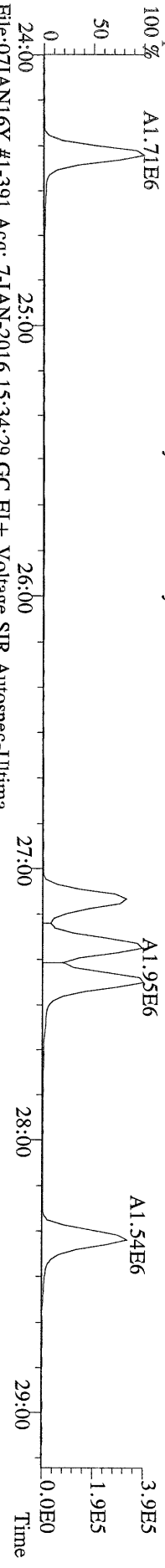
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321.8936 Exp:PCDD
Sample Text:ST010716Y1 File Text:Frontier Analytical Laboratory FAL4
100 %



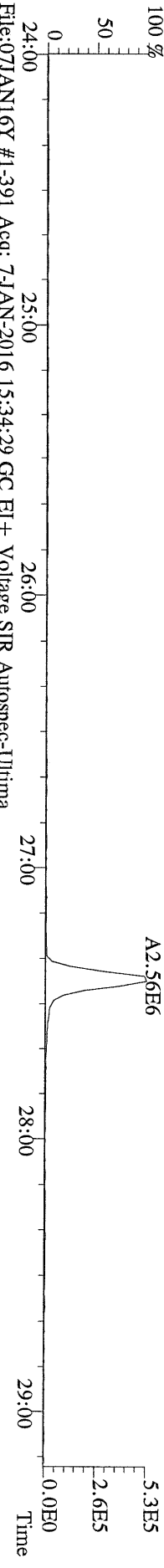
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319.8965 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y1 File Text:Frontier Analytical Laboratory FAL4



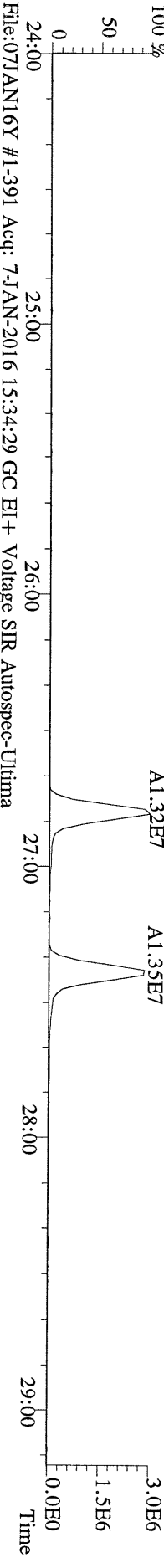
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Sample Text:ST010716Y1 File Text:Frontier Analytical Laboratory FAL4



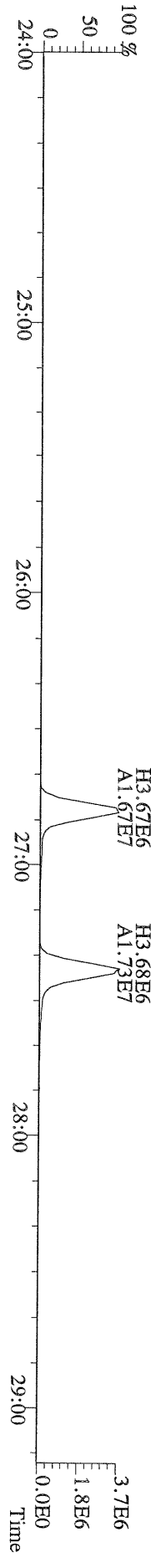
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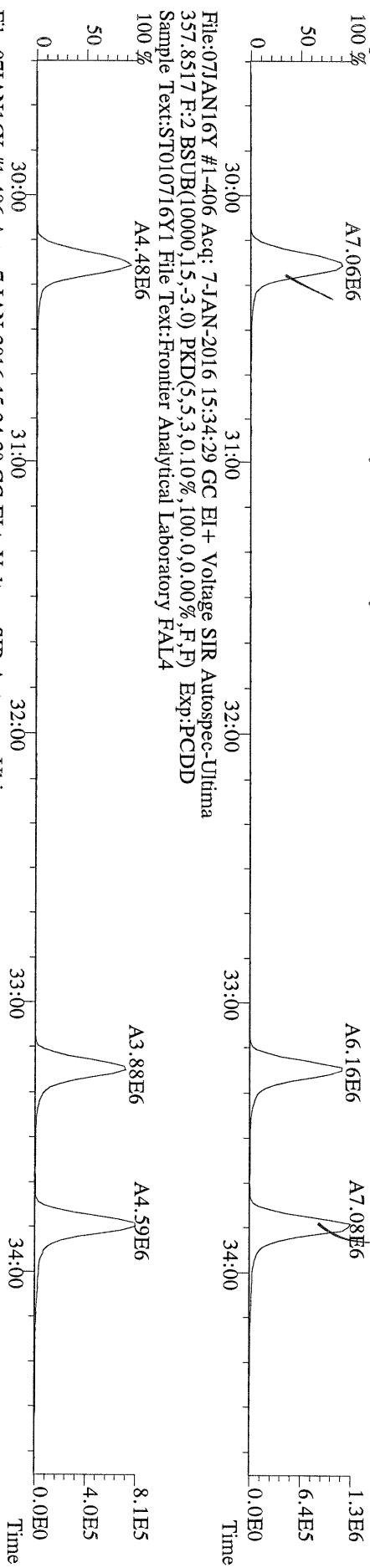
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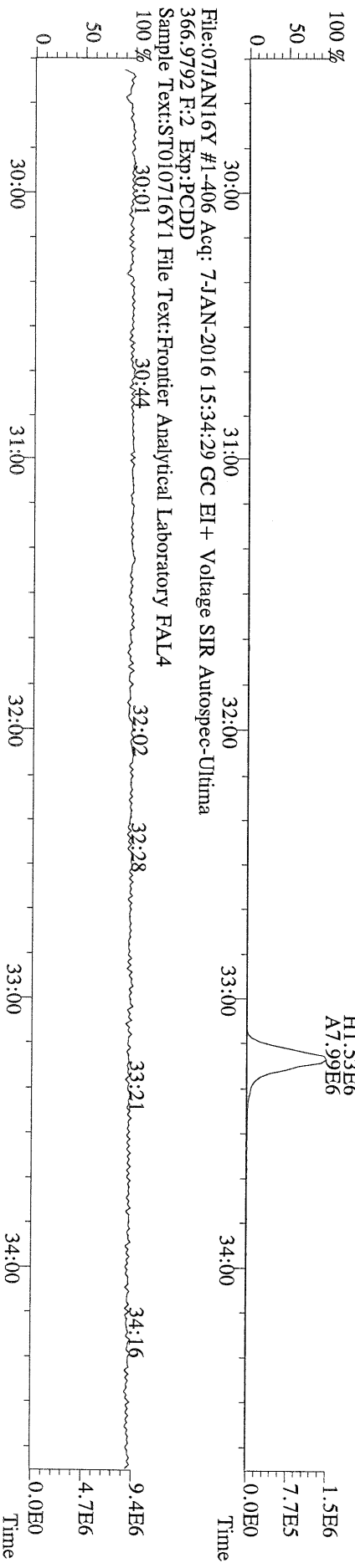
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333.9339 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
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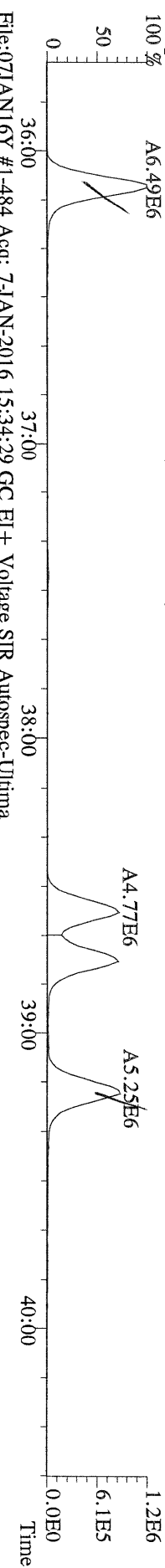
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355.8546 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y1 File Text:Frontier Analytical Laboratory FAL4



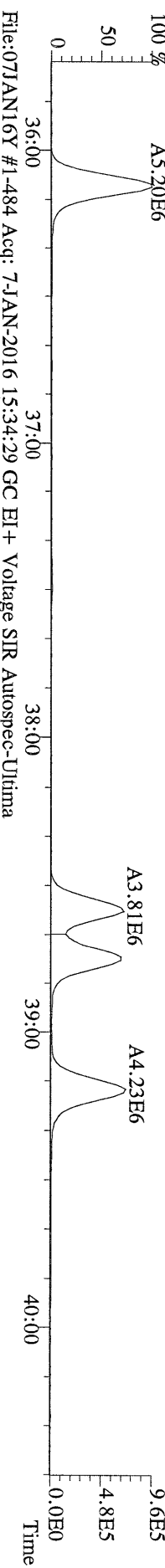
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Sample Text:ST010716Y1 File Text:Frontier Analytical Laboratory FAL4



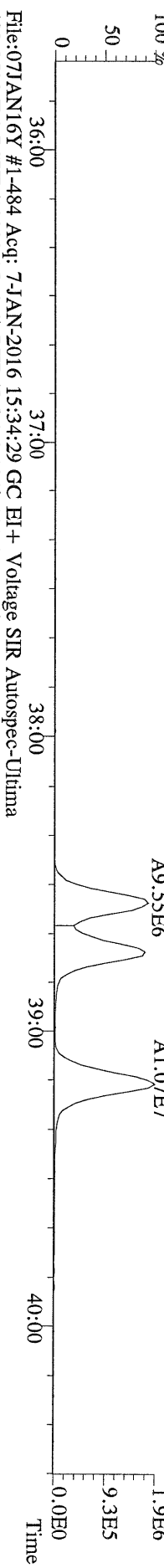
File:07JAN16Y #1-484 Acq: 7-JAN-2016 15:34:29 GC EI+ Voltage SIR Autospec-Ultima
 389.8156 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
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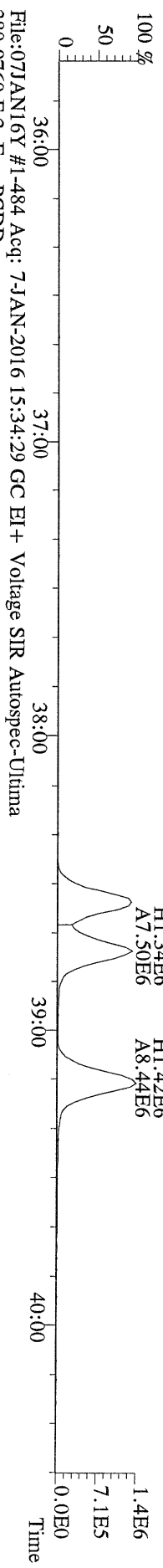
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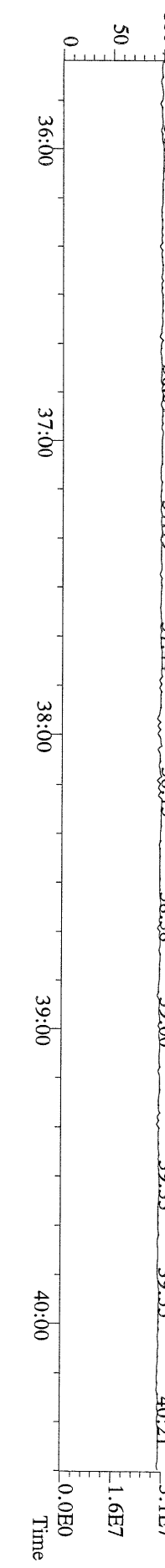
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 401.8559 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
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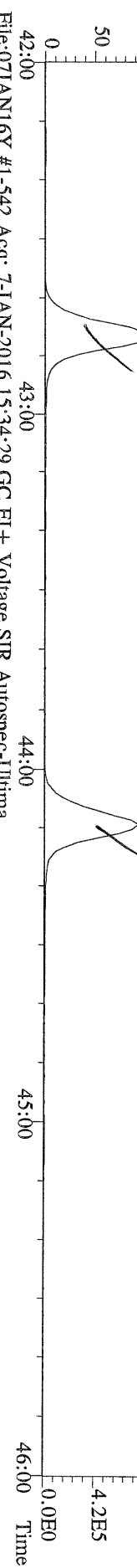
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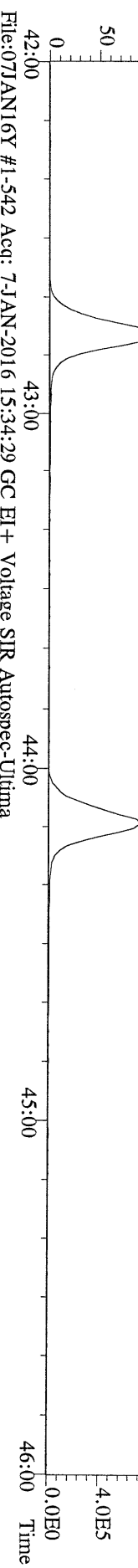
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 380.9760 F:3 Exp:PCDD
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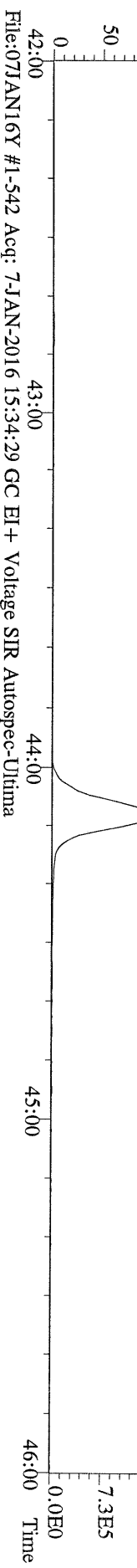
File:071JAN16Y #1-542 Acq: 7-JAN-2016 15:34:29 GC EI+ Voltage SIR Autospec-Utima
423.7767 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y1 File Text:Frontier Analytical Laboratory FAL4
100 %



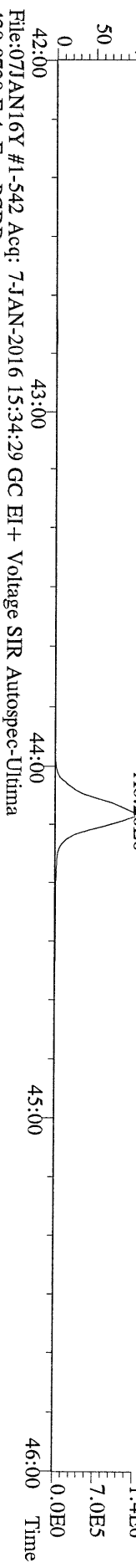
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425.7737 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y1 File Text:Frontier Analytical Laboratory FAL4
100 %



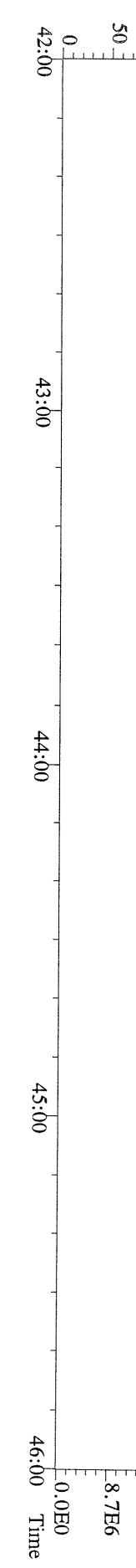
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435.8169 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y1 File Text:Frontier Analytical Laboratory FAL4
100 %



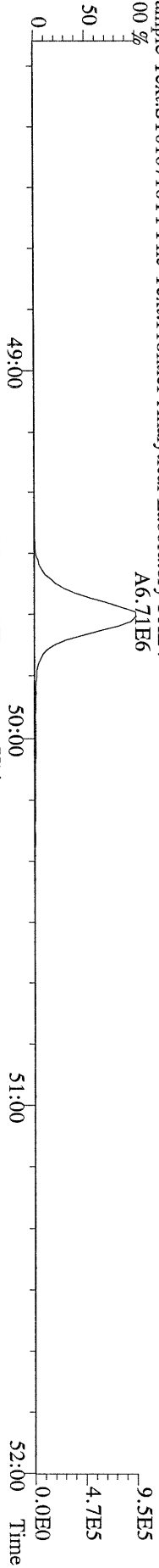
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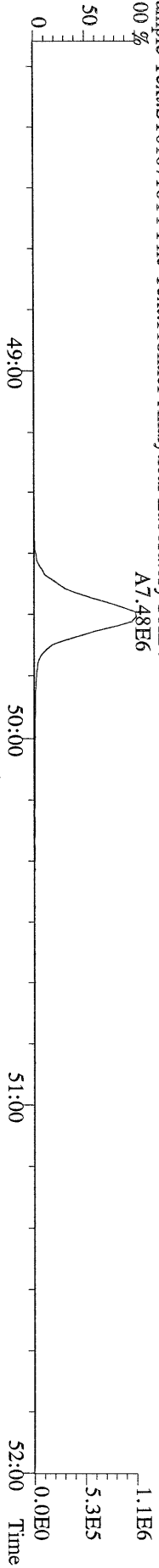
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430.9728 F:4 Exp:PCDD
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100 %



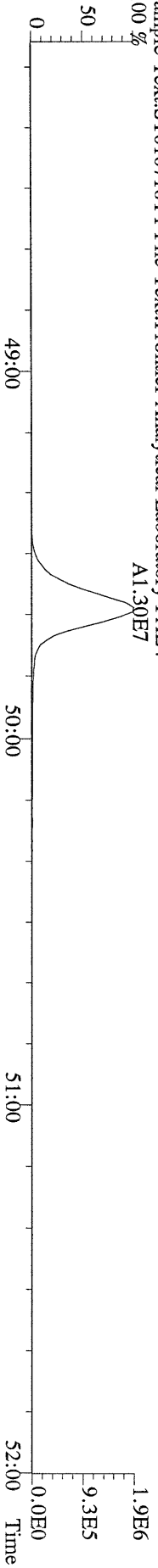
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457.7377 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y1 File Text:Frontier Analytical Laboratory FAL4



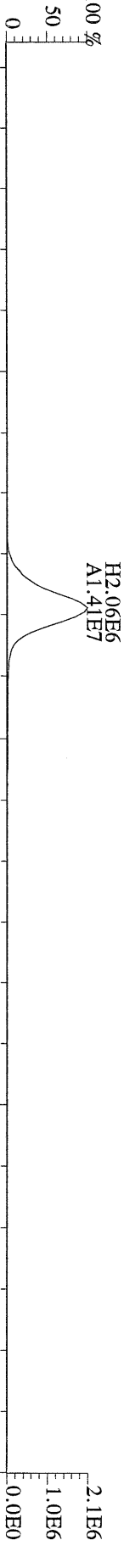
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459.7348 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y1 File Text:Frontier Analytical Laboratory FAL4



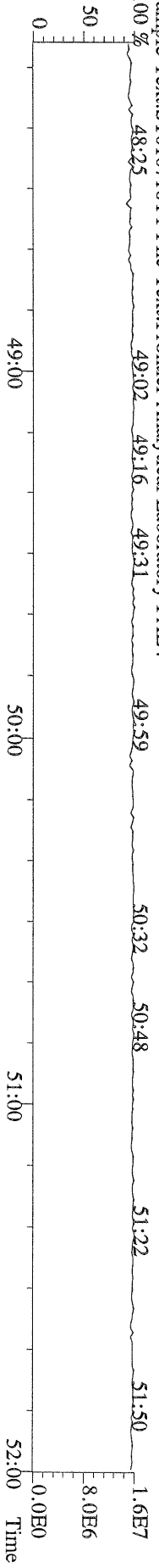
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469.7780 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
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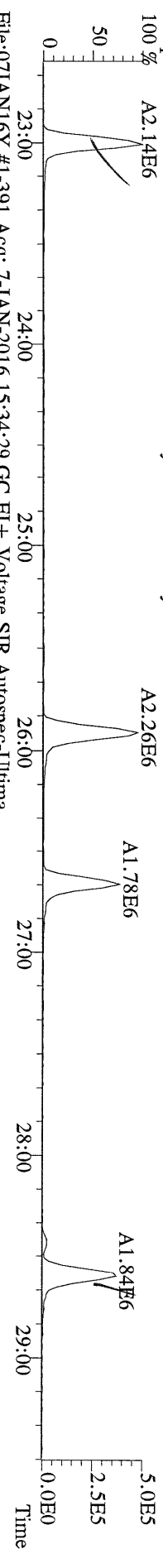
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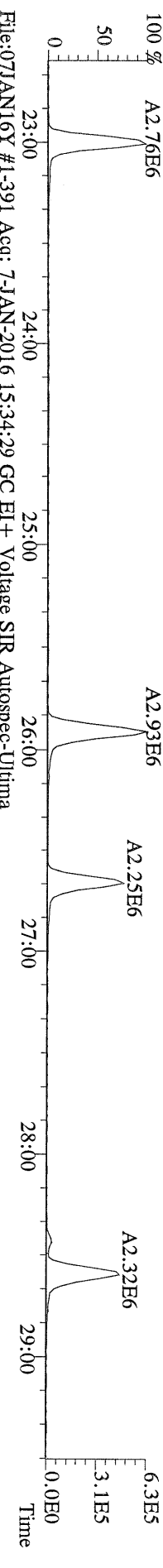
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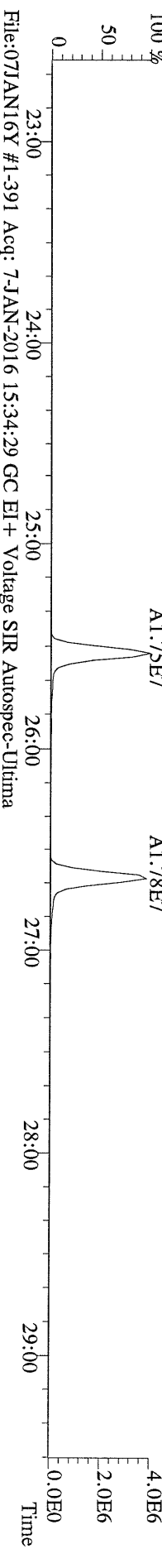
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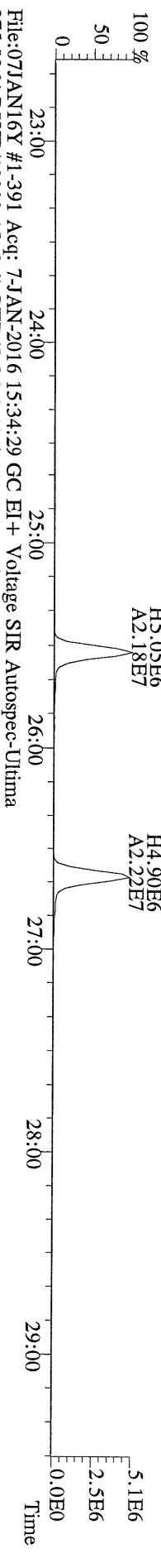
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305.8987 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y1 File Text:Frontier Analytical Laboratory FAL4



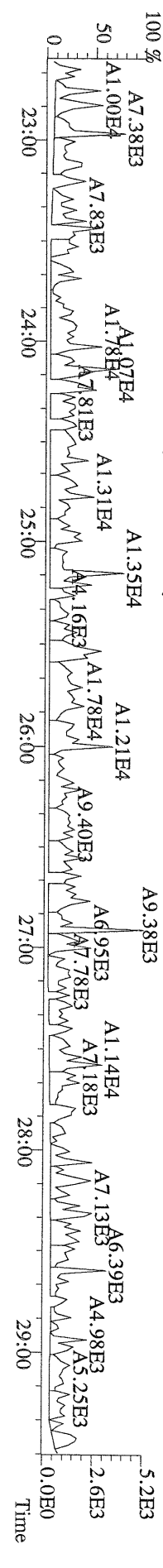
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315.9419 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
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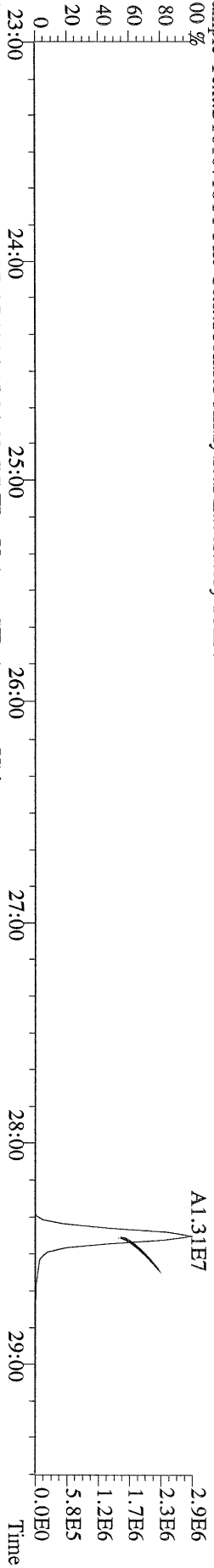
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317.9389 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
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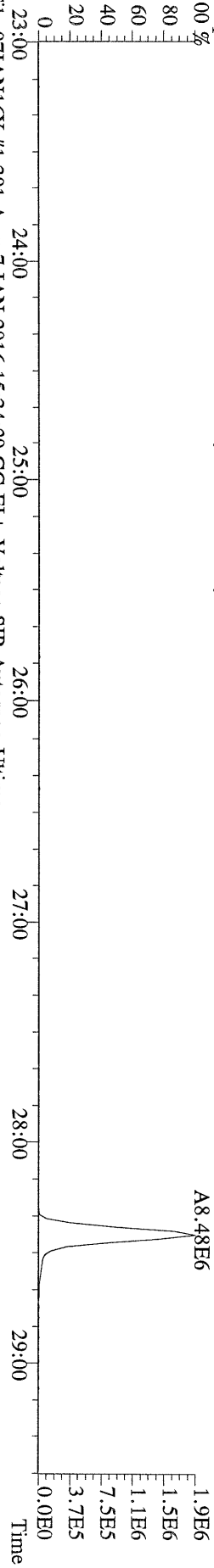
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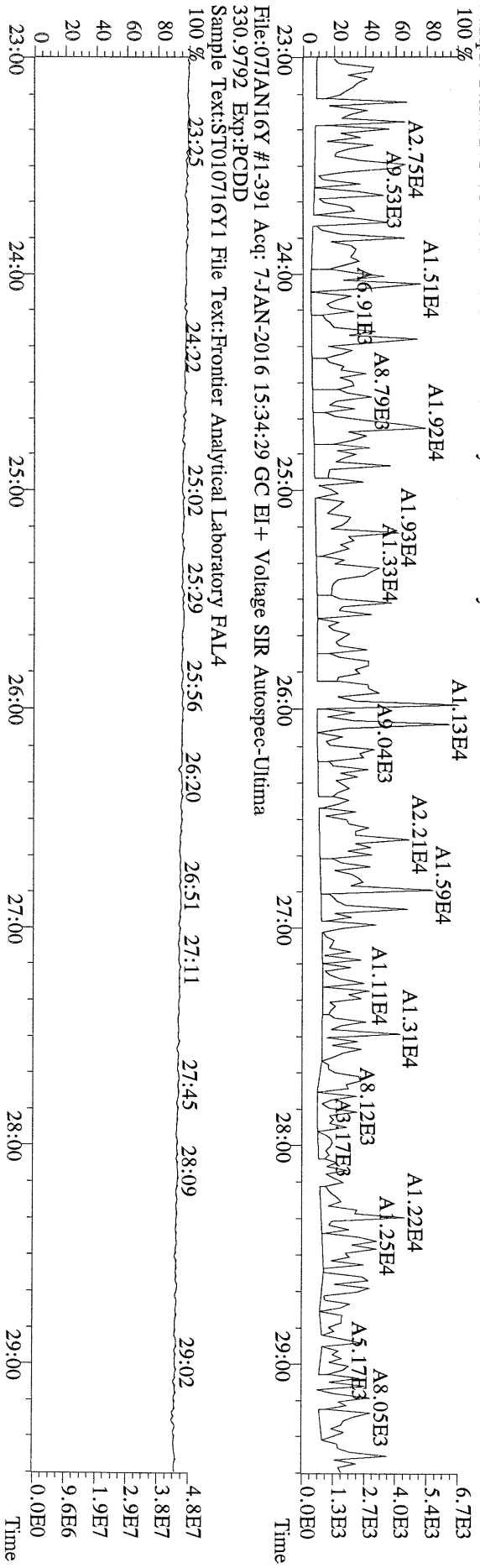
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 339.8597 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
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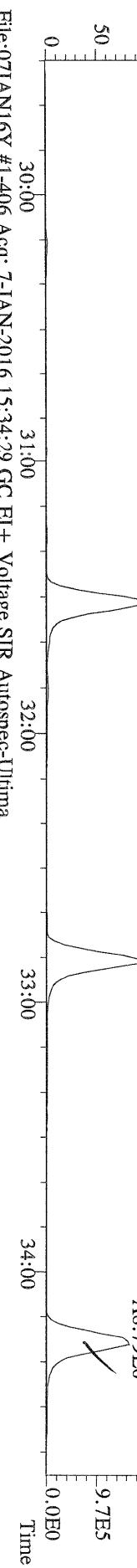
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 341.8568 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
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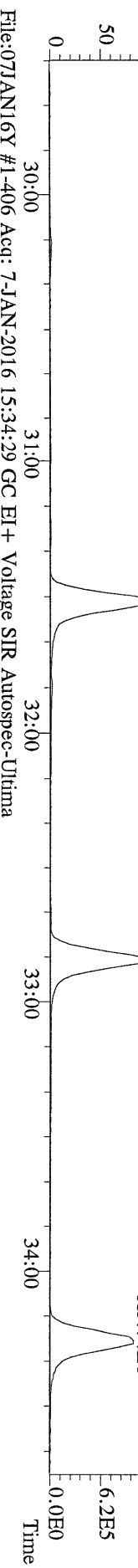
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 409.7974 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010716Y1 File Text:Frontier Analytical Laboratory FAL4



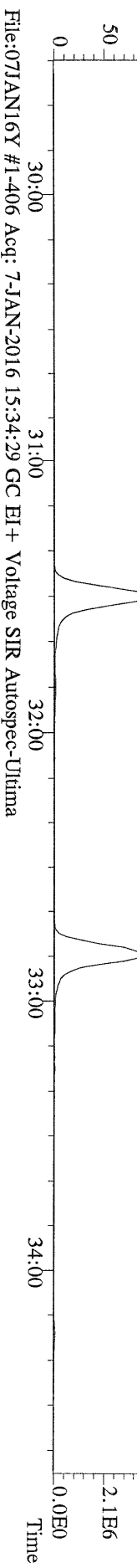
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339.8597 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y1 File Text:Frontier Analytical Laboratory FAL4



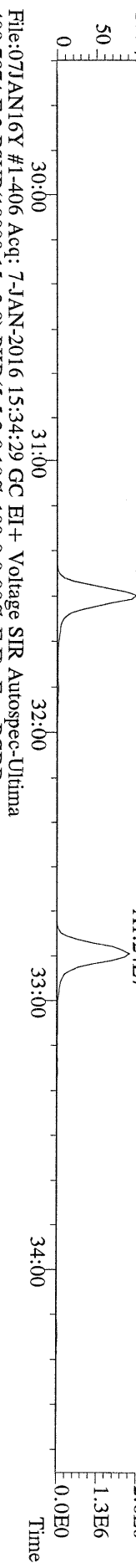
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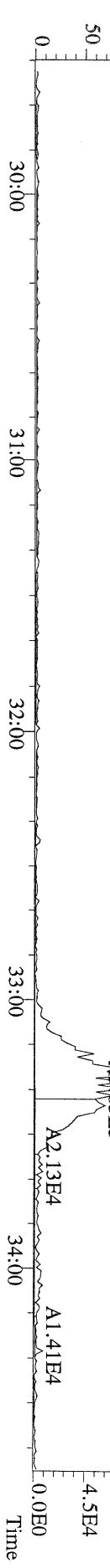
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Sample Text:ST010716Y1 File Text:Frontier Analytical Laboratory FAL4



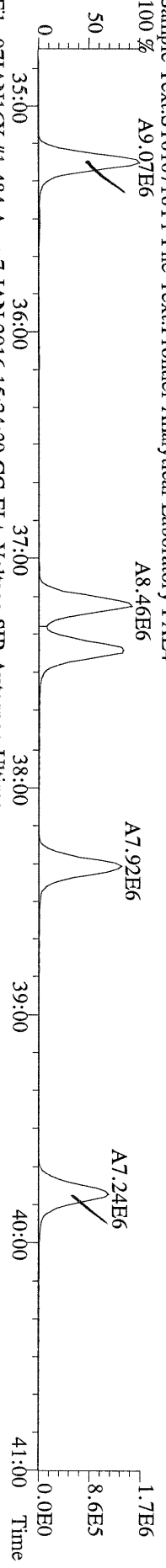
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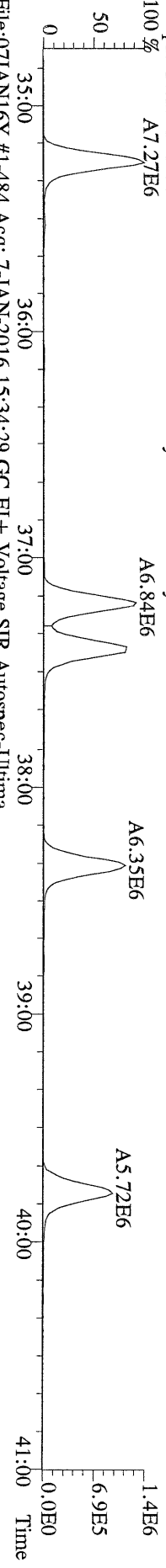
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409.7974 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y1 File Text:Frontier Analytical Laboratory FAL4



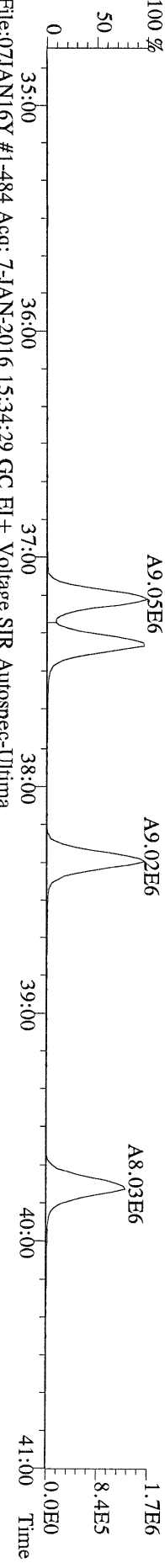
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 373.8207 F:3 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010716Y1 File Text:Frontier Analytical Laboratory FAL4



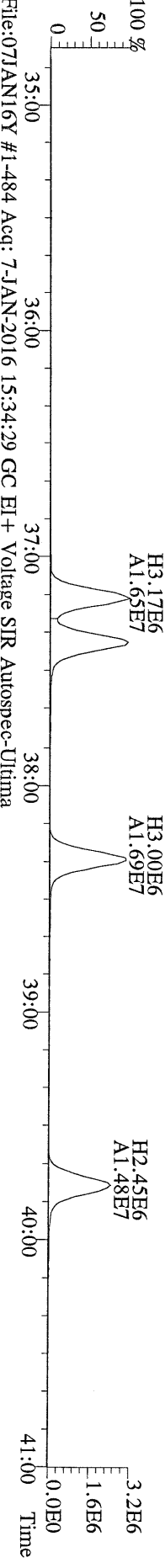
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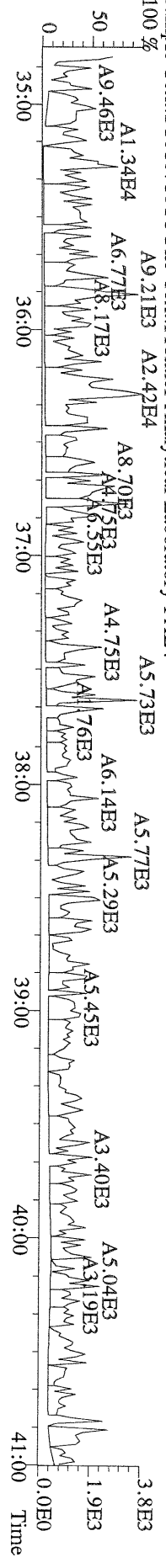
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 383.8639 F:3 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010716Y1 File Text:Frontier Analytical Laboratory FAL4



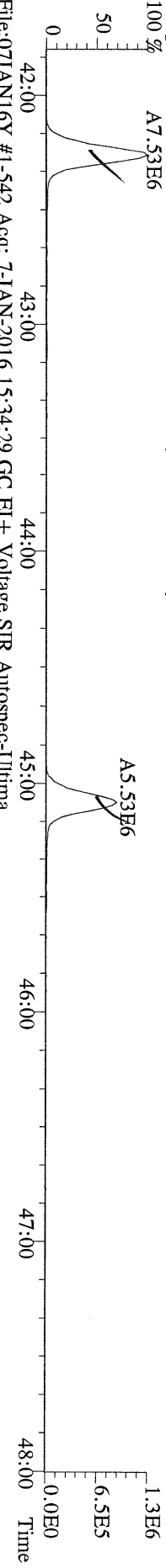
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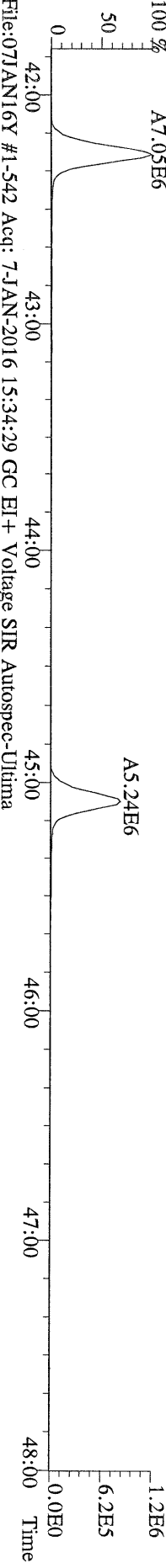
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 445.7555 F:3 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
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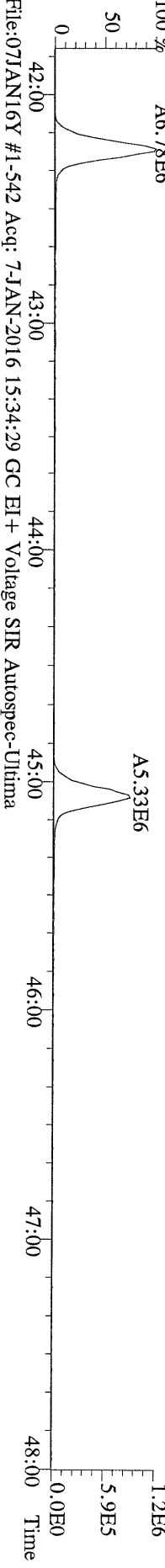
File:07JIAN16Y #1-542 Acq: 7-JAN-2016 15:34:29 GC EI+ Voltage SIR Autospec-Ultima
407.7818 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y1 File Text:Frontier Analytical Laboratory FAL4
100 %



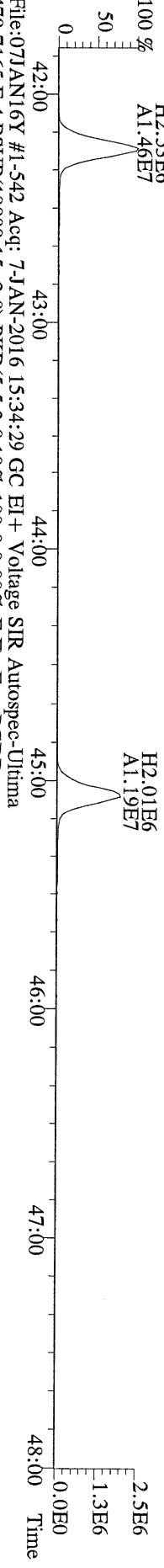
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409.7788 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y1 File Text:Frontier Analytical Laboratory FAL4
100 %



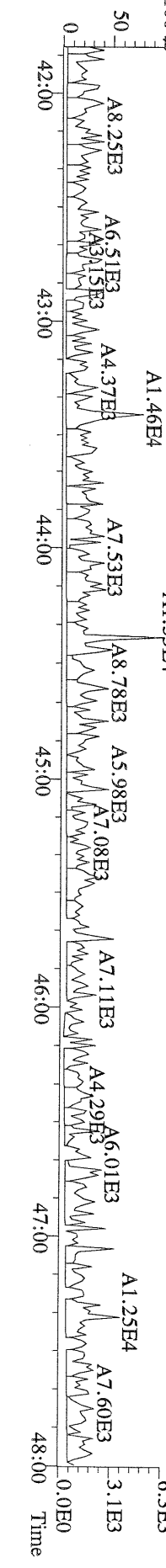
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417.8253 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y1 File Text:Frontier Analytical Laboratory FAL4
100 %



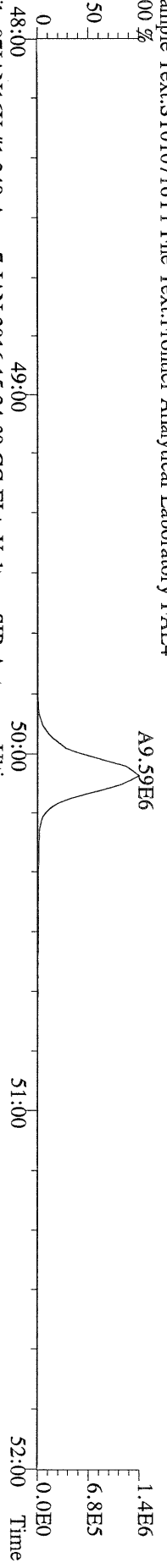
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Sample Text:ST010716Y1 File Text:Frontier Analytical Laboratory FAL4
100 %



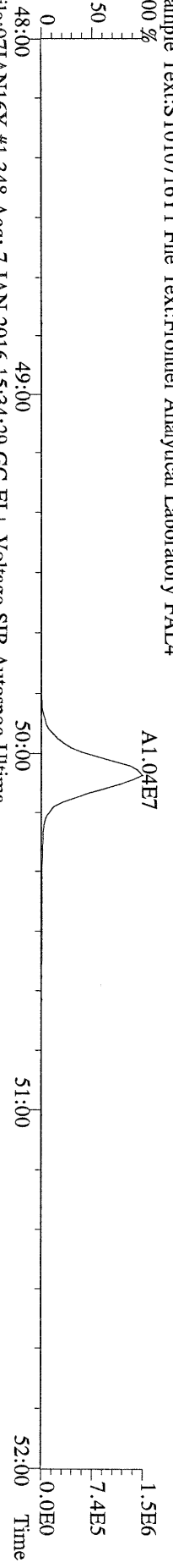
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479.7165 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y1 File Text:Frontier Analytical Laboratory FAL4
100 %



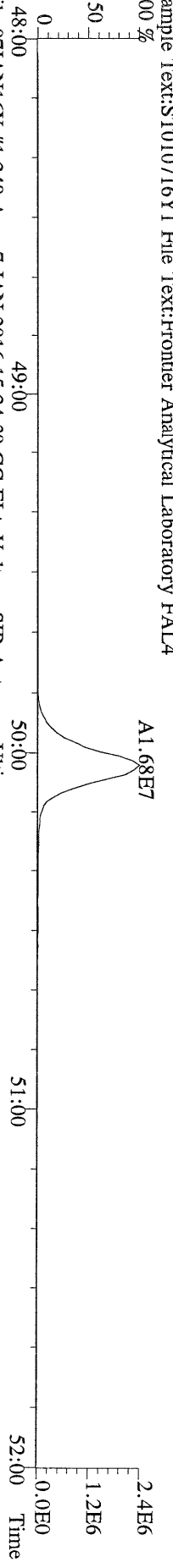
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 441.7428 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010716Y1 File Text:Frontier Analytical Laboratory FAL4



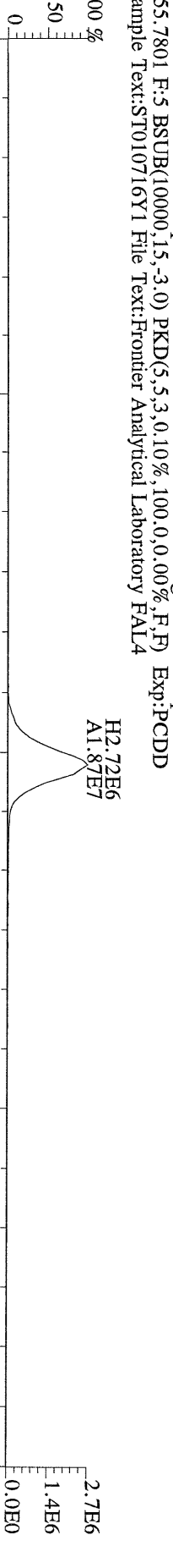
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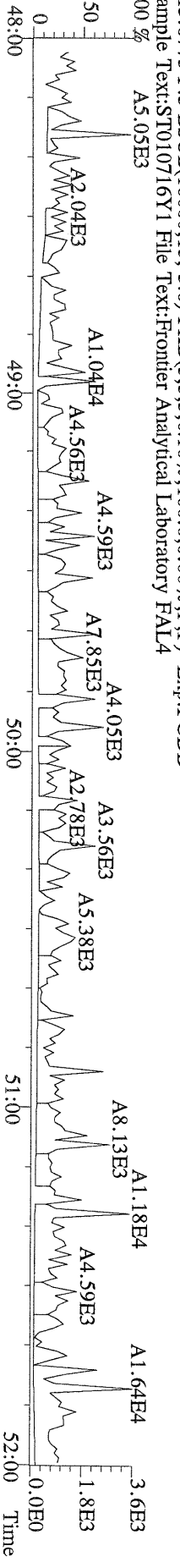
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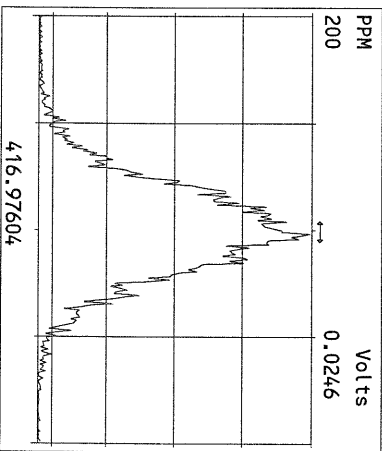
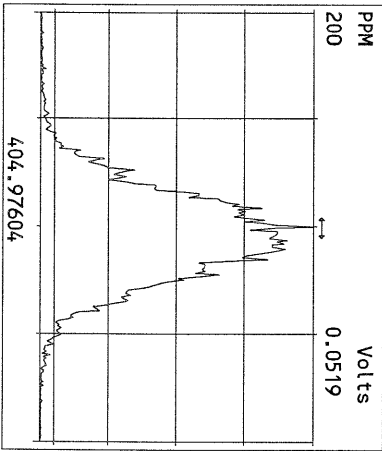
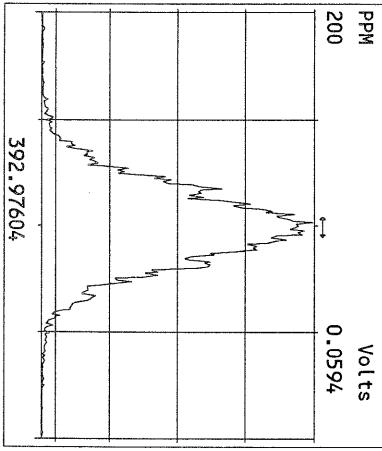
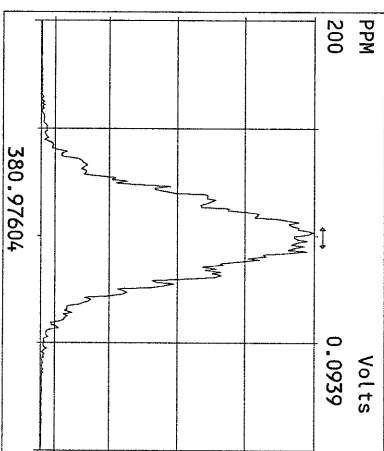
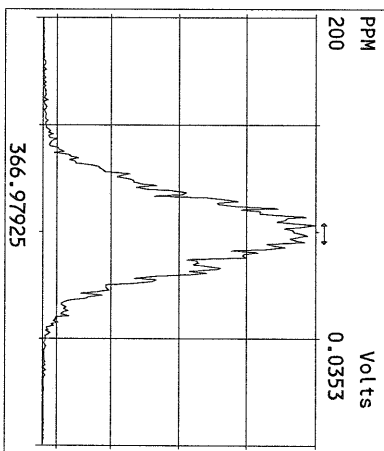
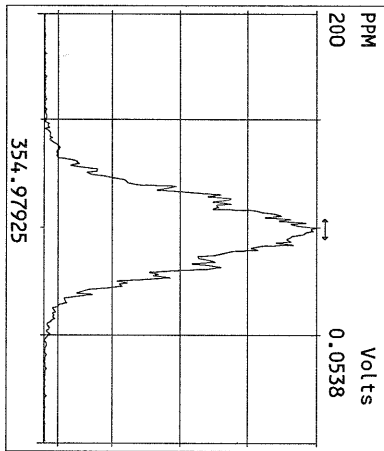
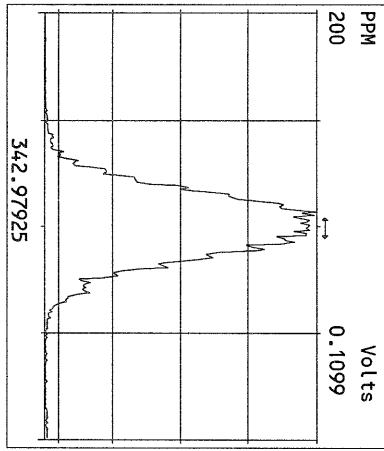
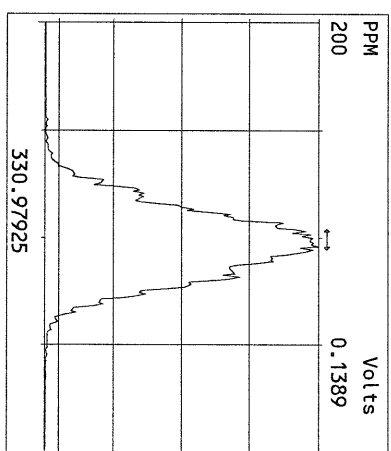
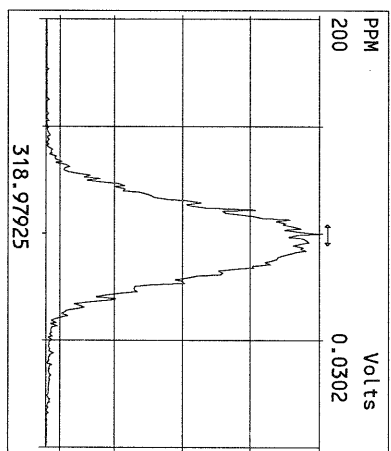
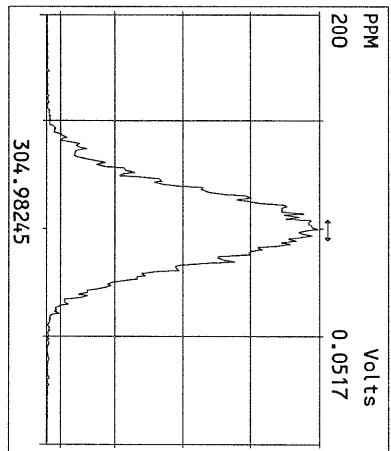
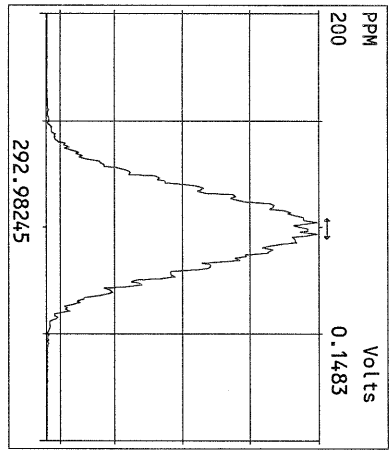


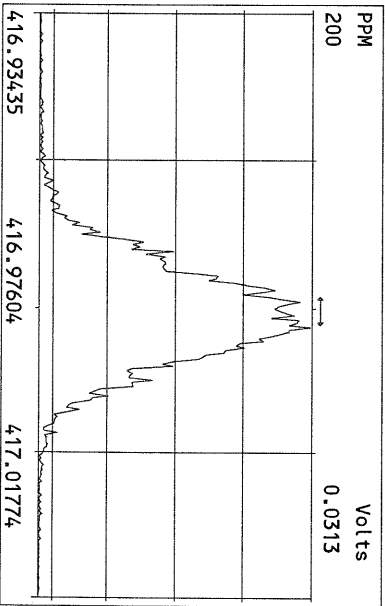
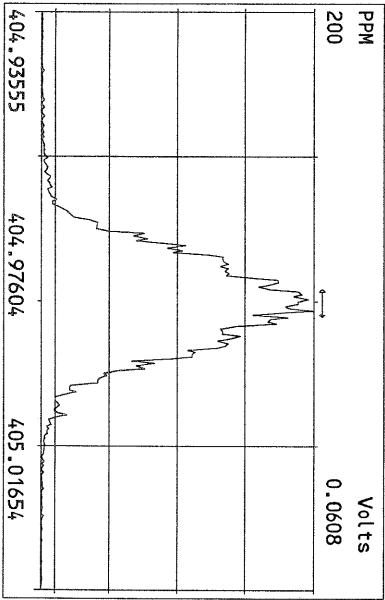
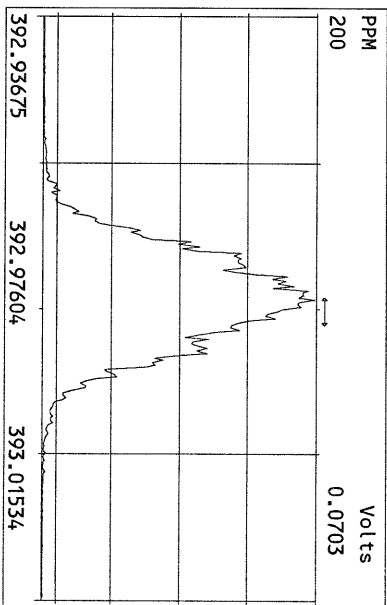
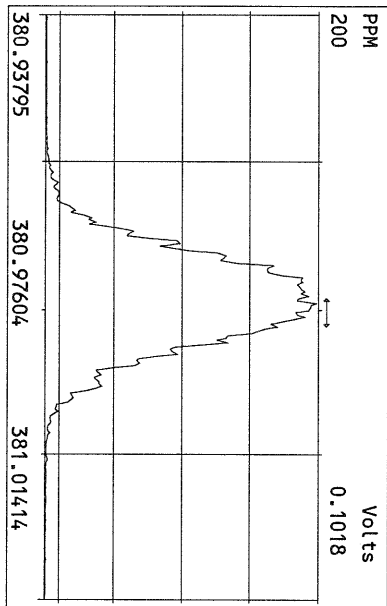
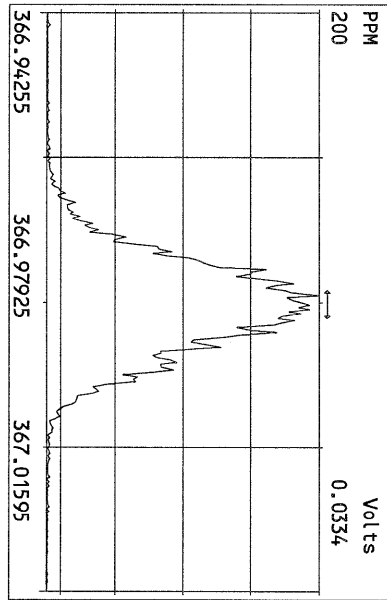
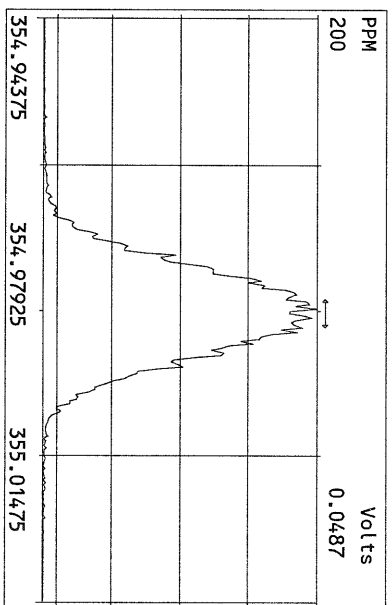
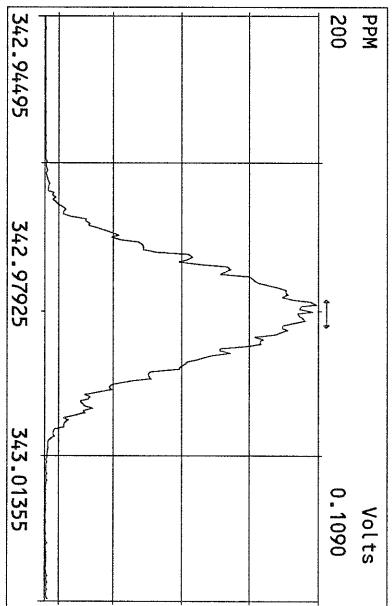
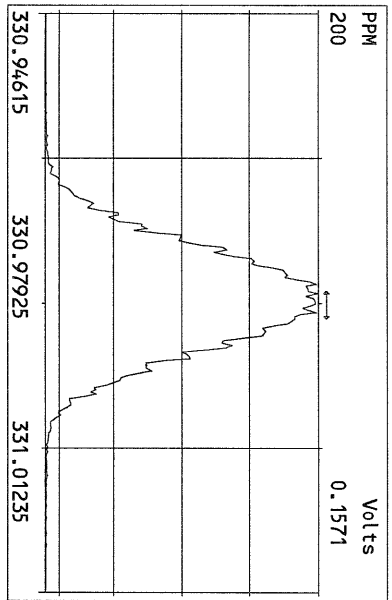
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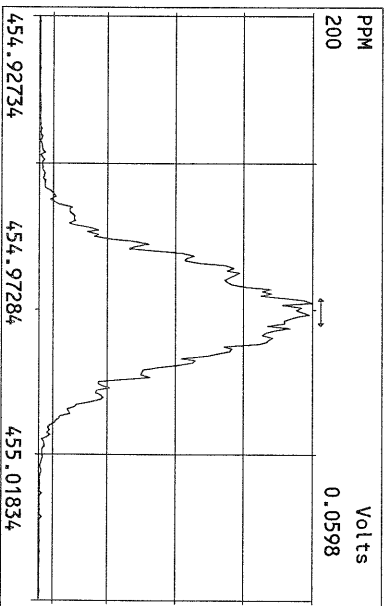
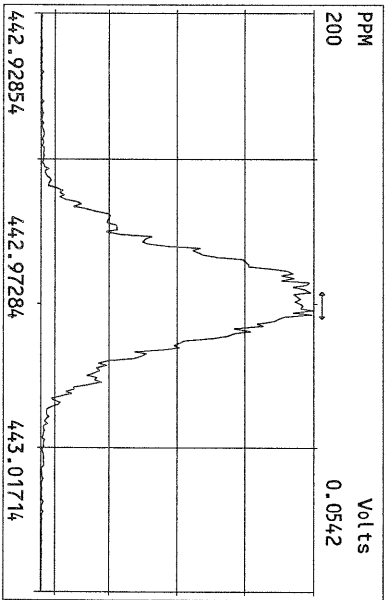
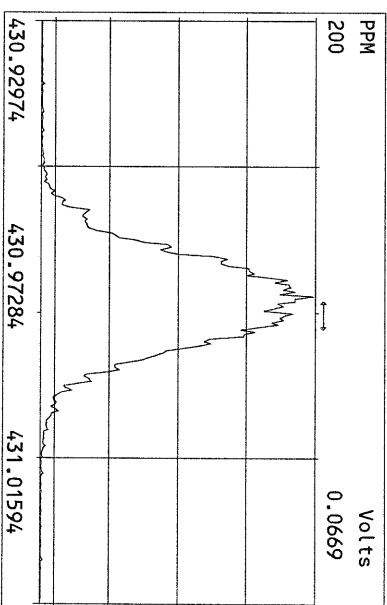
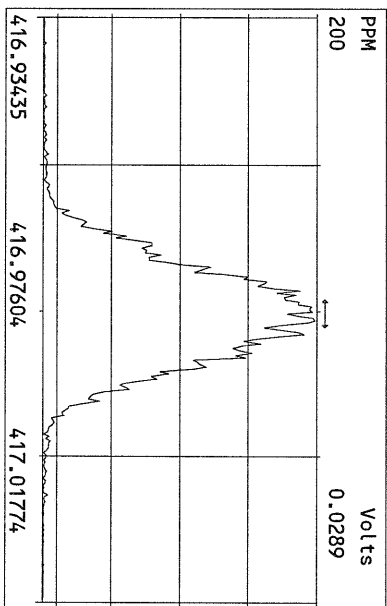
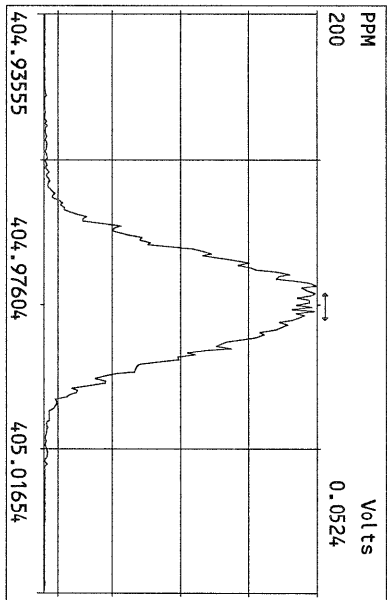
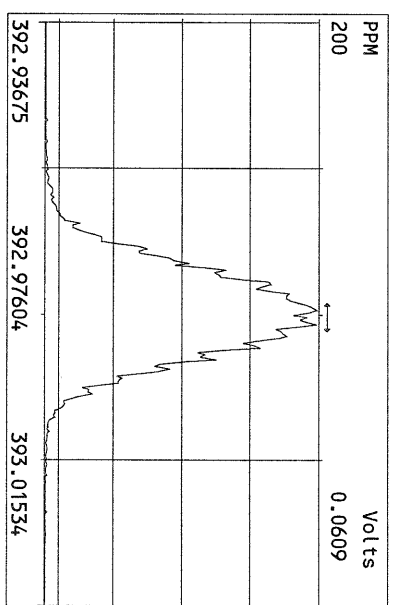
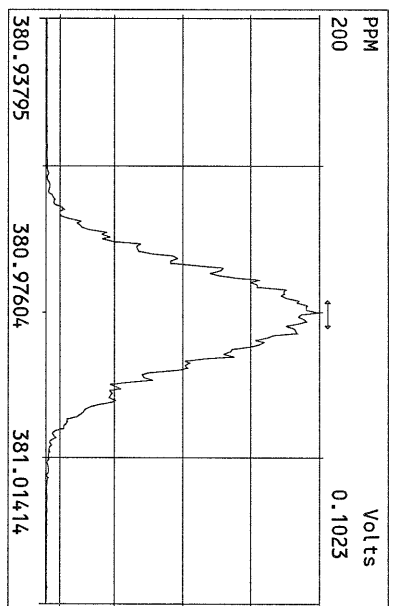
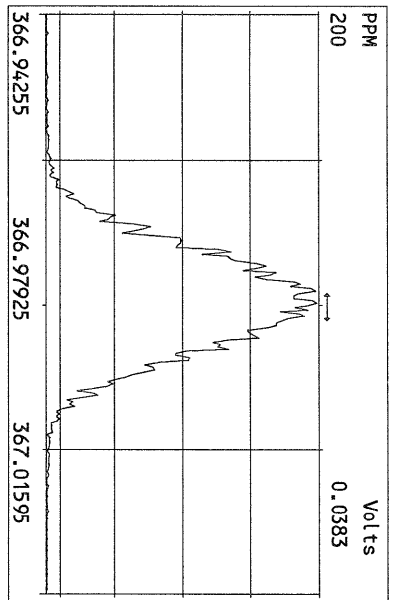


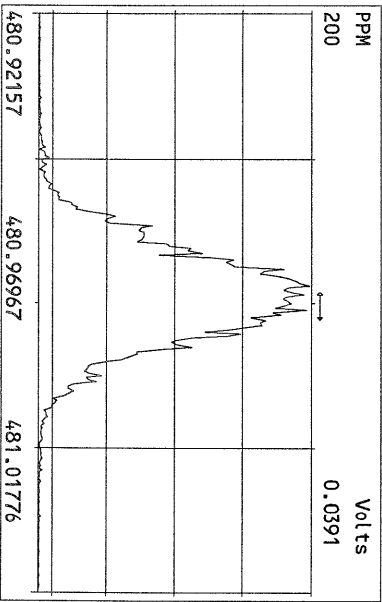
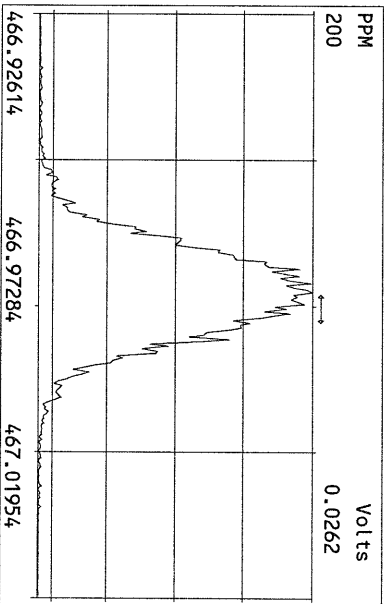
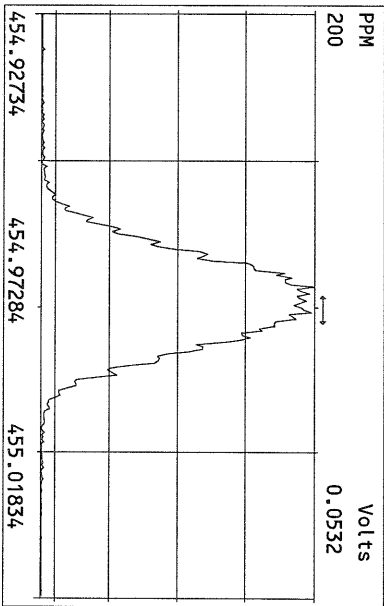
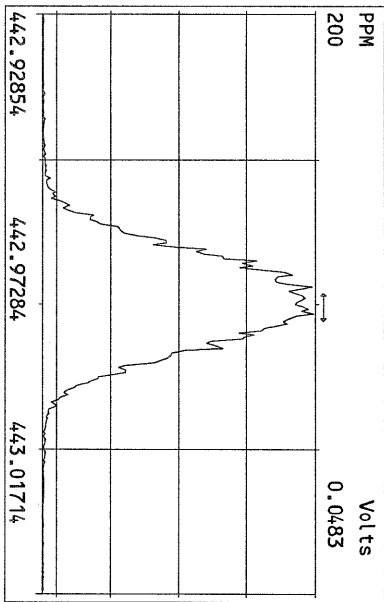
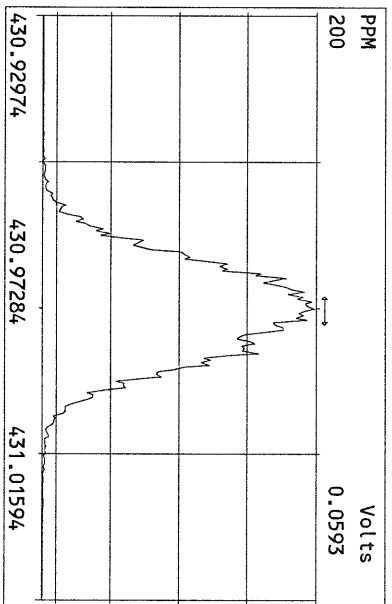
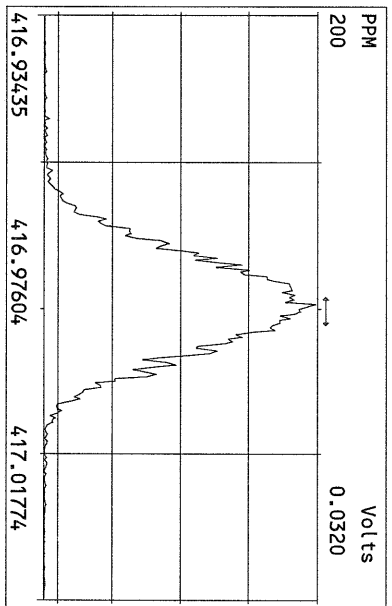
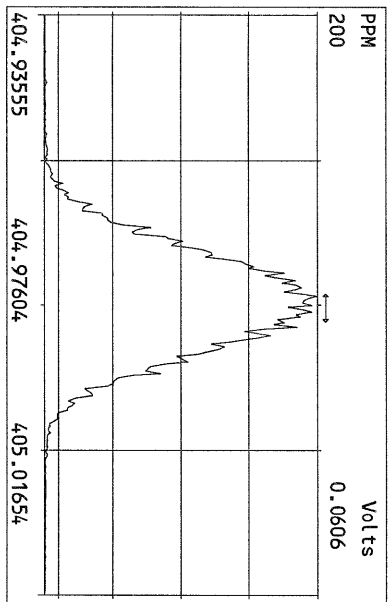
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 513.6775 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010716Y1 File Text:Frontier Analytical Laboratory FAL4



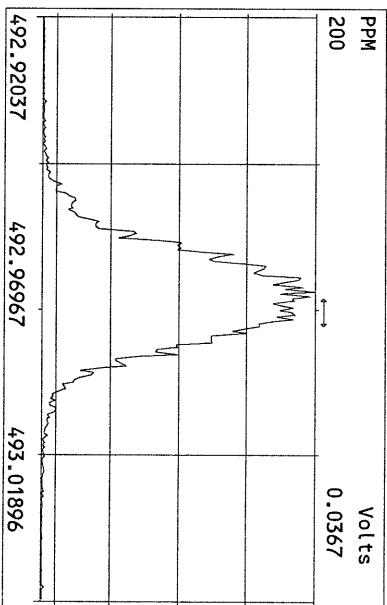
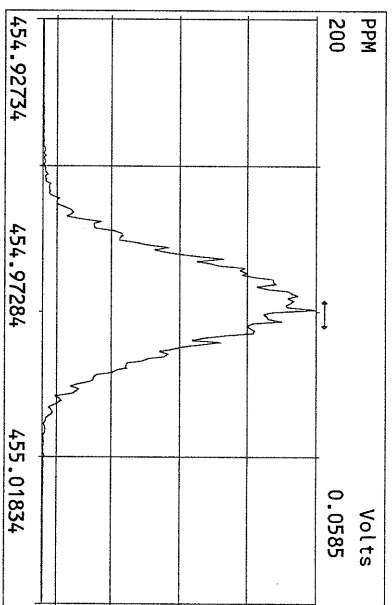
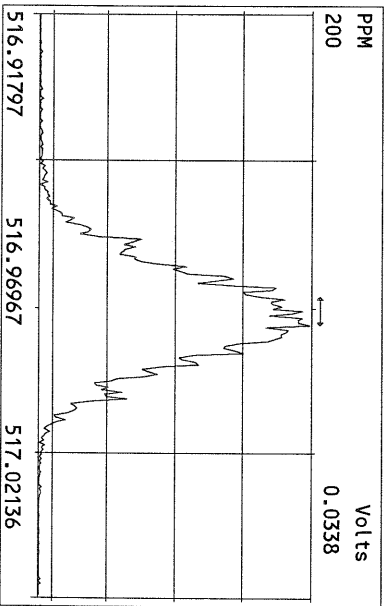
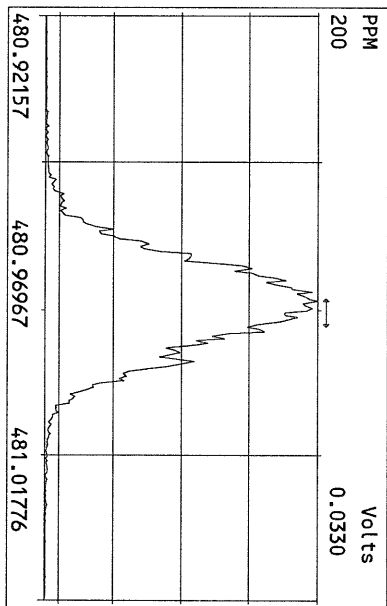
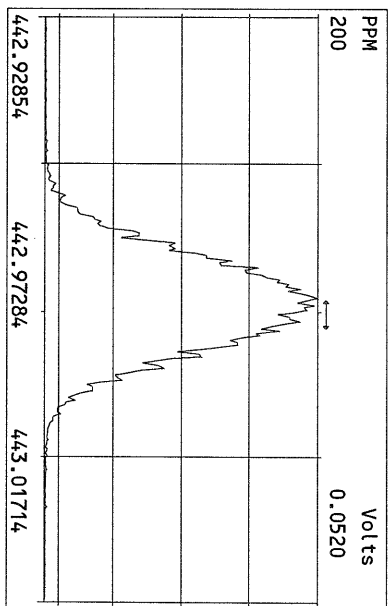
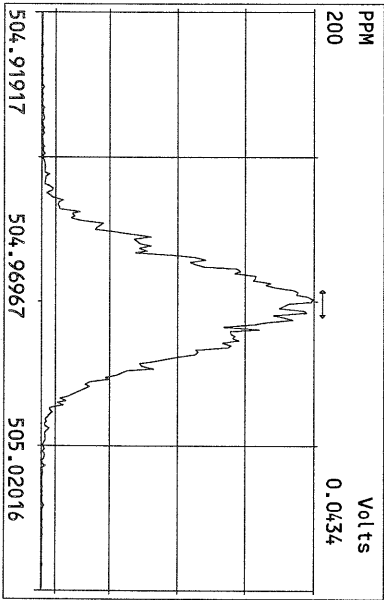
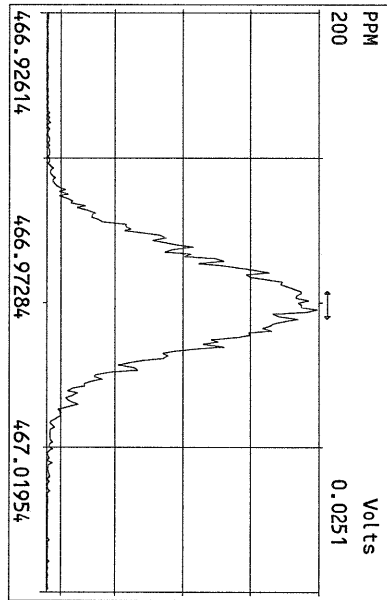
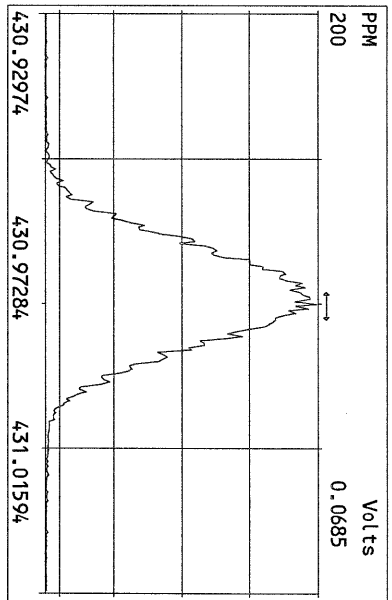








Peak Locate Examination: 8-JAN-2016:09:45 File:07JAN16Y_RES_CHECK
Experiment:PCDD Function:5 Reference:PFK



USEPA - ITD

FORM 4B
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: Frontier Analytical Laboratory

Episode No.:

Contract No.:

SAS No.:

Initial Calibration Date: 12/29/15

Instrument ID: FAL4

GC Column ID: DB5

VER Data Filename: 07JAN16Y Sam:16

Analysis Date: 8-JAN-16 05:21:12


LABELLED COMPOUNDS	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	ACCEPT	CONC. FOUND	CONC. RANGE (ng/mL) (3)
13C-2,3,7,8-TCDD	M/M+2	0.80	0.65-0.89	y	99.2	82.0 - 121 ✓
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.57	1.32-1.78	y	95.9	62.0 - 160 ✓
13C-1,2,3,4,7,8-HxCDD	M+2/M+4	1.35	1.05-1.43	y	106	85.0 - 117 ✓
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.34	1.05-1.43	y	104	85.0 - 118 ✓
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.09	0.88-1.20	y	111	72.0 - 138 ✓
13C-OCDD	M+2/M+4	0.92	0.76-1.02	y	208	96.0 - 418 ✓
13C-2,3,7,8-TCDF	M/M+2	0.84	0.65-0.89	y	112	71.0 - 140 ✓
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.63	1.32-1.78	y	115	76.0 - 130 ✓
13C-2,3,4,7,8-PeCDF	M+2/M+4	1.65	1.32-1.78	y	115	77.0 - 130 ✓
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.54	0.43-0.59	y	115	76.0 - 134 ✓
13C-1,2,3,6,7,8-HxCDF	M/M+2	0.55	0.43-0.59	y	114	70.0 - 143 ✓
13C-2,3,4,6,7,8-HxCDF	M/M+2	0.54	0.43-0.59	y	115	73.0 - 137 ✓
13C-1,2,3,7,8,9-HxCDF	M/M+2	0.54	0.43-0.59	y	113	74.0 - 135 ✓
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.49	0.37-0.51	y	112	78.0 - 129 ✓
13C-1,2,3,4,7,8,9-HpCDF	M/M+2	0.48	0.37-0.51	y	109	77.0 - 129 ✓
13C-OCDF	M+2/M+4	0.91	0.76-1.02	y	206	96.0 - 415 ✓
CLEANUP STANDARD (4)						
37Cl-2,3,7,8-TCDD					10.3	7.90 - 12.7 ✓

(1) See Table 8, Method 1613, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613.

(3) Contract-required concentration range as specified in Table 6, Method 1613.

(4) No ion abundance ratio; report concentration found.

Analyst: 

Date: 1/8/16

FORM 5
PCDD/PCDF RT WINDOW AND ISOMER SPECIFICITY STANDARDS

Lab Name: Frontier Analytical Laboratory Episode No.:
Contract No.: SAS No.:
Instrument ID: FAL4 Initial Calibration Date: 12/29/15
RT Window Data Filename: 07JAN16Y Sam:16 Analysis Date: 8-JAN-16 Time: 05:21:12
DB-5 IS Data Filename: 07JAN16Y Sam:16 Analysis Date: 8-JAN-16 Time: 05:21:12
DB-225 IS Data Filename: Analysis Date: Time:

DB-5 RT WINDOW DEFINING STANDARDS RESULTS

ISOMERS	ABSOLUTE RT	ISOMERS	ABSOLUTE RT
1,3,6,8-TCDD (F)	24:23 ✓	1,3,6,8-TCDF (F)	23:02 ✓
1,2,8,9-TCDD (L)	28:24 ✓	1,2,8,9-TCDF (L)	28:38 ✓
1,2,4,7,9-PeCDD (F)	30:17 ✓	1,3,4,6,8-PeCDF (F)	28:27 ✓
1,2,3,8,9-PeCDD (L)	33:51 ✓	1,2,3,8,9-PeCDF (L)	34:18 ✓
1,2,4,6,7,9-HxCDD (F)	36:09 ✓	1,2,3,4,6,8-HxCDF (F)	35:17 ✓
1,2,3,7,8,9-HxCDD (L)	39:15 ✓	1,2,3,7,8,9-HxCDF (L)	39:49 ✓
1,2,3,4,6,7,9-HpCDD (F)	42:49 ✓	1,2,3,4,6,7,8-HpCDF (F)	42:18 ✓
1,2,3,4,6,7,8-HpCDD (L)	44:11 ✓	1,2,3,4,7,8,9-HpCDF (L)	45:07 ✓

(F) = First eluting isomer (DB-5); (L) = Last eluting isomer (DB-5)


=====

ISOMER SPECIFICITY (IS) TEST STANDARD RESULTS

% VALLEY HEIGHT
BETWEEN
COMPARED PEAKS (1)

<25%

(1) To meet contract requirement, %Valley Height Between Compared Peaks shall not exceed 25% (section 15.4.2.2, Method 1613).

Analyst: 

Date: 1/8/16

USEPA - ITD

FORM 6A

PCDD/PCDF RELATIVE RETENTION TIMES

Lab Name: Frontier Analytical Laboratory

Episode No.:

Contract No.:

SAS No.:

Init. Cal. Date: 12/29/15

Instrument ID: FAL4

GC Column ID: DB5

Analysis Date: 8-JAN-16 05:21:12

CS3 or VER Data Filename: 07JAN16Y

Sam:16

NATIVE ANALYTES	RETENTION TIME REFERENCE	RRT	RRT QC LIMITS (1)
2,3,7,8-TCDD	13C-2,3,7,8-TCDD	1.001	0.999-1.002 ✓
2,3,7,8-TCDF	13C-2,3,7,8-TCDF	1.001	0.999-1.003 ✓
1,2,3,7,8-PeCDD	13C-1,2,3,7,8-PeCDD	1.000	0.999-1.002 ✓
1,2,3,7,8-PeCDF	13C-1,2,3,7,8-PeCDF	1.001	0.999-1.002 ✓
2,3,4,7,8-PeCDF	13C-2,3,4,7,8-PeCDF	1.000	0.999-1.002 ✓
LABELED COMPOUNDS			
37Cl-2,3,7,8-TCDD	13C-1,2,3,4-TCDD	1.023	0.989-1.052 ✓
13C-2,3,7,8-TCDD		1.021	0.976-1.043 ✓
13C-2,3,7,8-TCDF		0.993	0.923-1.103 ✓
13C-1,2,3,7,8-PeCDD		1.239	1.000-1.567 ✓
13C-1,2,3,7,8-PeCDF		1.175	0.923-1.203 ✓
13C-2,3,4,7,8-PeCDF		1.224	0.923-1.303 ✓

(1) Contract-required limits for Relative Retention Times (RRT) as specified in Table 2, Method 1613.

Analyst: _____

Date: _____

USEPA - ITD

FORM 6B
PCDD/PCDF RELATIVE RETENTION TIMES

Lab Name: Frontier Analytical Laboratory

Episode No.:

Contract No.:

SAS No.:

Init. Cal. Date: 12/29/15

Instrument ID: FAL4

GC Column ID: DB5


Analysis Date: 8-JAN-16 05:21:12 CS3 or VER Data Filename: 07JAN16Y Sam:16

NATIVE ANALYTES	RETENTION TIME REFERENCE	RRT	RRT QC LIMITS (1)
1,2,3,4,7,8-HxCDD	13C-1,2,3,4,7,8-HxCDD	1.001	0.999-1.001 ✓
1,2,3,6,7,8-HxCDD	13C-1,2,3,6,7,8-HxCDD	1.000	0.998-1.004 ✓
1,2,3,7,8,9-HxCDD	13C-1,2,3,6,7,8-HxCDD	1.012	1.000-1.019 ✓
1,2,3,4,7,8-HxCDF	13C-1,2,3,4,7,8-HxCDF	1.000	0.999-1.001 ✓
1,2,3,6,7,8-HxCDF	13C-1,2,3,6,7,8-HxCDF	1.001	0.997-1.005 ✓
2,3,4,6,7,8-HxCDF	13C-2,3,4,6,7,8-HxCDF	1.000	0.999-1.001 ✓
1,2,3,7,8,9-HxCDF	13C-1,2,3,7,8,9-HxCDF	1.000	0.999-1.001 ✓
1,2,3,4,6,7,8-HpCDD	13C-1,2,3,4,6,7,8-HpCDD	1.000	0.999-1.001 ✓
1,2,3,4,6,7,8-HpCDF	13C-1,2,3,4,6,7,8-HpCDF	1.000	0.999-1.001 ✓
1,2,3,4,7,8,9-HpCDF	13C-1,2,3,4,7,8,9-HpCDF	1.000	0.999-1.001 ✓
OCDD	13C-OCDD	1.000	0.999-1.001 ✓
OCDF	13C-OCDF	1.000	0.999-1.001 ✓

LABELED COMPOUNDS

13C-1,2,3,4,7,8-HxCDD	13C-1,2,3,7,8,9-HxCDD	0.984	0.977-1.000 ✓
13C-1,2,3,6,7,8-HxCDD		0.989	0.981-1.003 ✓
13C-1,2,3,4,7,8-HxCDF		0.949	0.944-0.970 ✓
13C-1,2,3,6,7,8-HxCDF		0.954	0.949-0.975 ✓
13C-2,3,4,6,7,8-HxCDF		0.978	0.959-1.021 ✓
13C-1,2,3,7,8,9-HxCDF		1.015	0.977-1.047 ✓
13C-1,2,3,4,6,7,8-HpCDD		1.127	1.086-1.130 ✓
13C-1,2,3,4,6,7,8-HpCDF		1.078	1.043-1.085 ✓
13C-1,2,3,4,7,8,9-HpCDF		1.151	1.057-1.154 ✓
13C-OCDD		1.268	1.032-1.311 ✓
13C-OCDF		1.277	1.000-1.311 ✓

(1) Contract-required limits for Relative Retention Times (RRT) as specified in Table 2, Method 1613.

Analyst: 

Date: 1/8/16

Name	Resp	RA	RT	RRF	Conc	Qual	Fac Noise-1	Noise-2	DL	#Hom
2,3,7,8-TCDD	1.22e+06	0.80 y	27:27	1.08	10.7		2.50	-	*	
1,2,3,7,8-PeCDD	3.63e+06	1.56 y	33:16	0.90	54.5		2.50	-	*	
1,2,3,4,7,8-HxCDD	3.12e+06	1.24 y	38:37	0.98	52.5		2.50	-	*	
1,2,3,6,7,8-HxCDD	3.19e+06	1.25 y	38:47	1.00	55.5		2.50	-	*	
1,2,3,7,8,9-HxCDD	3.43e+06	1.24 y	39:15	1.11	52.2		2.50	-	*	
1,2,3,4,6,7,8-HpCDD	3.38e+06	1.06 y	44:11	1.09	49.7		2.50	-	*	
OCDD	5.19e+06	0.92 y	49:43	1.04	104		2.50	-	*	
2,3,7,8-TCDF	1.50e+06	0.79 y	26:42	1.05	10.1		2.50	-	*	
1,2,3,7,8-PeCDF	6.10e+06	1.52 y	31:34	0.98	49.5		2.50	-	*	
2,3,4,7,8-PeCDF	5.91e+06	1.54 y	32:53	1.01	50.4		2.50	-	*	
1,2,3,4,7,8-HxCDF	5.64e+06	1.23 y	37:14	1.23	48.1		2.50	-	*	
1,2,3,6,7,8-HxCDF	5.54e+06	1.25 y	37:26	1.17	49.2		2.50	-	*	
2,3,4,6,7,8-HxCDF	5.36e+06	1.25 y	38:23	1.12	50.0		2.50	-	*	
1,2,3,7,8,9-HxCDF	4.96e+06	1.23 y	39:49	1.15	49.9		2.50	-	*	
1,2,3,4,6,7,8-HpCDF	5.43e+06	1.06 y	42:18	1.36	51.0		2.50	-	*	
1,2,3,4,7,8,9-HpCDF	4.18e+06	1.07 y	45:07	1.23	51.3		2.50	-	*	
OCDF	7.53e+06	0.92 y	50:06	1.13	103		2.50	-	*	
Rec										
13C-2,3,7,8-TCDD	1.05e+07	0.80 y	27:25	1.07	99.2				99.2	
13C-1,2,3,7,8-PeCDD	7.35e+06	1.57 y	33:16	0.78	95.9				95.9	
13C-1,2,3,4,7,8-HxCDD	6.06e+06	1.35 y	38:36	0.87	106				106	
13C-1,2,3,6,7,8-HxCDD	5.74e+06	1.34 y	38:46	0.84	104				104	
13C-1,2,3,4,6,7,8-HpCDD	6.27e+06	1.09 y	44:11	0.85	111				111	
13C-OCDD	9.57e+06	0.92 y	49:42	0.70	208				104	
13C-2,3,7,8-TCDF	1.42e+07	0.84 y	26:40	1.03	112				112	
13C-1,2,3,7,8-PeCDF	1.26e+07	1.63 y	31:32	0.89	115				115	
13C-2,3,4,7,8-PeCDF	1.16e+07	1.65 y	32:52	0.82	115				115	
13C-1,2,3,4,7,8-HxCDF	9.56e+06	0.54 y	37:13	1.26	115				115	
13C-1,2,3,6,7,8-HxCDF	9.66e+06	0.55 y	37:25	1.28	114				114	
13C-2,3,4,6,7,8-HxCDF	9.59e+06	0.54 y	38:22	1.27	115				115	
13C-1,2,3,7,8,9-HxCDF	8.66e+06	0.54 y	39:49	1.16	113				113	
13C-1,2,3,4,6,7,8-HpCDF	7.82e+06	0.49 y	42:17	1.06	112				112	
13C-1,2,3,4,7,8,9-HpCDF	6.65e+06	0.48 y	45:07	0.93	109				109	
13C-OCDF	1.29e+07	0.91 y	50:06	0.95	206				103	
37Cl-2,3,7,8-TCDD	9.08e+05		27:27	0.90	10.3					103
13C-1,2,3,4-TCDD	9.87e+06	0.79 y	26:50	-	26.9					
13C-1,2,3,4-TCDF	1.23e+07	0.85 y	25:33	-	25.5					
13C-1,2,3,7,8,9-HxCDD	6.59e+06	1.35 y	39:13	-	24.2					
Fac Noise-1 Noise-2 DL #Hom										
Total Tetra-Dioxins	5.55e+06		22:46	1.08	48.8		2.50	-	*	32
Total Penta-Dioxins	1.20e+07		30:17	0.90	181		2.50	-	*	27
Total Hexa-Dioxins	1.41e+07		35:16	1.03	232		2.50	-	*	34
Total Hepta-Dioxins	7.41e+06		41:28	1.09	109		2.50	-	*	44
Total Tetra-Furans	6.85e+06		22:42	1.05	46.1		2.50	-	*	30
1st Fn. Tot Penta-Furans	6.98e+06		28:27	0.99	58.0		2.50	-	*	PeCDF 4
Total Penta-Furans	1.79e+07		30:13	0.99	149		2.50	-	*	207 18
Total Hexa-Furans	2.78e+07		35:17	1.16	255		2.50	-	*	20
Total Hepta-Furans	1.03e+07		41:36	1.30	110		2.50	-	*	39

Analyst: 

Date: 1/5/16

Frontier Analytical Laboratory - Acquisition Log

Run Name:07JAN16Y

Instrument: FAL4

GC: DB5

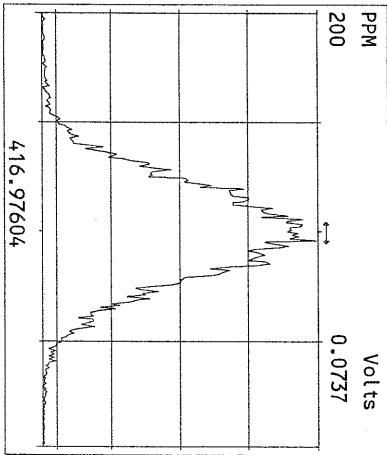
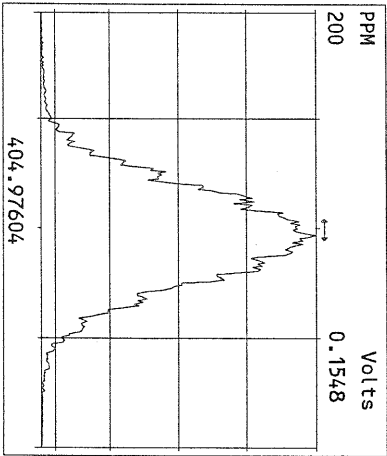
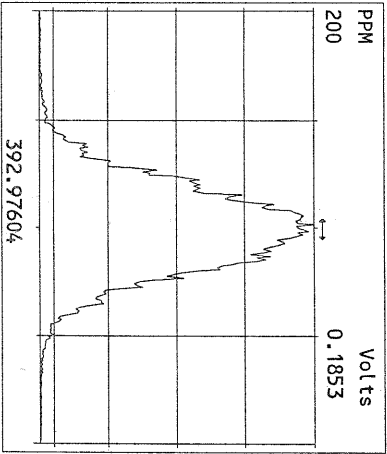
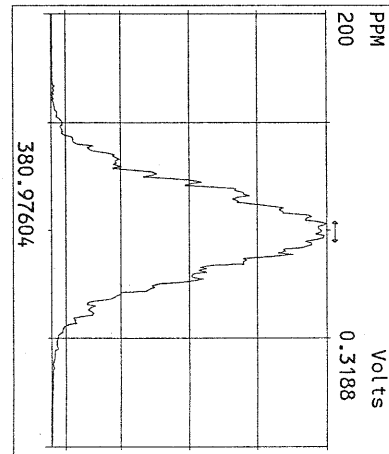
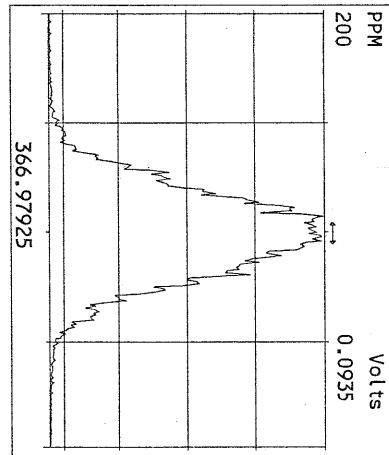
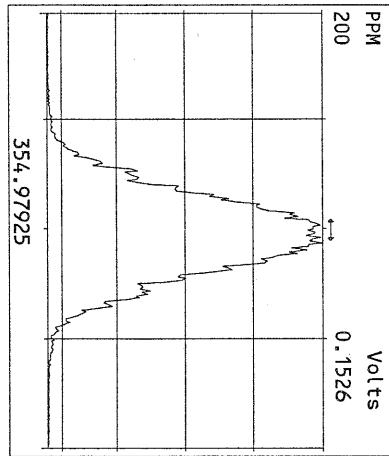
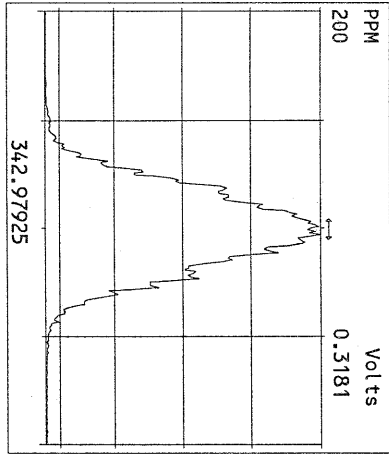
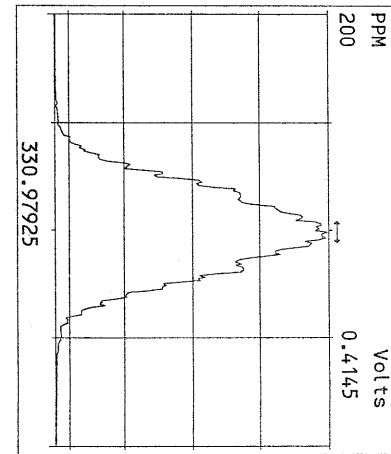
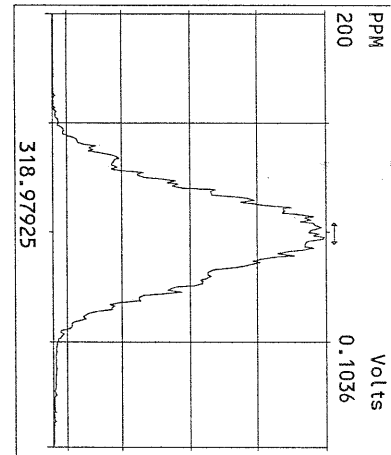
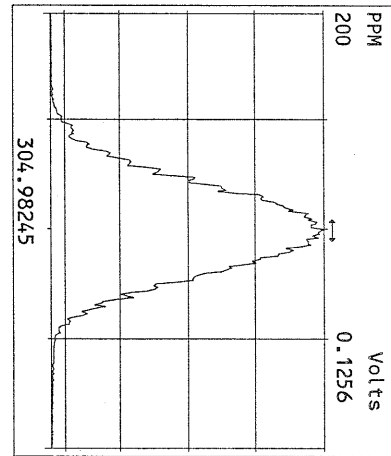
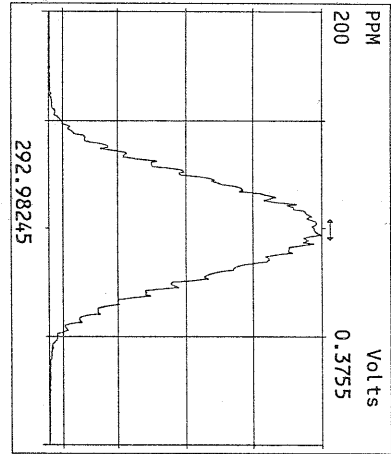
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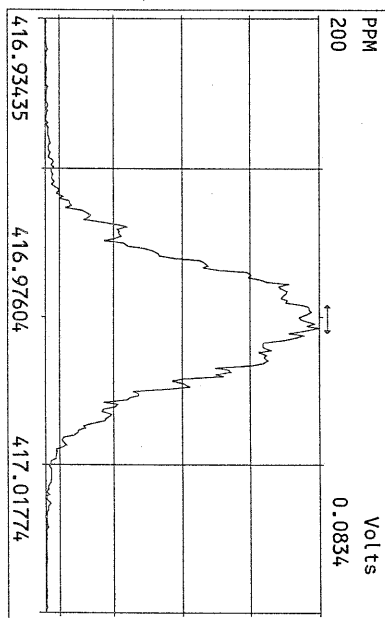
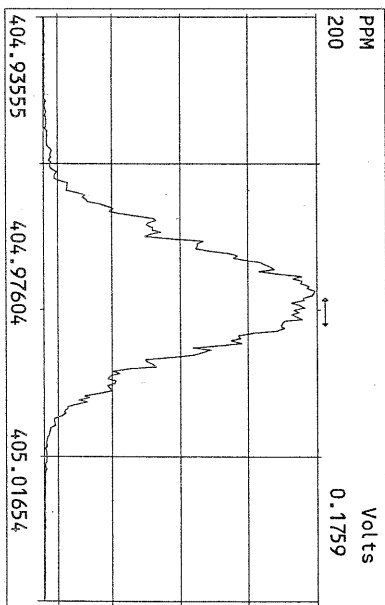
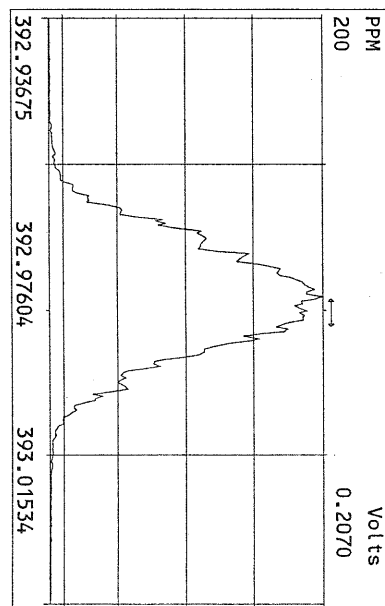
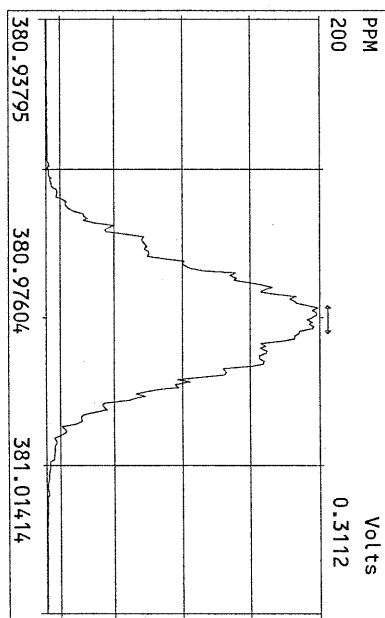
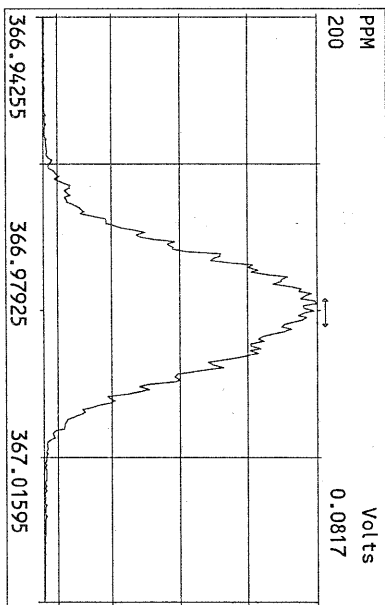
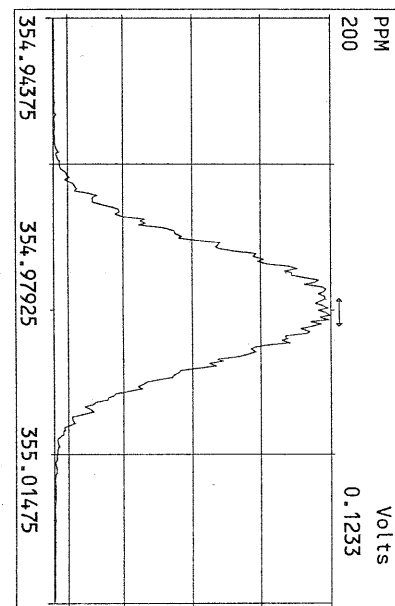
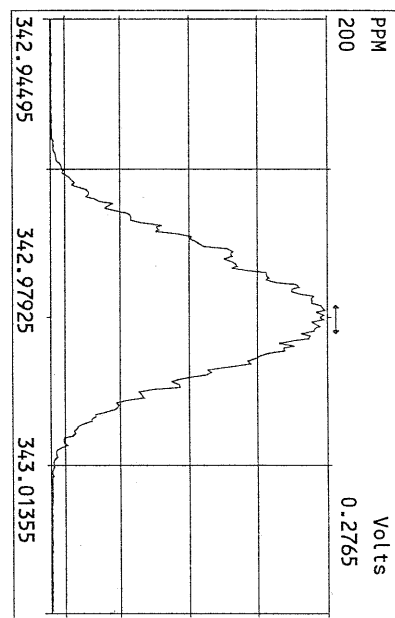
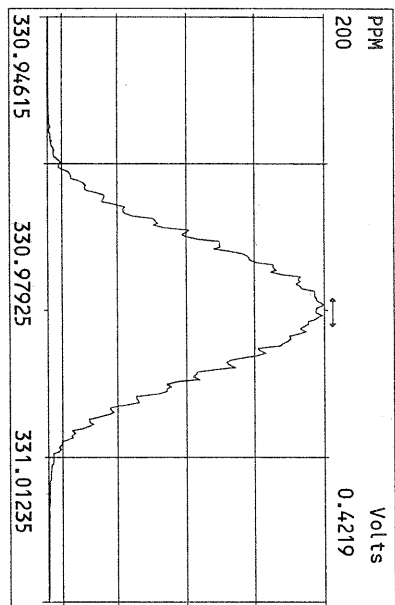
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07JAN16Y 3	3543-001-0001-MB	Method Blank	7-JAN-16 17:29:01	ST010716Y1	ST010716Y2	BS
07JAN16Y 4	9514-001-0001-SA	NAWS-CL ASC-01	7-JAN-16 18:23:49	ST010716Y1	ST010716Y2	BS
07JAN16Y 5	9488-001-0001-SA	1531060-14	7-JAN-16 19:18:36	ST010716Y1	ST010716Y2	BS
07JAN16Y 6	9505-001-0001-SA	DDSD DIGESTER CAKE 12/5-9/20 ₁₁	7-JAN-16 20:13:23	ST010716Y1	ST010716Y2	BS
07JAN16Y 7	9486-002-0001-SA	SB-05-9-10	7-JAN-16 21:08:11	ST010716Y1	ST010716Y2	BS
07JAN16Y 8	9486-001-0001-SA	SB-07-12-13 1:10 Dil	7-JAN-16 22:02:58	ST010716Y1	ST010716Y2	BS
07JAN16Y 9	9528-003-0001-SA	SP-R-DU-2C	7-JAN-16 22:57:45	ST010716Y1	ST010716Y2	BS
07JAN16Y 10	9528-001-0001-SA	SP-FA-1 1:5 Dil	7-JAN-16 23:52:32	ST010716Y1	ST010716Y2	BS
07JAN16Y 11	9528-002-0001-SA	SP-1H/7H	8-JAN-16 00:47:19	ST010716Y1	ST010716Y2	BS
07JAN16Y 12	9487-001-0001-SA	SB-10-12.5-13 1:20 Dil	8-JAN-16 01:42:05	ST010716Y1	ST010716Y2	BS
07JAN16Y 13	SB010716Y1	Solvent Blank	8-JAN-16 02:36:52	ST010716Y1	ST010716Y2	BS
07JAN16Y 14	QC010716Y1	QC1	8-JAN-16 03:31:38	ST010716Y1	ST010716Y2	BS
07JAN16Y 15	QC010716Y2	QC2	8-JAN-16 04:26:24	ST010716Y1	ST010716Y2	BS
07JAN16Y 16	ST010716Y2	1613 CS3 151209J	8-JAN-16 05:21:12	ST010716Y1	ST010716Y2	BS
07JAN16Y 17	QC010716Y3	QC3	8-JAN-16 06:15:57	ST010716Y1	ST010716Y2	BS
07JAN16Y 18	QC010716Y4	QC4	8-JAN-16 07:10:41	ST010716Y1	ST010716Y2	BS
07JAN16Y 19	QC010716Y5	QC5	8-JAN-16 08:05:27	ST010716Y1	ST010716Y2	BS
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1/8/16

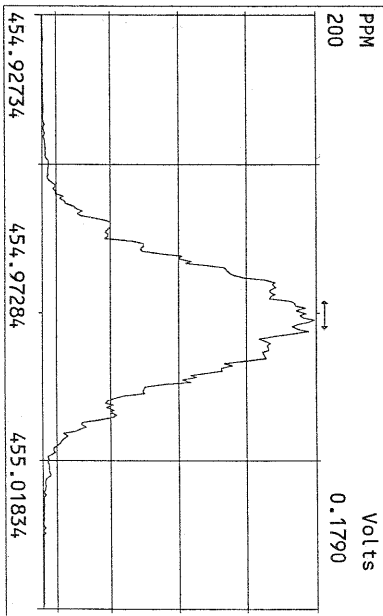
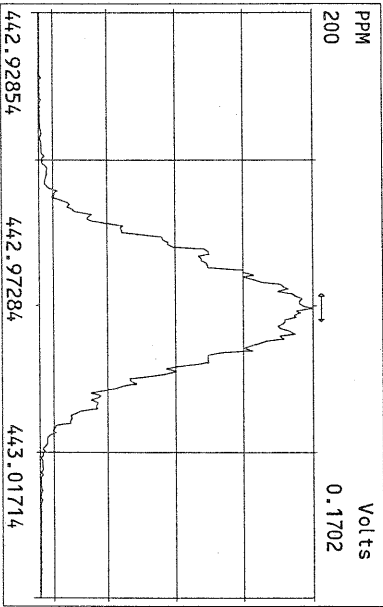
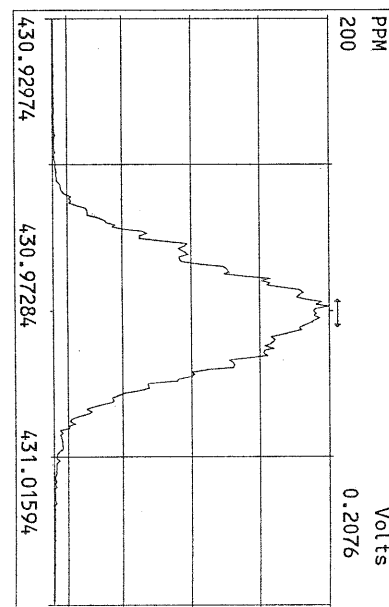
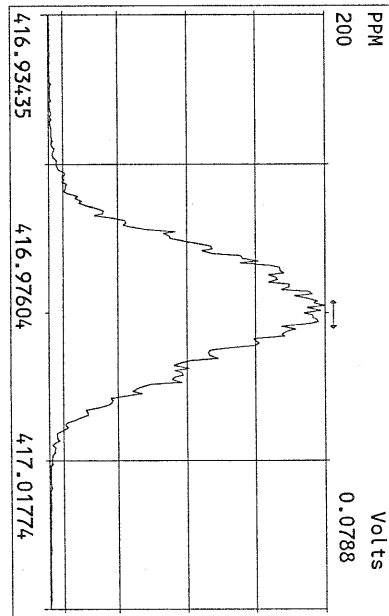
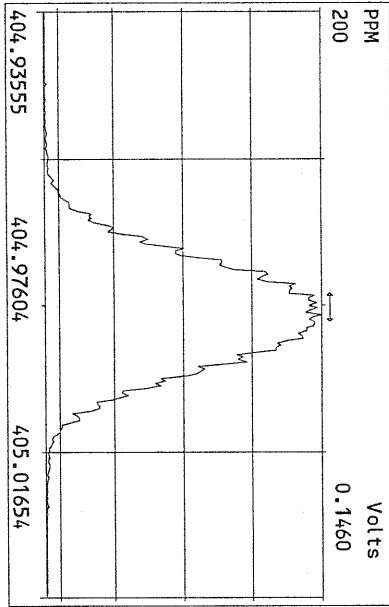
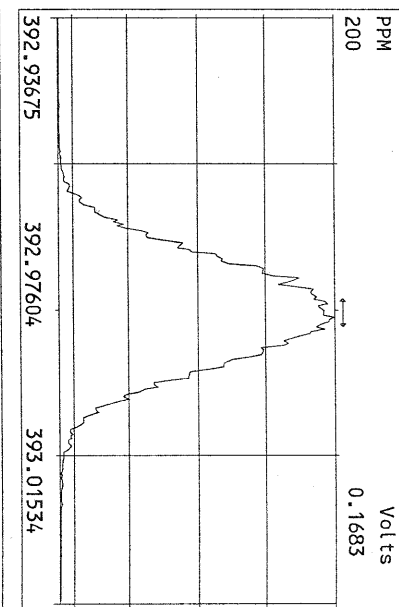
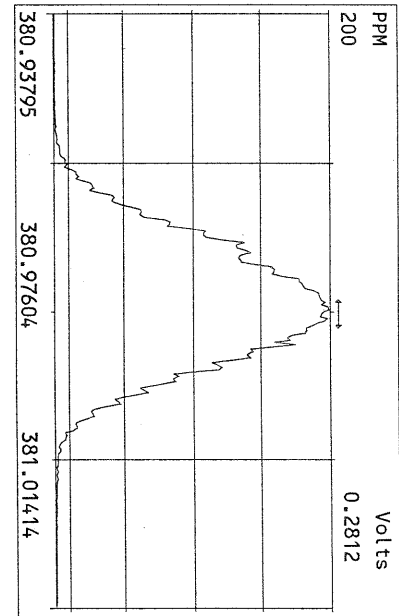
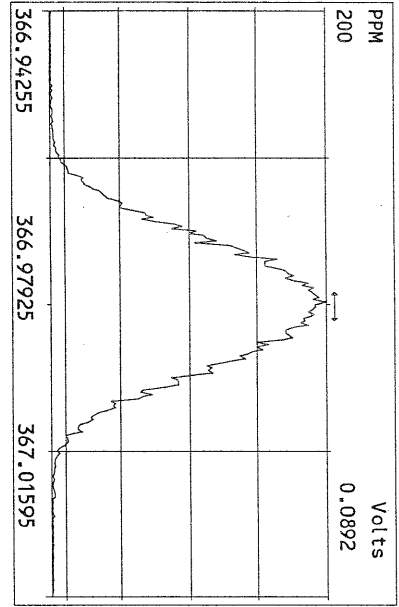
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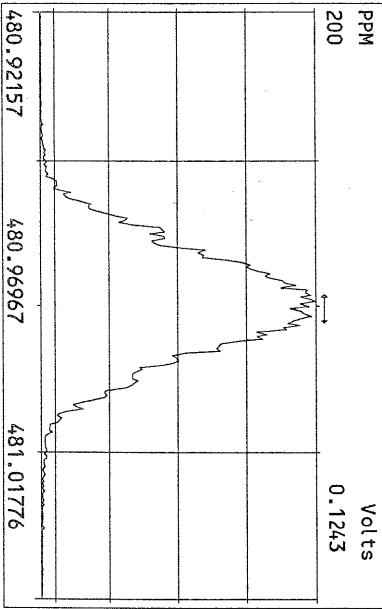
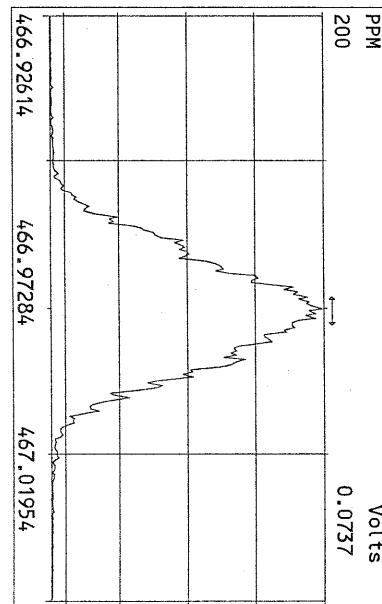
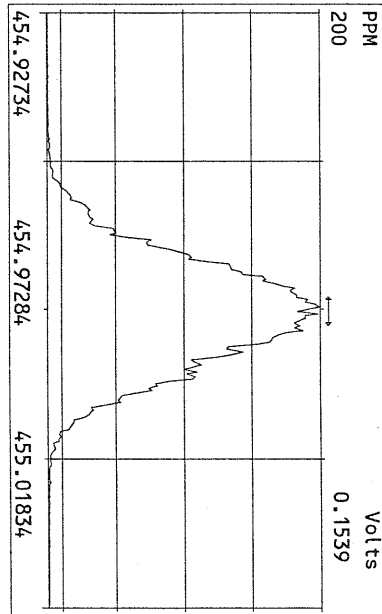
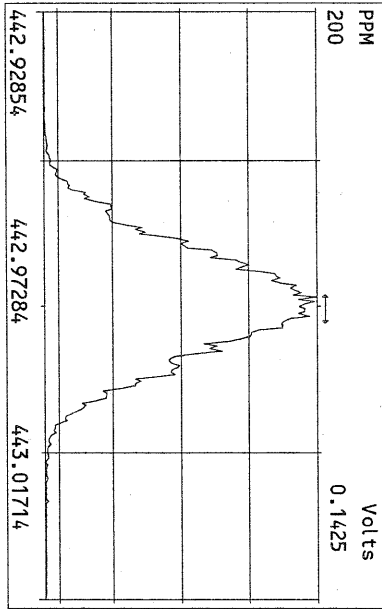
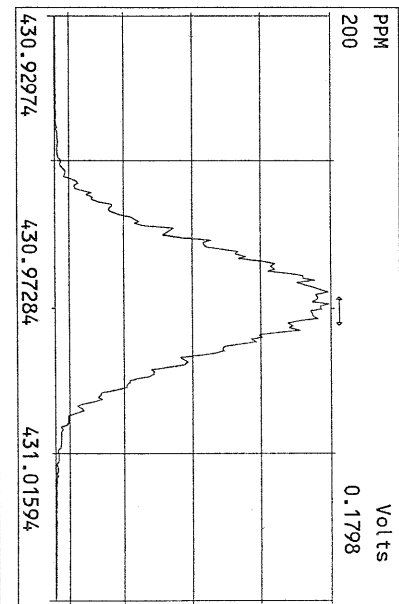
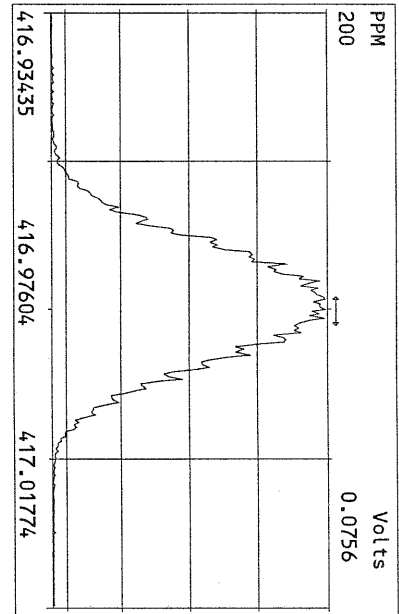
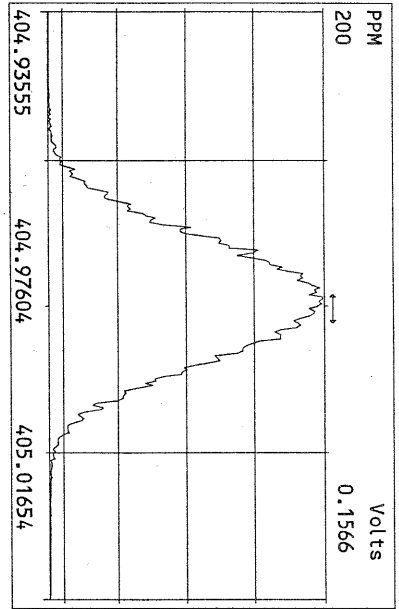
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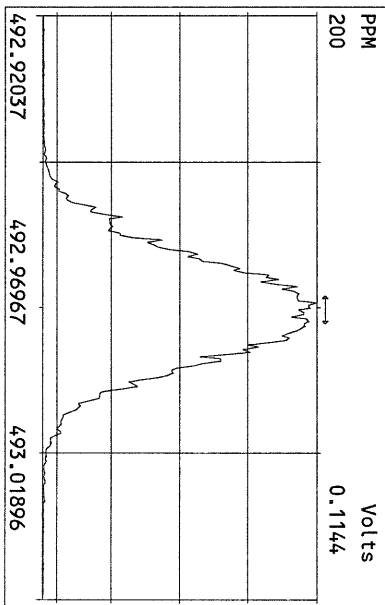
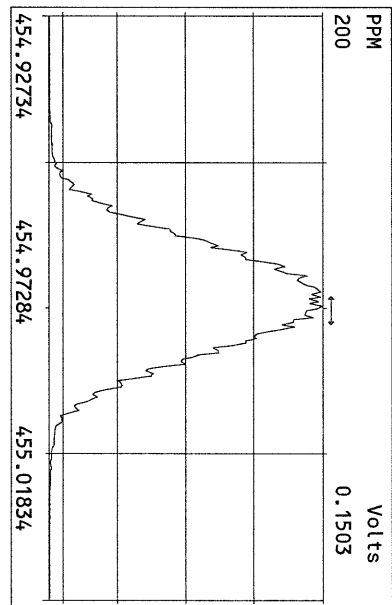
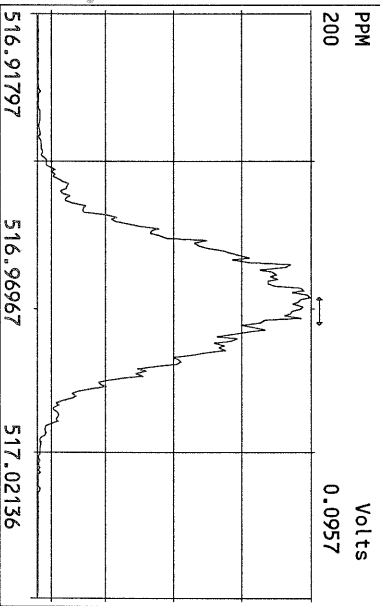
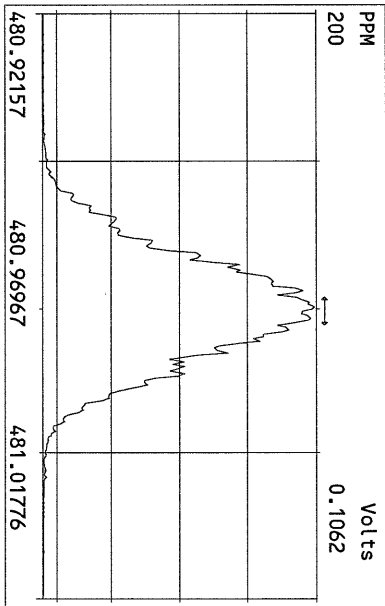
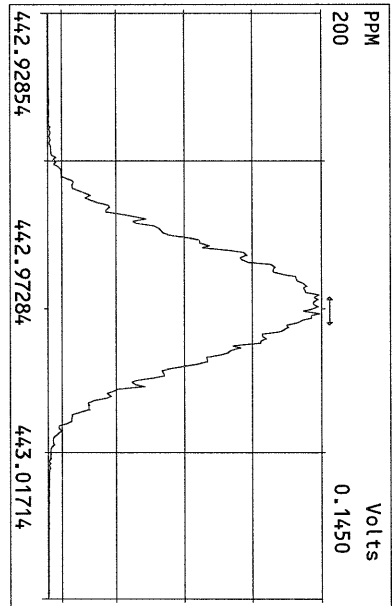
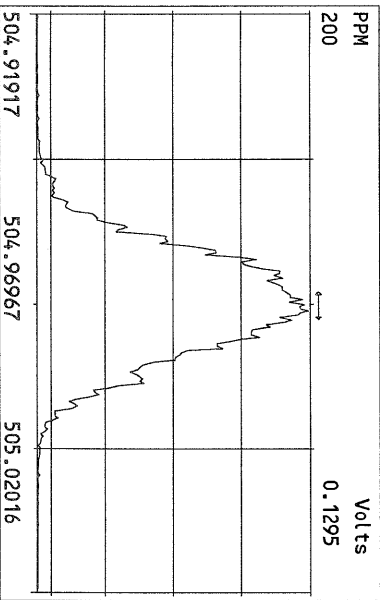
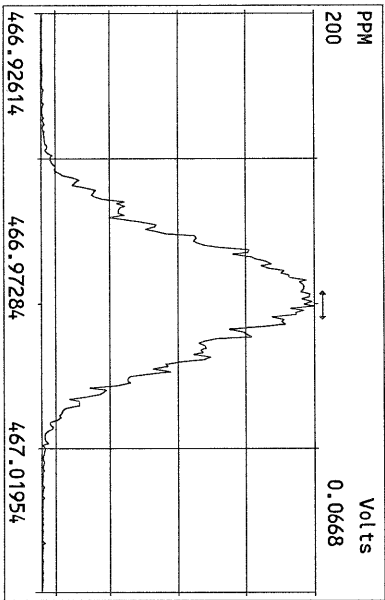
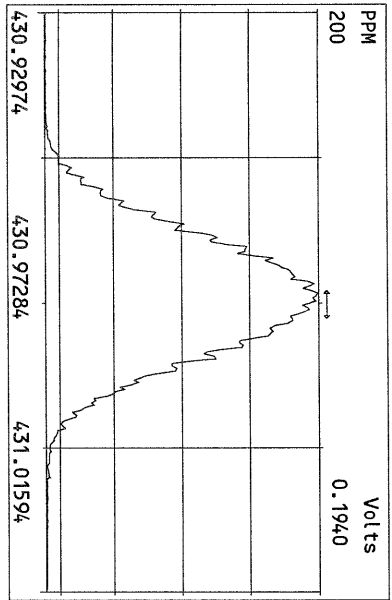




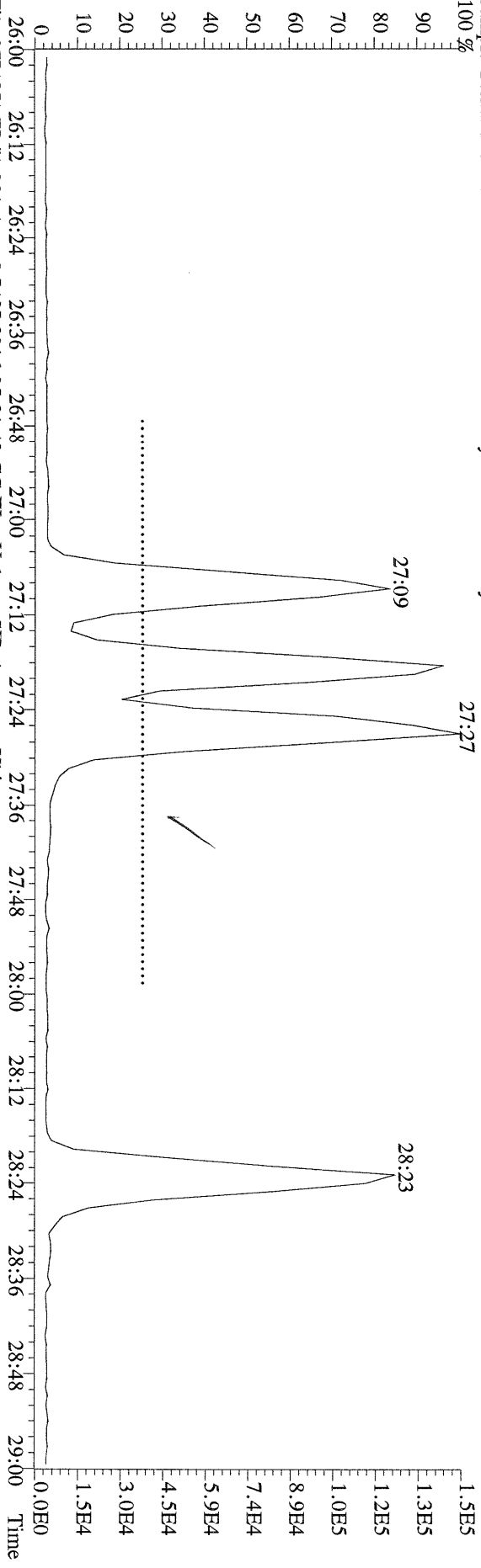
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Experiment::PCDD Function:3 Reference:PFK



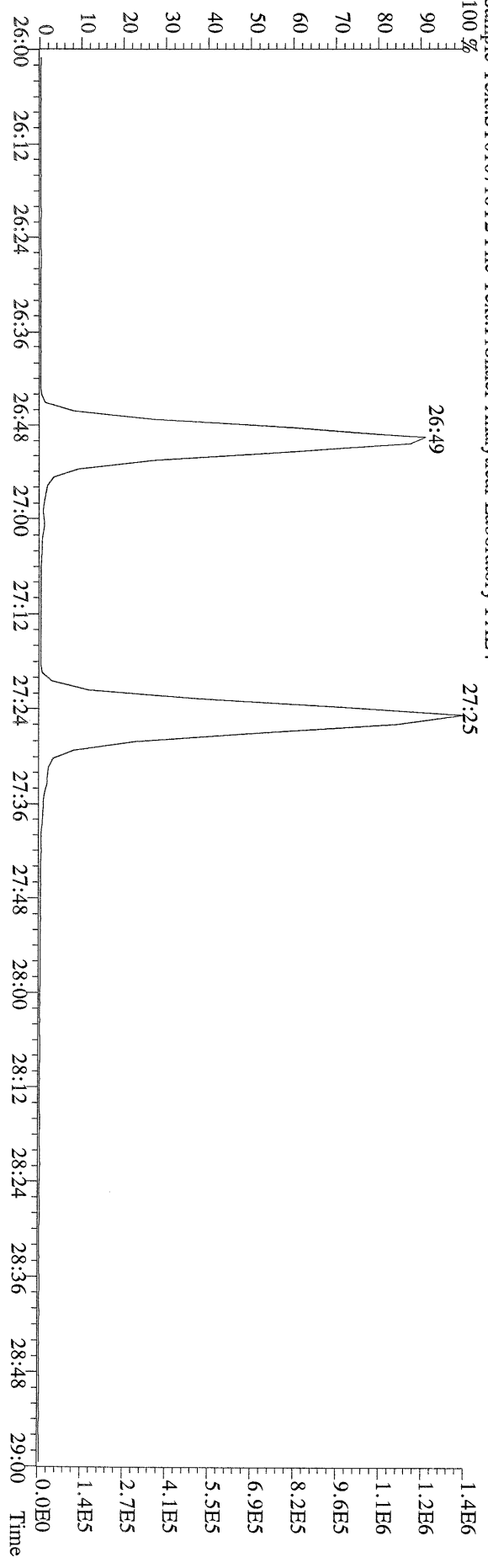




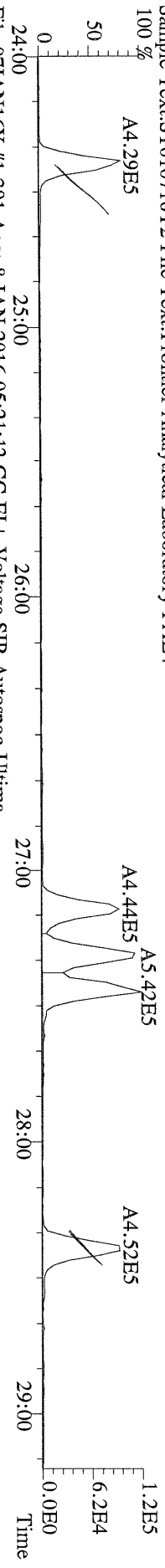
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321.8936 S:16 Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4
100 %



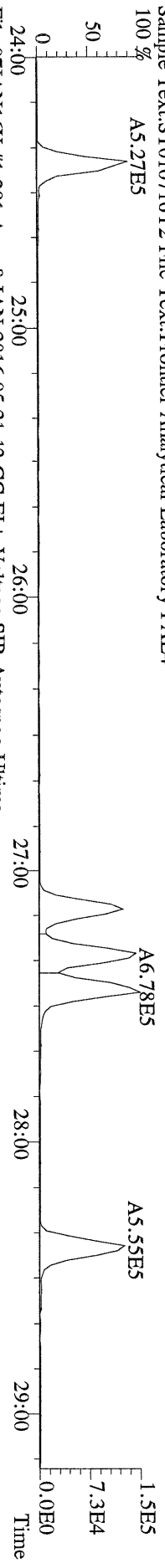
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333.9339 S:16 Exp:PCDD
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100 %



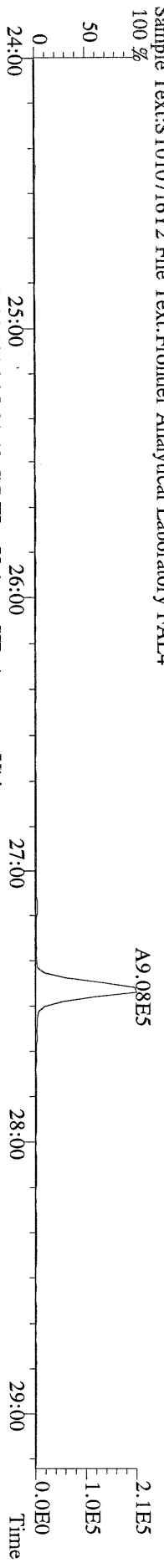
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319.8965 S:16 BSUB(10000,15,-3.0) PKD(5,5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD
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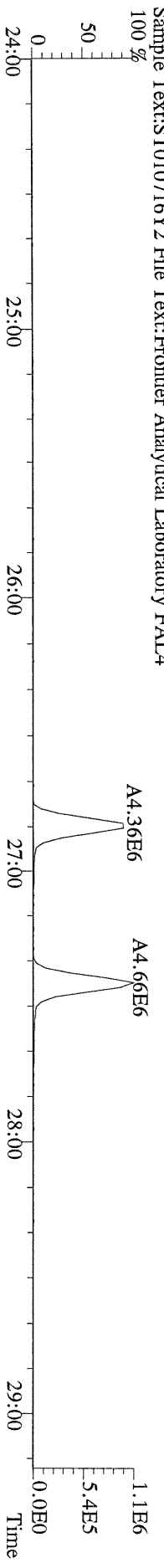
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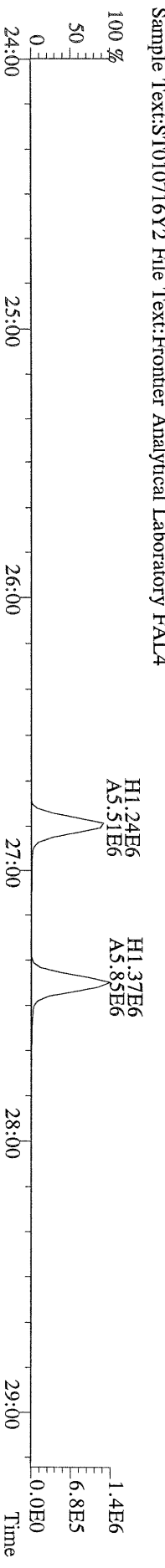
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Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



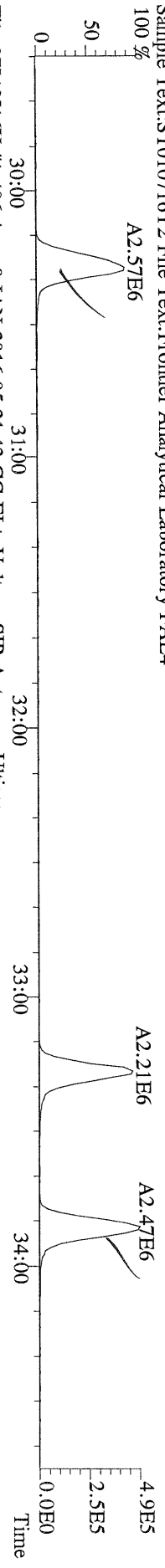
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Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



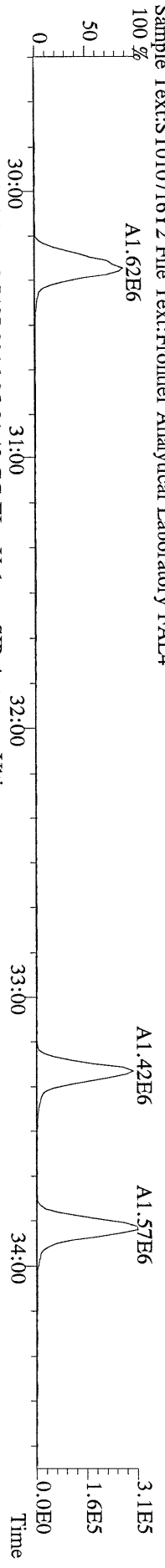
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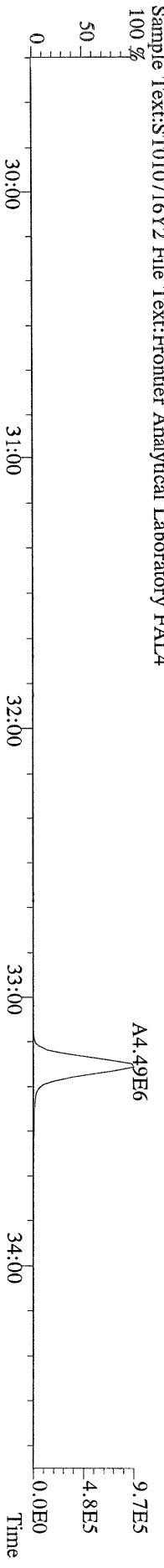
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355.8546 S:16 F:2 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD
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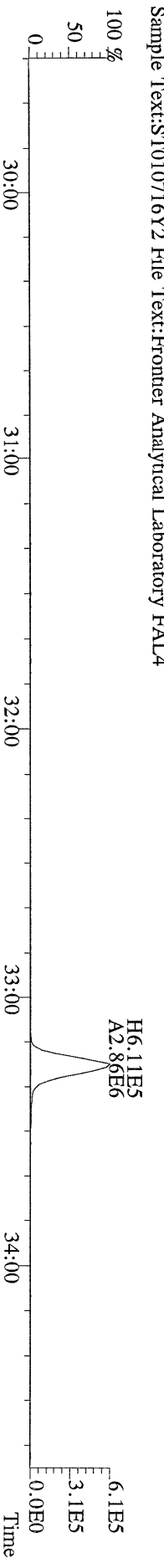
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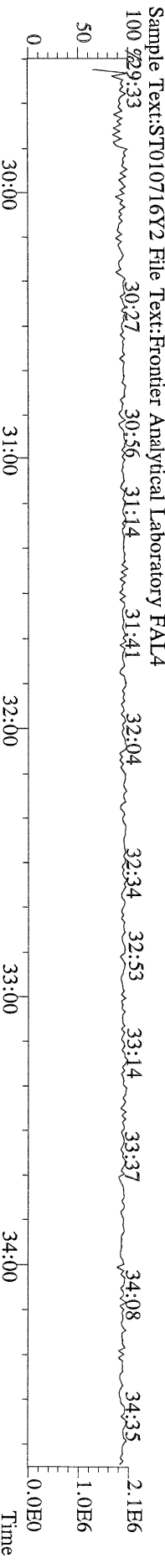
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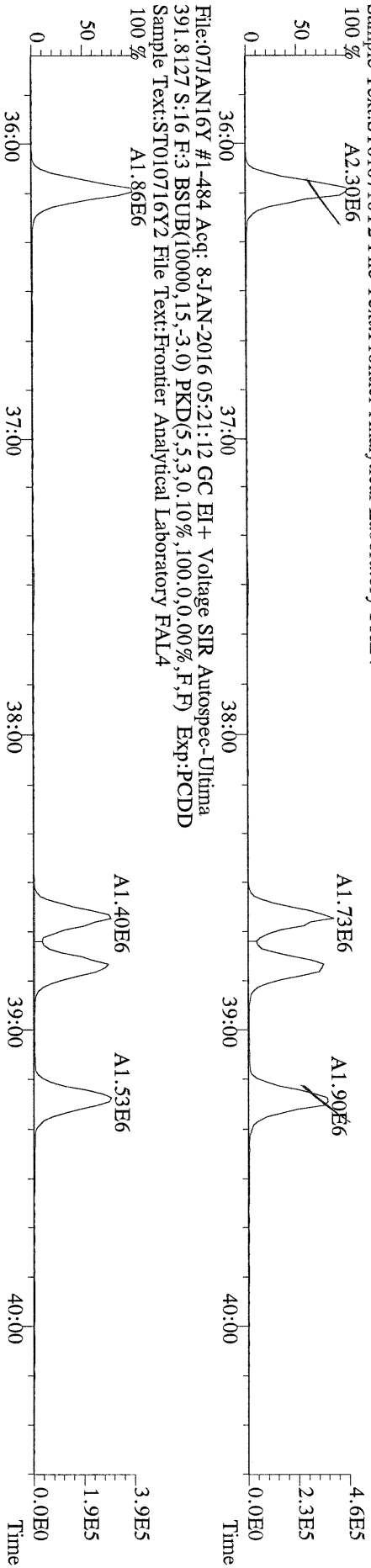
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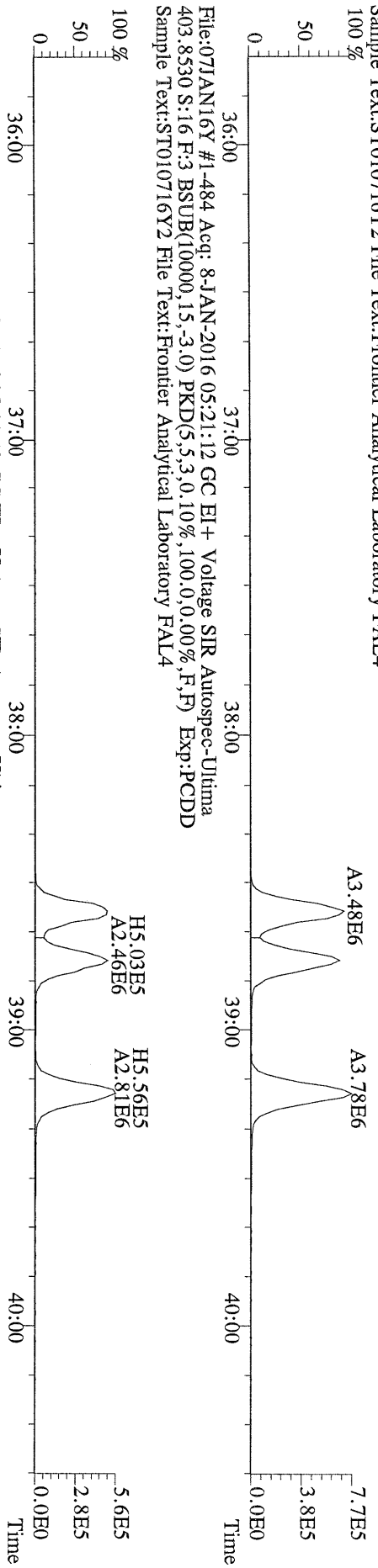
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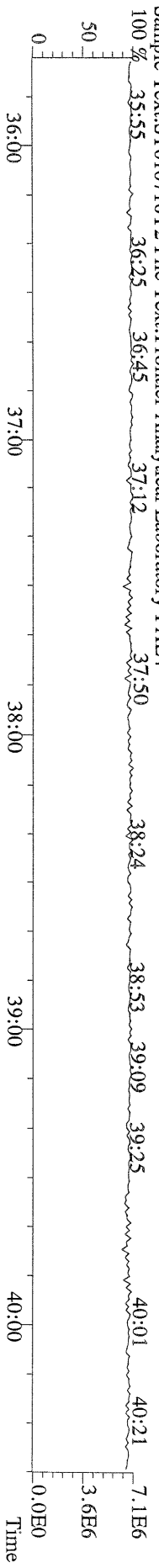
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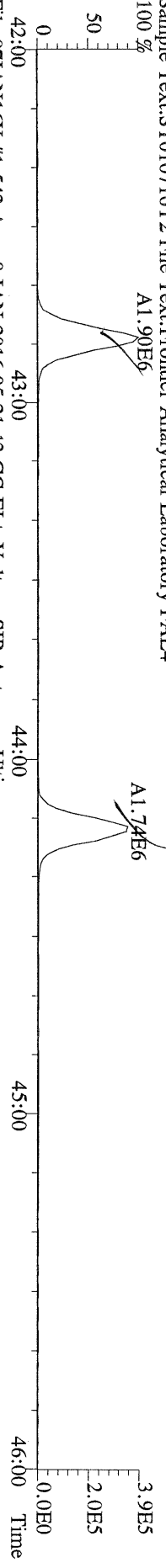
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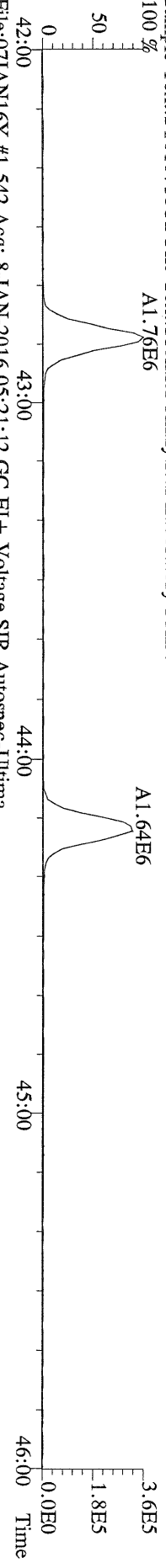
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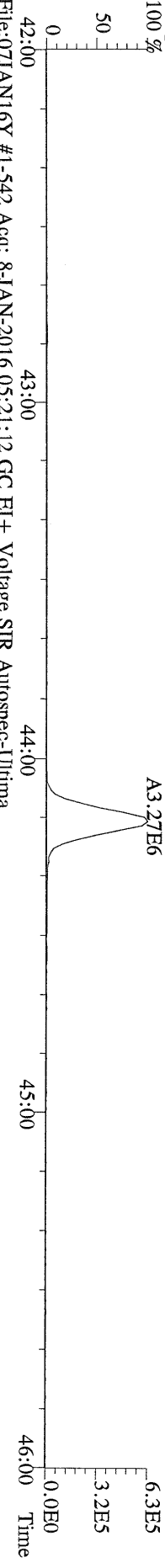
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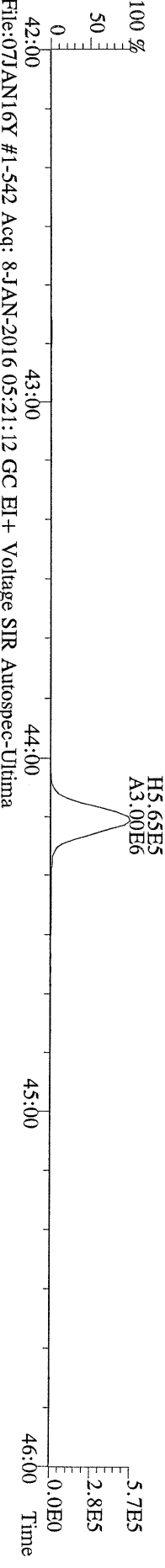
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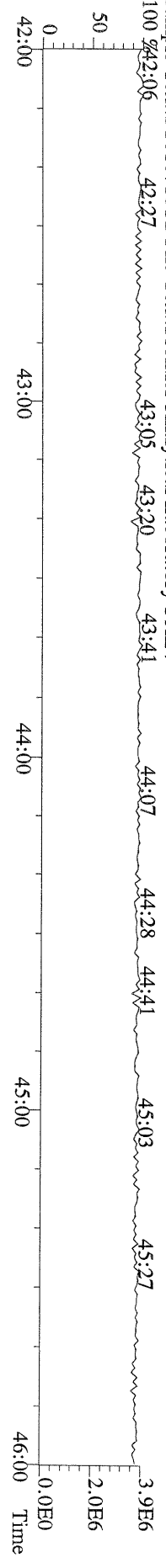
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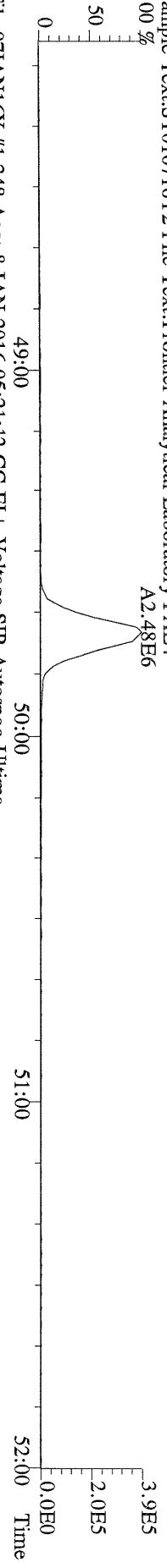
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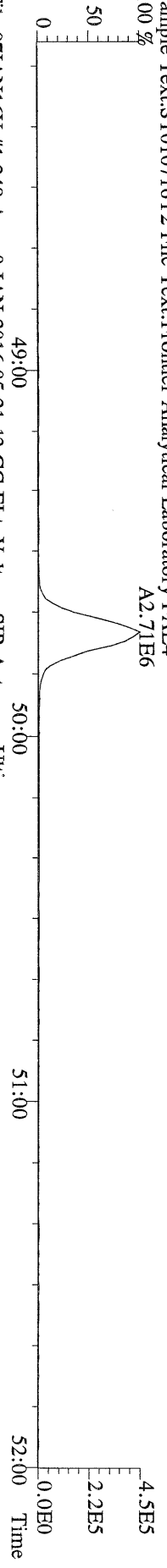
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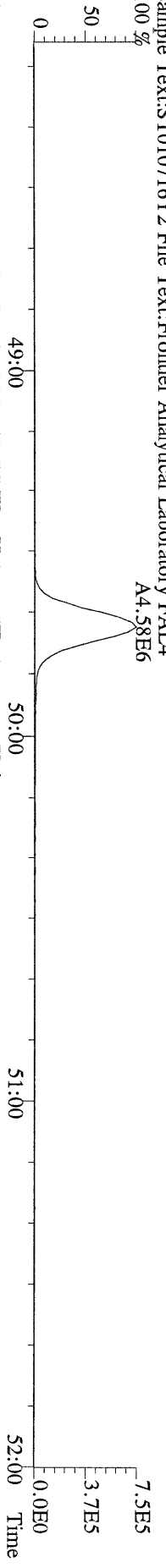
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Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



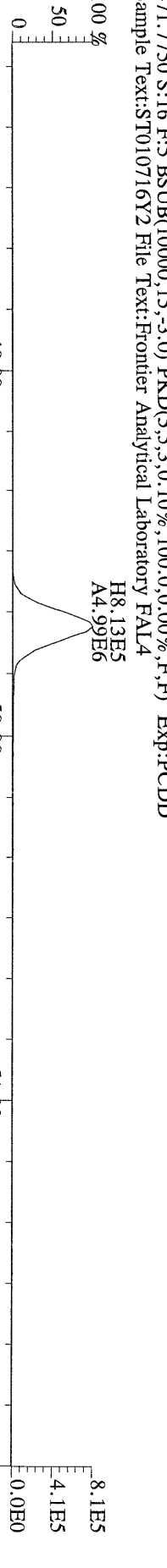
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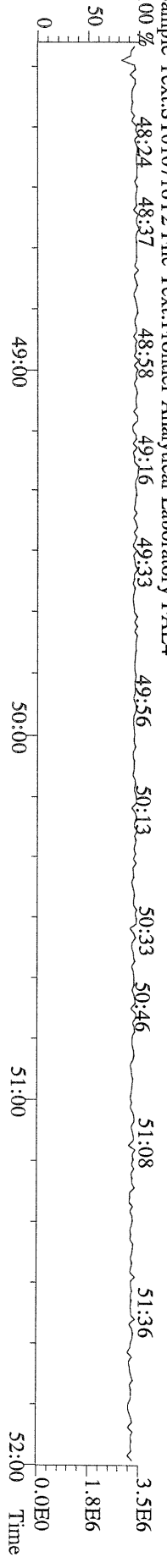
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Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



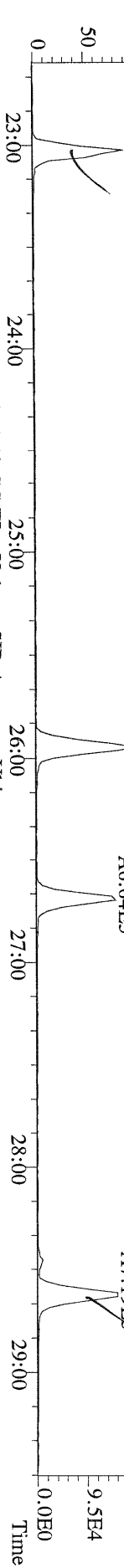
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471.7750 S:16 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



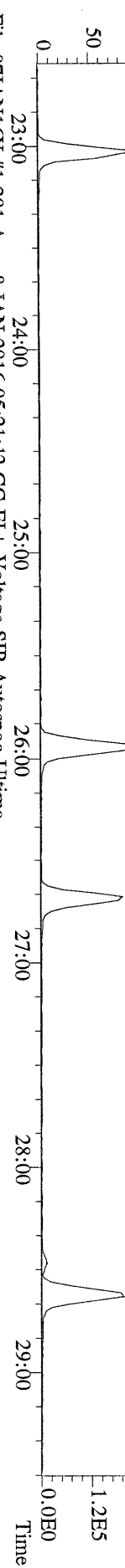
File:07JAN16Y #1-348 Acq: 8-JAN-2016 05:21:12 GC EI+ Voltage SIR Autospec-Ultima
454.9728 S:16 F:5 Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



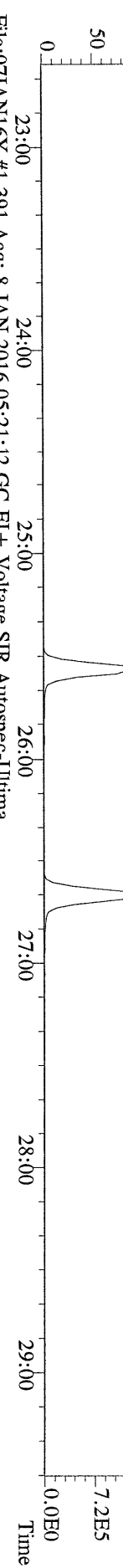
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303.9016 S:16 BSUB(10000,15,-3.0) PKD(5,5,3,0,100,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



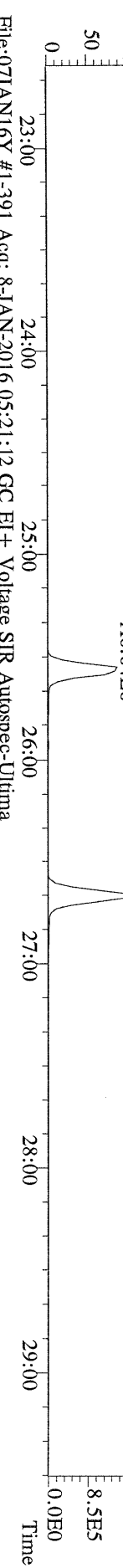
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305.8987 S:16 BSUB(10000,15,-3.0) PKD(5,5,3,0,100,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



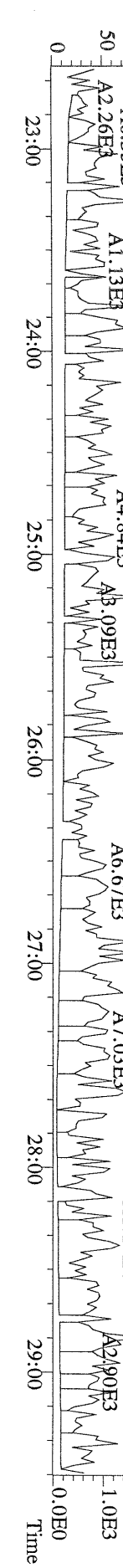
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315.9419 S:16 BSUB(10000,15,-3.0) PKD(5,5,3,0,100,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



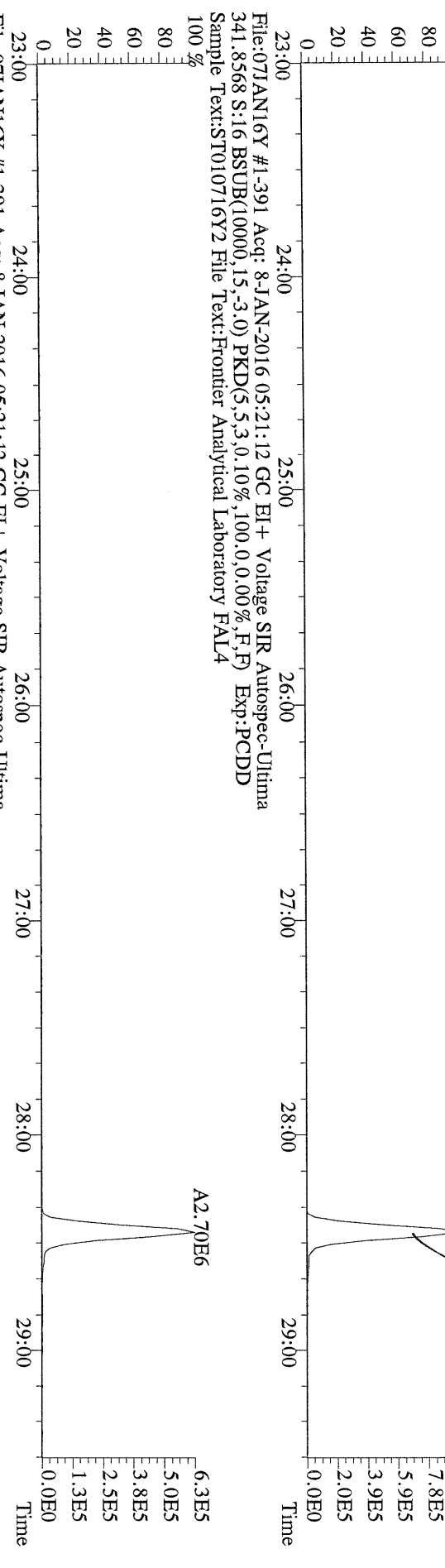
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317.9389 S:16 BSUB(10000,15,-3.0) PKD(5,5,3,0,100,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



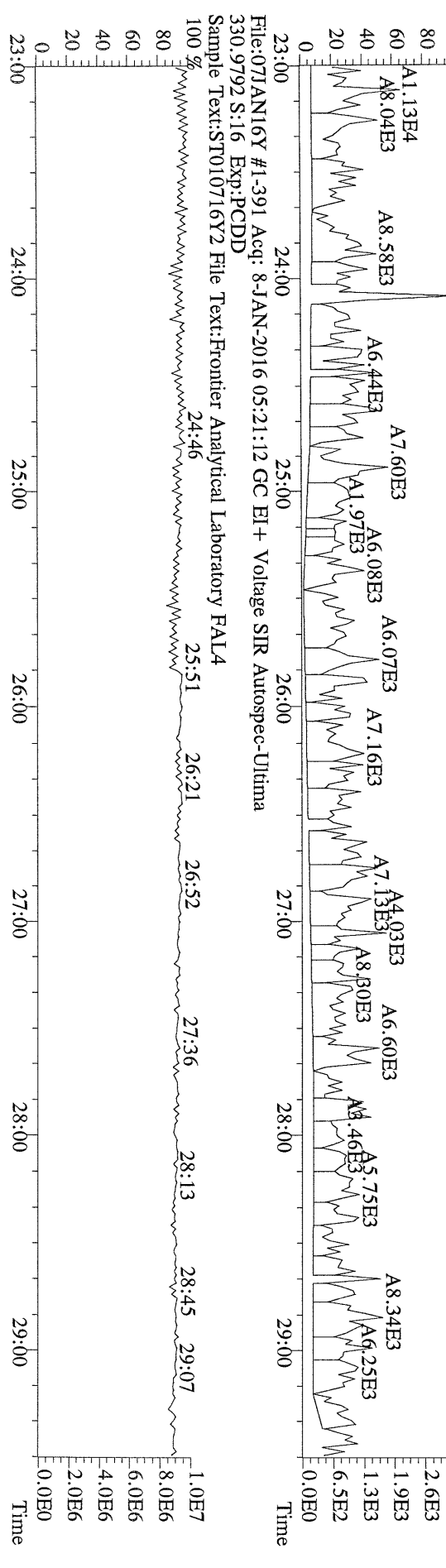
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375.8364 S:16 BSUB(10000,15,-3.0) PKD(5,5,3,0,100,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



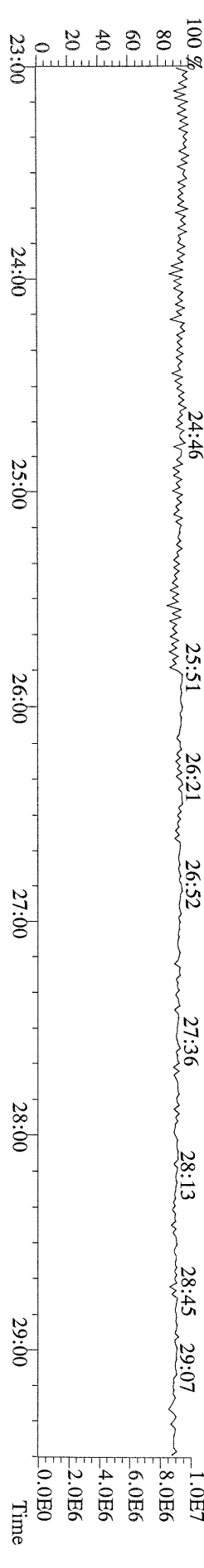
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339.8597 S:16 BSUB(10000,15,-3.0) PKD(5,5,3,0,100,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



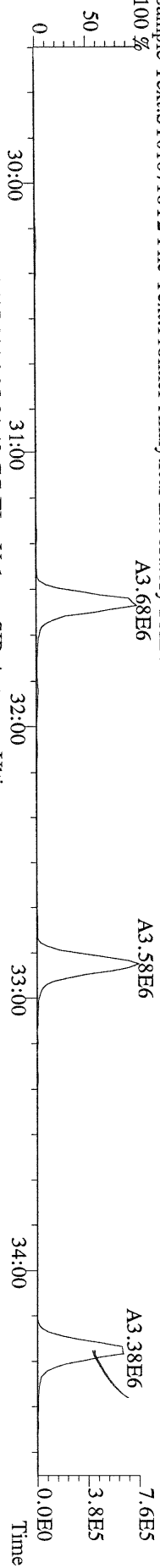
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409.7974 S:16 BSUB(10000,15,-3.0) PKD(5,5,3,0,100,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



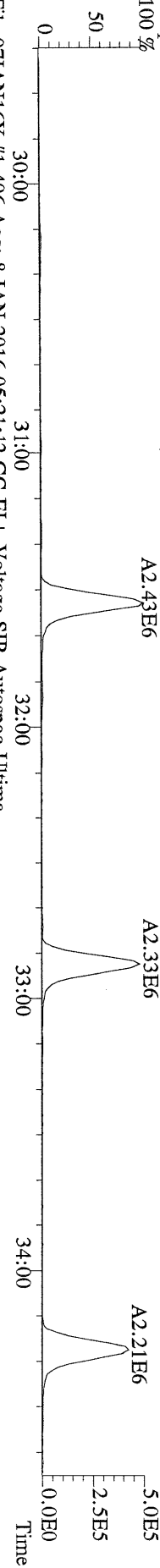
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330.9792 S:16 Exp:PCDD
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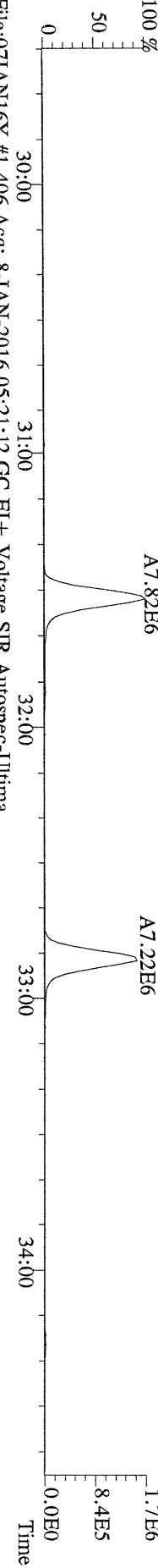
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339.8597 S:16 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



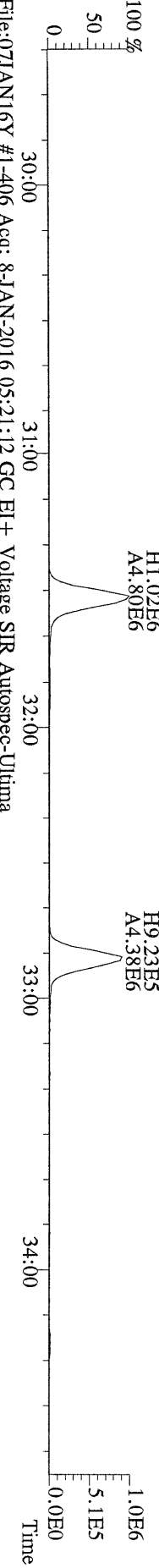
File:07JAN16Y #1-406 Acq: 8-JAN-2016 05:21:12 GC EI+ Voltage SIR Autospec-Ultima
341.8568 S:16 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



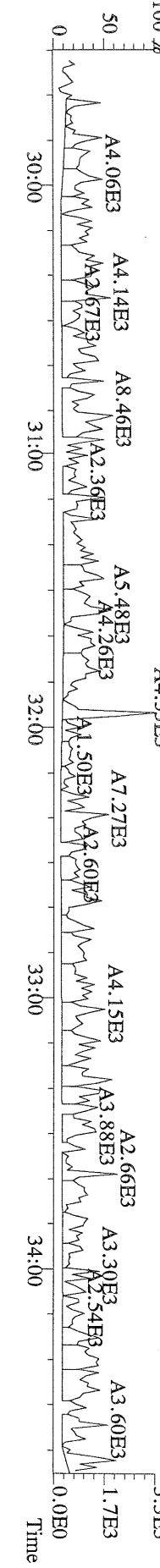
File:07JAN16Y #1-406 Acq: 8-JAN-2016 05:21:12 GC EI+ Voltage SIR Autospec-Ultima
351.9000 S:16 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



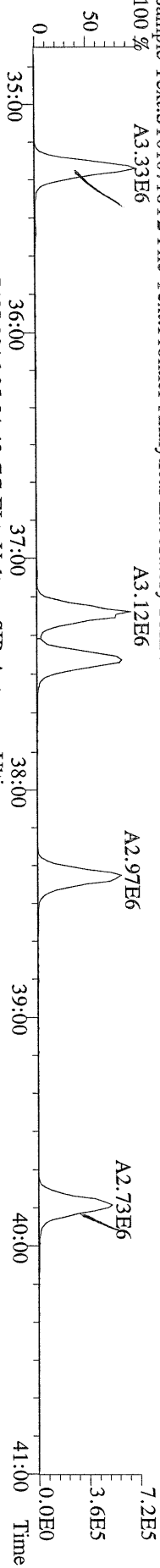
File:07JAN16Y #1-406 Acq: 8-JAN-2016 05:21:12 GC EI+ Voltage SIR Autospec-Ultima
353.8970 S:16 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



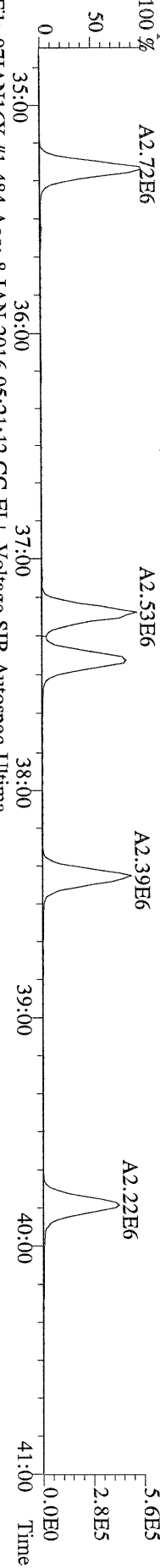
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409.7974 S:16 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



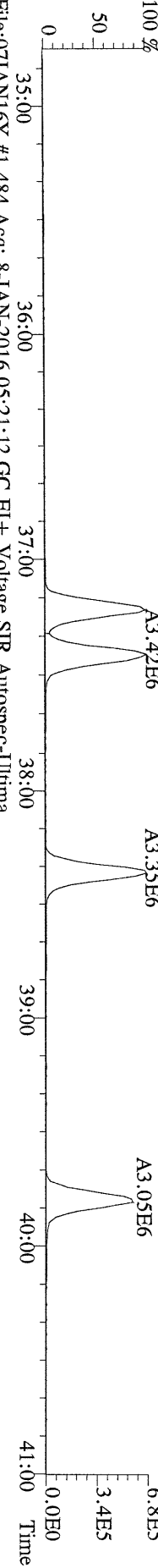
File:07JAN16Y #1-484 Acq: 8-JAN-2016 05:21:12 GC EI+ Voltage SIR Autospec-Ultima
373.8207 S:16 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



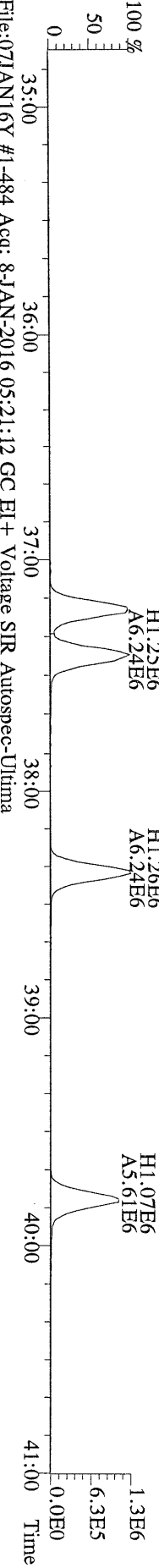
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375.8178 S:16 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



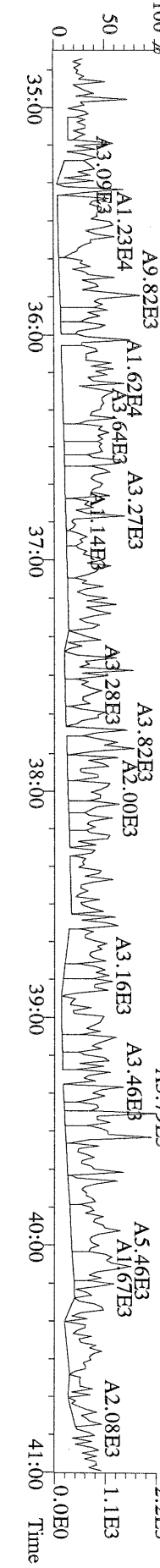
File:07JAN16Y #1-484 Acq: 8-JAN-2016 05:21:12 GC EI+ Voltage SIR Autospec-Ultima
383.8639 S:16 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



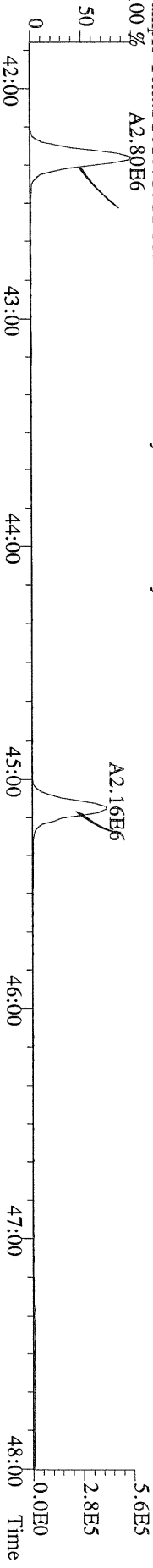
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385.8610 S:16 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



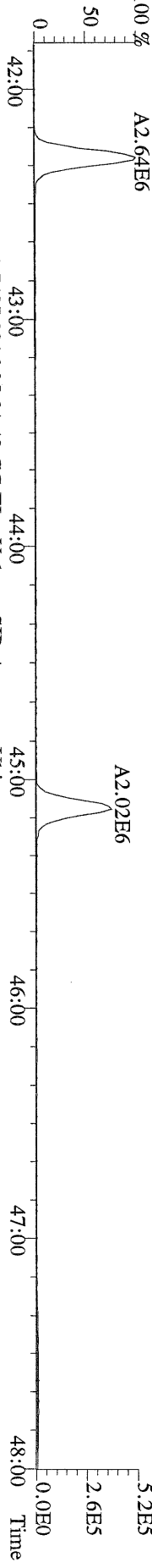
File:07JAN16Y #1-484 Acq: 8-JAN-2016 05:21:12 GC EI+ Voltage SIR Autospec-Ultima
445.7555 S:16 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



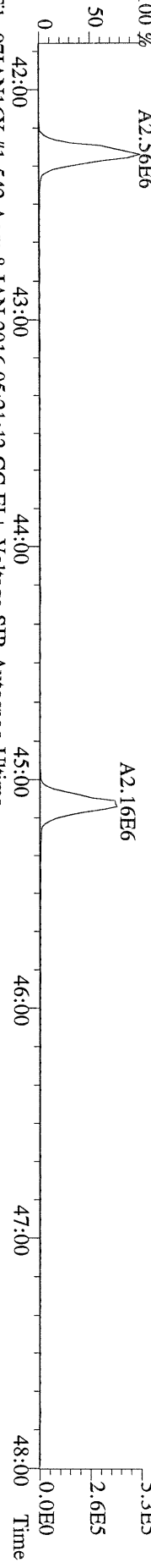
File:07JAN16Y #1-542 Acq: 8-JAN-2016 05:21:12 GC EI+ Voltage SIR Autospec-Ultima
407.7818 S:16 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4
100 % A2.80E6



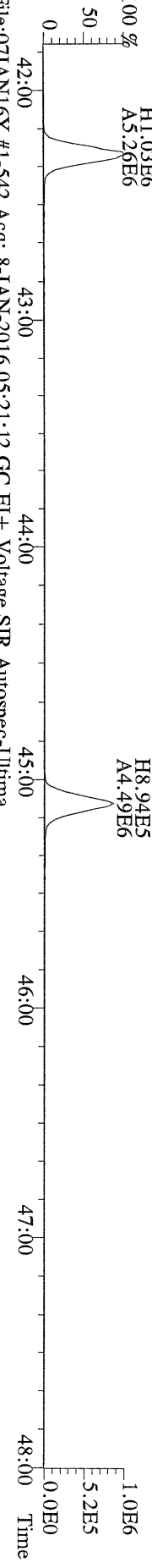
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409.7788 S:16 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4
100 % A2.64E6



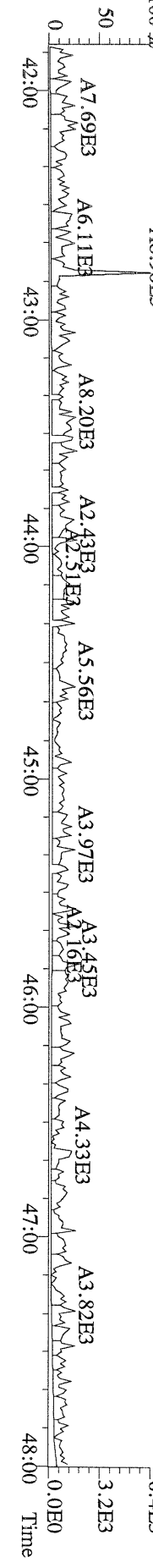
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417.8253 S:16 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4
100 % A2.56E6



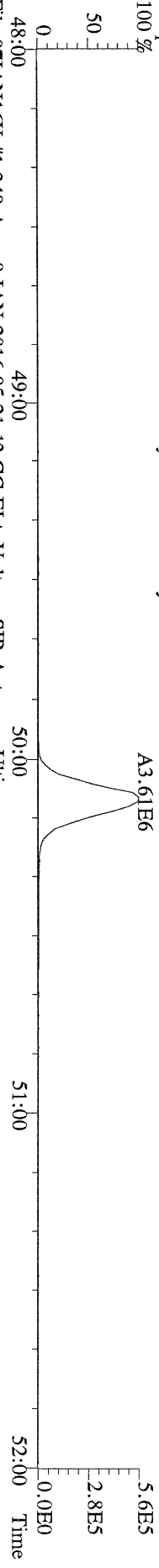
File:07JAN16Y #1-542 Acq: 8-JAN-2016 05:21:12 GC EI+ Voltage SIR Autospec-Ultima
419.8220 S:16 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4
100 % H1.03E6
A5.26E6



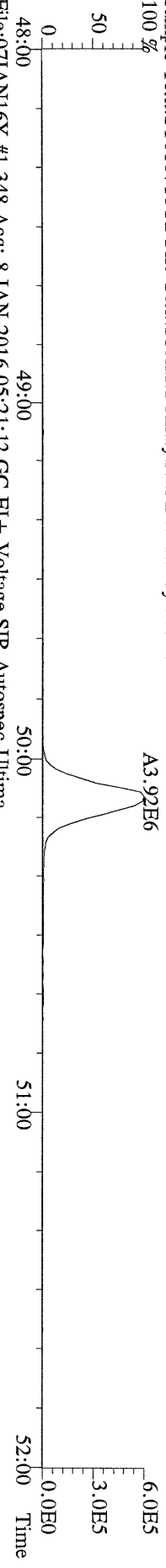
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479.7165 S:16 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4
100 % A8.90E3



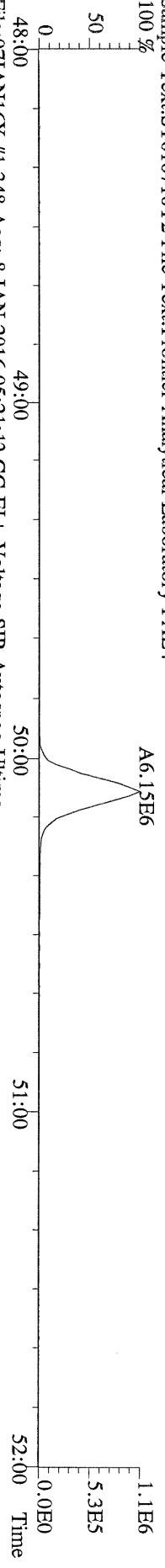
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441.7428 S:16 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4
100 %



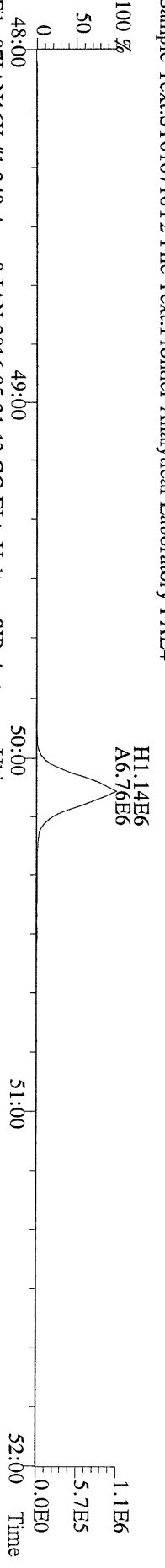
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443.7398 S:16 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4
100 %



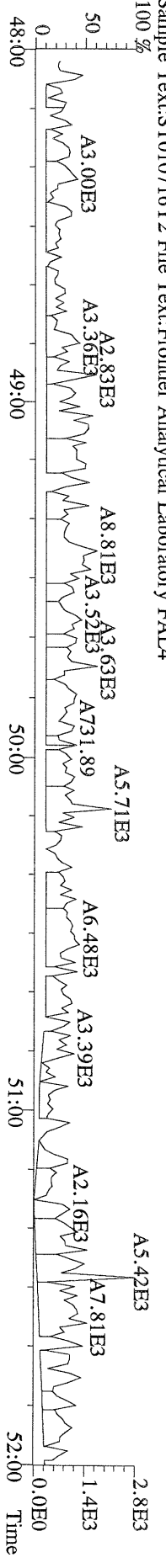
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453.7831 S:16 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4
100 %



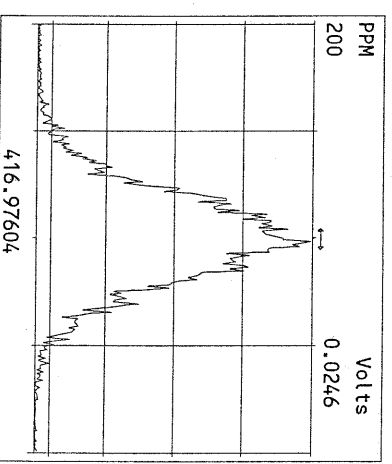
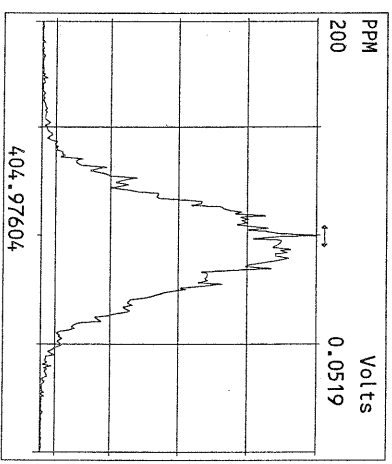
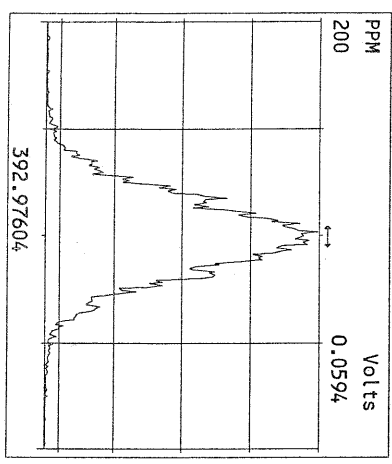
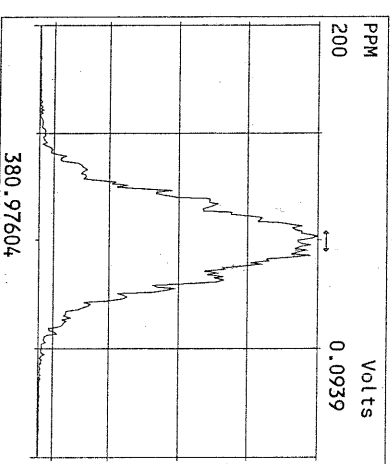
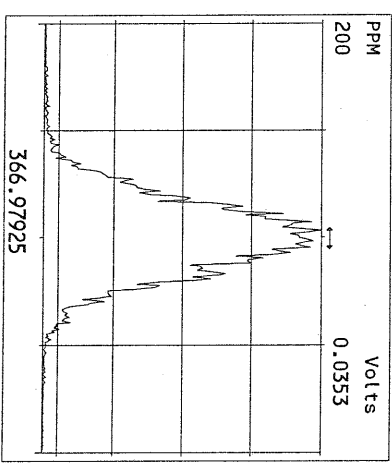
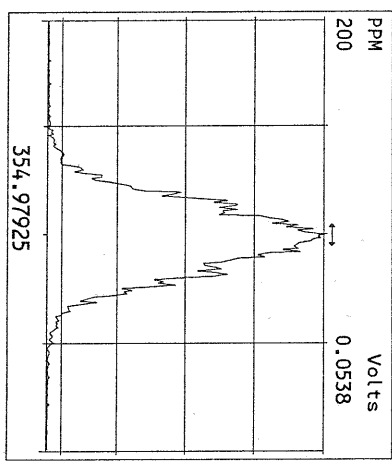
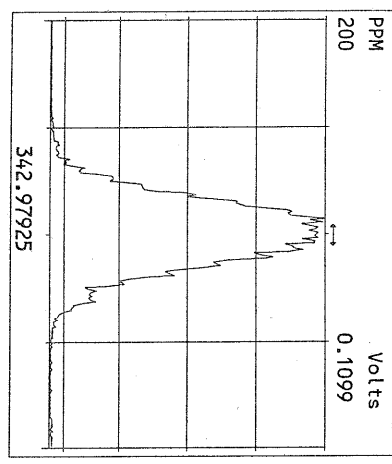
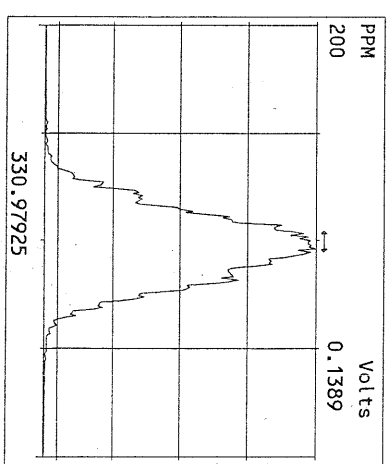
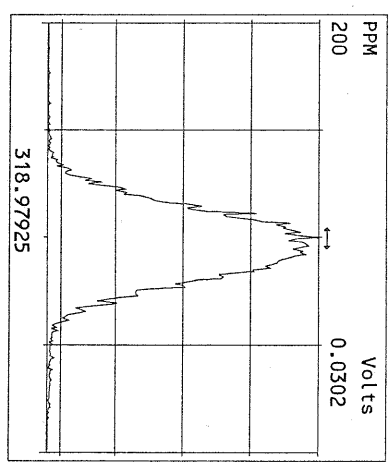
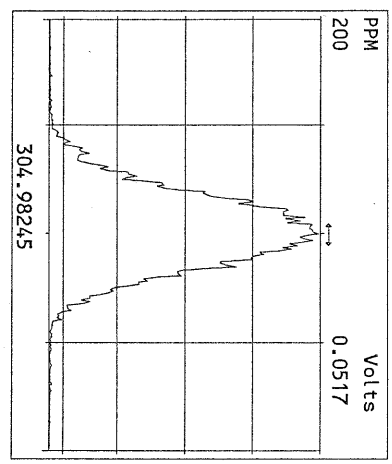
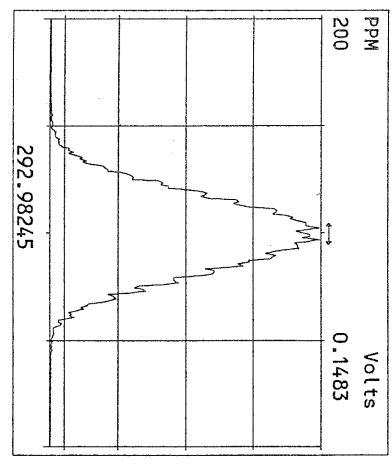
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455.7801 S:16 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4

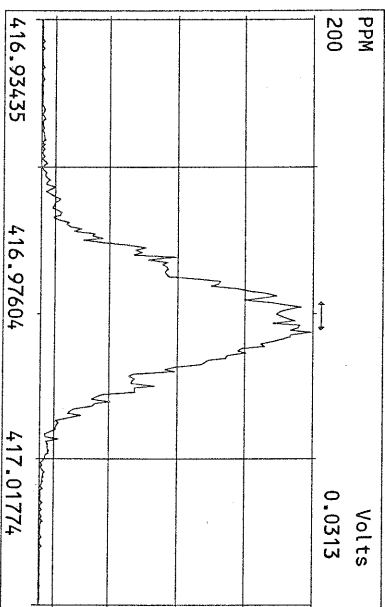
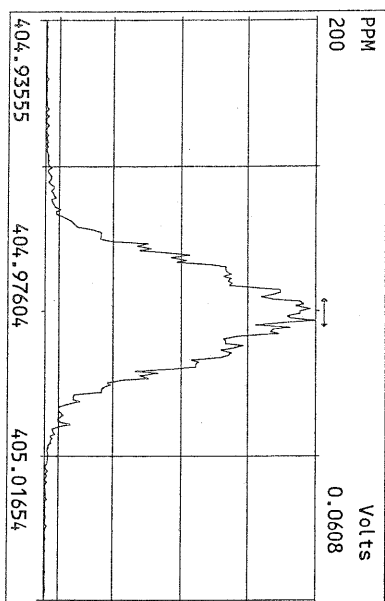
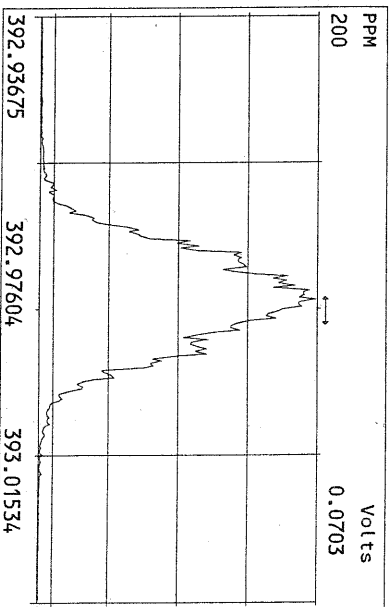
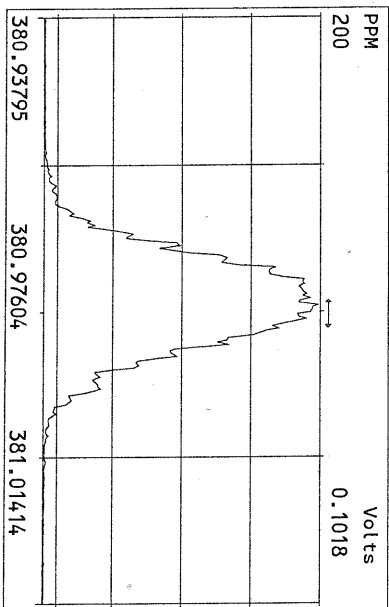
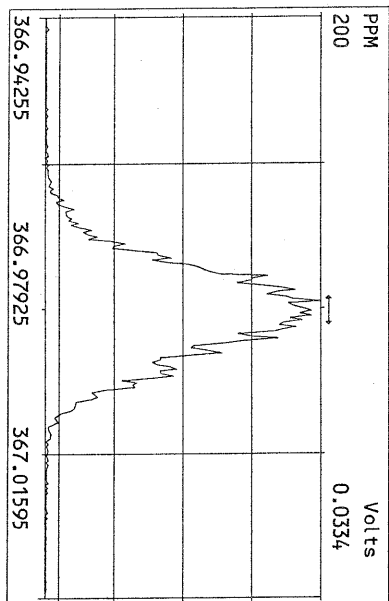
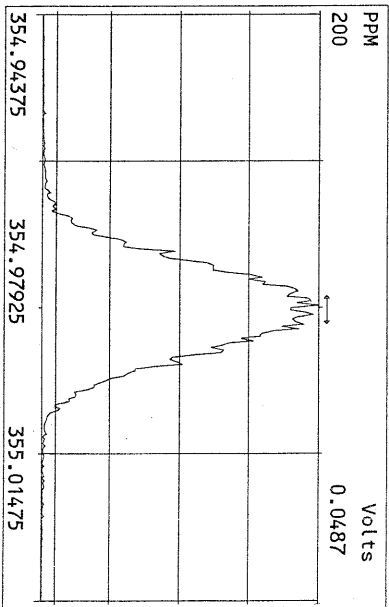
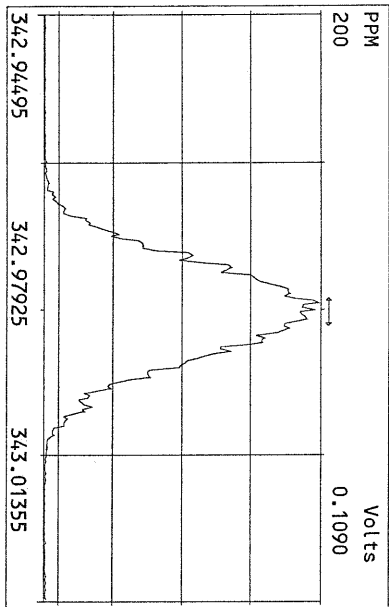
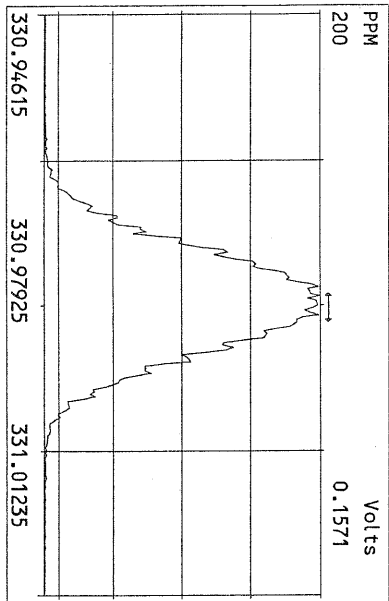


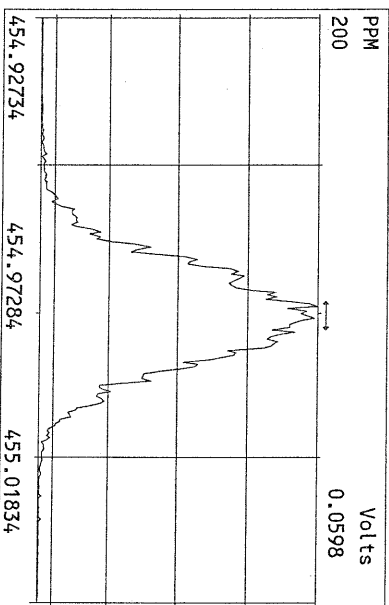
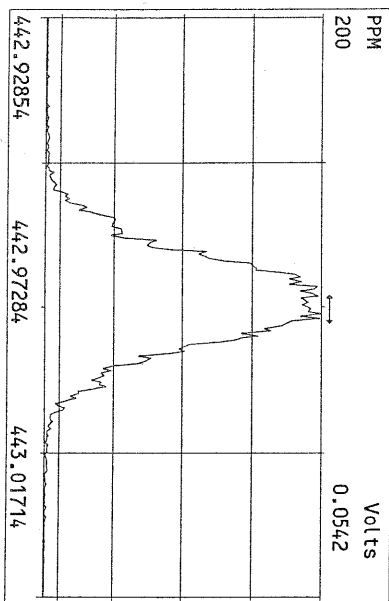
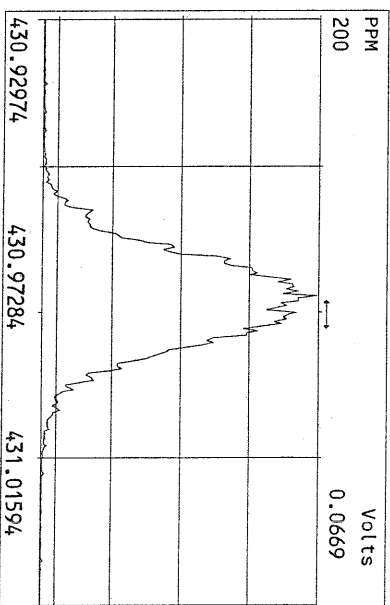
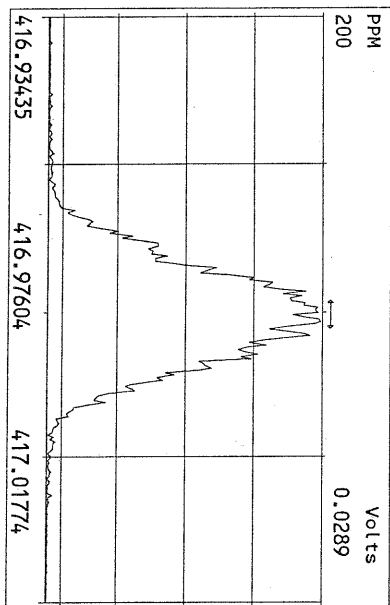
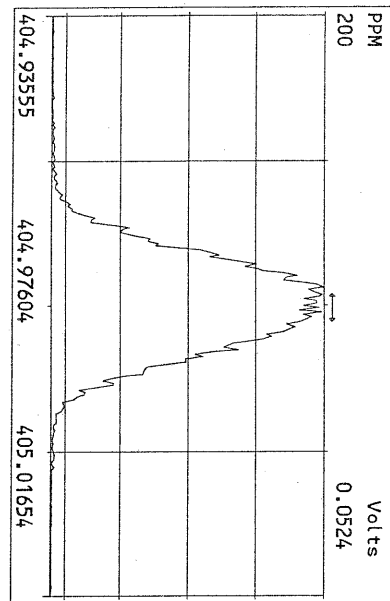
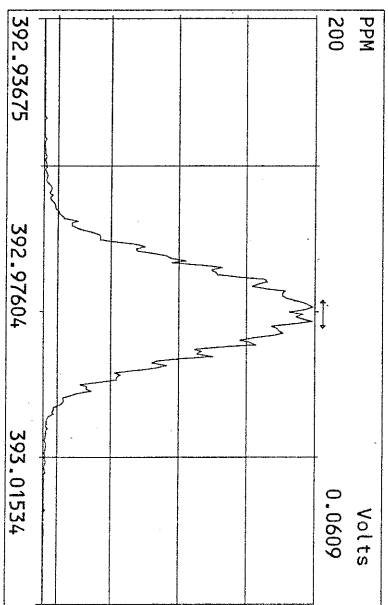
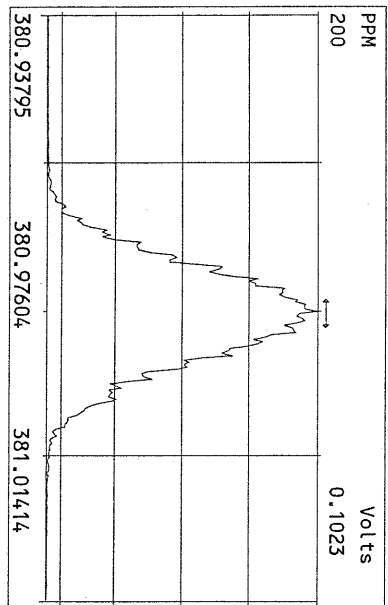
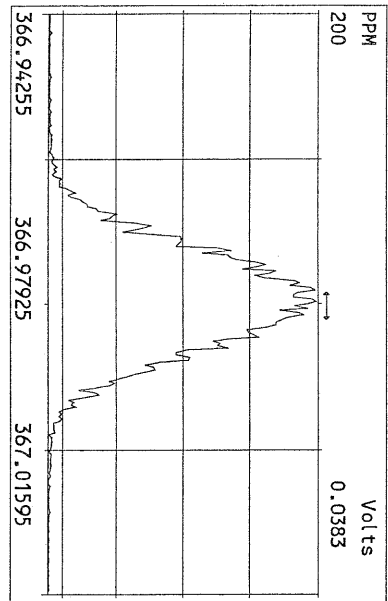
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513.6775 S:16 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4

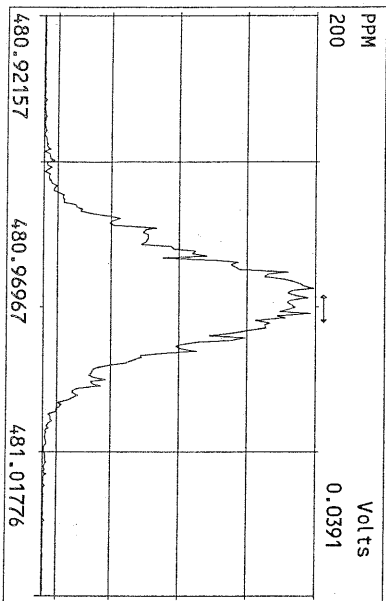
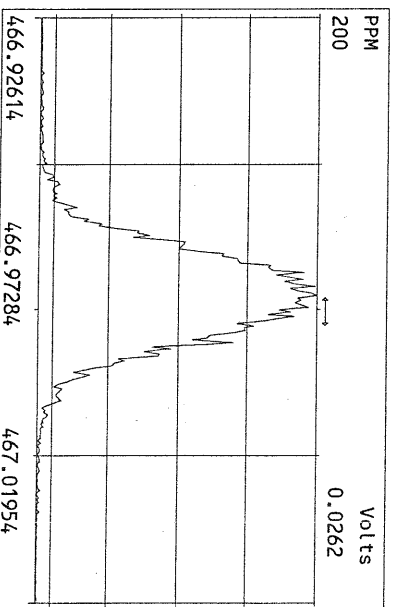
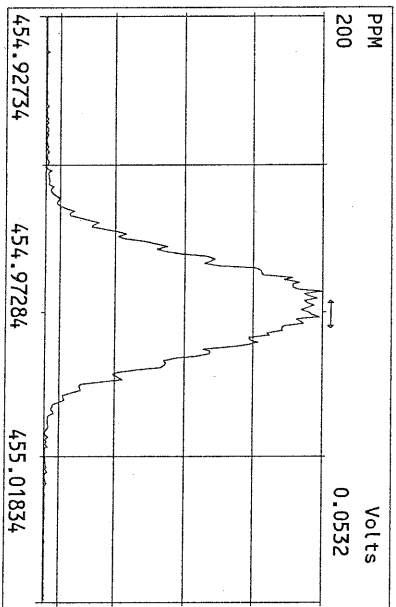
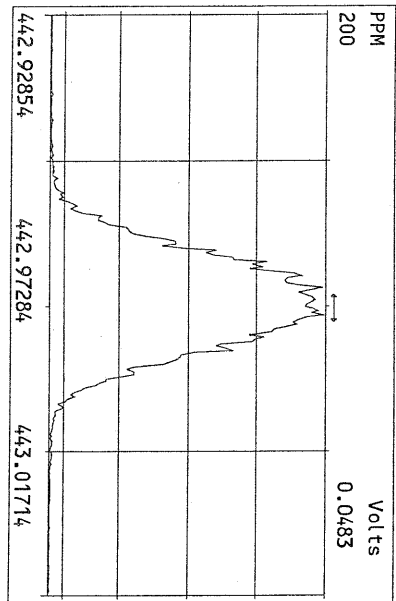
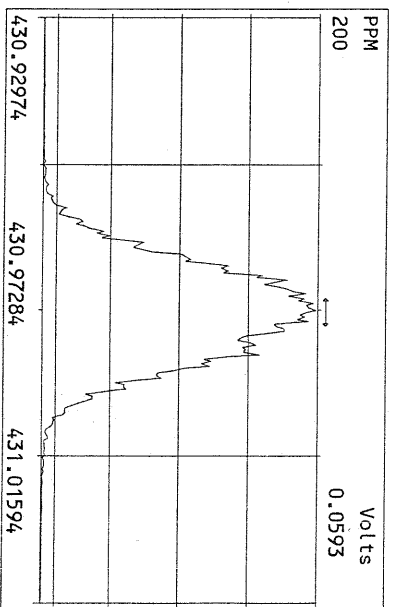
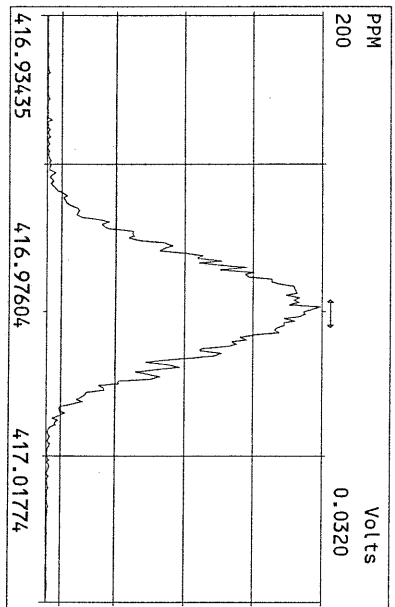
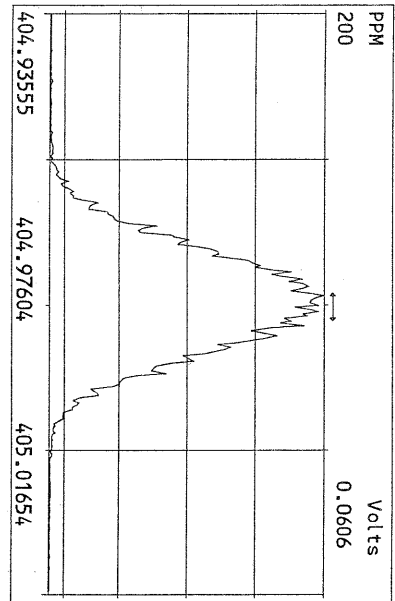


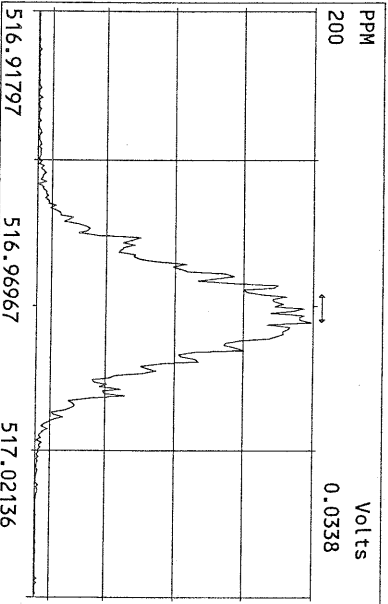
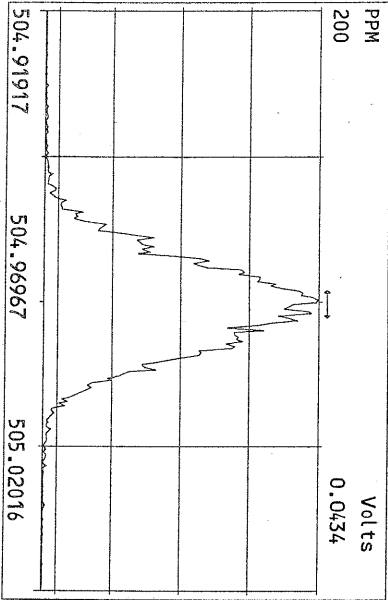
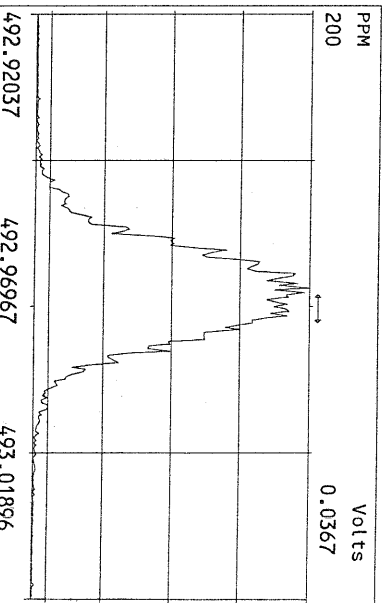
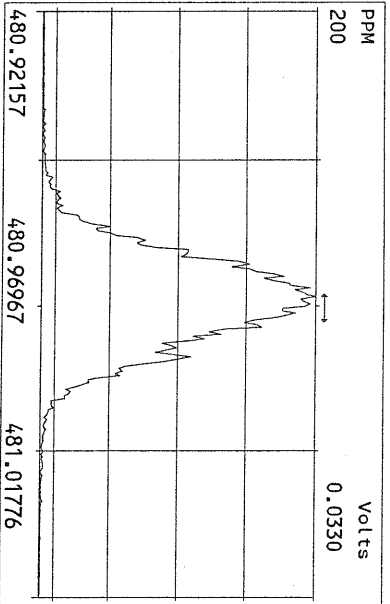
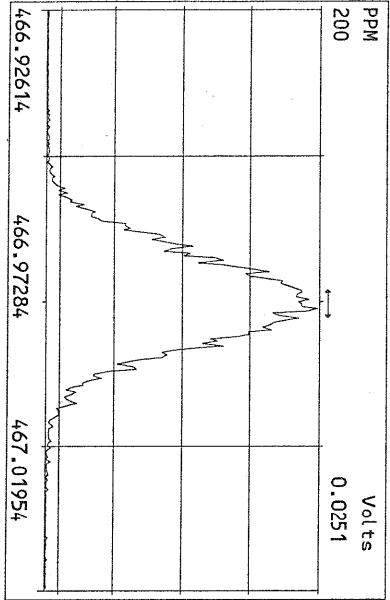
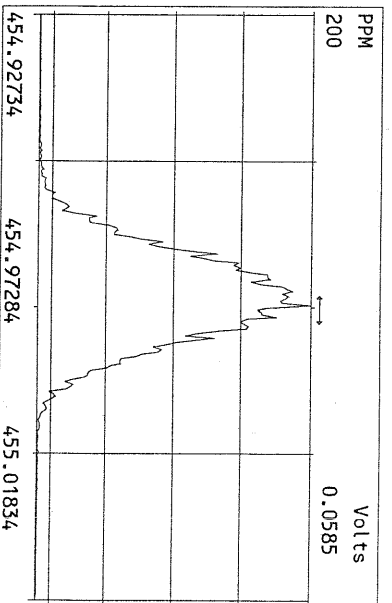
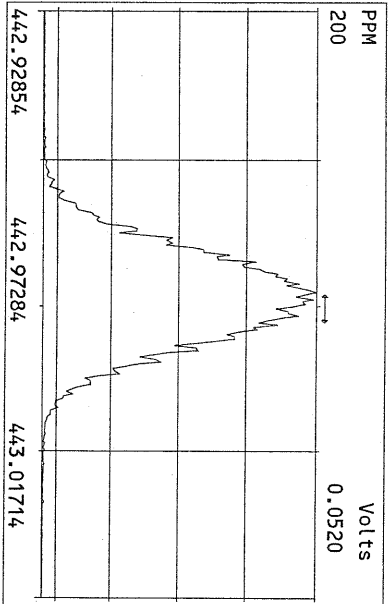
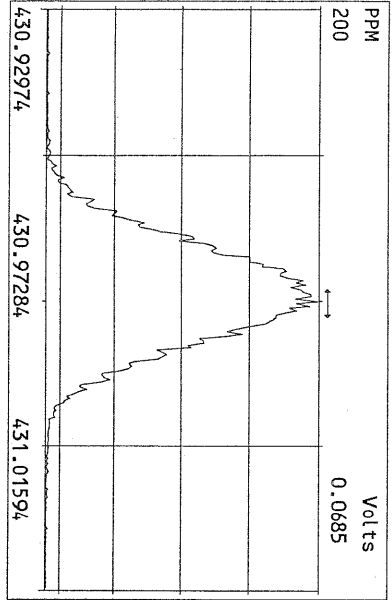
Peak Locate Examination: 8-JAN-2016:09:43 File:07JAN16V_RES_CHECK
Experiment:PCDD Function:1 Reference:PFK











USEPA - ITD

FORM 4A
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: Frontier Analytical Laboratory Episode No.:

Contract No.: SAS No.:

Initial Calibration Date: 12/29/15

Instrument ID: FAL4 GC Column ID: DB5

VER Data Filename: 08JAN16Z Sam:1 Analysis Date: 8-JAN-16 10:18:56

NATIVE ANALYTES	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	ACCEPT	CONC. FOUND	CONC. RANGE (ng/mL) (3)
2,3,7,8-TCDD	M/M+2	0.80	0.65-0.89	y	10.0	7.80 - 12.9
1,2,3,7,8-PeCDD	M+2/M+4	1.58	1.32-1.78	y	50.1	39.0 - 65.0
1,2,3,4,7,8-HxCDD	M+2/M+4	1.23	1.05-1.43	y	47.4	39.0 - 64.0
1,2,3,6,7,8-HxCDD	M+2/M+4	1.26	1.05-1.43	y	49.8	39.0 - 64.0
1,2,3,7,8,9-HxCDD	M+2/M+4	1.24	1.05-1.43	y	48.9	41.0 - 61.0
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.06	0.88-1.20	y	49.3	43.0 - 58.0
OCDD	M+2/M+4	0.89	0.76-1.02	y	122	79.0 - 126
2,3,7,8-TCDF	M/M+2	0.79	0.65-0.89	y	9.09	8.40 - 12.0
1,2,3,7,8-PeCDF	M+2/M+4	1.54	1.32-1.78	y	47.5	41.0 - 60.0
2,3,4,7,8-PeCDF	M+2/M+4	1.52	1.32-1.78	y	46.2	41.0 - 60.0
1,2,3,4,7,8-HxCDF	M+2/M+4	1.23	1.05-1.43	y	47.1	45.0 - 56.0
1,2,3,6,7,8-HxCDF	M+2/M+4	1.25	1.05-1.43	y	47.8	44.0 - 57.0
2,3,4,6,7,8-HxCDF	M+2/M+4	1.25	1.05-1.43	y	47.7	44.0 - 57.0
1,2,3,7,8,9-HxCDF	M+2/M+4	1.27	1.05-1.43	y	48.0	45.0 - 56.0
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.05	0.88-1.20	y	49.0	45.0 - 55.0
1,2,3,4,7,8,9-HpCDF	M+2/M+4	1.03	0.88-1.20	y	49.0	43.0 - 58.0
OCDF	M+2/M+4	0.91	0.76-1.02	y	101	63.0 - 159

(1) See Table 8, Method 1613, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613.

(3) Contract-required concentration range as specified in Table 6, Method 1613.

Analyst: 8

Date: 1/8/16

USEPA - ITD

FORM 4B

PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: Frontier Analytical Laboratory

Episode No.:

Contract No.:

SAS No.:

Initial Calibration Date: 12/29/15

Instrument ID: FAL4

GC Column ID: DB5

VER Data Filename: 08JAN16Z Sam:1

Analysis Date: 8-JAN-16 10:18:56


LABELLED COMPOUNDS	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	ACCEPT	CONC. FOUND	CONC. RANGE (ng/mL) (3)
13C-2,3,7,8-TCDD	M/M+2	0.79	0.65-0.89	y	97.8	82.0 - 121 ✓
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.59	1.32-1.78	y	94.1	62.0 - 160 ✓
13C-1,2,3,4,7,8-HxCDD	M+2/M+4	1.28	1.05-1.43	y	102	85.0 - 117 ✓
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.28	1.05-1.43	y	103	85.0 - 118 ✓
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.08	0.88-1.20	y	101	72.0 - 138 ✓
13C-OCDD	M+2/M+4	0.90	0.76-1.02	y	197	96.0 - 415 ✓
13C-2,3,7,8-TCDF	M/M+2	0.80	0.65-0.89	y	99.1	71.0 - 140 ✓
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.58	1.32-1.78	y	95.7	76.0 - 130 ✓
13C-2,3,4,7,8-PeCDF	M+2/M+4	1.59	1.32-1.78	y	98.6	77.0 - 130 ✓
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.53	0.43-0.59	y	96.8	76.0 - 131 ✓
13C-1,2,3,6,7,8-HxCDF	M/M+2	0.53	0.43-0.59	y	98.6	70.0 - 143 ✓
13C-2,3,4,6,7,8-HxCDF	M/M+2	0.54	0.43-0.59	y	98.3	73.0 - 137 ✓
13C-1,2,3,7,8,9-HxCDF	M/M+2	0.53	0.43-0.59	y	96.1	74.0 - 135 ✓
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.44	0.37-0.51	y	93.7	78.0 - 129 ✓
13C-1,2,3,4,7,8,9-HpCDF	M/M+2	0.45	0.37-0.51	y	91.4	77.0 - 129 ✓
13C-OCDF	M+2/M+4	0.90	0.76-1.02	y	191	96.0 - 415 ✓
CLEANUP STANDARD (4)						
37Cl-2,3,7,8-TCDD					9.86	7.90 - 12.7 ✓

(1) See Table 8, Method 1613, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613.

(3) Contract-required concentration range as specified in Table 6, Method 1613.

(4) No ion abundance ratio; report concentration found.

Analyst: Date: 1/8/16

FORM 5
PCDD/PCDF RT WINDOW AND ISOMER SPECIFICITY STANDARDS

Lab Name: Frontier Analytical Laboratory Episode No.:
Contract No.: SAS No.:
Instrument ID: FAL4 Initial Calibration Date: 12/29/15
RT Window Data Filename: 08JAN16Z Sam:1 Analysis Date: 8-JAN-16 Time: 10:18:56
DB-5 IS Data Filename: 08JAN16Z Sam:1 Analysis Date: 8-JAN-16 Time: 10:18:56
DB-225 IS Data Filename: Analysis Date: Time:

DB-5 RT WINDOW DEFINING STANDARDS RESULTS

ISOMERS	ABSOLUTE RT	ISOMERS	ABSOLUTE RT
1,3,6,8-TCDD (F)	24:22	1,3,6,8-TCDF (F)	22:60
1,2,8,9-TCDD (L)	28:21	1,2,8,9-TCDF (L)	28:35
1,2,4,7,9-PeCDD (F)	30:15	1,3,4,6,8-PeCDF (F)	28:24
1,2,3,8,9-PeCDD (L)	33:49	1,2,3,8,9-PeCDF (L)	34:15
1,2,4,6,7,9-HxCDD (F)	36:06	1,2,3,4,6,8-HxCDF (F)	35:14
1,2,3,7,8,9-HxCDD (L)	39:11	1,2,3,7,8,9-HxCDF (L)	39:46
1,2,3,4,6,7,9-HpCDD (F)	42:45	1,2,3,4,6,7,8-HpCDF (F)	42:14
1,2,3,4,6,7,8-HpCDD (L)	44:08	1,2,3,4,7,8,9-HpCDF (L)	45:04

(F) = First eluting isomer (DB-5); (L) = Last eluting isomer (DB-5)

=====
ISOMER SPECIFICITY (IS) TEST STANDARD RESULTS

% VALLEY HEIGHT
BETWEEN
COMPARED PEAKS (1)

<25%

(1) To meet contract requirement, %Valley Height Between Compared Peaks shall not exceed 25% (section 15.4.2.2, Method 1613).

Analyst:  Date: 1/8/16

USEPA - ITD

FORM 6B
PCDD/PCDF RELATIVE RETENTION TIMES

Lab Name: Frontier Analytical Laboratory Episode No.:

Contract No.: SAS No.: Init. Cal. Date: 12/29/15

Instrument ID: FAL4 GC Column ID: DB5

Analysis Date: 8-JAN-16 10:18:56 CS3 or VER Data Filename: 08JAN16Z Sam:1

NATIVE ANALYTES	RETENTION TIME REFERENCE	RRT	RRT QC LIMITS (1)
1,2,3,4,7,8-HxCDD	13C-1,2,3,4,7,8-HxCDD	1.000	0.999-1.001
1,2,3,6,7,8-HxCDD	13C-1,2,3,6,7,8-HxCDD	1.000	0.998-1.004
1,2,3,7,8,9-HxCDD	13C-1,2,3,6,7,8-HxCDD	1.012	1.000-1.019
1,2,3,4,7,8-HxCDF	13C-1,2,3,4,7,8-HxCDF	1.001	0.999-1.001
1,2,3,6,7,8-HxCDF	13C-1,2,3,6,7,8-HxCDF	1.001	0.997-1.005
2,3,4,6,7,8-HxCDF	13C-2,3,4,6,7,8-HxCDF	1.001	0.999-1.001
1,2,3,7,8,9-HxCDF	13C-1,2,3,7,8,9-HxCDF	1.000	0.999-1.001
1,2,3,4,6,7,8-HpCDD	13C-1,2,3,4,6,7,8-HpCDD	1.000	0.999-1.001
1,2,3,4,6,7,8-HpCDF	13C-1,2,3,4,6,7,8-HpCDF	1.000	0.999-1.001
1,2,3,4,7,8,9-HpCDF	13C-1,2,3,4,7,8,9-HpCDF	1.001	0.999-1.001
OCDD	13C-OCDD	1.000	0.999-1.001
OCDF	13C-OCDF	1.000	0.999-1.001
LABELED COMPOUNDS			
13C-1,2,3,4,7,8-HxCDD	13C-1,2,3,7,8,9-HxCDD	0.985	0.977-1.000
13C-1,2,3,6,7,8-HxCDD		0.989	0.981-1.003
13C-1,2,3,4,7,8-HxCDF		0.949	0.944-0.970
13C-1,2,3,6,7,8-HxCDF		0.954	0.949-0.975
13C-2,3,4,6,7,8-HxCDF		0.978	0.959-1.021
13C-1,2,3,7,8,9-HxCDF		1.015	0.977-1.047
13C-1,2,3,4,6,7,8-HpCDD		1.127	1.086-1.130
13C-1,2,3,4,6,7,8-HpCDF		1.078	1.043-1.085
13C-1,2,3,4,7,8,9-HpCDF		1.150	1.057-1.154
13C-OCDD		1.268	1.032-1.311
13C-OCDF		1.278	1.000-1.311

(1) Contract-required limits for Relative Retention Times (RRT) as specified
in Table 2, Method 1613.

Analyst: _____

Date: 1/8/16

Name	Resp	RA	RT	RRF	Conc	Qual	Fac Noise-1	Noise-2	DL	#Hom
2,3,7,8-TCDD	4.99e+06	0.80 y	27:24	1.08	10.0		2.50	-	*	
1,2,3,7,8-PeCDD	1.46e+07	1.58 y	33:14	0.90	50.1		2.50	-	*	
1,2,3,4,7,8-HxCDD	1.25e+07	1.23 y	38:34	0.98	47.4		2.50	-	*	
1,2,3,6,7,8-HxCDD	1.30e+07	1.26 y	38:44	1.00	49.8		2.50	-	*	
1,2,3,7,8,9-HxCDD	1.44e+07	1.24 y	39:11	1.11	48.9		2.50	-	*	
1,2,3,4,6,7,8-HpCDD	1.39e+07	1.06 y	44:08	1.09	49.3		2.50	-	*	
OCDD	2.65e+07	0.89 y	49:39	1.04	122		2.50	-	*	
2,3,7,8-TCDF	5.58e+06	0.79 y	26:39	1.05	9.09		2.50	-	*	
1,2,3,7,8-PeCDF	2.27e+07	1.54 y	31:30	0.98	47.5		2.50	-	*	
2,3,4,7,8-PeCDF	2.17e+07	1.52 y	32:50	1.01	46.2		2.50	-	*	
1,2,3,4,7,8-HxCDF	2.13e+07	1.23 y	37:12	1.23	47.1		2.50	-	*	
1,2,3,6,7,8-HxCDF	2.13e+07	1.25 y	37:23	1.17	47.8		2.50	-	*	
2,3,4,6,7,8-HxCDF	2.00e+07	1.25 y	38:20	1.12	47.7		2.50	-	*	
1,2,3,7,8,9-HxCDF	1.86e+07	1.27 y	39:46	1.15	48.0		2.50	-	*	
1,2,3,4,6,7,8-HpCDF	2.00e+07	1.05 y	42:14	1.36	49.0		2.50	-	*	
1,2,3,4,7,8,9-HpCDF	1.54e+07	1.03 y	45:04	1.23	49.0		2.50	-	*	
OCDF	3.13e+07	0.91 y	50:02	1.13	101		2.50	-	*	
13C-2,3,7,8-TCDD	4.61e+07	0.79 y	27:23	1.07	97.8					97.8
13C-1,2,3,7,8-PeCDD	3.21e+07	1.59 y	33:13	0.78	94.1					94.1
13C-1,2,3,4,7,8-HxCDD	2.68e+07	1.28 y	38:33	0.87	102					102
13C-1,2,3,6,7,8-HxCDD	2.60e+07	1.28 y	38:43	0.84	103					103
13C-1,2,3,4,6,7,8-HpCDD	2.60e+07	1.08 y	44:07	0.85	101					101
13C-OCDD	4.16e+07	0.90 y	49:38	0.70	197					98.7
13C-2,3,7,8-TCDF	5.86e+07	0.80 y	26:38	1.03	99.1					99.1
13C-1,2,3,7,8-PeCDF	4.89e+07	1.58 y	31:29	0.89	95.7					95.7
13C-2,3,4,7,8-PeCDF	4.65e+07	1.59 y	32:49	0.82	98.6					98.6
13C-1,2,3,4,7,8-HxCDF	3.69e+07	0.53 y	37:10	1.26	96.8					96.8
13C-1,2,3,6,7,8-HxCDF	3.82e+07	0.53 y	37:22	1.28	98.6					98.6
13C-2,3,4,6,7,8-HxCDF	3.76e+07	0.54 y	38:18	1.27	98.3					98.3
13C-1,2,3,7,8,9-HxCDF	3.38e+07	0.53 y	39:45	1.16	96.1					96.1
13C-1,2,3,4,6,7,8-HpCDF	3.00e+07	0.44 y	42:14	1.06	93.7					93.7
13C-1,2,3,4,7,8,9-HpCDF	2.56e+07	0.45 y	45:03	0.93	91.4					91.4
13C-OCDF	5.50e+07	0.90 y	50:01	0.95	191					95.7
37Cl-2,3,7,8-TCDD	3.89e+06		27:24	0.90	9.86					98.6
13C-1,2,3,4-TCDD	4.40e+07	0.79 y	26:48	-	120					
13C-1,2,3,4-TCDF	5.72e+07	0.80 y	25:31	-	119					
13C-1,2,3,7,8,9-HxCDD	3.02e+07	1.27 y	39:09	-	111					
Total Tetra-Dioxins	2.23e+07		23:01	1.08	44.8		2.50	-	*	24
Total Penta-Dioxins	4.67e+07		30:15	0.90	161		2.50	-	*	17
Total Hexa-Dioxins	5.71e+07		35:05	1.03	209		2.50	-	*	15
Total Hepta-Dioxins	2.90e+07		42:14	1.09	103		2.50	-	*	23
Total Tetra-Furans	2.57e+07		22:60	1.05	41.9		2.50	-	*	21
1st Fn. Tot Penta-Furans	3.22e+07		28:24	0.99	67.9		2.50	-	*	PeCDF 1
Total Penta-Furans	6.64e+07		30:11	0.99	140		2.50	-	*	208 16
Total Hexa-Furans	1.04e+08		35:14	1.16	244		2.50	-	*	23
Total Hepta-Furans	3.77e+07		42:14	1.30	104		2.50	-	*	30

Analyst: J

Date: 1/8/14

Frontier Analytical Laboratory - Acquisition Log

Run Name:08JAN16Z

Instrument: FAL4

GC: DB5

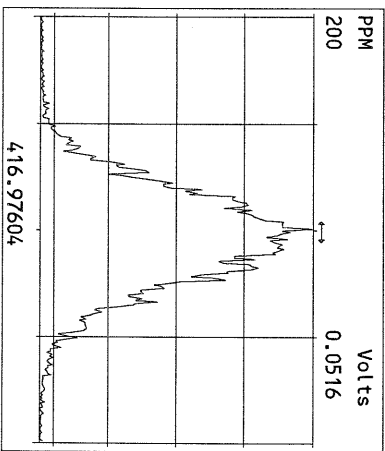
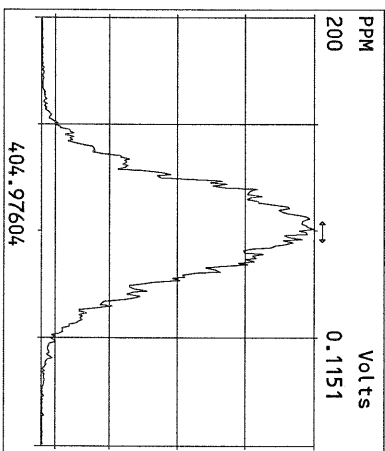
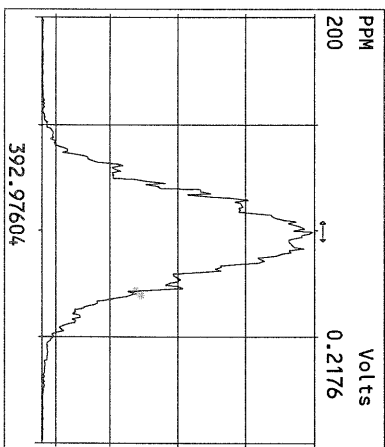
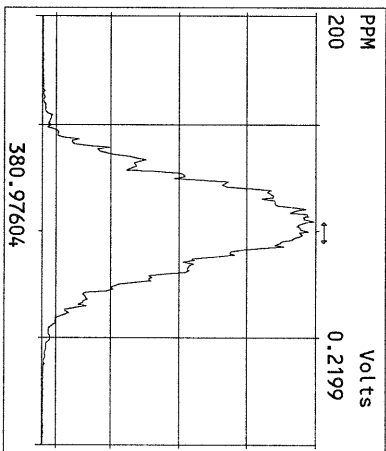
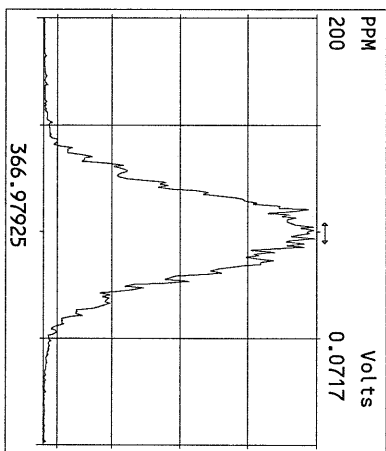
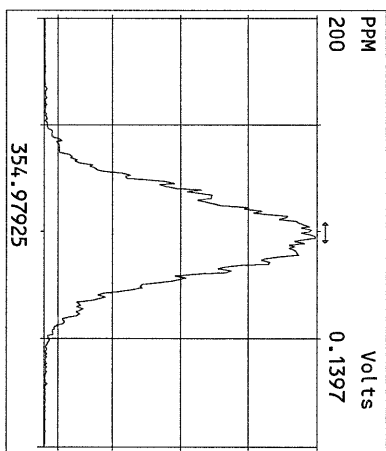
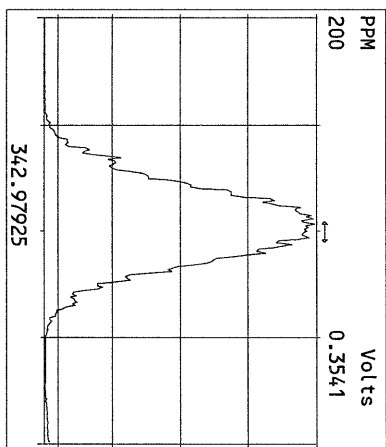
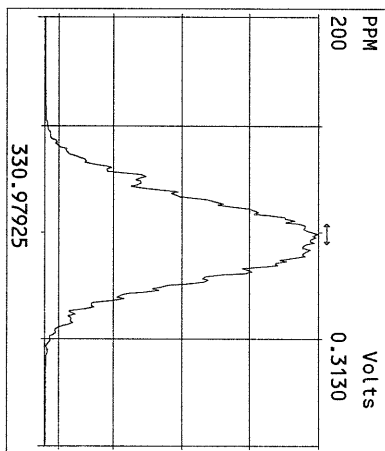
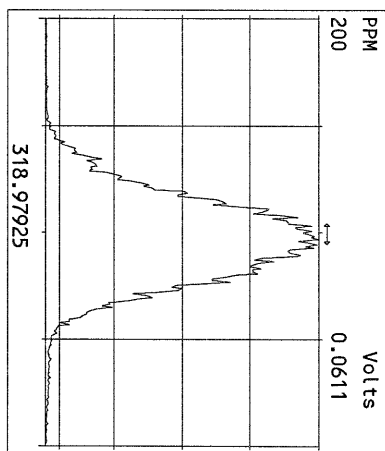
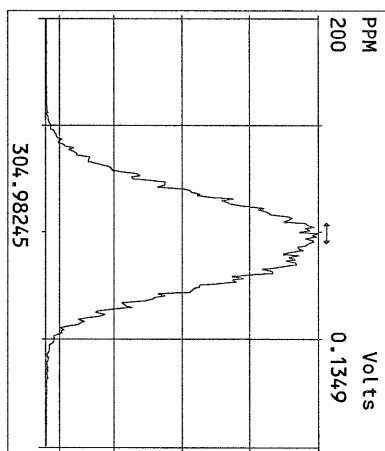
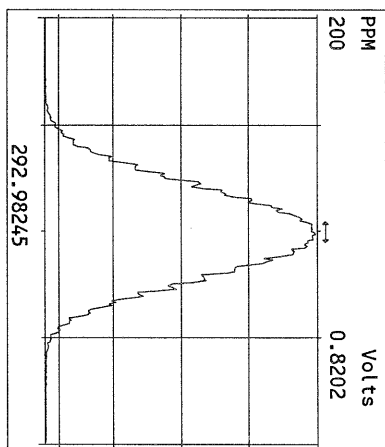
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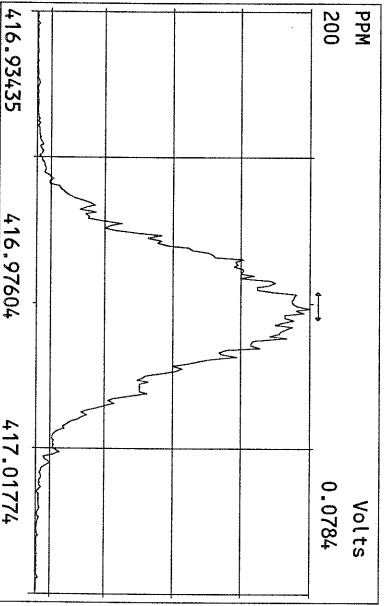
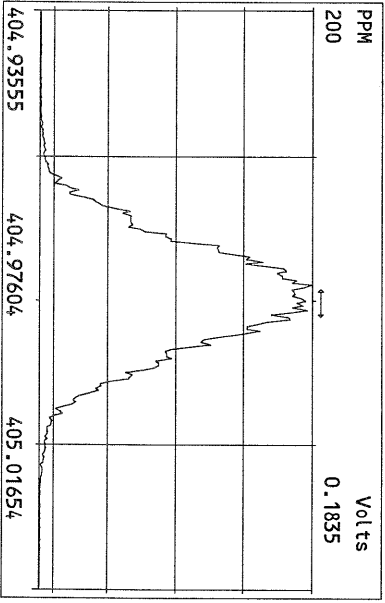
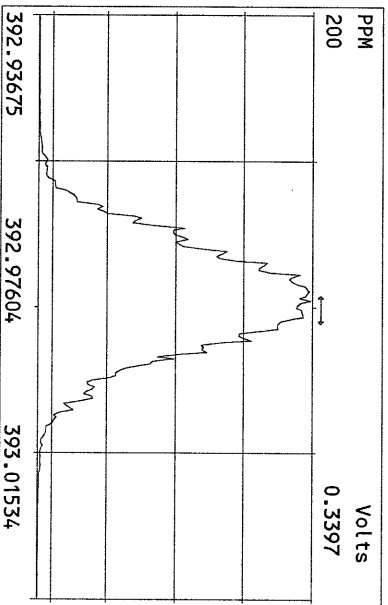
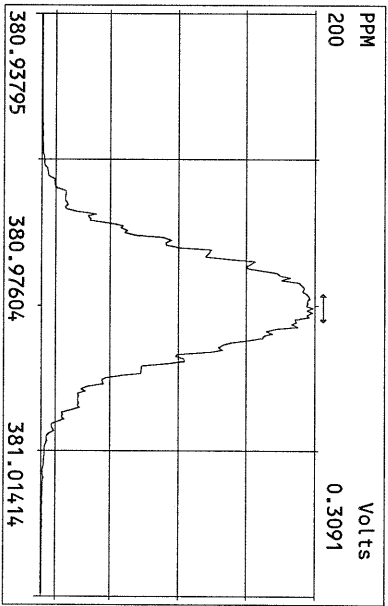
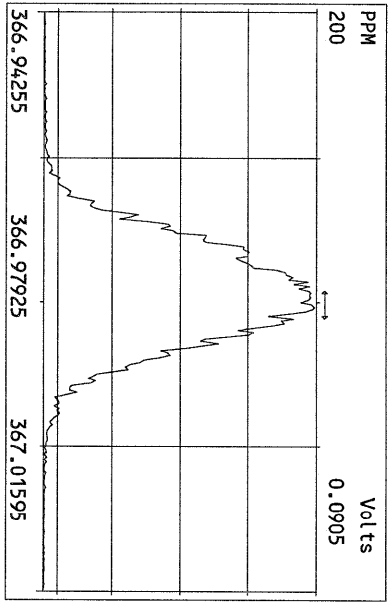
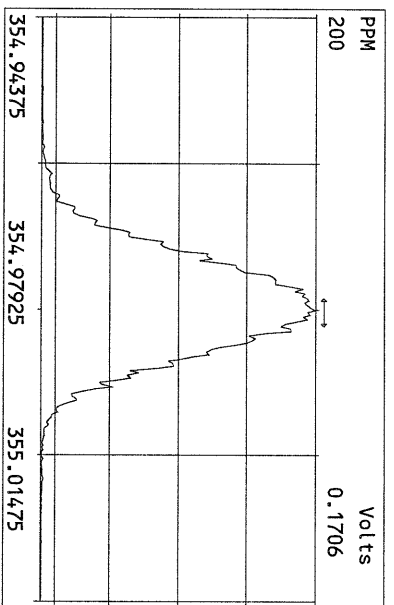
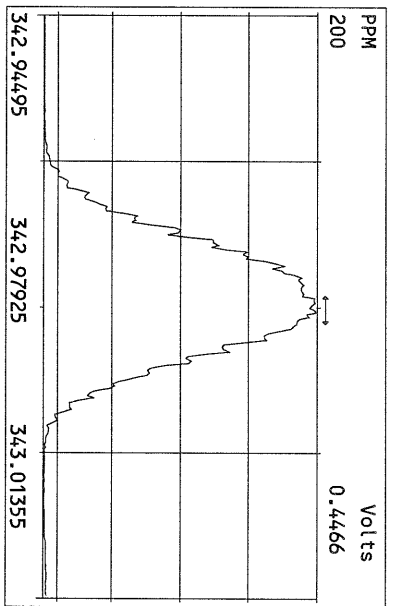
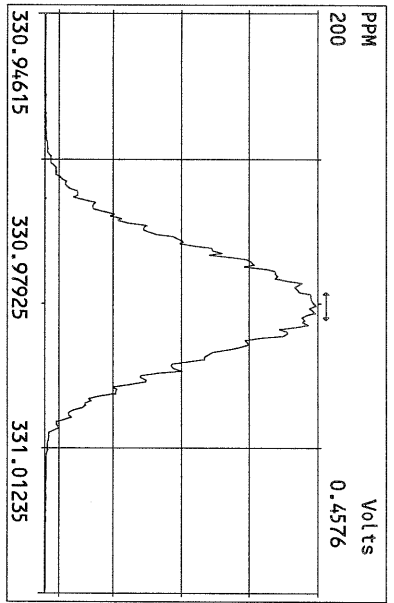
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08JAN16Z	3	9528-001-0001-SA	SP-FA-1	8-JAN-16 12:08:33	ST010816Z1	ST010816Z2	BS
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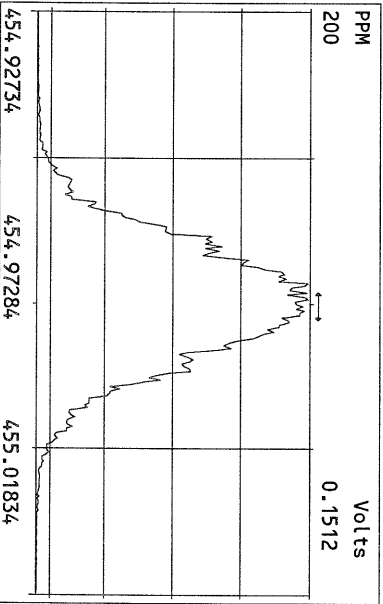
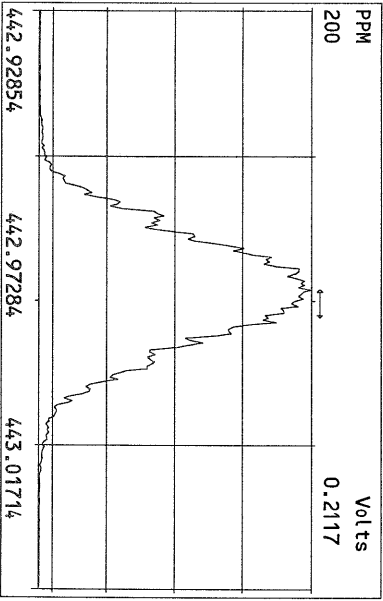
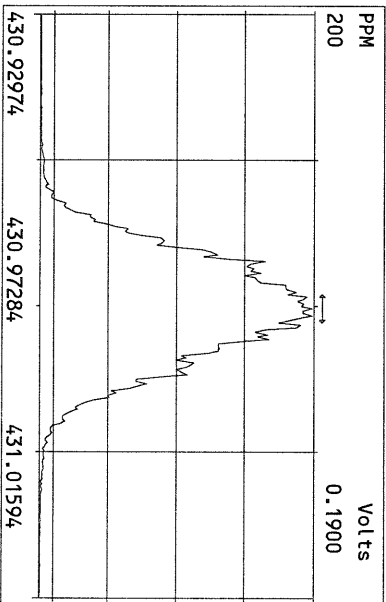
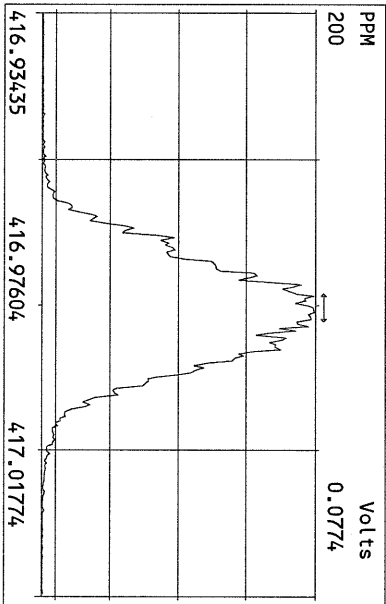
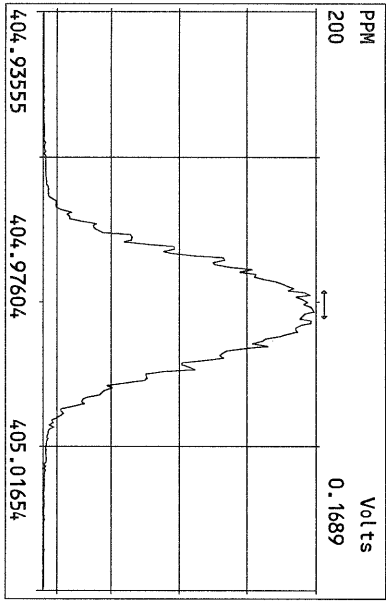
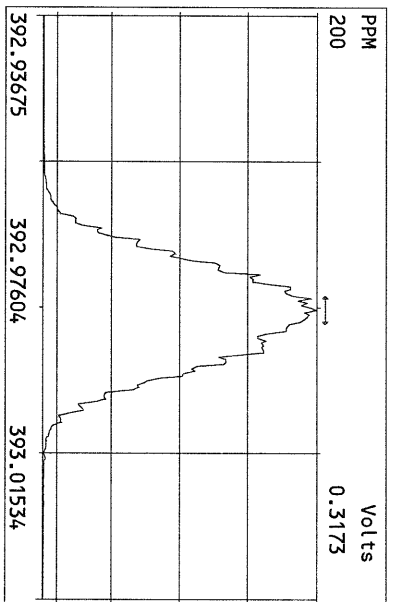
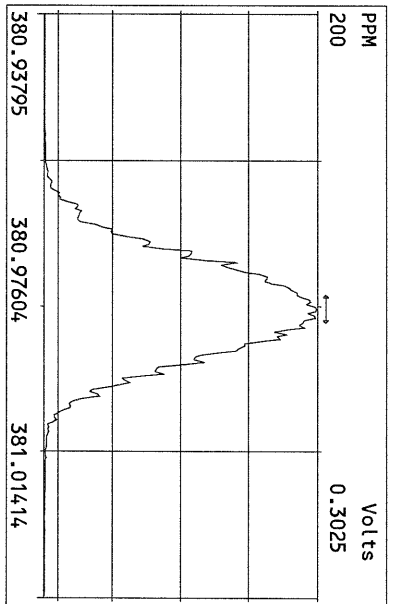
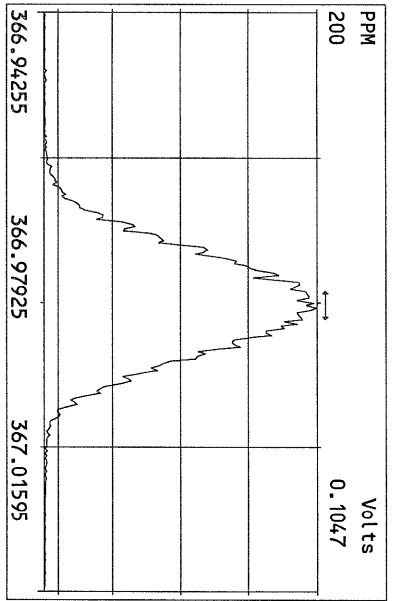
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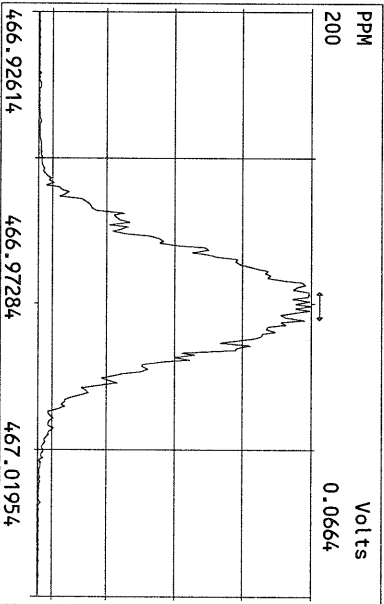
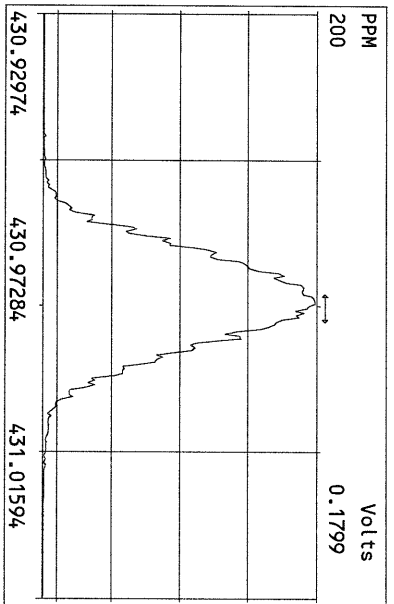
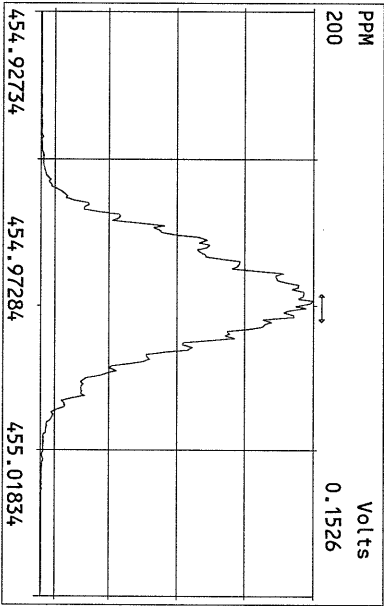
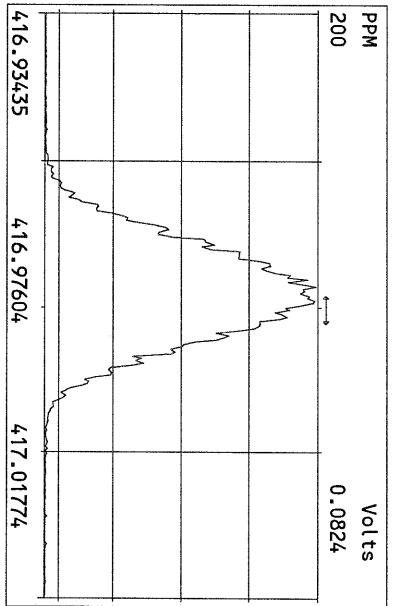
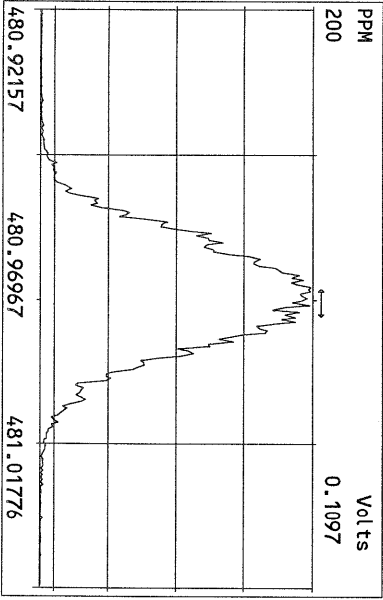
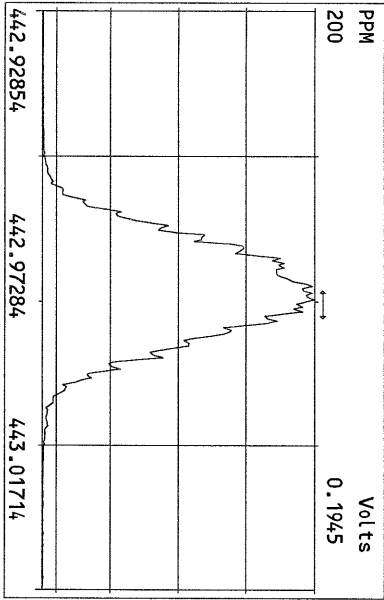
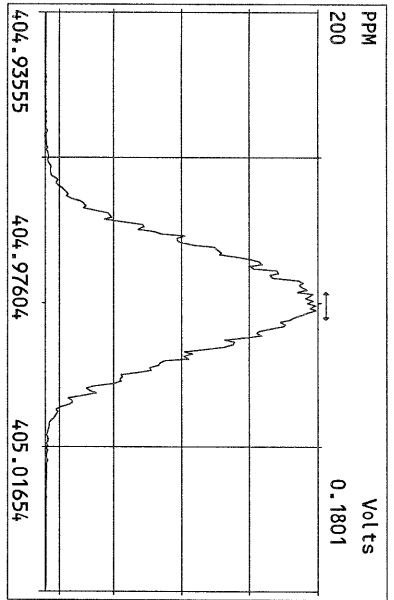
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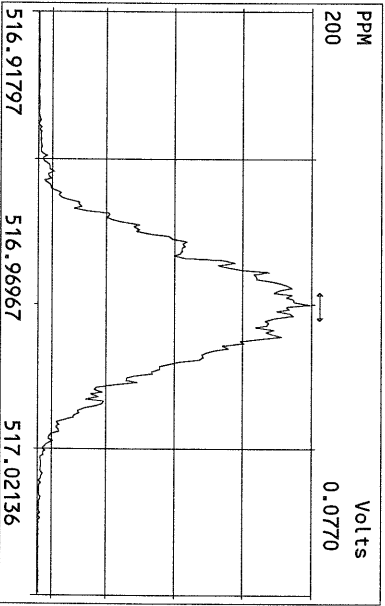
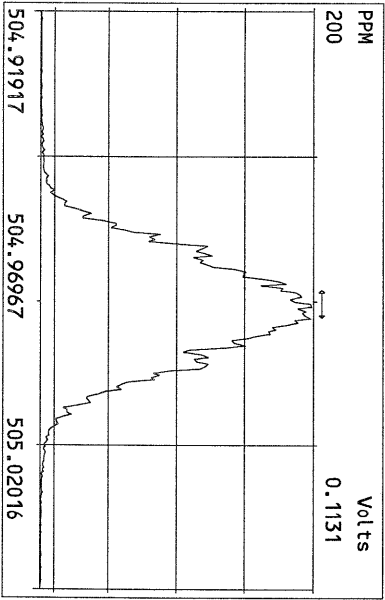
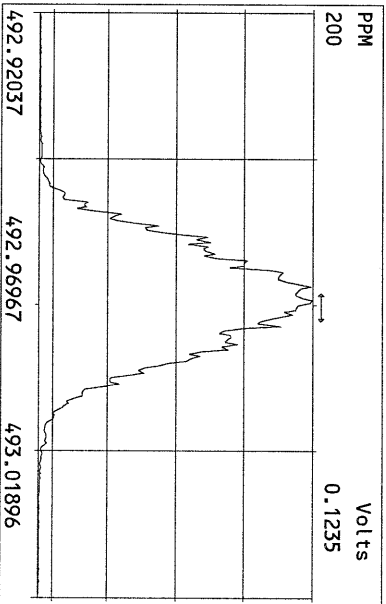
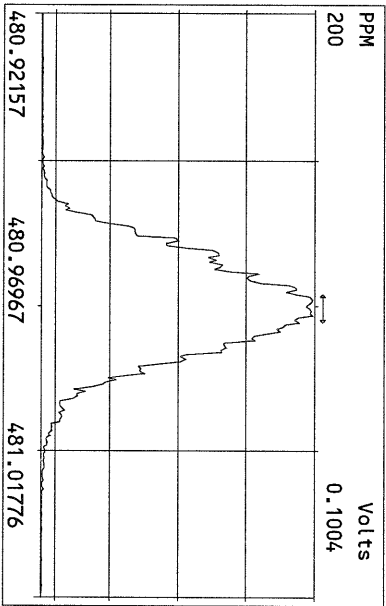
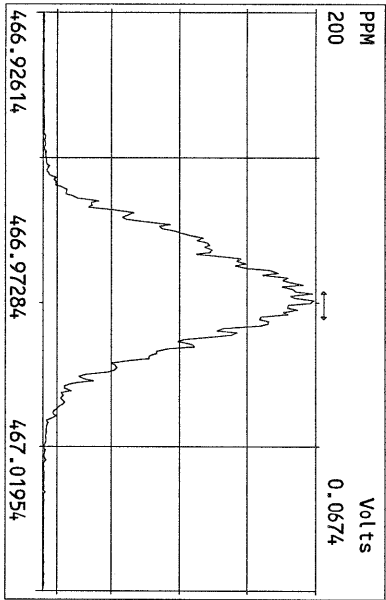
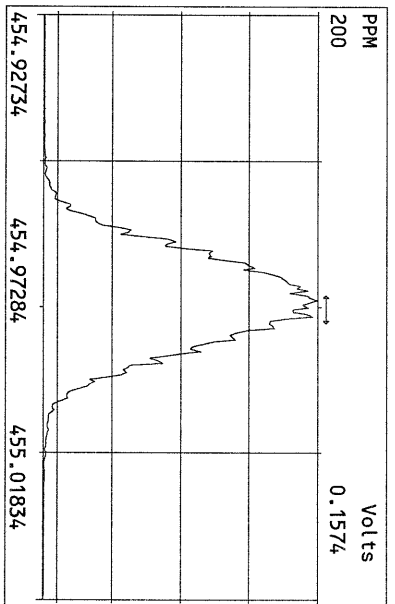
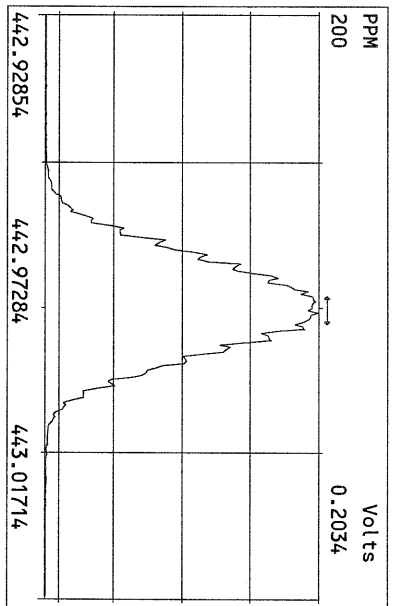
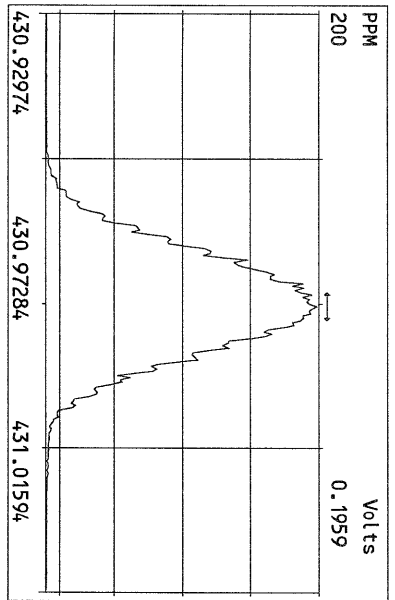
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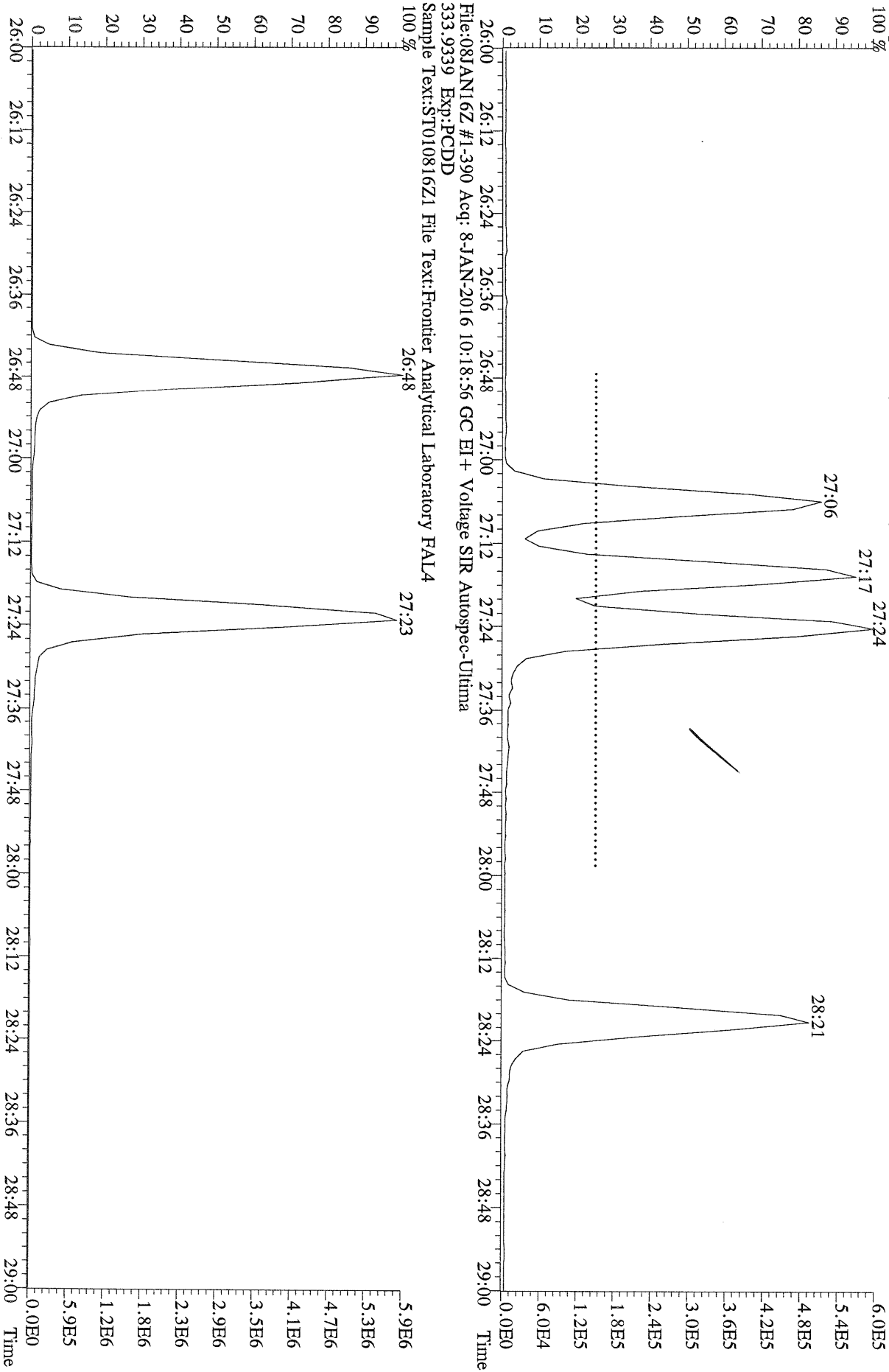




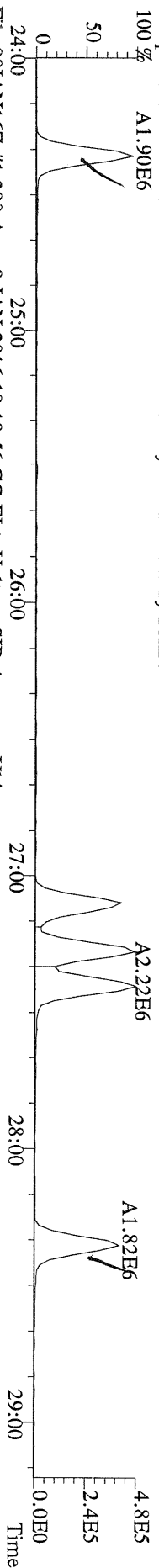




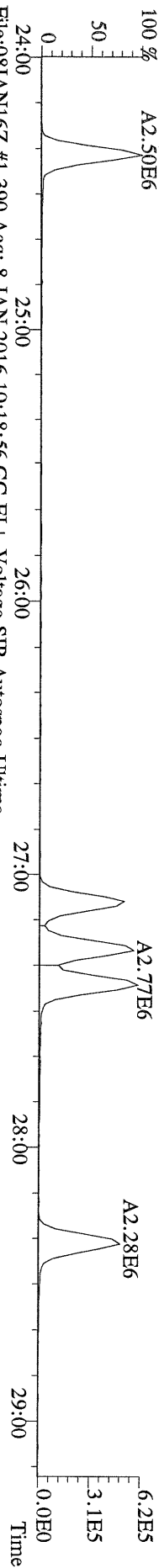
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Sample Text:ST010816Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



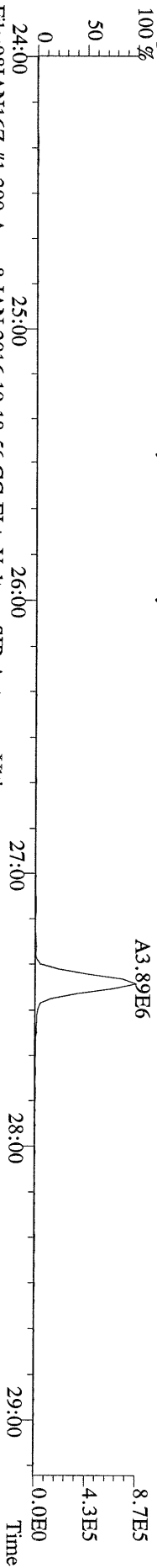
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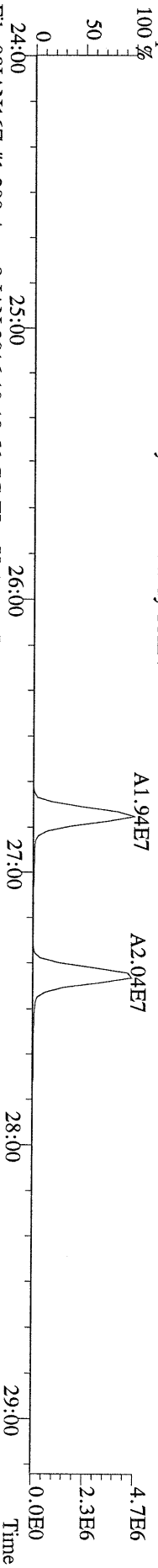
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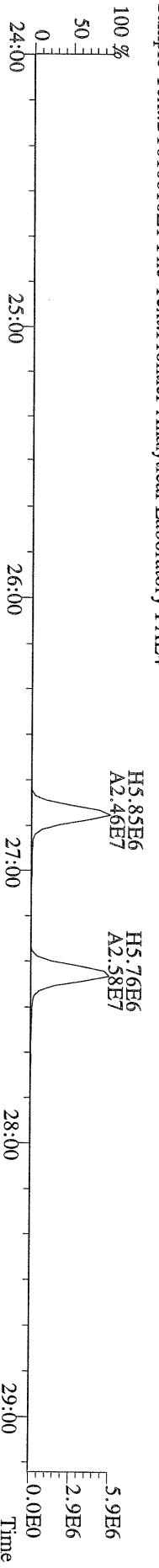
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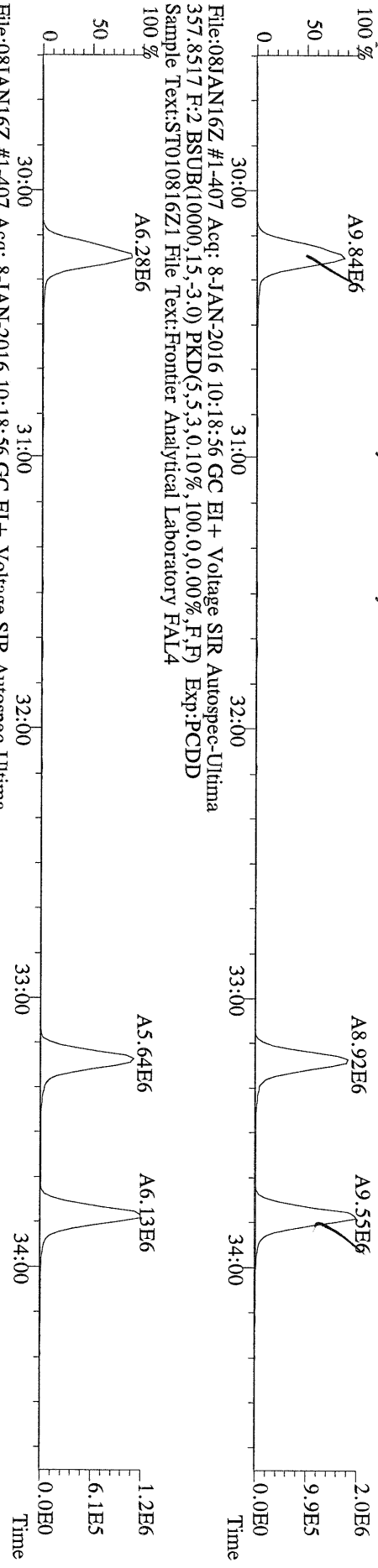
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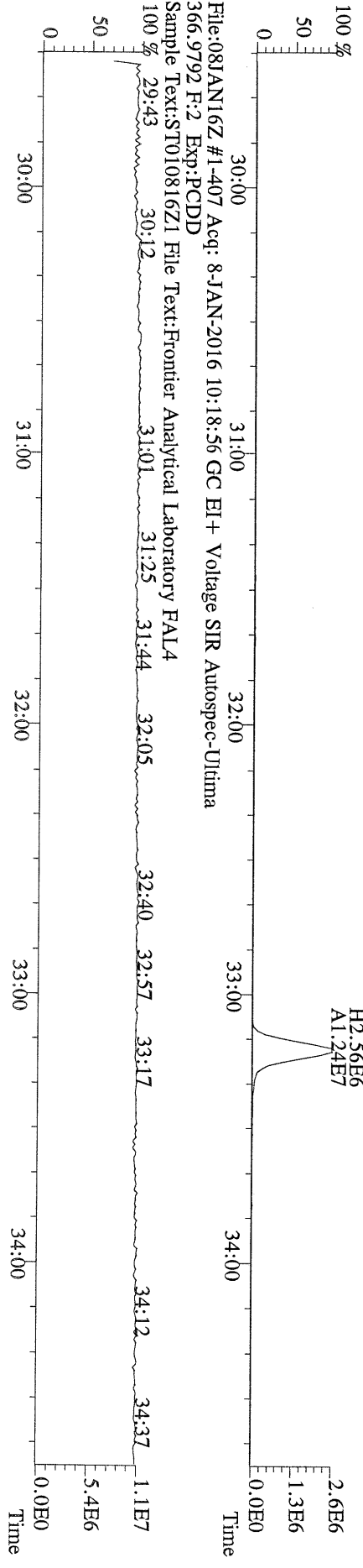
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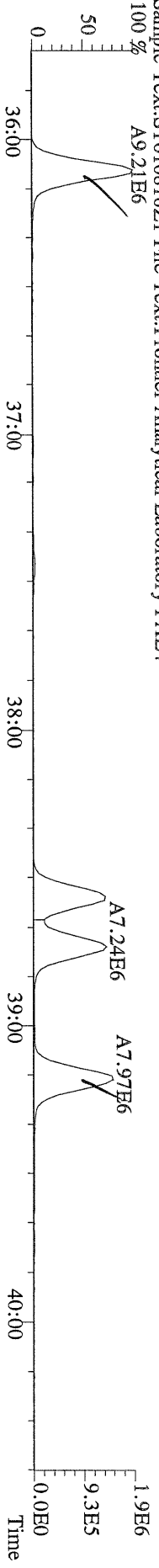
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355.8546 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,P) Exp:PCDD
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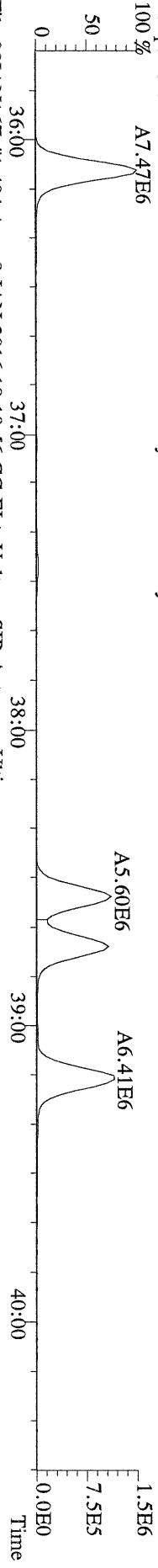
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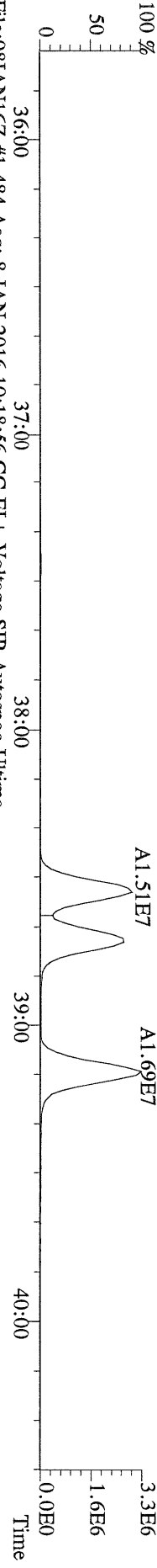
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389.8156 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,00% .F.F) Exp:PCDD
Sample Text:ST010816Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



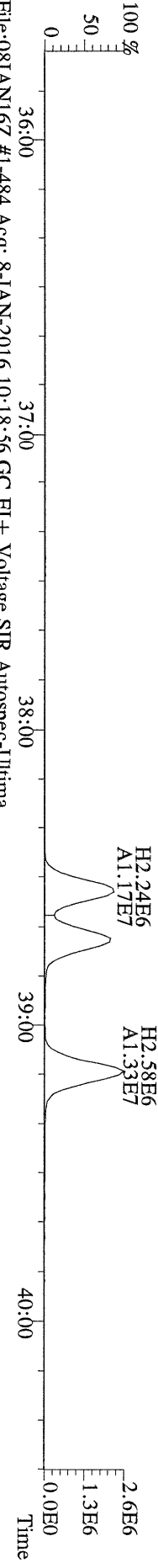
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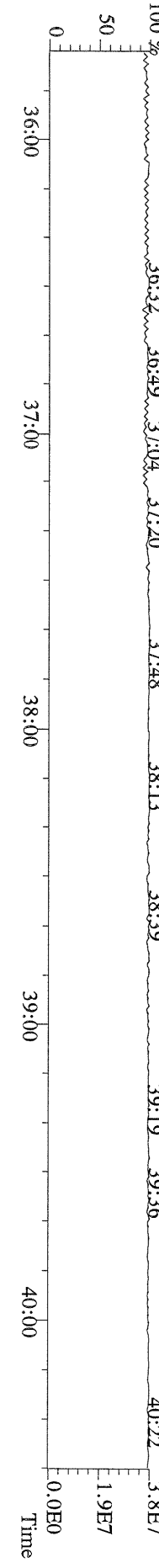
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100 %



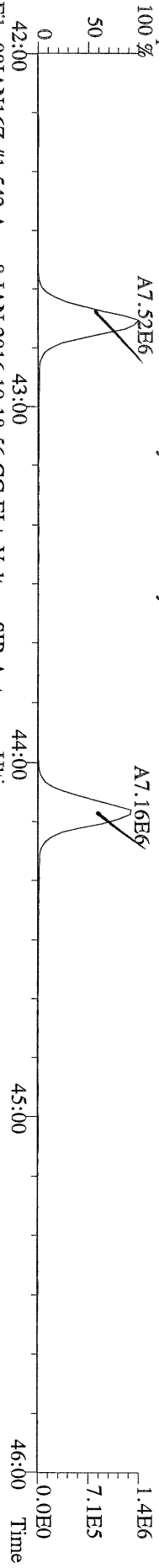
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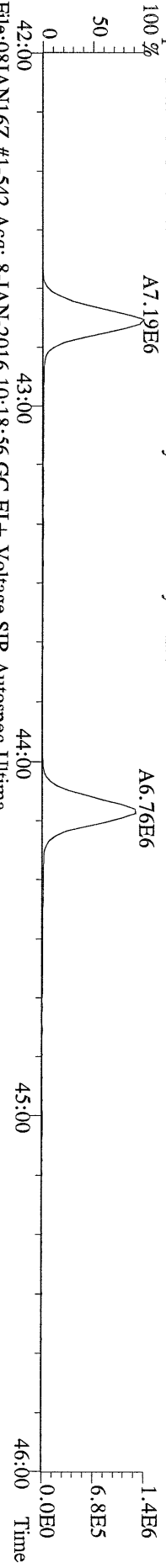
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380.9760 F:3 Exp:PCDD
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100 %



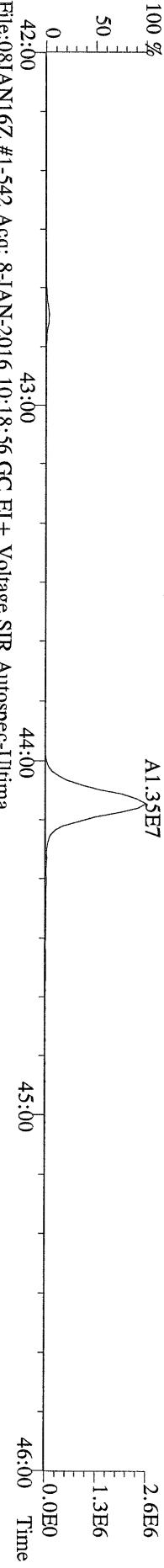
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423.7767 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010816Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



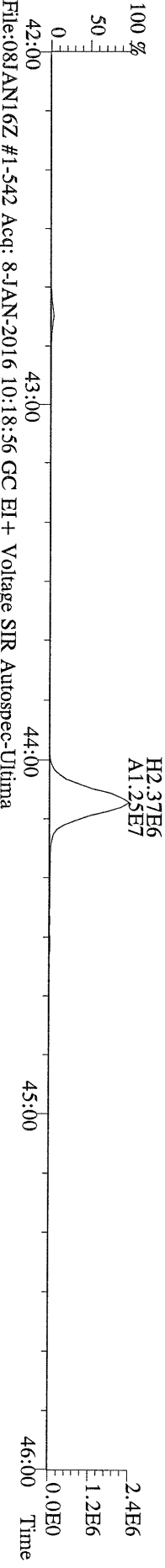
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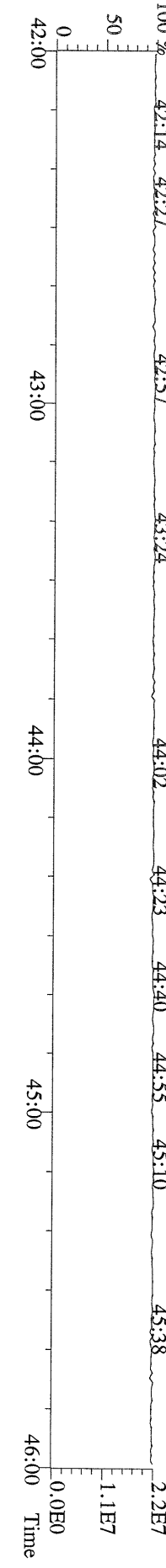
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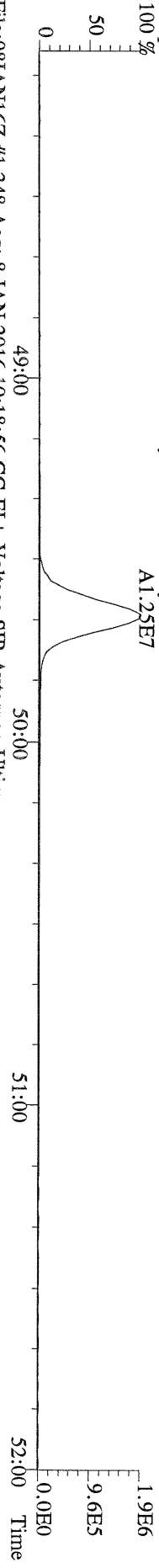
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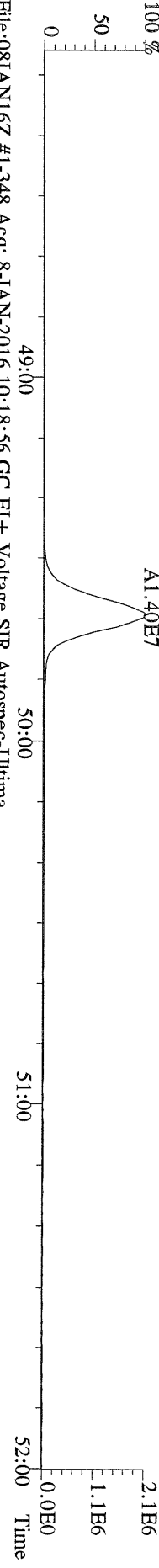
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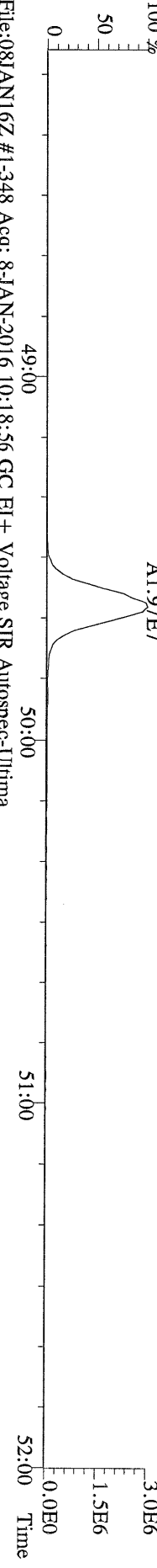
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457.7377 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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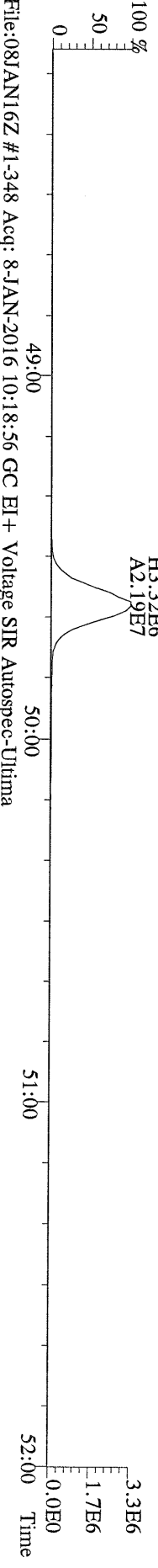
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459.7348 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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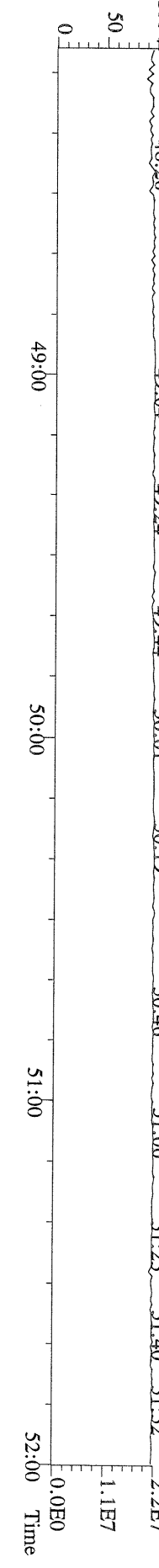
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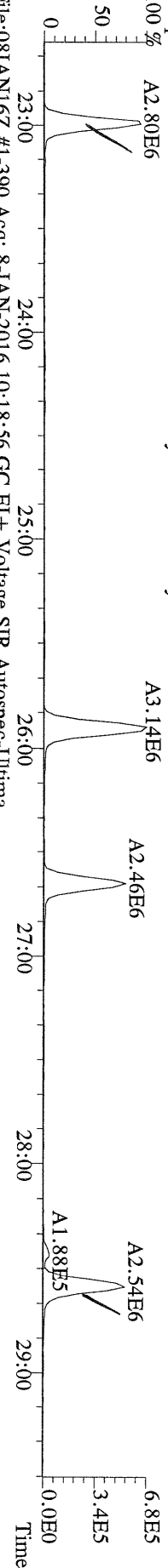
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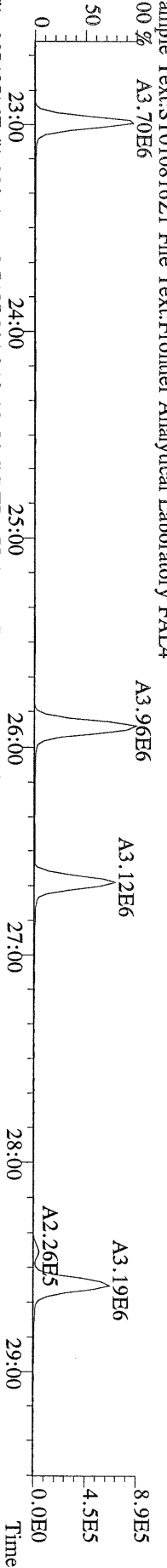
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Sample Text:ST010816Z1 File Text:Frontier Analytical Laboratory FAL4



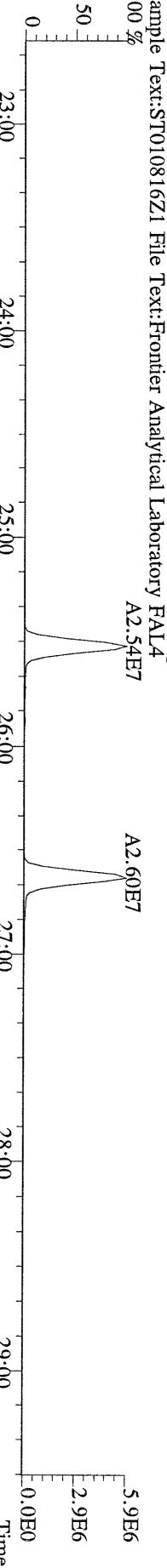
File:08JAN16Z #1-390 Acq: 8-JAN-2016 10:18:56 GC EI+ Voltage SIR Autospec-Ultima
303.9016 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010816Z1 File Text:Frontier Analytical Laboratory FAL4
100 % A2.80E6



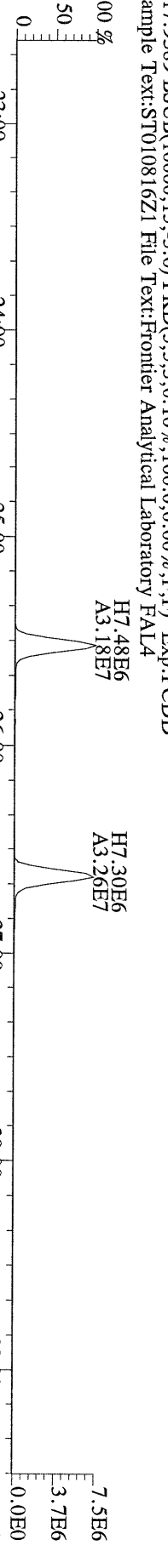
File:08JAN16Z #1-390 Acq: 8-JAN-2016 10:18:56 GC EI+ Voltage SIR Autospec-Ultima
305.8987 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010816Z1 File Text:Frontier Analytical Laboratory FAL4
100 % A3.70E6



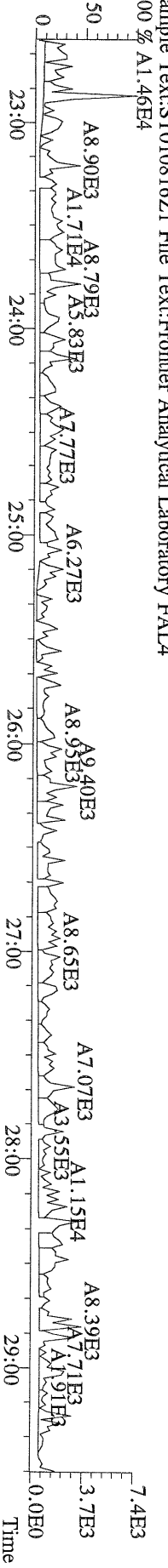
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315.9419 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010816Z1 File Text:Frontier Analytical Laboratory FAL4
100 % A2.54E7



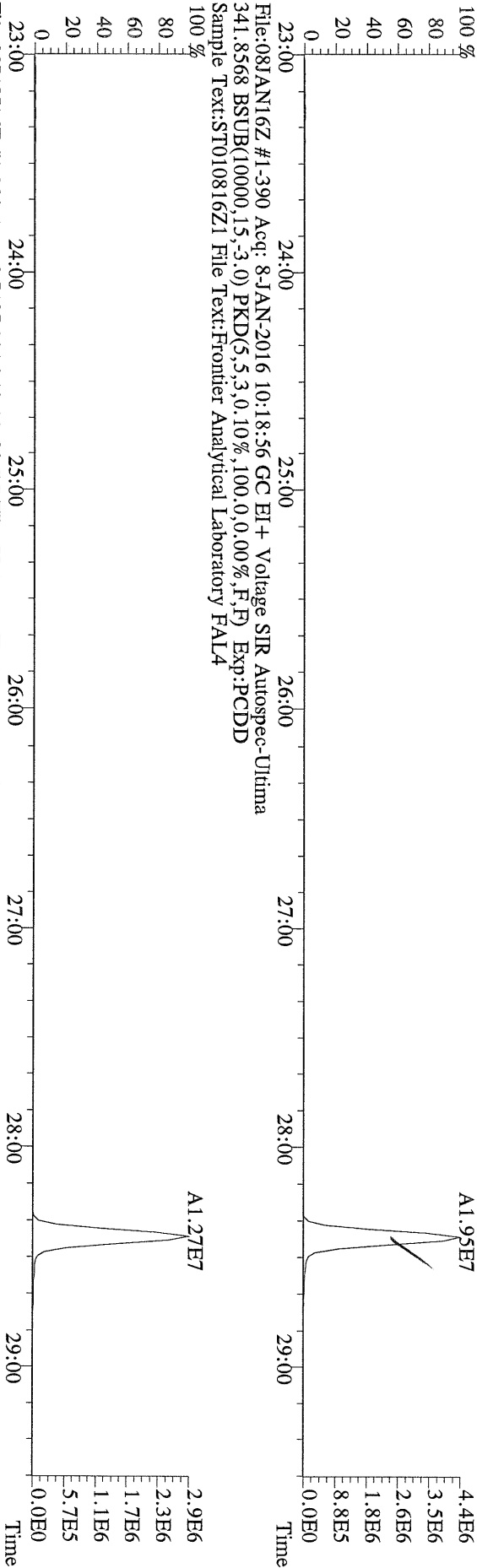
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317.9389 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010816Z1 File Text:Frontier Analytical Laboratory FAL4



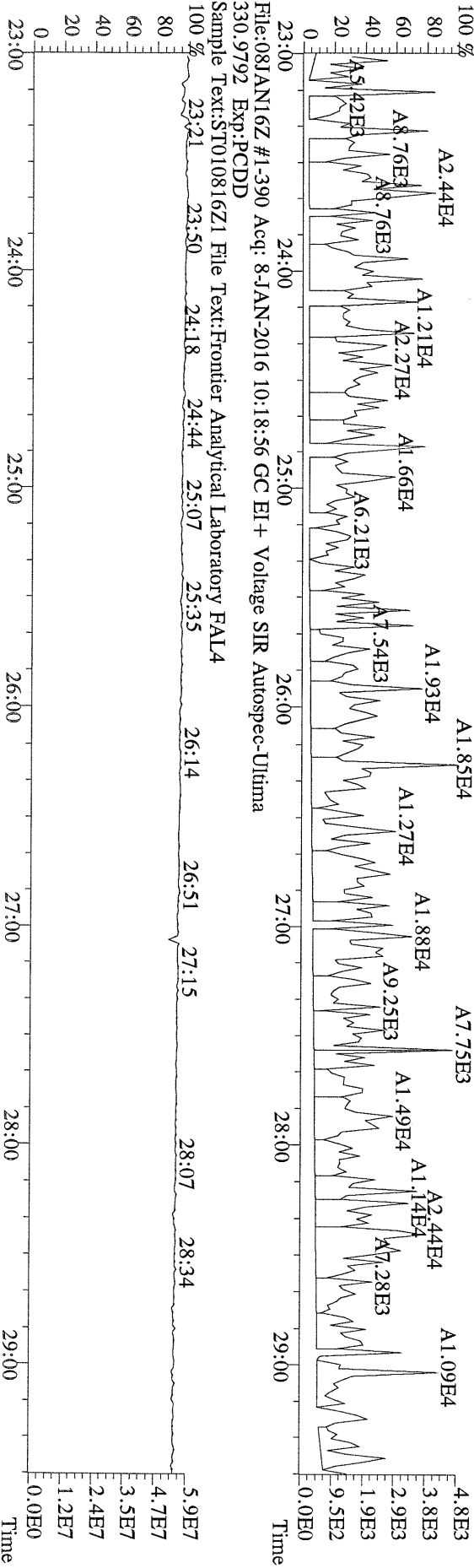
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375.8364 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010816Z1 File Text:Frontier Analytical Laboratory FAL4
100 % A1.46E4



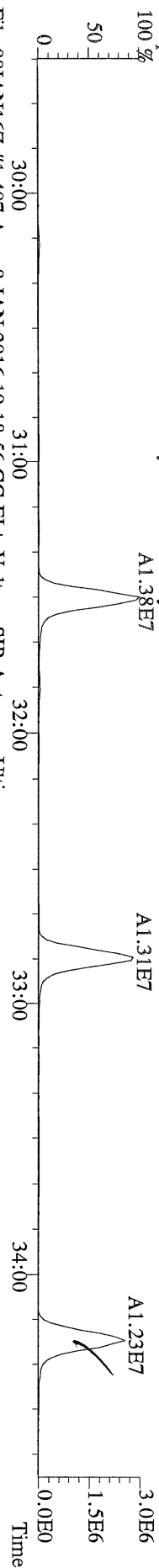
File:081ANI6Z #1-390 Acq: 8-JAN-2016 10:18:56 GC EI + Voltage SIR Autospec-Ultima
 339.8597 BSUB(10000,15,-3.0) PKD(5,5,3.0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:ST010816Z1 File Text:Frontier Analytical Laboratory FAL4



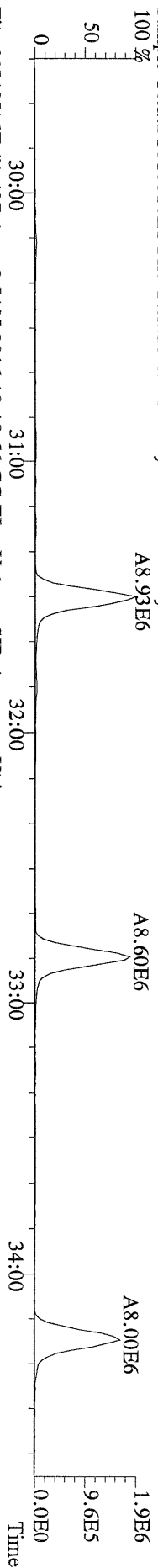
File:081ANI6Z #1-390 Acq: 8-JAN-2016 10:18:56 GC EI + Voltage SIR Autospec-Ultima
 409.7974 BSUB(10000,15,-3.0) PKD(5,5,3.0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:ST010816Z1 File Text:Frontier Analytical Laboratory FAL4



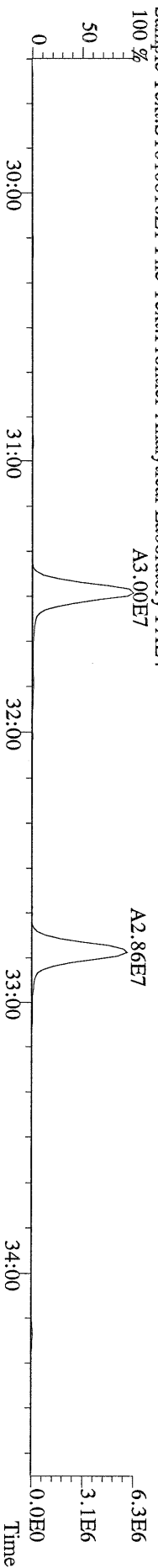
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 339,8597 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,P) Exp:PCDD
 Sample Text:STO10816Z1 File Text:Frontier Analytical Laboratory FAL4



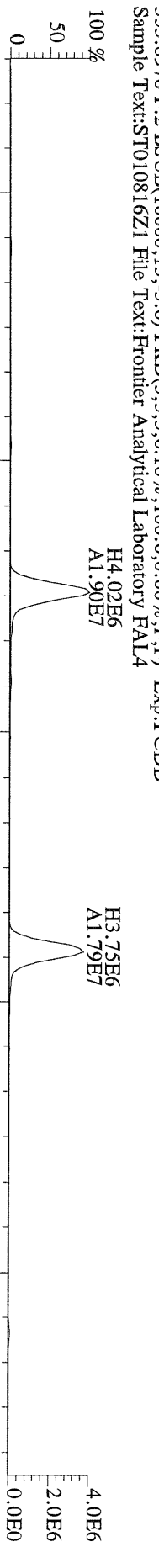
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 341,8568 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,P) Exp:PCDD
 Sample Text:STO10816Z1 File Text:Frontier Analytical Laboratory FAL4



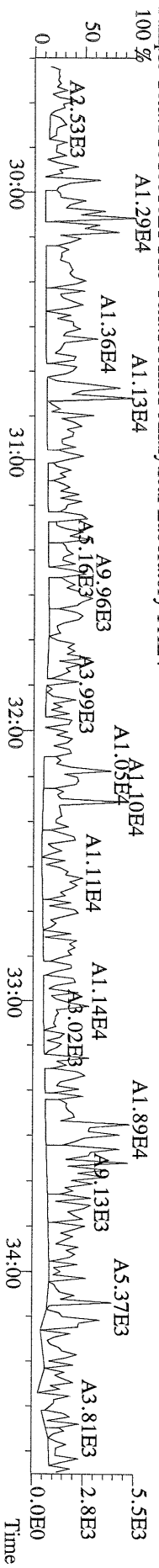
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 Sample Text:STO10816Z1 File Text:Frontier Analytical Laboratory FAL4



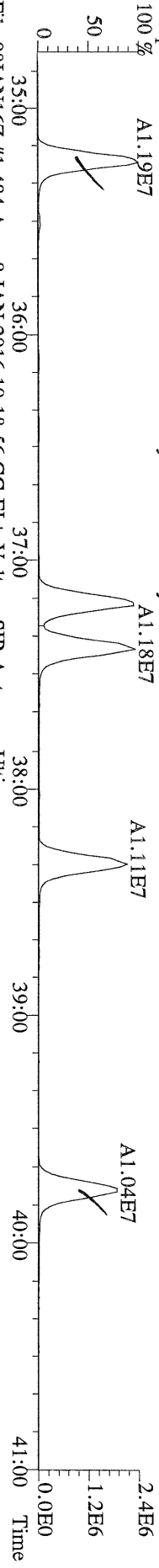
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 353,8970 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,P) Exp:PCDD
 Sample Text:STO10816Z1 File Text:Frontier Analytical Laboratory FAL4



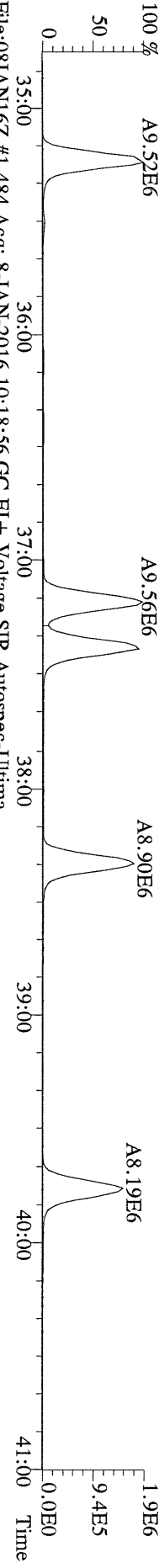
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 409,7974 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,P) Exp:PCDD
 Sample Text:STO10816Z1 File Text:Frontier Analytical Laboratory FAL4



File:081JAN16Z #1-484 Acq: 8-JAN-2016 10:18:56 GC EI+ Voltage SIR Autospec-Ultima
373.8207 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0) F,F) Exp:PCDD
Sample Text:ST010816Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



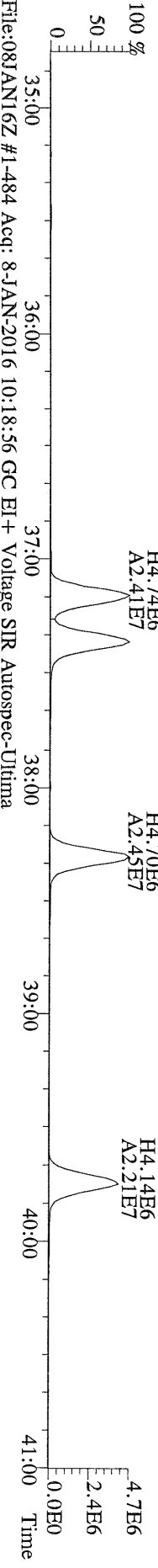
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375.8178 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0) F,F) Exp:PCDD
Sample Text:ST010816Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



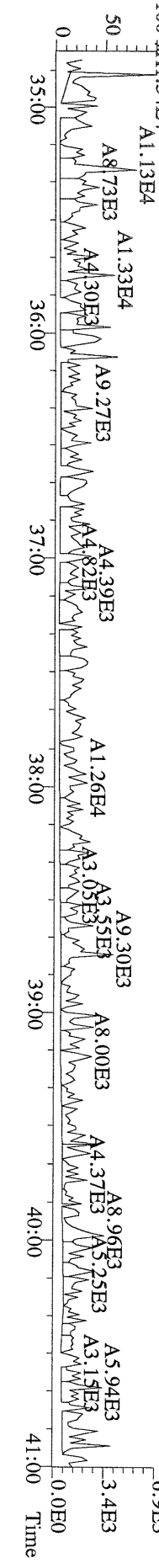
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383.8639 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0) F,F) Exp:PCDD
Sample Text:ST010816Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



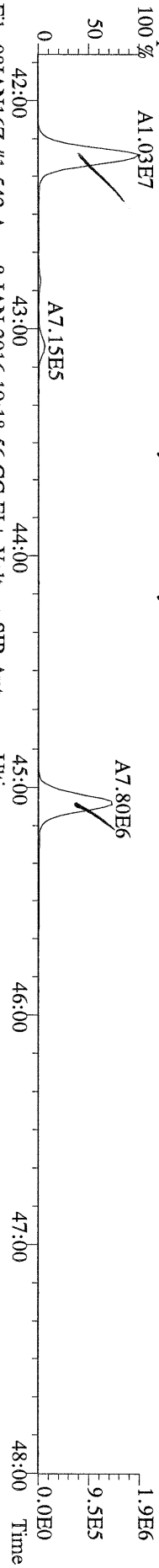
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445.7555 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0) F,F) Exp:PCDD
Sample Text:ST010816Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



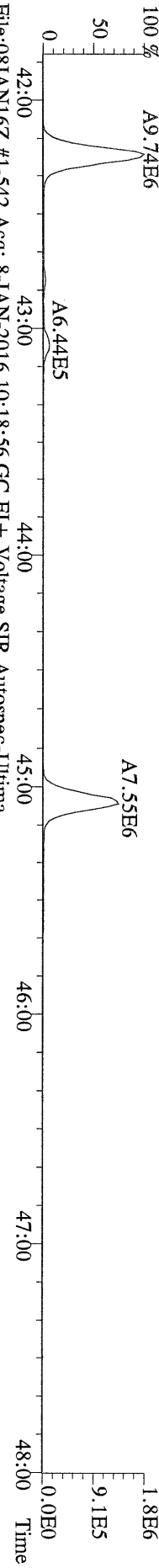
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445.7555 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0) F,F) Exp:PCDD
Sample Text:ST010816Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



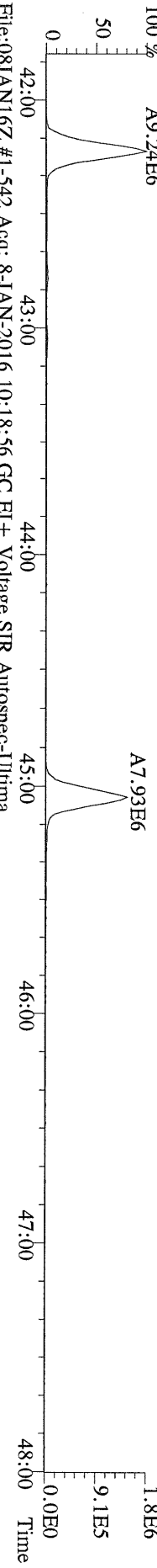
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407.7818 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010816Z1 File Text:Frontier Analytical Laboratory FAL4
100 % A1.03E7



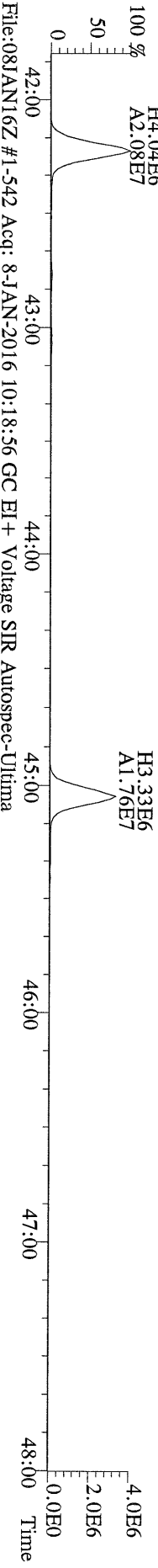
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409.7788 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010816Z1 File Text:Frontier Analytical Laboratory FAL4
100 % A9.74E6



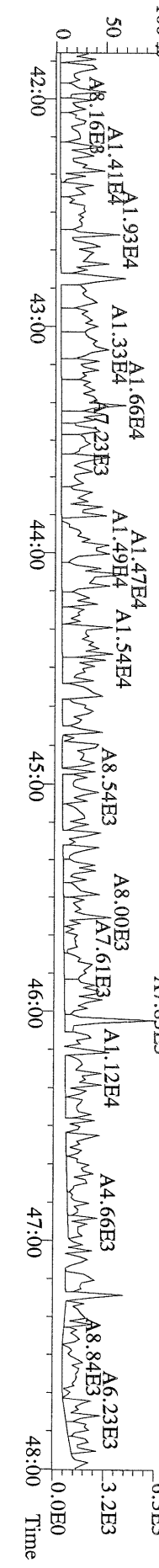
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417.8253 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010816Z1 File Text:Frontier Analytical Laboratory FAL4
100 % A9.24E6



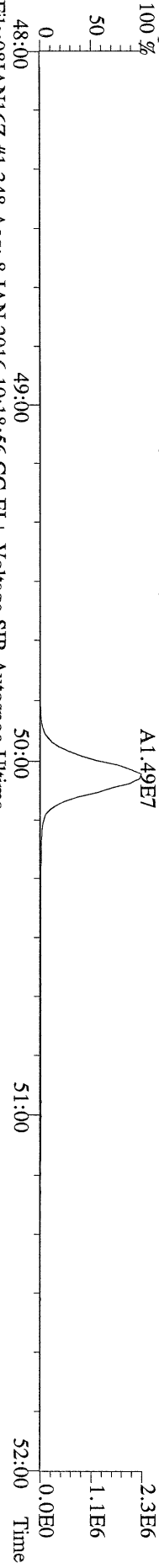
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419.8220 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010816Z1 File Text:Frontier Analytical Laboratory FAL4
100 % H4.04E6
A2.08E7



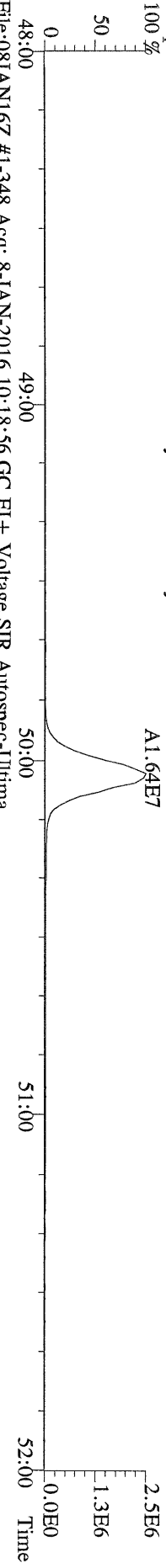
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479.7165 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010816Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



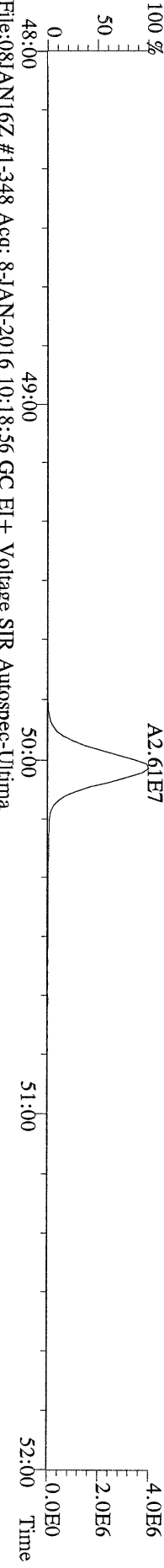
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441.7428 F:5 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



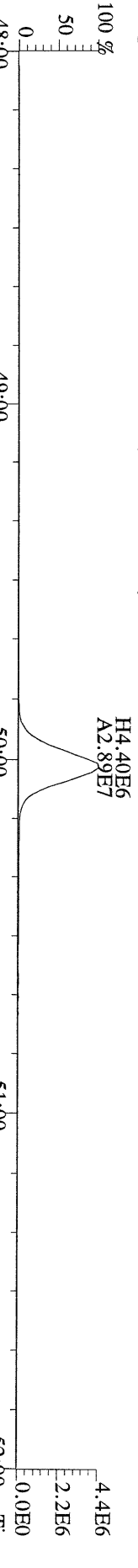
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443.7398 F:5 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



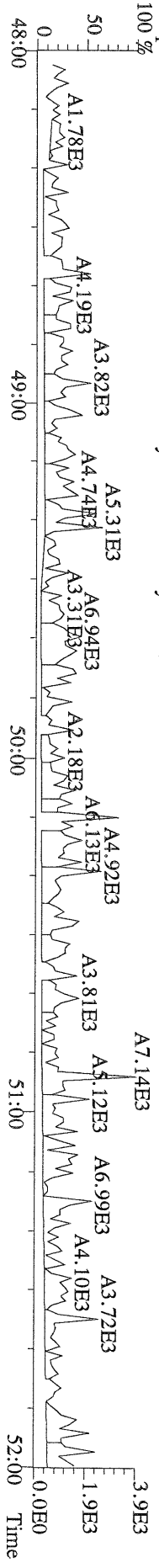
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Sample Text:ST010816Z1 File Text:Frontier Analytical Laboratory FAL4
100 %

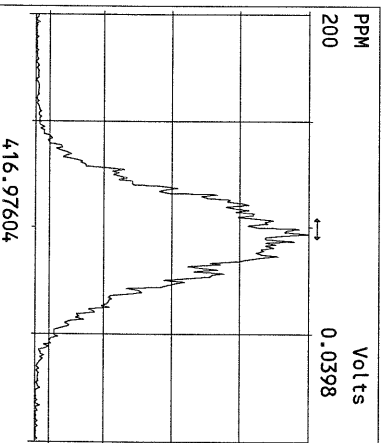
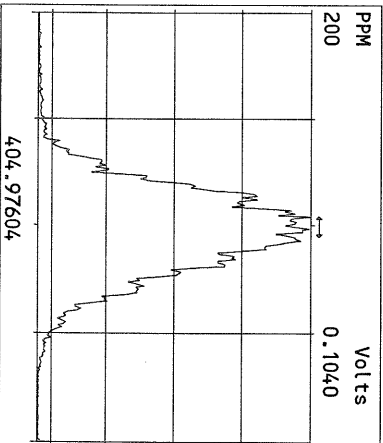
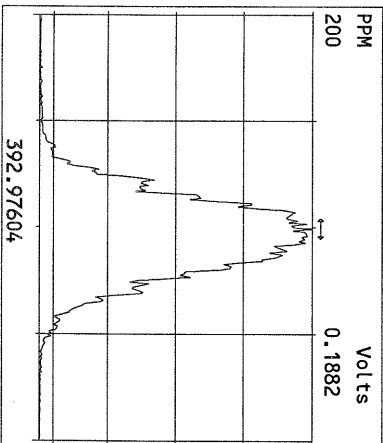
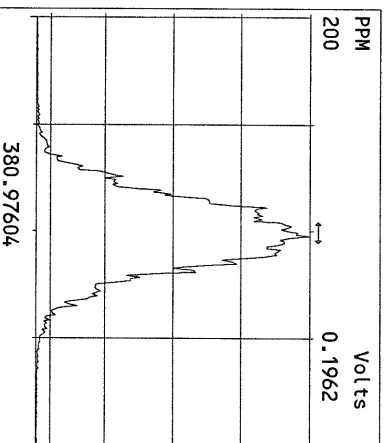
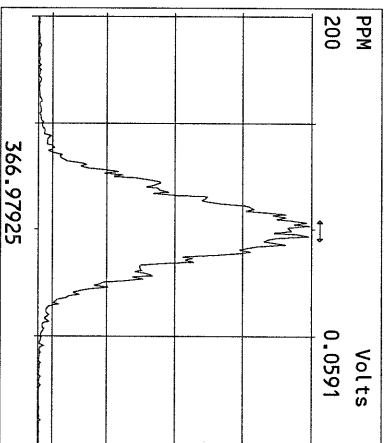
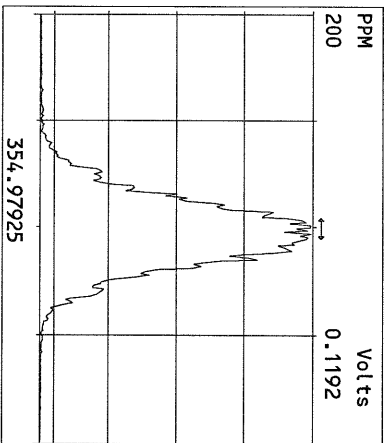
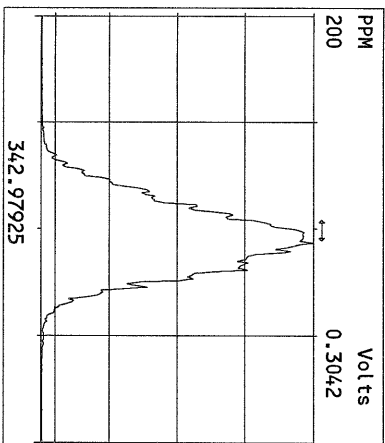
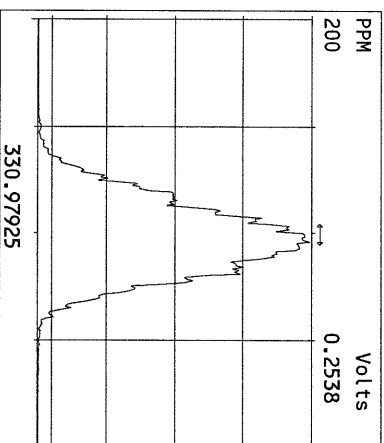
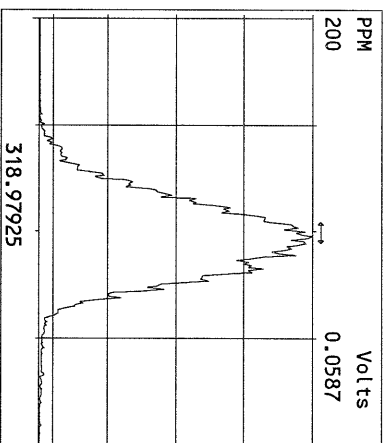
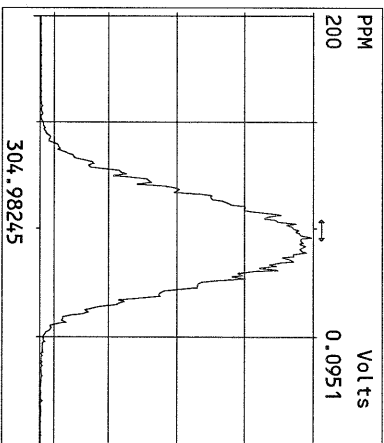
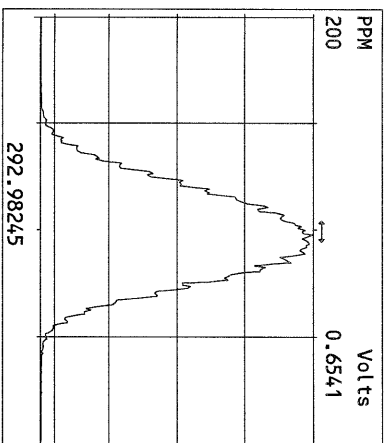


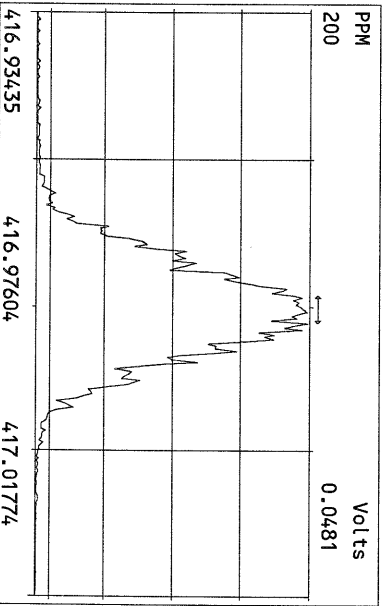
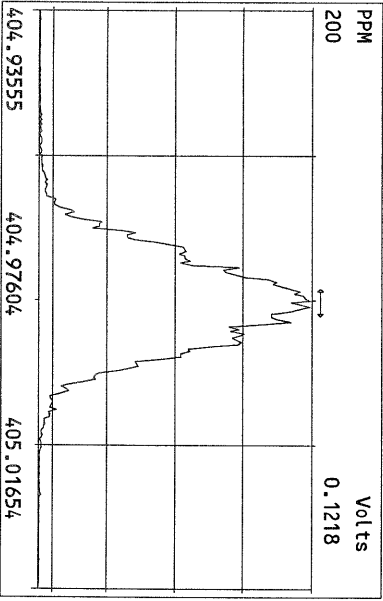
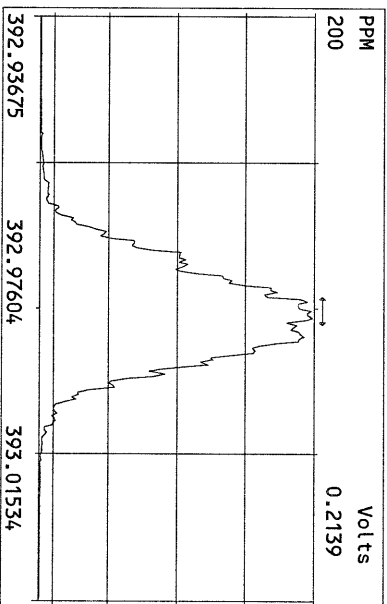
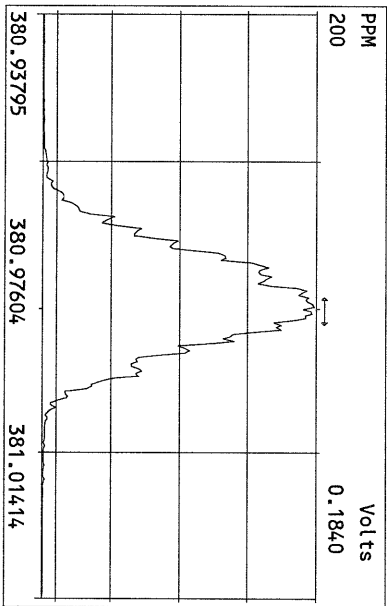
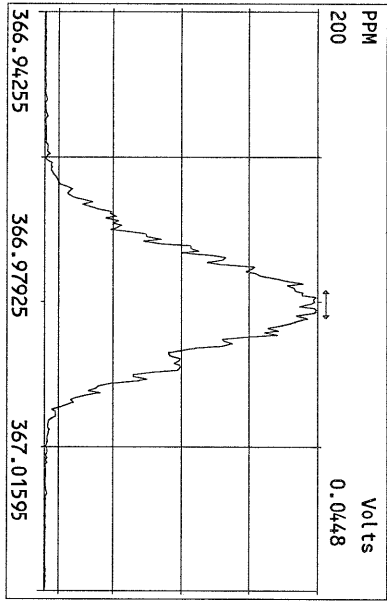
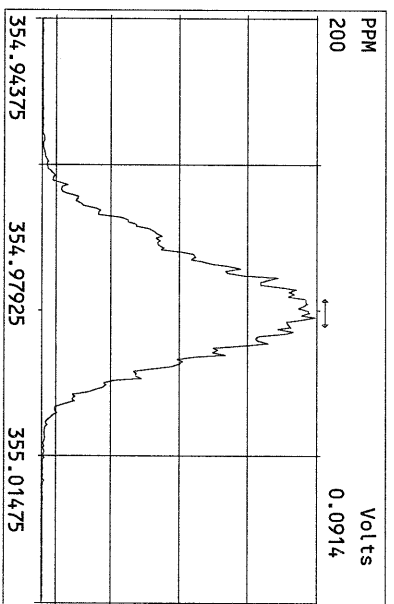
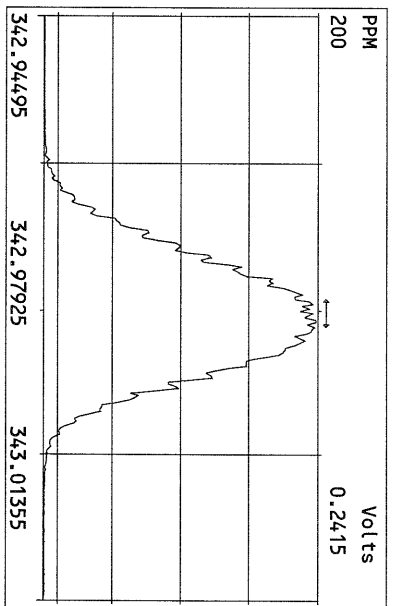
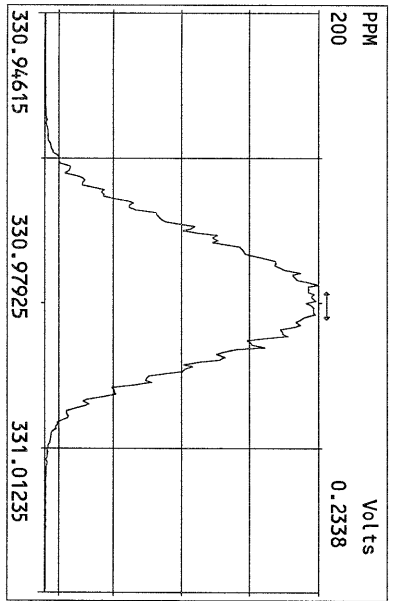
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455.7801 F:5 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816Z1 File Text:Frontier Analytical Laboratory FAL4

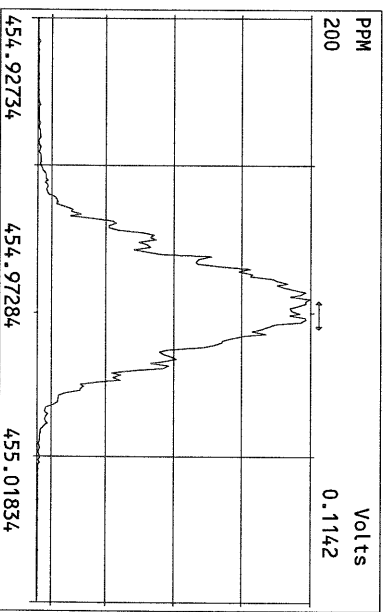
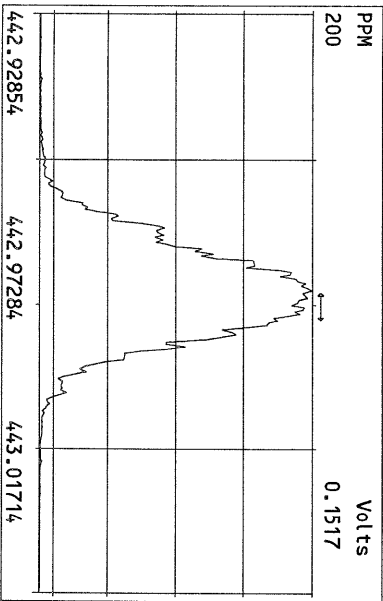
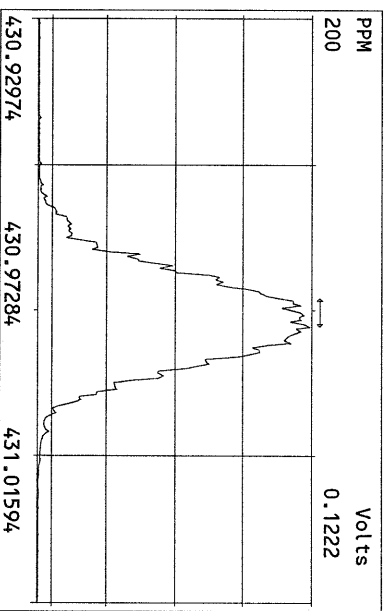
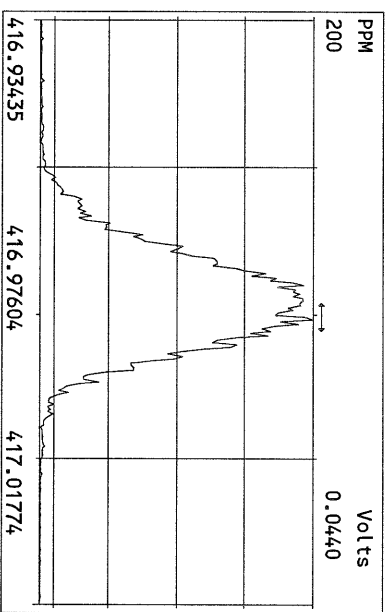
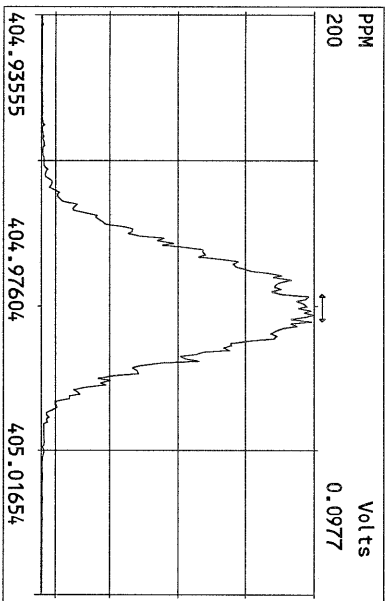
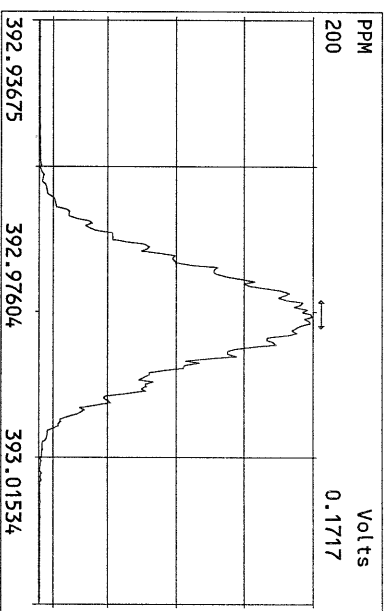
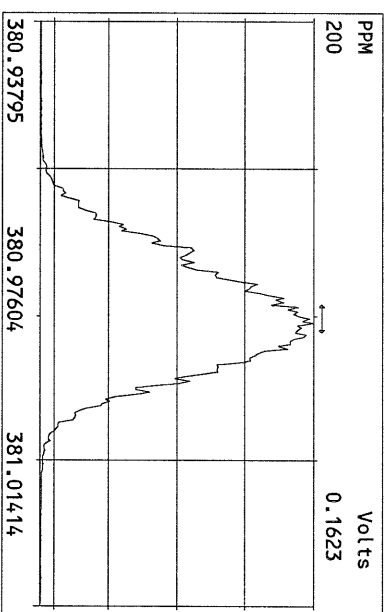
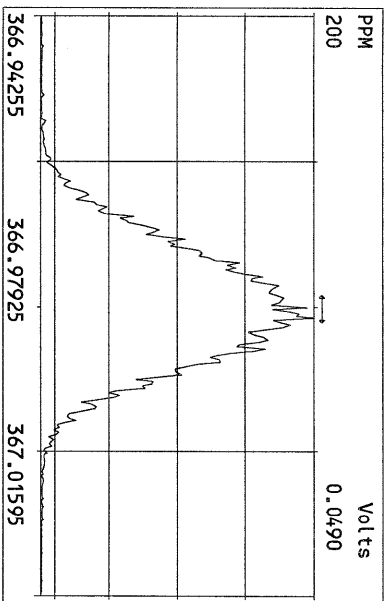


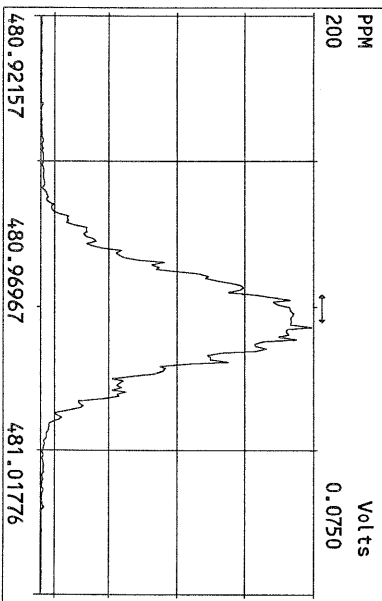
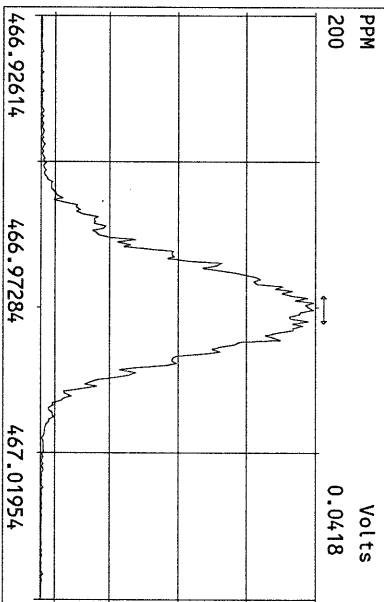
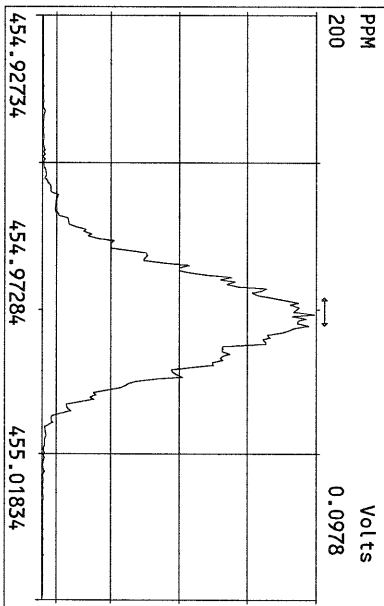
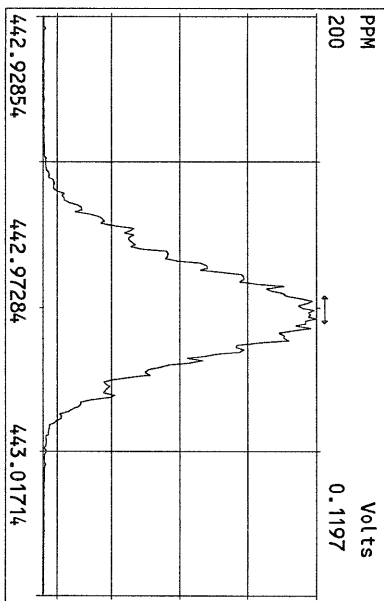
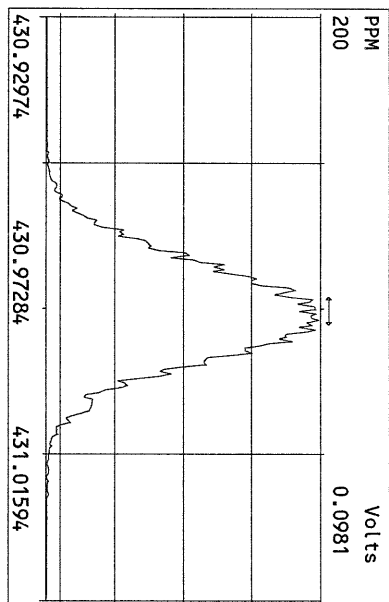
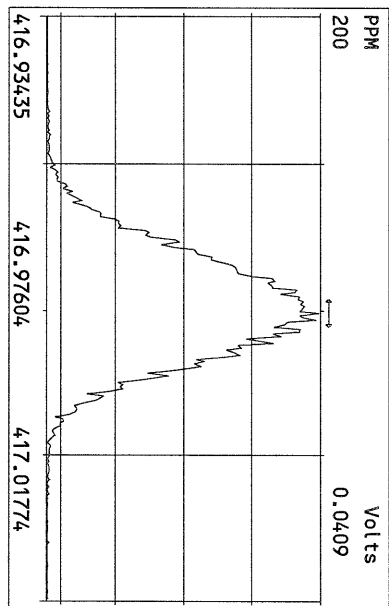
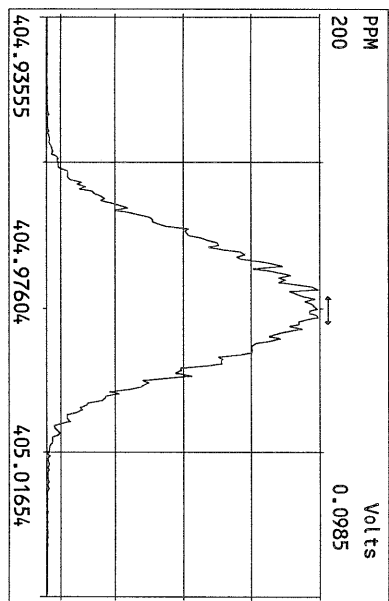
File:081JAN16Z #1-348 Acq: 8-JAN-2016 10:18:56 GC EI+ Voltage SIR Autospec-Ultima
513.6775 F:5 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816Z1 File Text:Frontier Analytical Laboratory FAL4
100 %

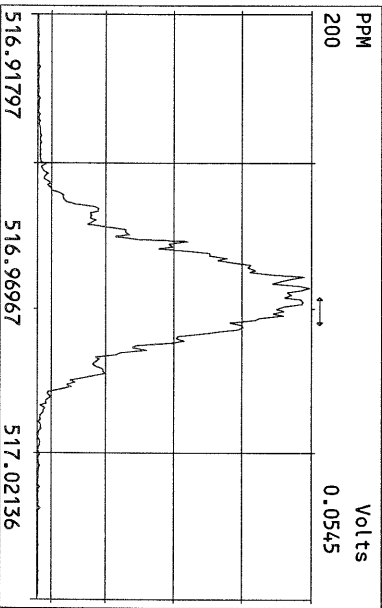
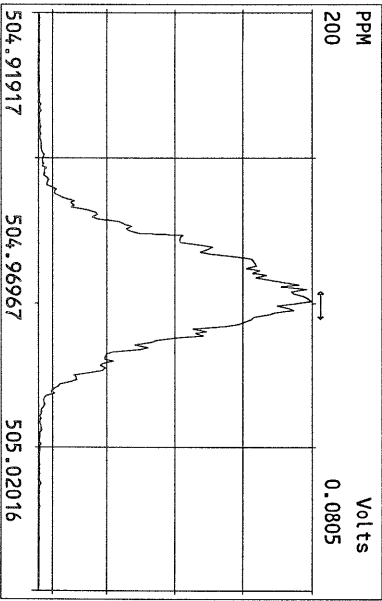
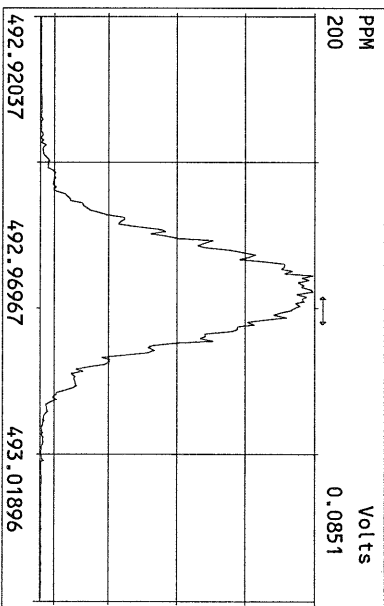
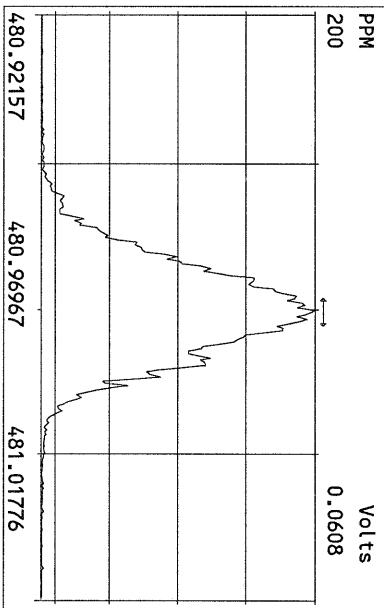
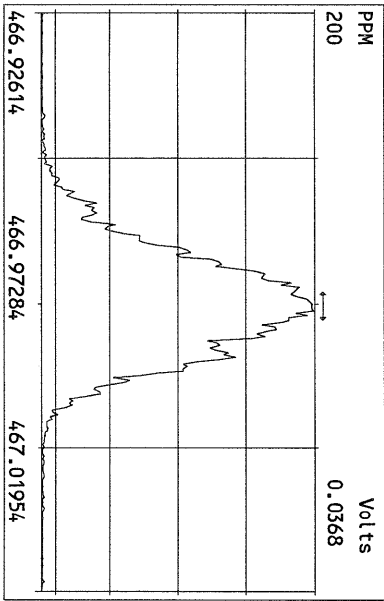
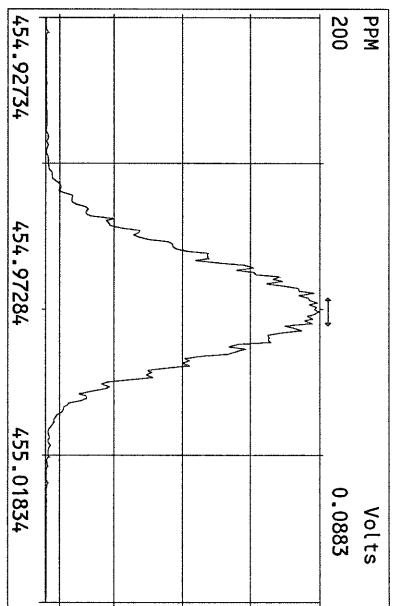
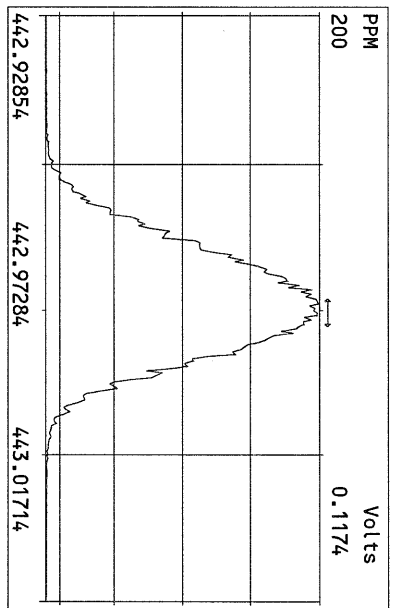
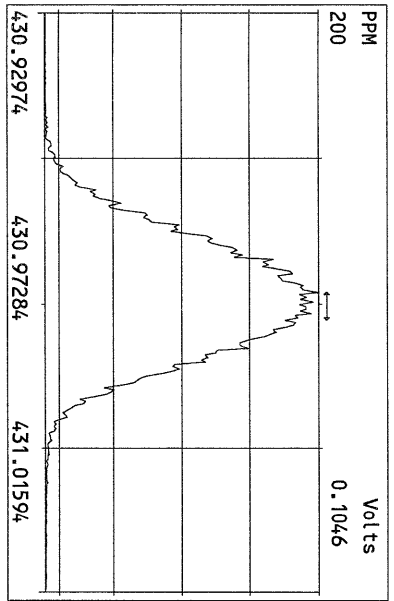












USEPA - ITD

FORM 4A
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: Frontier Analytical Laboratory Episode No.:

Contract No.: SAS No.:

Initial Calibration Date: 12/29/15

Instrument ID: FAL4 GC Column ID: DB5

VER Data Filename: 08JAN16Z Sam:5 Analysis Date: 8-JAN-16 13:58:11

NATIVE ANALYTES	M/Z'S	ION	QC	ACCEPT	CONC. FOUND	CONC. RANGE (ng/mL) (3)
	FORMING RATIO (1)	ABUND. RATIO	LIMITS (2)			
2,3,7,8-TCDD	M/M+2	0.81	0.65-0.89	y	9.77	7.80 - 12.9
1,2,3,7,8-PeCDD	M+2/M+4	1.59	1.32-1.78	y	51.6	39.0 - 65.0
1,2,3,4,7,8-HxCDD	M+2/M+4	1.23	1.05-1.43	y	47.9	39.0 - 64.0
1,2,3,6,7,8-HxCDD	M+2/M+4	1.26	1.05-1.43	y	49.4	39.0 - 64.0
1,2,3,7,8,9-HxCDD	M+2/M+4	1.25	1.05-1.43	y	49.2	41.0 - 61.0
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.07	0.88-1.20	y	50.6	43.0 - 58.0
OCDD	M+2/M+4	0.89	0.76-1.02	y	125	79.0 - 126
2,3,7,8-TCDF	M/M+2	0.80	0.65-0.89	y	9.21	8.40 - 12.0
1,2,3,7,8-PeCDF	M+2/M+4	1.58	1.32-1.78	y	48.9	41.0 - 60.0
2,3,4,7,8-PeCDF	M+2/M+4	1.58	1.32-1.78	y	47.9	41.0 - 60.0
1,2,3,4,7,8-HxCDF	M+2/M+4	1.23	1.05-1.43	y	47.6	45.0 - 56.0
1,2,3,6,7,8-HxCDF	M+2/M+4	1.24	1.05-1.43	y	48.5	44.0 - 57.0
2,3,4,6,7,8-HxCDF	M+2/M+4	1.24	1.05-1.43	y	48.6	44.0 - 57.0
1,2,3,7,8,9-HxCDF	M+2/M+4	1.26	1.05-1.43	y	49.1	45.0 - 56.0
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.03	0.88-1.20	y	52.3	45.0 - 55.0
1,2,3,4,7,8,9-HpCDF	M+2/M+4	1.05	0.88-1.20	y	50.6	43.0 - 58.0
OCDF	M+2/M+4	0.88	0.76-1.02	y	109	63.0 - 159

(1) See Table 8, Method 1613, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613.

(3) Contract-required concentration range as specified in Table 6, Method 1613.

Analyst: _____

Date: 1/8/16

USEPA - ITD

FORM 4B
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: Frontier Analytical Laboratory

Episode No.:

Contract No.:

SAS No.:

Initial Calibration Date: 12/29/15

Instrument ID: FAL4

GC Column ID: DB5

VER Data Filename: 08JAN16Z Sam:5

Analysis Date: 8-JAN-16 13:58:11

LABELED COMPOUNDS	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	ACCEPT	CONC. FOUND	CONC. RANGE (ng/mL) (3)
13C-2,3,7,8-TCDD	M/M+2	0.79	0.65-0.89	y	99.1	82.0 - 121 ✓
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.58	1.32-1.78	y	100	62.0 - 160 ✓
13C-1,2,3,4,7,8-HxCDD	M+2/M+4	1.27	1.05-1.43	y	101	85.0 - 117 ✓
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.27	1.05-1.43	y	99.6	85.0 - 118 ✓
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.07	0.88-1.20	y	108	72.0 - 138 ✓
13C-OCDD	M+2/M+4	0.91	0.76-1.02	y	221	96.0 - 415 ✓
13C-2,3,7,8-TCDF	M/M+2	0.80	0.65-0.89	y	102	71.0 - 140 ✓
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.59	1.32-1.78	y	101	76.0 - 130 ✓
13C-2,3,4,7,8-PeCDF	M+2/M+4	1.61	1.32-1.78	y	105	77.0 - 130 ✓
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.54	0.43-0.59	y	93.1	76.0 - 131 ✓
13C-1,2,3,6,7,8-HxCDF	M/M+2	0.55	0.43-0.59	y	92.2	70.0 - 143 ✓
13C-2,3,4,6,7,8-HxCDF	M/M+2	0.54	0.43-0.59	y	95.3	73.0 - 137 ✓
13C-1,2,3,7,8,9-HxCDF	M/M+2	0.53	0.43-0.59	y	99.2	74.0 - 135 ✓
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.45	0.37-0.51	y	98.6	78.0 - 129 ✓
13C-1,2,3,4,7,8,9-HpCDF	M/M+2	0.46	0.37-0.51	y	101	77.0 - 129 ✓
13C-OCDF	M+2/M+4	0.91	0.76-1.02	y	206	96.0 - 415 ✓
CLEANUP STANDARD (4)						
37Cl-2,3,7,8-TCDD					9.56	7.90 - 12.7

(1) See Table 8, Method 1613, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613.

(3) Contract-required concentration range as specified in Table 6, Method 1613.

(4) No ion abundance ratio; report concentration found.

Analyst: Date: 1/8/16

USEPA - ITD

FORM 6A

PCDD/PCDF RELATIVE RETENTION TIMES

Lab Name: Frontier Analytical Laboratory

Episode No.:

Contract No.:

SAS No.:

Init. Cal. Date: 12/29/15

Instrument ID: FAL4

GC Column ID: DB5

Analysis Date: 8-JAN-16 13:58:11

CS3 or VER Data Filename: 08JAN16Z

Sam:5

NATIVE ANALYTES	RETENTION TIME REFERENCE	RRT	RRT QC LIMITS (1)
2,3,7,8-TCDD	13C-2,3,7,8-TCDD	1.001	0.999-1.002
2,3,7,8-TCDF	13C-2,3,7,8-TCDF	1.001	0.999-1.003
1,2,3,7,8-PeCDD	13C-1,2,3,7,8-PeCDD	1.001	0.999-1.002
1,2,3,7,8-PeCDF	13C-1,2,3,7,8-PeCDF	1.000	0.999-1.002
2,3,4,7,8-PeCDF	13C-2,3,4,7,8-PeCDF	1.001	0.999-1.002
LABELED COMPOUNDS			
37Cl-2,3,7,8-TCDD	13C-1,2,3,4-TCDD	1.023	0.989-1.052
13C-2,3,7,8-TCDD		1.022	0.976-1.043
13C-2,3,7,8-TCDF		0.994	0.923-1.103
13C-1,2,3,7,8-PeCDD		1.240	1.000-1.567
13C-1,2,3,7,8-PeCDF		1.176	0.923-1.203
13C-2,3,4,7,8-PeCDF		1.225	0.923-1.303

(1) Contract-required limits for Relative Retention Times (RRT) as specified in Table 2, Method 1613.

Analyst: 

Date: 1/8/16

USEPA - ITD

FORM 6B

PCDD/PCDF RELATIVE RETENTION TIMES

Lab Name: Frontier Analytical Laboratory

Episode No.:

Contract No.:

SAS No.:

Init. Cal. Date: 12/29/15

Instrument ID: FAL4

GC Column ID: DB5

Analysis Date: 8-JAN-16 13:58:11

CS3 or VER Data Filename: 08JAN16Z

Sam:5

NATIVE ANALYTES	RETENTION TIME REFERENCE	RRT	RRT QC LIMITS (1)
1,2,3,4,7,8-HxCDD	13C-1,2,3,4,7,8-HxCDD	1.001	0.999-1.001
1,2,3,6,7,8-HxCDD	13C-1,2,3,6,7,8-HxCDD	1.000	0.998-1.004
1,2,3,7,8,9-HxCDD	13C-1,2,3,6,7,8-HxCDD	1.012	1.000-1.019
1,2,3,4,7,8-HxCDF	13C-1,2,3,4,7,8-HxCDF	1.001	0.999-1.001
1,2,3,6,7,8-HxCDF	13C-1,2,3,6,7,8-HxCDF	1.000	0.997-1.005
2,3,4,6,7,8-HxCDF	13C-2,3,4,6,7,8-HxCDF	1.001	0.999-1.001
1,2,3,7,8,9-HxCDF	13C-1,2,3,7,8,9-HxCDF	1.001	0.999-1.001
1,2,3,4,6,7,8-HpCDD	13C-1,2,3,4,6,7,8-HpCDD	1.000	0.999-1.001
1,2,3,4,6,7,8-HpCDF	13C-1,2,3,4,6,7,8-HpCDF	1.001	0.999-1.001
1,2,3,4,7,8,9-HpCDF	13C-1,2,3,4,7,8,9-HpCDF	1.000	0.999-1.001
OCDD	13C-OCDD	1.000	0.999-1.001
OCDF	13C-OCDF	1.001	0.999-1.001
LABELED COMPOUNDS			
13C-1,2,3,4,7,8-HxCDD	13C-1,2,3,7,8,9-HxCDD	0.984	0.977-1.000
13C-1,2,3,6,7,8-HxCDD		0.988	0.981-1.003
13C-1,2,3,4,7,8-HxCDF		0.949	0.944-0.970
13C-1,2,3,6,7,8-HxCDF		0.954	0.949-0.975
13C-2,3,4,6,7,8-HxCDF		0.978	0.959-1.021
13C-1,2,3,7,8,9-HxCDF		1.015	0.977-1.047
13C-1,2,3,4,6,7,8-HpCDD		1.127	1.086-1.130
13C-1,2,3,4,6,7,8-HpCDF		1.078	1.043-1.085
13C-1,2,3,4,7,8,9-HpCDF		1.151	1.057-1.154
13C-OCDD		1.267	1.032-1.311
13C-OCDF		1.277	1.000-1.311

(1) Contract-required limits for Relative Retention Times (RRT) as specified in Table 2, Method 1613.

Analyst: Date: 

	Name	Resp	RA	RT	RRF	WHO 1998 Tox:		WHO 2005 Tox:		114 DL
						Conc	Qual	Fac Noise-1	Noise-2	
	2,3,7,8-TCDD	5.96e+06	0.81 y	27:23	1.08	9.77	2.50	-	-	*
	1,2,3,7,8-PeCDD	1.92e+07	1.59 y	33:13	0.90	51.6	2.50	-	-	*
	1,2,3,4,7,8-HxCDD	1.69e+07	1.23 y	38:33	0.98	47.9	2.50	-	-	*
	1,2,3,6,7,8-HxCDD	1.70e+07	1.26 y	38:43	1.00	49.4	2.50	-	-	*
	1,2,3,7,8,9-HxCDD	1.92e+07	1.25 y	39:10	1.11	49.2	2.50	-	-	*
	1,2,3,4,6,7,8-HpCDD	2.09e+07	1.07 y	44:07	1.09	50.6	2.50	-	-	*
	OCDD	4.15e+07	0.89 y	49:38	1.04	125	2.50	-	-	*
	2,3,7,8-TCDF	6.98e+06	0.80 y	26:38	1.05	9.21	2.50	-	-	*
	1,2,3,7,8-PeCDF	2.98e+07	1.58 y	31:29	0.98	48.9	2.50	-	-	*
	2,3,4,7,8-PeCDF	2.88e+07	1.58 y	32:49	1.01	47.9	2.50	-	-	*
	1,2,3,4,7,8-HxCDF	2.82e+07	1.23 y	37:11	1.23	47.6	2.50	-	-	*
	1,2,3,6,7,8-HxCDF	2.75e+07	1.24 y	37:22	1.17	48.5	2.50	-	-	*
	2,3,4,6,7,8-HxCDF	2.69e+07	1.24 y	38:19	1.12	48.6	2.50	-	-	*
	1,2,3,7,8,9-HxCDF	2.67e+07	1.26 y	39:45	1.15	49.1	2.50	-	-	*
	1,2,3,4,6,7,8-HpCDF	3.06e+07	1.03 y	42:14	1.36	52.3	2.50	-	-	*
	1,2,3,4,7,8,9-HpCDF	2.39e+07	1.05 y	45:03	1.23	50.6	2.50	-	-	*
	OCDF	4.97e+07	0.88 y	50:02	1.13	109	2.50	-	-	*
										Rec
	13C-2,3,7,8-TCDD	5.64e+07	0.79 y	27:22	1.07	99.1				99.1
	13C-1,2,3,7,8-PeCDD	4.12e+07	1.58 y	33:11	0.78	100				100
	13C-1,2,3,4,7,8-HxCDD	3.59e+07	1.27 y	38:32	0.87	101				101
	13C-1,2,3,6,7,8-HxCDD	3.43e+07	1.27 y	38:42	0.84	99.6				99.6
	13C-1,2,3,4,6,7,8-HpCDD	3.80e+07	1.07 y	44:07	0.85	108				108
	13C-OCDD	6.34e+07	0.91 y	49:37	0.70	221				111
	13C-2,3,7,8-TCDF	7.25e+07	0.80 y	26:37	1.03	102				102
	13C-1,2,3,7,8-PeCDF	6.22e+07	1.59 y	31:29	0.89	101				101
	13C-2,3,4,7,8-PeCDF	5.95e+07	1.61 y	32:47	0.82	105				105
	13C-1,2,3,4,7,8-HxCDF	4.83e+07	0.54 y	37:09	1.26	93.1				93.1
	13C-1,2,3,6,7,8-HxCDF	4.86e+07	0.55 y	37:21	1.28	92.2				92.2
	13C-2,3,4,6,7,8-HxCDF	4.96e+07	0.54 y	38:17	1.27	95.3				95.3
	13C-1,2,3,7,8,9-HxCDF	4.74e+07	0.53 y	39:44	1.16	99.2				99.2
	13C-1,2,3,4,6,7,8-HpCDF	4.29e+07	0.45 y	42:12	1.06	98.6				98.6
	13C-1,2,3,4,7,8,9-HpCDF	3.85e+07	0.46 y	45:02	0.93	101				101
	13C-OCDF	8.06e+07	0.91 y	50:00	0.95	206				103
	37Cl-2,3,7,8-TCDD	4.55e+06		27:23	0.90	9.56				95.6
	13C-1,2,3,4-TCDD	5.30e+07	0.80 y	26:46	-	145				
	13C-1,2,3,4-TCDF	6.88e+07	0.80 y	25:31	-	143				
	13C-1,2,3,7,8,9-HxCDD	4.11e+07	1.27 y	39:09	-	151				
	Total Tetra-Dioxins	2.79e+07		23:15	1.08	45.7	2.50	-	-	* 26
	Total Penta-Dioxins	6.25e+07		30:14	0.90	167	2.50	-	-	* 20
	Total Hexa-Dioxins	7.67e+07		34:58	1.03	212	2.50	-	-	* 30
	Total Hepta-Dioxins	4.76e+07		41:18	1.09	115	2.50	-	-	* 35
	Total Tetra-Furans	3.22e+07		22:59	1.05	42.5	2.50	-	-	* 20
1st Fn.	Tot Penta-Furans	3.84e+07		28:23	0.99	63.4	2.50	-	-	* PeCDF 1
	Total Penta-Furans	8.92e+07		30:10	0.99	147	2.50	-	-	* 211 17
	Total Hexa-Furans	1.54e+08		35:13	1.16	274	2.50	-	-	* 24
	Total Hepta-Furans	1.11e+08		41:20	1.30	210	2.50	-	-	* 31

Analyst: J

Date: 1/8/16

Frontier Analytical Laboratory - Acquisition Log

Run Name:08JAN16Z

Instrument: FAL4

GC: DB5

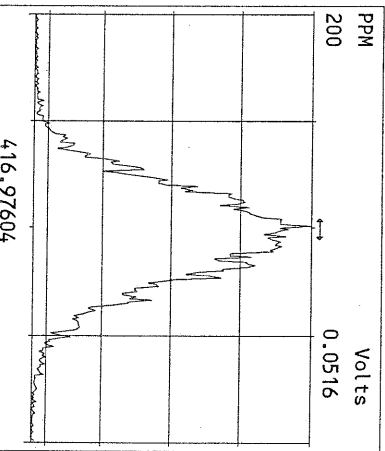
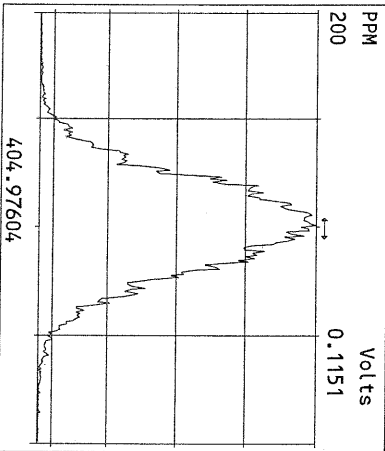
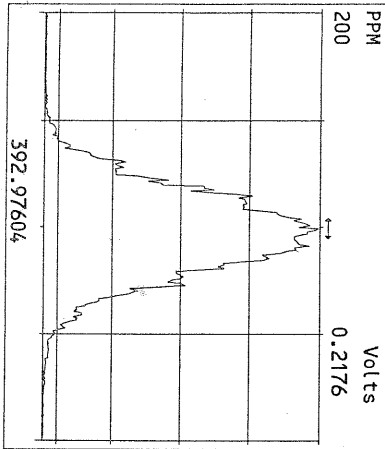
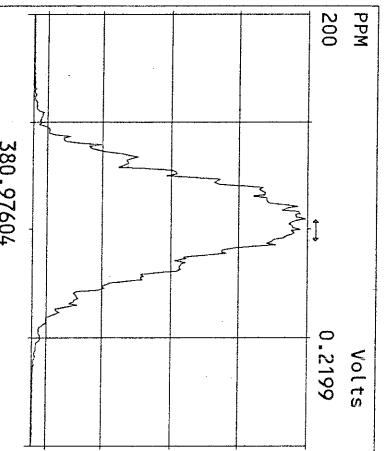
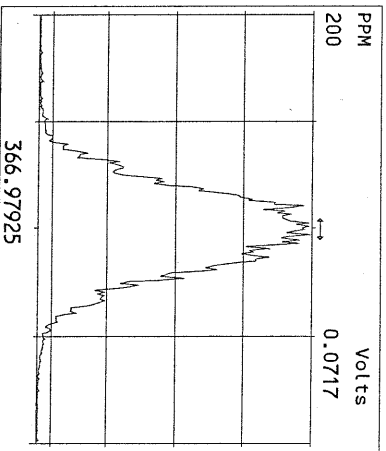
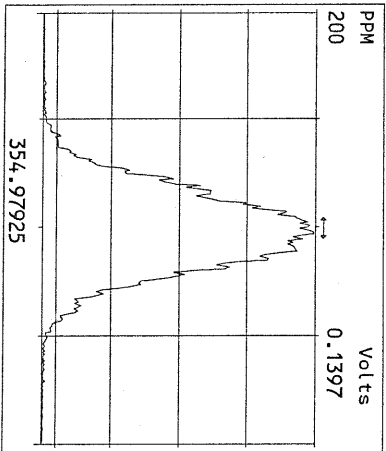
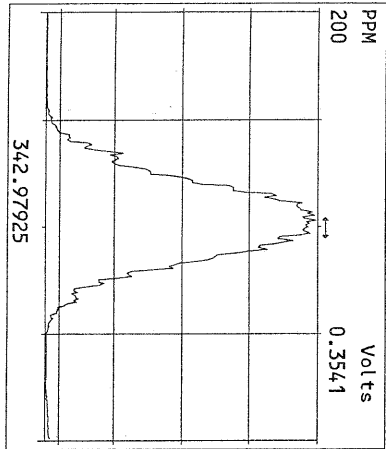
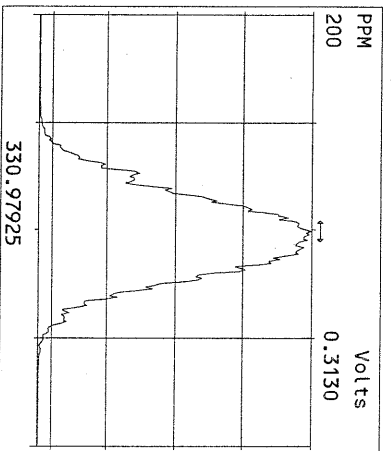
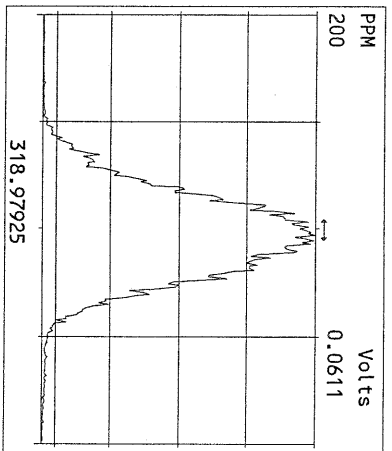
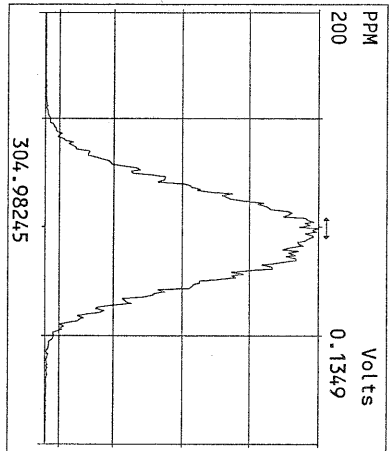
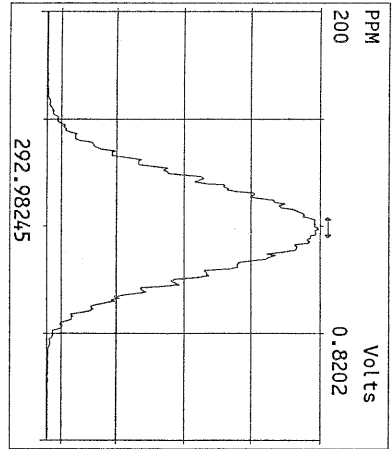
Experiment:PCDD

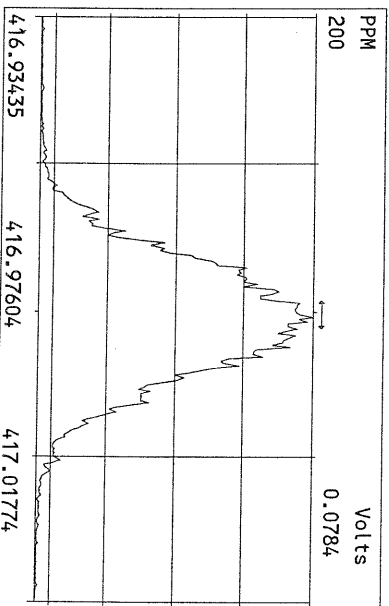
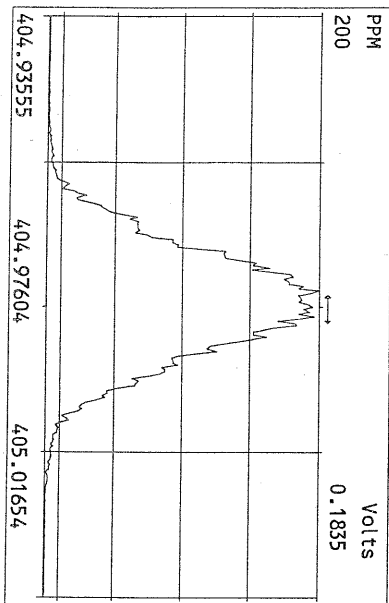
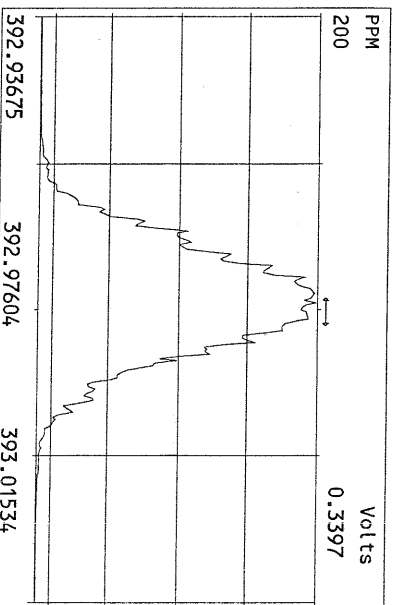
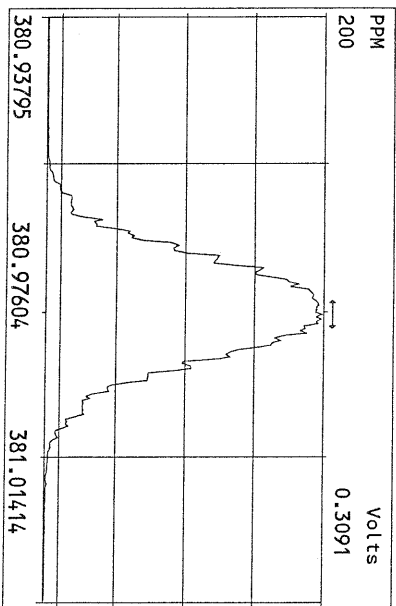
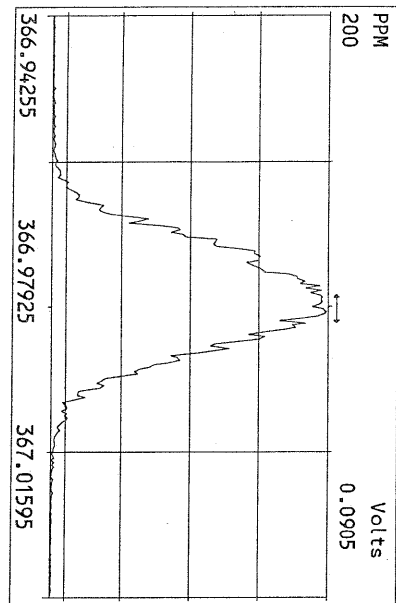
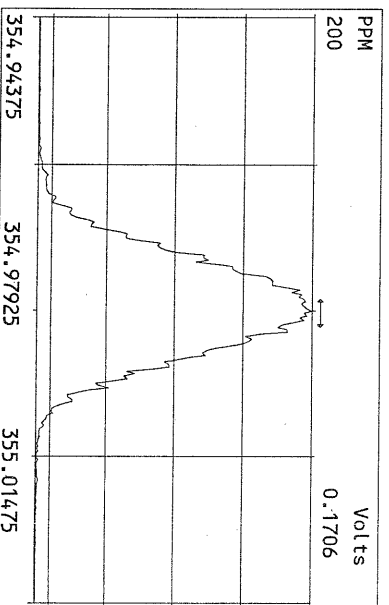
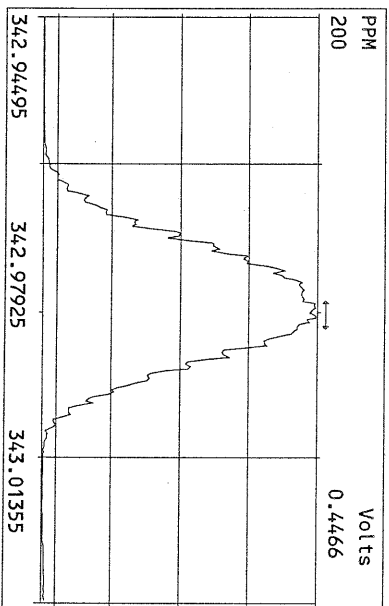
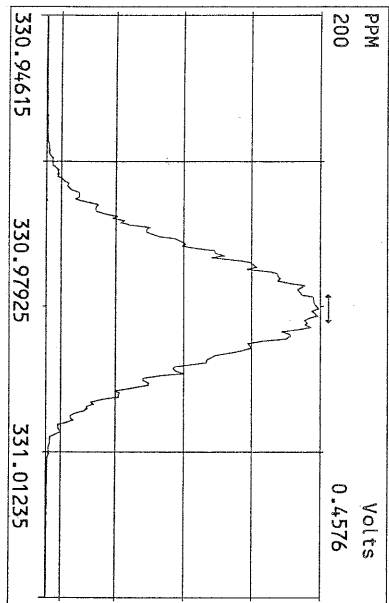
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08JAN16Z 2	9486-001-0001-SA	SB-07-12-13	8-JAN-16 11:13:44	ST010816Z1	ST010816Z2	BS
08JAN16Z 3	9528-001-0001-SA	SP-FA-1	8-JAN-16 12:08:33	ST010816Z1	ST010816Z2	BS
08JAN16Z 4	9487-001-0001-SA	SB-10-12.5-13	8-JAN-16 13:03:21	ST010816Z1	ST010816Z2	BS
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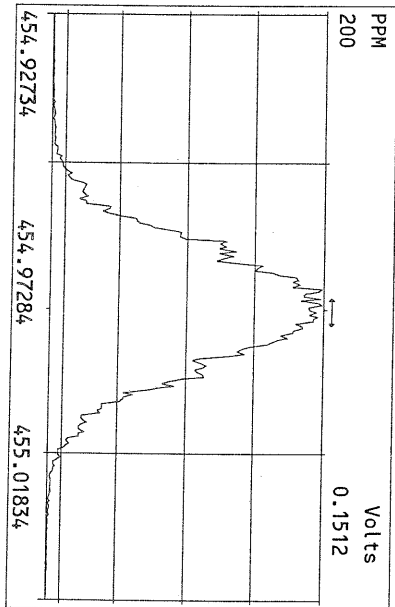
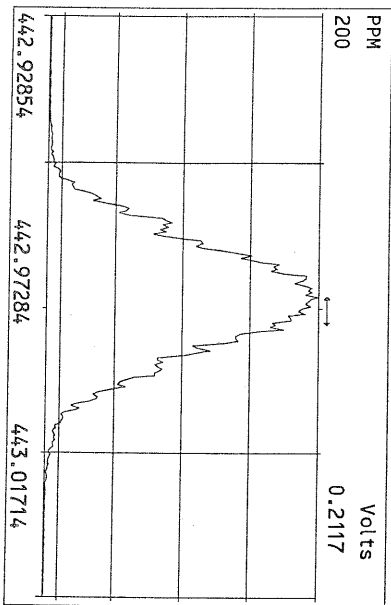
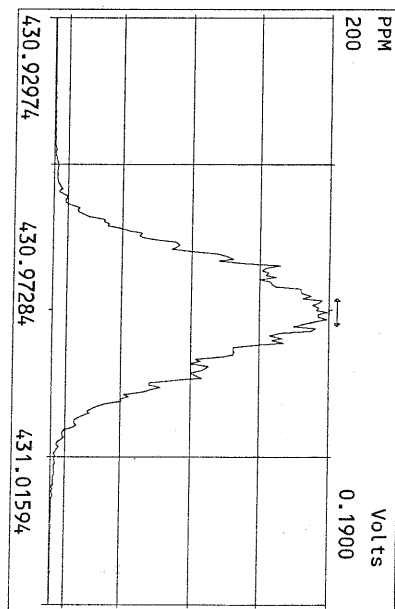
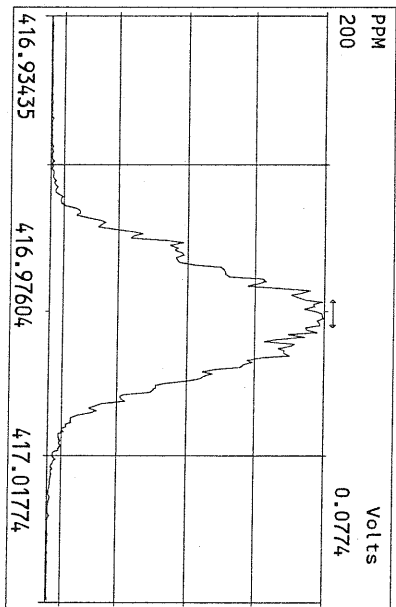
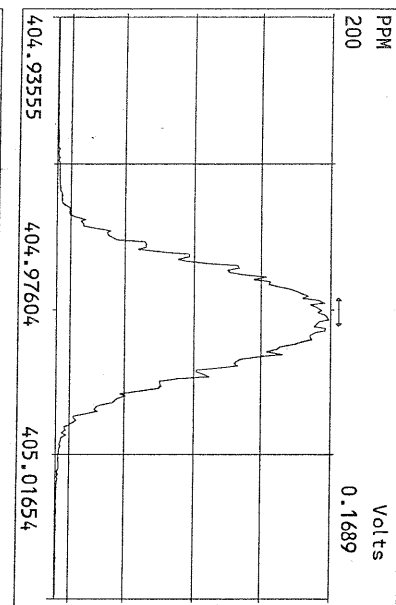
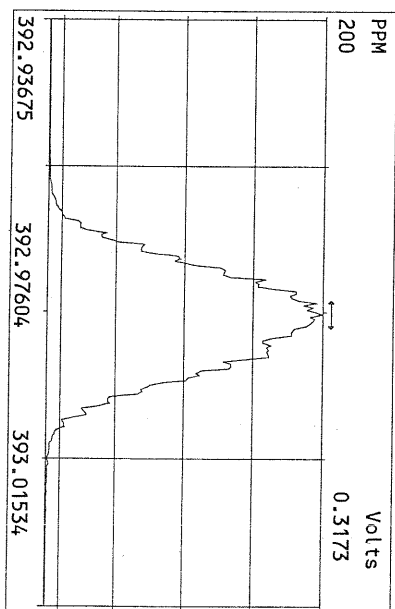
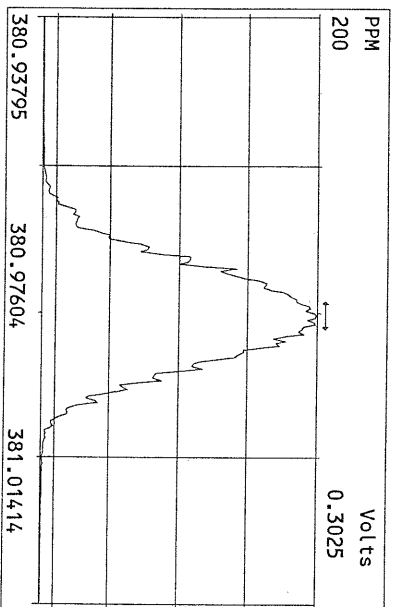
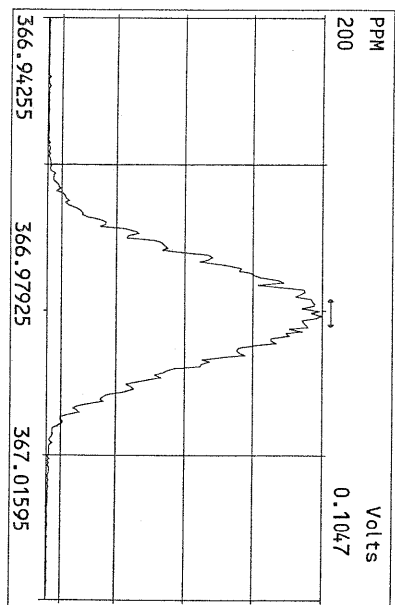
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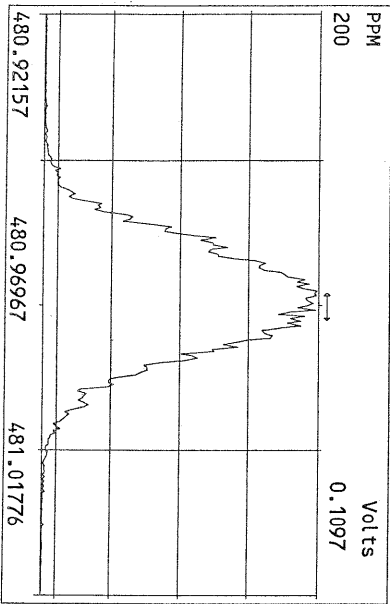
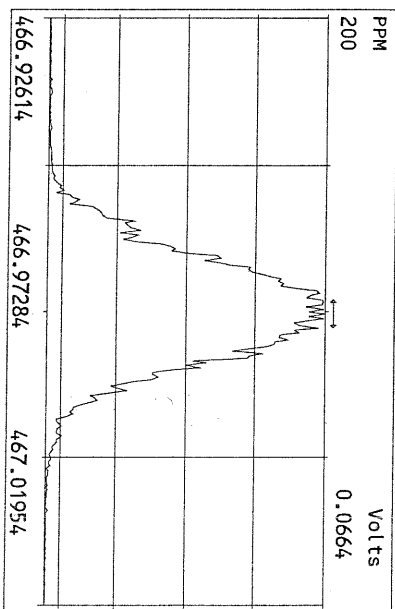
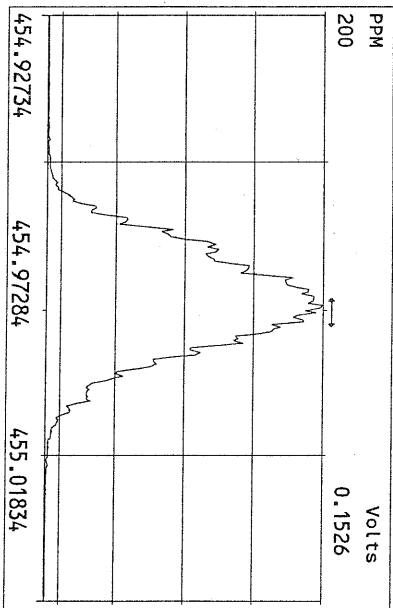
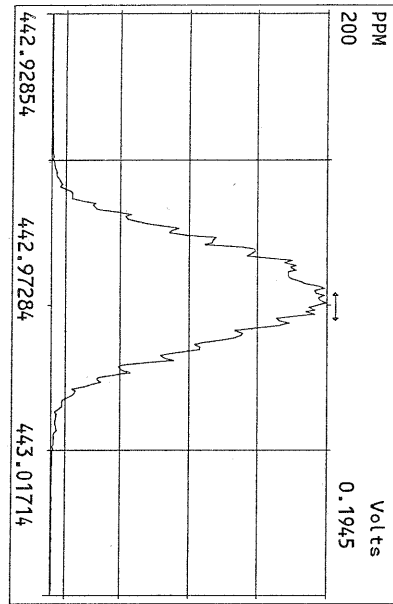
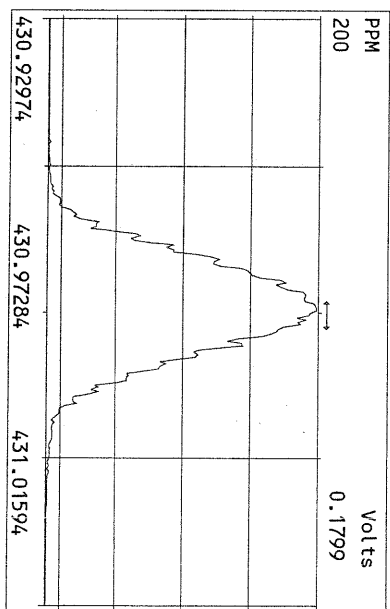
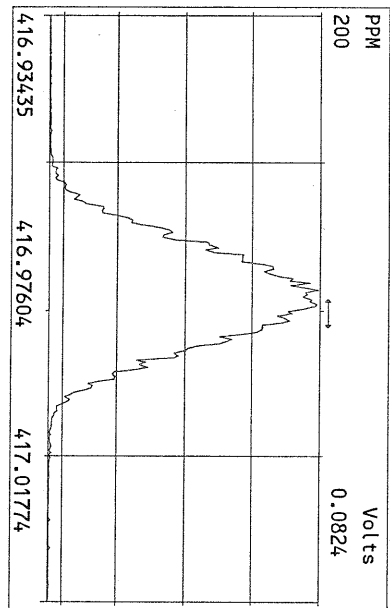
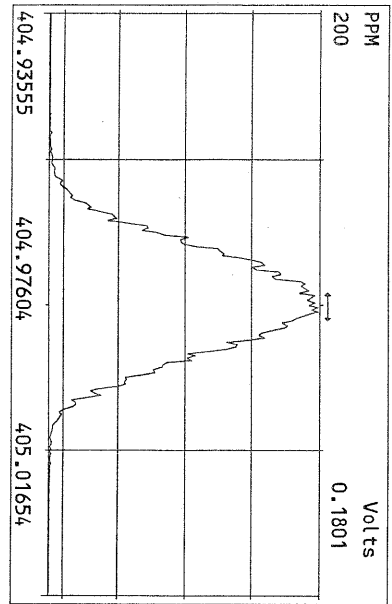
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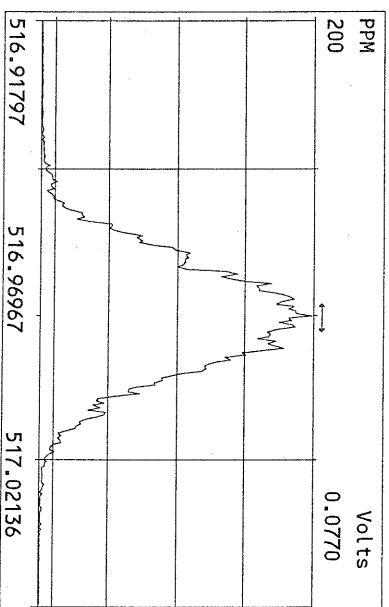
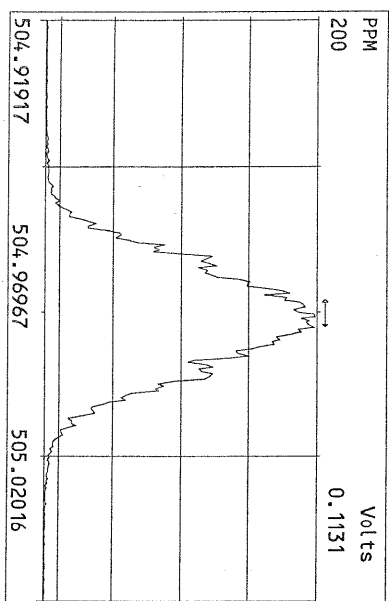
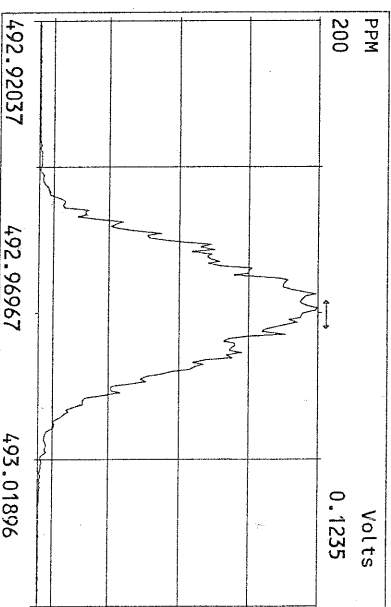
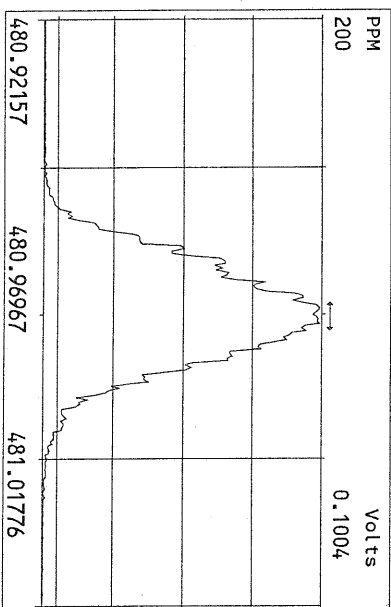
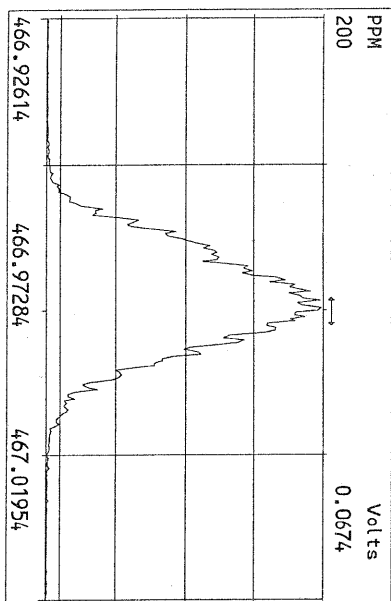
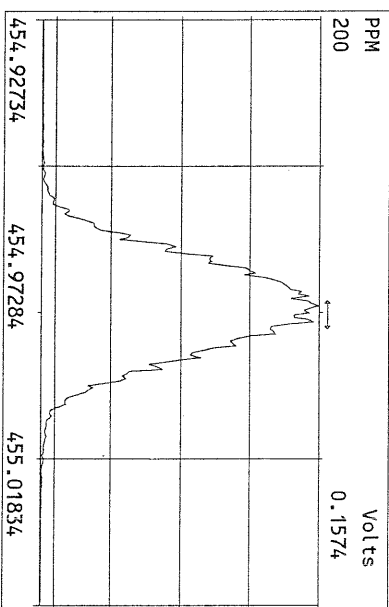
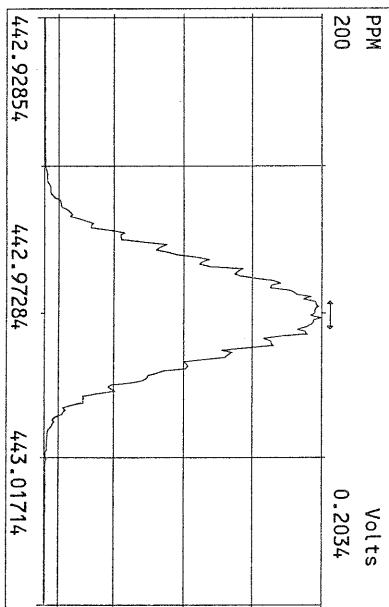
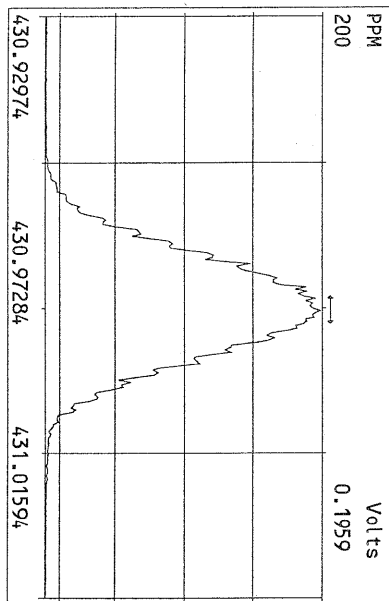




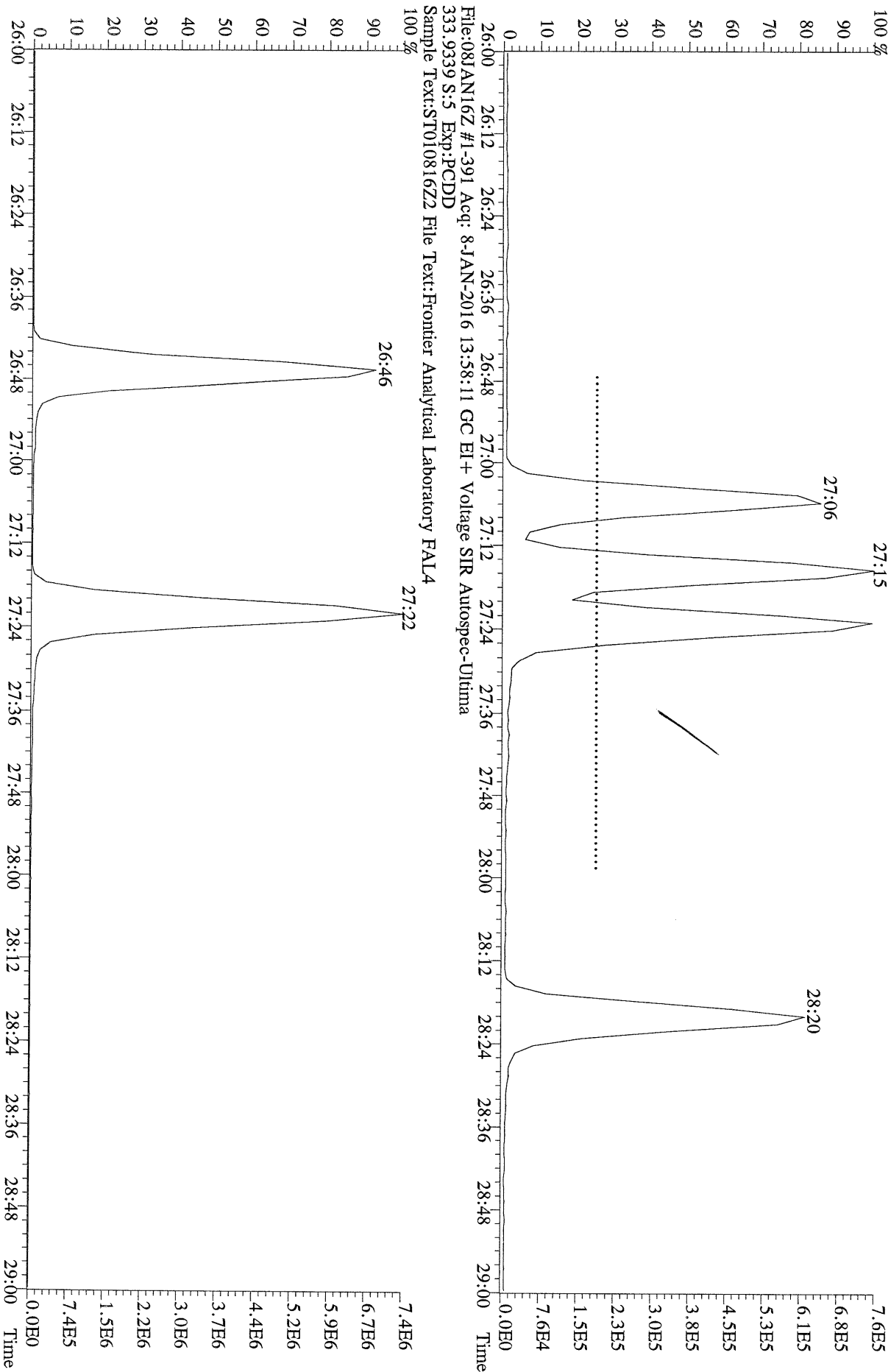
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Experiment:PCDD Function:4 Reference:PKK



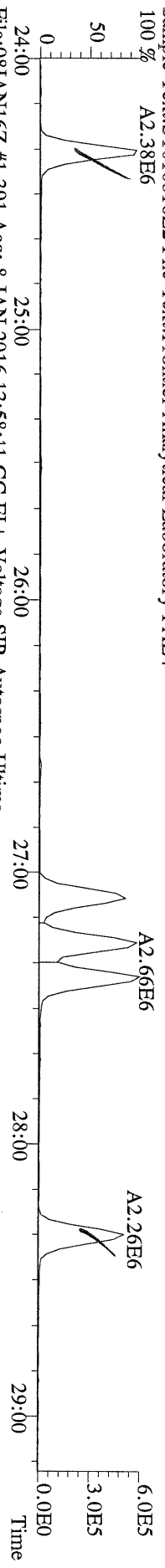
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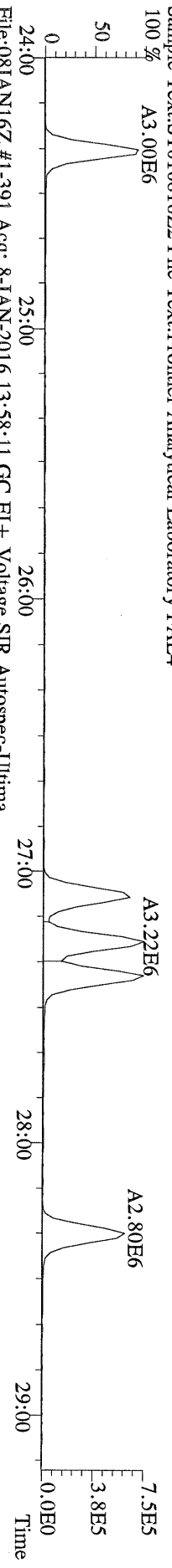
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321.8936 S:5 Exp:PCDD
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100 %



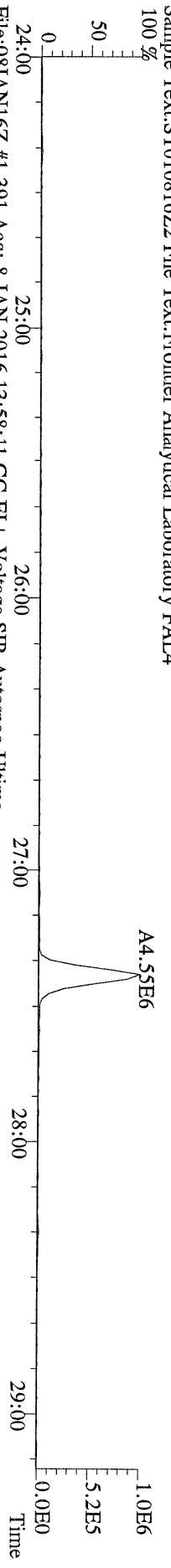
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100 % A2.38E6



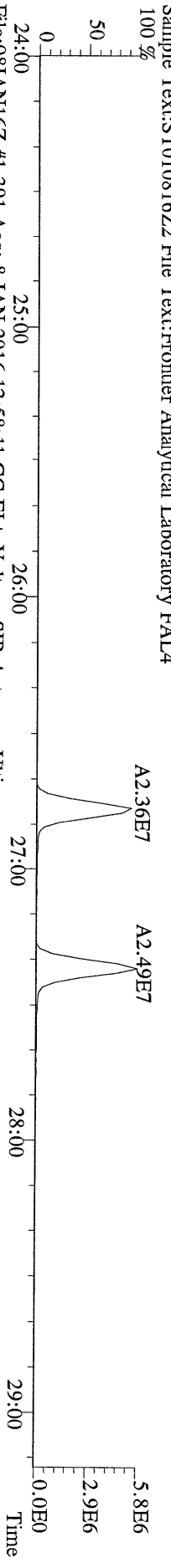
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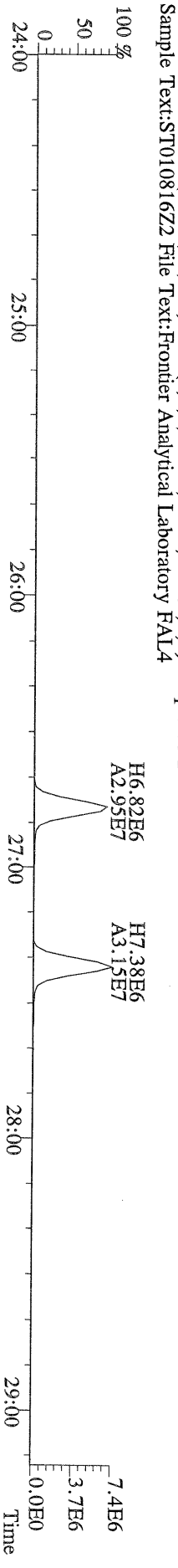
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100 %



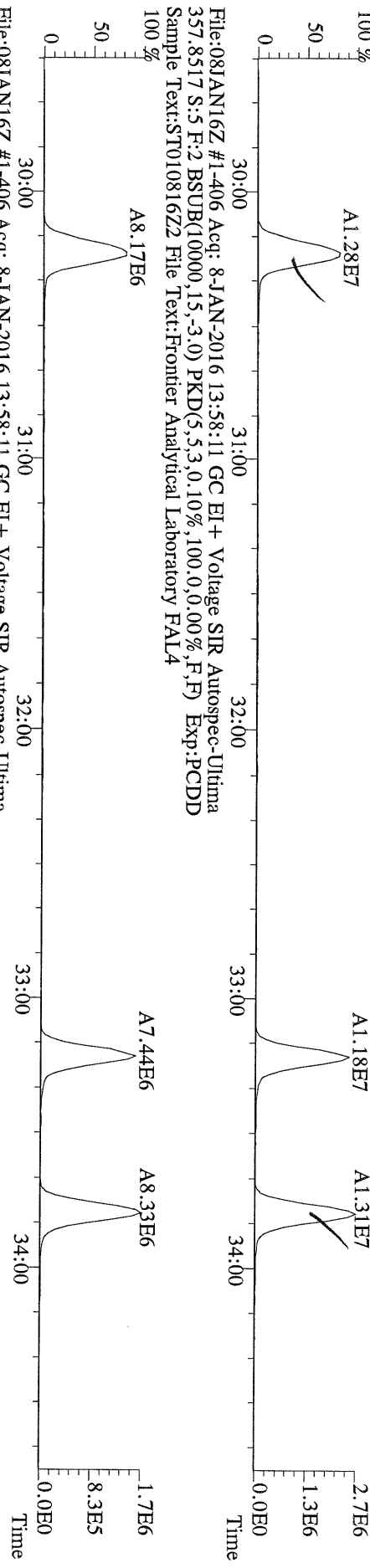
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100 %



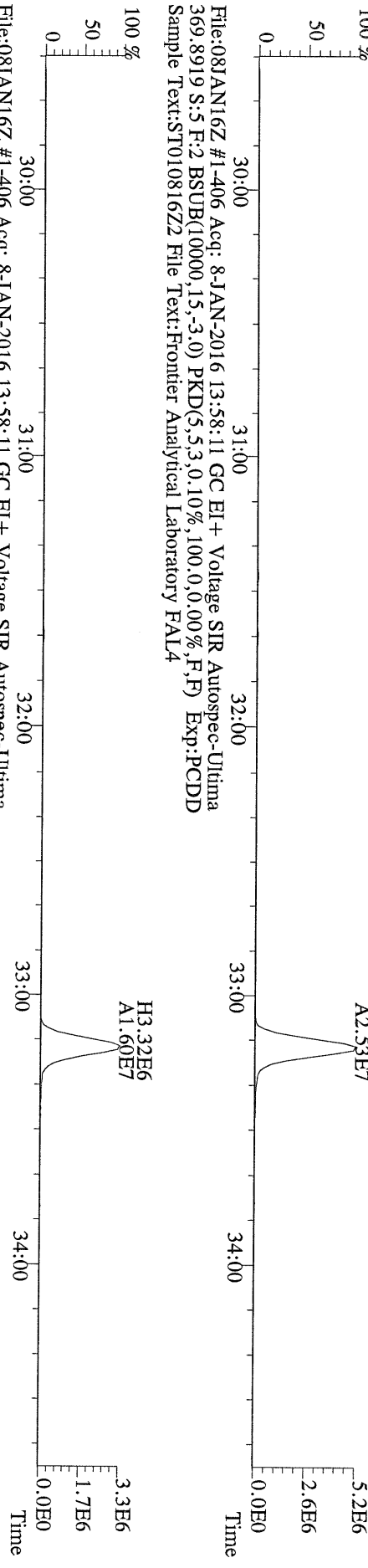
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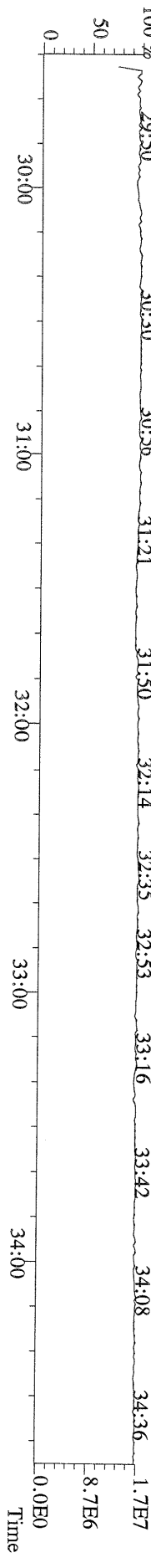
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355.8546 S:5 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100.0,0.00%,F,F) Exp:PCDD
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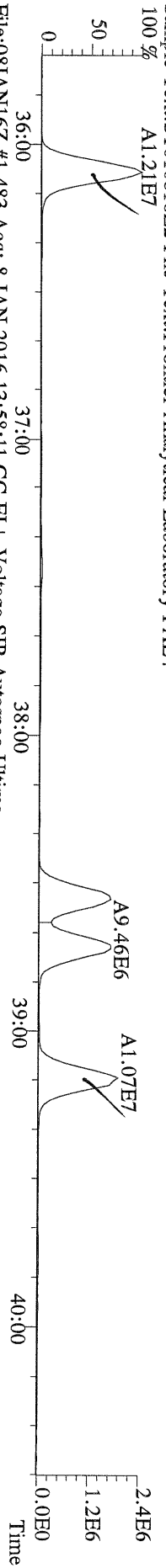
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Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4



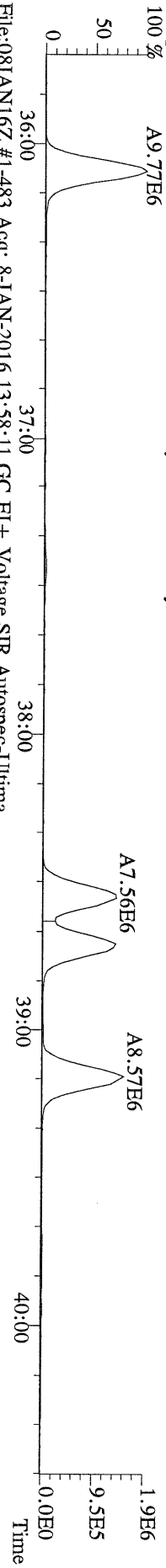
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366.9792 S:5 F:2 Exp:PCDD
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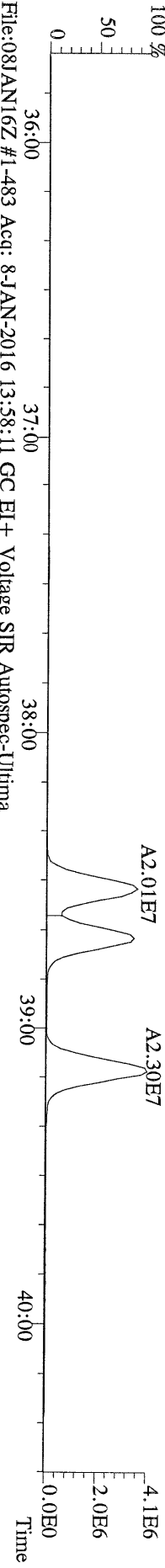
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100 %



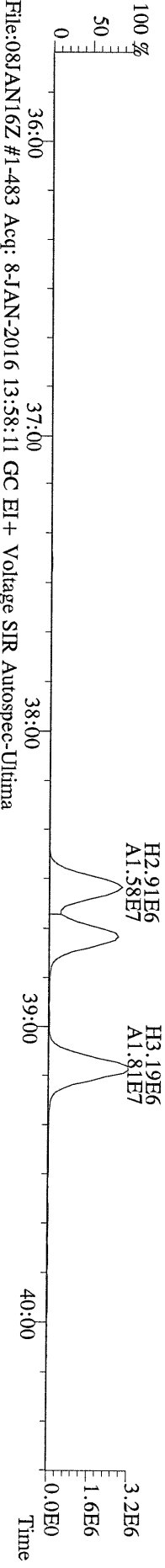
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Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4
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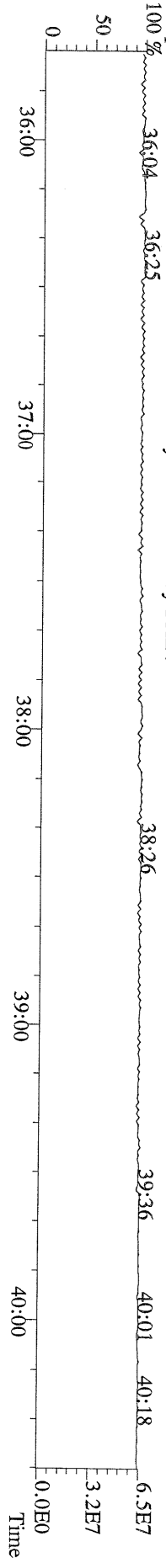
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Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4
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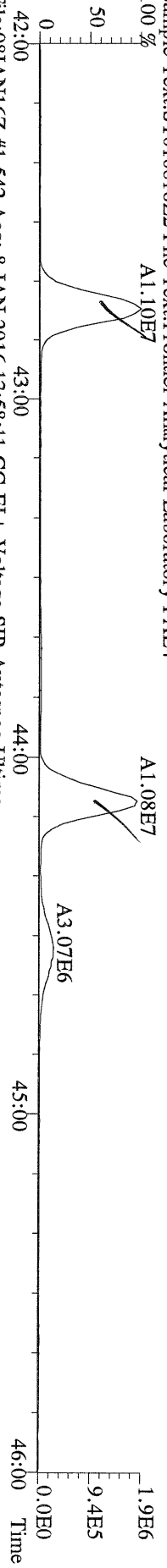
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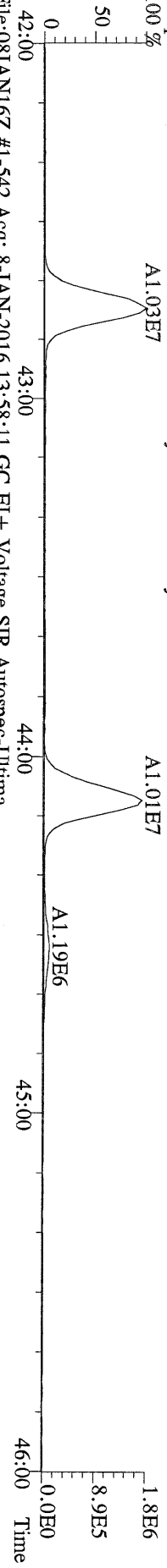
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380.9760 S:5 F:3 Exp:PCDD
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100 %



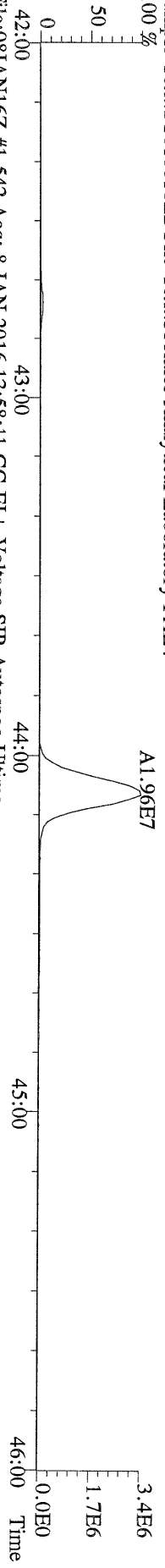
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423.7767 S:5 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4



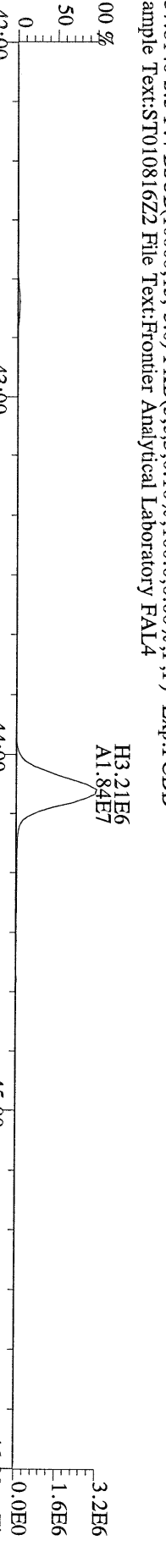
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Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4



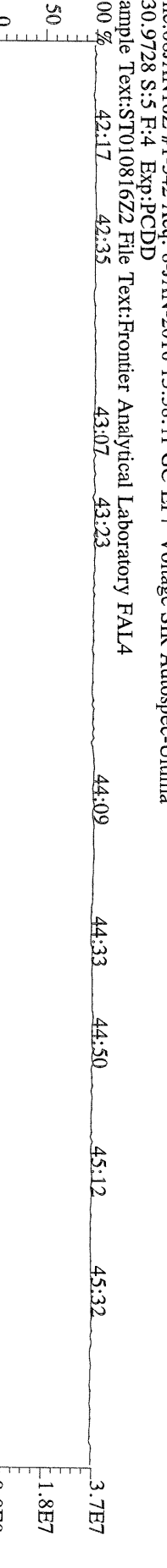
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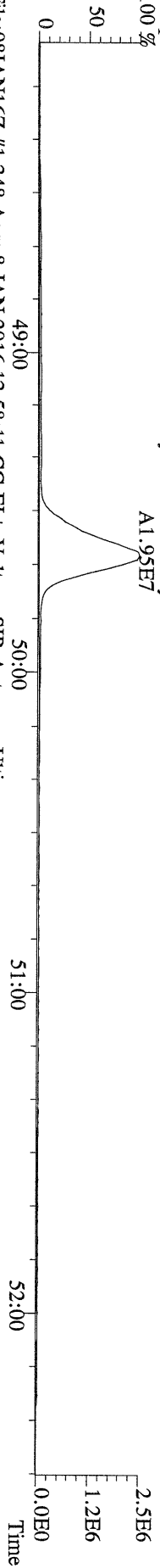
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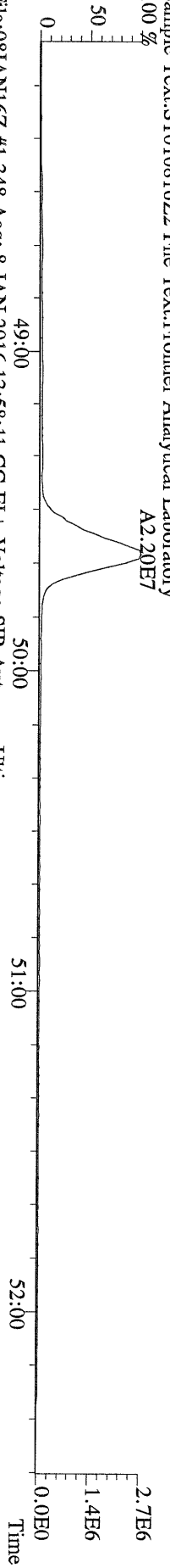
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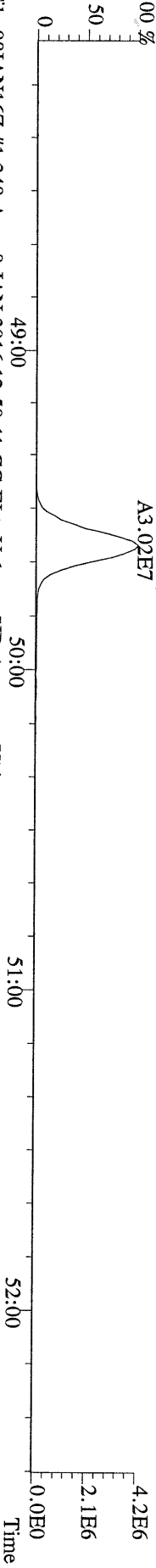
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457.7377 S:5 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
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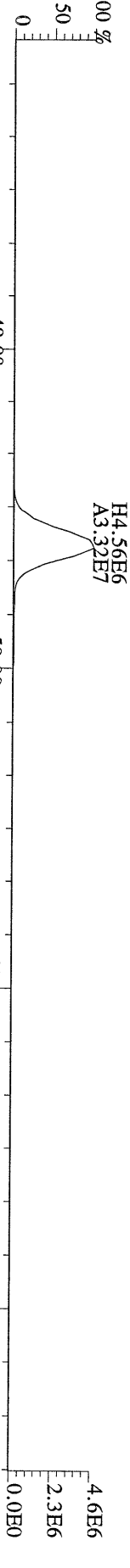
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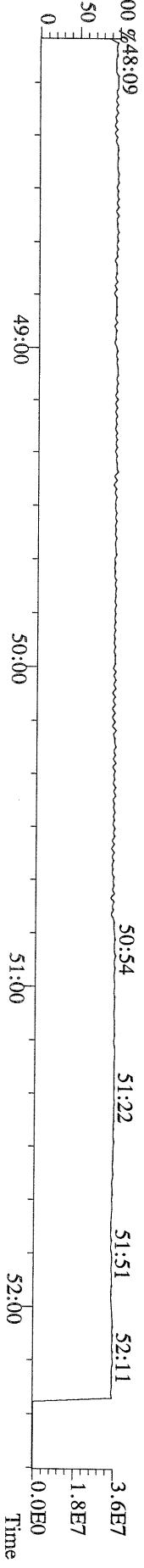
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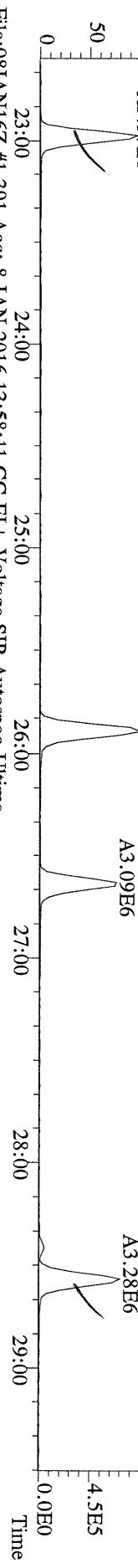
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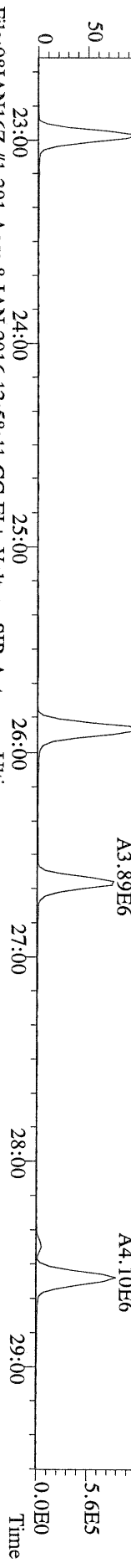
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Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory



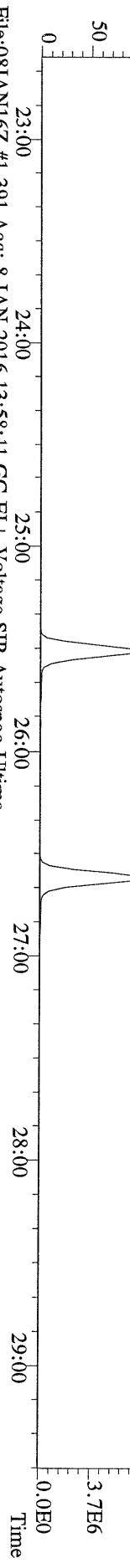
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 303.9016 S:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
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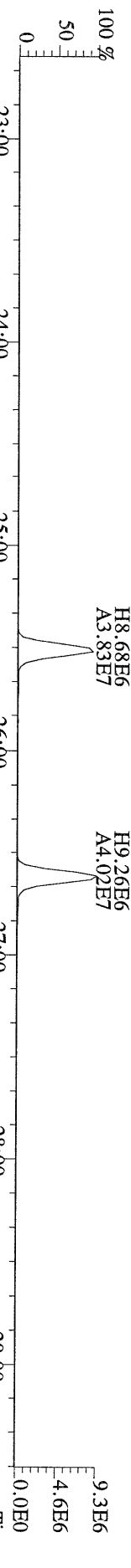
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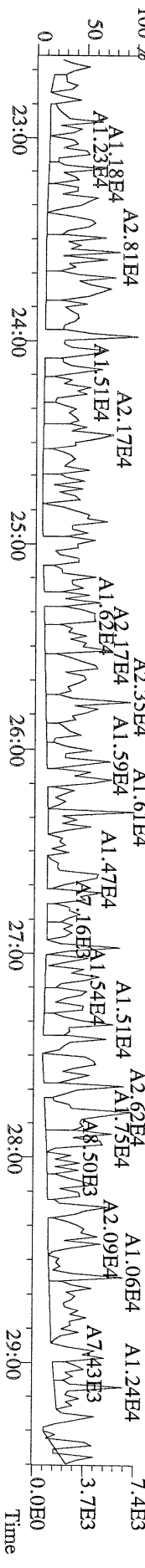
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 315.9419 S:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4



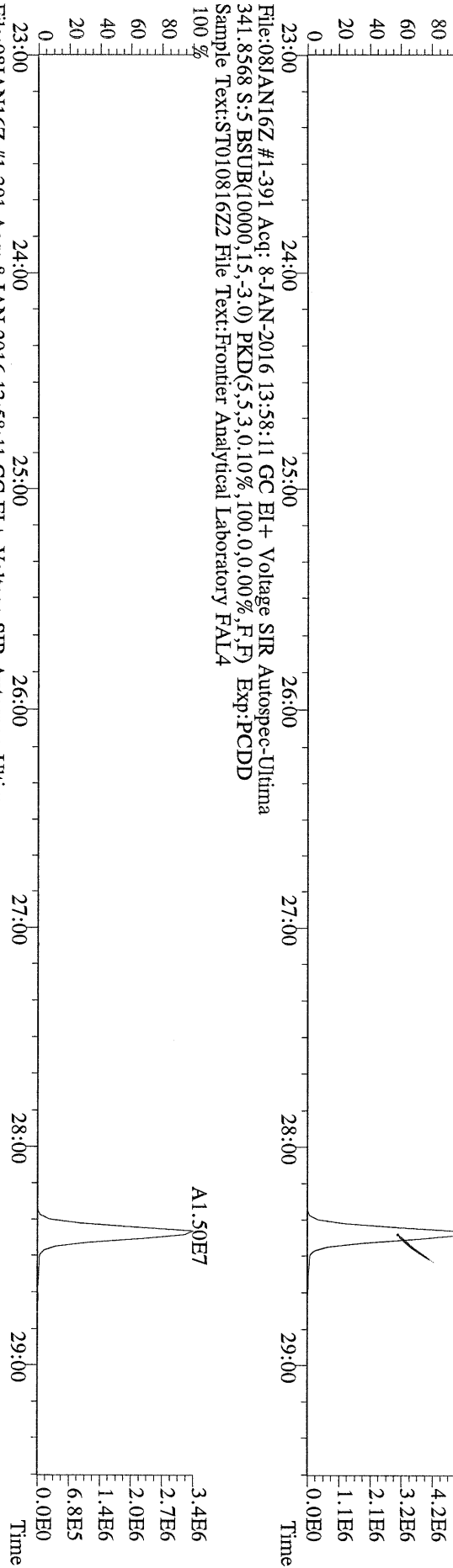
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 Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4



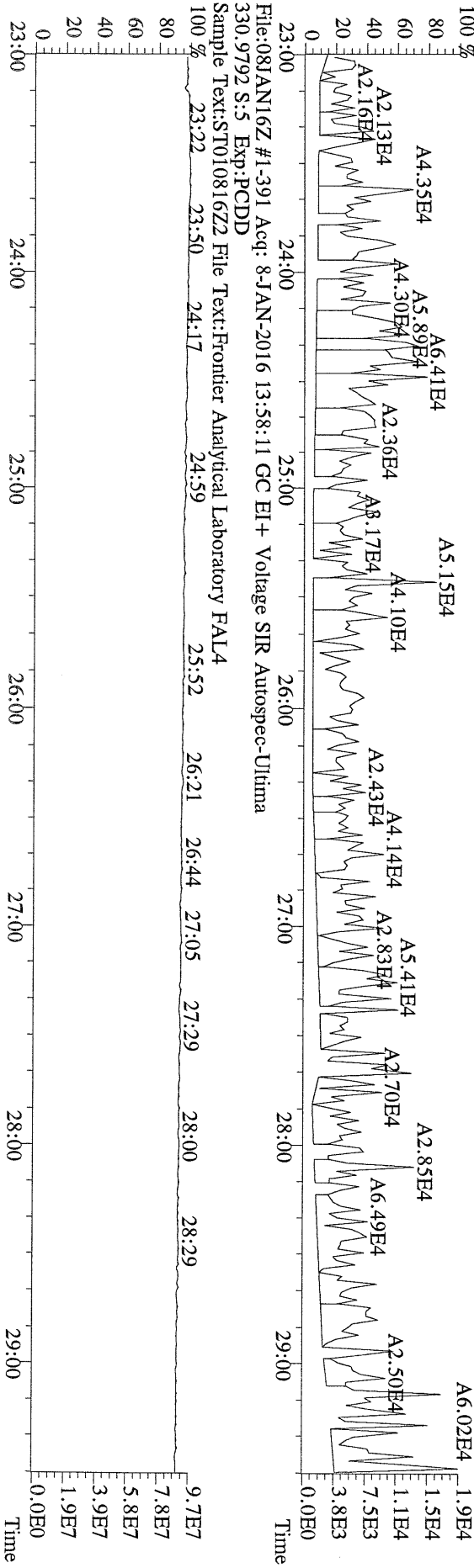
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 375.8364 S:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
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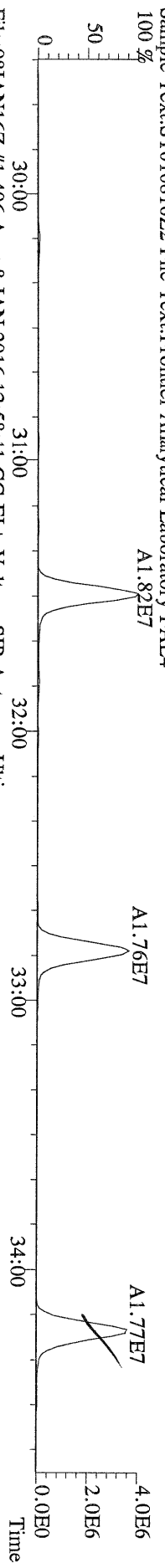
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 339.8597 S:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4



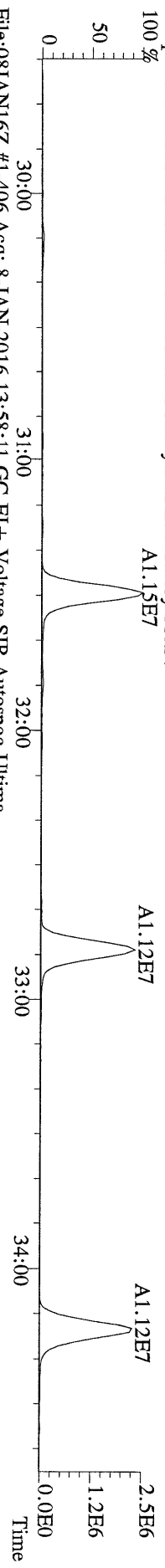
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 Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4



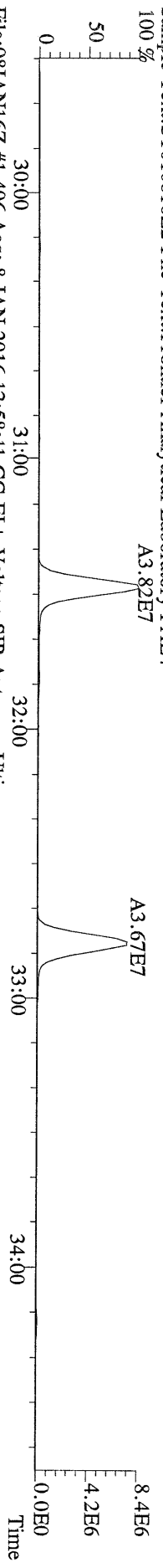
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 339.8597 S:5 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4



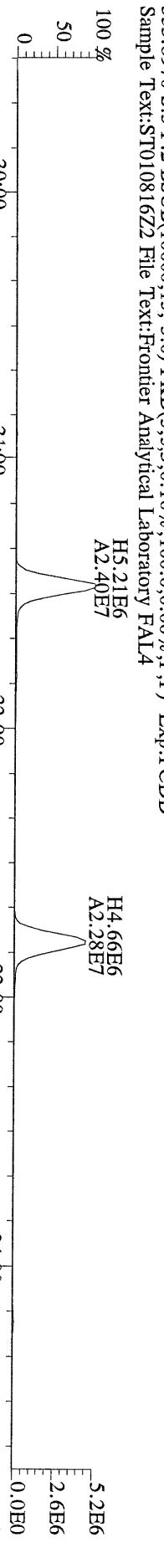
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 Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4



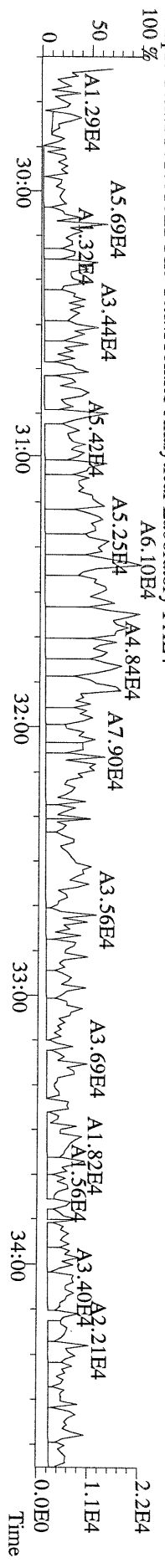
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 Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4



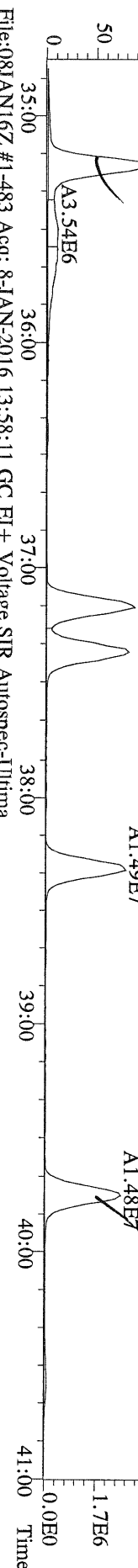
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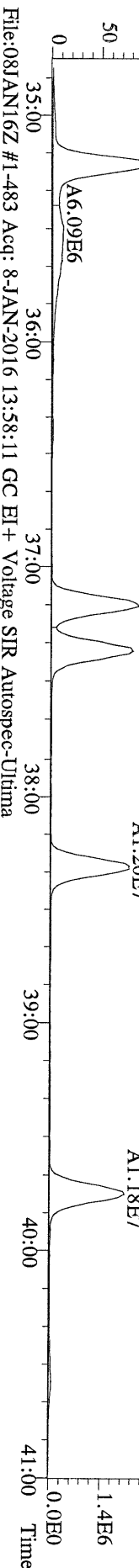
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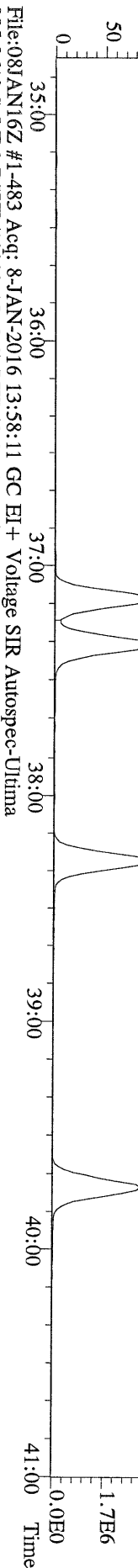
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373.8207 S:5 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4



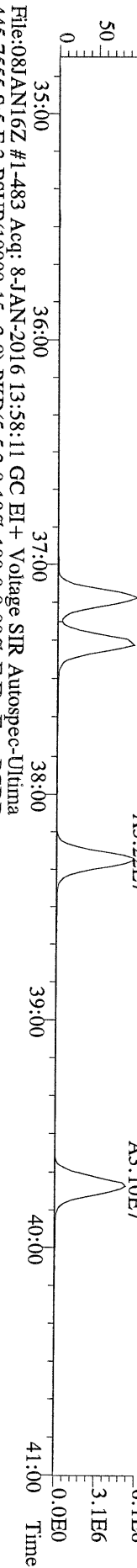
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375.8178 S:5 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4



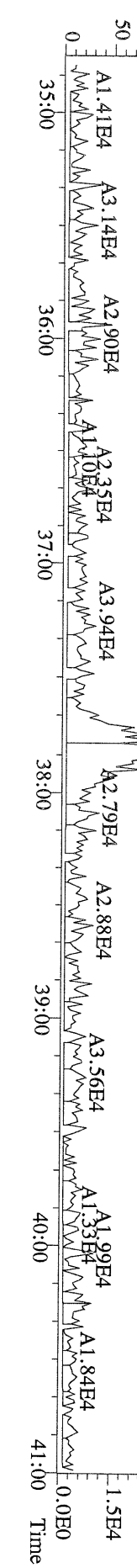
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383.8639 S:5 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4



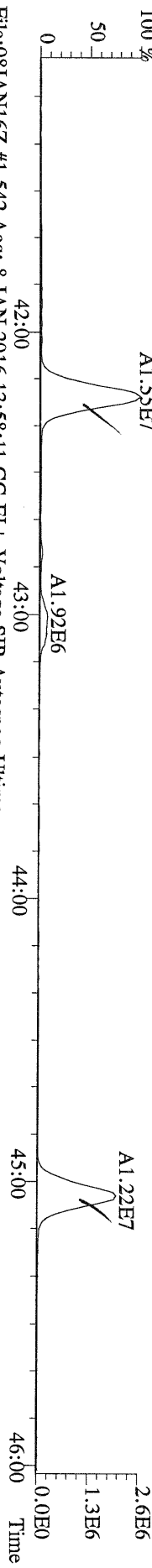
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Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4



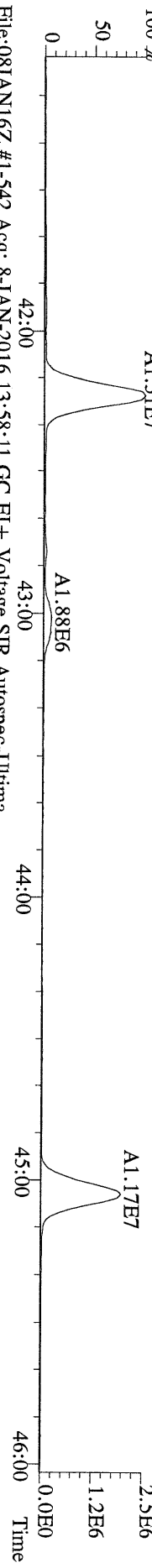
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Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4



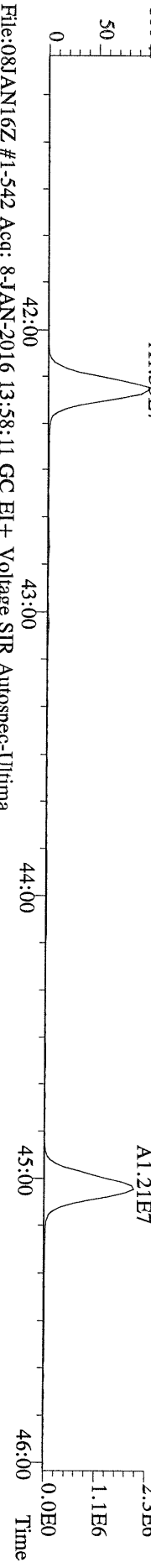
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407.7818 S:5 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory



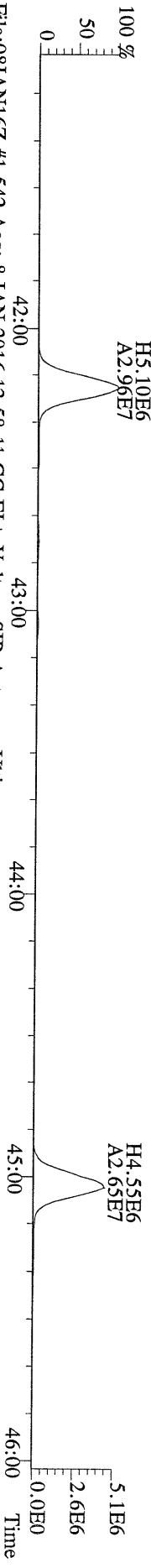
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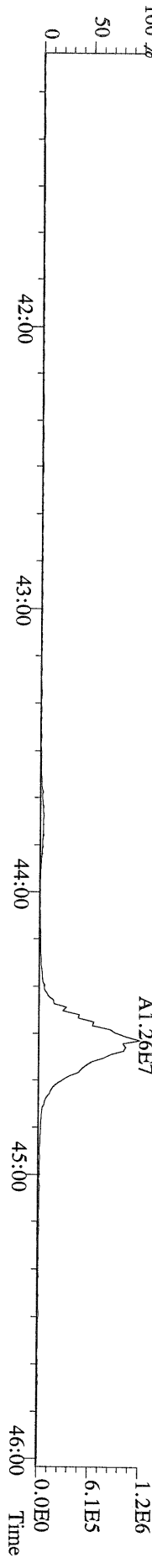
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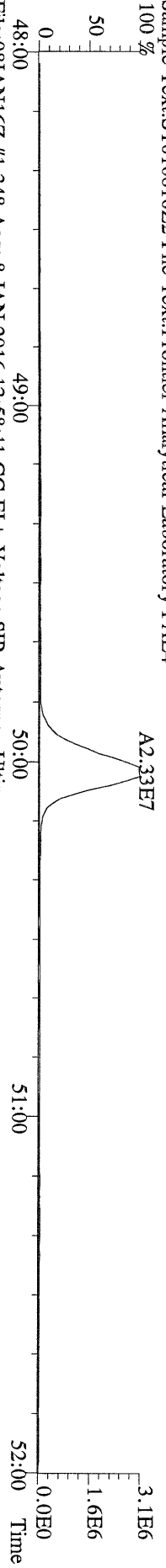
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Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory



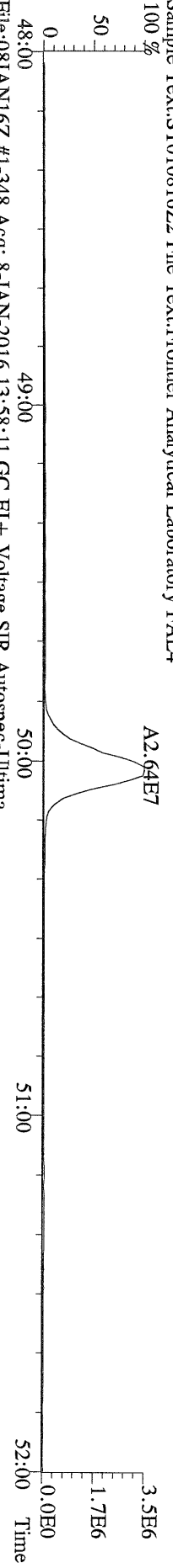
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Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory



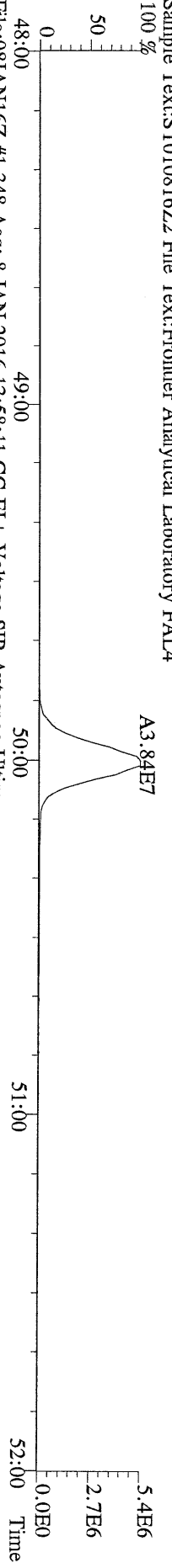
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Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4



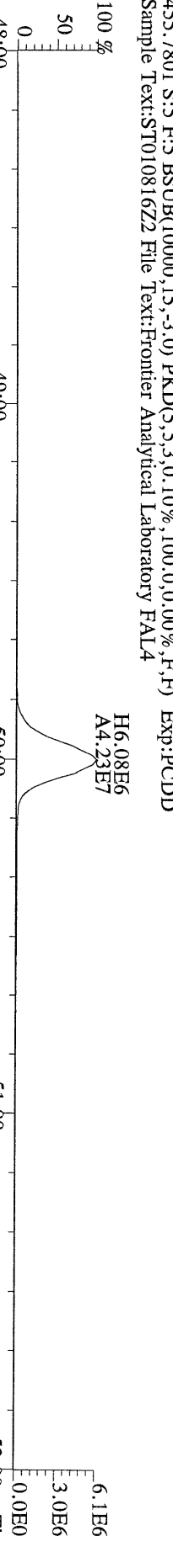
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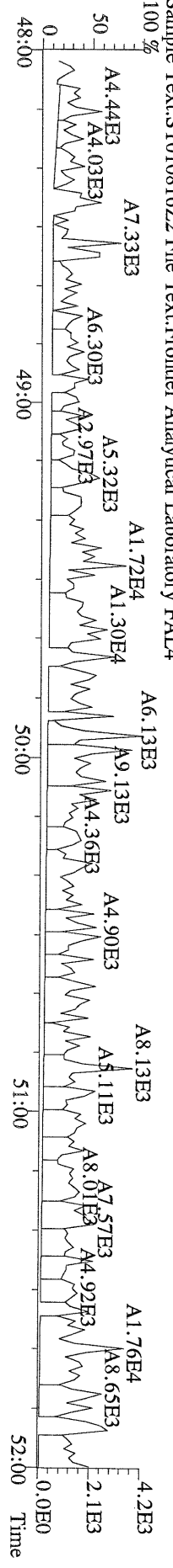
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Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4

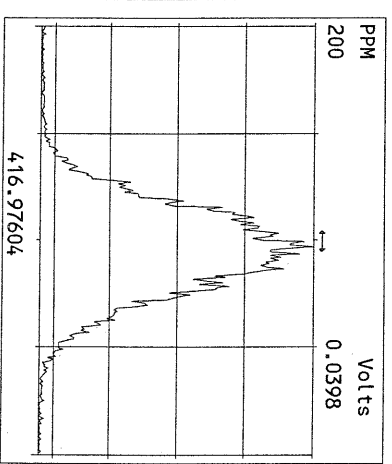
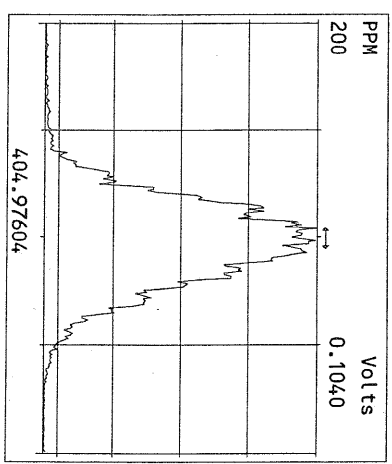
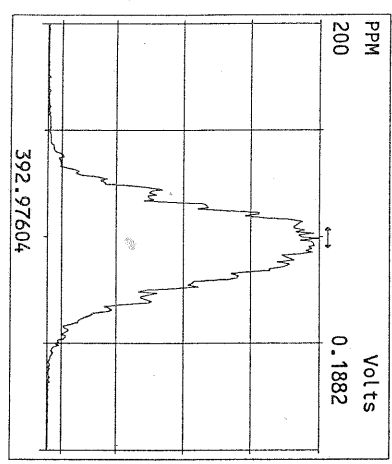
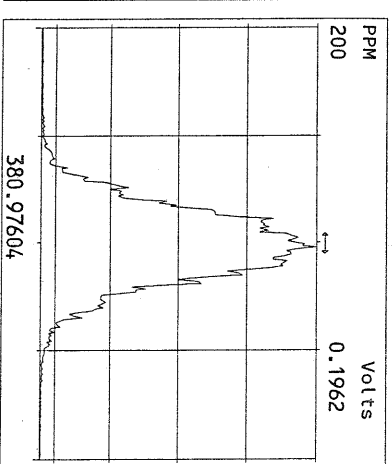
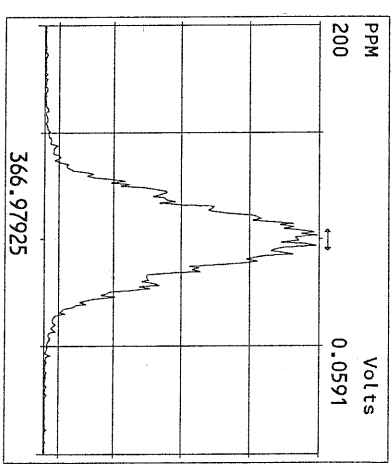
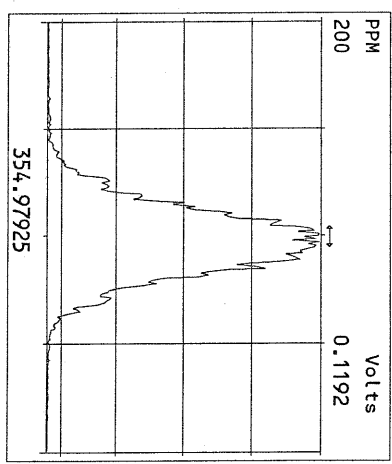
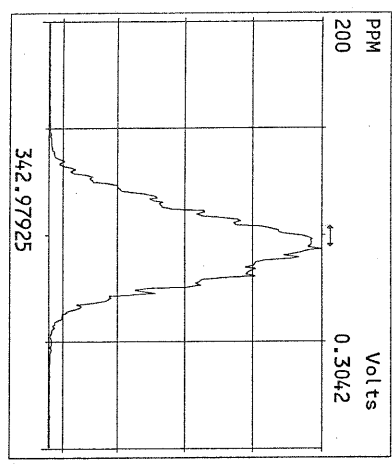
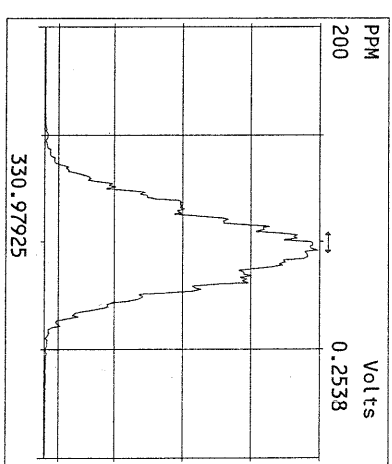
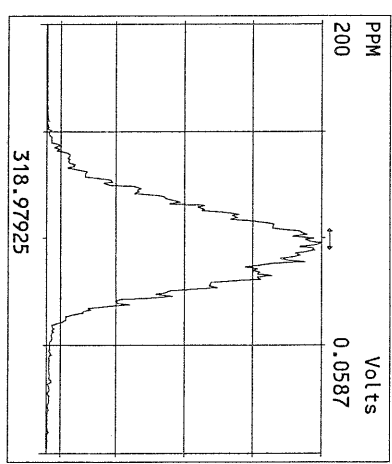
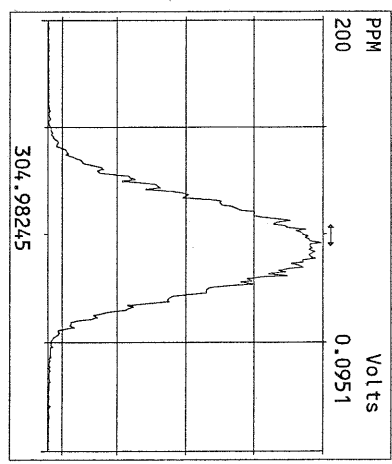
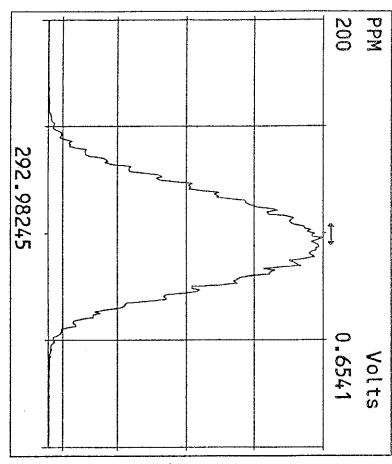


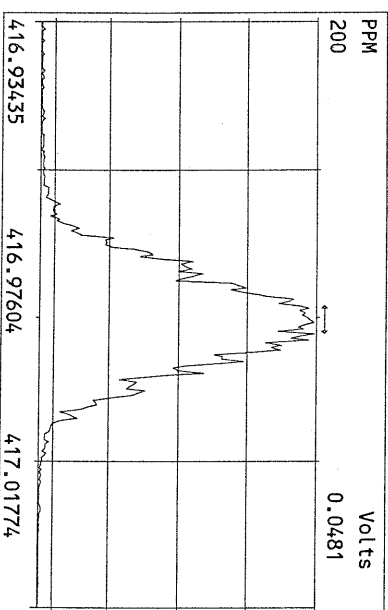
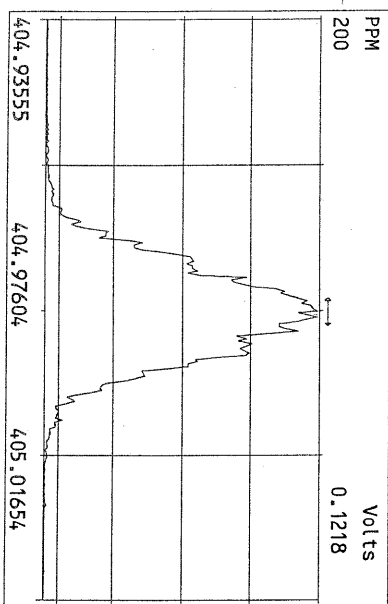
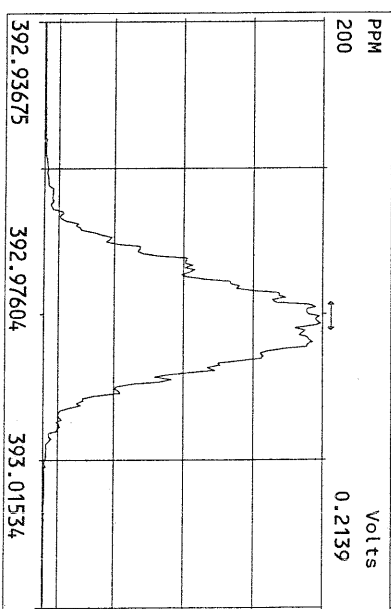
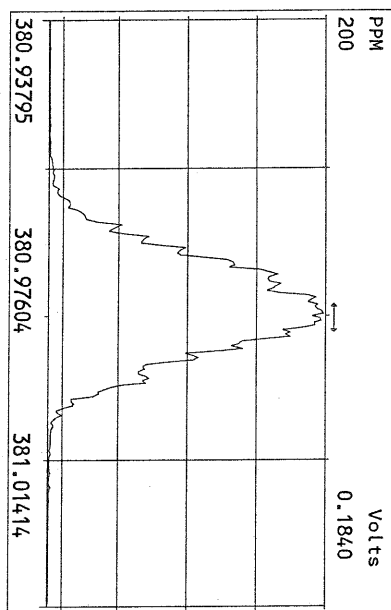
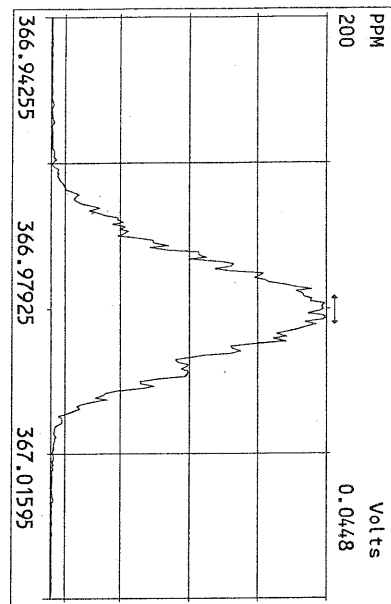
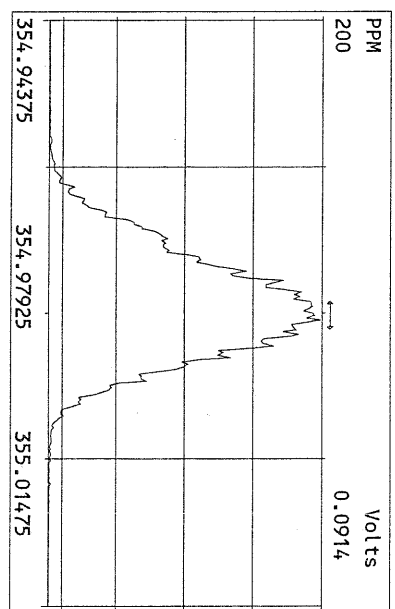
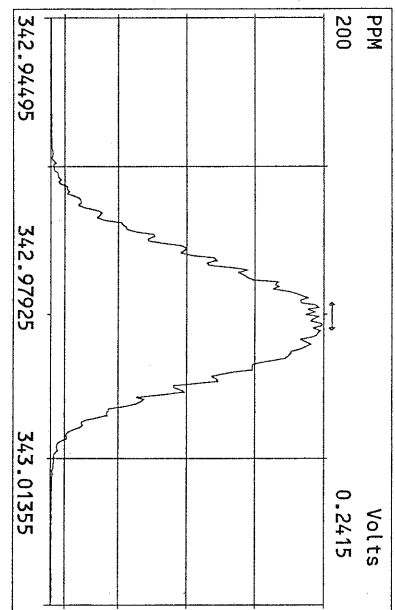
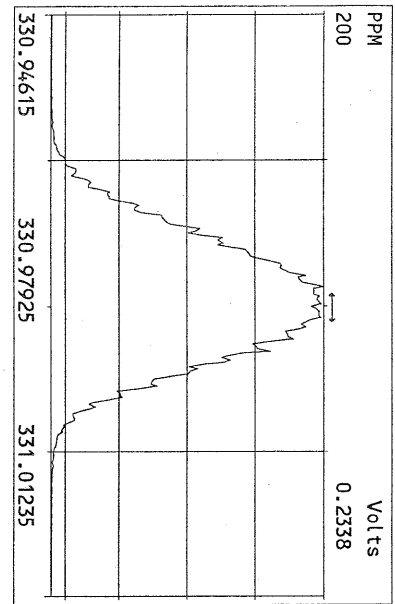
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Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4

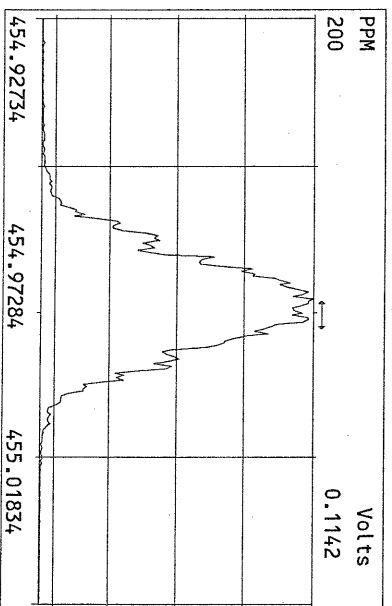
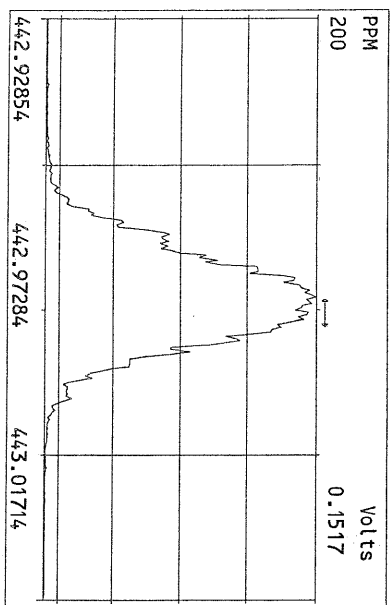
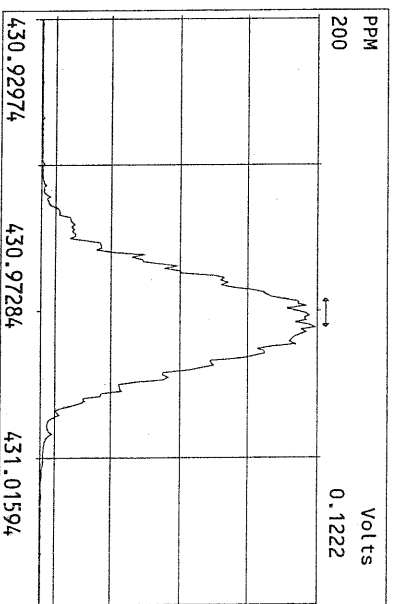
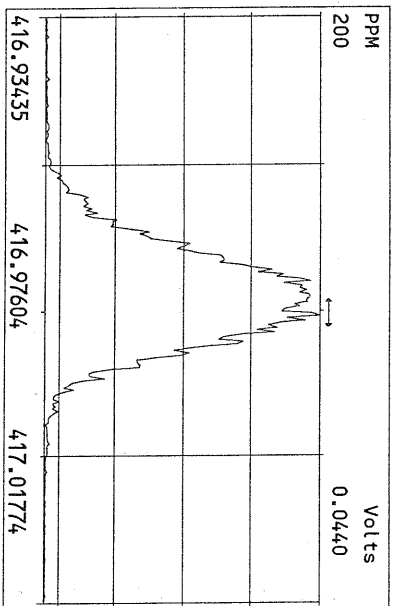
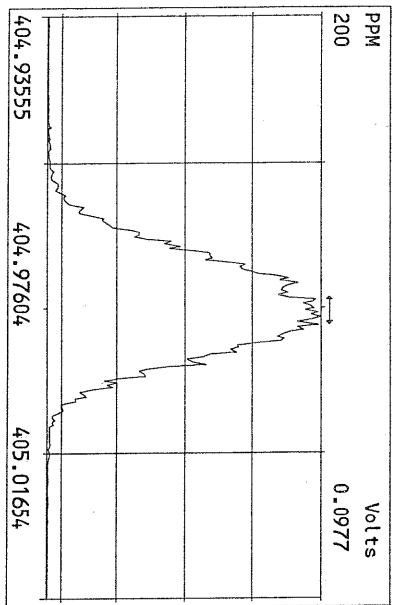
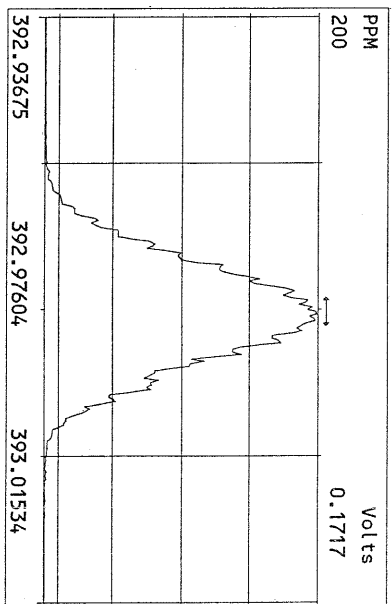
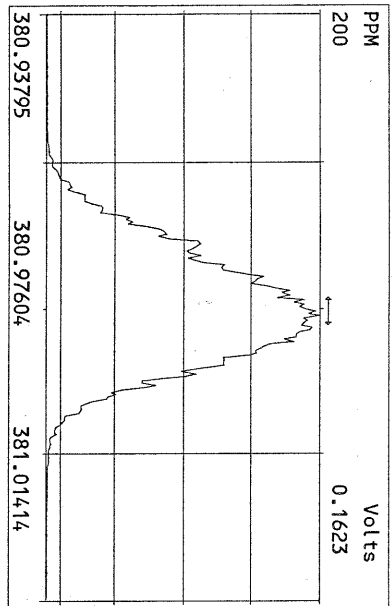
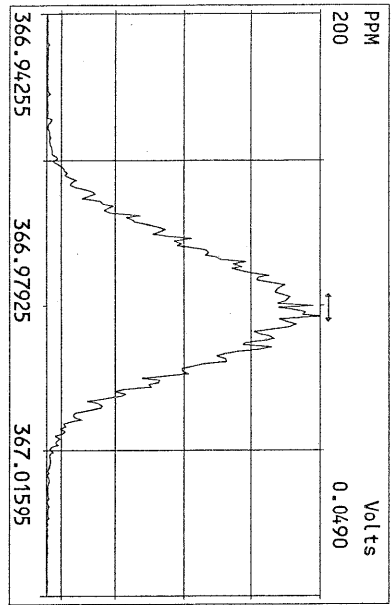


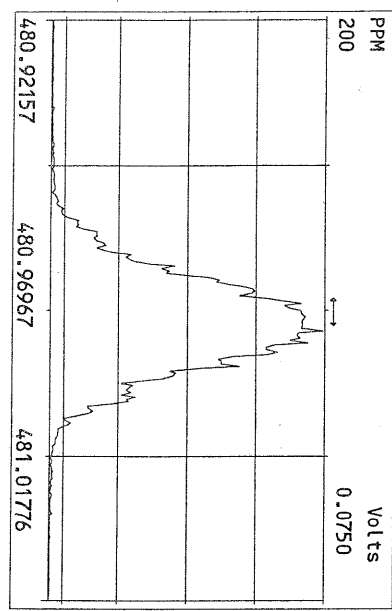
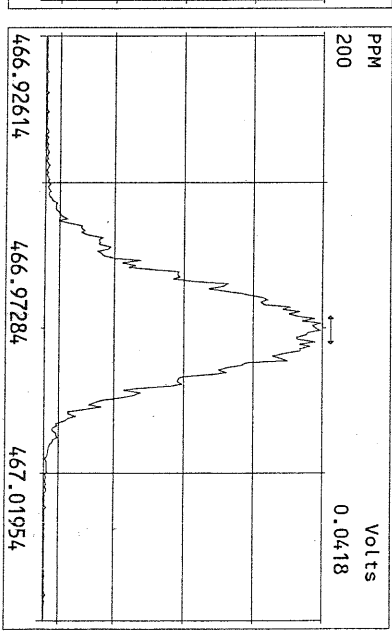
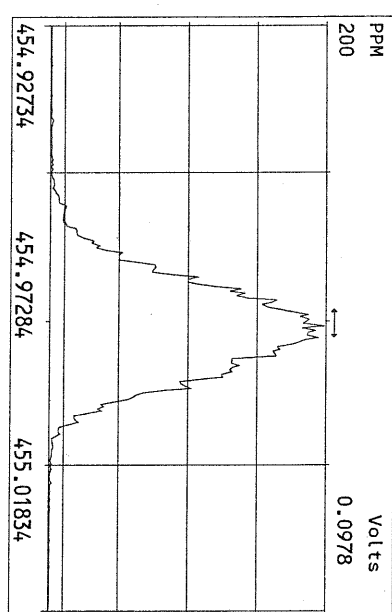
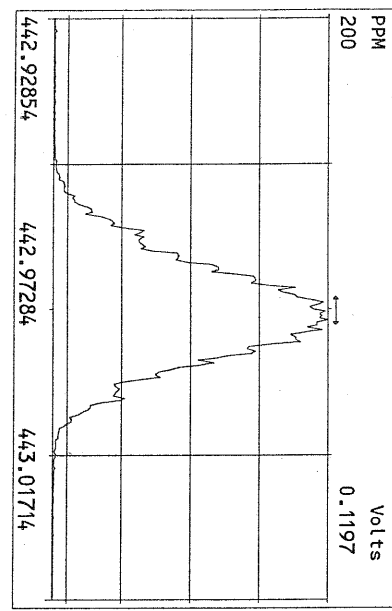
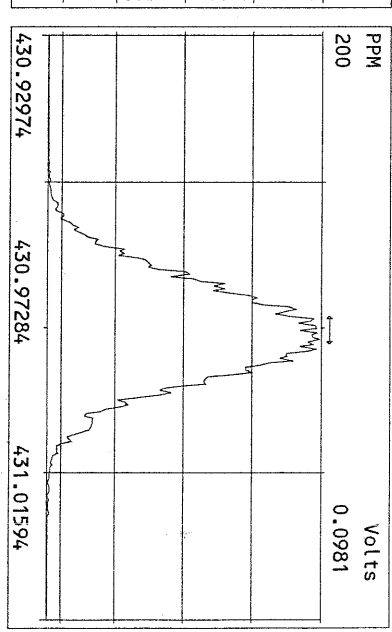
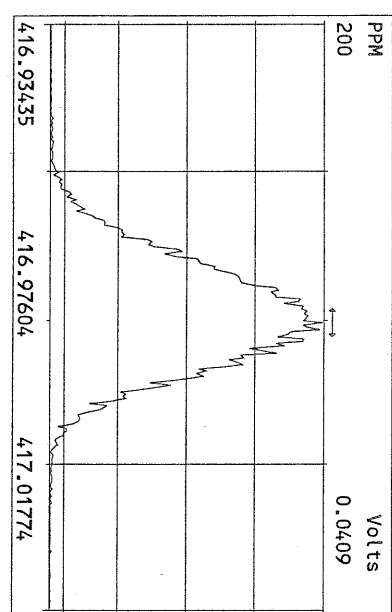
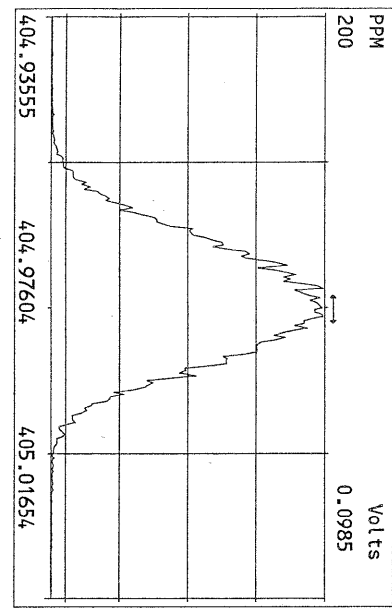
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Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4

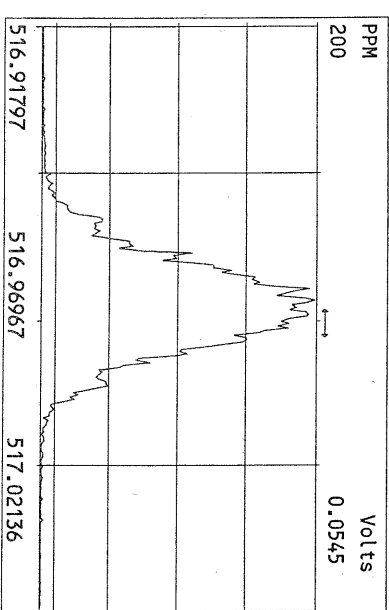
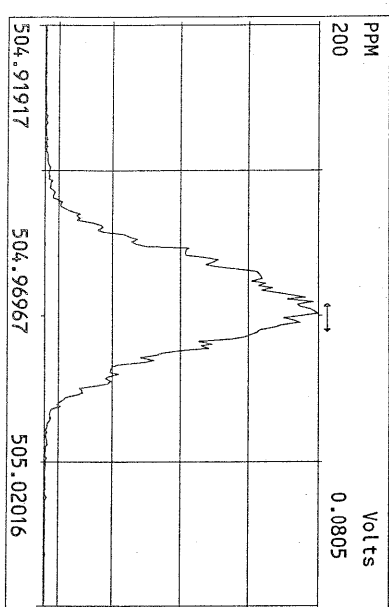
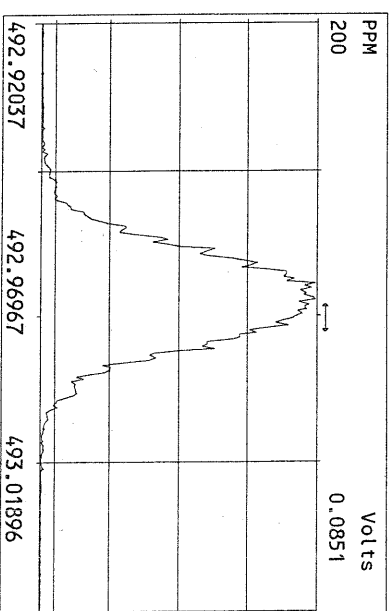
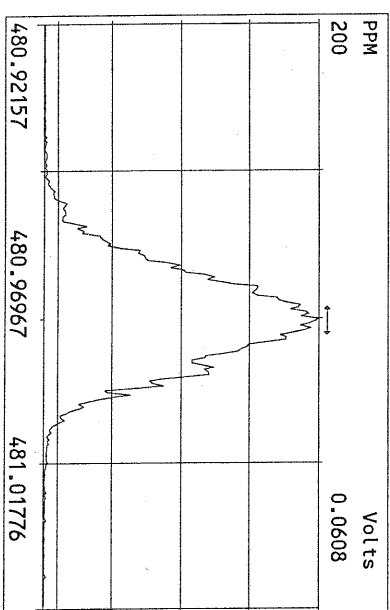
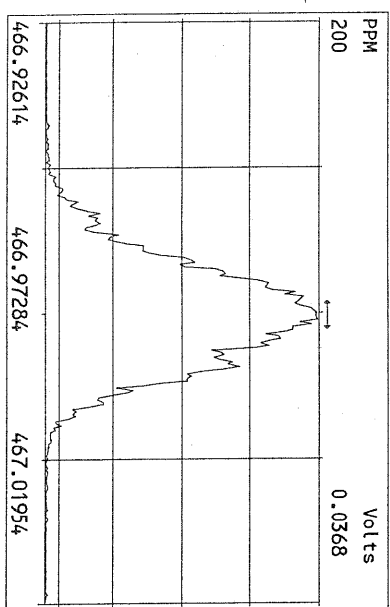
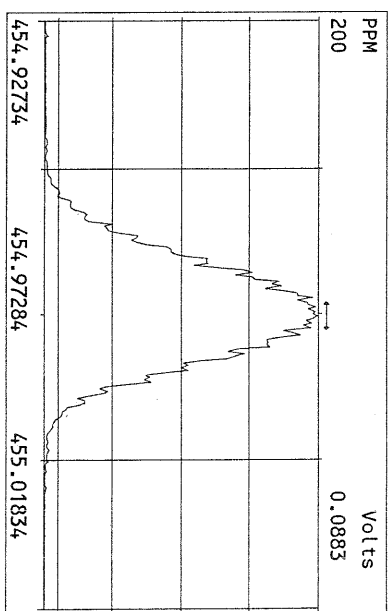
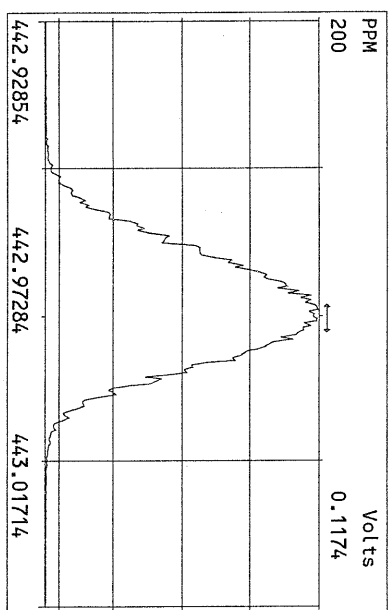
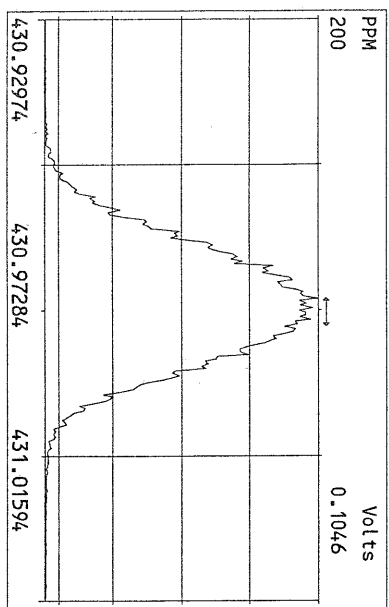












USEPA - ITD

FORM 4A
TCDF CALIBRATION VERIFICATION

Lab Name: Frontier Analytical Laboratory Episode No.:

Contract No.: SAS No.:

Initial Calibration Date: 1/4/16

Instrument ID: FAL3 GC Column ID: DB225

VER Data Filename: 07JAN16M Sam:1 Analysis Date: 7-JAN-16 Time: 10:19:48

NATIVE ANALYTES	M/Z'S	ION	QC	ACCEPT	CONC.	CONC.
	FORMING	ABUND.	LIMITS		FOUND	RANGE
	RATIO (1)	RATIO	(2)		FOUND	(ng/mL) (3)
Labeled Compounds						
2,3,7,8-TCDF	M/M+2	0.77	0.65-0.89	y	10.5	8.40 - 12.0
Cleanup Standards						
37Cl-2,3,7,8-TCDD					10.6	8.30 - 12.1

(1) See Table 8, Method 1613, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613.

(3) Contract-required concentration range as specified in Table 6A, Method 1613

Analyst: 

Date: 1/7/16

FAL ID: ST010716M1 Filename: 07JAN16M Sam:1 Acquired: 7-JAN-16 10:19:48 ICal: TCDFFAL3-1-4-16
Client ID: 1613 CS3 151209J ConCal: ST010716M1 EndCal: ST010716M2
Results: GC Column: DB225 Amount: 1.000

Name	Resp	RA	RT	RRF	Conc	Qual	Fac	Noise	DL	#Hom	Rec
2,3,7,8-TCDF	7.55e+06	0.77 y	20:17	0.90	10.5		2.50	-	-	1	
13C-2,3,7,8-TCDF	7.97e+07	0.80 y	20:16	1.01	104						104
13C-1,2,3,4-TCDF	7.60e+07	0.80 y	17:35	-	82.3						
37Cl-2,3,7,8-TCDD	5.17e+06		18:32	0.64	10.6						106

Analyst: 

Date: 1/7/16

Frontier Analytical Laboratory - Acquisition Log

Run Name:07JAN16M

Instrument: FAL3

GC: DB225

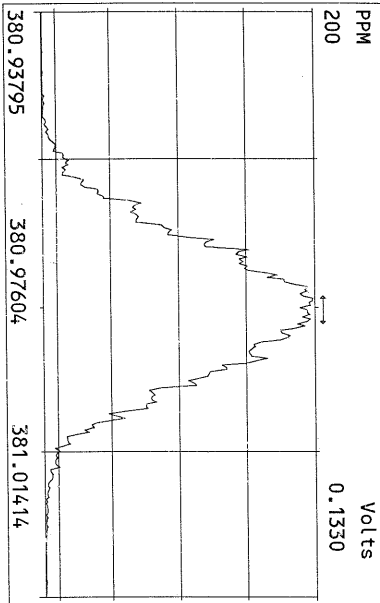
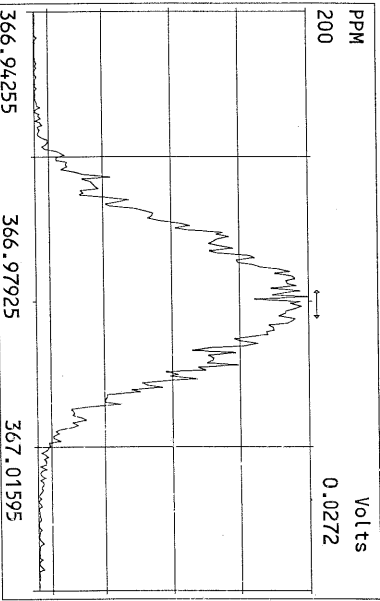
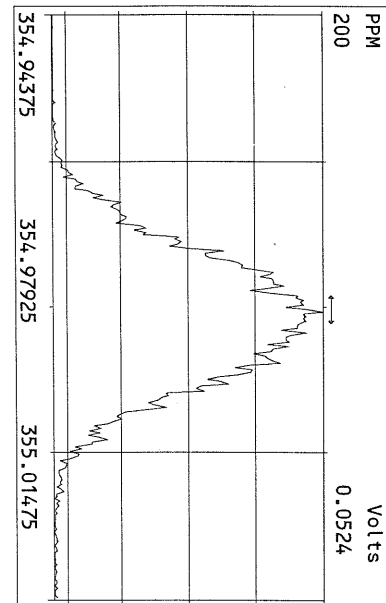
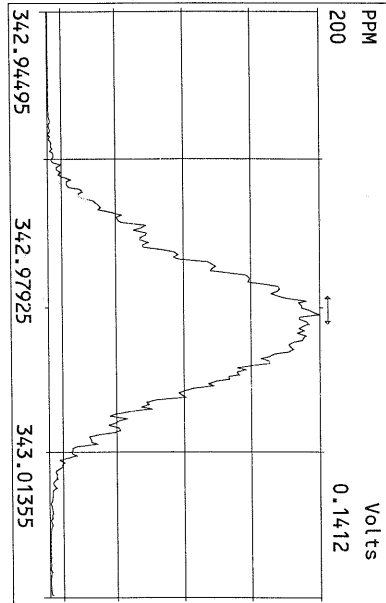
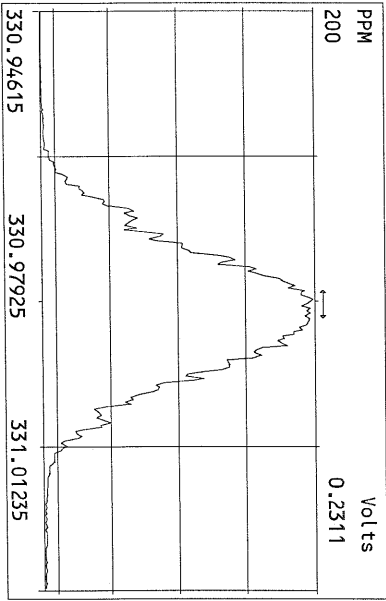
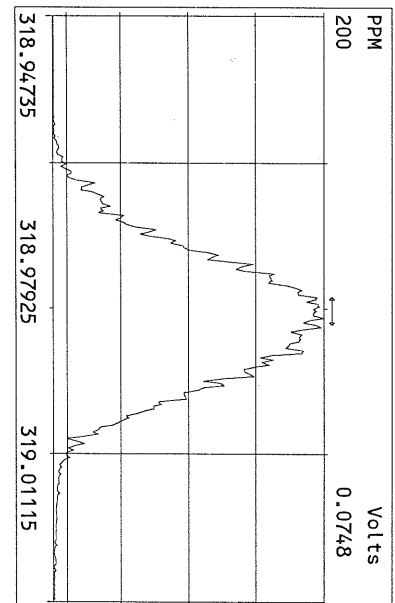
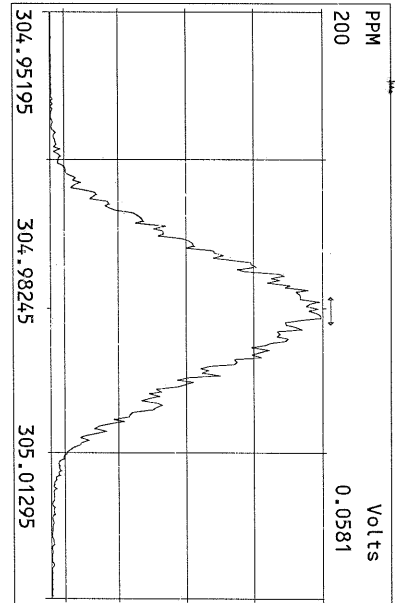
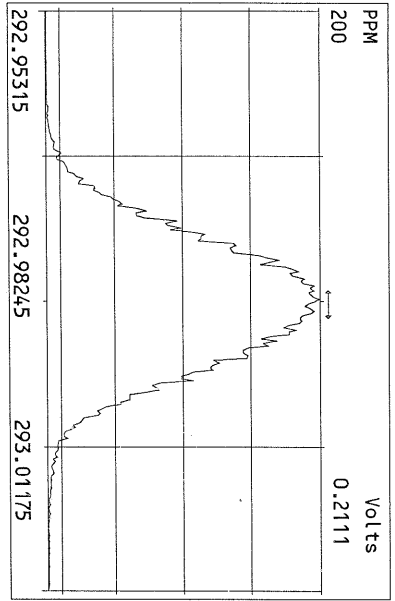
Experiment:TCDF

Data File S	FAL ID	Client ID	Acquired	ConCal	EndCal	Analyst
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07JAN16M 2	9528-003-0001-SA	SP-R-DU-2C	7-JAN-16 10:59:00	ST010716M1	ST010716M2	TC
07JAN16M 3	9486-001-0001-SA	SB-07-12-13	7-JAN-16 11:45:07	ST010716M1	ST010716M2	TC
07JAN16M 4	9505-001-0001-SA	DDSD DIGESTER CAKE 12/5-9/27	7-JAN-16 12:26:46	ST010716M1	ST010716M2	TC
07JAN16M 5	9528-001-0001-SA	SP-FA-1	7-JAN-16 13:04:02	ST010716M1	ST010716M2	TC
07JAN16M 6	9528-002-0001-SA	SP-1H/7H	7-JAN-16 13:41:18	ST010716M1	ST010716M2	TC
07JAN16M 7	9466-001-0001-SA	LRAA9338	7-JAN-16 14:18:35	ST010716M1	ST010716M2	TC
07JAN16M 8	SB010716Z1	Solvent Blank	7-JAN-16 14:55:51	ST010716M1	ST010716M2	TC
07JAN16M 9	ST010716Z2	1613 CS3 151209J	7-JAN-16 15:41:55	ST010716M1	ST010716M2	TC

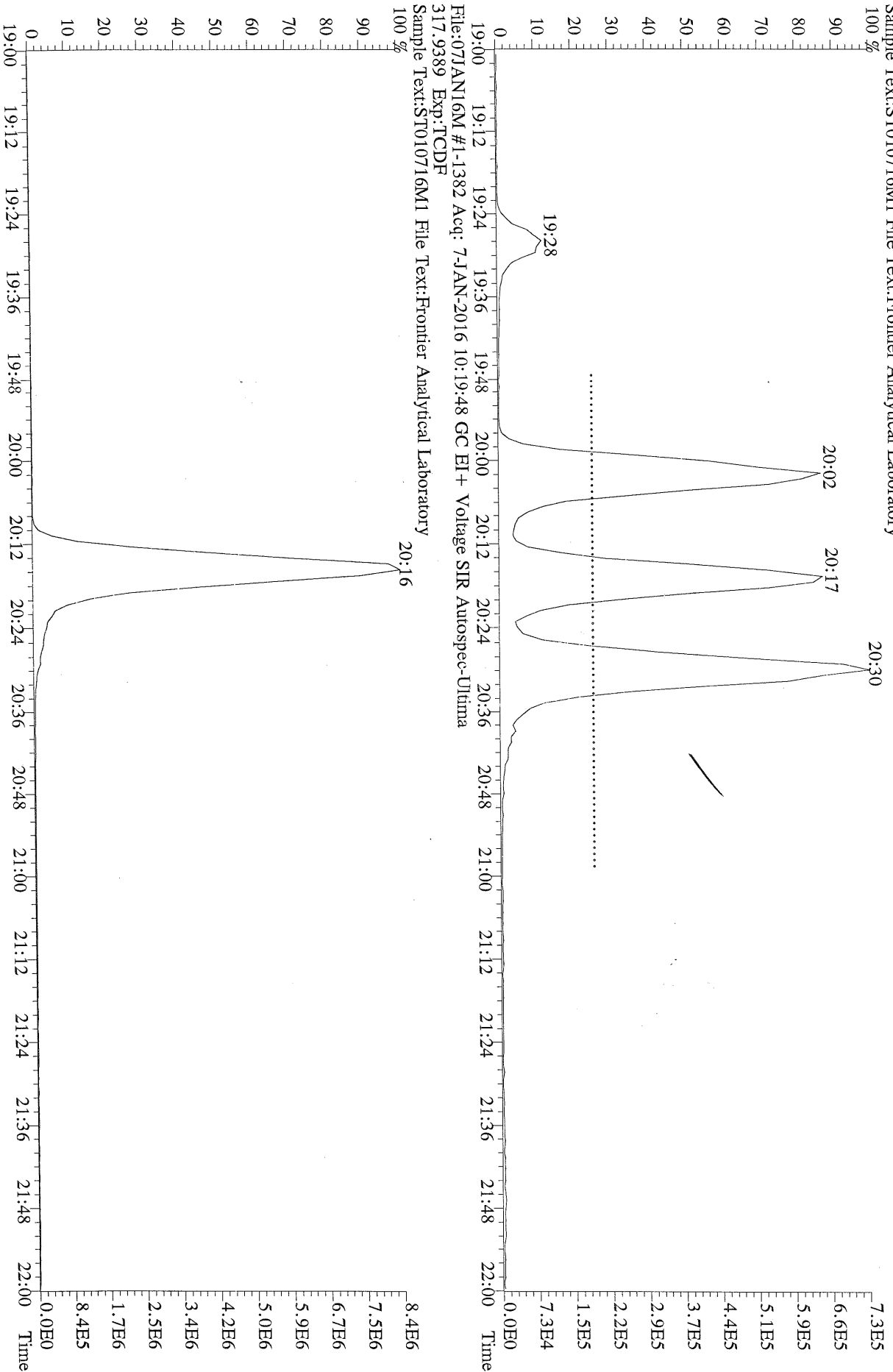
TC 1/7/16

Data Backed Up: _____

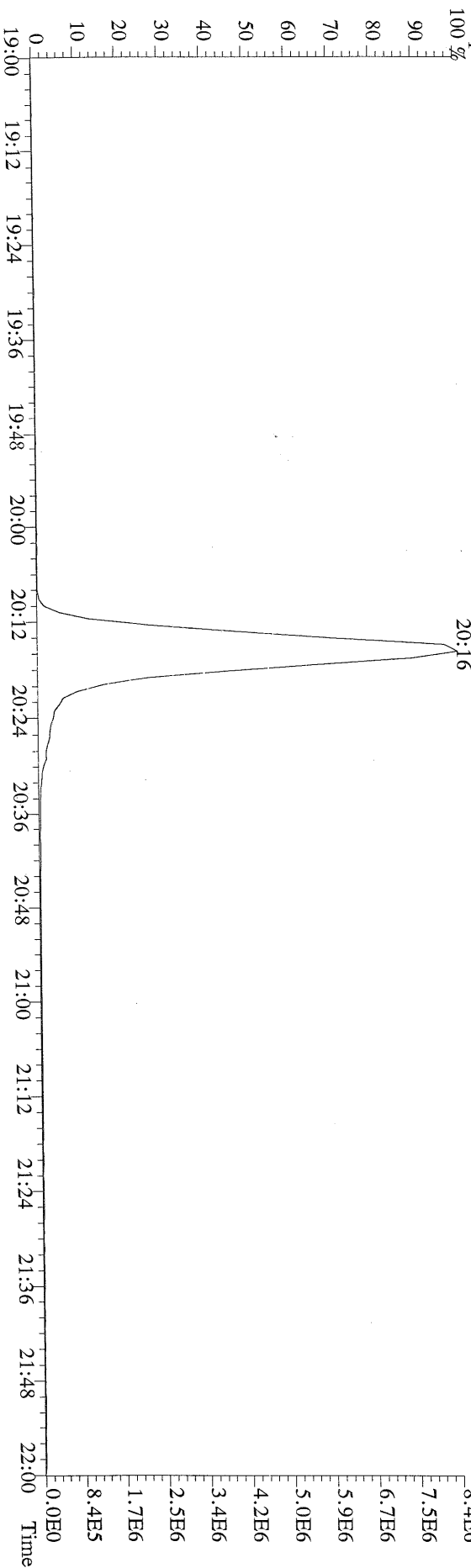
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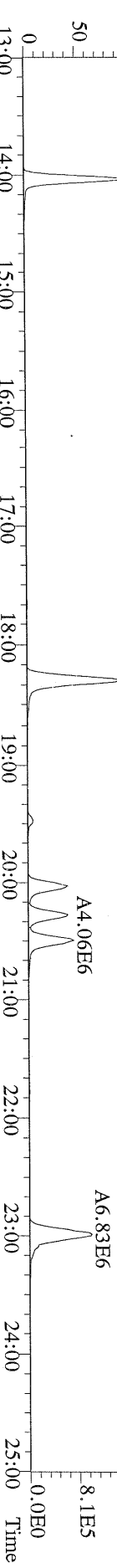
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Sample Text:ST010716M1 File Text:Frontier Analytical Laboratory
100 %



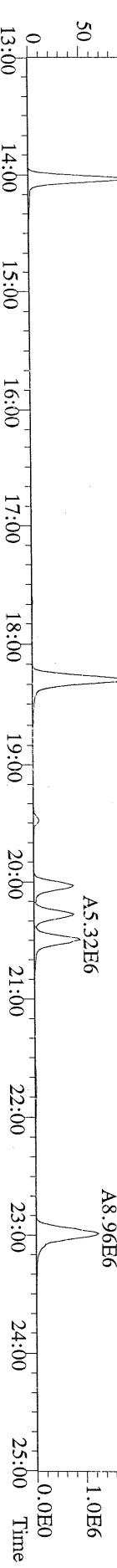
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Sample Text:ST010716M1 File Text:Frontier Analytical Laboratory
100 %



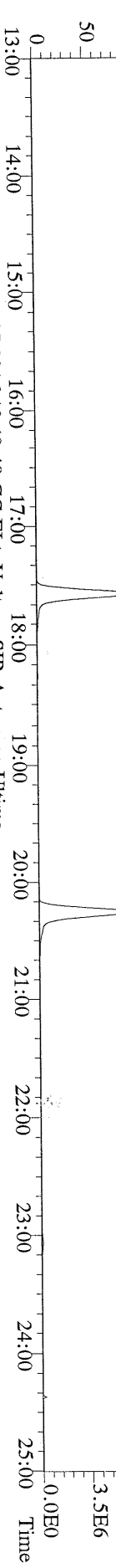
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100 %



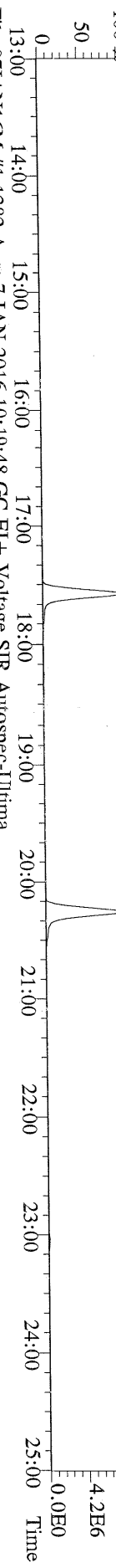
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Sample Text:ST010716M1 File Text:Frontier Analytical Laboratory
100 %



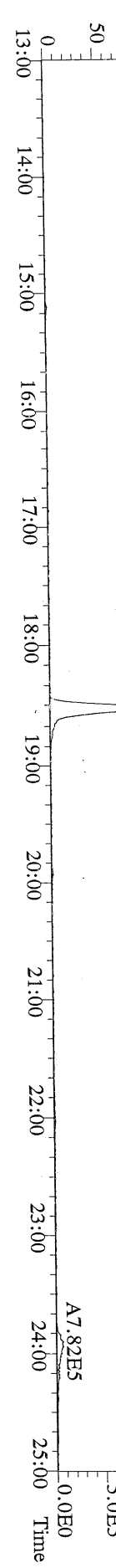
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Sample Text:ST010716M1 File Text:Frontier Analytical Laboratory
100 %

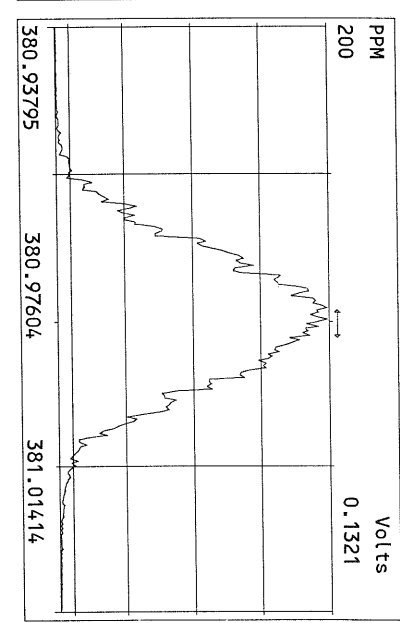
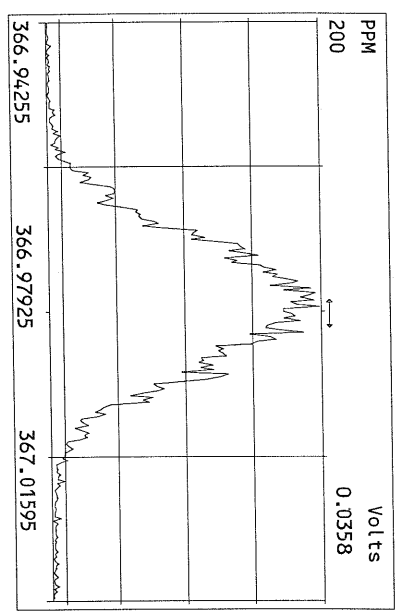
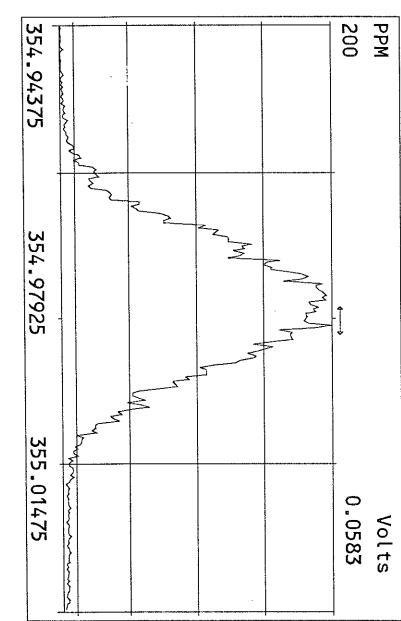
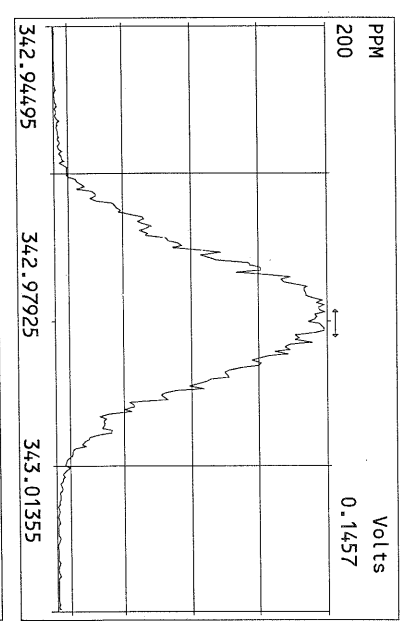
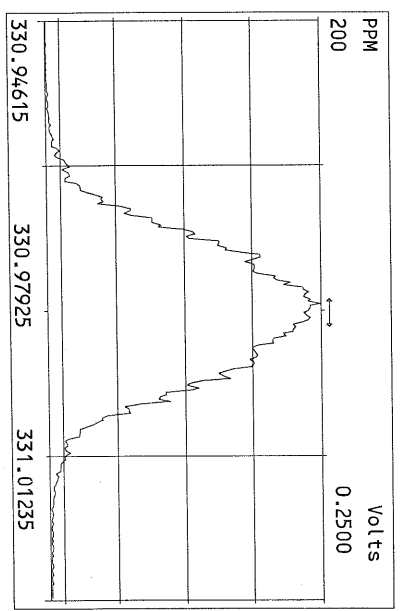
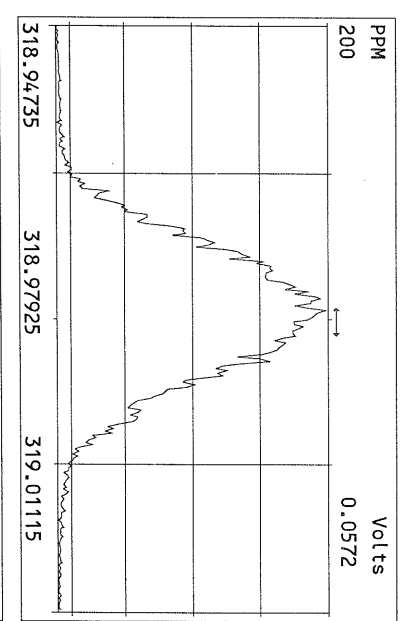
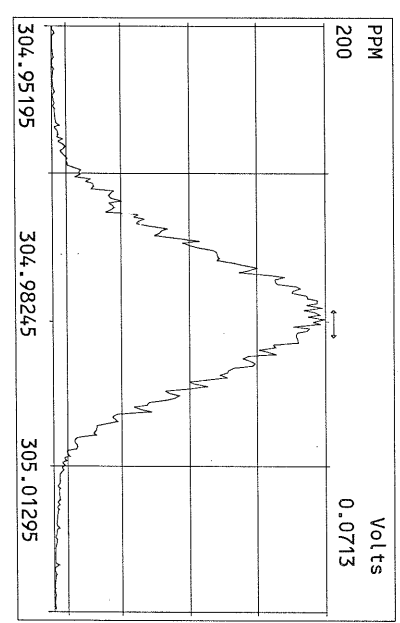
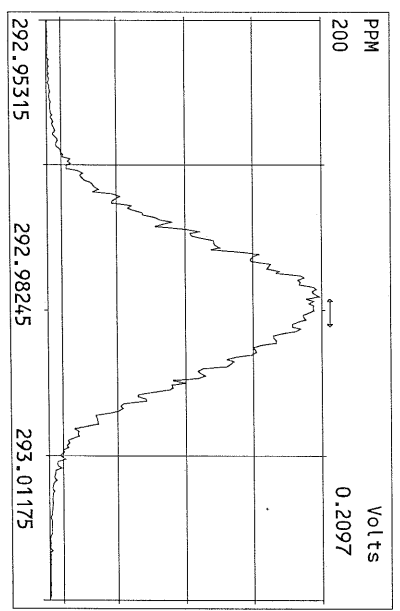


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Sample Text:ST010716M1 File Text:Frontier Analytical Laboratory



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Sample Text:ST010716M1 File Text:Frontier Analytical Laboratory
100 %





USEPA - ITD

FORM 4A
TCDF CALIBRATION VERIFICATION

Lab Name: Frontier Analytical Laboratory Episode No.:

Contract No.: SAS No.:

Initial Calibration Date: 1/4/16

Instrument ID: FAL3

GC Column ID: DB225

VER Data Filename: 07JAN16M Sam:9

Analysis Date: 7-JAN-16 Time: 15:41:55

	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	ACCEPT	CONC. FOUND	CONC. RANGE (ng/mL) (3)
NATIVE ANALYTES						
2,3,7,8-TCDF	M/M+2	0.76	0.65-0.89	y	10.4	8.40 - 12.0
LABELED COMPOUNDS						
13C-2,3,7,8-TCDF	M/M+2	0.79	0.65-0.89	y	108	71.0 - 140
CLEANUP STANDARDS						
37Cl-2,3,7,8-TCDD					11.4	8.30 - 12.1

(1) See Table 8, Method 1613, for m/z specifications.


(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613.

(3) Contract-required concentration range as specified in Table 6A, Method 1613

Analyst: Date: 1/7/16

FAL ID: ST010716Z2 Filename: 07JAN16M Sam:9 Acquired: 7-JAN-16 15:41:55 ICal: TCDFFAL3-1-4-16
Client ID: 1613 CS3 151209J ConCal: ST010716M1 EndCal: ST010716M2
Results: GC Column: DB225 Amount: 1.000

Name	Resp	RA	RT	RRF	Conc	Qual	Fac	Noise	DL	#Hom	Rec
2,3,7,8-TCDF	6.76e+06	0.76 y	20:10	0.90	10.4		2.50	-	-	1	
13C-2,3,7,8-TCDF	7.21e+07	0.79 y	20:09	1.01	108						108
13C-1,2,3,4-TCDF	6.62e+07	0.80 y	17:28	-	71.6						
37Cl-2,3,7,8-TCDD	4.81e+06		18:26	0.64	11.4						114

Analyst: 

Date: 1/7/16

Frontier Analytical Laboratory - Acquisition Log

Run Name:07JAN16M

Instrument: FAL3

GC: DB225

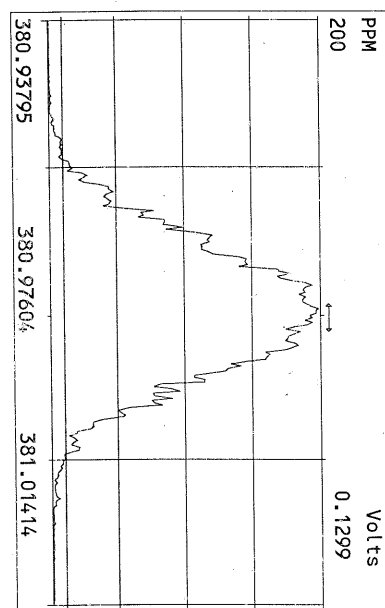
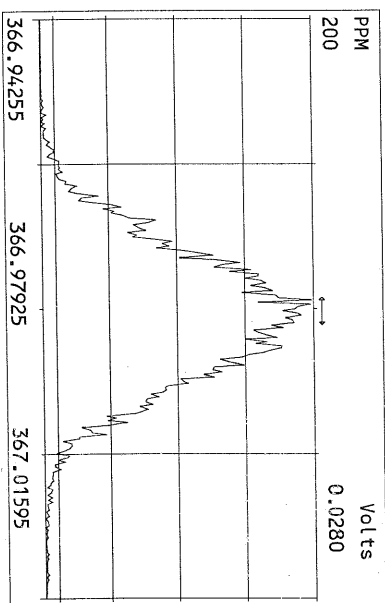
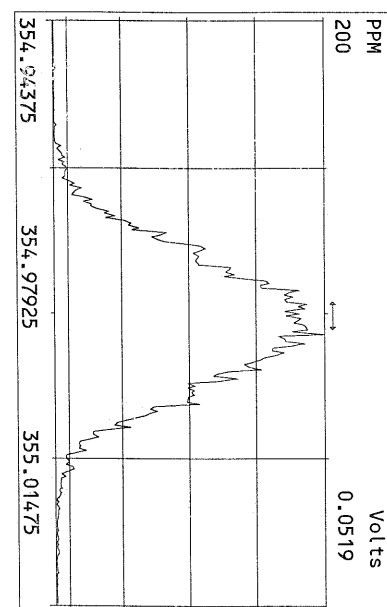
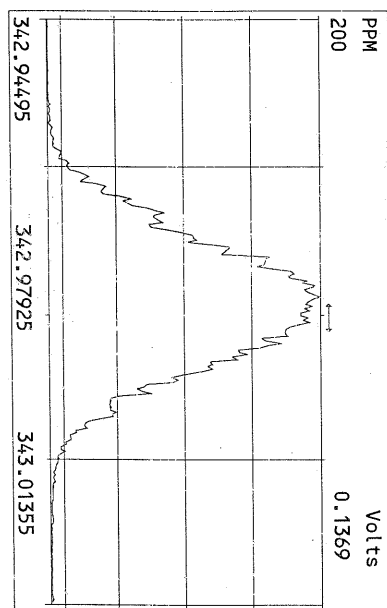
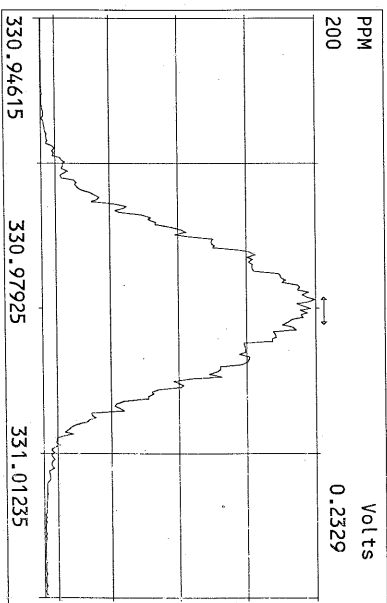
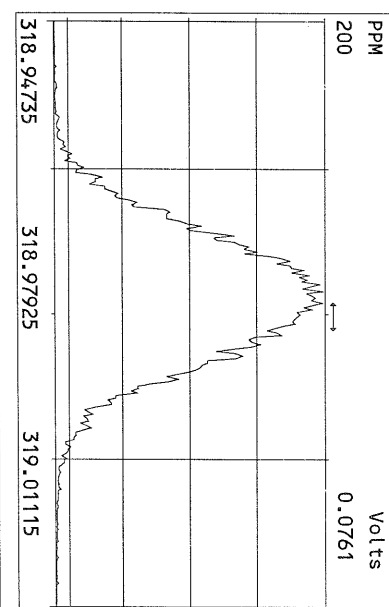
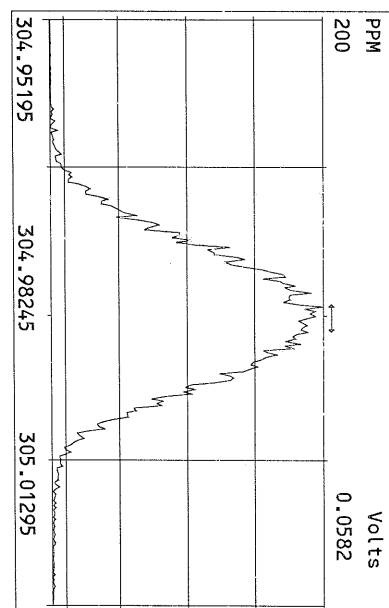
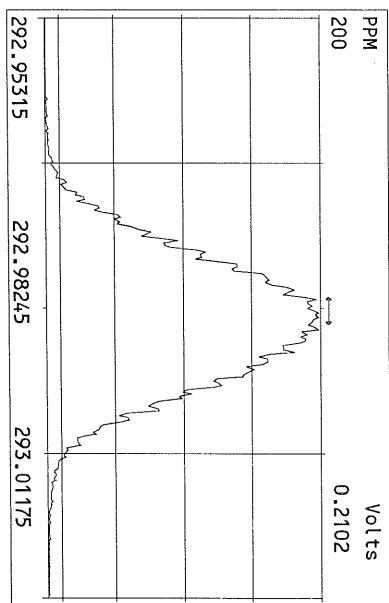
Experiment:TCDF

Data File S	FAL ID	Client ID	Acquired	ConCal	EndCal	Analyst
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07JAN16M 2	9528-003-0001-SA	SP-R-DU-2C	7-JAN-16 10:59:00	ST010716M1	ST010716M2	TC
07JAN16M 3	9486-001-0001-SA	SB-07-12-13	7-JAN-16 11:45:07	ST010716M1	ST010716M2	TC
07JAN16M 4	9505-001-0001-SA	DDSD DIGESTER CAKE 12/5-9/2 ₁	7-JAN-16 12:26:46	ST010716M1	ST010716M2	TC
07JAN16M 5	9528-001-0001-SA	SP-FA-1	7-JAN-16 13:04:02	ST010716M1	ST010716M2	TC
07JAN16M 6	9528-002-0001-SA	SP-1H/7H	7-JAN-16 13:41:18	ST010716M1	ST010716M2	TC
07JAN16M 7	9466-001-0001-SA	LRAA9338	7-JAN-16 14:18:35	ST010716M1	ST010716M2	TC
07JAN16M 8	SB010716Z1	Solvent Blank	7-JAN-16 14:55:51	ST010716M1	ST010716M2	TC
07JAN16M 9	ST010716Z2	1613 CS3 151209J	7-JAN-16 15:41:55	ST010716M1	ST010716M2	TC

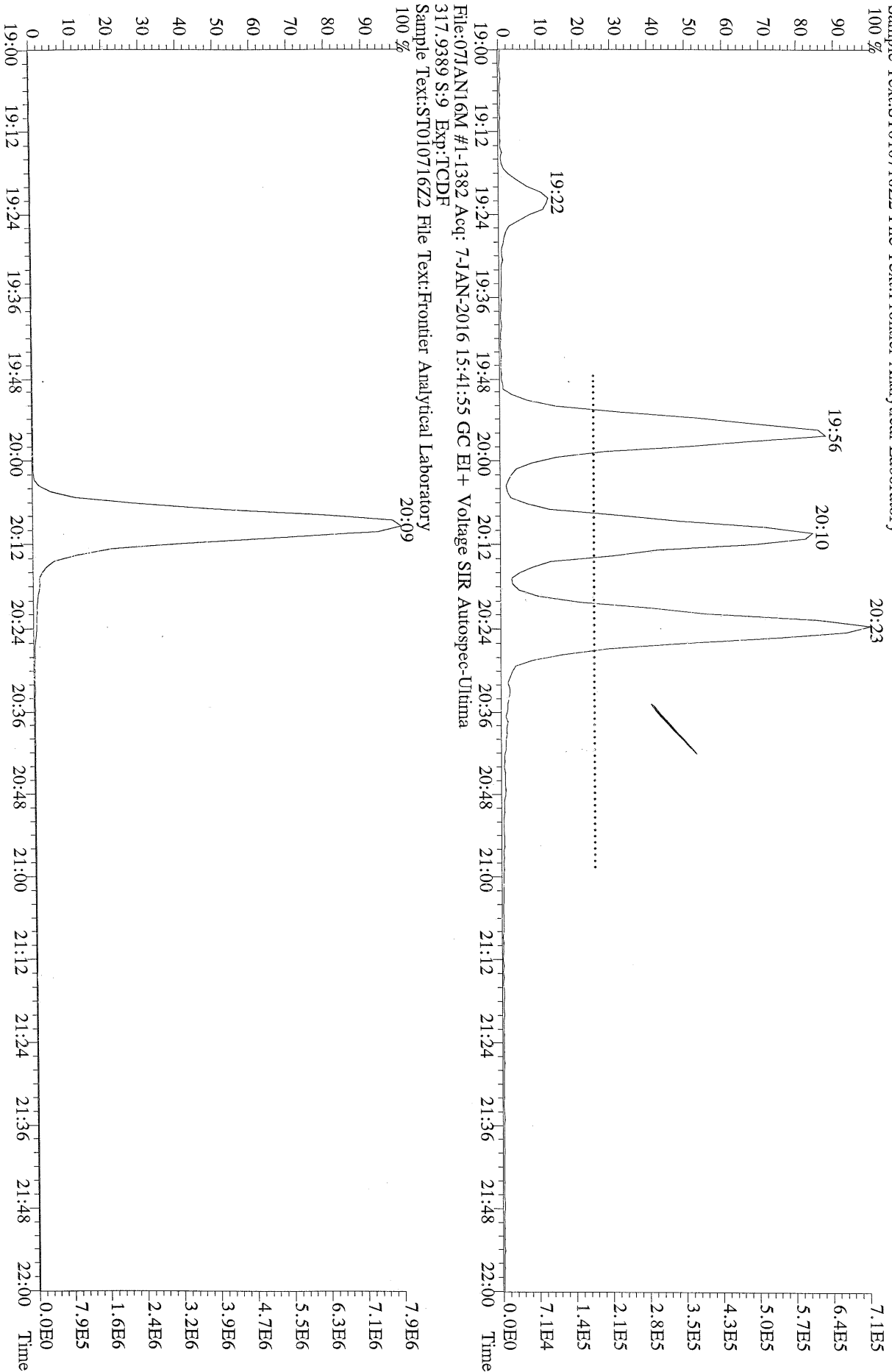
1/7/16

Data Backed Up: _____

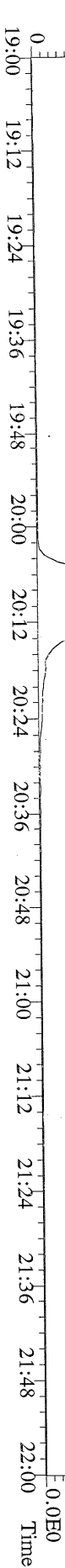
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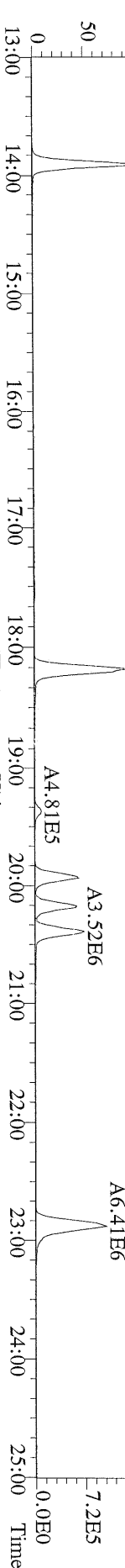
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Sample Text:ST010716Z2 File Text:Frontier Analytical Laboratory



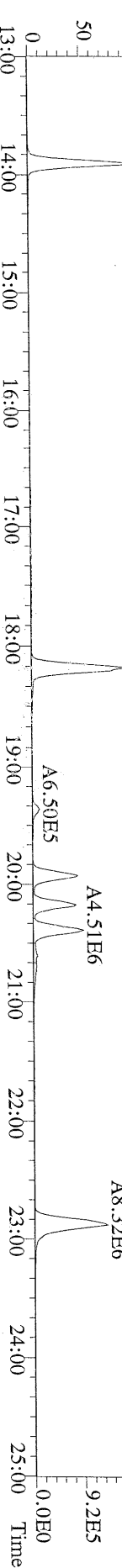
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Sample Text:ST010716Z2 File Text:Frontier Analytical Laboratory



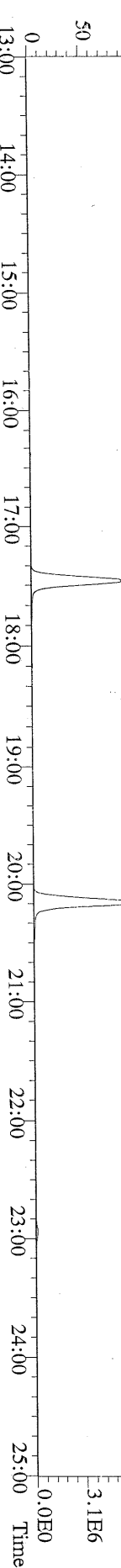
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Sample Text:ST010716Z2 File Text:Frontier Analytical Laboratory



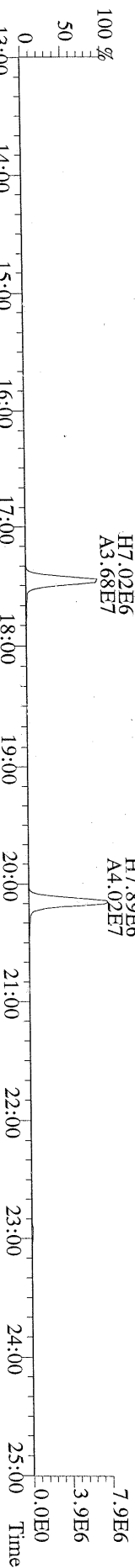
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Sample Text:ST010716Z2 File Text:Frontier Analytical Laboratory



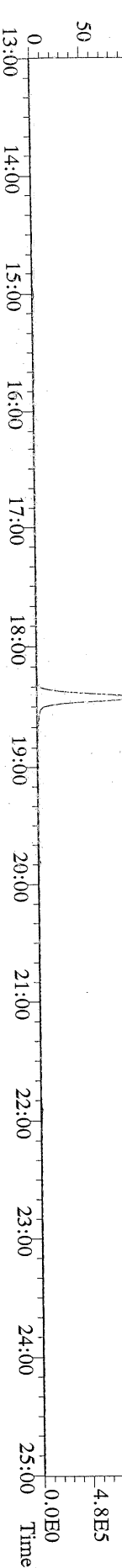
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Sample Text:ST010716Z2 File Text:Frontier Analytical Laboratory



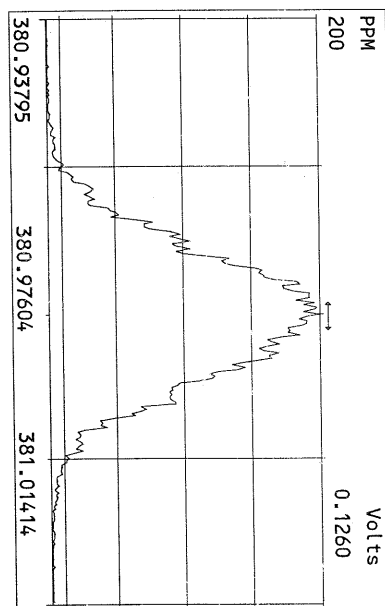
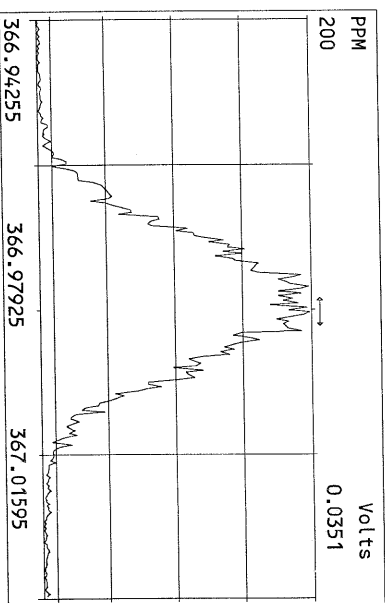
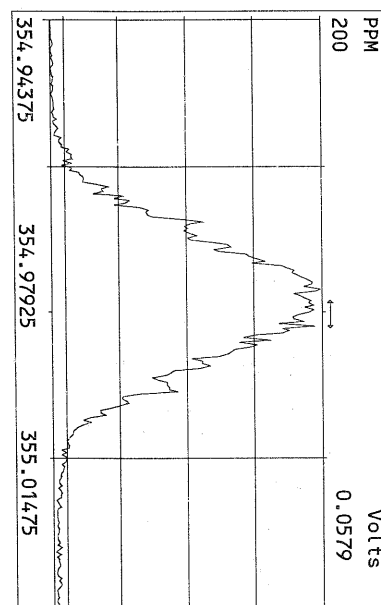
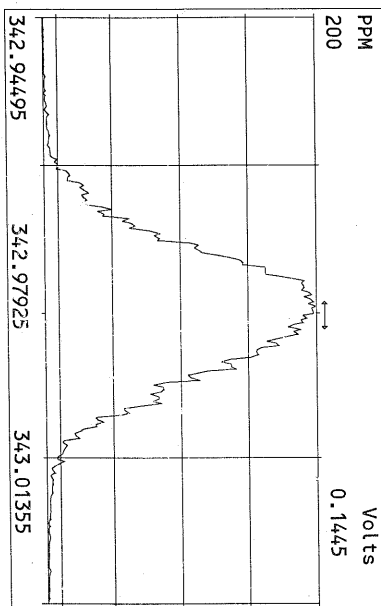
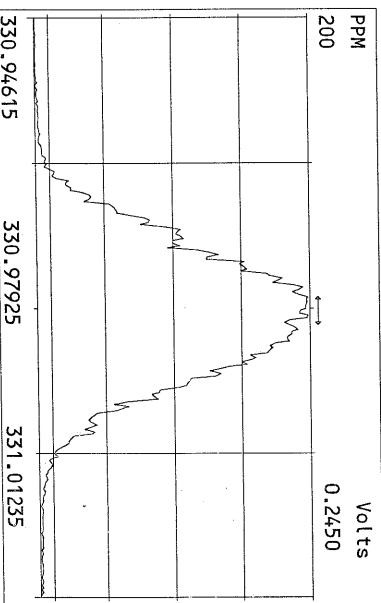
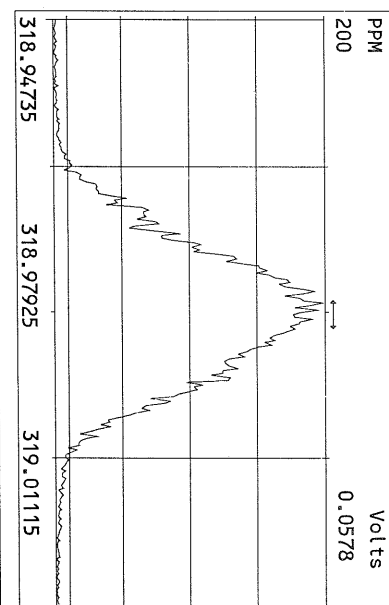
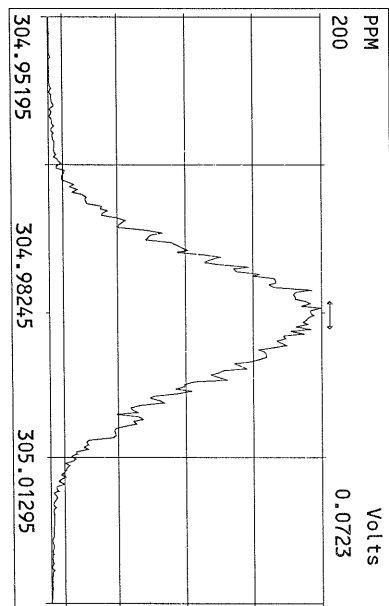
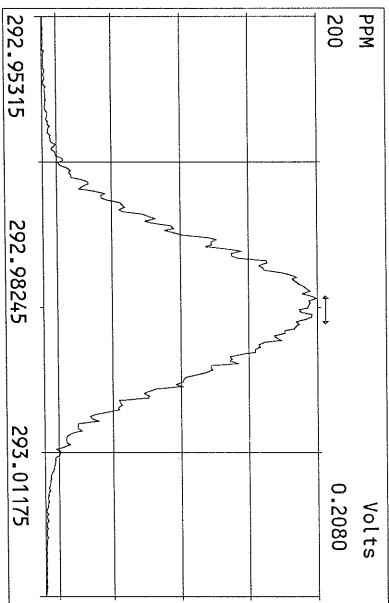
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Sample Text:ST010716Z2 File Text:Frontier Analytical Laboratory



File:07JAN16M #1-1382 Acq: 7-JAN-2016 15:41:55 GC EI+ Voltage SIR Autospec-Ultima
327.8847 S.9 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100,0,0.00%,F,F) Exp:TCDF
Sample Text:ST010716Z2 File Text:Frontier Analytical Laboratory



Peak Locate Examination: 7-JAN-2016:16:25 File:07JAN16M_RES_CHECK
 Experiment:TCDF Function:1 Reference:PFK





January 11, 2016

Mr. Michael Ridgeway
Fremont Analytical, Inc.
3600 Fremont Ave., N.
Seattle, WA 98103

Dear Mr. Ridgeway,

The following results are for Frontier Analytical Laboratory project **9487**. This corresponds to your project number **1512073**. One soil sample was received on 12/11/2015 in good condition. This sample was extracted and analyzed by EPA Method 1613 for tetra through octa chlorinated dibenzo dioxins and furans. The Toxic Equivalency (TEQ) for your sample has been calculated using the 2005 World Health Organization's (WHO's) toxic equivalency factors (TEFs). Fremont Analytical, Inc. requested a turnaround time of fifteen business days for project **9487**.

Please note that due to high levels of HpCDD, OCDD, HpCDF and OCDF, this sample required dilution and reanalysis. All values taken from the dilution reanalysis are noted with the "*" qualifier.

The following Level IV report consists of an Analytical Data section, a Sample Receipt section, a Laboratory Raw Data section, and an Instrument Raw Data section. The Analytical Data section contains our project-sample tracking log and the analytical results. The Sample Receipt section contains your original chain of custody, our sample login form and a sample photo. The Laboratory Raw Data section contains our project request sheet, a percent solids sheet, an extraction bench sheet and the cleanup bench sheet. The instrument raw data section contains three sub-sections; the sample results section, the initial calibration section and the continuing/ending calibration section. The sample results sub-section consists of the quantitation summary forms and chromatograms for all samples and QC. The initial calibration sub-section consists of the individual quantitation summary forms and chromatograms for each point of the initial calibration curve as well as an overall quantitation summary form of the initial calibration curve. The continuing/ending calibration sub-section consists of the quantitation summary forms and chromatograms for all beginning and ending calibration injections associated with the samples and QC. A portable document format (PDF) file of the Level I data package and EDD have been emailed to you. A compact disk of the Level IV data package along with the Electronic Data Deliverable (EDD) has been sent to you via overnight courier. The enclosed results are specifically for the samples referenced in this report only. These results meet all National Environmental Laboratory Accreditation Program (NELAP) requirements and shall not be reproduced except in full. Frontier Analytical Laboratory's State of Oregon NELAP certificate number is **4041** and our State of Washington certificate number is **C844**.

If you have any questions regarding project **9487**, please feel free to contact me at (916) 934-0900. Thank you for choosing Frontier Analytical Laboratory for your analytical testing needs.

Sincerely,

A handwritten signature in black ink that reads "Daniel P. Vickers".

Daniel P. Vickers
Vice President

Frontier Analytical Laboratory

Sample Tracking Log

FAL Project ID: 9487

Received on: 12/11/2015

Project Due: 01/06/2016 Storage: R2

FAL Sample ID	Dup	Client Project ID	Client Sample ID	Requested Method	Matrix	Sampling Date	Sampling Time	Hold Time Due Date
9487-001-SA	0	1512073	SB-10-12.5-13	EPA 1613 D/F	Soil	12/07/2015	02:45 pm	12/06/2016

EPA Method 1613
PCDD/F



FAL ID: 9487-001-MB
Client ID: Method Blank
Matrix: Soil
Batch No: X3543

Date Extracted: 01-05-2016
Date Received: NA
Amount: 5.00 g


ICal: PCDDFAL4-12-29-15-7PT
GC Column: DB5
Units: pg/g


Acquired: 01-07-2016
2005 WHO TEQ: 0.00
Basis: Dry Weight

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.172		-	0.0143				
1,2,3,7,8-PeCDD	ND	0.448		-	0.0256				
1,2,3,4,7,8-HxCDD	ND	0.468		-	0.0300				
1,2,3,6,7,8-HxCDD	ND	0.495		-	0.0329	Total TCDD	ND	0.172	
1,2,3,7,8,9-HxCDD	ND	0.429		-	0.0287	Total PeCDD	ND	0.448	
1,2,3,4,6,7,8-HpCDD	ND	0.614		-	0.0463	Total HxCDD	ND	0.495	
OCDD	ND	2.41		-	0.115	Total HpCDD	ND	0.614	
2,3,7,8-TCDF	ND	0.137		-	0.0115				
1,2,3,7,8-PeCDF	ND	0.322		-	0.0184				
2,3,4,7,8-PeCDF	ND	0.339		-	0.0172				
1,2,3,4,7,8-HxCDF	ND	0.340		-	0.0171				
1,2,3,6,7,8-HxCDF	ND	0.369		-	0.0181				
2,3,4,6,7,8-HxCDF	ND	0.429		-	0.0198				
1,2,3,7,8,9-HxCDF	ND	0.457		-	0.0240	Total TCDF	ND	0.137	
1,2,3,4,6,7,8-HpCDF	ND	0.491		-	0.0263	Total PeCDF	ND	0.339	
1,2,3,4,7,8,9-HpCDF	ND	0.595		-	0.0338	Total HxCDF	ND	0.457	
OCDF	ND	1.52		-	0.0565	Total HpCDF	ND	0.595	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	94.0	25.0 - 164	
13C-1,2,3,7,8-PeCDD	88.4	25.0 - 181	
13C-1,2,3,4,7,8-HxCDD	92.3	32.0 - 141	
13C-1,2,3,6,7,8-HxCDD	91.4	28.0 - 130	
13C-1,2,3,4,6,7,8-HpCDD	92.3	23.0 - 140	
13C-OCDD	83.9	17.0 - 157	
13C-2,3,7,8-TCDF	92.7	24.0 - 169	
13C-1,2,3,7,8-PeCDF	86.2	24.0 - 185	
13C-2,3,4,7,8-PeCDF	88.9	21.0 - 178	
13C-1,2,3,4,7,8-HxCDF	95.8	26.0 - 152	
13C-1,2,3,6,7,8-HxCDF	95.1	26.0 - 123	
13C-2,3,4,6,7,8-HxCDF	90.9	28.0 - 136	
13C-1,2,3,7,8,9-HxCDF	89.9	29.0 - 147	
13C-1,2,3,4,6,7,8-HpCDF	89.2	28.0 - 143	
13C-1,2,3,4,7,8,9-HpCDF	98.1	26.0 - 138	
13C-OCDF	83.7	17.0 - 157	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	90.9	35.0 - 197	

- A Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
- B Analyte is present in Method Blank
- C Chemical Interference
- D Presence of Diphenyl Ethers
- DNQ Analyte concentration is below calibration range
- E Analyte concentration is above calibration range
- F Analyte confirmation on secondary column
- J Analyte concentration is below calibration range
- M Maximum possible concentration
- ND Analyte Not Detected at Detection Limit Level
- NP Not Provided
- P Pre-filtered through a Whatman 0.7um GF/F filter
- S Sample acceptance criteria not met
- X Matrix interferences
- * Result taken from dilution or reinjection

Analyst: 
Date: 1/8/2016

Reviewed By: 
Date: 1/8/2016

EPA Method 1613
PCDD/F



FAL ID: 9487-001-OPR
Client ID: OPR
Matrix: Soil
Batch No: X3543


Date Extracted: 01-05-2016
Date Received: NA
Amount: 5.00 g


ICal: PCDDFAL4-12-29-15-7PT
GC Column: DB5
Units: ng/ml

Acquired: 01-07-2016
2005 WHO TEQ: NA

Compound	Conc	QC Limits	Qual
2,3,7,8-TCDD	10.1	6.70 - 15.8	
1,2,3,7,8-PeCDD	52.0	35.0 - 71.0	
1,2,3,4,7,8-HxCDD	51.0	35.0 - 82.0	
1,2,3,6,7,8-HxCDD	52.9	38.0 - 67.0	
1,2,3,7,8,9-HxCDD	49.2	32.0 - 81.0	
1,2,3,4,6,7,8-HpCDD	47.7	35.0 - 70.0	
OCDD	101	78.0 - 144	
2,3,7,8-TCDF	9.54	7.50 - 15.8	
1,2,3,7,8-PeCDF	49.6	40.0 - 67.0	
2,3,4,7,8-PeCDF	50.5	34.0 - 80.0	
1,2,3,4,7,8-HxCDF	49.1	36.0 - 67.0	
1,2,3,6,7,8-HxCDF	49.4	42.0 - 65.0	
2,3,4,6,7,8-HxCDF	50.0	35.0 - 78.0	
1,2,3,7,8,9-HxCDF	50.2	39.0 - 65.0	
1,2,3,4,6,7,8-HpCDF	50.7	41.0 - 61.0	
1,2,3,4,7,8,9-HpCDF	51.6	39.0 - 69.0	
OCDF	102	63.0 - 170	
Internal Standards			
13C-2,3,7,8-TCDD	90.7	20.0 - 175	
13C-1,2,3,7,8-PeCDD	85.7	21.0 - 227	
13C-1,2,3,4,7,8-HxCDD	99.3	21.0 - 193	
13C-1,2,3,6,7,8-HxCDD	99.1	25.0 - 163	
13C-1,2,3,4,6,7,8-HpCDD	96.6	26.0 - 166	
13C-OCDD	85.4	13.0 - 198	
13C-2,3,7,8-TCDF	93.9	22.0 - 152	
13C-1,2,3,7,8-PeCDF	88.1	21.0 - 192	
13C-2,3,4,7,8-PeCDF	90.0	13.0 - 328	
13C-1,2,3,4,7,8-HxCDF	102	19.0 - 202	
13C-1,2,3,6,7,8-HxCDF	102	21.0 - 159	
13C-2,3,4,6,7,8-HxCDF	97.8	22.0 - 176	
13C-1,2,3,7,8,9-HxCDF	92.9	17.0 - 205	
13C-1,2,3,4,6,7,8-HpCDF	93.9	21.0 - 158	
13C-1,2,3,4,7,8,9-HpCDF	95.7	20.0 - 186	
13C-OCDF	85.0	13.0 - 198	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	89.9	31.0 - 191	

- A Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
- B Analyte is present in Method Blank
- C Chemical Interference
- D Presence of Diphenyl Ethers
- DNQ Analyte concentration is below calibration range
- E Analyte concentration is above calibration range
- F Analyte confirmation on secondary column
- J Analyte concentration is below calibration range
- M Maximum possible concentration
- ND Analyte Not Detected at Detection Limit Level
- NP Not Provided
- P Pre-filtered through a Whatman 0.7um GF/F filter
- S Sample acceptance criteria not met
- X Matrix interferences
- * Result taken from dilution or reinjection

Analyst: 
Date: 1/8/2016

Reviewed By: 
Date: 1/8/2016

EPA Method 1613
PCDD/F



FAL ID: 9487-001-SA
Client ID: SB-10-12.5-13
Matrix: Soil
Batch No: X3543

Date Extracted: 01-05-2016
Date Received: 12-11-2015
Amount: 5.11 g
% Solids: 84.90


ICal: PCDDFAL4-12-29-15-7PT
GC Column: DB5
Units: pg/g


Acquired: 01-08-2016
2005 WHO TEQ: 3130
Basis: Dry Weight

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	0.392	-	J	0.392	0.0143				
1,2,3,7,8-PeCDD	9.32	-		9.32	0.0256				
1,2,3,4,7,8-HxCDD	87.2	-		8.72	0.0300				
1,2,3,6,7,8-HxCDD	5890	-		589	0.0329	Total TCDD	12.4	-	
1,2,3,7,8,9-HxCDD	321	-		32.1	0.0287	Total PeCDD	68.6	-	
1,2,3,4,6,7,8-HpCDD	124000	-	*	1240	0.0463	Total HxCDD	13200	-	
OCDD	744000	-	*	223	0.115	Total HpCDD	183000	-	*
2,3,7,8-TCDF	1.59	-		0.159	0.0115				
1,2,3,7,8-PeCDF	11.1	-		0.333	0.0184				
2,3,4,7,8-PeCDF	20.5	-		6.15	0.0172				
1,2,3,4,7,8-HxCDF	750	-		75.0	0.0171				
1,2,3,6,7,8-HxCDF	343	-		34.3	0.0181				
2,3,4,6,7,8-HxCDF	808	-		80.8	0.0198				
1,2,3,7,8,9-HxCDF	104	-		10.4	0.0240	Total TCDF	256	-	D,M
1,2,3,4,6,7,8-HpCDF	68600	-	*	686	0.0263	Total PeCDF	881	-	D,M
1,2,3,4,7,8,9-HpCDF	3450	-	*	34.5	0.0338	Total HxCDF	60700	-	D,M
OCDF	329000	-	*	98.7	0.0565	Total HpCDF	374000	-	*

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	97.7	25.0 - 164	
13C-1,2,3,7,8-PeCDD	98.1	25.0 - 181	
13C-1,2,3,4,7,8-HxCDD	95.3	32.0 - 141	
13C-1,2,3,6,7,8-HxCDD	94.5	28.0 - 130	
13C-1,2,3,4,6,7,8-HpCDD	111	23.0 - 140	*
13C-OCDD	134	17.0 - 157	*
13C-2,3,7,8-TCDF	98.3	24.0 - 169	
13C-1,2,3,7,8-PeCDF	92.8	24.0 - 185	
13C-2,3,4,7,8-PeCDF	102	21.0 - 178	
13C-1,2,3,4,7,8-HxCDF	88.7	26.0 - 152	
13C-1,2,3,6,7,8-HxCDF	87.6	26.0 - 123	
13C-2,3,4,6,7,8-HxCDF	84.0	28.0 - 136	
13C-1,2,3,7,8,9-HxCDF	87.4	29.0 - 147	
13C-1,2,3,4,6,7,8-HpCDF	102	28.0 - 143	*
13C-1,2,3,4,7,8,9-HpCDF	100	26.0 - 138	*
13C-OCDF	122	17.0 - 157	*
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	87.2	35.0 - 197	

- A Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
- B Analyte is present in Method Blank
- C Chemical Interference
- D Presence of Diphenyl Ethers
- DNQ Analyte concentration is below calibration range
- E Analyte concentration is above calibration range
- F Analyte confirmation on secondary column
- J Analyte concentration is below calibration range
- M Maximum possible concentration
- ND Analyte Not Detected at Detection Limit Level
- NP Not Provided
- P Pre-filtered through a Whatman 0.7um GF/F filter
- S Sample acceptance criteria not met
- X Matrix interferences
- * Result taken from dilution or reinjection

Analyst: 
Date: 1/8/2016

Reviewed By: 
Date: 1/8/2016



CHAIN OF CUSTODY RECORD

Omega COCID 194 PAGE: 1 OF: 1

ADDRESS
 Fremont Analytical, Inc.
 3600 Fremont Ave. N.
 Seattle, WA 98103
 TEL: 206-352-3790
 FAX: 206-352-7178
 Website: www.fremontanalytical.com

9487
 OOC

SUB CONTRACTOR: Frontier Analytical La COMPANY: Frontier Analytical Laboratory		SPECIAL INSTRUCTIONS / COMMENTS:	
ADDRESS: 5172 Hillsdale Circle		Please email results to Michael Ridgeway and Chelsea Ward - mridgeway@fremontanalytical.com; cward@fremontanalytical.com	
CITY, STATE, ZIP: El Dorado Hills, CA 95762			
PHONE: (916) 934-0900 FAX: (916) 934-0999 EMAIL:			
ACCOUNT #:			

ITEM #	SAMPLE ID	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	DATE COLLECTED	NUMBER OF CONTAINERS	COMMENTS: Methanol Preserved Weights HOT Sample Notation, Additional Sample Description.
1	1512073-017B	SB-10-12.5-13	AMBER JAR 4OZ	Soil	12/7/2015 2:45:00 PM	1	
	O-DIOXIN (SW8290) EPA 1613 <i>SS 12/9/15</i>						

Mike to Kathy - L4 Data package. Use 1512073 for project name & Client Sample ID. EIM or Equis EDD.

Relinquished By: <i>[Signature]</i>	Date: <i>12/9/15</i>	Time: <i>16:48</i>	Received By: <i>UPS</i>	Date: _____	Time: _____	REPORT TRANSMITTAL DESIRED:	
Relinquished By: <i>UPS</i>	Date: _____	Time: _____	Received By: <i>K Hillen</i>	Date: <i>12-11-15</i>	Time: <i>10:15AM</i>	<input type="checkbox"/> HARD COPY (extra cost)	<input type="checkbox"/> FAX <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> ONLINE
Relinquished By: _____	Date: _____	Time: _____	Received By: _____	Date: _____	Time: _____	FOR LAB USE ONLY	
TAT: Standard <input checked="" type="checkbox"/> RUSH Next BD <input type="checkbox"/> 2nd BD <input type="checkbox"/> 3rd BD <input type="checkbox"/>						Temp of samples _____ °C Attempt to Cool? _____	
Note: RUSH requests will incur surcharges!						Comments: _____ 000006 of 000300	

Frontier Analytical Laboratory

Sample Login Form

FAL Project ID: **9487**

Client:	Fremont Analytical
Client Project ID:	1512073
Date Received:	12/11/2015
Time Received:	10:15 am
Received By:	KH
Logged In By:	KZ
# of Samples Received:	1
Duplicates:	0
Storage Location:	R2

Method of Delivery:	UPS
Tracking Number:	1ZX6192X0324639747
Shipping Container Received Intact	Yes
Custody seals(s) present?	Yes
Custody seals(s) intact?	Yes
Sample Arrival Temperature (C)	0
Cooling Method	Blue Ice
Chain Of Custody Present?	Yes
Return Shipping Container To Client	Yes
Test aqueous sample for residual Chlorine	No
Sodium Thiosulfate Added	No
Adequate Sample Volume	Yes
Appropriate Sample Container	Yes
pH Range of Aqueous Sample	N/A
Anomalies or additional comments:	

9487
00

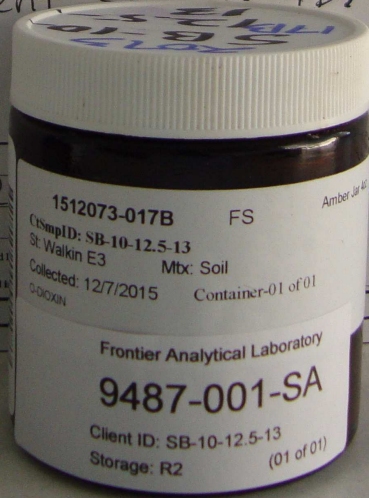
3600 Fremont Ave. N.
Seattle, WA 98103
TEL: 206-352-3790
FAX: 206-352-7178
Website: www.frontieranalytical.com

SUB CONTRACTOR: Frontier Analytical La		COMPANY: Frontier Analytical Laboratory		SPECIAL INSTRUCTIONS / COMMENTS: Please email results to Michael Ridgeway and Chelsea Ward - mridgeway@frontieranalytical.com; cward@frontieranalytical.com			
ADDRESS: 5172 Hillsdale Circle							
CITY, STATE, ZIP: El Dorado Hills, CA 95762							
PHONE: (916) 934-0900	FAX: (916) 934-0999	EMAIL:					
ACCOUNT #:							

ITEM #	SAMPLE ID	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	DATE COLLECTED	NUMBER OF CONTAINERS	COMMENTS: Methanol Preserved Weights HOT Sample Notation, Additional Sample Description.
1	1512073-017B O-DIOXIN (SW8299)	SB-10-12.5-13 EPA 1613	AMBER JAR 4OZ	Soil	12/7/2015 2:45:00 PM	1	

Mike to Kathy - L4 Data package. use 1512073 for project name. & client sample ID: EIM or Equis EDD

Relinquished By: <i>[Signature]</i>	Date: 12/7/15	Time: 16:48	Received By: UPS
Relinquished By: UPS	Date:	Time:	Received By: K Hillen
TAT: Standard <input checked="" type="checkbox"/>		RUSH	Next BD <input type="checkbox"/> 2nd <input type="checkbox"/>



REPORT TRANSMITTAL DESIRED:
(extra cost) <input type="checkbox"/> FAX <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> ONLINE
FOR LAB USE ONLY
Attempt to Cool? _____

2015/12/11

Frontier Analytical Laboratory
PROJECT REQUEST SHEET

Project #: 9487 Sample #: 1 Client Manager: BS
Client: Fremont Analytical Hold Time: 12/06/2016
Matrix: Soil Extraction Batch: 3543 Due Date: 01/06/2016
Method: EPA 1613 D/F Storage: R2
SOP: SOPs: EP2A Rev.12 IP2A Rev.13
¹⁴
~~13~~
DN 12-14-15

COMMENTS/INSTRUCTIONS:

Results: 9487
9487-DIL
9487 TCDF

Instrument:
DB5 FAL-4
DB225 FAL-3
DB1 _____
Other _____

Extract/s located in box: "Spring - Springs"

Standards: 9486

L4 Data package + EIM or Equis
EDD

Frontier Analytical Laboratory
EXTRACTION SHEET

Project #: 9487 Extraction Date: 2016-01-05 Extraction Chemist: DV

Method/Analysis: EPA 1613 D/F

Procedure: SOX/SDS Solvent: Toluene

9486

Sample ID	Wet wt. (g/L)	Dry wt. (g/L)	IS	NS	CSS
			Amt: 10.0uL ID: 151209A Vial: 1 Chemist/Witness/Date	Amt: 10.0uL ID: 151209B Vial: 1 Chemist/Witness/Date	Amt: 10.0uL ID: 151209C Vial: 1 Chemist/Witness/Date
3543-001-0001-MB					
3543-001-0001-OPR					
9487-001-0001-SA	6.02g	5.11g	DN 1.5.16	N/A	DN KH 1.6.16

AX-21 Charcoal Cleaned	130410	Acetone	156453	Acid Alumina	A0325890	Hexane	156309
Methanol	154307	Methylene Chloride (DCM)	156647	Silica Gel	TA1975634	Sodium Hydroxide 1N	151965
Sodium Sulfate	XF27A	Sulfuric Acid	153943	Tetradecane	147332	Toluene	55282
Water	55152	C-18 Empore Discs	320819D	Cyclohexane	54303		

Comments:

Frontier Analytical Laboratory CLEANUP SHEET

Project #: 9487

Method/Analysis: EPA 1613 D/F

Splits: 0 Split Date: N/A Final Volume: 20.0uL

9486

Sample ID	Cleanup 1	Cleanup 2	Cleanup 3	RS
	Chemist/Date	Chemist/Date	Chemist/Date	Chemist/Witness/Date
	M56-AA	CC	N/A	Amt: 10.0uL ID: 151209D Vial: 1
3543-001-0001-MB			N/A	
3543-001-0001-OPR			N/A	
9487-001-0001-SA	DN 1-6-16	DN 1-6-16	N/A	DN KP 1-6-16

AX-21 Charcoal Cleaned	130410	Acetone	156453	Acid Alumina	A0325890	Hexane	156309
Methanol	154307	Methylene Chloride (DCM)	156647	Silica Gel	TA1975634	Sodium Hydroxide 1N	151965
Sodium Sulfate	XF27A	Sulfuric Acid	153943	Tetradecane	147332	Toluene	55282
Water	55152	C-18 Empore Discs	320819D	Cyclohexane	54303		

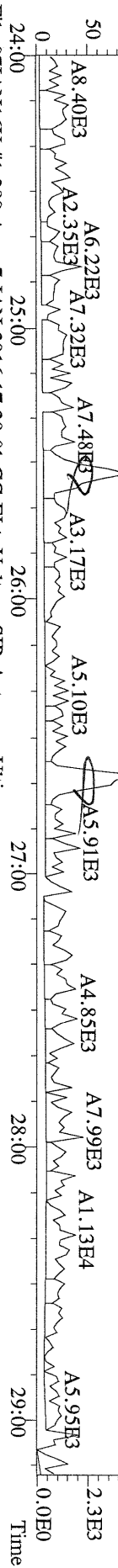
Comments:

FAL ID: 3543-001-0001-MB Filename: 07JAN16Y Sam:3 Acquired: 7-JAN-16 17:29:01 ICal: PCDDFAL4-12-29-15-7PT
 Client ID: Method Blank ConCal: ST010716Y1 EndCal: ST010716Y2
 Results: 9514 GC Column: DB5 Amount: 5.000 NATO 1989 Tox: 0.00 WHO 1998 Tox: 0.00 WHO 2005 Tox: 0.00

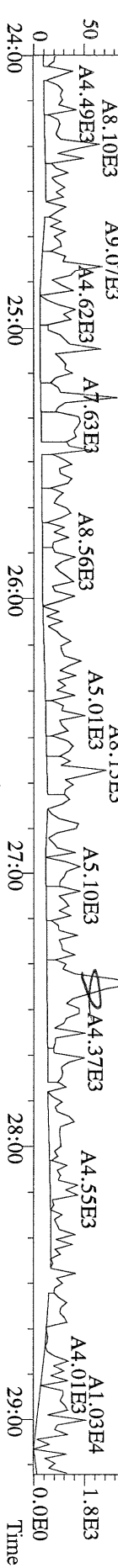
Name	Resp	RA	RT	RRF	Conc	Qual	Fac Noise-1	Noise-2	DL	#Hom		
2,3,7,8-TCDD	*	n	NotFnd	1.08	*		2.50	578	652	0.172		
1,2,3,7,8-PeCDD	*	n	NotFnd	0.90	*		2.50	841	756	0.448		
1,2,3,4,7,8-HxCDD	*	n	NotFnd	0.98	*		2.50	721	493	0.468		
1,2,3,6,7,8-HxCDD	*	n	NotFnd	1.00	*		2.50	721	493	0.495		
1,2,3,7,8,9-HxCDD	*	n	NotFnd	1.11	*		2.50	721	493	0.429		
1,2,3,4,6,7,8-HpCDD	*	n	NotFnd	1.09	*		2.50	826	745	0.614		
OCDD	*	n	NotFnd	1.04	*		2.50	1790	1830	2.41		
2,3,7,8-TCDF	*	n	NotFnd	1.05	*		2.50	533	710	0.137		
1,2,3,7,8-PeCDF	*	n	NotFnd	0.98	*		2.50	945	1090	0.322		
2,3,4,7,8-PeCDF	*	n	NotFnd	1.01	*		2.50	945	1090	0.339		
1,2,3,4,7,8-HxCDF	*	n	NotFnd	1.23	*		2.50	1110	689	0.340		
1,2,3,6,7,8-HxCDF	*	n	NotFnd	1.17	*		2.50	1110	689	0.369		
2,3,4,6,7,8-HxCDF	*	n	NotFnd	1.12	*		2.50	1110	689	0.429		
1,2,3,7,8,9-HxCDF	*	n	NotFnd	1.15	*		2.50	1110	689	0.457		
1,2,3,4,6,7,8-HpCDF	*	n	NotFnd	1.36	*		2.50	1010	981	0.491		
1,2,3,4,7,8,9-HpCDF	*	n	NotFnd	1.23	*		2.50	1010	981	0.595		
OCDF	*	n	NotFnd	1.13	*		2.50	1390	1790	1.52		
Rec												
13C-2,3,7,8-TCDD	2.92e+07	0.79	y	27:23	1.07	376				94.0		
13C-1,2,3,7,8-PeCDD	1.99e+07	1.59	y	33:13	0.78	354				88.4		
13C-1,2,3,4,7,8-HxCDD	1.61e+07	1.31	y	38:32	0.87	369				92.3		
13C-1,2,3,6,7,8-HxCDD	1.54e+07	1.31	y	38:43	0.84	366				91.4		
13C-1,2,3,4,6,7,8-HpCDD	1.59e+07	1.07	y	44:07	0.85	369				92.3		
13C-OCDD	2.35e+07	0.92	y	49:38	0.70	672				83.9		
13C-2,3,7,8-TCDF	3.85e+07	0.81	y	26:38	1.03	371				92.7		
13C-1,2,3,7,8-PeCDF	3.09e+07	1.64	y	31:29	0.89	345				86.2		
13C-2,3,4,7,8-PeCDF	2.94e+07	1.63	y	32:49	0.82	356				88.9		
13C-1,2,3,4,7,8-HxCDF	2.43e+07	0.53	y	37:11	1.26	383				95.8		
13C-1,2,3,6,7,8-HxCDF	2.45e+07	0.53	y	37:22	1.28	380				95.1		
13C-2,3,4,6,7,8-HxCDF	2.31e+07	0.54	y	38:19	1.27	364				90.9		
13C-1,2,3,7,8,9-HxCDF	2.10e+07	0.54	y	39:45	1.16	360				89.9		
13C-1,2,3,4,6,7,8-HpCDF	1.90e+07	0.47	y	42:14	1.06	357				89.2		
13C-1,2,3,4,7,8,9-HpCDF	1.83e+07	0.46	y	45:04	0.93	392				98.1		
13C-OCDF	3.20e+07	0.90	y	50:02	0.95	670				83.7		
37Cl-2,3,7,8-TCDD	9.46e+06			27:24	0.90	145				90.9		
13C-1,2,3,4-TCDD	2.90e+07	0.81	y	26:48	-	15.8						
13C-1,2,3,4-TCDF	4.01e+07	0.80	y	25:33	-	16.7						
13C-1,2,3,7,8,9-HxCDD	2.01e+07	1.30	y	39:10	-	14.8						
Total Tetra-Dioxins	*		NotFnd	1.08	*		2.50	578	652	0.172	0	
Total Penta-Dioxins	*		NotFnd	0.90	*		2.50	841	756	0.448	0	
Total Hexa-Dioxins	*		NotFnd	1.03	*		2.50	721	493	0.495	0	
Total Hepta-Dioxins	*		NotFnd	1.09	*		2.50	826	745	0.614	0	
Total Tetra-Furans	*		NotFnd	1.05	*		2.50	533	710	0.137	0	
1st Fn. Tot Penta-Furans	*		NotFnd	0.99	*		2.50	945	1090	0.339 PeCDF	0	
Total Penta-Furans	*		NotFnd	0.99	*		2.50	945	1090	0.339	0.00	0
Total Hexa-Furans	*		NotFnd	1.16	*		2.50	1110	689	0.457	0	0
Total Hepta-Furans	*		NotFnd	1.30	*		2.50	1010	981	0.595	0	0

Analyst:  Date: 1/8/16

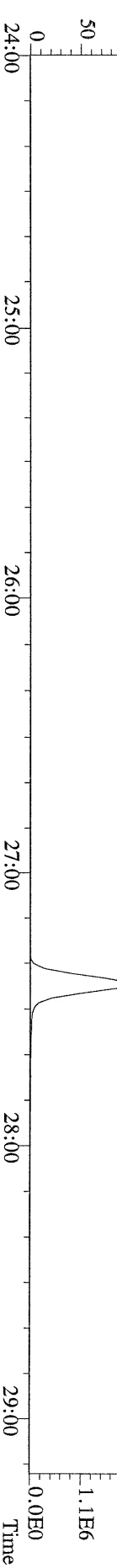
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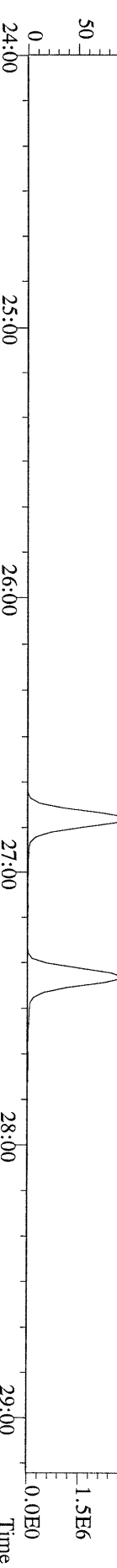
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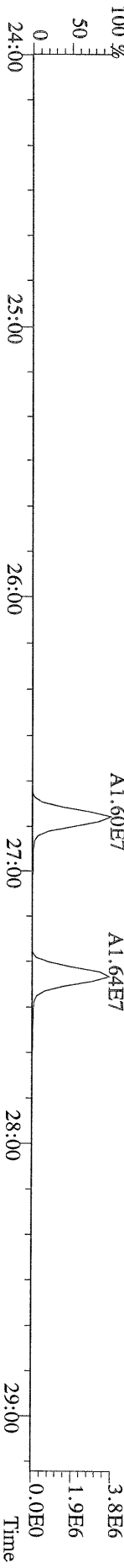
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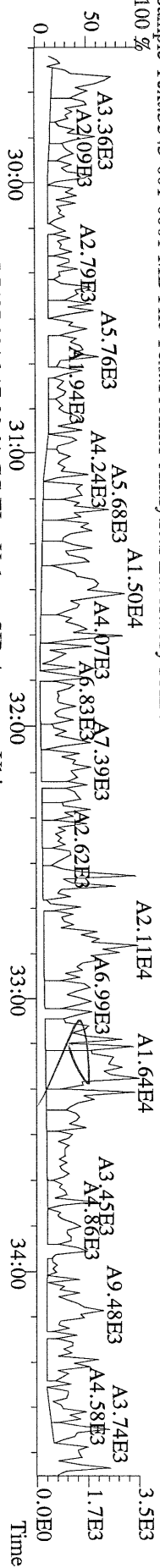
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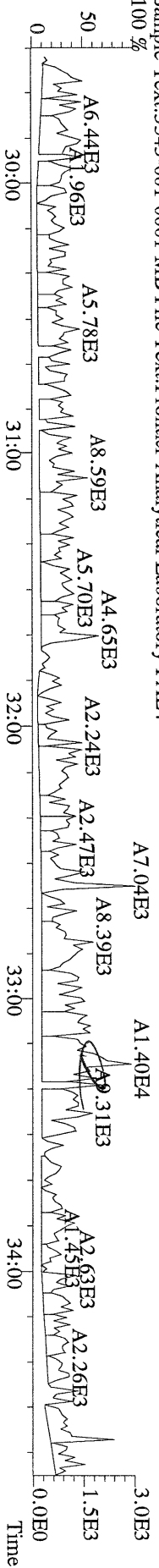
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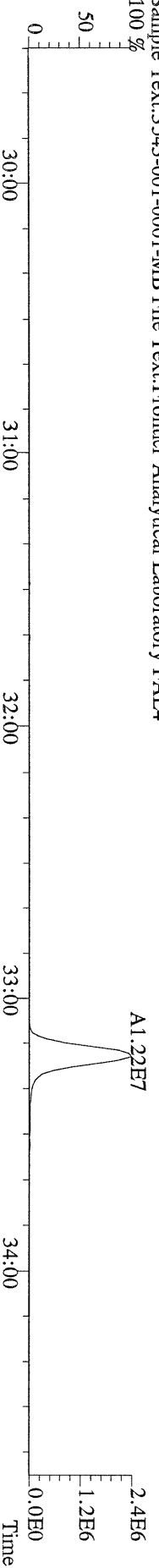
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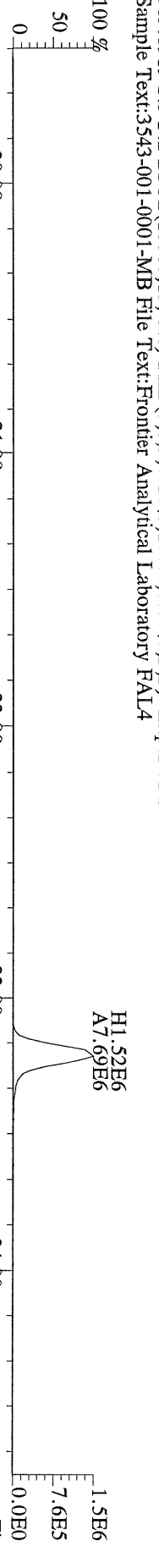
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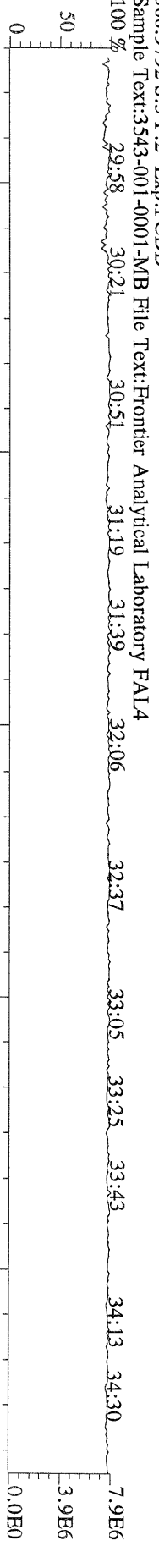
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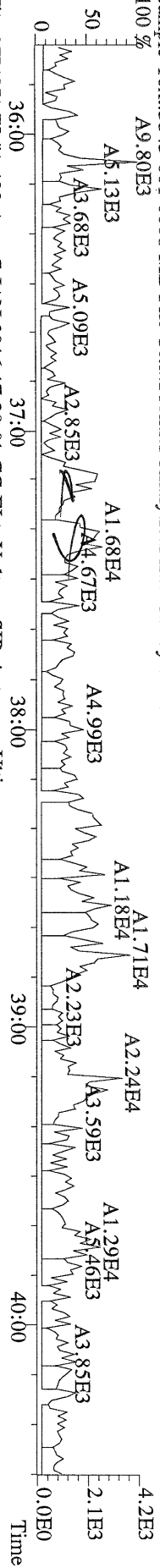
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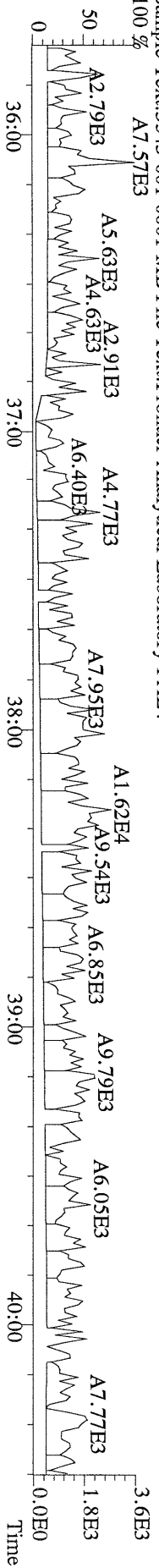
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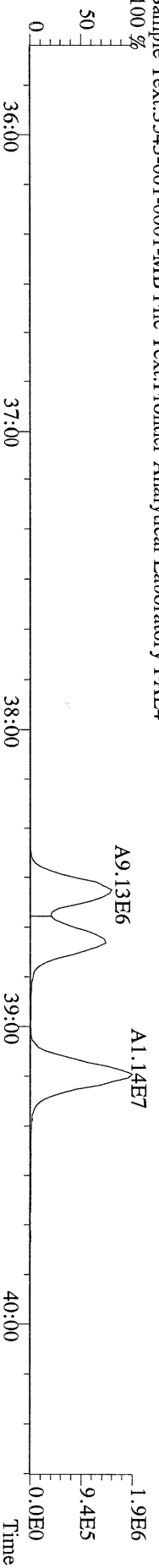
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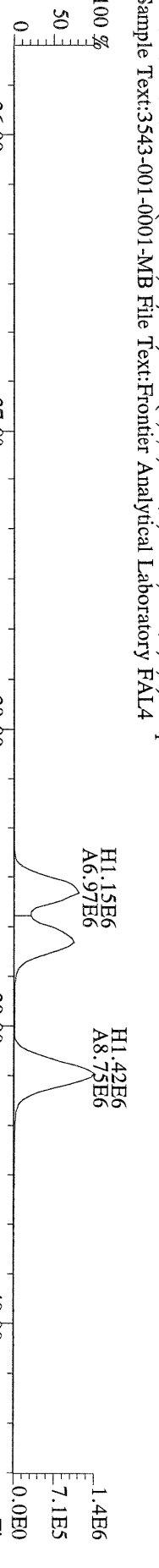
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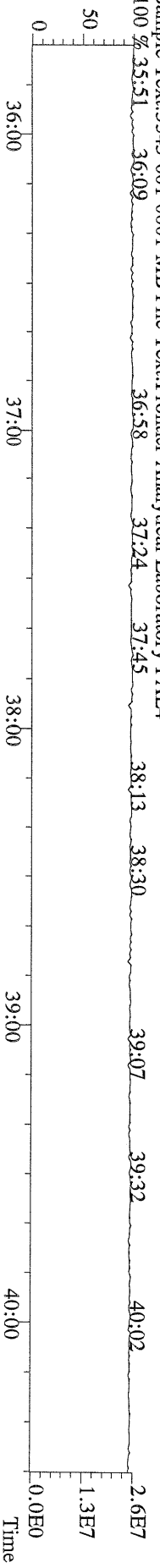
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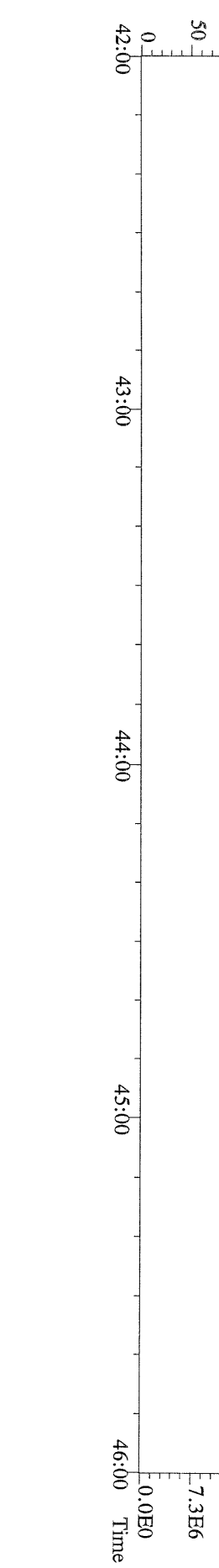
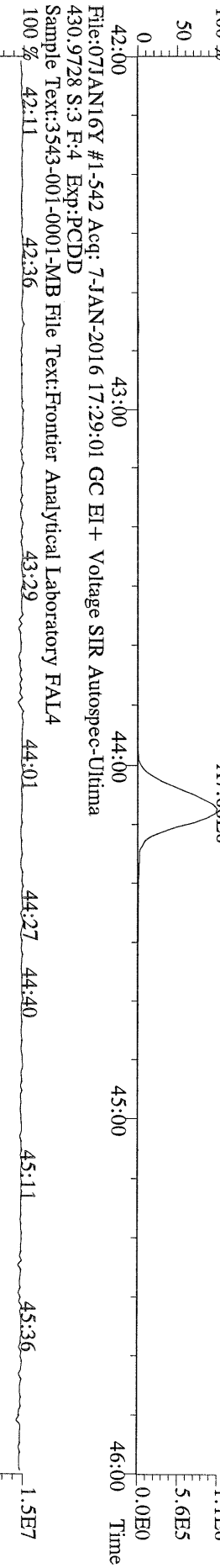
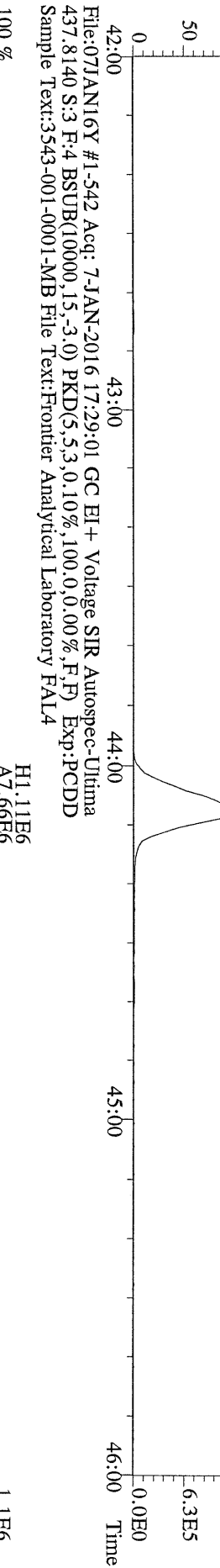
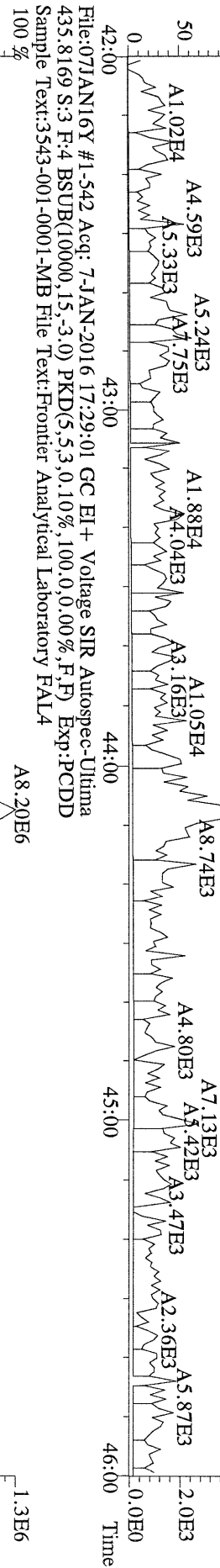
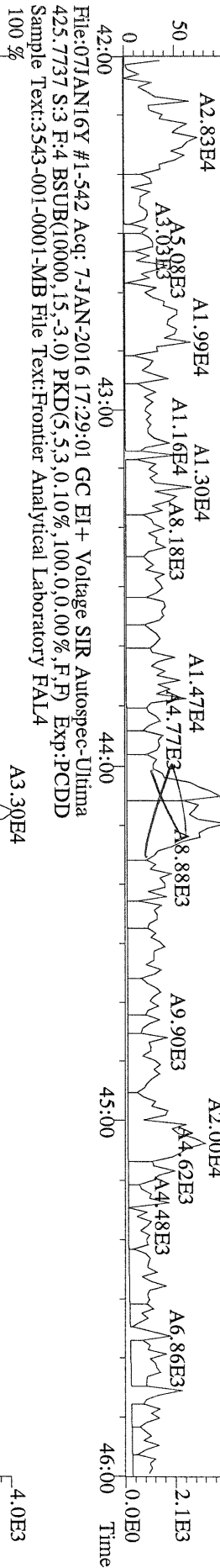
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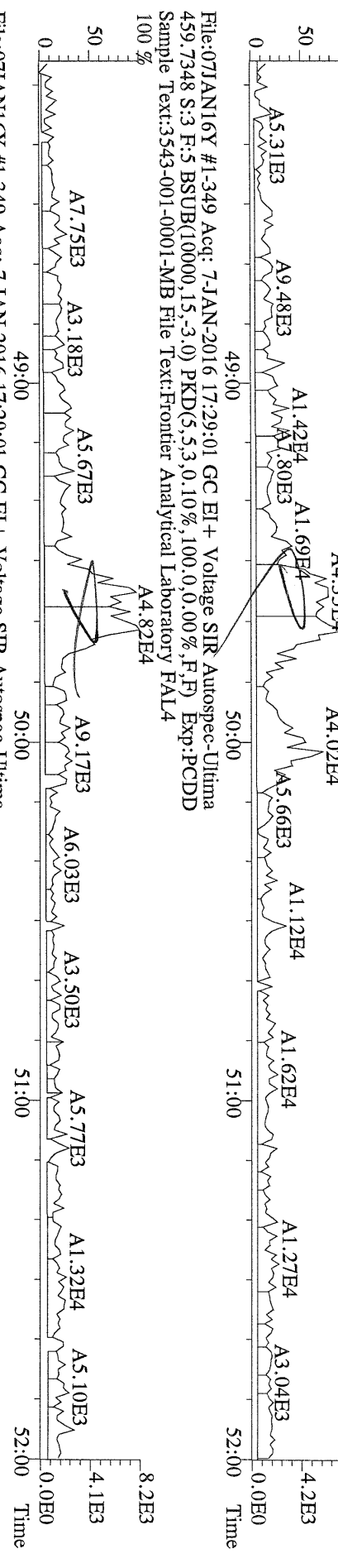
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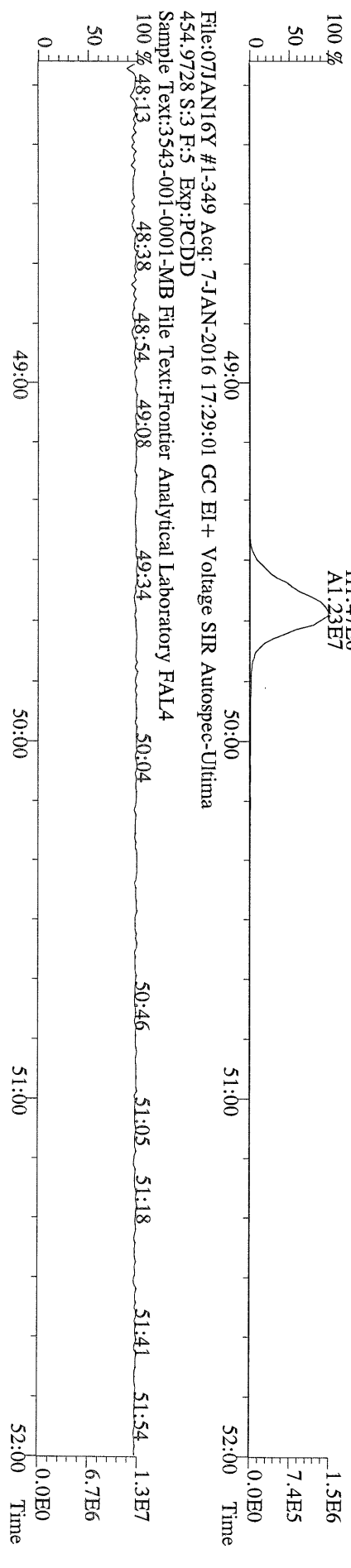
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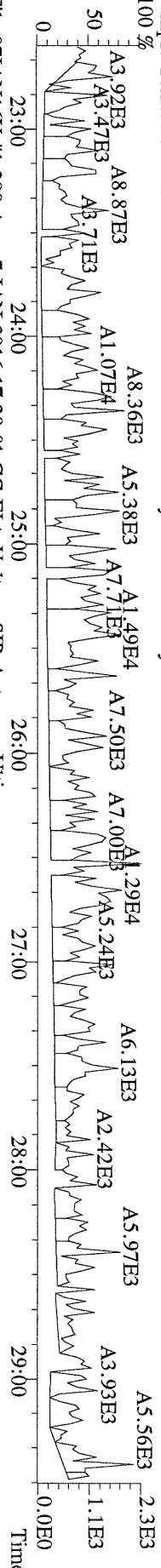
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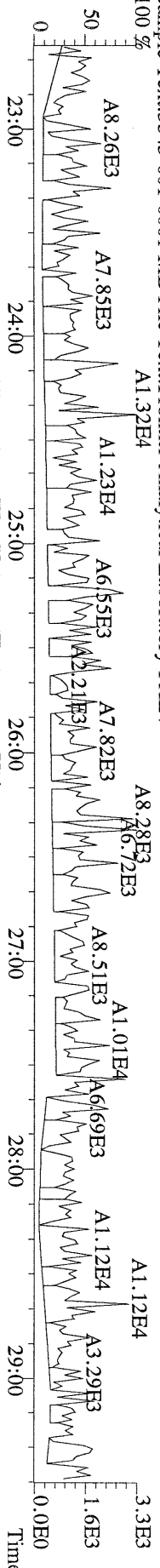
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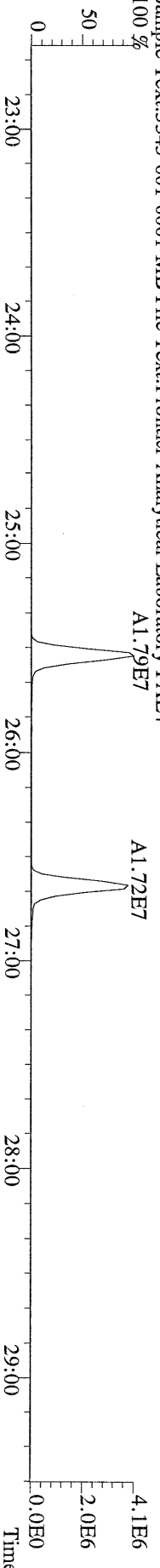
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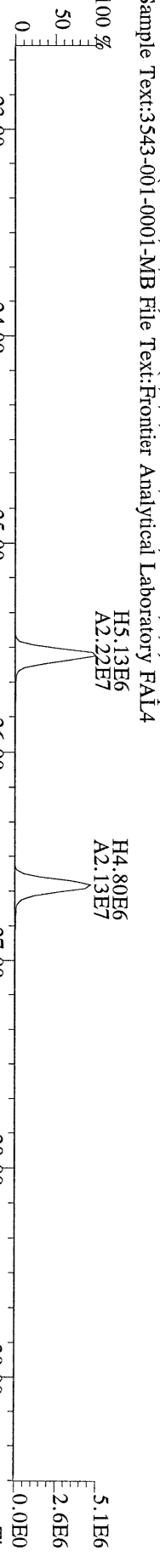
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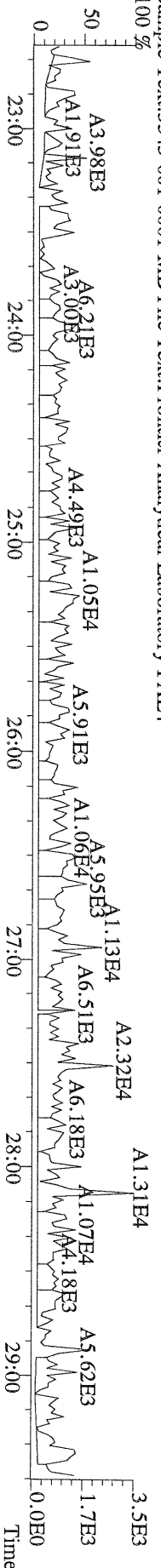
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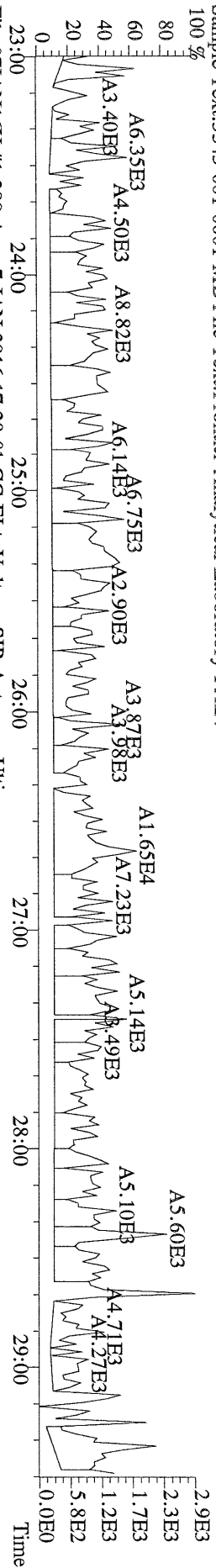
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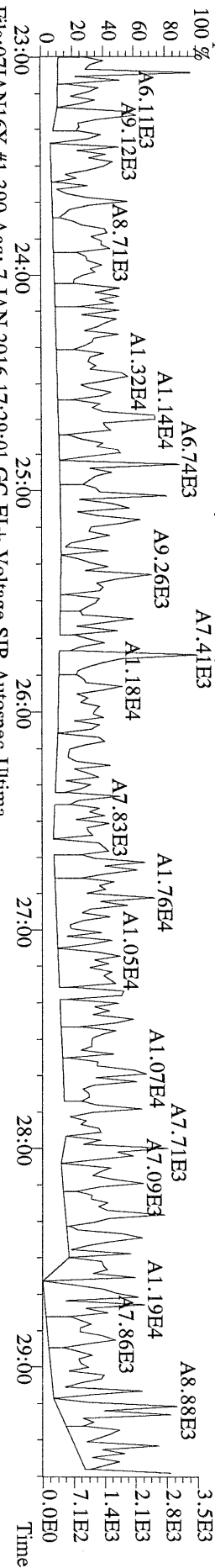
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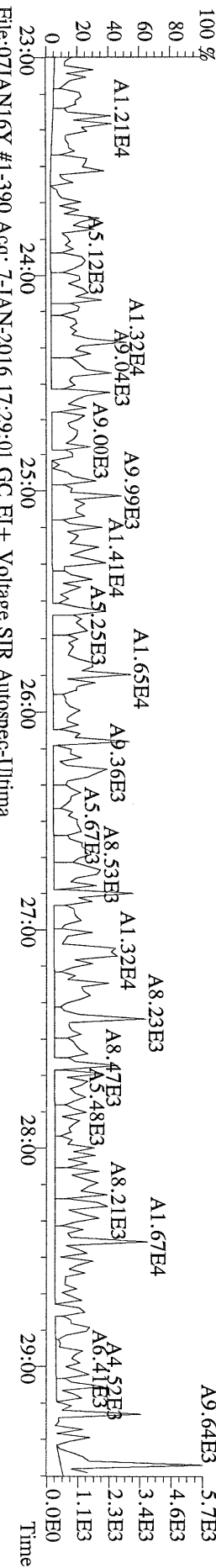
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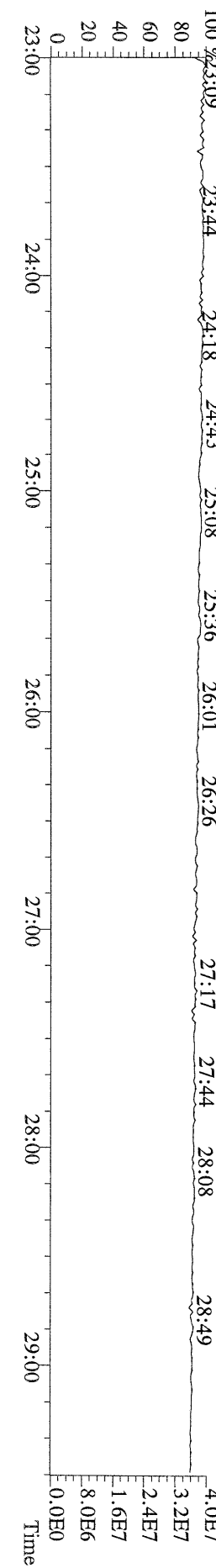
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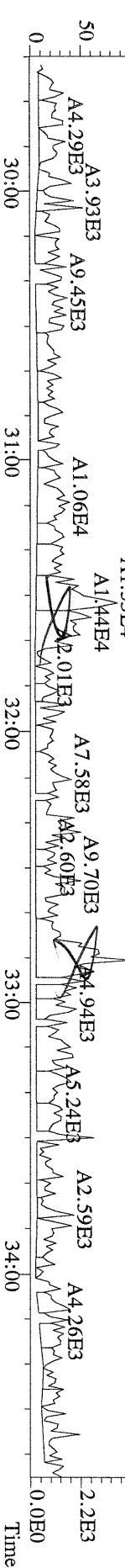
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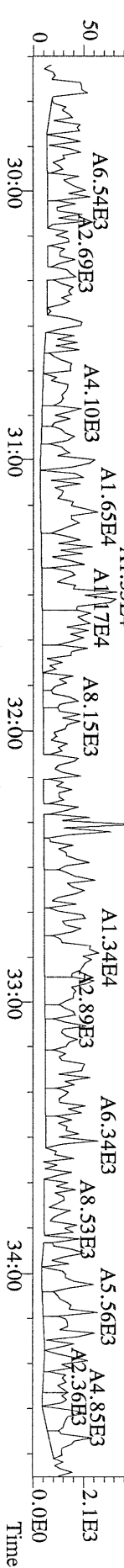
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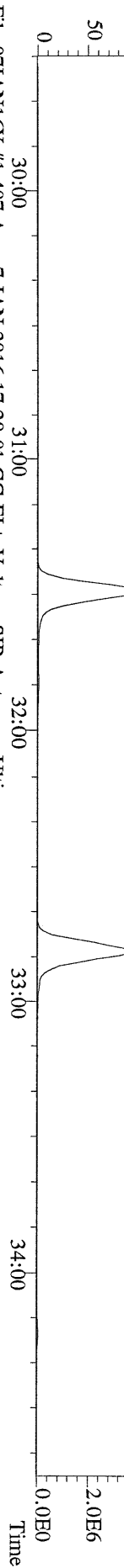
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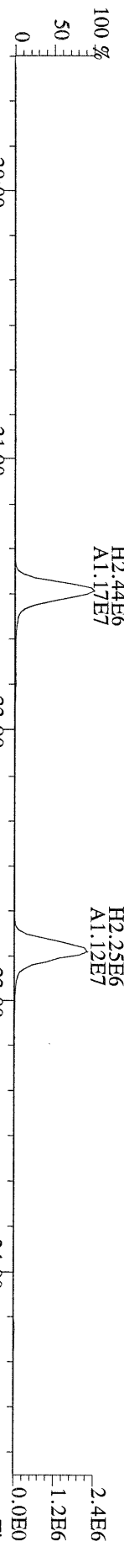
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341.8568 S:3 F:2 BSUB(10000.15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,I) Exp:PCDD
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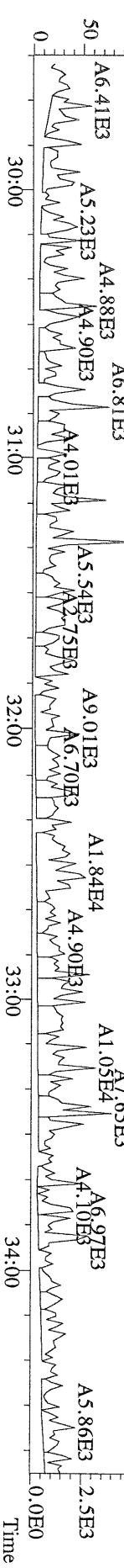
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351.9000 S:3 F:2 BSUB(10000.15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,I) Exp:PCDD
Sample Text:3543-001-0001-MB File Text:Frontier Analytical Laboratory FAL4



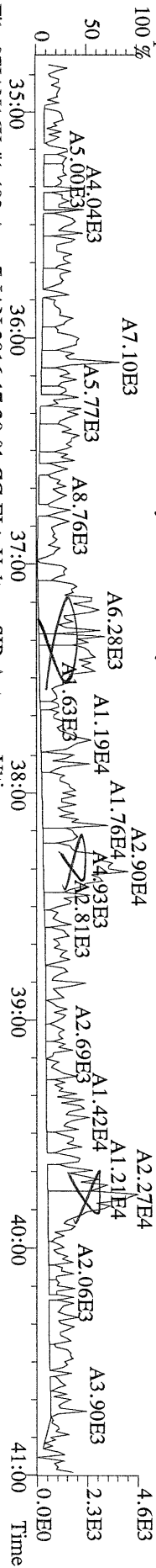
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353.8970 S:3 F:2 BSUB(10000.15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,I) Exp:PCDD
Sample Text:3543-001-0001-MB File Text:Frontier Analytical Laboratory FAL4



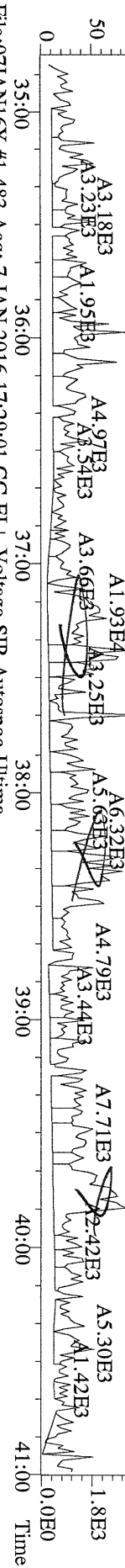
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409.7974 S:3 F:2 BSUB(10000.15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,I) Exp:PCDD
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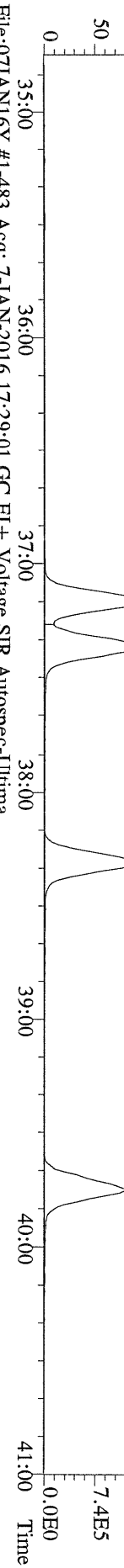
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 373.8207 S:3 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,100,0,0.00%,F,I) Exp:PCDD
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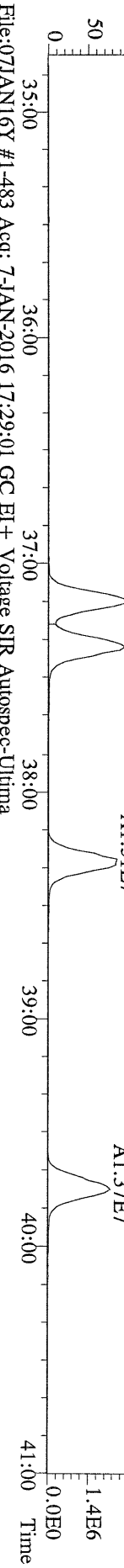
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 375.8178 S:3 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,100,0,0.00%,F,I) Exp:PCDD
 Sample Text:3543-001-0001-MB File Text:Fronter Analytical Laboratory FAL4



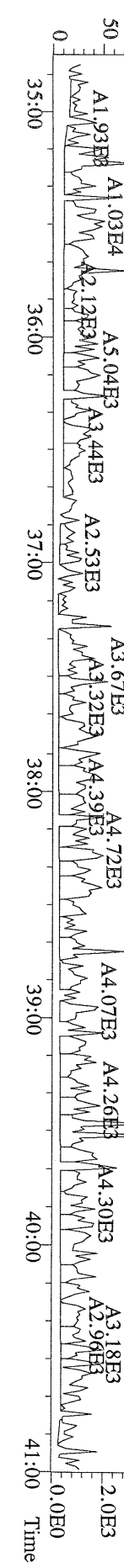
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 383.8639 S:3 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,100,0,0.00%,F,I) Exp:PCDD
 Sample Text:3543-001-0001-MB File Text:Fronter Analytical Laboratory FAL4



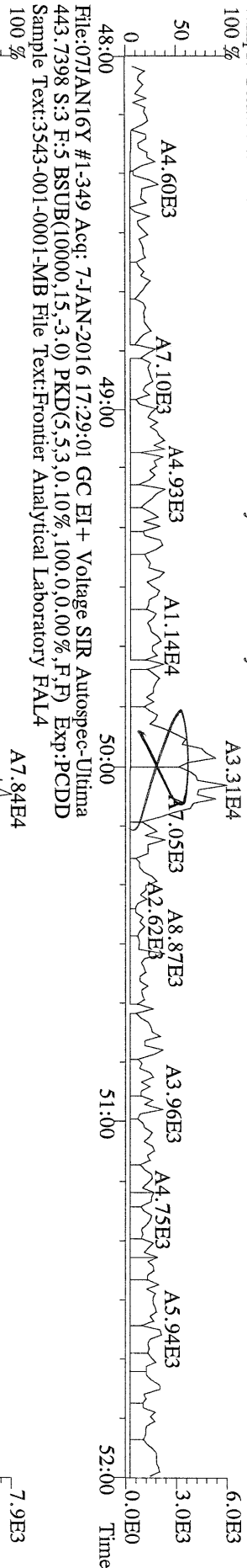
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 445.7555 S:3 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,100,0,0.00%,F,I) Exp:PCDD
 Sample Text:3543-001-0001-MB File Text:Fronter Analytical Laboratory FAL4



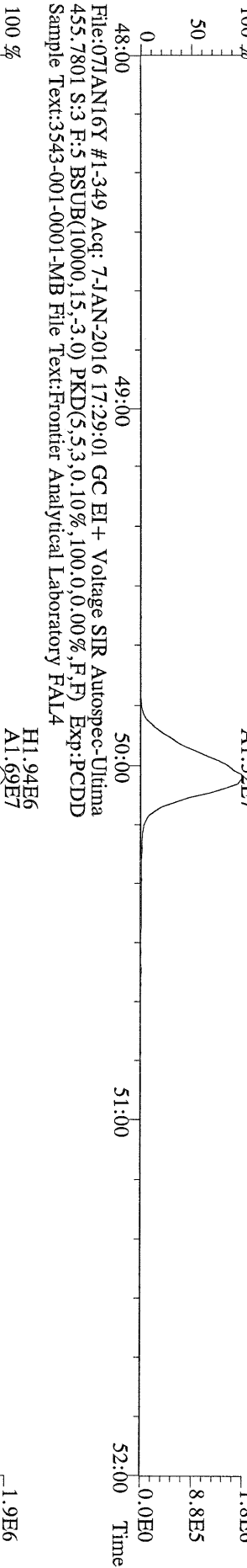
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 Sample Text:3543-001-0001-MB File Text:Fronter Analytical Laboratory FAL4



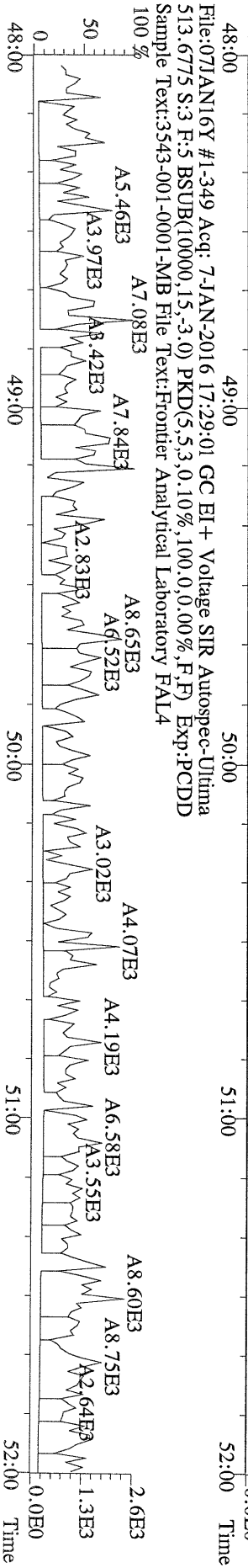
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441.7428 S:3 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,P) Exp:PCDD
Sample Text:3543-001-0001-MB File Text:Frontier Analytical Laboratory FAL4
100 %



File:071JAN16Y #1-349 Acq: 7-JAN-2016 17:29:01 GC EI+ Voltage SIR Autospec-Utima
453.7831 S:3 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,P) Exp:PCDD
Sample Text:3543-001-0001-MB File Text:Frontier Analytical Laboratory FAL4
100 %



File:071JAN16Y #1-349 Acq: 7-JAN-2016 17:29:01 GC EI+ Voltage SIR Autospec-Utima
513.6775 S:3 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,P) Exp:PCDD
Sample Text:3543-001-0001-MB File Text:Frontier Analytical Laboratory FAL4
100 %



3543-001-0001-OPR

USEPA - ITD

FORM 8A
PCDD/PCDF ONGOING PRECISION AND RECOVERY (OPR)

Lab Name: Frontier Analytical Laboratory Episode No.:
Contract No.: SAS No.:
Matrix (aqueous/solid/leachate): Soil OPR Data Filename: 07JAN16Y Sam:2
Ext. Date: 1/5/16 Shift: Day Analysis Date: 7-JAN-16 16:34:12

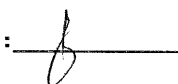
ALL CONCENTRATIONS REPORTED ON THIS FORM ARE CONCENTRATIONS IN EXTRACT.

	SPIKE CONC. (ng/mL)	CONC. FOUND (ng/mL)	OPR CONC. LIMITS (1) (ng/mL)
NATIVE ANALYTES			
2,3,7,8-TCDD	10	10.1	6.70 - 15.8
1,2,3,7,8-PeCDD	50	52.0	35.0 - 71.0
1,2,3,4,7,8-HxCDD	50	51.0	35.0 - 82.0
1,2,3,6,7,8-HxCDD	50	52.9	38.0 - 67.0
1,2,3,7,8,9-HxCDD	50	49.2	32.0 - 81.0
1,2,3,4,6,7,8-HpCDD	50	47.7	35.0 - 70.0
OCDD	100	101	78.0 - 144
2,3,7,8-TCDF	10	9.54	7.50 - 15.8
1,2,3,7,8-PeCDF	50	49.6	40.0 - 67.0
2,3,4,7,8-PeCDF	50	50.5	34.0 - 80.0
1,2,3,4,7,8-HxCDF	50	49.1	36.0 - 67.0
1,2,3,6,7,8-HxCDF	50	49.4	42.0 - 65.0
2,3,4,6,7,8-HxCDF	50	50.0	35.0 - 78.0
1,2,3,7,8,9-HxCDF	50	50.2	39.0 - 65.0
1,2,3,4,6,7,8-HpCDF	50	50.7	41.0 - 61.0
1,2,3,4,7,8,9-HpCDF	50	51.6	39.0 - 69.0
OCDF	100	102	63.0 - 170

(1) Contract-required concentration limits for OPR as specified in Table 6, Method 1613

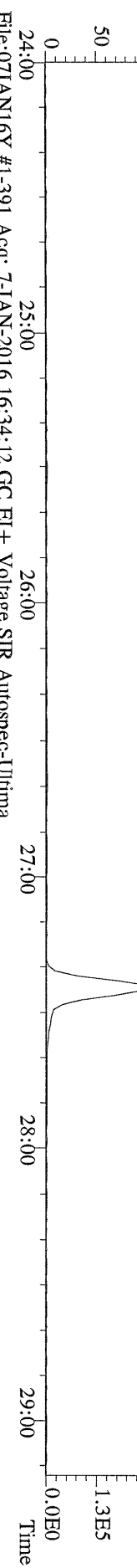
Analyst: J Date: 1/5/16

Name	Resp	RA	RT	RRF	Conc	Qual	Fac Noise-1	Noise-2	DL	#Hom
2,3,7,8-TCDD	2.96e+06	0.79 y	27:24	1.08	10.1	2.50	-	-	*	
1,2,3,7,8-PeCDD	8.73e+06	1.57 y	33:15	0.90	52.0	2.50	-	-	*	
1,2,3,4,7,8-HxCDD	7.51e+06	1.27 y	38:35	0.98	51.0	2.50	-	-	*	
1,2,3,6,7,8-HxCDD	7.67e+06	1.24 y	38:45	1.00	52.9	2.50	-	-	*	
1,2,3,7,8,9-HxCDD	8.07e+06	1.24 y	39:12	1.11	49.2	2.50	-	-	*	
1,2,3,4,6,7,8-HpCDD	7.44e+06	1.05 y	44:10	1.09	47.7	2.50	-	-	*	
OCDD	1.10e+07	0.90 y	49:40	1.04	101	2.50	-	-	*	
2,3,7,8-TCDF	3.58e+06	0.82 y	26:40	1.05	9.54	2.50	-	-	*	
1,2,3,7,8-PeCDF	1.41e+07	1.58 y	31:31	0.98	49.6	2.50	-	-	*	
2,3,4,7,8-PeCDF	1.40e+07	1.59 y	32:51	1.01	50.5	2.50	-	-	*	
1,2,3,4,7,8-HxCDF	1.34e+07	1.26 y	37:12	1.23	49.1	2.50	-	-	*	
1,2,3,6,7,8-HxCDF	1.31e+07	1.24 y	37:24	1.17	49.4	2.50	-	-	*	
2,3,4,6,7,8-HxCDF	1.20e+07	1.25 y	38:21	1.12	50.0	2.50	-	-	*	
1,2,3,7,8,9-HxCDF	1.08e+07	1.26 y	39:47	1.15	50.2	2.50	-	-	*	
1,2,3,4,6,7,8-HpCDF	1.20e+07	1.08 y	42:15	1.36	50.7	2.50	-	-	*	
1,2,3,4,7,8,9-HpCDF	9.75e+06	1.08 y	45:05	1.23	51.6	2.50	-	-	*	
OCDF	1.62e+07	0.92 y	50:04	1.13	102	2.50	-	-	*	
									Rec	
13C-2,3,7,8-TCDD	2.72e+07	0.78 y	27:23	1.07	90.7				90.7	
13C-1,2,3,7,8-PeCDD	1.85e+07	1.59 y	33:13	0.78	85.7				85.7	
13C-1,2,3,4,7,8-HxCDD	1.50e+07	1.32 y	38:33	0.87	99.3				99.3	
13C-1,2,3,6,7,8-HxCDD	1.45e+07	1.27 y	38:43	0.84	99.1				99.1	
13C-1,2,3,4,6,7,8-HpCDD	1.44e+07	1.07 y	44:08	0.85	96.6				96.6	
13C-OCDD	2.07e+07	0.92 y	49:39	0.70	171				85.4	
13C-2,3,7,8-TCDF	3.59e+07	0.81 y	26:39	1.03	93.9				93.9	
13C-1,2,3,7,8-PeCDF	2.91e+07	1.63 y	31:29	0.89	88.1				88.1	
13C-2,3,4,7,8-PeCDF	2.74e+07	1.64 y	32:49	0.82	90.0				90.0	
13C-1,2,3,4,7,8-HxCDF	2.23e+07	0.54 y	37:11	1.26	102				102	
13C-1,2,3,6,7,8-HxCDF	2.28e+07	0.54 y	37:23	1.28	102				102	
13C-2,3,4,6,7,8-HxCDF	2.15e+07	0.53 y	38:19	1.27	97.8				97.8	
13C-1,2,3,7,8,9-HxCDF	1.88e+07	0.54 y	39:45	1.16	92.9				92.9	
13C-1,2,3,4,6,7,8-HpCDF	1.73e+07	0.47 y	42:15	1.06	93.9				93.9	
13C-1,2,3,4,7,8,9-HpCDF	1.54e+07	0.46 y	45:04	0.93	95.7				95.7	
13C-OCDF	2.81e+07	0.90 y	50:02	0.95	170				85.0	
37Cl-2,3,7,8-TCDD	9.00e+06		27:24	0.90	35.9				89.9	
13C-1,2,3,4-TCDD	2.79e+07	0.78 y	26:49	-	76.1					
13C-1,2,3,4-TCDF	3.69e+07	0.80 y	25:32	-	76.8					
13C-1,2,3,7,8,9-HxCDD	1.74e+07	1.29 y	39:10	-	63.9					
Total Tetra-Dioxins	3.26e+06		22:59	1.08	11.1	2.50	-	-	*	28
Total Penta-Dioxins	8.80e+06		32:34	0.90	52.4	2.50	-	-	*	7
Total Hexa-Dioxins	2.34e+07		35:11	1.03	154	2.50	-	-	*	26
Total Hepta-Dioxins	7.77e+06		42:03	1.09	49.9	2.50	-	-	*	31
Total Tetra-Furans	3.91e+06		23:04	1.05	10.4	2.50	-	-	*	26
1st Fn. Tot Penta-Furans	2.20e+05		22:53	0.99	0.783	2.50	-	-	*	PeCDF 26
Total Penta-Furans	2.87e+07		30:14	0.99	102	2.50	-	-	*	103 21
Total Hexa-Furans	4.97e+07		35:31	1.16	199	2.50	-	-	*	17
Total Hepta-Furans	2.19e+07		41:47	1.30	103	2.50	-	-	*	21

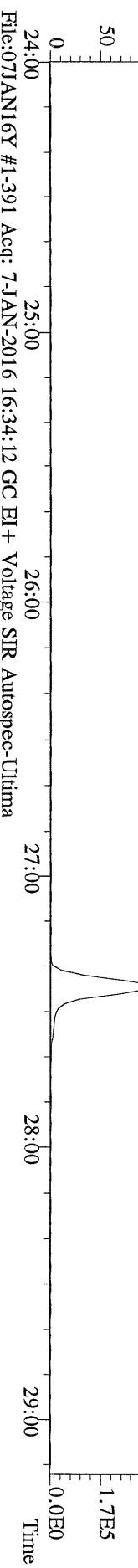
Analyst: 

Date: 1/8/16

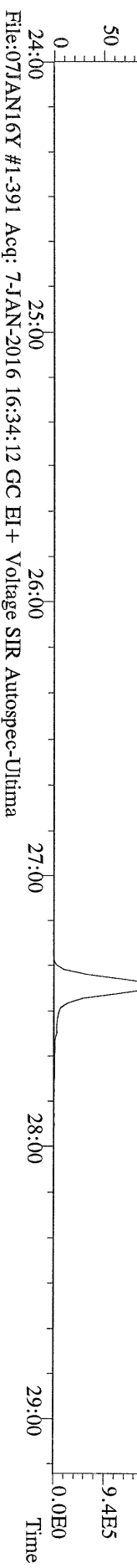
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319.8965 S:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
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100 %



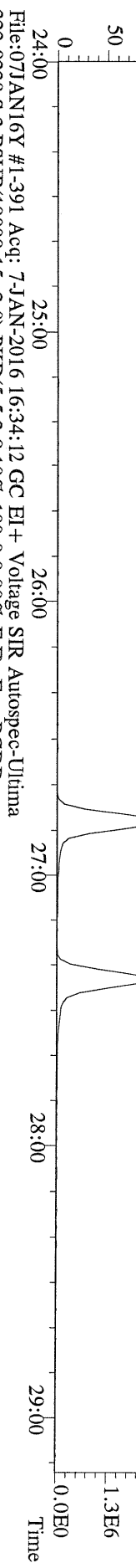
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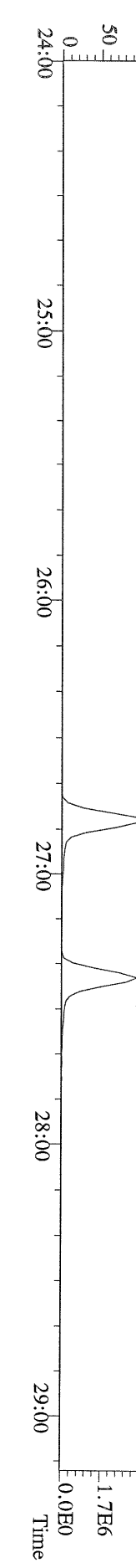
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327.8847 S:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:3543-001-0001-OPR File Text:Frontier Analytical Laboratory FAL4
100 %



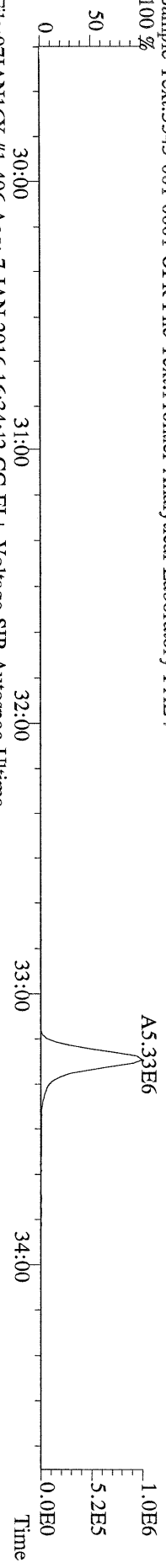
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331.9368 S:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
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100 %



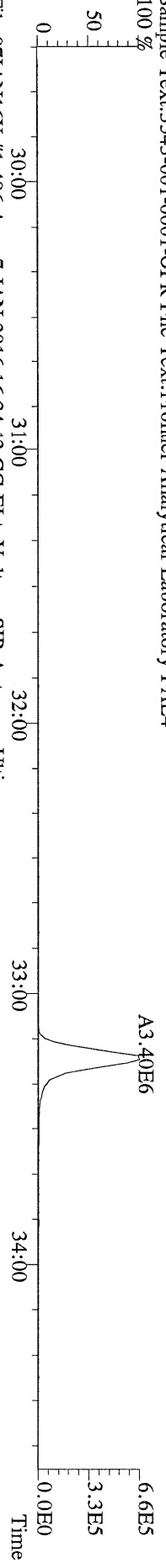
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333.9339 S:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
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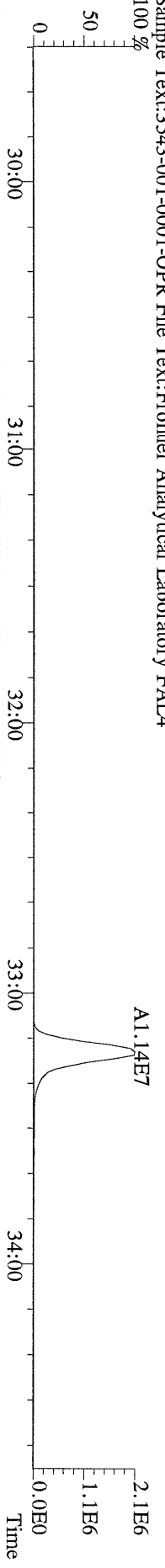
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355.8546 S:2 F:2 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,H) Exp:PCDD
Sample Text:3543-001-0001-OPR File Text:Frontier Analytical Laboratory FAL4
100 %



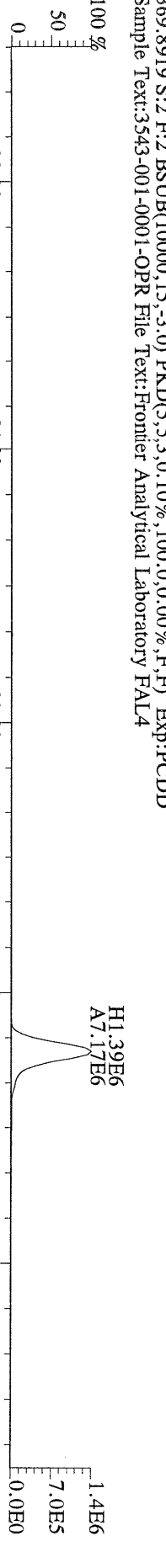
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357.8517 S:2 F:2 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,H) Exp:PCDD
Sample Text:3543-001-0001-OPR File Text:Frontier Analytical Laboratory FAL4
100 %



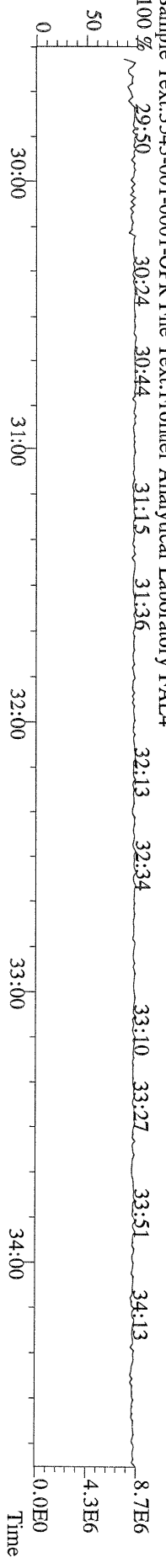
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367.8949 S:2 F:2 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,H) Exp:PCDD
Sample Text:3543-001-0001-OPR File Text:Frontier Analytical Laboratory FAL4
100 %



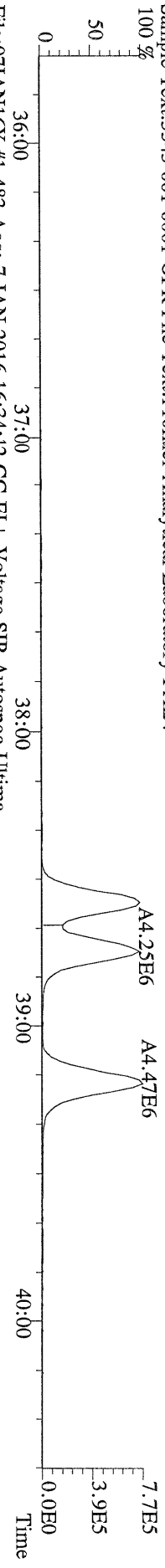
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369.8919 S:2 F:2 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,H) Exp:PCDD
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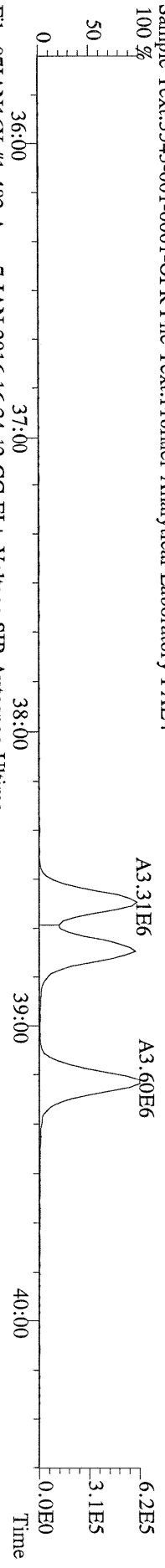
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366.9792 S:2 F:2 Exp:PCDD
Sample Text:3543-001-0001-OPR File Text:Frontier Analytical Laboratory FAL4
100 %



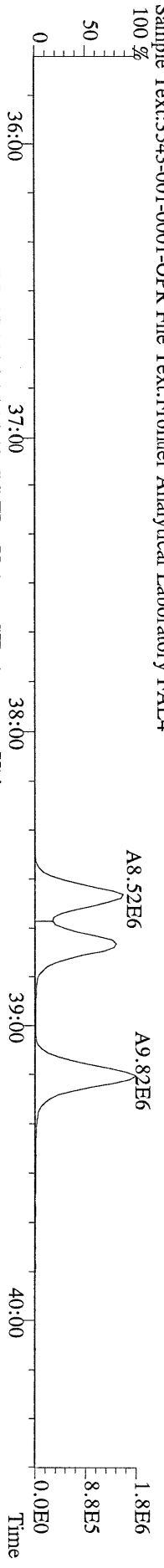
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389.8156 S:2 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:3543-001-0001-OPR File Text:Frontier Analytical Laboratory FAL4
100 %



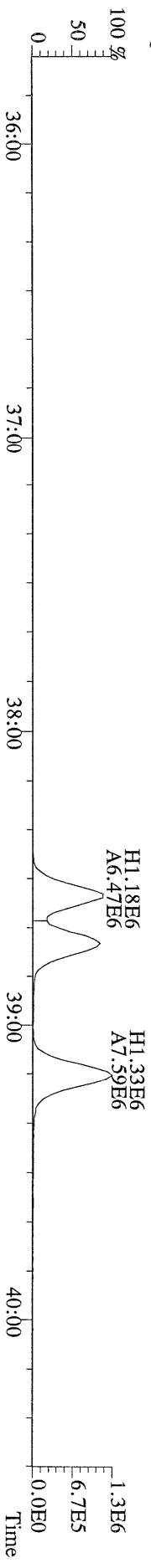
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391.8127 S:2 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
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100 %



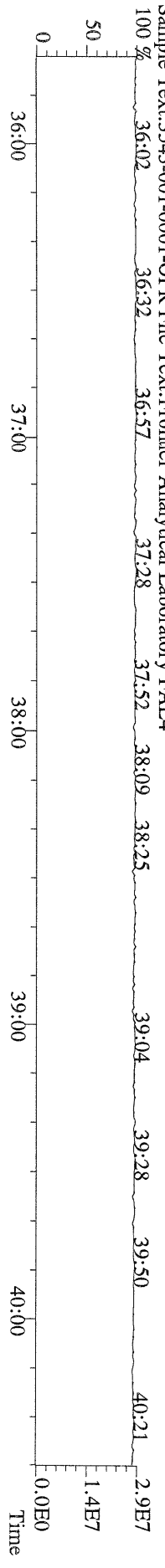
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401.8559 S:2 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:3543-001-0001-OPR File Text:Frontier Analytical Laboratory FAL4
100 %



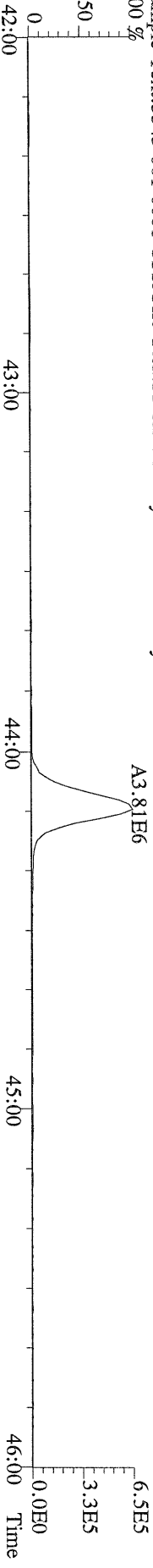
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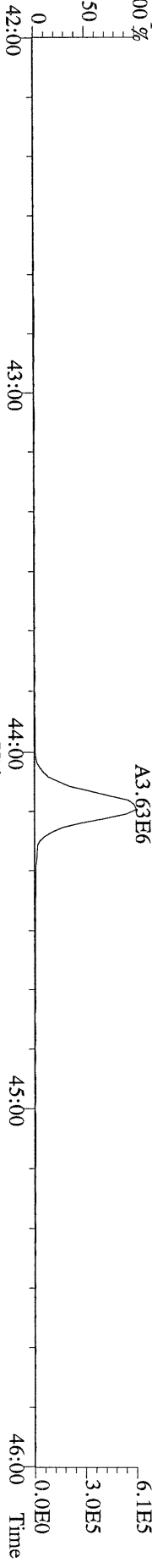
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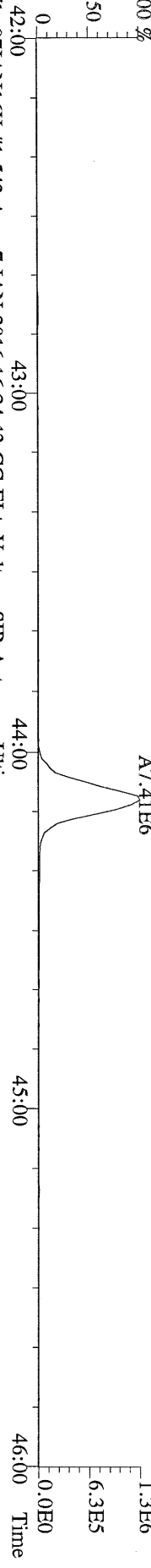
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423.7767 S:2 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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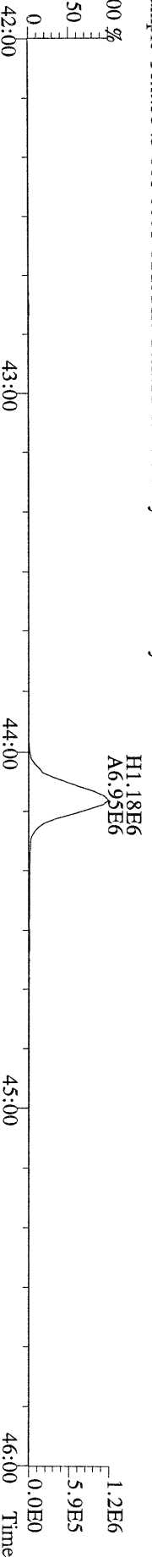
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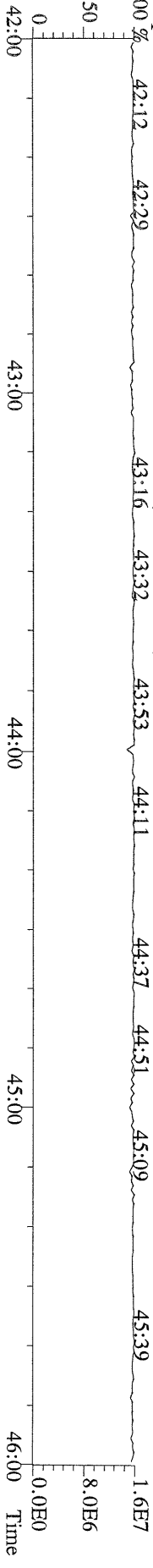
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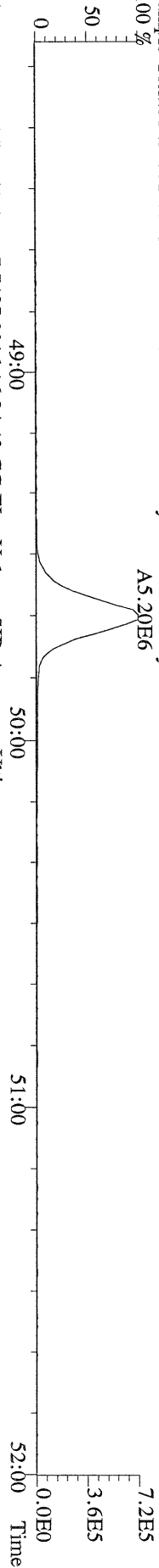
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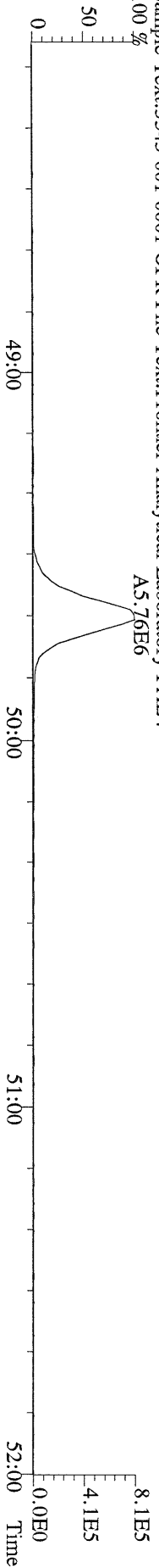
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100 %



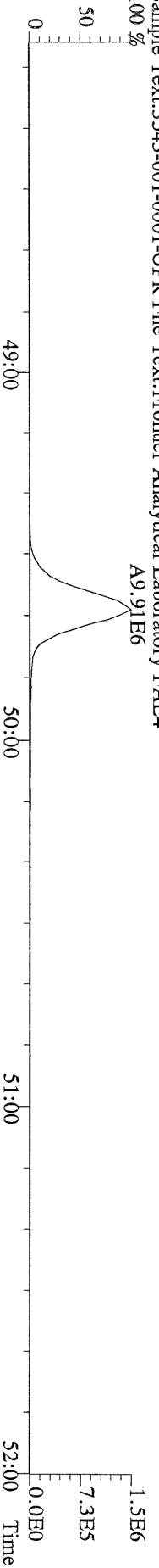
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457.7377 S:2 F:5 BSUB(10000,15,3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
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100 %



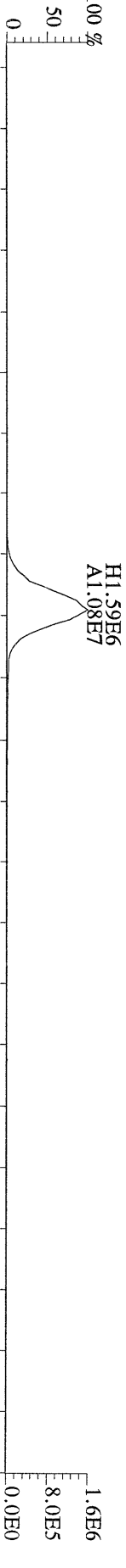
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100 %



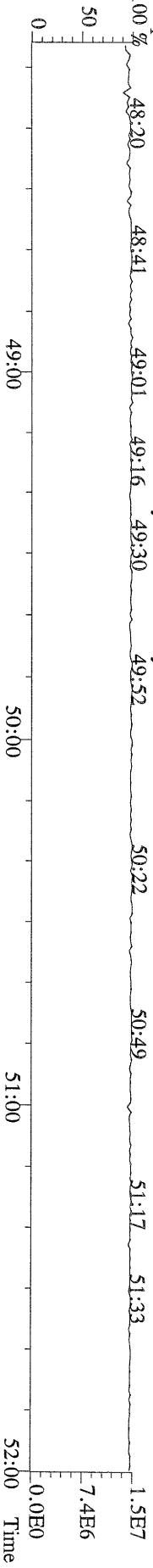
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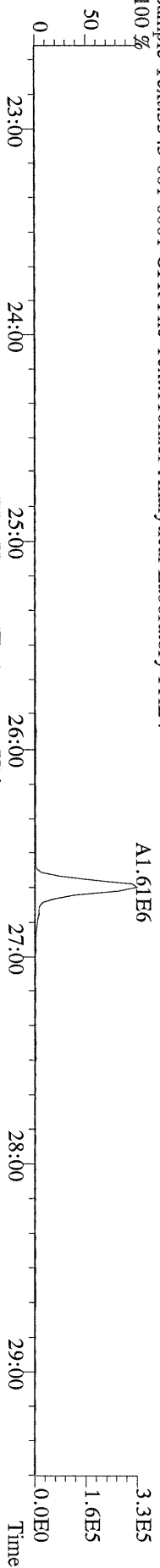
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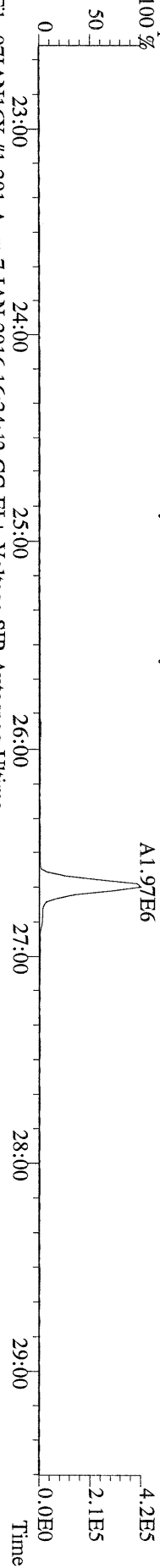
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454.9728 S:2 F:5 Exp:PCDD
Sample Text:3543-001-0001-OPR File Text:Frontier Analytical Laboratory FAL4
100 %



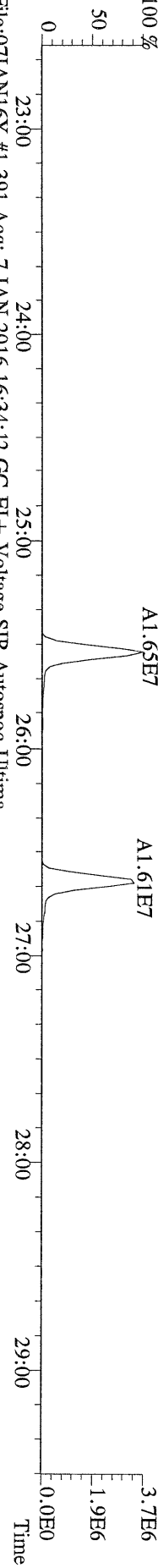
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Sample Text:3543-001-0001-OPR File Text:Frontier Analytical Laboratory FAL4
100 %



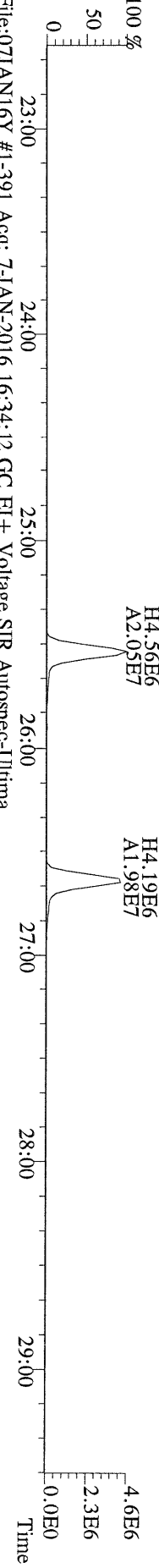
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Sample Text:3543-001-0001-OPR File Text:Frontier Analytical Laboratory FAL4
100 %



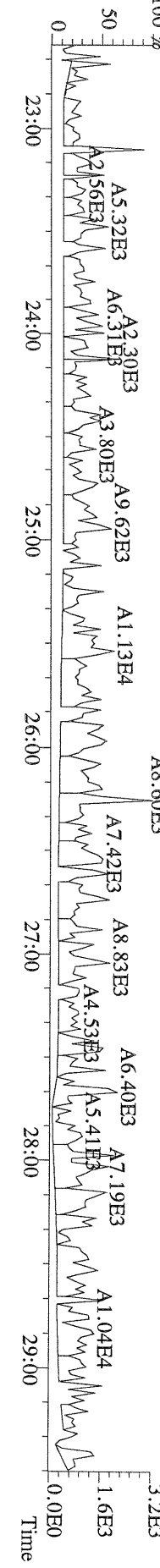
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100 %



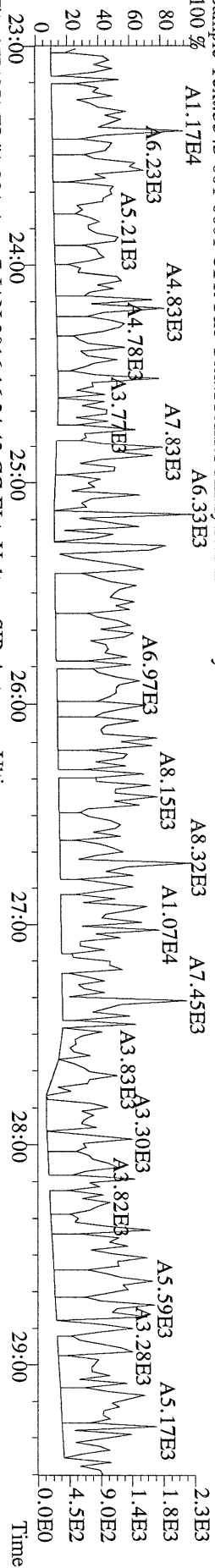
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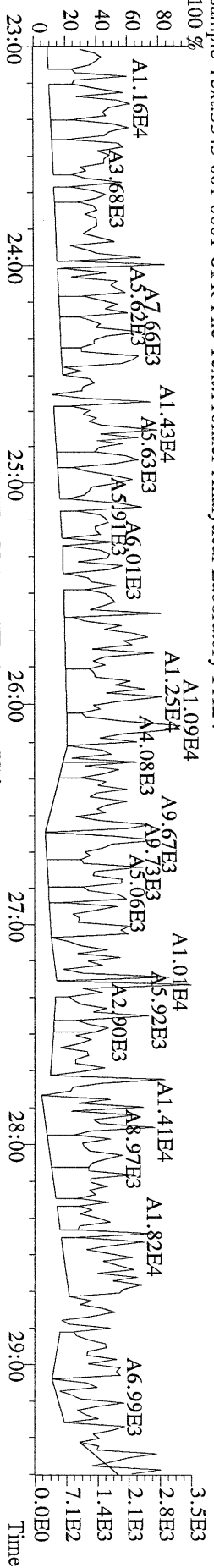
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Sample Text:3543-001-0001-OPR File Text:Frontier Analytical Laboratory FAL4
100 %



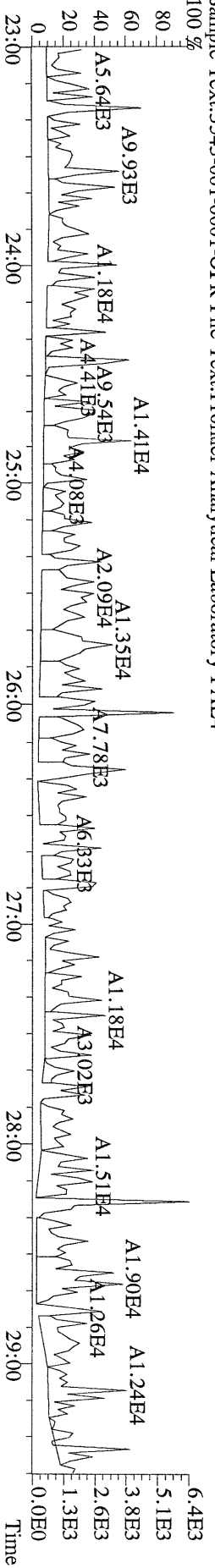
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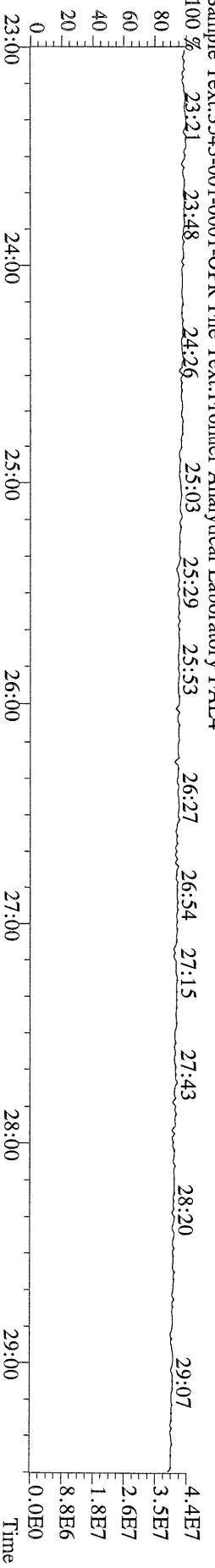
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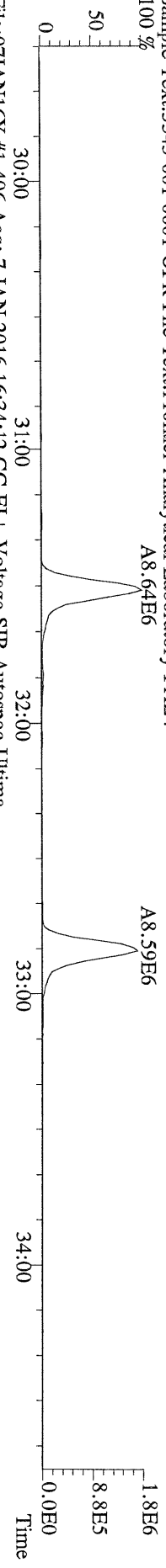
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 Sample Text:3543-001-0001-OPR File Text:Frontier Analytical Laboratory FAL4
 100 % A9.93E3



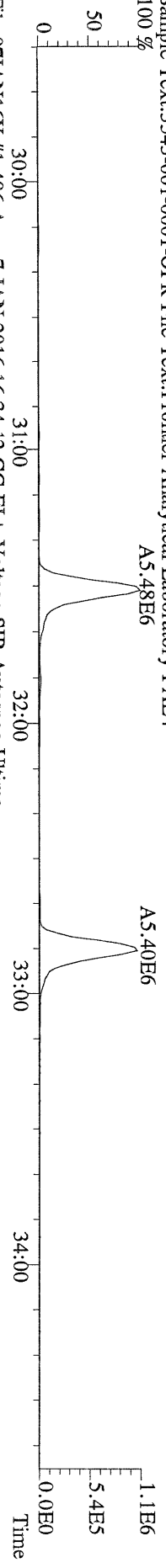
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 330.9792 S:2 Exp:PCDD
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 100 % 23:21 23:48 24:26 25:03 25:29 25:53 26:27 26:54 27:15 27:43 28:20 29:07



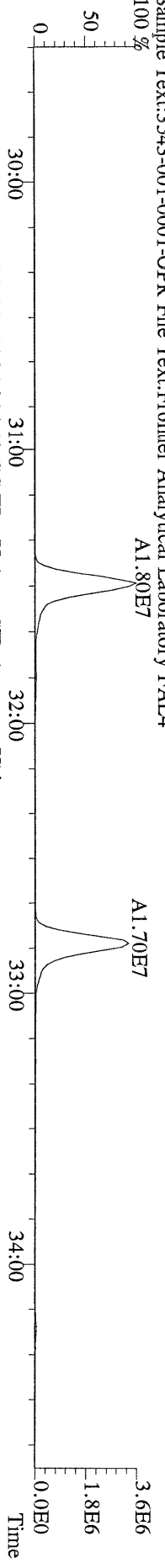
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Sample Text:3543-001-0001-OPR File Text:Fronter Analytical Laboratory FAL4
100 %



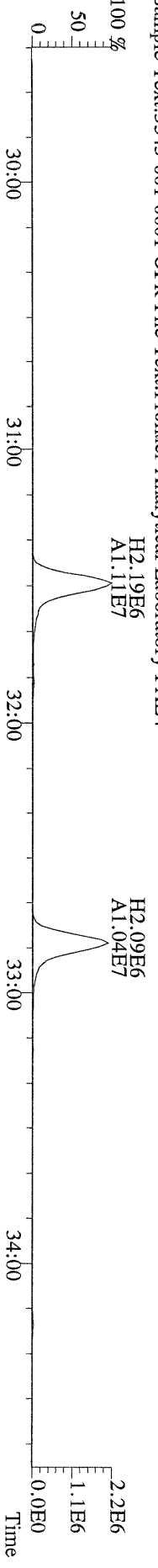
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Sample Text:3543-001-0001-OPR File Text:Fronter Analytical Laboratory FAL4
100 %



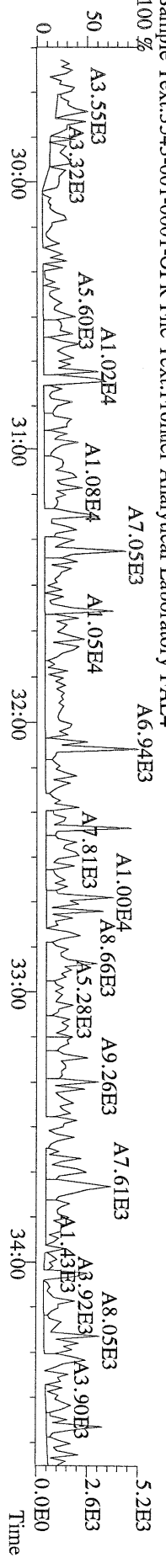
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Sample Text:3543-001-0001-OPR File Text:Fronter Analytical Laboratory FAL4
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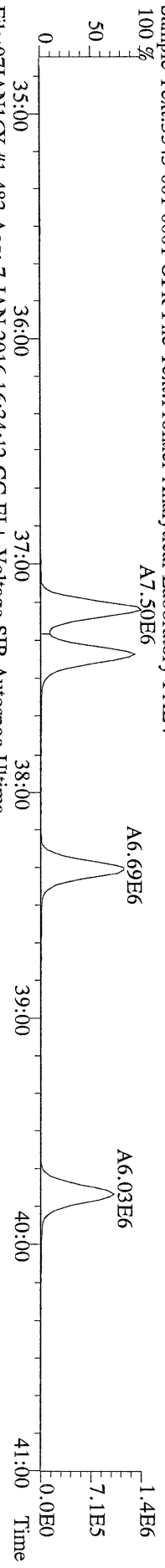
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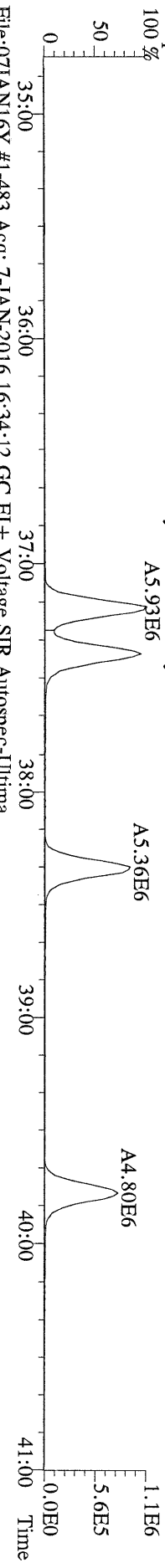
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Sample Text:3543-001-0001-OPR File Text:Fronter Analytical Laboratory FAL4
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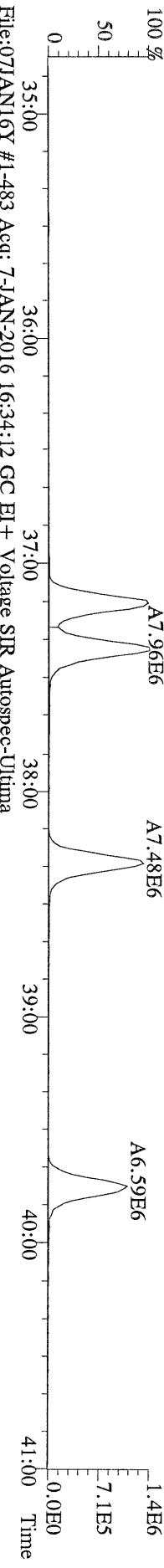
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373.8207 S:2 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100.0,0.00%,F,F) Exp:PCDD
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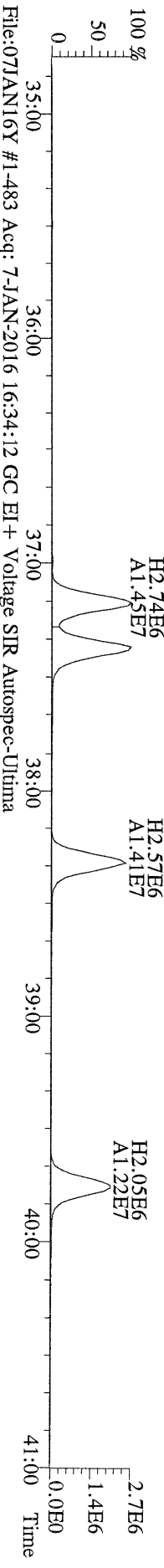
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375.8178 S:2 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100.0,0.00%,F,F) Exp:PCDD
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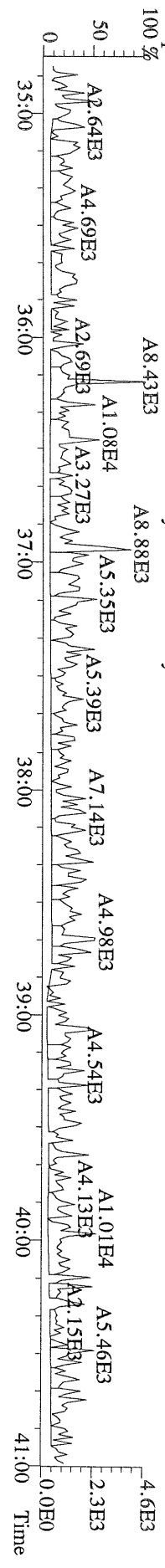
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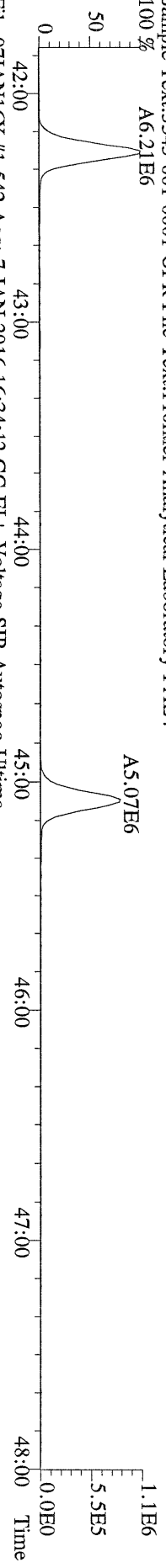
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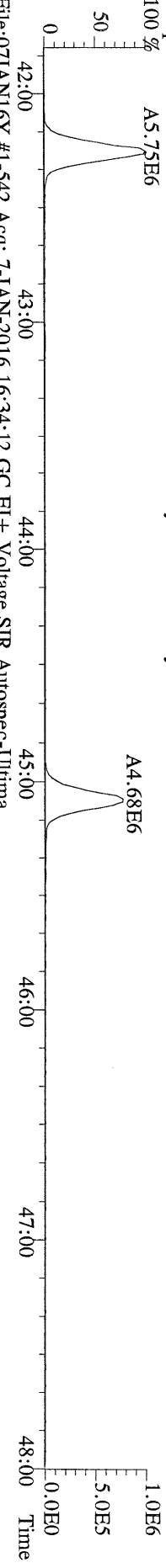
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Sample Text:3543-001-0001-OPR File Text:Fronter Analytical Laboratory FAL4



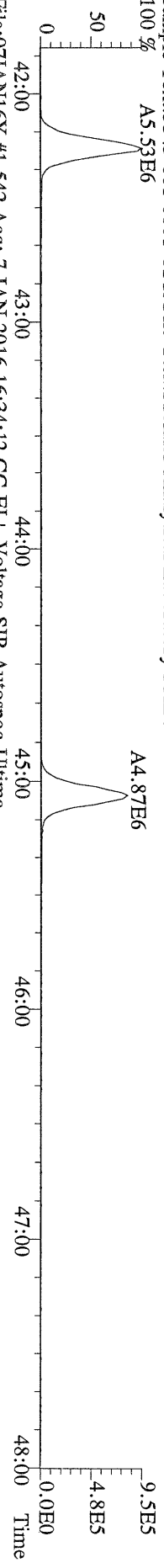
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Sample Text:3543-001-0001-OPR File Text:Fronter Analytical Laboratory FAL4
100 %



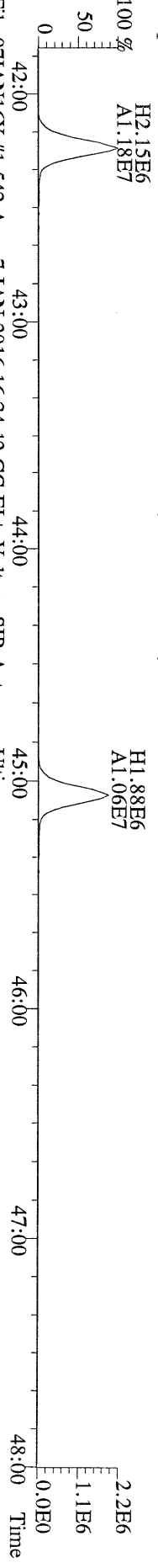
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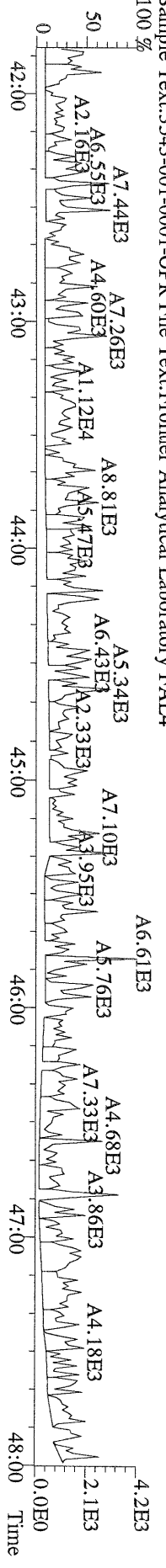
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Sample Text:3543-001-0001-OPR File Text:Fronter Analytical Laboratory FAL4
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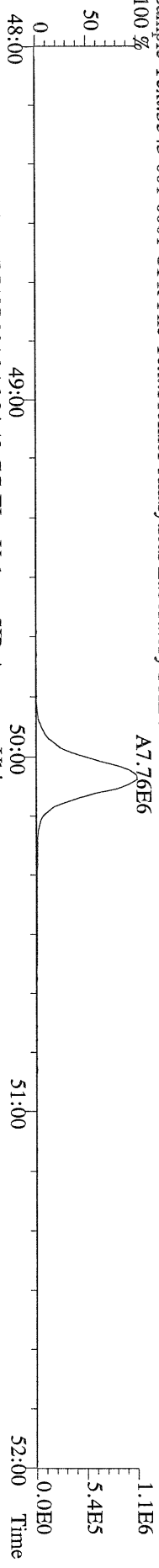
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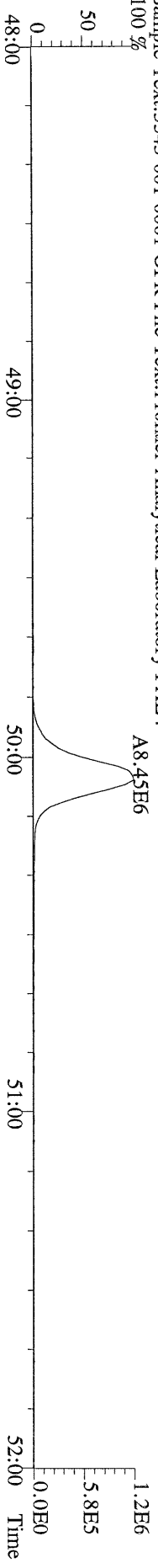
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Sample Text:3543-001-0001-OPR File Text:Fronter Analytical Laboratory FAL4
100 %



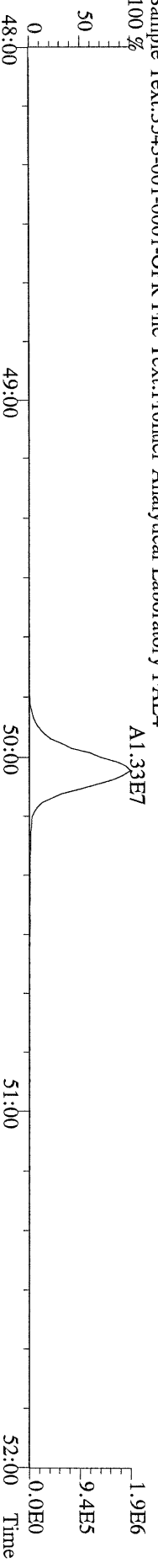
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Sample Text:3543-001-0001-OPR File Text:Frontier Analytical Laboratory FAL4



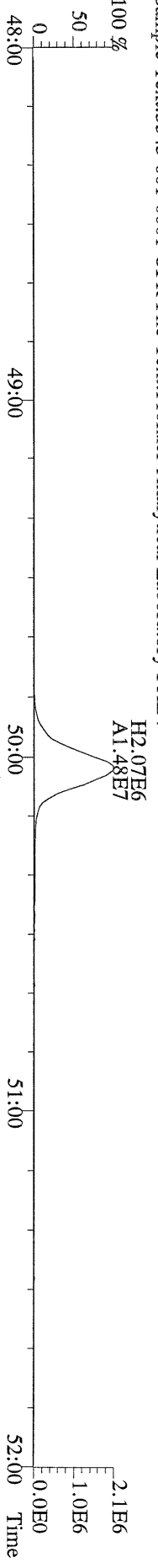
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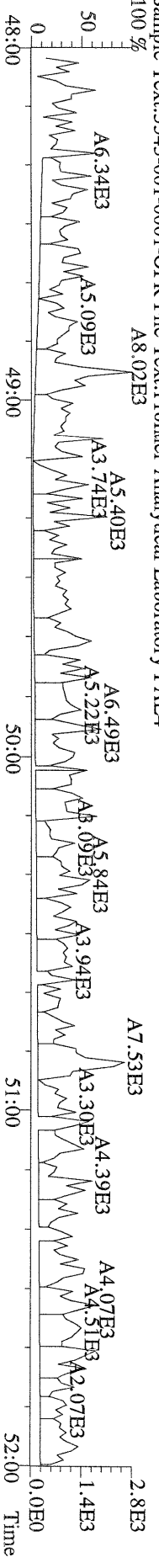
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File:07JAN16Y #1-349 Acq: 7-JAN-2016 16:34:12 GC EI+ Voltage SIR Autospec-Ultima
455.7801 S:2 F:5 BSUB(10000,15,3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:3543-001-0001-OPR File Text:Frontier Analytical Laboratory FAL4



File:07JAN16Y #1-349 Acq: 7-JAN-2016 16:34:12 GC EI+ Voltage SIR Autospec-Ultima
513.6775 S:2 F:5 BSUB(10000,15,3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:3543-001-0001-OPR File Text:Frontier Analytical Laboratory FAL4



Name	Resp	RA	RT	RRF	Conc	Qual	Fac Noise-1	Noise-2	DL	#Hom
2,3,7,8-TCDD	5.95e+04	0.66 y	27:24	1.08	0.392	J	2.50	-	*	
1,2,3,7,8-PeCDD	8.60e+05	1.60 y	33:15	0.90	9.32		2.50	-	*	
1,2,3,4,7,8-HxCDD	7.75e+06	1.23 y	38:37	0.98	87.2		2.50	-	*	
1,2,3,6,7,8-HxCDD	5.12e+08	1.26 y	38:45	1.00	5890		2.50	-	*	
1,2,3,7,8,9-HxCDD	3.17e+07	1.22 y	39:12	1.11	321		2.50	-	*	
1,2,3,4,6,7,8-HpCDD	*	* n	NotFnd	1.09	124,000	*	2.50	-	*	
OCDD	*	* n	NotFnd	1.04	744,000	*	2.50	-	*	
2,3,7,8-TCDF	2.94e+05	0.68 y	26:41	1.05	1.59		2.50	-	*	
1,2,3,7,8-PeCDF	1.56e+06	1.51 y	31:30	0.98	11.1		2.50	-	*	
2,3,4,7,8-PeCDF	3.03e+06	1.51 y	32:51	1.01	20.5		2.50	-	*	
1,2,3,4,7,8-HxCDF	1.13e+08	1.25 y	37:13	1.23	750		2.50	-	*	
1,2,3,6,7,8-HxCDF	4.93e+07	1.26 y	37:24	1.17	343		2.50	-	*	
2,3,4,6,7,8-HxCDF	1.05e+08	1.26 y	38:22	1.12	808		2.50	-	*	
1,2,3,7,8,9-HxCDF	1.33e+07	1.22 y	39:51	1.15	104		2.50	-	*	
1,2,3,4,6,7,8-HpCDF	*	* n	NotFnd	1.36	68,600	*	2.50	-	*	
1,2,3,4,7,8,9-HpCDF	*	* n	NotFnd	1.23	3450	*	2.50	-	*	
OCDF	*	* n	NotFnd	1.13	329,000	*	2.50	-	*	
13C-2,3,7,8-TCDD	5.50e+07	0.78 y	27:23	1.07	383				Rec 97.7	
13C-1,2,3,7,8-PeCDD	3.99e+07	1.58 y	33:13	0.78	384				98.1	
13C-1,2,3,4,7,8-HxCDD	3.54e+07	1.28 y	38:34	0.87	373				95.3	
13C-1,2,3,6,7,8-HxCDD	3.39e+07	1.28 y	38:44	0.84	370				94.5	
13C-1,2,3,4,6,7,8-HpCDD	*	* n	NotFnd	0.85	*	*			* 111	
13C-OCDD	*	* n	NotFnd	0.70	*	*			* 134	
13C-2,3,7,8-TCDF	6.89e+07	0.80 y	26:39	1.03	385				98.3	
13C-1,2,3,7,8-PeCDF	5.63e+07	1.57 y	31:29	0.89	363				92.8	
13C-2,3,4,7,8-PeCDF	5.72e+07	1.59 y	32:49	0.82	401				102	
13C-1,2,3,4,7,8-HxCDF	4.80e+07	0.53 y	37:10	1.26	347				88.7	
13C-1,2,3,6,7,8-HxCDF	4.82e+07	0.53 y	37:23	1.28	343				87.6	
13C-2,3,4,6,7,8-HxCDF	4.55e+07	0.53 y	38:19	1.27	329				84.0	
13C-1,2,3,7,8,9-HxCDF	4.36e+07	0.54 y	39:46	1.16	342				87.4	
13C-1,2,3,4,6,7,8-HpCDF	*	* n	NotFnd	1.06	*	*			* 102	
13C-1,2,3,4,7,8,9-HpCDF	*	* n	NotFnd	0.93	*	*			* 100	
13C-OCDF	*	* n	NotFnd	0.95	*	*			* 122	
37Cl-2,3,7,8-TCDD	1.64e+07		27:25	0.90	137				87.2	
13C-1,2,3,4-TCDD	5.24e+07	0.80 y	26:49	-	28.0					
13C-1,2,3,4-TCDF	6.78e+07	0.80 y	25:33	-	27.6					
13C-1,2,3,7,8,9-HxCDD	4.28e+07	1.28 y	39:10	-	30.8					
Total Tetra-Dioxins	1.88e+06		24:23	1.08	12.4		2.50	-	*	8
Total Penta-Dioxins	6.33e+06		30:15	0.90	68.6		2.50	-	*	10
Total Hexa-Dioxins	1.18e+09		36:09	1.03	13200		2.50	-	*	8
Total Hepta-Dioxins	1.72e+10		42:55	1.09	* 183,000		2.50	-	*	2
Total Tetra-Furans	4.72e+07		23:12	1.05	256	D,M	2.50	-	*	21
1st Fn. Tot Penta-Furans	8.60e+07		28:27	0.99	597	D,M	2.50	-	*	PeCDF 1
Total Penta-Furans	4.10e+07		30:14	0.99	284	D,M	2.50	-	*	881 15
Total Hexa-Furans	8.37e+09		35:15	1.16	60700	D,M	2.50	-	*	11
Total Hepta-Furans	*		NotFnd	1.30	* 374,000		2.50	-	*	0

847 3130
DL JC 1/8/16

Analyst: J Date: 1/8/16

Totals class: Total Tetra-Dioxins

Entry #: 38

Run: 11

File: 08JAN16Z

S: 4 I: 1 F: 1

Acquired: 8-JAN-16 13:03:21

Total Concentration: 12.4

Unnamed Concentration: 12.0

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
24:23	4.41e+05	5.80e+05	0.76 y	1.02e+06	6.72	
24:40	1.39e+05	1.59e+05	0.88 y	2.98e+05	1.96	
25:47	5.31e+04	6.17e+04	0.86 y	1.15e+05	0.756	
25:57	5.21e+04	6.89e+04	0.76 y	1.21e+05	0.797	
26:07	2.23e+04	2.68e+04	0.83 y	4.91e+04	0.323	
26:50	4.89e+04	5.65e+04	0.87 y	1.05e+05	0.695	
27:09	5.21e+04	6.39e+04	0.81 y	1.16e+05	0.764	
27:24	2.36e+04	3.59e+04	0.66 y	5.95e+04	0.392	2,3,7,8-TCDD

Totals class: Total Penta-Dioxins

Entry #: 39

Run: 11

File: 08JAN16Z

S: 4 I: 1 F: 2

Acquired: 8-JAN-16 13:03:21

Total Concentration: 68.6

Unnamed Concentration: 59.3

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
30:15	7.00e+05	4.65e+05	1.50 y	1.16e+06	12.6	
30:52	6.08e+04	3.42e+04	1.78 y	9.50e+04	1.03	
31:29	9.09e+05	5.78e+05	1.57 y	1.49e+06	16.1	
31:43	2.71e+05	1.83e+05	1.48 y	4.54e+05	4.92	
31:51	4.86e+05	2.99e+05	1.63 y	7.85e+05	8.52	
32:08	2.91e+05	1.79e+05	1.62 y	4.70e+05	5.10	
32:37	3.81e+05	2.51e+05	1.52 y	6.33e+05	6.86	
33:15	5.29e+05	3.31e+05	1.60 y	8.60e+05	9.32	1,2,3,7,8-PeCDD
33:21	1.31e+05	7.45e+04	1.76 y	2.06e+05	2.23	
33:50	1.04e+05	6.67e+04	1.57 y	1.71e+05	1.86	

Totals class: Total Hexa-Dioxins

Entry #: 40

Run: 11

File: 08JAN16Z

S: 4 I: 1 F: 3

Acquired: 8-JAN-16 13:03:21

Total Concentration: 13200

Unnamed Concentration: 6850

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
36:09	7.29e+07	5.84e+07	1.25 y	1.31e+08	1440	
37:04	1.06e+07	8.49e+06	1.25 y	1.91e+07	209	
37:30	2.59e+08	2.07e+08	1.25 y	4.66e+08	5100	
37:38	3.59e+06	2.77e+06	1.30 y	6.36e+06	69.5	
38:37	4.27e+06	3.47e+06	1.23 y	7.75e+06	87.2	1,2,3,4,7,8-HxCDD
38:45	2.86e+08	2.27e+08	1.26 y	5.12e+08	5890	1,2,3,6,7,8-HxCDD
39:04	1.91e+06	1.63e+06	1.17 y	3.53e+06	38.6	
39:12	1.74e+07	1.43e+07	1.22 y	3.17e+07	321	1,2,3,7,8,9-HxCDD

Totals class: Total Tetra-Furans

Entry #: 42

Run: 11

File: 08JAN16Z

S: 4 I: 1 F: 1

Acquired: 8-JAN-16 13:03:21

Total Concentration: 256

Unnamed Concentration: 255

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
23:12	2.25e+05	2.86e+05	0.79 y	5.10e+05	2.77	
23:29	6.24e+05	8.05e+05	0.78 y	1.43e+06	7.76	
23:48	2.62e+05	3.53e+05	0.74 y	6.16e+05	3.34	
24:07	7.17e+06	9.15e+06	0.78 y	1.63e+07	88.6	
24:25	6.35e+06	8.06e+06	0.79 y	1.44e+07	78.2	
24:44	3.45e+05	4.25e+05	0.81 y	7.70e+05	4.18	
24:57	6.59e+04	9.19e+04	0.72 y	1.58e+05	0.857	
25:21	1.40e+05	1.96e+05	0.71 y	3.37e+05	1.83	
25:35	2.36e+06	2.97e+06	0.79 y	5.32e+06	28.9	
25:47	1.86e+05	2.39e+05	0.78 y	4.25e+05	2.31	
25:56	1.48e+05	1.98e+05	0.75 y	3.46e+05	1.88	
26:10	3.62e+04	4.84e+04	0.75 y	8.46e+04	0.459	
26:18	3.05e+05	3.96e+05	0.77 y	7.01e+05	3.81	
26:30	3.18e+05	4.18e+05	0.76 y	7.36e+05	3.99	
26:35	4.47e+05	5.85e+05	0.76 y	1.03e+06	5.60	
26:41	1.19e+05	1.74e+05	0.68 y	2.94e+05	1.59	2,3,7,8-TCDF
27:02	3.79e+04	4.91e+04	0.77 y	8.70e+04	0.472	
27:22	3.74e+04	4.88e+04	0.77 y	8.63e+04	0.468	
27:51	9.77e+05	1.24e+06	0.79 y	2.22e+06	12.0	
28:04	1.51e+05	2.01e+05	0.75 y	3.52e+05	1.91	
28:28	4.15e+05	5.86e+05	0.71 y	1.00e+06	5.44	

Totals class: 1st Fn. Tot Penta-Furans Entry #: 43

Run: 11 File: 08JAN16Z S: 4 I: 1 F: 1
Acquired: 8-JAN-16 13:03:21

Total Concentration: 597 Unnamed Concentration: 597

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
28:27	5.21e+07	3.39e+07	1.54 y	8.60e+07	597	

Totals class: Total Penta-Furans

Entry #: 44

Run: 11

File: 08JAN16Z

S: 4 I: 1 F: 2

Acquired: 8-JAN-16 13:03:21

Total Concentration: 284

Unnamed Concentration: 253

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
30:14	8.97e+06	5.82e+06	1.54 y	1.48e+07	103	
30:45	1.33e+05	8.64e+04	1.53 y	2.19e+05	1.52	
30:58	2.18e+06	1.41e+06	1.55 y	3.59e+06	24.9	
31:15	1.56e+06	1.03e+06	1.51 y	2.59e+06	18.0	
31:30	9.42e+05	6.22e+05	1.51 y	1.56e+06	11.1	1,2,3,7,8-PeCDF
31:44	4.07e+06	2.72e+06	1.49 y	6.79e+06	47.1	
31:51	8.10e+05	5.25e+05	1.55 y	1.33e+06	9.27	
32:03	1.01e+06	6.43e+05	1.58 y	1.66e+06	11.5	
32:42	8.29e+04	6.16e+04	1.35 y	1.45e+05	1.00	
32:51	1.82e+06	1.21e+06	1.51 y	3.03e+06	20.5	2,3,4,7,8-PeCDF
32:54	1.13e+06	6.75e+05	1.68 y	1.81e+06	12.6	
33:02	1.06e+05	6.09e+04	1.74 y	1.67e+05	1.16	
33:55	1.08e+05	7.91e+04	1.36 y	1.87e+05	1.30	
34:06	1.75e+06	1.15e+06	1.52 y	2.90e+06	20.2	
34:16	1.16e+05	7.33e+04	1.59 y	1.90e+05	1.32	

Totals class: Total Hexa-Furans

Entry #: 45

Run: 11

File: 08JAN16Z

S: 4 I: 1 F: 3

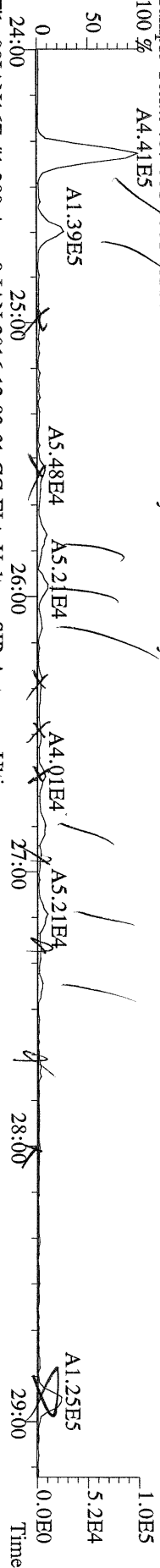
Acquired: 8-JAN-16 13:03:21

Total Concentration: 60700

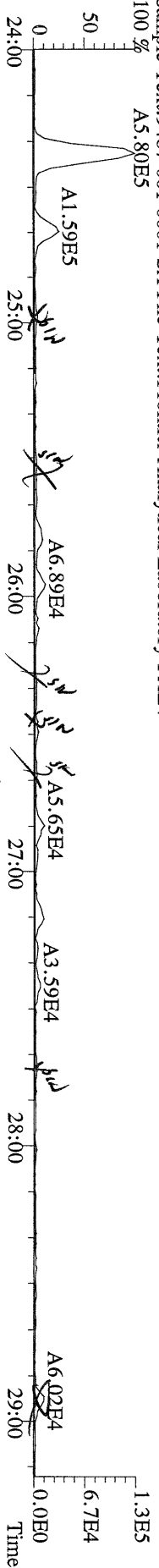
Unnamed Concentration: 58700

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
35:15	8.77e+07	6.98e+07	1.26 y	1.57e+08	1140	
35:32	7.36e+08	5.85e+08	1.26 y	1.32e+09	9590	
36:08	1.17e+07	9.42e+06	1.24 y	2.11e+07	153	
36:28	3.64e+09	2.91e+09	1.25 y	6.56e+09	47600	
37:04	2.48e+06	1.90e+06	1.31 y	4.37e+06	31.7	
37:13	6.27e+07	5.01e+07	1.25 y	1.13e+08	750	1,2,3,4,7,8-HxCDF
37:24	2.75e+07	2.18e+07	1.26 y	4.93e+07	343	1,2,3,6,7,8-HxCDF
37:52	2.85e+06	2.33e+06	1.22 y	5.18e+06	37.6	
38:04	1.46e+07	1.15e+07	1.27 y	2.62e+07	190	
38:22	5.86e+07	4.64e+07	1.26 y	1.05e+08	808	2,3,4,6,7,8-HxCDF
39:51	7.28e+06	5.97e+06	1.22 y	1.33e+07	104	1,2,3,7,8,9-HxCDF

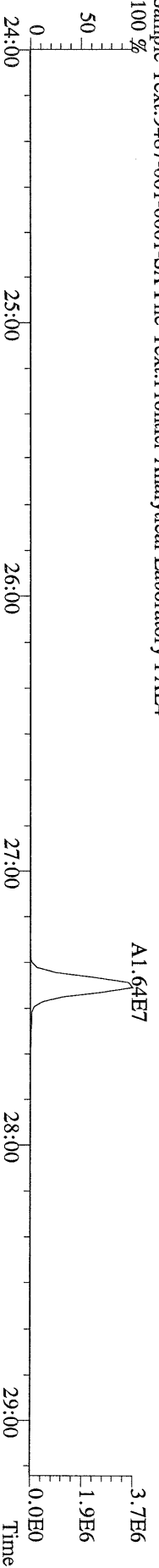
File:08JAN16Z #1-390 Acq: 8-JAN-2016 13:03:21 GC EI+ Voltage SIR Autospec-Ultima
319.8965 S:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4
100 % A4.41E5



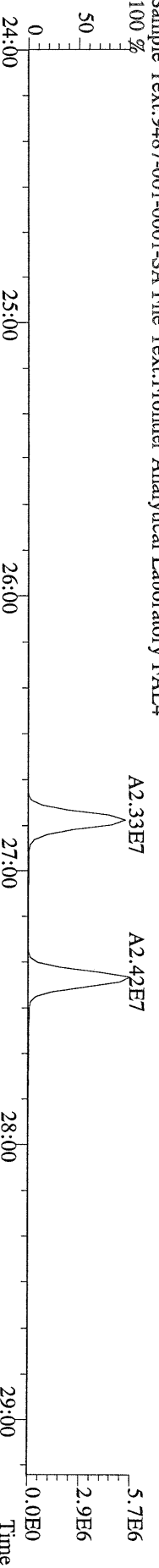
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321.8936 S:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4
100 % A5.80E5



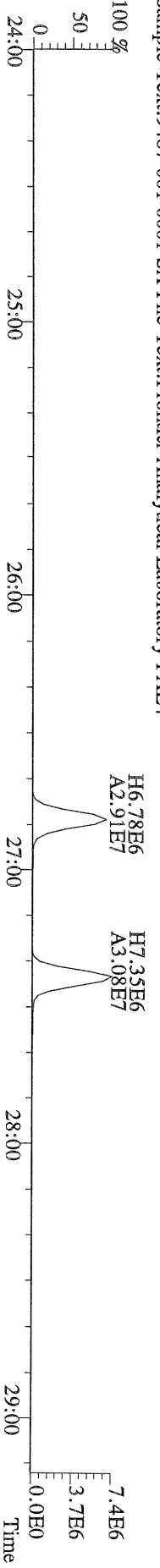
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327.8847 S:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4
100 %



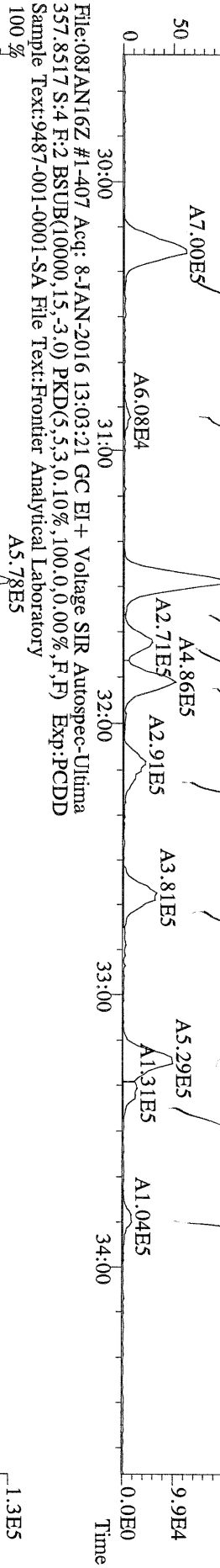
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331.9368 S:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4
100 %



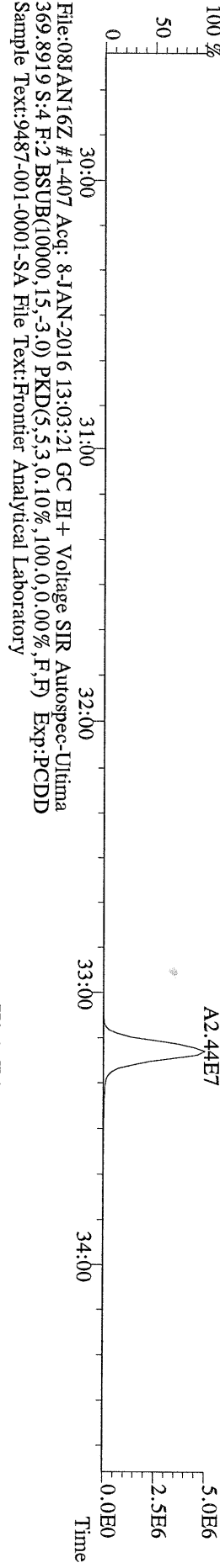
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333.9339 S:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4



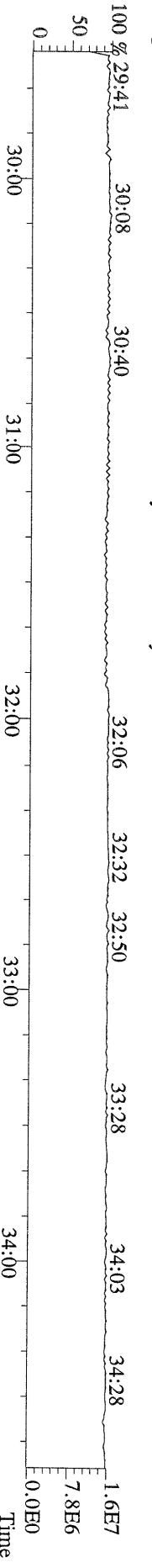
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355.8546 S:4 F:2 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory
100 %



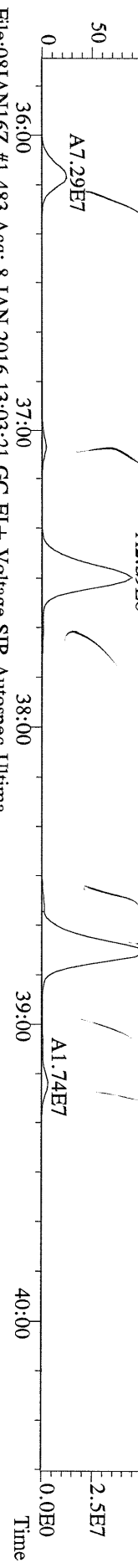
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367.8949 S:4 F:2 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory
100 %



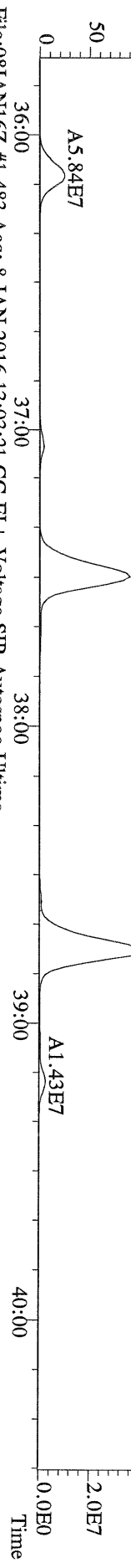
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366.9792 S:4 F:2 Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory



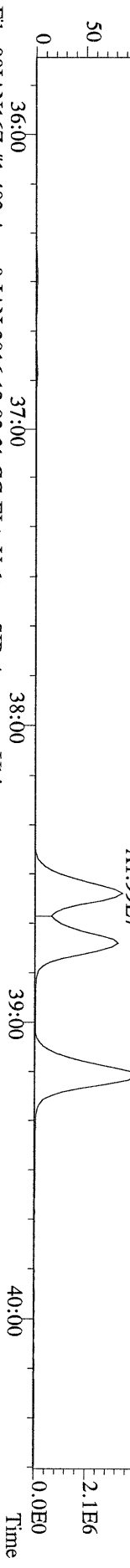
File:08JAN16Z #1-483 Acq: 8-JAN-2016 13:03:21 GC EI+ Voltage SIR Autospec-Ultima
389.8156 S:4 F:3 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory



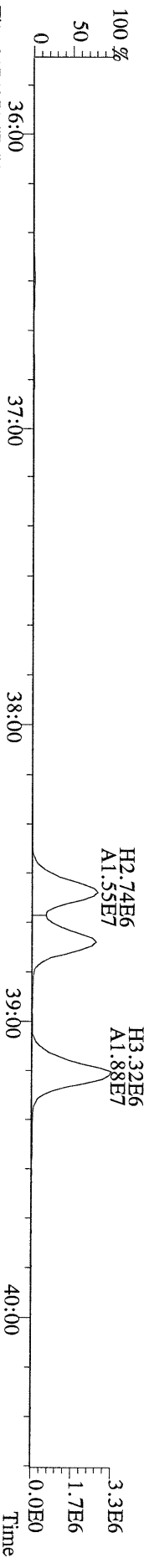
File:08JAN16Z #1-483 Acq: 8-JAN-2016 13:03:21 GC EI+ Voltage SIR Autospec-Ultima
391.8127 S:4 F:3 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory



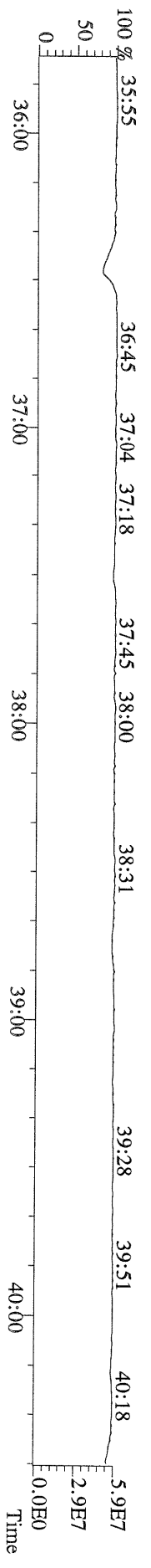
File:08JAN16Z #1-483 Acq: 8-JAN-2016 13:03:21 GC EI+ Voltage SIR Autospec-Ultima
401.8559 S:4 F:3 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory



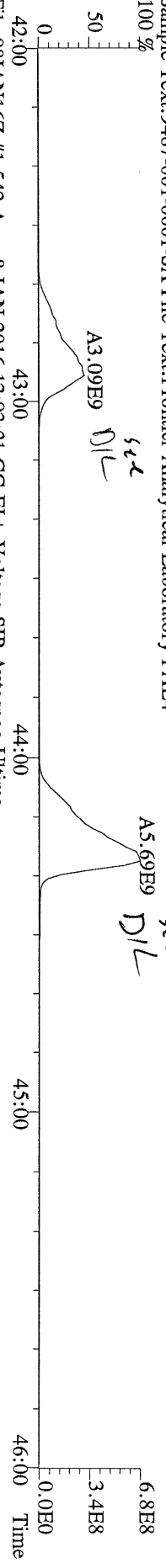
File:08JAN16Z #1-483 Acq: 8-JAN-2016 13:03:21 GC EI+ Voltage SIR Autospec-Ultima
403.8530 S:4 F:3 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory



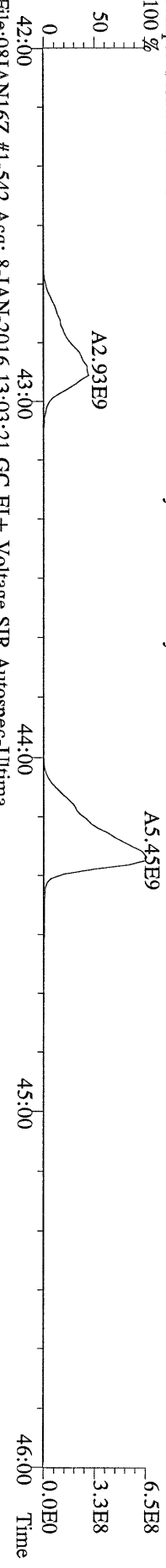
File:08JAN16Z #1-483 Acq: 8-JAN-2016 13:03:21 GC EI+ Voltage SIR Autospec-Ultima
380.9760 S:4 F:3 Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory



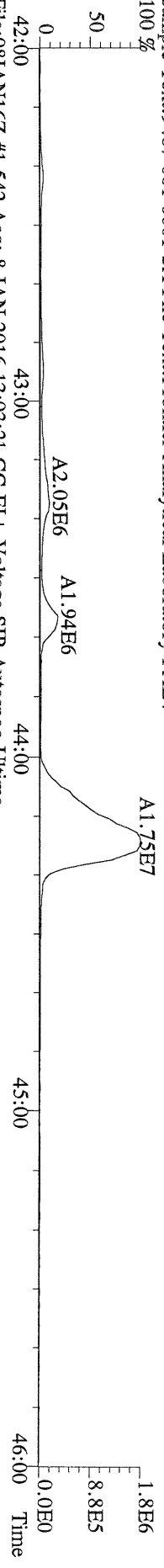
File:08JAN16Z #1-542 Acq: 8-JAN-2016 13:03:21 GC EI+ Voltage SIR Autospec-Ultima
423.7767 S:4 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4



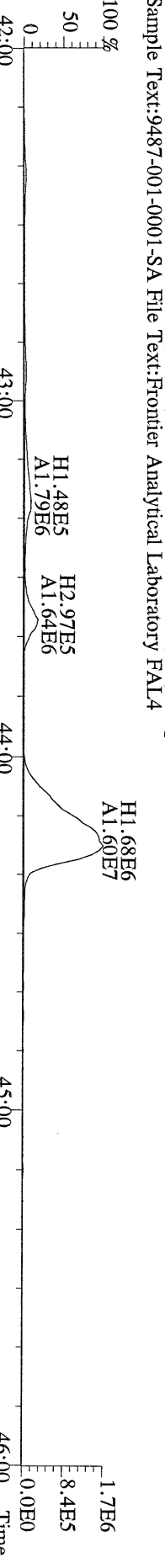
File:08JAN16Z #1-542 Acq: 8-JAN-2016 13:03:21 GC EI+ Voltage SIR Autospec-Ultima
425.7737 S:4 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4



File:08JAN16Z #1-542 Acq: 8-JAN-2016 13:03:21 GC EI+ Voltage SIR Autospec-Ultima
435.8169 S:4 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4



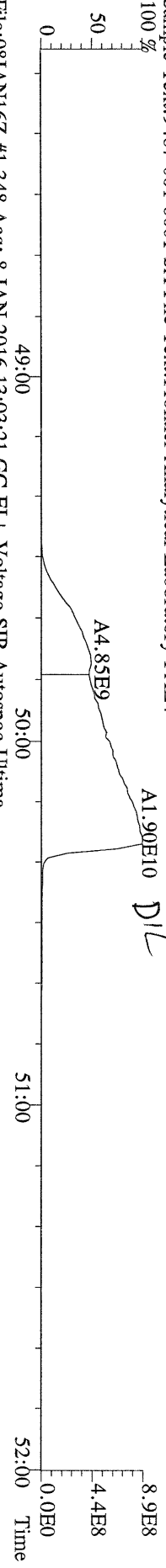
File:08JAN16Z #1-542 Acq: 8-JAN-2016 13:03:21 GC EI+ Voltage SIR Autospec-Ultima
437.8140 S:4 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4



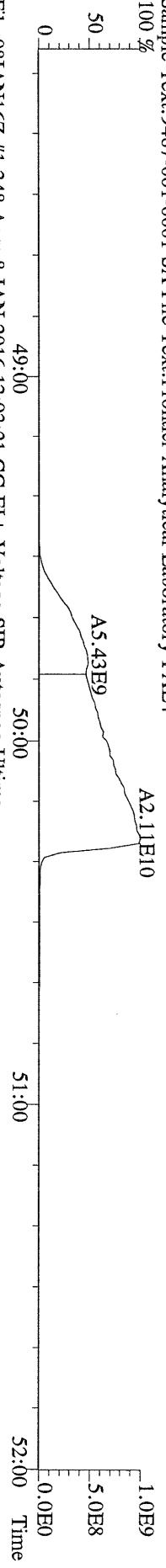
File:08JAN16Z #1-542 Acq: 8-JAN-2016 13:03:21 GC EI+ Voltage SIR Autospec-Ultima
430.9728 S:4 F:4 Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4



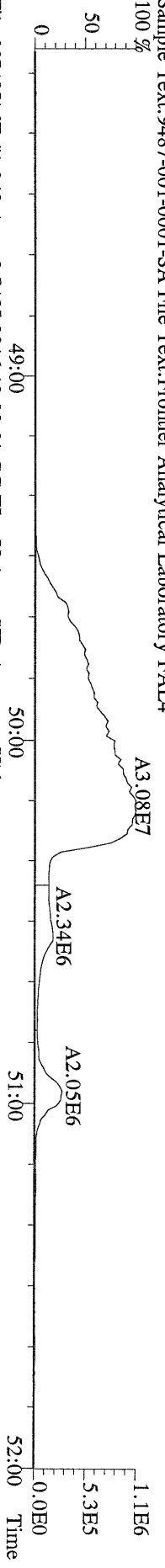
File:08JAN16Z #1-348 Acq: 8-JAN-2016 13:03:21 GC EI+ Voltage SIR Autospec-Ultima
457.7377 S:4 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4
100 %



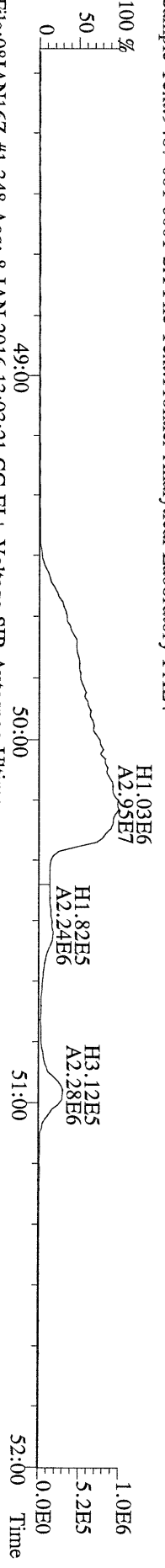
File:08JAN16Z #1-348 Acq: 8-JAN-2016 13:03:21 GC EI+ Voltage SIR Autospec-Ultima
459.7348 S:4 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4
100 %



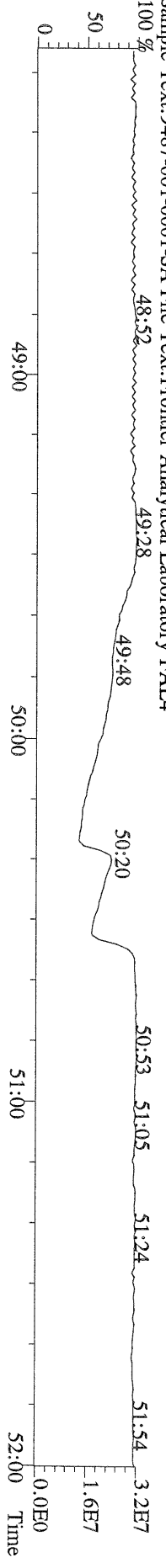
File:08JAN16Z #1-348 Acq: 8-JAN-2016 13:03:21 GC EI+ Voltage SIR Autospec-Ultima
469.7780 S:4 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4
100 %



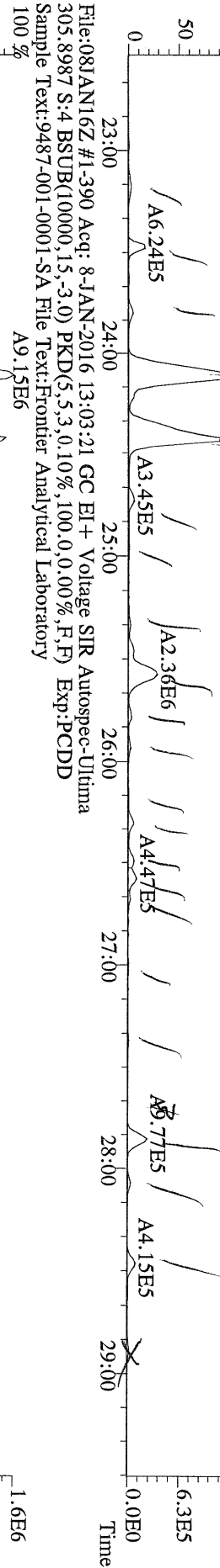
File:08JAN16Z #1-348 Acq: 8-JAN-2016 13:03:21 GC EI+ Voltage SIR Autospec-Ultima
471.7750 S:4 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4



File:08JAN16Z #1-348 Acq: 8-JAN-2016 13:03:21 GC EI+ Voltage SIR Autospec-Ultima
454.9728 S:4 F:5 Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4
100 %



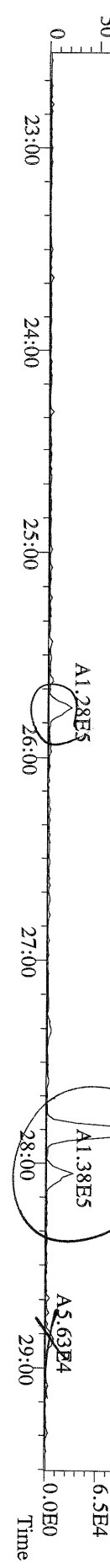
File:08JAN16Z #1-390 Acq: 8-JAN-2016 13:03:21 GC EI + Voltage SIR Autospec-Ultima
303.9016 S:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory



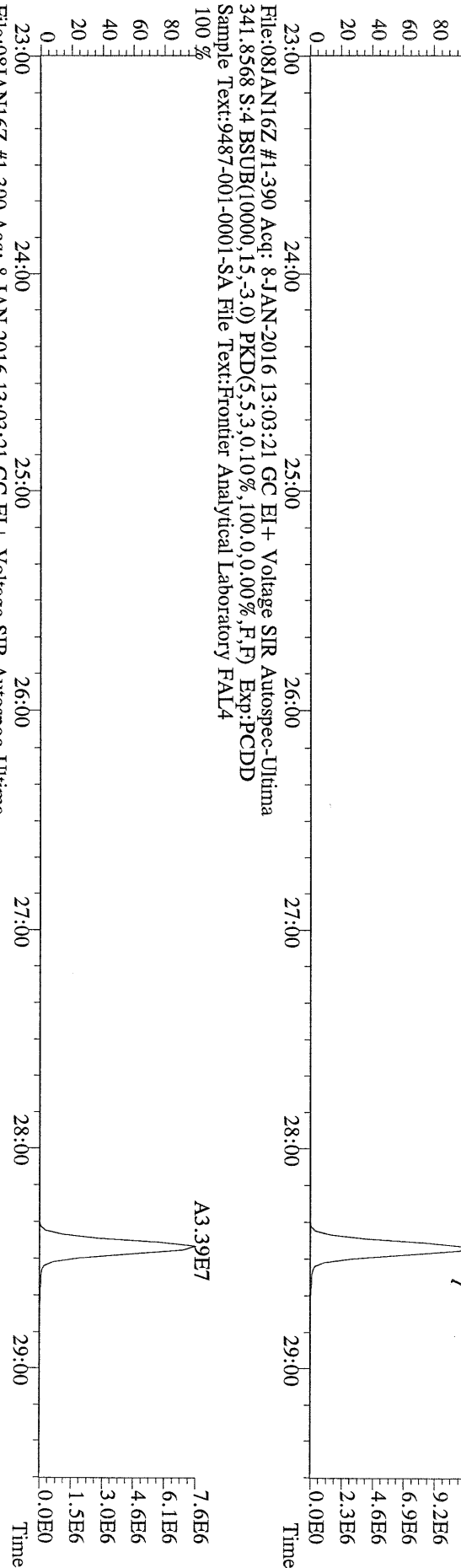
File:08JAN16Z #1-390 Acq: 8-JAN-2016 13:03:21 GC EI + Voltage SIR Autospec-Ultima
315.9419 S:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory



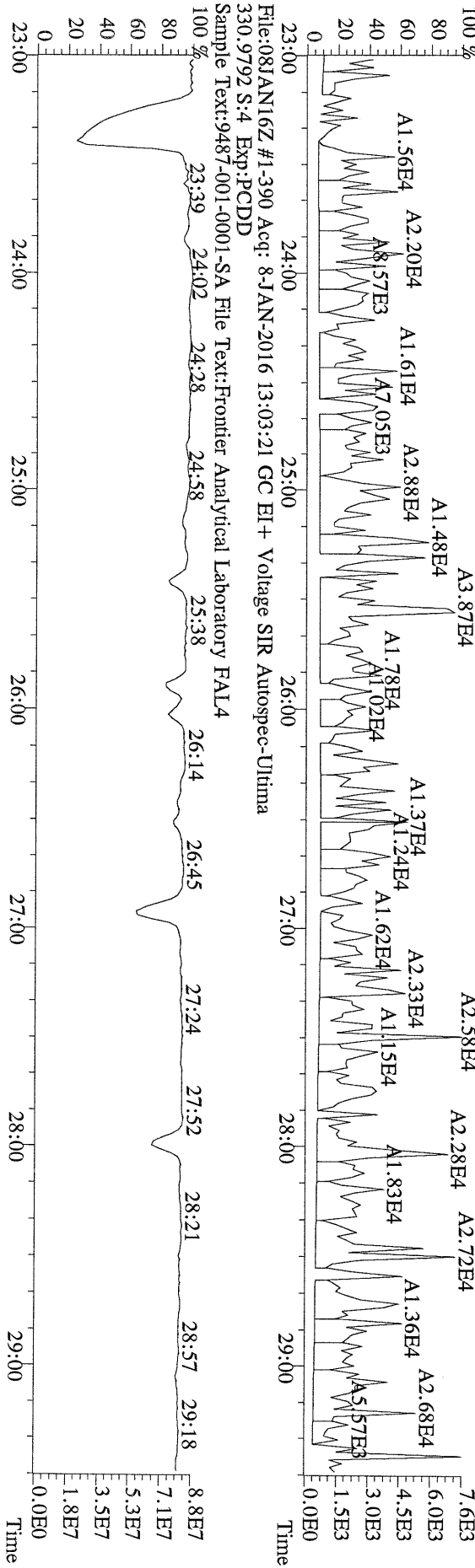
File:08JAN16Z #1-390 Acq: 8-JAN-2016 13:03:21 GC EI + Voltage SIR Autospec-Ultima
375.8364 S:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory



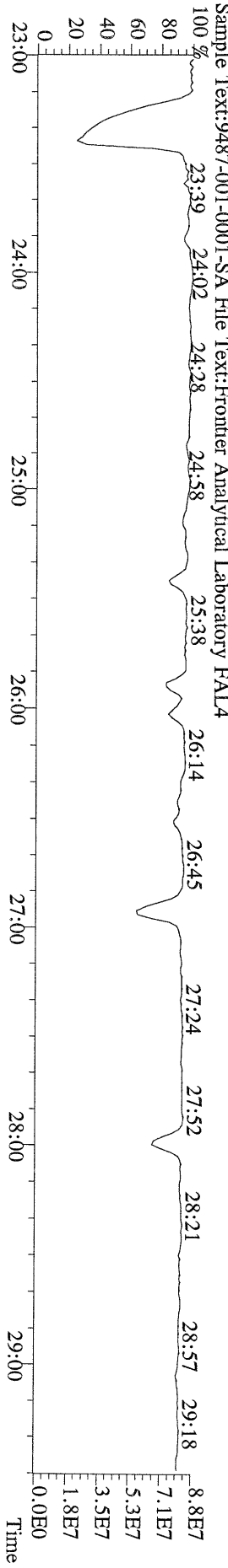
File:08JAN16Z #1-390 Acq: 8-JAN-2016 13:03:21 GC EI+ Voltage SIR Autospec-Ultima
 339.8597 S:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4
 100 %



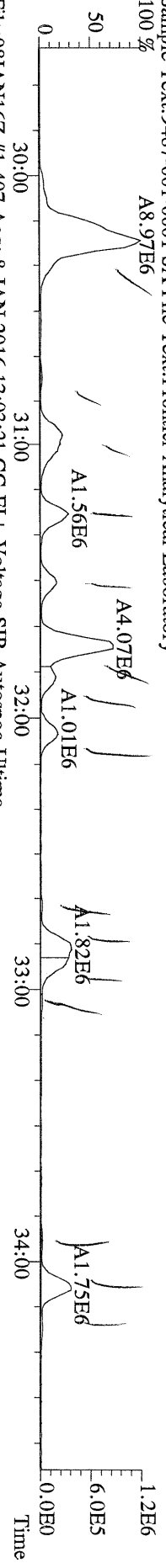
File:08JAN16Z #1-390 Acq: 8-JAN-2016 13:03:21 GC EI+ Voltage SIR Autospec-Ultima
 409.7974 S:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4
 100 %



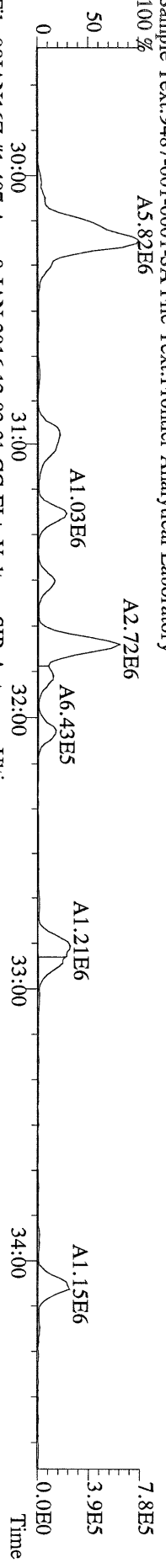
File:08JAN16Z #1-390 Acq: 8-JAN-2016 13:03:21 GC EI+ Voltage SIR Autospec-Ultima
 330.9792 S:4 Exp:PCDD
 Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4



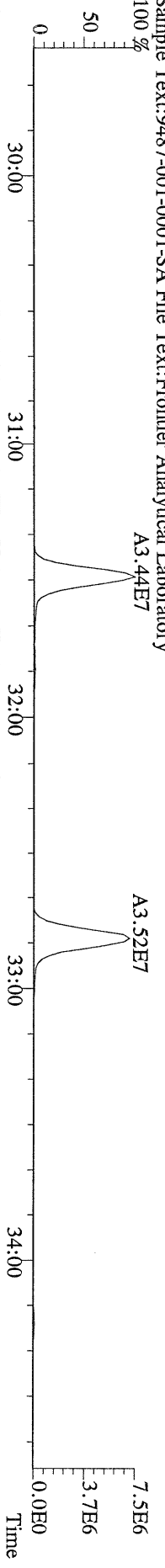
File:08JAN16Z #1-407 Acq: 8-JAN-2016 13:03:21 GC EI+ Voltage SIR Autospec-Ultima
339.8597 S:4 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory



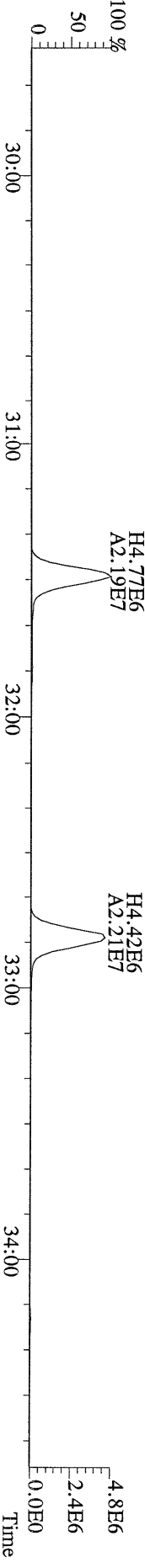
File:08JAN16Z #1-407 Acq: 8-JAN-2016 13:03:21 GC EI+ Voltage SIR Autospec-Ultima
341.8568 S:4 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory



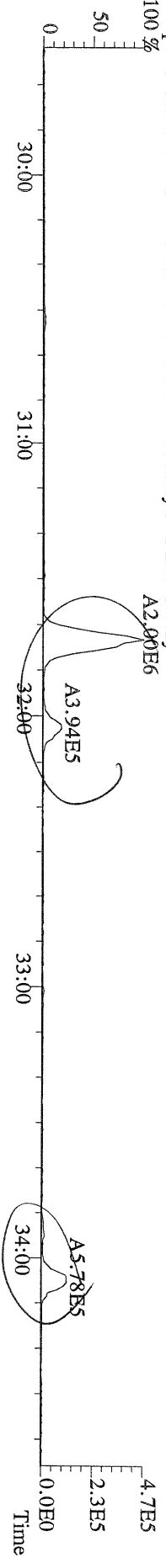
File:08JAN16Z #1-407 Acq: 8-JAN-2016 13:03:21 GC EI+ Voltage SIR Autospec-Ultima
351.9000 S:4 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory



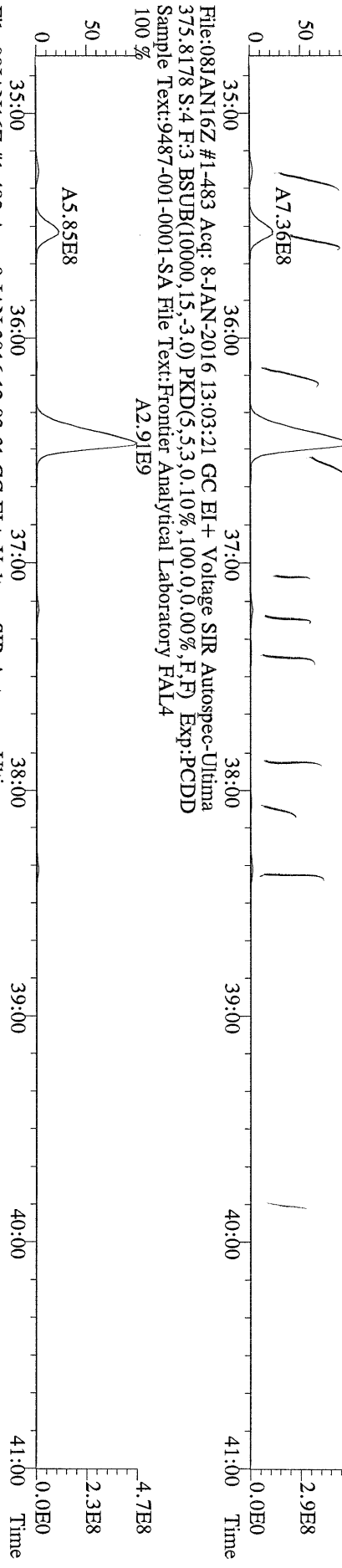
File:08JAN16Z #1-407 Acq: 8-JAN-2016 13:03:21 GC EI+ Voltage SIR Autospec-Ultima
353.8970 S:4 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory



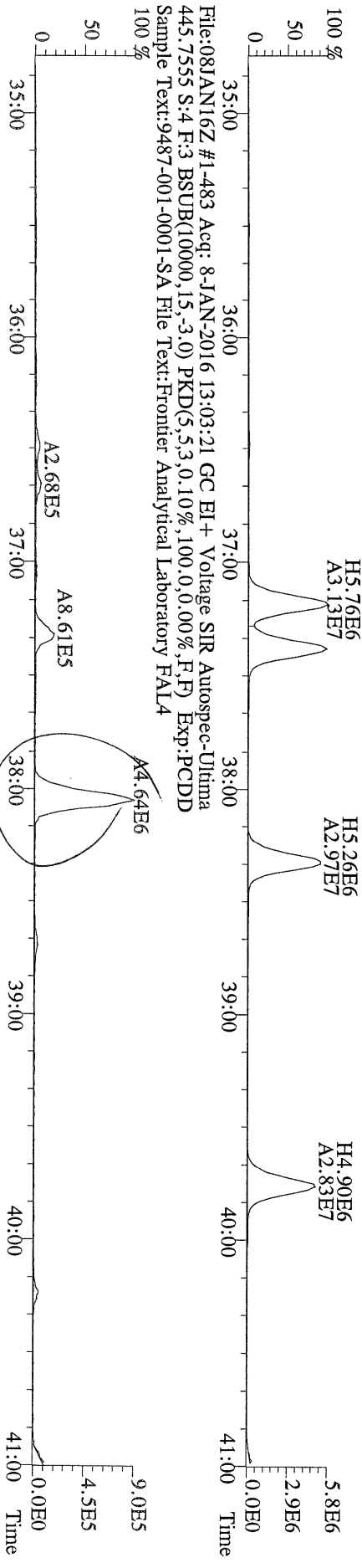
File:08JAN16Z #1-407 Acq: 8-JAN-2016 13:03:21 GC EI+ Voltage SIR Autospec-Ultima
409.7974 S:4 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory



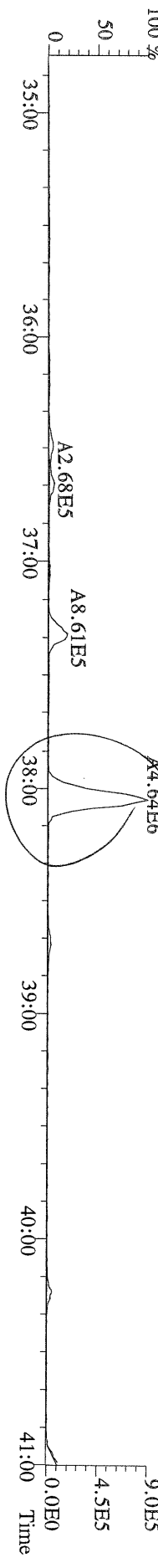
File:08JAN16Z #1-483 Acq: 8-JAN-2016 13:03:21 GC EI+ Voltage SIR Autospec-Ultima
373.8207 S:4 F:3 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4



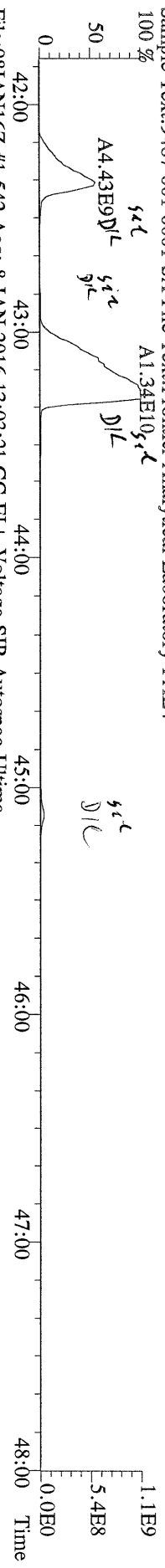
File:08JAN16Z #1-483 Acq: 8-JAN-2016 13:03:21 GC EI+ Voltage SIR Autospec-Ultima
383.8639 S:4 F:3 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4



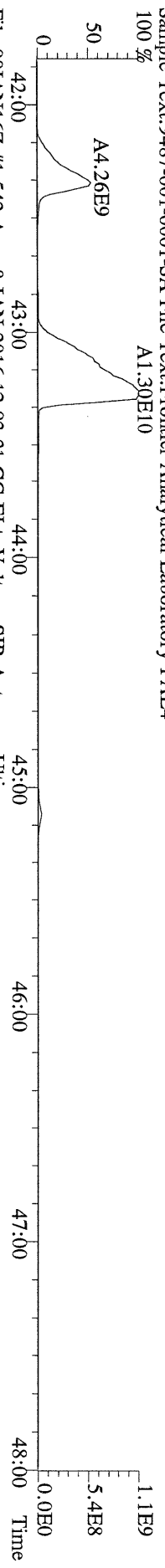
File:08JAN16Z #1-483 Acq: 8-JAN-2016 13:03:21 GC EI+ Voltage SIR Autospec-Ultima
445.7555 S:4 F:3 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4



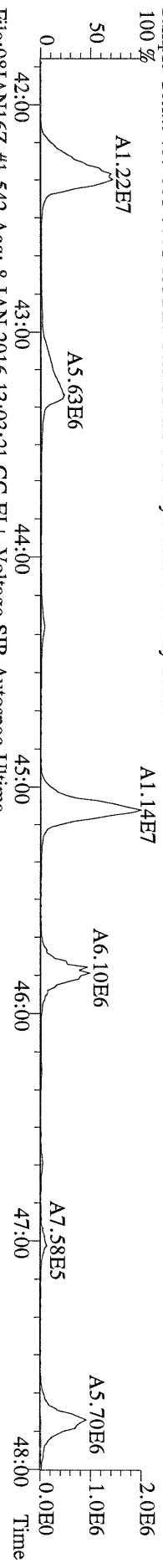
File:08JAN16Z #1-542 Acq: 8-JAN-2016 13:03:21 GC EI+ Voltage SIR Autospec-Ultima
407.7818 S:4 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4



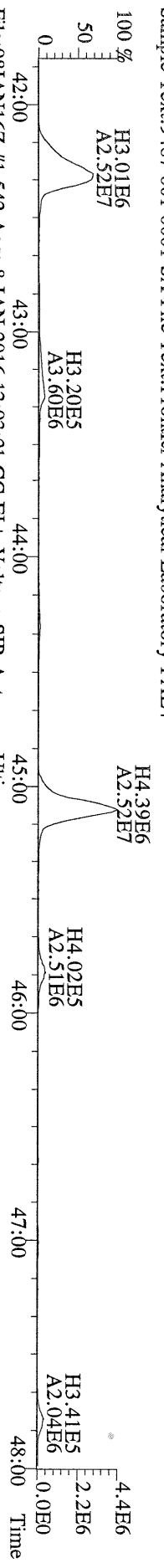
File:08JAN16Z #1-542 Acq: 8-JAN-2016 13:03:21 GC EI+ Voltage SIR Autospec-Ultima
409.7788 S:4 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4



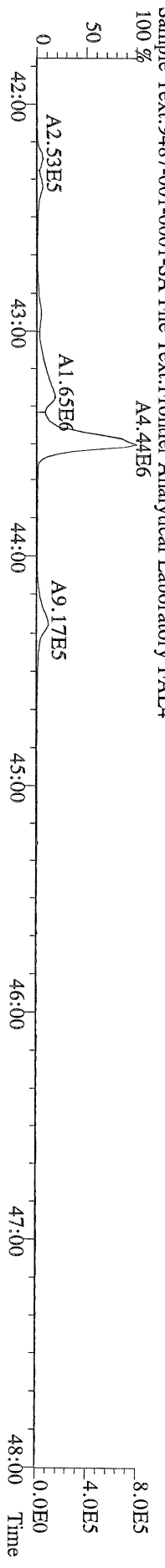
File:08JAN16Z #1-542 Acq: 8-JAN-2016 13:03:21 GC EI+ Voltage SIR Autospec-Ultima
417.8253 S:4 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4



File:08JAN16Z #1-542 Acq: 8-JAN-2016 13:03:21 GC EI+ Voltage SIR Autospec-Ultima
419.8220 S:4 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4



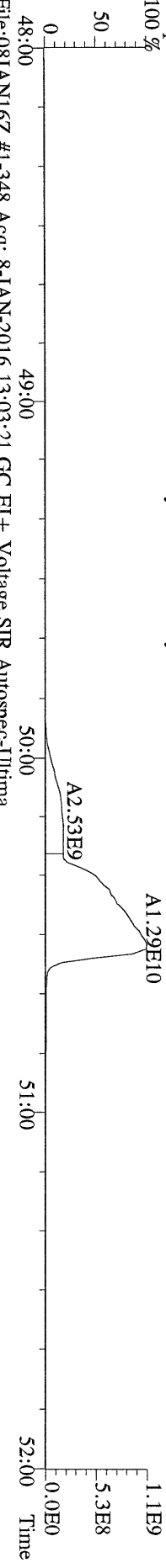
File:08JAN16Z #1-542 Acq: 8-JAN-2016 13:03:21 GC EI+ Voltage SIR Autospec-Ultima
479.7165 S:4 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4



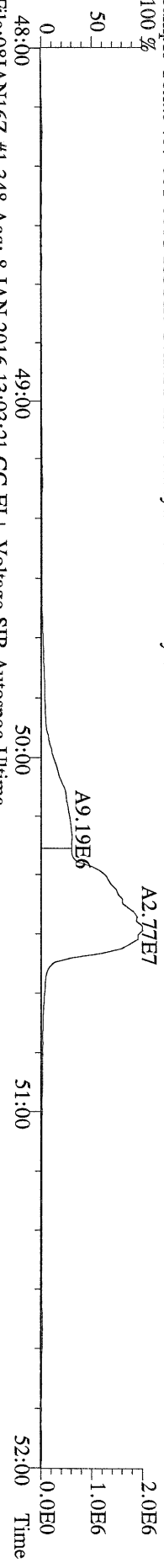
File:08JAN16Z #1-348 Acq: 8-JAN-2016 13:03:21 GC EI+ Voltage SIR Autospec-Ultima
441.7428 S:4 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4
100 %



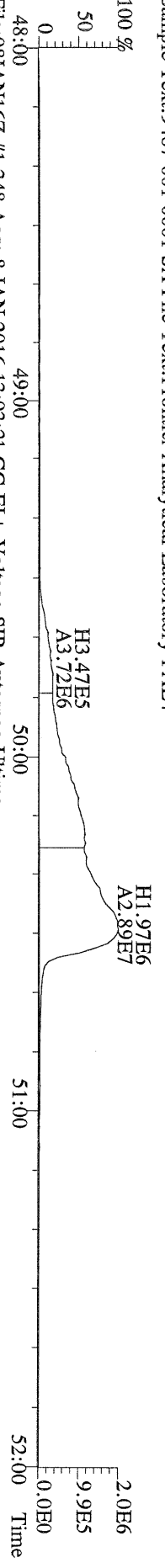
File:08JAN16Z #1-348 Acq: 8-JAN-2016 13:03:21 GC EI+ Voltage SIR Autospec-Ultima
443.7398 S:4 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4
100 %



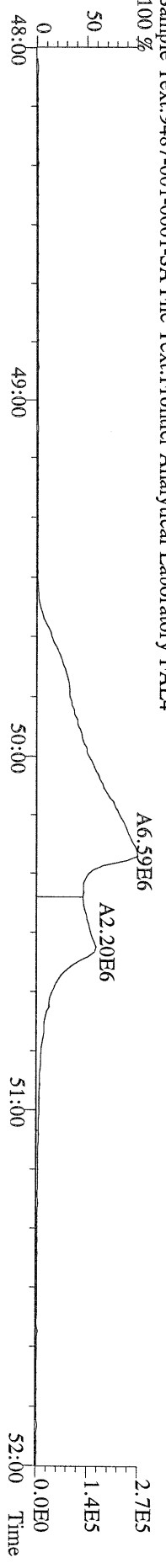
File:08JAN16Z #1-348 Acq: 8-JAN-2016 13:03:21 GC EI+ Voltage SIR Autospec-Ultima
453.7831 S:4 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4
100 %



File:08JAN16Z #1-348 Acq: 8-JAN-2016 13:03:21 GC EI+ Voltage SIR Autospec-Ultima
455.7801 S:4 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4



File:08JAN16Z #1-348 Acq: 8-JAN-2016 13:03:21 GC EI+ Voltage SIR Autospec-Ultima
513.6775 S:4 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4
100 %



Totals class: Total Hepta-Dioxins

Entry #: 41

Run: 20

File: 07JAN16Y

S: 12 I: 1 F: 4

Acquired: 8-JAN-16 01:42:05

Total Concentration: 183000

Unnamed Concentration: 59200

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
42:49	6.56e+07	6.21e+07	1.06 y	1.28e+08	59200	
44:12	1.38e+08	1.30e+08	1.06 y	2.68e+08	124000	1,2,3,4,6,7,8-HpCDD

Totals class: Total Hepta-Furans

Entry #: 46

Run: 20

File: 07JAN16Y

S: 12 I: 1 F: 4

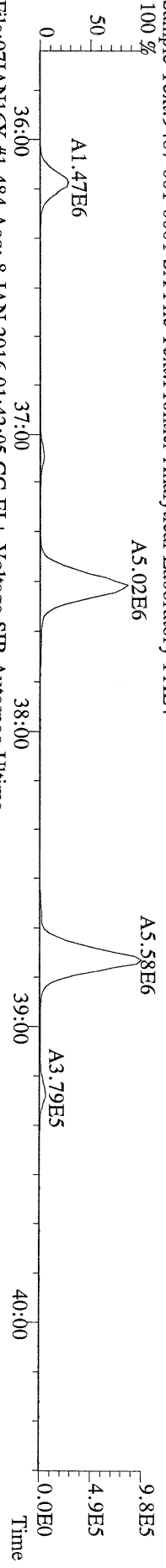
Acquired: 8-JAN-16 01:42:05

Total Concentration: 374000

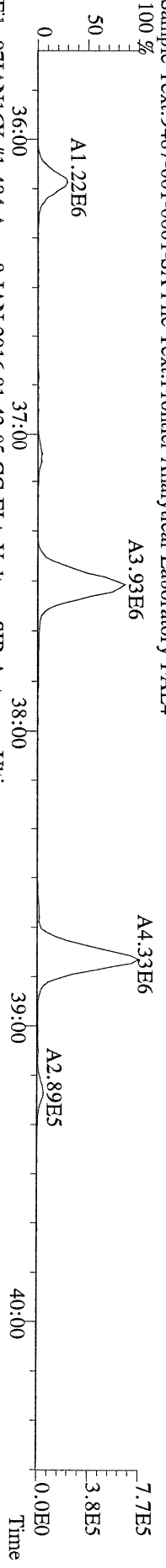
Unnamed Concentration: 302000

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
42:18	1.09e+08	1.02e+08	1.07 y	2.12e+08	68600	1,2,3,4,6,7,8-HpCDF
42:50	6.99e+05	7.04e+05	0.99 y	1.40e+06	512	
43:08	4.28e+08	3.99e+08	1.07 y	8.27e+08	302000	
45:07	4.27e+06	4.01e+06	1.07 y	8.28e+06	3450	1,2,3,4,7,8,9-HpCDF

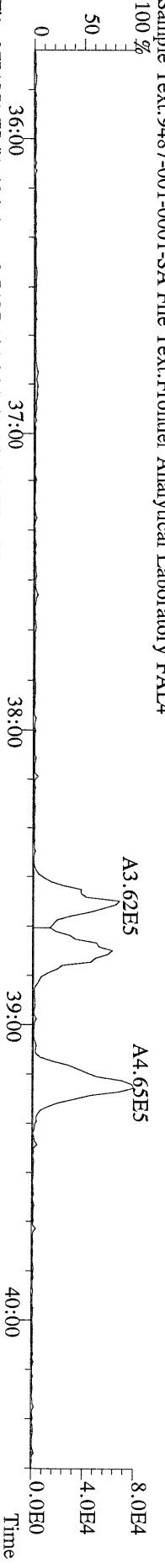
File:07JAN16Y #1-484 Acq: 8-JAN-2016 01:42:05 GC EI + Voltage SIR Autospec-Ultima
 389.8156 S:12 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4
 100 %



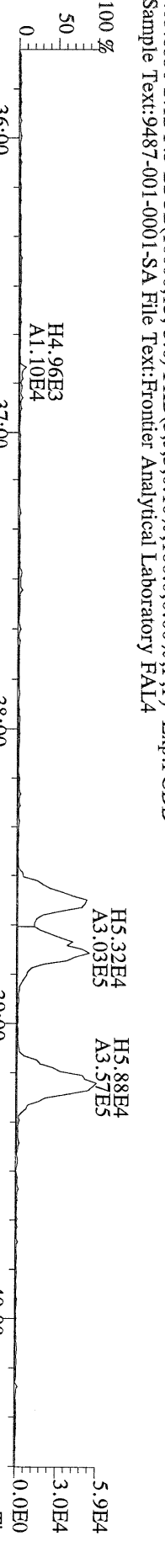
File:07JAN16Y #1-484 Acq: 8-JAN-2016 01:42:05 GC EI + Voltage SIR Autospec-Ultima
 391.8127 S:12 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4
 100 %



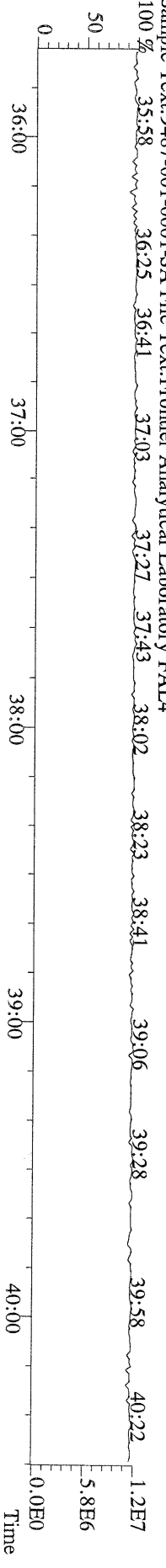
File:07JAN16Y #1-484 Acq: 8-JAN-2016 01:42:05 GC EI + Voltage SIR Autospec-Ultima
 401.8559 S:12 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4
 100 %



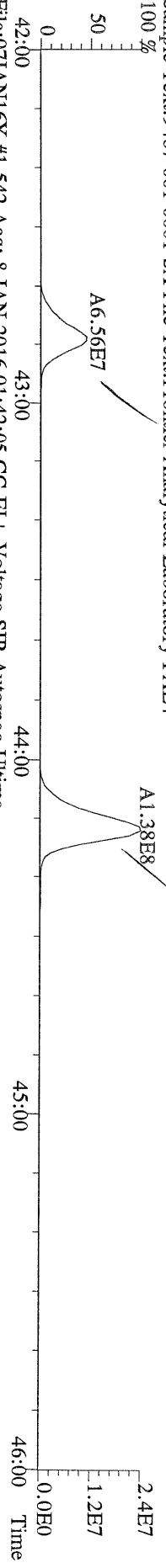
File:07JAN16Y #1-484 Acq: 8-JAN-2016 01:42:05 GC EI + Voltage SIR Autospec-Ultima
 403.8530 S:12 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4



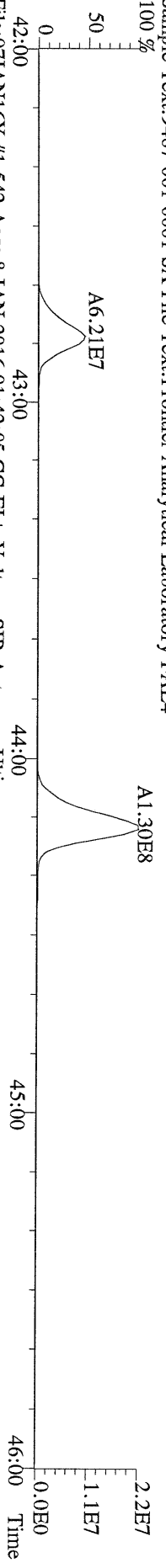
File:07JAN16Y #1-484 Acq: 8-JAN-2016 01:42:05 GC EI + Voltage SIR Autospec-Ultima
 380.9760 S:12 F:3 Exp:PCDD
 Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4
 100 %



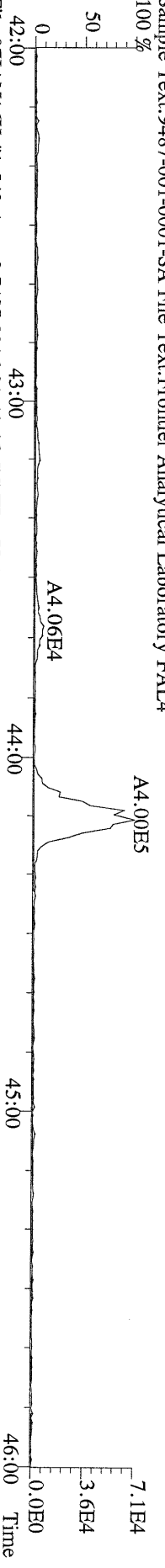
File:07JAN16Y #1-542 Acq: 8-JAN-2016 01:42:05 GC EI+ Voltage SIR Autospec-Ultima
423.7767 S:12 F:4 BSUB(10000,15,-3.0) PKD(5,5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4
100 %



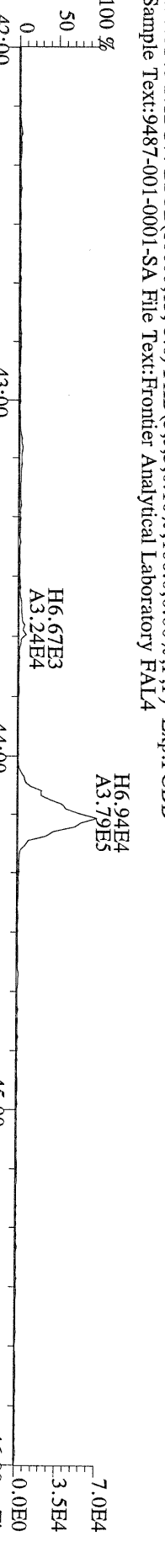
File:07JAN16Y #1-542 Acq: 8-JAN-2016 01:42:05 GC EI+ Voltage SIR Autospec-Ultima
425.7737 S:12 F:4 BSUB(10000,15,-3.0) PKD(5,5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4
100 %



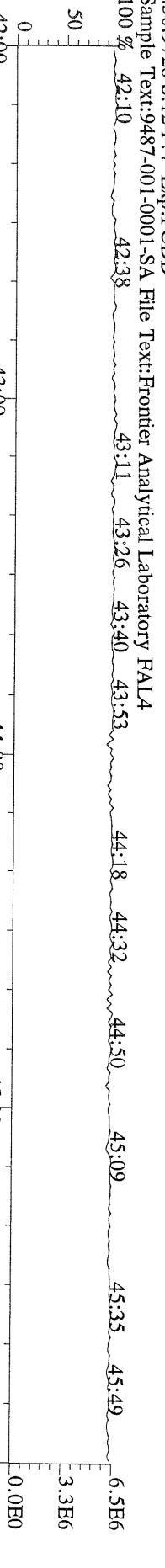
File:07JAN16Y #1-542 Acq: 8-JAN-2016 01:42:05 GC EI+ Voltage SIR Autospec-Ultima
435.8169 S:12 F:4 BSUB(10000,15,-3.0) PKD(5,5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4
100 %



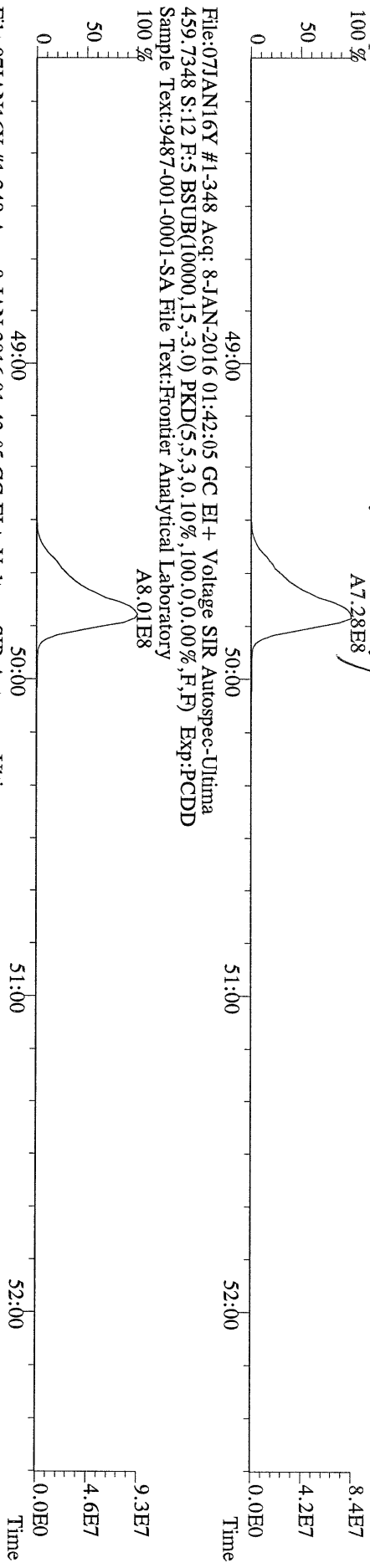
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437.8140 S:12 F:4 BSUB(10000,15,-3.0) PKD(5,5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4



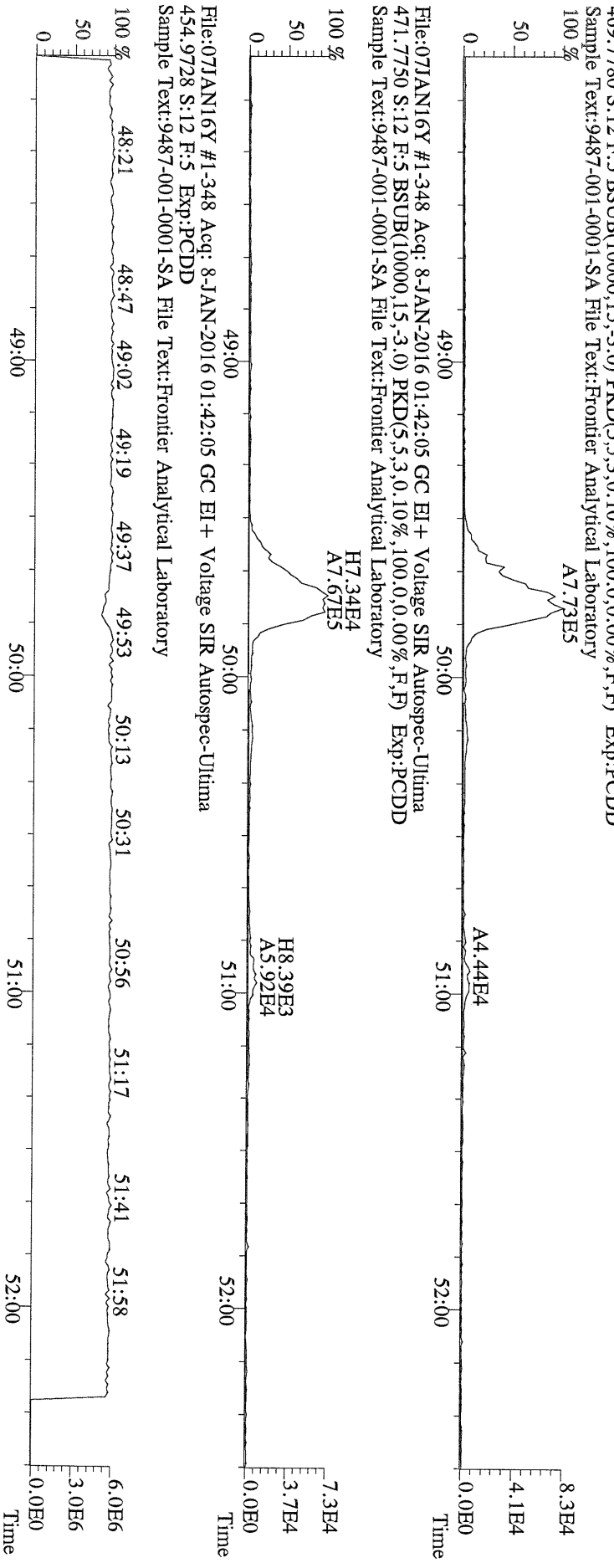
File:07JAN16Y #1-542 Acq: 8-JAN-2016 01:42:05 GC EI+ Voltage SIR Autospec-Ultima
430.9728 S:12 F:4 Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4
100 %



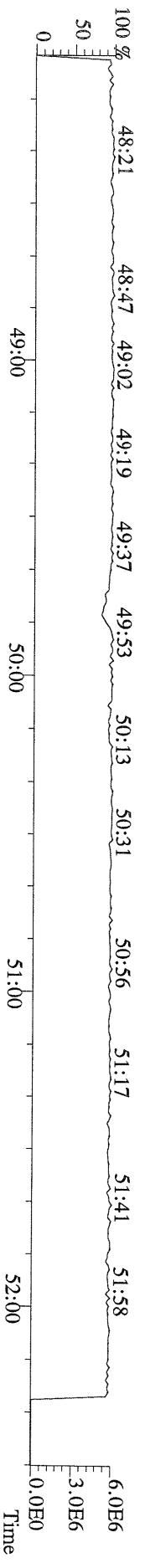
File:07JIAN16Y #1-348 Acq: 8-JAN-2016 01:42:05 GC EI+ Voltage SIR Autospec-Ultima
457.7377 S:12 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory



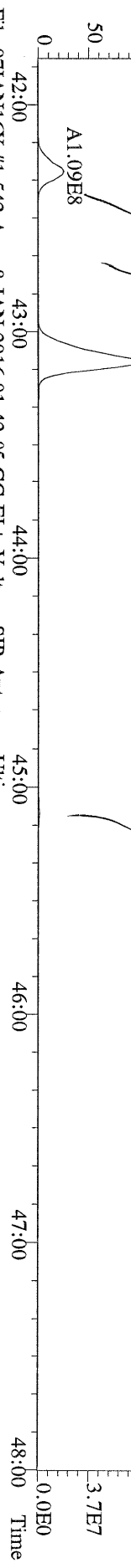
File:07JIAN16Y #1-348 Acq: 8-JAN-2016 01:42:05 GC EI+ Voltage SIR Autospec-Ultima
469.7780 S:12 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory



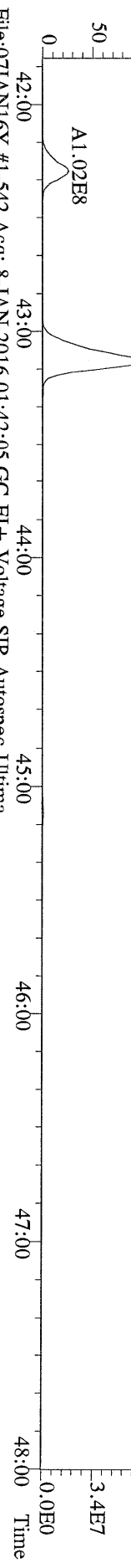
File:07JIAN16Y #1-348 Acq: 8-JAN-2016 01:42:05 GC EI+ Voltage SIR Autospec-Ultima
454.9728 S:12 F:5 Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory



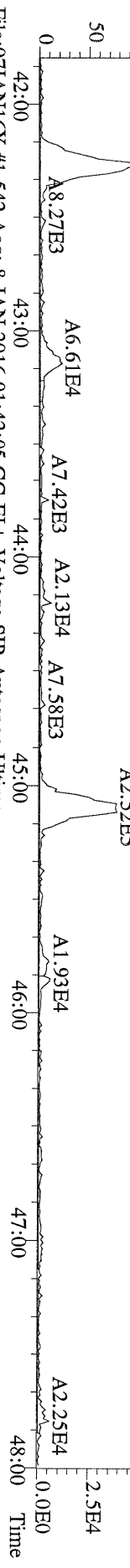
File:07JIAN16Y #1-542 Acq: 8-JAN-2016 01:42:05 GC EI+ Voltage SIR Autospec-Ultima
 407.7818 S:12 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4



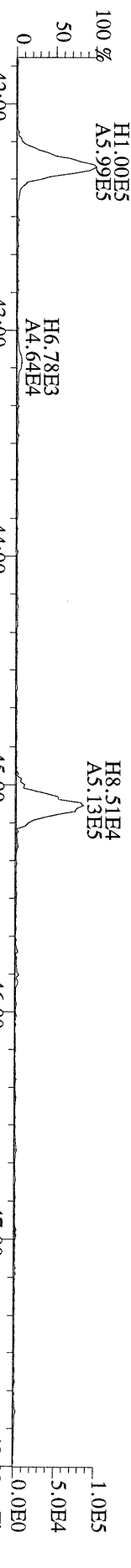
File:07JIAN16Y #1-542 Acq: 8-JAN-2016 01:42:05 GC EI+ Voltage SIR Autospec-Ultima
 409.7788 S:12 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4



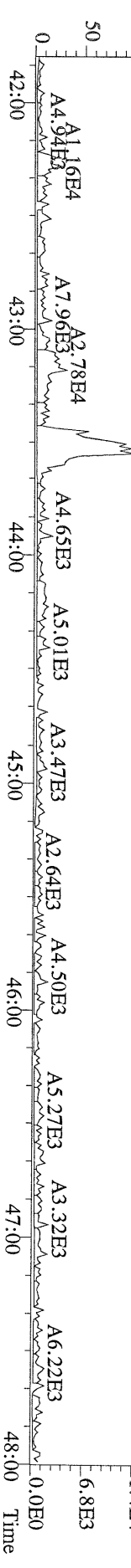
File:07JIAN16Y #1-542 Acq: 8-JAN-2016 01:42:05 GC EI+ Voltage SIR Autospec-Ultima
 417.8253 S:12 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4



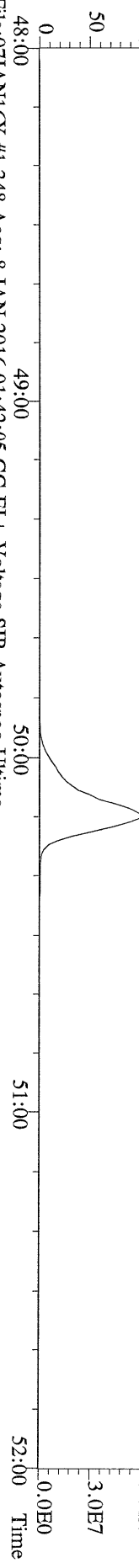
File:07JIAN16Y #1-542 Acq: 8-JAN-2016 01:42:05 GC EI+ Voltage SIR Autospec-Ultima
 419.8220 S:12 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4



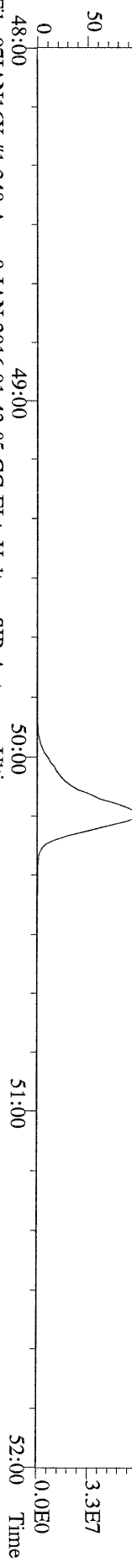
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 479.7165 S:12 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4



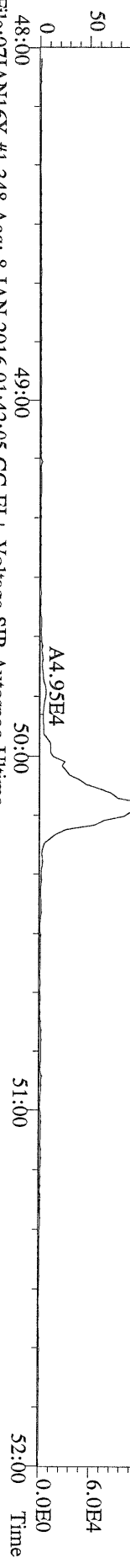
File:07JAN16Y #1-348 Acq: 8-JAN-2016 01:42:05 GC EI+ Voltage SIR Autospec-Ultima
441.7428 S:12 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4



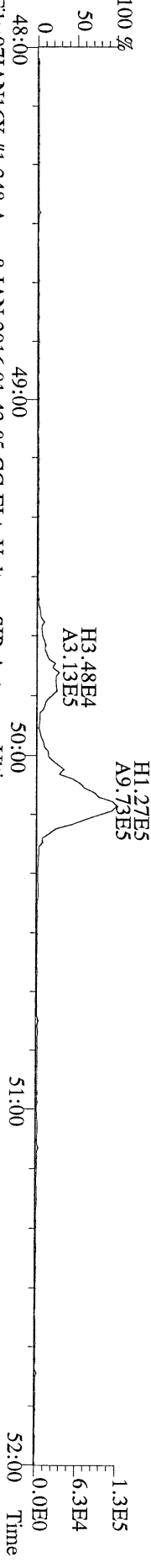
File:07JAN16Y #1-348 Acq: 8-JAN-2016 01:42:05 GC EI+ Voltage SIR Autospec-Ultima
443.7398 S:12 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4



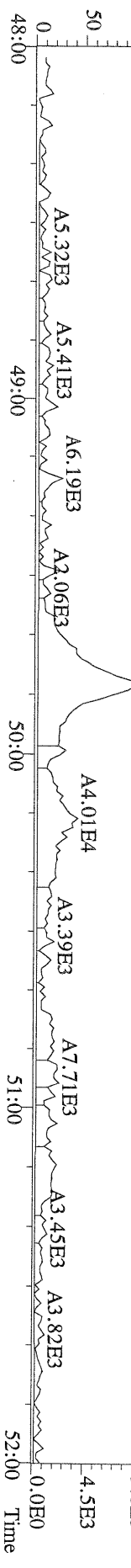
File:07JAN16Y #1-348 Acq: 8-JAN-2016 01:42:05 GC EI+ Voltage SIR Autospec-Ultima
453.7831 S:12 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4



File:07JAN16Y #1-348 Acq: 8-JAN-2016 01:42:05 GC EI+ Voltage SIR Autospec-Ultima
455.7801 S:12 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4



File:07JAN16Y #1-348 Acq: 8-JAN-2016 01:42:05 GC EI+ Voltage SIR Autospec-Ultima
513.6775 S:12 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:9487-001-0001-SA File Text:Frontier Analytical Laboratory FAL4



Frontier Analytical Laboratory

Data Filename: 07JAN16Z

Analyte: PCDDFAL4-12-29-15-7PT Cal: PCDDFAL4-12-29-15-7PT

Name	RRF	S. D.	%RSD	S1 RRF#1	S2 RRF#2	S3 RRF#3	S4 RRF#4	S5 RRF#5	S6 RRF#6	S1 RRF#7
2,3,7,8-TCDD	1.08	0.0710	6.57 %	1.16	1.10	1.08	1.11	0.99	0.99	1.15
1,2,3,7,8-PeCDD	0.90	0.0496	5.49 %	0.93	0.91	0.90	0.88	0.86	0.85	1.00
1,2,3,4,7,8-HxCDD	0.98	0.0591	6.02 %	1.07	1.02	0.97	0.94	0.93	0.91	1.03
1,2,3,6,7,8-HxCDD	1.00	0.0582	5.81 %	1.08	0.98	1.04	0.99	0.95	0.92	1.06
1,2,3,7,8,9-HxCDD	1.11	0.0518	4.65 %	1.17	1.14	1.11	1.11	1.05	1.04	1.17
1,2,3,4,6,7,8-HpCDD	1.09	0.0526	4.85 %	1.18	1.10	1.09	1.07	1.03	1.02	1.11
OCDD	1.04	0.0539	5.16 %	1.13	1.06	1.05	1.03	0.99	0.97	1.07
2,3,7,8-TCDF	1.05	0.0872	8.33 %	1.21	1.10	1.04	1.00	0.96	0.96	1.06
1,2,3,7,8-PeCDF	0.98	0.0349	3.56 %	1.05	0.98	0.98	0.98	0.95	0.94	0.97
2,3,4,7,8-PeCDF	1.01	0.0408	4.04 %	1.09	1.02	1.02	1.00	0.97	0.96	1.01
1,2,3,4,7,8-HxCDF	1.23	0.0538	4.38 %	1.31	1.26	1.21	1.20	1.18	1.16	1.27
1,2,3,6,7,8-HxCDF	1.17	0.0483	4.14 %	1.23	1.19	1.17	1.15	1.11	1.11	1.22
2,3,4,6,7,8-HxCDF	1.12	0.0474	4.24 %	1.16	1.13	1.13	1.10	1.07	1.05	1.18
1,2,3,7,8,9-HxCDF	1.15	0.0494	4.31 %	1.20	1.16	1.16	1.13	1.10	1.08	1.20
1,2,3,4,6,7,8-HpCDF	1.36	0.0481	3.53 %	1.42	1.37	1.37	1.35	1.31	1.30	1.41
1,2,3,4,7,8,9-HpCDF	1.23	0.0532	4.34 %	1.32	1.23	1.25	1.20	1.18	1.16	1.24
OCDF	1.13	0.0530	4.69 %	1.21	1.18	1.14	1.11	1.08	1.06	1.14
13C-2,3,7,8-TCDD	1.07	0.0234	2.18 %	1.06	1.07	1.07	1.06	1.11	1.05	1.10
13C-1,2,3,7,8-PeCDD	0.78	0.0383	4.93 %	0.77	0.76	0.76	0.74	0.79	0.76	0.85
13C-1,2,3,4,7,8-HxCDD	0.87	0.0202	2.33 %	0.88	0.86	0.88	0.87	0.90	0.84	0.85
13C-1,2,3,6,7,8-HxCDD	0.84	0.0232	2.77 %	0.82	0.85	0.84	0.85	0.87	0.82	0.81
13C-1,2,3,4,6,7,8-HpCDD	0.85	0.0242	2.84 %	0.86	0.87	0.85	0.83	0.88	0.82	0.87
13C-OCDD	0.70	0.0277	3.97 %	0.69	0.69	0.68	0.69	0.72	0.66	0.74
13C-2,3,7,8-TCDF	1.03	0.0172	1.66 %	1.02	1.03	1.03	1.02	1.06	1.02	1.06
13C-1,2,3,7,8-PeCDF	0.89	0.0226	2.52 %	0.87	0.89	0.88	0.88	0.94	0.89	0.91
13C-2,3,4,7,8-PeCDF	0.82	0.0391	4.74 %	0.81	0.80	0.80	0.79	0.83	0.83	0.91
13C-1,2,3,4,7,8-HxCDF	1.26	0.0374	2.96 %	1.23	1.24	1.28	1.22	1.31	1.25	1.31
13C-1,2,3,6,7,8-HxCDF	1.28	0.0348	2.71 %	1.24	1.28	1.29	1.26	1.33	1.25	1.32
13C-2,3,4,6,7,8-HxCDF	1.27	0.0308	2.44 %	1.23	1.26	1.27	1.25	1.31	1.23	1.30
13C-1,2,3,7,8,9-HxCDF	1.16	0.0341	2.93 %	1.13	1.17	1.15	1.16	1.22	1.13	1.20
13C-1,2,3,4,6,7,8-HpCDF	1.06	0.0419	3.95 %	1.03	1.04	1.06	1.04	1.09	1.02	1.14
13C-1,2,3,4,7,8,9-HpCDF	0.93	0.0512	5.53 %	0.89	0.92	0.90	0.91	0.96	0.87	1.03
13C-OCDF	0.95	0.0505	5.31 %	0.93	0.95	0.91	0.94	0.98	0.90	1.05
37Cl-2,3,7,8-TCDD	0.90	0.0647	7.21 %	0.95	0.89	0.79	0.90	0.88	0.87	1.00
13C-1,2,3,4-TCDD	-	-	- %	-	-	-	-	-	-	-
13C-1,2,3,4-TCDF	-	-	- %	-	-	-	-	-	-	-
13C-1,2,3,7,8,9-HxCDD	-	-	- %	-	-	-	-	-	-	-
Total Tetra-Dioxins	1.08	0.0710	6.57 %	1.16	1.10	1.08	1.11	0.99	0.99	1.15
Total Penta-Dioxins	0.90	0.0496	5.49 %	0.93	0.91	0.90	0.88	0.86	0.85	1.00
Total Hexa-Dioxins	1.03	0.0540	5.23 %	1.11	1.05	1.04	1.01	0.98	0.96	1.09
Total Hepta-Dioxins	1.09	0.0526	4.85 %	1.18	1.10	1.09	1.07	1.03	1.02	1.11
Total Tetra-Furans	1.05	0.0872	8.33 %	1.21	1.10	1.04	1.00	0.96	0.96	1.06
1st Fn. Tot Penta-Furans	0.99	0.0375	3.77 %	1.07	1.00	1.00	0.99	0.96	0.95	0.99
Total Penta-Furans	0.99	0.0375	3.77 %	1.07	1.00	1.00	0.99	0.96	0.95	0.99
Total Hexa-Furans	1.16	0.0487	4.18 %	1.22	1.18	1.17	1.14	1.11	1.10	1.22
Total Hepta-Furans	1.30	0.0492	3.79 %	1.37	1.31	1.31	1.28	1.25	1.24	1.33

Analyst: 6

Date: 1/7/16

USEPA - ITD

FORM 3A

PCDD/PCDF INITIAL CALIBRATION RELATIVE RESPONSES

Lab Name: Frontier Analytical Laboratory Episode No.:

Contract No.: SAS No.:

Initial Calibration Date: 12/29/15

Instrument ID: FAL4 GC Column ID: db5

CS0 Data Filename: 07JAN16Z S4 CS1 Data Filename: 29DEC15Z S1

CS2 Data Filename: 29DEC15Z S2 CS3 Data Filename: 29DEC15Z S3

CS4 Data Filename: 29DEC15Z S4 CS5 Data Filename: 29DEC15Z S5

CS6 Data Filename: 29DEC15Z S6

	RELATIVE RESPONSE (RR)							MEAN RR	Cv (%RSD)
	CS0	CS1	CS2	CS3	CS4	CS5	CS6		
NATIVE ANALYTES									
2,3,7,8-TCDD	22.10	1.16	1.10	1.08	1.11	0.99	0.99	1.08	6.57
1,2,3,7,8-PeCDD	17.58	0.93	0.91	0.90	0.88	0.86	0.85	0.90	5.49
1,2,3,4,7,8-HxCDD	18.89	1.07	1.02	0.97	0.94	0.93	0.91	0.98	6.02
1,2,3,6,7,8-HxCDD	19.88	1.08	0.98	1.04	0.99	0.95	0.92	1.00	5.81
1,2,3,7,8,9-HxCDD	22.11	1.17	1.14	1.11	1.11	1.05	1.04	1.11	4.65
1,2,3,4,6,7,8-HpCDD	21.39	1.18	1.10	1.09	1.07	1.03	1.02	1.09	4.85
OCDD	20.65	1.13	1.06	1.05	1.03	0.99	0.97	1.04	5.16
2,3,7,8-TCDF	20.00	1.21	1.10	1.04	1.00	0.96	0.96	1.05	8.33
1,2,3,7,8-PeCDF	19.70	1.05	0.98	0.98	0.98	0.95	0.94	0.98	3.56
2,3,4,7,8-PeCDF	20.06	1.09	1.02	1.02	1.00	0.97	0.96	1.01	4.04
1,2,3,4,7,8-HxCDF	24.02	1.31	1.26	1.21	1.20	1.18	1.16	1.23	4.38
1,2,3,6,7,8-HxCDF	23.01	1.23	1.19	1.17	1.15	1.11	1.11	1.17	4.14
2,3,4,6,7,8-HxCDF	21.94	1.16	1.13	1.13	1.10	1.07	1.05	1.12	4.24
1,2,3,7,8,9-HxCDF	22.51	1.20	1.16	1.16	1.13	1.10	1.08	1.15	4.31
1,2,3,4,6,7,8-HpCDF	26.97	1.42	1.37	1.37	1.35	1.31	1.30	1.36	3.53
1,2,3,4,7,8,9-HpCDF	23.96	1.32	1.23	1.25	1.20	1.18	1.16	1.23	4.34
OCDF	22.23	1.21	1.18	1.14	1.11	1.08	1.06	1.13	4.69

Analyst: Date: 1/7/16

USEPA - ITD

FORM 3B

PCDD/PCDF INITIAL CALIBRATION RELATIVE RESPONSES

Lab Name: Frontier Analytical Laboratory Episode No.:

Contract No.: SAS No.:

Initial Calibration Date: 12/29/15

Instrument ID: FAL4 GC Column ID: db5

CS0 Data Filename: 29DEC15Z S4 CS1 Data Filename: 29DEC15Z S1

CS2 Data Filename: 29DEC15Z S2 CS3 Data Filename: 29DEC15Z S3

CS4 Data Filename: 29DEC15Z S4 CS5 Data Filename: 29DEC15Z S5

CS6 Data Filename: 07JAN16Z S6

LABELLED COMPOUNDS	RELATIVE RESPONSE (RR)							MEAN RR	Cv (%RSD)
	CS0	CS1	CS2	CS3	CS4	CS5	CS6		
13C-2,3,7,8-TCDD	1.06	1.06	1.07	1.07	1.06	1.11	1.05	1.07	2.18
13C-1,2,3,7,8-PeCDD	0.74	0.77	0.76	0.76	0.74	0.79	0.76	0.78	4.93
13C-1,2,3,4,7,8-HxCDD	0.87	0.88	0.86	0.88	0.87	0.90	0.84	0.87	2.33
13C-1,2,3,6,7,8-HxCDD	0.85	0.82	0.85	0.84	0.85	0.87	0.82	0.84	2.77
13C-1,2,3,4,6,7,8-HpCDD	0.83	0.86	0.87	0.85	0.83	0.88	0.82	0.85	2.84
13C-OCDD	0.69	0.69	0.69	0.68	0.69	0.72	0.66	0.70	3.97
13C-2,3,7,8-TCDF	1.02	1.02	1.03	1.03	1.02	1.06	1.02	1.03	1.66
13C-1,2,3,7,8-PeCDF	0.88	0.87	0.89	0.88	0.88	0.94	0.89	0.89	2.52
13C-2,3,4,7,8-PeCDF	0.79	0.81	0.80	0.80	0.79	0.83	0.83	0.82	4.74
13C-1,2,3,4,7,8-HxCDF	1.22	1.23	1.24	1.28	1.22	1.31	1.25	1.26	2.96
13C-1,2,3,6,7,8-HxCDF	1.26	1.24	1.28	1.29	1.26	1.33	1.25	1.28	2.71
13C-2,3,4,6,7,8-HxCDF	1.25	1.23	1.26	1.27	1.25	1.31	1.23	1.27	2.44
13C-1,2,3,7,8,9-HxCDF	1.16	1.13	1.17	1.15	1.16	1.22	1.13	1.16	2.93
13C-1,2,3,4,6,7,8-HpCDF	1.04	1.03	1.04	1.06	1.04	1.09	1.02	1.06	3.95
13C-1,2,3,4,7,8,9-HpCDF	0.91	0.89	0.92	0.90	0.91	0.96	0.87	0.93	5.53
13C-OCDF	0.94	0.93	0.95	0.91	0.94	0.98	0.90	0.95	5.31
CLEANUP STANDARD									
37Cl-2,3,7,8-TCDD	0.90	0.95	0.89	0.79	0.90	0.88	0.87	0.90	7.21

Analyst: Date: 1/7/16

USEPA - ITD

FORM 3C

PCDD/PCDF INITIAL CALIBRATION ION ABUNDANCE RATIOS

Lab Name: Frontier Analytical Laboratory Episode No.:

Contract No.: SAS No.:

Initial Calibration Date: 12/29/15

Instrument ID: FAL4 GC Column ID: db5


CS0 Data Filename: 29DEC15Z S4 CS1 Data Filename: 29DEC15Z S1

CS2 Data Filename: 29DEC15Z S2 CS3 Data Filename: 29DEC15Z S3

CS4 Data Filename: 29DEC15Z S4 CS5 Data Filename: 29DEC15Z S5

CS6 Data Filename: 07JAN16Z S6

NATIVE ANALYTES	M/Z'S FORMING RATIO	ION ABUNDANCE RATIOS							QC LIMITS
		CS0	CS1	CS2	CS3	CS4	CS5	CS6	
2,3,7,8-TCDD	M/M+2	0.78	0.87	0.83	0.78	0.78	0.79	0.79	0.65-0.89
1,2,3,7,8-PeCDD	M+2/M+4	1.57	1.52	1.58	1.56	1.57	1.58	1.58	1.32-1.78
1,2,3,4,7,8-HxCDD	M+2/M+4	1.25	1.24	1.21	1.25	1.25	1.27	1.25	1.05-1.43
1,2,3,6,7,8-HxCDD	M+2/M+4	1.24	1.21	1.28	1.27	1.24	1.26	1.25	1.05-1.43
1,2,3,7,8,9-HxCDD	M+2/M+4	1.27	1.30	1.25	1.26	1.27	1.26	1.26	1.05-1.43
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.06	1.04	1.07	1.07	1.06	1.05	1.06	0.88-1.20
OCDD	M+2/M+4	0.90	0.86	0.94	0.91	0.90	0.90	0.91	0.76-1.02
2,3,7,8-TCDF	M/M+2	0.81	0.79	0.73	0.86	0.81	0.81	0.79	0.65-0.89
1,2,3,7,8-PeCDF	M+2/M+4	1.54	1.47	1.49	1.49	1.54	1.55	1.56	1.32-1.78
2,3,4,7,8-PeCDF	M+2/M+4	1.54	1.37	1.51	1.49	1.54	1.54	1.54	1.32-1.78
1,2,3,4,7,8-HxCDF	M+2/M+4	1.26	1.28	1.32	1.25	1.26	1.28	1.26	1.05-1.43
1,2,3,6,7,8-HxCDF	M+2/M+4	1.26	1.28	1.27	1.25	1.26	1.28	1.26	1.05-1.43
2,3,4,6,7,8-HxCDF	M+2/M+4	1.26	1.26	1.28	1.27	1.26	1.26	1.26	1.05-1.43
1,2,3,7,8,9-HxCDF	M+2/M+4	1.27	1.32	1.31	1.26	1.27	1.27	1.26	1.05-1.43
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.05	1.09	1.02	1.07	1.05	1.06	1.07	0.88-1.20
1,2,3,4,7,8,9-HpCDF	M+2/M+4	1.08	1.09	1.13	1.07	1.08	1.07	1.05	0.88-1.20
OCDF	M+2/M+4	0.92	0.86	0.91	0.91	0.92	0.91	0.91	0.76-1.02

Analyst: Date: 1/7/16

USEPA - ITD

FORM 3D

PCDD/PCDF INITIAL CALIBRATION ION ABUNDANCE RATIOS

Lab Name: Frontier Analytical Laboratory Episode No.:

Contract No.: SAS No.:

Initial Calibration Date: 12/29/15

Instrument ID: FAL4 GC Column ID: db5

CS0 Data Filename: 29DEC15Z S4 CS1 Data Filename: 29DEC15Z S1

CS2 Data Filename: 29DEC15Z S2 CS3 Data Filename: 29DEC15Z S3

CS4 Data Filename: 29DEC15Z S4 CS5 Data Filename: 29DEC15Z S5

CS6 Data Filename: 07JAN16Z S6

Labeled Compounds	M/Z'S FORMING RATIO	ION ABUNDANCE RATIOS							QC LIMITS
		CS0	CS1	CS2	CS3	CS4	CS5	CS6	
13C-2,3,7,8-TCDD	M/M+2	0.80	0.80	0.79	0.80	0.80	0.78	0.80	0.65-0.89
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.57	1.57	1.59	1.61	1.57	1.58	1.58	1.32-1.78
13C-1,2,3,4,7,8-HxCDD	M+2/M+4	1.27	1.28	1.27	1.27	1.27	1.27	1.25	1.05-1.43
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.27	1.26	1.27	1.27	1.27	1.25	1.26	1.05-1.43
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.09	1.06	1.07	1.07	1.09	1.08	1.08	0.88-1.20
13C-OCDD	M+2/M+4	0.90	0.91	0.90	0.90	0.90	0.91	0.91	0.76-1.02
13C-2,3,7,8-TCDF	M/M+2	0.80	0.79	0.80	0.81	0.80	0.80	0.81	0.65-0.89
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.59	1.57	1.59	1.59	1.59	1.60	1.57	1.32-1.78
13C-2,3,4,7,8-PeCDF	M+2/M+4	1.60	1.60	1.57	1.59	1.60	1.59	1.60	1.32-1.78
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.53	0.53	0.53	0.52	0.53	0.54	0.54	0.43-0.59
13C-1,2,3,6,7,8-HxCDF	M/M+2	0.54	0.53	0.53	0.54	0.54	0.53	0.54	0.43-0.59
13C-2,3,4,6,7,8-HxCDF	M/M+2	0.54	0.53	0.53	0.54	0.54	0.54	0.54	0.43-0.59
13C-1,2,3,7,8,9-HxCDF	M/M+2	0.53	0.53	0.54	0.53	0.53	0.53	0.54	0.43-.059
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.45	0.46	0.46	0.47	0.45	0.46	0.46	0.37-0.51
13C-1,2,3,4,7,8,9-HpCDF	M/M+2	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.37-0.51
13C-OCDF	M+2/M+4	0.90	0.91	0.91	0.91	0.90	0.90	0.93	0.76-1.02

Analyst: JDate: 1/7/16

USEPA - ITD

FORM 4A
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: Frontier Analytical Laboratory Episode No.:
Contract No.: SAS No.:
Initial Calibration Date: 12/29/15
Instrument ID: FAL4 GC Column ID: db5
VER Data Filename: 29DEC15Z Sam:4 Analysis Date: 29-DEC-15 13:15:57

NATIVE ANALYTES	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	ACCEPT	CONC. FOUND	CONC. RANGE (ng/mL) (3)
2,3,7,8-TCDD	M/M+2	0.78	0.65-0.89	y	10.2	7.80 - 12.9
1,2,3,7,8-PeCDD	M+2/M+4	1.57	1.32-1.78	y	48.6	39.0 - 65.0
1,2,3,4,7,8-HxCDD	M+2/M+4	1.25	1.05-1.43	y	48.1	39.0 - 64.0
1,2,3,6,7,8-HxCDD	M+2/M+4	1.24	1.05-1.43	y	49.6	39.0 - 64.0
1,2,3,7,8,9-HxCDD	M+2/M+4	1.27	1.05-1.43	y	49.6	41.0 - 61.0
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.06	0.88-1.20	y	49.3	43.0 - 58.0
OCDD	M+2/M+4	0.90	0.76-1.02	y	98.9	79.0 - 126
2,3,7,8-TCDF	M/M+2	0.81	0.65-0.89	y	9.55	8.40 - 12.0
1,2,3,7,8-PeCDF	M+2/M+4	1.54	1.32-1.78	y	50.3	41.0 - 60.0
2,3,4,7,8-PeCDF	M+2/M+4	1.54	1.32-1.78	y	49.6	41.0 - 60.0
1,2,3,4,7,8-HxCDF	M+2/M+4	1.26	1.05-1.43	y	49.0	45.0 - 56.0
1,2,3,6,7,8-HxCDF	M+2/M+4	1.26	1.05-1.43	y	49.3	44.0 - 57.0
2,3,4,6,7,8-HxCDF	M+2/M+4	1.26	1.05-1.43	y	49.1	44.0 - 57.0
1,2,3,7,8,9-HxCDF	M+2/M+4	1.27	1.05-1.43	y	49.1	45.0 - 56.0
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.05	0.88-1.20	y	49.5	45.0 - 55.0
1,2,3,4,7,8,9-HpCDF	M+2/M+4	1.08	0.88-1.20	y	48.9	43.0 - 58.0
OCDF	M+2/M+4	0.92	0.76-1.02	y	98.3	63.0 - 159

- (1) See Table 8, Method 1613, for m/z specifications.
(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613.
(3) Contract-required concentration range as specified in Table 6, Method 1613.

Analyst: Date: 1/7/16

USEPA - ITD

FORM 4B
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: Frontier Analytical Laboratory

Episode No.:

Contract No.:

SAS No.:

Initial Calibration Date: 12/29/15

Instrument ID: FAL3

GC Column ID: db5

VER Data Filename: 29DEC15Z Sam:4

Analysis Date: 29-DEC-15 13:15:57

LABELLED COMPOUNDS	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	ACCEPT	CONC. FOUND	CONC. RANGE (ng/mL) (3)
13C-2,3,7,8-TCDD	M/M+2	0.80	0.65-0.89	y	98.5	82.0 - 121
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.57	1.32-1.78	y	94.8	62.0 - 160
13C-1,2,3,4,7,8-HxCDD	M+2/M+4	1.27	1.05-1.43	y	100	85.0 - 117
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.27	1.05-1.43	y	101	85.0 - 118
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.09	0.88-1.20	y	97.0	72.0 - 138
13C-OCDD	M+2/M+4	0.90	0.76-1.02	y	199	96.0 - 415
13C-2,3,7,8-TCDF	M/M+2	0.80	0.65-0.89	y	99.0	71.0 - 140
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.59	1.32-1.78	y	98.4	76.0 - 130
13C-2,3,4,7,8-PeCDF	M+2/M+4	1.60	1.32-1.78	y	95.9	77.0 - 130
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.53	0.43-0.59	y	96.8	76.0 - 131
13C-1,2,3,6,7,8-HxCDF	M/M+2	0.54	0.43-0.59	y	98.2	70.0 - 143
13C-2,3,4,6,7,8-HxCDF	M/M+2	0.54	0.43-0.59	y	98.8	73.0 - 137
13C-1,2,3,7,8,9-HxCDF	M/M+2	0.53	0.43-0.59	y	99.5	74.0 - 135
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.45	0.37-0.51	y	97.7	78.0 - 129
13C-1,2,3,4,7,8,9-HpCDF	M/M+2	0.46	0.37-0.51	y	98.4	77.0 - 129
13C-OCDF	M+2/M+4	0.90	0.76-1.02	y	199	96.0 - 415
CLEANUP STANDARD (4)						
37Cl-2,3,7,8-TCDD					10.0	7.90 - 12.7

(1) See Table 8, Method 1613, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613.

(3) Contract-required concentration range as specified in Table 6, Method 1613.

(4) No ion abundance ratio; report concentration found.

Analyst: Date: 1/7/16

FORM 5
PCDD/PCDF RT WINDOW AND ISOMER SPECIFICITY STANDARDS

Lab Name: Frontier Analytical Laboratory Episode No.:
Contract No.: SAS No.:
Instrument ID: FAL4 Initial Calibration Date: 12/29/15
RT Window Data Filename: 29DEC15Z Sam:4 Analysis Date: 29-DEC-15 Time: 13:15:57
DB-5 IS Data Filename: 29DEC15Z Sam:4 Analysis Date: 29-DEC-15 Time: 13:15:57
DB-225 IS Date Filename: Analysis Date: Time:

DB-5 RT WINDOW DEFINING STANDARDS RESULTS

ISOMERS	ABSOLUTE RT	ISOMERS	ABSOLUTE RT
1,3,6,8-TCDD (F)	24:20	1,3,6,8-TCDF (F)	22:59
1,2,8,9-TCDD (L)	28:20	1,2,8,9-TCDF (L)	28:34
1,2,4,7,9-PeCDD (F)	30:14	1,3,4,6,8-PeCDF (F)	28:23
1,2,3,8,9-PeCDD (L)	33:48	1,2,3,8,9-PeCDF (L)	34:14
1,2,4,6,7,9-HxCDD (F)	36:06	1,2,3,4,6,8-HxCDF (F)	35:14
1,2,3,7,8,9-HxCDD (L)	39:10	1,2,3,7,8,9-HxCDF (L)	39:45
1,2,3,4,6,7,9-HpCDD (F)	42:45	1,2,3,4,6,7,8-HpCDF (F)	42:14
1,2,3,4,6,7,8-HpCDD (L)	44:07	1,2,3,4,7,8,9-HpCDF (L)	45:03

(F) = First eluting isomer (DB-5); (L) = Last eluting isomer (DB-5)

=====

ISOMER SPECIFICITY (IS) TEST STANDARD RESULTS

% VALLEY HEIGHT
BETWEEN
COMPARED PEAKS (1)

<25%

(1) To meet contract requirement, %Valley Height Between Compared Peaks shall not exceed 25% (section 15.4.2.2, Method 1613).

Analyst: _____

Date: 12/30/15

USEPA - ITD

FORM 6A

PCDD/PCDF RELATIVE RETENTION TIMES

Lab Name: Frontier Analytical Laboratory

Episode No.:

Contract No.:

SAS No.:

Init. Cal. Date: 12/29/15

Instrument ID: FAL4

GC Column ID: db5

Analysis Date: 29-DEC-15 13:15:57

CS3 or VER Data Filename: 29DEC15Z

Sam:4

NATIVE ANALYTES	RETENTION TIME REFERENCE	RRT	RRT QC LIMITS (1)
2,3,7,8-TCDD	13C-2,3,7,8-TCDD	1.001	0.999-1.002
2,3,7,8-TCDF	13C-2,3,7,8-TCDF	1.001	0.999-1.003
1,2,3,7,8-PeCDD	13C-1,2,3,7,8-PeCDD	1.001	0.999-1.002
1,2,3,7,8-PeCDF	13C-1,2,3,7,8-PeCDF	1.000	0.999-1.002
2,3,4,7,8-PeCDF	13C-2,3,4,7,8-PeCDF	1.001	0.999-1.002
LABELED COMPOUNDS			
37Cl-2,3,7,8-TCDD	13C-1,2,3,4-TCDD	1.023	0.989-1.052
13C-2,3,7,8-TCDD		1.022	0.976-1.043
13C-2,3,7,8-TCDF		0.994	0.923-1.103
13C-1,2,3,7,8-PeCDD		1.240	1.000-1.567
13C-1,2,3,7,8-PeCDF		1.176	0.923-1.203
13C-2,3,4,7,8-PeCDF		1.225	0.923-1.303

(1) Contract-required limits for Relative Retention Times (RRT) as specified in Table 2, Method 1613.

Analyst: 

Date: 1/7/16

USEPA - ITD

FORM 6B

PCDD/PCDF RELATIVE RETENTION TIMES

Lab Name: Frontier Analytical Laboratory

Episode No.:

Contract No.:

SAS No.:

Init. Cal. Date: 12/29/15

Instrument ID: FAL4

GC Column ID: db5

Analysis Date: 29-DEC-15 13:15:57

CS3 or VER Data Filename: 29DEC15Z


Sam:4

NATIVE ANALYTES	RETENTION TIME REFERENCE	RRT	RRT QC LIMITS (1)
1,2,3,4,7,8-HxCDD	13C-1,2,3,4,7,8-HxCDD	1.000	0.999-1.001
1,2,3,6,7,8-HxCDD	13C-1,2,3,6,7,8-HxCDD	1.000	0.998-1.004
1,2,3,7,8,9-HxCDD	13C-1,2,3,6,7,8-HxCDD	1.012	1.000-1.019
1,2,3,4,7,8-HxCDF	13C-1,2,3,4,7,8-HxCDF	1.001	0.999-1.001
1,2,3,6,7,8-HxCDF	13C-1,2,3,6,7,8-HxCDF	1.000	0.997-1.005
2,3,4,6,7,8-HxCDF	13C-2,3,4,6,7,8-HxCDF	1.001	0.999-1.001
1,2,3,7,8,9-HxCDF	13C-1,2,3,7,8,9-HxCDF	1.000	0.999-1.001
1,2,3,4,6,7,8-HpCDD	13C-1,2,3,4,6,7,8-HpCDD	1.001	0.999-1.001
1,2,3,4,6,7,8-HpCDF	13C-1,2,3,4,6,7,8-HpCDF	1.000	0.999-1.001
1,2,3,4,7,8,9-HpCDF	13C-1,2,3,4,7,8,9-HpCDF	1.000	0.999-1.001
OCDD	13C-OCDD	1.001	0.999-1.001
OCDF	13C-OCDF	1.001	0.999-1.001

LABELED COMPOUNDS

13C-1,2,3,4,7,8-HxCDD	13C-1,2,3,7,8,9-HxCDD	0.985	0.977-1.000
13C-1,2,3,6,7,8-HxCDD		0.989	0.981-1.003
13C-1,2,3,4,7,8-HxCDF		0.949	0.944-0.970
13C-1,2,3,6,7,8-HxCDF		0.954	0.949-0.975
13C-2,3,4,6,7,8-HxCDF		0.978	0.959-1.021
13C-1,2,3,7,8,9-HxCDF		1.015	0.977-1.047
13C-1,2,3,4,6,7,8-HpCDD		1.126	1.086-1.130
13C-1,2,3,4,6,7,8-HpCDF		1.078	1.043-1.085
13C-1,2,3,4,7,8,9-HpCDF		1.150	1.057-1.154
13C-OCDD		1.267	1.032-1.311
13C-OCDF		1.277	1.000-1.311

(1) Contract-required limits for Relative Retention Times (RRT) as specified in Table 2, Method 1613.

Analyst: 

Date: 1/7/16

Name	Resp	RA	RT	RRF	Conc	Qual	Fac	Noise-1	Noise-2	DL	#Hom
2,3,7,8-TCDD	4.44e+06	0.78 y	27:23	1.08	10.2		2.50	-	-	*	
1,2,3,7,8-PeCDD	1.23e+07	1.57 y	33:14	0.90	48.6		2.50	-	-	*	
1,2,3,4,7,8-HxCDD	1.11e+07	1.25 y	38:33	0.98	48.1		2.50	-	-	*	
1,2,3,6,7,8-HxCDD	1.14e+07	1.24 y	38:43	1.00	49.6		2.50	-	-	*	
1,2,3,7,8,9-HxCDD	1.28e+07	1.27 y	39:10	1.11	49.6		2.50	-	-	*	
1,2,3,4,6,7,8-HpCDD	1.20e+07	1.06 y	44:07	1.09	49.3		2.50	-	-	*	
OCDD	1.94e+07	0.90 y	49:38	1.04	98.9		2.50	-	-	*	
2,3,7,8-TCDF	5.07e+06	0.81 y	26:38	1.05	9.55		2.50	-	-	*	
1,2,3,7,8-PeCDF	2.14e+07	1.54 y	31:29	0.98	50.3		2.50	-	-	*	
2,3,4,7,8-PeCDF	1.96e+07	1.54 y	32:49	1.01	49.6		2.50	-	-	*	
1,2,3,4,7,8-HxCDF	1.99e+07	1.26 y	37:10	1.23	49.0		2.50	-	-	*	
1,2,3,6,7,8-HxCDF	1.97e+07	1.26 y	37:22	1.17	49.3		2.50	-	-	*	
2,3,4,6,7,8-HxCDF	1.86e+07	1.26 y	38:19	1.12	49.1		2.50	-	-	*	
1,2,3,7,8,9-HxCDF	1.76e+07	1.27 y	39:45	1.15	49.1		2.50	-	-	*	
1,2,3,4,6,7,8-HpCDF	1.89e+07	1.05 y	42:14	1.36	49.5		2.50	-	-	*	
1,2,3,4,7,8,9-HpCDF	1.48e+07	1.08 y	45:03	1.23	48.9		2.50	-	-	*	
OCDF	2.84e+07	0.92 y	50:01	1.13	98.3		2.50	-	-	*	
13C-2,3,7,8-TCDD	4.02e+07	0.80 y	27:22	1.07	98.5						Rec 98.5
13C-1,2,3,7,8-PeCDD	2.80e+07	1.57 y	33:12	0.78	94.8						94.8
13C-1,2,3,4,7,8-HxCDD	2.35e+07	1.27 y	38:32	0.87	100						100
13C-1,2,3,6,7,8-HxCDD	2.30e+07	1.27 y	38:42	0.84	101						101
13C-1,2,3,4,6,7,8-HpCDD	2.24e+07	1.09 y	44:06	0.85	97.0						97.0
13C-OCDD	3.76e+07	0.90 y	49:37	0.70	199						99.6
13C-2,3,7,8-TCDF	5.07e+07	0.80 y	26:37	1.03	99.0						99.0
13C-1,2,3,7,8-PeCDF	4.36e+07	1.59 y	31:29	0.89	98.4						98.4
13C-2,3,4,7,8-PeCDF	3.92e+07	1.60 y	32:47	0.82	95.9						95.9
13C-1,2,3,4,7,8-HxCDF	3.31e+07	0.53 y	37:09	1.26	96.8						96.8
13C-1,2,3,6,7,8-HxCDF	3.42e+07	0.54 y	37:21	1.28	98.2						98.2
13C-2,3,4,6,7,8-HxCDF	3.39e+07	0.54 y	38:18	1.27	98.8						98.8
13C-1,2,3,7,8,9-HxCDF	3.14e+07	0.53 y	39:44	1.16	99.5						99.5
13C-1,2,3,4,6,7,8-HpCDF	2.81e+07	0.45 y	42:13	1.06	97.7						97.7
13C-1,2,3,4,7,8,9-HpCDF	2.47e+07	0.46 y	45:02	0.93	98.4						98.4
13C-OCDF	5.12e+07	0.90 y	49:60	0.95	199						99.3
37Cl-2,3,7,8-TCDD	3.41e+06		27:23	0.90	10.0						100
13C-1,2,3,4-TCDD	3.80e+07	0.81 y	26:46	-	104						
13C-1,2,3,4-TCDF	4.95e+07	0.78 y	25:30	-	103						
13C-1,2,3,7,8,9-HxCDD	2.71e+07	1.25 y	39:09	-	99.5						
Total Tetra-Dioxins	1.98e+07		22:55	1.08	45.6		2.50	-	-	*	27
Total Penta-Dioxins	3.95e+07		30:14	0.90	156		2.50	-	-	*	14
Total Hexa-Dioxins	5.07e+07		36:06	1.03	211		2.50	-	-	*	18
Total Hepta-Dioxins	2.52e+07		42:13	1.09	104		2.50	-	-	*	25
Total Tetra-Furans	2.38e+07		22:59	1.05	44.9		2.50	-	-	*	18
1st Fn. Tot Penta-Furans	2.73e+07		28:23	0.99	66.5		2.50	-	-	*	PeCDF 2
Total Penta-Furans	6.10e+07		30:10	0.99	149		2.50	-	-	*	215 13
Total Hexa-Furans	9.68e+07		35:14	1.16	251		2.50	-	-	*	18
Total Hepta-Furans	3.40e+07		42:14	1.30	99.4		2.50	-	-	*	16

Analyst: 

Date: 1/7/16

Run #1 Filename 29DEC15Z
Client ID: ST122915Z0

S: 1

Acquired: 29-DEC-15 10:31:38 Cal: PCDDFAL4-12-29-15

Analyte:

FAL ID: 1613 CS0 151209G

Typ	Name	Amount	Resp	RA	RT	RRF
1 Unk	2,3,7,8-TCDD	0.25	1.35e+05	0.87 y	27:25	1.16 y
2 Unk	1,2,3,7,8-PeCDD	1.25	3.93e+05	1.52 y	33:15	0.931 y
3 Unk	1,2,3,4,7,8-HxCDD	1.25	3.96e+05	1.24 y	38:36	1.07 y
4 Unk	1,2,3,6,7,8-HxCDD	1.25	3.72e+05	1.21 y	38:45	1.08 y
5 Unk	1,2,3,7,8,9-HxCDD	1.25	4.19e+05	1.30 y	39:13	1.17 y
6 Unk	1,2,3,4,6,7,8-HpCDD	1.25	4.25e+05	1.04 y	44:10	1.18 y
7 Unk	OCDD	2.50	6.60e+05	0.86 y	49:42	1.13 y
8 Unk	2,3,7,8-TCDF	0.25	1.75e+05	0.79 y	26:40	1.21 y
9 Unk	1,2,3,7,8-PeCDF	1.25	6.47e+05	1.47 y	31:31	1.05 y
10 Unk	2,3,4,7,8-PeCDF	1.25	6.24e+05	1.37 y	32:51	1.09 y
11 Unk	1,2,3,4,7,8-HxCDF	1.25	6.80e+05	1.28 y	37:13	1.31 y
12 Unk	1,2,3,6,7,8-HxCDF	1.25	6.47e+05	1.28 y	37:24	1.23 y
13 Unk	2,3,4,6,7,8-HxCDF	1.25	6.03e+05	1.26 y	38:21	1.16 y
14 Unk	1,2,3,7,8,9-HxCDF	1.25	5.74e+05	1.32 y	39:48	1.20 y
15 Unk	1,2,3,4,6,7,8-HpCDF	1.25	6.19e+05	1.09 y	42:17	1.42 y
16 Unk	1,2,3,4,7,8,9-HpCDF	1.25	4.98e+05	1.09 y	45:06	1.32 y
17 Unk	OCDF	2.50	9.52e+05	0.86 y	50:04	1.21 y
18 IS/RT	13C-2,3,7,8-TCDD	100.00	4.66e+07	0.80 y	27:24	1.06 y
19 IS	13C-1,2,3,7,8-PeCDD	100.00	3.38e+07	1.57 y	33:14	0.765 y
20 IS	13C-1,2,3,4,7,8-HxCDD	100.00	2.96e+07	1.28 y	38:35	0.875 y
21 IS	13C-1,2,3,6,7,8-HxCDD	100.00	2.77e+07	1.26 y	38:45	0.818 y
22 IS	13C-1,2,3,4,6,7,8-HpCDD	100.00	2.89e+07	1.06 y	44:10	0.855 y
23 IS	13C-OCDD	200.00	4.65e+07	0.91 y	49:41	0.688 y
24 IS	13C-2,3,7,8-TCDF	100.00	5.79e+07	0.79 y	26:39	1.02 y
25 IS	13C-1,2,3,7,8-PeCDF	100.00	4.94e+07	1.57 y	31:30	0.872 y
26 IS	13C-2,3,4,7,8-PeCDF	100.00	4.59e+07	1.60 y	32:50	0.809 y
27 IS	13C-1,2,3,4,7,8-HxCDF	100.00	4.15e+07	0.53 y	37:11	1.23 y
28 IS	13C-1,2,3,6,7,8-HxCDF	100.00	4.21e+07	0.53 y	37:23	1.24 y
29 IS	13C-2,3,4,6,7,8-HxCDF	100.00	4.17e+07	0.53 y	38:20	1.23 y
30 IS	13C-1,2,3,7,8,9-HxCDF	100.00	3.82e+07	0.53 y	39:46	1.13 y
31 IS	13C-1,2,3,4,6,7,8-HpCDF	100.00	3.48e+07	0.46 y	42:15	1.03 y
32 IS	13C-1,2,3,4,7,8,9-HpCDF	100.00	3.02e+07	0.46 y	45:05	0.892 y
33 IS	13C-OCDF	200.00	6.28e+07	0.91 y	50:04	0.929 y
34 C/Up	37Cl-2,3,7,8-TCDD	0.25	1.05e+05		27:25	0.949 y
35 RS	13C-1,2,3,4-TCDD	100.00	4.42e+07	0.79 y	26:49	- n
36 RS	13C-1,2,3,4-TCDF	100.00	5.67e+07	0.80 y	25:34	- n
37 RS/RT	13C-1,2,3,7,8,9-HxCDD	100.00	3.38e+07	1.27 y	39:12	- n
38 Tot	Total Tetra-Dioxins	0.00	-	- n	-	1.16 y
39 Tot	Total Penta-Dioxins	0.00	-	- n	-	0.931 y
40 Tot	Total Hexa-Dioxins	0.00	-	- n	-	1.11 y
41 Tot	Total Hepta-Dioxins	0.00	-	- n	-	1.18 y
42 Tot	Total Tetra-Furans	0.00	-	- n	-	1.21 y
43 Tot	1st Fn. Tot Penta-Furans	0.00	-	- n	-	1.07 y
44 Tot	Total Penta-Furans	0.00	-	- n	-	1.07 y
45 Tot	Total Hexa-Furans	0.00	-	- n	-	1.22 y
46 Tot	Total Hepta-Furans	0.00	-	- n	-	1.37 y

Analyst: J

Date: 12/30/15

Run #3 Filename 29DEC15Z
Client ID: ST122915Z2

S: 3 Acquired: 29-DEC-15 12:21:09 Cal:
Analyte:

FAL ID: 1613 CS2 151209I

Typ	Name	Amount	Resp	RA	RT	RRF	
1	Unk 2,3,7,8-TCDD	2.00	1.08e+06	0.78 y	27:23	1.08	y
2	Unk 1,2,3,7,8-PeCDD	10.00	3.21e+06	1.56 y	33:13	0.900	y
3	Unk 1,2,3,4,7,8-HxCDD	10.00	2.90e+06	1.25 y	38:34	0.967	y
4	Unk 1,2,3,6,7,8-HxCDD	10.00	2.97e+06	1.27 y	38:43	1.04	y
5	Unk 1,2,3,7,8,9-HxCDD	10.00	3.26e+06	1.26 y	39:10	1.11	y
6	Unk 1,2,3,4,6,7,8-HpCDD	10.00	3.18e+06	1.07 y	44:08	1.09	y
7	Unk OCDD	20.00	4.87e+06	0.91 y	49:40	1.05	y
8	Unk 2,3,7,8-TCDF	2.00	1.32e+06	0.86 y	26:38	1.04	y
9	Unk 1,2,3,7,8-PeCDF	10.00	5.29e+06	1.49 y	31:29	0.977	y
10	Unk 2,3,4,7,8-PeCDF	10.00	5.01e+06	1.49 y	32:49	1.02	y
11	Unk 1,2,3,4,7,8-HxCDF	10.00	5.26e+06	1.25 y	37:11	1.21	y
12	Unk 1,2,3,6,7,8-HxCDF	10.00	5.14e+06	1.25 y	37:23	1.17	y
13	Unk 2,3,4,6,7,8-HxCDF	10.00	4.89e+06	1.27 y	38:19	1.13	y
14	Unk 1,2,3,7,8,9-HxCDF	10.00	4.55e+06	1.26 y	39:45	1.16	y
15	Unk 1,2,3,4,6,7,8-HpCDF	10.00	4.95e+06	1.07 y	42:15	1.37	y
16	Unk 1,2,3,4,7,8,9-HpCDF	10.00	3.83e+06	1.07 y	45:04	1.25	y
17	Unk OCDF	20.00	7.04e+06	0.91 y	50:02	1.14	y
18	IS/RT 13C-2,3,7,8-TCDD	100.00	5.01e+07	0.80 y	27:22	1.07	y
19	IS 13C-1,2,3,7,8-PeCDD	100.00	3.57e+07	1.61 y	33:11	0.759	y
20	IS 13C-1,2,3,4,7,8-HxCDD	100.00	2.99e+07	1.27 y	38:32	0.880	y
21	IS 13C-1,2,3,6,7,8-HxCDD	100.00	2.87e+07	1.27 y	38:43	0.843	y
22	IS 13C-1,2,3,4,6,7,8-HpCDD	100.00	2.90e+07	1.07 y	44:07	0.854	y
23	IS 13C-OCDD	200.00	4.63e+07	0.90 y	49:38	0.681	y
24	IS 13C-2,3,7,8-TCDF	100.00	6.35e+07	0.81 y	26:37	1.03	y
25	IS 13C-1,2,3,7,8-PeCDF	100.00	5.41e+07	1.59 y	31:28	0.880	y
26	IS 13C-2,3,4,7,8-PeCDF	100.00	4.93e+07	1.59 y	32:48	0.801	y
27	IS 13C-1,2,3,4,7,8-HxCDF	100.00	4.34e+07	0.52 y	37:10	1.28	y
28	IS 13C-1,2,3,6,7,8-HxCDF	100.00	4.39e+07	0.54 y	37:21	1.29	y
29	IS 13C-2,3,4,6,7,8-HxCDF	100.00	4.31e+07	0.54 y	38:18	1.27	y
30	IS 13C-1,2,3,7,8,9-HxCDF	100.00	3.91e+07	0.53 y	39:44	1.15	y
31	IS 13C-1,2,3,4,6,7,8-HpCDF	100.00	3.61e+07	0.47 y	42:13	1.06	y
32	IS 13C-1,2,3,4,7,8,9-HpCDF	100.00	3.07e+07	0.46 y	45:03	0.903	y
33	IS 13C-OCDF	200.00	6.18e+07	0.91 y	50:02	0.908	y
34	C/Up 37Cl-2,3,7,8-TCDD	2.00	7.45e+05		27:24	0.793	y
35	RS 13C-1,2,3,4-TCDD	100.00	4.70e+07	0.79 y	26:47	-	n
36	RS 13C-1,2,3,4-TCDF	100.00	6.15e+07	0.80 y	25:32	-	n
37	RS/RT 13C-1,2,3,7,8,9-HxCDD	100.00	3.40e+07	1.26 y	39:10	-	n
38	Tot Total Tetra-Dioxins	0.00	-	- n	-	1.08	y
39	Tot Total Penta-Dioxins	0.00	-	- n	-	0.900	y
40	Tot Total Hexa-Dioxins	0.00	-	- n	-	1.04	y
41	Tot Total Hepta-Dioxins	0.00	-	- n	-	1.09	y
42	Tot Total Tetra-Furans	0.00	-	- n	-	1.04	y
43	Tot 1st Fn. Tot Penta-Furans	0.00	-	- n	-	0.997	y
44	Tot Total Penta-Furans	0.00	-	- n	-	0.997	y
45	Tot Total Hexa-Furans	0.00	-	- n	-	1.17	y
46	Tot Total Hepta-Furans	0.00	-	- n	-	1.31	y

Analyst:

Date: 12/30/15

Run #4 Filename 29DEC15Z
Client ID: ST122915Z3

S: 4 Acquired: 29-DEC-15 13:15:57 Cal:
Analyte:

FAL ID: 1613 CS3 151209J

Typ	Name	Amount	Resp	RA	RT	RRF
1	Unk	2,3,7,8-TCDD	10.00	4.44e+06	0.78 y 27:23	1.11 y
2	Unk	1,2,3,7,8-PeCDD	50.00	1.23e+07	1.57 y 33:14	0.879 y
3	Unk	1,2,3,4,7,8-HxCDD	50.00	1.11e+07	1.25 y 38:33	0.944 y
4	Unk	1,2,3,6,7,8-HxCDD	50.00	1.14e+07	1.24 y 38:43	0.994 y
5	Unk	1,2,3,7,8,9-HxCDD	50.00	1.28e+07	1.27 y 39:10	1.11 y
6	Unk	1,2,3,4,6,7,8-HpCDD	50.00	1.20e+07	1.06 y 44:07	1.07 y
7	Unk	OCDD	100.00	1.94e+07	0.90 y 49:38	1.03 y
8	Unk	2,3,7,8-TCDF	10.00	5.07e+06	0.81 y 26:38	1.000 y
9	Unk	1,2,3,7,8-PeCDF	50.00	2.14e+07	1.54 y 31:29	0.985 y
10	Unk	2,3,4,7,8-PeCDF	50.00	1.96e+07	1.54 y 32:49	1.00 y
11	Unk	1,2,3,4,7,8-HxCDF	50.00	1.99e+07	1.26 y 37:10	1.20 y
12	Unk	1,2,3,6,7,8-HxCDF	50.00	1.97e+07	1.26 y 37:22	1.15 y
13	Unk	2,3,4,6,7,8-HxCDF	50.00	1.86e+07	1.26 y 38:19	1.10 y
14	Unk	1,2,3,7,8,9-HxCDF	50.00	1.76e+07	1.27 y 39:45	1.13 y
15	Unk	1,2,3,4,6,7,8-HpCDF	50.00	1.89e+07	1.05 y 42:14	1.35 y
16	Unk	1,2,3,4,7,8,9-HpCDF	50.00	1.48e+07	1.08 y 45:03	1.20 y
17	Unk	OCDF	100.00	2.84e+07	0.92 y 50:01	1.11 y
18	IS/RT	13C-2,3,7,8-TCDD	100.00	4.02e+07	0.80 y 27:22	1.06 y
19	IS	13C-1,2,3,7,8-PeCDD	100.00	2.80e+07	1.57 y 33:12	0.735 y
20	IS	13C-1,2,3,4,7,8-HxCDD	100.00	2.35e+07	1.27 y 38:32	0.868 y
21	IS	13C-1,2,3,6,7,8-HxCDD	100.00	2.30e+07	1.27 y 38:42	0.847 y
22	IS	13C-1,2,3,4,6,7,8-HpCDD	100.00	2.24e+07	1.09 y 44:06	0.828 y
23	IS	13C-OCDD	200.00	3.76e+07	0.90 y 49:37	0.694 y
24	IS	13C-2,3,7,8-TCDF	100.00	5.07e+07	0.80 y 26:37	1.02 y
25	IS	13C-1,2,3,7,8-PeCDF	100.00	4.36e+07	1.59 y 31:29	0.880 y
26	IS	13C-2,3,4,7,8-PeCDF	100.00	3.92e+07	1.60 y 32:47	0.791 y
27	IS	13C-1,2,3,4,7,8-HxCDF	100.00	3.31e+07	0.53 y 37:09	1.22 y
28	IS	13C-1,2,3,6,7,8-HxCDF	100.00	3.42e+07	0.54 y 37:21	1.26 y
29	IS	13C-2,3,4,6,7,8-HxCDF	100.00	3.39e+07	0.54 y 38:18	1.25 y
30	IS	13C-1,2,3,7,8,9-HxCDF	100.00	3.14e+07	0.53 y 39:44	1.16 y
31	IS	13C-1,2,3,4,6,7,8-HpCDF	100.00	2.81e+07	0.45 y 42:13	1.04 y
32	IS	13C-1,2,3,4,7,8,9-HpCDF	100.00	2.47e+07	0.46 y 45:02	0.911 y
33	IS	13C-OCDF	200.00	5.12e+07	0.90 y 49:60	0.944 y
34	C/Up	37Cl-2,3,7,8-TCDD	10.00	3.41e+06	27:23	0.898 y
35	RS	13C-1,2,3,4-TCDD	100.00	3.80e+07	0.81 y 26:46	- n
36	RS	13C-1,2,3,4-TCDF	100.00	4.95e+07	0.78 y 25:30	- n
37	RS/RT	13C-1,2,3,7,8,9-HxCDD	100.00	2.71e+07	1.25 y 39:09	- n
38	Tot	Total Tetra-Dioxins	0.00	-	- n -	1.11 y
39	Tot	Total Penta-Dioxins	0.00	-	- n -	0.879 y
40	Tot	Total Hexa-Dioxins	0.00	-	- n -	1.01 y
41	Tot	Total Hepta-Dioxins	0.00	-	- n -	1.07 y
42	Tot	Total Tetra-Furans	0.00	-	- n -	1.000 y
43	Tot	1st Fn. Tot Penta-Furans	0.00	-	- n -	0.993 y
44	Tot	Total Penta-Furans	0.00	-	- n -	0.993 y
45	Tot	Total Hexa-Furans	0.00	-	- n -	1.14 y
46	Tot	Total Hepta-Furans	0.00	-	- n -	1.28 y

Analyst: *[Signature]*

Date: 12/30/15

Run #5 Filename 29DEC15Z
Client ID: ST12291524

S: 5

Acquired: 29-DEC-15 14:10:45 Cal:

Analyte:

FAL ID: 1613 CS4 151209K

Typ	Name	Amount	Resp	RA	RT	RRF
1 Unk	2,3,7,8-TCDD	40.00	1.70e+07	0.79 y	27:23	0.986 y
2 Unk	1,2,3,7,8-PeCDD	200.00	5.31e+07	1.58 y	33:13	0.865 y
3 Unk	1,2,3,4,7,8-HxCDD	200.00	4.76e+07	1.27 y	38:33	0.934 y
4 Unk	1,2,3,6,7,8-HxCDD	200.00	4.70e+07	1.26 y	38:43	0.948 y
5 Unk	1,2,3,7,8,9-HxCDD	200.00	5.29e+07	1.26 y	39:10	1.05 y
6 Unk	1,2,3,4,6,7,8-HpCDD	200.00	5.15e+07	1.05 y	44:07	1.03 y
7 Unk	OCDD	400.00	8.10e+07	0.90 y	49:38	0.988 y
8 Unk	2,3,7,8-TCDF	40.00	2.08e+07	0.81 y	26:38	0.962 y
9 Unk	1,2,3,7,8-PeCDF	200.00	9.07e+07	1.55 y	31:30	0.948 y
10 Unk	2,3,4,7,8-PeCDF	200.00	8.28e+07	1.54 y	32:48	0.972 y
11 Unk	1,2,3,4,7,8-HxCDF	200.00	8.77e+07	1.28 y	37:10	1.18 y
12 Unk	1,2,3,6,7,8-HxCDF	200.00	8.40e+07	1.28 y	37:22	1.11 y
13 Unk	2,3,4,6,7,8-HxCDF	200.00	7.94e+07	1.26 y	38:18	1.07 y
14 Unk	1,2,3,7,8,9-HxCDF	200.00	7.57e+07	1.27 y	39:44	1.10 y
15 Unk	1,2,3,4,6,7,8-HpCDF	200.00	8.07e+07	1.06 y	42:14	1.31 y
16 Unk	1,2,3,4,7,8,9-HpCDF	200.00	6.38e+07	1.07 y	45:03	1.18 y
17 Unk	OCDF	400.00	1.19e+08	0.91 y	50:01	1.08 y
18 IS/RT	13C-2,3,7,8-TCDD	100.00	4.30e+07	0.78 y	27:22	1.11 y
19 IS	13C-1,2,3,7,8-PeCDD	100.00	3.07e+07	1.58 y	33:12	0.791 y
20 IS	13C-1,2,3,4,7,8-HxCDD	100.00	2.55e+07	1.27 y	38:32	0.901 y
21 IS	13C-1,2,3,6,7,8-HxCDD	100.00	2.48e+07	1.25 y	38:42	0.874 y
22 IS	13C-1,2,3,4,6,7,8-HpCDD	100.00	2.50e+07	1.08 y	44:06	0.883 y
23 IS	13C-OCDD	200.00	4.10e+07	0.91 y	49:37	0.723 y
24 IS	13C-2,3,7,8-TCDF	100.00	5.42e+07	0.80 y	26:37	1.06 y
25 IS	13C-1,2,3,7,8-PeCDF	100.00	4.78e+07	1.60 y	31:28	0.936 y
26 IS	13C-2,3,4,7,8-PeCDF	100.00	4.26e+07	1.59 y	32:47	0.834 y
27 IS	13C-1,2,3,4,7,8-HxCDF	100.00	3.72e+07	0.54 y	37:08	1.31 y
28 IS	13C-1,2,3,6,7,8-HxCDF	100.00	3.78e+07	0.53 y	37:21	1.33 y
29 IS	13C-2,3,4,6,7,8-HxCDF	100.00	3.72e+07	0.54 y	38:17	1.31 y
30 IS	13C-1,2,3,7,8,9-HxCDF	100.00	3.45e+07	0.53 y	39:44	1.22 y
31 IS	13C-1,2,3,4,6,7,8-HpCDF	100.00	3.09e+07	0.46 y	42:12	1.09 y
32 IS	13C-1,2,3,4,7,8,9-HpCDF	100.00	2.72e+07	0.46 y	45:02	0.959 y
33 IS	13C-OCDF	200.00	5.54e+07	0.90 y	50:00	0.978 y
34 C/Up	37Cl-2,3,7,8-TCDD	40.00	1.37e+07		27:23	0.881 y
35 RS	13C-1,2,3,4-TCDD	100.00	3.88e+07	0.79 y	26:47	- n
36 RS	13C-1,2,3,4-TCDF	100.00	5.11e+07	0.80 y	25:30	- n
37 RS/RT	13C-1,2,3,7,8,9-HxCDD	100.00	2.83e+07	1.25 y	39:08	- n
38 Tot	Total Tetra-Dioxins	0.00	-	- n	-	0.986 y
39 Tot	Total Penta-Dioxins	0.00	-	- n	-	0.865 y
40 Tot	Total Hexa-Dioxins	0.00	-	- n	-	0.978 y
41 Tot	Total Hepta-Dioxins	0.00	-	- n	-	1.03 y
42 Tot	Total Tetra-Furans	0.00	-	- n	-	0.962 y
43 Tot	1st Fn. Tot Penta-Furans	0.00	-	- n	-	0.959 y
44 Tot	Total Penta-Furans	0.00	-	- n	-	0.959 y
45 Tot	Total Hexa-Furans	0.00	-	- n	-	1.11 y
46 Tot	Total Hepta-Furans	0.00	-	- n	-	1.25 y

Analyst:

Date: 12/30/15

Run #6 Filename 29DEC15Z
Client ID: ST122915Z5

S: 6 Acquired: 29-DEC-15 15:05:33 Cal:
Analyte:

FAL ID: 1613 CS5 151209L

Typ	Name	Amount	Resp	RA	RT	RRF	
1	Unk 2,3,7,8-TCDD	200.00	7.48e+07	0.79 y	27:23	0.986	y
2	Unk 1,2,3,7,8-PeCDD	1000.00	2.34e+08	1.58 y	33:13	0.850	y
3	Unk 1,2,3,4,7,8-HxCDD	1000.00	2.02e+08	1.25 y	38:34	0.908	y
4	Unk 1,2,3,6,7,8-HxCDD	1000.00	1.99e+08	1.25 y	38:44	0.922	y
5	Unk 1,2,3,7,8,9-HxCDD	1000.00	2.29e+08	1.26 y	39:11	1.04	y
6	Unk 1,2,3,4,6,7,8-HpCDD	1000.00	2.20e+08	1.06 y	44:09	1.02	y
7	Unk OCDD	2000.00	3.39e+08	0.91 y	49:40	0.973	y
8	Unk 2,3,7,8-TCDF	200.00	9.20e+07	0.79 y	26:38	0.959	y
9	Unk 1,2,3,7,8-PeCDF	1000.00	3.96e+08	1.56 y	31:30	0.941	y
10	Unk 2,3,4,7,8-PeCDF	1000.00	3.75e+08	1.54 y	32:49	0.963	y
11	Unk 1,2,3,4,7,8-HxCDF	1000.00	3.83e+08	1.26 y	37:11	1.16	y
12	Unk 1,2,3,6,7,8-HxCDF	1000.00	3.66e+08	1.26 y	37:23	1.11	y
13	Unk 2,3,4,6,7,8-HxCDF	1000.00	3.43e+08	1.26 y	38:20	1.05	y
14	Unk 1,2,3,7,8,9-HxCDF	1000.00	3.20e+08	1.26 y	39:46	1.08	y
15	Unk 1,2,3,4,6,7,8-HpCDF	1000.00	3.50e+08	1.07 y	42:14	1.30	y
16	Unk 1,2,3,4,7,8,9-HpCDF	1000.00	2.69e+08	1.05 y	45:03	1.16	y
17	Unk OCDF	2000.00	5.05e+08	0.91 y	50:02	1.06	y
18	IS/RT 13C-2,3,7,8-TCDD	100.00	3.79e+07	0.80 y	27:22	1.05	y
19	IS 13C-1,2,3,7,8-PeCDD	100.00	2.75e+07	1.58 y	33:13	0.762	y
20	IS 13C-1,2,3,4,7,8-HxCDD	100.00	2.23e+07	1.25 y	38:33	0.843	y
21	IS 13C-1,2,3,6,7,8-HxCDD	100.00	2.16e+07	1.26 y	38:43	0.818	y
22	IS 13C-1,2,3,4,6,7,8-HpCDD	100.00	2.16e+07	1.08 y	44:07	0.816	y
23	IS 13C-OCDD	200.00	3.48e+07	0.91 y	49:38	0.658	y
24	IS 13C-2,3,7,8-TCDF	100.00	4.80e+07	0.81 y	26:36	1.02	y
25	IS 13C-1,2,3,7,8-PeCDF	100.00	4.20e+07	1.57 y	31:28	0.894	y
26	IS 13C-2,3,4,7,8-PeCDF	100.00	3.90e+07	1.60 y	32:48	0.829	y
27	IS 13C-1,2,3,4,7,8-HxCDF	100.00	3.30e+07	0.54 y	37:09	1.25	y
28	IS 13C-1,2,3,6,7,8-HxCDF	100.00	3.31e+07	0.54 y	37:22	1.25	y
29	IS 13C-2,3,4,6,7,8-HxCDF	100.00	3.26e+07	0.54 y	38:18	1.23	y
30	IS 13C-1,2,3,7,8,9-HxCDF	100.00	2.98e+07	0.54 y	39:45	1.13	y
31	IS 13C-1,2,3,4,6,7,8-HpCDF	100.00	2.70e+07	0.46 y	42:13	1.02	y
32	IS 13C-1,2,3,4,7,8,9-HpCDF	100.00	2.31e+07	0.46 y	45:03	0.874	y
33	IS 13C-OCDF	200.00	4.76e+07	0.93 y	50:01	0.900	y
34	C/Up 37Cl-2,3,7,8-TCDD	200.00	6.28e+07		27:23	0.871	y
35	RS 13C-1,2,3,4-TCDD	100.00	3.61e+07	0.80 y	26:46	-	n
36	RS 13C-1,2,3,4-TCDF	100.00	4.70e+07	0.80 y	25:30	-	n
37	RS/RT 13C-1,2,3,7,8,9-HxCDD	100.00	2.64e+07	1.25 y	39:10	-	n
38	Tot Total Tetra-Dioxins	0.00	-	- n	-	0.986	y
39	Tot Total Penta-Dioxins	0.00	-	- n	-	0.850	y
40	Tot Total Hexa-Dioxins	0.00	-	- n	-	0.957	y
41	Tot Total Hepta-Dioxins	0.00	-	- n	-	1.02	y
42	Tot Total Tetra-Furans	0.00	-	- n	-	0.959	y
43	Tot 1st Fn. Tot Penta-Furans	0.00	-	- n	-	0.952	y
44	Tot Total Penta-Furans	0.00	-	- n	-	0.952	y
45	Tot Total Hexa-Furans	0.00	-	- n	-	1.10	y
46	Tot Total Hepta-Furans	0.00	-	- n	-	1.24	y

Analyst: *6*

Date: 12/30/15

Typ	Name	Amount	Resp	RA	RT	RRF	
1	Unk	2,3,7,8-TCDD	2000.00	2.46e+08	0.80 y	27:22	1.15 y
2	Unk	1,2,3,7,8-PeCDD	10000.00	8.24e+08	1.60 y	33:14	0.998 y
3	Unk	1,2,3,4,7,8-HxCDD	10000.00	7.70e+08	1.29 y	38:35	1.03 y
4	Unk	1,2,3,6,7,8-HxCDD	10000.00	7.63e+08	1.29 y	38:45	1.06 y
5	Unk	1,2,3,7,8,9-HxCDD	10000.00	8.56e+08	1.28 y	39:11	1.17 y
6	Unk	1,2,3,4,6,7,8-HpCDD	10000.00	8.52e+08	1.07 y	44:09	1.11 y
7	Unk	OCDD	20000.00	1.40e+09	0.91 y	49:42	1.07 y
8	Unk	2,3,7,8-TCDF	2000.00	3.26e+08	0.81 y	26:36	1.06 y
9	Unk	1,2,3,7,8-PeCDF	10000.00	1.28e+09	1.51 y	31:30	0.968 y
10	Unk	2,3,4,7,8-PeCDF	10000.00	1.33e+09	1.52 y	32:50	1.01 y
11	Unk	1,2,3,4,7,8-HxCDF	10000.00	1.46e+09	1.27 y	37:12	1.27 y
12	Unk	1,2,3,6,7,8-HxCDF	10000.00	1.42e+09	1.28 y	37:24	1.22 y
13	Unk	2,3,4,6,7,8-HxCDF	10000.00	1.36e+09	1.28 y	38:20	1.18 y
14	Unk	1,2,3,7,8,9-HxCDF	10000.00	1.27e+09	1.27 y	39:47	1.20 y
15	Unk	1,2,3,4,6,7,8-HpCDF	10000.00	1.43e+09	1.06 y	42:15	1.41 y
16	Unk	1,2,3,4,7,8,9-HpCDF	10000.00	1.13e+09	1.07 y	45:05	1.24 y
17	Unk	OCDF	20000.00	2.11e+09	0.91 y	50:06	1.14 y
18	IS/RT	13C-2,3,7,8-TCDD	100.00	1.07e+07	0.81 y	27:20	1.10 y
19	IS	13C-1,2,3,7,8-PeCDD	100.00	8.25e+06	1.61 y	33:13	0.855 y
20	IS	13C-1,2,3,4,7,8-HxCDD	100.00	7.48e+06	1.28 y	38:33	0.845 y
21	IS	13C-1,2,3,6,7,8-HxCDD	100.00	7.17e+06	1.28 y	38:43	0.810 y
22	IS	13C-1,2,3,4,6,7,8-HpCDD	100.00	7.71e+06	1.09 y	44:08	0.872 y
23	IS	13C-OCDD	200.00	1.31e+07	0.91 y	49:40	0.742 y
24	IS	13C-2,3,7,8-TCDF	100.00	1.54e+07	0.82 y	26:35	1.06 y
25	IS	13C-1,2,3,7,8-PeCDF	100.00	1.33e+07	1.58 y	31:30	0.911 y
26	IS	13C-2,3,4,7,8-PeCDF	100.00	1.32e+07	1.58 y	32:49	0.906 y
27	IS	13C-1,2,3,4,7,8-HxCDF	100.00	1.16e+07	0.56 y	37:10	1.31 y
28	IS	13C-1,2,3,6,7,8-HxCDF	100.00	1.17e+07	0.55 y	37:22	1.32 y
29	IS	13C-2,3,4,6,7,8-HxCDF	100.00	1.15e+07	0.55 y	38:19	1.30 y
30	IS	13C-1,2,3,7,8,9-HxCDF	100.00	1.06e+07	0.57 y	39:45	1.20 y
31	IS	13C-1,2,3,4,6,7,8-HpCDF	100.00	1.01e+07	0.49 y	42:14	1.14 y
32	IS	13C-1,2,3,4,7,8,9-HpCDF	100.00	9.07e+06	0.49 y	45:02	1.03 y
33	IS	13C-OCDF	200.00	1.86e+07	0.93 y	50:04	1.05 y
34	C/Up	37Cl-2,3,7,8-TCDD	200.00	1.93e+07		27:22	1.00 y
35	RS	13C-1,2,3,4-TCDD	100.00	9.65e+06	0.80 y	26:45	- n
36	RS	13C-1,2,3,4-TCDF	100.00	1.46e+07	0.80 y	25:27	- n
37	RS/RT	13C-1,2,3,7,8,9-HxCDD	100.00	8.85e+06	1.27 y	39:11	- n
38	Tot	Total Tetra-Dioxins	0.00	-	- n	-	1.15 y
39	Tot	Total Penta-Dioxins	0.00	-	- n	-	0.998 y
40	Tot	Total Hexa-Dioxins	0.00	-	- n	-	1.09 y
41	Tot	Total Hepta-Dioxins	0.00	-	- n	-	1.11 y
42	Tot	Total Tetra-Furans	0.00	-	- n	-	1.06 y
43	Tot	1st Fn. Tot Penta-Furans	0.00	-	- n	-	0.987 y
44	Tot	Total Penta-Furans	0.00	-	- n	-	0.987 y
45	Tot	Total Hexa-Furans	0.00	-	- n	-	1.22 y
46	Tot	Total Hepta-Furans	0.00	-	- n	-	1.33 y

Analyst: J

Date: 1/7/16

Frontier Analytical Laboratory - Acquisition Log

Run Name: 29DEC15Z

Instrument: FAL4

GC: DB5

Experiment: PCDD

Data File S	FAL ID	Client ID	Acquired	ConCal	EndCal	Analyst	
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29DEC15Z	2	ST122915Z1	1613 CS1 151209H	29-DEC-15 11:26:24	NA	NA	BS
29DEC15Z	3	ST122915Z2	1613 CS2 151209I	29-DEC-15 12:21:09	NA	NA	BS
29DEC15Z	4	ST122915Z3	1613 CS3 151209J	29-DEC-15 13:15:57	NA	NA	BS
29DEC15Z	5	ST122915Z4	1613 CS4 151209K	29-DEC-15 14:10:45	NA	NA	BS
29DEC15Z	6	ST122915Z5	1613 CS5 151209L	29-DEC-15 15:05:33	NA	NA	BS
29DEC15Z	7	SB122915Z1	Solvent Blank	29-DEC-15 16:00:22	NA	NA	BS
29DEC15Z	8	SS122915Z1	2nd Source	29-DEC-15 16:55:09	NA	NA	BS

Δ 12/30/15

Data Backed Up: _____

Date: _____

Frontier Analytical Laboratory - Acquisition Log

Run Name:07JAN16Z

Instrument: FAL4

GC: DB5

Experiment:PCDD

Data File S FAL ID
07JAN16Z 1 ST010716Z1

Client ID
1613 CS6 151209M

Acquired
7-JAN-16 12:03:46

ConCal
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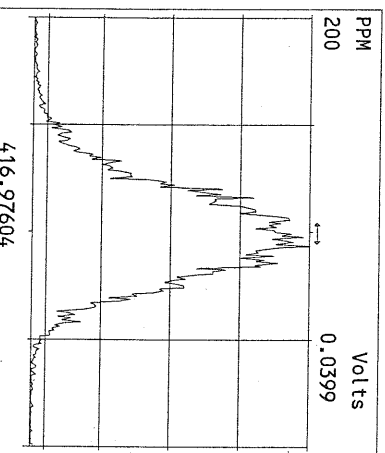
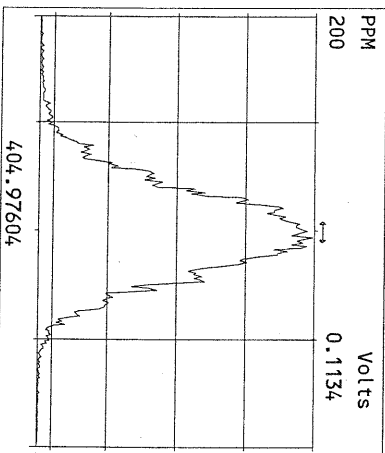
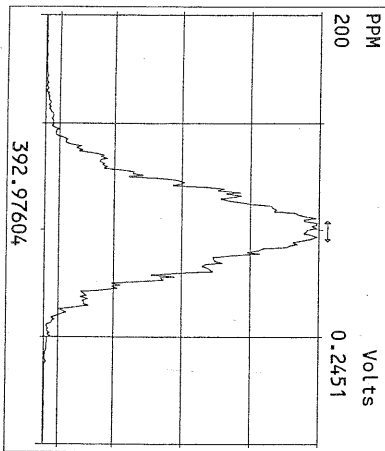
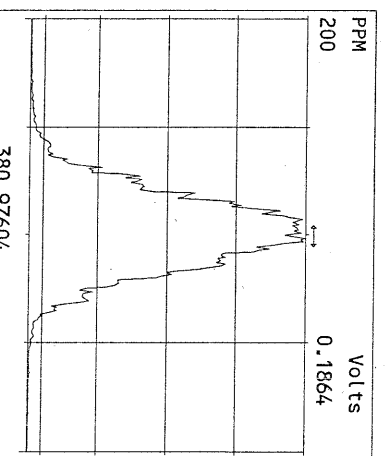
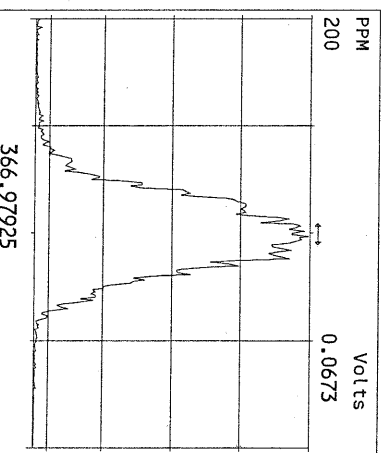
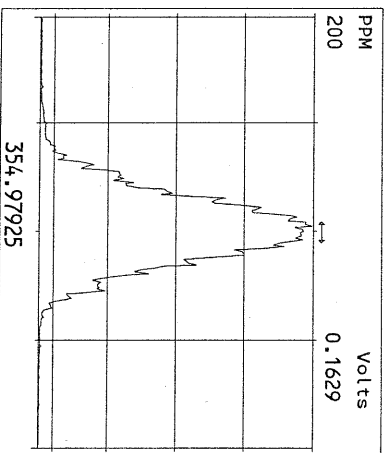
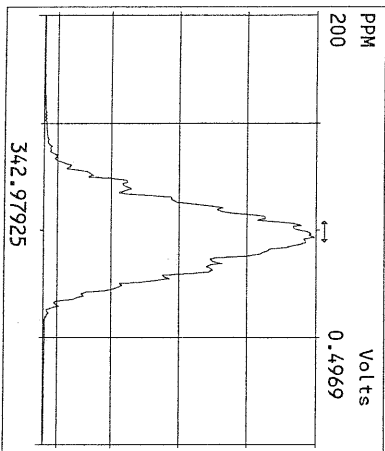
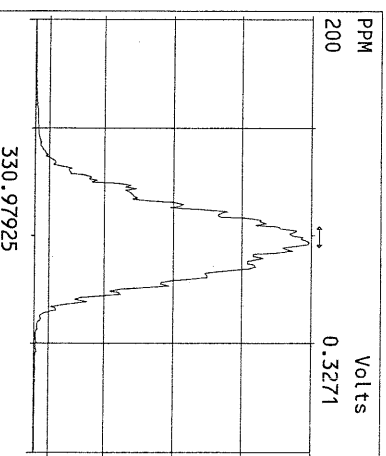
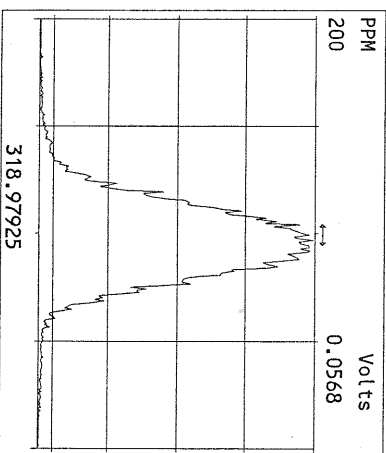
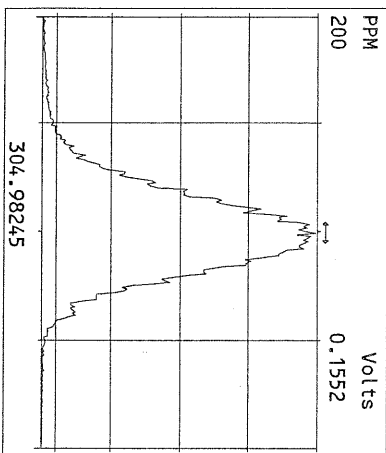
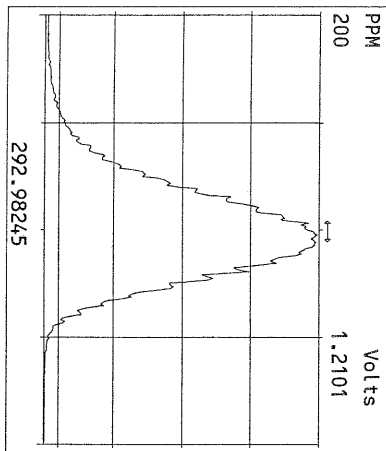
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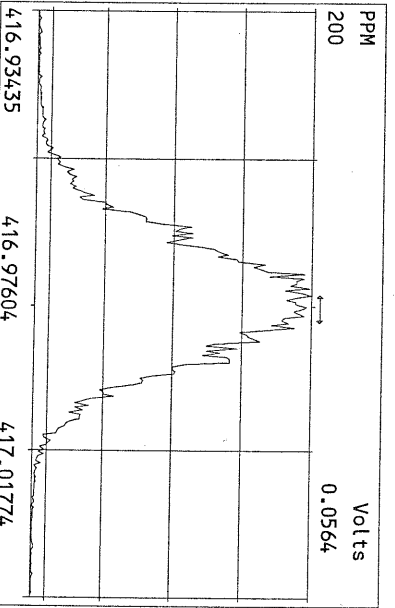
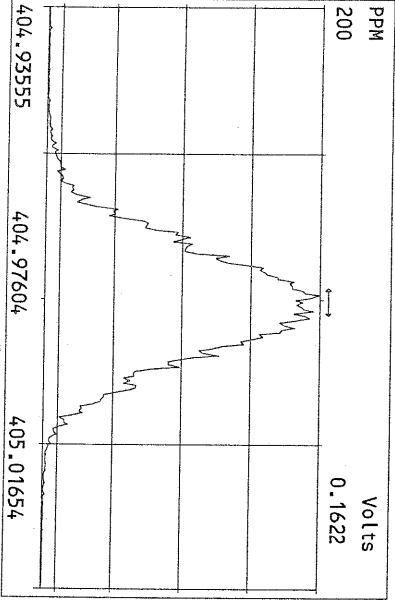
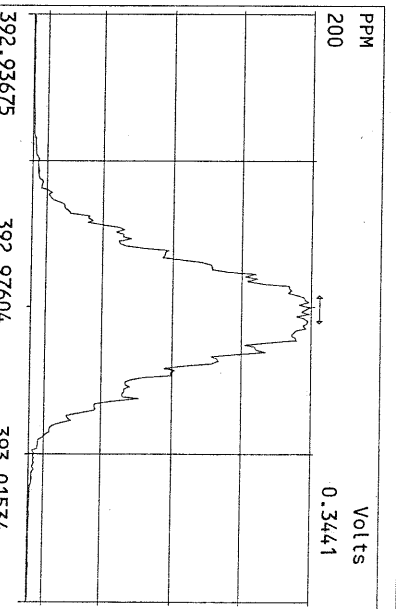
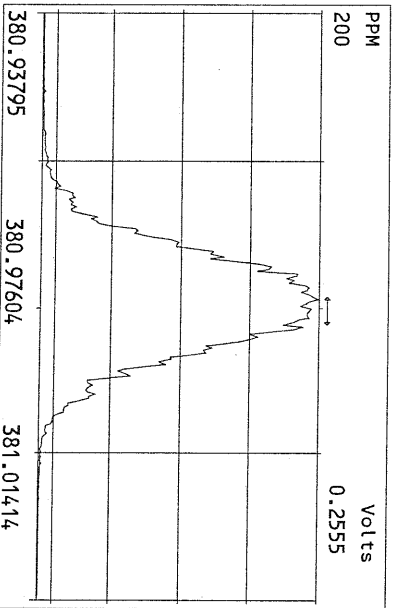
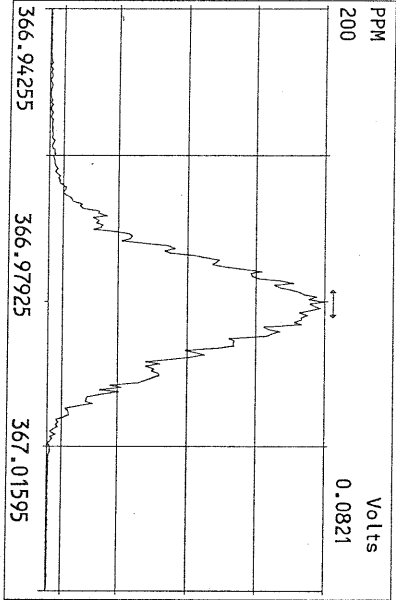
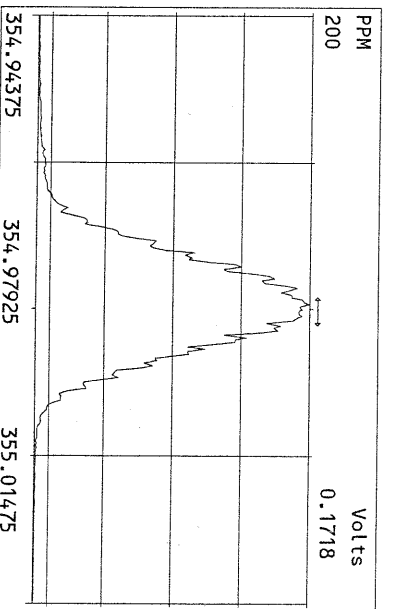
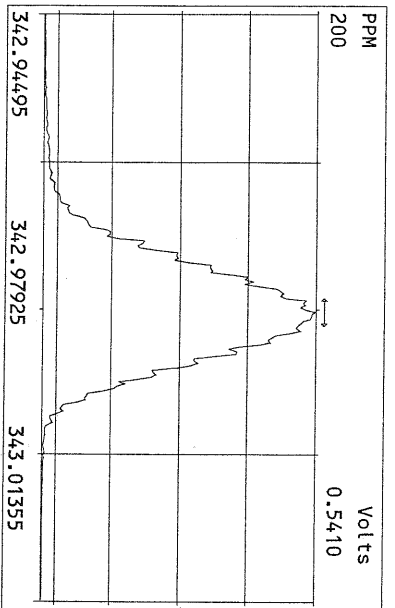
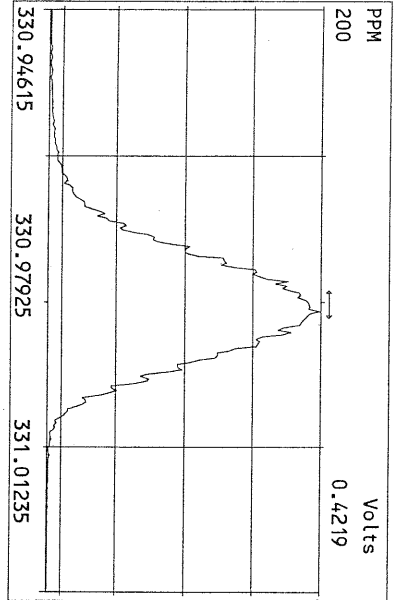
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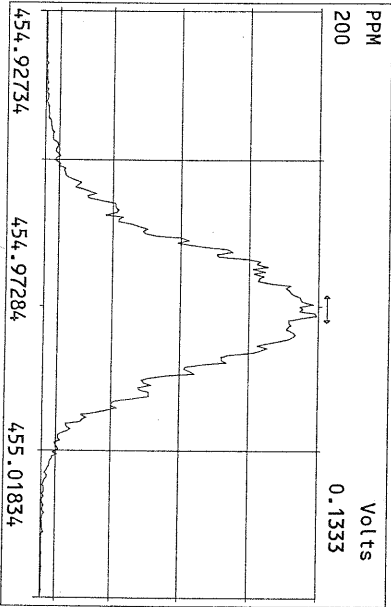
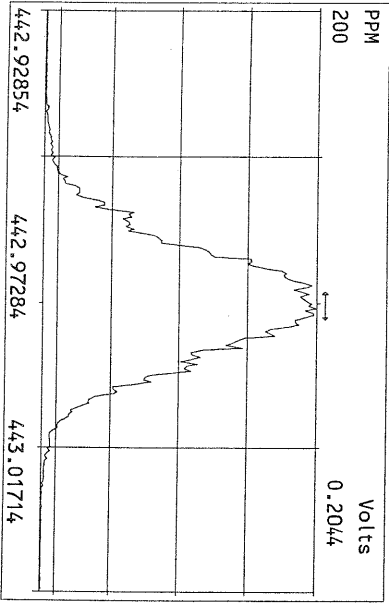
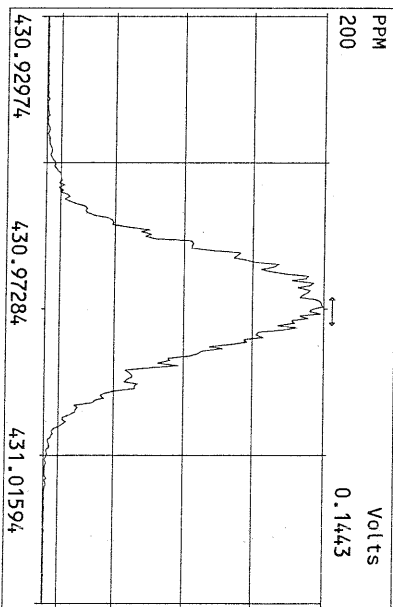
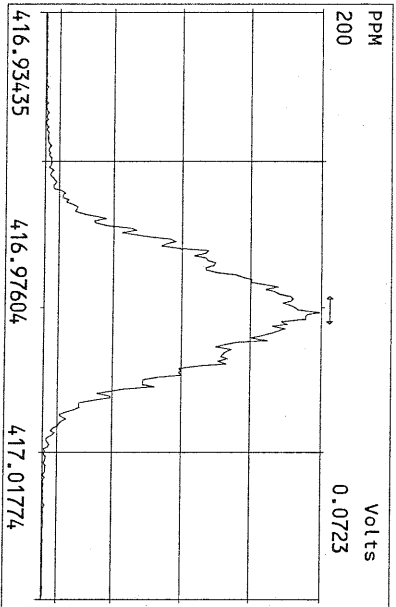
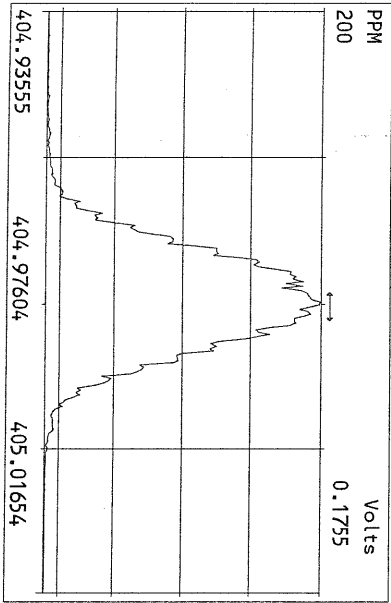
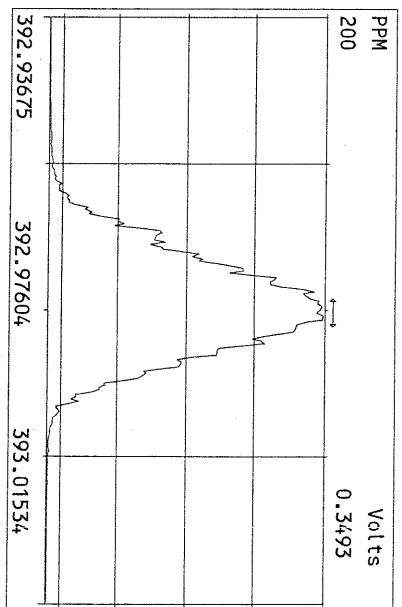
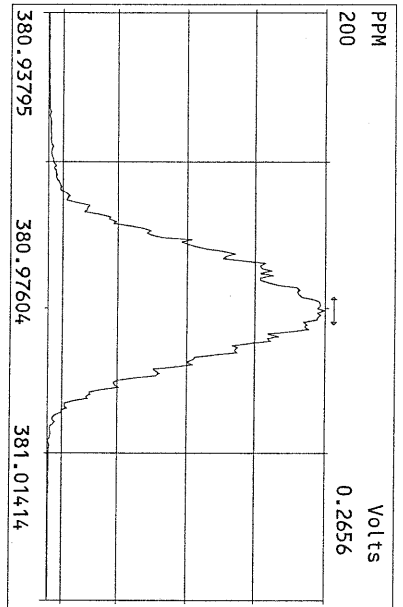
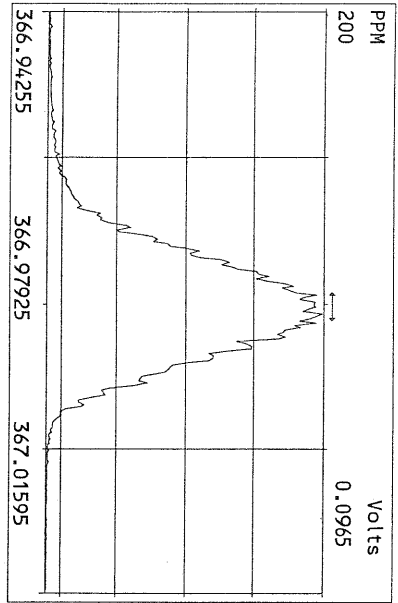
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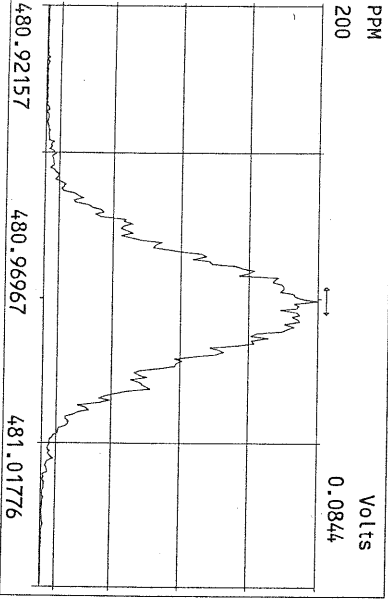
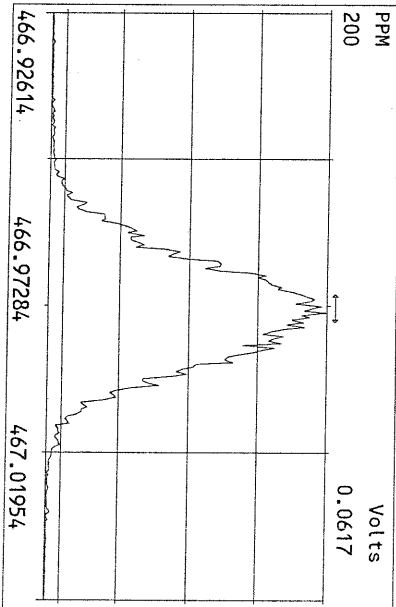
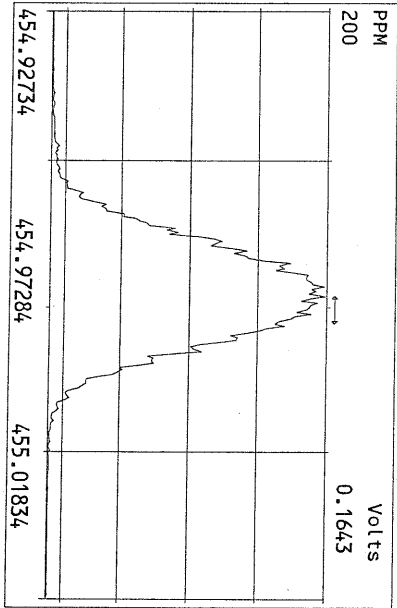
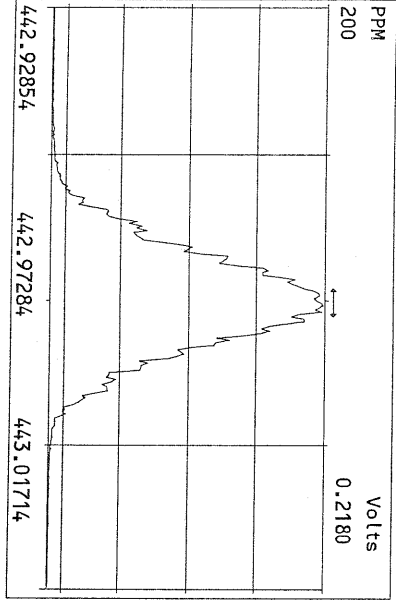
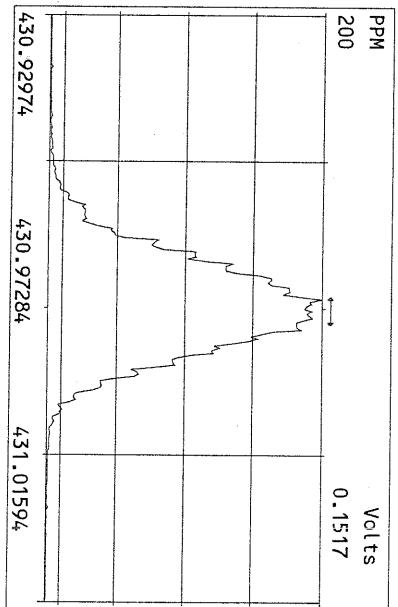
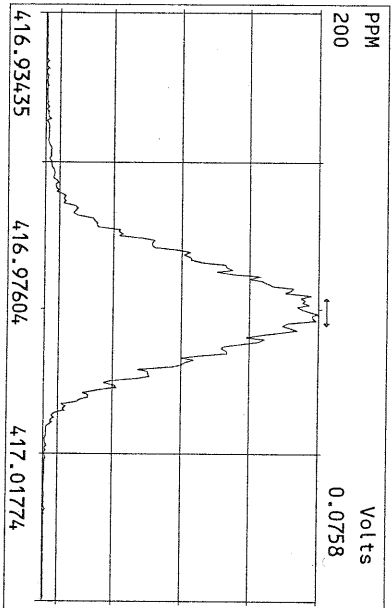
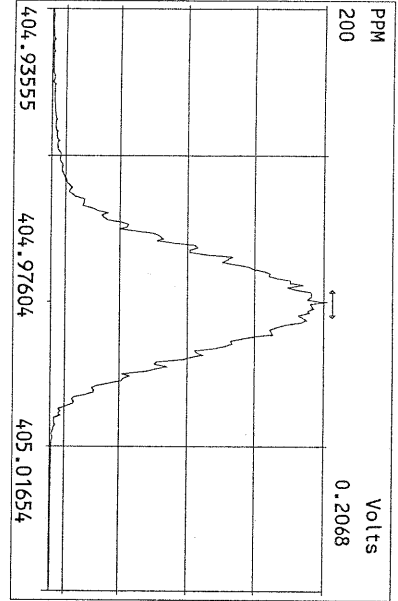
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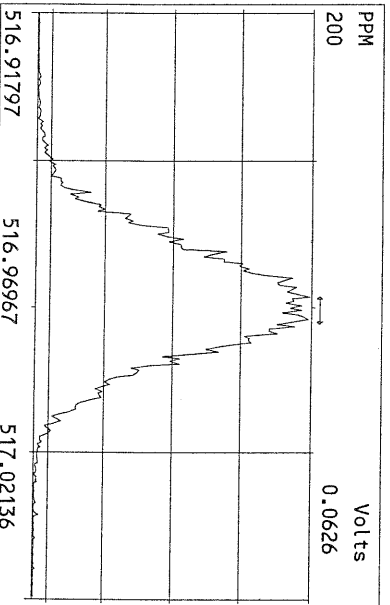
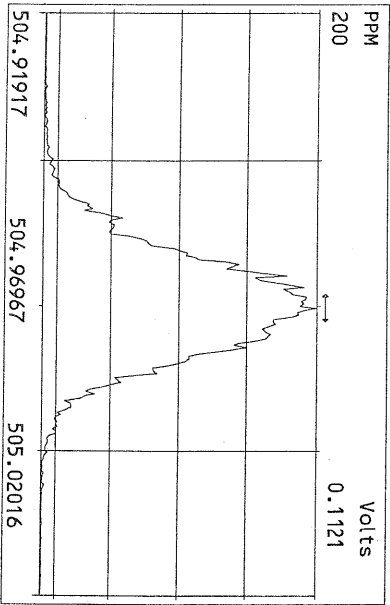
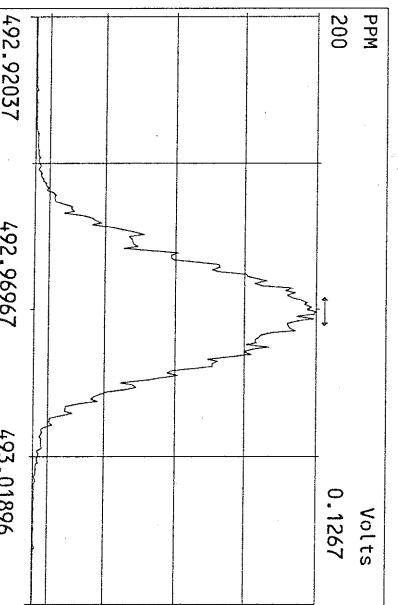
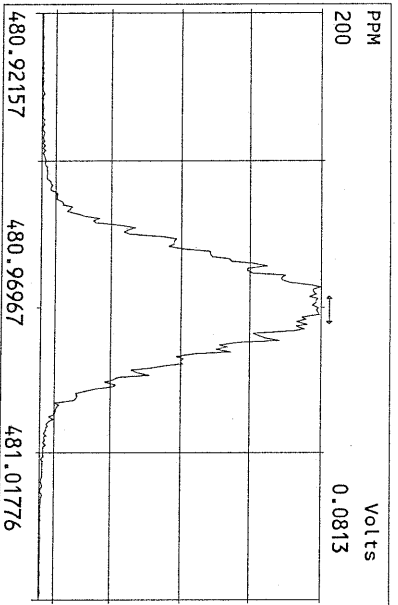
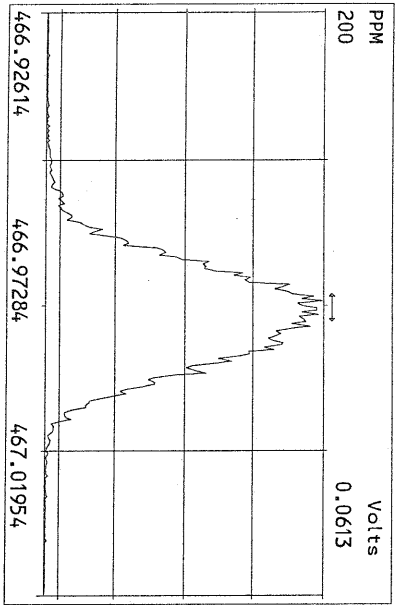
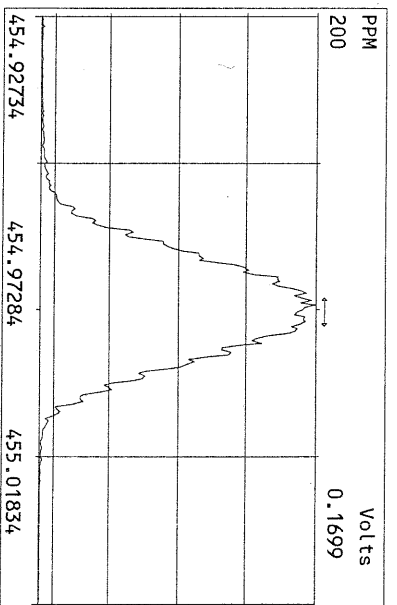
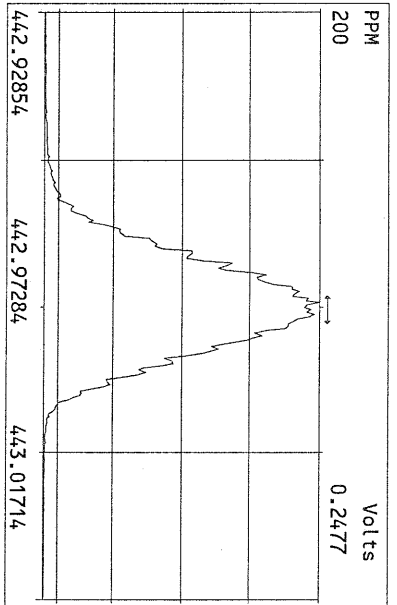
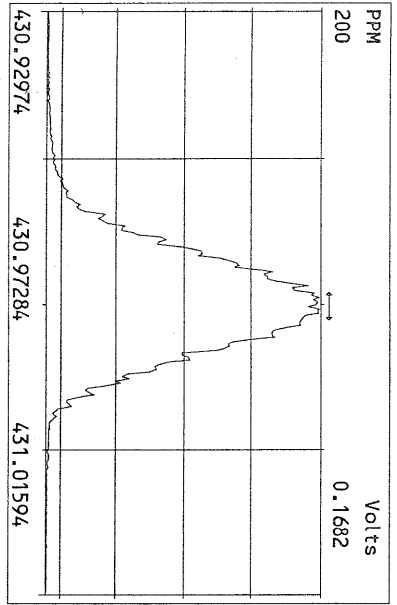
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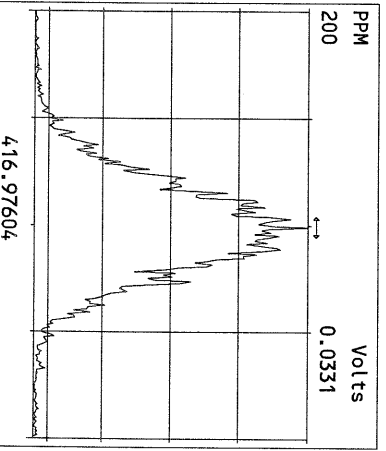
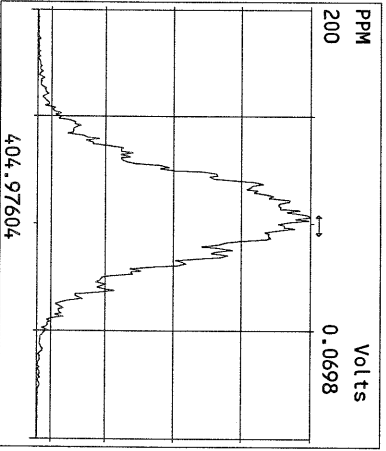
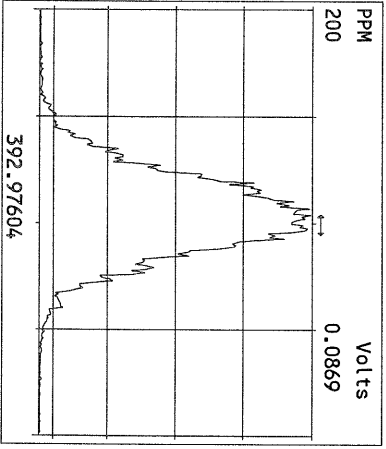
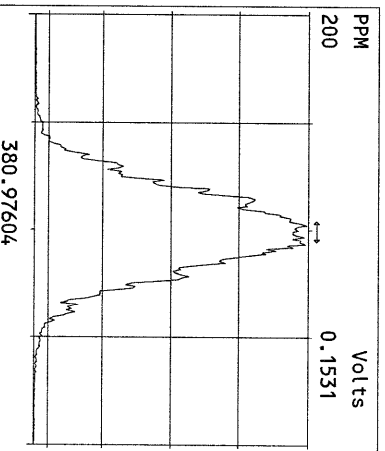
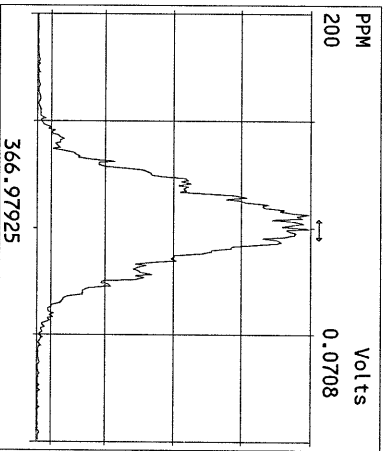
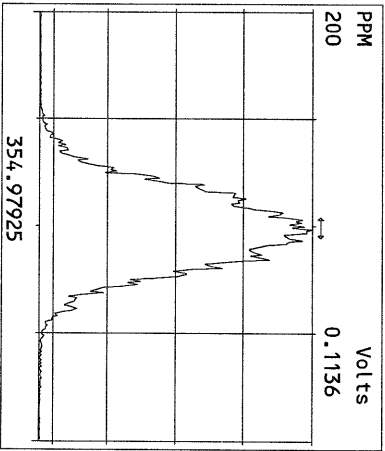
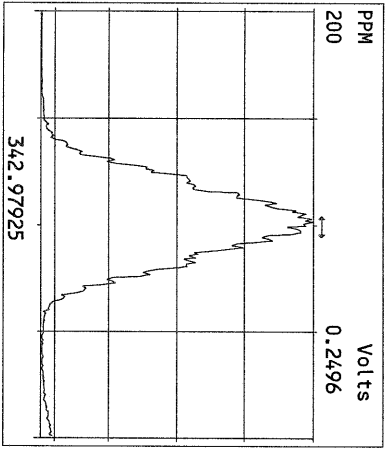
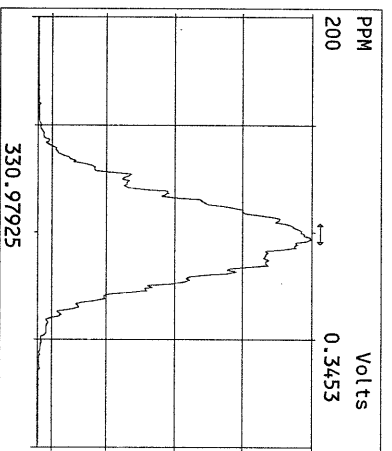
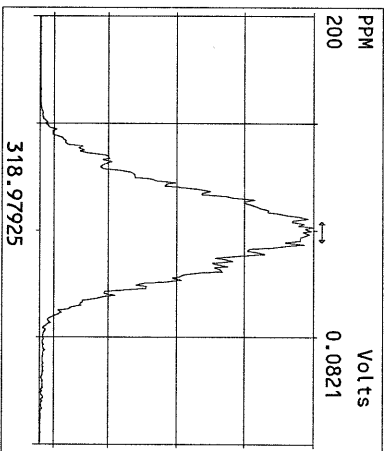
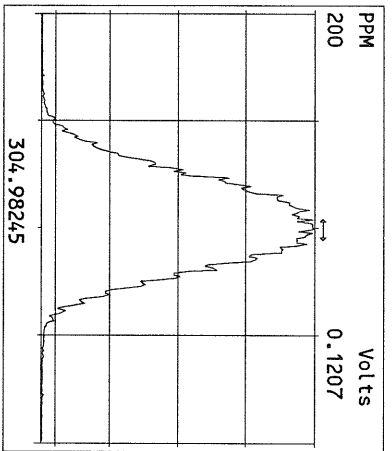
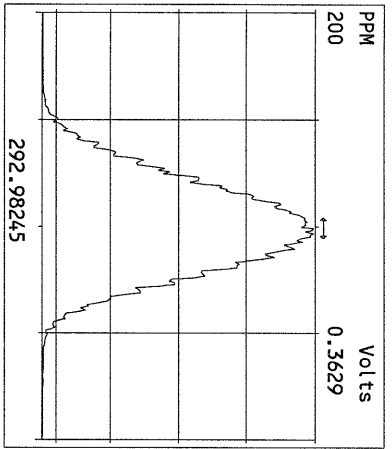


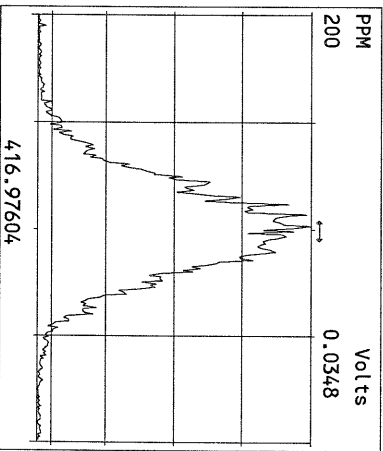
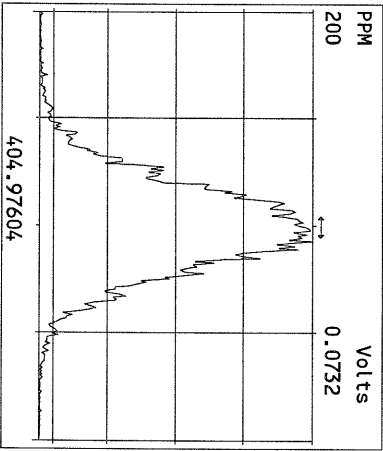
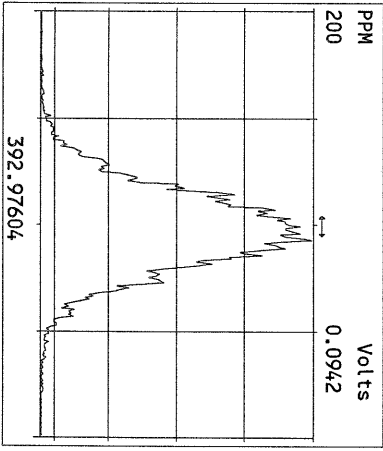
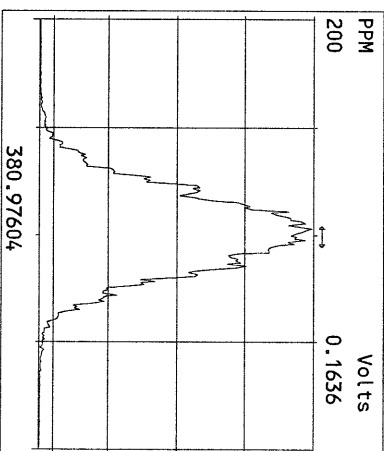
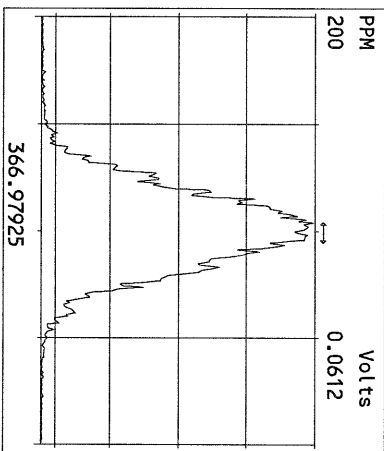
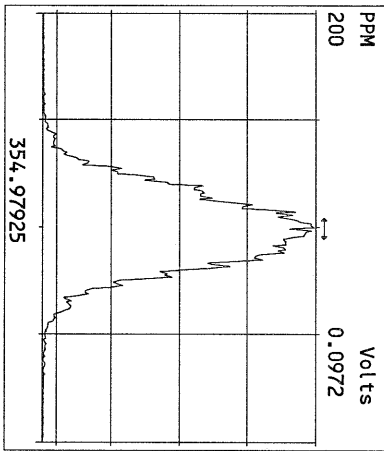
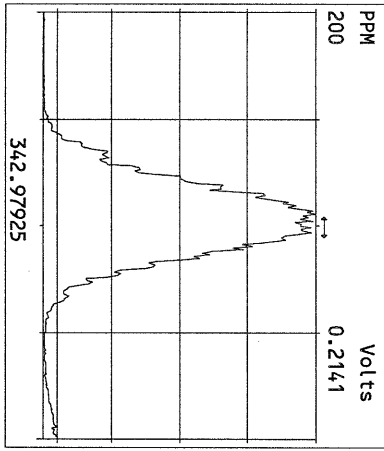
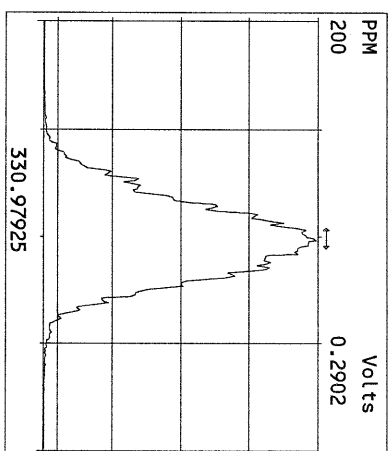
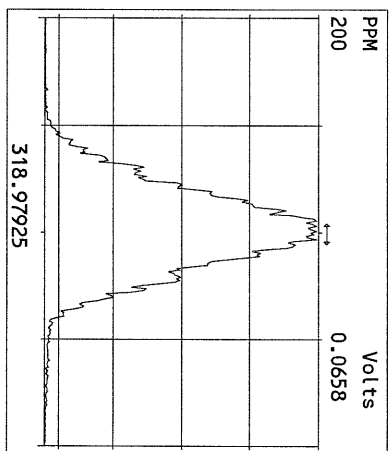
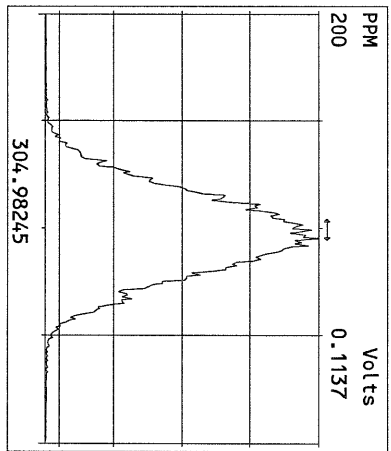
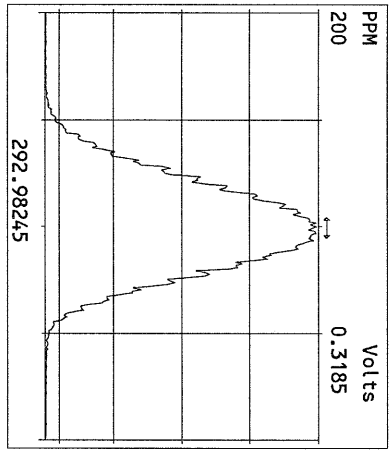


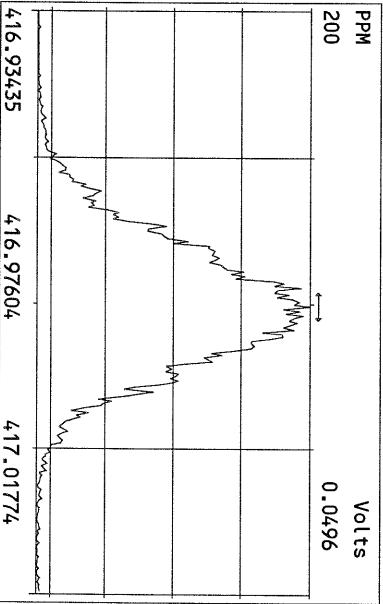
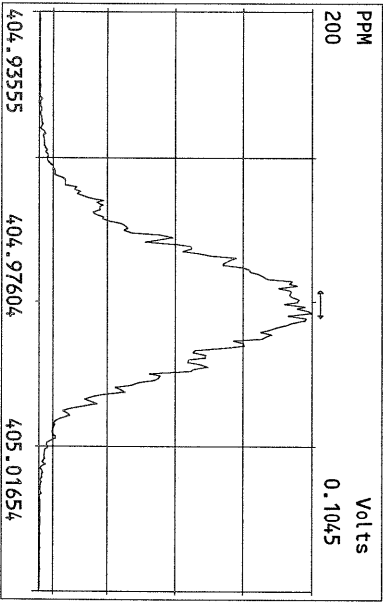
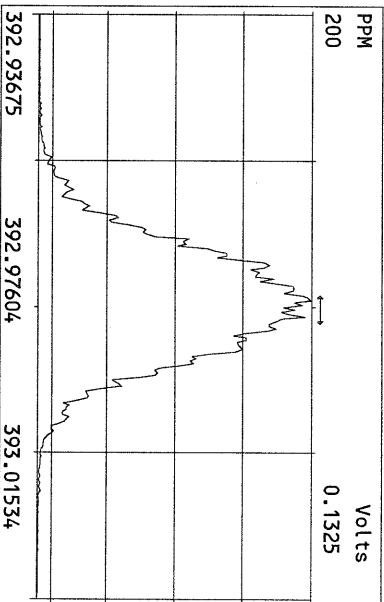
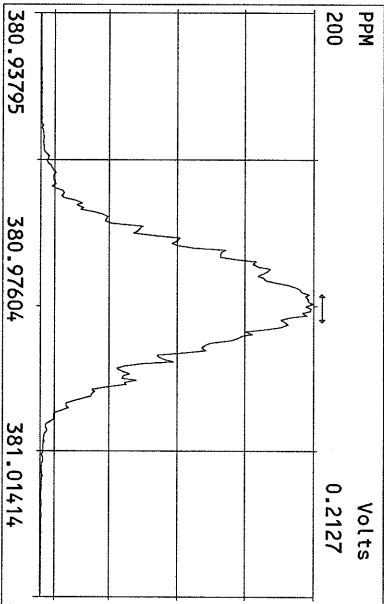
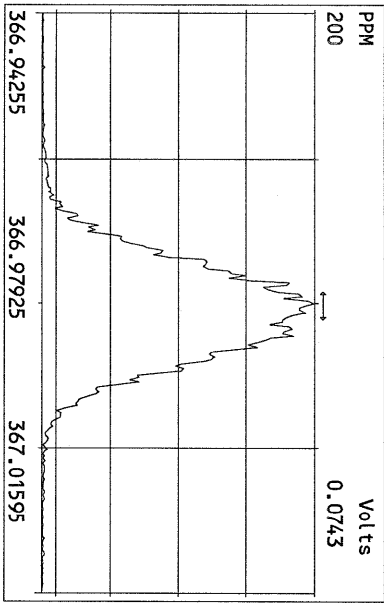
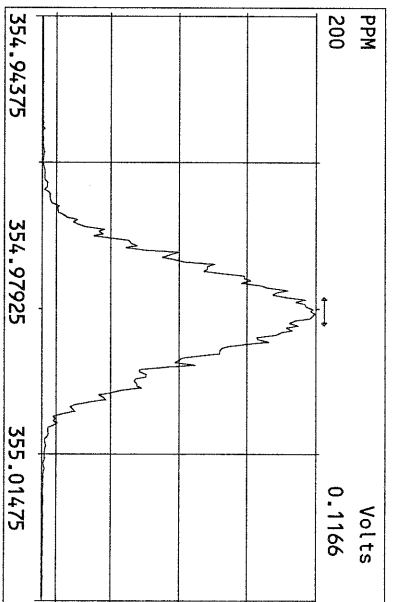
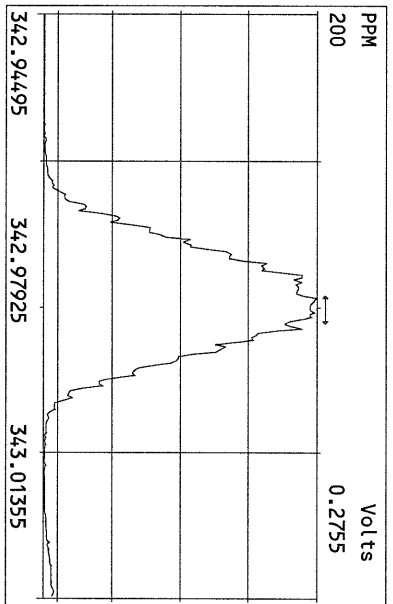
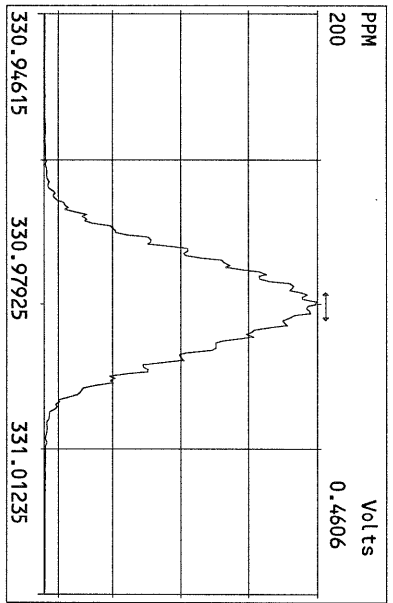




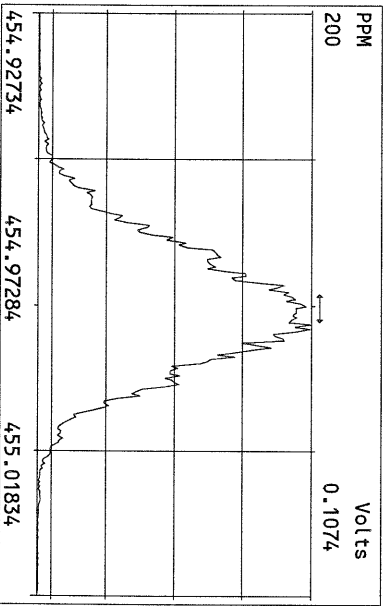
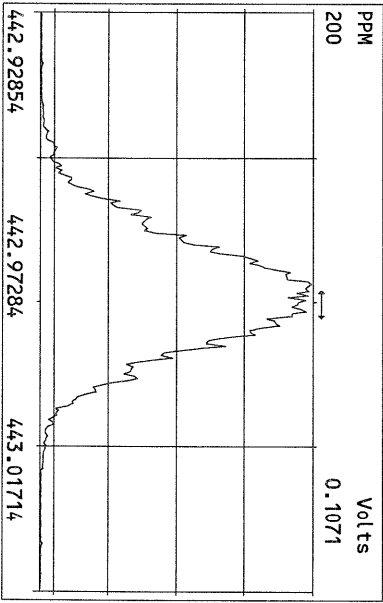
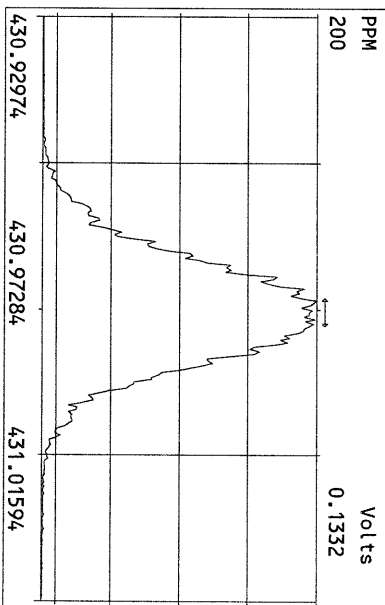
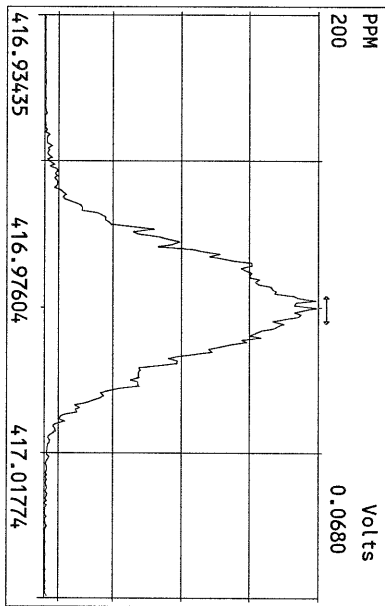
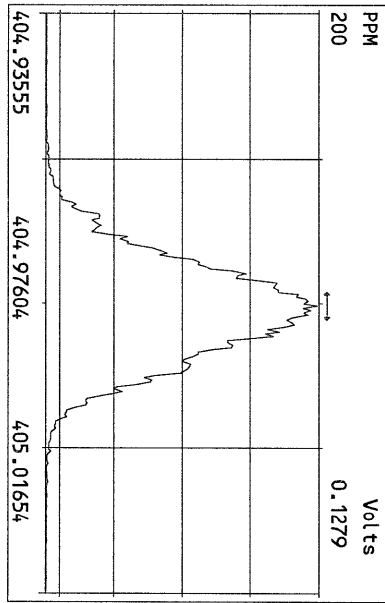
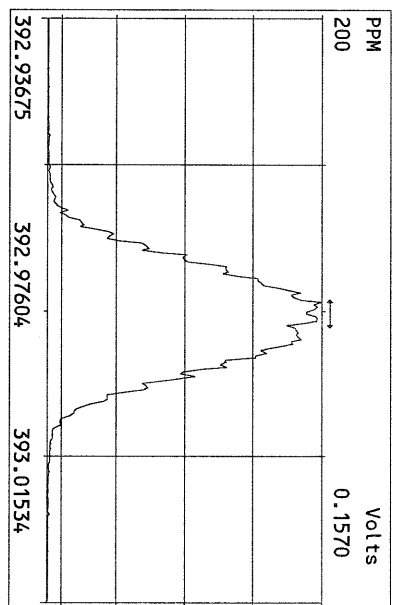
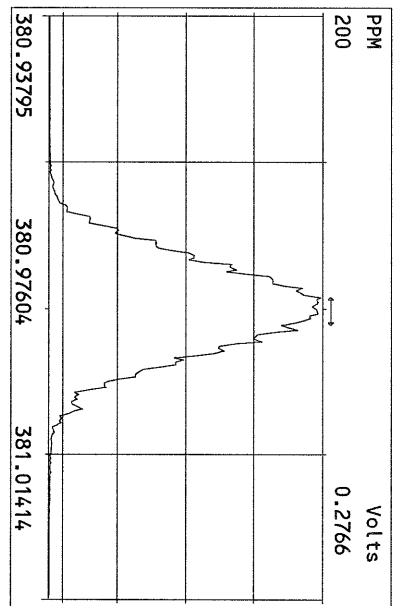
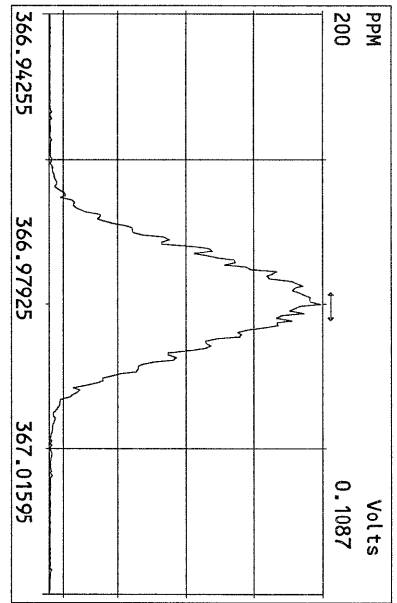




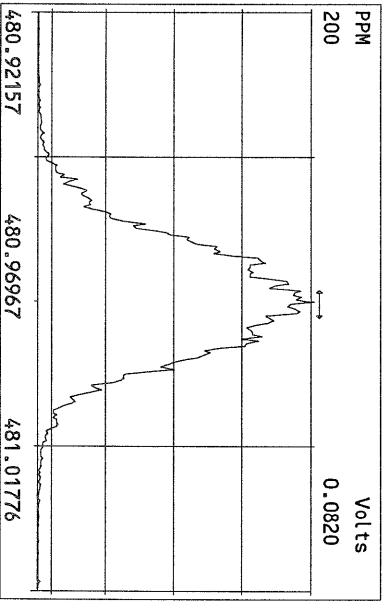
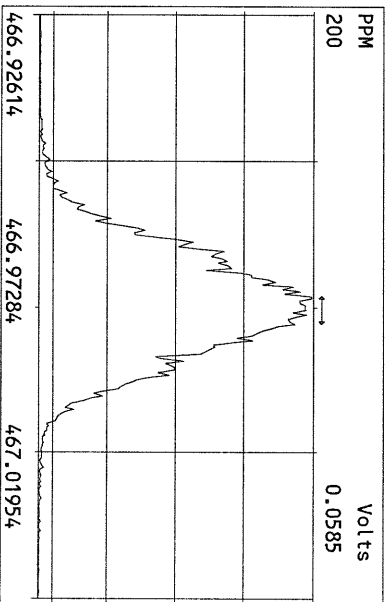
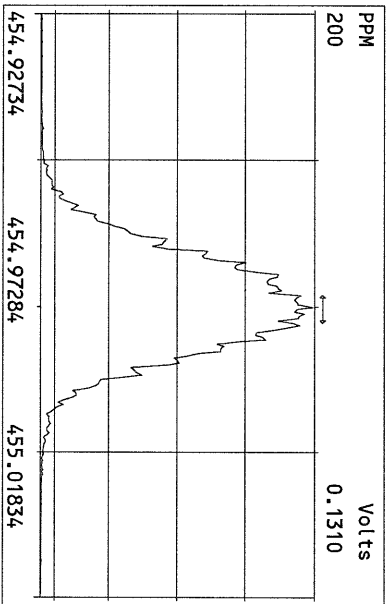
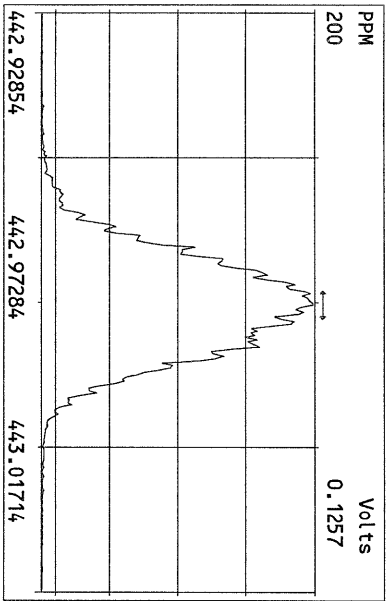
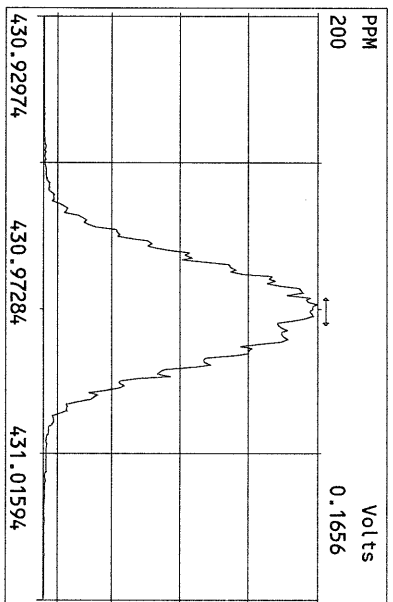
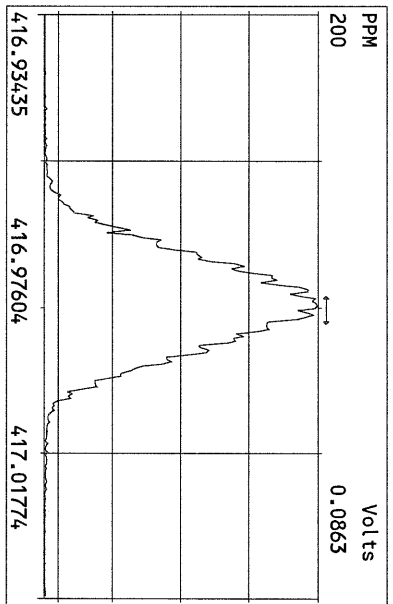
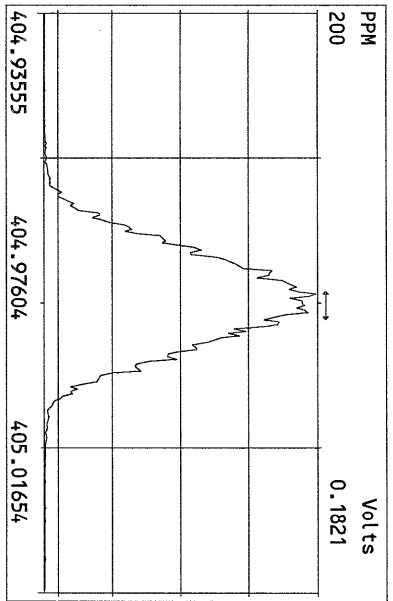


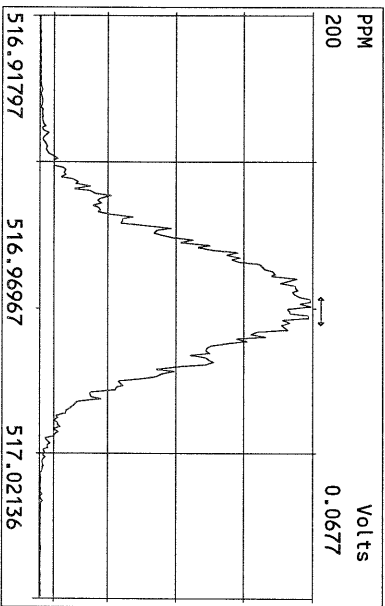
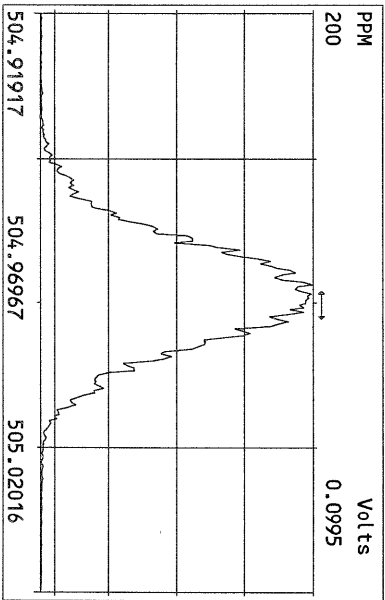
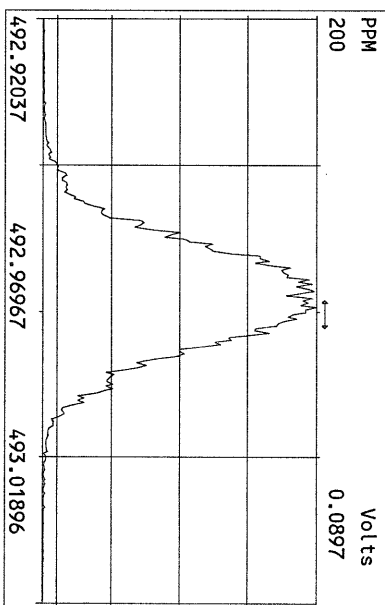
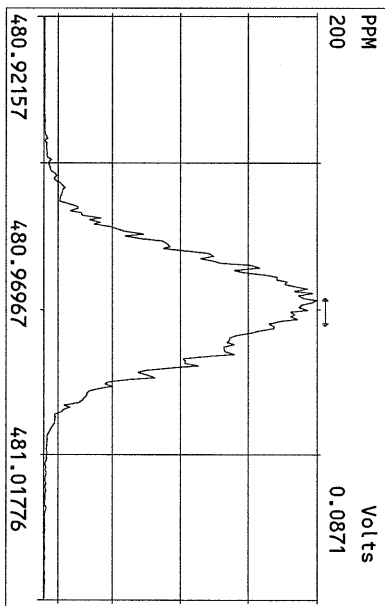
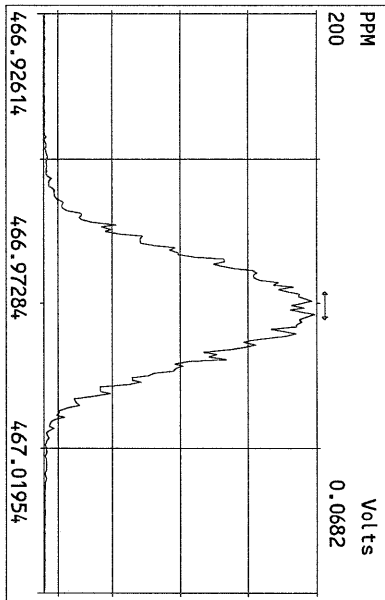
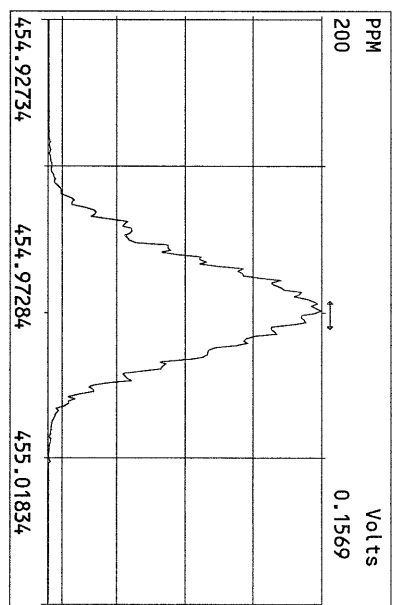
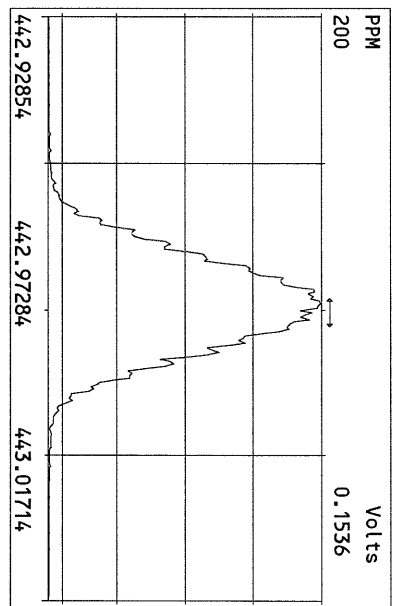
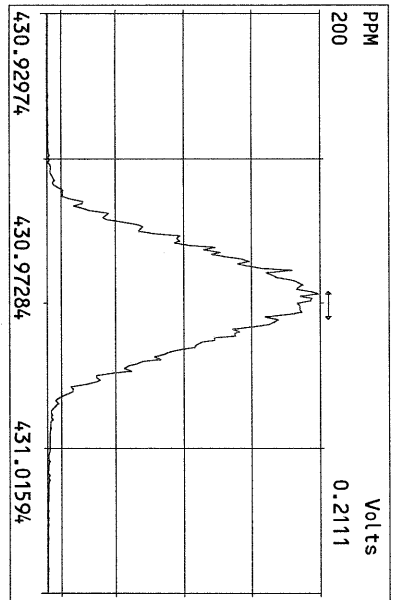


Peak Locate Examination: 7-JAN-2016:12:02 File:07JAN16Z
Experiment:PCDD Function:3 Reference:PFK

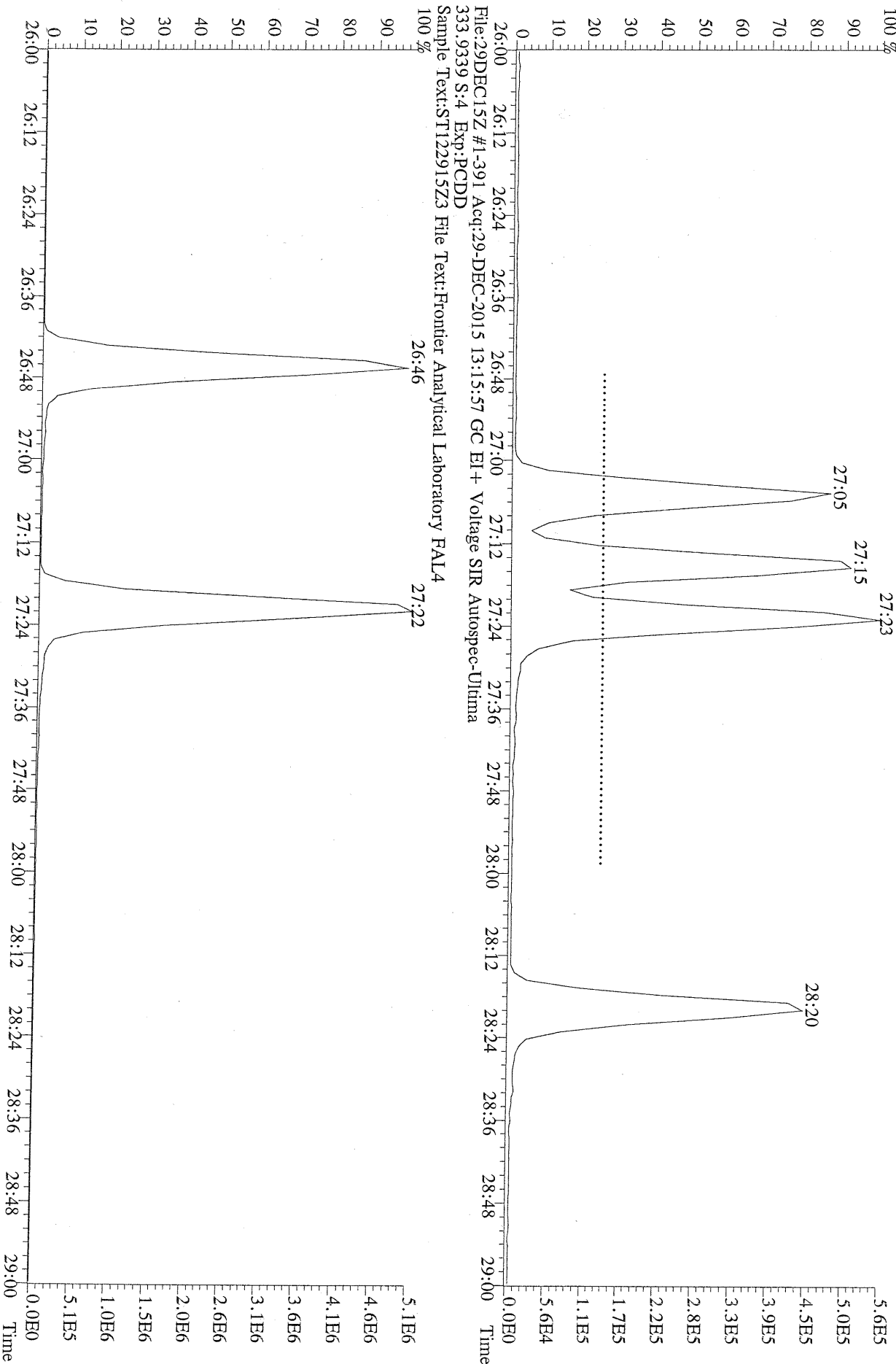


Peak Locate Examination: 7-JAN-2016:12:02 File:07JAN16Z
Experiment:PCDD Function:4 Reference:PFK

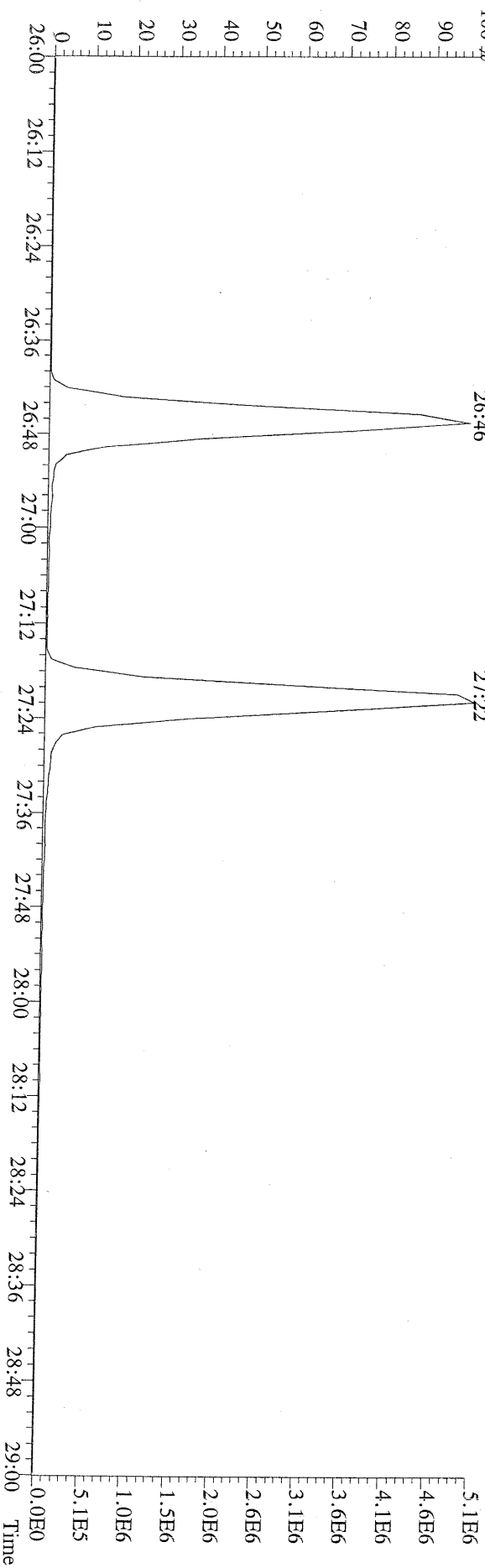




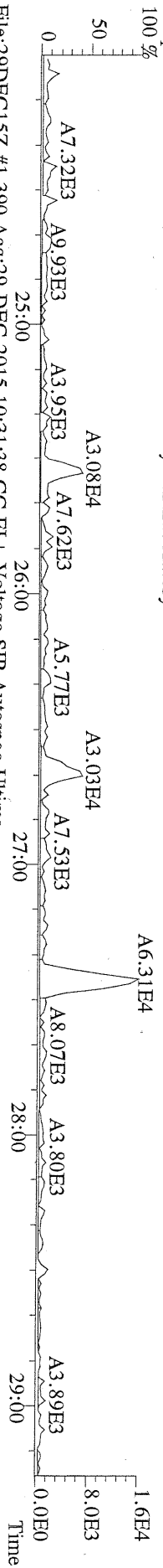
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321.8936 S:4 Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4



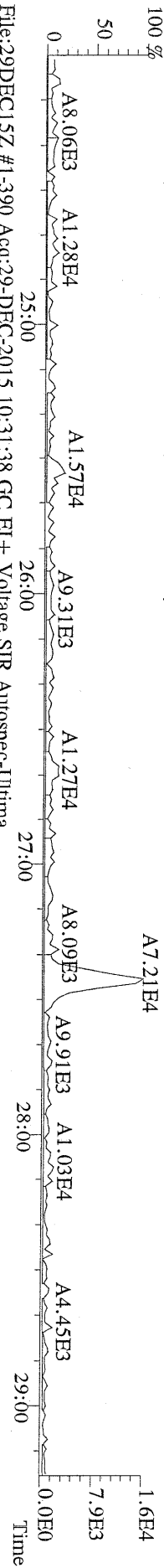
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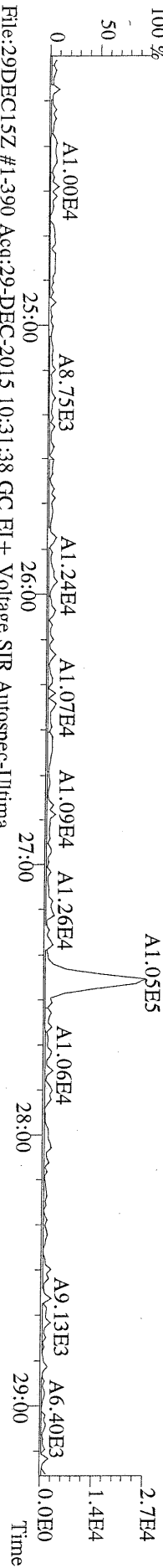
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Sample Text: ST122915Z0 File Text: Frontier Analytical Laboratory



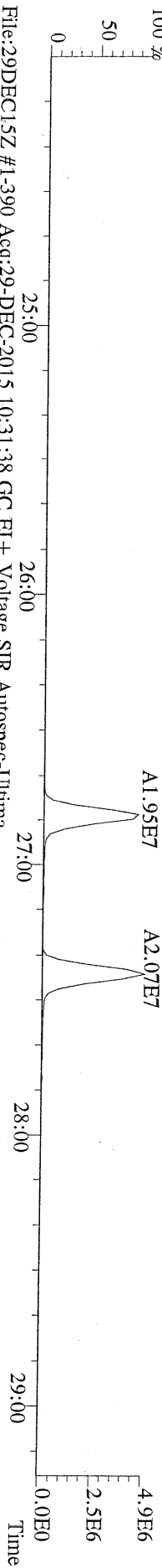
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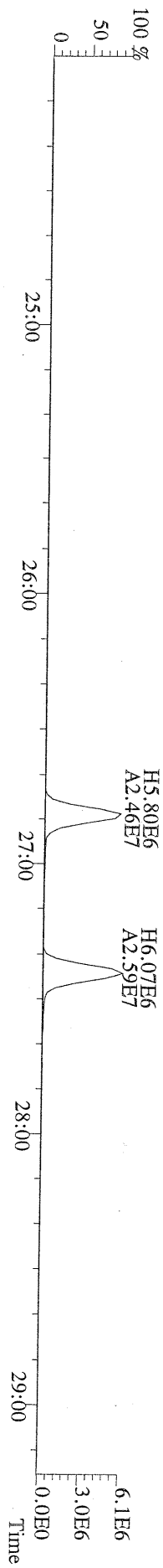
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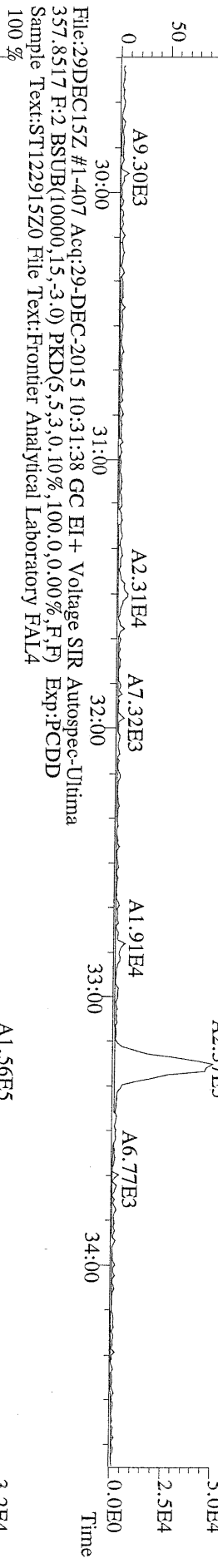
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331.9368 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text: ST122915Z0 File Text: Frontier Analytical Laboratory



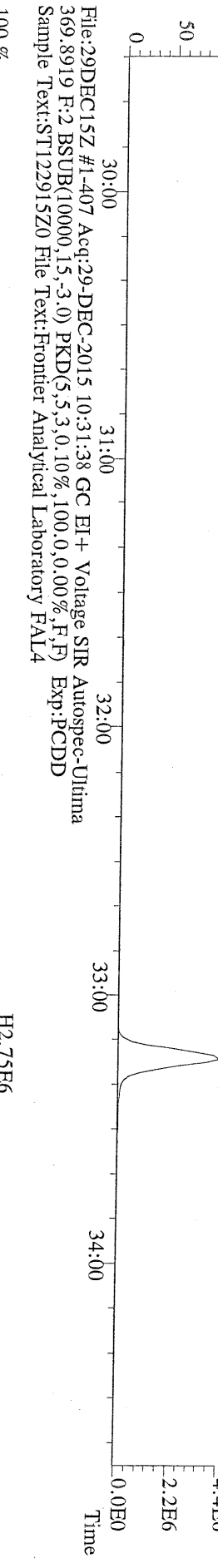
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333.9339 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text: ST122915Z0 File Text: Frontier Analytical Laboratory



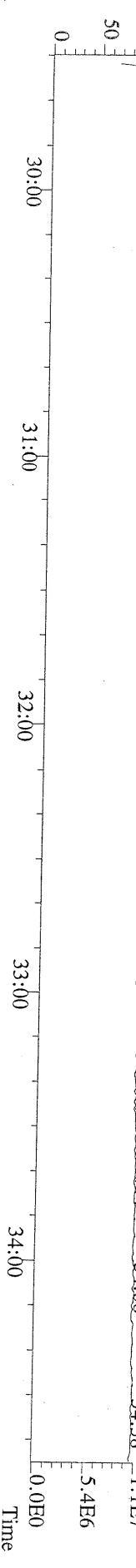
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355.8546 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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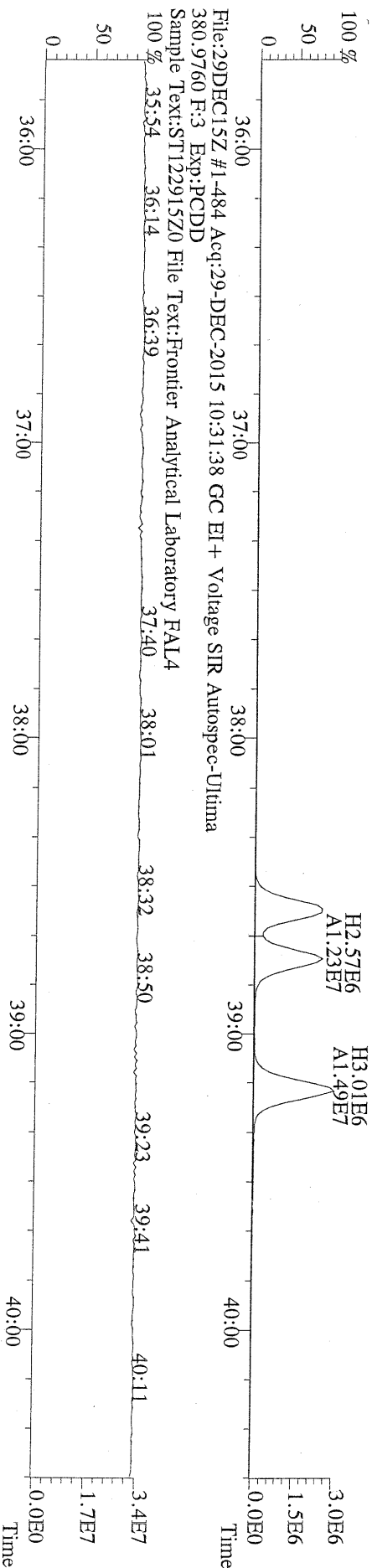
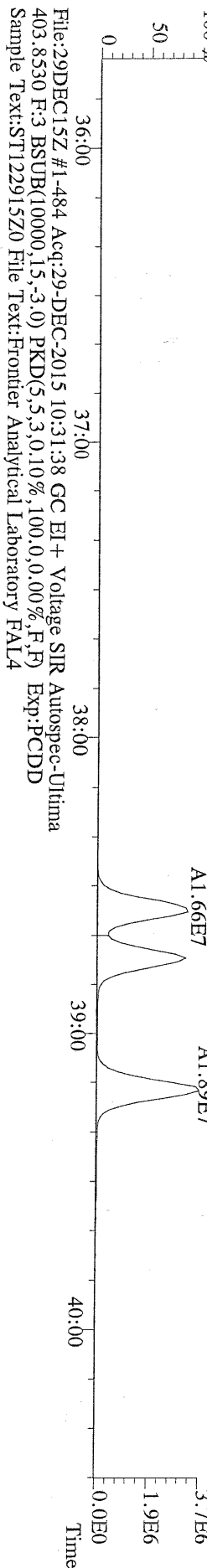
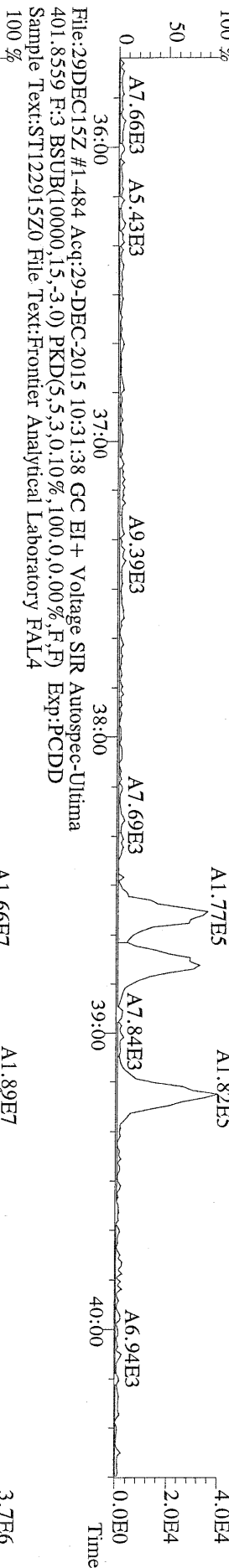
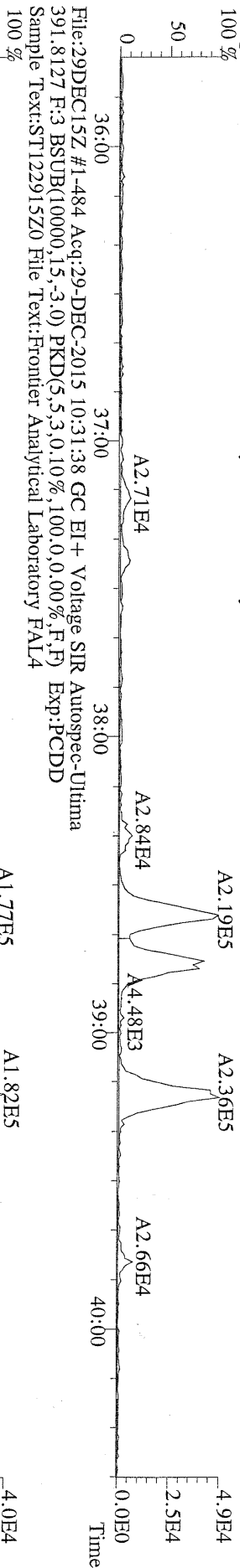
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367.8949 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory FAL4



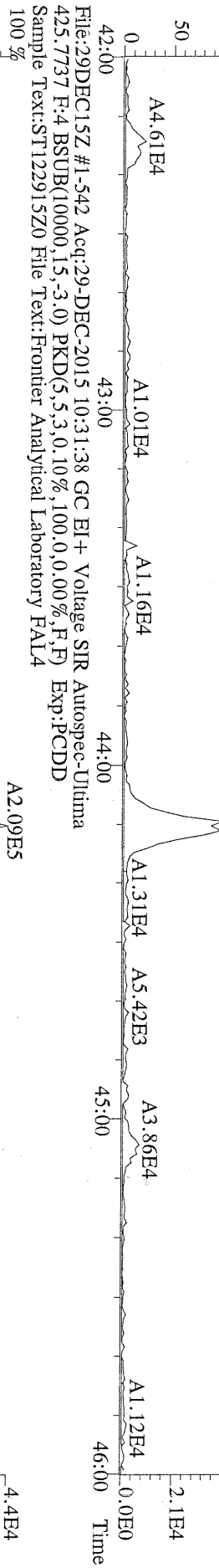
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366.9792 F:2 Exp:PCDD
Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory FAL4



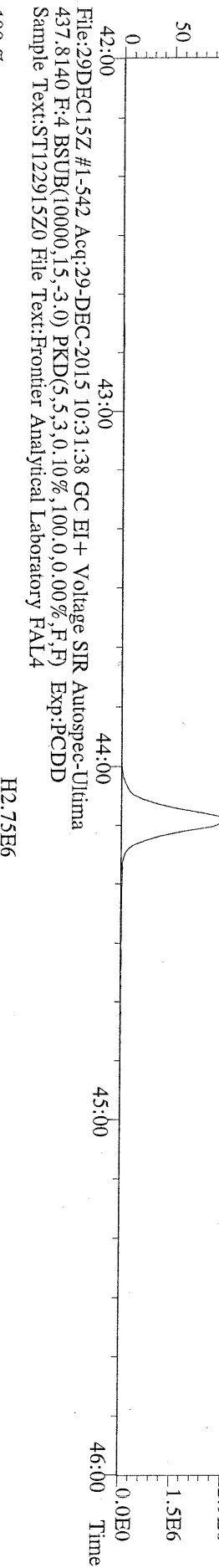
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389.8156 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory FAL4
100 %



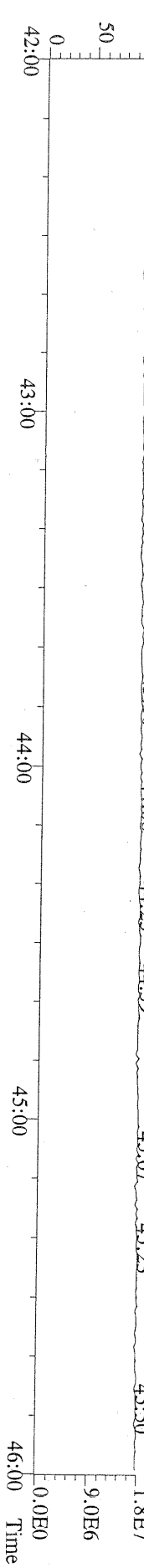
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423.7767 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory FAL4
100 %



File:29DEC15Z #1-542 Acq:29-DEC-2015 10:31:38 GC EI+ Voltage SIR Autospec-Ultima
435.8169 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory FAL4
100 %



File:29DEC15Z #1-542 Acq:29-DEC-2015 10:31:38 GC EI+ Voltage SIR Autospec-Ultima
430.9728 F:4 Exp:PCDD
Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory FAL4
100 %



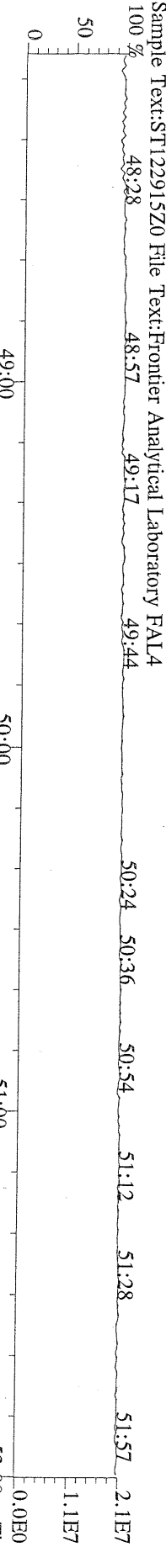
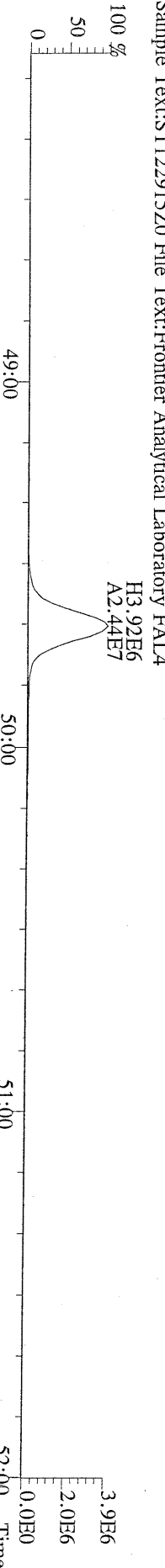
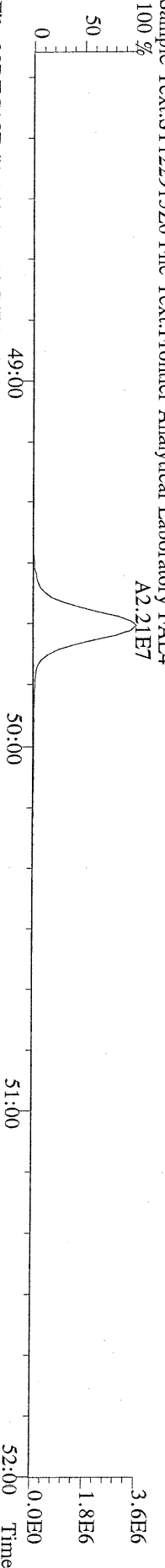
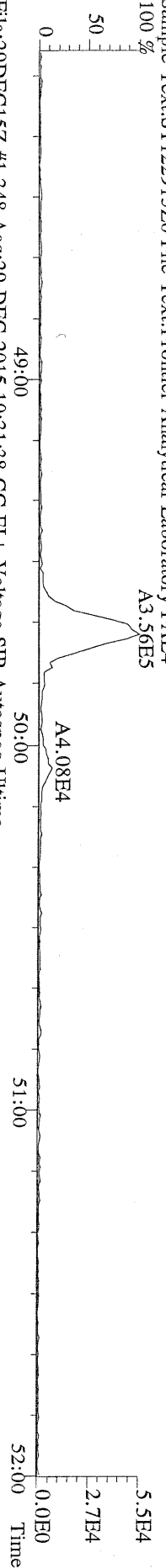
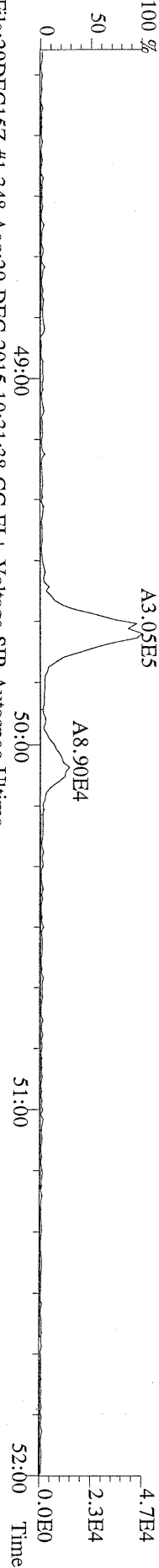
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457.7377 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z0 File Text:Fronter Analytical Laboratory FAL4
100 % A3.05E5

File:29DEC15Z #1-348 Acq:29-DEC-2015 10:31:38 GC EI+ Voltage SIR Autospec-Ultima
459.7348 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z0 File Text:Fronter Analytical Laboratory FAL4
100 % A3.56E5

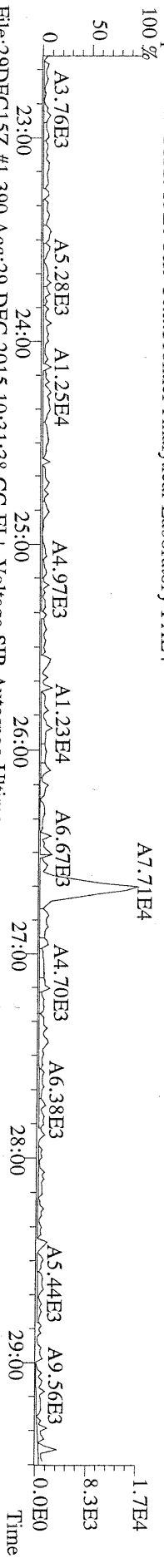
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469.7780 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z0 File Text:Fronter Analytical Laboratory FAL4
100 % A2.21E7

File:29DEC15Z #1-348 Acq:29-DEC-2015 10:31:38 GC EI+ Voltage SIR Autospec-Ultima
471.7750 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z0 File Text:Fronter Analytical Laboratory FAL4

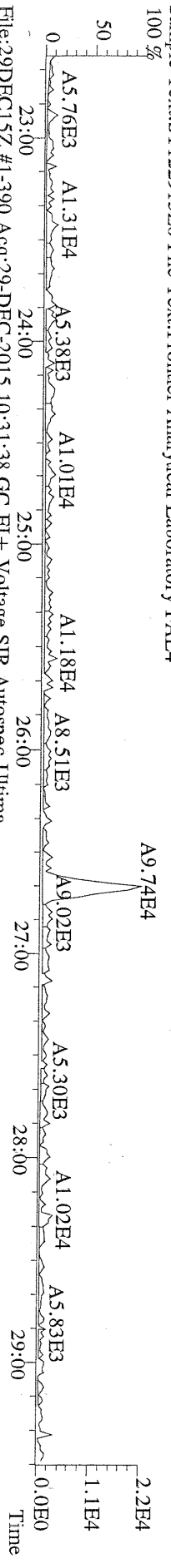
File:29DEC15Z #1-348 Acq:29-DEC-2015 10:31:38 GC EI+ Voltage SIR Autospec-Ultima
454.9728 F:5 Exp:PCDD
Sample Text:ST122915Z0 File Text:Fronter Analytical Laboratory FAL4



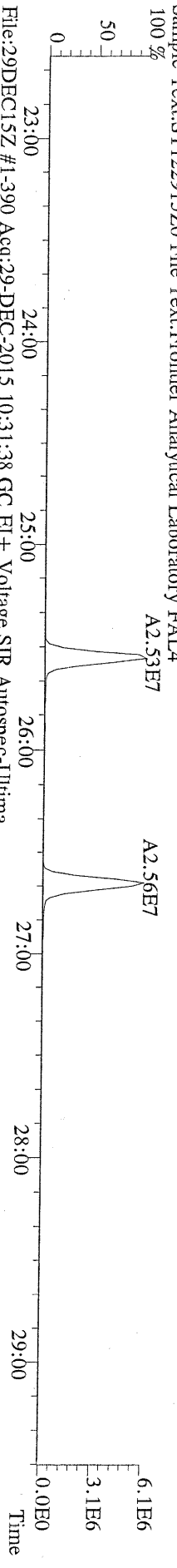
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303.9016 BSub(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory FAL4
100 %



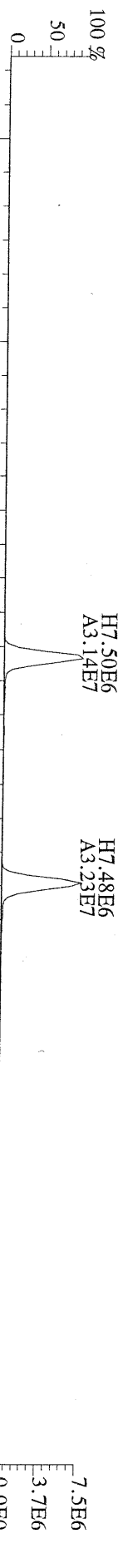
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305.8987 BSub(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory FAL4
100 %



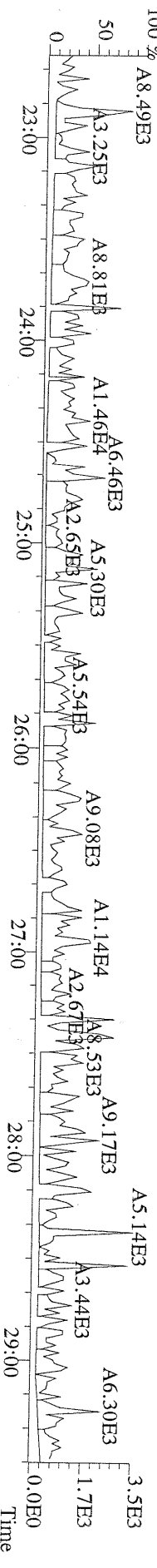
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Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory FAL4
100 %



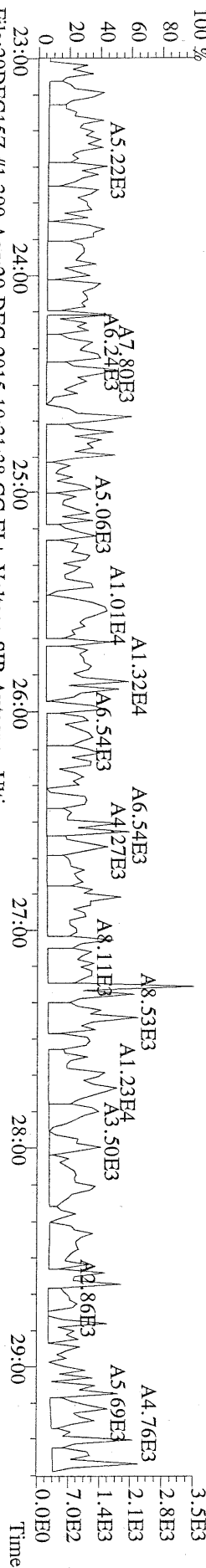
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317.9389 BSub(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory FAL4
100 %



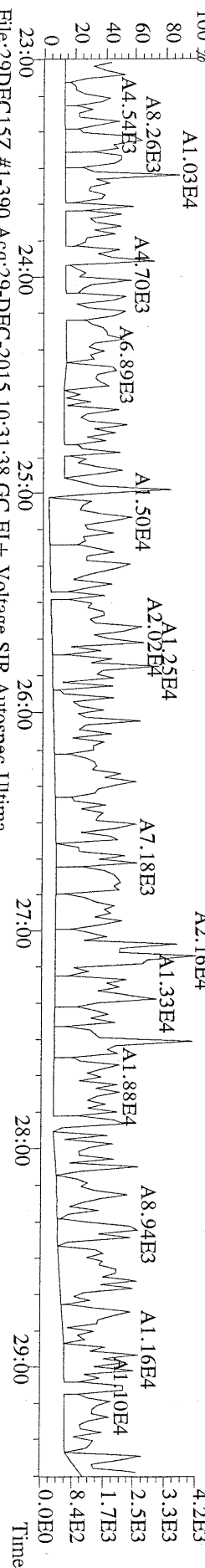
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375.8364 BSub(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory FAL4
100 %



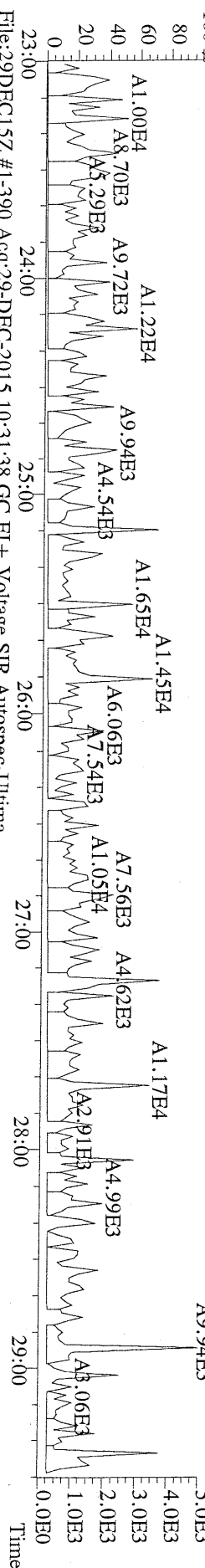
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 339.8597 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory FAL4



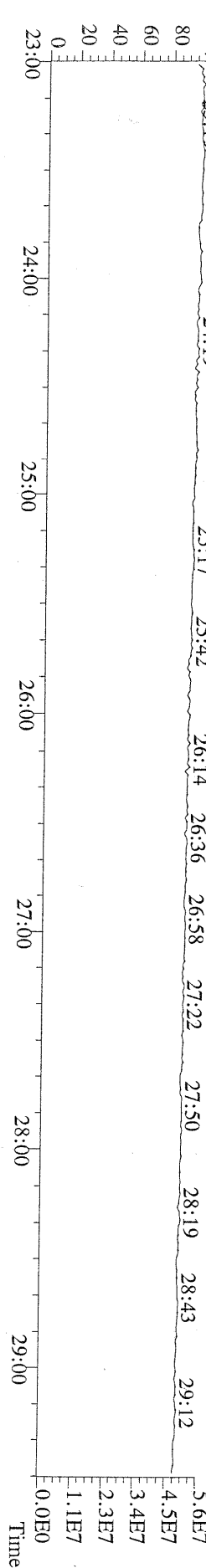
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 341.8568 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory FAL4



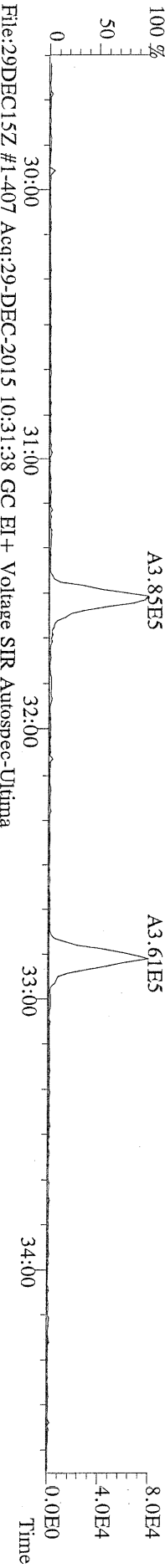
File:29DEC15Z #1-390 Acq:29-DEC-2015 10:31:38 GC EI+ Voltage SIR Autospec-Utima
 409.7974 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory FAL4



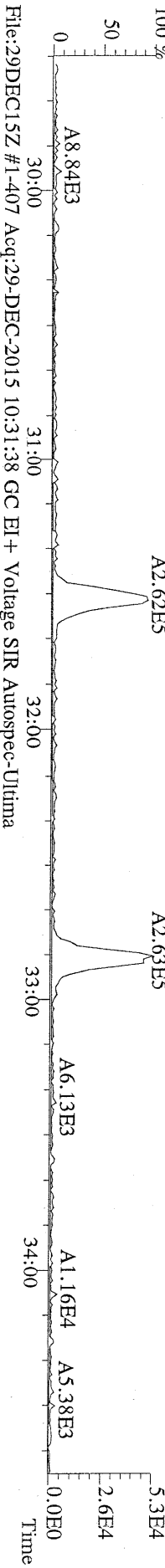
File:29DEC15Z #1-390 Acq:29-DEC-2015 10:31:38 GC EI+ Voltage SIR Autospec-Utima
 330.9792 Exp:PCDD
 Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory FAL4



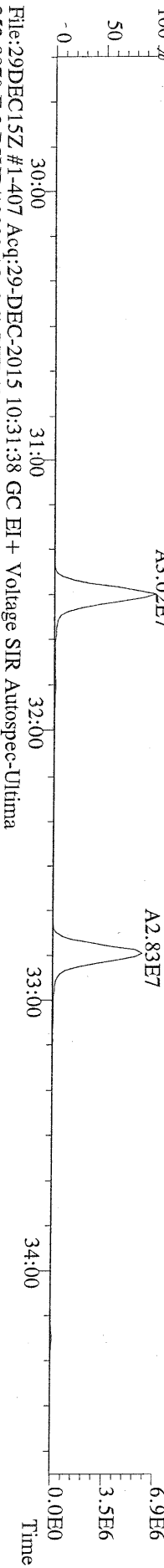
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 Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory FAL4
 100 %



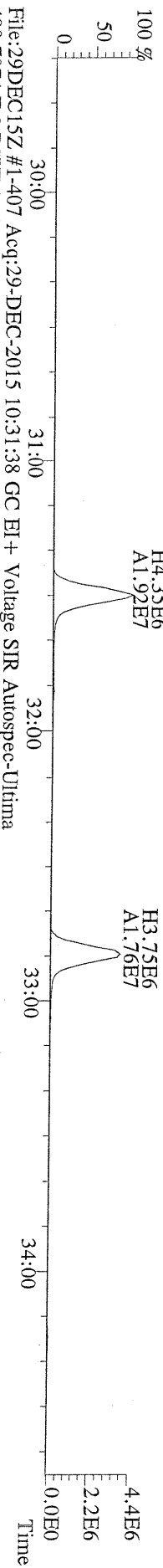
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 Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory FAL4
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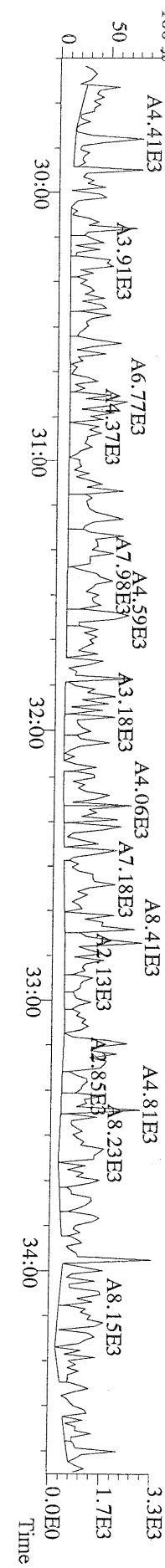
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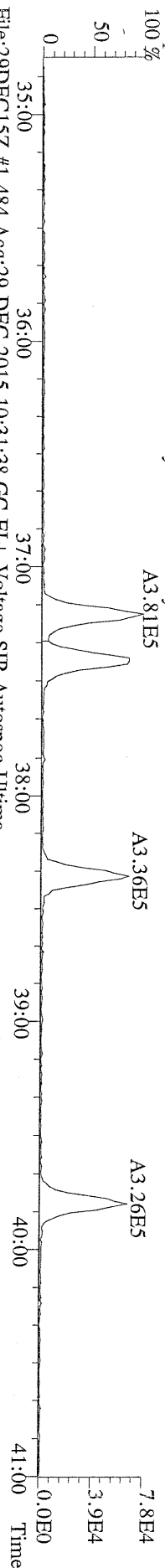
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 353.8970 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp.:PCDD
 Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory FAL4



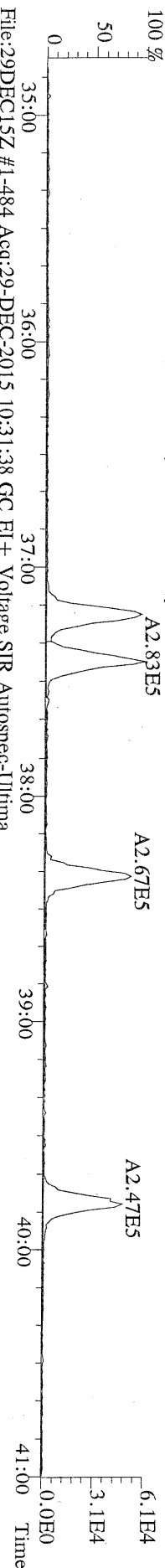
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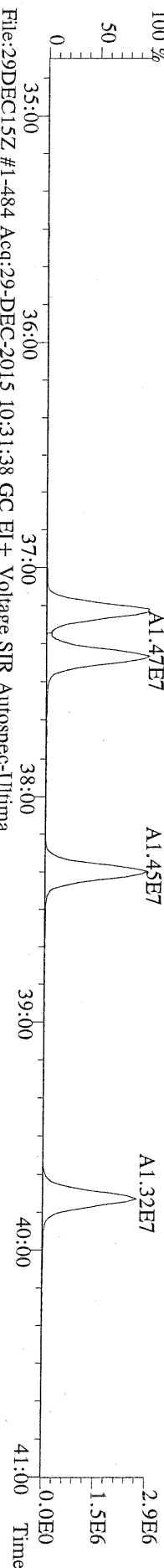
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373.8207 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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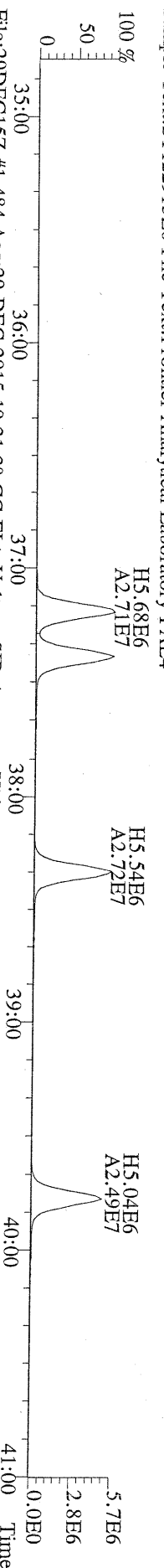
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375.8178 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory FAL4



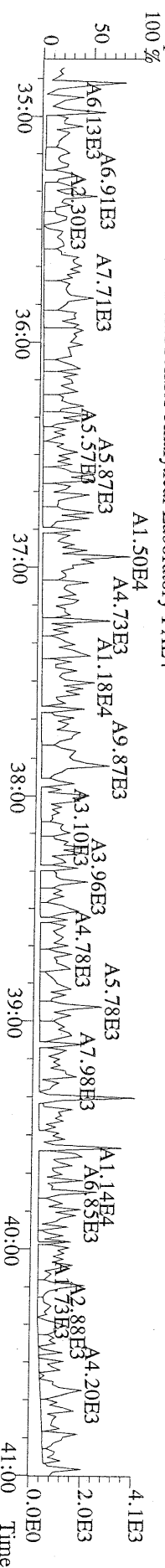
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383.8639 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory FAL4



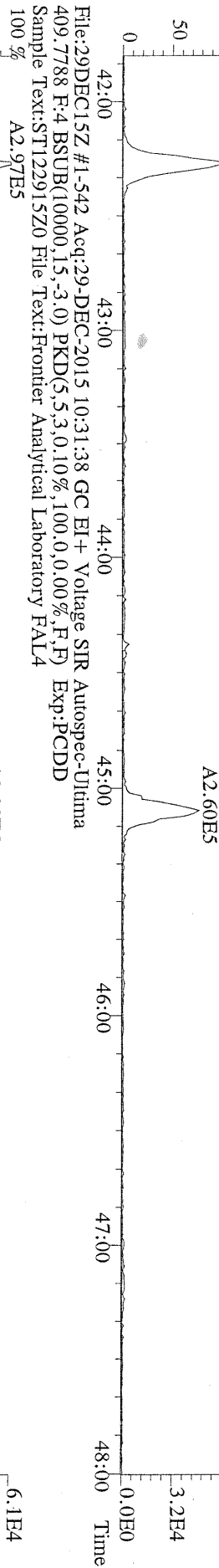
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Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory FAL4



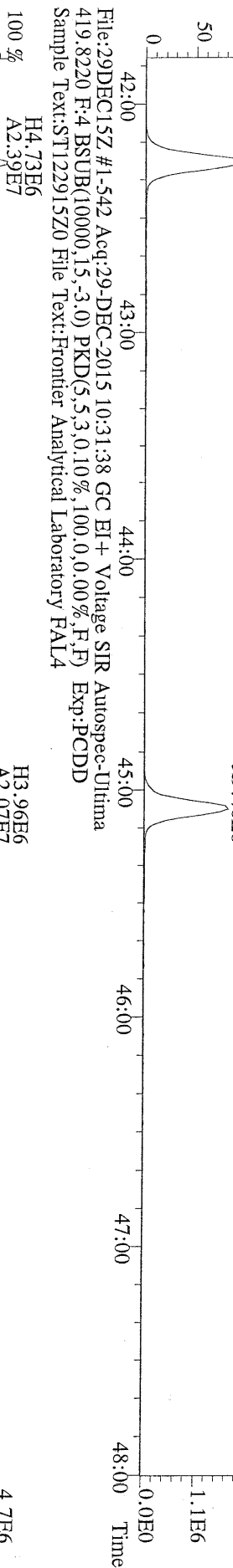
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445.7555 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory FAL4



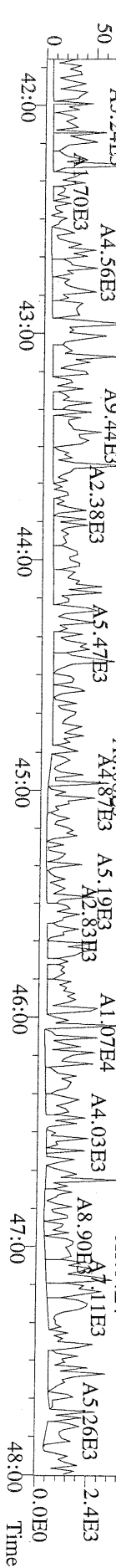
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407.7818 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory FAL4
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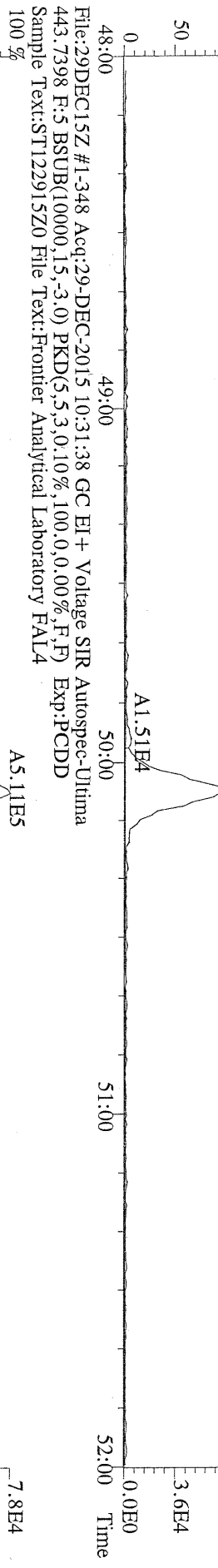
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417.8253 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory FAL4
100% A1.09E7



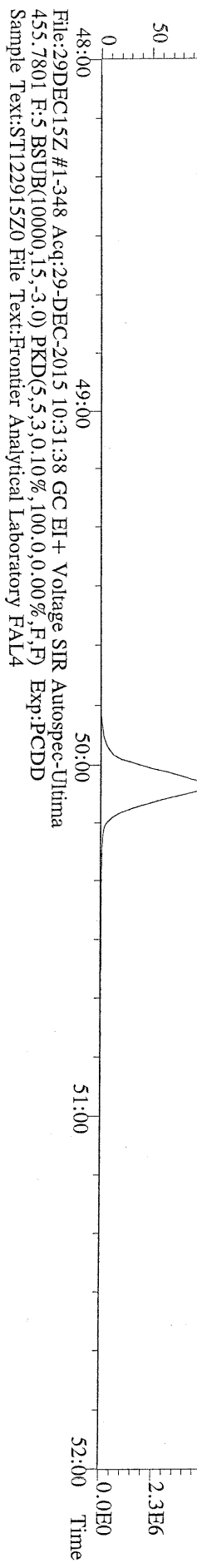
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419.8220 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory FAL4
100% H4.73E6
A2.39E7



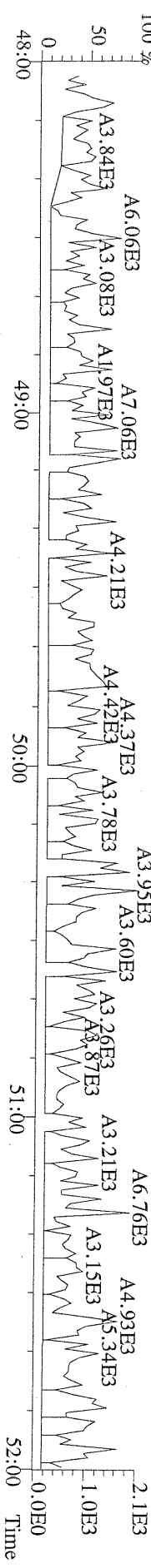
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441.7428 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z0 File Text:Frontier Analytical Laboratory FAL4
100 %



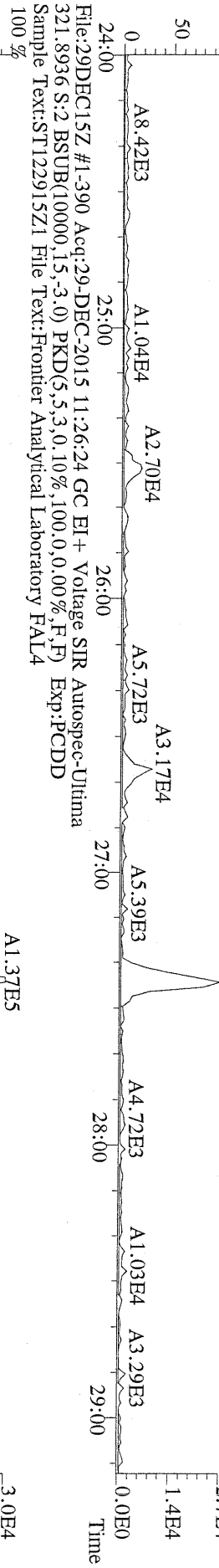
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443.7398 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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100 %



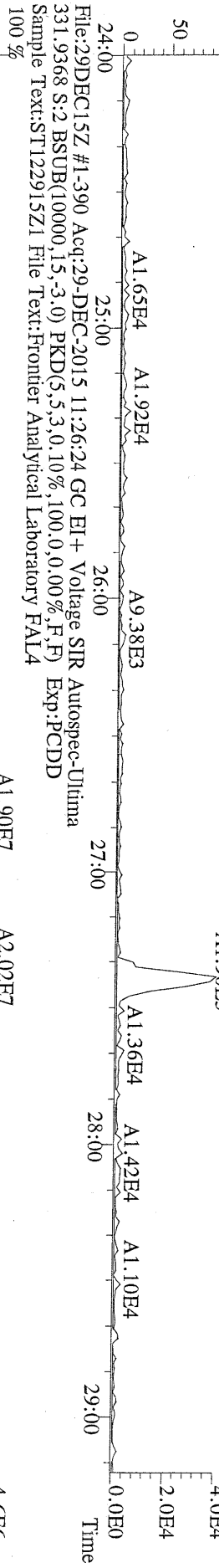
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455.7801 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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100 %



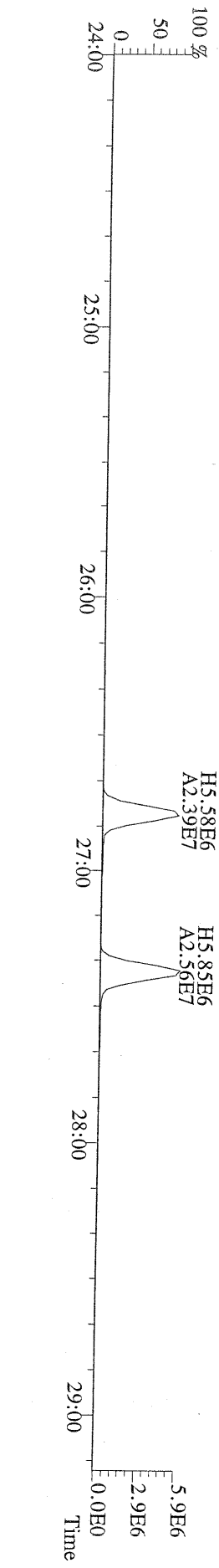
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319.8965 S:2.BSUB(10000,15,-3.0) PKD(5,5,3,0,100,0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4
100%



File:29DEC15Z #1-390 Acq:29-DEC-2015 11:26:24 GC EI+ Voltage SIR Autospec-Ultima
327.8847 S:2.BSUB(10000,15,-3.0) PKD(5,5,3,0,100,0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4
100%



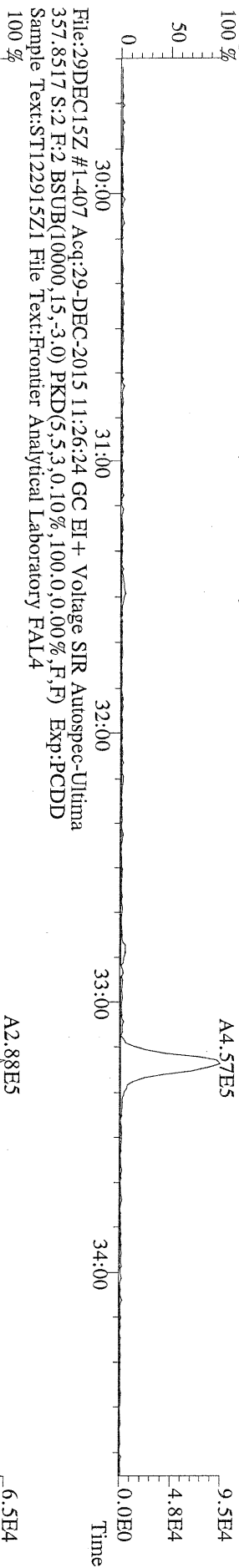
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331.9368 S:2.BSUB(10000,15,-3.0) PKD(5,5,3,0,100,0,0.00%,F,F) Exp:PCDD
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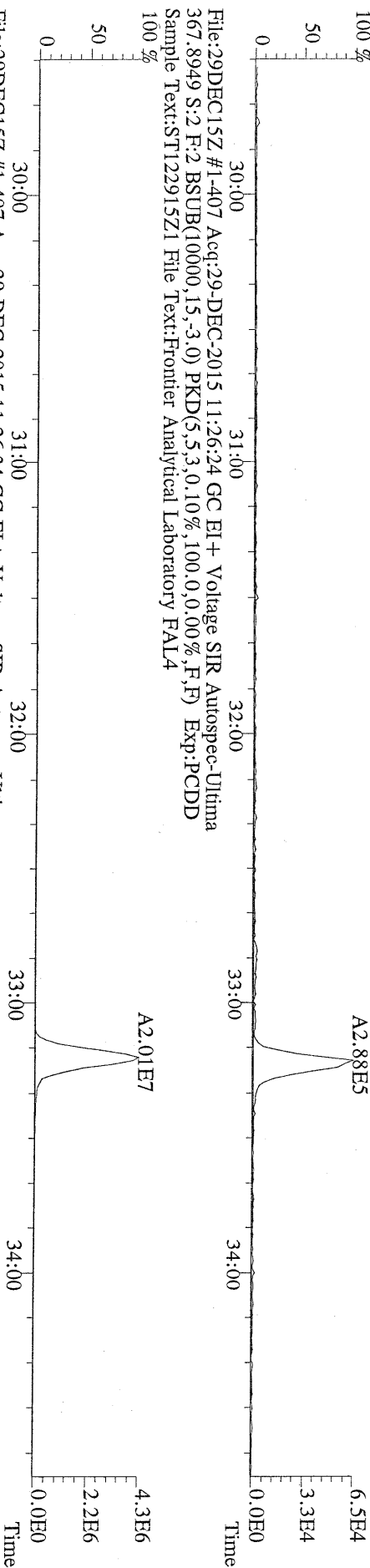
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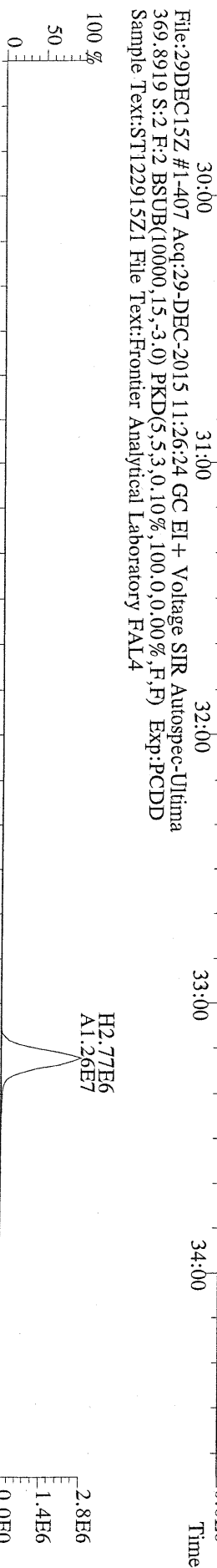
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355.8546 S:2 F:2 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text: ST122915Z1 File Text: Frontier Analytical Laboratory FAL4
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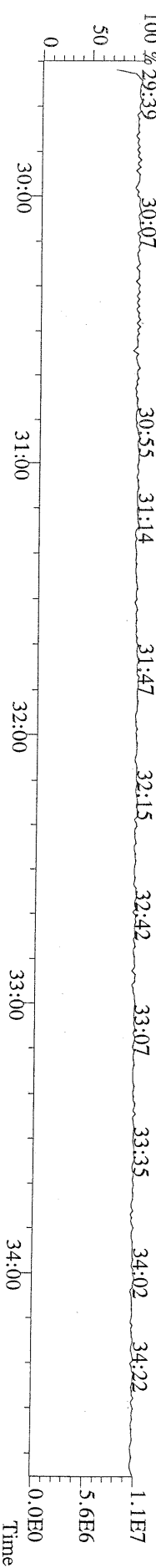
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357.8517 S:2 F:2 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD
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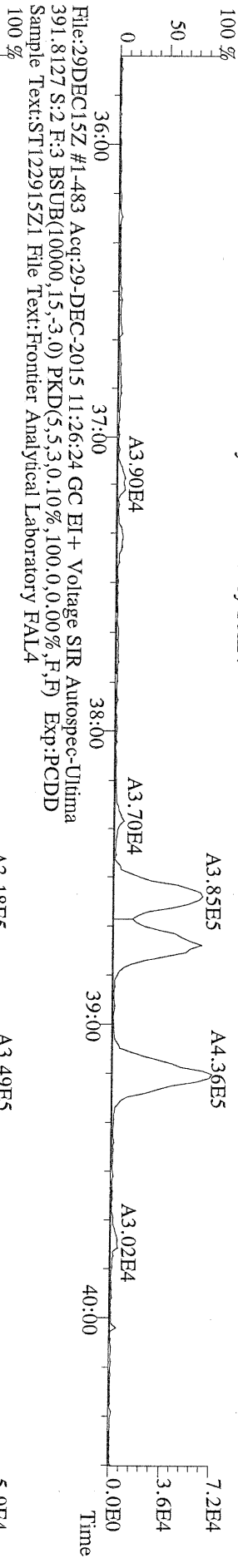
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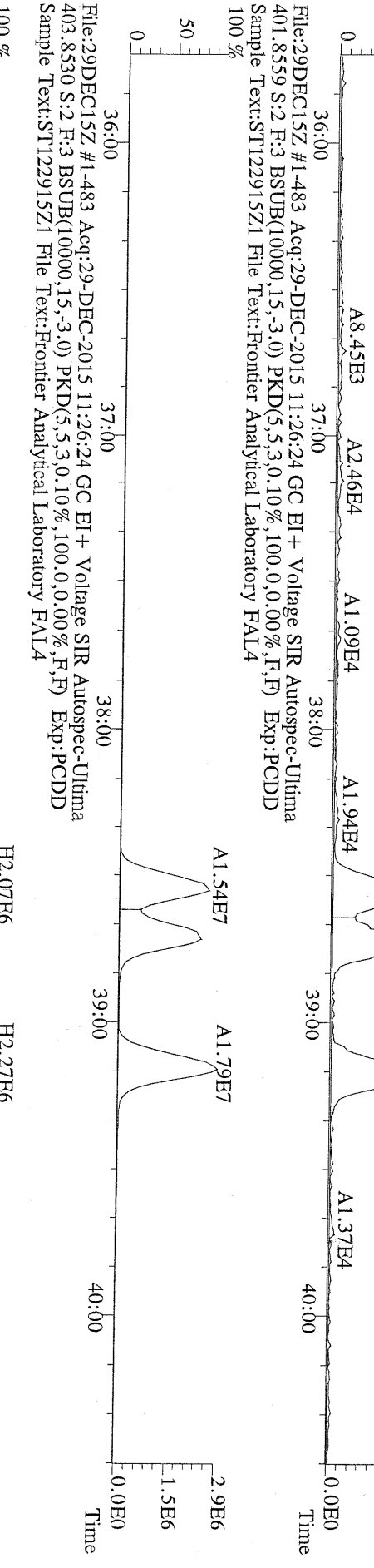
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Sample Text: ST122915Z1 File Text: Frontier Analytical Laboratory FAL4
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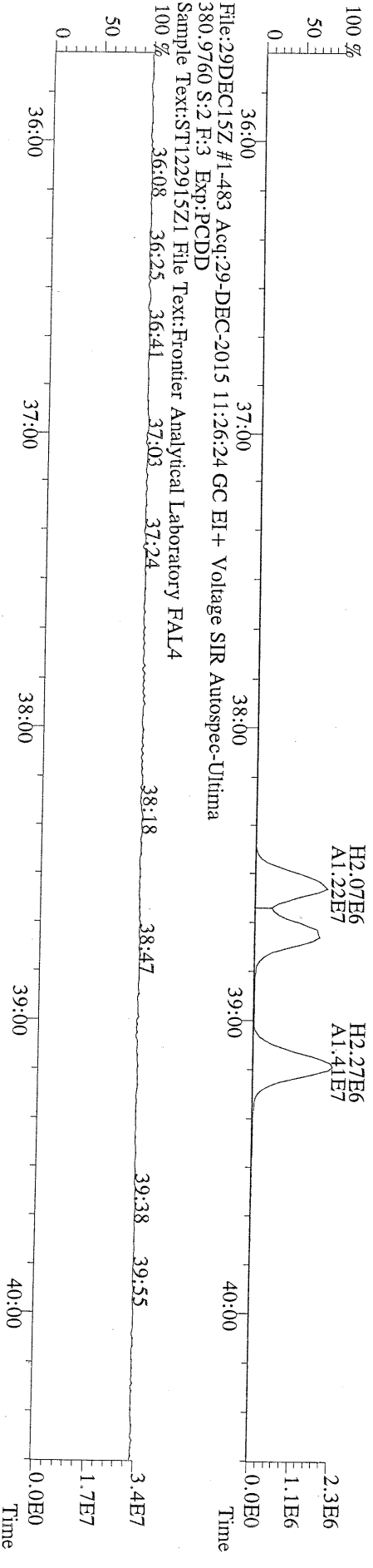
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389.8156 S:2 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4



File:29DEC15Z #1-483 Acq:29-DEC-2015 11:26:24 GC EI+ Voltage SIR Autospec-Ultima
401.8559 S:2 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4



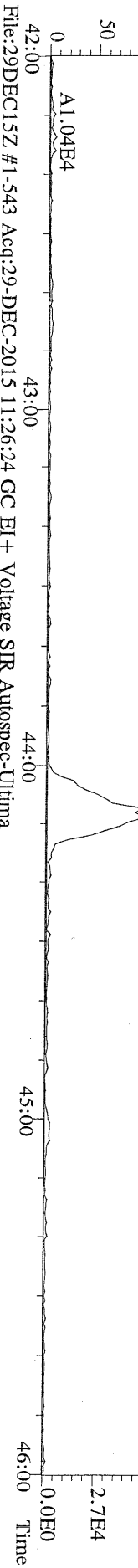
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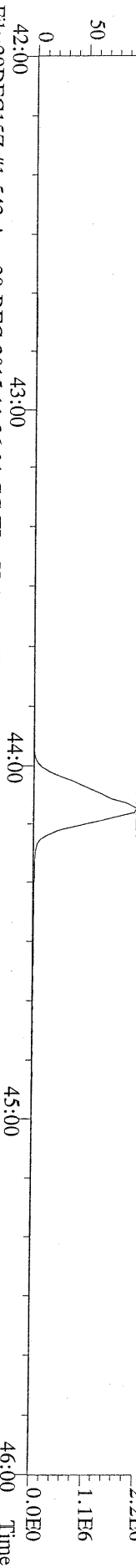
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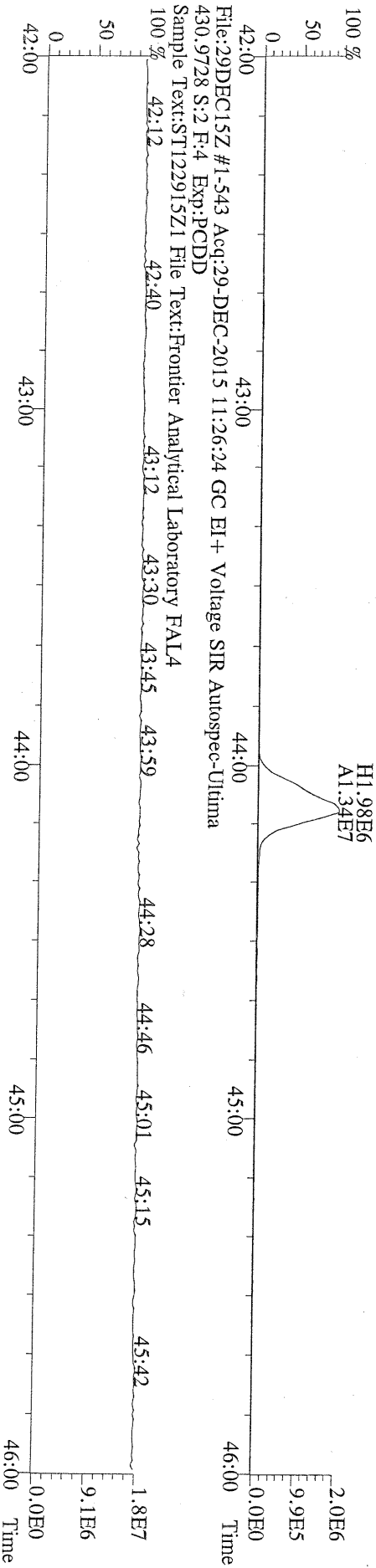
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100 %



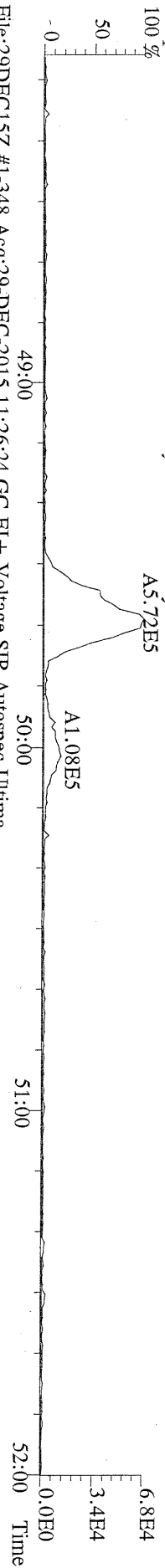
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Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4
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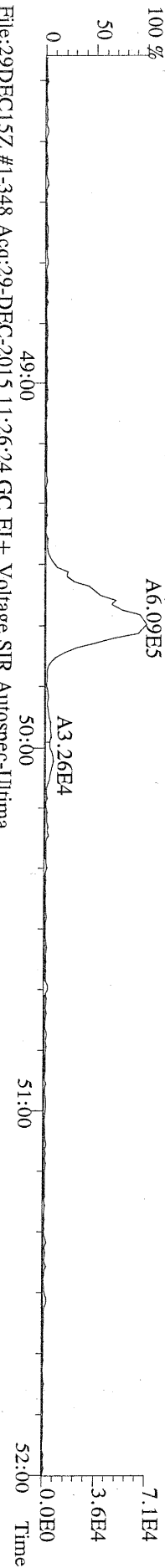
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430.9728 S:2 F:4 Exp:PCDD
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100 %



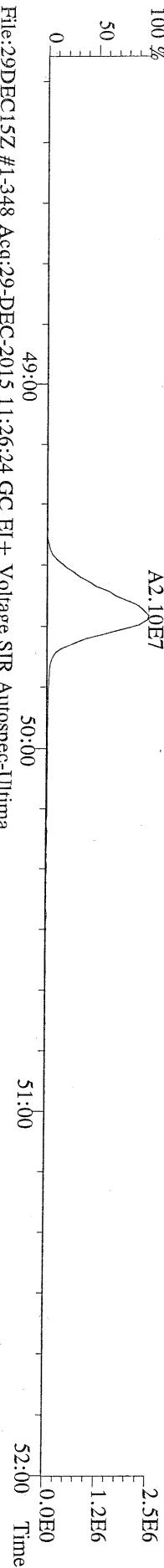
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457.7377 S:2 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp.:PCDD
Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



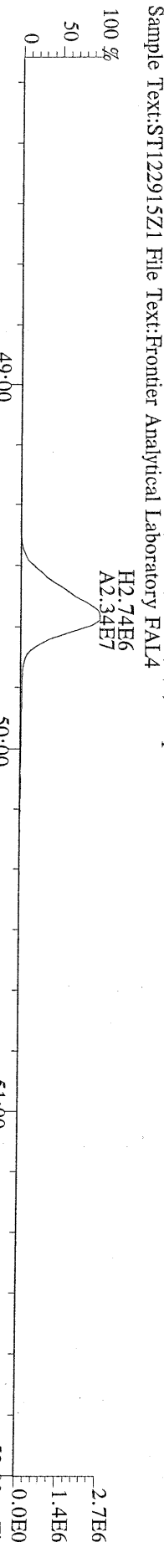
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459.7348 S:2 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp.:PCDD
Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4
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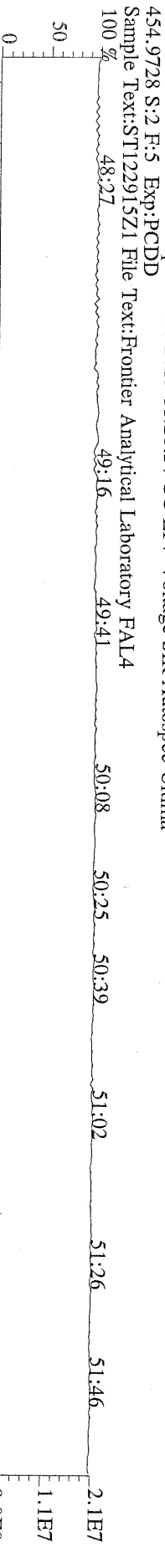
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100 %



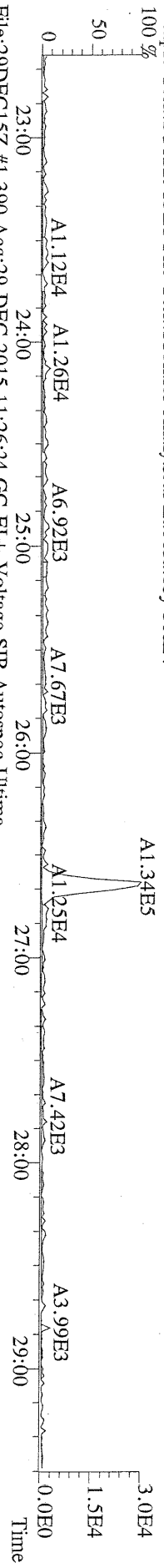
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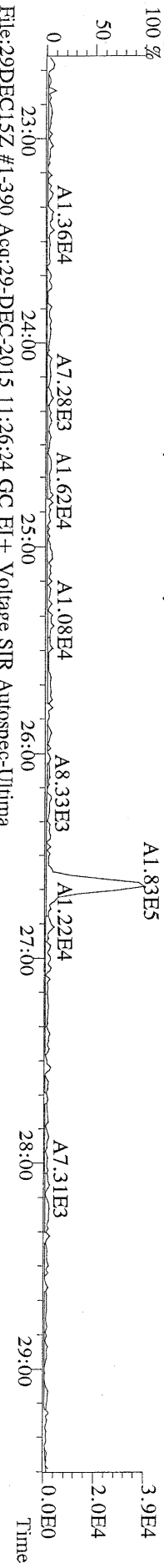
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454.9728 S:2 F:5 Exp:PCDD
Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4



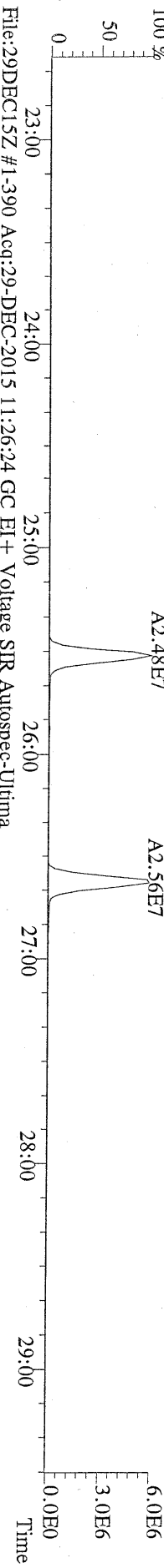
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Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



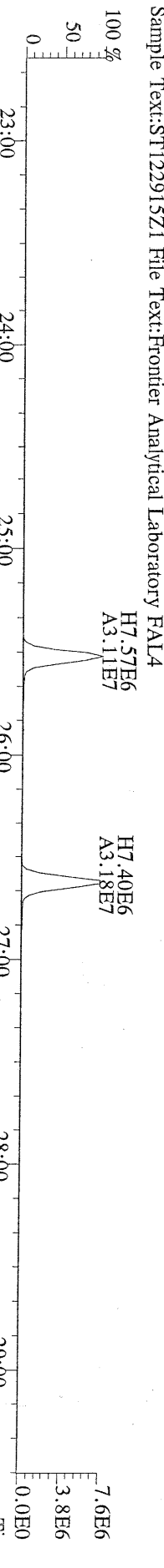
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305.8987 S:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



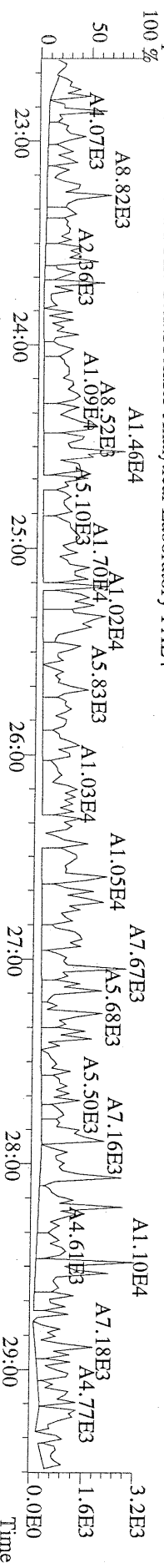
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Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



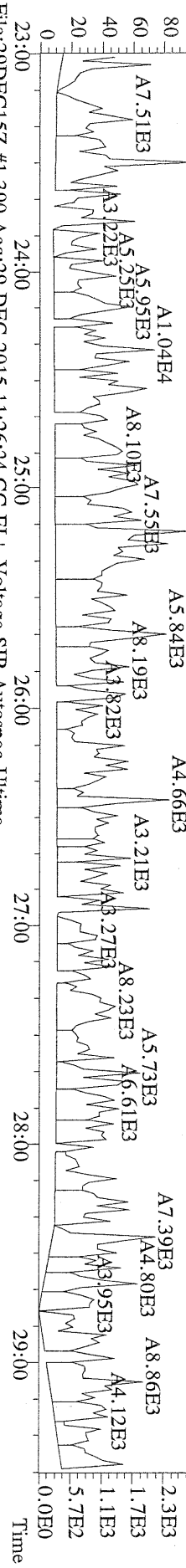
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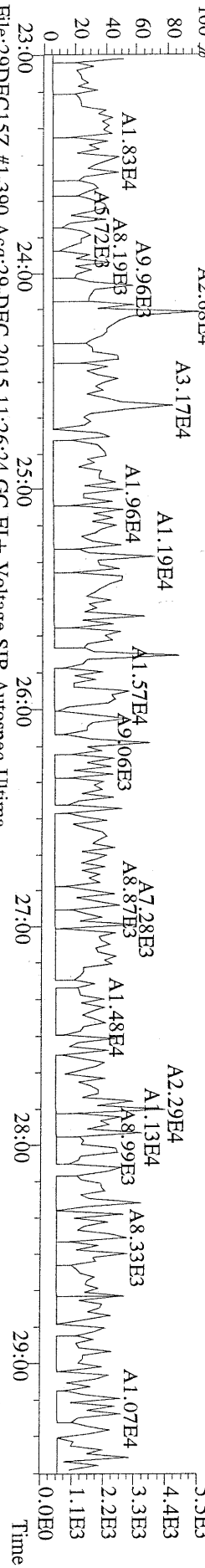
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375.8364 S:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



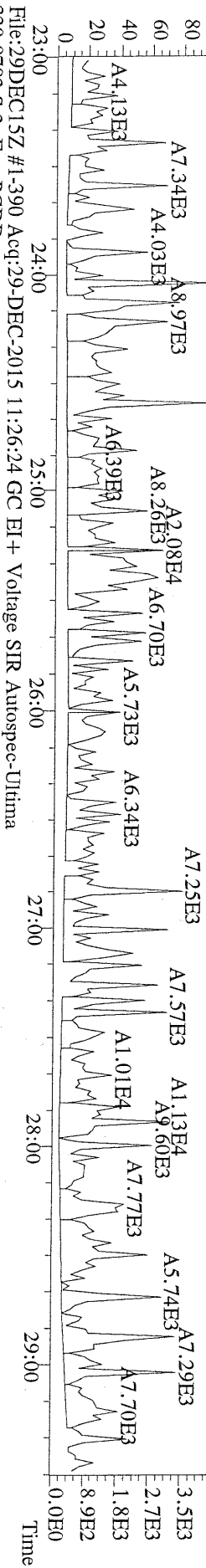
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 339.8597 S:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0) Exp:PCDD
 Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4



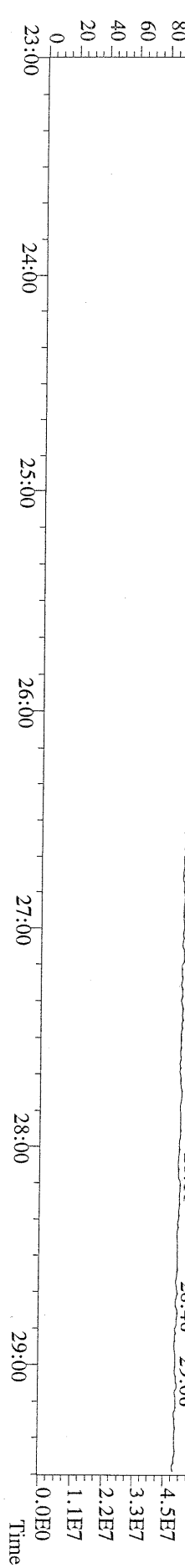
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 Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4



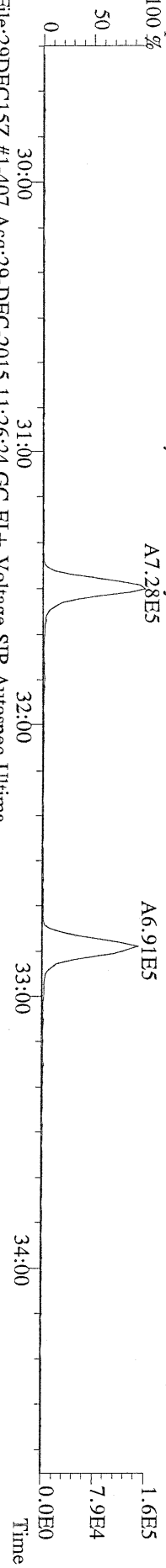
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 409.7974 S:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0) Exp:PCDD
 Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4



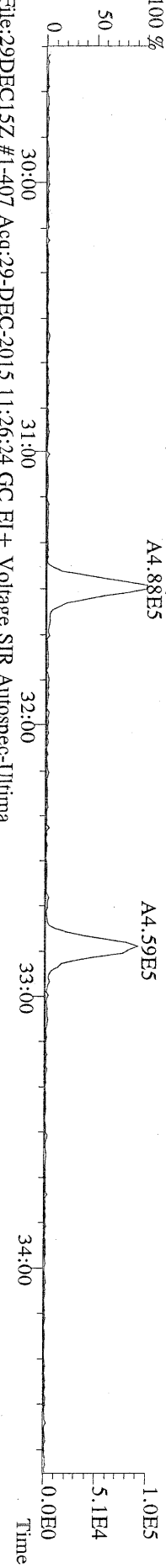
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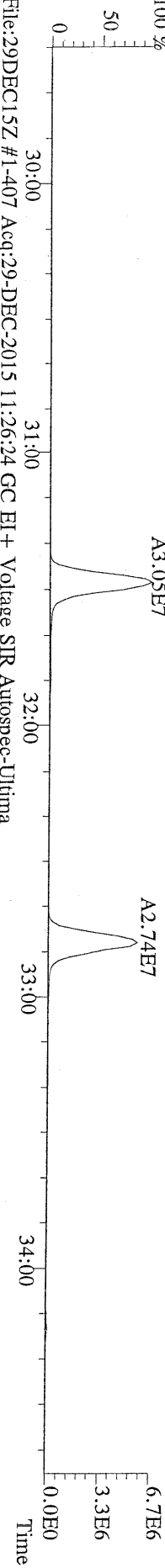
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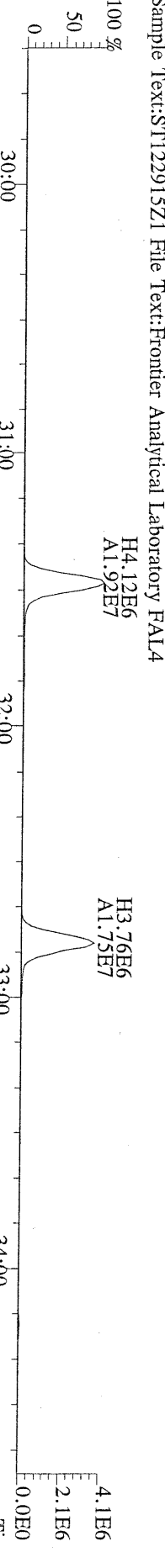
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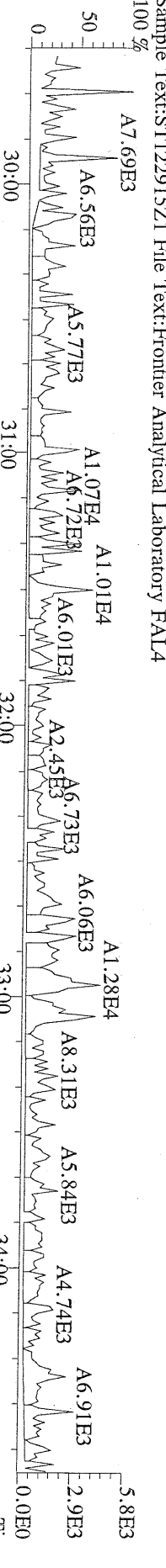
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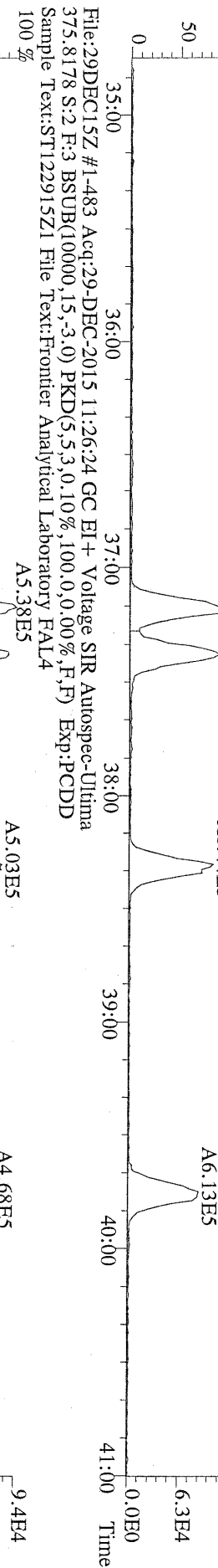
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353.8970 S:2 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0,0) Exp:PCDD
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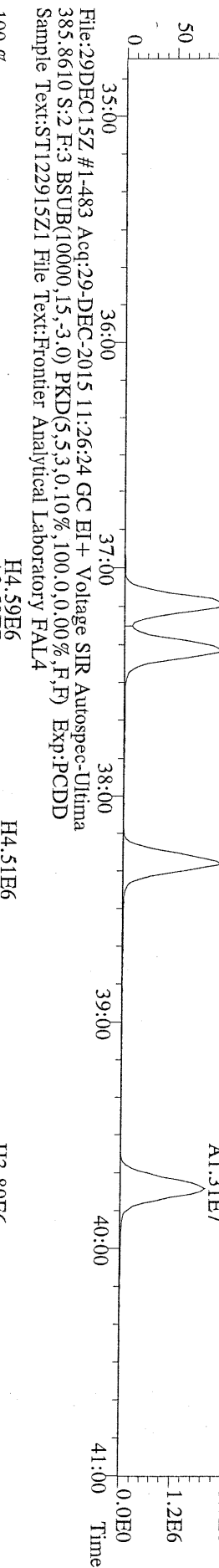
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409.7974 S:2 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0,0) Exp:PCDD
Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4



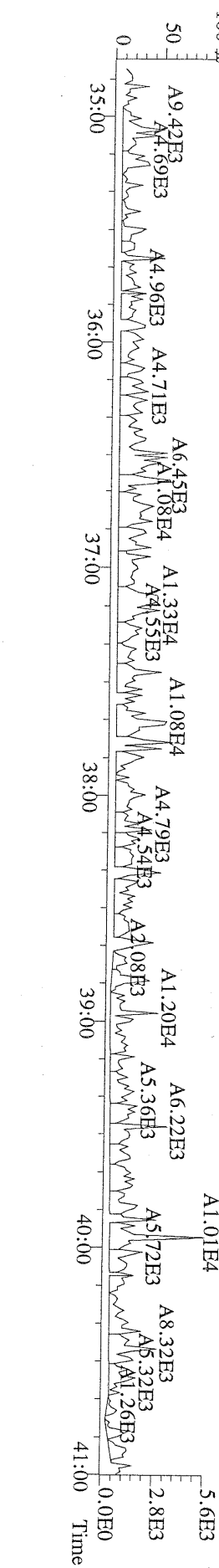
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 373.8207 S:2 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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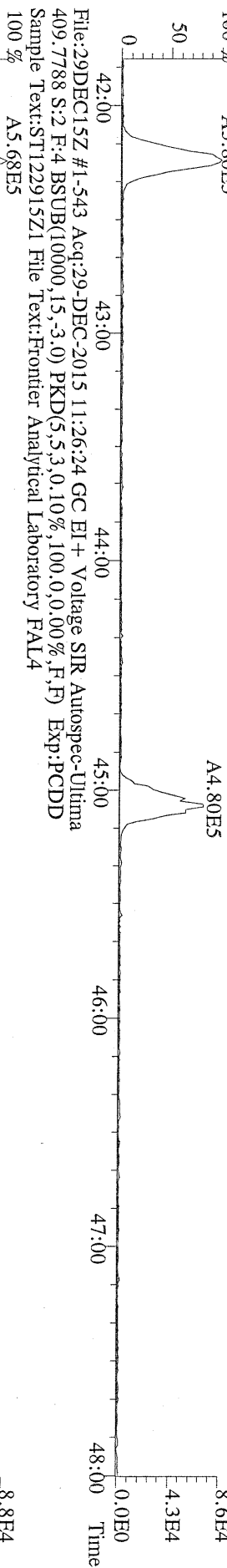
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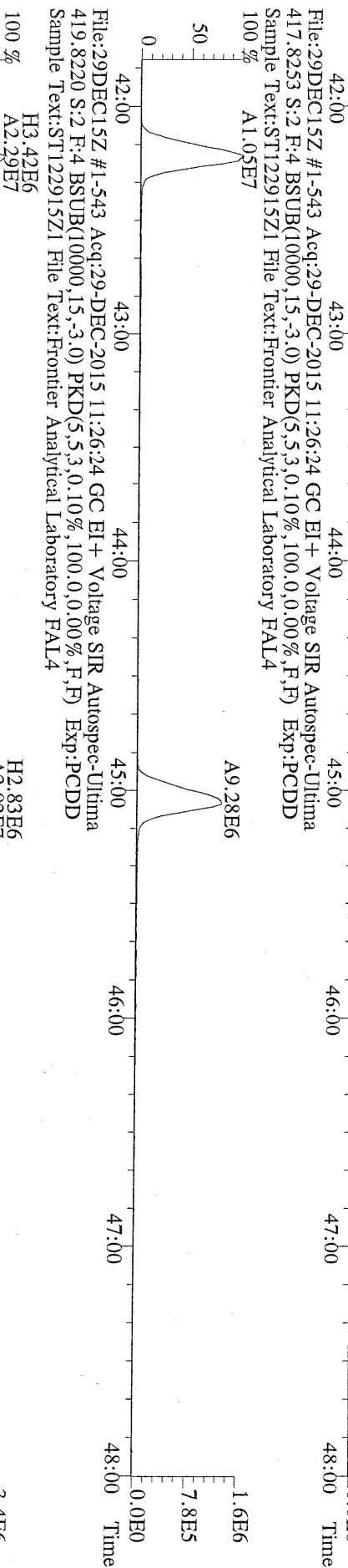
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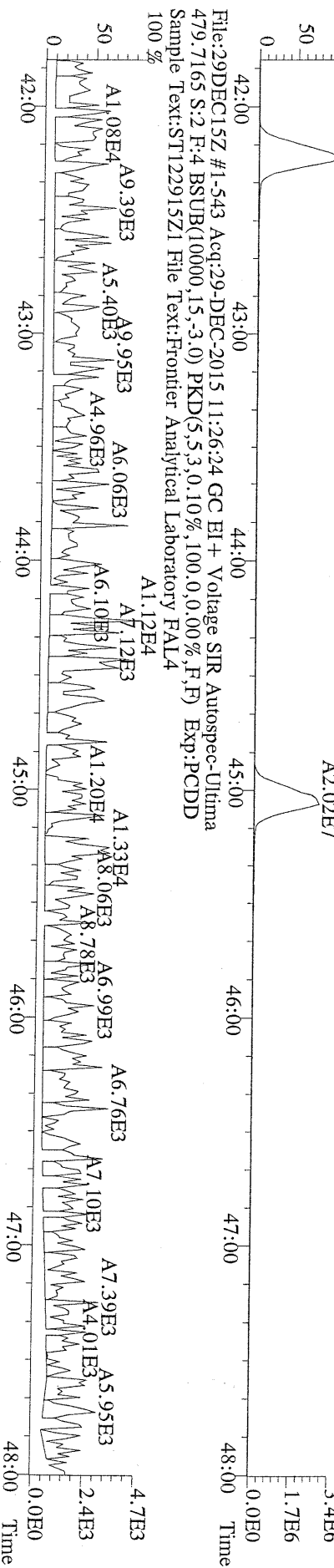
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407.7818 S:2 F:4 BSUB(10000,15,-3.0) PKD(5.5,3,0,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4
100 % A5.80E5



File:29DEC15Z #1-543 Acq:29-DEC-2015 11:26:24 GC EI+ Voltage SIR Autospec-Utima
417.8253 S:2 F:4 BSUB(10000,15,-3.0) PKD(5.5,3,0,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4
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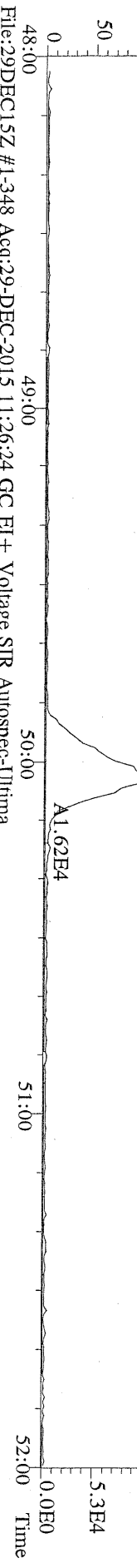
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419.8220 S:2 F:4 BSUB(10000,15,-3.0) PKD(5.5,3,0,100,0,0,00%,F,F) Exp:PCDD
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A2.29E7



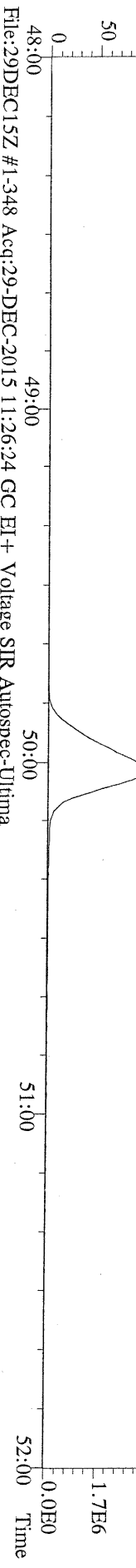
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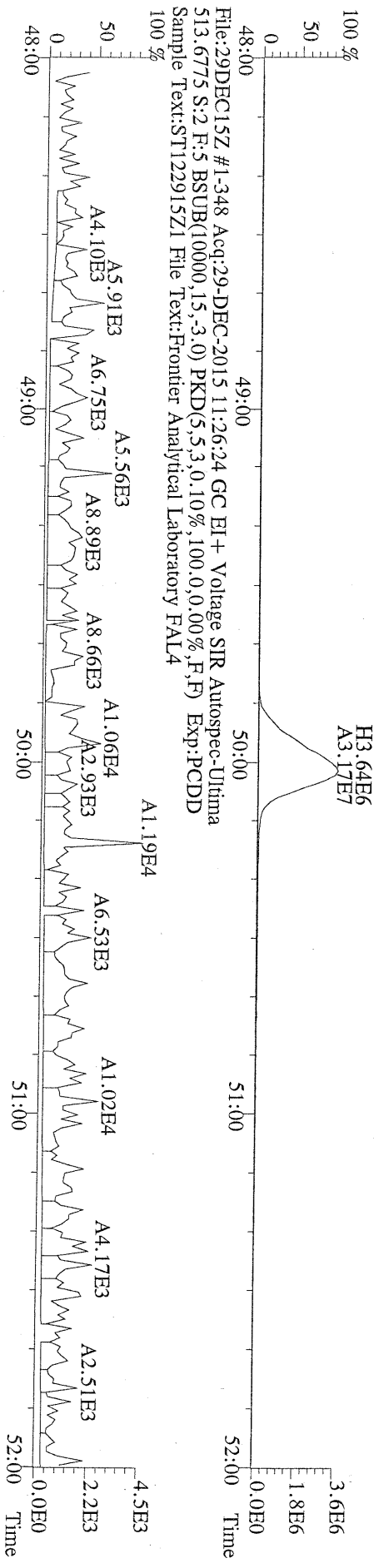
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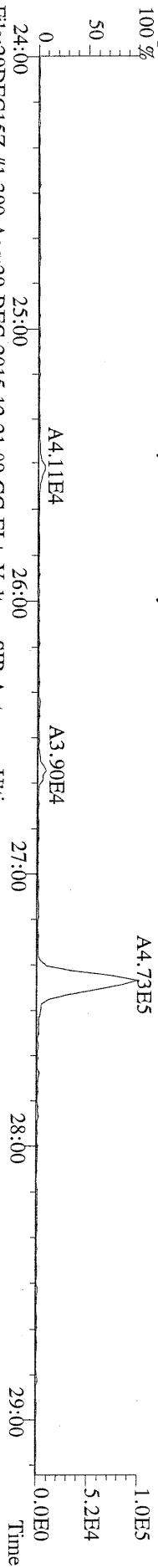
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 455.7801 S:2 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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 100 %



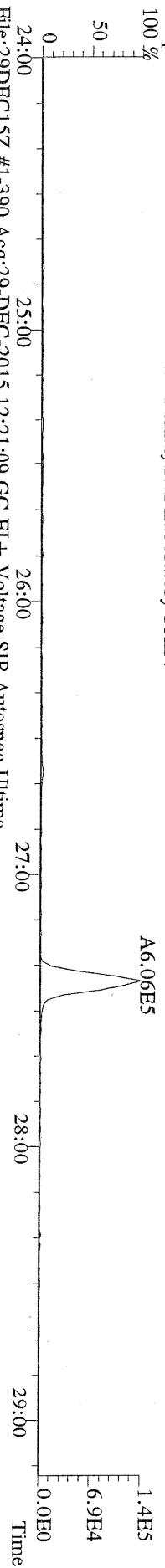
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 Sample Text:ST122915Z1 File Text:Frontier Analytical Laboratory FAL4
 100 %



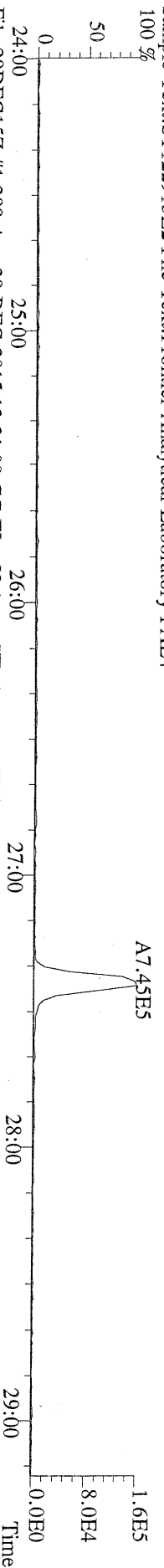
File:29DEC15Z #1-390 Acq:29-DEC-2015 12:21:09 GC EI+ Voltage SIR Autospec-Ultima
319.8965 S:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100 %



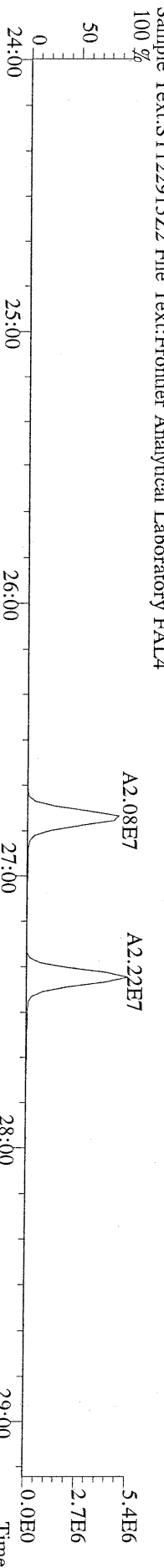
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321.8936 S:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100 %



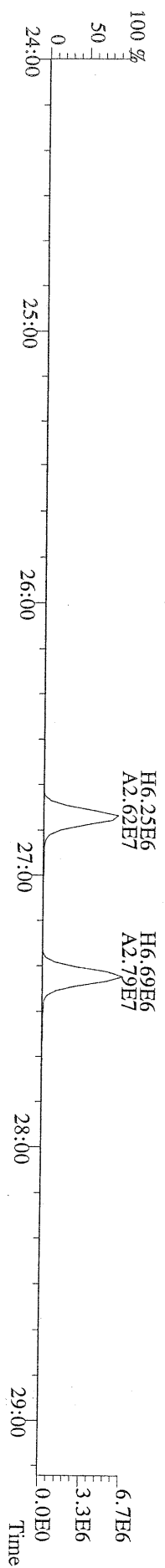
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327.8847 S:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100 %



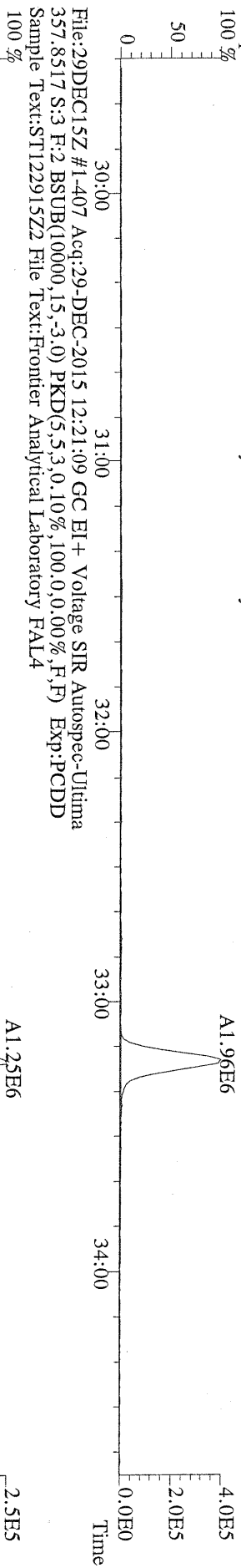
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331.9368 S:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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100 %



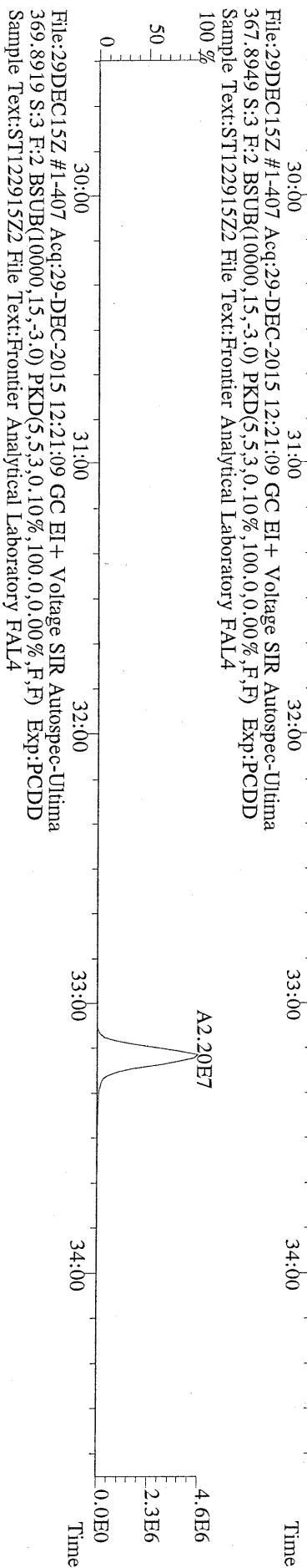
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333.9339 S:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4



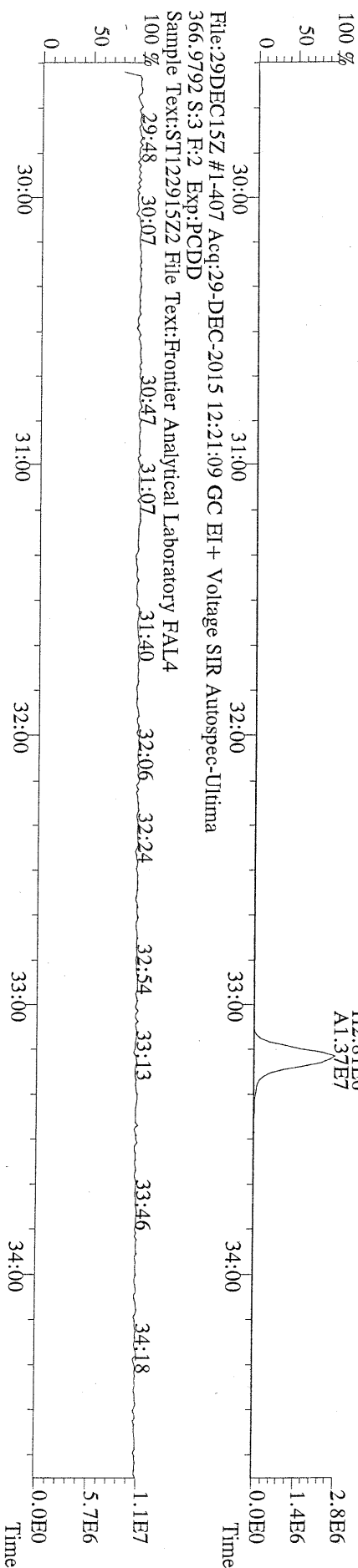
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357.8517 S:3 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0) Exp.:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100 %



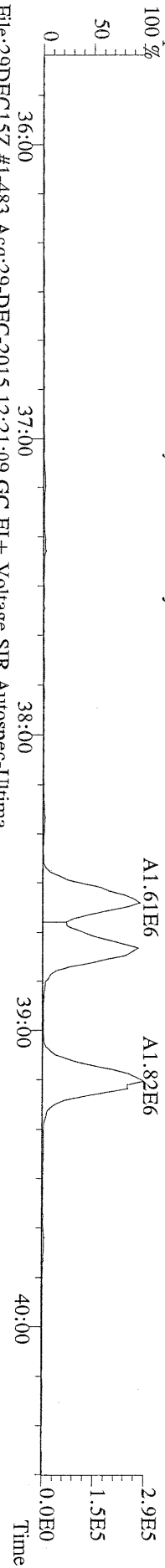
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367.8949 S:3 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0) Exp.:PCDD
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100 %



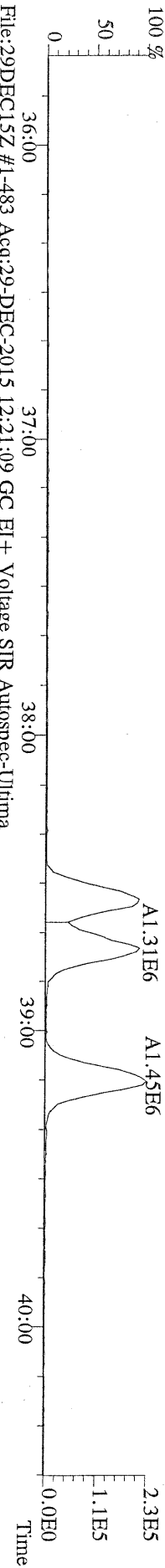
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366.9792 S:3 F:2 Exp.:PCDD
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100 %



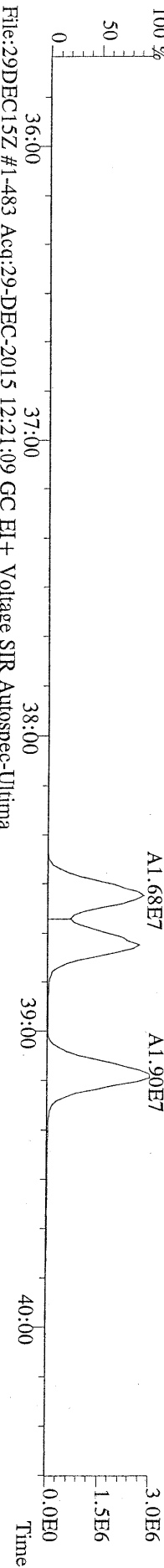
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 389.8156 S:3 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0%) Exp.:PCDD
 Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
 100 %



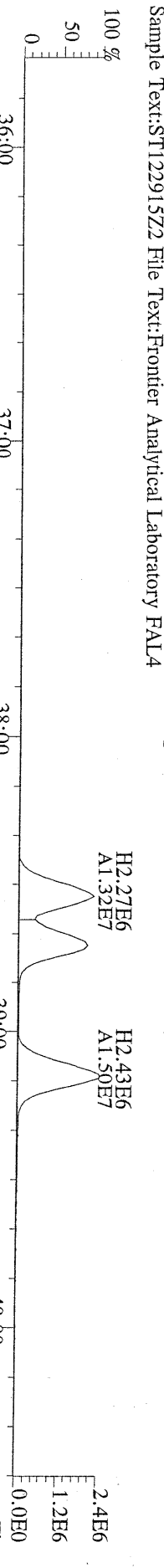
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 391.8127 S:3 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0%) Exp.:PCDD
 Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
 100 %



File:29DEC15Z #1-483 Acq:29-DEC-2015 12:21:09 GC EI+ Voltage SIR Autospec-Ultima
 401.8559 S:3 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0%) Exp.:PCDD
 Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
 100 %



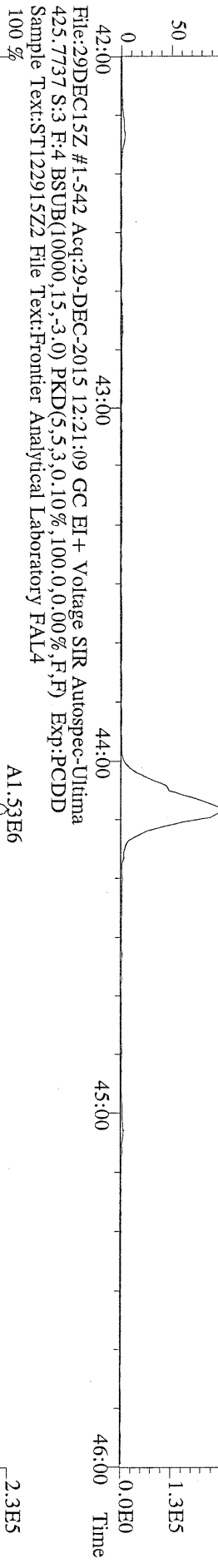
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 403.8530 S:3 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0%) Exp.:PCDD
 Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4



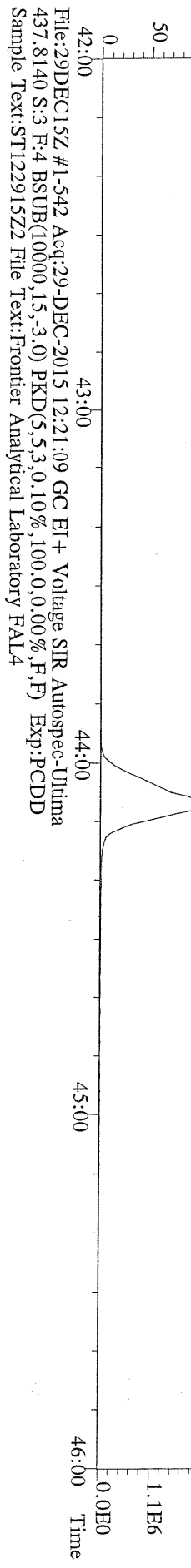
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 380.9760 S:3 F:3 Exp:PCDD
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 100 %



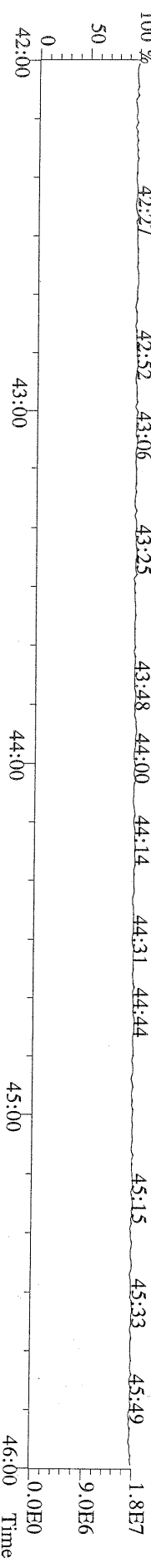
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423.7767 S:3 F:4 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100 %



File:29DEC15Z #1-542 Acq:29-DEC-2015 12:21:09 GC EI+ Voltage SIR Autospec-Ultima
425.7737 S:3 F:4 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100 %



File:29DEC15Z #1-542 Acq:29-DEC-2015 12:21:09 GC EI+ Voltage SIR Autospec-Ultima
437.8140 S:3 F:4 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100 %



File:29DEC15Z #1-349 Acq:29-DEC-2015 12:21:09 GC EI+ Voltage SIR Autospec-Utima
457.7377 S:3 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100 % A2.32E6

File:29DEC15Z #1-349 Acq:29-DEC-2015 12:21:09 GC EI+ Voltage SIR Autospec-Utima
459.7348 S:3 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100 % A2.55E6

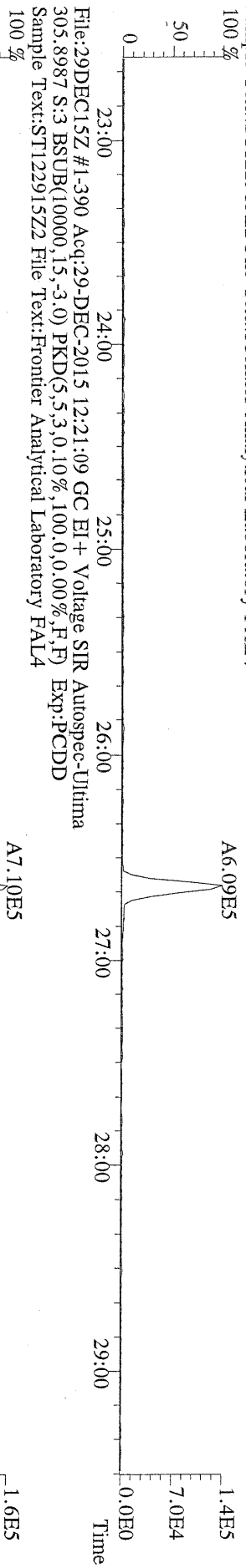
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469.7780 S:3 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100 % A2.20E7

File:29DEC15Z #1-349 Acq:29-DEC-2015 12:21:09 GC EI+ Voltage SIR Autospec-Utima
471.7750 S:3 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100 % H2.98E6
A2.43E7

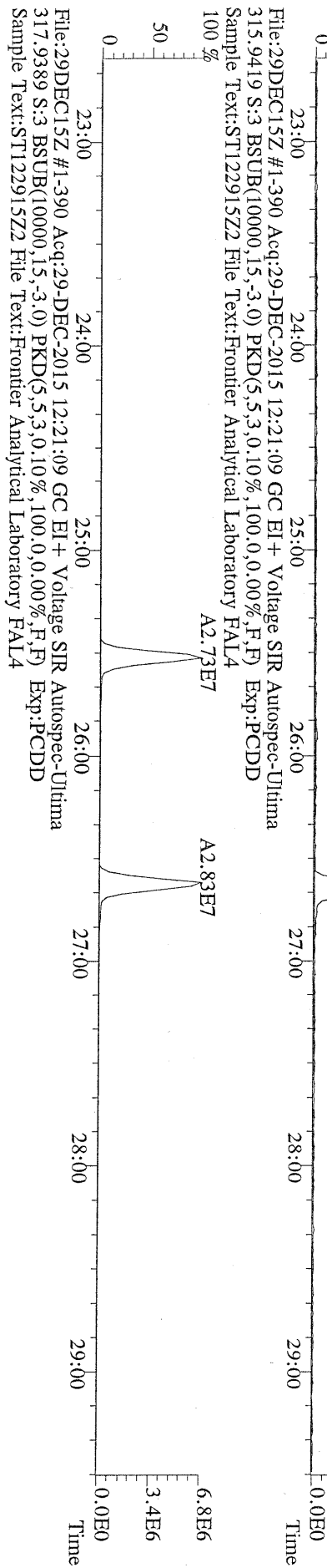
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454.9728 S:3 F:5 Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100 % 48:16 48:43 49:01 49:18 49:31 49:58 50:10 50:26 50:50 51:22 51:39

49:00 50:00 51:00 52:00 Time
0 50 100 %
0.0E0 1.1E7 2.1E7
0.0E0 1.3E6 2.7E6
0.0E0 1.5E5 3.1E5
0.0E0 1.4E5 2.8E5
0.0E0 1.5E6 3.0E6

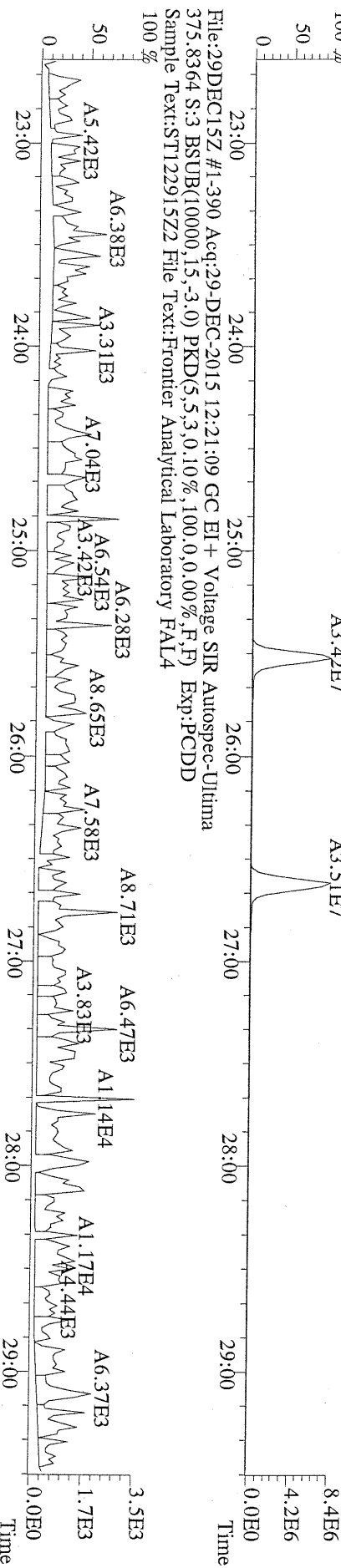
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303.9016 S:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100 %



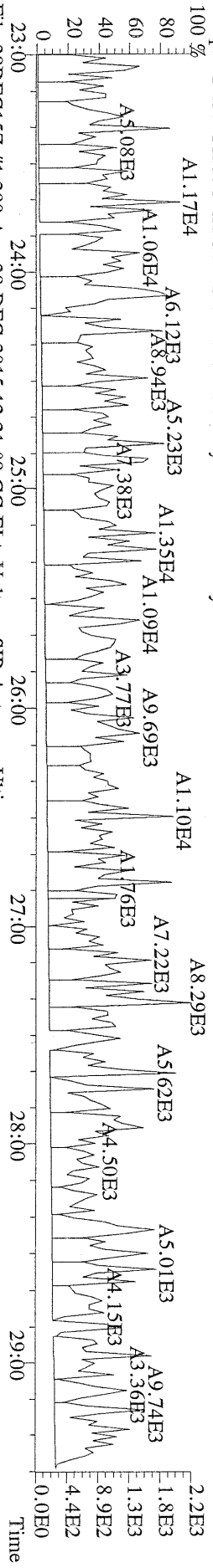
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315.9419 S:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100 %



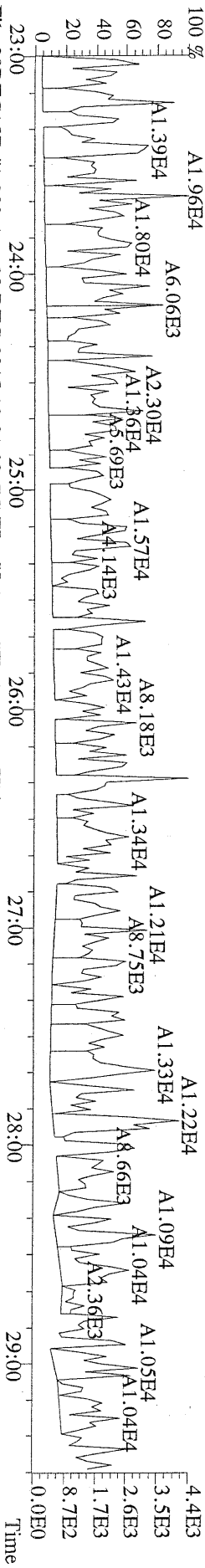
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317.9389 S:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100 %



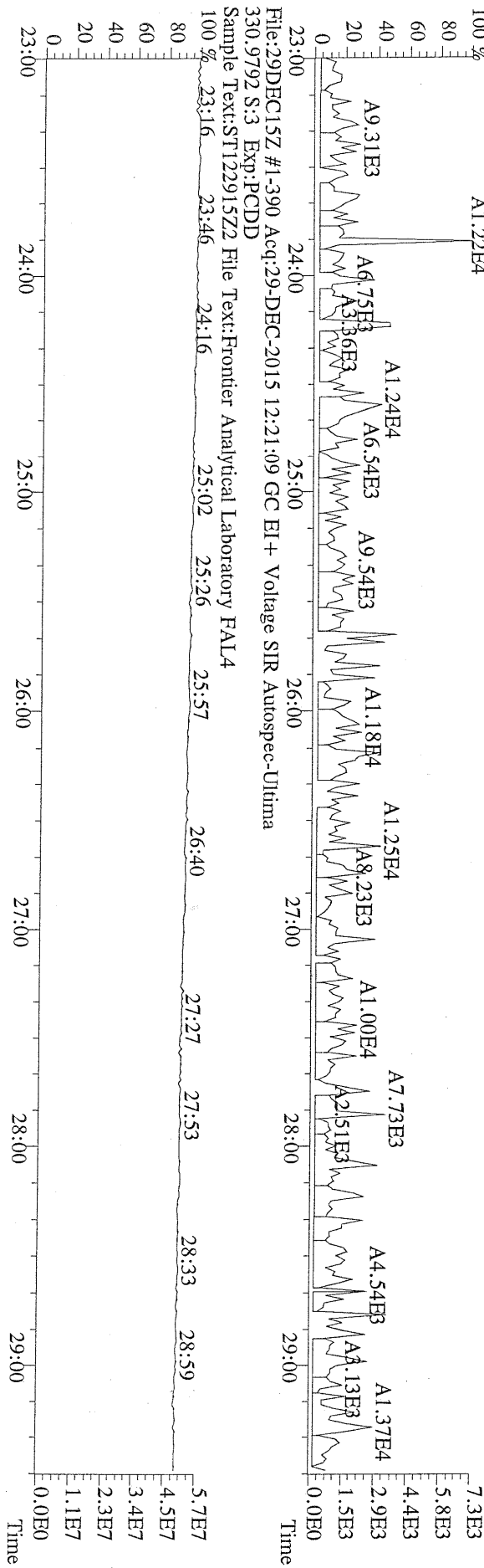
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 339.8597 S:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:ST1122915Z2 File Text:Frontier Analytical Laboratory FAL4



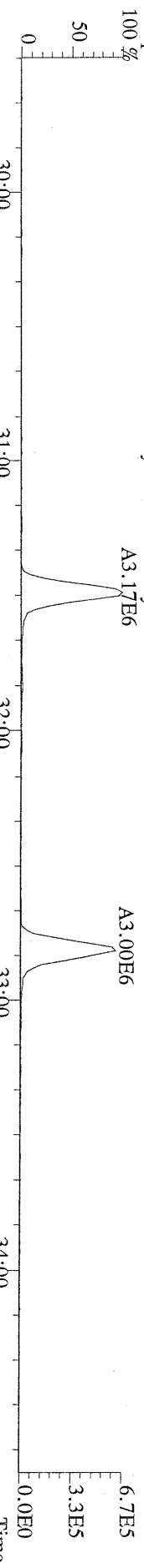
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 341.8568 S:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:ST1122915Z2 File Text:Frontier Analytical Laboratory FAL4



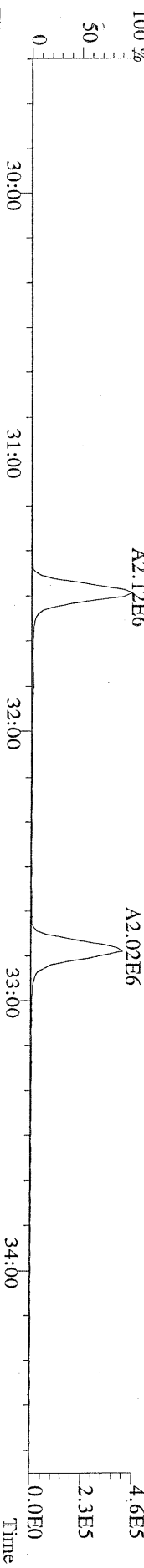
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 409.7974 S:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:ST1122915Z2 File Text:Frontier Analytical Laboratory FAL4



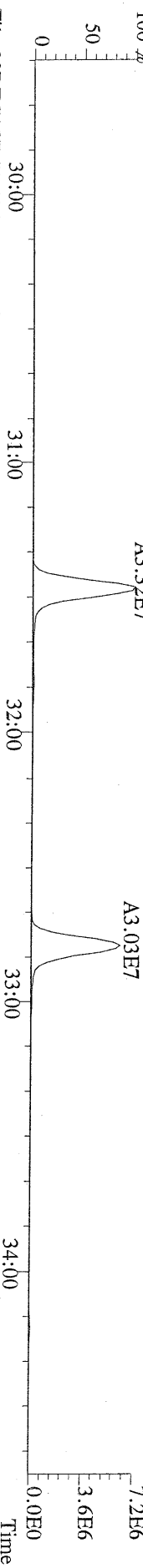
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 339.8597 S:3 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:ST1122915Z2 File Text:Frontier Analytical Laboratory FAL4



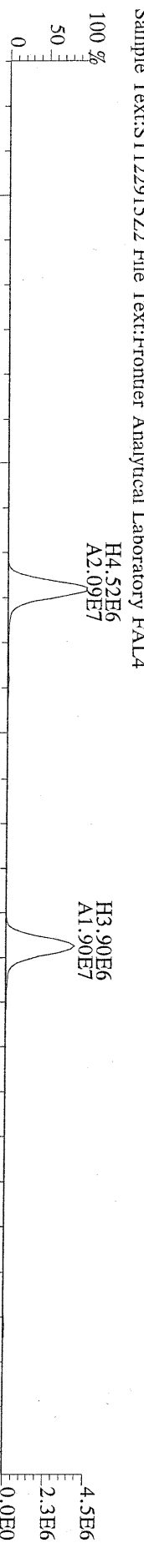
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 Sample Text:ST1122915Z2 File Text:Frontier Analytical Laboratory FAL4



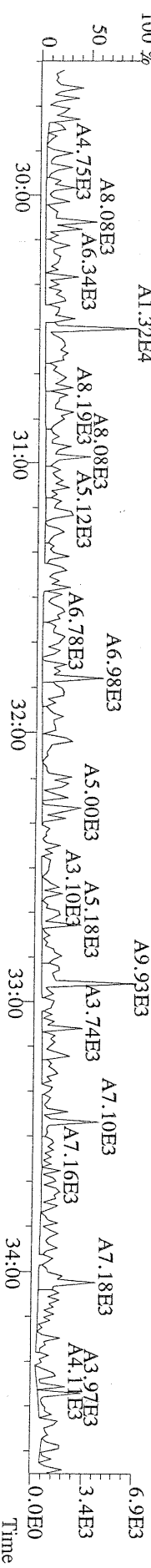
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 351.9000 S:3 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:ST1122915Z2 File Text:Frontier Analytical Laboratory FAL4



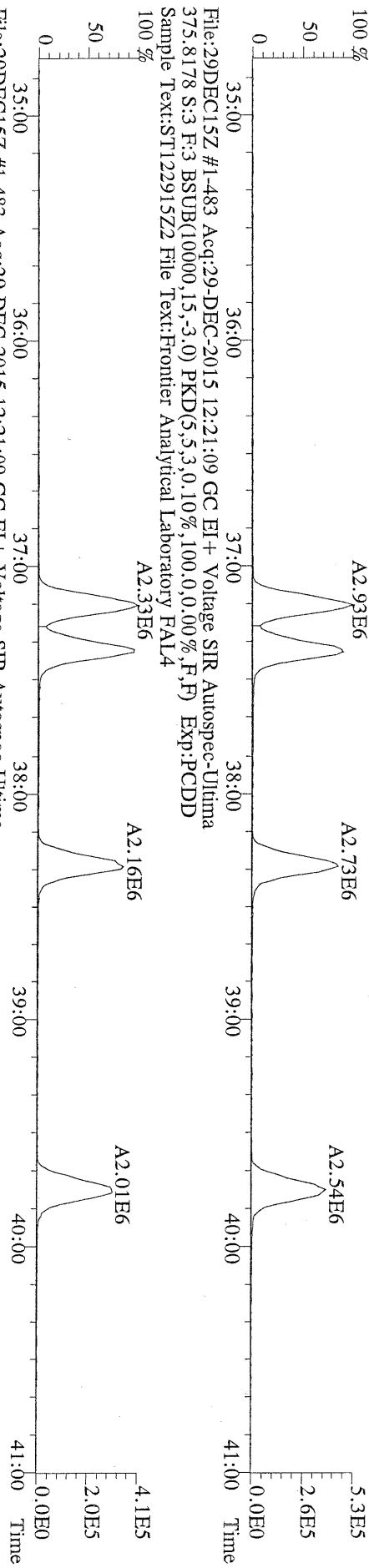
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 353.8970 S:3 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:ST1122915Z2 File Text:Frontier Analytical Laboratory FAL4



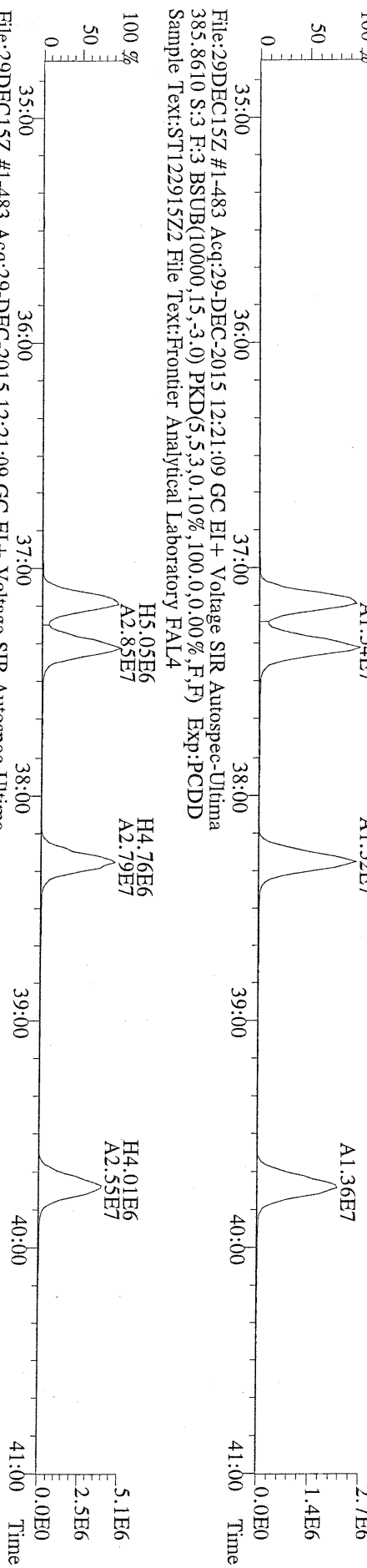
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 409.7974 S:3 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:ST1122915Z2 File Text:Frontier Analytical Laboratory FAL4



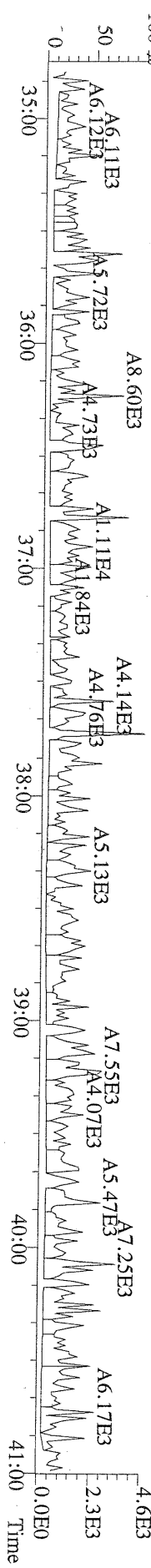
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373.8207 S:3 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4



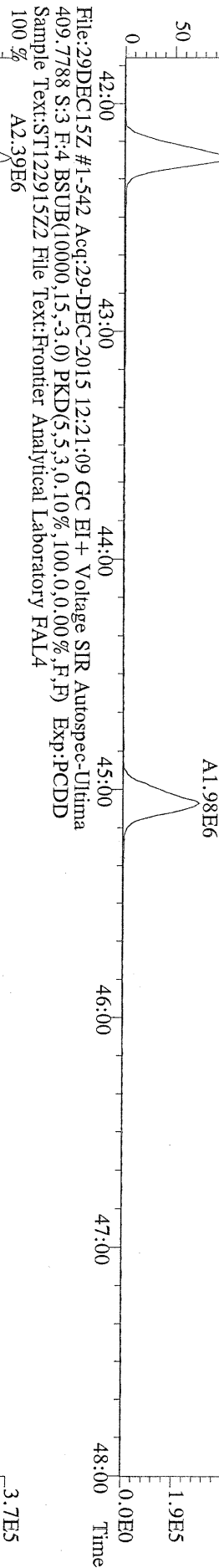
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383.8639 S:3 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4



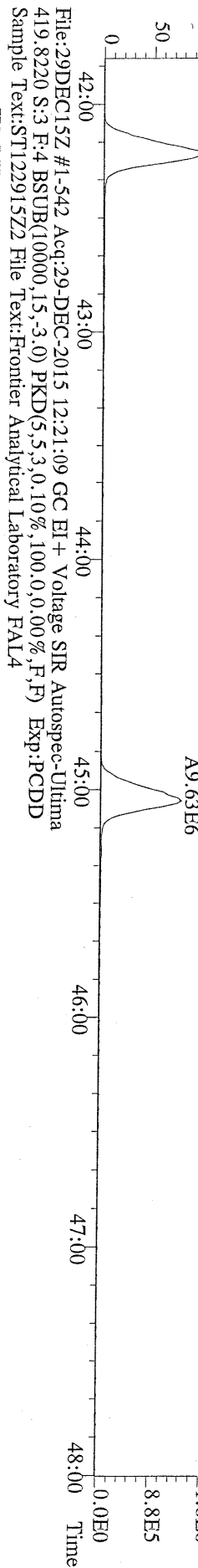
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445.7555 S:3 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4



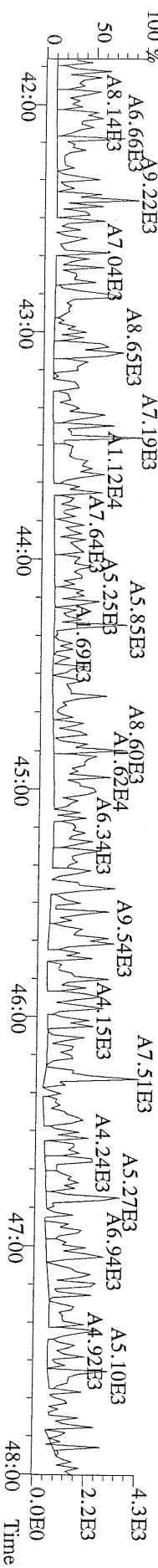
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407.7818 S:3 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100 % A2.56E6



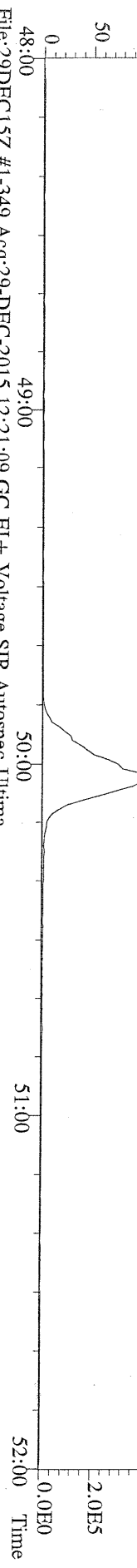
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417.8253 S:3 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100 % A1.15E7



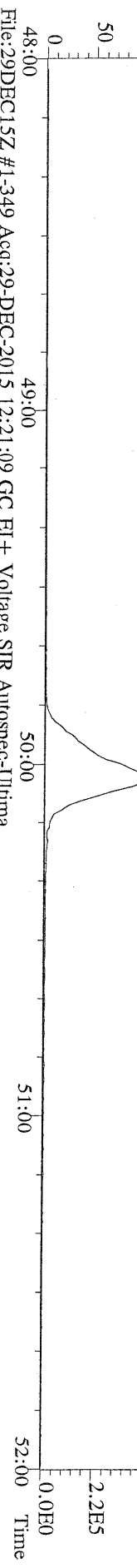
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419.8220 S:3 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100 % H3.75E6
A2.46E7



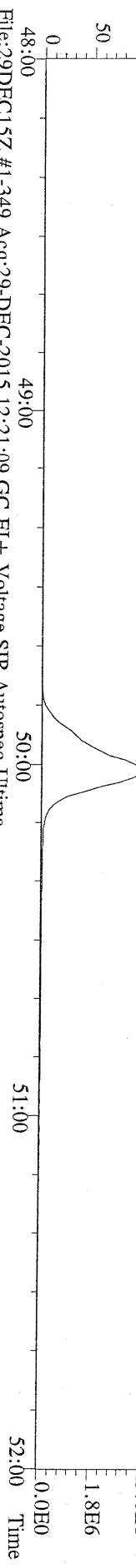
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441.7428 S:3 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100%



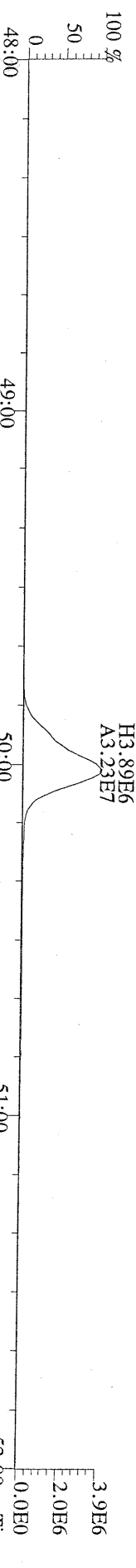
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443.7398 S:3 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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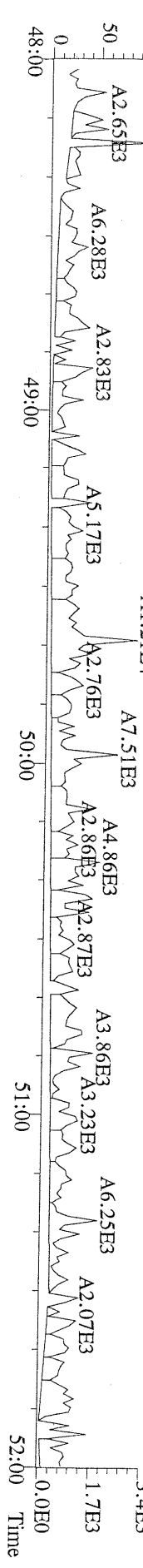
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453.7831 S:3 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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100%



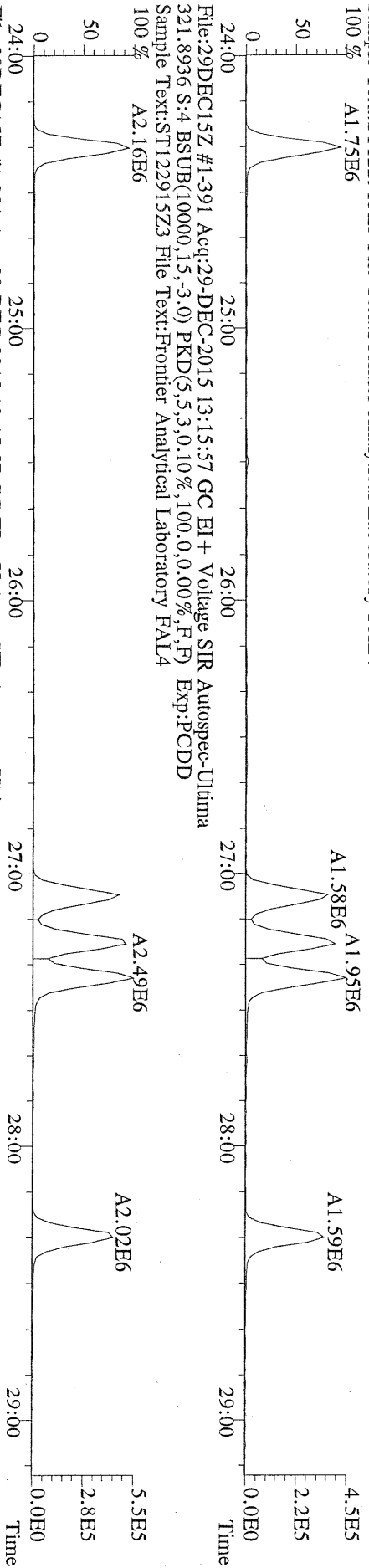
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455.7801 S:3 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4



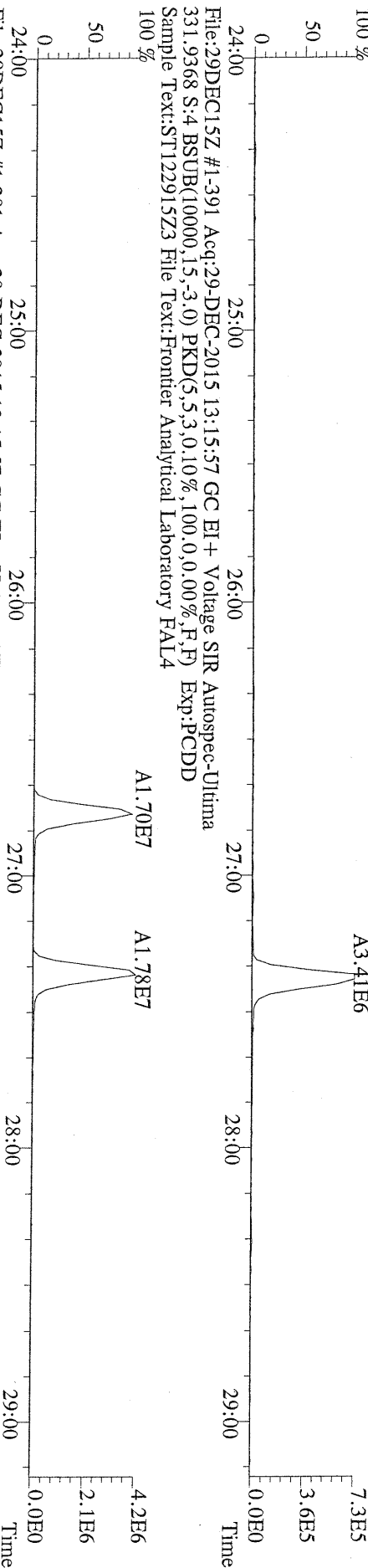
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513.6775 S:3 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z2 File Text:Frontier Analytical Laboratory FAL4
100%



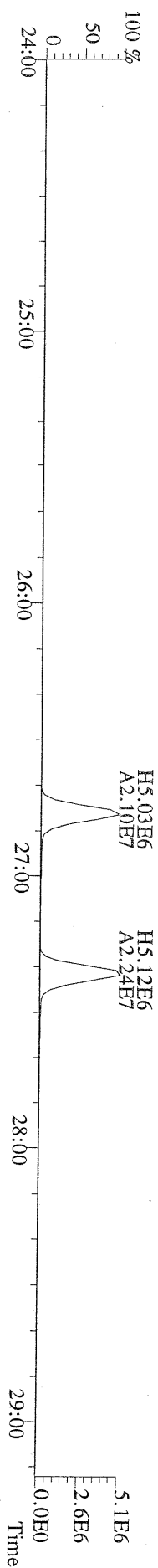
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319.8965 S:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4
100 % A1.75E6



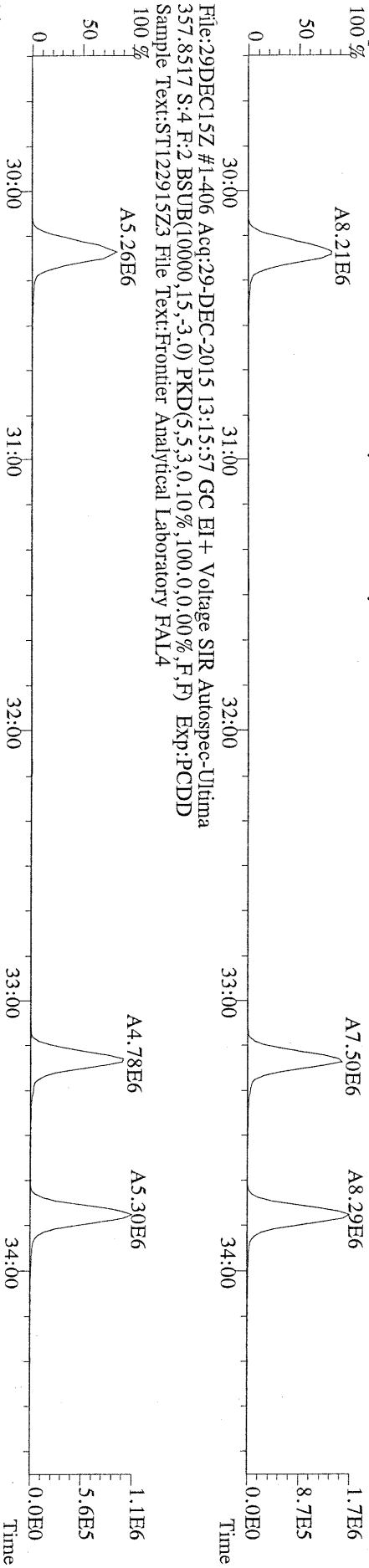
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327.8847 S:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4
100 % A2.16E6



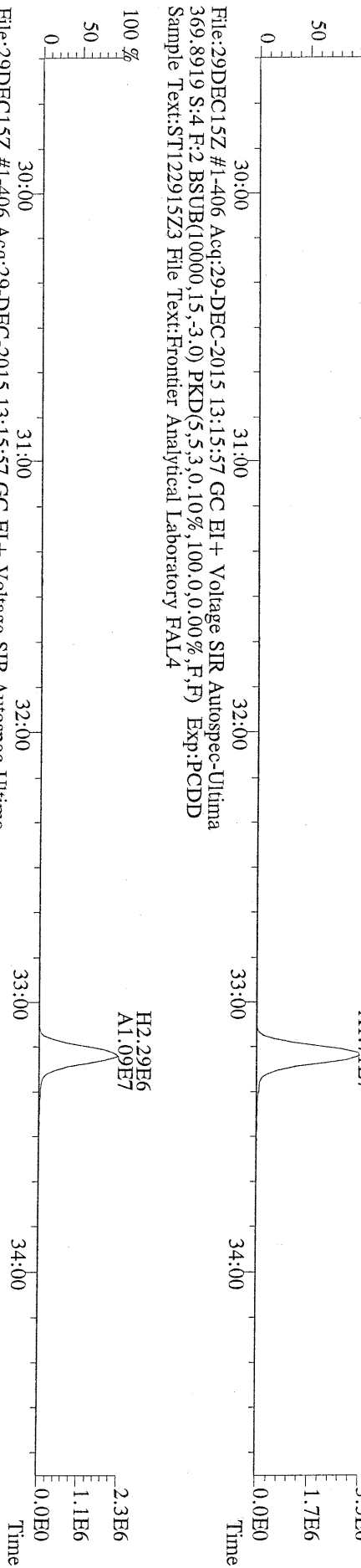
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333.9339 S:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4



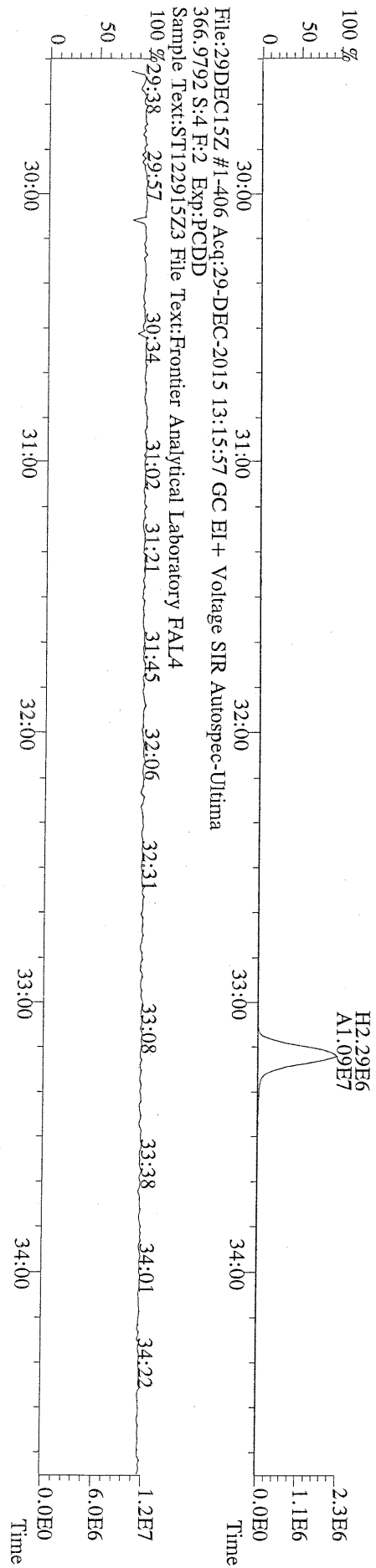
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355.8546 S:4 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4
100 %



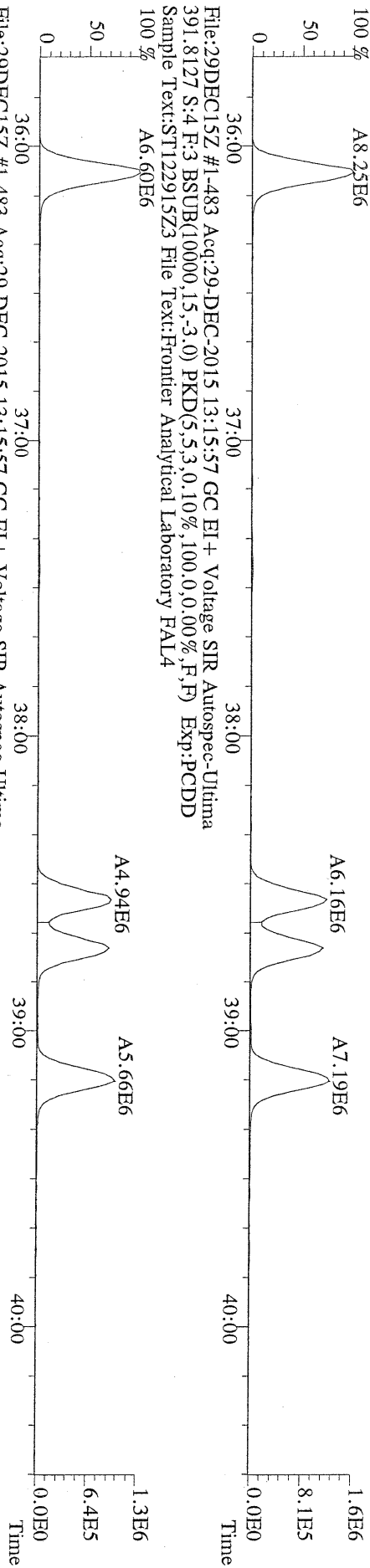
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367.8949 S:4 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4
100 %



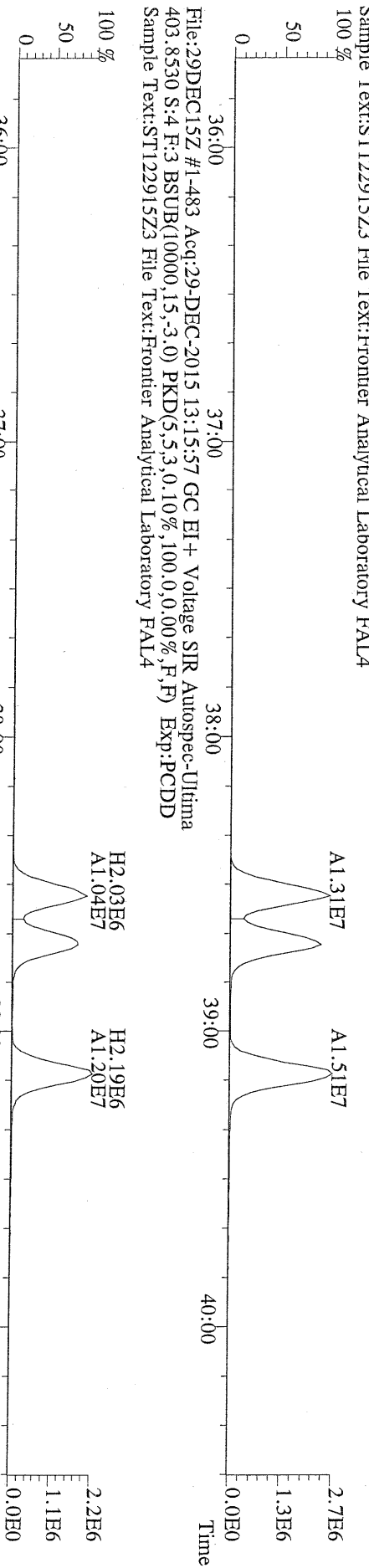
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369.8919 S:4 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4



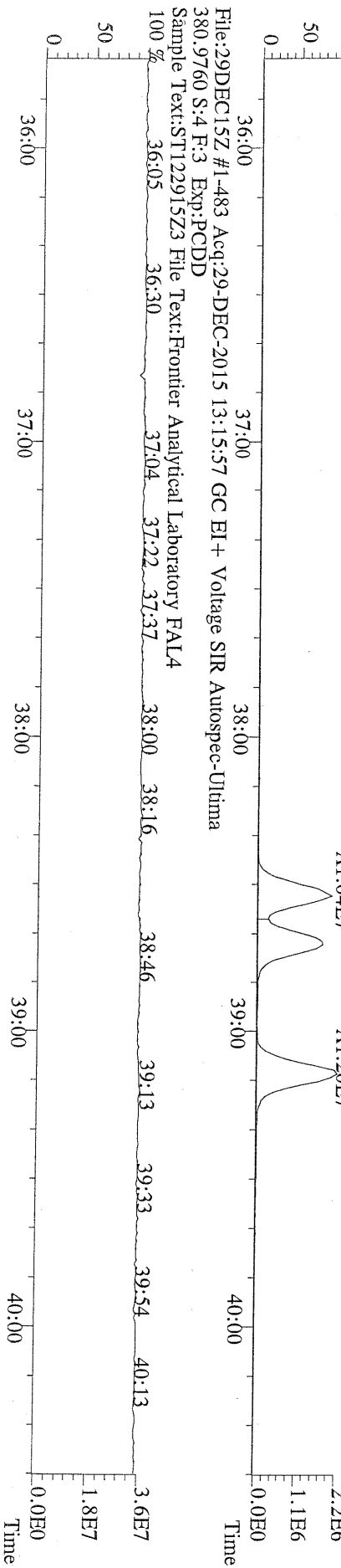
File: 29DEC15Z #1-483 Acq: 29-DEC-2015 13:15:57 GC EI+ Voltage SIR Autospec-Ultima
389.8156 S:4 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD
Sample Text: ST122915Z3 File Text: Frontier Analytical Laboratory FAL4
100 % A8.25E6



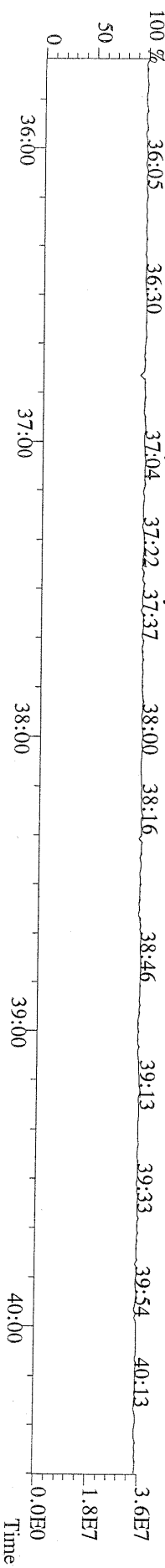
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401.8559 S:4 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD
Sample Text: ST122915Z3 File Text: Frontier Analytical Laboratory FAL4
100 %



File: 29DEC15Z #1-483 Acq: 29-DEC-2015 13:15:57 GC EI+ Voltage SIR Autospec-Ultima
403.8530 S:4 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD
Sample Text: ST122915Z3 File Text: Frontier Analytical Laboratory FAL4
100 %



File: 29DEC15Z #1-483 Acq: 29-DEC-2015 13:15:57 GC EI+ Voltage SIR Autospec-Ultima
380.9760 S:4 F:3 Exp:PCDD
Sample Text: ST122915Z3 File Text: Frontier Analytical Laboratory FAL4
100 %



File:29DEC15Z #1-348 Acq:29-DEC-2015 13:15:57 GC EI+ Voltage SIR Autospec-Utima
457.7377 S:4 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4
100 % A9.20E6

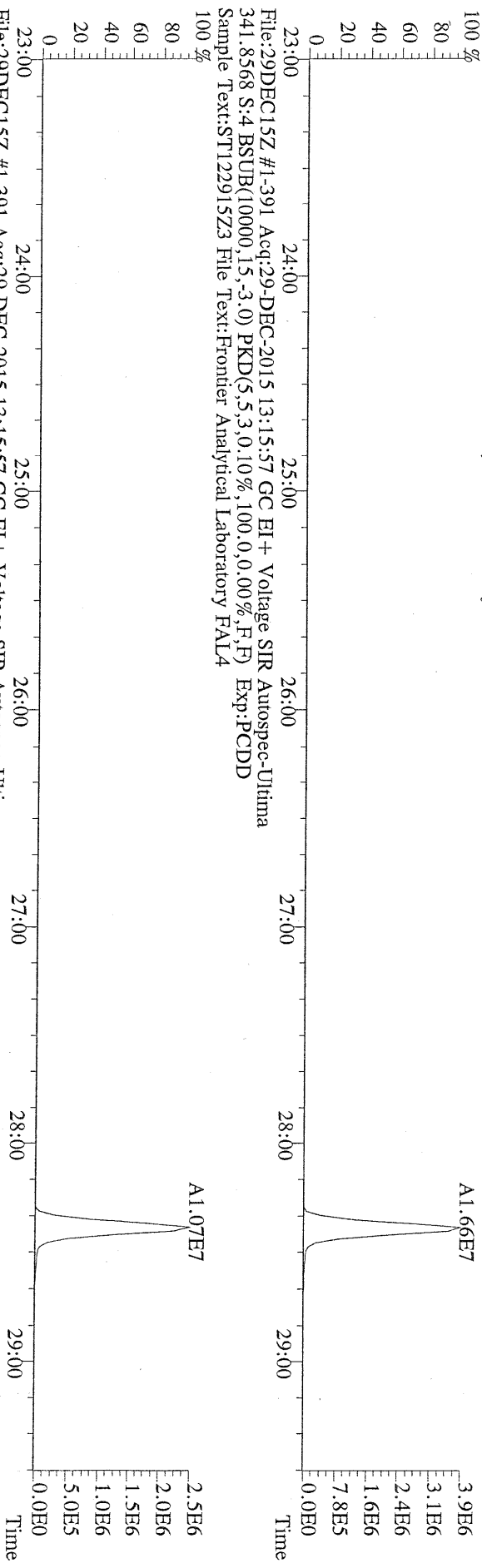
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459.7348 S:4 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4
100 % A1.02E7

File:29DEC15Z #1-348 Acq:29-DEC-2015 13:15:57 GC EI+ Voltage SIR Autospec-Utima
469.7780 S:4 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4
100 % A1.78E7

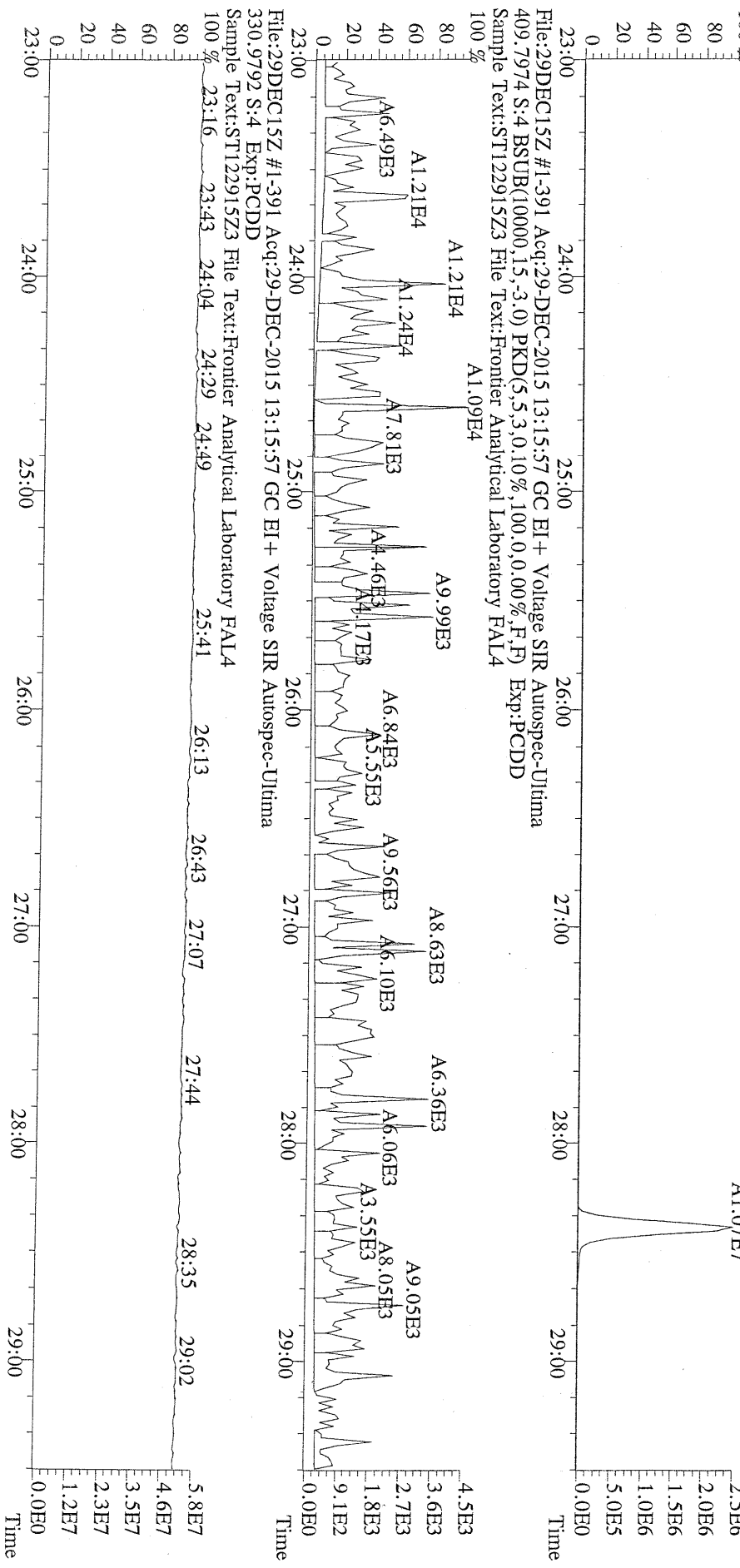
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471.7750 S:4 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4
100 % H2.78E6
A1.98E7

File:29DEC15Z #1-348 Acq:29-DEC-2015 13:15:57 GC EI+ Voltage SIR Autospec-Utima
454.9728 S:4 F:5 Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4
100 % 48.23 48.44 49.07 49.23 49.35 49.51 50.05 50.22 50.34 50.54 51.17 51.37 2.2E7

File:29DDEC15Z #1-391 Acq:29-DEC-2015 13:15:57 GC EI+ Voltage SIR Autospec-Utima
339.8597 S:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4

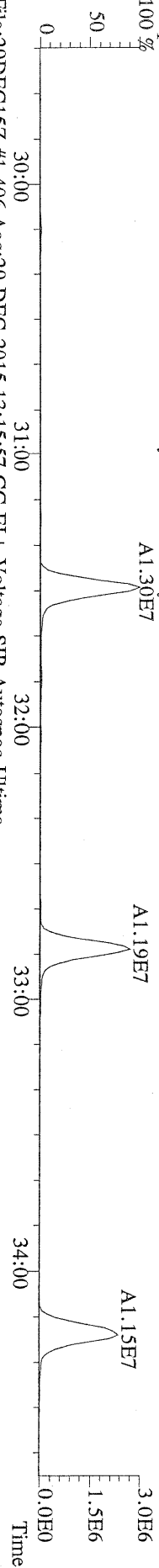


File:29DDEC15Z #1-391 Acq:29-DEC-2015 13:15:57 GC EI+ Voltage SIR Autospec-Utima
341.8568 S:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4

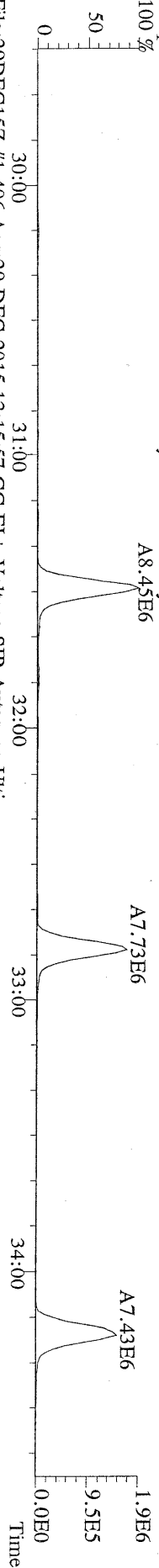


File:29DDEC15Z #1-391 Acq:29-DEC-2015 13:15:57 GC EI+ Voltage SIR Autospec-Utima
330.9792 S:4 Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4

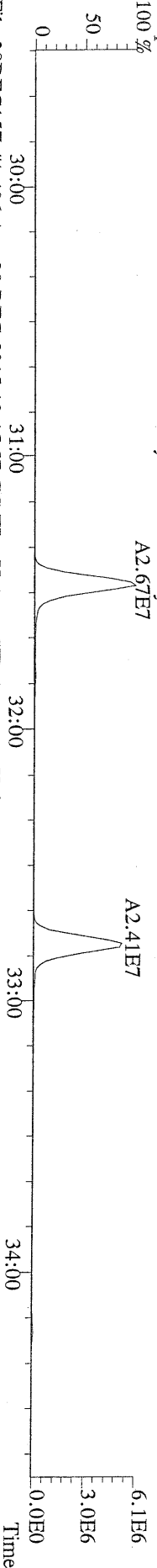
File:29DEC15Z #1-406 Acq:29-DEC-2015 13:15:57 GC EI+ Voltage SIR Autospec-Ultima
339.8597 S:4 F:2 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4



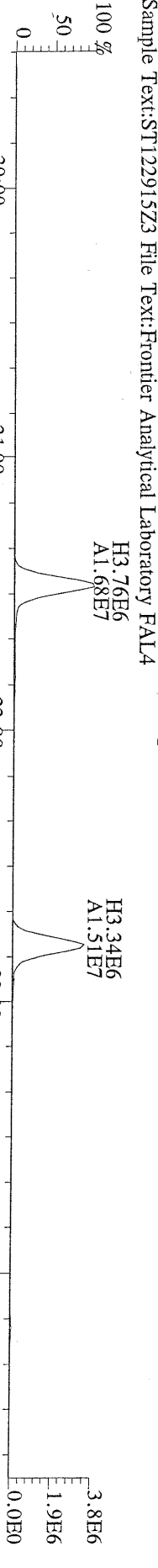
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341.8568 S:4 F:2 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4



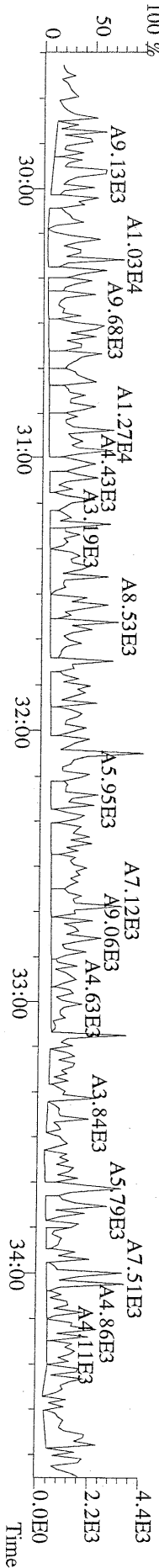
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351.9000 S:4 F:2 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4



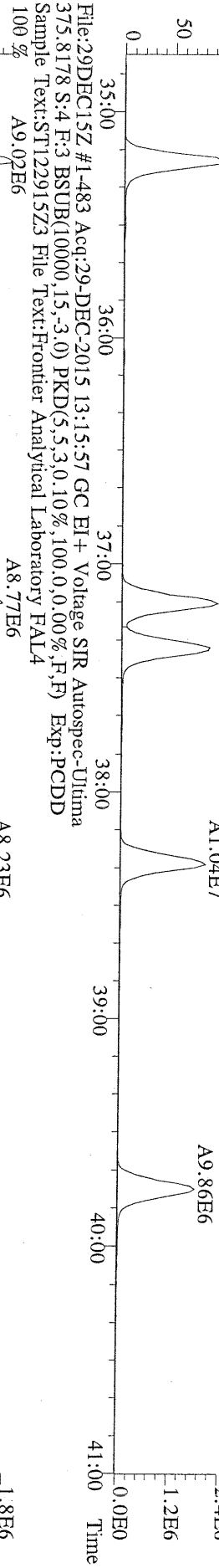
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353.8970 S:4 F:2 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4



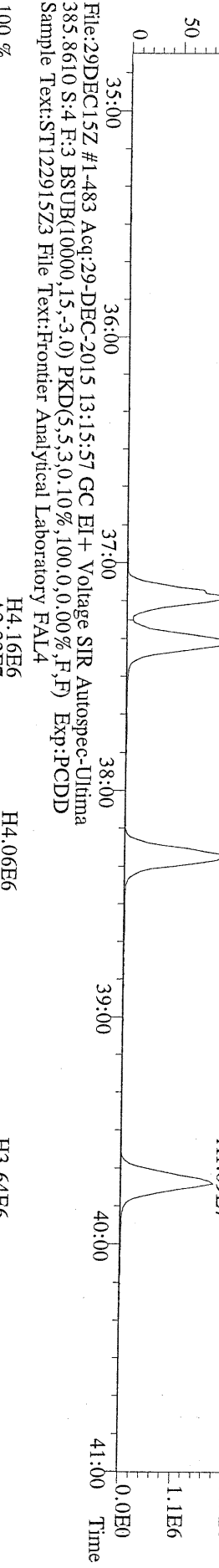
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409.7974 S:4 F:2 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4



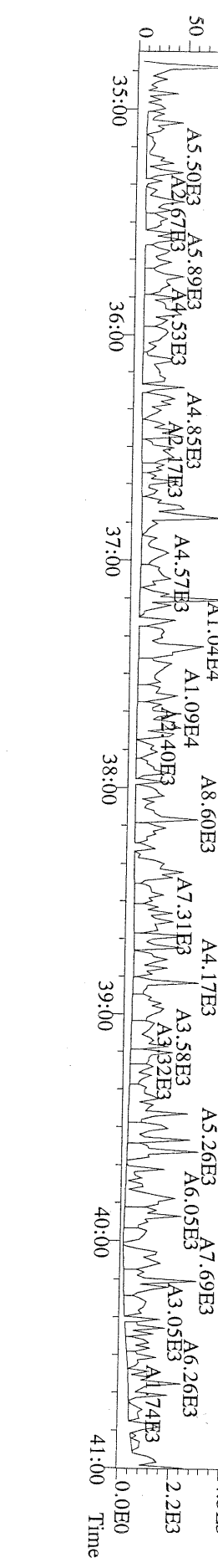
File:29DEC15Z #1-483 Acq:29-DEC-2015 13:15:57 GC EI+ Voltage SIR Autospec-Utima
373.8207 S:4 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4



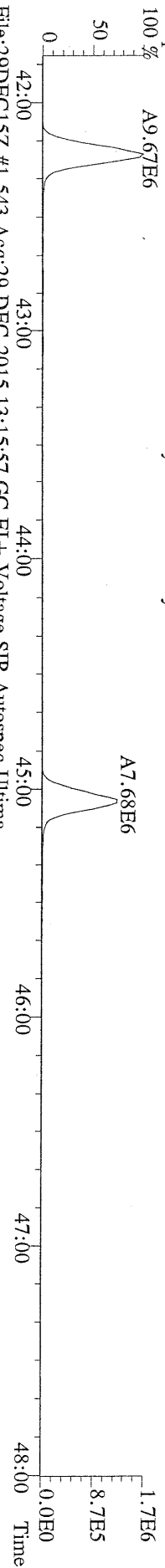
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383.8639 S:4 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4



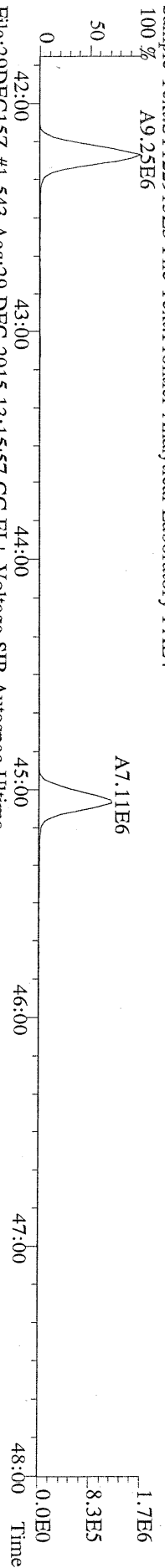
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445.7555 S:4 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4



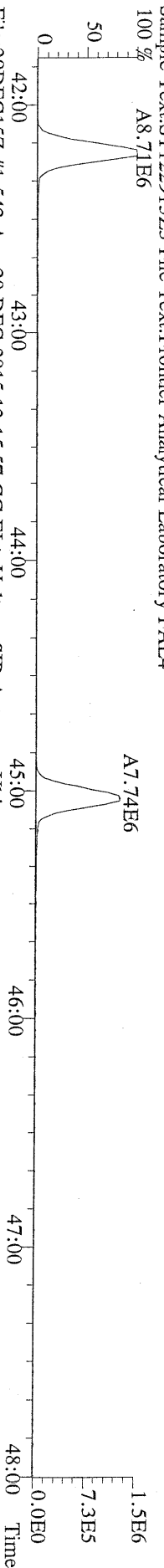
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407.7818 S:4 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0,0,0,0) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory PAL4
100 % A9.67E6



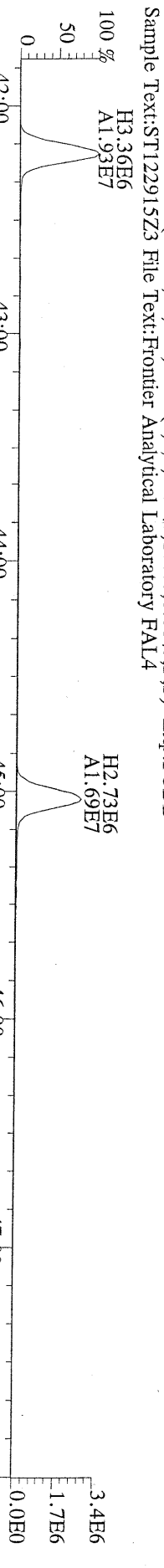
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409.7788 S:4 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0,0,0) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory PAL4
100 % A9.25E6



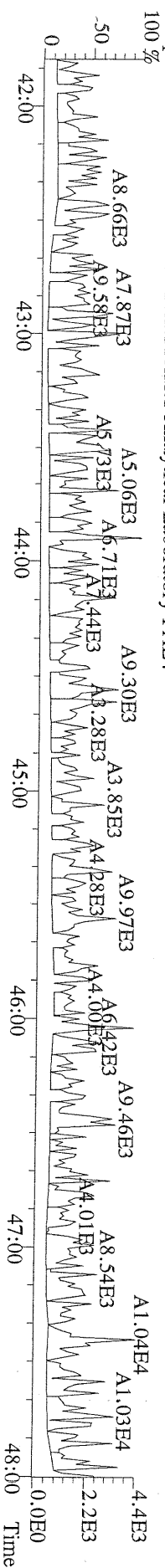
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417.8253 S:4 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0,0,0) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory PAL4
100 % A8.71E6



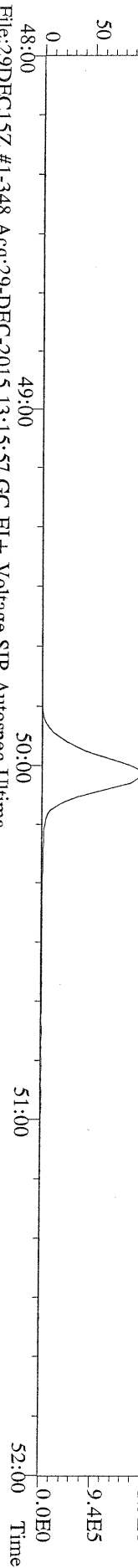
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419.8220 S:4 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0,0,0) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory PAL4



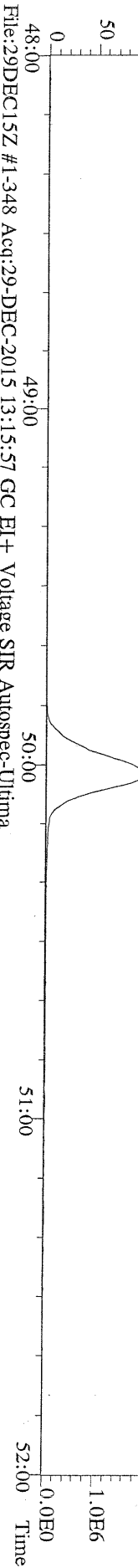
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479.7165 S:4 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0,0,0) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory PAL4



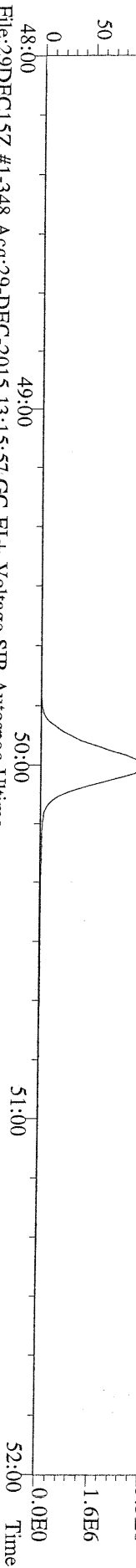
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441.7428 S:4 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4
100%



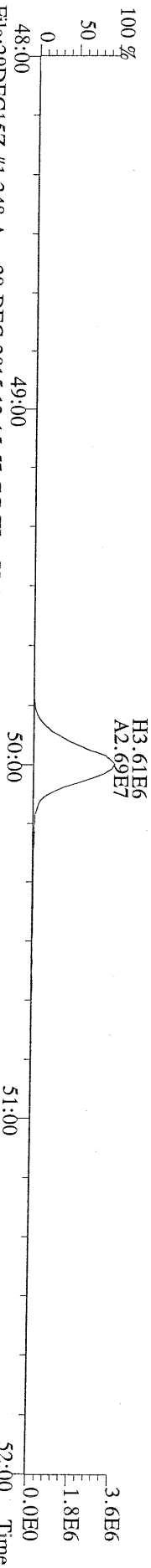
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443.7398 S:4 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4
100%



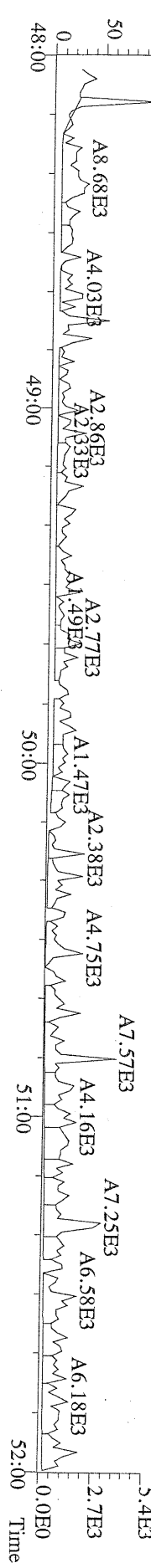
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453.7831 S:4 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4
100%



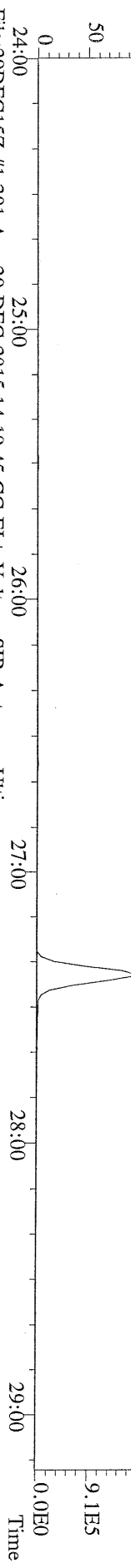
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455.7801 S:4 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4



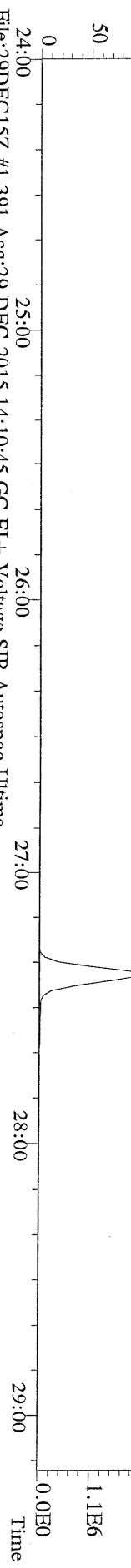
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513.6775 S:4 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z3 File Text:Frontier Analytical Laboratory FAL4
100%



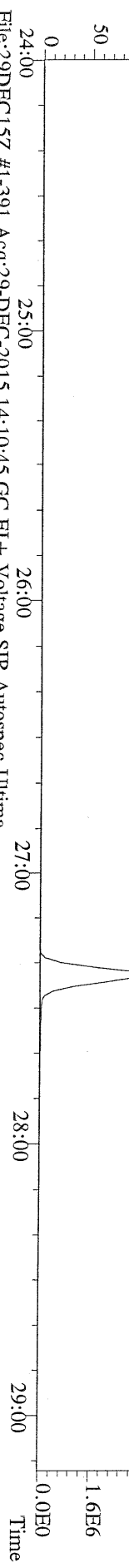
File:29DEC15Z #1-391 Acq:29-DEC-2015 14:10:45 GC EI+ Voltage SIR Autospec-Utima
319.8965 S:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z4 File Text:Frontier Analytical Laboratory FAL4
100 %



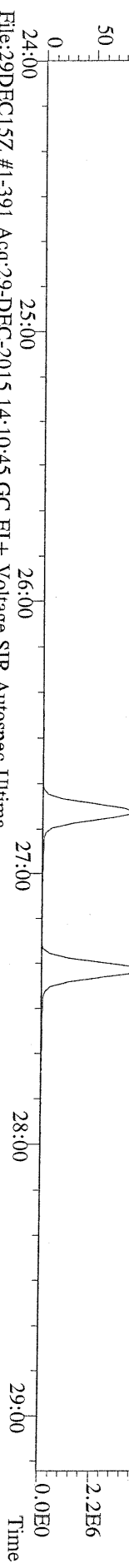
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321.8936 S:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z4 File Text:Frontier Analytical Laboratory FAL4
100 %



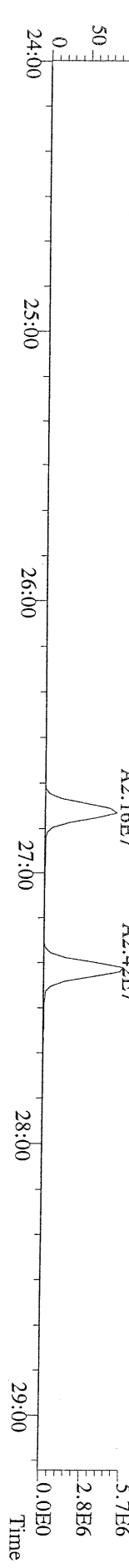
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327.8847 S:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z4 File Text:Frontier Analytical Laboratory FAL4
100 %



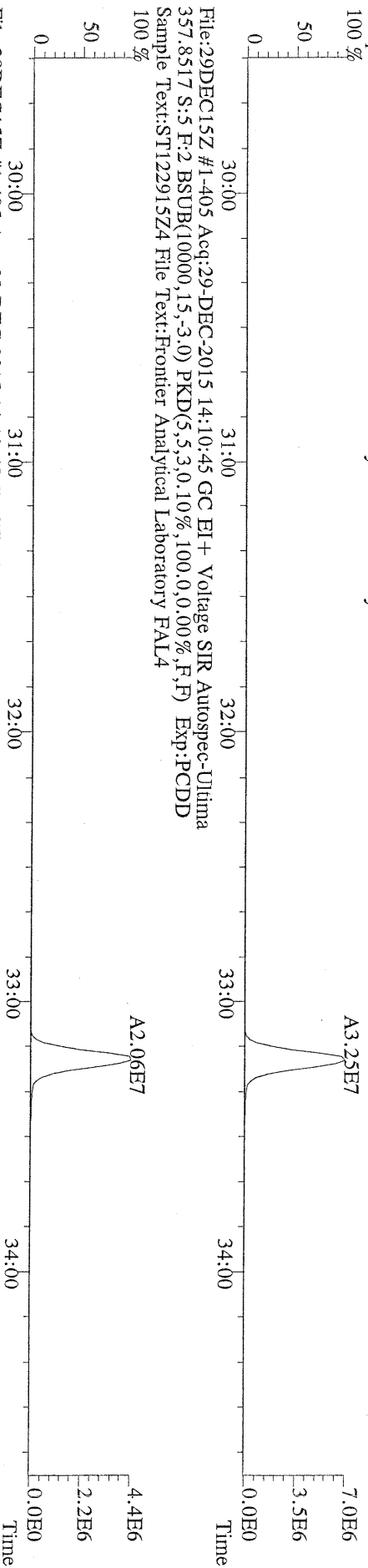
File:29DEC15Z #1-391 Acq:29-DEC-2015 14:10:45 GC EI+ Voltage SIR Autospec-Utima
331.9368 S:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z4 File Text:Frontier Analytical Laboratory FAL4
100 %



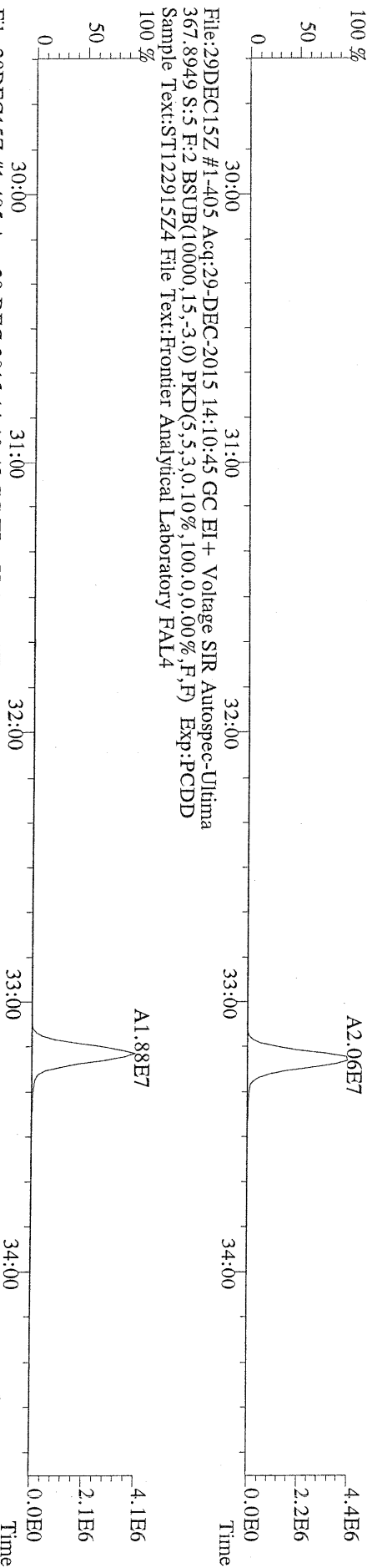
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333.9339 S:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z4 File Text:Frontier Analytical Laboratory FAL4



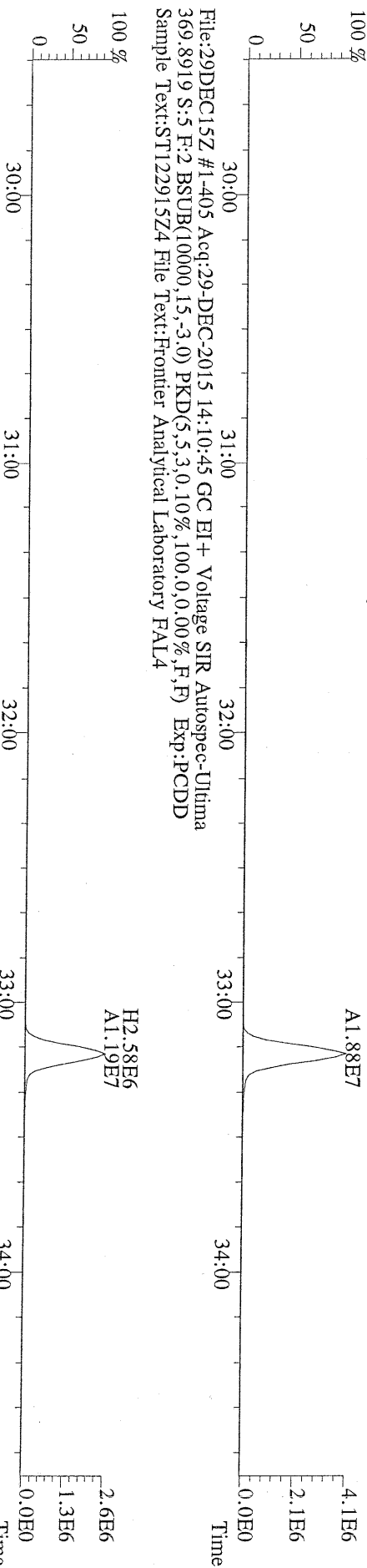
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355.8546 S:5 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z4 File Text:Frontier Analytical Laboratory FAL4
100%



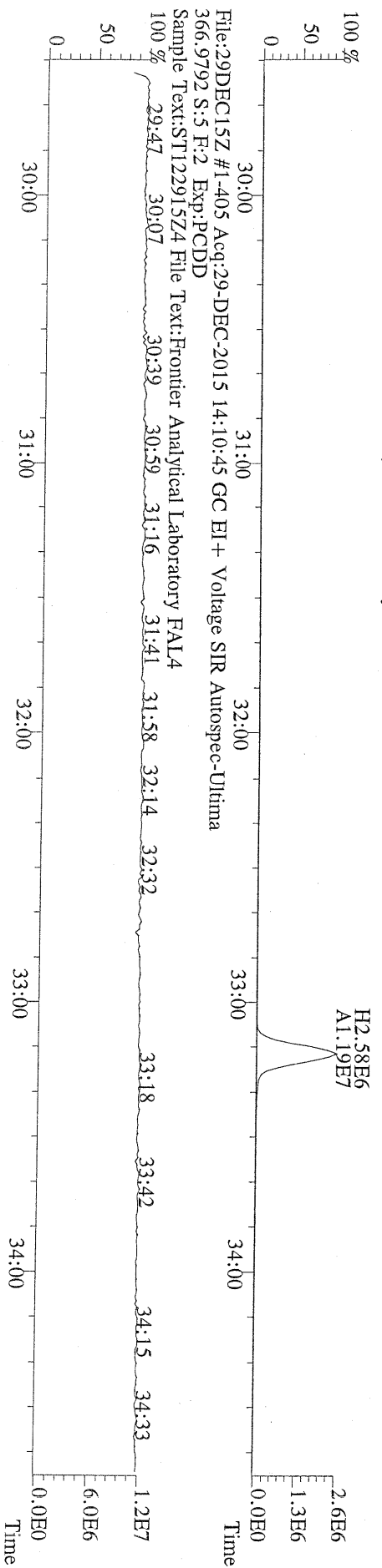
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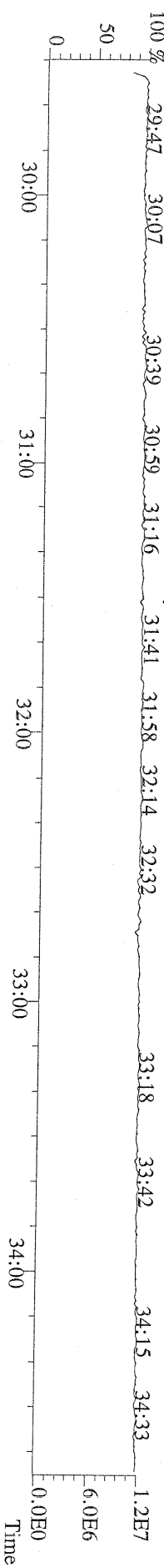
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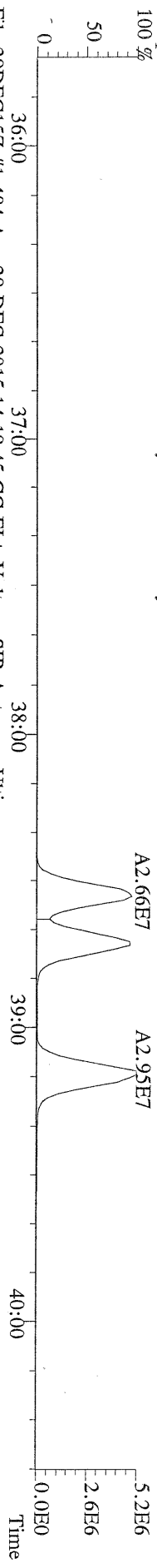
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366.9792 S:5 F:2 Exp:PCDD
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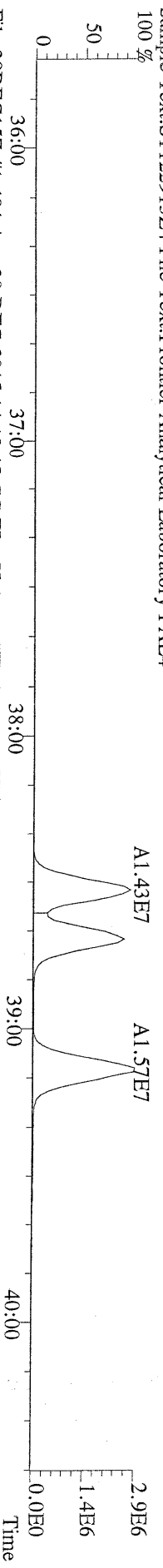
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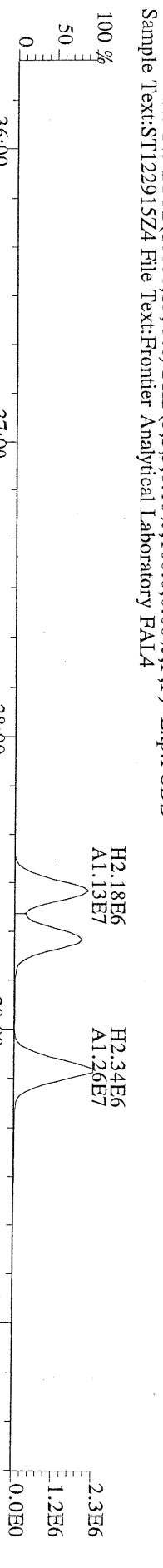
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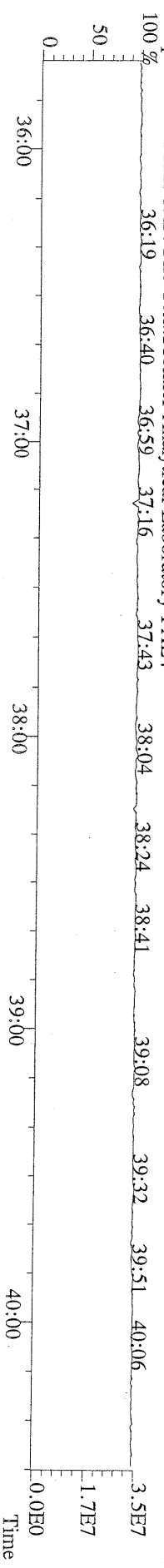
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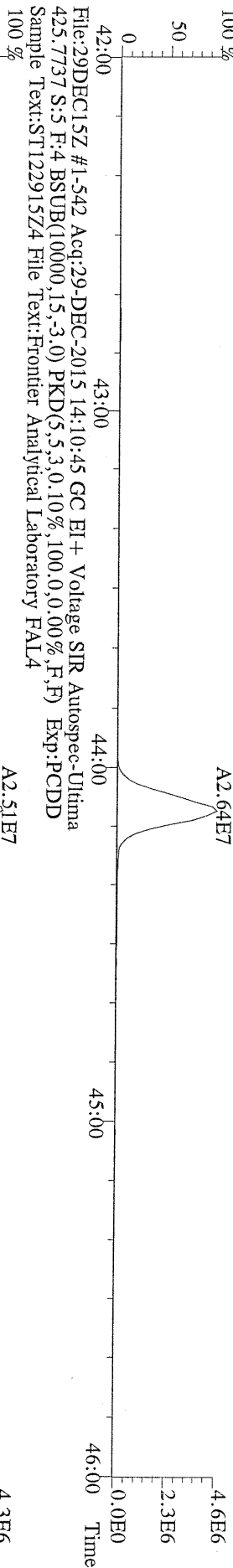
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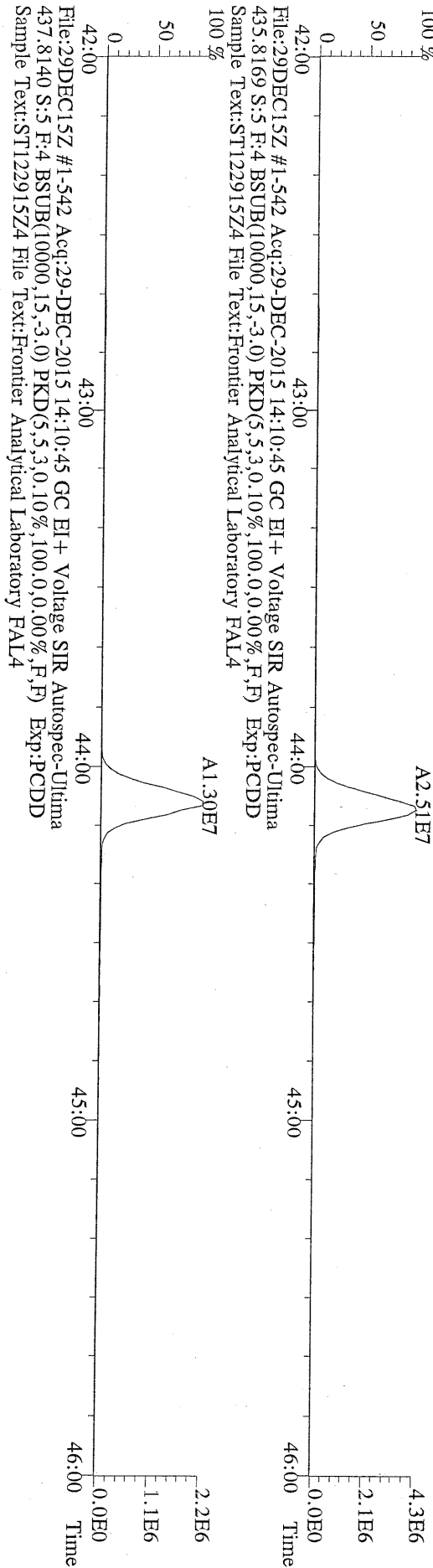
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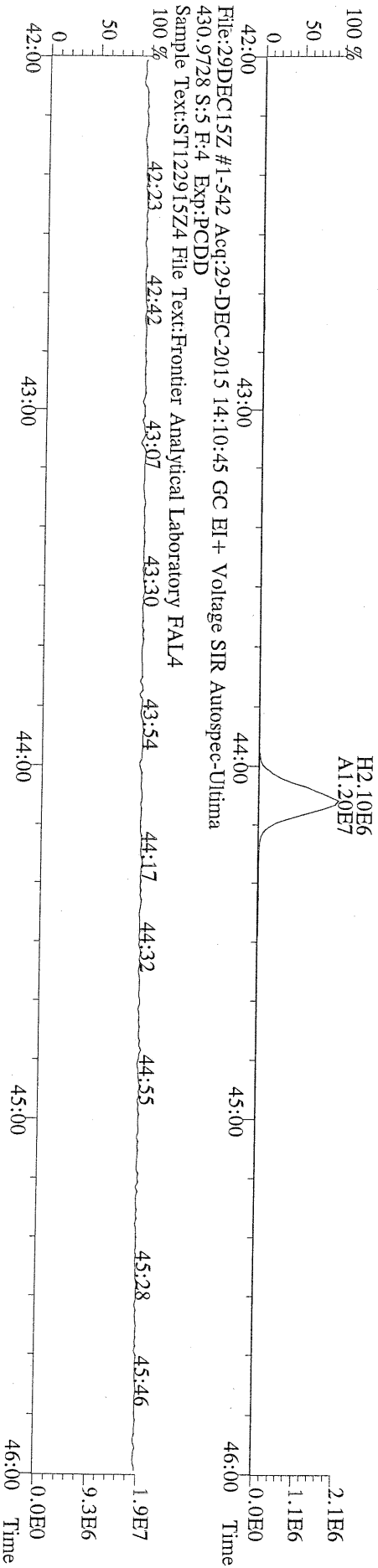
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100 %



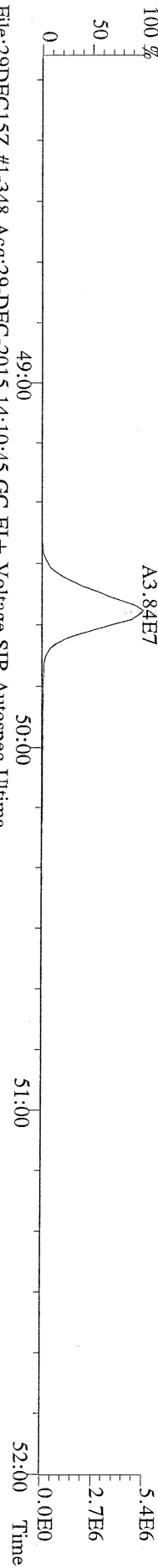
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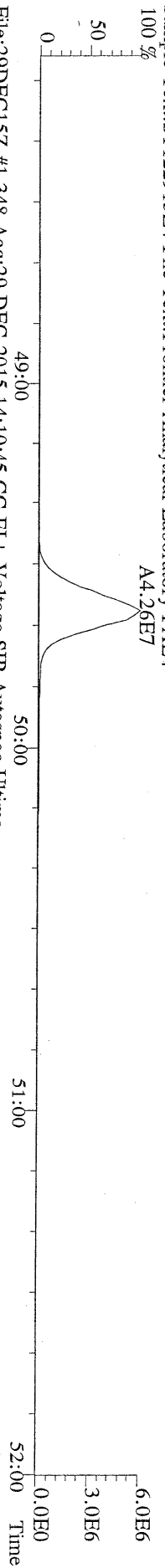
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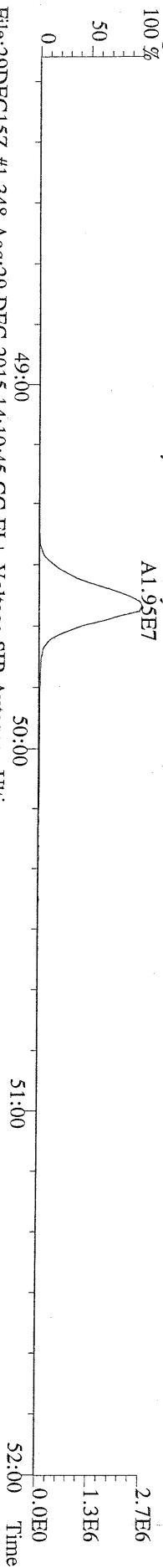
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Sample Text:ST122915Z4 File Text:Frontier Analytical Laboratory FAL4
100 %



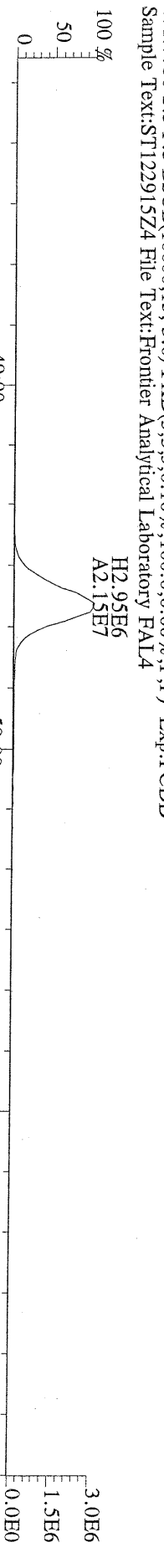
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459.7348 S:5 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp.:PCDD
Sample Text:ST122915Z4 File Text:Frontier Analytical Laboratory FAL4
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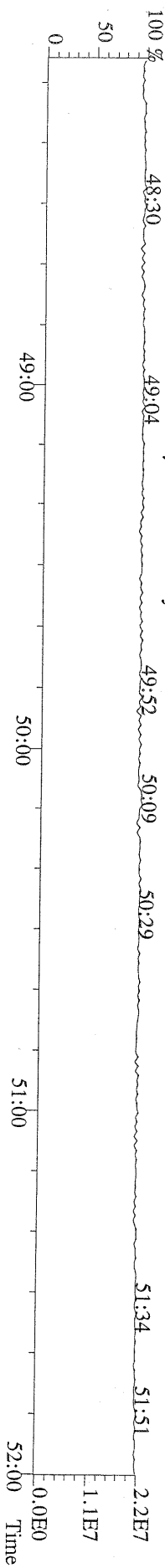
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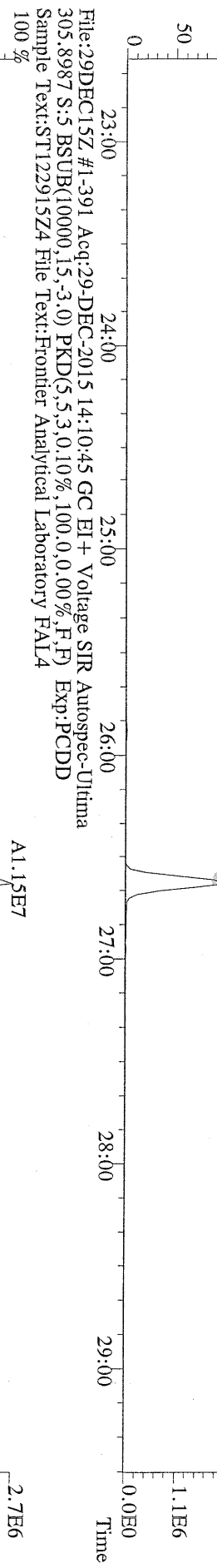
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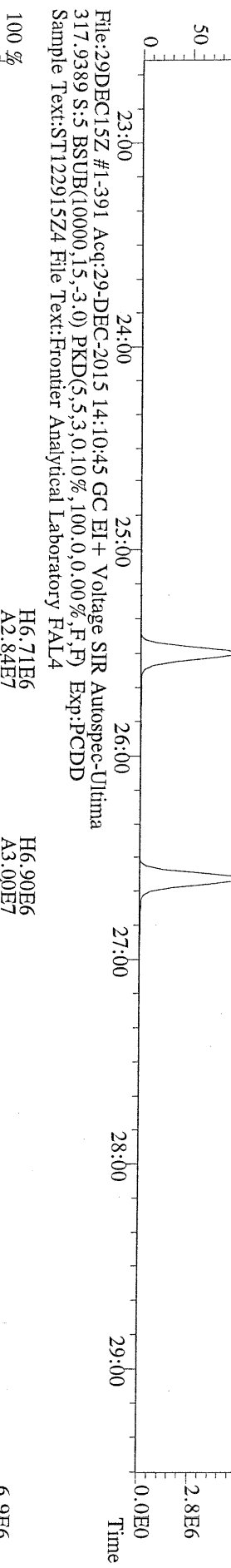
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454.9728 S:5 F:5 Exp.:PCDD
Sample Text:ST122915Z4 File Text:Frontier Analytical Laboratory FAL4



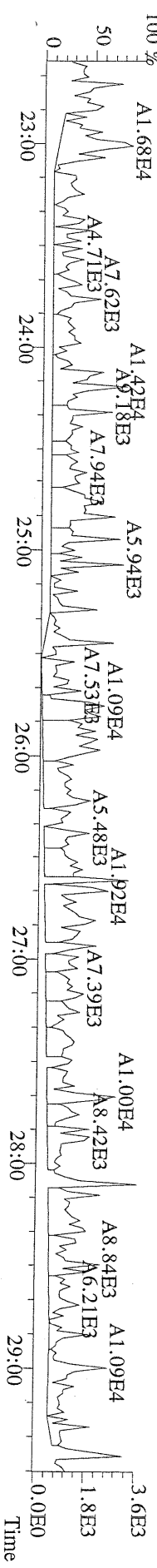
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303.9016 S:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text: ST122915Z4 File Text: Frontier Analytical Laboratory FAL4



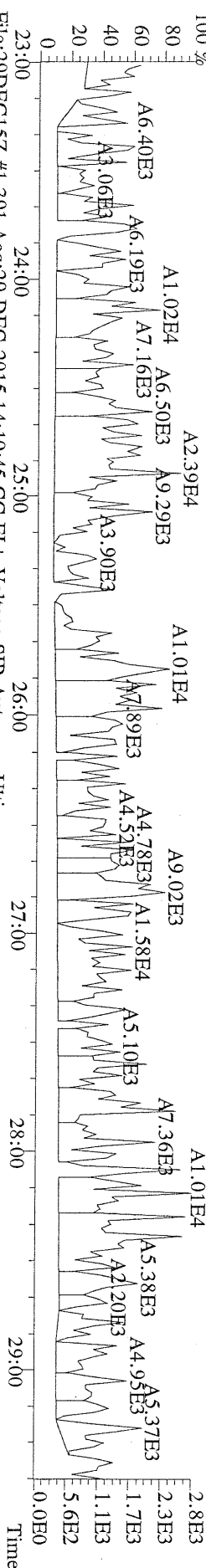
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315.9419 S:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text: ST122915Z4 File Text: Frontier Analytical Laboratory FAL4



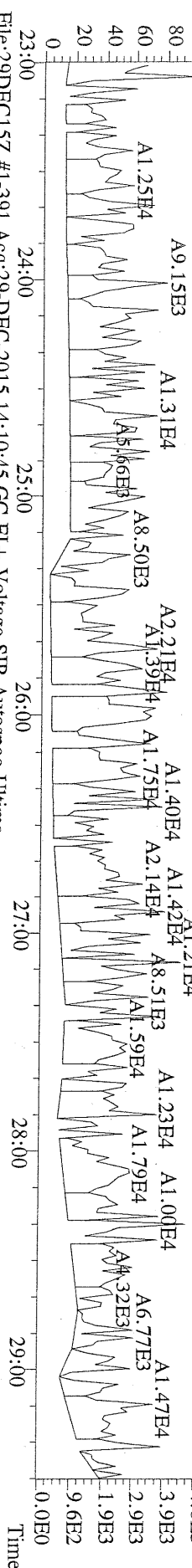
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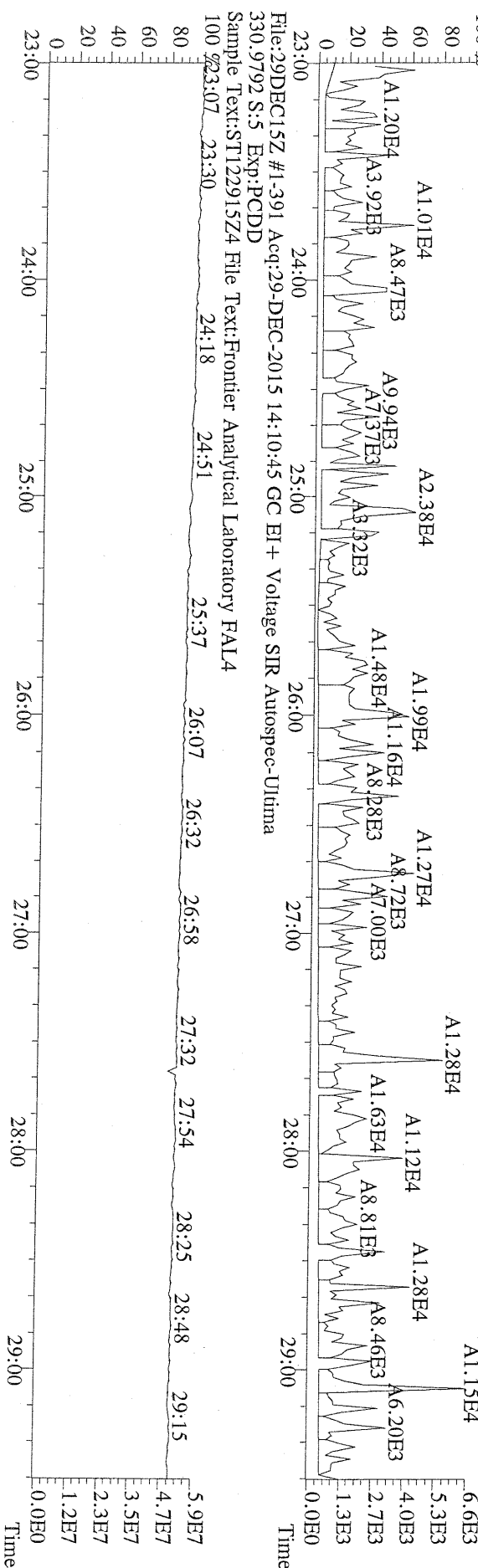
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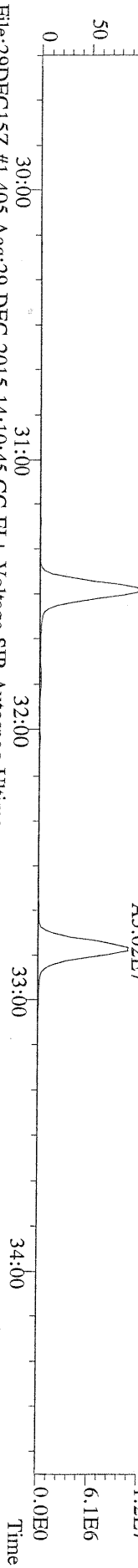
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 Sample Text:ST122915Z4 File Text:Frontier Analytical Laboratory FAL4



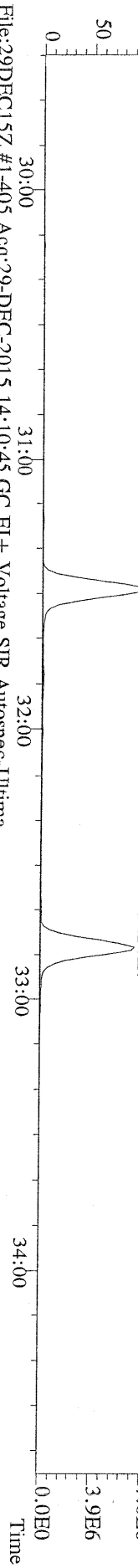
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 409.7974 S.S: BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0,00%,F,F) Exp:PCDD
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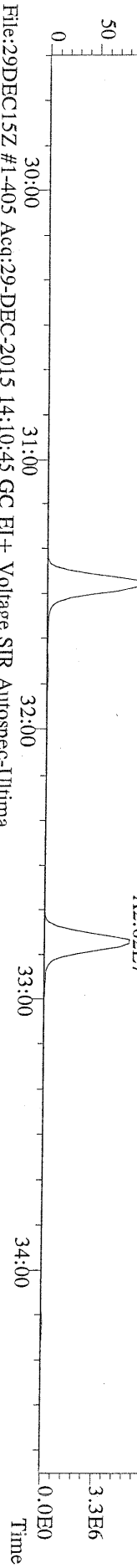
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Sample Text:ST122915Z4 File Text:Frontier Analytical Laboratory FAL4
100 %



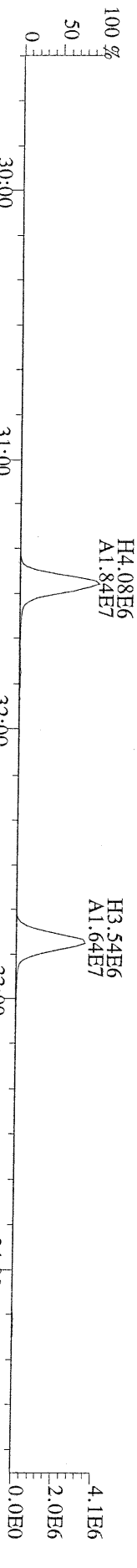
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Sample Text:ST122915Z4 File Text:Frontier Analytical Laboratory FAL4
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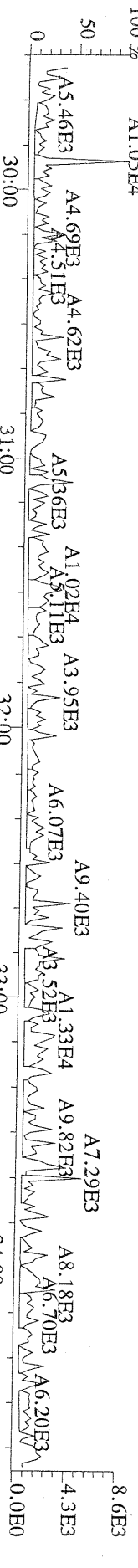
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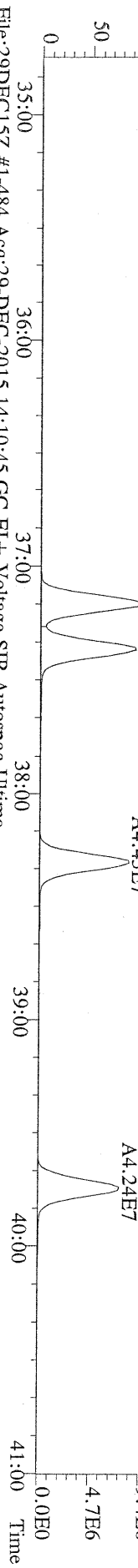
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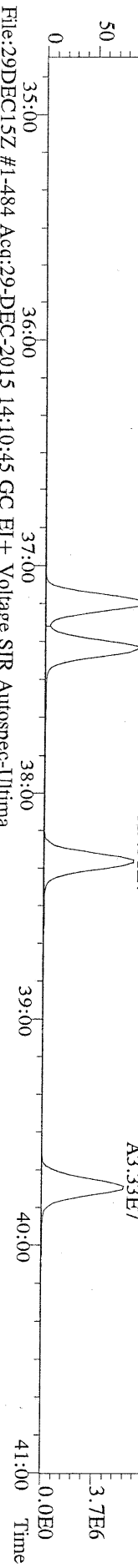
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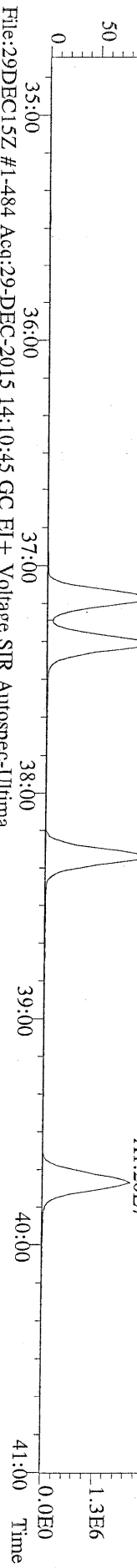
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373.8207 S:5 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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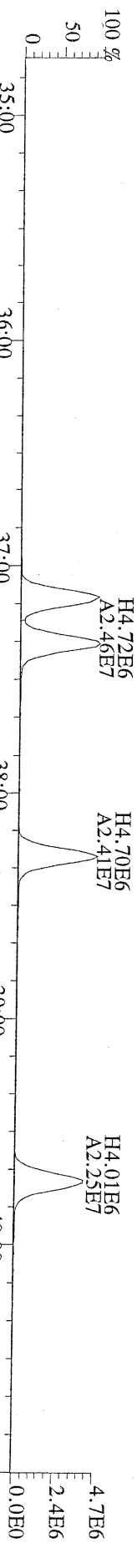
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375.8178 S:5 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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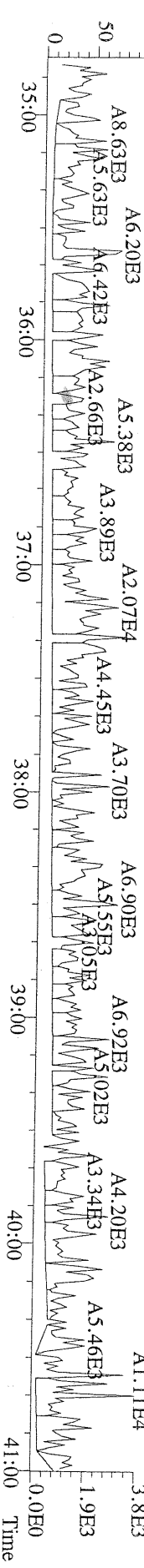
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383.8639 S:5 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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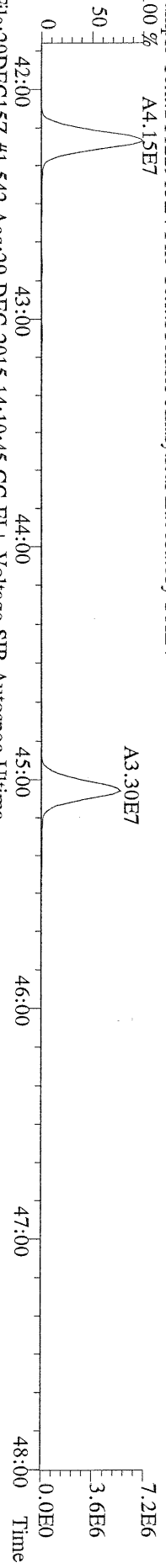
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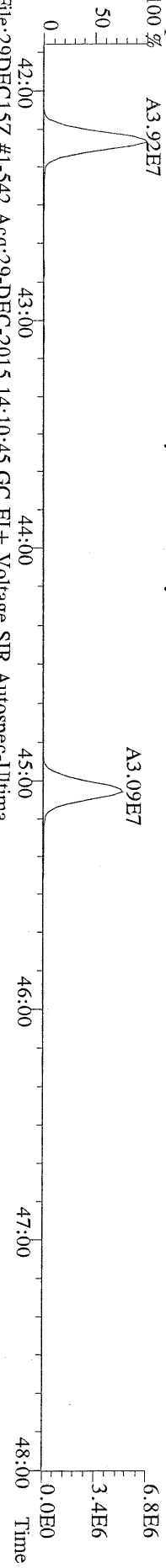
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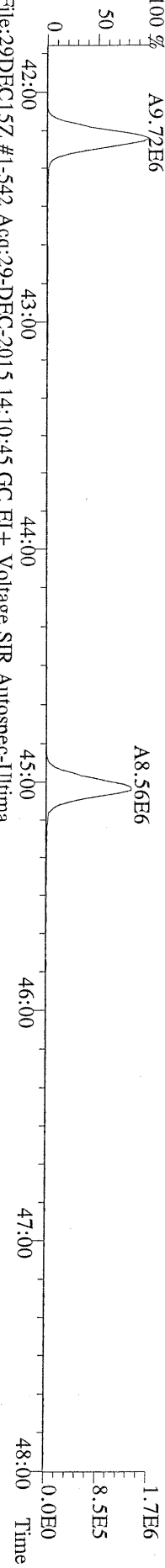
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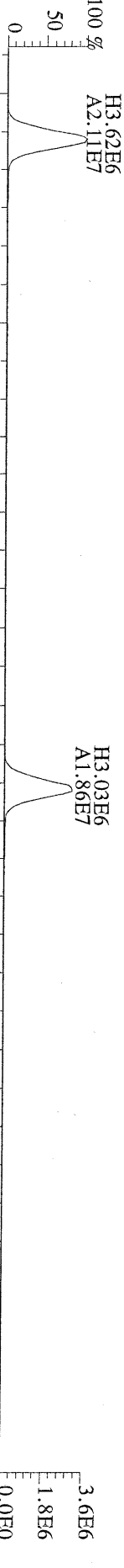
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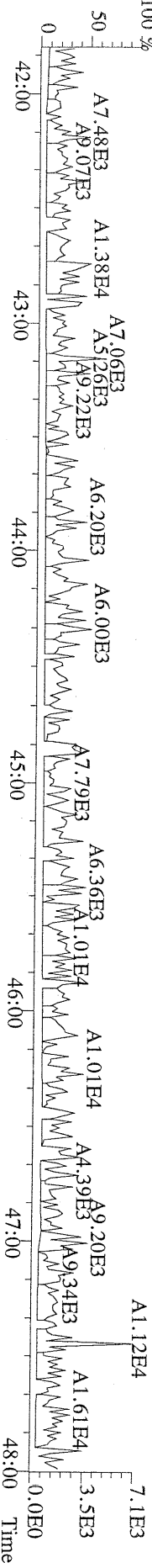
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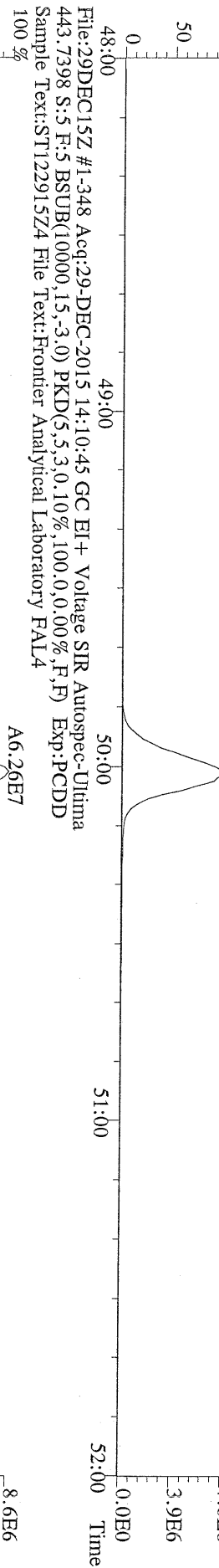
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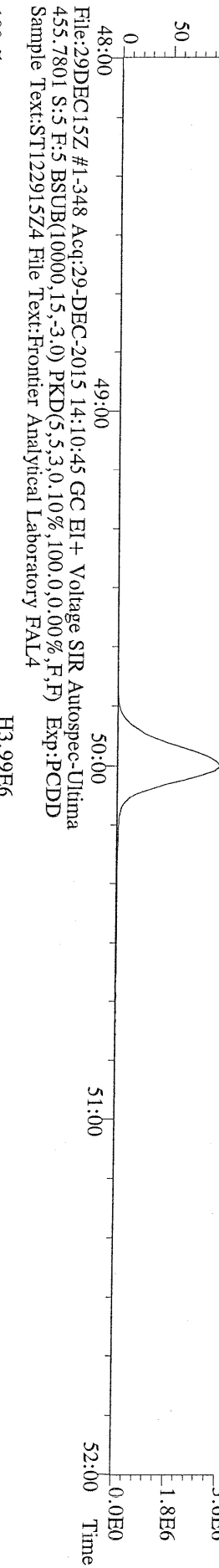
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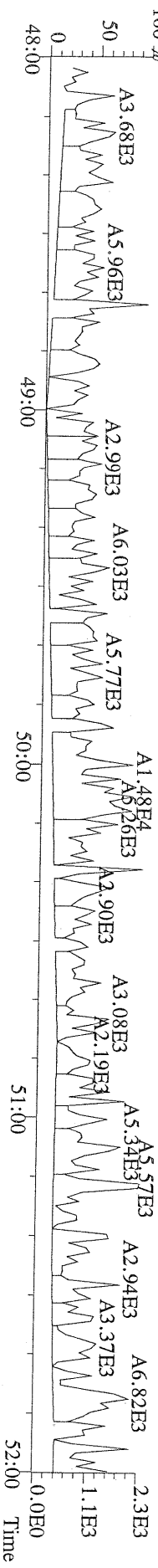
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Sample Text:ST122915Z4 File Text:Frontier Analytical Laboratory FAL4



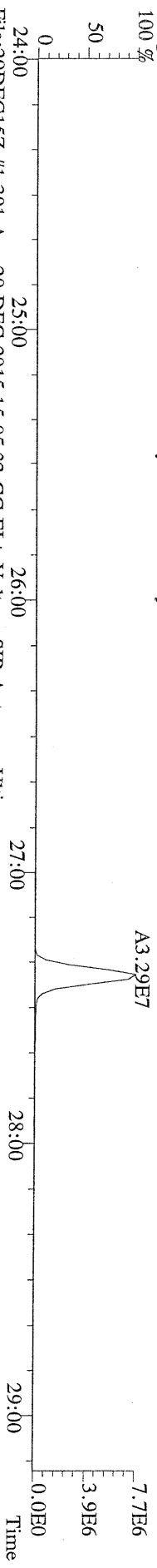
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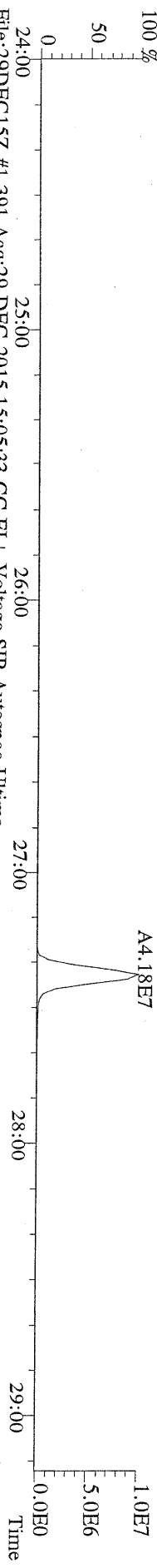
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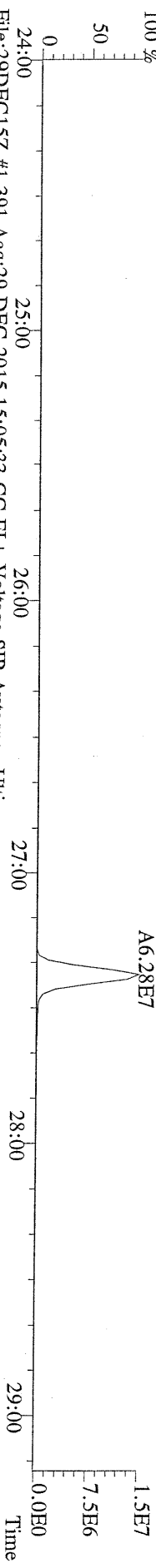
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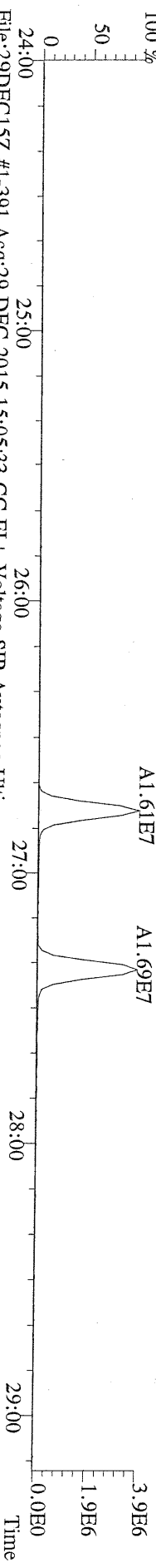
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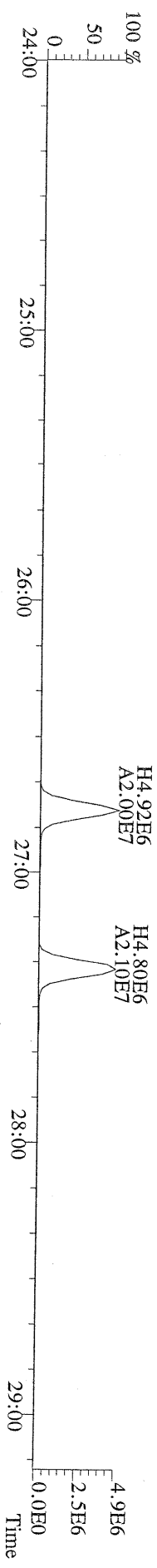
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327.8847 S:6 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
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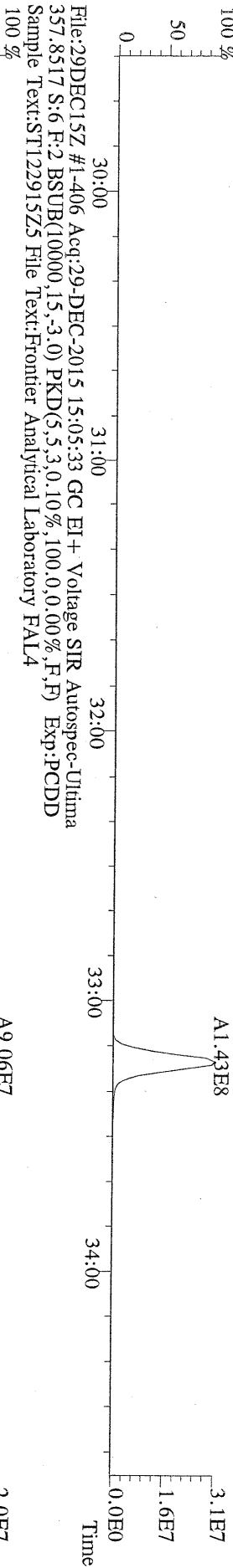
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Sample Text:ST122915Z5 File Text:Frontier Analytical Laboratory FAL4
100 %



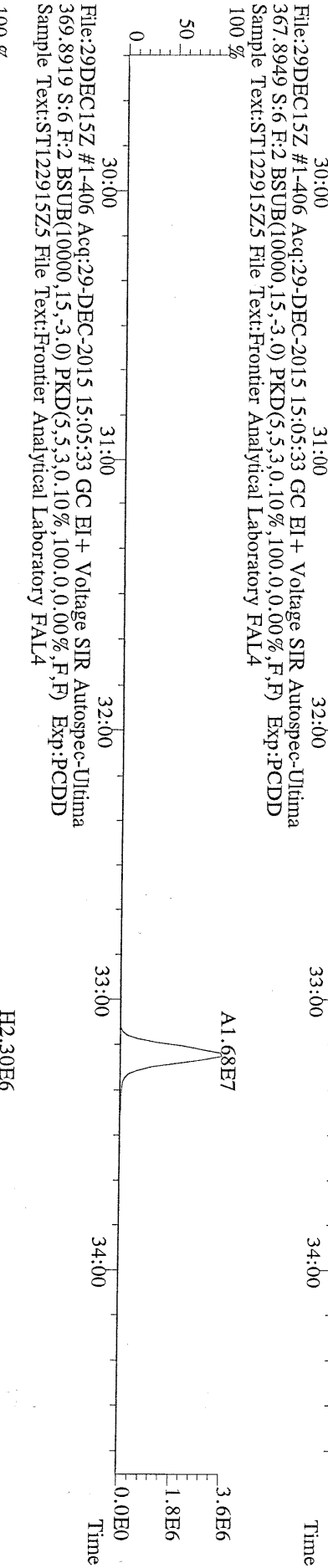
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Sample Text:ST122915Z5 File Text:Frontier Analytical Laboratory FAL4



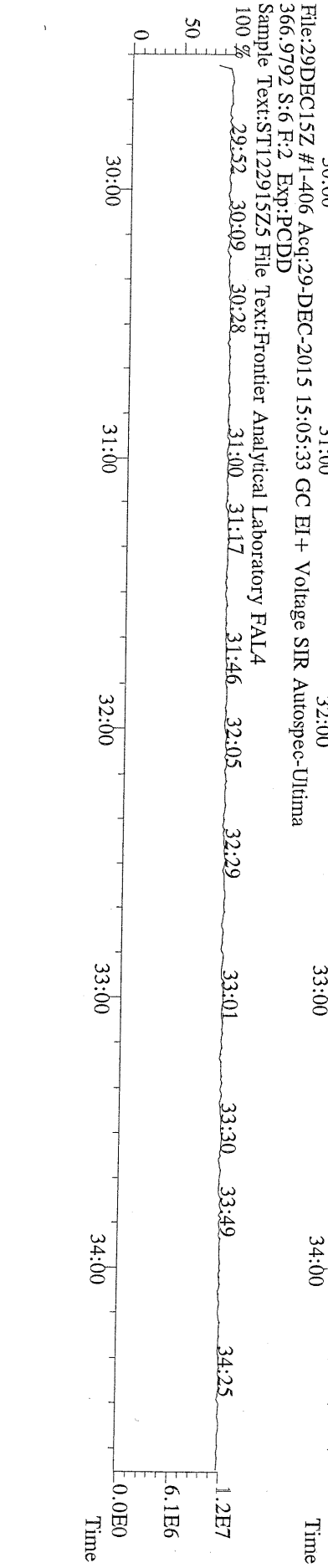
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100 %



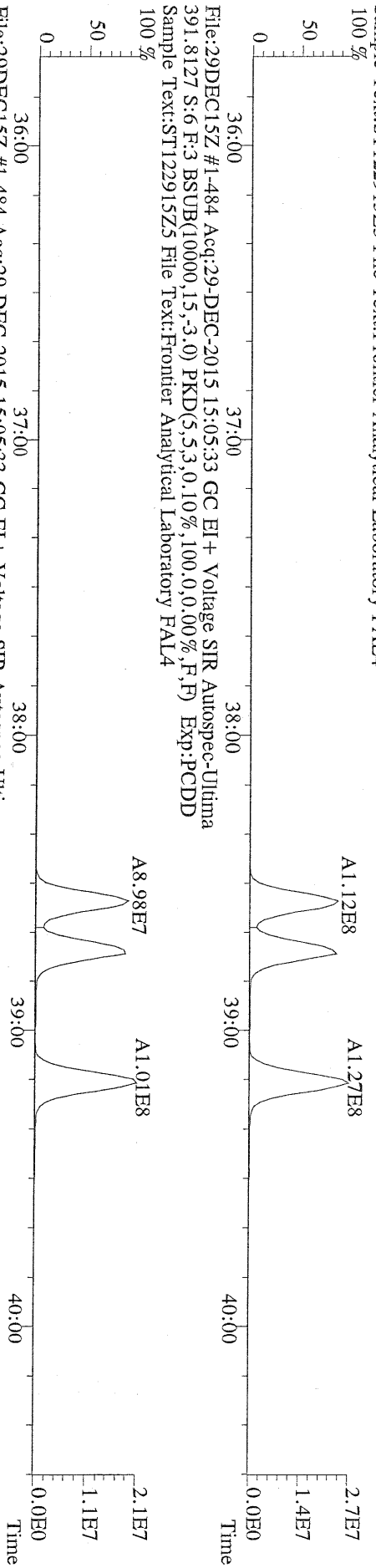
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Sample Text:ST122915Z5 File Text:Frontier Analytical Laboratory FAL4
100 %



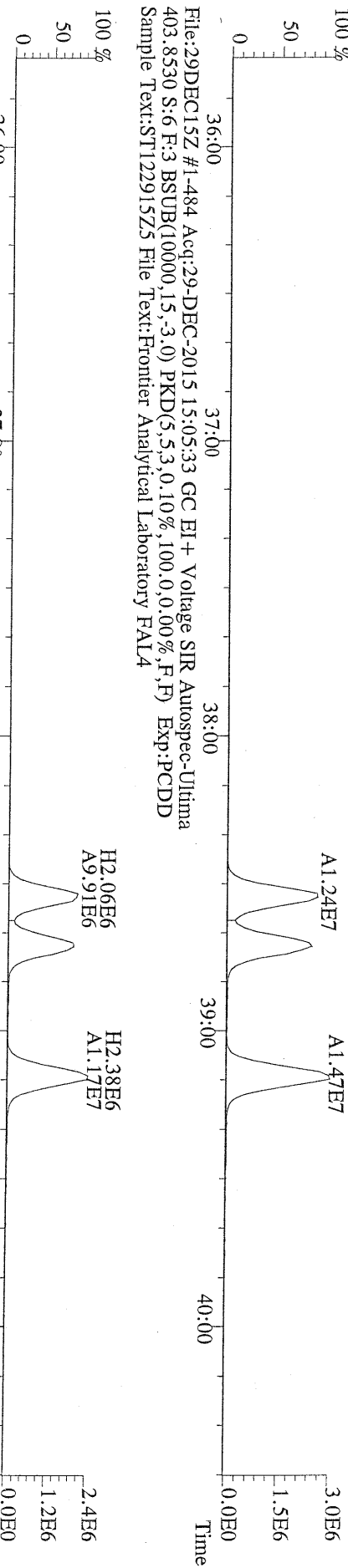
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Sample Text:ST122915Z5 File Text:Frontier Analytical Laboratory FAL4
100 %



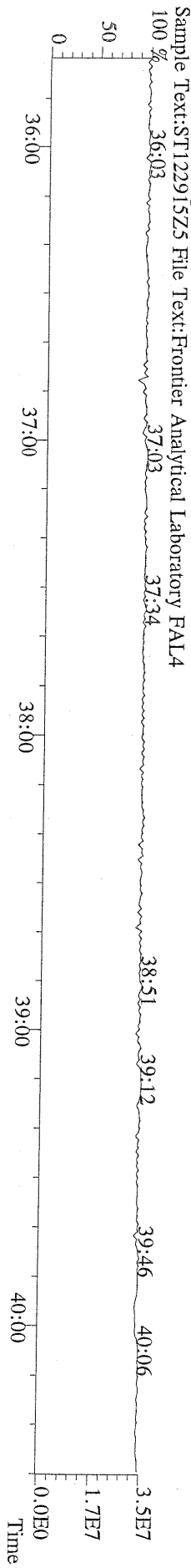
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389.8156 S:6 F:3 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
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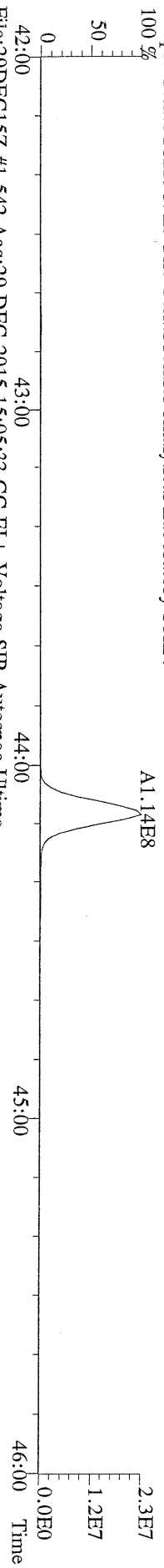
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Sample Text: ST122915Z5 File Text: Frontier Analytical Laboratory FAL4



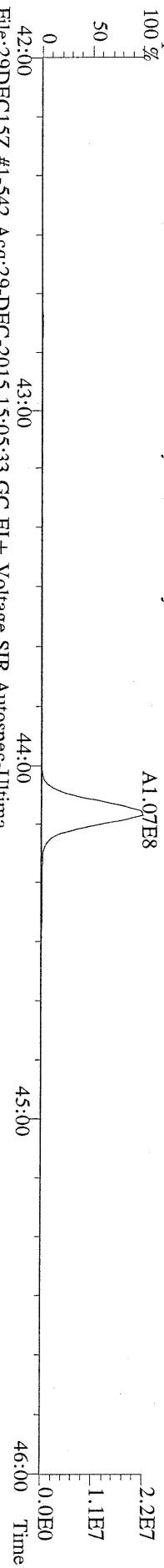
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Sample Text: ST122915Z5 File Text: Frontier Analytical Laboratory FAL4



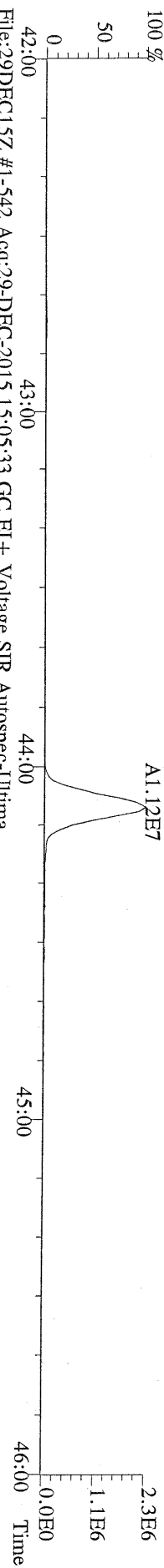
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Sample Text:ST122915Z5 File Text:Frontier Analytical Laboratory FAL4
100 %



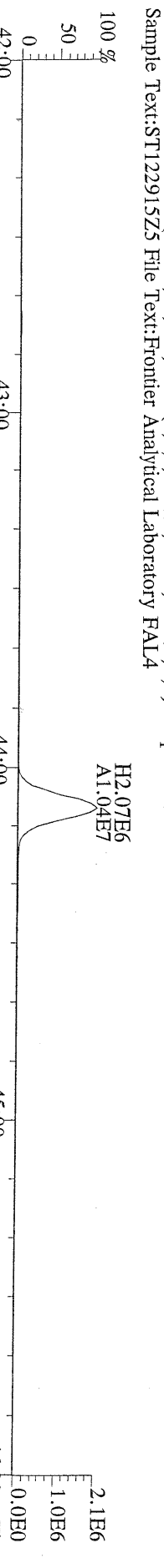
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Sample Text:ST122915Z5 File Text:Frontier Analytical Laboratory FAL4
100 %



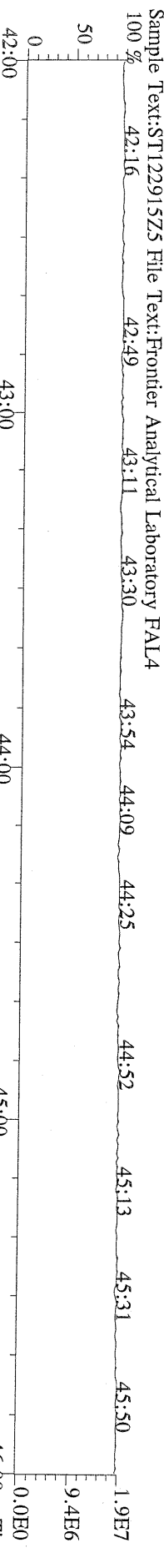
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435.8169 S:6 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z5 File Text:Frontier Analytical Laboratory FAL4
100 %



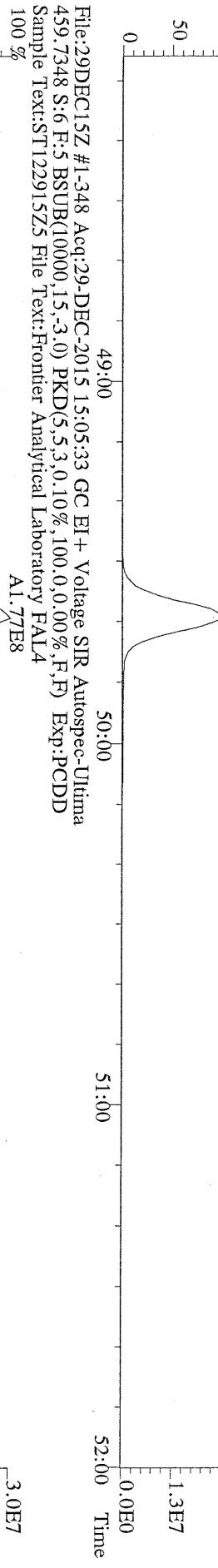
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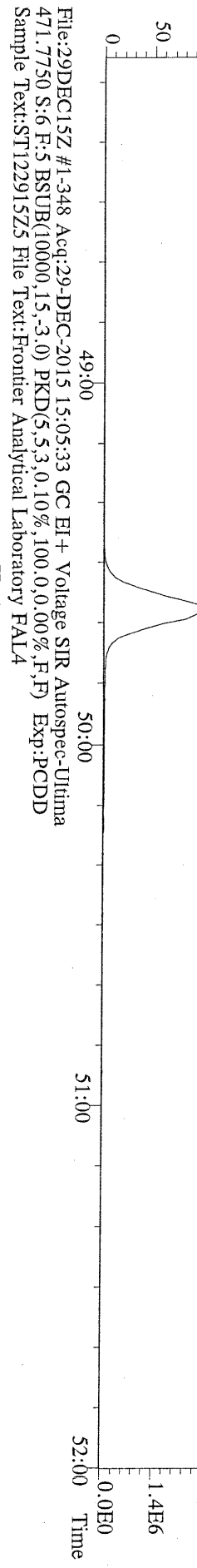
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Sample Text:ST122915Z5 File Text:Frontier Analytical Laboratory FAL4
100 %



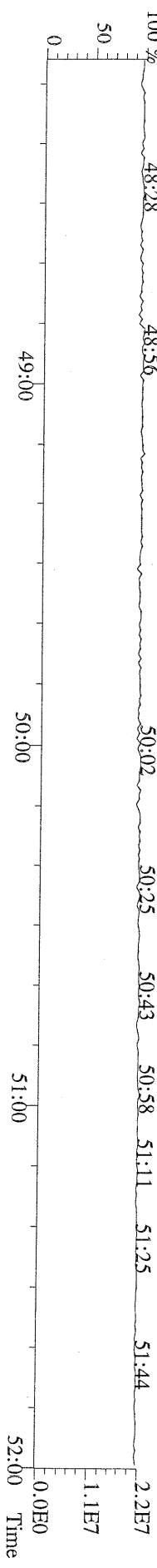
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457.7377 S:6 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp.:PCDD
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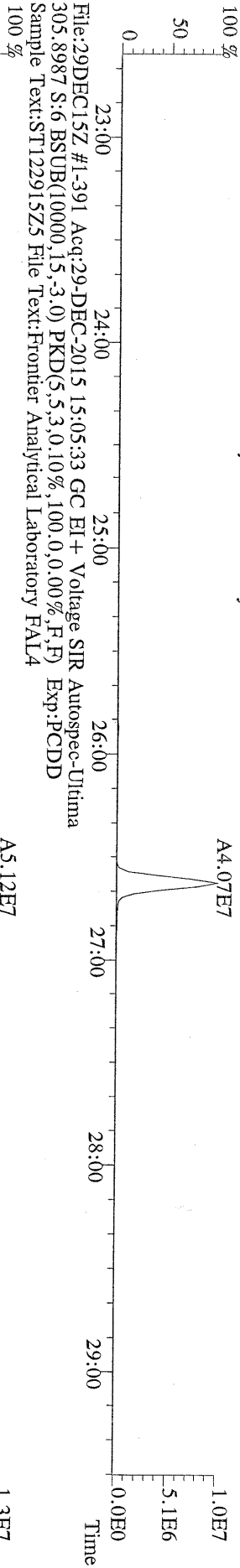
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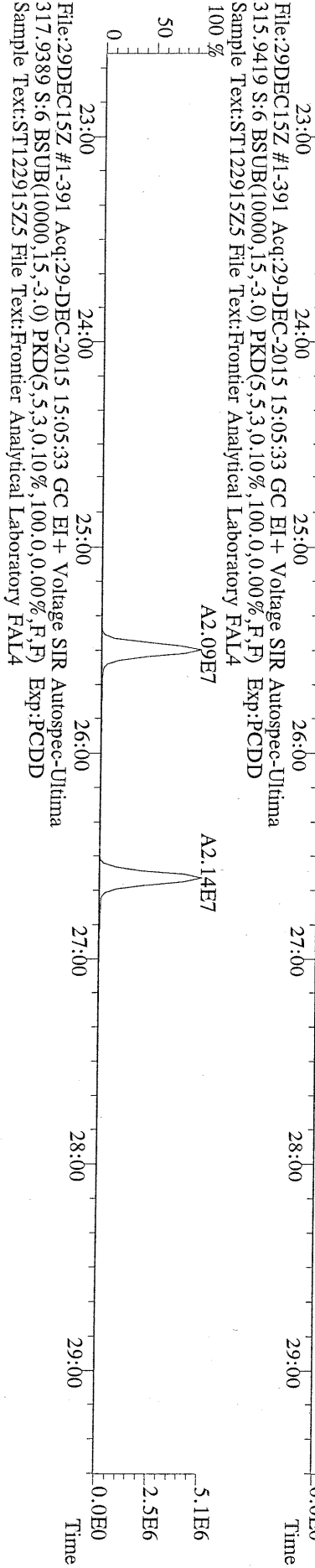
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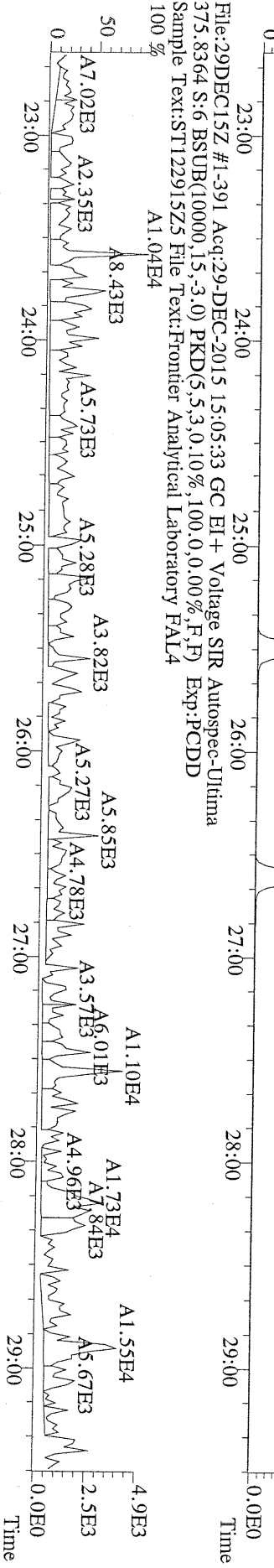
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Sample Text:ST122915Z5 File Text:Frontier Analytical Laboratory FAL4



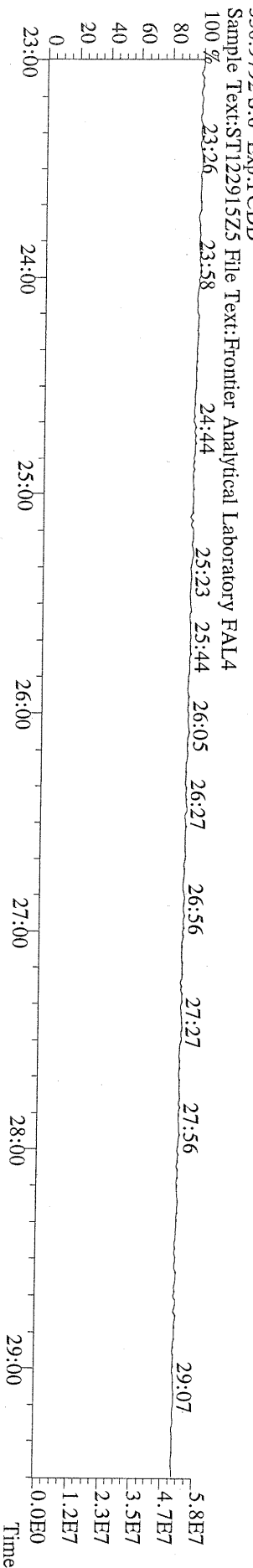
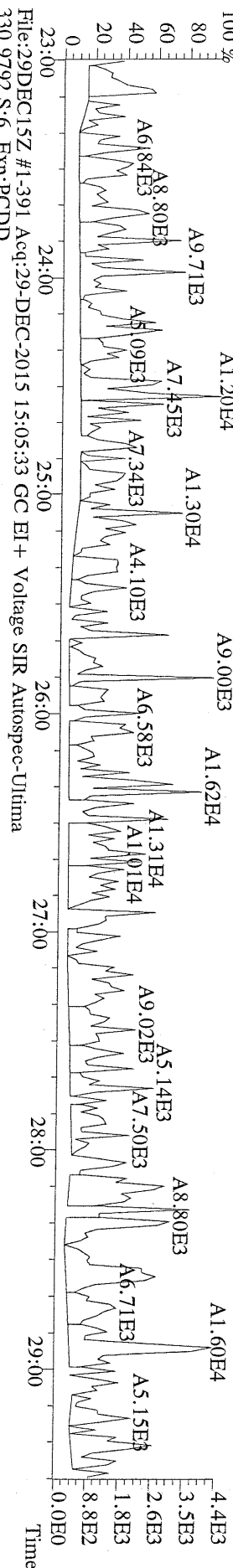
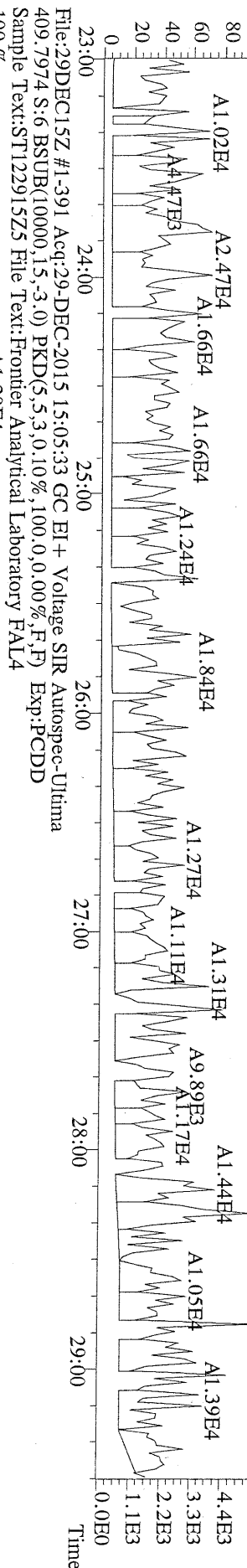
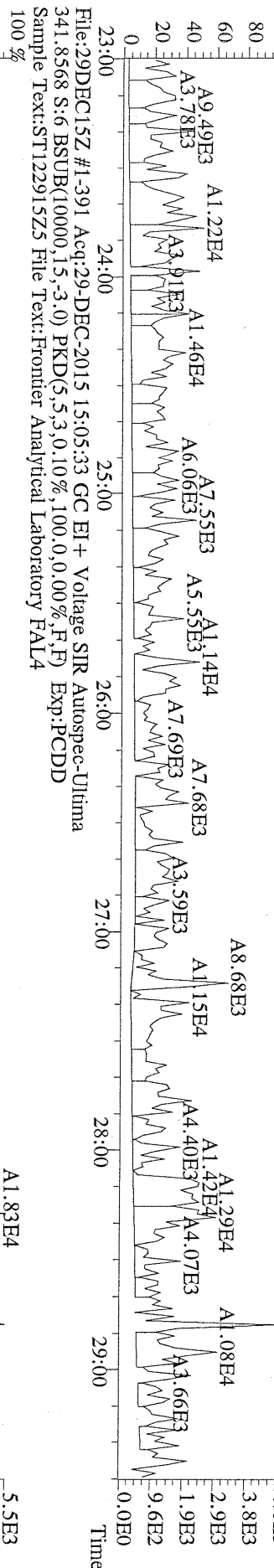
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315.9419 S:6 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z5 File Text:Frontier Analytical Laboratory FAL4



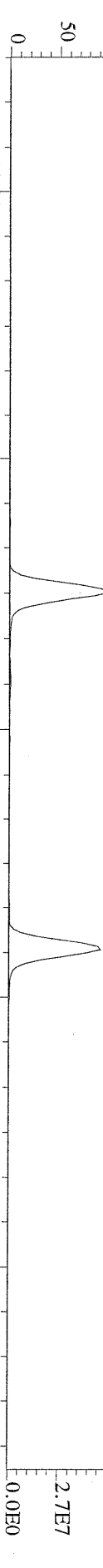
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375.8364 S:6 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST122915Z5 File Text:Frontier Analytical Laboratory FAL4



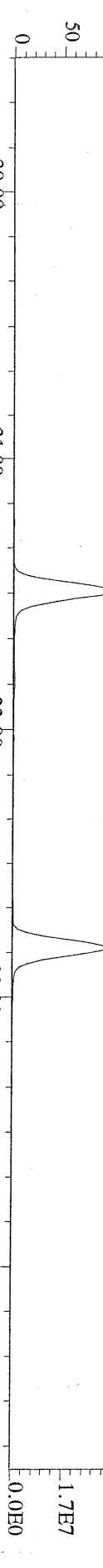
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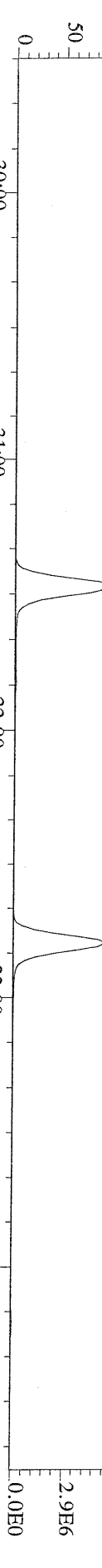
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Sample Text:ST122915Z5 File Text:Frontier Analytical Laboratory FALA
100 %



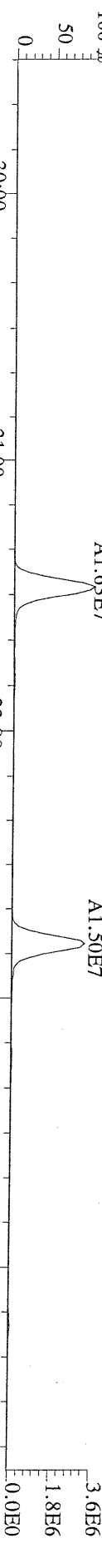
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Sample Text:ST122915Z5 File Text:Frontier Analytical Laboratory FALA
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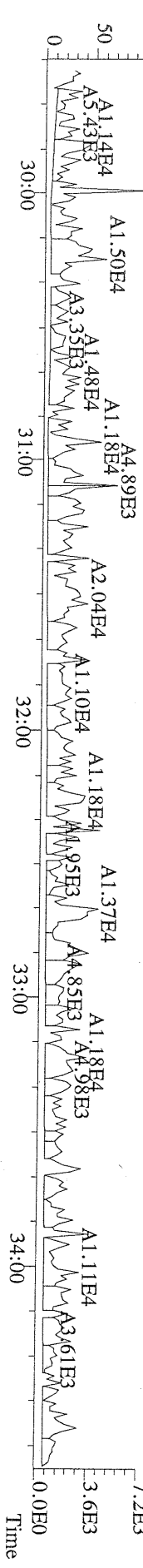
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Sample Text:ST122915Z5 File Text:Frontier Analytical Laboratory FALA
100 %



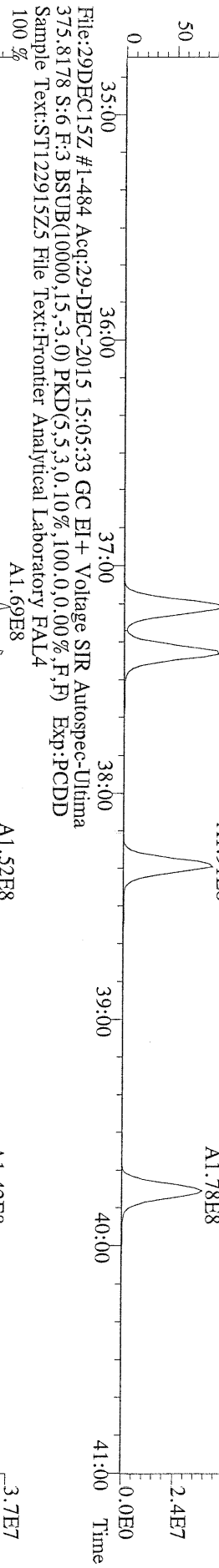
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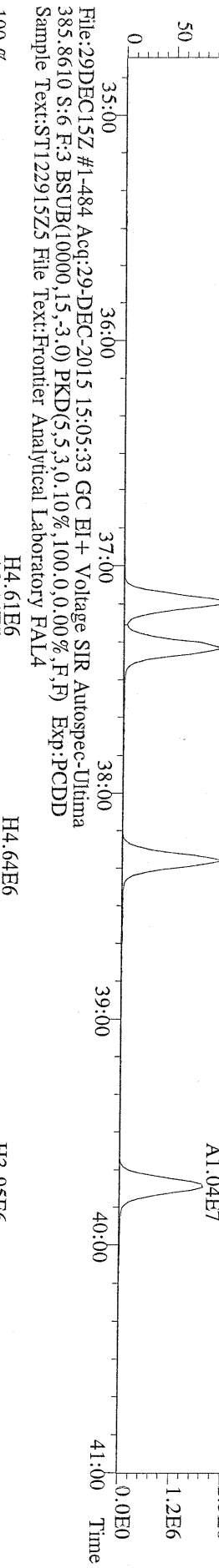
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Sample Text:ST122915Z5 File Text:Frontier Analytical Laboratory FALA



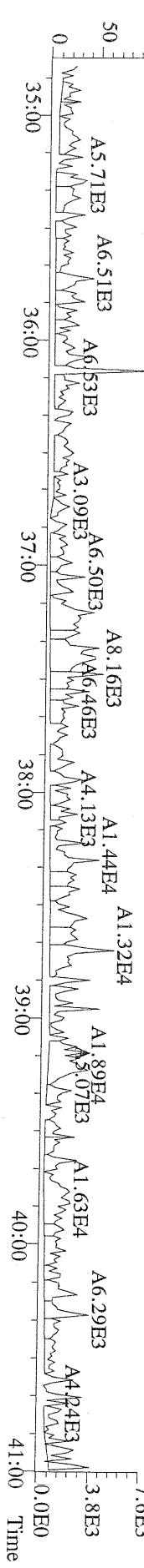
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373.8207 S:6 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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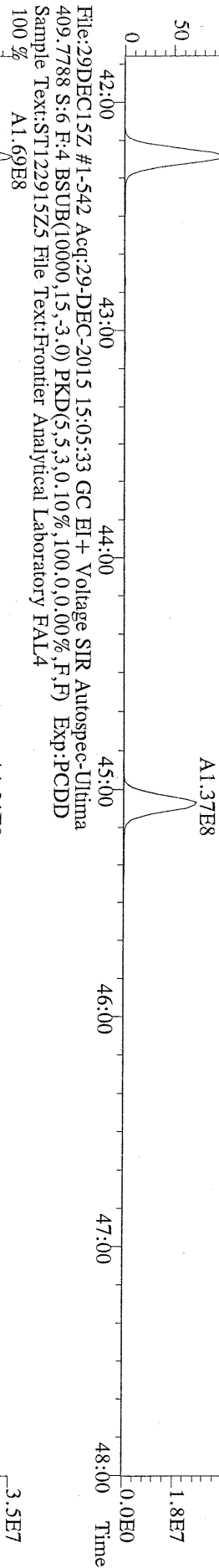
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383.8639 S:6 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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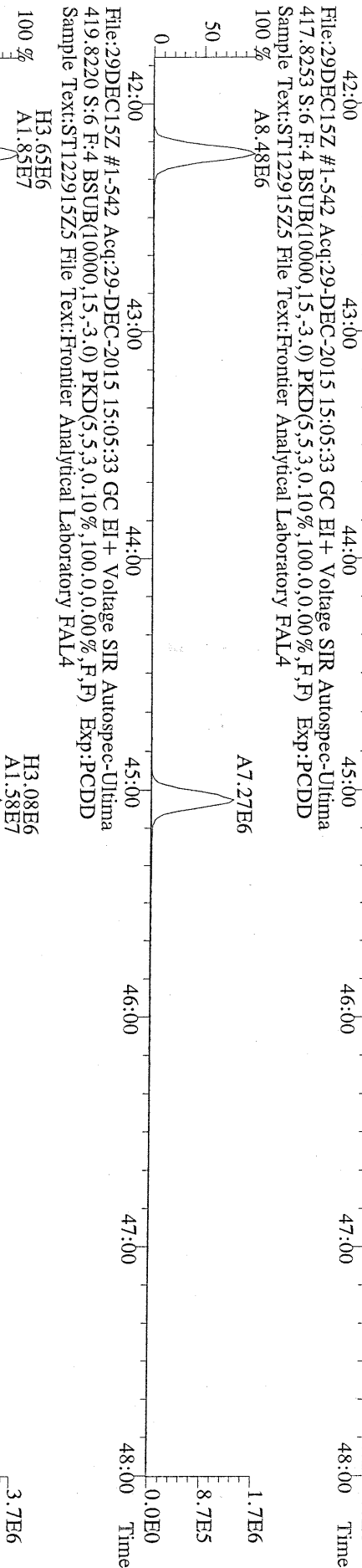
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445.7555 S:6 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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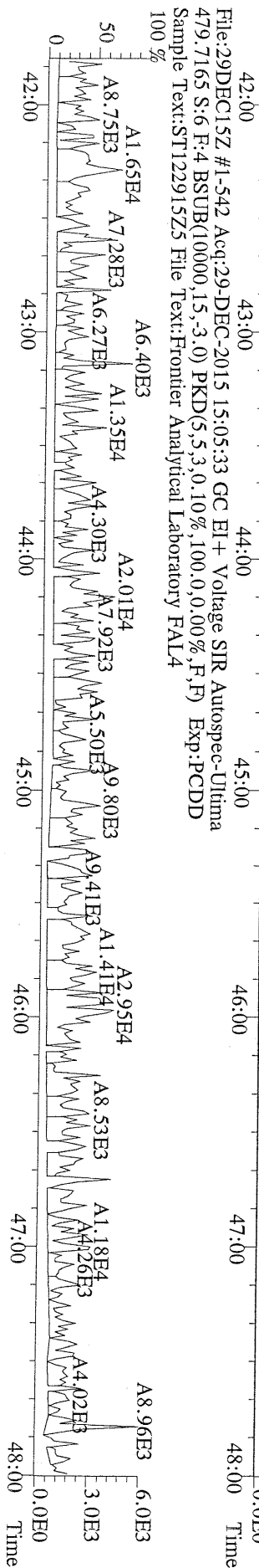
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407.7818 S:6 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0.10%,100,0,0.00%,F,R) Exp:PCDD
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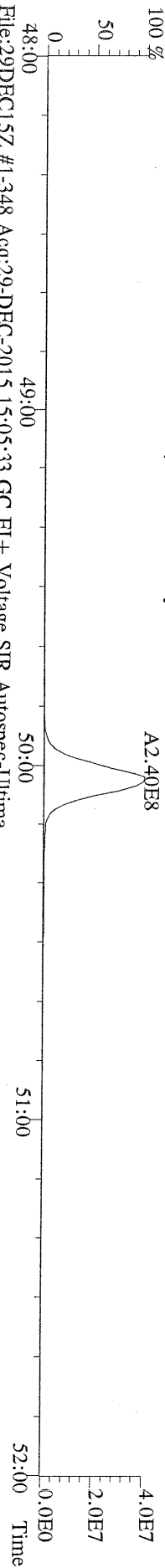
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417.8253 S:6 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0.10%,100,0,0.00%,F,R) Exp:PCDD
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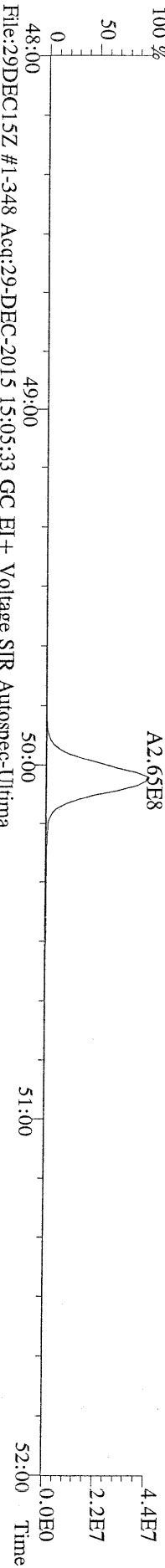
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479.7165 S:6 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0.10%,100,0,0.00%,F,R) Exp:PCDD
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100 %



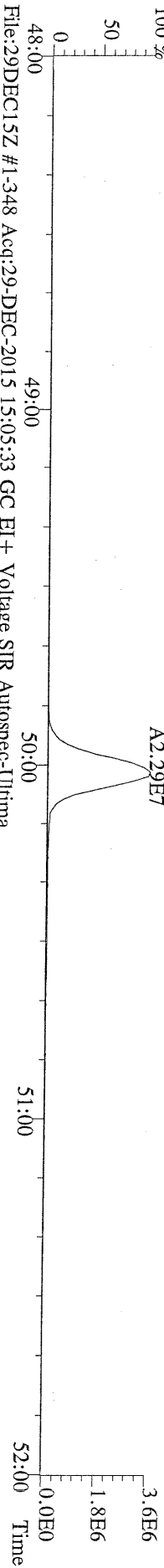
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441.7428 S:6 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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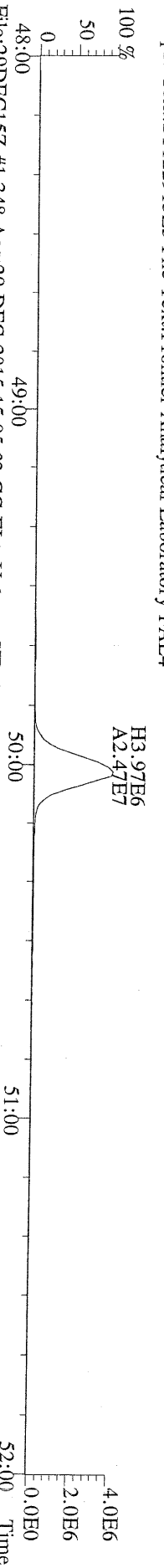
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443.7398 S:6 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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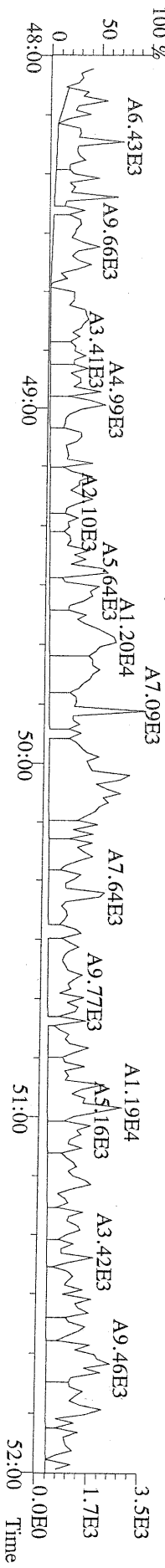
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453.7831 S:6 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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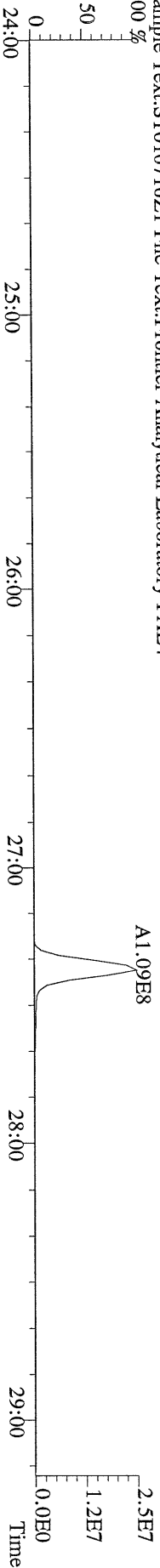
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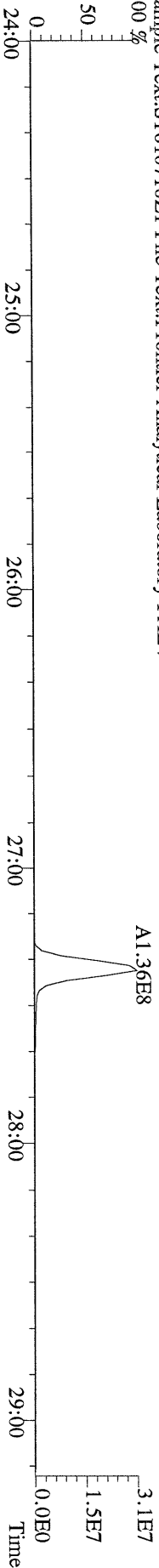
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513.6775 S:6 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST122915Z5 File Text:Frontier Analytical Laboratory FAL4



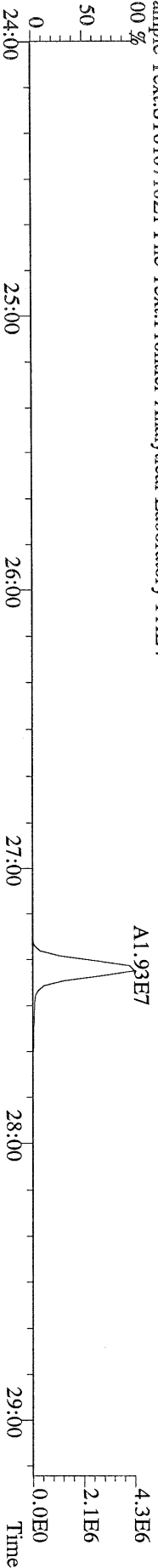
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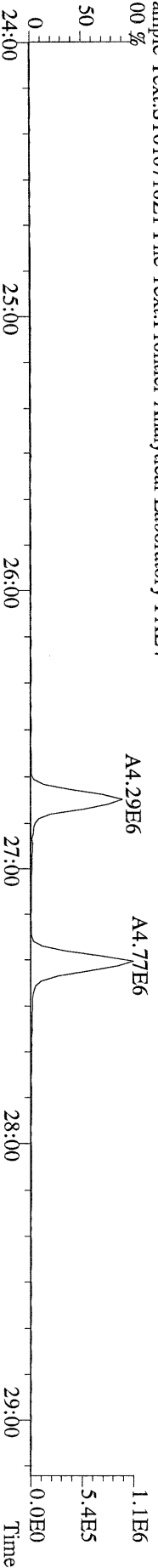
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Sample Text:ST010716Z1 File Text:Frontier Analytical Laboratory FAL4
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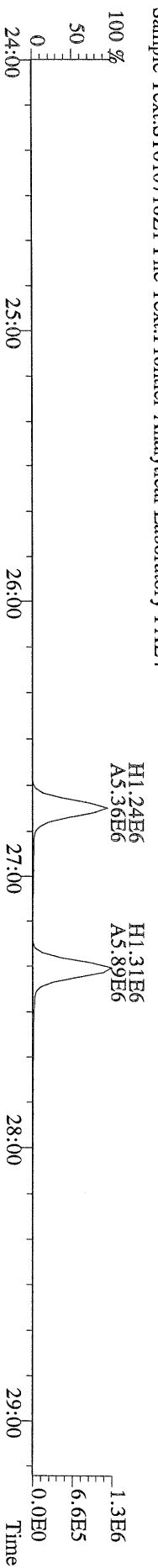
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Sample Text:ST010716Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



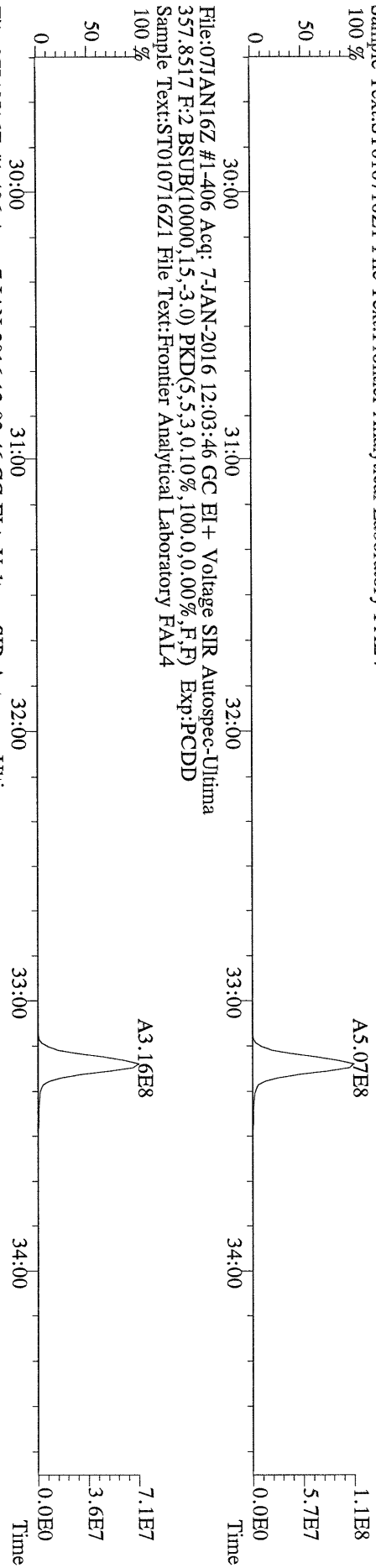
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Sample Text:ST010716Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



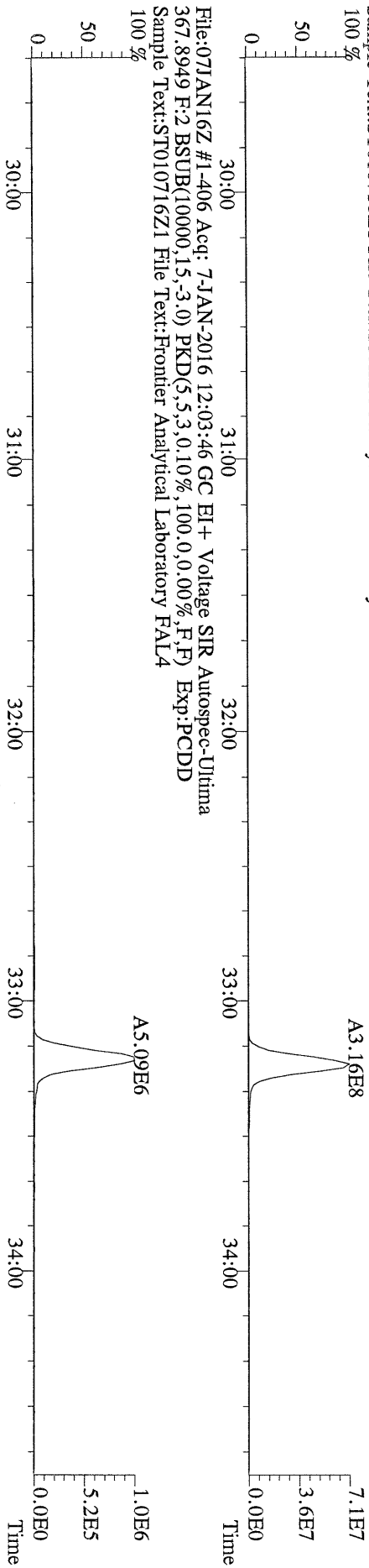
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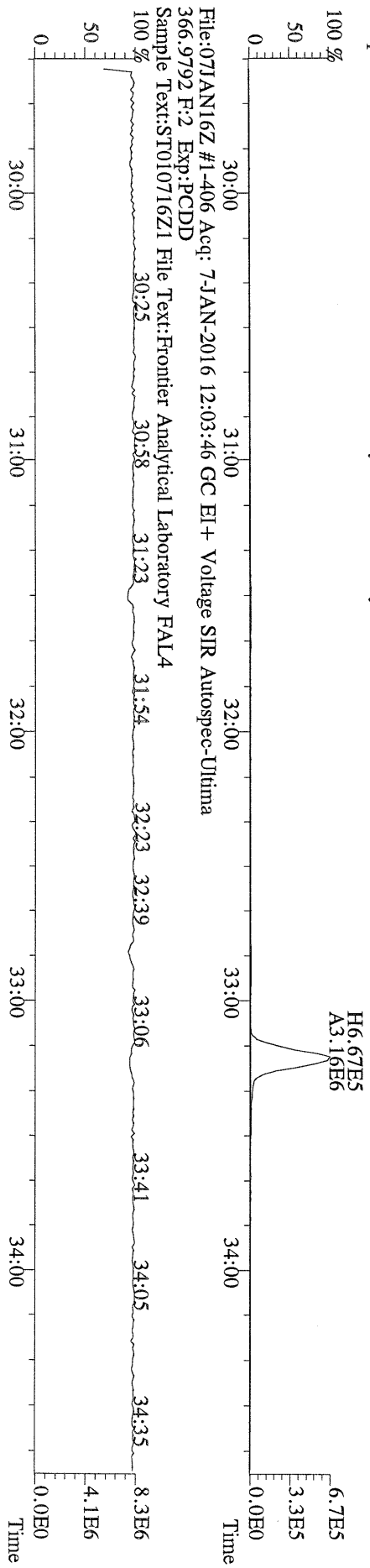
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355.8546 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Z1 File Text:Frontier Analytical Laboratory FAL4



File:07JAN16Z #1-406 Acq: 7-JAN-2016 12:03:46 GC EI+ Voltage SIR Autospec-Ultima
357.8517 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Z1 File Text:Frontier Analytical Laboratory FAL4

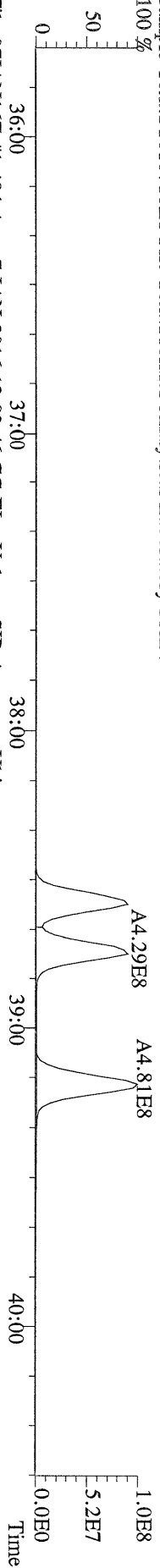


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369.8919 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Z1 File Text:Frontier Analytical Laboratory FAL4

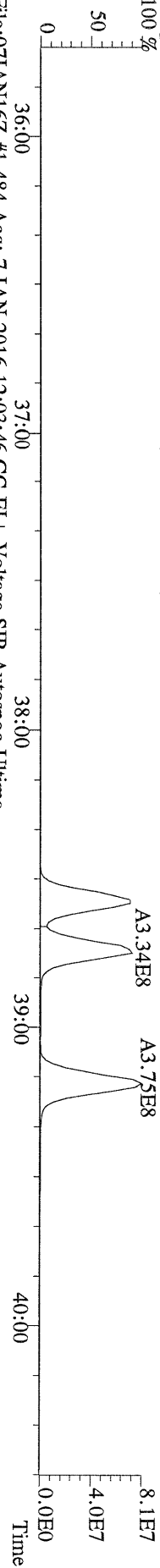


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366.9792 F:2 Exp:PCDD
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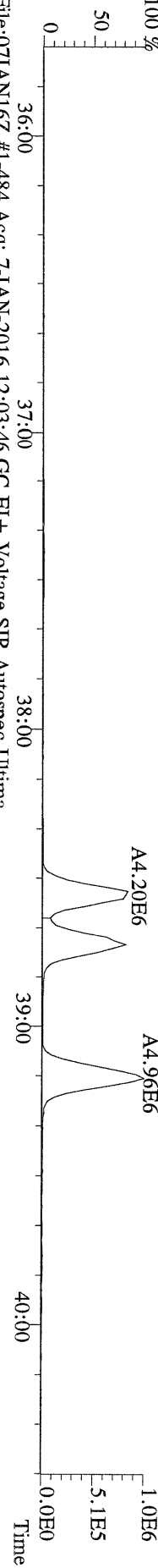
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389.8156 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010716Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



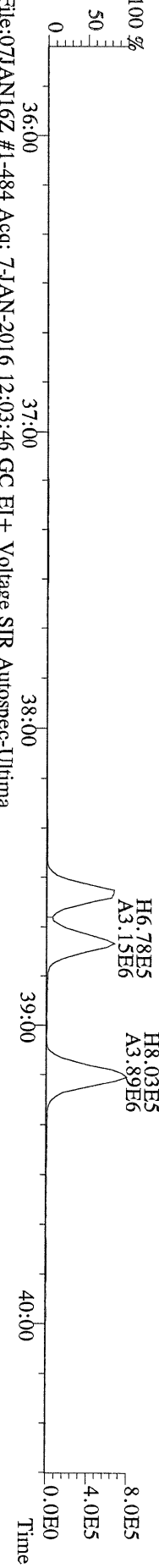
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391.8127 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010716Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



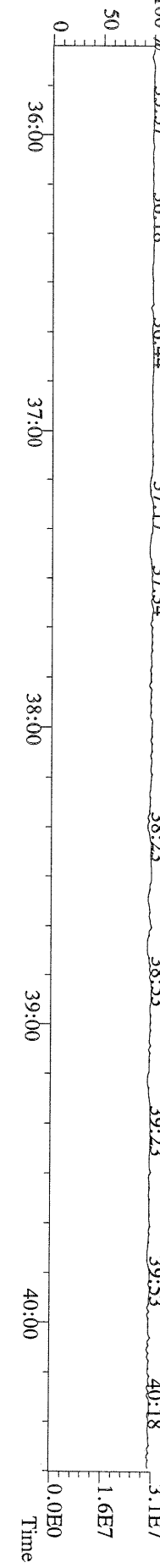
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401.8559 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010716Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



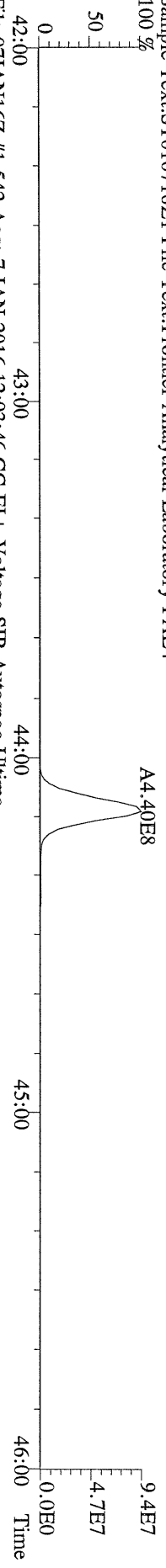
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403.8530 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010716Z1 File Text:Frontier Analytical Laboratory FAL4



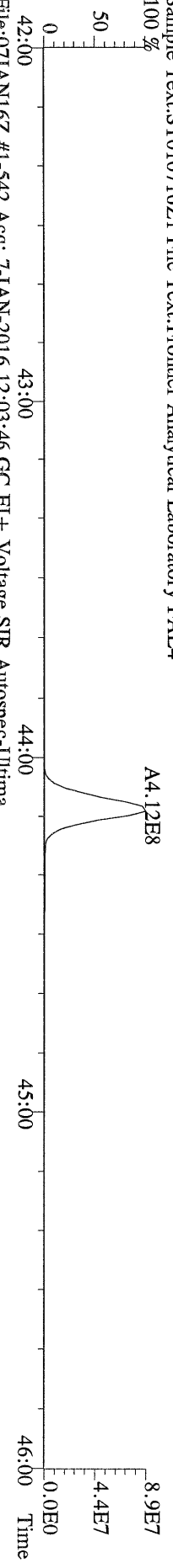
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380.9760 F:3 Exp:PCDD
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100 %



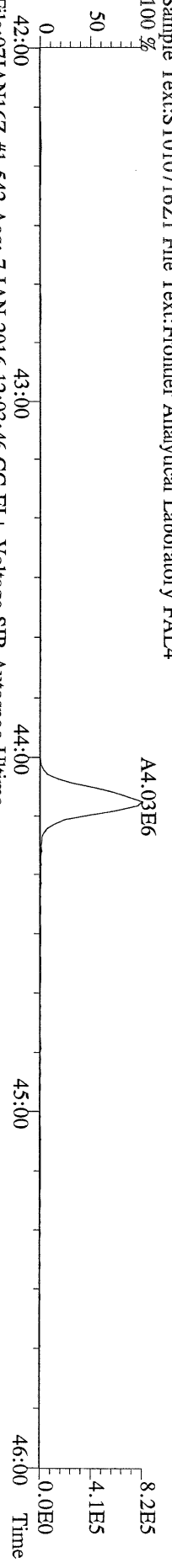
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423.7767 F:4 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



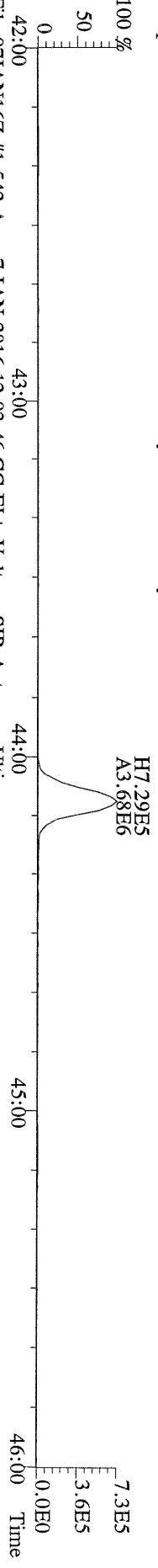
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425.7737 F:4 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



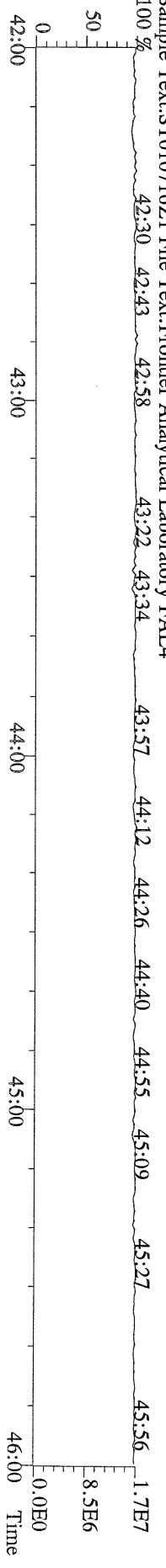
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435.8169 F:4 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Z1 File Text:Frontier Analytical Laboratory FAL4
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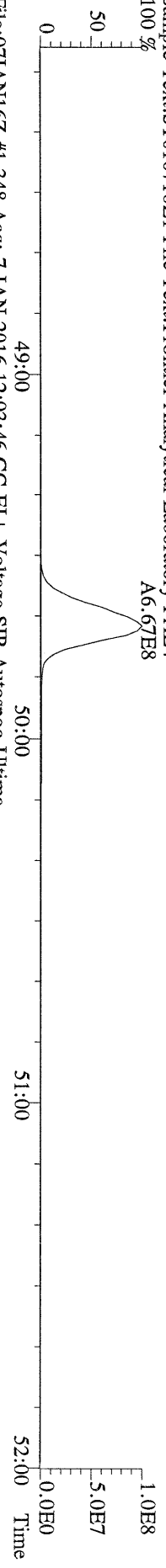
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437.8140 F:4 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
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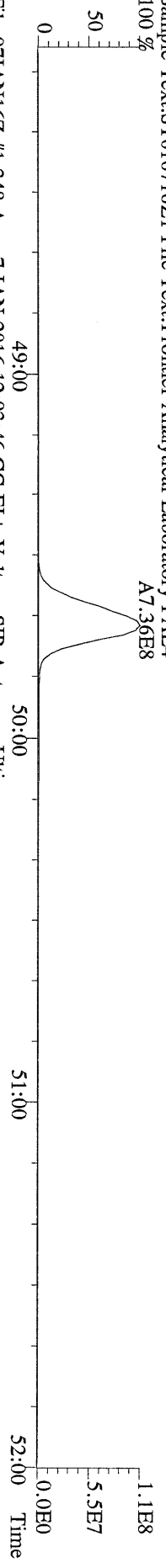
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430.9728 F:4 Exp:PCDD
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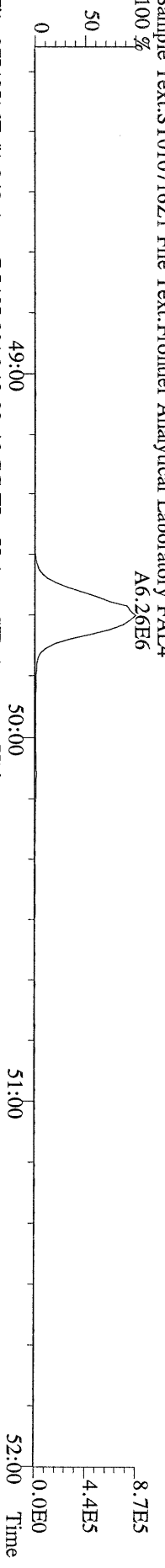
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457.7377 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



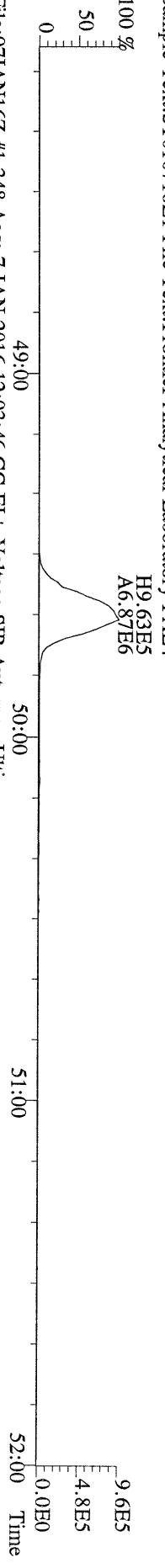
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459.7348 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



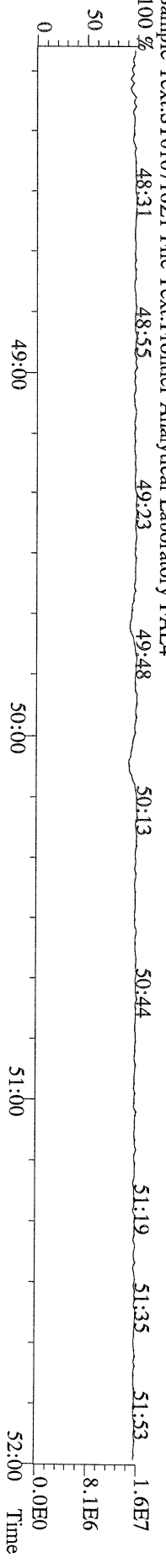
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Sample Text:ST010716Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



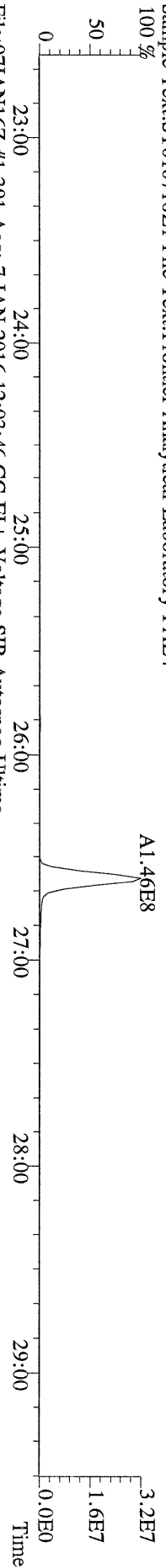
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471.7750 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
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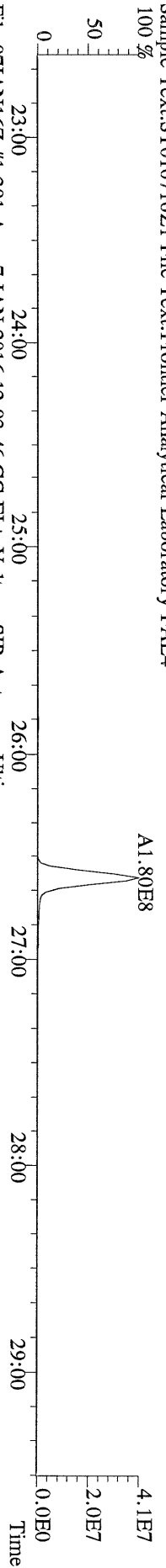
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454.9728 F:5 Exp:PCDD
Sample Text:ST010716Z1 File Text:Frontier Analytical Laboratory FAL4



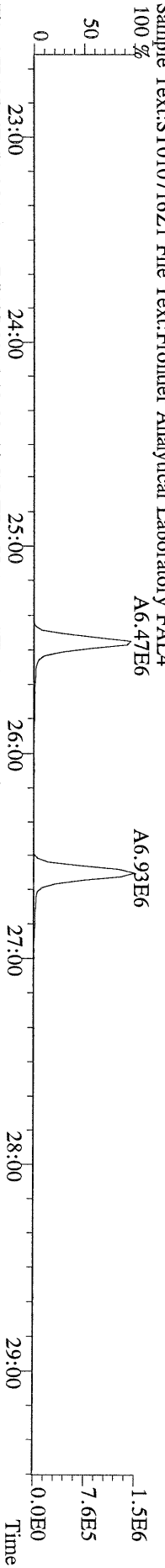
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303.9016 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
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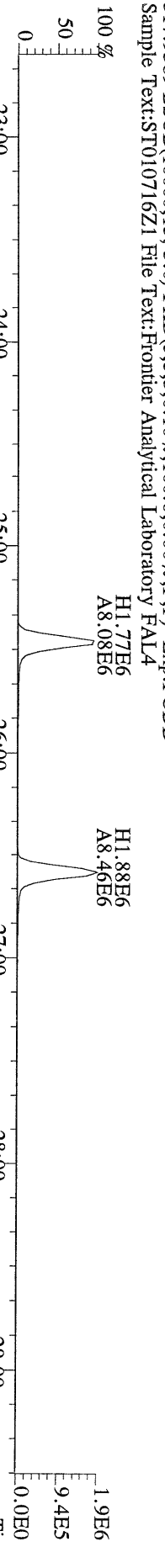
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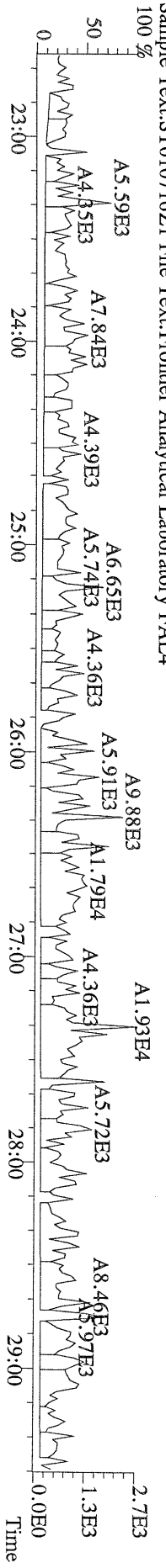
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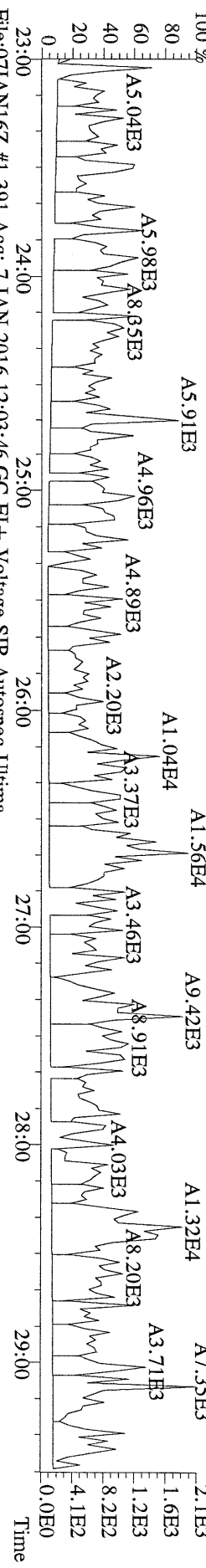
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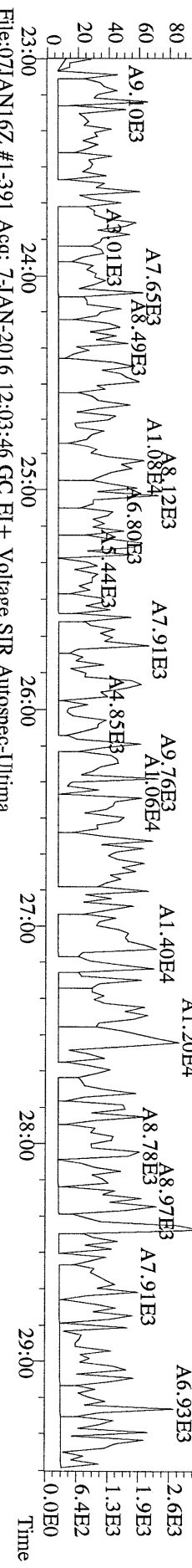
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375.8364 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
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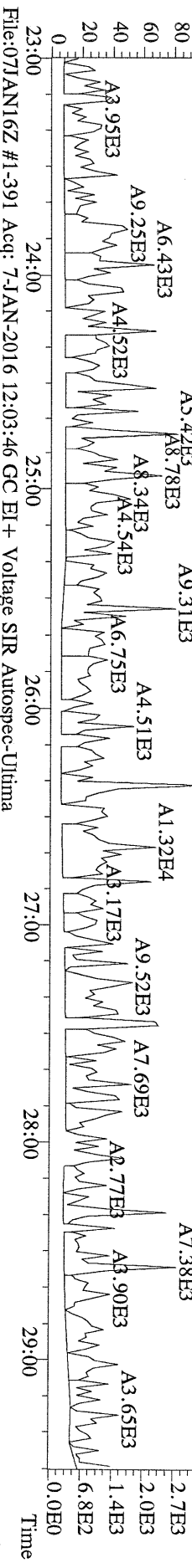
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 339.8597 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
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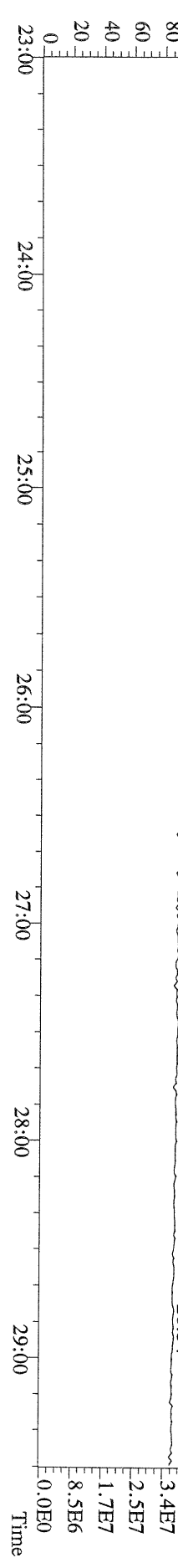
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 341.8568 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010716Z1 File Text:Frontier Analytical Laboratory FAL4



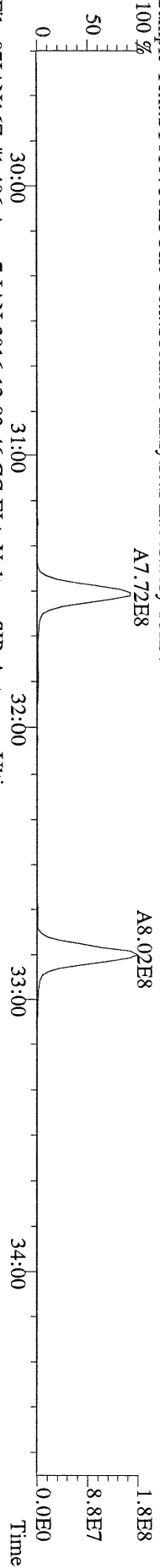
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 409.7974 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010716Z1 File Text:Frontier Analytical Laboratory FAL4



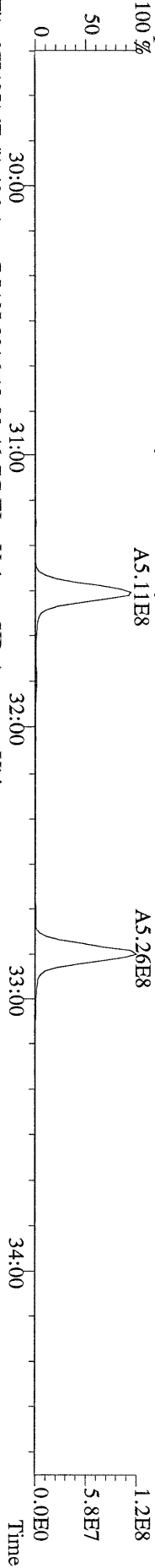
File:07JAN16Z #1-391 Acq: 7-JAN-2016 12:03:46 GC EI+ Voltage SIR Autospec-Ultima
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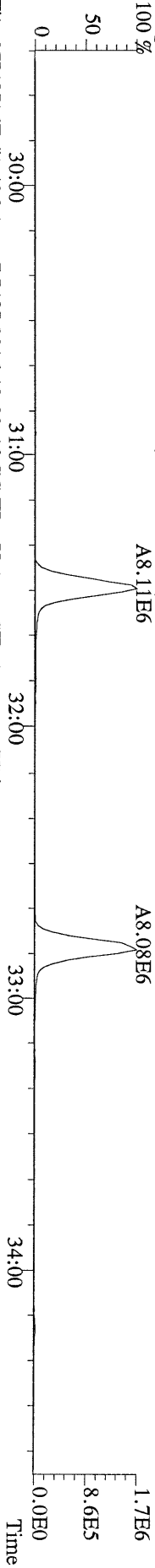
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Sample Text:STO10716Z1 File Text:Frontier Analytical Laboratory FAL4



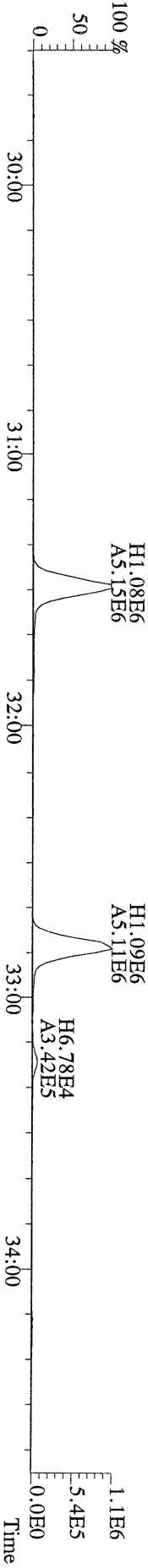
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341.8568 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%) F,F) Exp:PCDD
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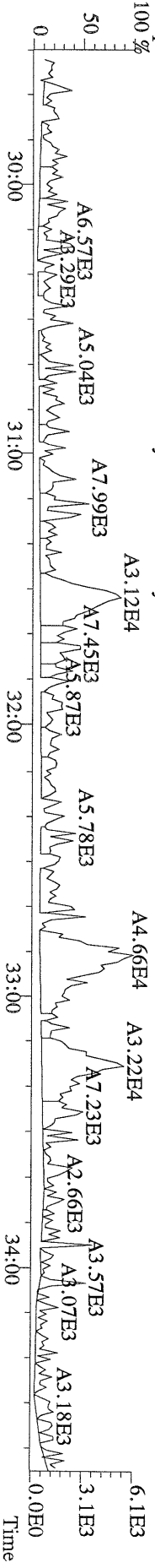
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351.9000 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%) F,F) Exp:PCDD
Sample Text:STO10716Z1 File Text:Frontier Analytical Laboratory FAL4



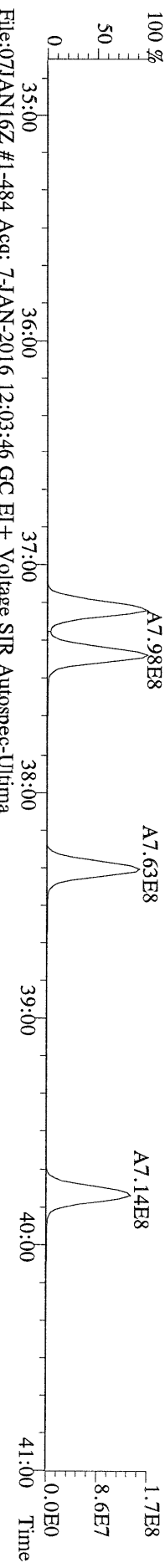
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353.8970 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%) F,F) Exp:PCDD
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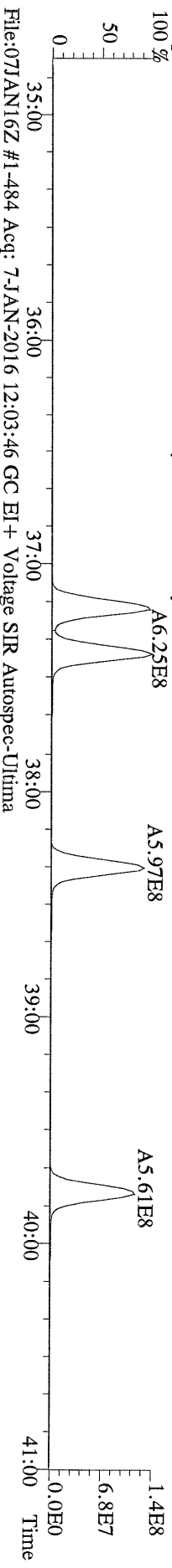
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409.7974 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%) F,F) Exp:PCDD
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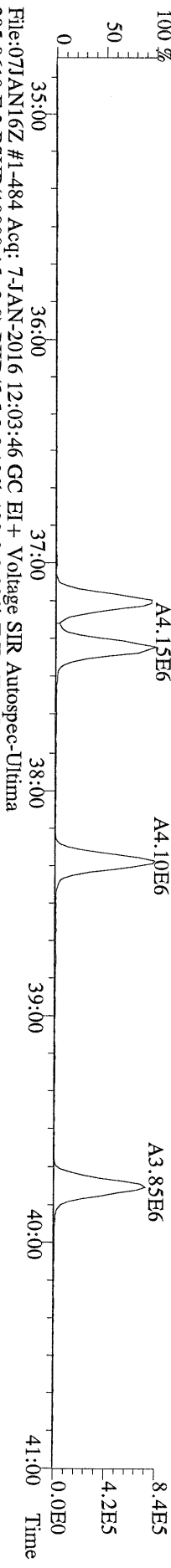
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373.8207 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
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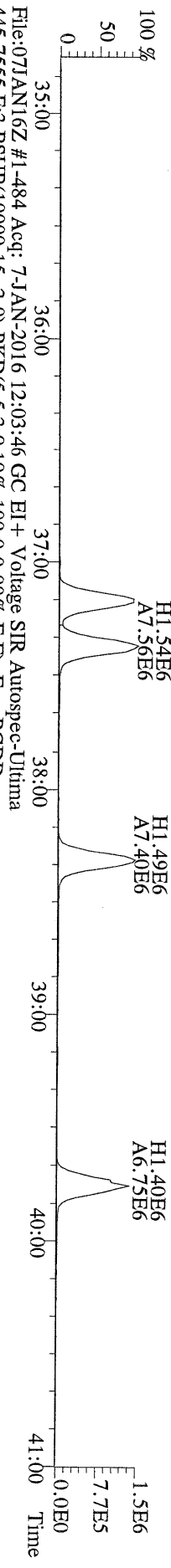
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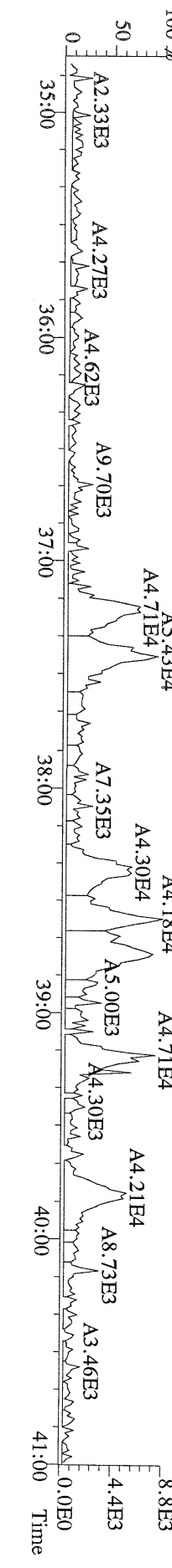
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383.8639 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
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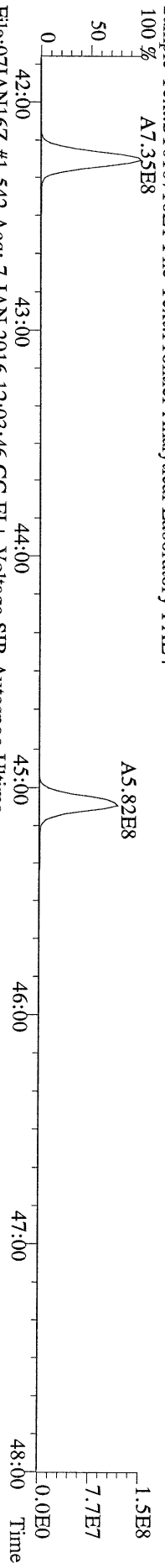
File:07JAN16Z #1-484 Acq: 7-JAN-2016 12:03:46 GC EI+ Voltage SIR Autospec-Ultima
385.8610 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Z1 File Text:Frontier Analytical Laboratory FAL4



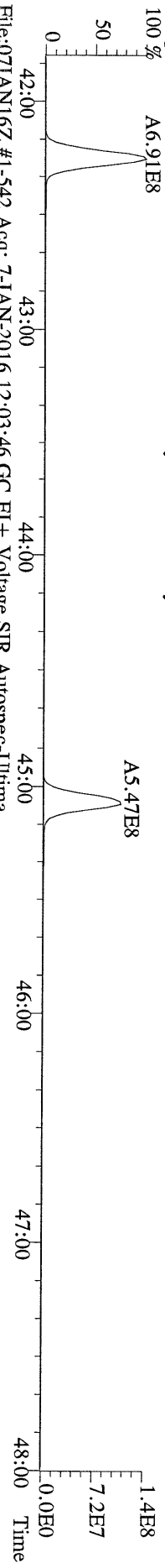
File:07JAN16Z #1-484 Acq: 7-JAN-2016 12:03:46 GC EI+ Voltage SIR Autospec-Ultima
445.7555 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Z1 File Text:Frontier Analytical Laboratory FAL4



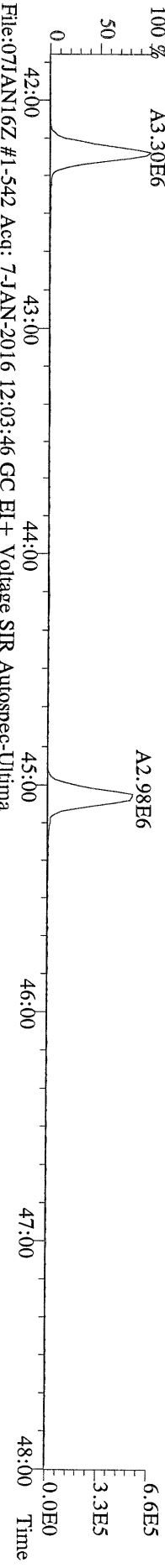
File:07JAN16Z #1-542 Acq: 7-JAN-2016 12:03:46 GC EI+ Voltage SIR Autospec-Ultima
407.7818 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Z1 File Text:Frontier Analytical Laboratory FAL4
100 % A7.35E8



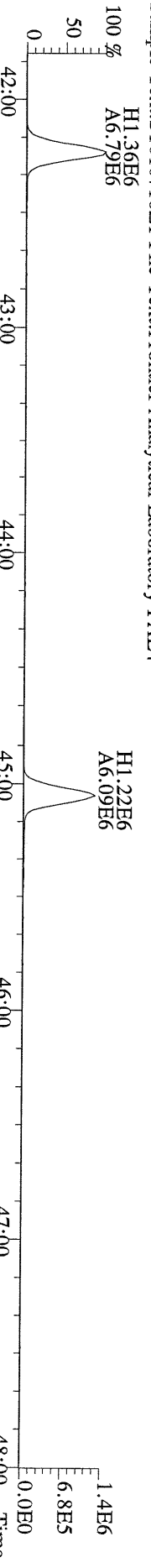
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409.7788 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Z1 File Text:Frontier Analytical Laboratory FAL4
100 % A6.91E8



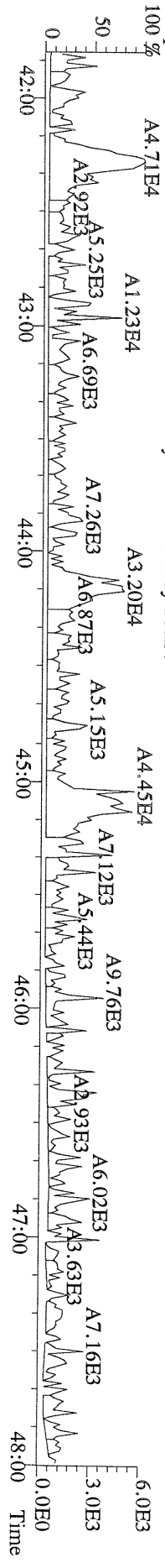
File:07JAN16Z #1-542 Acq: 7-JAN-2016 12:03:46 GC EI+ Voltage SIR Autospec-Ultima
417.8253 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Z1 File Text:Frontier Analytical Laboratory FAL4
100 % A3.30E6



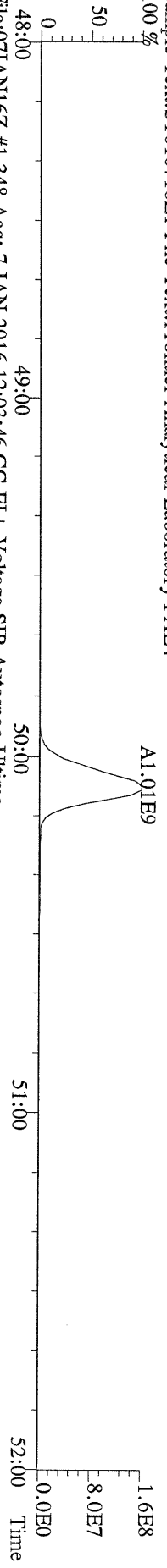
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419.8220 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Z1 File Text:Frontier Analytical Laboratory FAL4



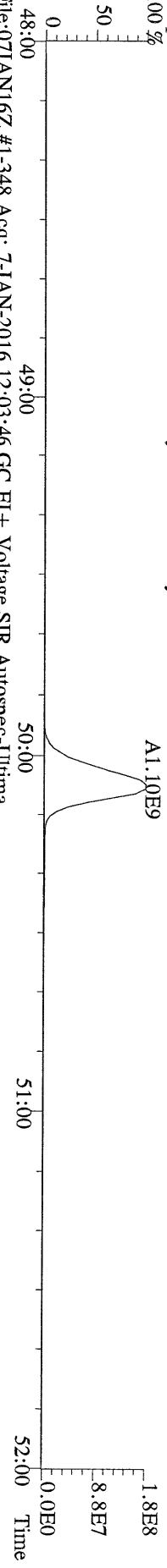
File:07JAN16Z #1-542 Acq: 7-JAN-2016 12:03:46 GC EI+ Voltage SIR Autospec-Ultima
479.7165 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Z1 File Text:Frontier Analytical Laboratory FAL4
100 % A4.71E4



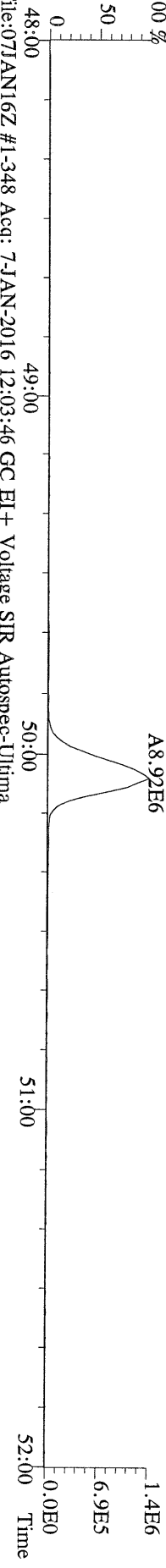
File:07JAN16Z #1-348 Acq: 7-JAN-2016 12:03:46 GC EI+ Voltage SIR Autospec-Ultima
441.7428 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



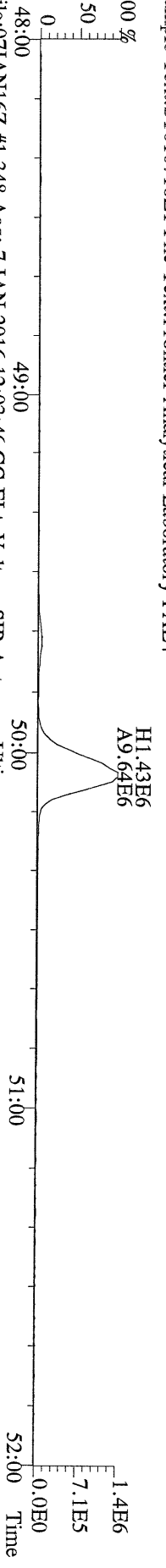
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443.7398 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



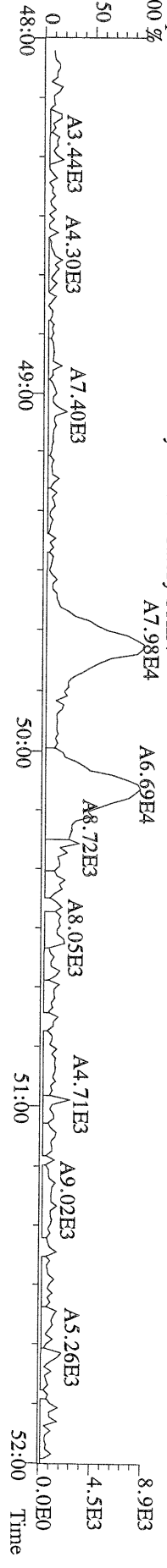
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453.7831 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Z1 File Text:Frontier Analytical Laboratory FAL4
100 %

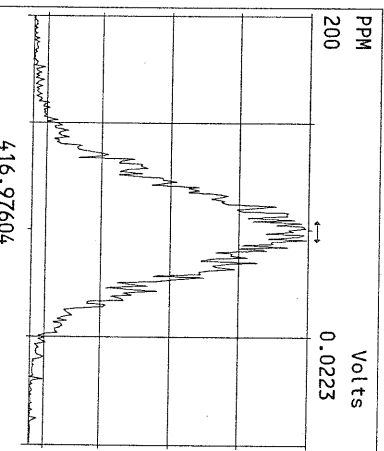
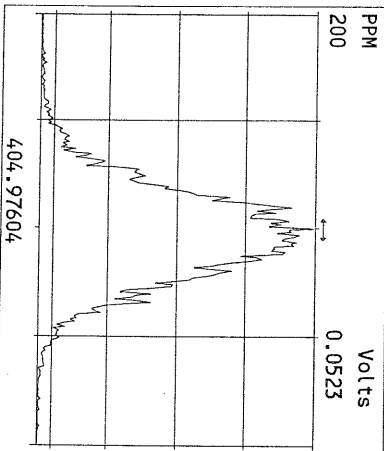
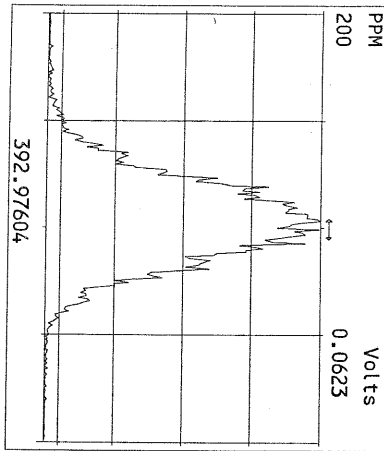
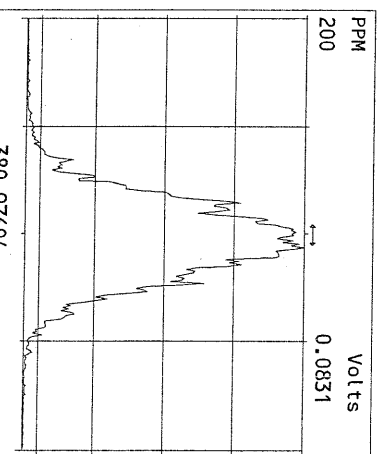
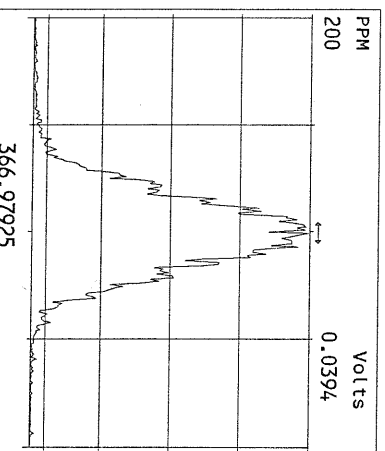
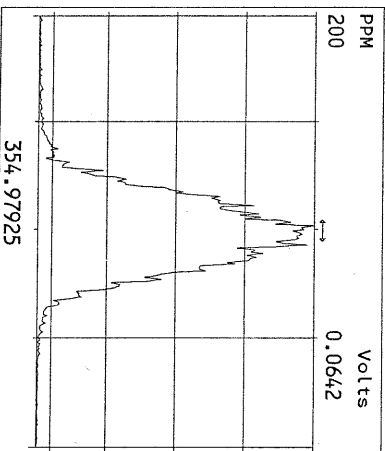
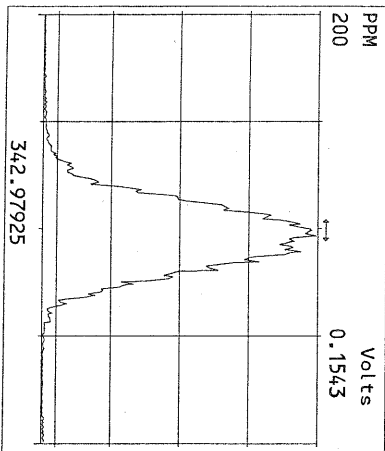
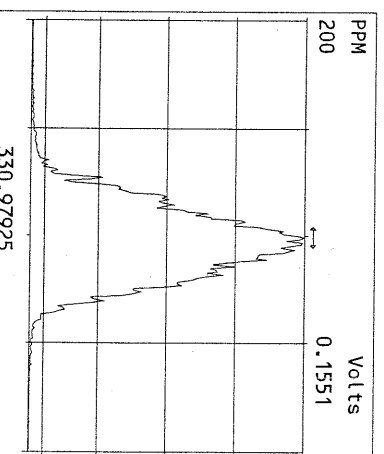
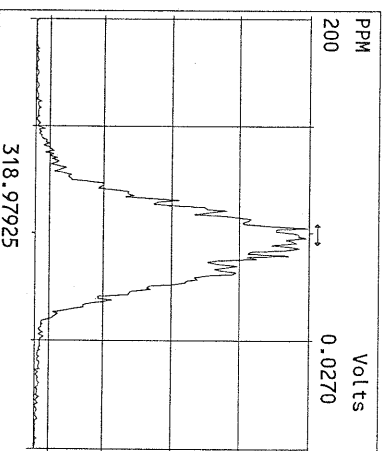
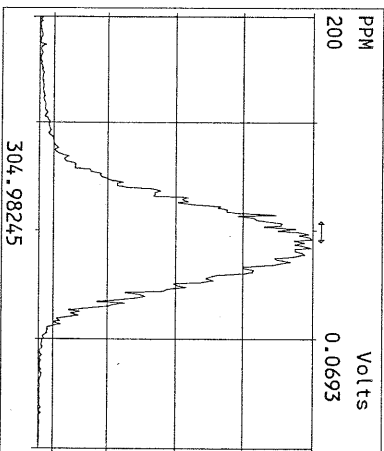
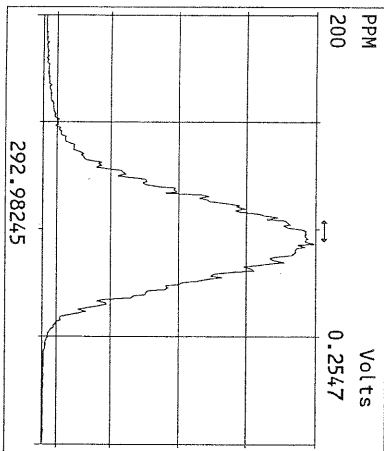


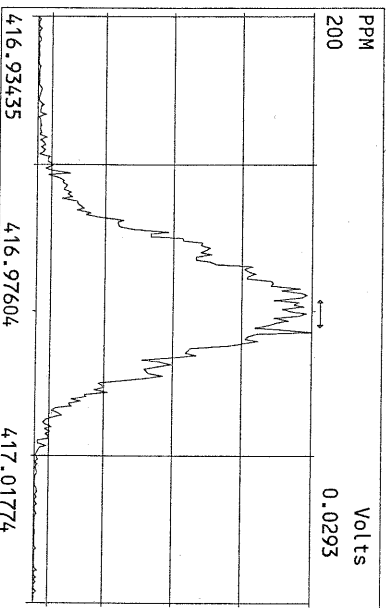
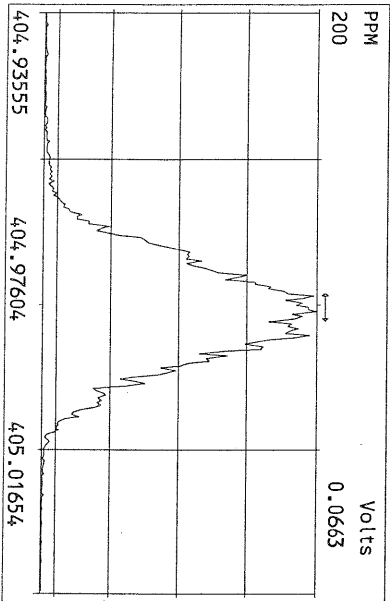
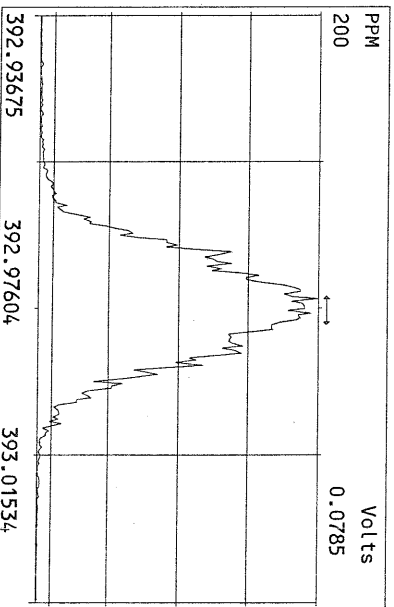
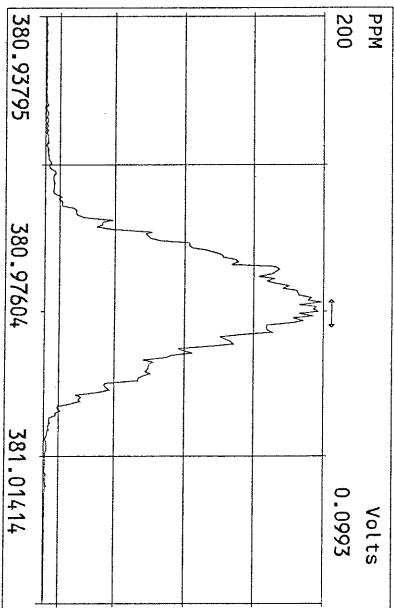
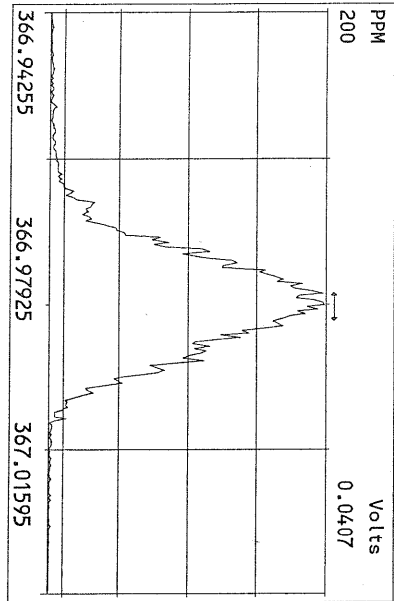
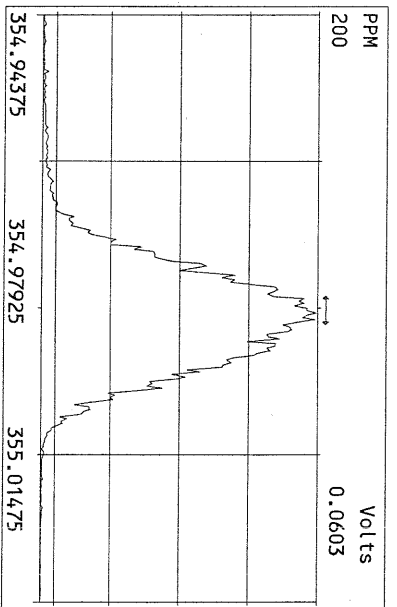
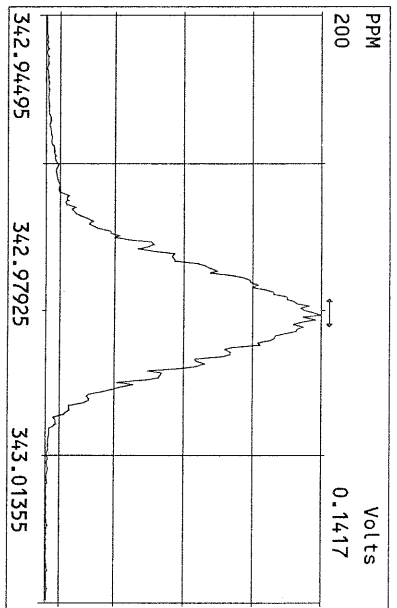
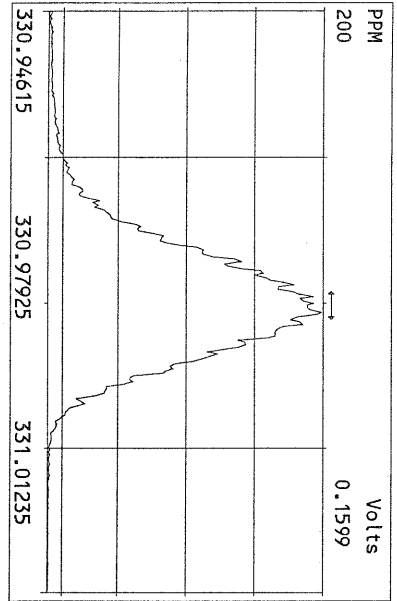
File:07JAN16Z #1-348 Acq: 7-JAN-2016 12:03:46 GC EI+ Voltage SIR Autospec-Ultima
455.7801 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Z1 File Text:Frontier Analytical Laboratory FAL4

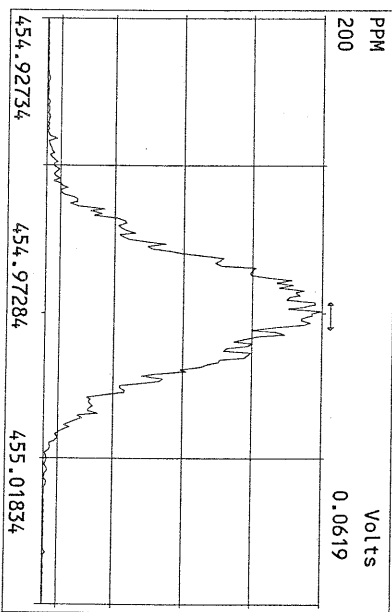
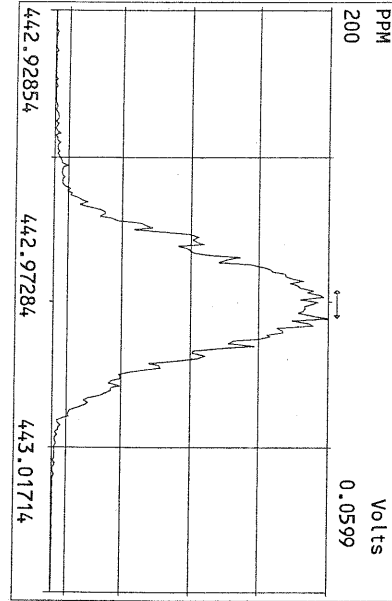
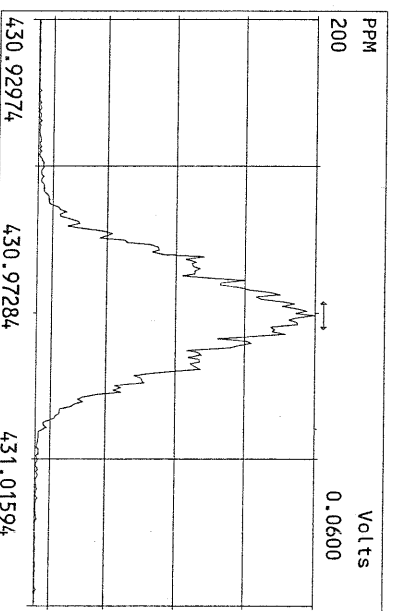
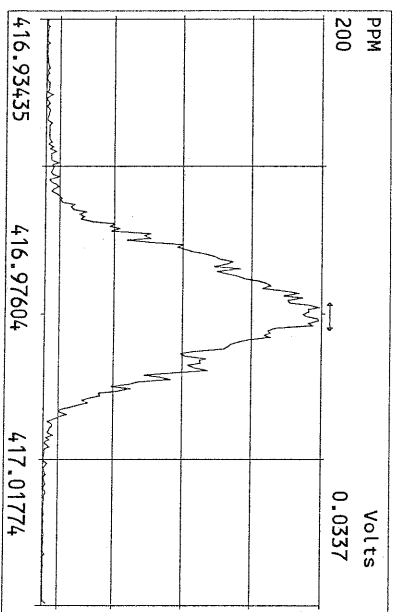
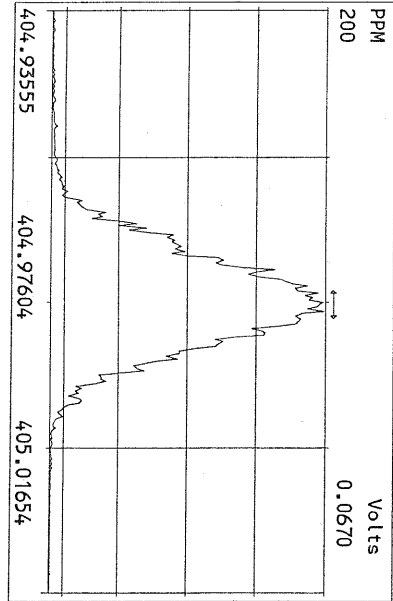
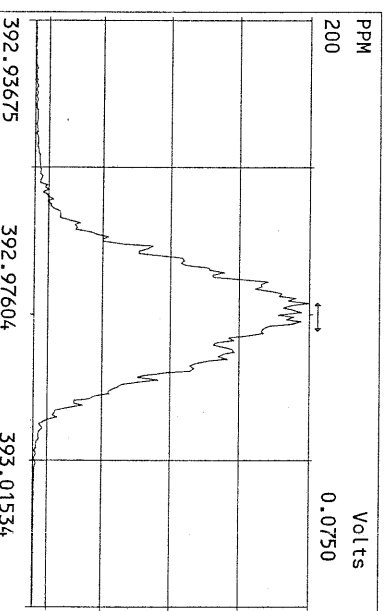
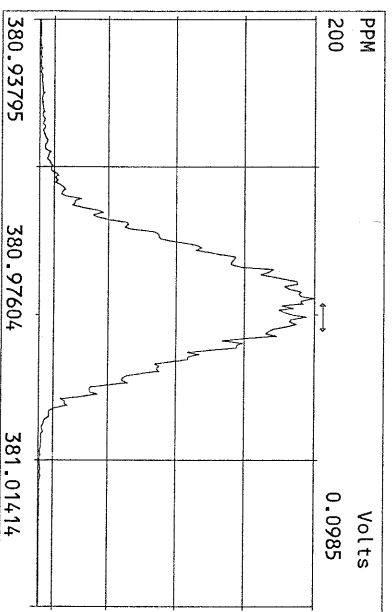
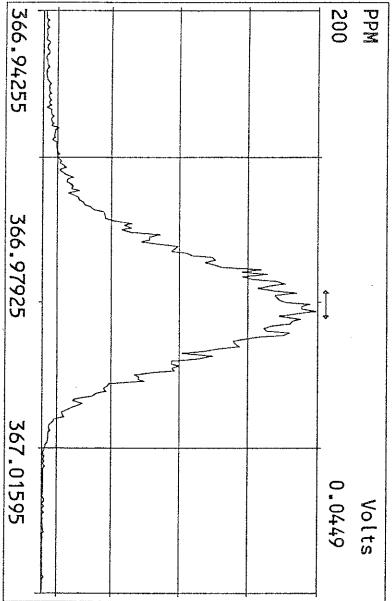


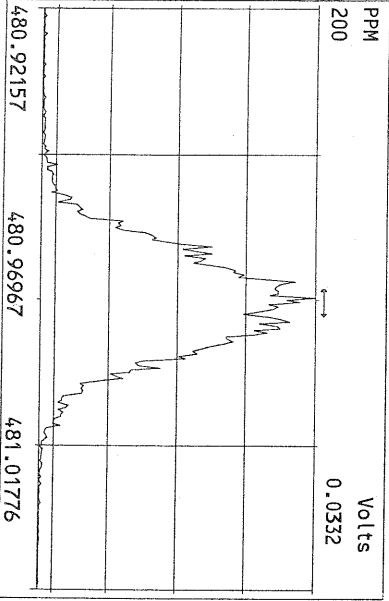
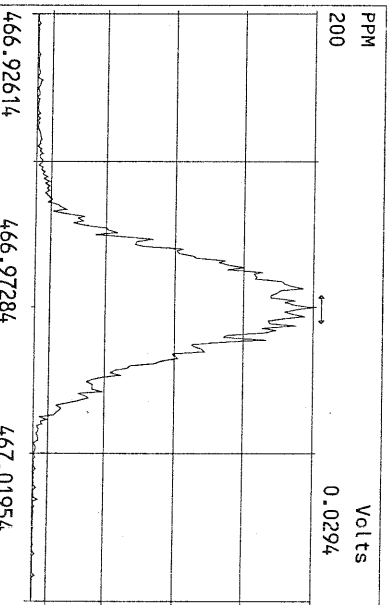
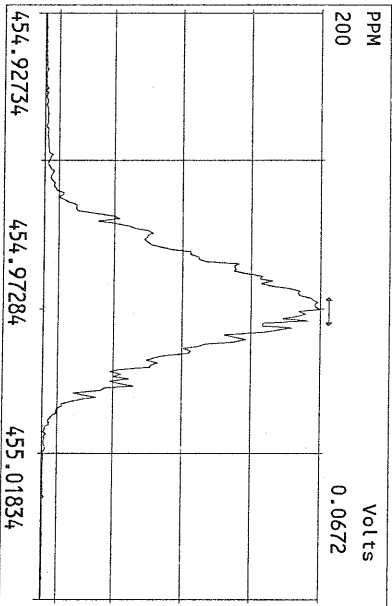
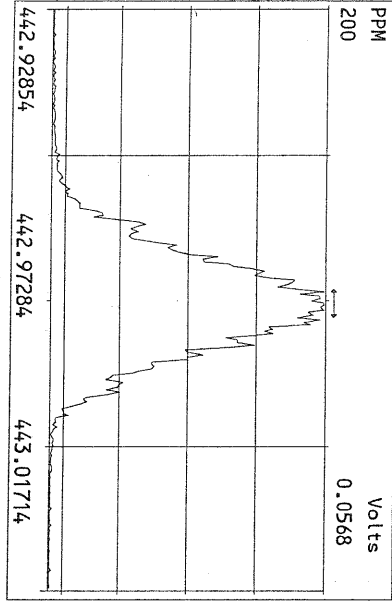
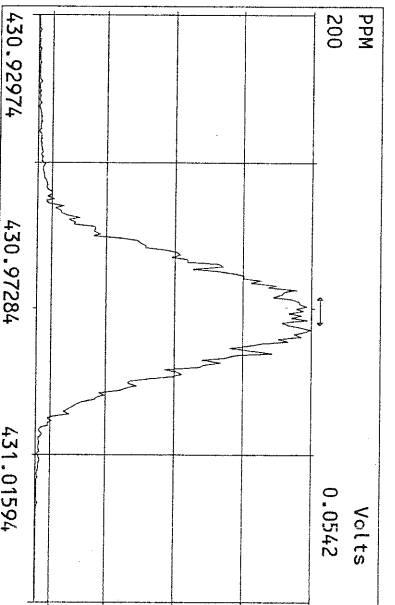
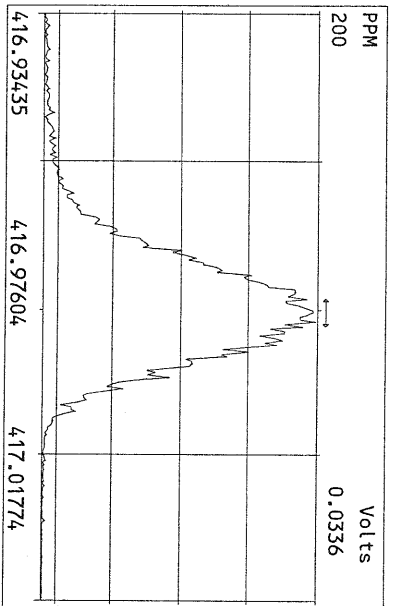
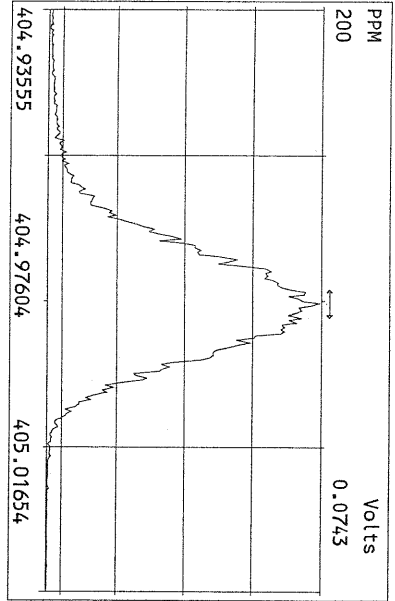
File:07JAN16Z #1-348 Acq: 7-JAN-2016 12:03:46 GC EI+ Voltage SIR Autospec-Ultima
513.6775 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Z1 File Text:Frontier Analytical Laboratory FAL4
100 %

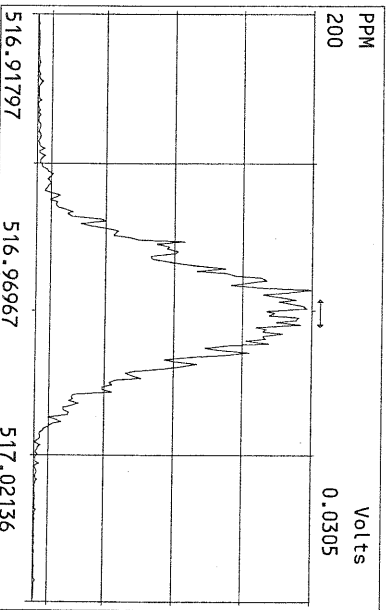
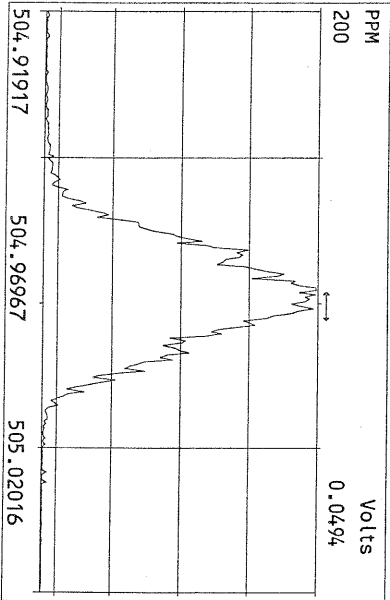
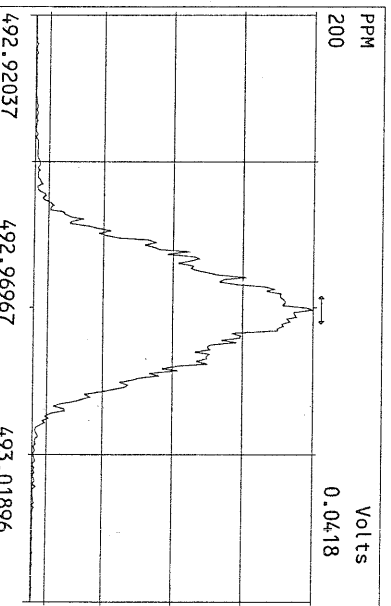
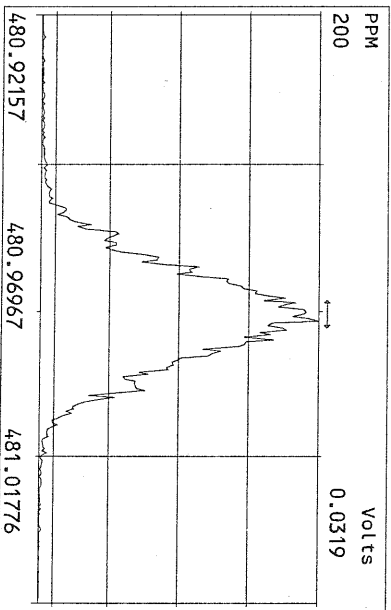
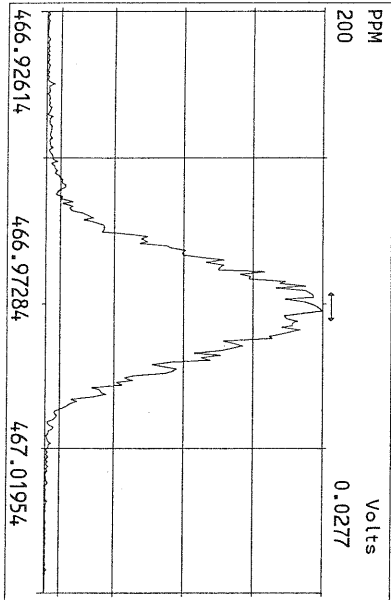
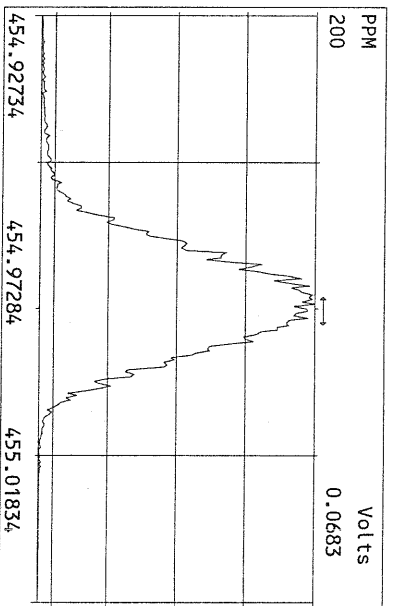
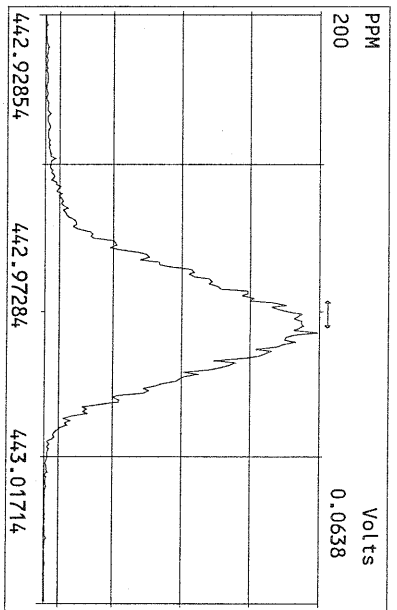
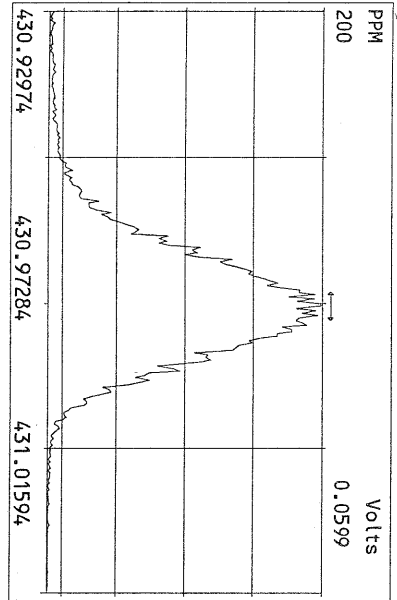




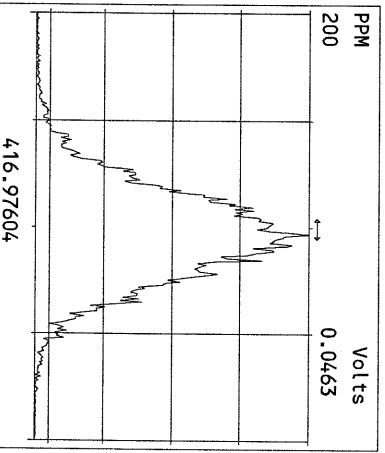
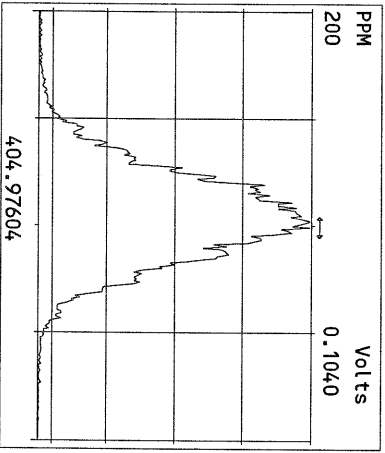
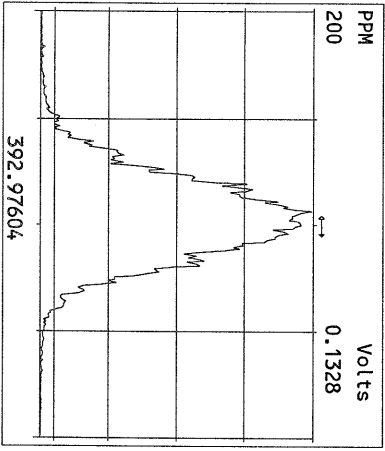
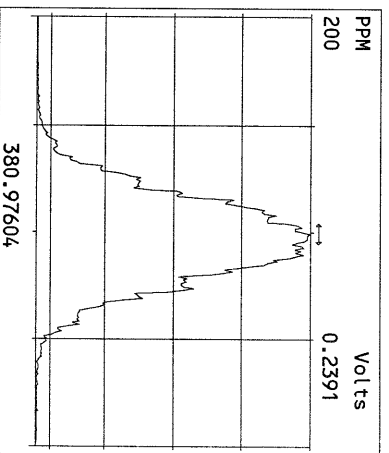
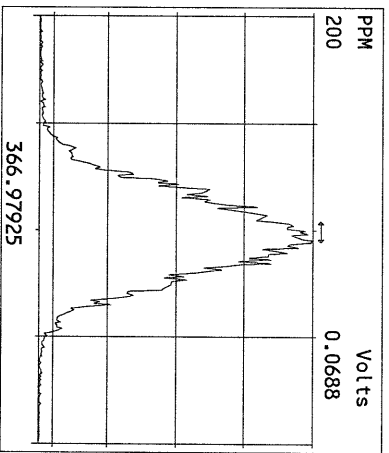
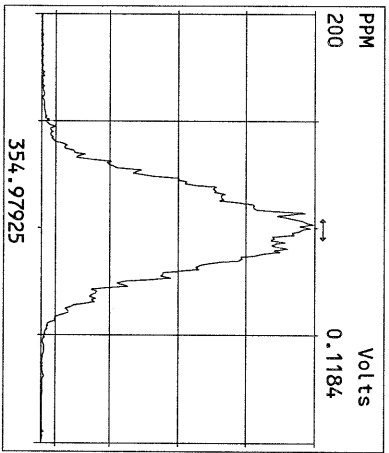
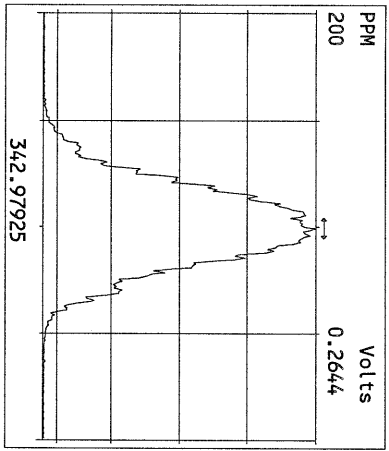
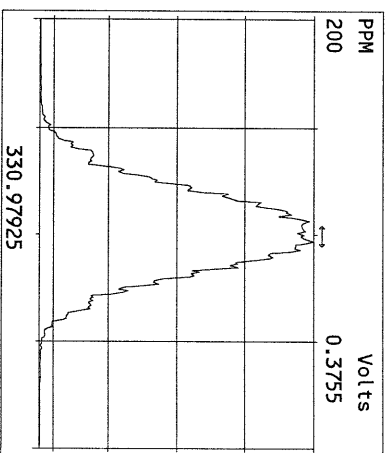
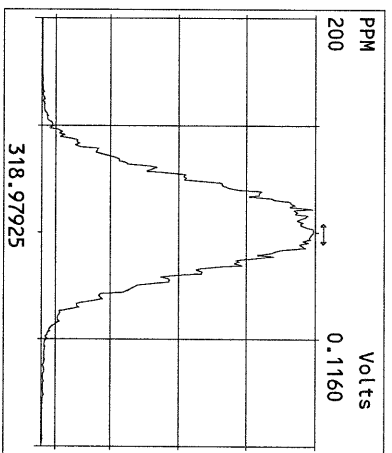
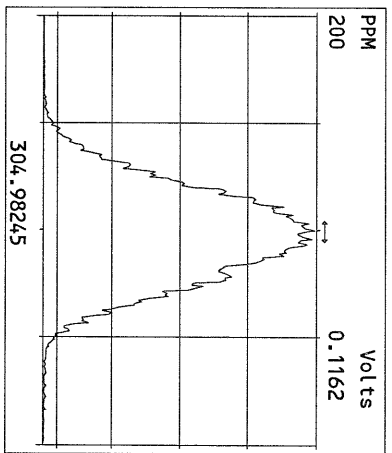
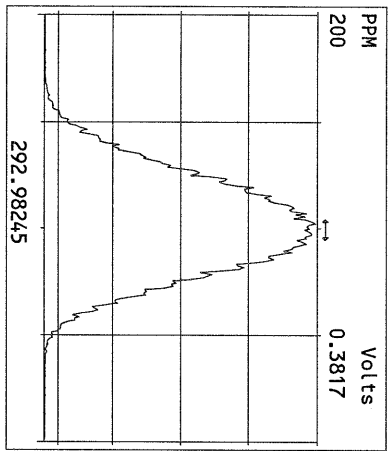




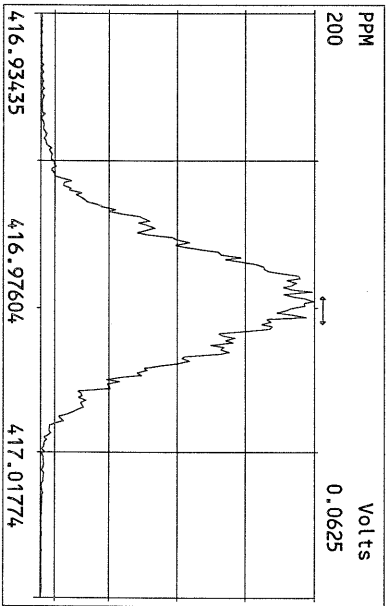
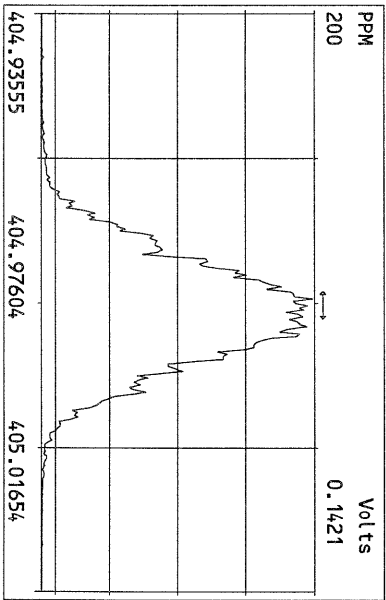
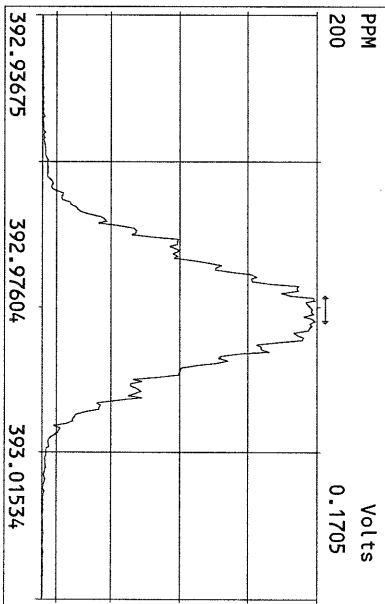
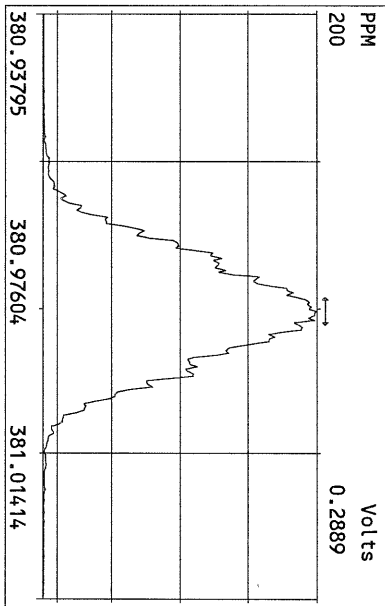
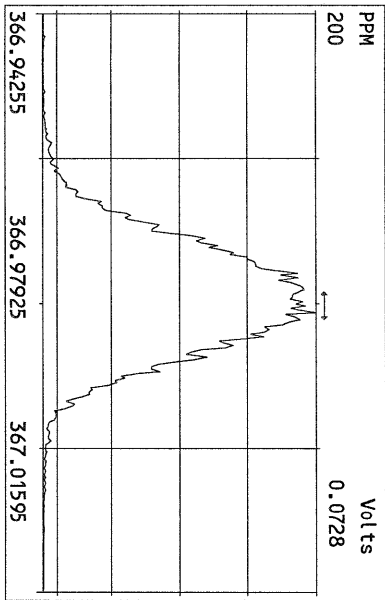
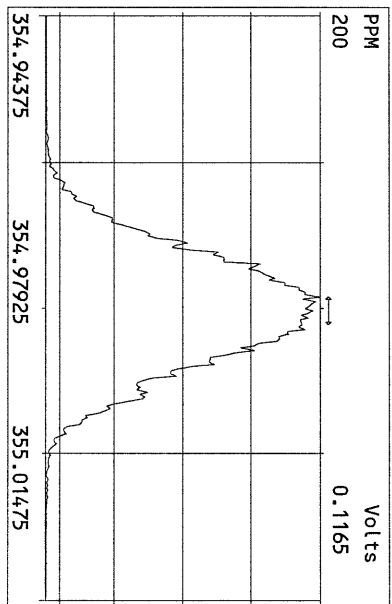
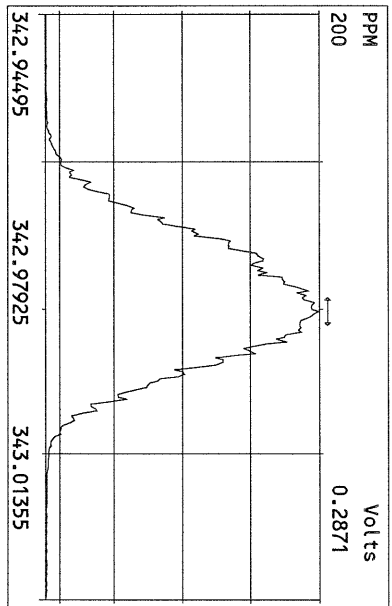
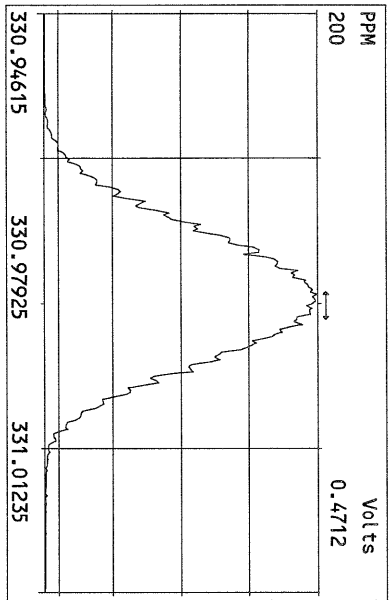


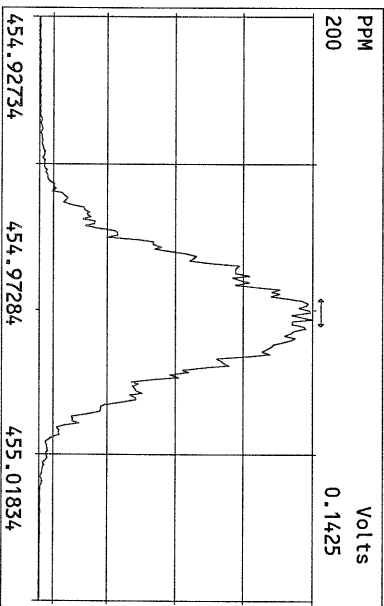
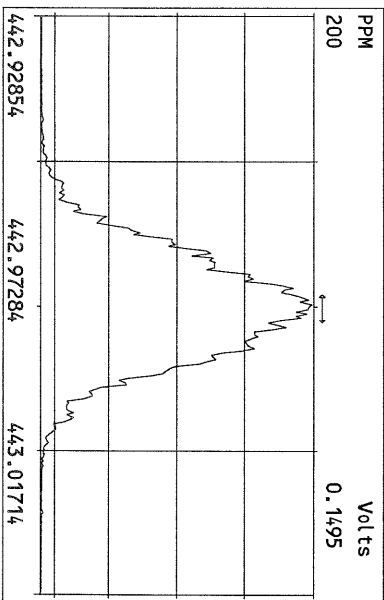
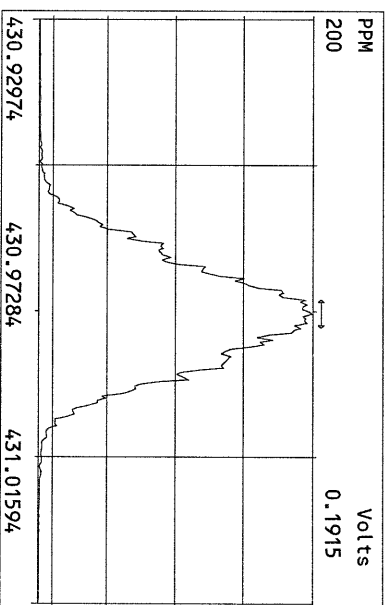
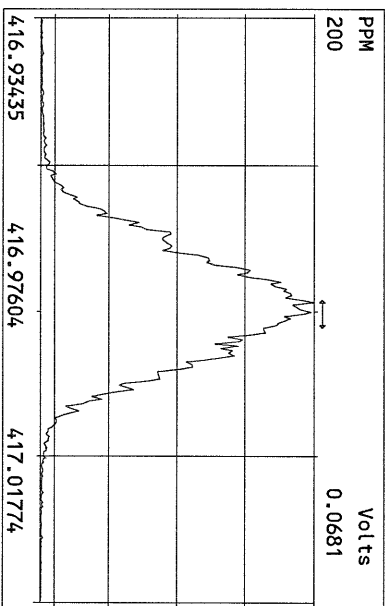
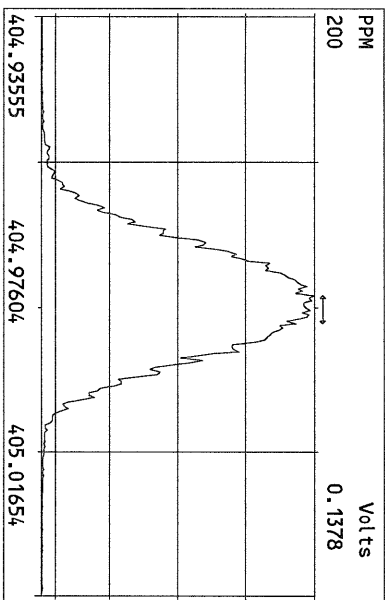
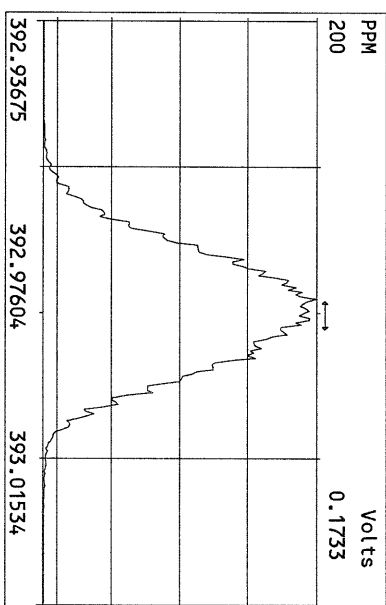
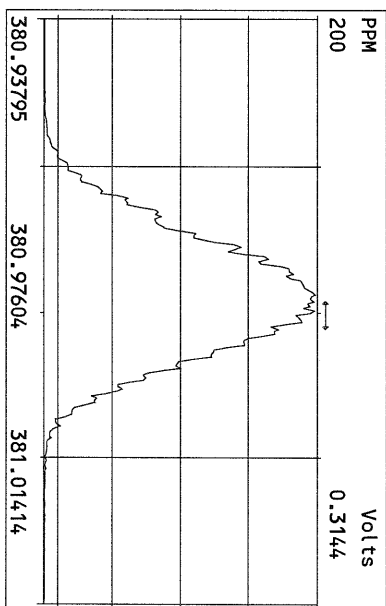
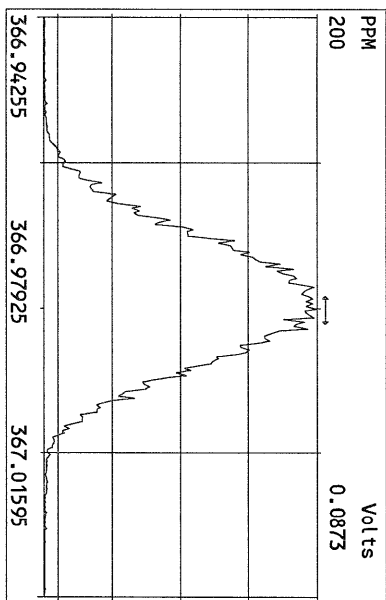


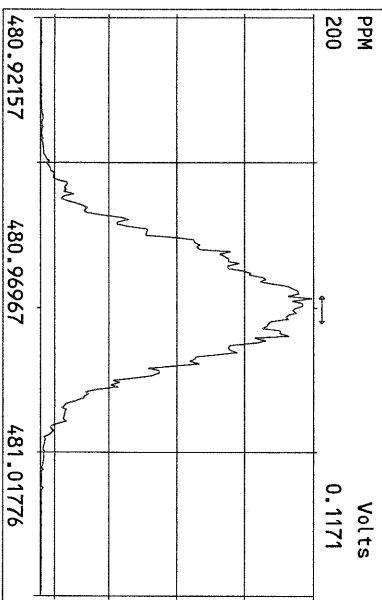
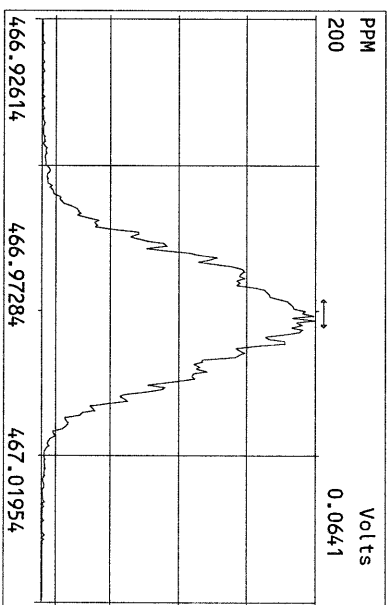
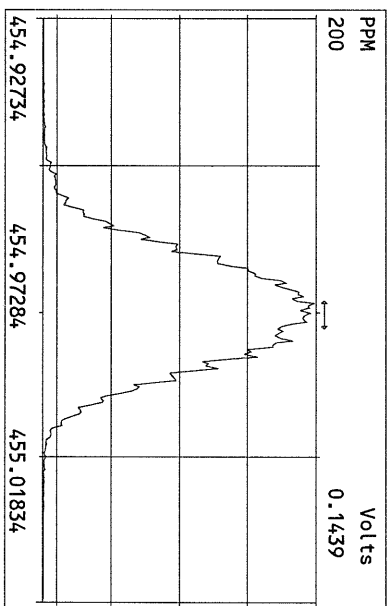
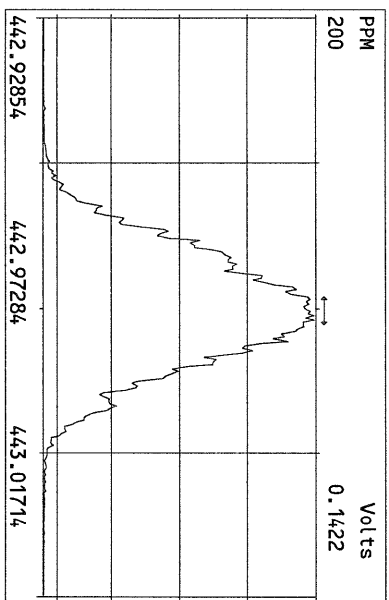
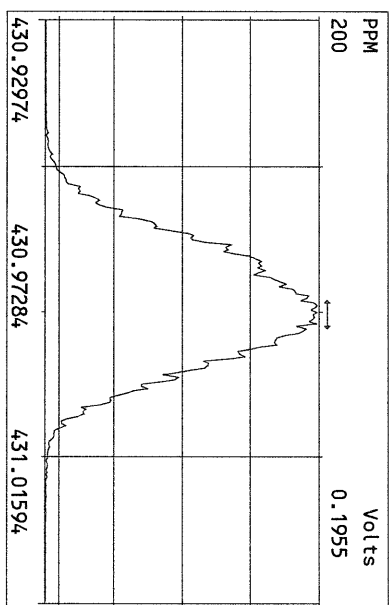
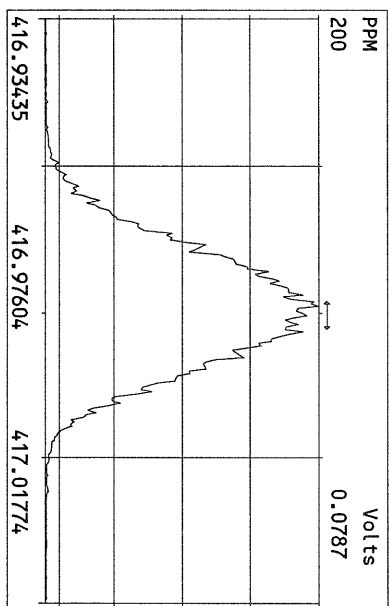
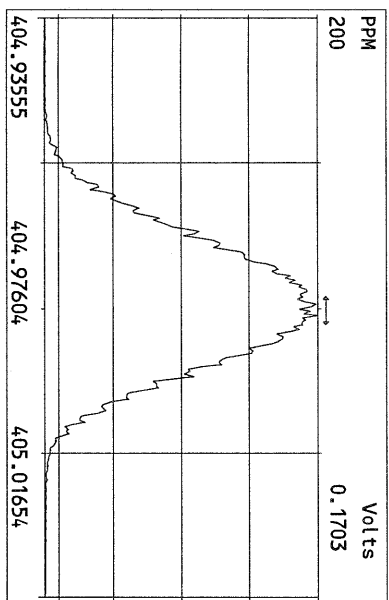
Peak Locate Examination: 7-JAN-2016:13:12 File:07JAN16Z_RES_CHECK
Experiment:PPDD Function:1 Reference:PFK

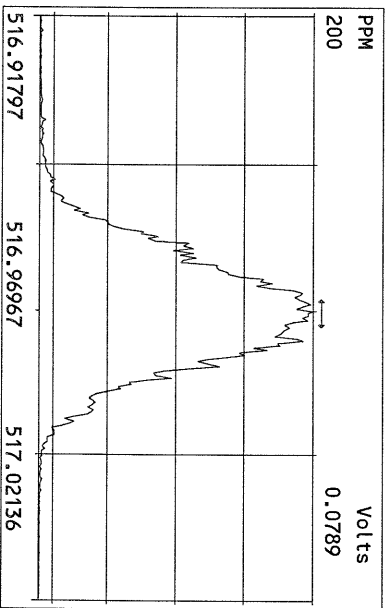
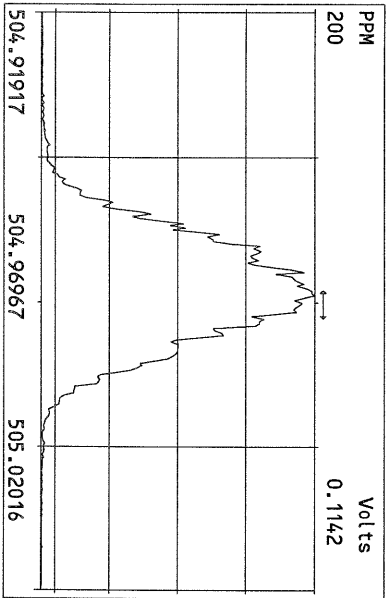
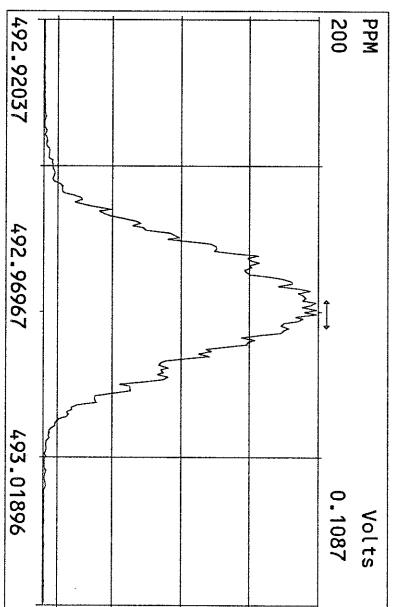
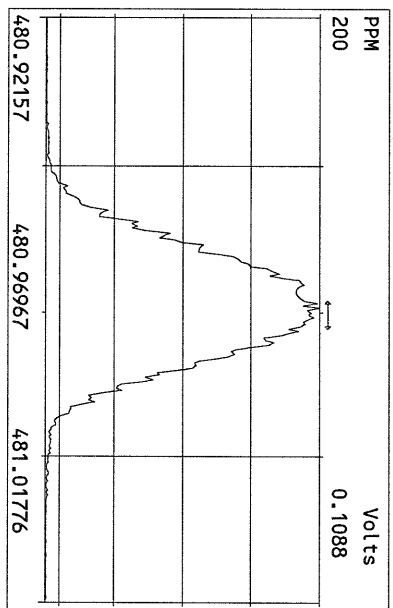
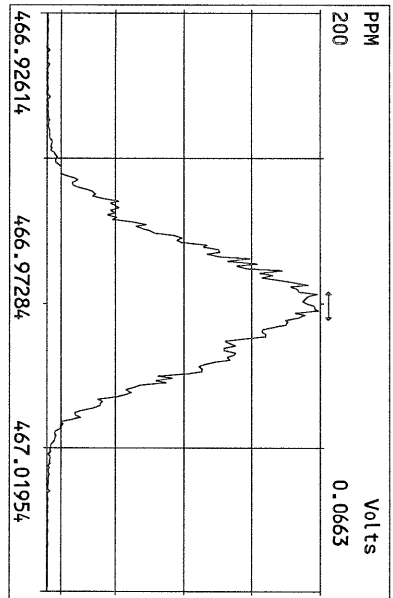
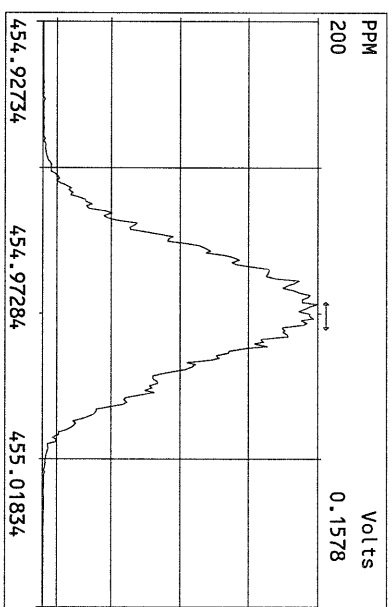
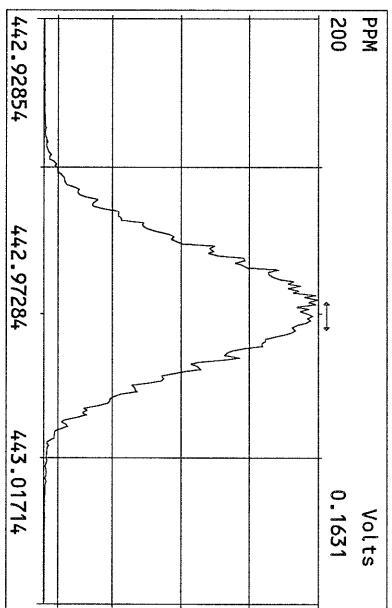
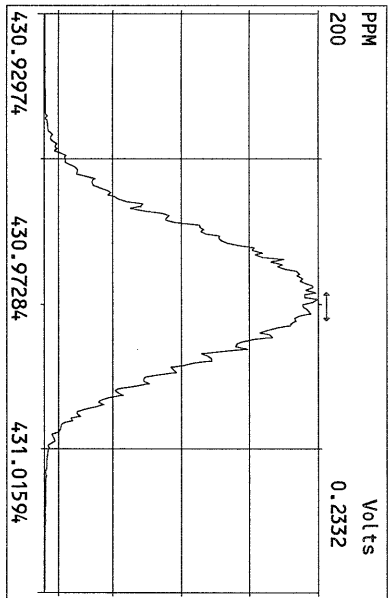


Peak Locate Examination: 7-JAN-2016:13:12 File:07JAN16Z_RES_CHECK
 Experiment:PCDD Function:2 Reference:PFK









USEPA - ITD

FORM 4A
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: Frontier Analytical Laboratory Episode No.:

Contract No.: SAS No.:

Initial Calibration Date: 12/29/15

Instrument ID: FAL4

GC Column ID: DB5

VER Data Filename: 07JAN16Y Sam:1

Analysis Date: 7-JAN-16 15:34:29

NATIVE ANALYTES	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	ACCEPT	CONC. FOUND	CONC. RANGE (ng/mL) (3)
2,3,7,8-TCDD	M/M+2	0.80	0.65-0.89	y	10.6	7.80 - 12.9
1,2,3,7,8-PeCDD	M+2/M+4	1.59	1.32-1.78	y	53.5	39.0 - 65.0
1,2,3,4,7,8-HxCDD	M+2/M+4	1.25	1.05-1.43	y	51.5	39.0 - 64.0
1,2,3,6,7,8-HxCDD	M+2/M+4	1.26	1.05-1.43	y	50.6	39.0 - 64.0
1,2,3,7,8,9-HxCDD	M+2/M+4	1.24	1.05-1.43	y	50.0	41.0 - 61.0
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.05	0.88-1.20	y	47.5	43.0 - 58.0
OCDD	M+2/M+4	0.90	0.76-1.02	y	100	79.0 - 126
2,3,7,8-TCDF	M/M+2	0.79	0.65-0.89	y	9.61	8.40 - 12.0
1,2,3,7,8-PeCDF	M+2/M+4	1.52	1.32-1.78	y	48.3	41.0 - 60.0
2,3,4,7,8-PeCDF	M+2/M+4	1.52	1.32-1.78	y	47.3	41.0 - 60.0
1,2,3,4,7,8-HxCDF	M+2/M+4	1.24	1.05-1.43	y	48.7	45.0 - 56.0
1,2,3,6,7,8-HxCDF	M+2/M+4	1.25	1.05-1.43	y	48.5	44.0 - 57.0
2,3,4,6,7,8-HxCDF	M+2/M+4	1.25	1.05-1.43	y	49.3	44.0 - 57.0
1,2,3,7,8,9-HxCDF	M+2/M+4	1.27	1.05-1.43	y	49.4	45.0 - 56.0
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.07	0.88-1.20	y	50.0	45.0 - 55.0
1,2,3,4,7,8,9-HpCDF	M+2/M+4	1.05	0.88-1.20	y	51.0	43.0 - 58.0
OCDF	M+2/M+4	0.92	0.76-1.02	y	99.4	63.0 - 159

(1) See Table 8, Method 1613, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613.

(3) Contract-required concentration range as specified in Table 6, Method 1613.

Analyst: *J*

Date: 1/8/16

USEPA - ITD

FORM 4B
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: Frontier Analytical Laboratory

Episode No.:

Contract No.:

SAS No.:

Initial Calibration Date: 12/29/15

Instrument ID: FAL4

GC Column ID: DB5

VER Data Filename: 07JAN16Y Sam:1

Analysis Date: 7-JAN-16 15:34:29

LABELLED COMPOUNDS	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	ACCEPT	CONC. FOUND	CONC. RANGE (ng/mL) (3)
13C-2,3,7,8-TCDD	M/M+2	0.78	0.65-0.89	y	95.8	82.0 - 121✓
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.60	1.32-1.78	y	89.3	62.0 - 160✓
13C-1,2,3,4,7,8-HxCDD	M+2/M+4	1.29	1.05-1.43	y	102	85.0 - 117✓
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.28	1.05-1.43	y	107	85.0 - 118✓
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.08	0.88-1.20	y	105	72.0 - 138✓
13C-OCDD	M+2/M+4	0.92	0.76-1.02	y	203	96.0 - 415✓
13C-2,3,7,8-TCDF	M/M+2	0.80	0.65-0.89	y	98.6	71.0 - 140✓
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.60	1.32-1.78	y	95.2	76.0 - 130✓
13C-2,3,4,7,8-PeCDF	M+2/M+4	1.58	1.32-1.78	y	98.7	77.0 - 130✓
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.55	0.43-0.59	y	106	76.0 - 131✓
13C-1,2,3,6,7,8-HxCDF	M/M+2	0.53	0.43-0.59	y	107	70.0 - 143✓
13C-2,3,4,6,7,8-HxCDF	M/M+2	0.53	0.43-0.59	y	107	73.0 - 137✓
13C-1,2,3,7,8,9-HxCDF	M/M+2	0.54	0.43-0.59	y	103	74.0 - 135✓
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.46	0.37-0.51	y	106	78.0 - 129✓
13C-1,2,3,4,7,8,9-HpCDF	M/M+2	0.45	0.37-0.51	y	97.3	77.0 - 129✓
13C-OCDF	M+2/M+4	0.90	0.76-1.02	y	195	96.0 - 415✓
CLEANUP STANDARD (4)						
37Cl-2,3,7,8-TCDD					9.54	7.90 - 12.7✓

(1) See Table 8, Method 1613, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613.

(3) Contract-required concentration range as specified in Table 6, Method 1613.

(4) No ion abundance ratio; report concentration found.

Analyst: 

Date: 1/8/16

USEPA - ITD

FORM 6A

PCDD/PCDF RELATIVE RETENTION TIMES

Lab Name: Frontier Analytical Laboratory

Episode No.:

Contract No.:

SAS No.:

Init. Cal. Date: 12/29/15

Instrument ID: FAL4

GC Column ID: DB5

Analysis Date: 7-JAN-16 15:34:29

CS3 or VER Data Filename: 07JAN16Y

Sam:1

NATIVE ANALYTES	RETENTION TIME REFERENCE	RRT	RRT QC LIMITS (1)
2,3,7,8-TCDD	13C-2,3,7,8-TCDD	1.001	0.999-1.002
2,3,7,8-TCDF	13C-2,3,7,8-TCDF	1.001	0.999-1.003
1,2,3,7,8-PeCDD	13C-1,2,3,7,8-PeCDD	1.000	0.999-1.002
1,2,3,7,8-PeCDF	13C-1,2,3,7,8-PeCDF	1.001	0.999-1.002
2,3,4,7,8-PeCDF	13C-2,3,4,7,8-PeCDF	1.001	0.999-1.002
LABELED COMPOUNDS			
37Cl-2,3,7,8-TCDD	13C-1,2,3,4-TCDD	1.023	0.989-1.052
13C-2,3,7,8-TCDD		1.021	0.976-1.043
13C-2,3,7,8-TCDF		0.994	0.923-1.103
13C-1,2,3,7,8-PeCDD		1.239	1.000-1.567
13C-1,2,3,7,8-PeCDF		1.175	0.923-1.203
13C-2,3,4,7,8-PeCDF		1.225	0.923-1.303


(1) Contract-required limits for Relative Retention Times (RRT) as specified in Table 2, Method 1613.

Analyst: _____

Date: _____

Results: GC Column: DB5 Amount: 1.000 NATO 1989 Tox: 101 WHO 1998 Tox: 127 WHO 2005 Tox: 117

Name	Resp	RA	RT	RRF	Conc	Qual	Fac	Noise-1	Noise-2	DL	Rec	#Hom
2,3,7,8-TCDD	3.52e+06	0.80 y	27:25	1.08	10.6		2.50	-	-	*		
1,2,3,7,8-PeCDD	1.00e+07	1.59 y	33:14	0.90	53.5		2.50	-	-	*		
1,2,3,4,7,8-HxCDD	8.58e+06	1.25 y	38:35	0.98	51.5		2.50	-	-	*		
1,2,3,6,7,8-HxCDD	8.68e+06	1.26 y	38:45	1.00	50.6		2.50	-	-	*		
1,2,3,7,8,9-HxCDD	9.48e+06	1.24 y	39:12	1.11	50.0		2.50	-	-	*		
1,2,3,4,6,7,8-HpCDD	8.84e+06	1.05 y	44:09	1.09	47.5		2.50	-	-	*		
OCDD	1.42e+07	0.90 y	49:40	1.04	100		2.50	-	-	*		
2,3,7,8-TCDF	4.03e+06	0.79 y	26:40	1.05	9.61		2.50	-	-	*		
1,2,3,7,8-PeCDF	1.58e+07	1.52 y	31:32	0.98	48.3		2.50	-	-	*		
2,3,4,7,8-PeCDF	1.53e+07	1.52 y	32:51	1.01	47.3		2.50	-	-	*		
1,2,3,4,7,8-HxCDF	1.53e+07	1.24 y	37:13	1.23	48.7		2.50	-	-	*		
1,2,3,6,7,8-HxCDF	1.49e+07	1.25 y	37:24	1.17	48.5		2.50	-	-	*		
2,3,4,6,7,8-HxCDF	1.43e+07	1.25 y	38:21	1.12	49.3		2.50	-	-	*		
1,2,3,7,8,9-HxCDF	1.30e+07	1.27 y	39:47	1.15	49.4		2.50	-	-	*		
1,2,3,4,6,7,8-HpCDF	1.46e+07	1.07 y	42:16	1.36	50.0		2.50	-	-	*		
1,2,3,4,7,8,9-HpCDF	1.08e+07	1.05 y	45:05	1.23	51.0		2.50	-	-	*		
OCDF	2.00e+07	0.92 y	50:04	1.13	99.4		2.50	-	-	*		
13C-2,3,7,8-TCDD	3.08e+07	0.78 y	27:23	1.07	95.8						95.8	
13C-1,2,3,7,8-PeCDD	2.07e+07	1.60 y	33:14	0.78	89.3						89.3	
13C-1,2,3,4,7,8-HxCDD	1.69e+07	1.29 y	38:34	0.87	102						102	
13C-1,2,3,6,7,8-HxCDD	1.71e+07	1.28 y	38:44	0.84	107						107	
13C-1,2,3,4,6,7,8-HpCDD	1.71e+07	1.08 y	44:08	0.85	105						105	
13C-OCDD	2.71e+07	0.92 y	49:39	0.70	203						102	
13C-2,3,7,8-TCDF	4.01e+07	0.80 y	26:39	1.03	98.6						98.6	
13C-1,2,3,7,8-PeCDF	3.34e+07	1.60 y	31:30	0.89	95.2						95.2	
13C-2,3,4,7,8-PeCDF	3.19e+07	1.58 y	32:50	0.82	98.7						98.7	
13C-1,2,3,4,7,8-HxCDF	2.56e+07	0.55 y	37:11	1.26	106						106	
13C-1,2,3,6,7,8-HxCDF	2.64e+07	0.53 y	37:23	1.28	107						107	
13C-2,3,4,6,7,8-HxCDF	2.59e+07	0.53 y	38:20	1.27	107						107	
13C-1,2,3,7,8,9-HxCDF	2.29e+07	0.54 y	39:46	1.16	103						103	
13C-1,2,3,4,6,7,8-HpCDF	2.14e+07	0.46 y	42:14	1.06	106						106	
13C-1,2,3,4,7,8,9-HpCDF	1.72e+07	0.45 y	45:04	0.93	97.3						97.3	
13C-OCDF	3.56e+07	0.90 y	50:02	0.95	195						97.7	
37Cl-2,3,7,8-TCDD	2.56e+06		27:25	0.90	9.54						95.4	
13C-1,2,3,4-TCDD	2.99e+07	0.79 y	26:48	-	81.7							
13C-1,2,3,4-TCDF	3.93e+07	0.80 y	25:32	-	81.7							
13C-1,2,3,7,8,9-HxCDD	1.91e+07	1.27 y	39:11	-	70.3							
Total Tetra-Dioxins	1.55e+07		23:01	1.08	46.7		2.50	-	-	*		25
Total Penta-Dioxins	3.34e+07		30:16	0.90	178		2.50	-	-	*		11
Total Hexa-Dioxins	3.89e+07		35:08	1.03	221		2.50	-	-	*		29
Total Hepta-Dioxins	1.89e+07		42:15	1.09	101		2.50	-	-	*		31
Total Tetra-Furans	1.88e+07		23:01	1.05	45.0		2.50	-	-	*		23
1st Fn. Tot Penta-Furans	2.16e+07		28:25	0.99	66.7		2.50	-	-	*	PeCDF	3
Total Penta-Furans	4.64e+07		29:45	0.99	143		2.50	-	-	*	209	16
Total Hexa-Furans	7.41e+07		35:15	1.16	253		2.50	-	-	*		11
Total Hepta-Furans	2.56e+07		42:16	1.30	102		2.50	-	-	*		13

Analyst: 

Date: 1/8/16

Frontier Analytical Laboratory - Acquisition Log

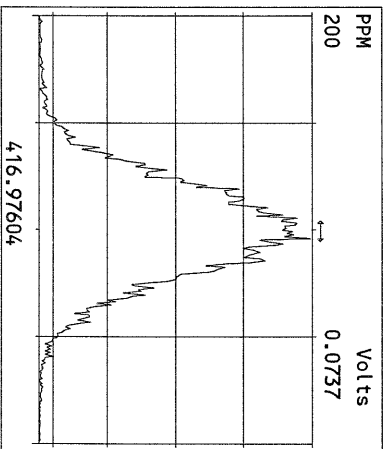
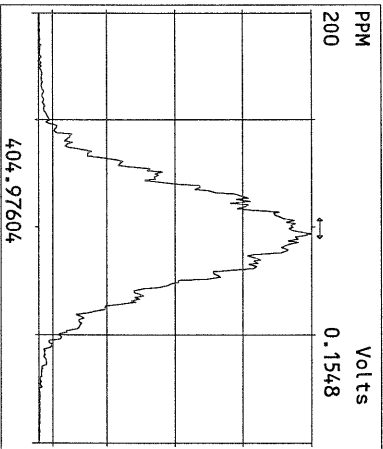
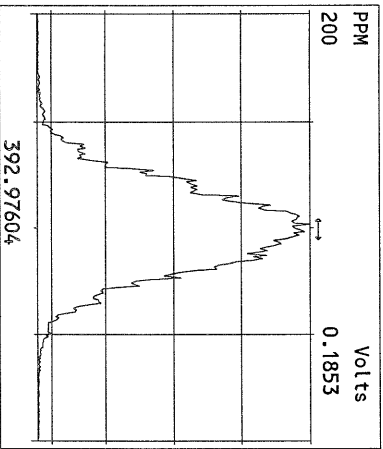
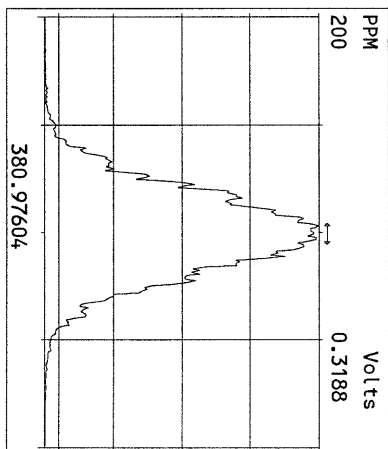
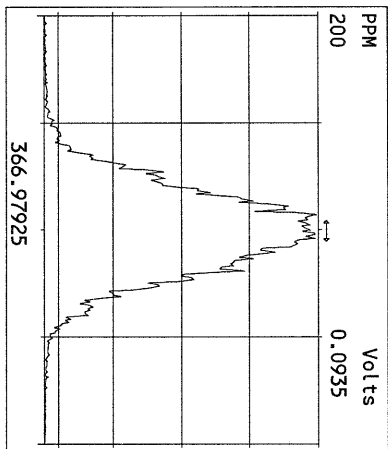
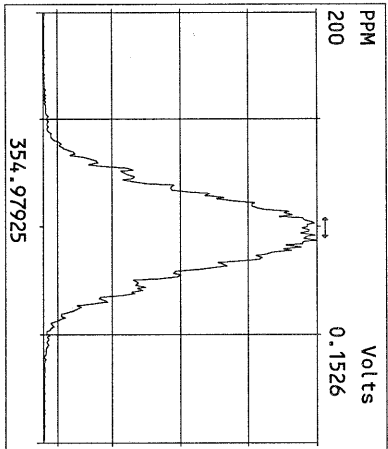
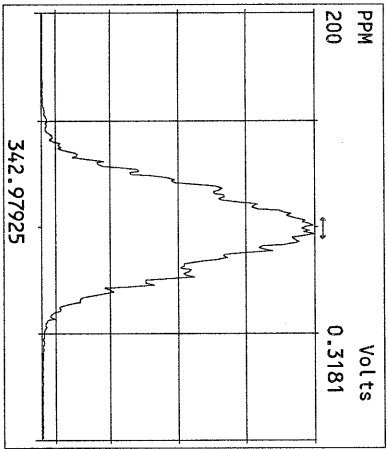
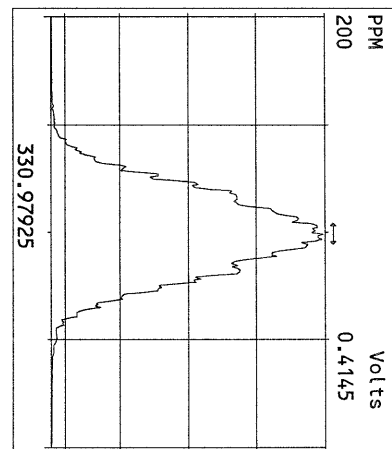
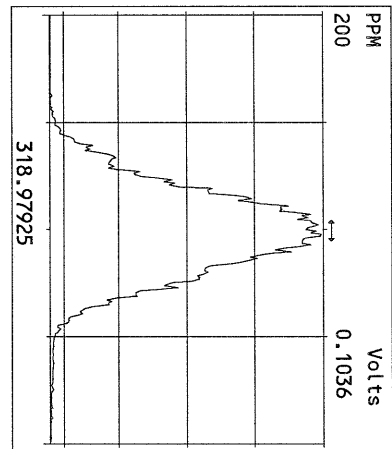
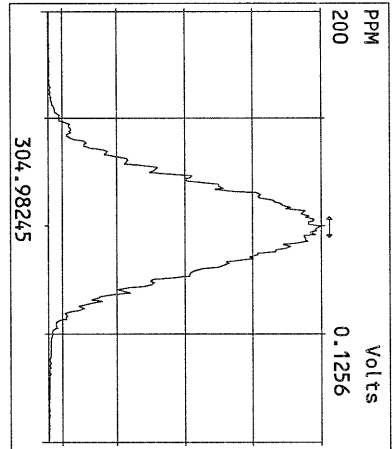
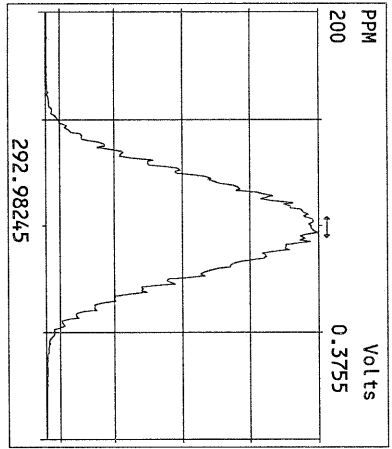
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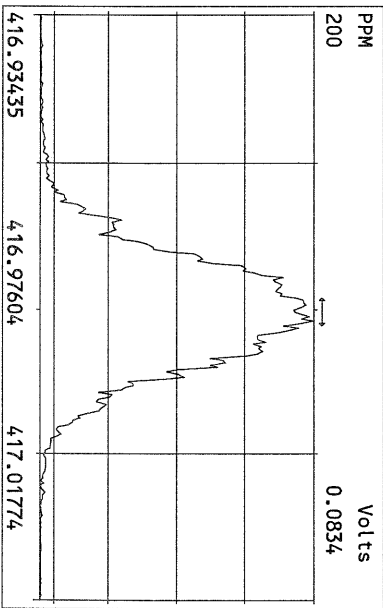
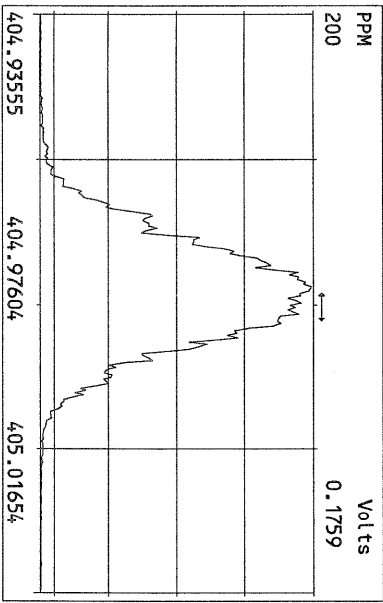
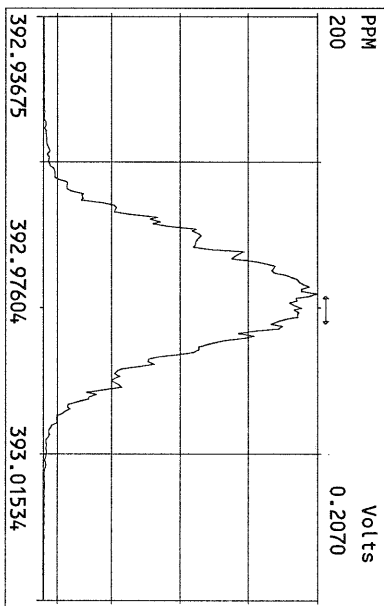
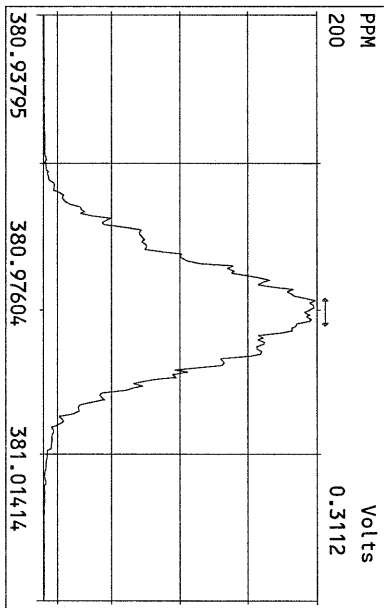
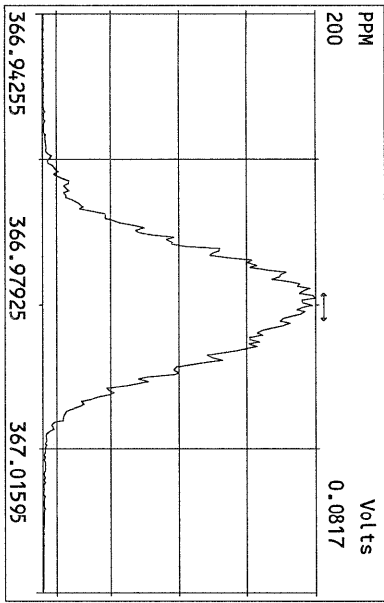
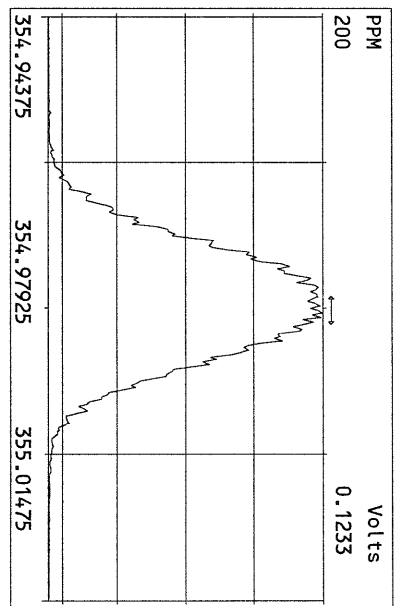
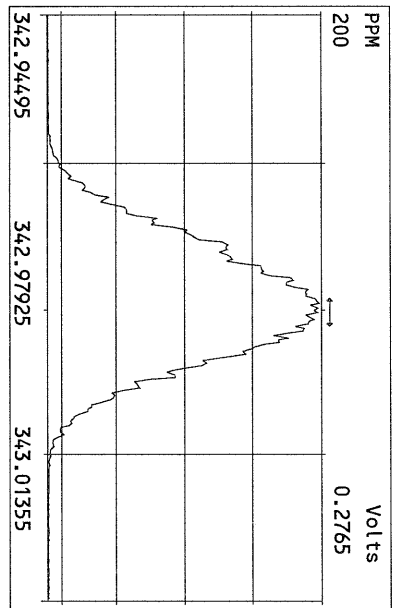
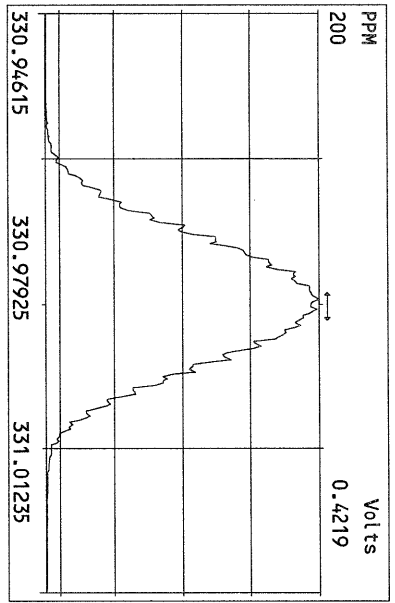
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07JAN16Y 3	3543-001-0001-MB	Method Blank	7-JAN-16 17:29:01	ST010716Y1	ST010716Y2	BS
07JAN16Y 4	9514-001-0001-SA	NAWS-CL ASC-01	7-JAN-16 18:23:49	ST010716Y1	ST010716Y2	BS
07JAN16Y 5	9488-001-0001-SA	1531060-14	7-JAN-16 19:18:36	ST010716Y1	ST010716Y2	BS
07JAN16Y 6	9505-001-0001-SA	DDSD DIGESTER CAKE 12/5-9/20 _n	7-JAN-16 20:13:23	ST010716Y1	ST010716Y2	BS
07JAN16Y 7	9486-002-0001-SA	SB-05-9-10	7-JAN-16 21:08:11	ST010716Y1	ST010716Y2	BS
07JAN16Y 8	9486-001-0001-SA	SB-07-12-13 1:10 Dil	7-JAN-16 22:02:58	ST010716Y1	ST010716Y2	BS
07JAN16Y 9	9528-003-0001-SA	SP-R-DU-2C	7-JAN-16 22:57:45	ST010716Y1	ST010716Y2	BS
07JAN16Y 10	9528-001-0001-SA	SP-FA-1 1:5 Dil	7-JAN-16 23:52:32	ST010716Y1	ST010716Y2	BS
07JAN16Y 11	9528-002-0001-SA	SP-1H/7H	8-JAN-16 00:47:19	ST010716Y1	ST010716Y2	BS
07JAN16Y 12	9487-001-0001-SA	SB-10-12.5-13 1:20 Dil	8-JAN-16 01:42:05	ST010716Y1	ST010716Y2	BS
07JAN16Y 13	SB010716Y1	Solvent Blank	8-JAN-16 02:36:52	ST010716Y1	ST010716Y2	BS
07JAN16Y 14	QC010716Y1	QC1	8-JAN-16 03:31:38	ST010716Y1	ST010716Y2	BS
07JAN16Y 15	QC010716Y2	QC2	8-JAN-16 04:26:24	ST010716Y1	ST010716Y2	BS
07JAN16Y 16	ST010716Y3	1613 CS3 151209J	8-JAN-16 05:21:12	ST010716Y1	ST010716Y2	BS
07JAN16Y 17	QC010716Y3	QC3	8-JAN-16 06:15:57	ST010716Y1	ST010716Y2	BS
07JAN16Y 18	QC010716Y4	QC4	8-JAN-16 07:10:41	ST010716Y1	ST010716Y2	BS
07JAN16Y 19	QC010716Y5	QC5	8-JAN-16 08:05:27	ST010716Y1	ST010716Y2	BS
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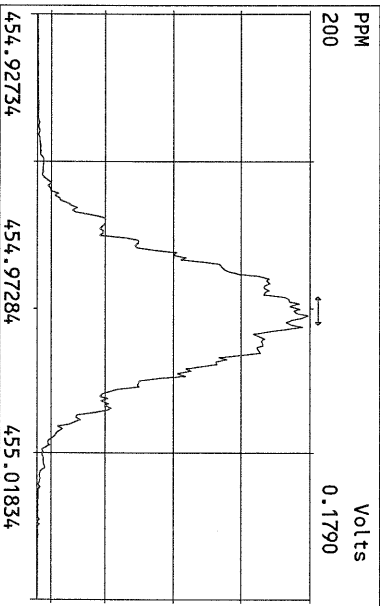
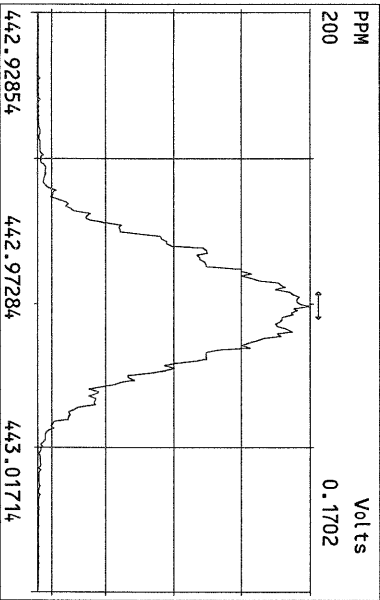
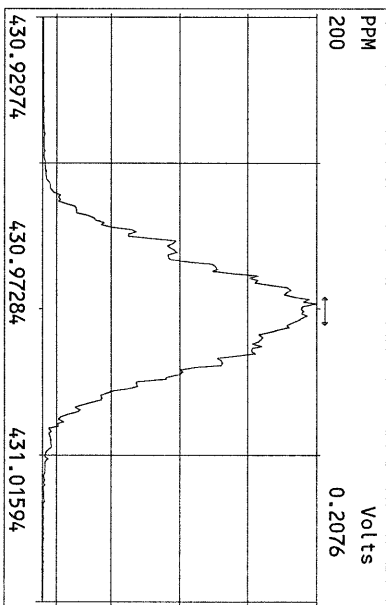
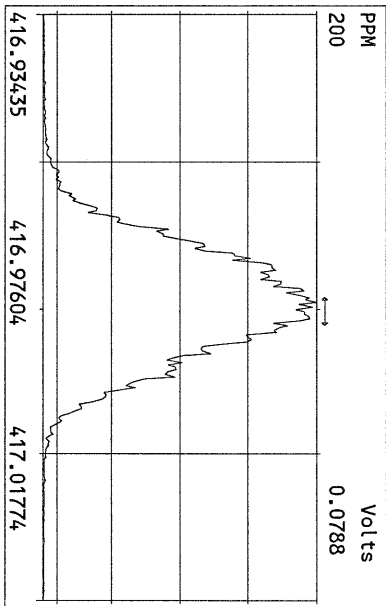
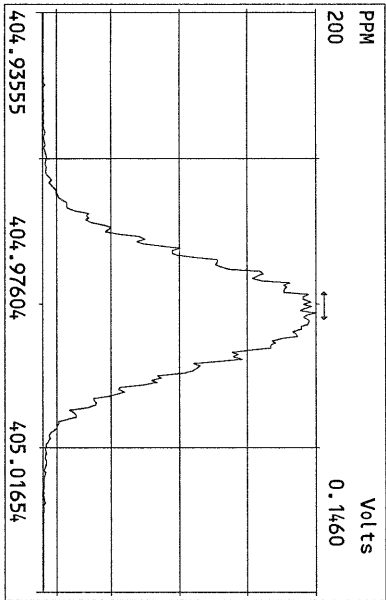
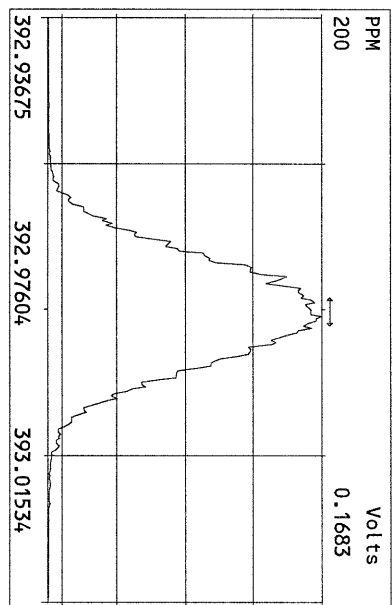
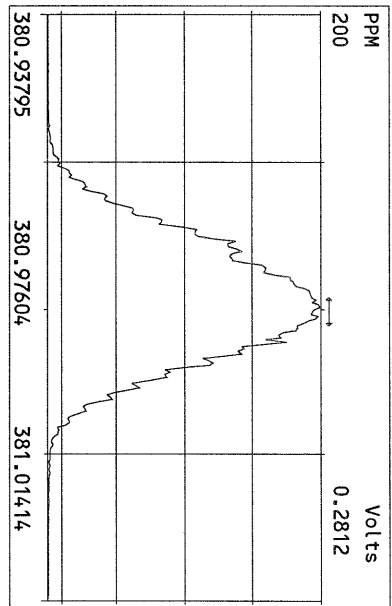
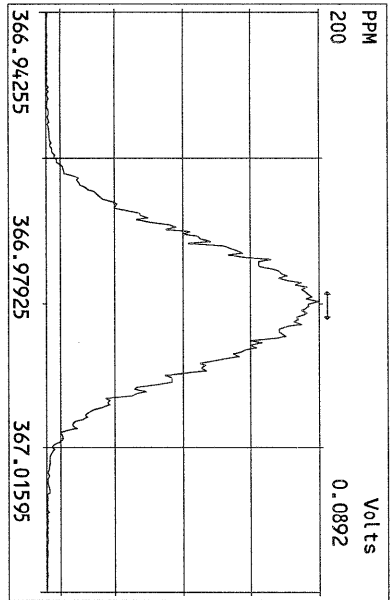
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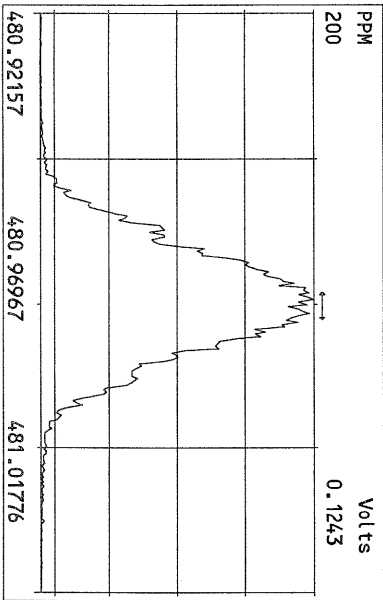
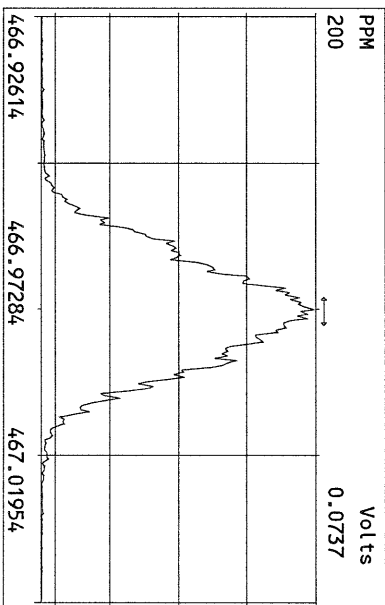
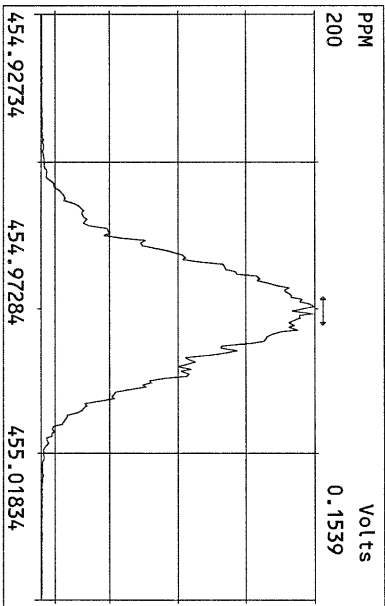
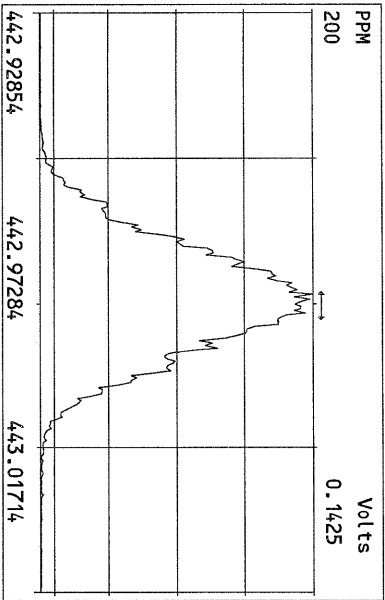
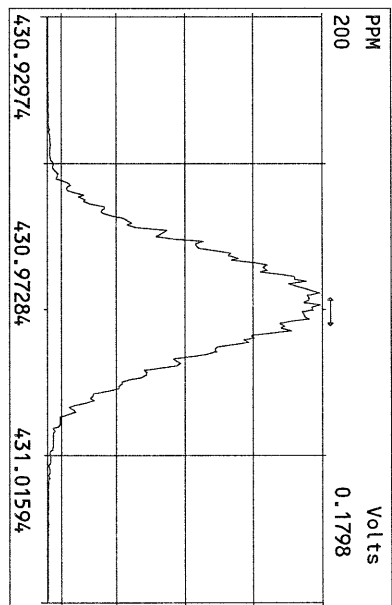
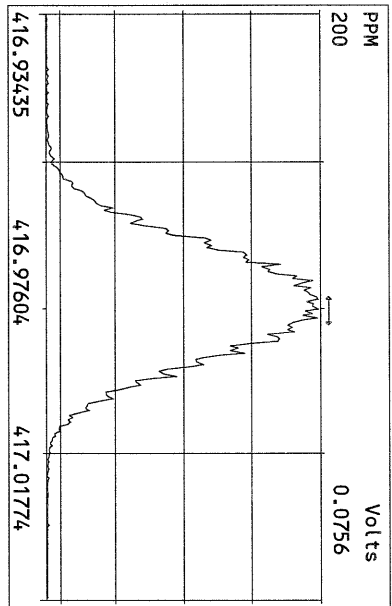
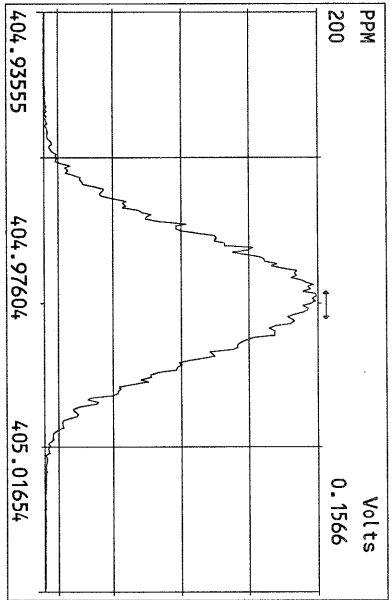
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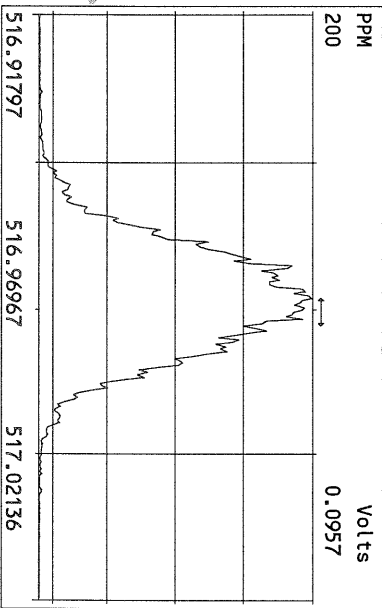
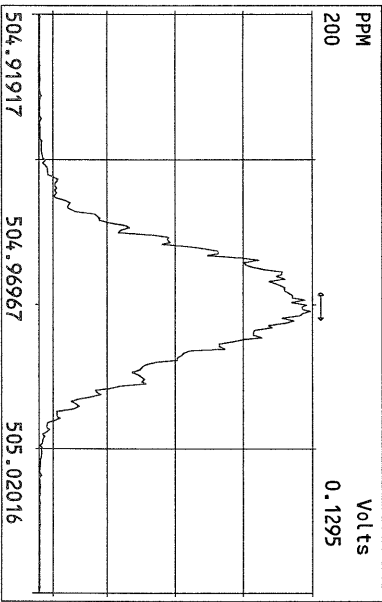
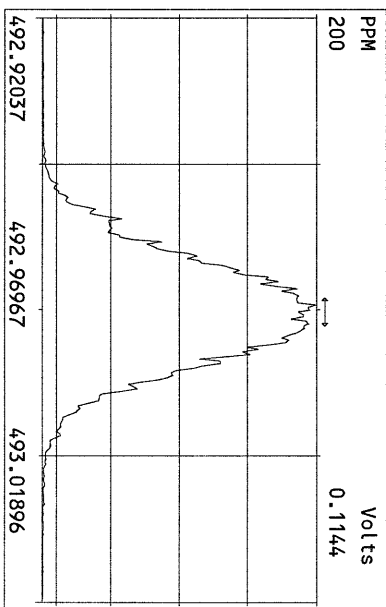
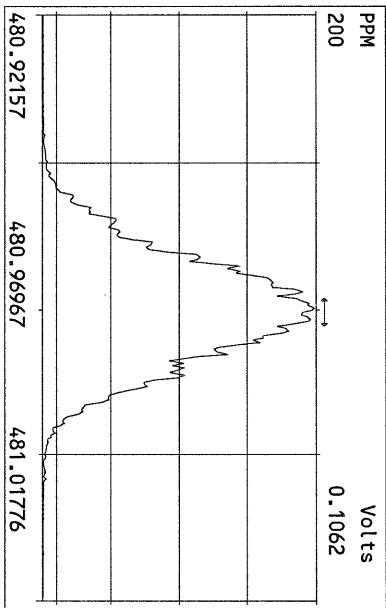
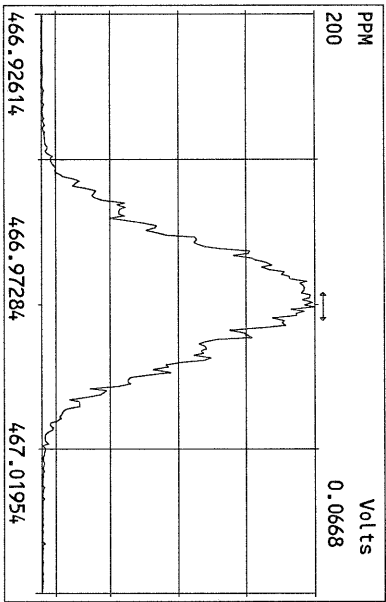
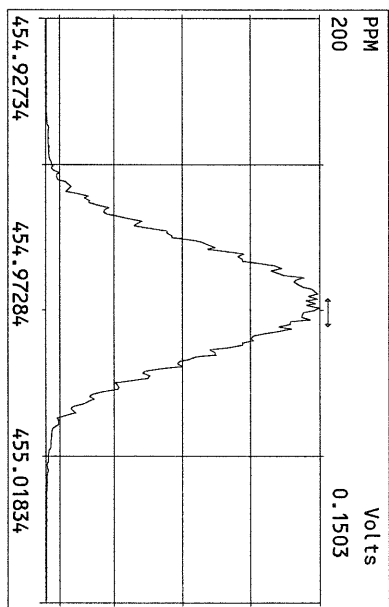
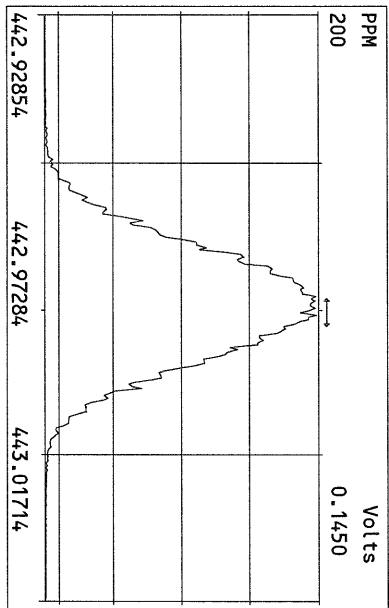
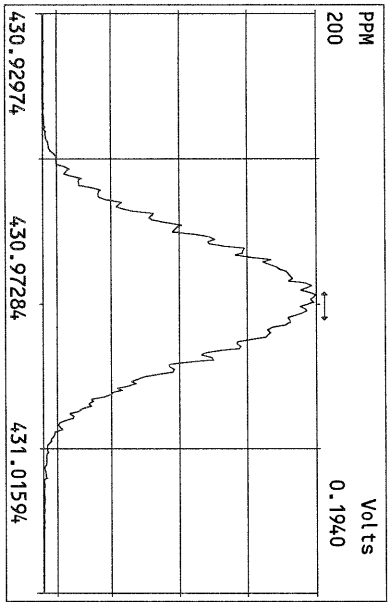
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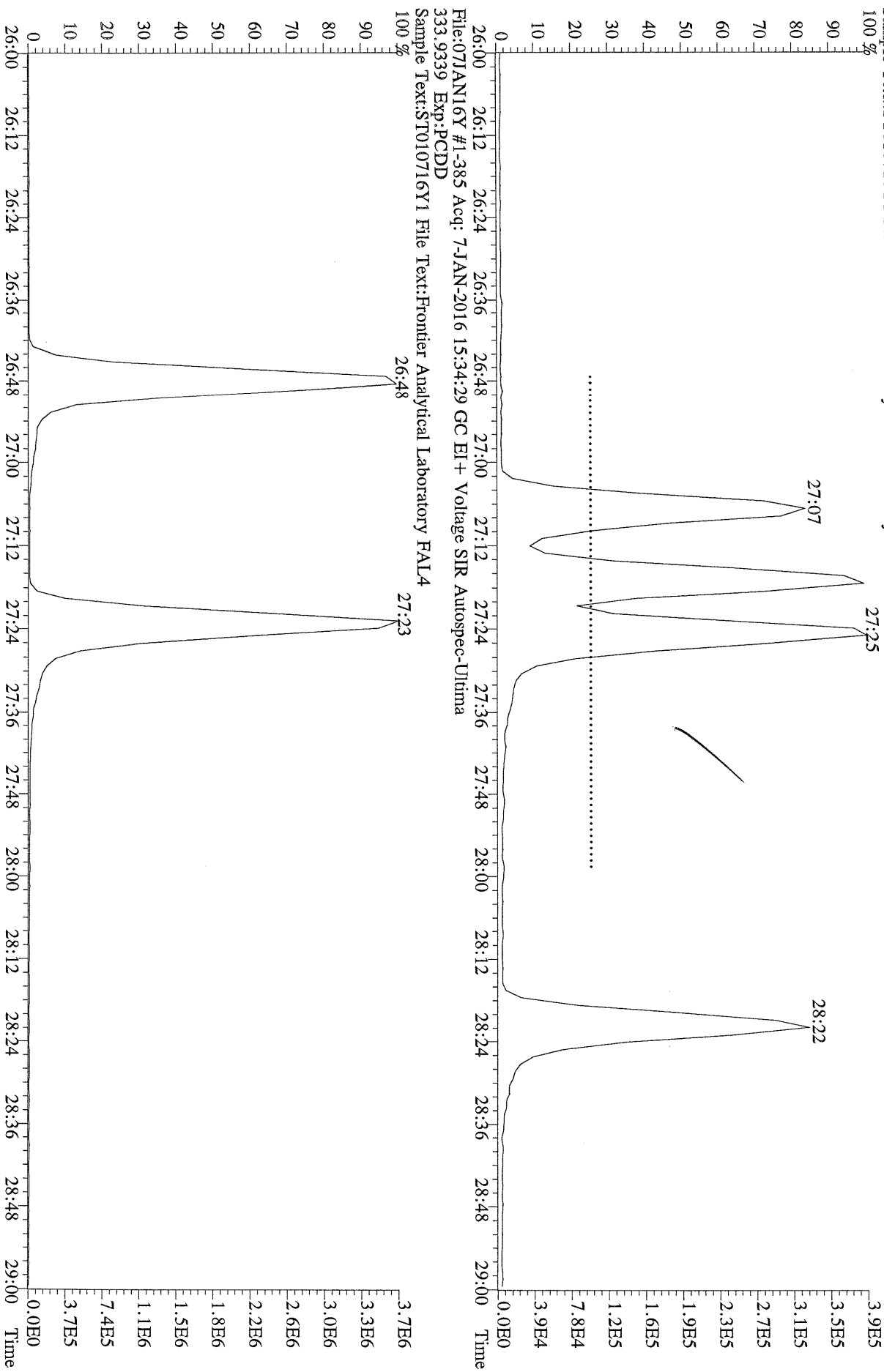




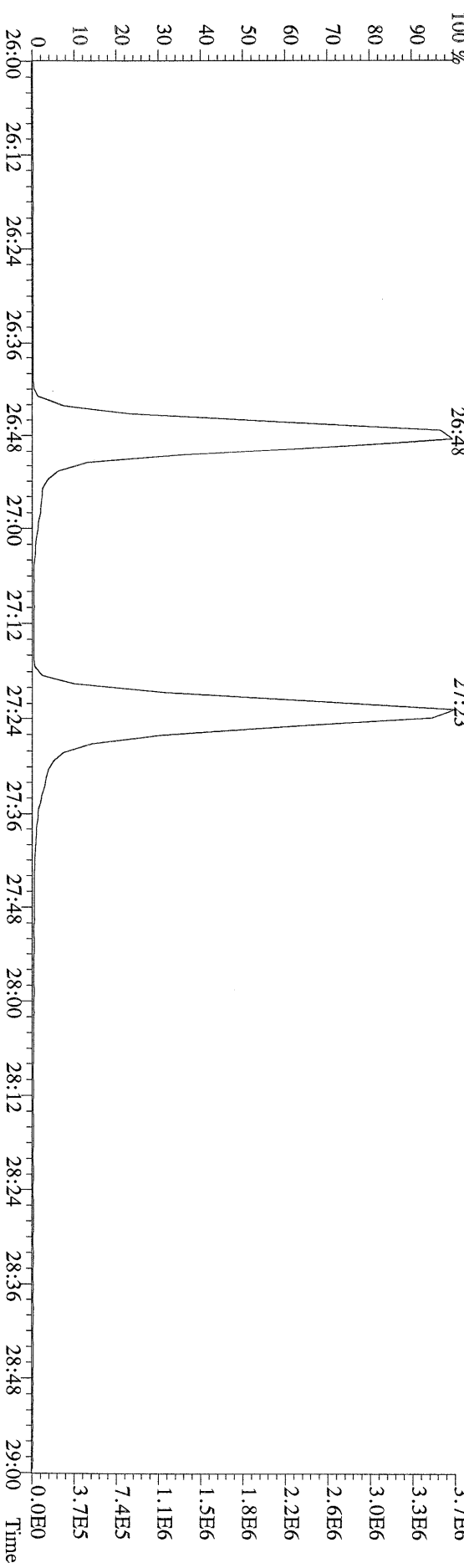




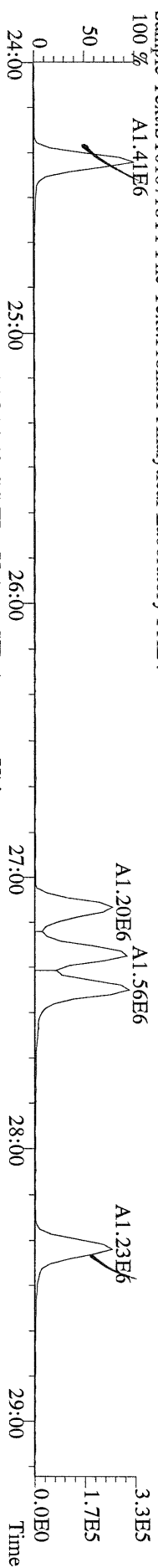
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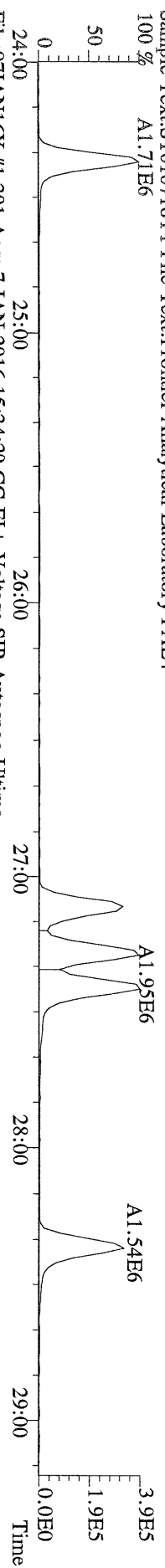
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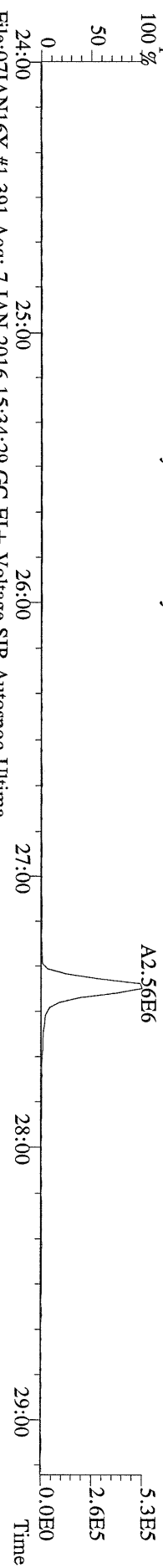
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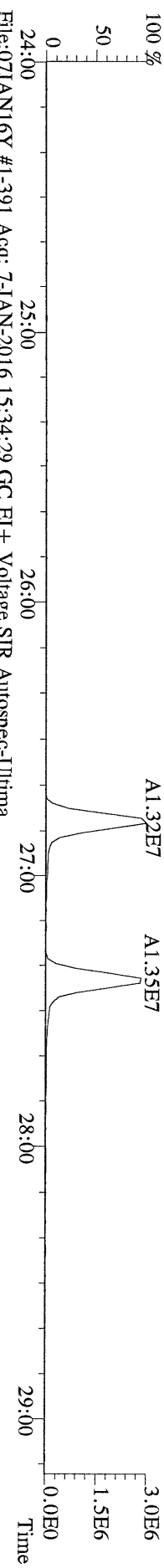
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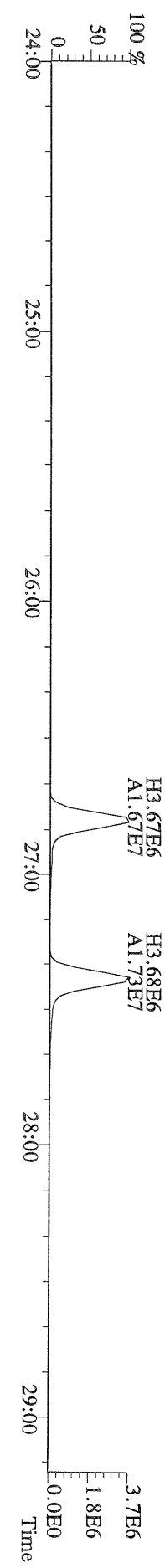
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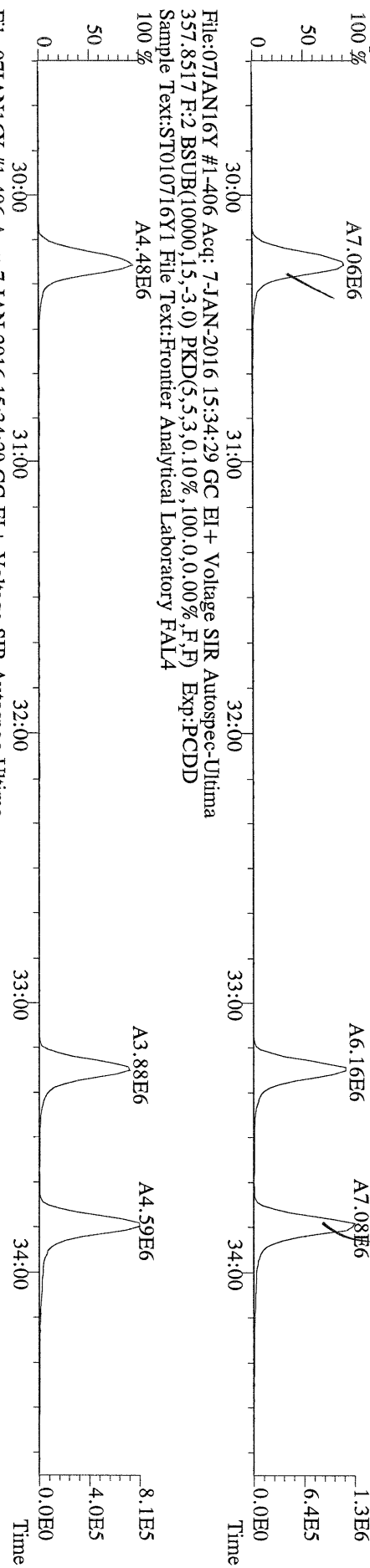
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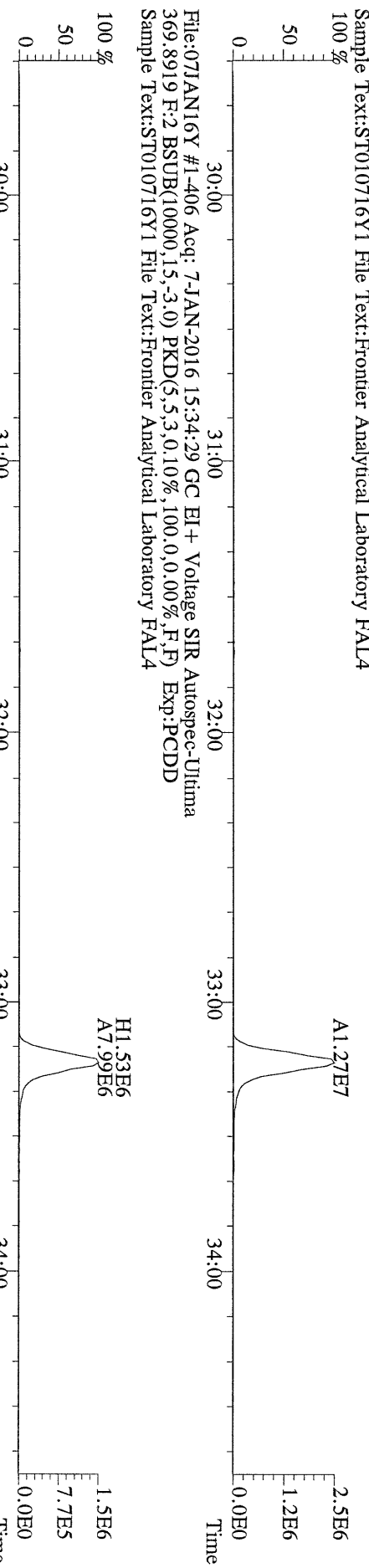
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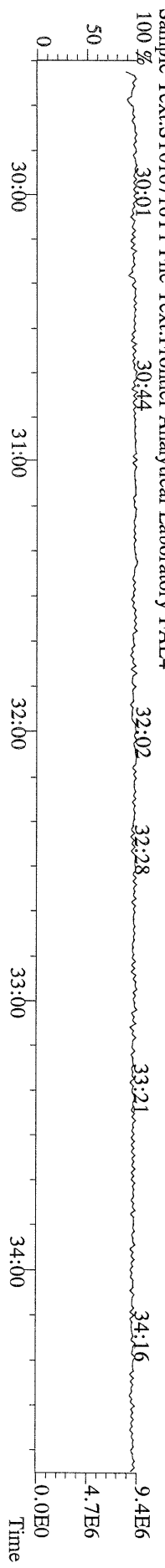
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355.8546 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
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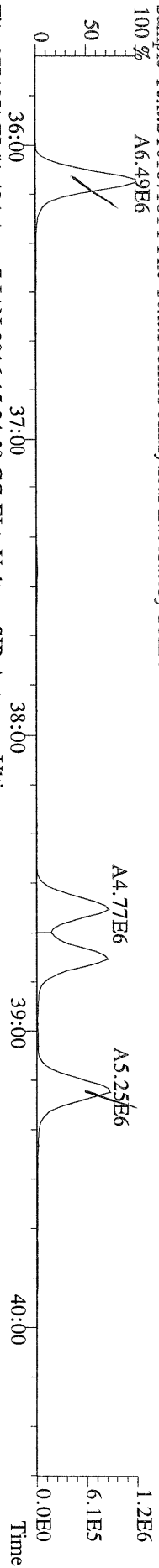
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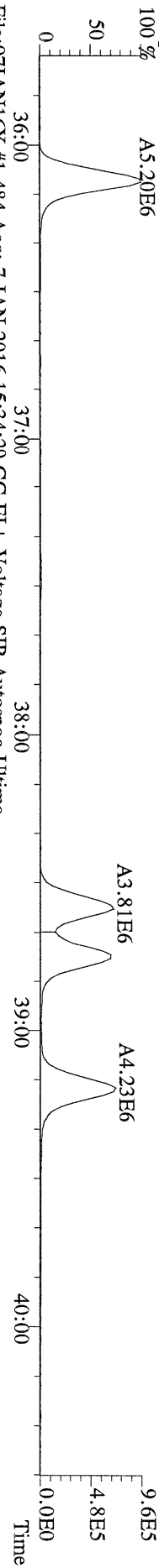
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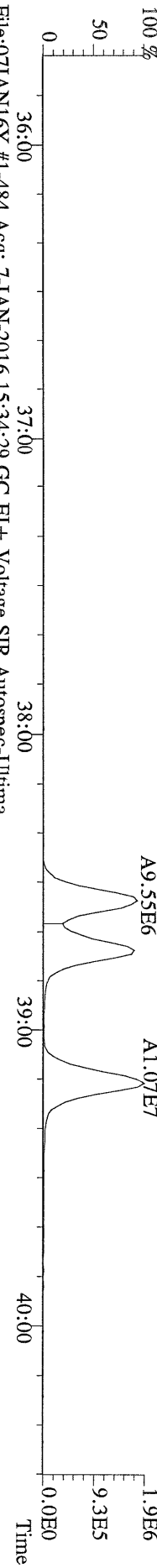
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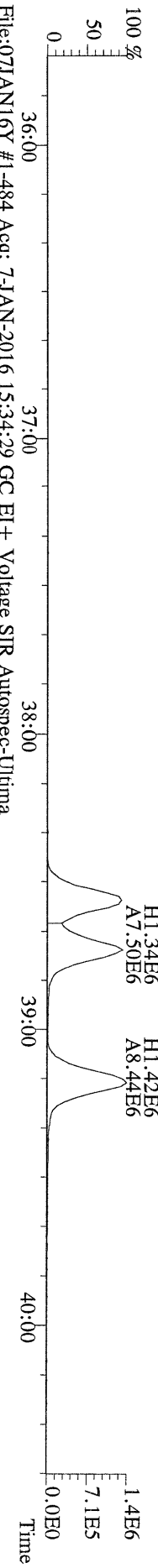
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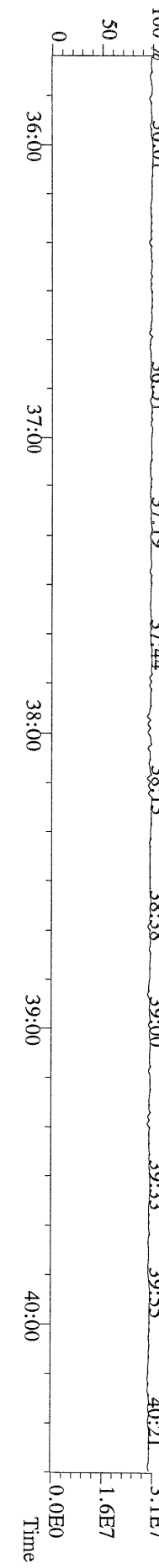
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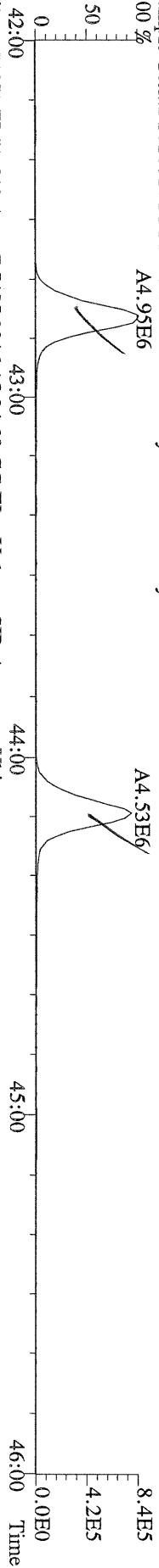
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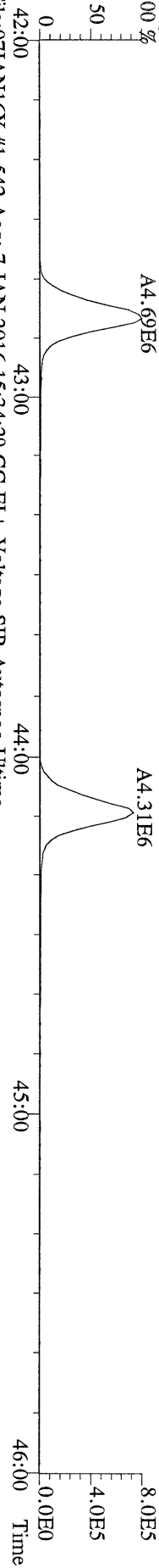
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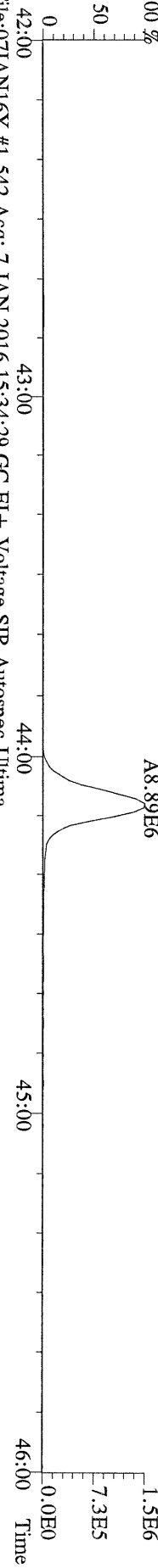
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423.7767 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y1 File Text:Frontier Analytical Laboratory FAL4
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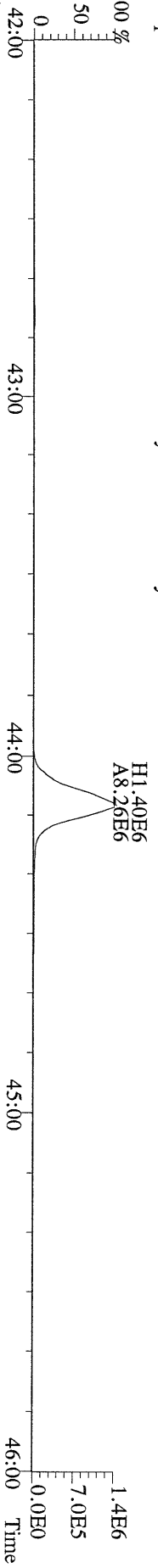
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Sample Text:ST010716Y1 File Text:Frontier Analytical Laboratory FAL4
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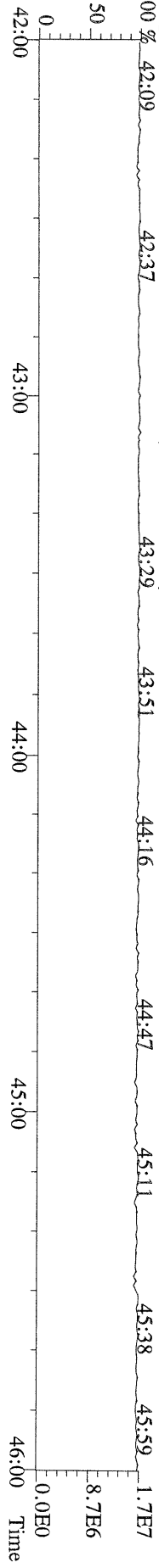
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Sample Text:ST010716Y1 File Text:Frontier Analytical Laboratory FAL4
100 %



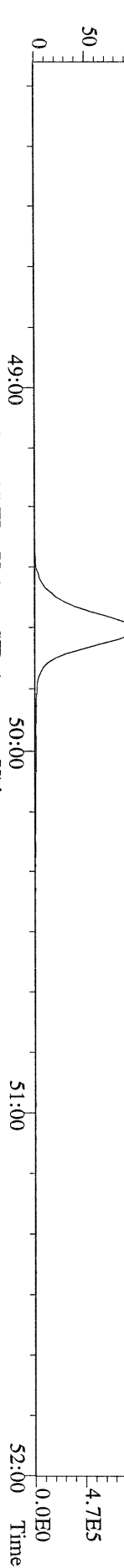
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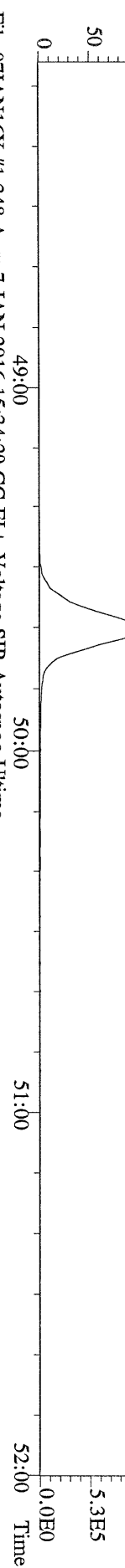
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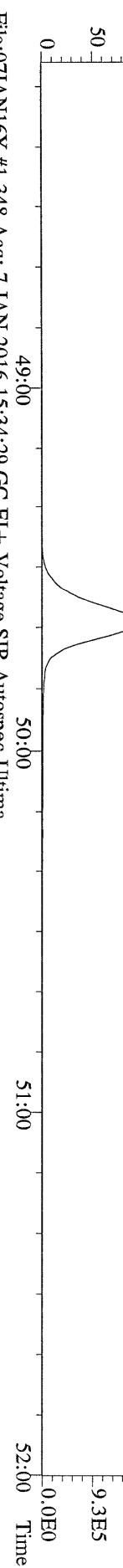
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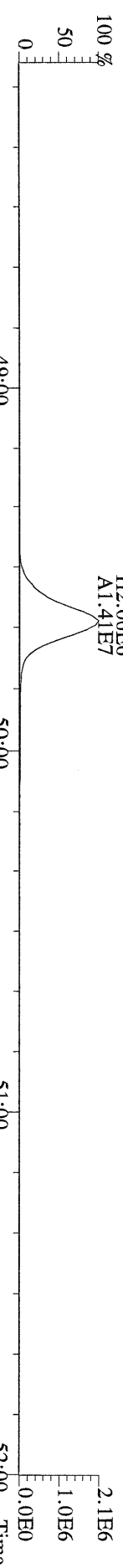
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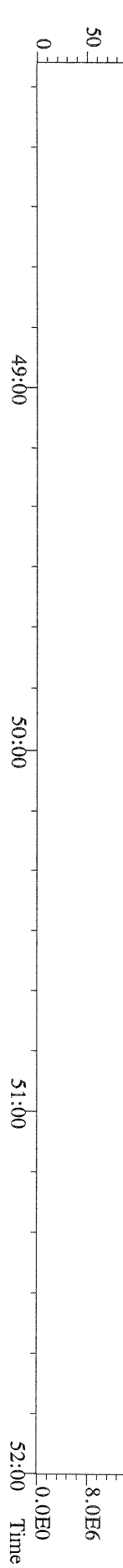
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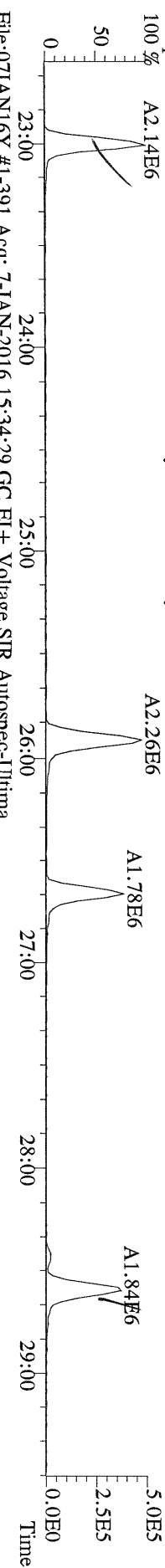
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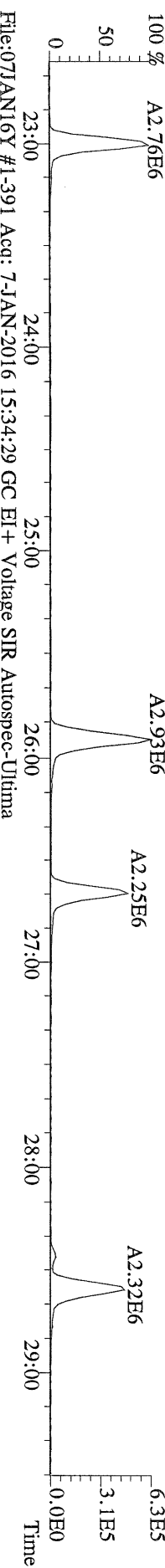
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454.9728 F:5 Exp:PCDD
Sample Text:ST010716Y1 File Text:Frontier Analytical Laboratory FAL4
100 %



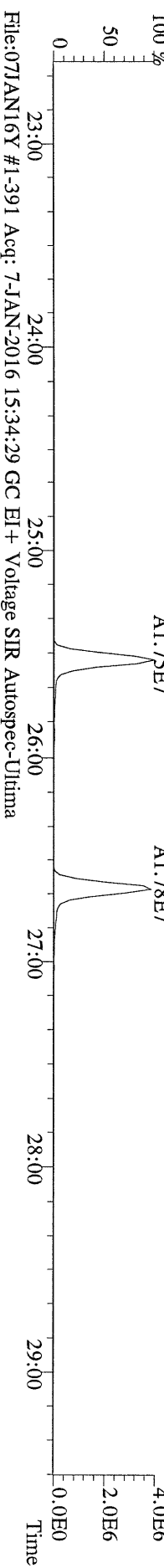
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303.9016 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD
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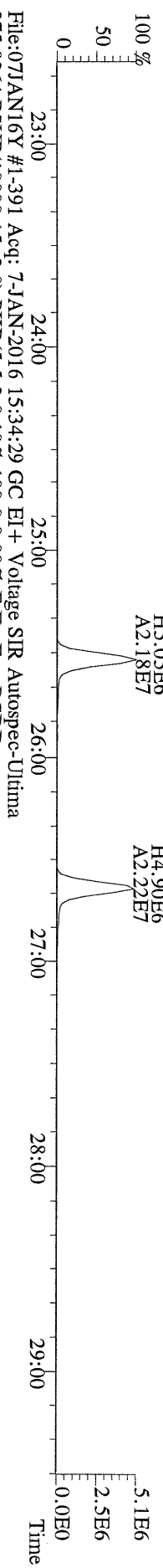
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305.8987 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y1 File Text:Frontier Analytical Laboratory FAL4



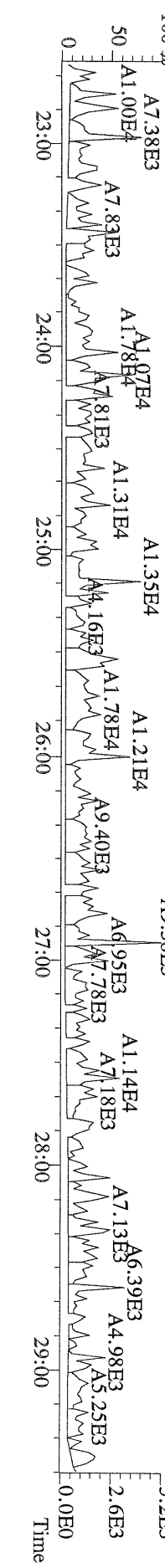
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315.9419 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD
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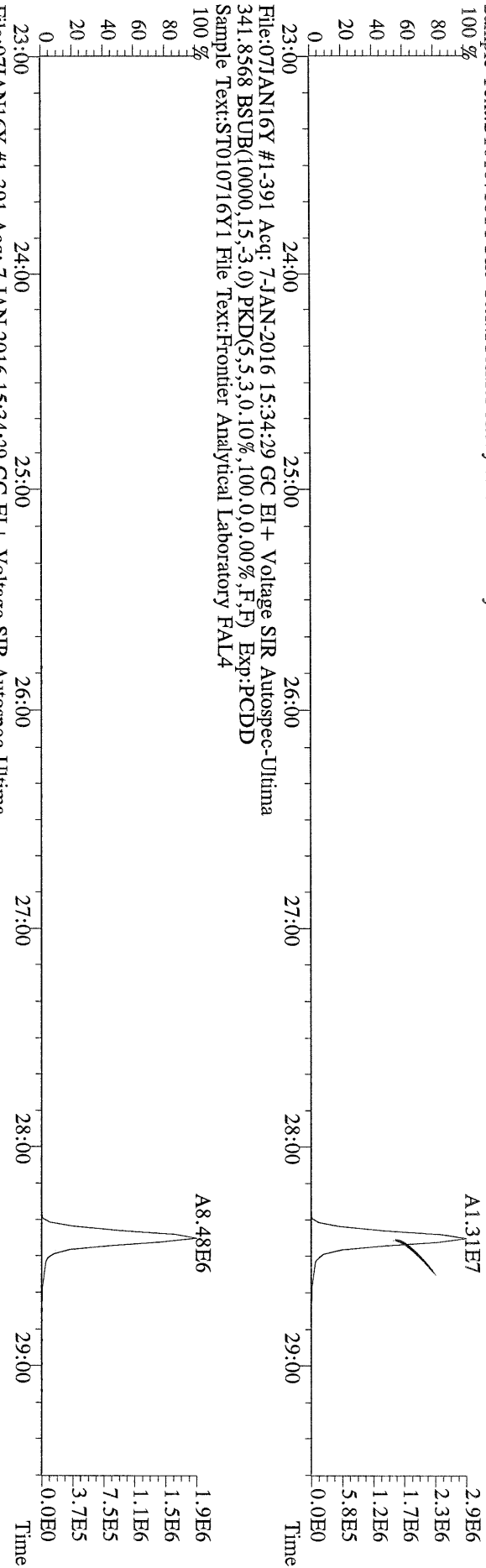
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317.9389 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD
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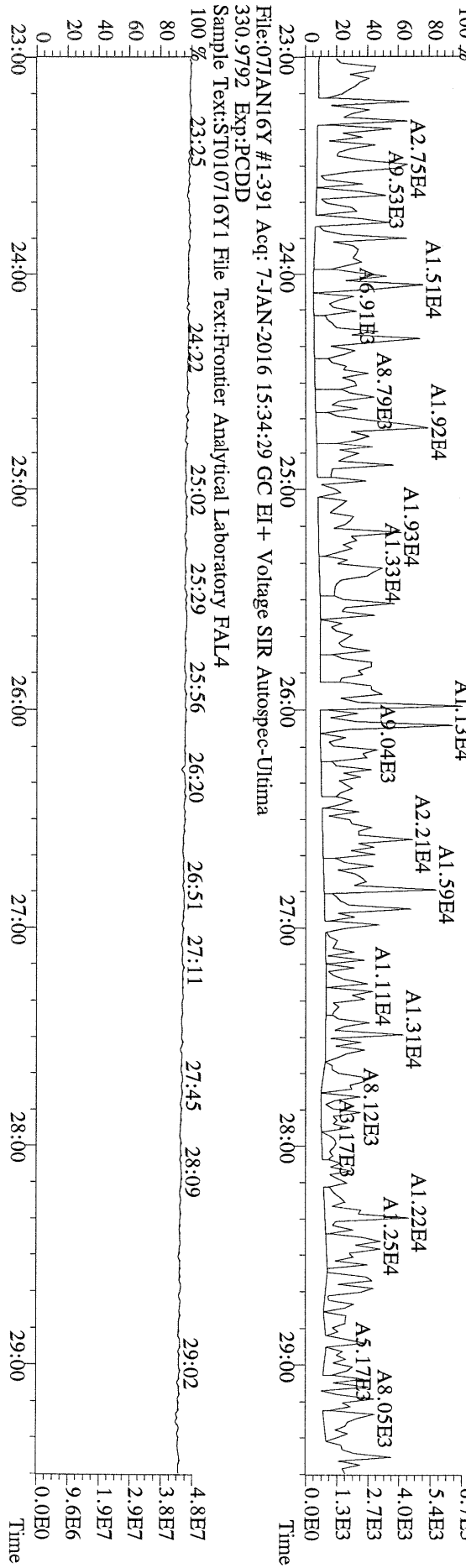
File:07JAN16Y #1-391 Acq: 7-JAN-2016 15:34:29 GC EI+ Voltage SIR Autospec-Ultima
375.8364 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y1 File Text:Frontier Analytical Laboratory FAL4



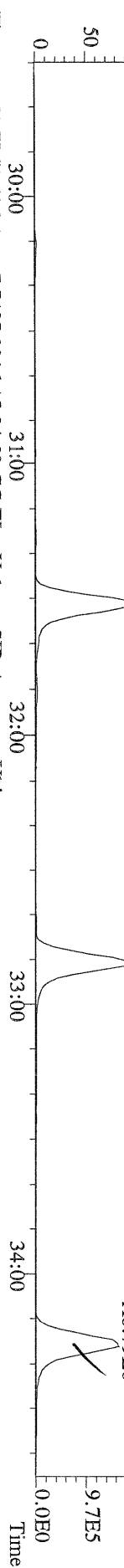
File:07JAN16Y #1-391 Acq: 7-JAN-2016 15:34:29 GC EI+ Voltage SIR Autospec-Ultima
 339.8597 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD
 Sample Text:ST010716Y1 File Text:Frontier Analytical Laboratory PAL4



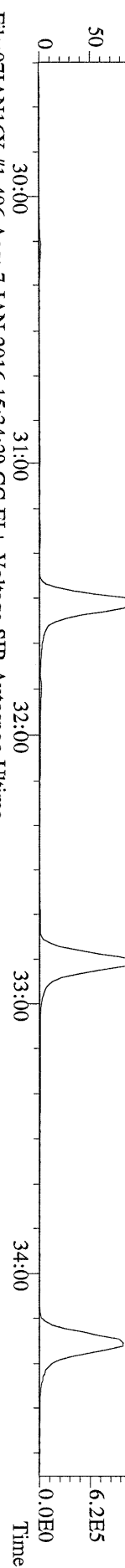
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 409.7974 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD
 Sample Text:ST010716Y1 File Text:Frontier Analytical Laboratory PAL4



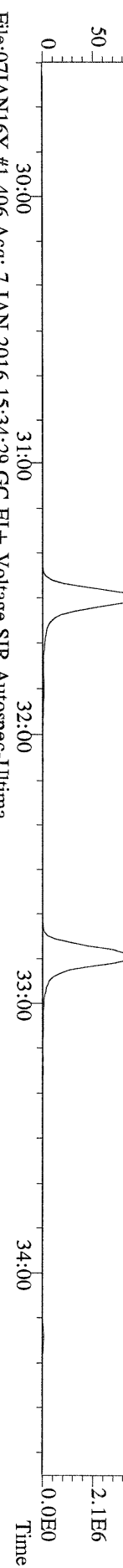
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339.8597 F.2: BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y1 File Text:Frontier Analytical Laboratory FAL4



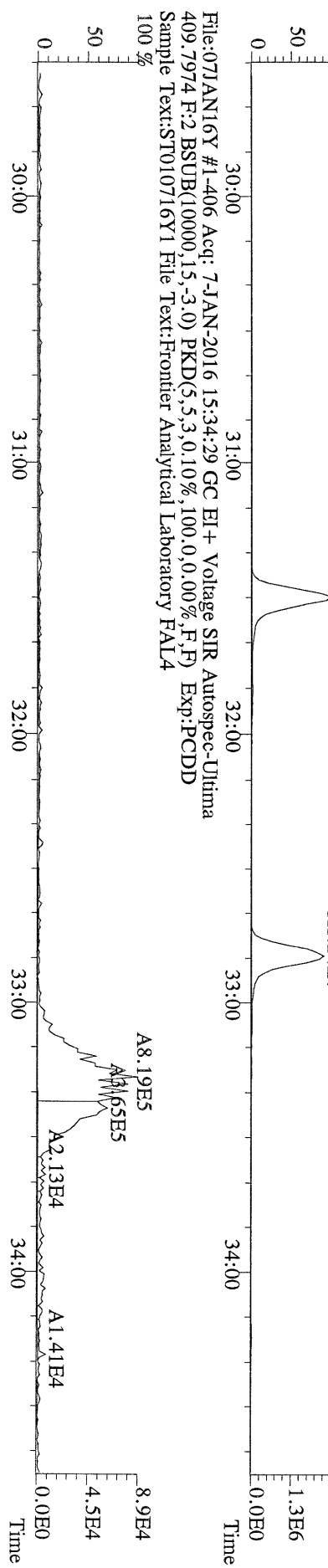
File:07JAN16Y #1-406 Acq: 7-JAN-2016 15:34:29 GC EI+ Voltage SIR Autospec-Ultima
341.8568 F.2: BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y1 File Text:Frontier Analytical Laboratory FAL4



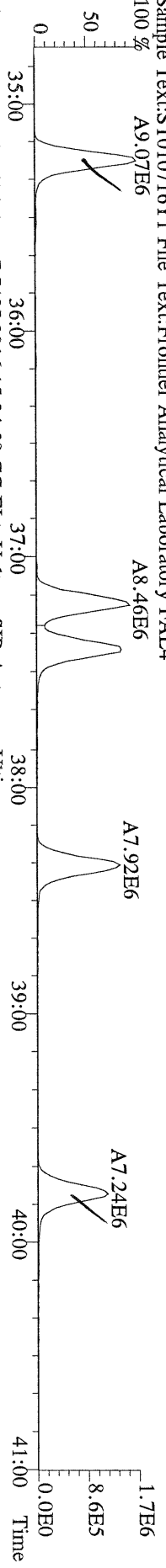
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351.9000 F.2: BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y1 File Text:Frontier Analytical Laboratory FAL4



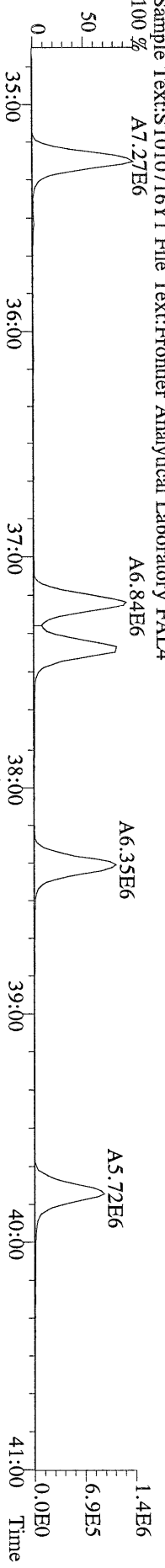
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409.7974 F.2: BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y1 File Text:Frontier Analytical Laboratory FAL4



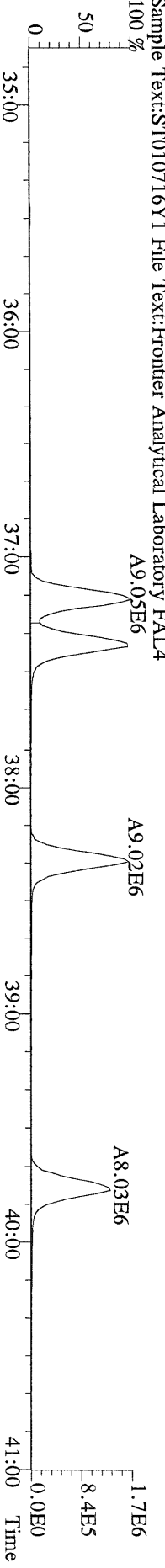
File:07JAN16Y #1-484 Acq: 7-JAN-2016 15:34:29 GC EI+ Voltage SIR Autospec-Ultima
373.8207 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010716Y1 File Text:Frontier Analytical Laboratory FAL4



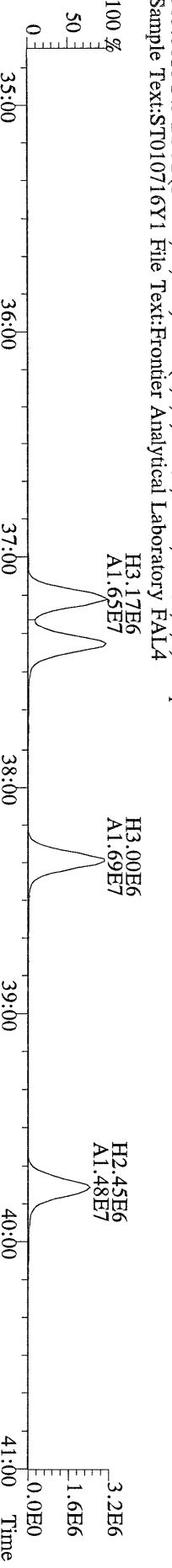
File:07JAN16Y #1-484 Acq: 7-JAN-2016 15:34:29 GC EI+ Voltage SIR Autospec-Ultima
375.8178 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010716Y1 File Text:Frontier Analytical Laboratory FAL4



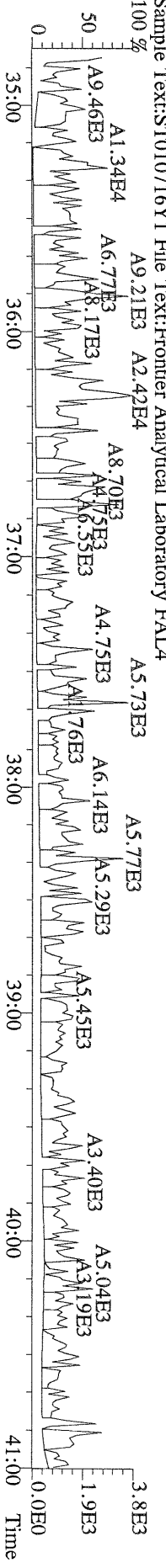
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383.8639 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010716Y1 File Text:Frontier Analytical Laboratory FAL4



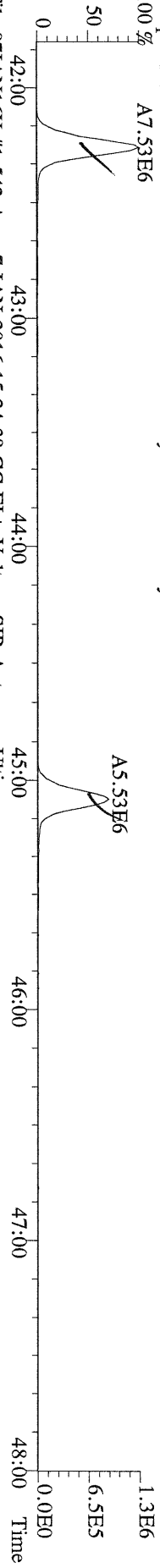
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385.8610 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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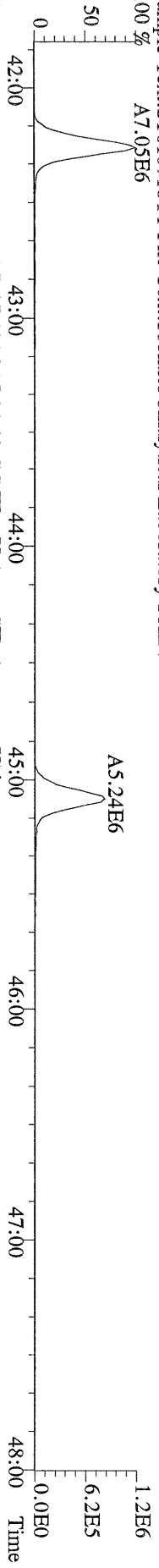
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445.7555 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010716Y1 File Text:Frontier Analytical Laboratory FAL4



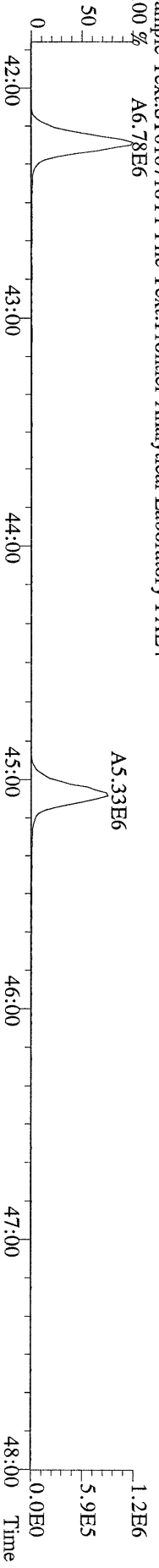
File:07JAN16Y #1-542 Acq: 7-JAN-2016 15:34:29 GC EI+ Voltage SIR Autospec-Ultima
407.7818 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010716Y1 File Text:Frontier Analytical Laboratory FAL4
100 % A7.53E6



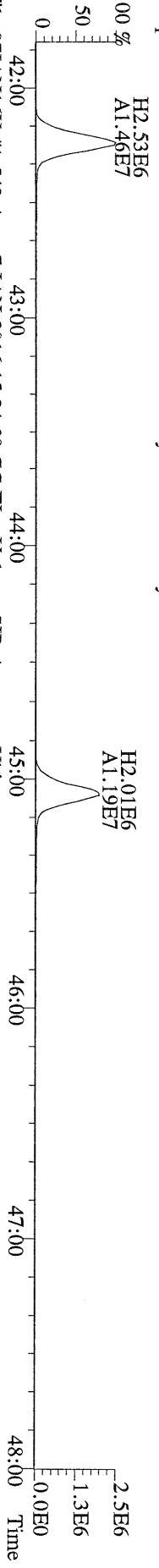
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409.7788 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010716Y1 File Text:Frontier Analytical Laboratory FAL4
100 % A7.05E6



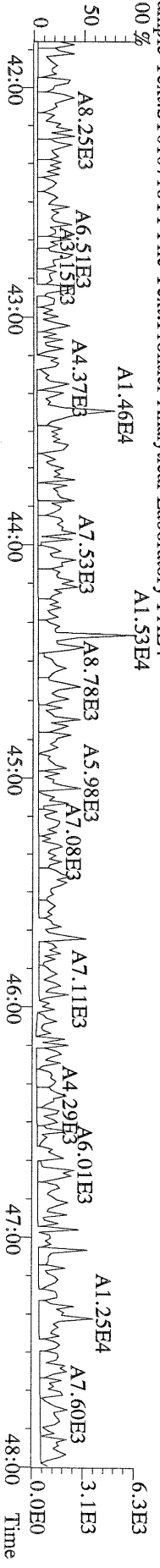
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417.8253 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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100 % A6.78E6



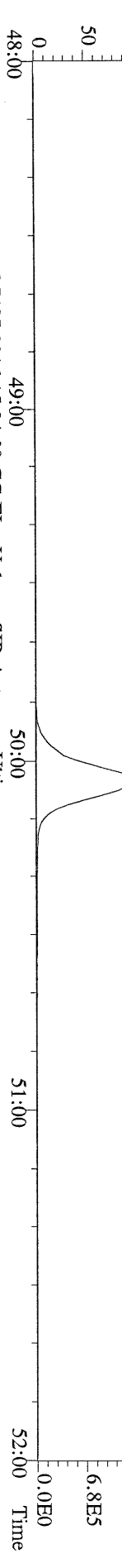
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419.8220 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010716Y1 File Text:Frontier Analytical Laboratory FAL4



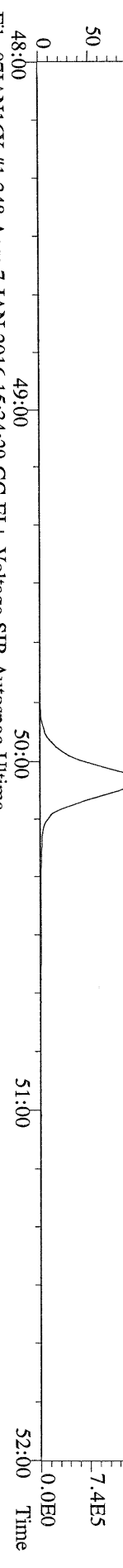
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479.7165 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010716Y1 File Text:Frontier Analytical Laboratory FAL4
100 %



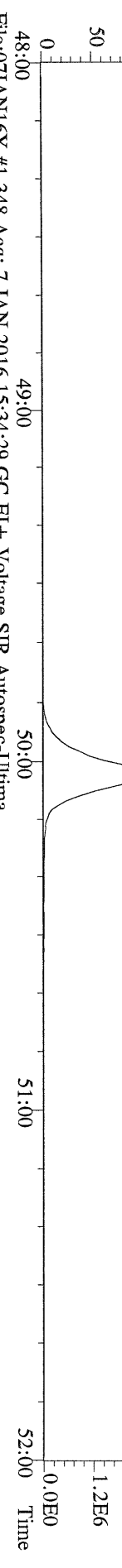
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441.7428 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y1 File Text:Fronter Analytical Laboratory FAL4
100 %



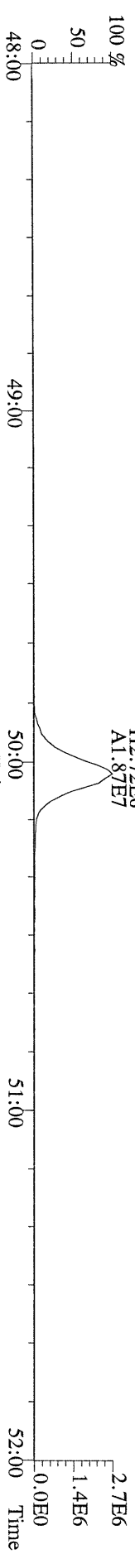
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443.7398 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y1 File Text:Fronter Analytical Laboratory FAL4
100 %



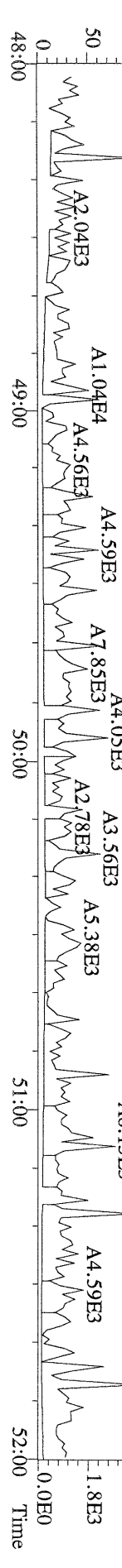
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453.7831 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y1 File Text:Fronter Analytical Laboratory FAL4
100 %

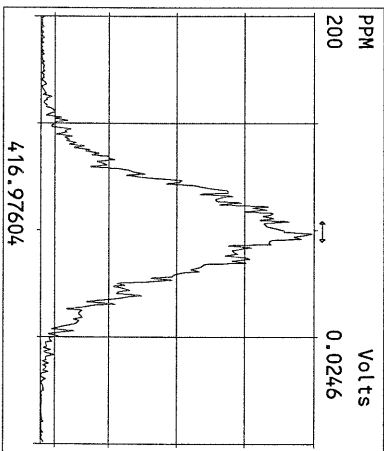
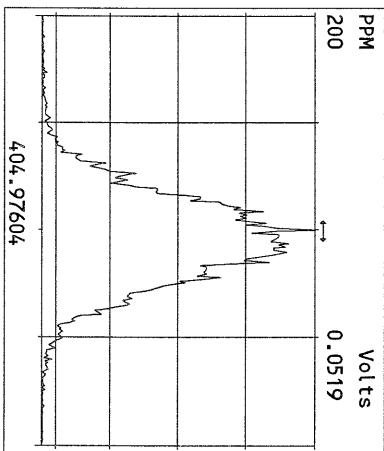
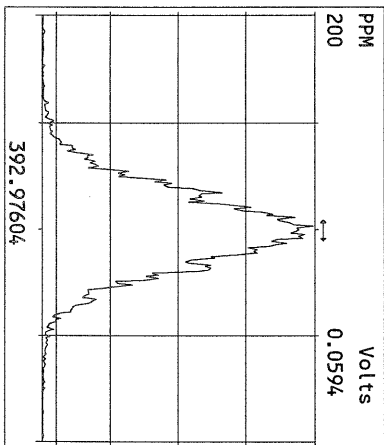
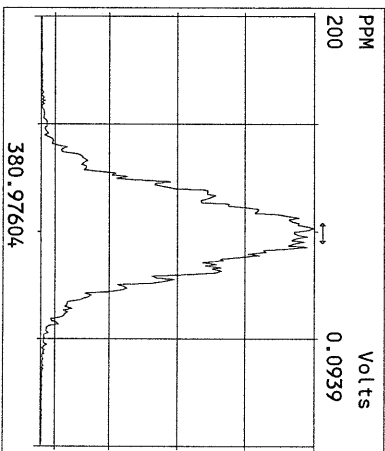
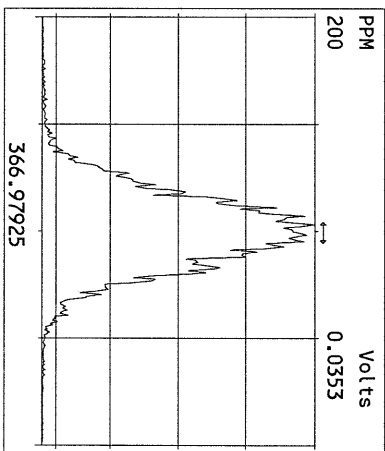
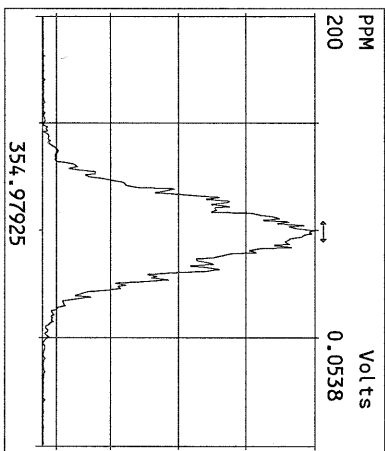
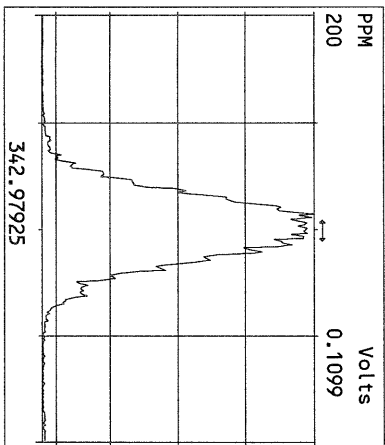
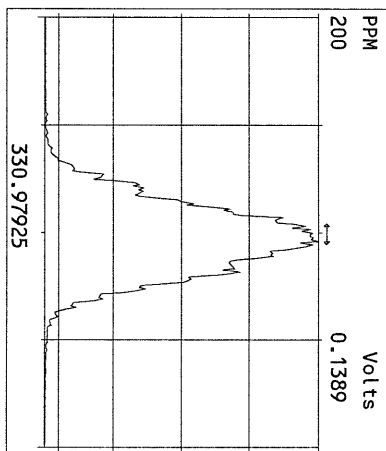
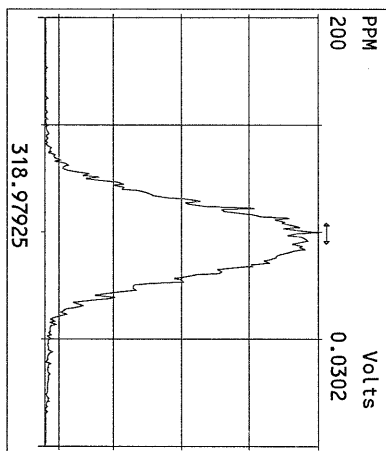
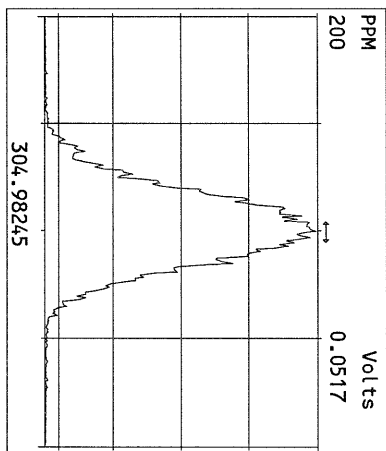
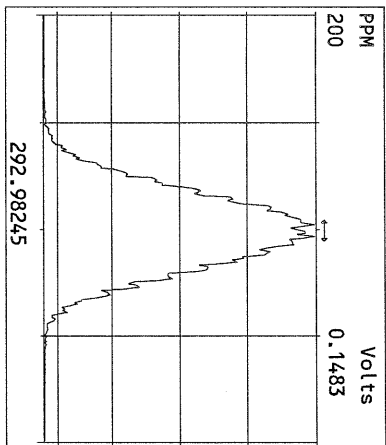


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Sample Text:ST010716Y1 File Text:Fronter Analytical Laboratory FAL4

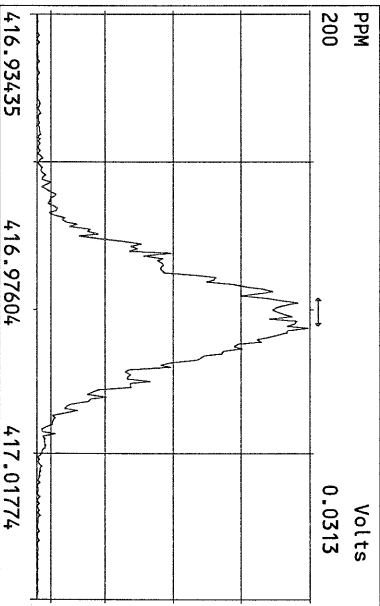
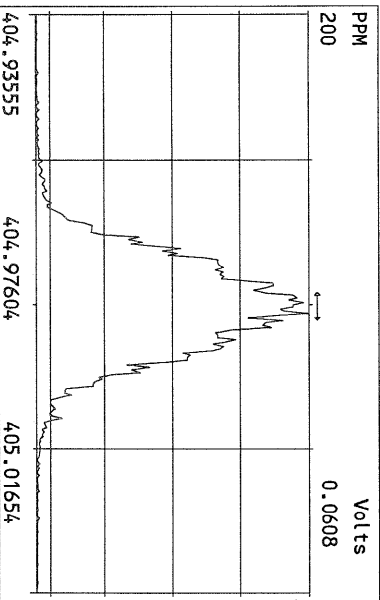
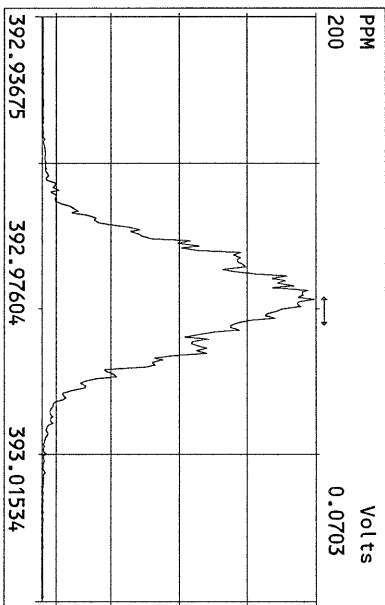
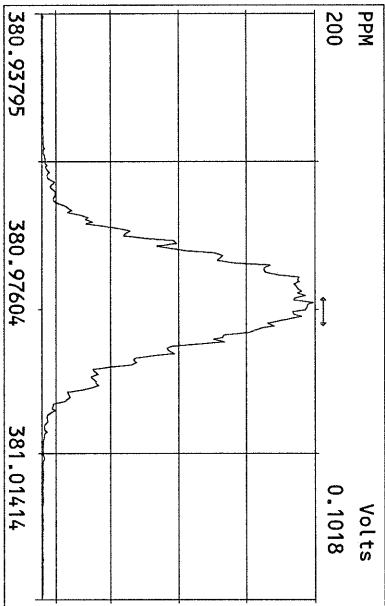
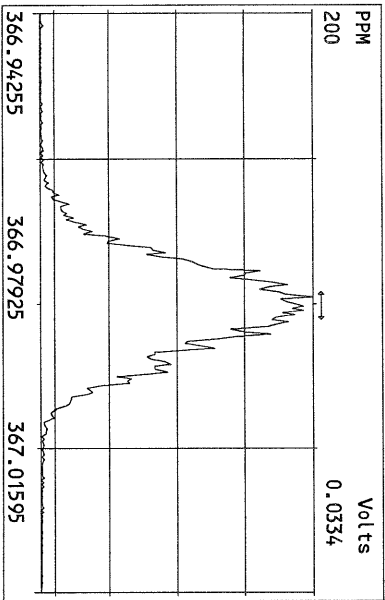
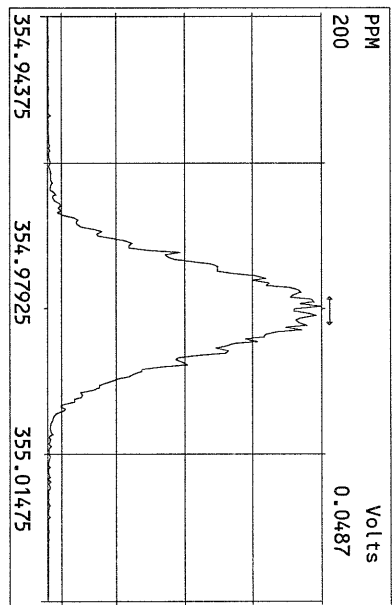
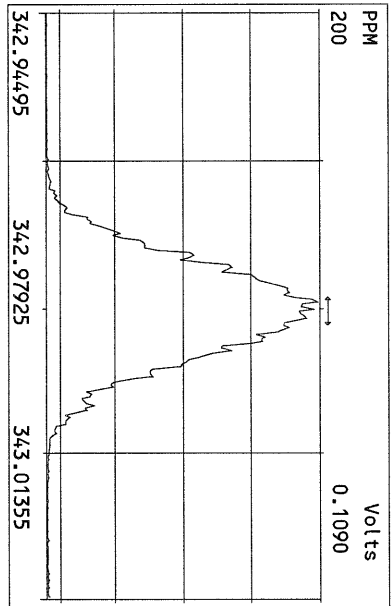
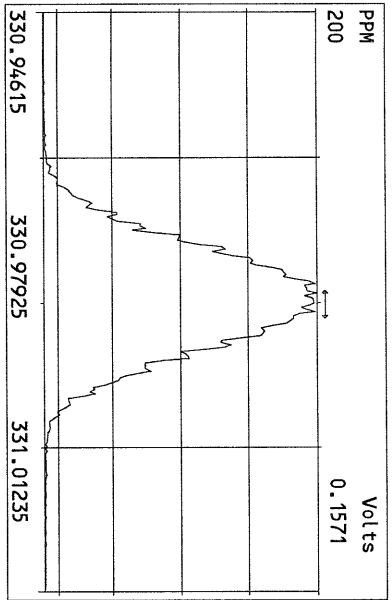


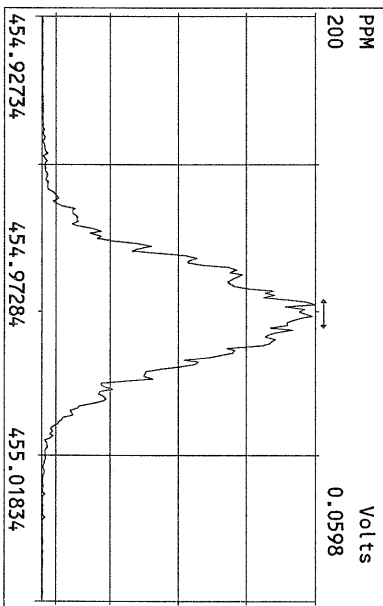
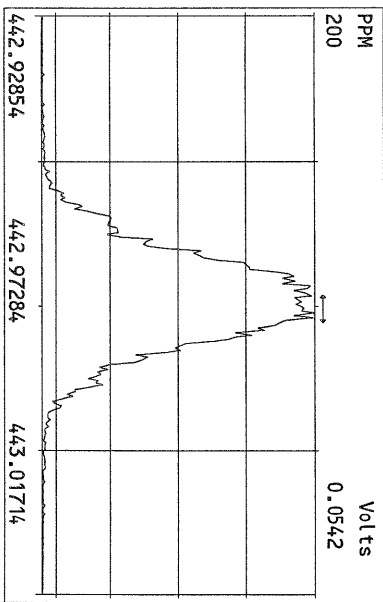
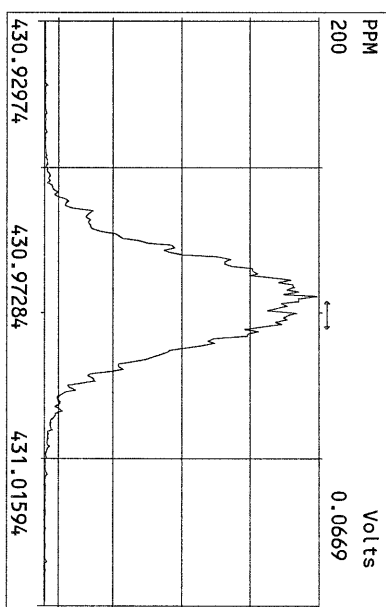
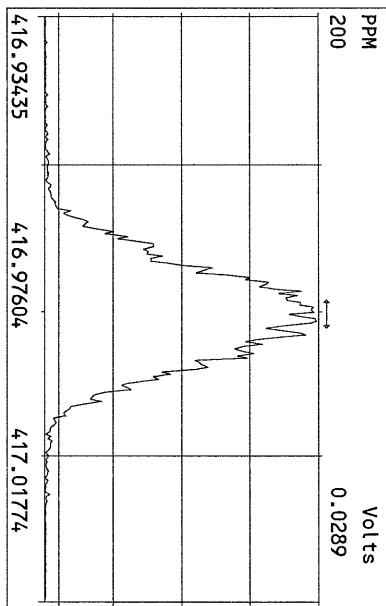
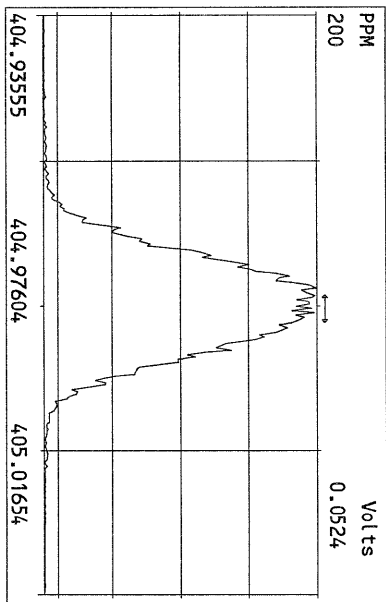
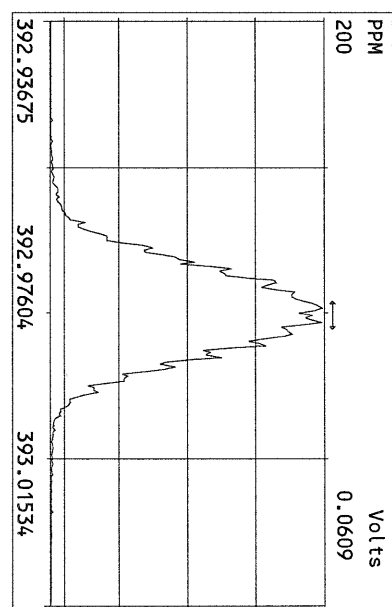
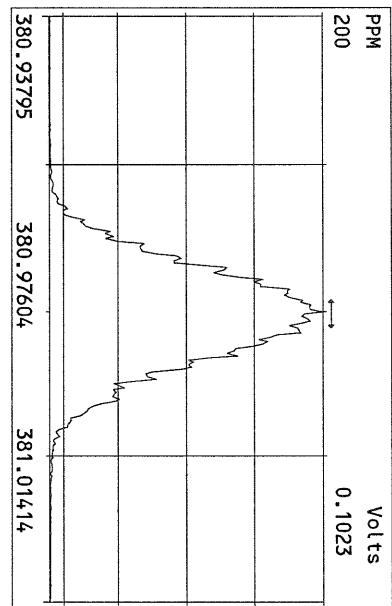
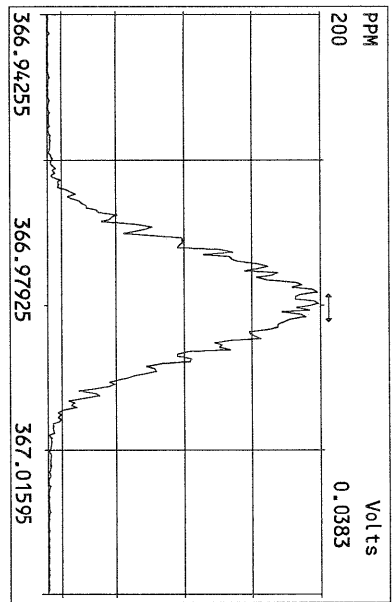
File:07JAN16Y #1-348 Acq: 7-JAN-2016 15:34:29 GC EI+ Voltage SIR Autospec-Ultima
513.6775 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y1 File Text:Fronter Analytical Laboratory FAL4
100 %

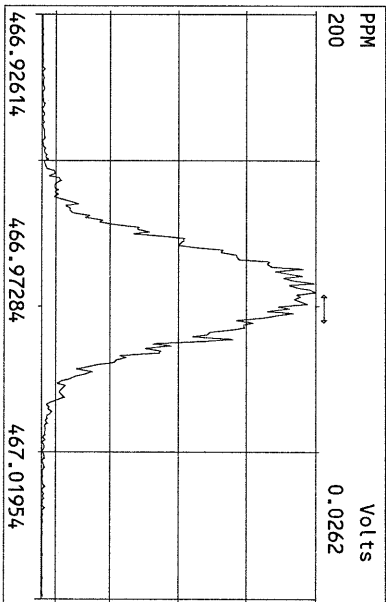
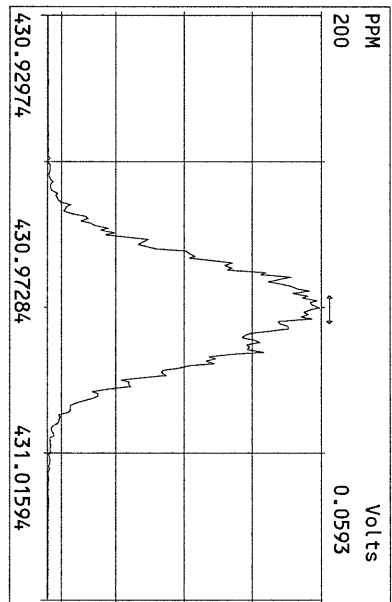
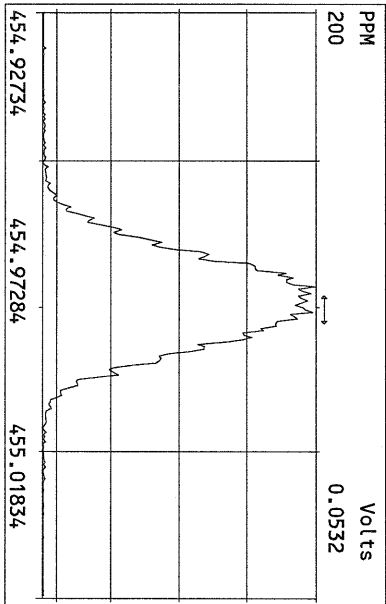
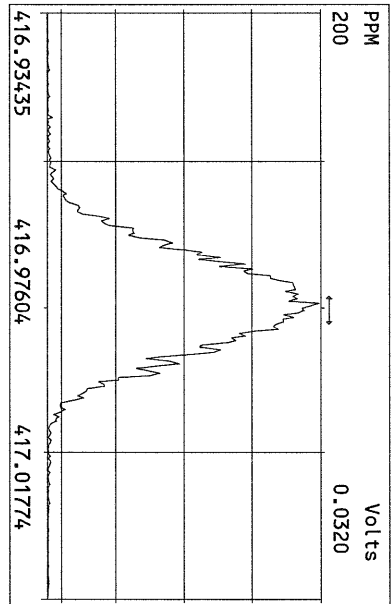
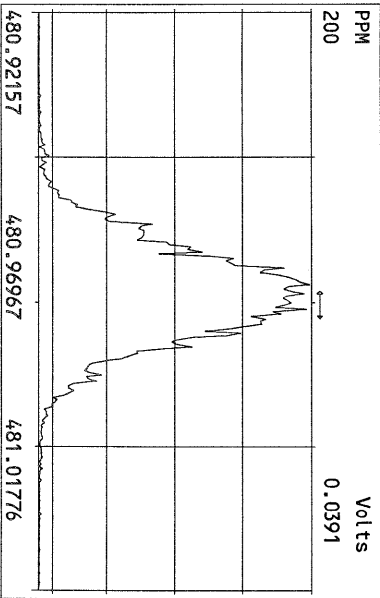
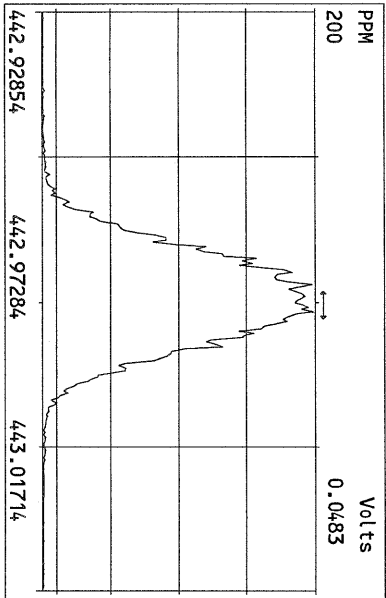
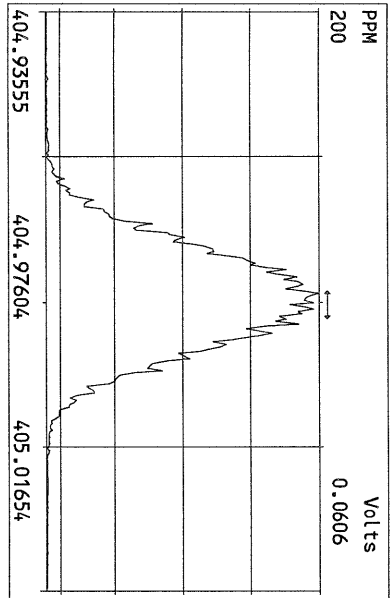




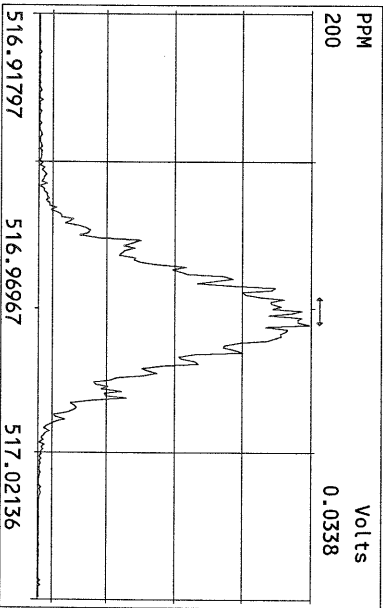
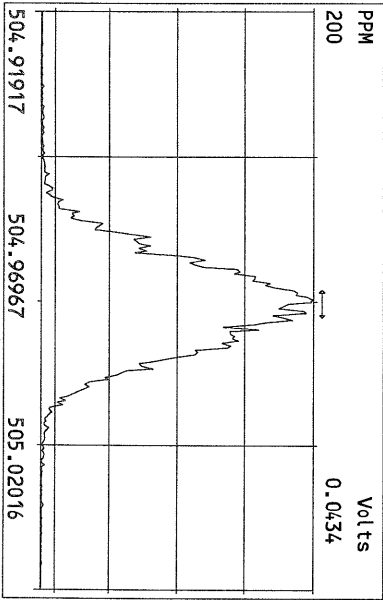
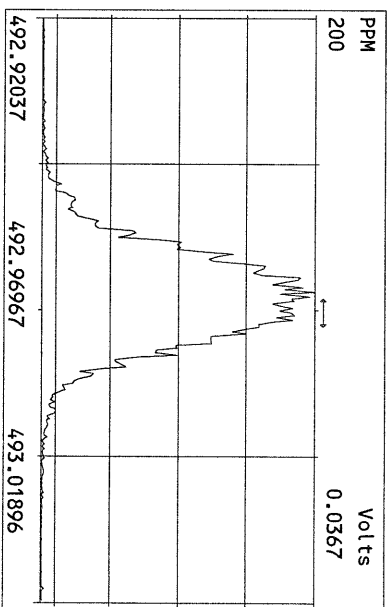
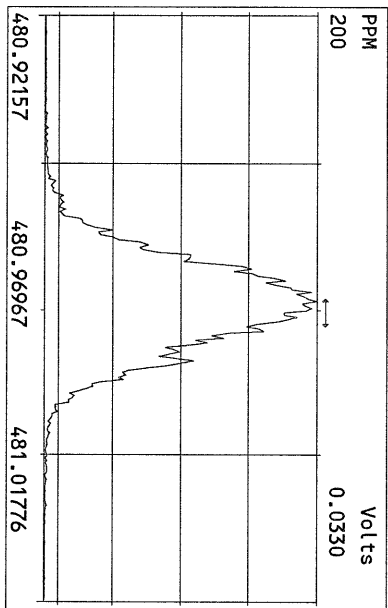
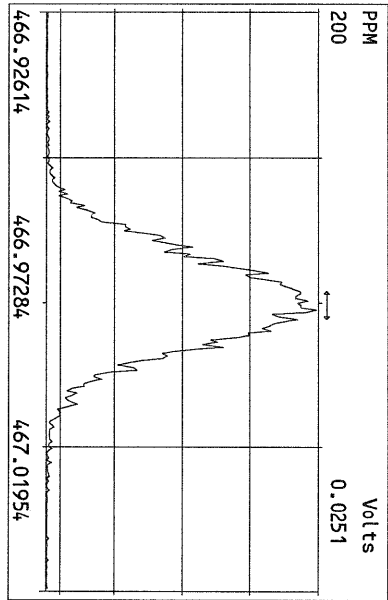
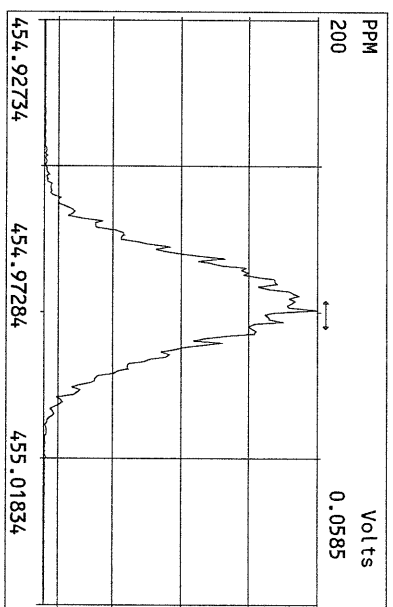
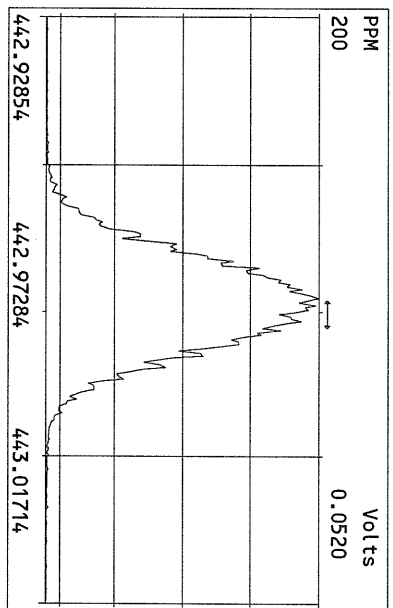
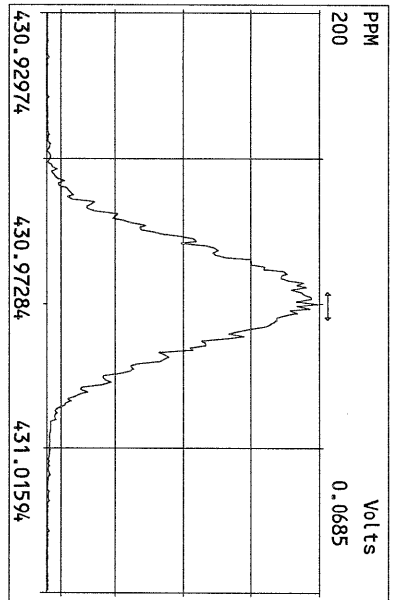
Peak Locate Examination: 8-JAN-2016:09:44 File:07JAN16Y_RES_CHECK
 Experiment:PCDD Function:2 Reference:PFK







Peak Locate Examination: 8-JAN-2016:09:45 File:07JAN16Y_RES_CHECK
Experiment:PCDD Function:5 Reference:PKK



USEPA - ITD

FORM 4A
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: Frontier Analytical Laboratory Episode No.:

Contract No.: SAS No.:

Initial Calibration Date: 12/29/15

Instrument ID: FAL4 GC Column ID: DB5

VER Data Filename: 07JAN16Y Sam:16 Analysis Date: 8-JAN-16 05:21:12

NATIVE ANALYTES	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	ACCEPT	CONC. FOUND	CONC. RANGE (ng/mL) (3)
2,3,7,8-TCDD	M/M+2	0.80	0.65-0.89	y	10.7	7.80 - 12.9 ✓
1,2,3,7,8-PeCDD	M+2/M+4	1.56	1.32-1.78	y	54.5	39.0 - 65.0 ✓
1,2,3,4,7,8-HxCDD	M+2/M+4	1.24	1.05-1.43	y	52.5	39.0 - 64.0 ✓
1,2,3,6,7,8-HxCDD	M+2/M+4	1.25	1.05-1.43	y	55.5	39.0 - 64.0 ✓
1,2,3,7,8,9-HxCDD	M+2/M+4	1.24	1.05-1.43	y	52.2	41.0 - 61.0 ✓
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.06	0.88-1.20	y	49.7	43.0 - 58.0 ✓
OCDD	M+2/M+4	0.92	0.76-1.02	y	104	79.0 - 126 ✓
2,3,7,8-TCDF	M/M+2	0.79	0.65-0.89	y	10.1	8.40 - 12.0 ✓
1,2,3,7,8-PeCDF	M+2/M+4	1.52	1.32-1.78	y	49.5	41.0 - 60.0 ✓
2,3,4,7,8-PeCDF	M+2/M+4	1.54	1.32-1.78	y	50.4	41.0 - 60.0 ✓
1,2,3,4,7,8-HxCDF	M+2/M+4	1.23	1.05-1.43	y	48.1	45.0 - 56.0 ✓
1,2,3,6,7,8-HxCDF	M+2/M+4	1.25	1.05-1.43	y	49.2	44.0 - 57.0 ✓
2,3,4,6,7,8-HxCDF	M+2/M+4	1.25	1.05-1.43	y	50.0	44.0 - 57.0 ✓
1,2,3,7,8,9-HxCDF	M+2/M+4	1.23	1.05-1.43	y	49.9	45.0 - 56.0 ✓
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.06	0.88-1.20	y	51.0	45.0 - 55.0 ✓
1,2,3,4,7,8,9-HpCDF	M+2/M+4	1.07	0.88-1.20	y	51.3	43.0 - 58.0 ✓
OCDF	M+2/M+4	0.92	0.76-1.02	y	103	63.0 - 159 ✓

(1) See Table 8, Method 1613, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613.

(3) Contract-required concentration range as specified in Table 6, Method 1613.

Analyst: 

Date: 1/8/16

USEPA - ITD

FORM 4B
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: Frontier Analytical Laboratory

Episode No.:

Contract No.:

SAS No.:

Initial Calibration Date: 12/29/15

Instrument ID: FAL4

GC Column ID: DB5

VER Data Filename: 07JAN16Y Sam:16

Analysis Date: 8-JAN-16 05:21:12


LABELLED COMPOUNDS	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	ACCEPT	CONC. FOUND	CONC. RANGE (ng/mL) (3)
13C-2,3,7,8-TCDD	M/M+2	0.80	0.65-0.89	y	99.2	82.0 - 121 ✓
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.57	1.32-1.78	y	95.9	62.0 - 160 ✓
13C-1,2,3,4,7,8-HxCDD	M+2/M+4	1.35	1.05-1.43	y	106	85.0 - 117 ✓
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.34	1.05-1.43	y	104	85.0 - 118 ✓
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.09	0.88-1.20	y	111	72.0 - 138 ✓
13C-OCDD	M+2/M+4	0.92	0.76-1.02	y	208	96.0 - 418 ✓
13C-2,3,7,8-TCDF	M/M+2	0.84	0.65-0.89	y	112	71.0 - 140 ✓
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.63	1.32-1.78	y	115	76.0 - 130 ✓
13C-2,3,4,7,8-PeCDF	M+2/M+4	1.65	1.32-1.78	y	115	77.0 - 130 ✓
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.54	0.43-0.59	y	115	76.0 - 134 ✓
13C-1,2,3,6,7,8-HxCDF	M/M+2	0.55	0.43-0.59	y	114	70.0 - 143 ✓
13C-2,3,4,6,7,8-HxCDF	M/M+2	0.54	0.43-0.59	y	115	73.0 - 137 ✓
13C-1,2,3,7,8,9-HxCDF	M/M+2	0.54	0.43-0.59	y	113	74.0 - 135 ✓
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.49	0.37-0.51	y	112	78.0 - 129 ✓
13C-1,2,3,4,7,8,9-HpCDF	M/M+2	0.48	0.37-0.51	y	109	77.0 - 129 ✓
13C-OCDF	M+2/M+4	0.91	0.76-1.02	y	206	96.0 - 415 ✓
CLEANUP STANDARD (4)						
37Cl-2,3,7,8-TCDD					10.3	7.90 - 12.7 ✓

(1) See Table 8, Method 1613, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613.

(3) Contract-required concentration range as specified in Table 6, Method 1613.

(4) No ion abundance ratio; report concentration found.

Analyst: 

Date: 1/8/16

FORM 5
PCDD/PCDF RT WINDOW AND ISOMER SPECIFICITY STANDARDS

Lab Name: Frontier Analytical Laboratory Episode No.:
Contract No.: SAS No.:
Instrument ID: FAL4 Initial Calibration Date: 12/29/15
RT Window Data Filename: 07JAN16Y Sam:16 Analysis Date: 8-JAN-16 Time: 05:21:12
DB-5 IS Data Filename: 07JAN16Y Sam:16 Analysis Date: 8-JAN-16 Time: 05:21:12
DB-225 IS Date Filename: Analysis Date: Time:

DB-5 RT WINDOW DEFINING STANDARDS RESULTS

	ABSOLUTE		ABSOLUTE
ISOMERS	RT	ISOMERS	RT
1,3,6,8-TCDD (F)	24:23 ✓	1,3,6,8-TCDF (F)	23:02 ✓
1,2,8,9-TCDD (L)	28:24 ✓	1,2,8,9-TCDF (L)	28:38 ✓
1,2,4,7,9-PeCDD (F)	30:17 ✓	1,3,4,6,8-PeCDF (F)	28:27 ✓
1,2,3,8,9-PeCDD (L)	33:51 ✓	1,2,3,8,9-PeCDF (L)	34:18 ✓
1,2,4,6,7,9-HxCDD (F)	36:09 ✓	1,2,3,4,6,8-HxCDF (F)	35:17 ✓
1,2,3,7,8,9-HxCDD (L)	39:15 ✓	1,2,3,7,8,9-HxCDF (L)	39:49 ✓
1,2,3,4,6,7,9-HpCDD (F)	42:49 ✓	1,2,3,4,6,7,8-HpCDF (F)	42:18 ✓
1,2,3,4,6,7,8-HpCDD (L)	44:11 ✓	1,2,3,4,7,8,9-HpCDF (L)	45:07 ✓

(F) = First eluting isomer (DB-5); (L) = Last eluting isomer (DB-5)

=====

ISOMER SPECIFICITY (IS) TEST STANDARD RESULTS

% VALLEY HEIGHT
BETWEEN
COMPARED PEAKS (1)

<25%

(1) To meet contract requirement, %Valley Height Between Compared Peaks shall not exceed 25% (section 15.4.2.2, Method 1613).

Analyst: _____ Date: 1/8/16 _____

USEPA - ITD

FORM 6A
PCDD/PCDF RELATIVE RETENTION TIMES

Lab Name: Frontier Analytical Laboratory

Episode No.:

Contract No.:

SAS No.:

Init. Cal. Date: 12/29/15

Instrument ID: FAL4

GC Column ID: DB5

Analysis Date: 8-JAN-16 05:21:12

CS3 or VER Data Filename: 07JAN16Y

Sam:16

NATIVE ANALYTES	RETENTION TIME REFERENCE	RRT	RRT QC LIMITS (1)
2,3,7,8-TCDD	13C-2,3,7,8-TCDD	1.001	0.999-1.002 ✓
2,3,7,8-TCDF	13C-2,3,7,8-TCDF	1.001	0.999-1.003 ✓
1,2,3,7,8-PeCDD	13C-1,2,3,7,8-PeCDD	1.000	0.999-1.002 ✓
1,2,3,7,8-PeCDF	13C-1,2,3,7,8-PeCDF	1.001	0.999-1.002 ✓
2,3,4,7,8-PeCDF	13C-2,3,4,7,8-PeCDF	1.000	0.999-1.002 ✓
LABELED COMPOUNDS			
37Cl-2,3,7,8-TCDD	13C-1,2,3,4-TCDD	1.023	0.989-1.052 ✓
13C-2,3,7,8-TCDD		1.021	0.976-1.043 ✓
13C-2,3,7,8-TCDF		0.993	0.923-1.103 ✓
13C-1,2,3,7,8-PeCDD		1.239	1.000-1.567 ✓
13C-1,2,3,7,8-PeCDF		1.175	0.923-1.203 ✓
13C-2,3,4,7,8-PeCDF		1.224	0.923-1.303 ✓

(1) Contract-required limits for Relative Retention Times (RRT) as specified in Table 2, Method 1613.

Analyst: _____

Date: _____

USEPA - ITD

FORM 6B
PCDD/PCDF RELATIVE RETENTION TIMES

Lab Name: Frontier Analytical Laboratory Episode No.:

Contract No.: SAS No.: Init. Cal. Date: 12/29/15

Instrument ID: FAL4 GC Column ID: DB5


Analysis Date: 8-JAN-16 05:21:12 CS3 or VER Data Filename: 07JAN16Y Sam:16

NATIVE ANALYTES	RETENTION TIME REFERENCE	RRT	RRT QC LIMITS (1)
1,2,3,4,7,8-HxCDD	13C-1,2,3,4,7,8-HxCDD	1.001	0.999-1.001 ✓
1,2,3,6,7,8-HxCDD	13C-1,2,3,6,7,8-HxCDD	1.000	0.998-1.004 ✓
1,2,3,7,8,9-HxCDD	13C-1,2,3,6,7,8-HxCDD	1.012	1.000-1.019 ✓
1,2,3,4,7,8-HxCDF	13C-1,2,3,4,7,8-HxCDF	1.000	0.999-1.001 ✓
1,2,3,6,7,8-HxCDF	13C-1,2,3,6,7,8-HxCDF	1.001	0.997-1.005 ✓
2,3,4,6,7,8-HxCDF	13C-2,3,4,6,7,8-HxCDF	1.000	0.999-1.001 ✓
1,2,3,7,8,9-HxCDF	13C-1,2,3,7,8,9-HxCDF	1.000	0.999-1.001 ✓
1,2,3,4,6,7,8-HpCDD	13C-1,2,3,4,6,7,8-HpCDD	1.000	0.999-1.001 ✓
1,2,3,4,6,7,8-HpCDF	13C-1,2,3,4,6,7,8-HpCDF	1.000	0.999-1.001 ✓
1,2,3,4,7,8,9-HpCDF	13C-1,2,3,4,7,8,9-HpCDF	1.000	0.999-1.001 ✓
OCDD	13C-OCDD	1.000	0.999-1.001 ✓
OCDF	13C-OCDF	1.000	0.999-1.001 ✓

LABELED COMPOUNDS

13C-1,2,3,4,7,8-HxCDD	13C-1,2,3,7,8,9-HxCDD	0.984	0.977-1.000 ✓
13C-1,2,3,6,7,8-HxCDD		0.989	0.981-1.003 ✓
13C-1,2,3,4,7,8-HxCDF		0.949	0.944-0.970 ✓
13C-1,2,3,6,7,8-HxCDF		0.954	0.949-0.975 ✓
13C-2,3,4,6,7,8-HxCDF		0.978	0.959-1.021 ✓
13C-1,2,3,7,8,9-HxCDF		1.015	0.977-1.047 ✓
13C-1,2,3,4,6,7,8-HpCDD		1.127	1.086-1.130 ✓
13C-1,2,3,4,6,7,8-HpCDF		1.078	1.043-1.085 ✓
13C-1,2,3,4,7,8,9-HpCDF		1.151	1.057-1.154 ✓
13C-OCDD		1.268	1.032-1.311 ✓
13C-OCDF		1.277	1.000-1.311 ✓

(1) Contract-required limits for Relative Retention Times (RRT) as specified in Table 2, Method 1613.

Analyst: 

Date: 1/8/16

Name	Resp	RA	RT	RRF	Conc	Qual	Fac Noise-1	Noise-2	DL	#Hom
2,3,7,8-TCDD	1.22e+06	0.80 y	27:27	1.08	10.7		2.50	-	*	
1,2,3,7,8-PeCDD	3.63e+06	1.56 y	33:16	0.90	54.5		2.50	-	*	
1,2,3,4,7,8-HxCDD	3.12e+06	1.24 y	38:37	0.98	52.5		2.50	-	*	
1,2,3,6,7,8-HxCDD	3.19e+06	1.25 y	38:47	1.00	55.5		2.50	-	*	
1,2,3,7,8,9-HxCDD	3.43e+06	1.24 y	39:15	1.11	52.2		2.50	-	*	
1,2,3,4,6,7,8-HpCDD	3.38e+06	1.06 y	44:11	1.09	49.7		2.50	-	*	
OCDD	5.19e+06	0.92 y	49:43	1.04	104		2.50	-	*	
2,3,7,8-TCDF	1.50e+06	0.79 y	26:42	1.05	10.1		2.50	-	*	
1,2,3,7,8-PeCDF	6.10e+06	1.52 y	31:34	0.98	49.5		2.50	-	*	
2,3,4,7,8-PeCDF	5.91e+06	1.54 y	32:53	1.01	50.4		2.50	-	*	
1,2,3,4,7,8-HxCDF	5.64e+06	1.23 y	37:14	1.23	48.1		2.50	-	*	
1,2,3,6,7,8-HxCDF	5.54e+06	1.25 y	37:26	1.17	49.2		2.50	-	*	
2,3,4,6,7,8-HxCDF	5.36e+06	1.25 y	38:23	1.12	50.0		2.50	-	*	
1,2,3,7,8,9-HxCDF	4.96e+06	1.23 y	39:49	1.15	49.9		2.50	-	*	
1,2,3,4,6,7,8-HpCDF	5.43e+06	1.06 y	42:18	1.36	51.0		2.50	-	*	
1,2,3,4,7,8,9-HpCDF	4.18e+06	1.07 y	45:07	1.23	51.3		2.50	-	*	
OCDF	7.53e+06	0.92 y	50:06	1.13	103		2.50	-	*	
Rec										
13C-2,3,7,8-TCDD	1.05e+07	0.80 y	27:25	1.07	99.2				99.2	
13C-1,2,3,7,8-PeCDD	7.35e+06	1.57 y	33:16	0.78	95.9				95.9	
13C-1,2,3,4,7,8-HxCDD	6.06e+06	1.35 y	38:36	0.87	106				106	
13C-1,2,3,6,7,8-HxCDD	5.74e+06	1.34 y	38:46	0.84	104				104	
13C-1,2,3,4,6,7,8-HpCDD	6.27e+06	1.09 y	44:11	0.85	111				111	
13C-OCDD	9.57e+06	0.92 y	49:42	0.70	208				104	
13C-2,3,7,8-TCDF	1.42e+07	0.84 y	26:40	1.03	112				112	
13C-1,2,3,7,8-PeCDF	1.26e+07	1.63 y	31:32	0.89	115				115	
13C-2,3,4,7,8-PeCDF	1.16e+07	1.65 y	32:52	0.82	115				115	
13C-1,2,3,4,7,8-HxCDF	9.56e+06	0.54 y	37:13	1.26	115				115	
13C-1,2,3,6,7,8-HxCDF	9.66e+06	0.55 y	37:25	1.28	114				114	
13C-2,3,4,6,7,8-HxCDF	9.59e+06	0.54 y	38:22	1.27	115				115	
13C-1,2,3,7,8,9-HxCDF	8.66e+06	0.54 y	39:49	1.16	113				113	
13C-1,2,3,4,6,7,8-HpCDF	7.82e+06	0.49 y	42:17	1.06	112				112	
13C-1,2,3,4,7,8,9-HpCDF	6.65e+06	0.48 y	45:07	0.93	109				109	
13C-OCDF	1.29e+07	0.91 y	50:06	0.95	206				103	
37Cl-2,3,7,8-TCDD	9.08e+05		27:27	0.90	10.3					103
13C-1,2,3,4-TCDD	9.87e+06	0.79 y	26:50	-	26.9					
13C-1,2,3,4-TCDF	1.23e+07	0.85 y	25:33	-	25.5					
13C-1,2,3,7,8,9-HxCDD	6.59e+06	1.35 y	39:13	-	24.2					
Fac Noise-1 Noise-2 DL #Hom										
Total Tetra-Dioxins	5.55e+06		22:46	1.08	48.8		2.50	-	*	32
Total Penta-Dioxins	1.20e+07		30:17	0.90	181		2.50	-	*	27
Total Hexa-Dioxins	1.41e+07		35:16	1.03	232		2.50	-	*	34
Total Hepta-Dioxins	7.41e+06		41:28	1.09	109		2.50	-	*	44
Total Tetra-Furans	6.85e+06		22:42	1.05	46.1		2.50	-	*	30
1st Fn. Tot Penta-Furans	6.98e+06		28:27	0.99	58.0		2.50	-	*	PeCDF 4
Total Penta-Furans	1.79e+07		30:13	0.99	149		2.50	-	*	207 18
Total Hexa-Furans	2.78e+07		35:17	1.16	255		2.50	-	*	20
Total Hepta-Furans	1.03e+07		41:36	1.30	110		2.50	-	*	39

Analyst: 

Date: 1/5/16

Frontier Analytical Laboratory - Acquisition Log

Run Name:07JAN16Y Instrument: FAL4 GC: DB5 Experiment:PCDD

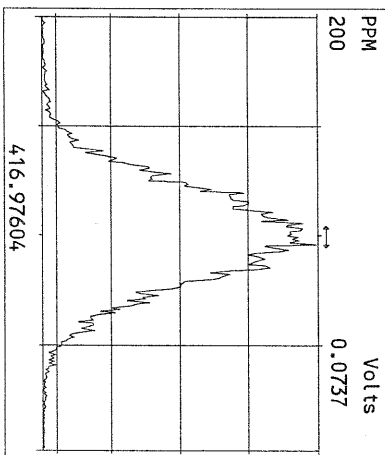
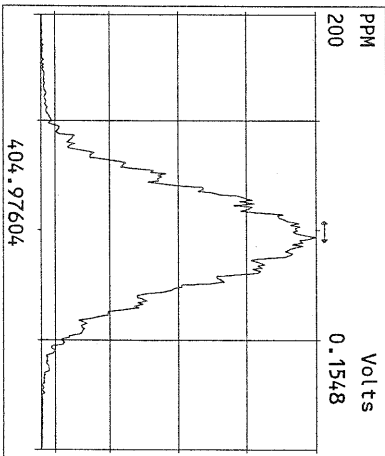
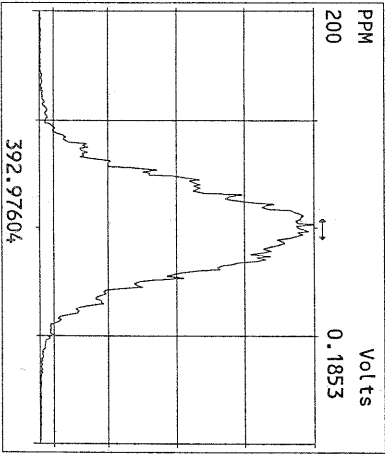
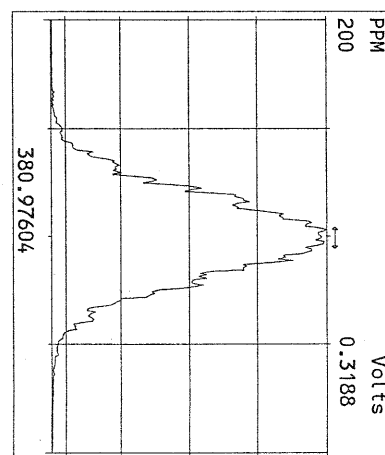
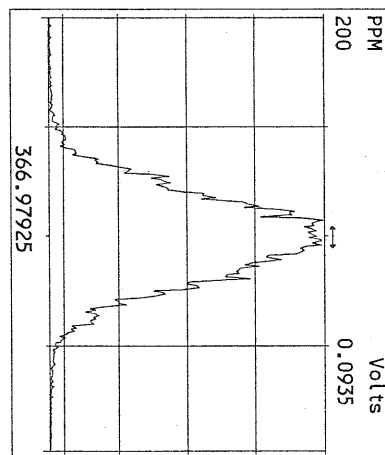
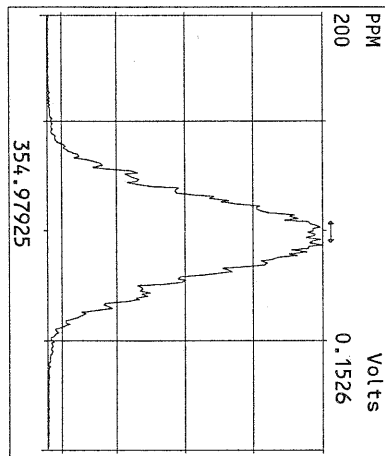
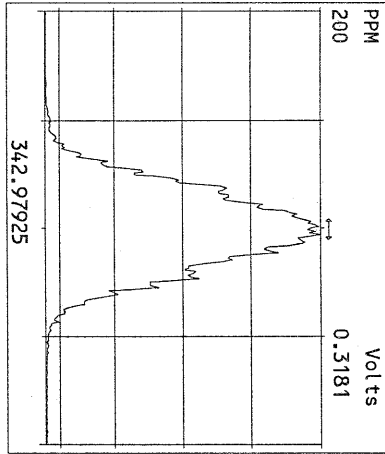
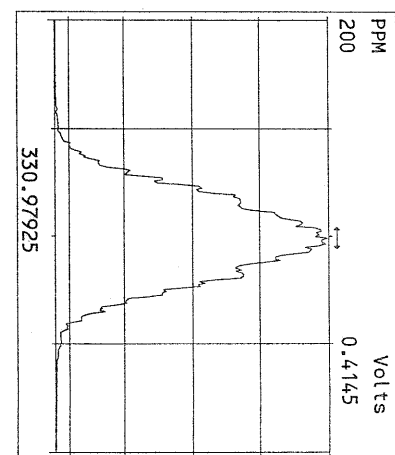
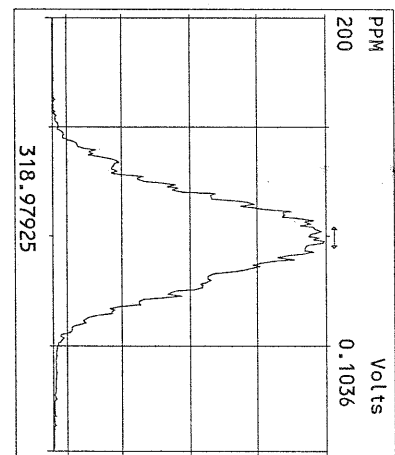
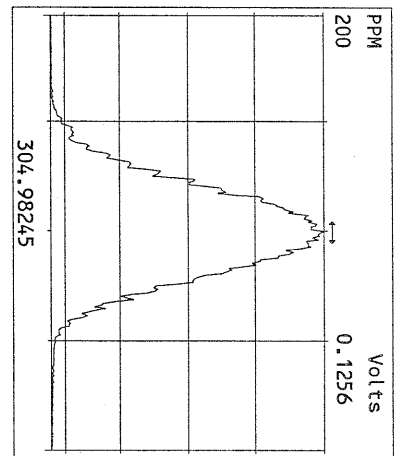
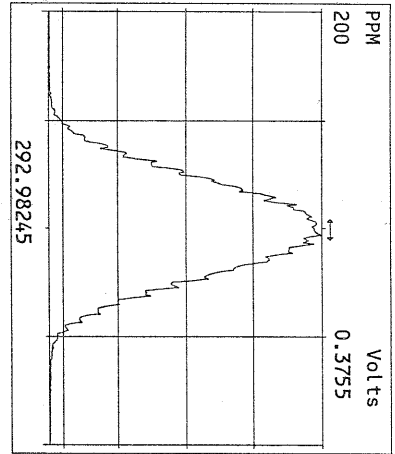
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07JAN16Y 3	3543-001-0001-MB	Method Blank	7-JAN-16 17:29:01	ST010716Y1	ST010716Y2	BS
07JAN16Y 4	9514-001-0001-SA	NAWS-CL ASC-01	7-JAN-16 18:23:49	ST010716Y1	ST010716Y2	BS
07JAN16Y 5	9488-001-0001-SA	1531060-14	7-JAN-16 19:18:36	ST010716Y1	ST010716Y2	BS
07JAN16Y 6	9505-001-0001-SA	DDSD DIGESTER CAKE 12/5-9/20 ₁₁	7-JAN-16 20:13:23	ST010716Y1	ST010716Y2	BS
07JAN16Y 7	9486-002-0001-SA	SB-05-9-10	7-JAN-16 21:08:11	ST010716Y1	ST010716Y2	BS
07JAN16Y 8	9486-001-0001-SA	SB-07-12-13 1:10 Dil	7-JAN-16 22:02:58	ST010716Y1	ST010716Y2	BS
07JAN16Y 9	9528-003-0001-SA	SP-R-DU-2C	7-JAN-16 22:57:45	ST010716Y1	ST010716Y2	BS
07JAN16Y 10	9528-001-0001-SA	SP-FA-1 1:5 Dil	7-JAN-16 23:52:32	ST010716Y1	ST010716Y2	BS
07JAN16Y 11	9528-002-0001-SA	SP-1H/7H	8-JAN-16 00:47:19	ST010716Y1	ST010716Y2	BS
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07JAN16Y 18	QC010716Y4	QC4	8-JAN-16 07:10:41	ST010716Y1	ST010716Y2	BS
07JAN16Y 19	QC010716Y5	QC5	8-JAN-16 08:05:27	ST010716Y1	ST010716Y2	BS
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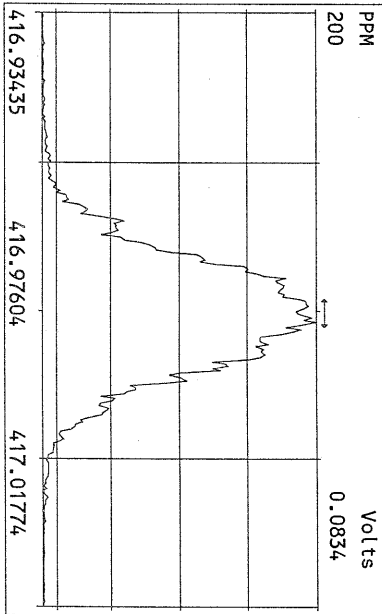
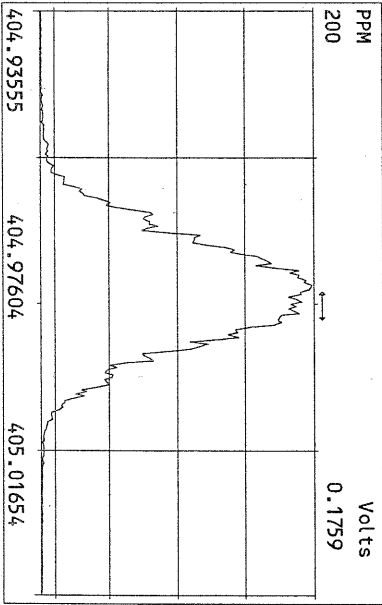
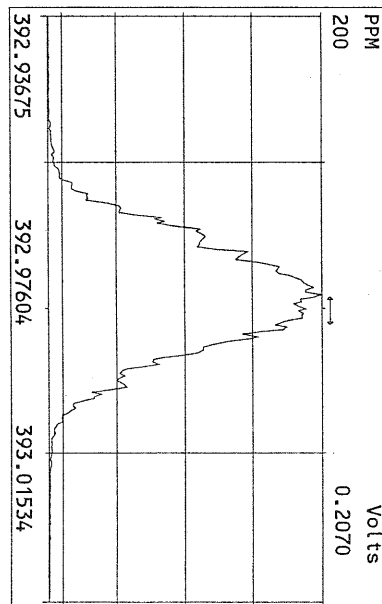
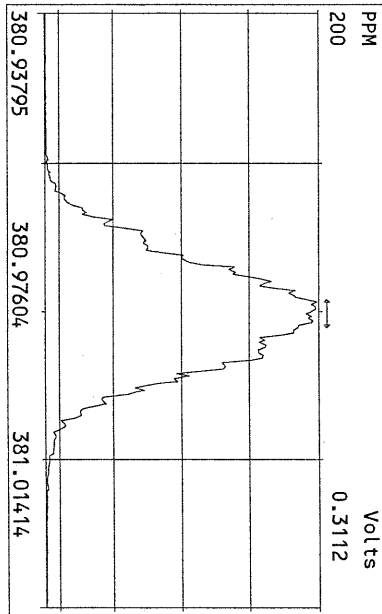
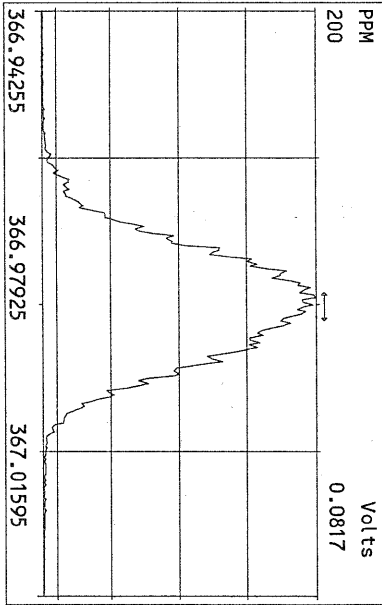
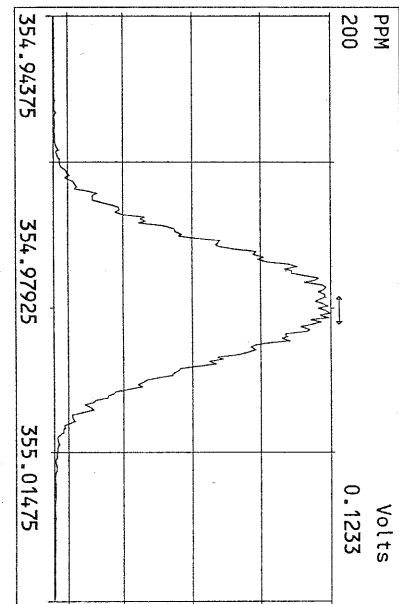
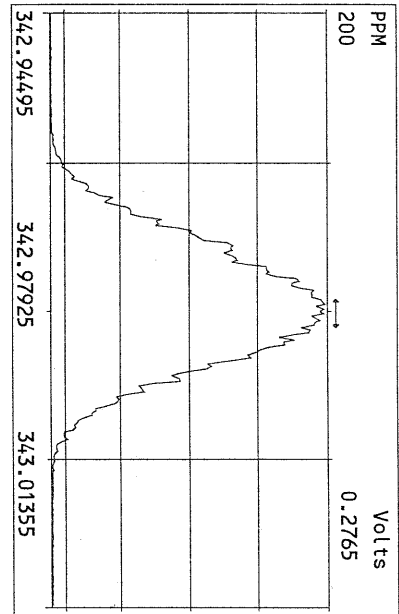
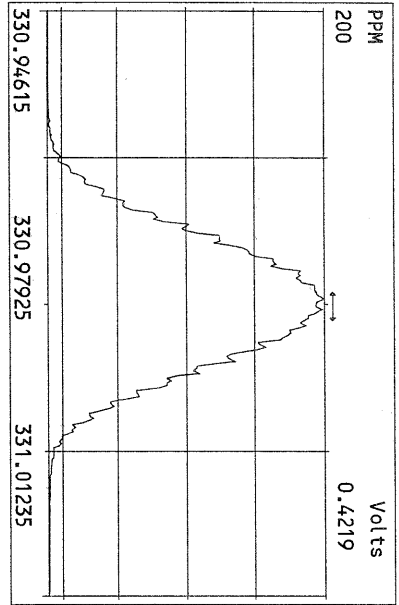
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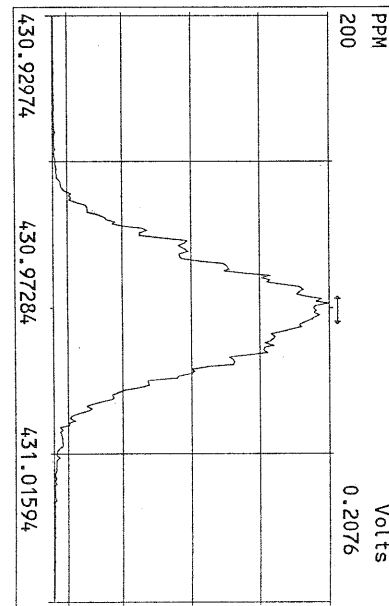
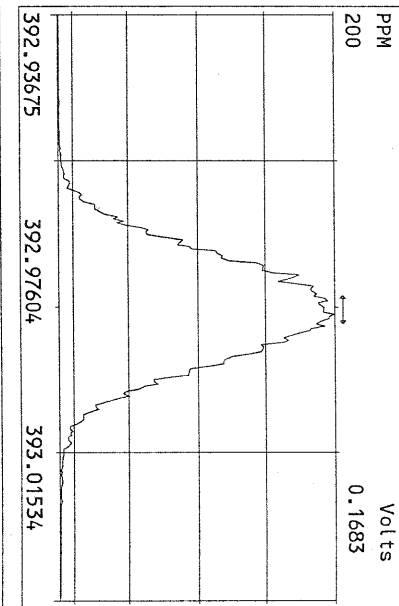
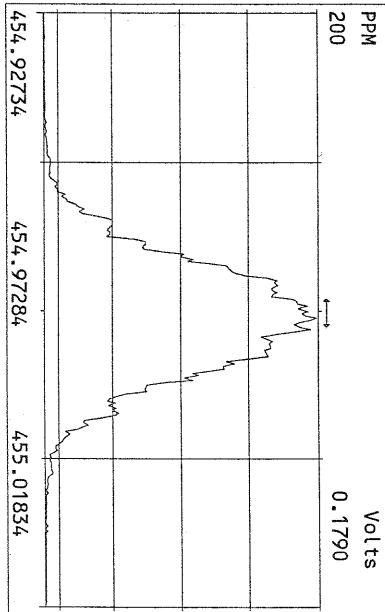
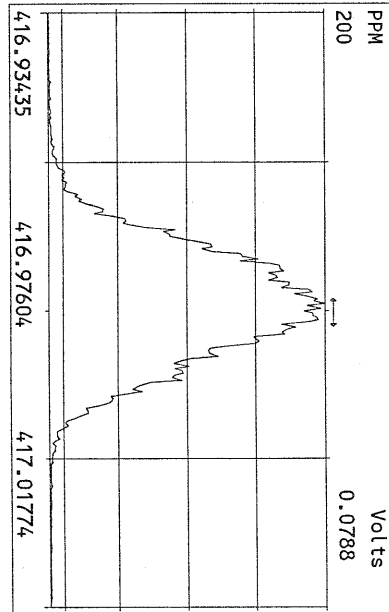
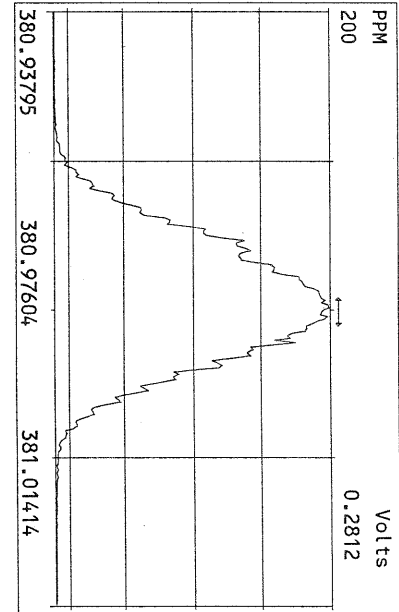
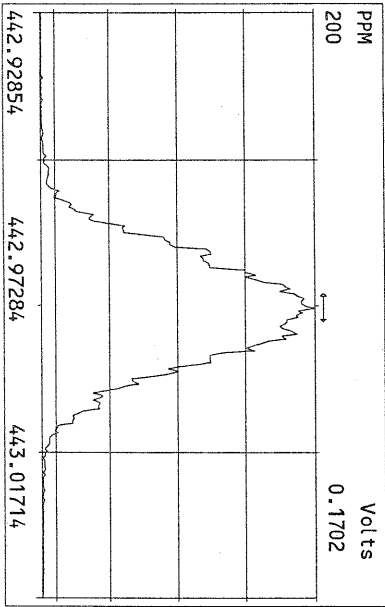
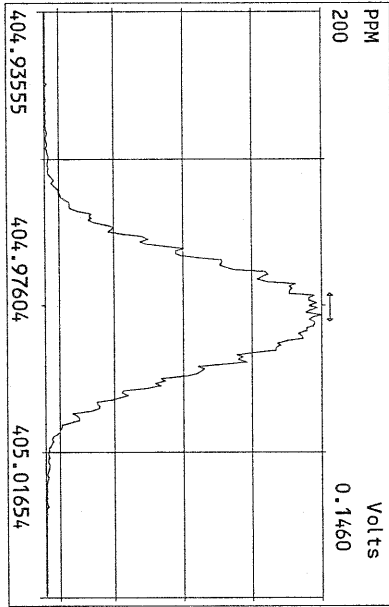
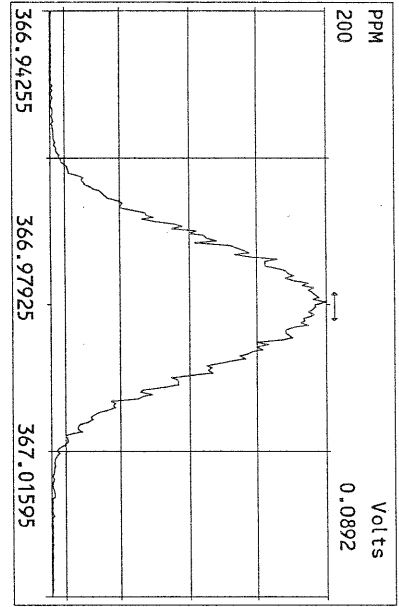
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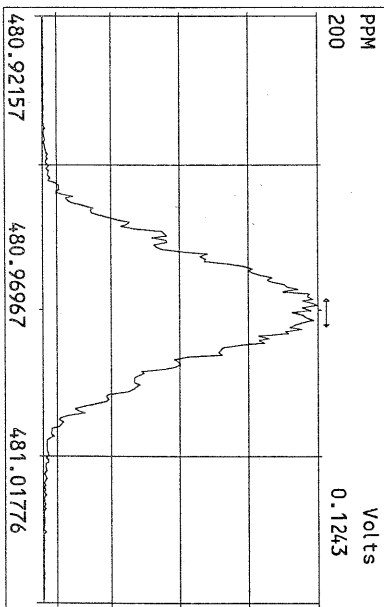
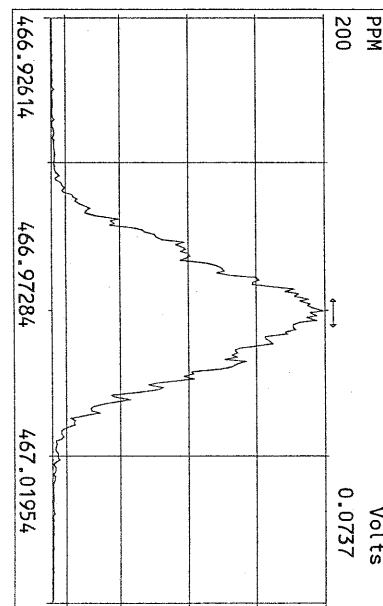
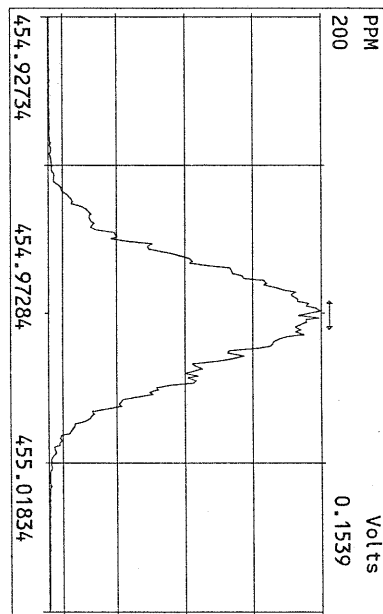
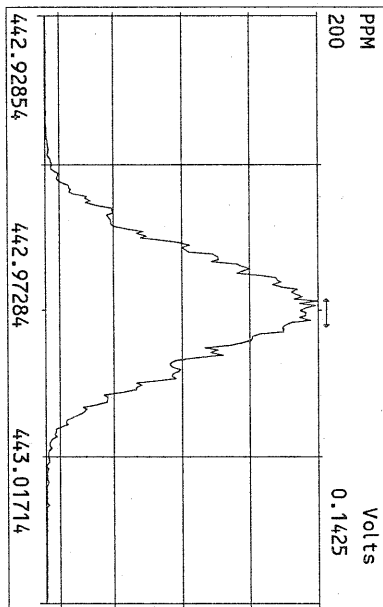
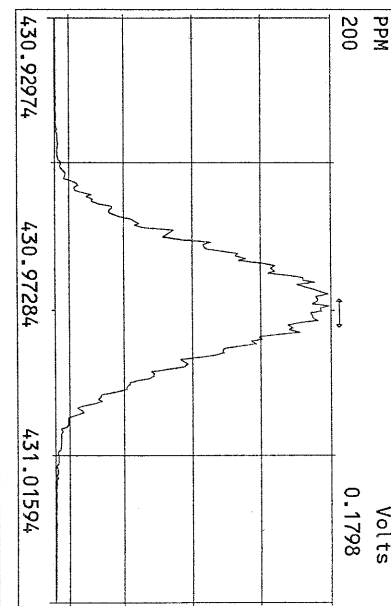
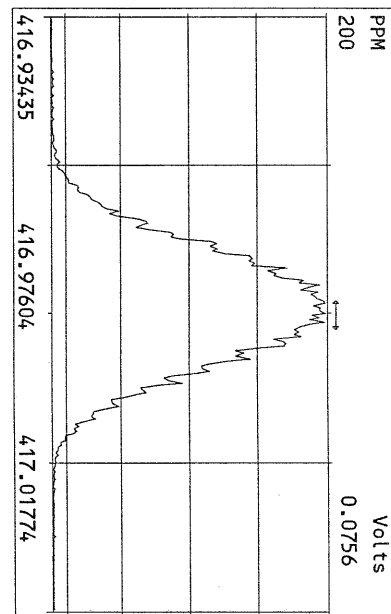
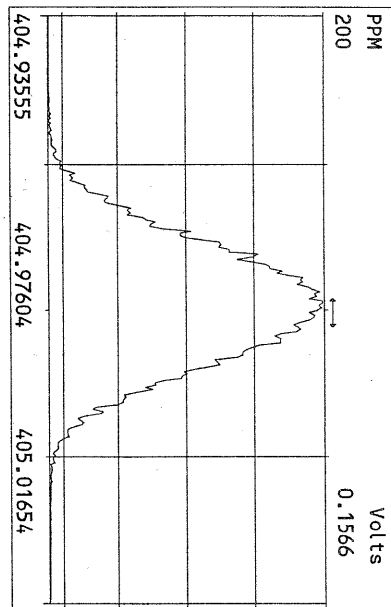
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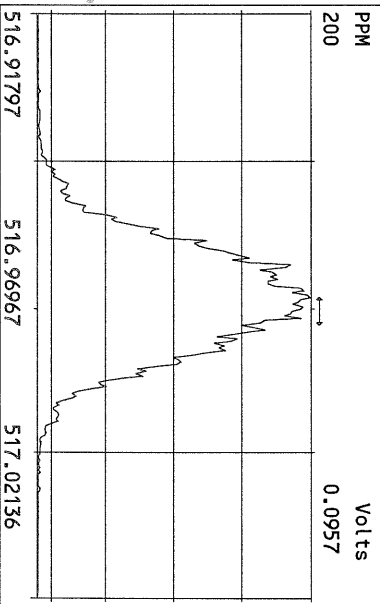
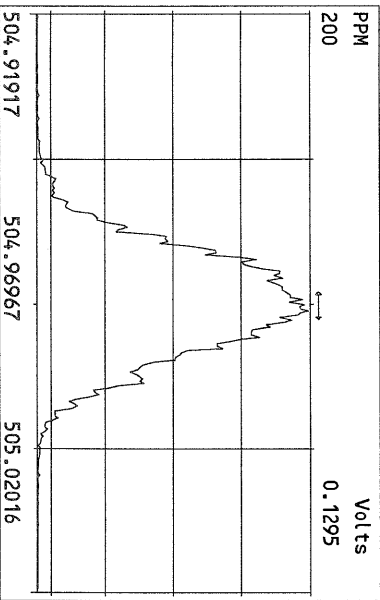
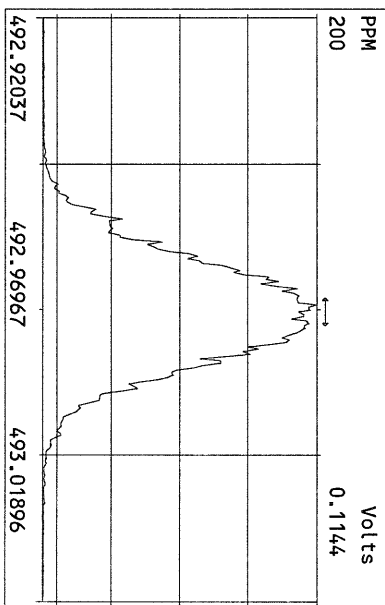
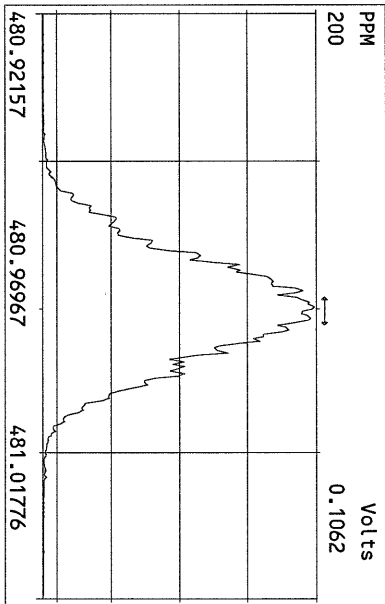
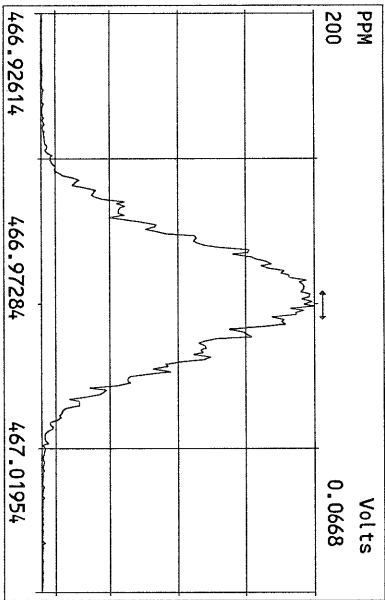
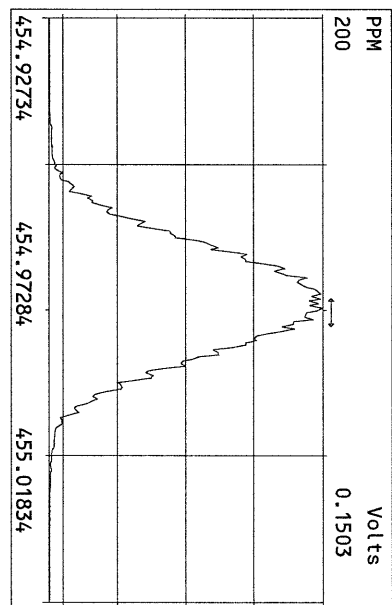
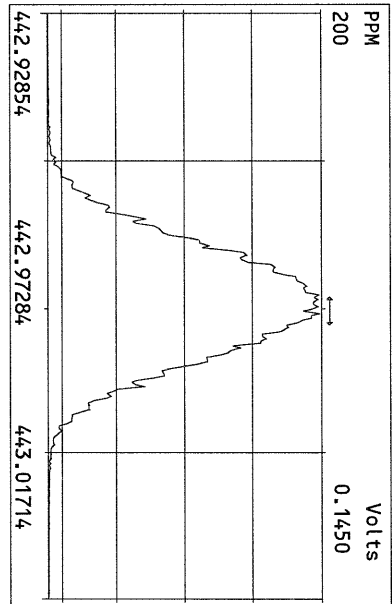
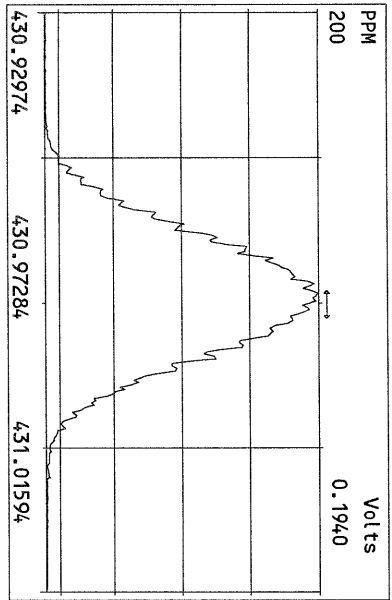
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Experiment:PCDD Function:1 Reference:PFK



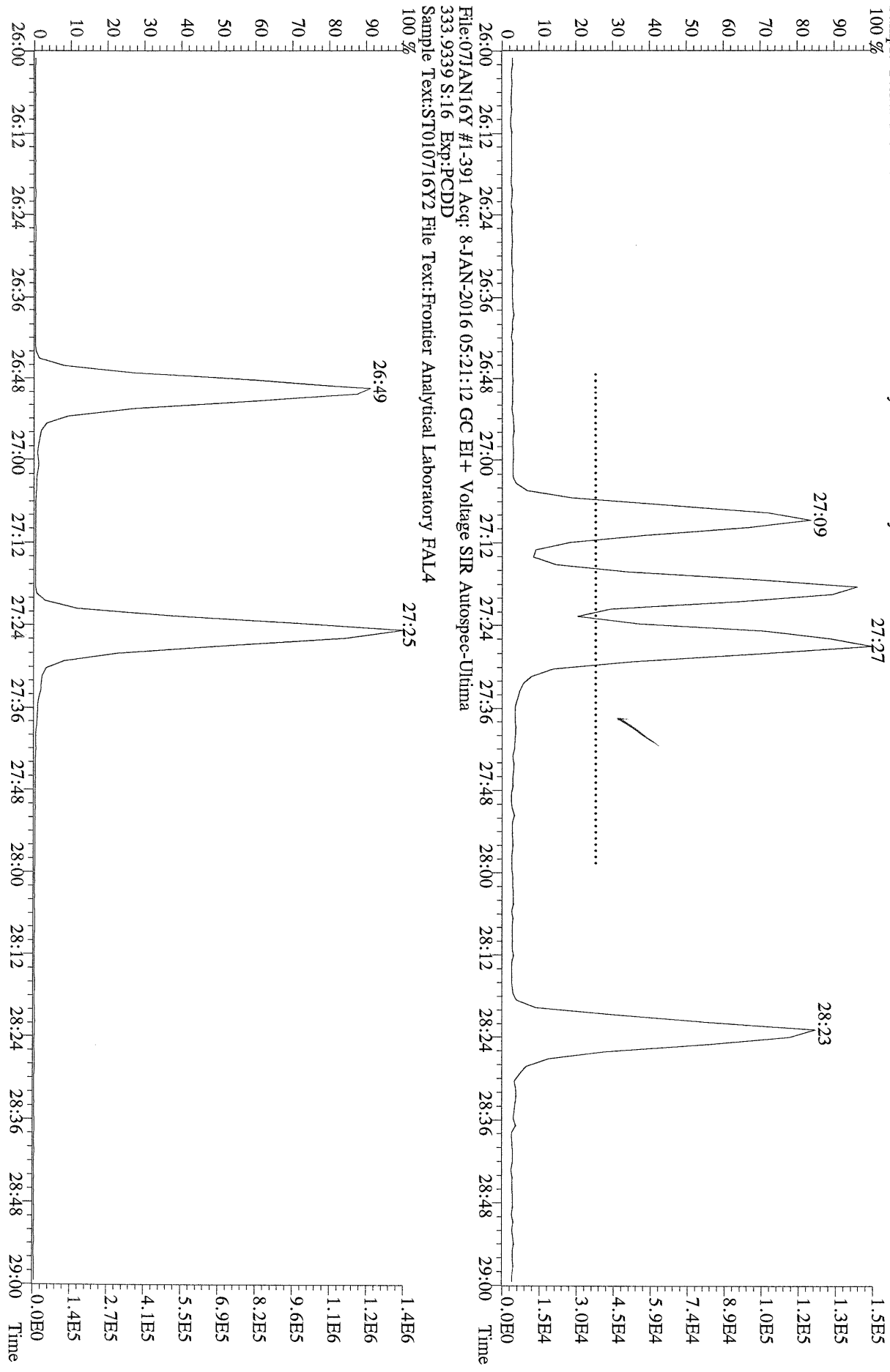






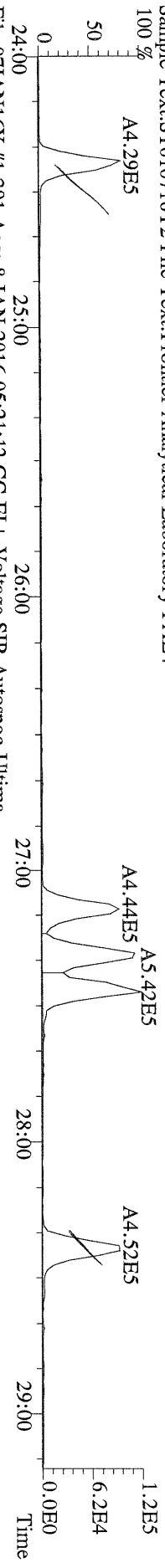


File:07JAN16Y #1-391 Acq: 8-JAN-2016 05:21:12 GC EI+ Voltage SIR Autospec-Ultima
321.8936 S:16 Exp:PCDD
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100 %

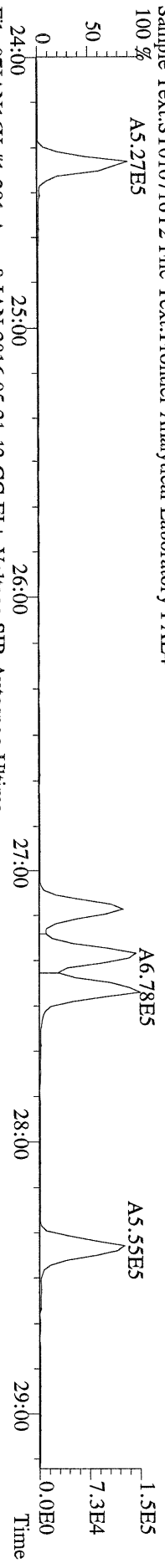


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333.9339 S:16 Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4
100 %

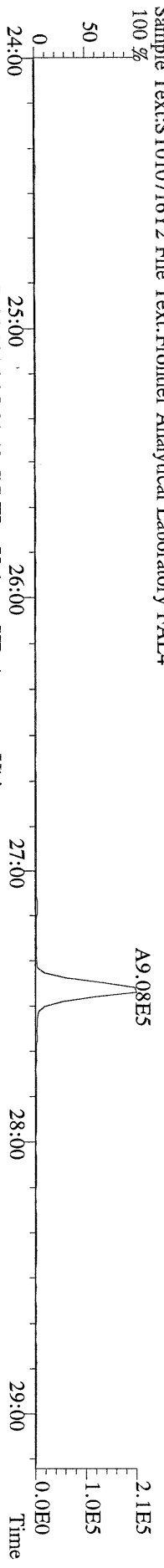
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319.8965 S:16 BSUB(10000,15,-3.0) PKD(5,5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD
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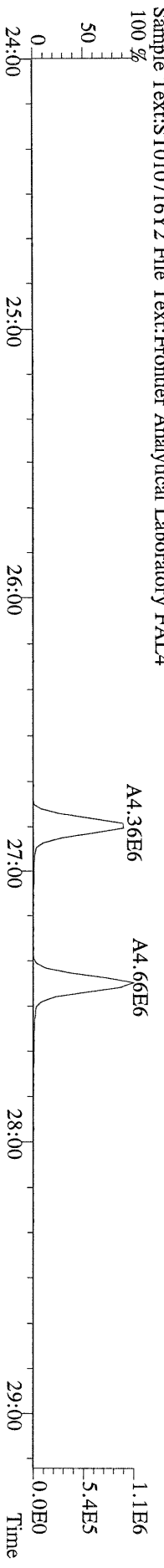
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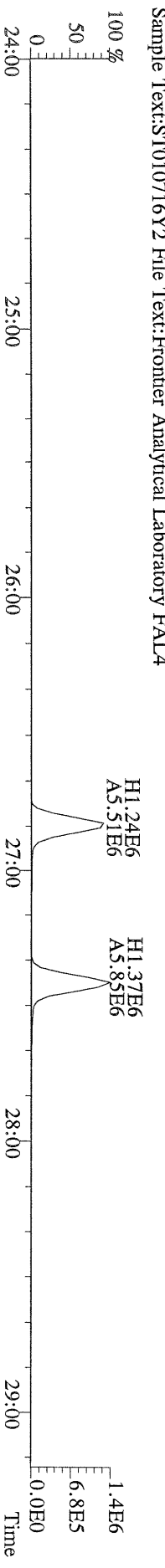
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327.8847 S:16 BSUB(10000,15,-3.0) PKD(5,5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



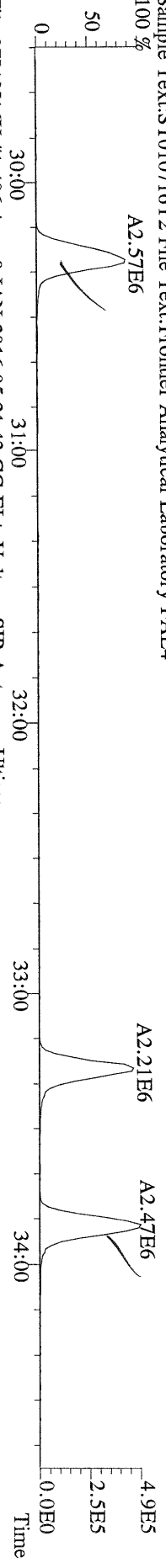
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Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



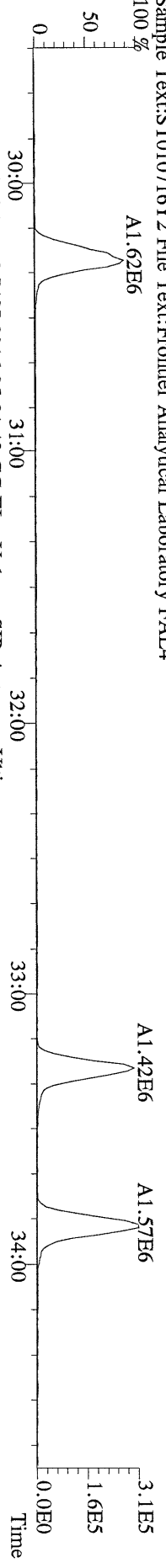
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Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



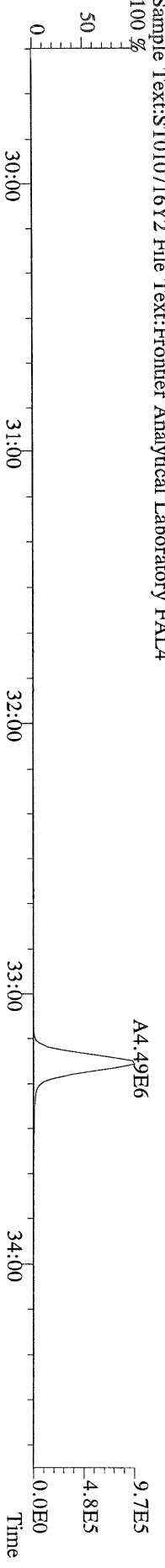
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 355.8546 S:16 F:2 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



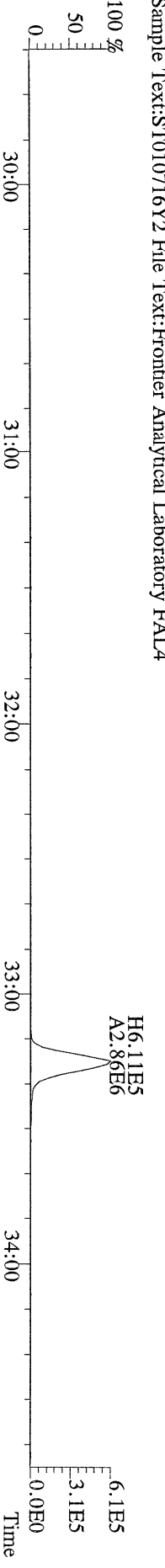
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 357.8517 S:16 F:2 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD
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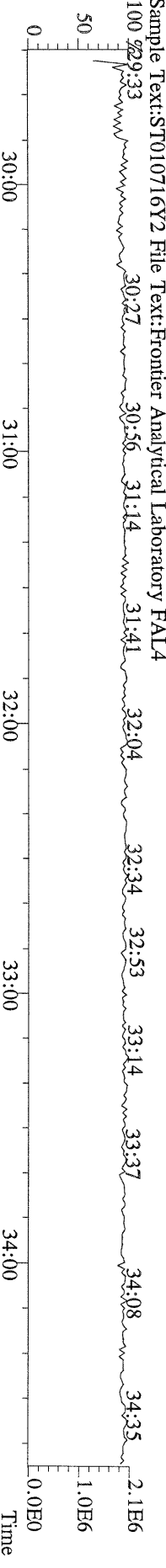
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 Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



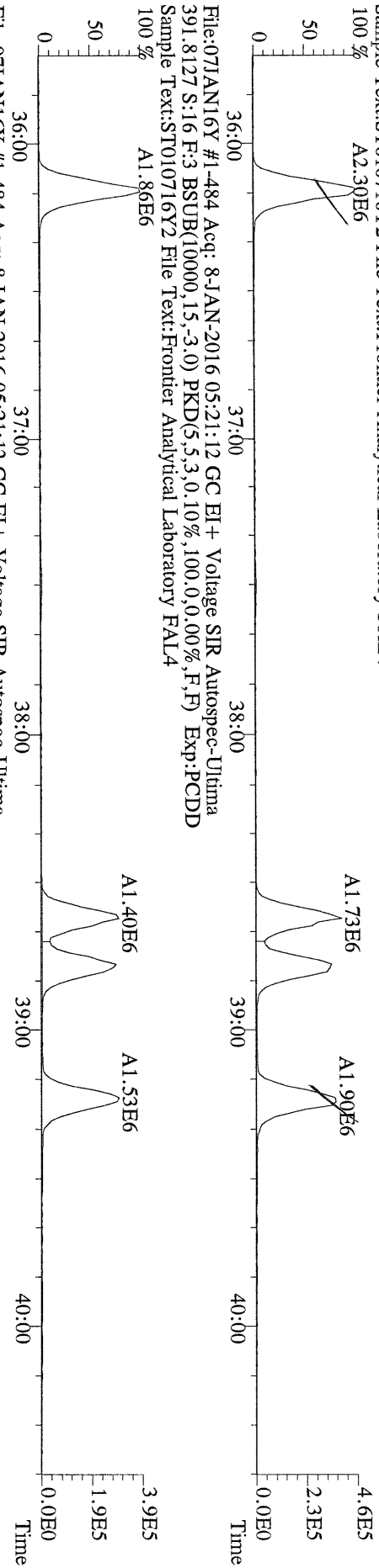
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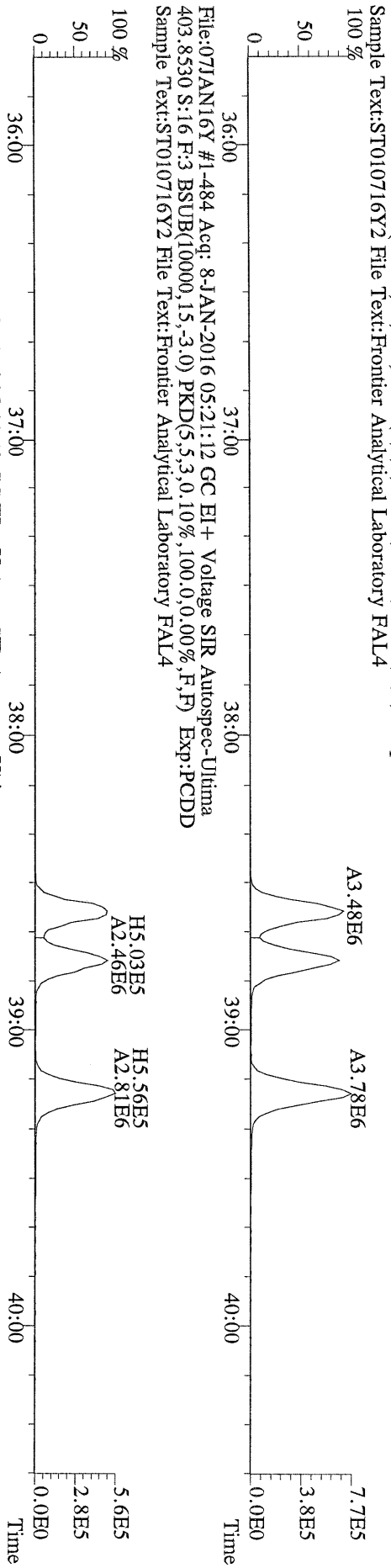
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 366.9792 S:16 F:2 Exp:PCDD
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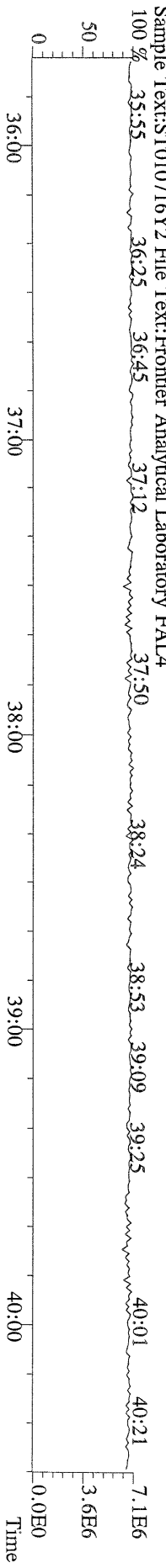
File:07JAN16Y #1-484 Acq: 8-JAN-2016 05:21:12 GC EI+ Voltage SIR Autospec-Ultima
389.8156 S:16 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



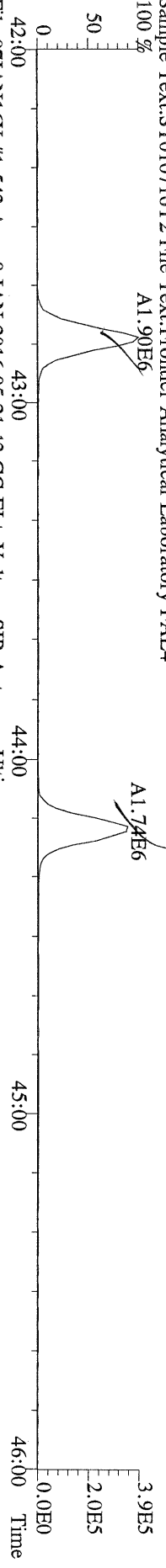
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401.8559 S:16 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



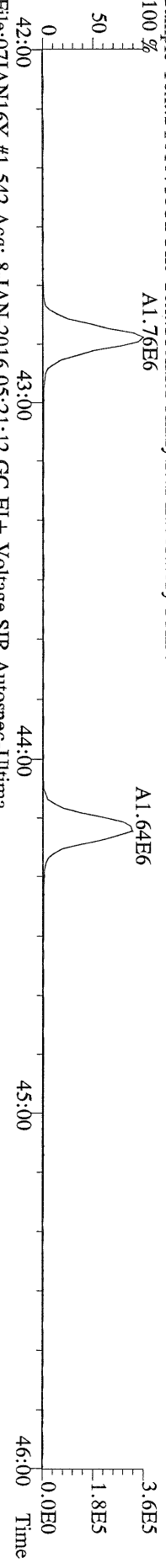
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Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



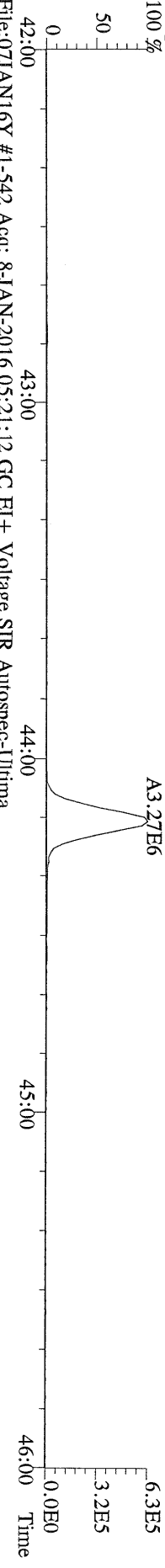
File:07JAN16Y #1-542 Acq: 8-JAN-2016 05:21:12 GC EI + Voltage SIR Autospec-Ultima
423.7767 S:16 F:4 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



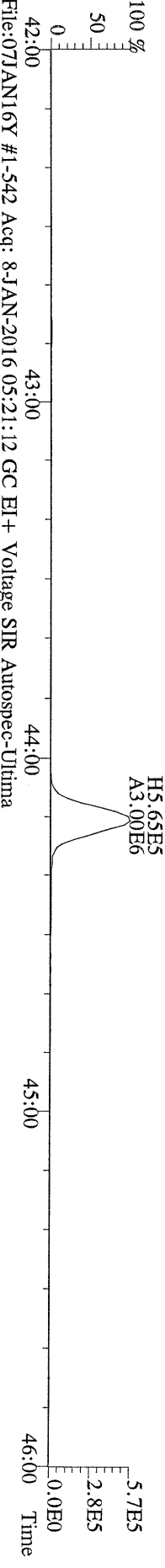
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425.7737 S:16 F:4 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD
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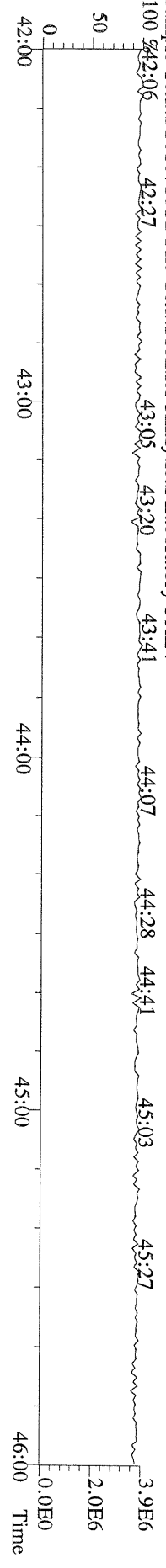
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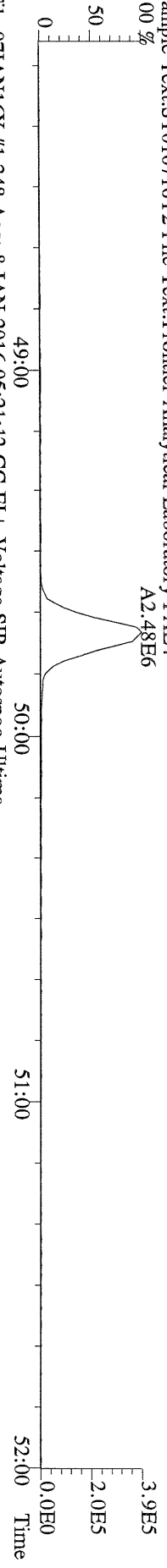
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437.8140 S:16 F:4 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



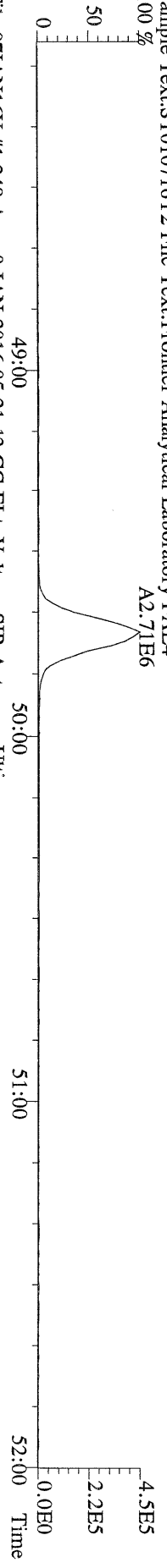
File:07JAN16Y #1-542 Acq: 8-JAN-2016 05:21:12 GC EI + Voltage SIR Autospec-Ultima
430.9728 S:16 F:4 Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



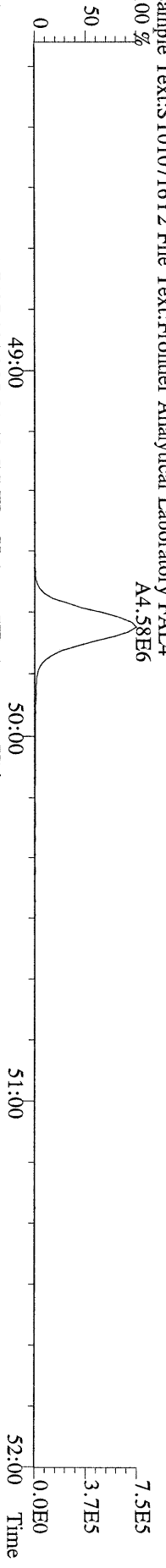
File:07JAN16Y #1-348 Acq: 8-JAN-2016 05:21:12 GC EI+ Voltage SIR Autospec-Ultima
457.7377 S:16 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



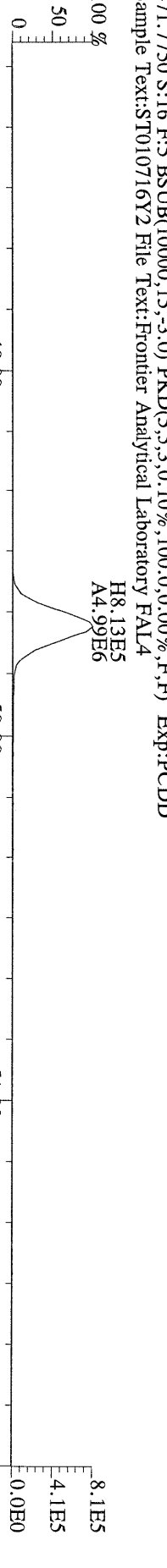
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459.7348 S:16 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



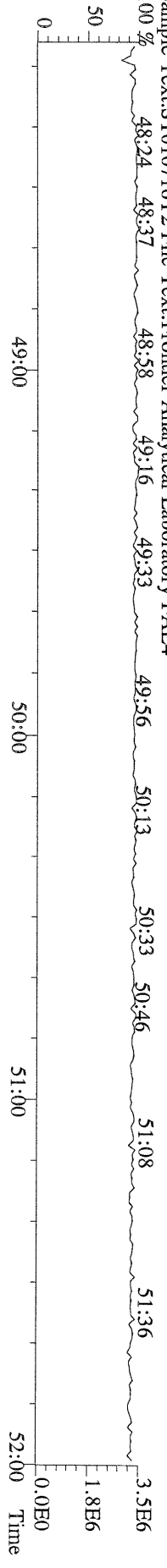
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469.7780 S:16 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



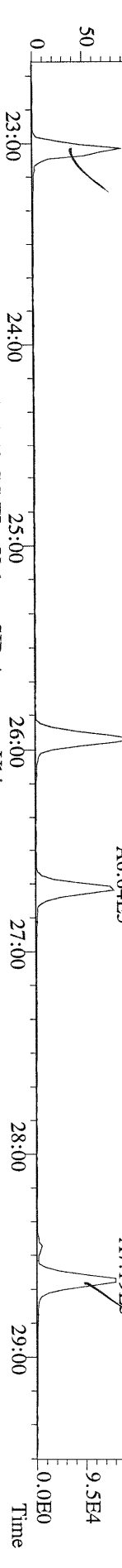
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471.7750 S:16 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



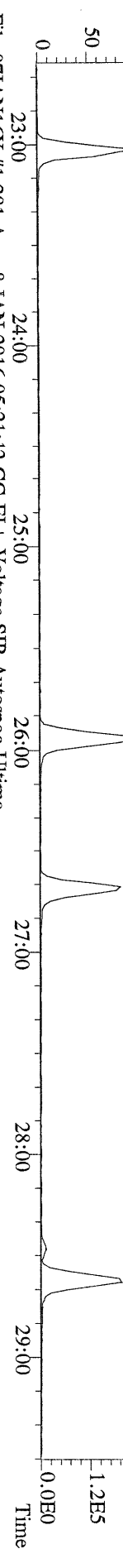
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454.9728 S:16 F:5 Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



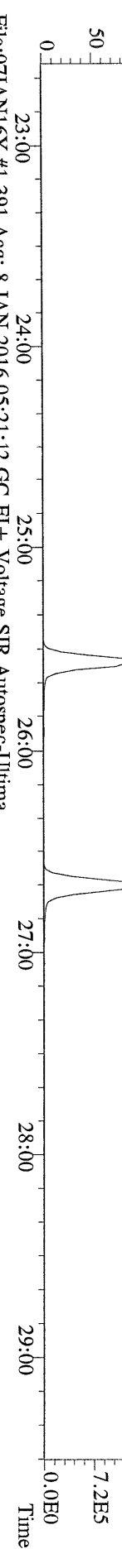
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303.9016 S:16 BSUB(10000,15,-3.0) PKD(5,5,3,0,100,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



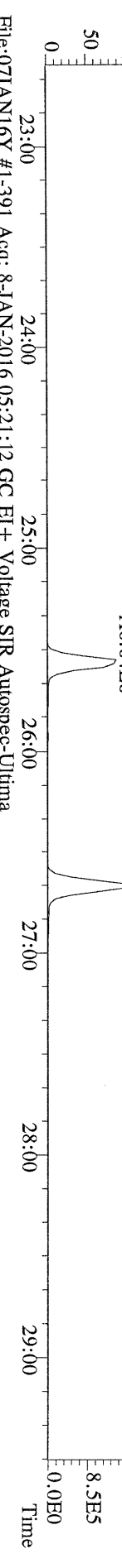
File:07JAN16Y #1-391 Acq: 8-JAN-2016 05:21:12 GC EI+ Voltage SIR Autospec-Ultima
305.8987 S:16 BSUB(10000,15,-3.0) PKD(5,5,3,0,100,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



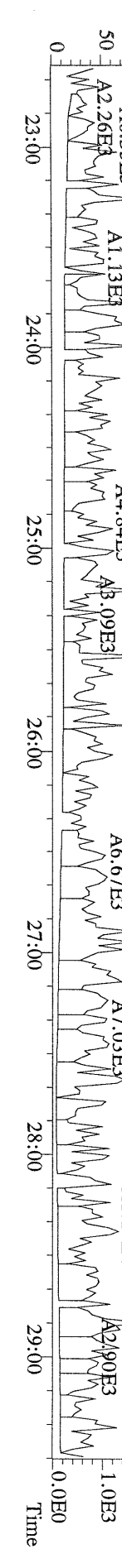
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315.9419 S:16 BSUB(10000,15,-3.0) PKD(5,5,3,0,100,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



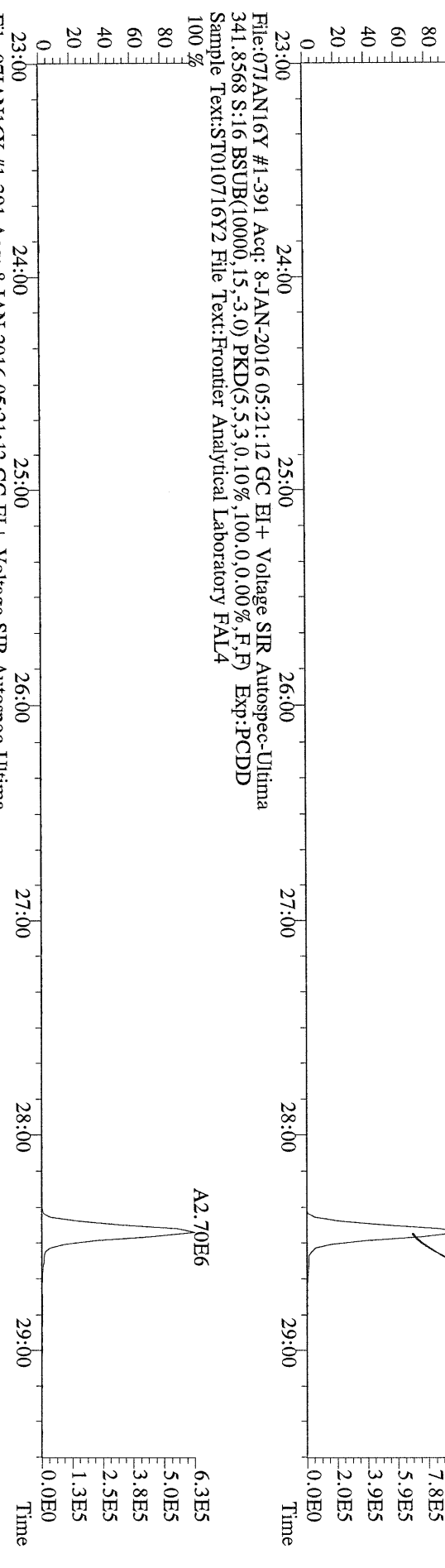
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317.9389 S:16 BSUB(10000,15,-3.0) PKD(5,5,3,0,100,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



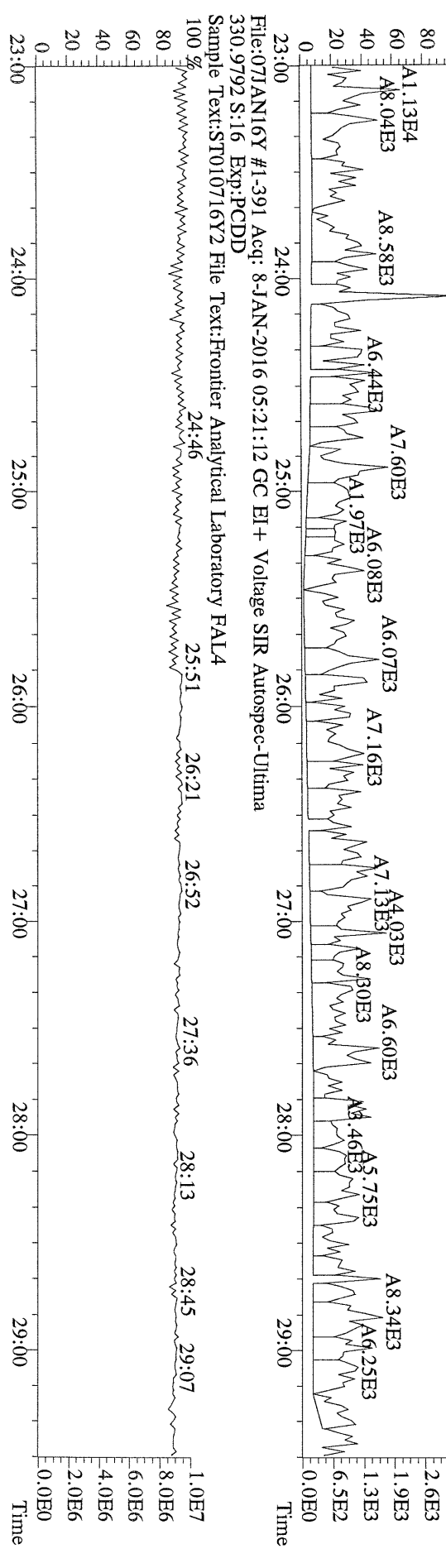
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375.8364 S:16 BSUB(10000,15,-3.0) PKD(5,5,3,0,100,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



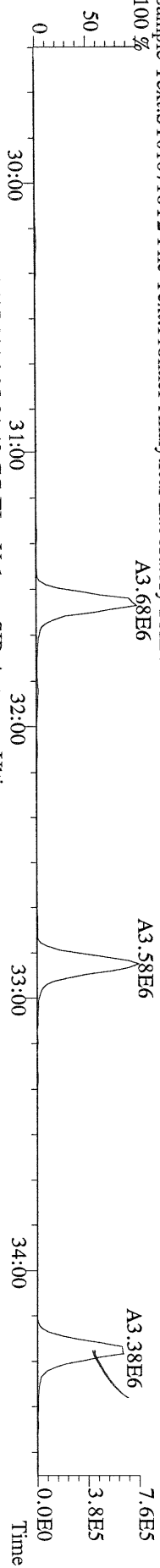
File:07JAN16Y #1-391 Acq: 8-JAN-2016 05:21:12 GC EI+ Voltage SIR Autospec-Ultima
339.8597 S:16 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



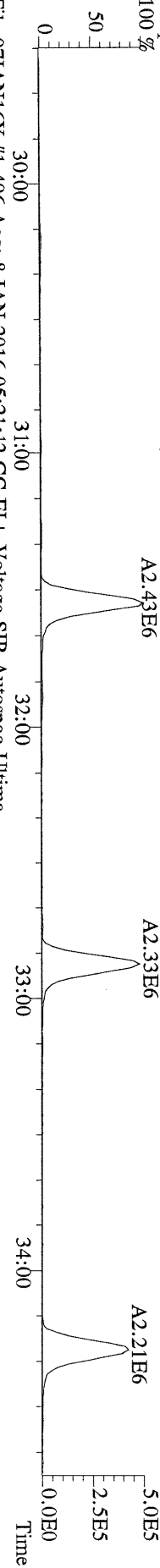
File:07JAN16Y #1-391 Acq: 8-JAN-2016 05:21:12 GC EI+ Voltage SIR Autospec-Ultima
409.7974 S:16 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



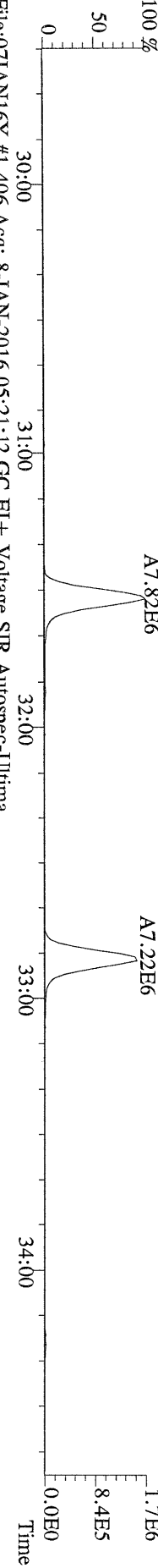
File:07JAN16Y #1-406 Acq: 8-JAN-2016 05:21:12 GC EI+ Voltage SIR Autospec-Ultima
339.8597 S:16 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



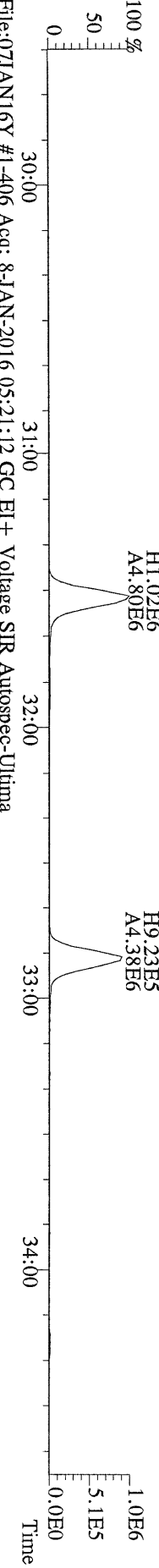
File:07JAN16Y #1-406 Acq: 8-JAN-2016 05:21:12 GC EI+ Voltage SIR Autospec-Ultima
341.8568 S:16 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



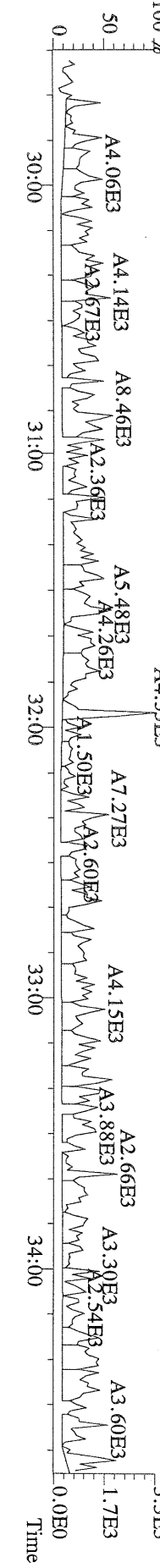
File:07JAN16Y #1-406 Acq: 8-JAN-2016 05:21:12 GC EI+ Voltage SIR Autospec-Ultima
351.9000 S:16 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



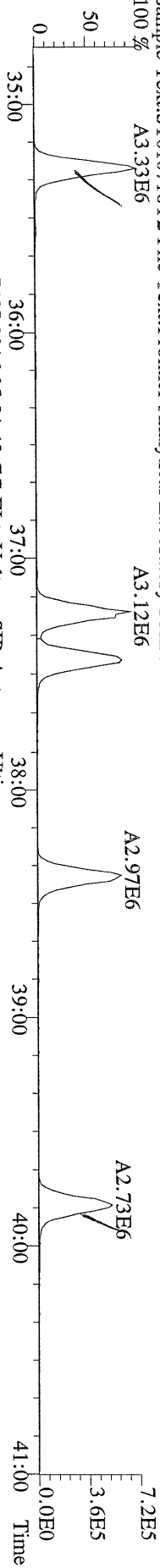
File:07JAN16Y #1-406 Acq: 8-JAN-2016 05:21:12 GC EI+ Voltage SIR Autospec-Ultima
353.8970 S:16 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



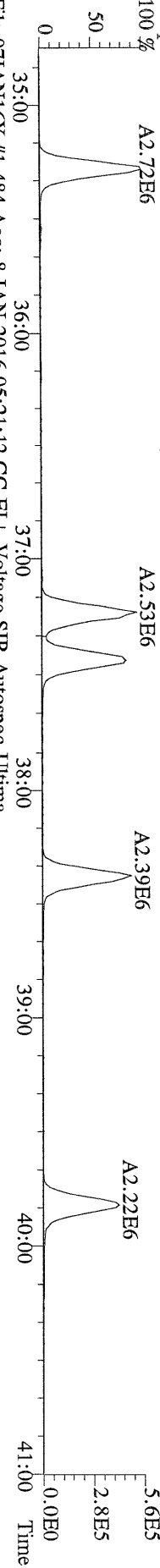
File:07JAN16Y #1-406 Acq: 8-JAN-2016 05:21:12 GC EI+ Voltage SIR Autospec-Ultima
409.7974 S:16 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



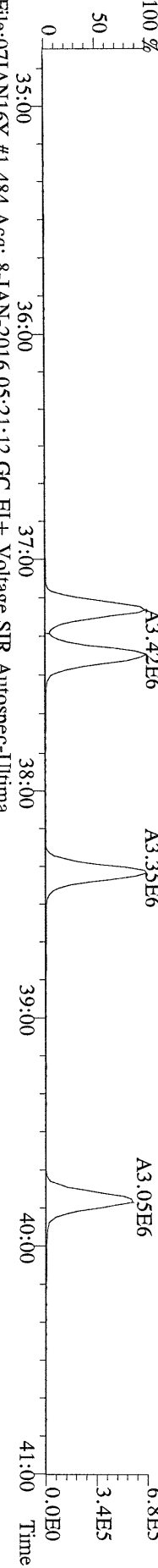
File:07JAN16Y #1-484 Acq: 8-JAN-2016 05:21:12 GC EI+ Voltage SIR Autospec-Ultima
 373.8207 S:16 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



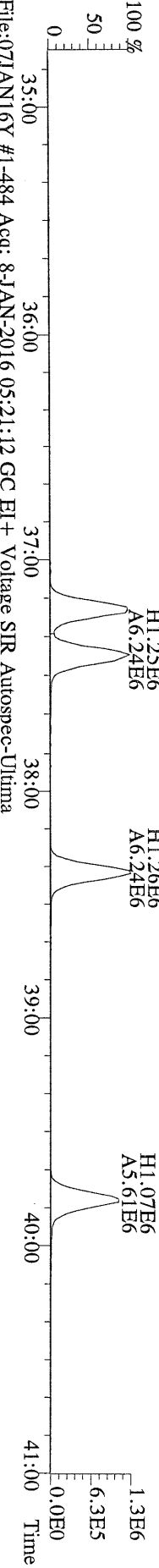
File:07JAN16Y #1-484 Acq: 8-JAN-2016 05:21:12 GC EI+ Voltage SIR Autospec-Ultima
 375.8178 S:16 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



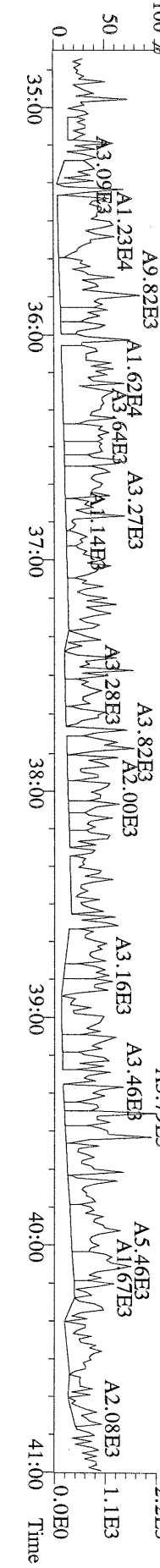
File:07JAN16Y #1-484 Acq: 8-JAN-2016 05:21:12 GC EI+ Voltage SIR Autospec-Ultima
 383.8639 S:16 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



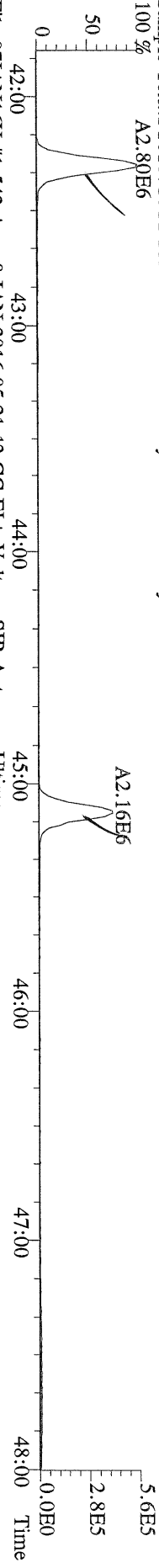
File:07JAN16Y #1-484 Acq: 8-JAN-2016 05:21:12 GC EI+ Voltage SIR Autospec-Ultima
 385.8610 S:16 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



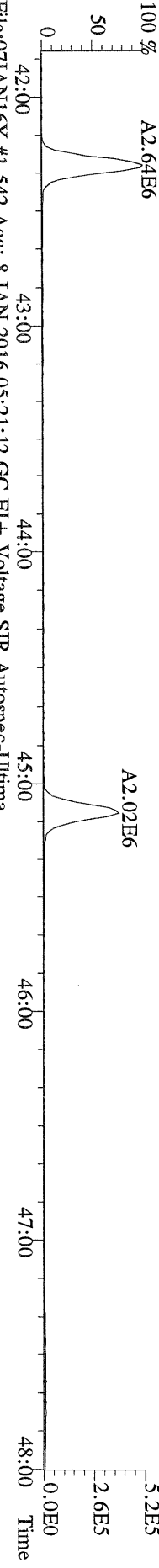
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 445.7555 S:16 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4



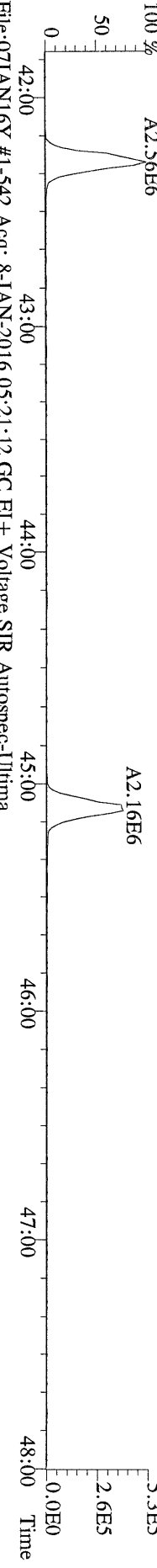
File:07JAN16Y #1-542 Acq: 8-JAN-2016 05:21:12 GC EI+ Voltage SIR Autospec-Ultima
407.7818 S:16 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4
100 % A2.80E6



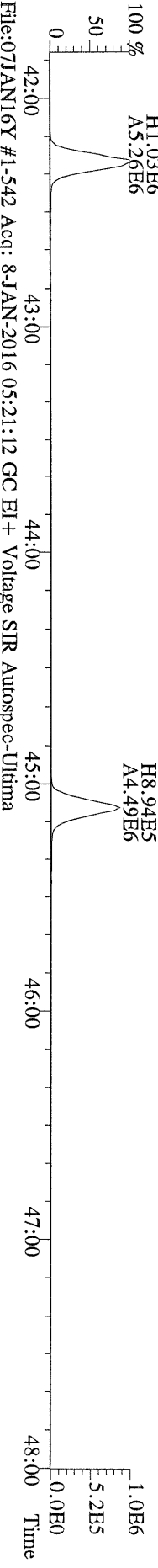
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409.7788 S:16 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4
100 % A2.64E6



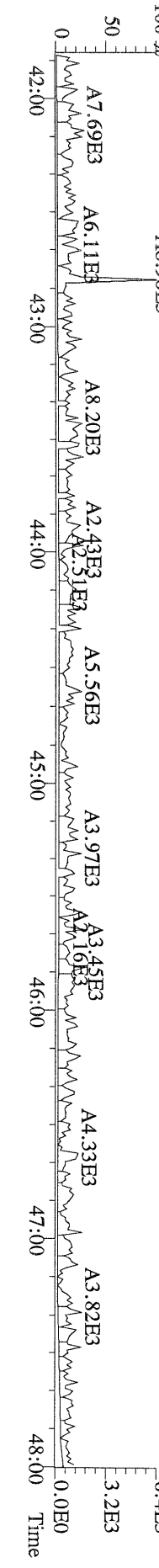
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417.8253 S:16 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4
100 % A2.56E6



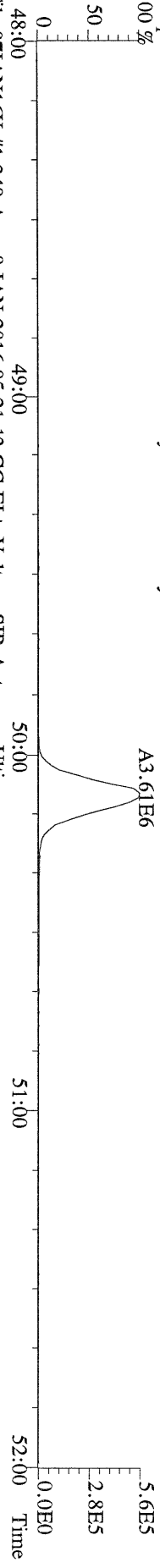
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419.8220 S:16 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4
100 % H1.03E6
A5.26E6



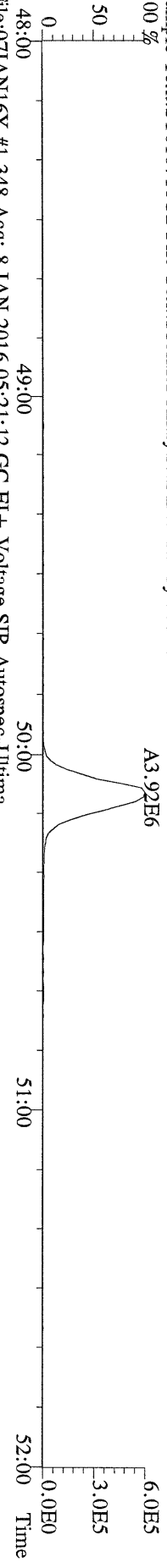
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479.7165 S:16 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4
100 % A8.90E3



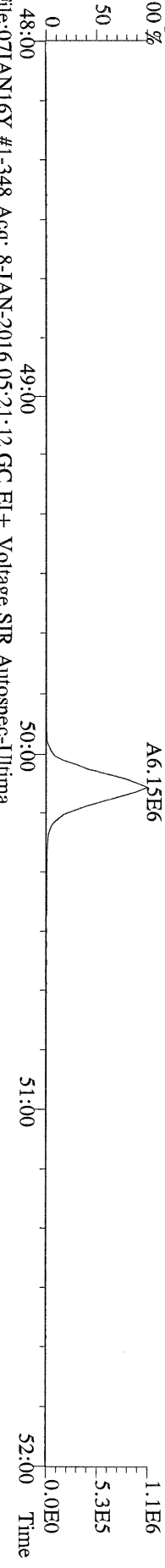
File:07JAN16Y #1-348 Acq: 8-JAN-2016 05:21:12 GC EI+ Voltage SIR Autospec-Ultima
441.7428 S:16 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4
100 %



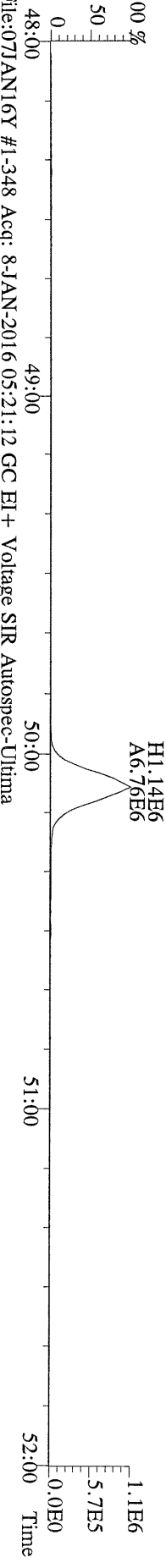
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443.7398 S:16 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4
100 %



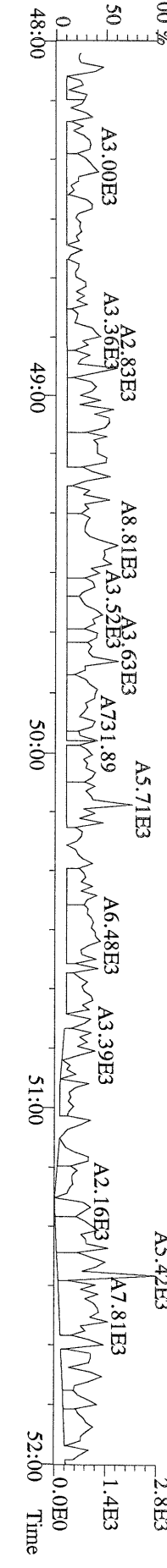
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453.7831 S:16 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4
100 %



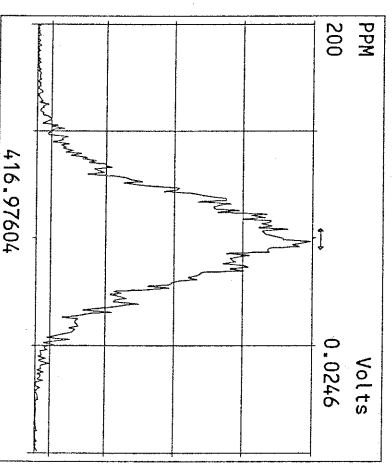
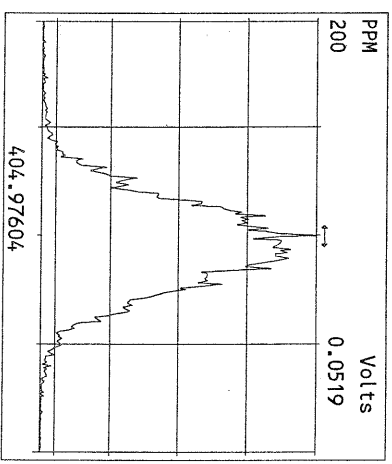
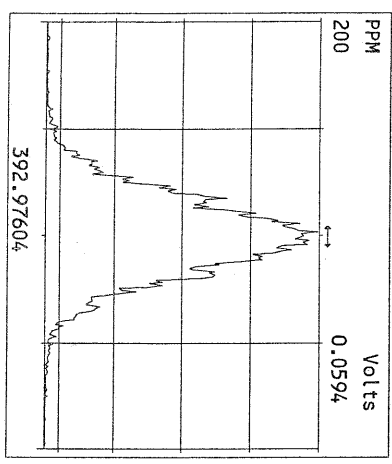
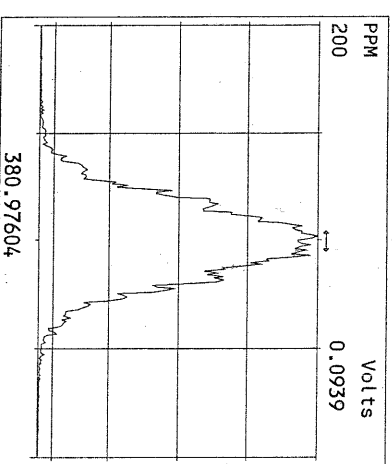
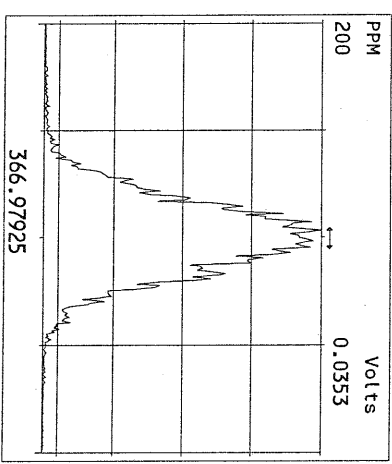
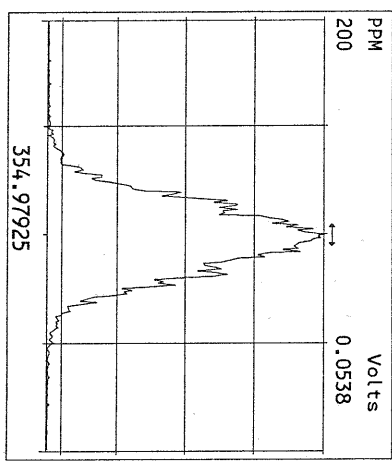
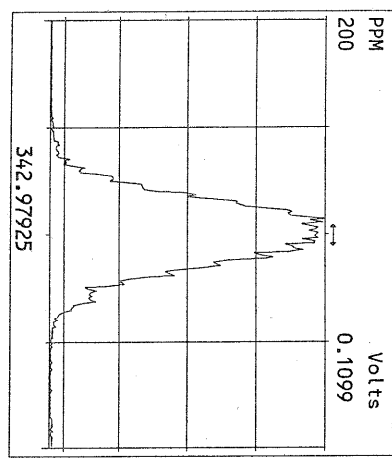
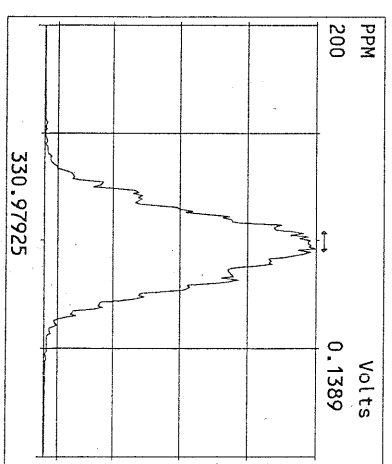
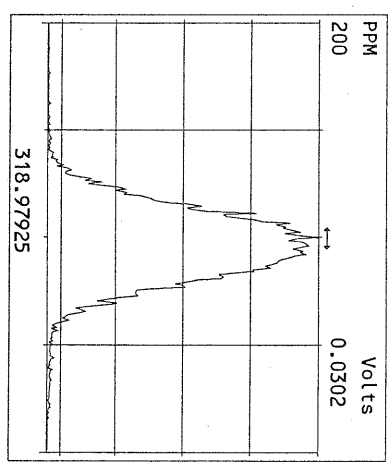
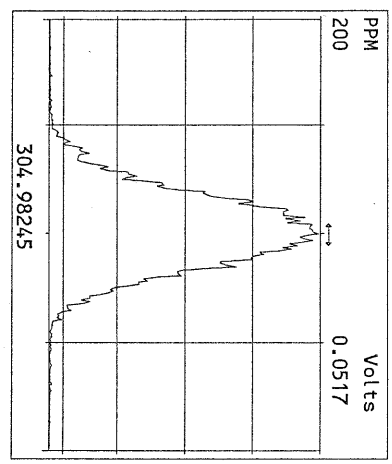
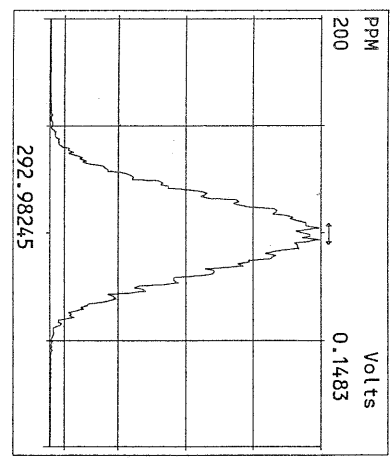
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455.7801 S:16 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4

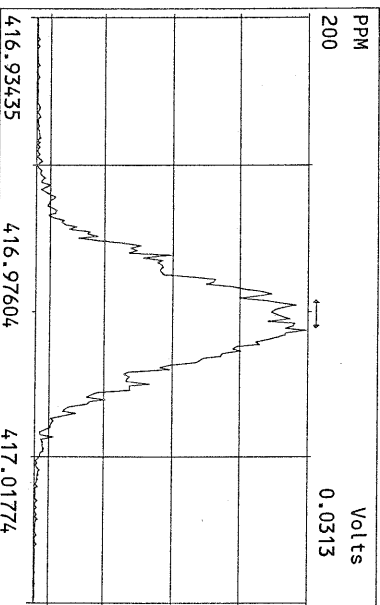
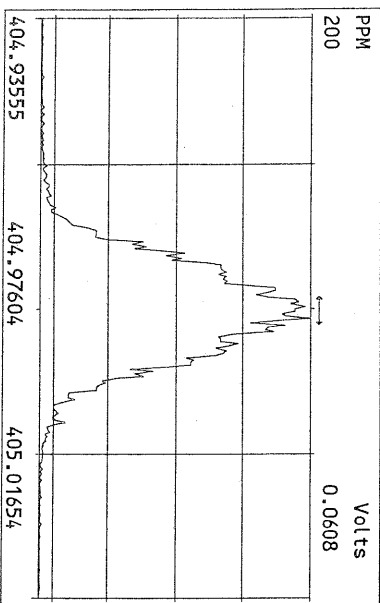
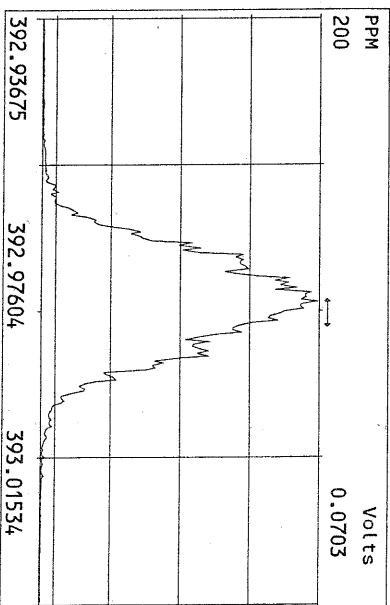
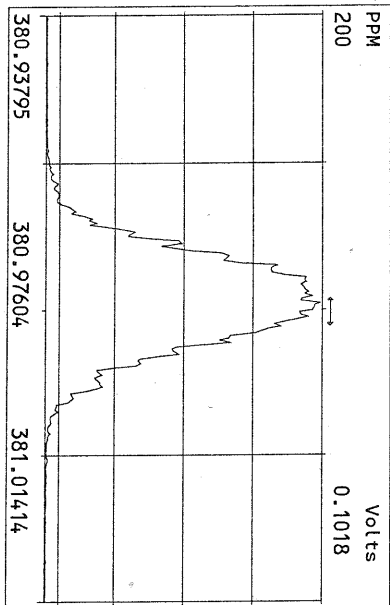
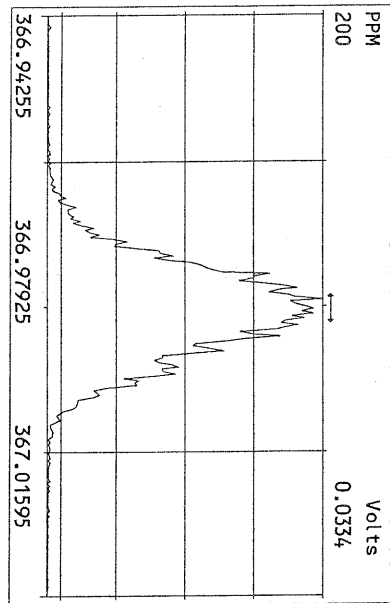
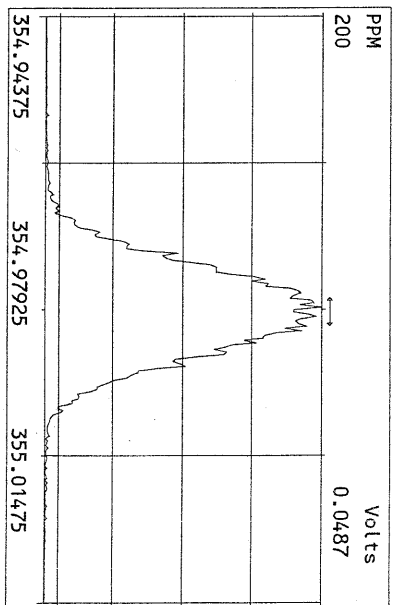
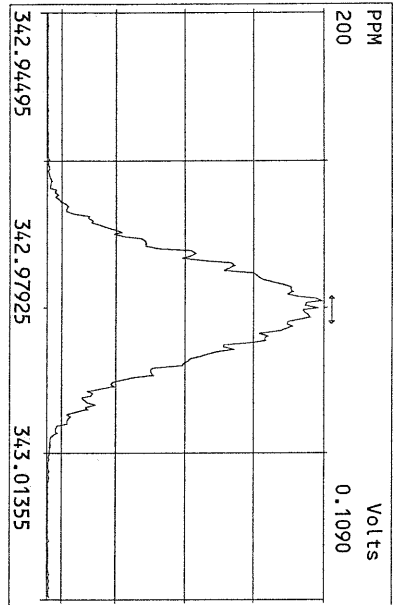
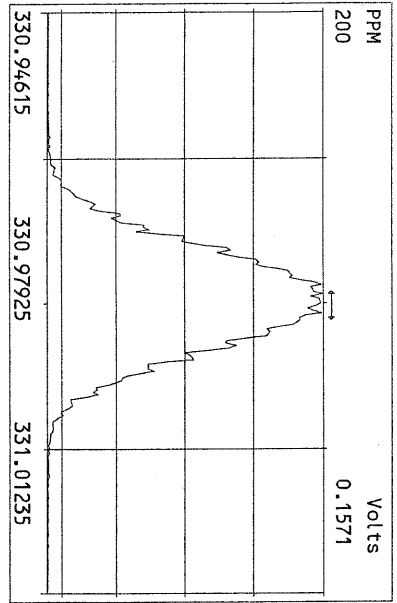


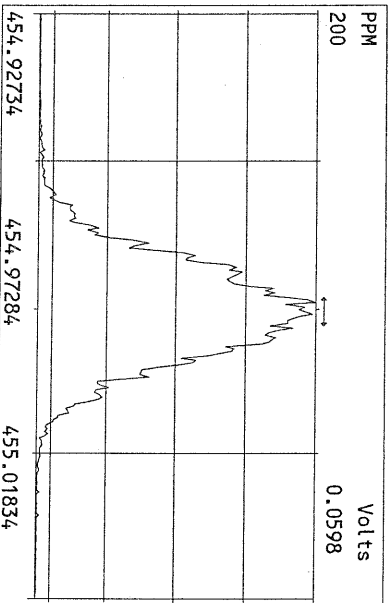
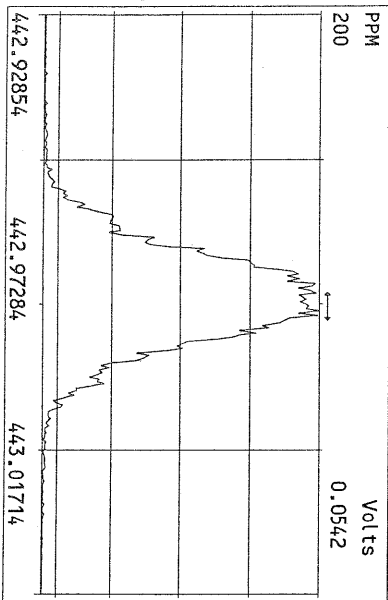
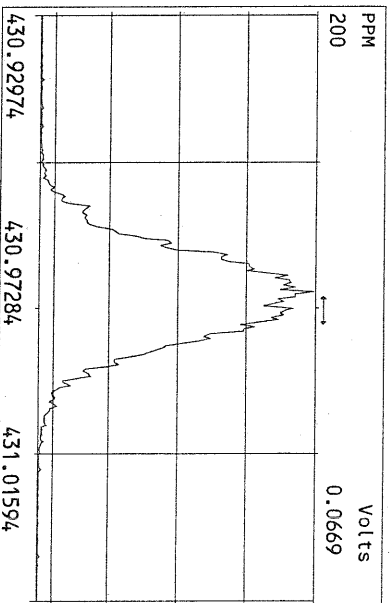
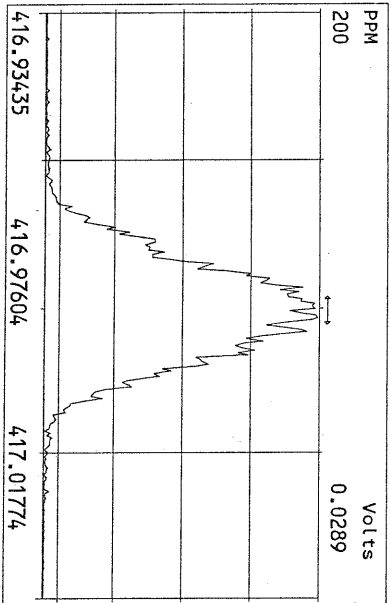
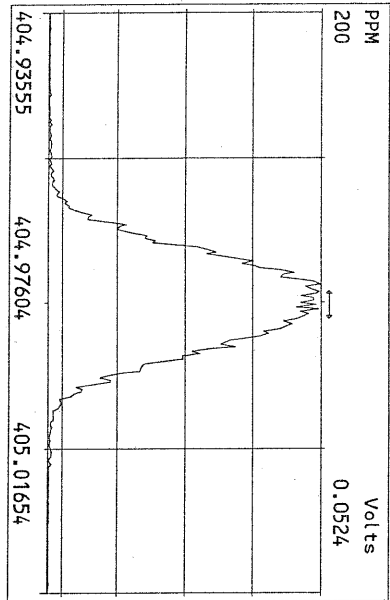
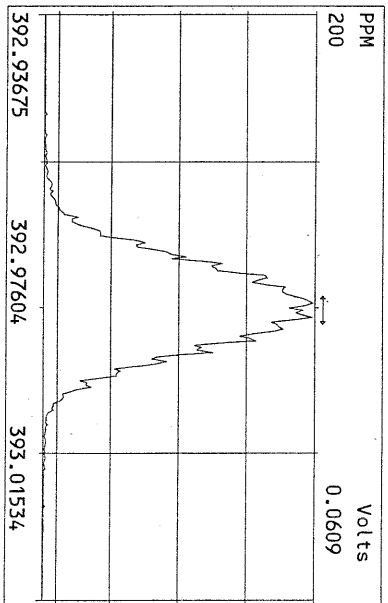
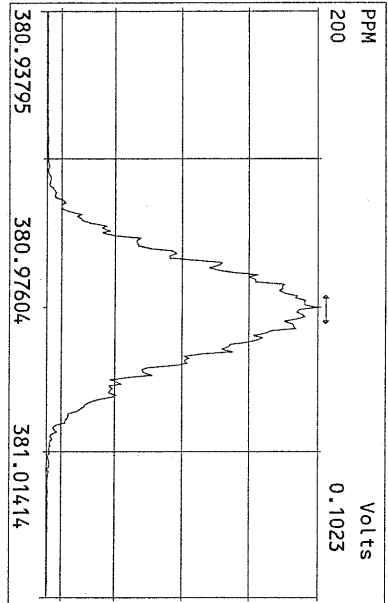
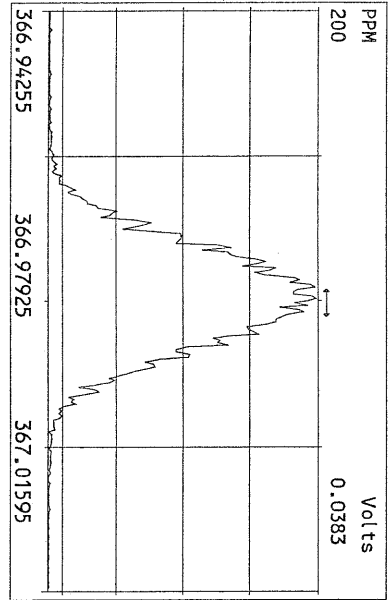
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Sample Text:ST010716Y2 File Text:Frontier Analytical Laboratory FAL4

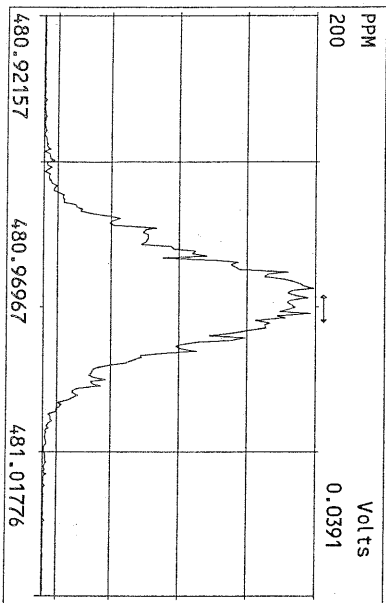
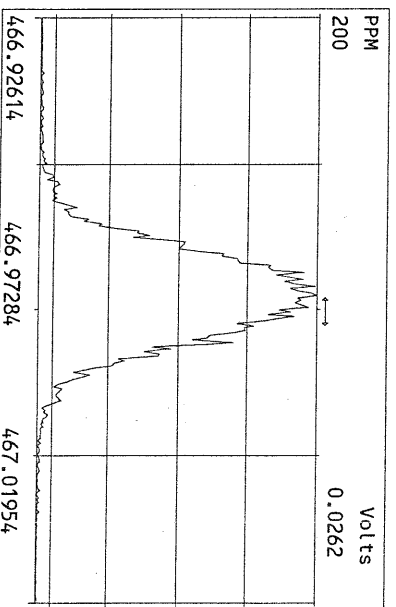
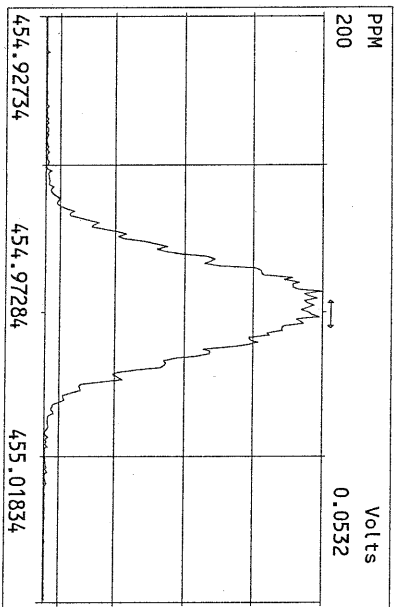
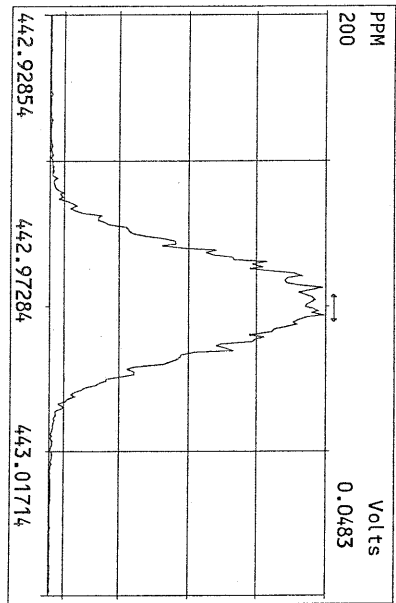
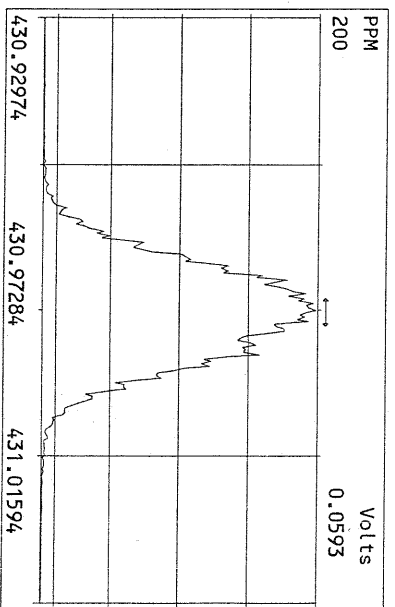
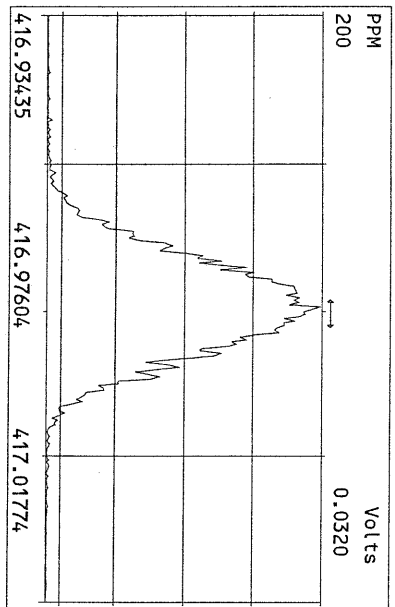
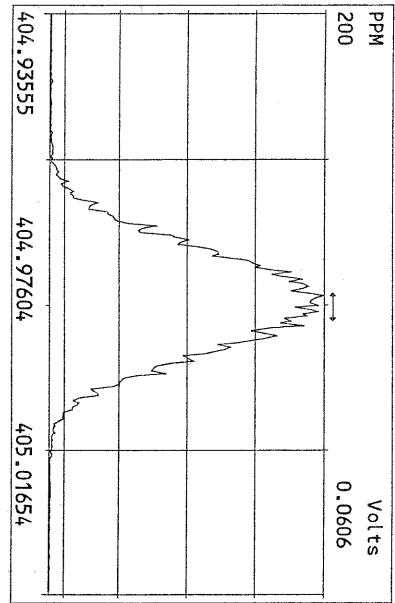


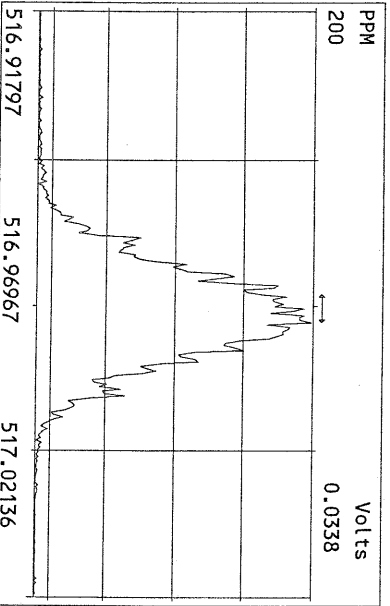
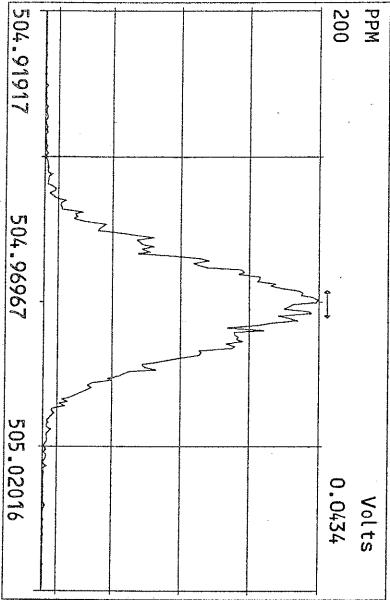
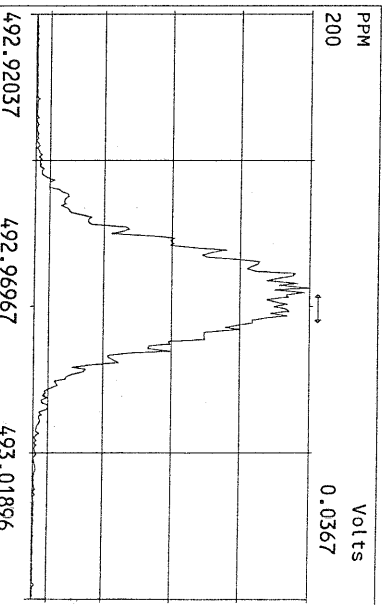
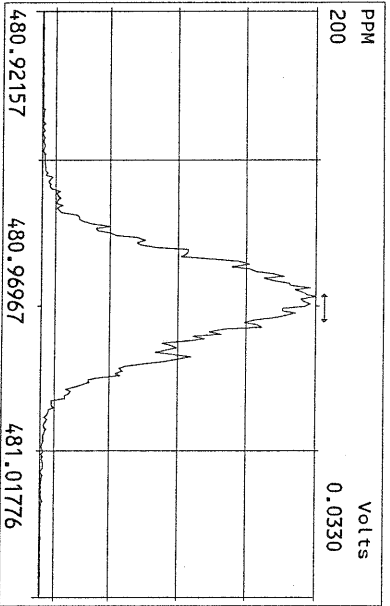
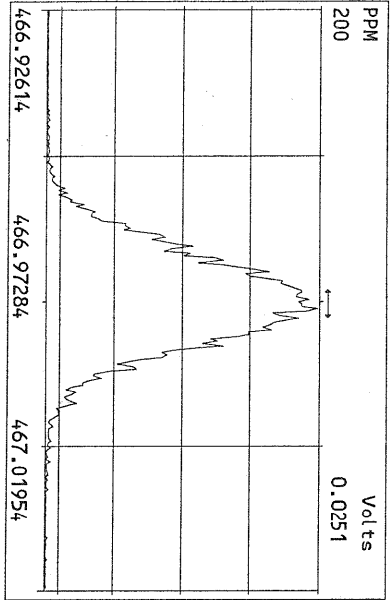
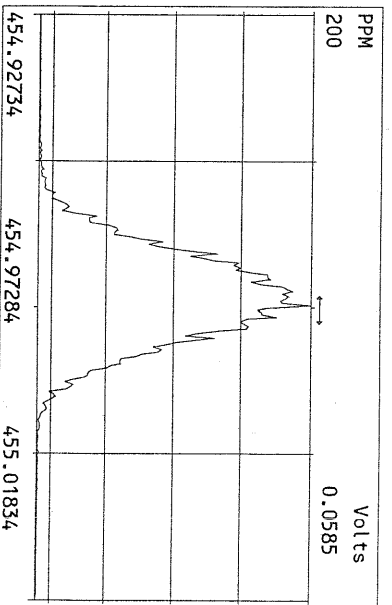
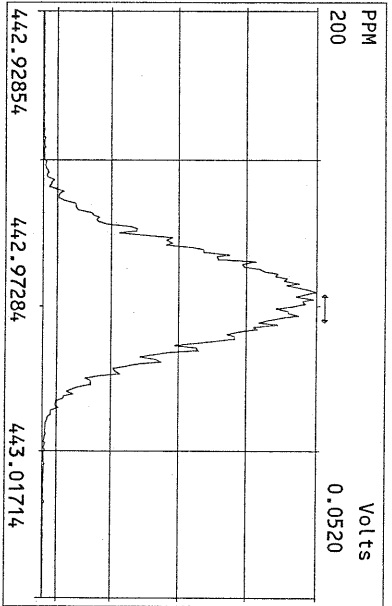
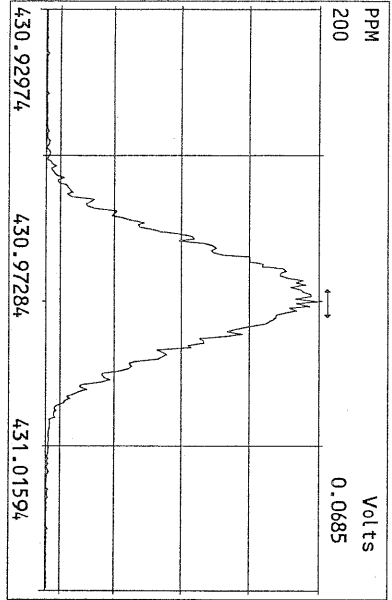
Peak Locate Examination: 8-JAN-2016:09:43 File:07JAN16V_RES_CHECK
Experiment:PCDD Function:1 Reference:PFK











USEPA - ITD

FORM 4A
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: Frontier Analytical Laboratory Episode No.:

Contract No.: SAS No.:

Initial Calibration Date: 12/29/15

Instrument ID: FAL4 GC Column ID: DB5

VER Data Filename: 08JAN16Z Sam:1 Analysis Date: 8-JAN-16 10:18:56

NATIVE ANALYTES	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	ACCEPT	CONC. FOUND	CONC. RANGE (ng/mL) (3)
2,3,7,8-TCDD	M/M+2	0.80	0.65-0.89	y	10.0	7.80 - 12.9
1,2,3,7,8-PeCDD	M+2/M+4	1.58	1.32-1.78	y	50.1	39.0 - 65.0
1,2,3,4,7,8-HxCDD	M+2/M+4	1.23	1.05-1.43	y	47.4	39.0 - 64.0
1,2,3,6,7,8-HxCDD	M+2/M+4	1.26	1.05-1.43	y	49.8	39.0 - 64.0
1,2,3,7,8,9-HxCDD	M+2/M+4	1.24	1.05-1.43	y	48.9	41.0 - 61.0
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.06	0.88-1.20	y	49.3	43.0 - 58.0
OCDD	M+2/M+4	0.89	0.76-1.02	y	122	79.0 - 126
2,3,7,8-TCDF	M/M+2	0.79	0.65-0.89	y	9.09	8.40 - 12.0
1,2,3,7,8-PeCDF	M+2/M+4	1.54	1.32-1.78	y	47.5	41.0 - 60.0
2,3,4,7,8-PeCDF	M+2/M+4	1.52	1.32-1.78	y	46.2	41.0 - 60.0
1,2,3,4,7,8-HxCDF	M+2/M+4	1.23	1.05-1.43	y	47.1	45.0 - 56.0
1,2,3,6,7,8-HxCDF	M+2/M+4	1.25	1.05-1.43	y	47.8	44.0 - 57.0
2,3,4,6,7,8-HxCDF	M+2/M+4	1.25	1.05-1.43	y	47.7	44.0 - 57.0
1,2,3,7,8,9-HxCDF	M+2/M+4	1.27	1.05-1.43	y	48.0	45.0 - 56.0
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.05	0.88-1.20	y	49.0	45.0 - 55.0
1,2,3,4,7,8,9-HpCDF	M+2/M+4	1.03	0.88-1.20	y	49.0	43.0 - 58.0
OCDF	M+2/M+4	0.91	0.76-1.02	y	101	63.0 - 159

(1) See Table 8, Method 1613, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613.

(3) Contract-required concentration range as specified in Table 6, Method 1613.

Analyst: 8

Date: 1/8/16

USEPA - ITD

FORM 4B

PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: Frontier Analytical Laboratory

Episode No.:

Contract No.:

SAS No.:

Initial Calibration Date: 12/29/15

Instrument ID: FAL4

GC Column ID: DB5

VER Data Filename: 08JAN16Z Sam:1

Analysis Date: 8-JAN-16 10:18:56


LABELLED COMPOUNDS	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	ACCEPT	CONC. FOUND	CONC. RANGE (ng/mL) (3)
13C-2,3,7,8-TCDD	M/M+2	0.79	0.65-0.89	y	97.8	82.0 - 121 ✓
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.59	1.32-1.78	y	94.1	62.0 - 160 ✓
13C-1,2,3,4,7,8-HxCDD	M+2/M+4	1.28	1.05-1.43	y	102	85.0 - 117 ✓
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.28	1.05-1.43	y	103	85.0 - 118 ✓
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.08	0.88-1.20	y	101	72.0 - 138 ✓
13C-OCDD	M+2/M+4	0.90	0.76-1.02	y	197	96.0 - 415 ✓
13C-2,3,7,8-TCDF	M/M+2	0.80	0.65-0.89	y	99.1	71.0 - 140 ✓
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.58	1.32-1.78	y	95.7	76.0 - 130 ✓
13C-2,3,4,7,8-PeCDF	M+2/M+4	1.59	1.32-1.78	y	98.6	77.0 - 130 ✓
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.53	0.43-0.59	y	96.8	76.0 - 131 ✓
13C-1,2,3,6,7,8-HxCDF	M/M+2	0.53	0.43-0.59	y	98.6	70.0 - 143 ✓
13C-2,3,4,6,7,8-HxCDF	M/M+2	0.54	0.43-0.59	y	98.3	73.0 - 137 ✓
13C-1,2,3,7,8,9-HxCDF	M/M+2	0.53	0.43-0.59	y	96.1	74.0 - 135 ✓
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.44	0.37-0.51	y	93.7	78.0 - 129 ✓
13C-1,2,3,4,7,8,9-HpCDF	M/M+2	0.45	0.37-0.51	y	91.4	77.0 - 129 ✓
13C-OCDF	M+2/M+4	0.90	0.76-1.02	y	191	96.0 - 415 ✓
CLEANUP STANDARD (4)						
37Cl-2,3,7,8-TCDD					9.86	7.90 - 12.7 ✓

(1) See Table 8, Method 1613, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613.

(3) Contract-required concentration range as specified in Table 6, Method 1613.

(4) No ion abundance ratio; report concentration found.

Analyst: Date: 1/8/16

FORM 5
PCDD/PCDF RT WINDOW AND ISOMER SPECIFICITY STANDARDS

Lab Name: Frontier Analytical Laboratory Episode No.:

Contract No.: SAS No.:

Instrument ID: FAL4 Initial Calibration Date: 12/29/15

RT Window Data Filename: 08JAN16Z Sam:1 Analysis Date: 8-JAN-16 Time: 10:18:56

DB-5 IS Data Filename: 08JAN16Z Sam:1 Analysis Date: 8-JAN-16 Time: 10:18:56

DB-225 IS Data Filename: Analysis Date: Time:

DB-5 RT WINDOW DEFINING STANDARDS RESULTS

ISOMERS	ABSOLUTE RT	ISOMERS	ABSOLUTE RT
1,3,6,8-TCDD (F)	24:22	1,3,6,8-TCDF (F)	22:60
1,2,8,9-TCDD (L)	28:21	1,2,8,9-TCDF (L)	28:35
1,2,4,7,9-PeCDD (F)	30:15	1,3,4,6,8-PeCDF (F)	28:24
1,2,3,8,9-PeCDD (L)	33:49	1,2,3,8,9-PeCDF (L)	34:15
1,2,4,6,7,9-HxCDD (F)	36:06	1,2,3,4,6,8-HxCDF (F)	35:14
1,2,3,7,8,9-HxCDD (L)	39:11	1,2,3,7,8,9-HxCDF (L)	39:46
1,2,3,4,6,7,9-HpCDD (F)	42:45	1,2,3,4,6,7,8-HpCDF (F)	42:14
1,2,3,4,6,7,8-HpCDD (L)	44:08	1,2,3,4,7,8,9-HpCDF (L)	45:04

(F) = First eluting isomer (DB-5); (L) = Last eluting isomer (DB-5)

=====

ISOMER SPECIFICITY (IS) TEST STANDARD RESULTS

% VALLEY HEIGHT
BETWEEN
COMPARED PEAKS (1)

<25%

(1) To meet contract requirement, %Valley Height Between Compared Peaks shall not exceed 25% (section 15.4.2.2, Method 1613).

Analyst: _____

Date: 1/8/16

USEPA - ITD

FORM 6A

PCDD/PCDF RELATIVE RETENTION TIMES

Lab Name: Frontier Analytical Laboratory

Episode No.:

Contract No.:

SAS No.:

Init. Cal. Date: 12/29/15

Instrument ID: FAL4

GC Column ID: DB5

Analysis Date: 8-JAN-16 10:18:56

CS3 or VER Data Filename: 08JAN16Z

Sam:1

NATIVE ANALYTES	RETENTION TIME REFERENCE	RRT	RRT QC LIMITS (1)
2,3,7,8-TCDD	13C-2,3,7,8-TCDD	1.001	0.999-1.002
2,3,7,8-TCDF	13C-2,3,7,8-TCDF	1.001	0.999-1.003
1,2,3,7,8-PeCDD	13C-1,2,3,7,8-PeCDD	1.000	0.999-1.002
1,2,3,7,8-PeCDF	13C-1,2,3,7,8-PeCDF	1.000	0.999-1.002
2,3,4,7,8-PeCDF	13C-2,3,4,7,8-PeCDF	1.000	0.999-1.002
LABELED COMPOUNDS			
37Cl-2,3,7,8-TCDD	13C-1,2,3,4-TCDD	1.023	0.989-1.052
13C-2,3,7,8-TCDD		1.022	0.976-1.043
13C-2,3,7,8-TCDF		0.994	0.923-1.103
13C-1,2,3,7,8-PeCDD		1.240	1.000-1.567
13C-1,2,3,7,8-PeCDF		1.175	0.923-1.203
13C-2,3,4,7,8-PeCDF		1.225	0.923-1.303

(1) Contract-required limits for Relative Retention Times (RRT) as specified in Table 2, Method 1613.

Analyst: Date: 1/8/16

USEPA - ITD

FORM 6B

PCDD/PCDF RELATIVE RETENTION TIMES

Lab Name: Frontier Analytical Laboratory

Episode No.:

Contract No.:

SAS No.:

Init. Cal. Date: 12/29/15

Instrument ID: FAL4

GC Column ID: DB5

Analysis Date: 8-JAN-16 10:18:56

CS3 or VER Data Filename: 08JAN16Z

Sam:1

NATIVE ANALYTES	RETENTION TIME REFERENCE	RRT	RRT QC LIMITS (1)
1,2,3,4,7,8-HxCDD	13C-1,2,3,4,7,8-HxCDD	1.000	0.999-1.001
1,2,3,6,7,8-HxCDD	13C-1,2,3,6,7,8-HxCDD	1.000	0.998-1.004
1,2,3,7,8,9-HxCDD	13C-1,2,3,6,7,8-HxCDD	1.012	1.000-1.019
1,2,3,4,7,8-HxCDF	13C-1,2,3,4,7,8-HxCDF	1.001	0.999-1.001
1,2,3,6,7,8-HxCDF	13C-1,2,3,6,7,8-HxCDF	1.001	0.997-1.005
2,3,4,6,7,8-HxCDF	13C-2,3,4,6,7,8-HxCDF	1.001	0.999-1.001
1,2,3,7,8,9-HxCDF	13C-1,2,3,7,8,9-HxCDF	1.000	0.999-1.001
1,2,3,4,6,7,8-HpCDD	13C-1,2,3,4,6,7,8-HpCDD	1.000	0.999-1.001
1,2,3,4,6,7,8-HpCDF	13C-1,2,3,4,6,7,8-HpCDF	1.000	0.999-1.001
1,2,3,4,7,8,9-HpCDF	13C-1,2,3,4,7,8,9-HpCDF	1.001	0.999-1.001
OCDD	13C-OCDD	1.000	0.999-1.001
OCDF	13C-OCDF	1.000	0.999-1.001

LABELED COMPOUNDS

13C-1,2,3,4,7,8-HxCDD	13C-1,2,3,7,8,9-HxCDD	0.985	0.977-1.000
13C-1,2,3,6,7,8-HxCDD		0.989	0.981-1.003
13C-1,2,3,4,7,8-HxCDF		0.949	0.944-0.970
13C-1,2,3,6,7,8-HxCDF		0.954	0.949-0.975
13C-2,3,4,6,7,8-HxCDF		0.978	0.959-1.021
13C-1,2,3,7,8,9-HxCDF		1.015	0.977-1.047
13C-1,2,3,4,6,7,8-HpCDD		1.127	1.086-1.130
13C-1,2,3,4,6,7,8-HpCDF		1.078	1.043-1.085
13C-1,2,3,4,7,8,9-HpCDF		1.150	1.057-1.154
13C-OCDD		1.268	1.032-1.311
13C-OCDF		1.278	1.000-1.311

(1) Contract-required limits for Relative Retention Times (RRT) as specified
in Table 2, Method 1613.

Analyst: _____

Date: _____

FAL ID: ST010816Z1 Filename: 08JAN16Z Sam:1 Acquired: 8-JAN-16 10:18:56 ICal: PCDDFAL4-12-29-15-7PT

Client ID: 1613 CS3 151209J

ConCal: ST010816Z1

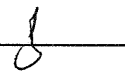
EndCal: ST010816Z2

Results: GC Column: DB5 Amount: 1.000

NATO 1989 Tox: 96.8

WHO 1998 Tox: 122 WHO 2005 Tox: 112

Name	Resp	RA	RT	RRF	Conc	Qual	Fac Noise-1	Noise-2	DL	#Hom
2,3,7,8-TCDD	4.99e+06	0.80 y	27:24	1.08	10.0		2.50	-	*	
1,2,3,7,8-PeCDD	1.46e+07	1.58 y	33:14	0.90	50.1		2.50	-	*	
1,2,3,4,7,8-HxCDD	1.25e+07	1.23 y	38:34	0.98	47.4		2.50	-	*	
1,2,3,6,7,8-HxCDD	1.30e+07	1.26 y	38:44	1.00	49.8		2.50	-	*	
1,2,3,7,8,9-HxCDD	1.44e+07	1.24 y	39:11	1.11	48.9		2.50	-	*	
1,2,3,4,6,7,8-HpCDD	1.39e+07	1.06 y	44:08	1.09	49.3		2.50	-	*	
OCDD	2.65e+07	0.89 y	49:39	1.04	122		2.50	-	*	
2,3,7,8-TCDF	5.58e+06	0.79 y	26:39	1.05	9.09		2.50	-	*	
1,2,3,7,8-PeCDF	2.27e+07	1.54 y	31:30	0.98	47.5		2.50	-	*	
2,3,4,7,8-PeCDF	2.17e+07	1.52 y	32:50	1.01	46.2		2.50	-	*	
1,2,3,4,7,8-HxCDF	2.13e+07	1.23 y	37:12	1.23	47.1		2.50	-	*	
1,2,3,6,7,8-HxCDF	2.13e+07	1.25 y	37:23	1.17	47.8		2.50	-	*	
2,3,4,6,7,8-HxCDF	2.00e+07	1.25 y	38:20	1.12	47.7		2.50	-	*	
1,2,3,7,8,9-HxCDF	1.86e+07	1.27 y	39:46	1.15	48.0		2.50	-	*	
1,2,3,4,6,7,8-HpCDF	2.00e+07	1.05 y	42:14	1.36	49.0		2.50	-	*	
1,2,3,4,7,8,9-HpCDF	1.54e+07	1.03 y	45:04	1.23	49.0		2.50	-	*	
OCDF	3.13e+07	0.91 y	50:02	1.13	101		2.50	-	*	
										Rec
13C-2,3,7,8-TCDD	4.61e+07	0.79 y	27:23	1.07	97.8				97.8	
13C-1,2,3,7,8-PeCDD	3.21e+07	1.59 y	33:13	0.78	94.1				94.1	
13C-1,2,3,4,7,8-HxCDD	2.68e+07	1.28 y	38:33	0.87	102				102	
13C-1,2,3,6,7,8-HxCDD	2.60e+07	1.28 y	38:43	0.84	103				103	
13C-1,2,3,4,6,7,8-HpCDD	2.60e+07	1.08 y	44:07	0.85	101				101	
13C-OCDD	4.16e+07	0.90 y	49:38	0.70	197				98.7	
13C-2,3,7,8-TCDF	5.86e+07	0.80 y	26:38	1.03	99.1				99.1	
13C-1,2,3,7,8-PeCDF	4.89e+07	1.58 y	31:29	0.89	95.7				95.7	
13C-2,3,4,7,8-PeCDF	4.65e+07	1.59 y	32:49	0.82	98.6				98.6	
13C-1,2,3,4,7,8-HxCDF	3.69e+07	0.53 y	37:10	1.26	96.8				96.8	
13C-1,2,3,6,7,8-HxCDF	3.82e+07	0.53 y	37:22	1.28	98.6				98.6	
13C-2,3,4,6,7,8-HxCDF	3.76e+07	0.54 y	38:18	1.27	98.3				98.3	
13C-1,2,3,7,8,9-HxCDF	3.38e+07	0.53 y	39:45	1.16	96.1				96.1	
13C-1,2,3,4,6,7,8-HpCDF	3.00e+07	0.44 y	42:14	1.06	93.7				93.7	
13C-1,2,3,4,7,8,9-HpCDF	2.56e+07	0.45 y	45:03	0.93	91.4				91.4	
13C-OCDF	5.50e+07	0.90 y	50:01	0.95	191				95.7	
37Cl-2,3,7,8-TCDD	3.89e+06		27:24	0.90	9.86				98.6	
13C-1,2,3,4-TCDD	4.40e+07	0.79 y	26:48	-	120					
13C-1,2,3,4-TCDF	5.72e+07	0.80 y	25:31	-	119					
13C-1,2,3,7,8,9-HxCDD	3.02e+07	1.27 y	39:09	-	111					
Total Tetra-Dioxins	2.23e+07		23:01	1.08	44.8		2.50	-	*	24
Total Penta-Dioxins	4.67e+07		30:15	0.90	161		2.50	-	*	17
Total Hexa-Dioxins	5.71e+07		35:05	1.03	209		2.50	-	*	15
Total Hepta-Dioxins	2.90e+07		42:14	1.09	103		2.50	-	*	23
Total Tetra-Furans	2.57e+07		22:60	1.05	41.9		2.50	-	*	21
1st Fn. Tot Penta-Furans	3.22e+07		28:24	0.99	67.9		2.50	-	*	PeCDF 1
Total Penta-Furans	6.64e+07		30:11	0.99	140		2.50	-	*	208 16
Total Hexa-Furans	1.04e+08		35:14	1.16	244		2.50	-	*	23
Total Hepta-Furans	3.77e+07		42:14	1.30	104		2.50	-	*	30

Analyst: 

Date: 1/8/14

Frontier Analytical Laboratory - Acquisition Log

Run Name:08JAN16Z

Instrument: FAL4

GC: DB5

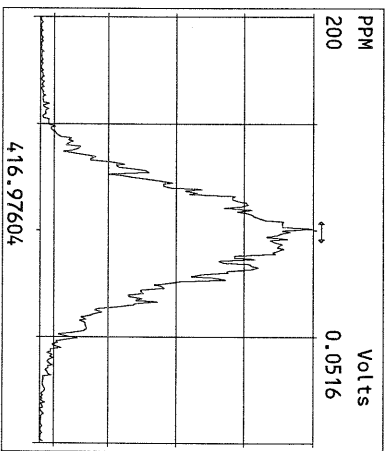
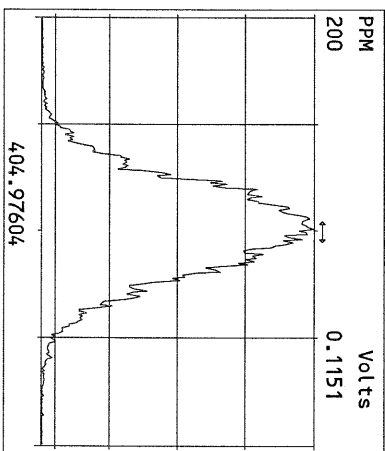
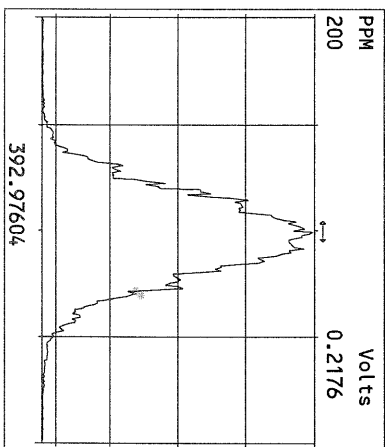
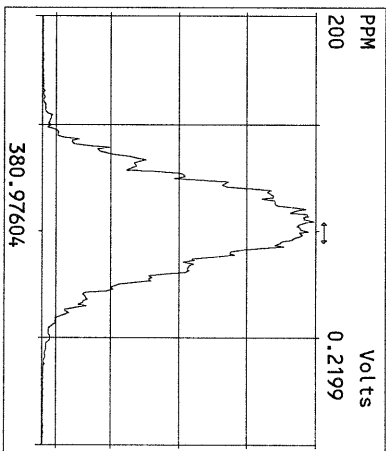
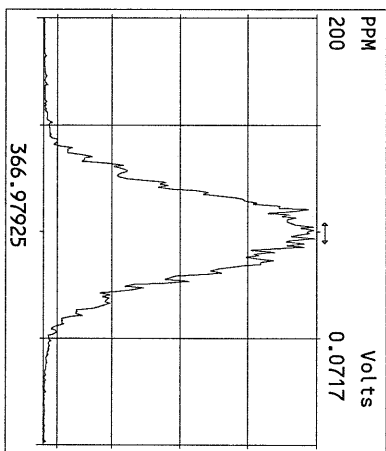
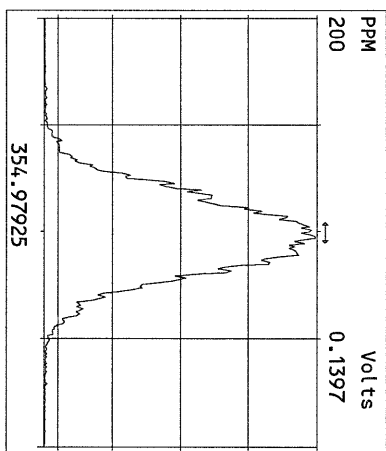
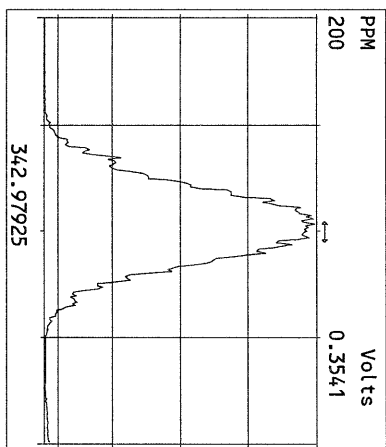
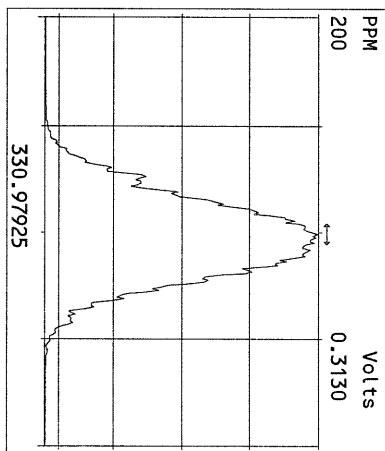
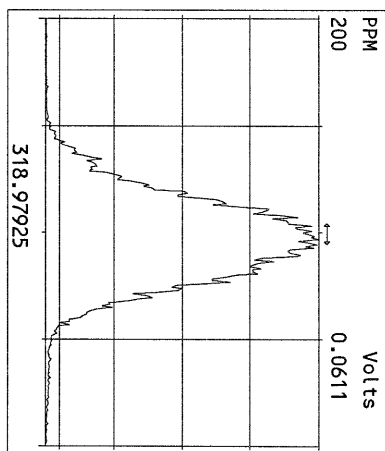
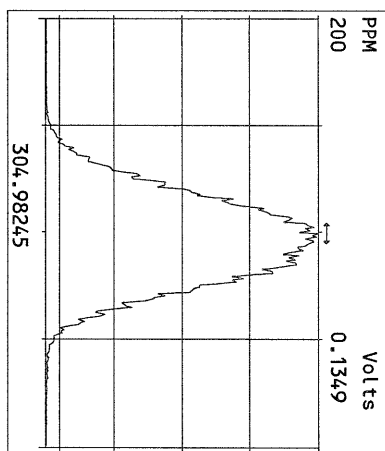
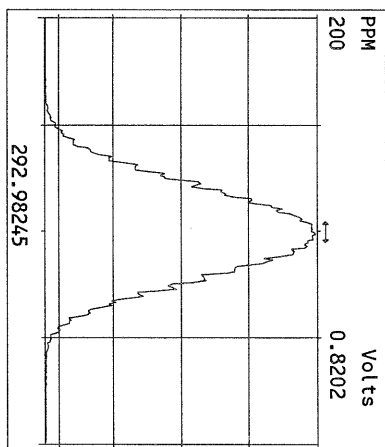
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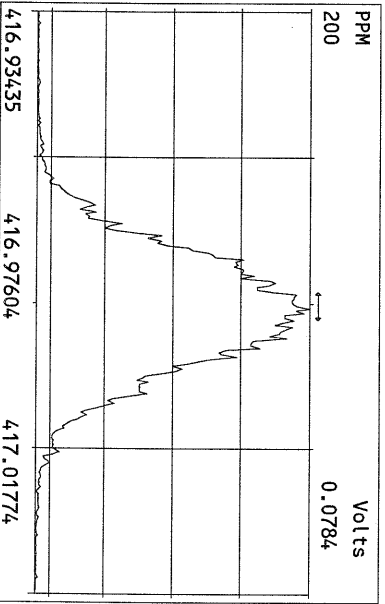
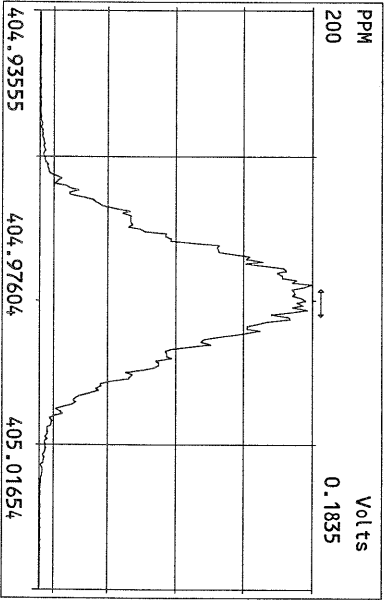
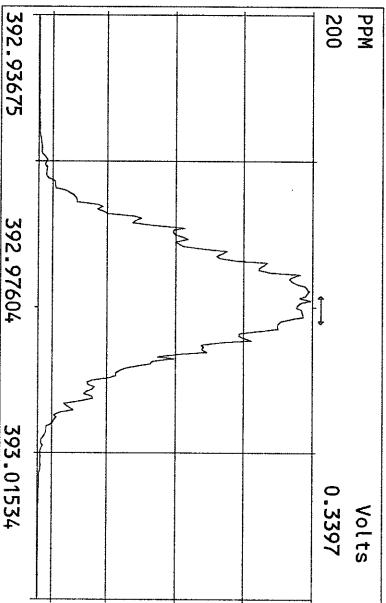
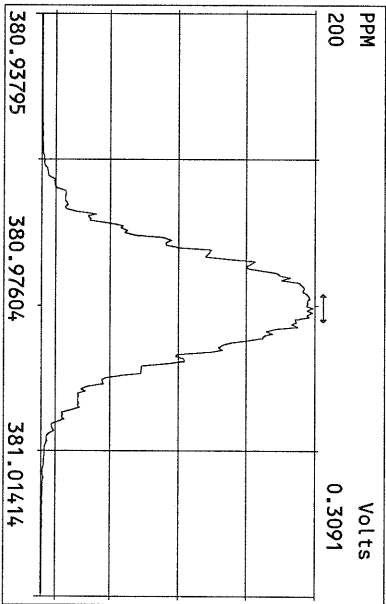
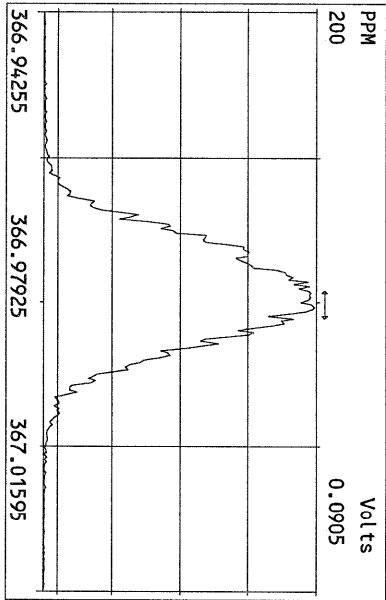
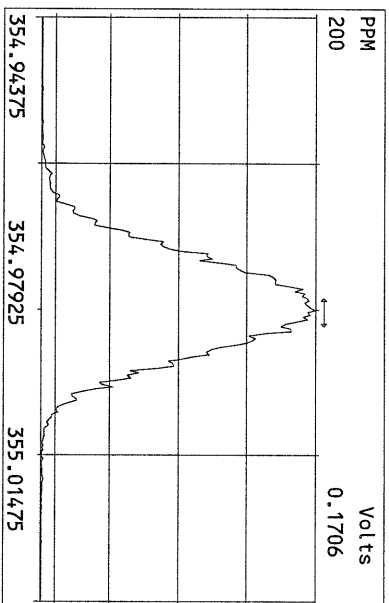
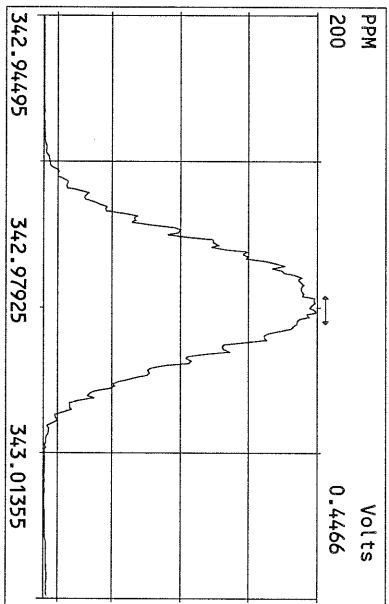
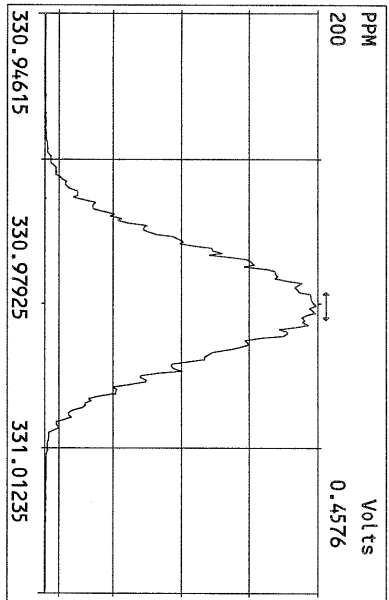
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08JAN16Z	4	9487-001-0001-SA	SB-10-12.5-13	8-JAN-16 13:03:21	ST010816Z1	ST010816Z2	BS
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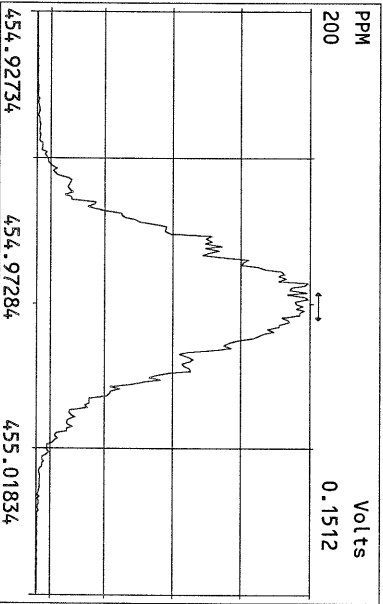
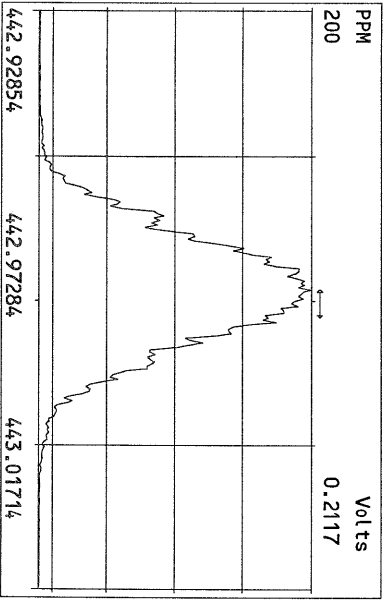
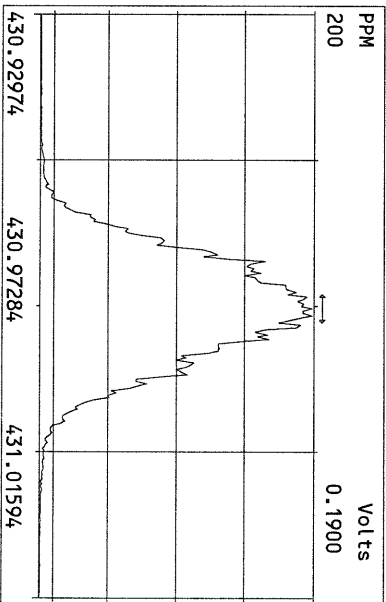
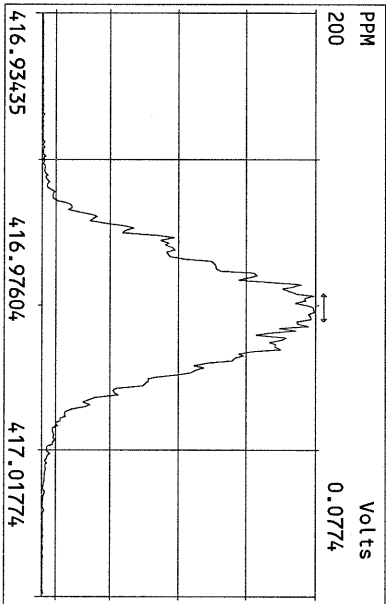
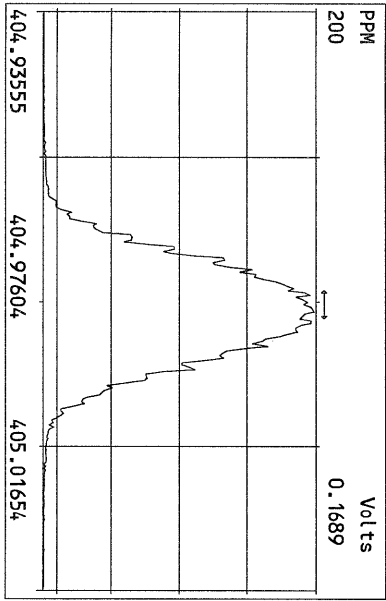
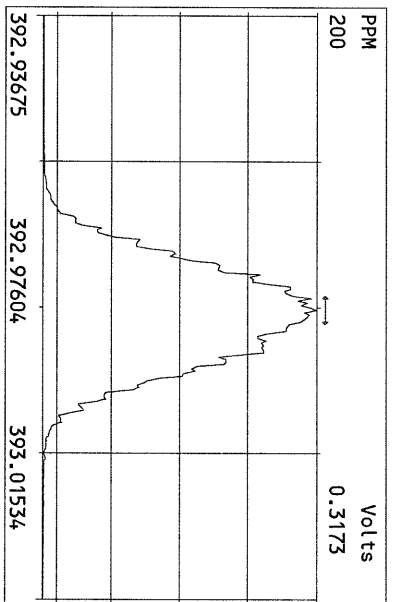
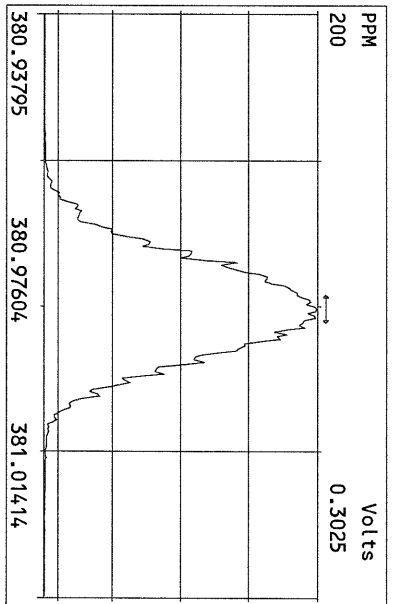
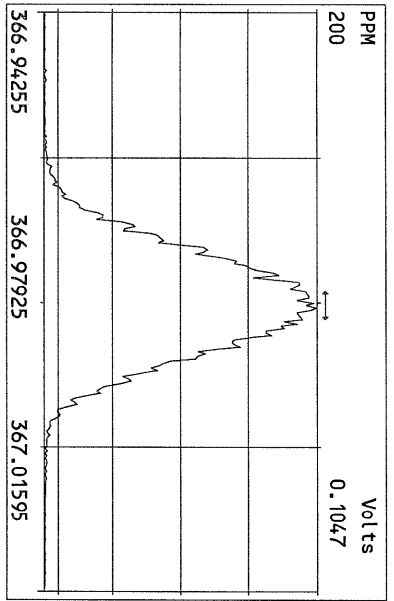
1/8/16

Data Backed Up: _____

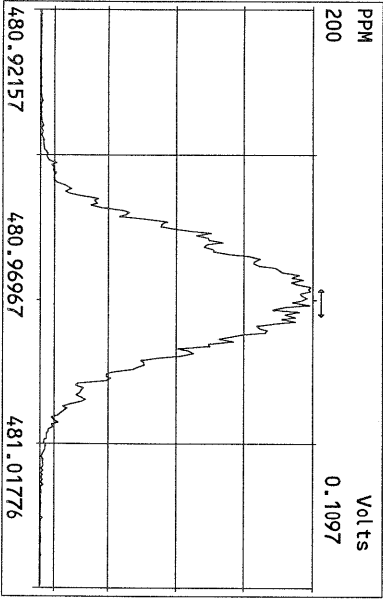
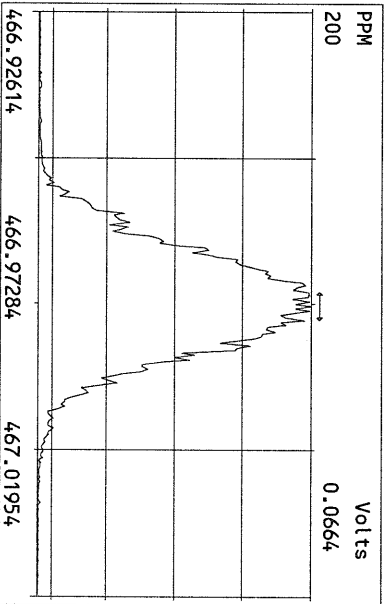
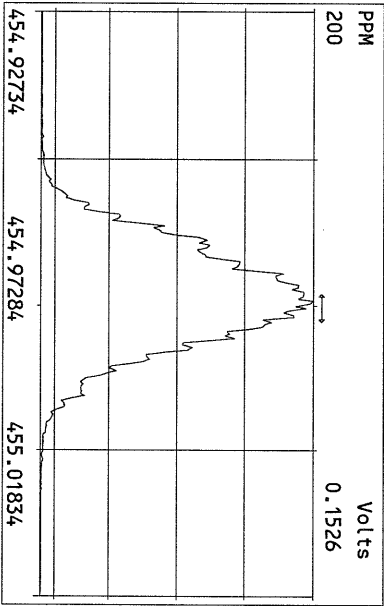
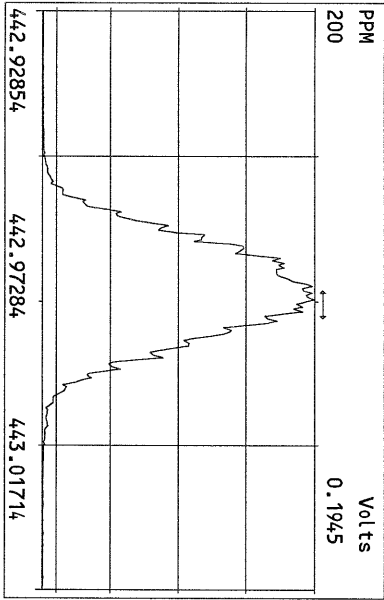
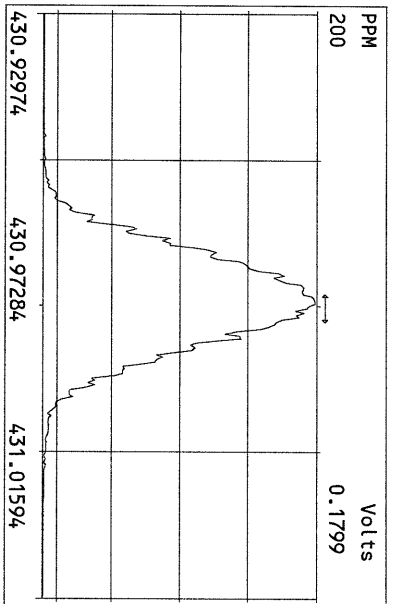
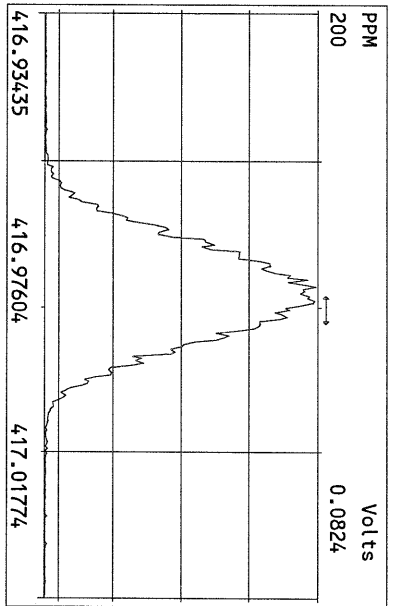
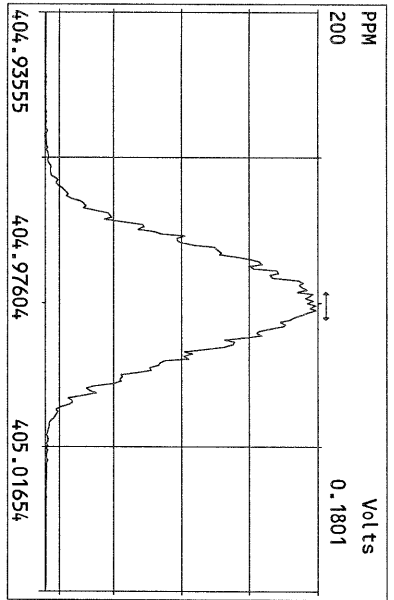
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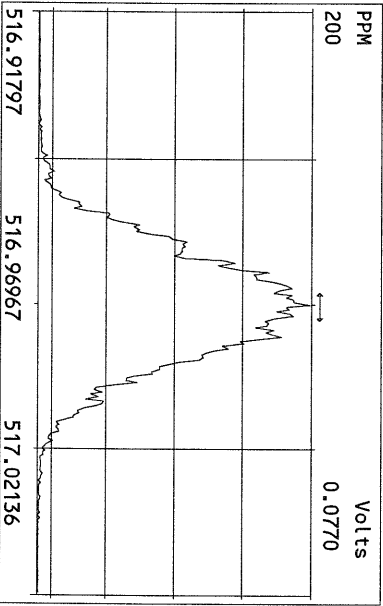
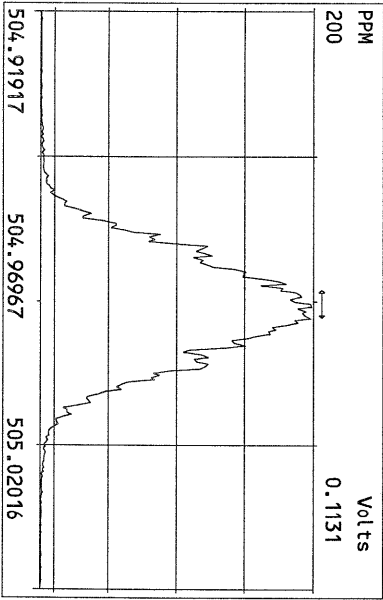
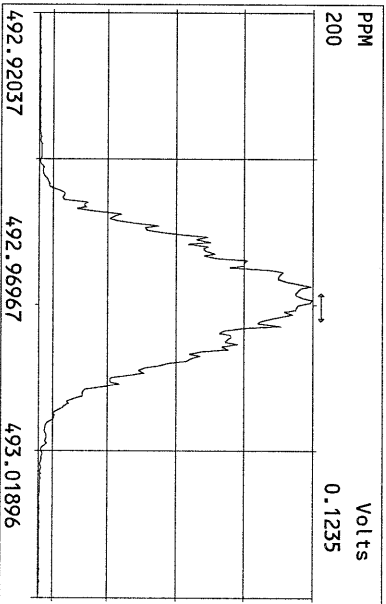
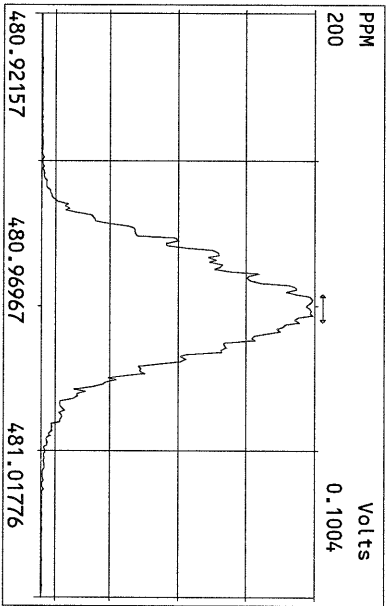
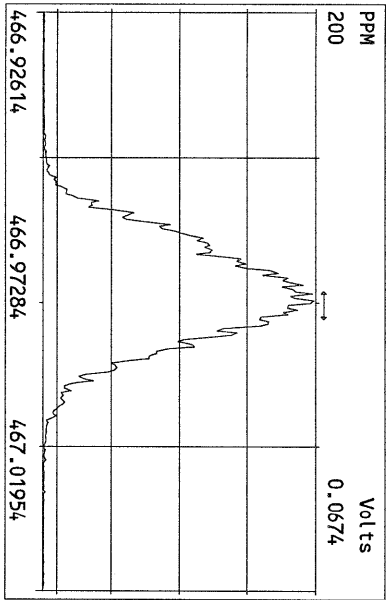
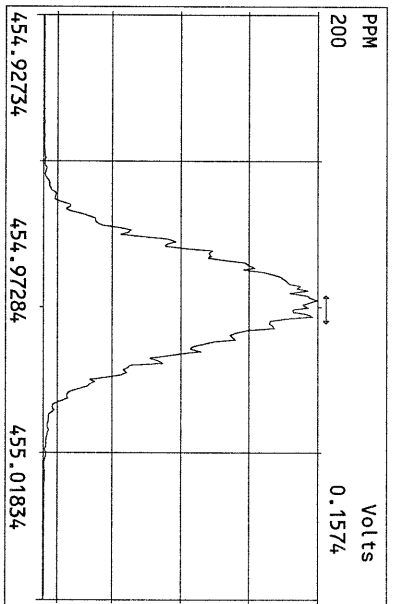
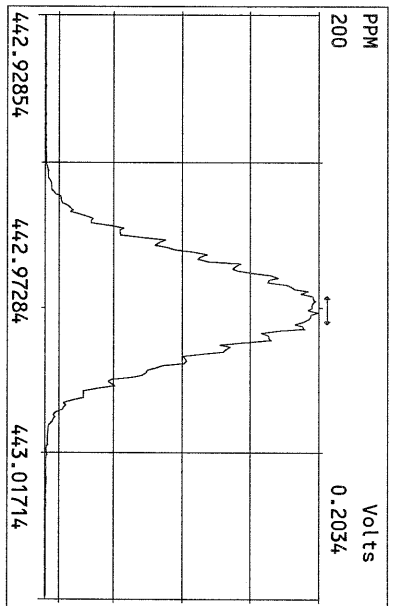
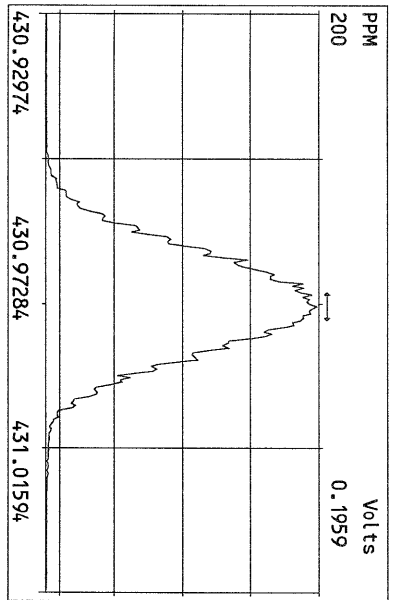




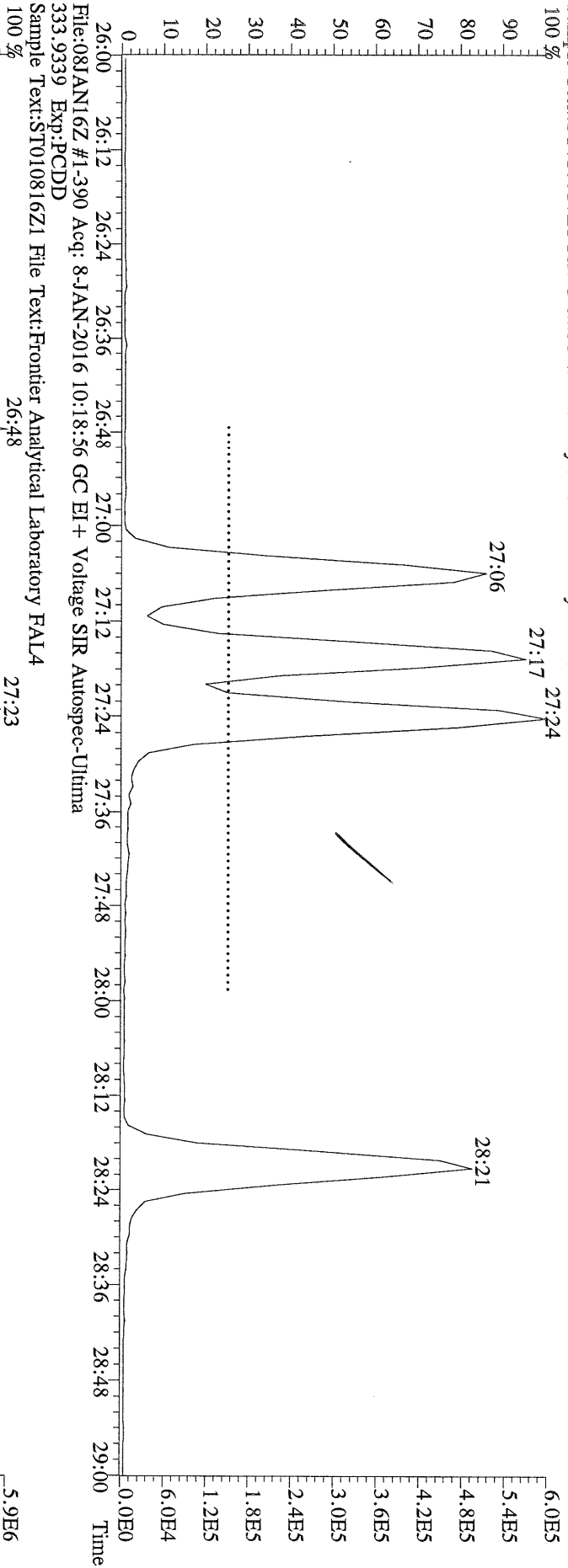


Peak Locate Examination: 8-JAN-2016:10:18 File:08JAN16Z
Experiment:PCDD Function:4 Reference:PFK

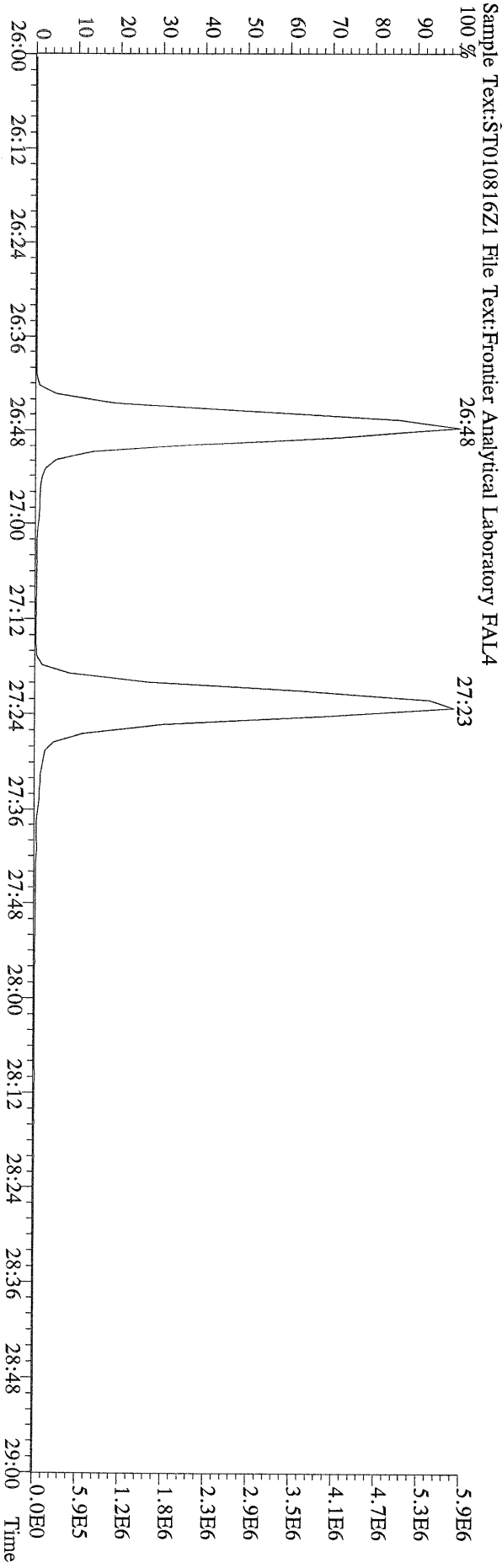




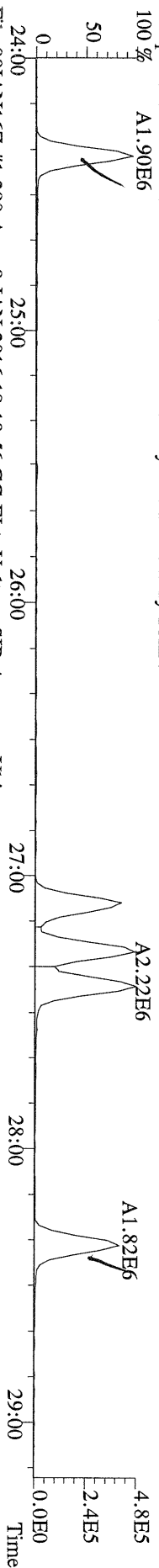
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321.8936 Exp:PCDD
Sample Text:ST010816Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



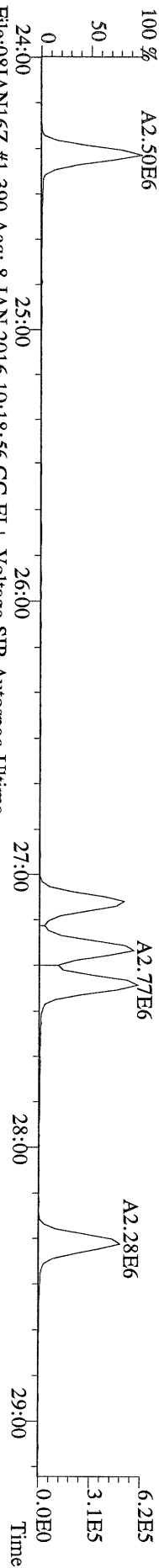
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333.9339 Exp:PCDD



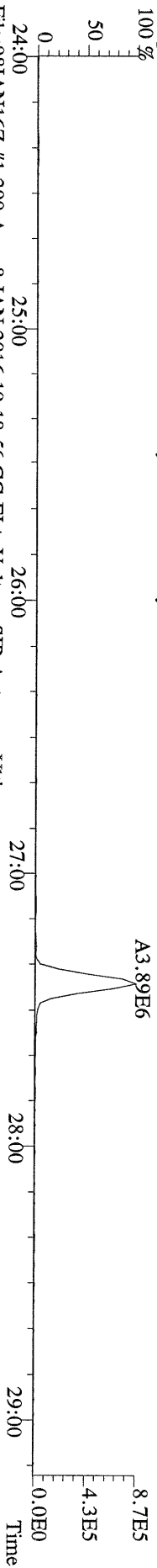
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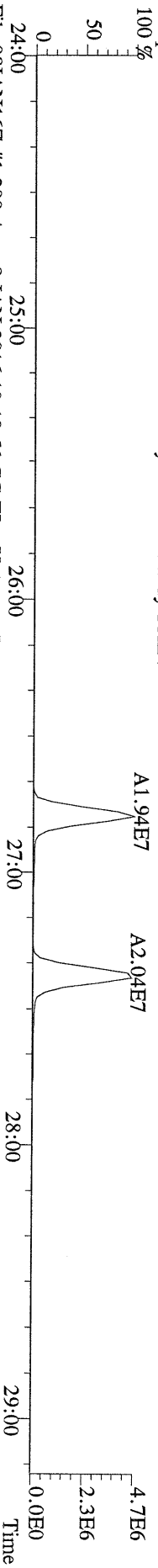
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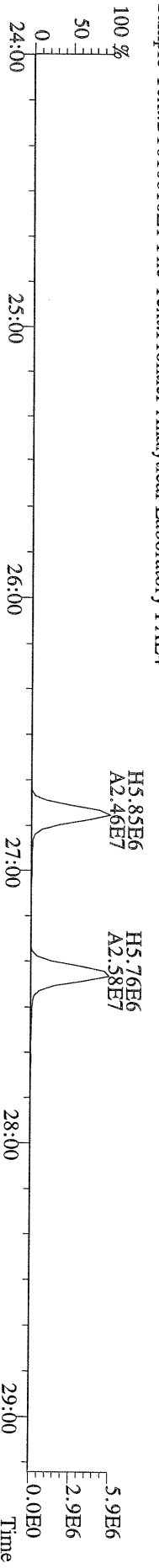
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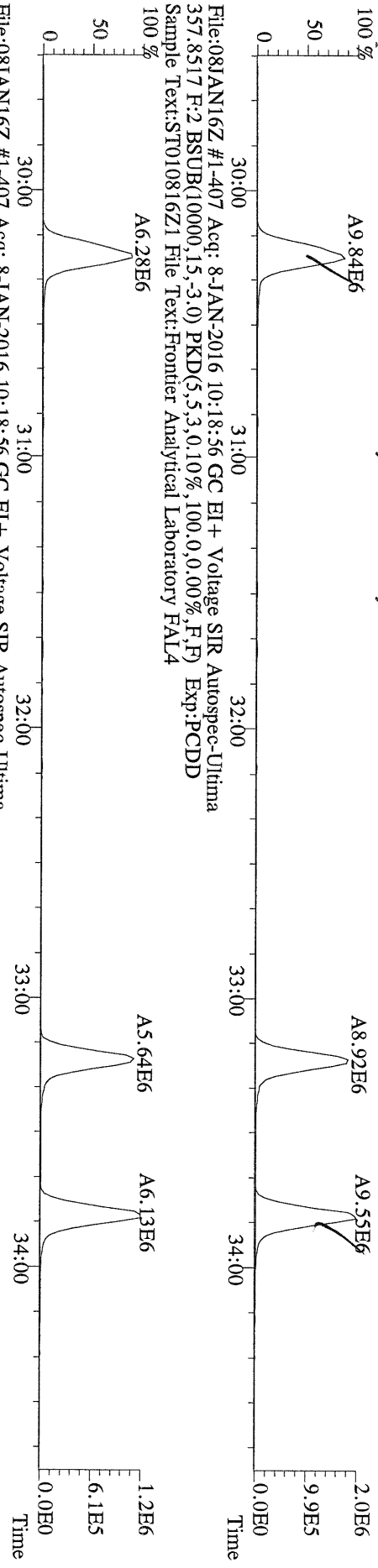
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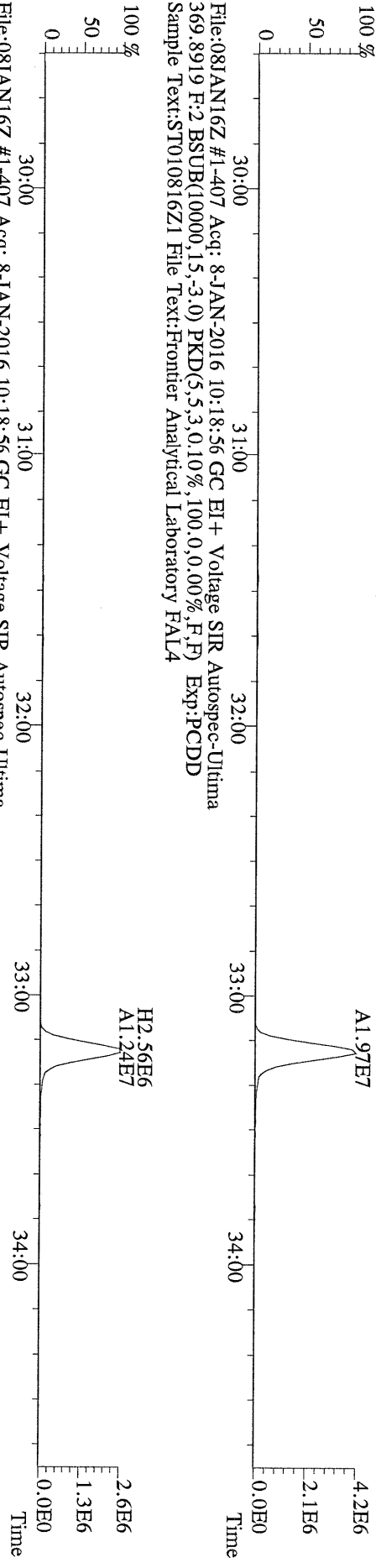
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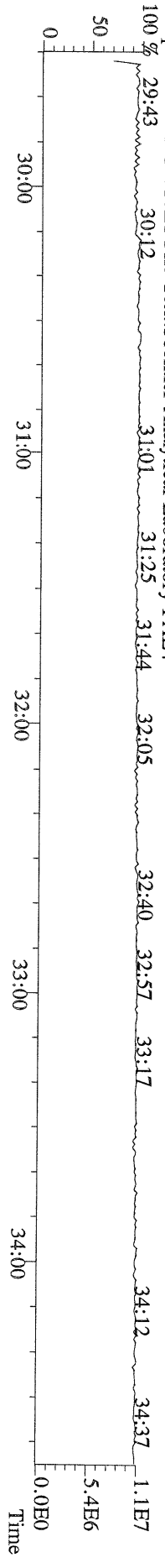
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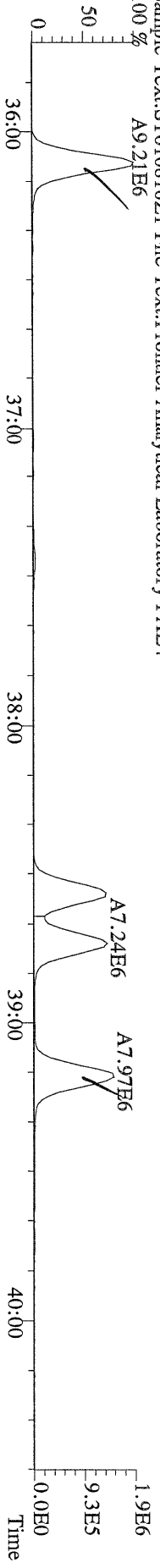
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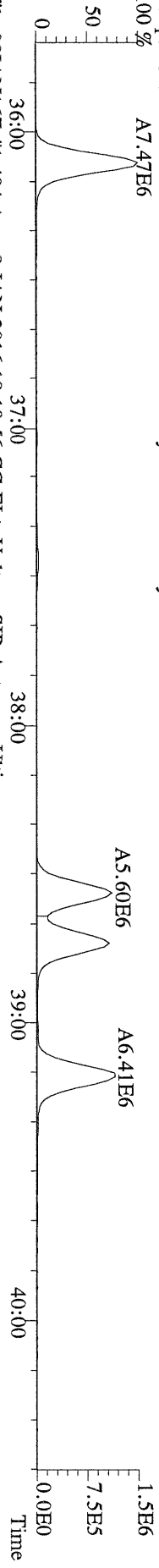
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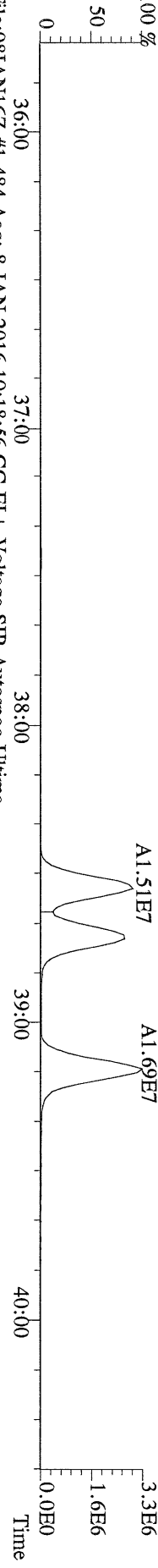
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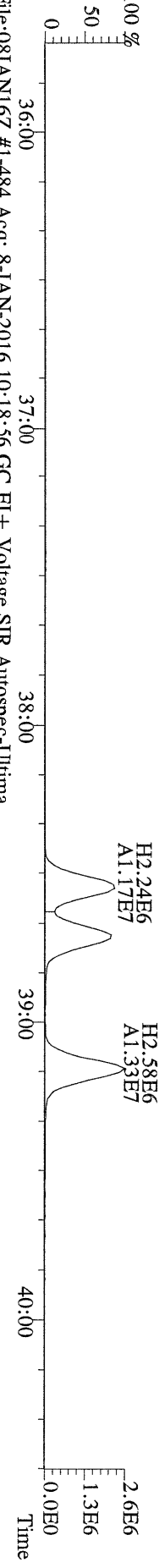
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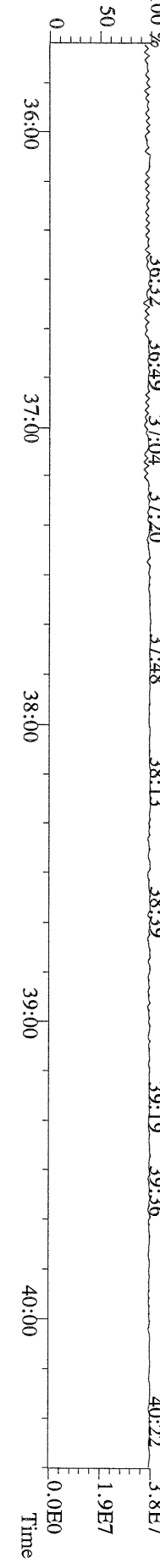
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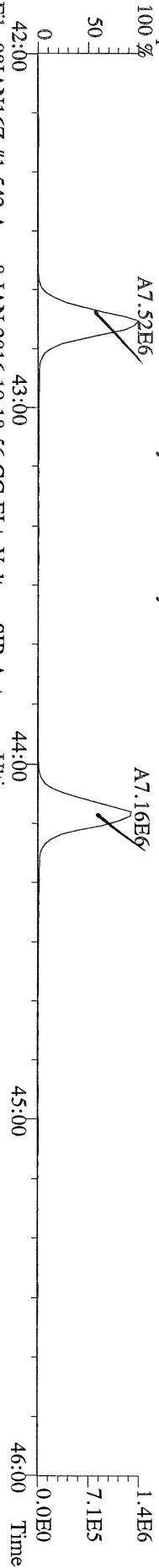
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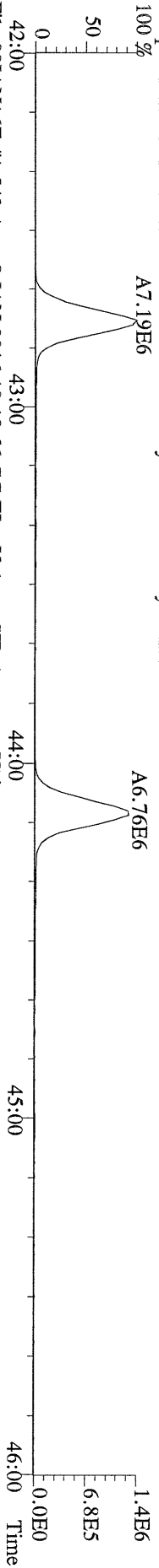
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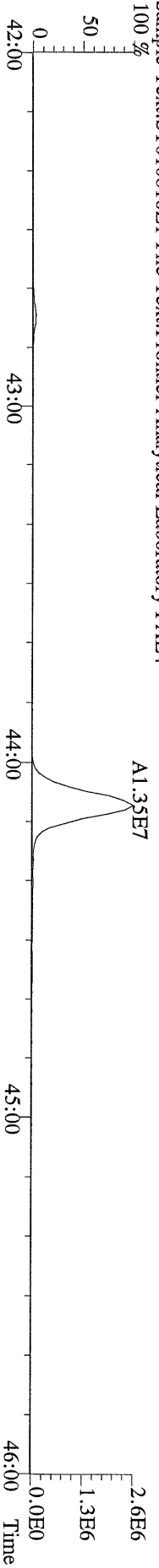
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423.7767 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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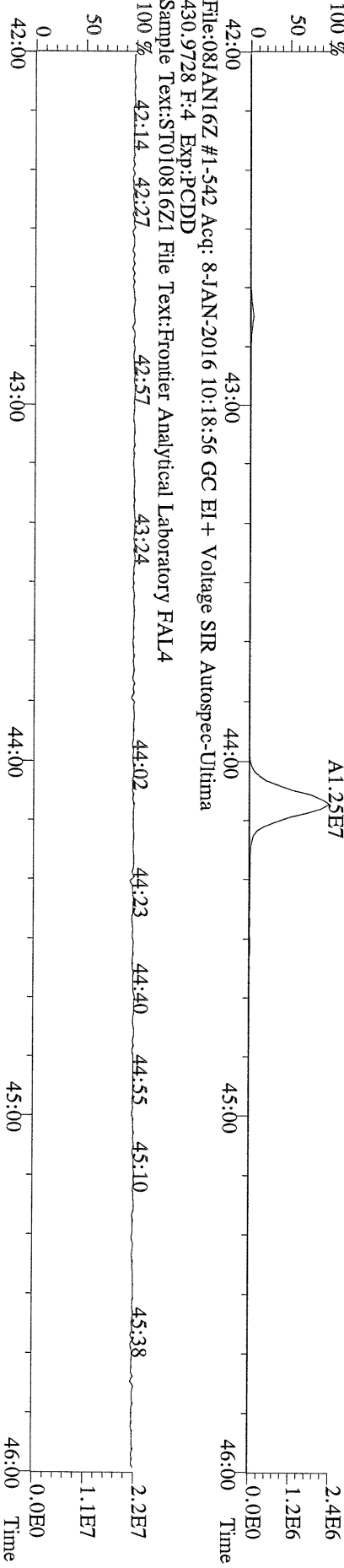
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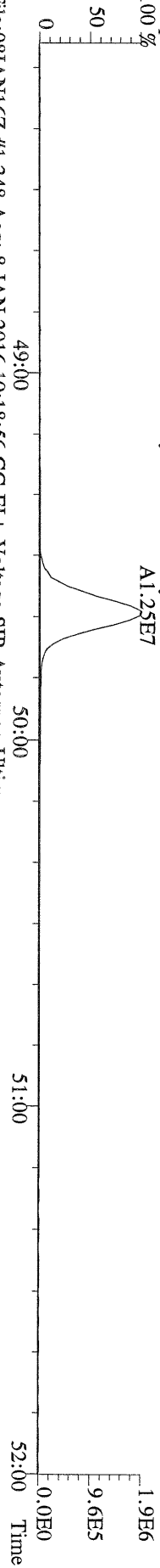
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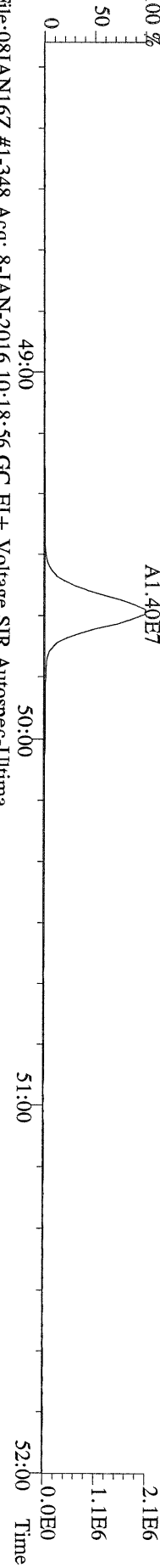
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430.9728 F:4 Exp:PCDD
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100 %



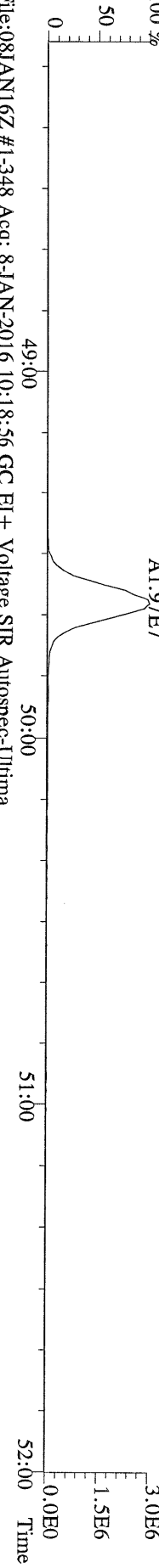
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Sample Text:ST010816Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



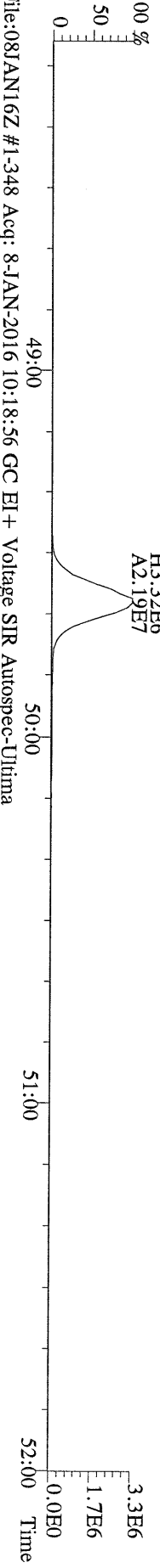
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Sample Text:ST010816Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



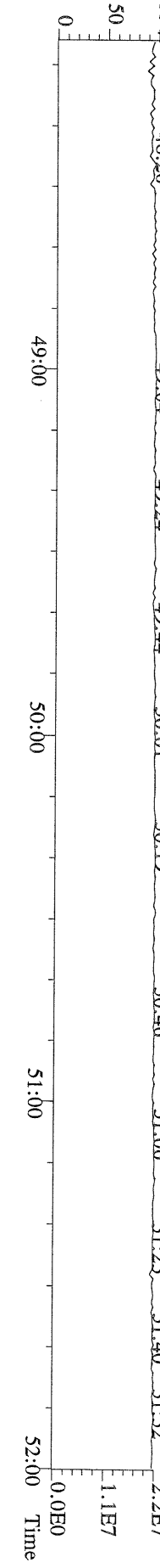
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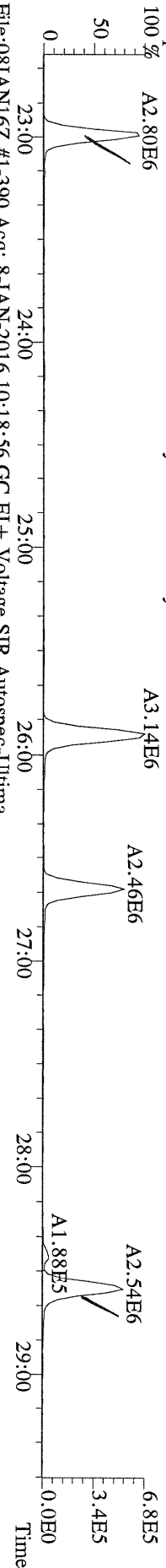
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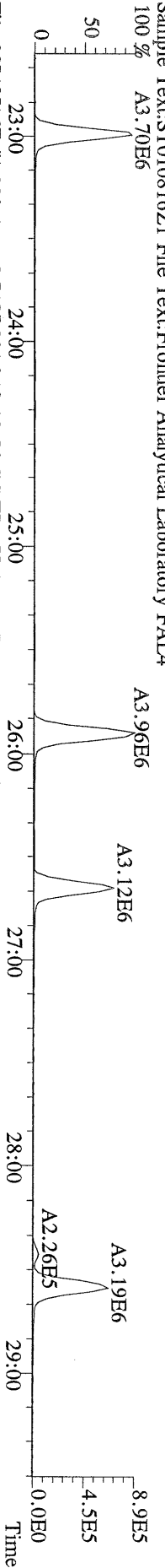
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454.9728 F:5 Exp:PCDD
Sample Text:ST010816Z1 File Text:Frontier Analytical Laboratory FAL4



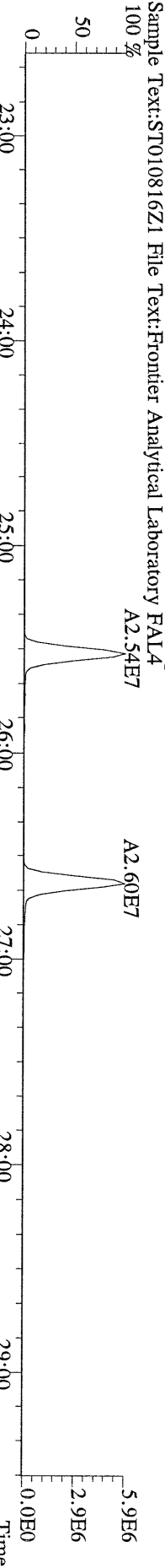
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303.9016 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010816Z1 File Text:Frontier Analytical Laboratory FAL4
100 % A2.80E6



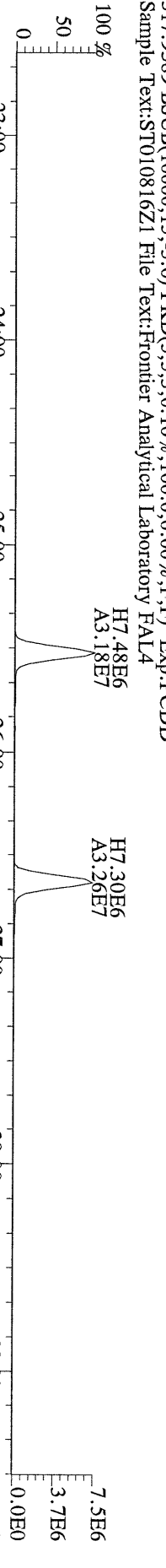
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305.8987 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010816Z1 File Text:Frontier Analytical Laboratory FAL4
100 % A3.70E6



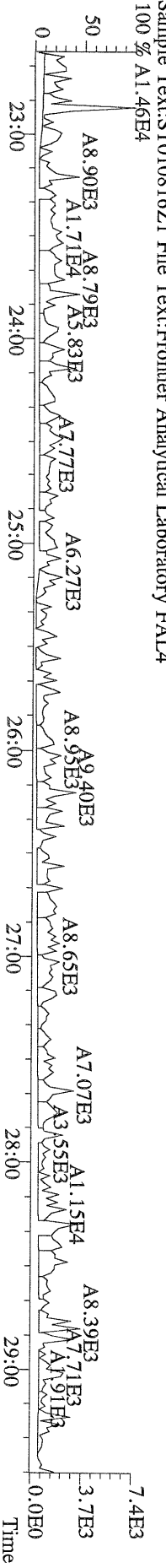
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315.9419 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010816Z1 File Text:Frontier Analytical Laboratory FAL4
100 % A2.54E7



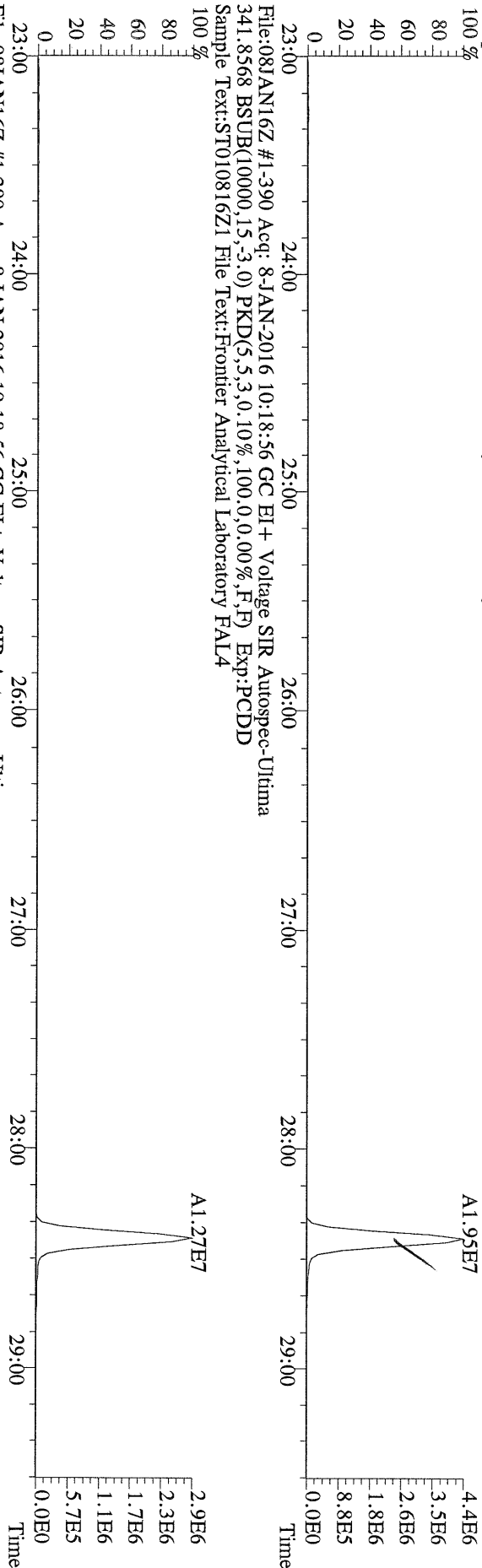
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317.9389 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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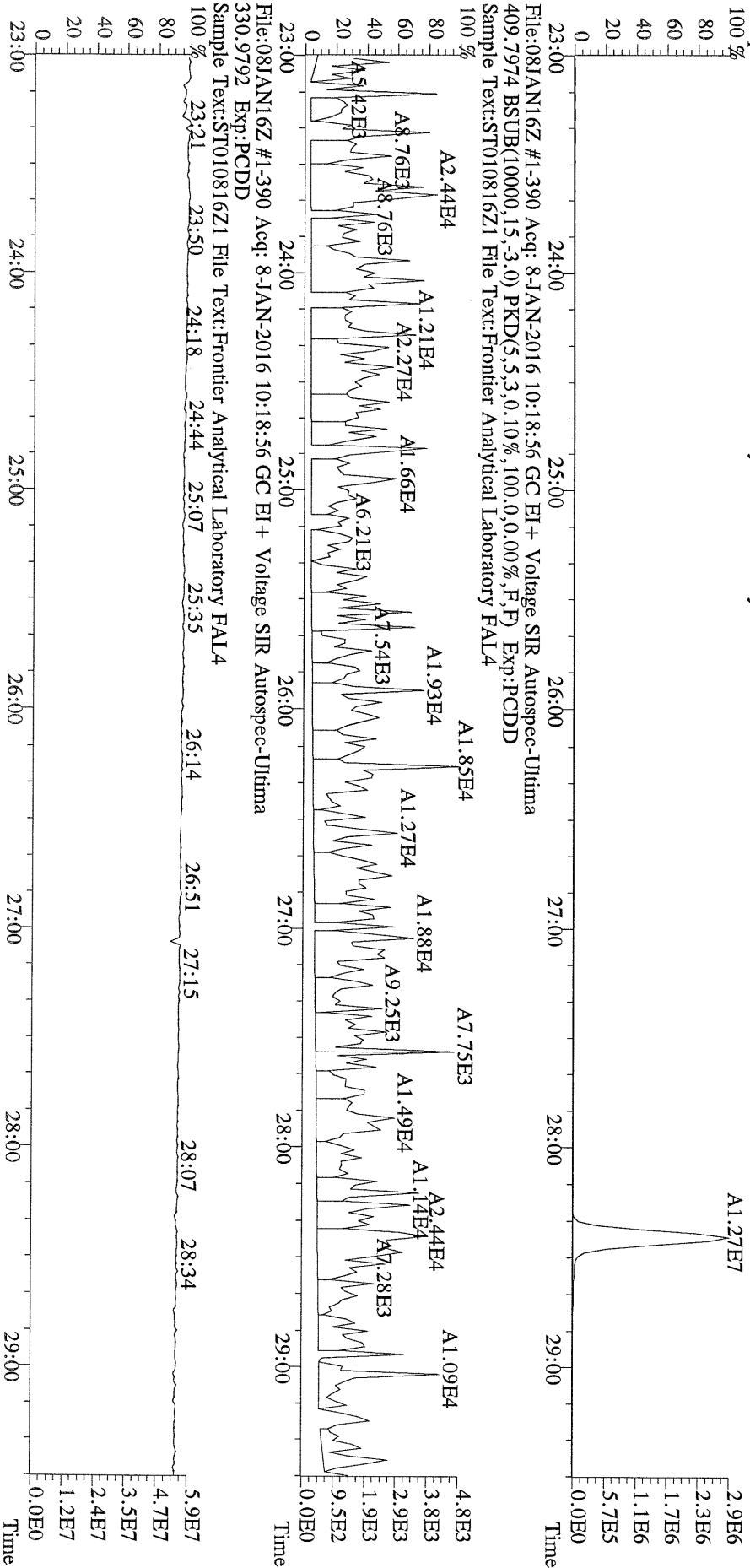
File:08JAN16Z #1-390 Acq: 8-JAN-2016 10:18:56 GC EI+ Voltage SIR Autospec-Ultima
375.8364 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010816Z1 File Text:Frontier Analytical Laboratory FAL4
100 % A1.46E4



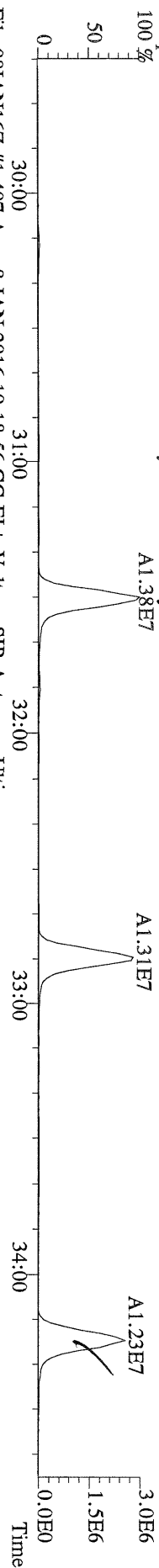
File:081ANI6Z #1-390 Acq: 8-JAN-2016 10:18:56 GC EI + Voltage SIR Autospec-Ultima
 339.8597 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:STO10816Z1 File Text:Frontier Analytical Laboratory FAL4



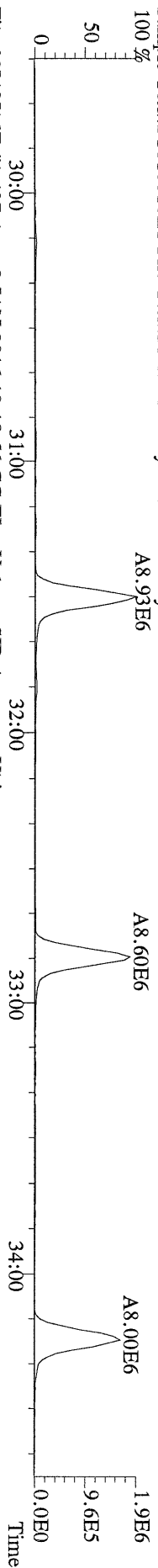
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 Sample Text:STO10816Z1 File Text:Frontier Analytical Laboratory FAL4



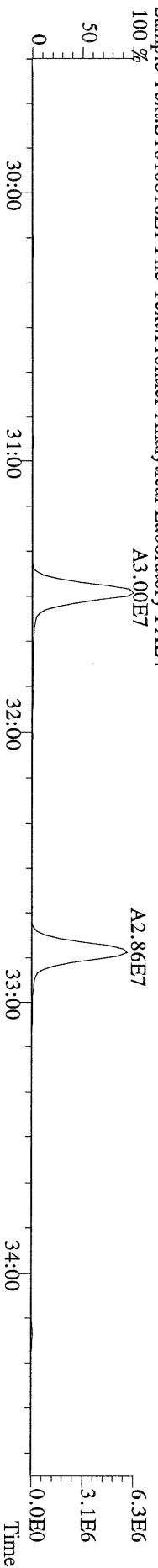
File:08JAN16Z #1-407 Acq: 8-JAN-2016 10:18:56 GC EI+ Voltage SIR Autospec-Ultima
 339, 8597 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,P) Exp:PCDD
 Sample Text:ST010816Z1 File Text:Frontier Analytical Laboratory FAL4
 100 %



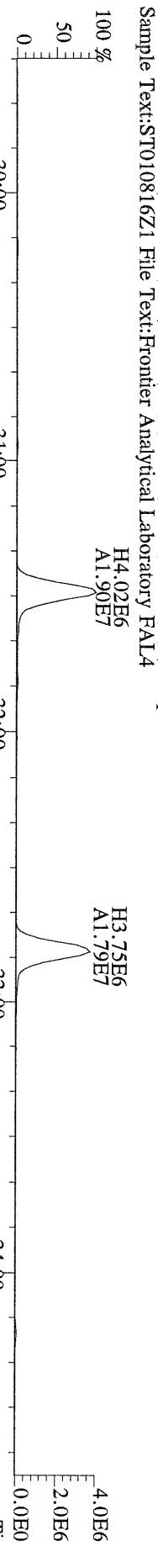
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 341, 8568 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,P) Exp:PCDD
 Sample Text:ST010816Z1 File Text:Frontier Analytical Laboratory FAL4
 100 %



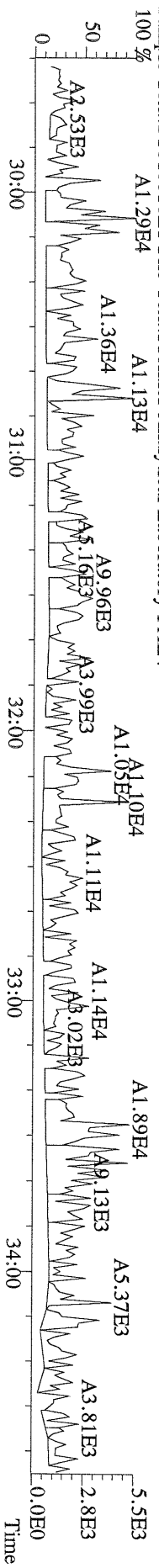
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 351, 9000 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,P) Exp:PCDD
 Sample Text:ST010816Z1 File Text:Frontier Analytical Laboratory FAL4
 100 %



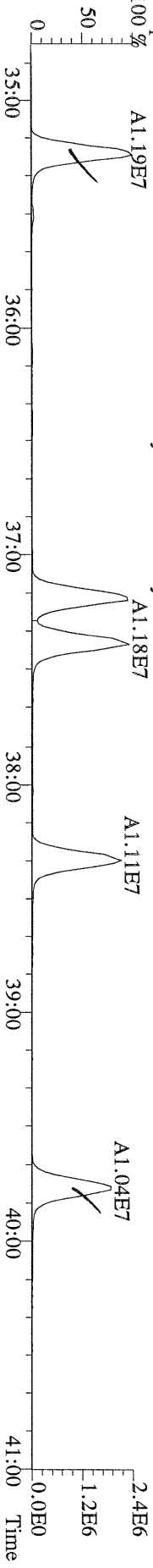
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 353, 8970 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,P) Exp:PCDD
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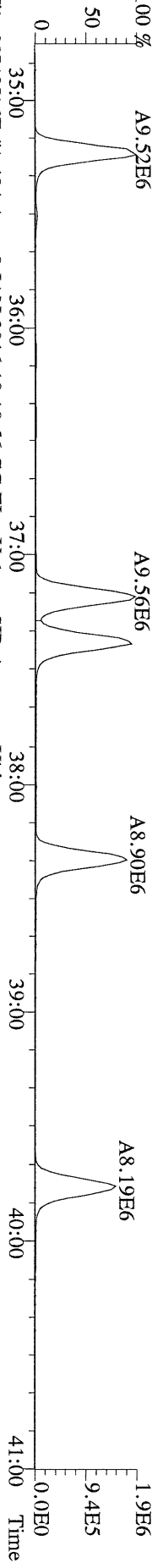
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 409, 7974 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,P) Exp:PCDD
 Sample Text:ST010816Z1 File Text:Frontier Analytical Laboratory FAL4
 100 %



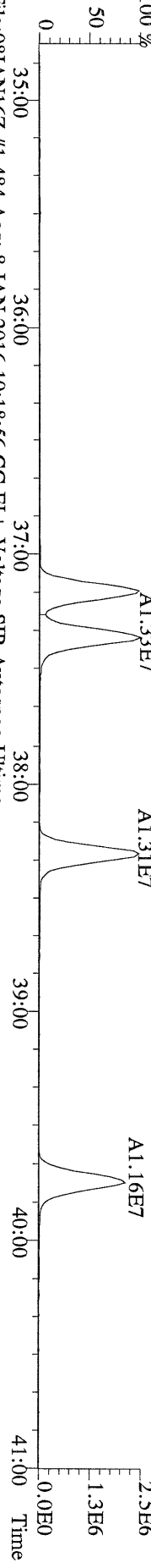
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373.8207 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0) F,F) Exp:PCDD
Sample Text:ST010816Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



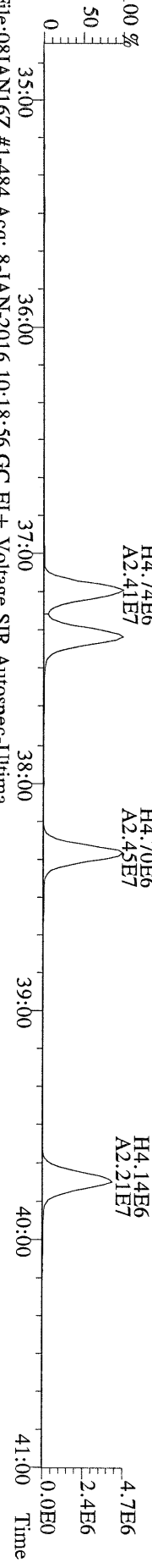
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375.8178 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0) F,F) Exp:PCDD
Sample Text:ST010816Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



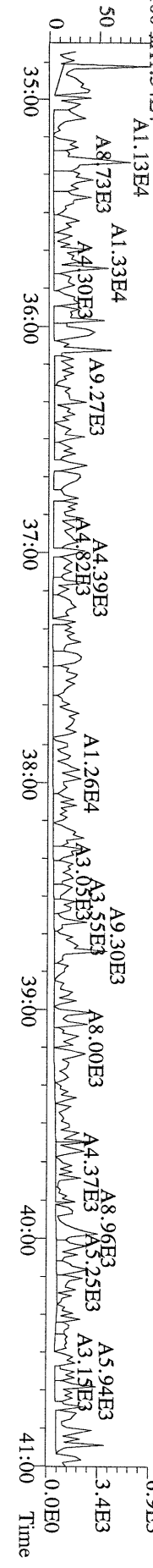
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383.8639 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0) F,F) Exp:PCDD
Sample Text:ST010816Z1 File Text:Frontier Analytical Laboratory FAL4
100 %



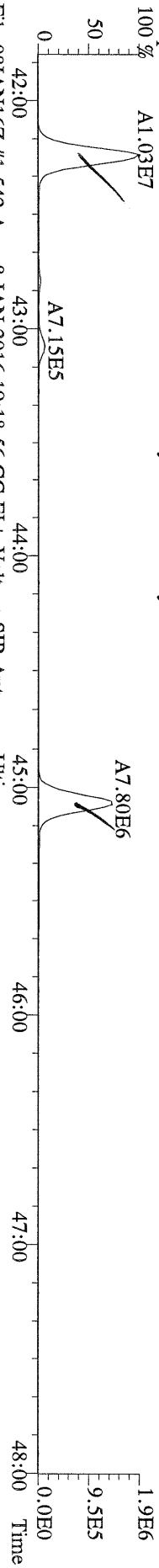
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445.7555 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0) F,F) Exp:PCDD
Sample Text:ST010816Z1 File Text:Frontier Analytical Laboratory FAL4
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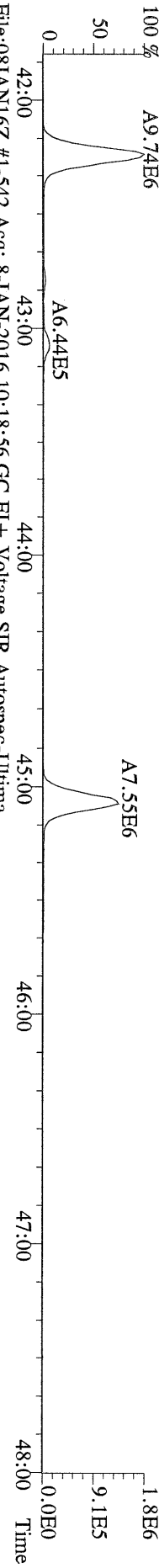
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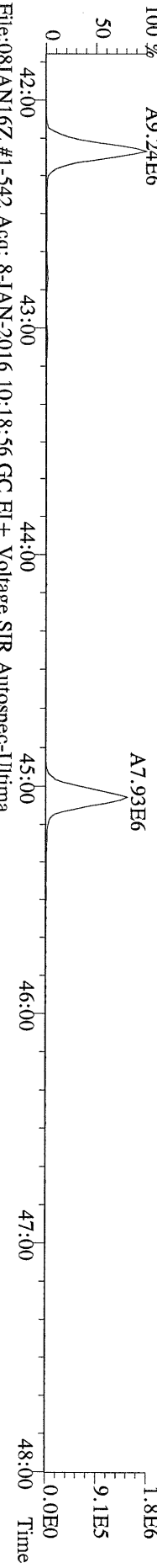
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407.7818 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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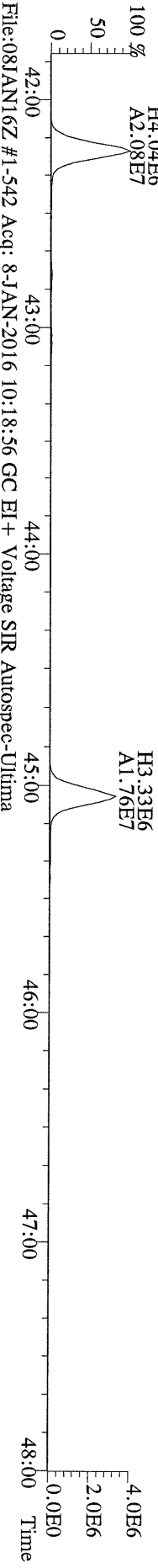
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409.7788 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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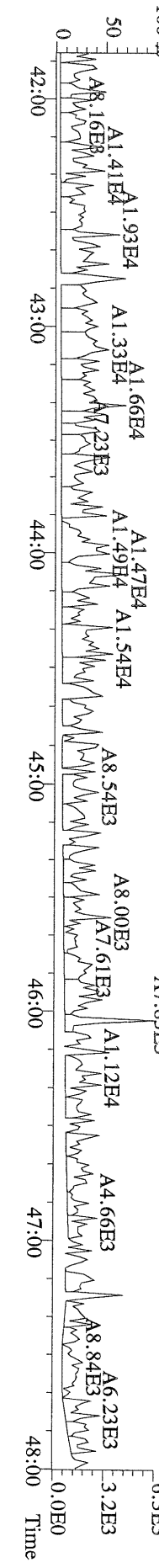
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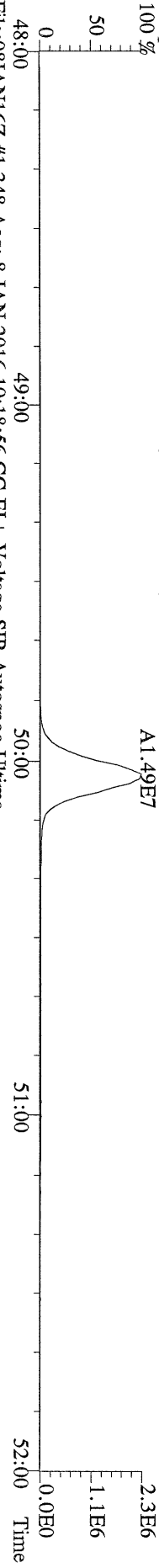
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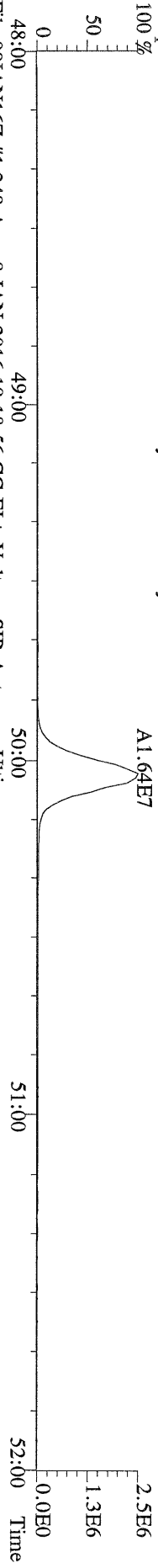
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100 %



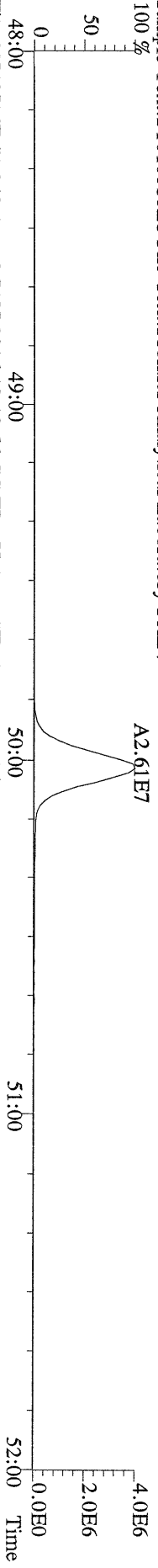
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441.7428 F:5 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD
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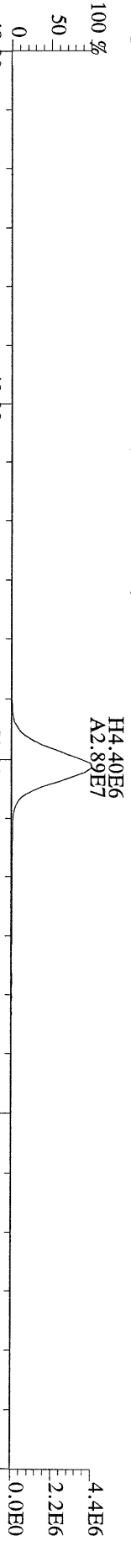
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100 %



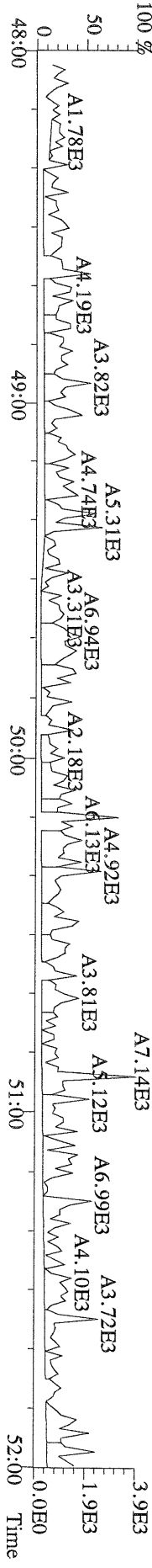
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453.7831 F:5 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816Z1 File Text:Frontier Analytical Laboratory FAL4
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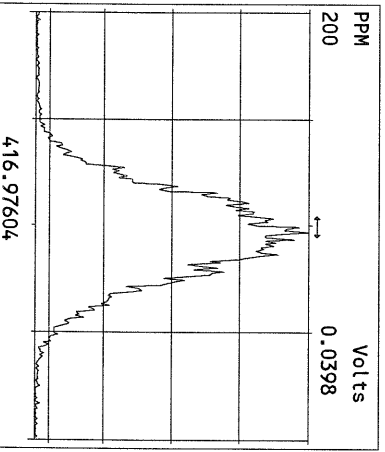
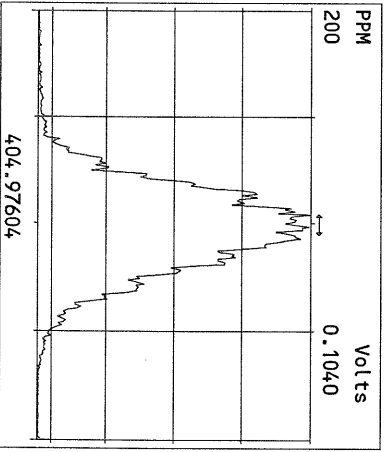
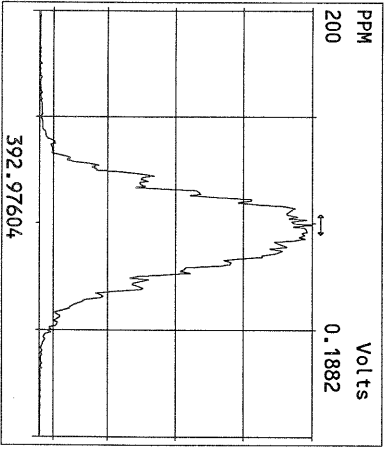
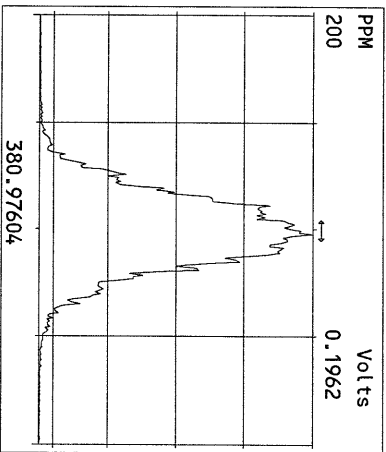
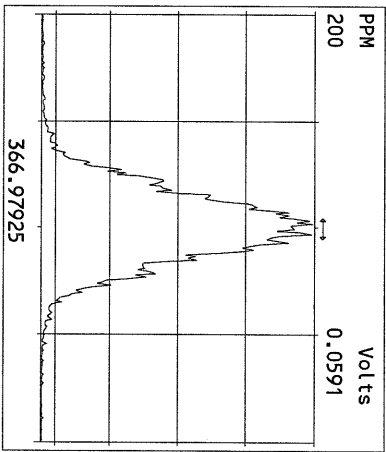
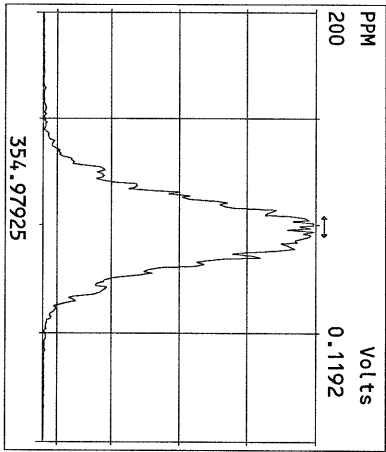
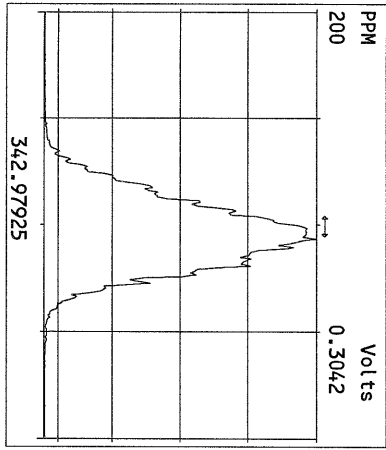
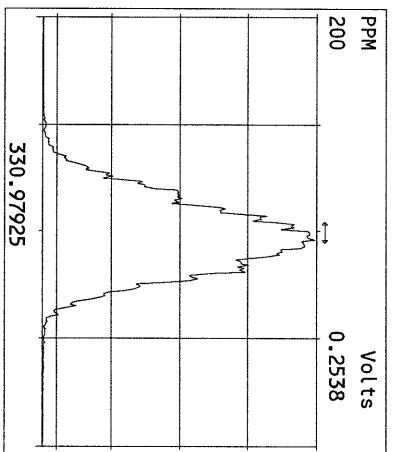
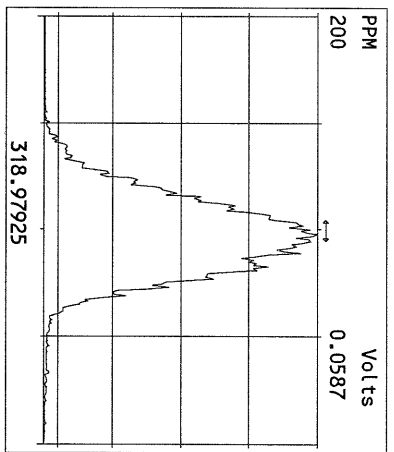
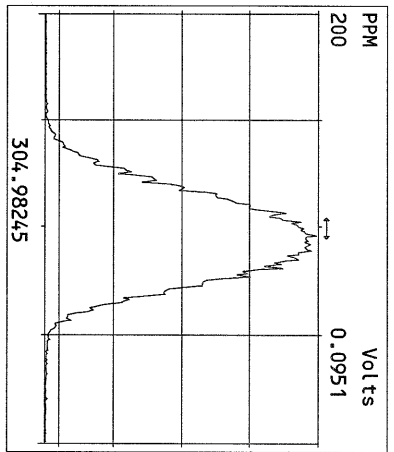
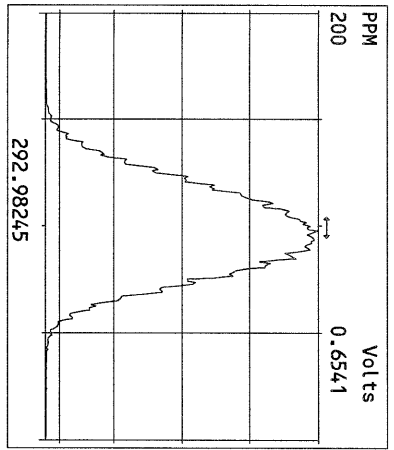


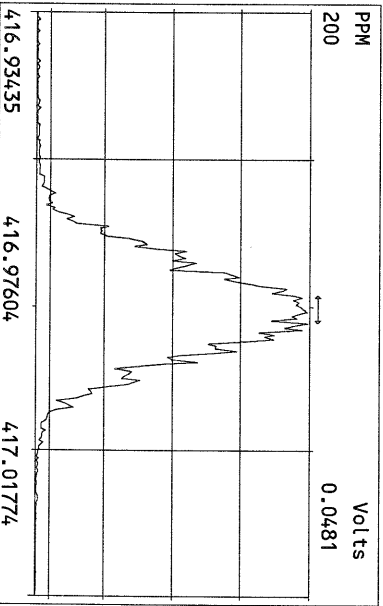
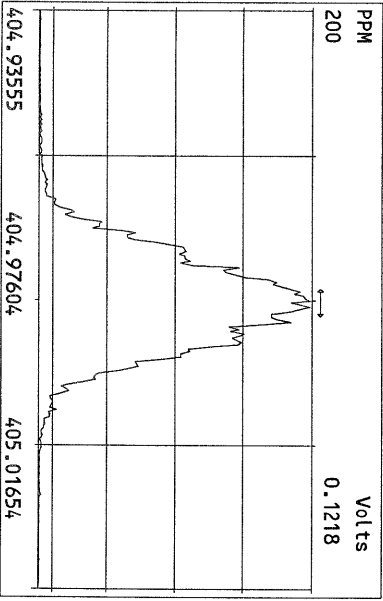
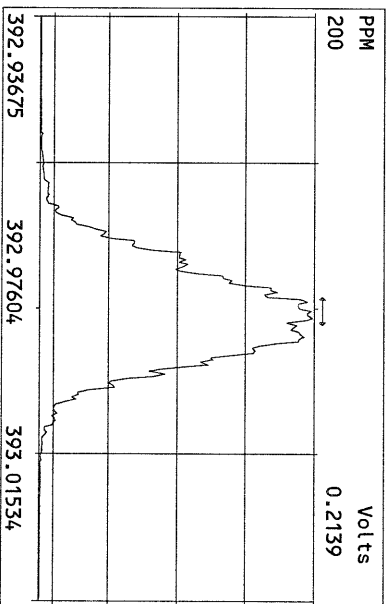
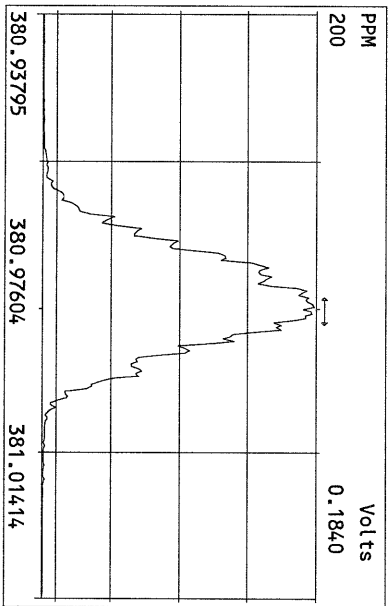
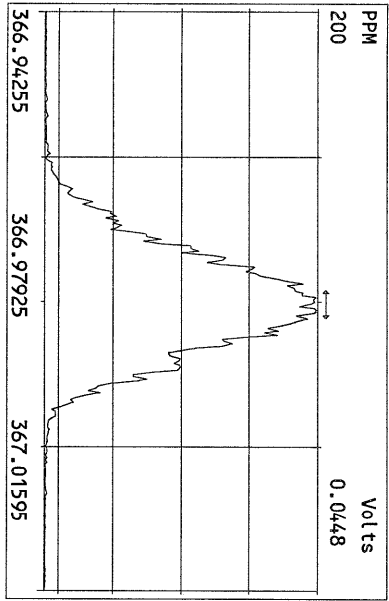
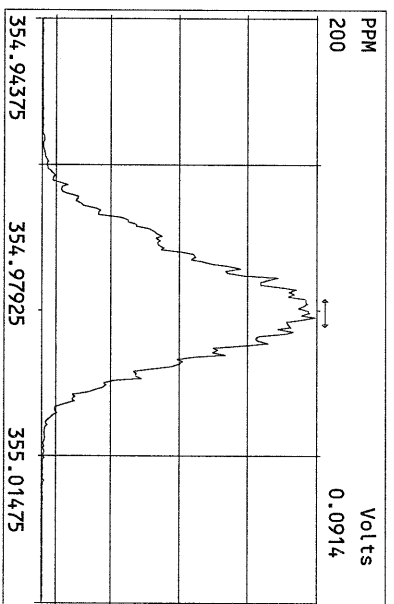
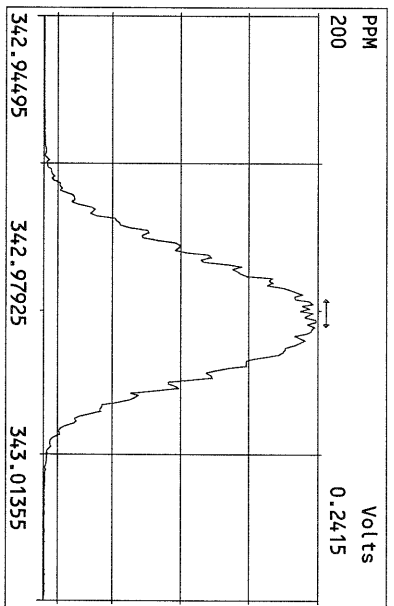
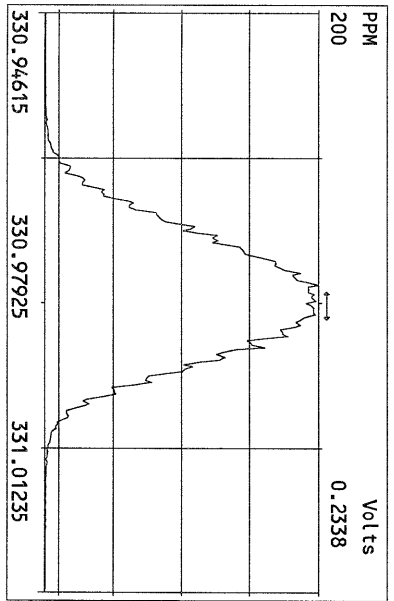
File:081JAN16Z #1-348 Acq: 8-JAN-2016 10:18:56 GC EI+ Voltage SIR Autospec-Ultima
455.7801 F:5 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816Z1 File Text:Frontier Analytical Laboratory FAL4

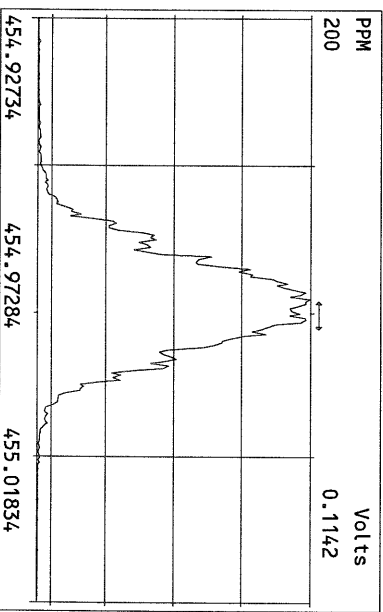
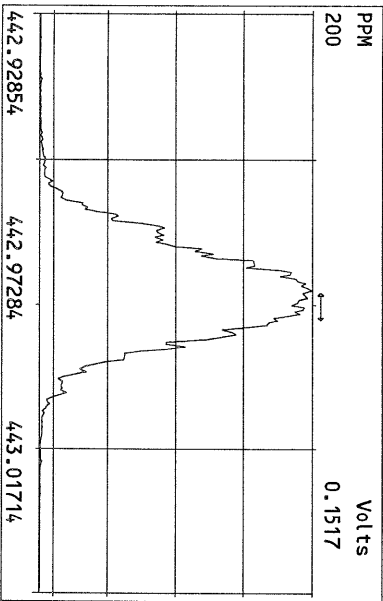
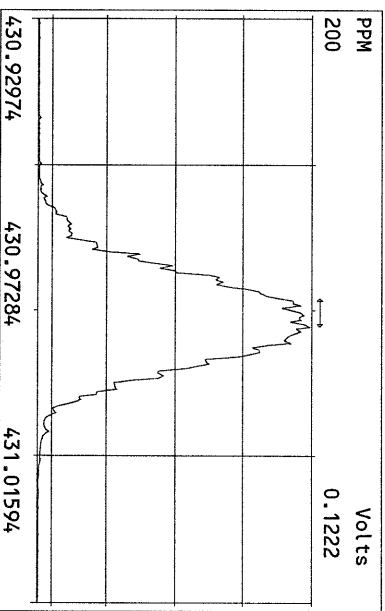
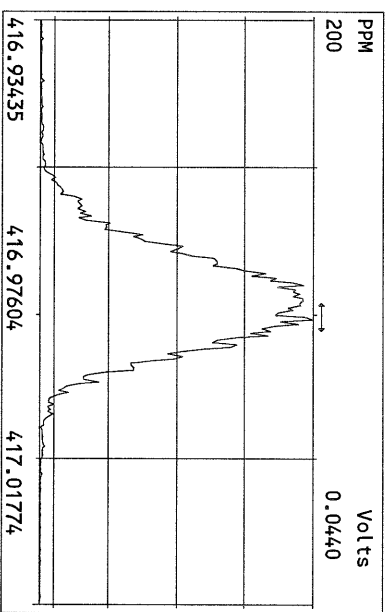
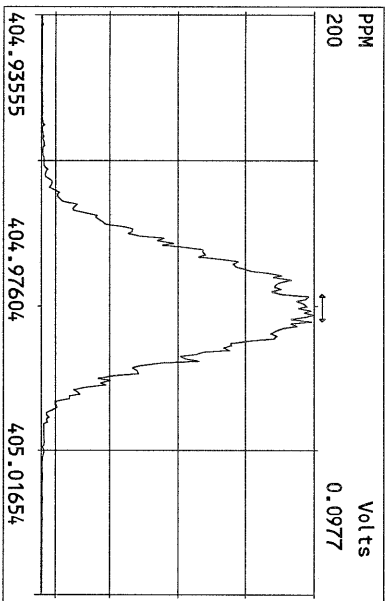
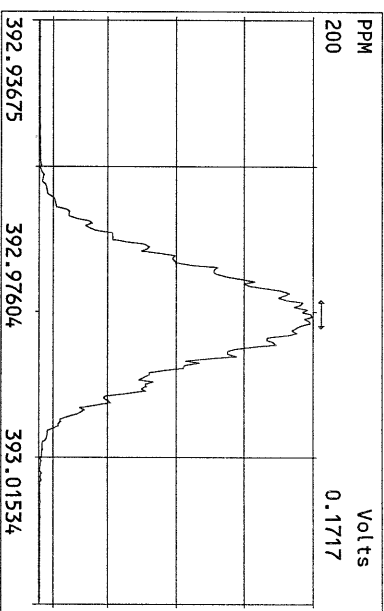
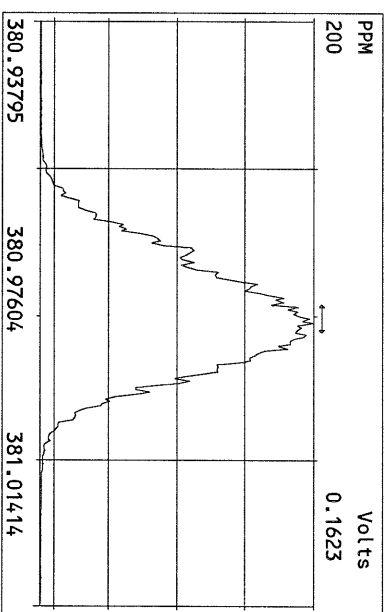
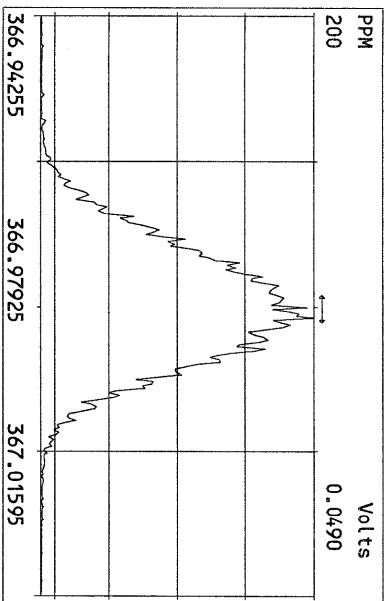


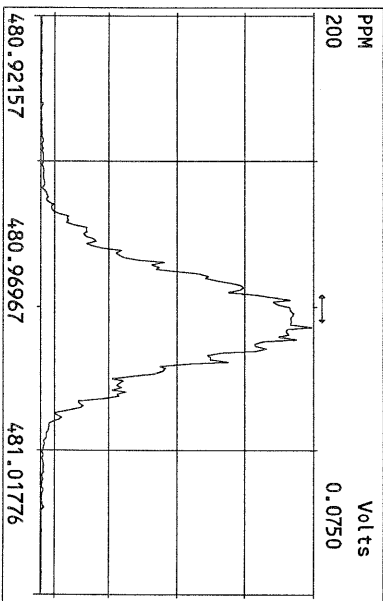
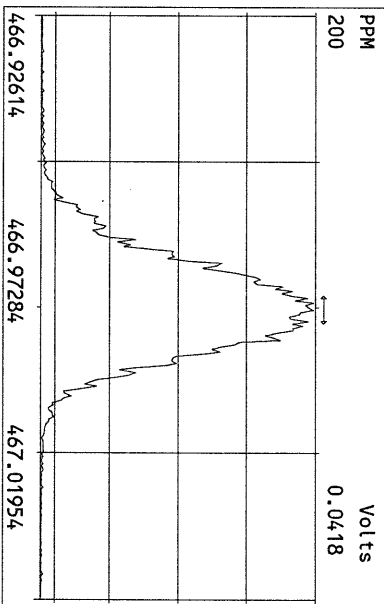
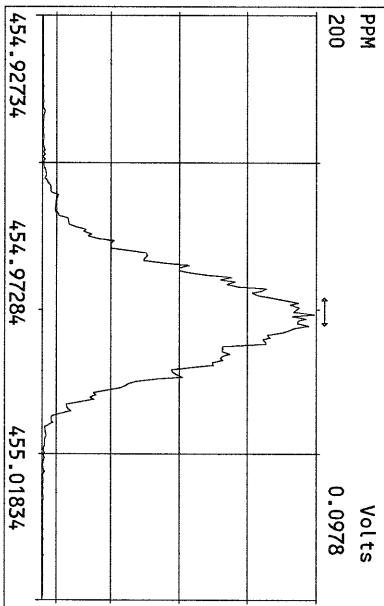
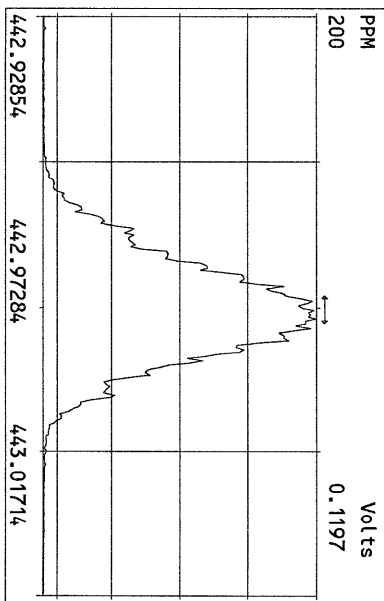
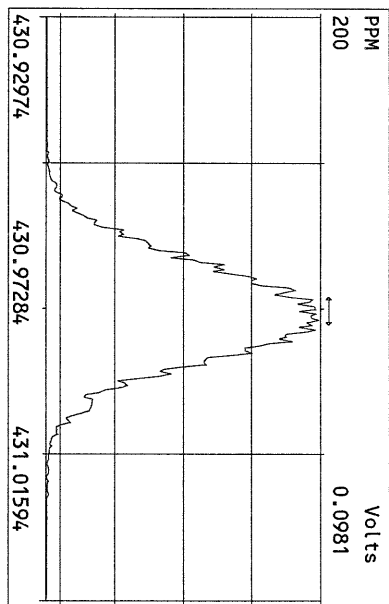
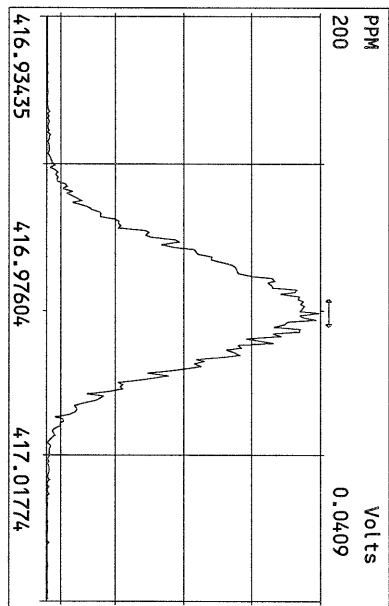
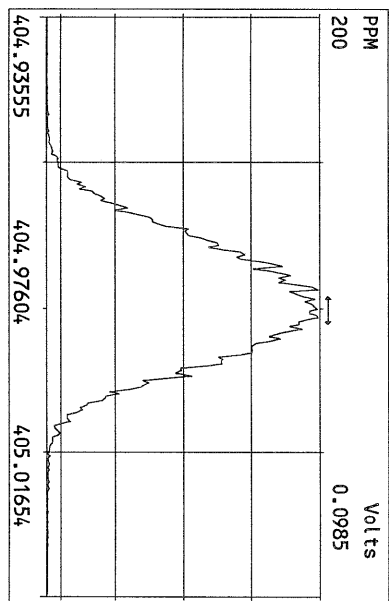
File:081JAN16Z #1-348 Acq: 8-JAN-2016 10:18:56 GC EI+ Voltage SIR Autospec-Ultima
513.6775 F:5 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816Z1 File Text:Frontier Analytical Laboratory FAL4
100 %

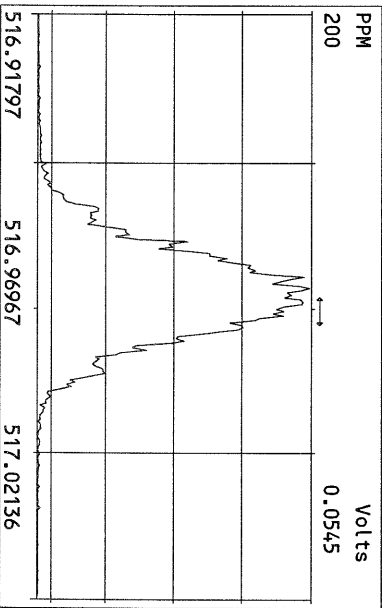
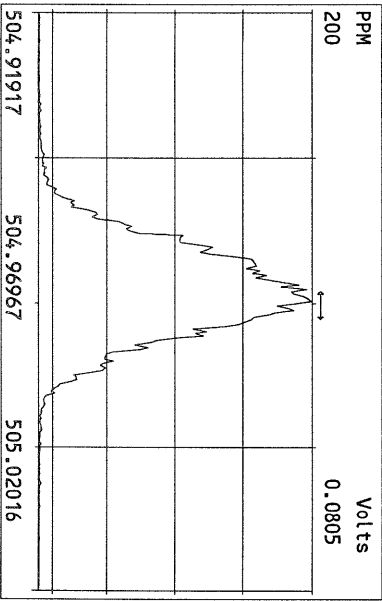
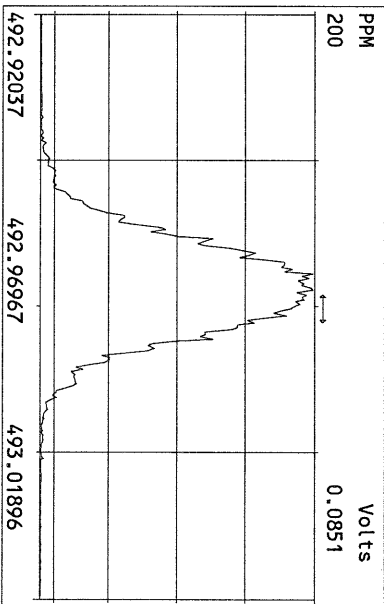
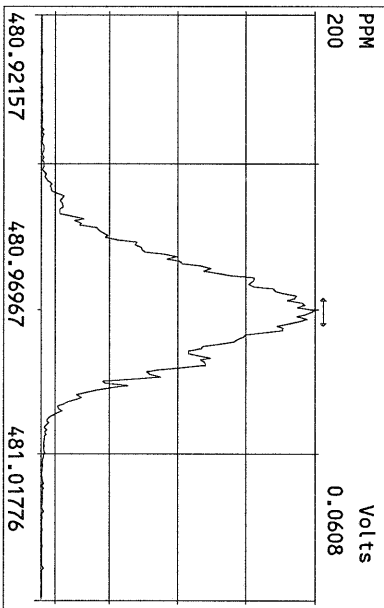
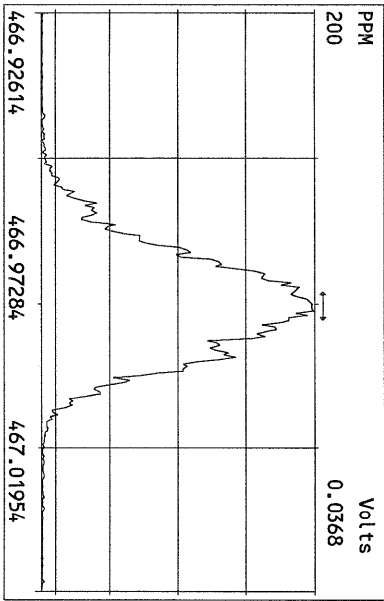
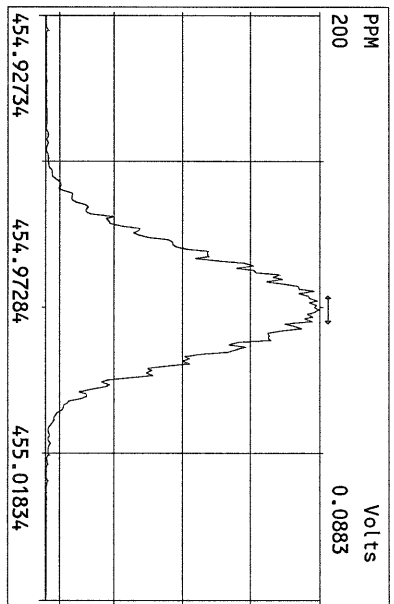
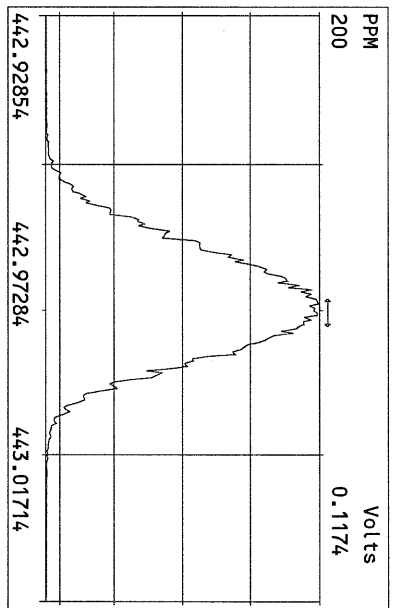
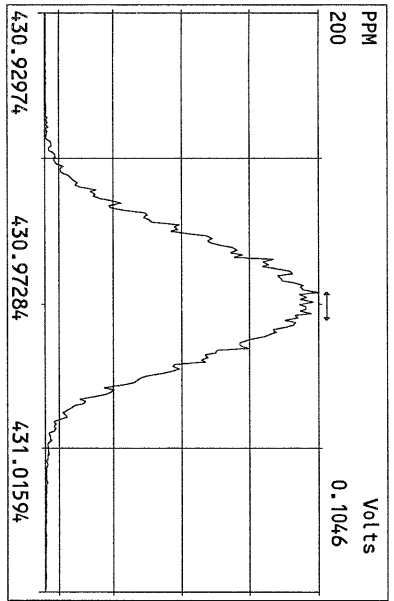












USEPA - ITD

FORM 4A
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: Frontier Analytical Laboratory Episode No.:

Contract No.: SAS No.:

Initial Calibration Date: 12/29/15

Instrument ID: FAL4 GC Column ID: DB5

VER Data Filename: 08JAN16Z Sam:5 Analysis Date: 8-JAN-16 13:58:11

NATIVE ANALYTES	M/Z'S	ION ABUND. RATIO	QC LIMITS (2)	ACCEPT	CONC. FOUND	CONC. RANGE (ng/mL) (3)
	FORMING RATIO (1)					
2,3,7,8-TCDD	M/M+2	0.81	0.65-0.89	y	9.77	7.80 - 12.9
1,2,3,7,8-PeCDD	M+2/M+4	1.59	1.32-1.78	y	51.6	39.0 - 65.0
1,2,3,4,7,8-HxCDD	M+2/M+4	1.23	1.05-1.43	y	47.9	39.0 - 64.0
1,2,3,6,7,8-HxCDD	M+2/M+4	1.26	1.05-1.43	y	49.4	39.0 - 64.0
1,2,3,7,8,9-HxCDD	M+2/M+4	1.25	1.05-1.43	y	49.2	41.0 - 61.0
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.07	0.88-1.20	y	50.6	43.0 - 58.0
OCDD	M+2/M+4	0.89	0.76-1.02	y	125	79.0 - 126
2,3,7,8-TCDF	M/M+2	0.80	0.65-0.89	y	9.21	8.40 - 12.0
1,2,3,7,8-PeCDF	M+2/M+4	1.58	1.32-1.78	y	48.9	41.0 - 60.0
2,3,4,7,8-PeCDF	M+2/M+4	1.58	1.32-1.78	y	47.9	41.0 - 60.0
1,2,3,4,7,8-HxCDF	M+2/M+4	1.23	1.05-1.43	y	47.6	45.0 - 56.0
1,2,3,6,7,8-HxCDF	M+2/M+4	1.24	1.05-1.43	y	48.5	44.0 - 57.0
2,3,4,6,7,8-HxCDF	M+2/M+4	1.24	1.05-1.43	y	48.6	44.0 - 57.0
1,2,3,7,8,9-HxCDF	M+2/M+4	1.26	1.05-1.43	y	49.1	45.0 - 56.0
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.03	0.88-1.20	y	52.3	45.0 - 55.0
1,2,3,4,7,8,9-HpCDF	M+2/M+4	1.05	0.88-1.20	y	50.6	43.0 - 58.0
OCDF	M+2/M+4	0.88	0.76-1.02	y	109	63.0 - 159

(1) See Table 8, Method 1613, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613.

(3) Contract-required concentration range as specified in Table 6, Method 1613.

Analyst: Date: 1/8/16

USEPA - ITD

FORM 4B
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: Frontier Analytical Laboratory

Episode No.:

Contract No.:

SAS No.:

Initial Calibration Date: 12/29/15

Instrument ID: FAL4

GC Column ID: DB5

VER Data Filename: 08JAN16Z Sam:5

Analysis Date: 8-JAN-16 13:58:11

LABELLED COMPOUNDS	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	ACCEPT	CONC. FOUND	CONC. RANGE (ng/mL) (3)
13C-2,3,7,8-TCDD	M/M+2	0.79	0.65-0.89	y	99.1	82.0 - 121 ✓
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.58	1.32-1.78	y	100	62.0 - 160 ✓
13C-1,2,3,4,7,8-HxCDD	M+2/M+4	1.27	1.05-1.43	y	101	85.0 - 117 ✓
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.27	1.05-1.43	y	99.6	85.0 - 118 ✓
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.07	0.88-1.20	y	108	72.0 - 138 ✓
13C-OCDD	M+2/M+4	0.91	0.76-1.02	y	221	96.0 - 415 ✓
13C-2,3,7,8-TCDF	M/M+2	0.80	0.65-0.89	y	102	71.0 - 140 ✓
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.59	1.32-1.78	y	101	76.0 - 130 ✓
13C-2,3,4,7,8-PeCDF	M+2/M+4	1.61	1.32-1.78	y	105	77.0 - 130 ✓
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.54	0.43-0.59	y	93.1	76.0 - 131 ✓
13C-1,2,3,6,7,8-HxCDF	M/M+2	0.55	0.43-0.59	y	92.2	70.0 - 143 ✓
13C-2,3,4,6,7,8-HxCDF	M/M+2	0.54	0.43-0.59	y	95.3	73.0 - 137 ✓
13C-1,2,3,7,8,9-HxCDF	M/M+2	0.53	0.43-0.59	y	99.2	74.0 - 135 ✓
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.45	0.37-0.51	y	98.6	78.0 - 129 ✓
13C-1,2,3,4,7,8,9-HpCDF	M/M+2	0.46	0.37-0.51	y	101	77.0 - 129 ✓
13C-OCDF	M+2/M+4	0.91	0.76-1.02	y	206	96.0 - 415 ✓
CLEANUP STANDARD (4)						
37Cl-2,3,7,8-TCDD					9.56	7.90 - 12.7

(1) See Table 8, Method 1613, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613.

(3) Contract-required concentration range as specified in Table 6, Method 1613.

(4) No ion abundance ratio; report concentration found.

Analyst: Date: 1/8/16

USEPA - ITD

FORM 6A

PCDD/PCDF RELATIVE RETENTION TIMES

Lab Name: Frontier Analytical Laboratory

Episode No.:

Contract No.:

SAS No.:

Init. Cal. Date: 12/29/15

Instrument ID: FAL4

GC Column ID: DB5

Analysis Date: 8-JAN-16 13:58:11

CS3 or VER Data Filename: 08JAN16Z

Sam:5

NATIVE ANALYTES	RETENTION TIME REFERENCE	RRT	RRT QC LIMITS (1)
2,3,7,8-TCDD	13C-2,3,7,8-TCDD	1.001	0.999-1.002
2,3,7,8-TCDF	13C-2,3,7,8-TCDF	1.001	0.999-1.003
1,2,3,7,8-PeCDD	13C-1,2,3,7,8-PeCDD	1.001	0.999-1.002
1,2,3,7,8-PeCDF	13C-1,2,3,7,8-PeCDF	1.000	0.999-1.002
2,3,4,7,8-PeCDF	13C-2,3,4,7,8-PeCDF	1.001	0.999-1.002
LABELED COMPOUNDS			
37Cl-2,3,7,8-TCDD	13C-1,2,3,4-TCDD	1.023	0.989-1.052
13C-2,3,7,8-TCDD		1.022	0.976-1.043
13C-2,3,7,8-TCDF		0.994	0.923-1.103
13C-1,2,3,7,8-PeCDD		1.240	1.000-1.567
13C-1,2,3,7,8-PeCDF		1.176	0.923-1.203
13C-2,3,4,7,8-PeCDF		1.225	0.923-1.303

(1) Contract-required limits for Relative Retention Times (RRT) as specified in Table 2, Method 1613.

Analyst: 

Date: 1/8/16

USEPA - ITD

FORM 6B

PCDD/PCDF RELATIVE RETENTION TIMES

Lab Name: Frontier Analytical Laboratory

Episode No.:

Contract No.:

SAS No.:

Init. Cal. Date: 12/29/15

Instrument ID: FAL4

GC Column ID: DB5

Analysis Date: 8-JAN-16 13:58:11

CS3 or VER Data Filename: 08JAN16Z


Sam:5

NATIVE ANALYTES	RETENTION TIME REFERENCE	RRT	RRT QC LIMITS (1)
1,2,3,4,7,8-HxCDD	13C-1,2,3,4,7,8-HxCDD	1.001	0.999-1.001
1,2,3,6,7,8-HxCDD	13C-1,2,3,6,7,8-HxCDD	1.000	0.998-1.004
1,2,3,7,8,9-HxCDD	13C-1,2,3,6,7,8-HxCDD	1.012	1.000-1.019
1,2,3,4,7,8-HxCDF	13C-1,2,3,4,7,8-HxCDF	1.001	0.999-1.001
1,2,3,6,7,8-HxCDF	13C-1,2,3,6,7,8-HxCDF	1.000	0.997-1.005
2,3,4,6,7,8-HxCDF	13C-2,3,4,6,7,8-HxCDF	1.001	0.999-1.001
1,2,3,7,8,9-HxCDF	13C-1,2,3,7,8,9-HxCDF	1.001	0.999-1.001
1,2,3,4,6,7,8-HpCDD	13C-1,2,3,4,6,7,8-HpCDD	1.000	0.999-1.001
1,2,3,4,6,7,8-HpCDF	13C-1,2,3,4,6,7,8-HpCDF	1.001	0.999-1.001
1,2,3,4,7,8,9-HpCDF	13C-1,2,3,4,7,8,9-HpCDF	1.000	0.999-1.001
OCDD	13C-OCDD	1.000	0.999-1.001
OCDF	13C-OCDF	1.001	0.999-1.001

LABELED COMPOUNDS

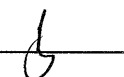
13C-1,2,3,4,7,8-HxCDD	13C-1,2,3,7,8,9-HxCDD	0.984	0.977-1.000
13C-1,2,3,6,7,8-HxCDD		0.988	0.981-1.003
13C-1,2,3,4,7,8-HxCDF		0.949	0.944-0.970
13C-1,2,3,6,7,8-HxCDF		0.954	0.949-0.975
13C-2,3,4,6,7,8-HxCDF		0.978	0.959-1.021
13C-1,2,3,7,8,9-HxCDF		1.015	0.977-1.047
13C-1,2,3,4,6,7,8-HpCDD		1.127	1.086-1.130
13C-1,2,3,4,6,7,8-HpCDF		1.078	1.043-1.085
13C-1,2,3,4,7,8,9-HpCDF		1.151	1.057-1.154
13C-OCDD		1.267	1.032-1.311
13C-OCDF		1.277	1.000-1.311

(1) Contract-required limits for Relative Retention Times (RRT) as specified
in Table 2, Method 1613.

Analyst: 

Date: 1/8/16

Name	Resp	RA	RT	RRF	Conc	Qual	Fac Noise-1	Noise-2	DL	#Hom
2,3,7,8-TCDD	5.96e+06	0.81 y	27:23	1.08	9.77	2.50	-	-	*	
1,2,3,7,8-PeCDD	1.92e+07	1.59 y	33:13	0.90	51.6	2.50	-	-	*	
1,2,3,4,7,8-HxCDD	1.69e+07	1.23 y	38:33	0.98	47.9	2.50	-	-	*	
1,2,3,6,7,8-HxCDD	1.70e+07	1.26 y	38:43	1.00	49.4	2.50	-	-	*	
1,2,3,7,8,9-HxCDD	1.92e+07	1.25 y	39:10	1.11	49.2	2.50	-	-	*	
1,2,3,4,6,7,8-HpCDD	2.09e+07	1.07 y	44:07	1.09	50.6	2.50	-	-	*	
OCDD	4.15e+07	0.89 y	49:38	1.04	125	2.50	-	-	*	
2,3,7,8-TCDF	6.98e+06	0.80 y	26:38	1.05	9.21	2.50	-	-	*	
1,2,3,7,8-PeCDF	2.98e+07	1.58 y	31:29	0.98	48.9	2.50	-	-	*	
2,3,4,7,8-PeCDF	2.88e+07	1.58 y	32:49	1.01	47.9	2.50	-	-	*	
1,2,3,4,7,8-HxCDF	2.82e+07	1.23 y	37:11	1.23	47.6	2.50	-	-	*	
1,2,3,6,7,8-HxCDF	2.75e+07	1.24 y	37:22	1.17	48.5	2.50	-	-	*	
2,3,4,6,7,8-HxCDF	2.69e+07	1.24 y	38:19	1.12	48.6	2.50	-	-	*	
1,2,3,7,8,9-HxCDF	2.67e+07	1.26 y	39:45	1.15	49.1	2.50	-	-	*	
1,2,3,4,6,7,8-HpCDF	3.06e+07	1.03 y	42:14	1.36	52.3	2.50	-	-	*	
1,2,3,4,7,8,9-HpCDF	2.39e+07	1.05 y	45:03	1.23	50.6	2.50	-	-	*	
OCDF	4.97e+07	0.88 y	50:02	1.13	109	2.50	-	-	*	
										Rec
13C-2,3,7,8-TCDD	5.64e+07	0.79 y	27:22	1.07	99.1					99.1
13C-1,2,3,7,8-PeCDD	4.12e+07	1.58 y	33:11	0.78	100					100
13C-1,2,3,4,7,8-HxCDD	3.59e+07	1.27 y	38:32	0.87	101					101
13C-1,2,3,6,7,8-HxCDD	3.43e+07	1.27 y	38:42	0.84	99.6					99.6
13C-1,2,3,4,6,7,8-HpCDD	3.80e+07	1.07 y	44:07	0.85	108					108
13C-OCDD	6.34e+07	0.91 y	49:37	0.70	221					111
13C-2,3,7,8-TCDF	7.25e+07	0.80 y	26:37	1.03	102					102
13C-1,2,3,7,8-PeCDF	6.22e+07	1.59 y	31:29	0.89	101					101
13C-2,3,4,7,8-PeCDF	5.95e+07	1.61 y	32:47	0.82	105					105
13C-1,2,3,4,7,8-HxCDF	4.83e+07	0.54 y	37:09	1.26	93.1					93.1
13C-1,2,3,6,7,8-HxCDF	4.86e+07	0.55 y	37:21	1.28	92.2					92.2
13C-2,3,4,6,7,8-HxCDF	4.96e+07	0.54 y	38:17	1.27	95.3					95.3
13C-1,2,3,7,8,9-HxCDF	4.74e+07	0.53 y	39:44	1.16	99.2					99.2
13C-1,2,3,4,6,7,8-HpCDF	4.29e+07	0.45 y	42:12	1.06	98.6					98.6
13C-1,2,3,4,7,8,9-HpCDF	3.85e+07	0.46 y	45:02	0.93	101					101
13C-OCDF	8.06e+07	0.91 y	50:00	0.95	206					103
37Cl-2,3,7,8-TCDD	4.55e+06		27:23	0.90	9.56					95.6
13C-1,2,3,4-TCDD	5.30e+07	0.80 y	26:46	-	145					
13C-1,2,3,4-TCDF	6.88e+07	0.80 y	25:31	-	143					
13C-1,2,3,7,8,9-HxCDD	4.11e+07	1.27 y	39:09	-	151					
Total Tetra-Dioxins	2.79e+07		23:15	1.08	45.7	2.50	-	-	*	26
Total Penta-Dioxins	6.25e+07		30:14	0.90	167	2.50	-	-	*	20
Total Hexa-Dioxins	7.67e+07		34:58	1.03	212	2.50	-	-	*	30
Total Hepta-Dioxins	4.76e+07		41:18	1.09	115	2.50	-	-	*	35
Total Tetra-Furans	3.22e+07		22:59	1.05	42.5	2.50	-	-	*	20
1st Fn. Tot Penta-Furans	3.84e+07		28:23	0.99	63.4	2.50	-	-	*	PeCDF 1
Total Penta-Furans	8.92e+07		30:10	0.99	147	2.50	-	-	*	211 17
Total Hexa-Furans	1.54e+08		35:13	1.16	274	2.50	-	-	*	24
Total Hepta-Furans	1.11e+08		41:20	1.30	210	2.50	-	-	*	31

Analyst: 

Date: 1/8/16

Frontier Analytical Laboratory - Acquisition Log

Run Name:08JAN16Z

Instrument: FAL4

GC: DB5

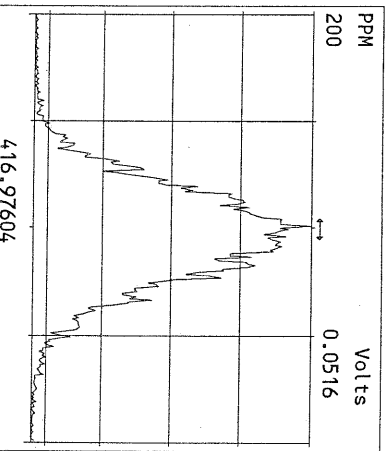
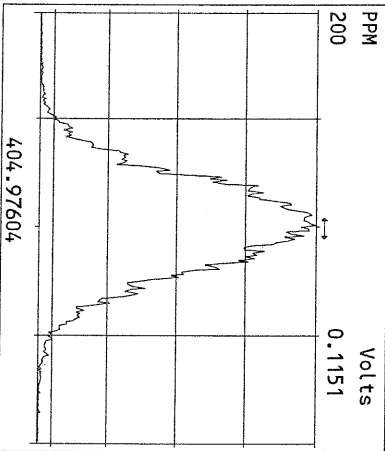
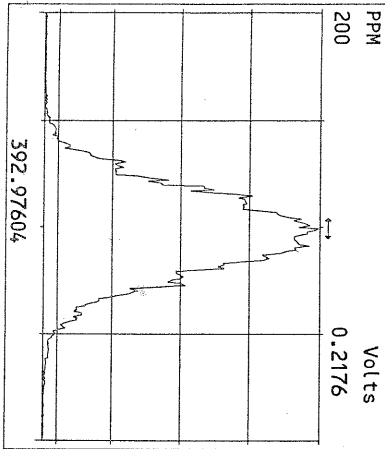
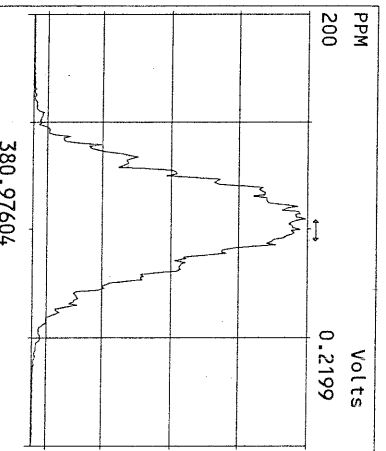
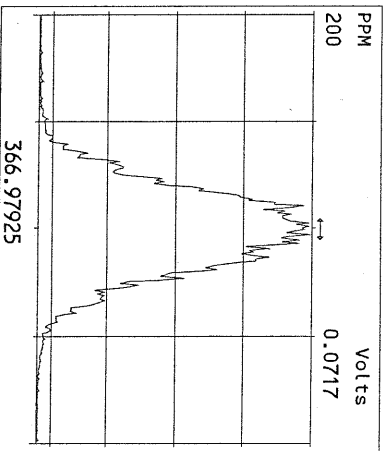
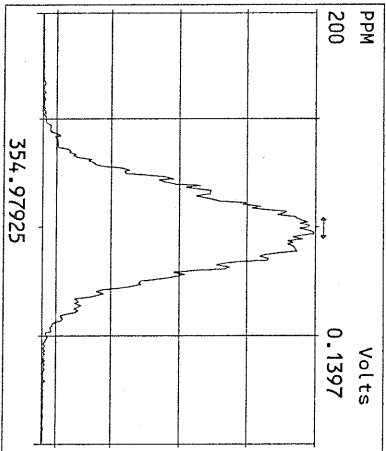
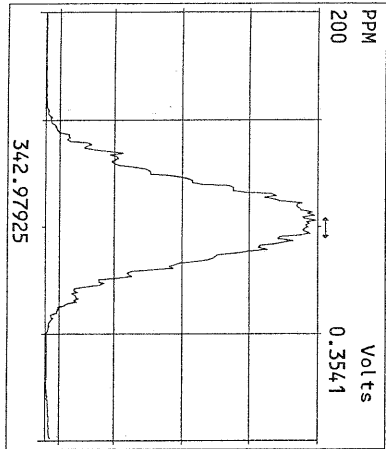
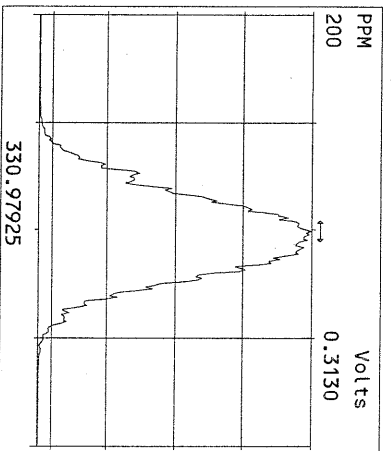
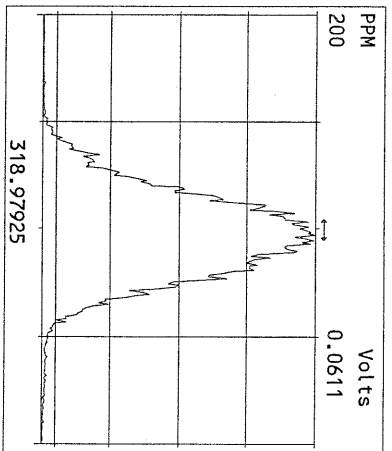
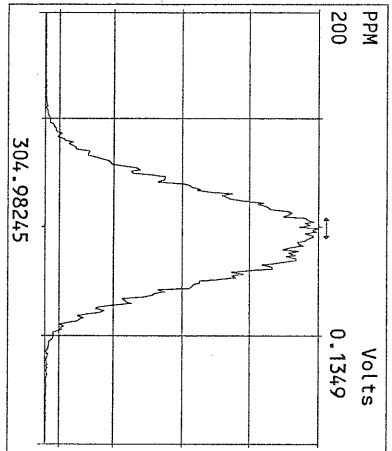
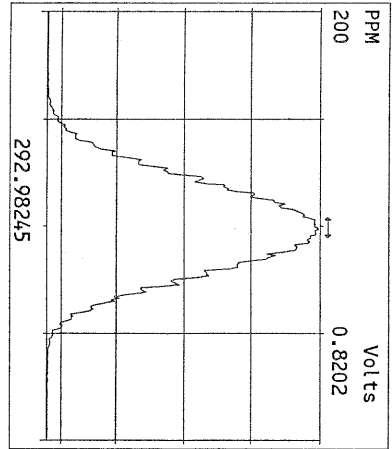
Experiment:PCDD

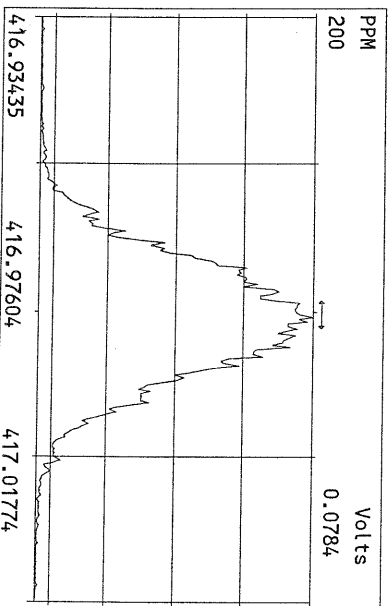
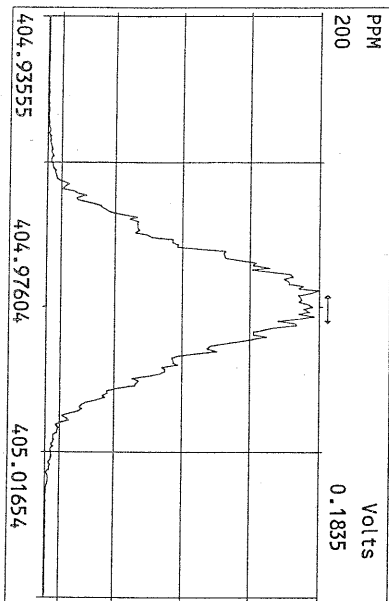
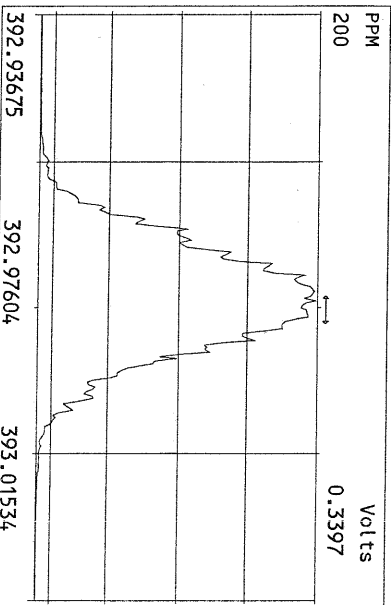
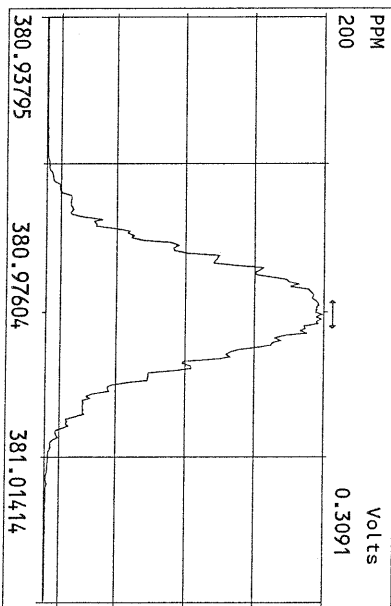
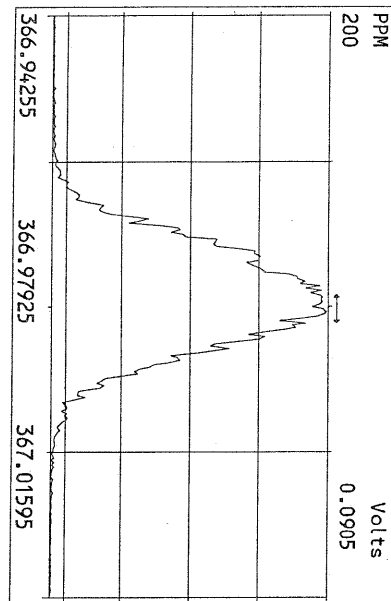
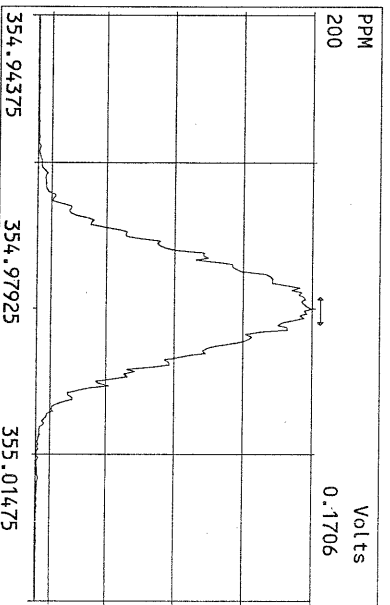
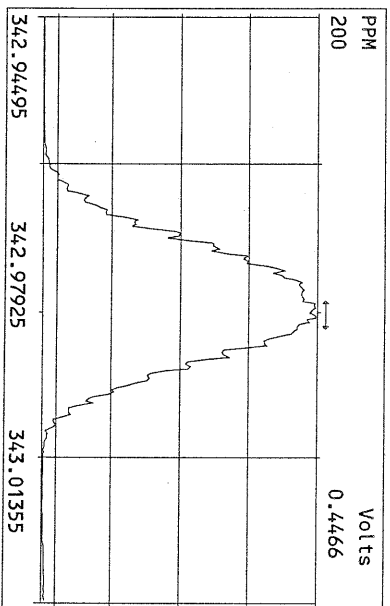
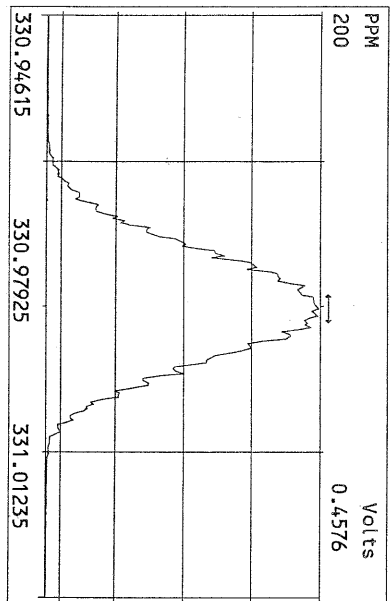
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08JAN16Z 2	9486-001-0001-SA	SB-07-12-13	8-JAN-16 11:13:44	ST010816Z1	ST010816Z2	BS
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08JAN16Z 4	9487-001-0001-SA	SB-10-12.5-13	8-JAN-16 13:03:21	ST010816Z1	ST010816Z2	BS
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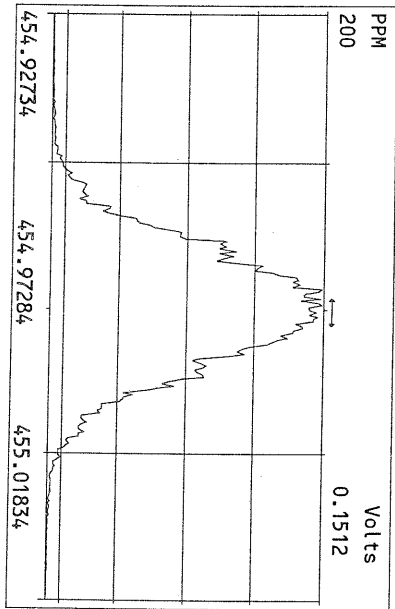
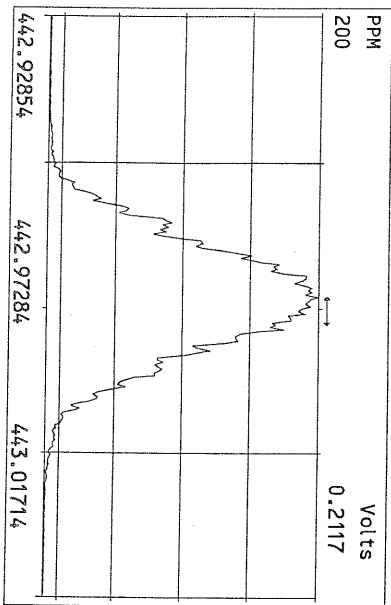
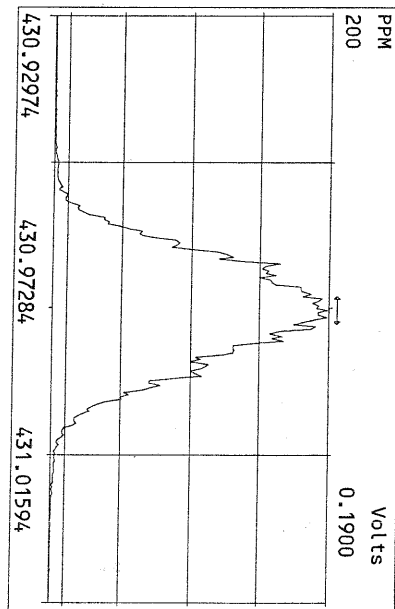
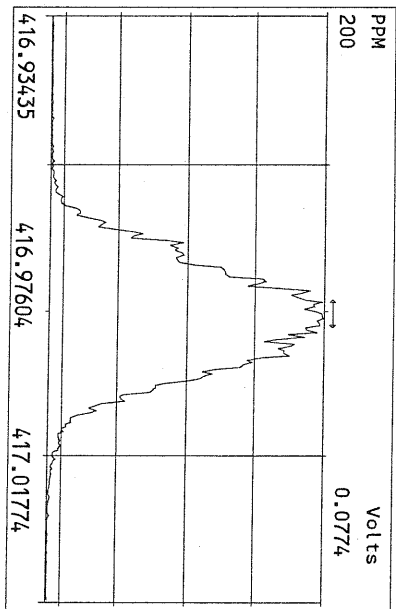
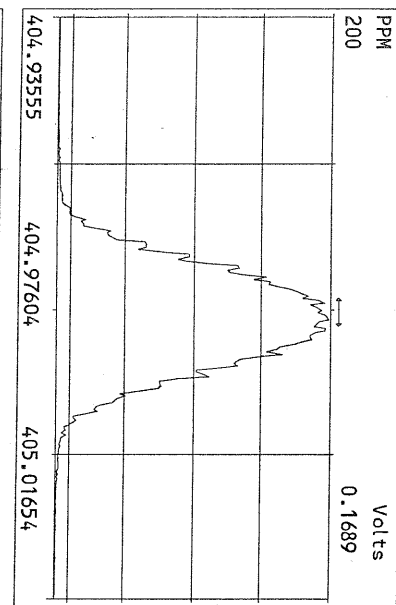
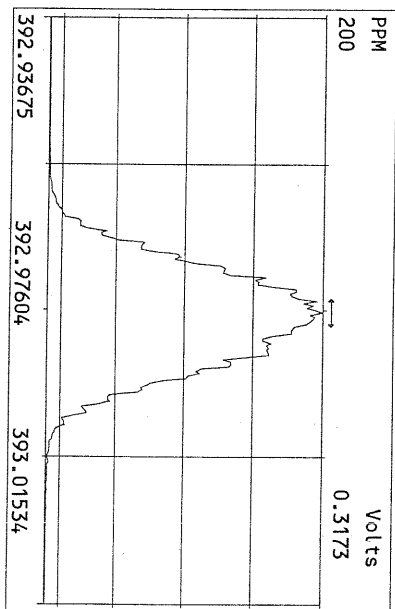
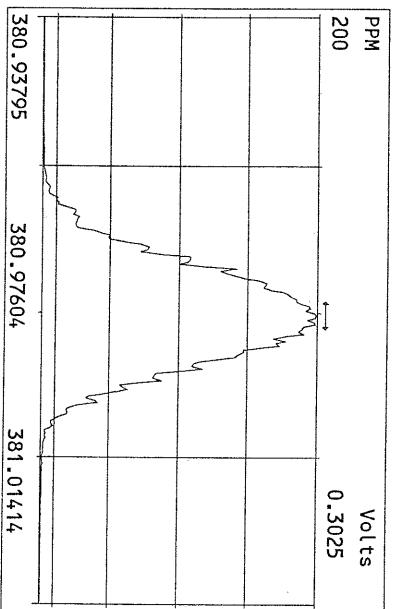
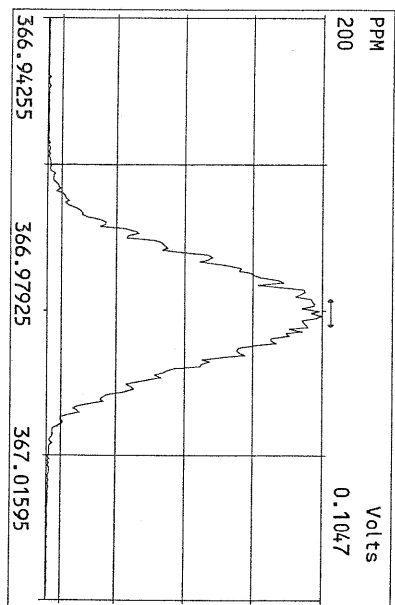
8/8/16

Data Backed Up: _____

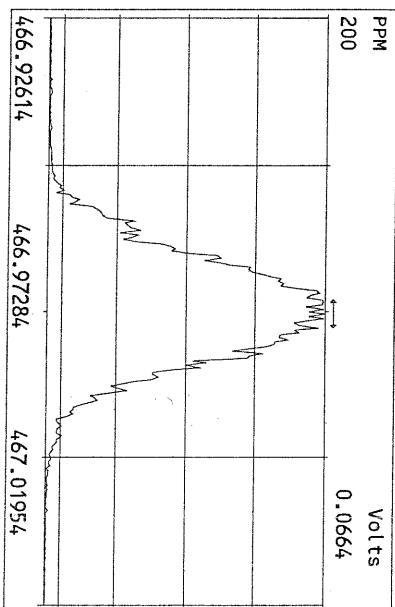
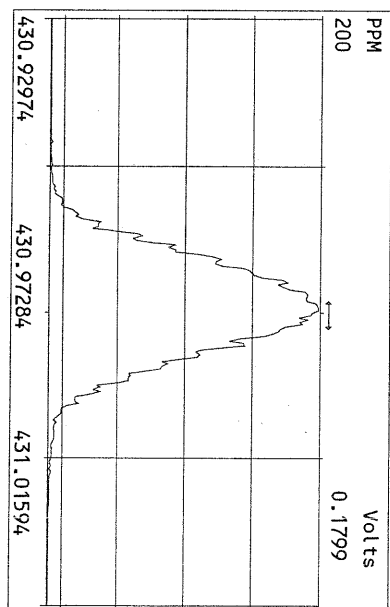
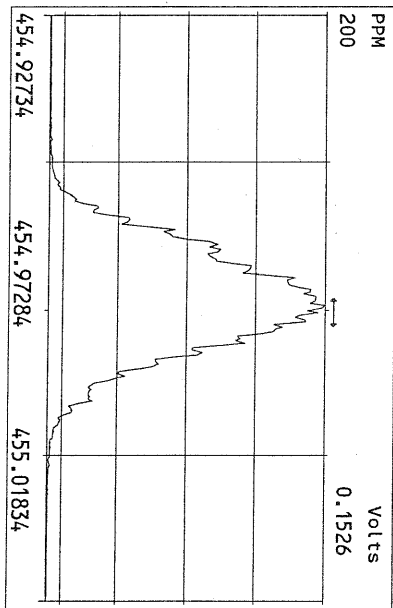
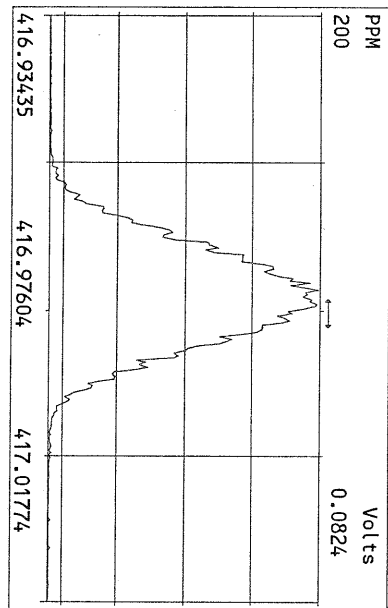
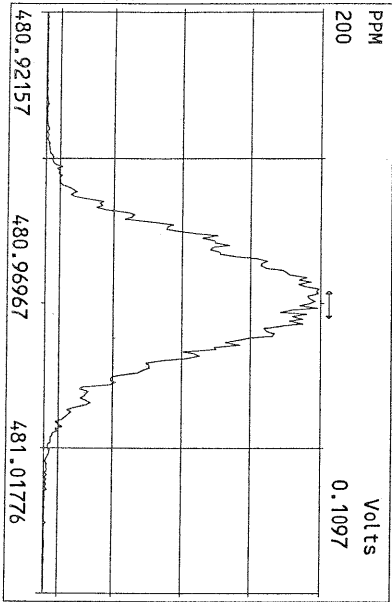
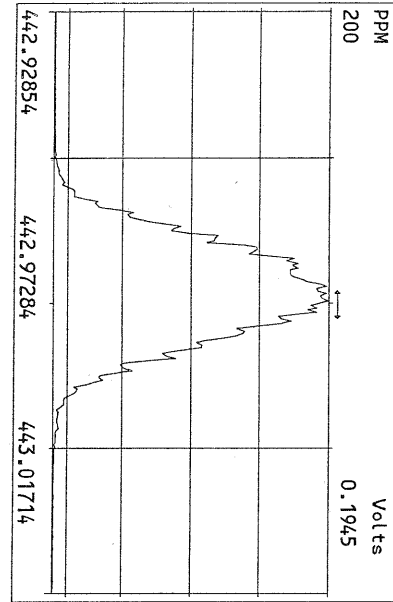
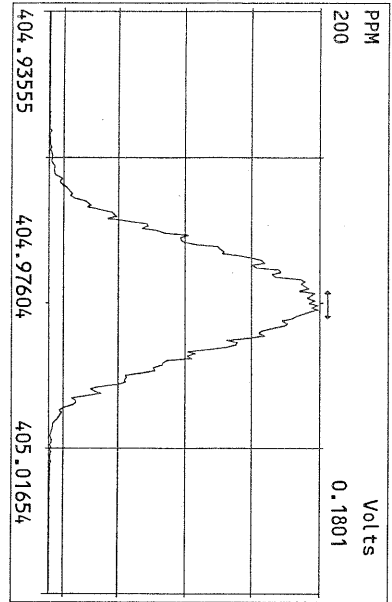
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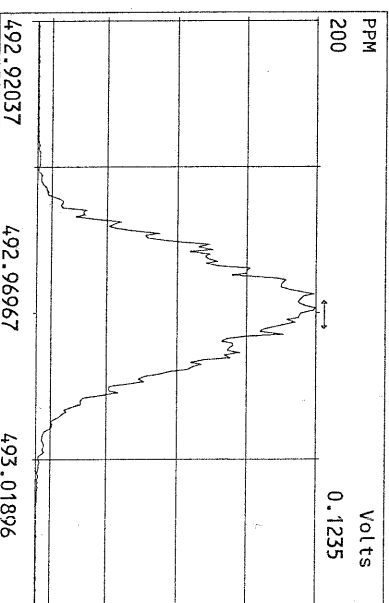
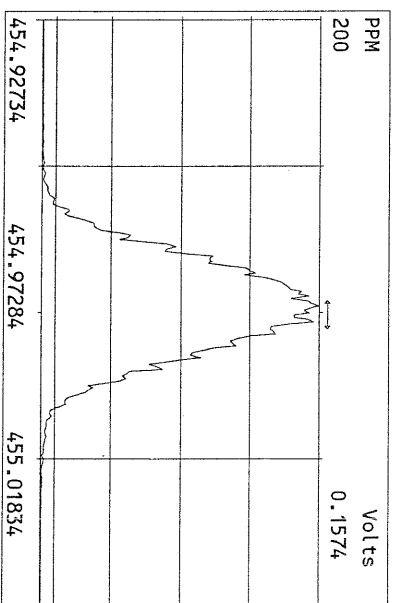
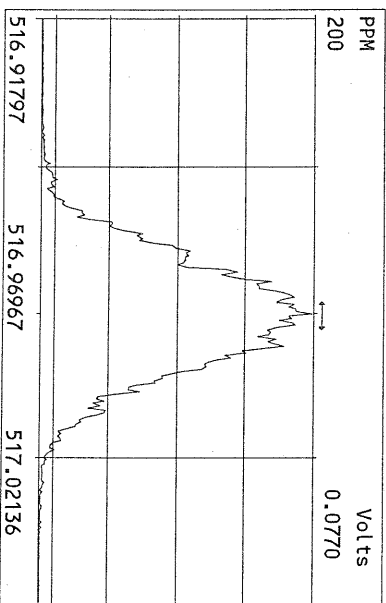
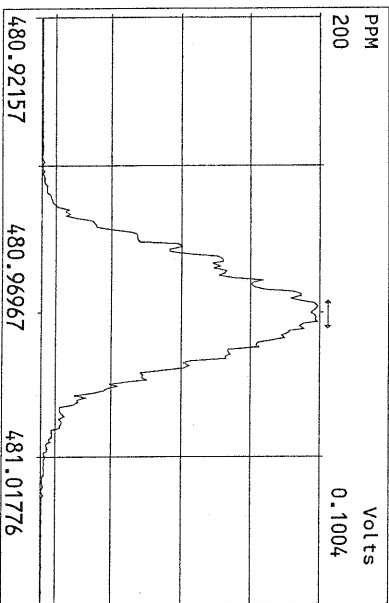
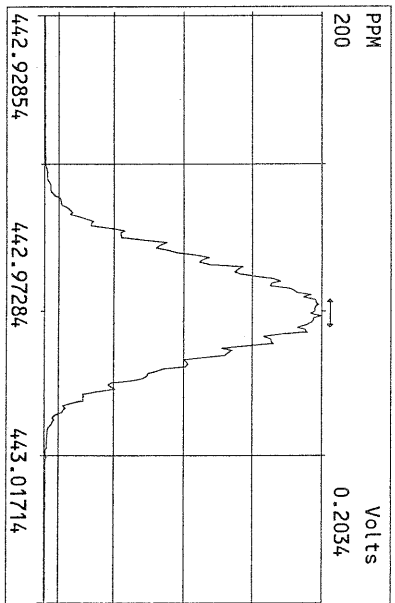
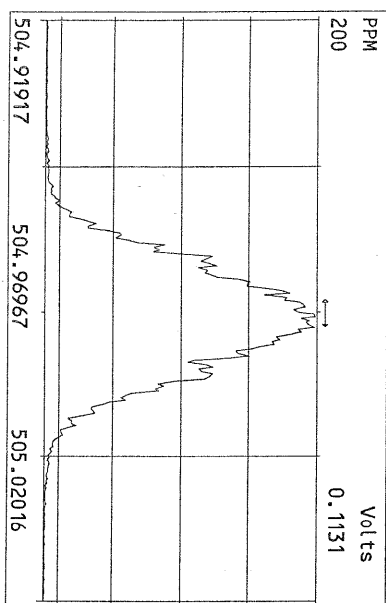
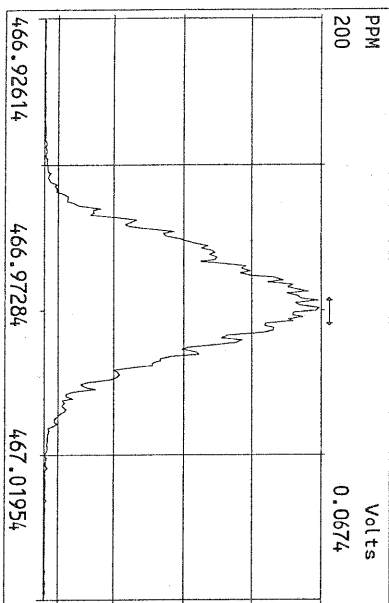
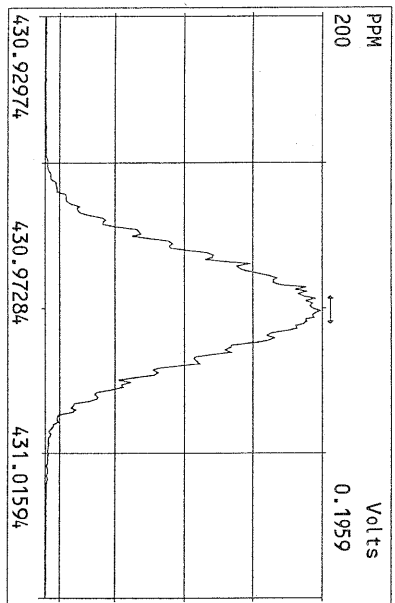




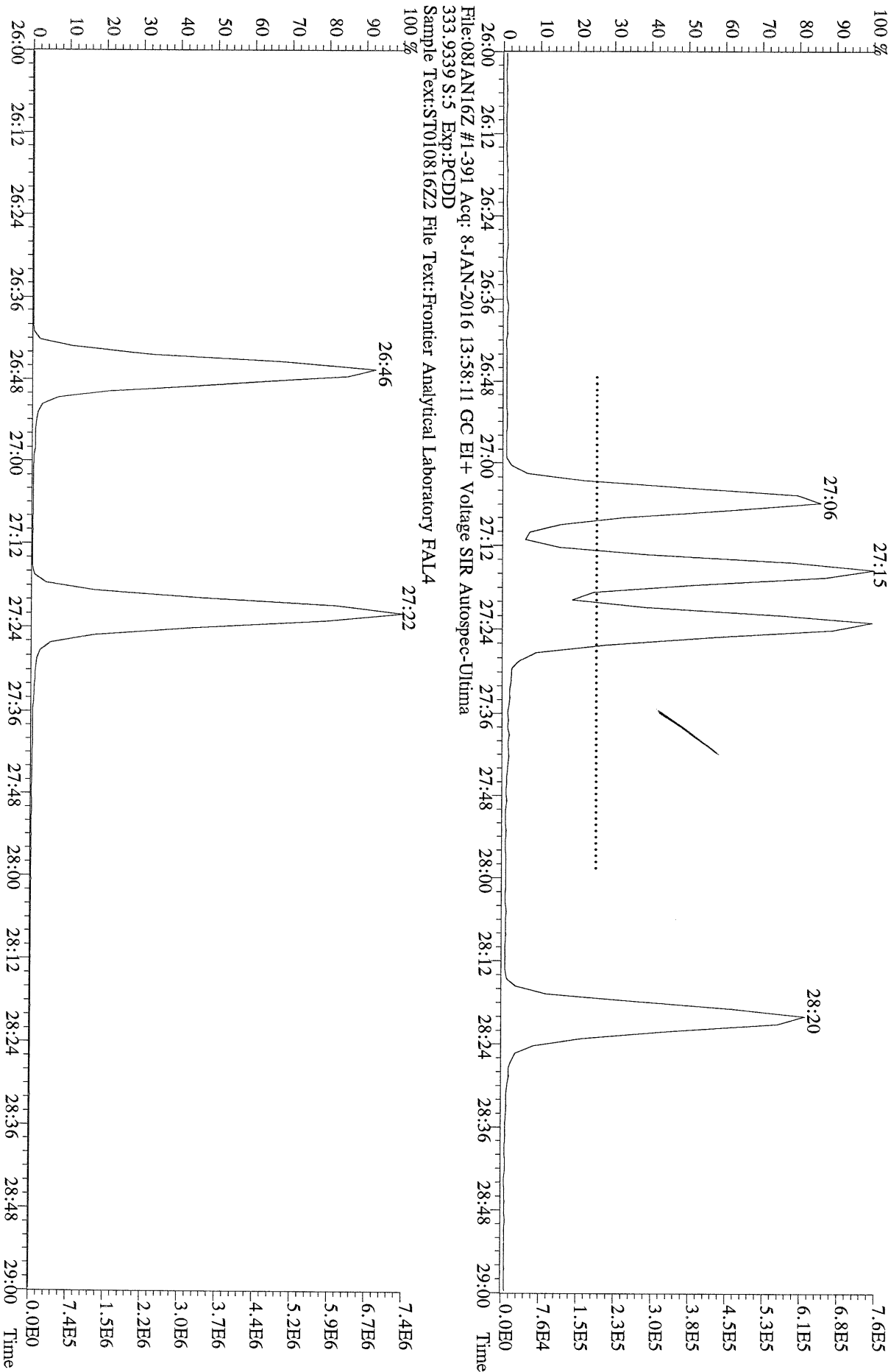
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Experiment:PCDD Function:4 Reference:PKK



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Experiment:PCDD Function:5 Reference:PFK

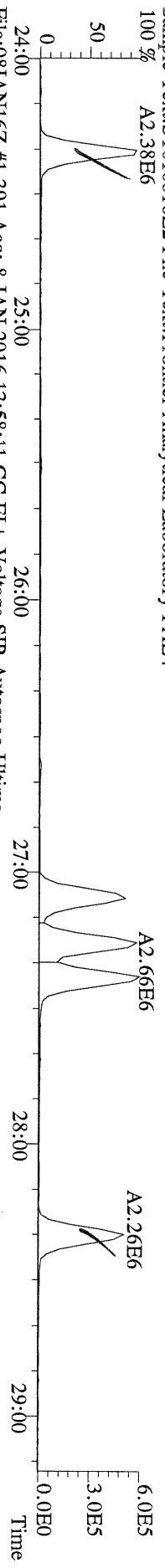


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321.8936 S:5 Exp:PCDD
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100 %

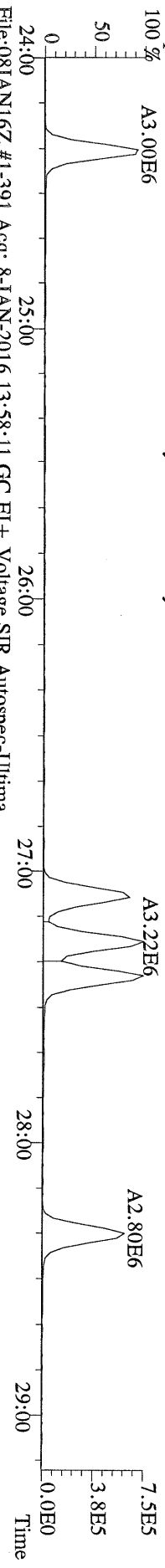


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333.9339 S:5 Exp:PCDD
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100 %

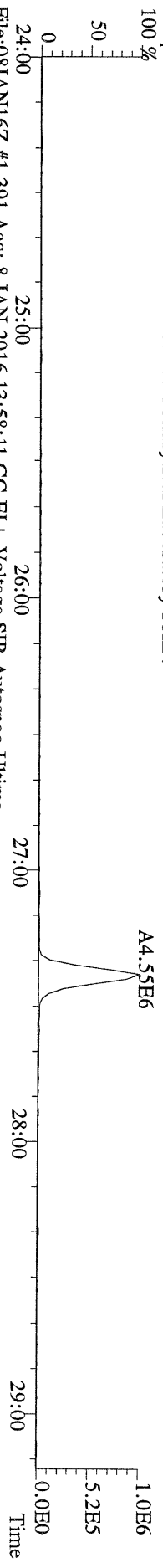
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319.8965 S:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
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100 % A2.38E6



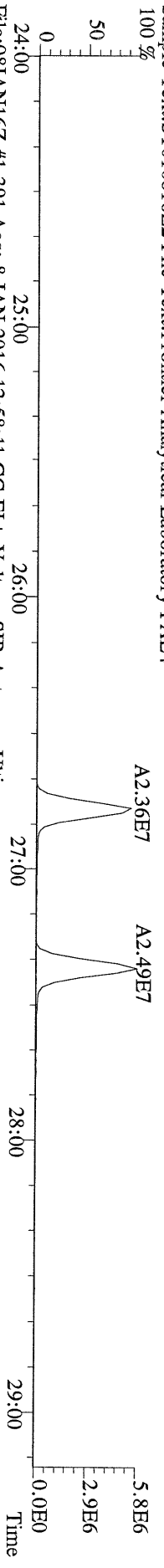
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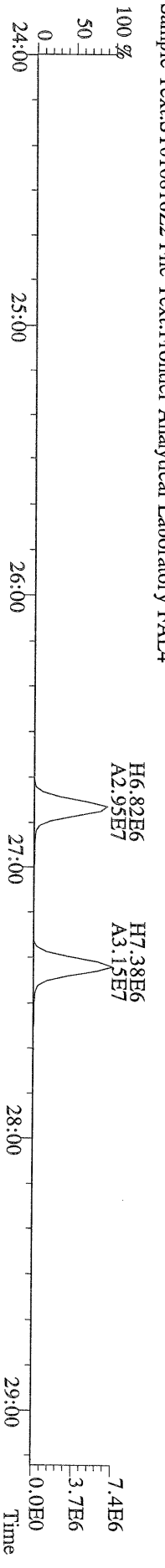
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100 %



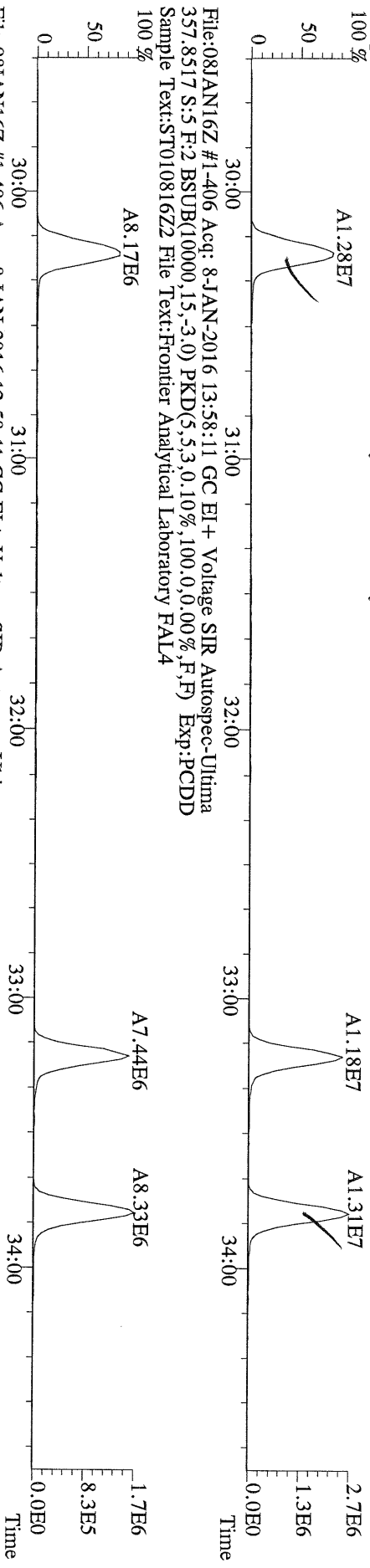
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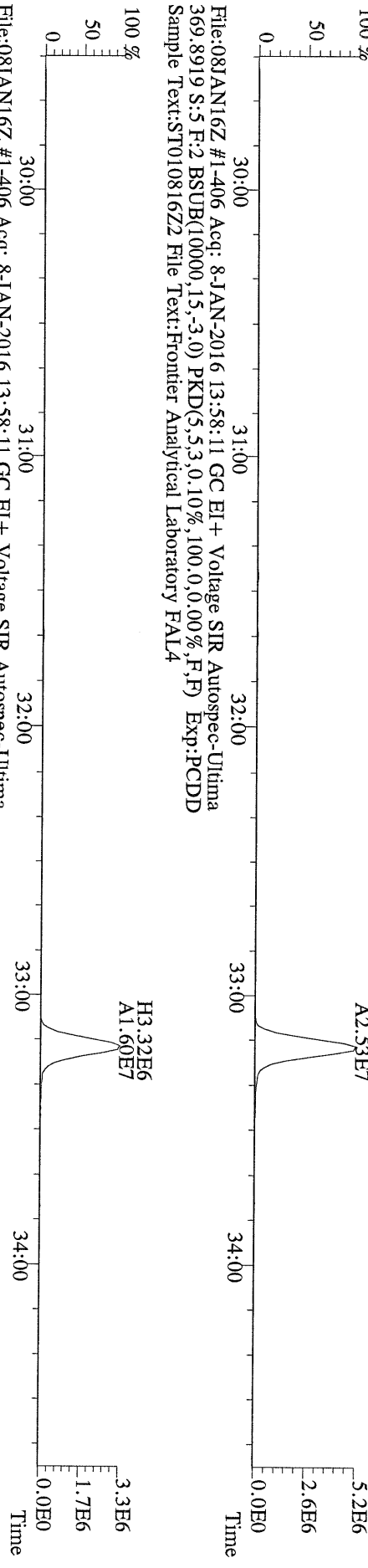
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355.8546 S:5 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100.0,0.00%,F,F) Exp:PCDD
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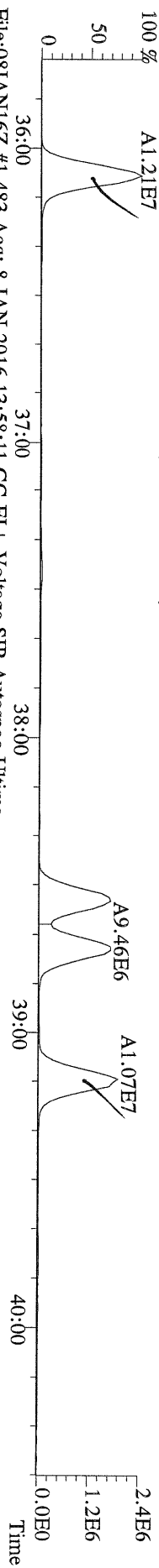
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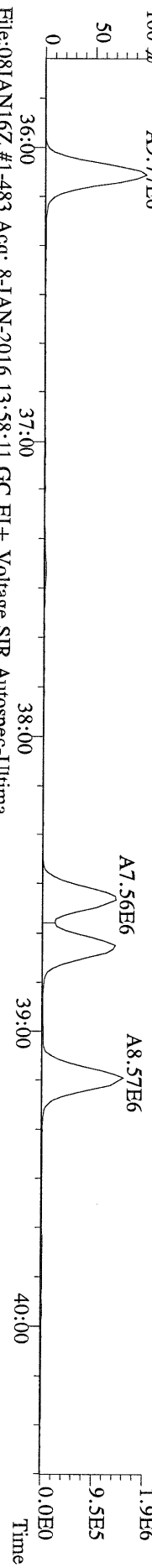
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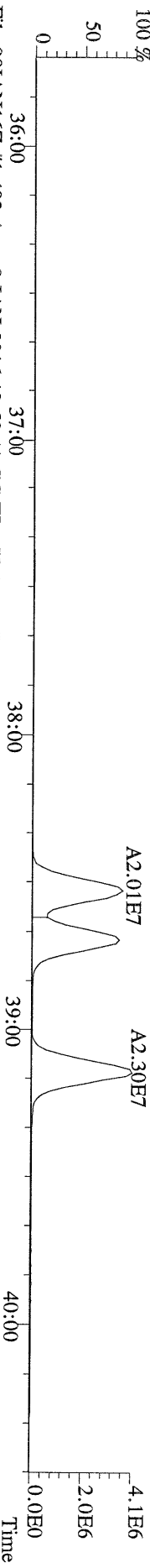
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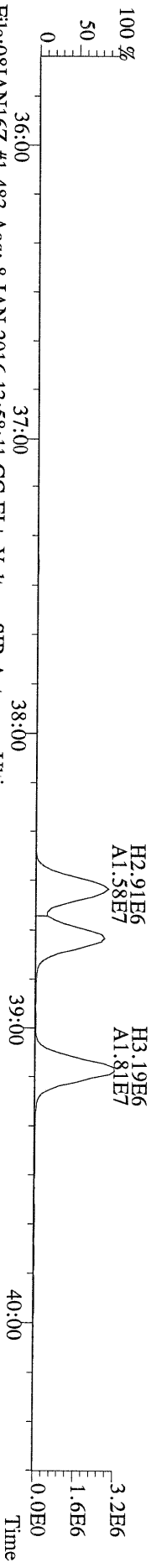
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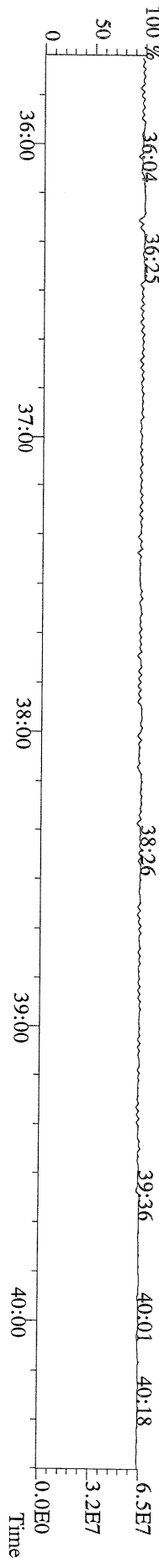
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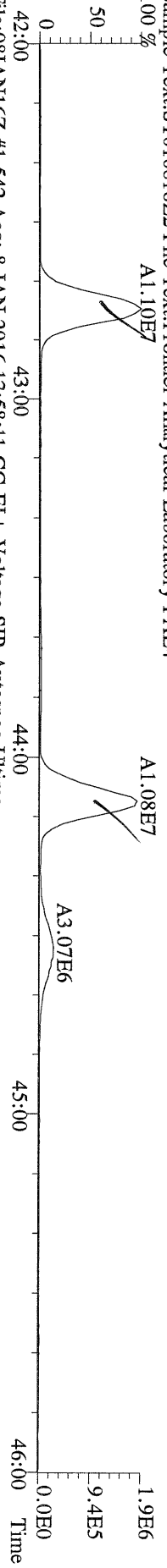
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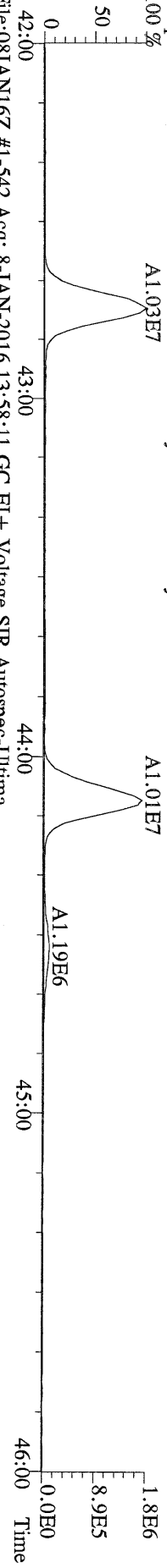
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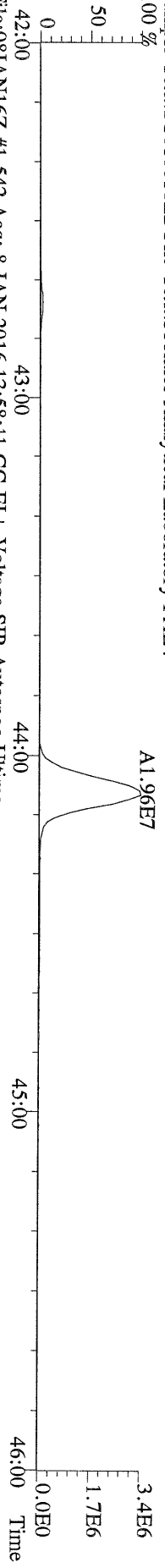
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423.7767 S:5 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4



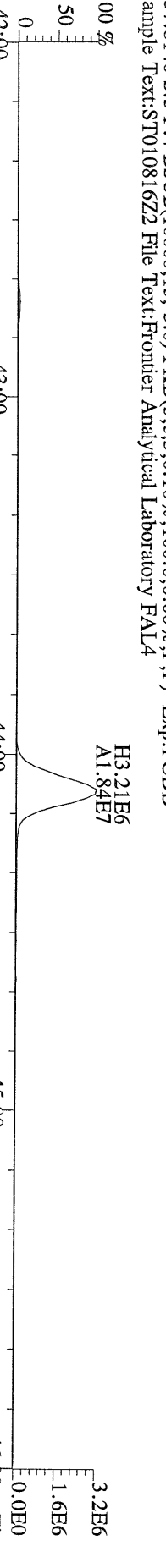
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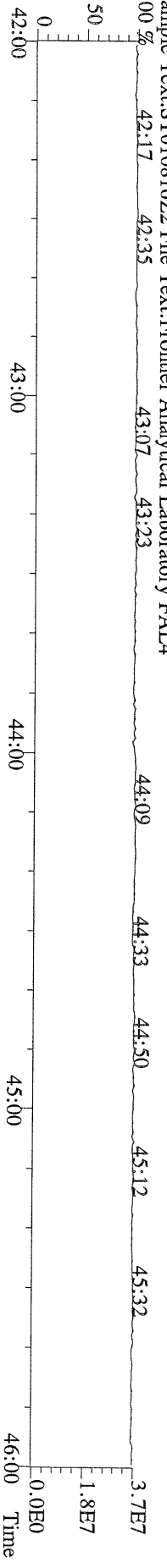
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435.8169 S:5 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4



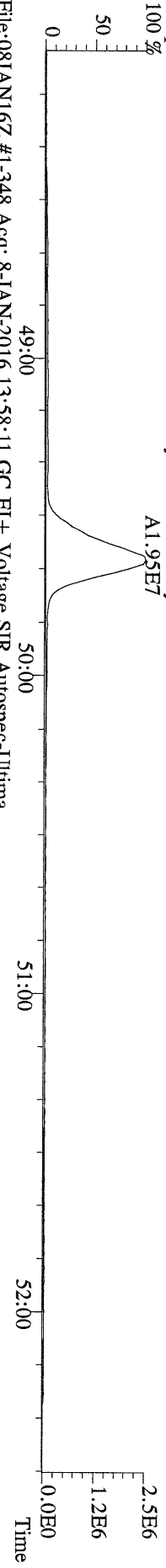
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Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4



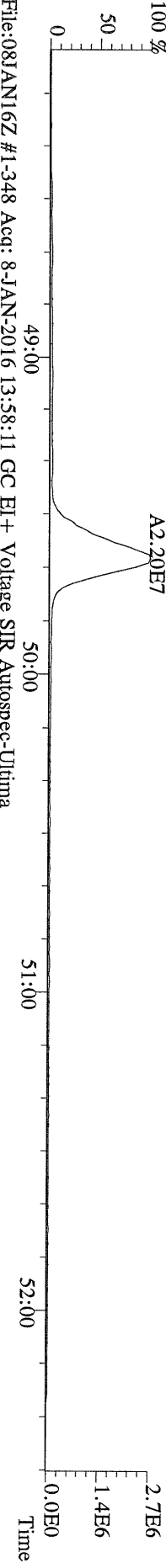
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430.9728 S:5 F:4 Exp:PCDD
Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4



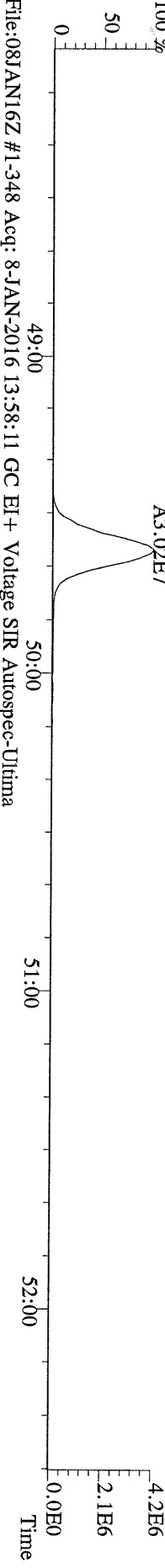
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457.7377 S:5 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory



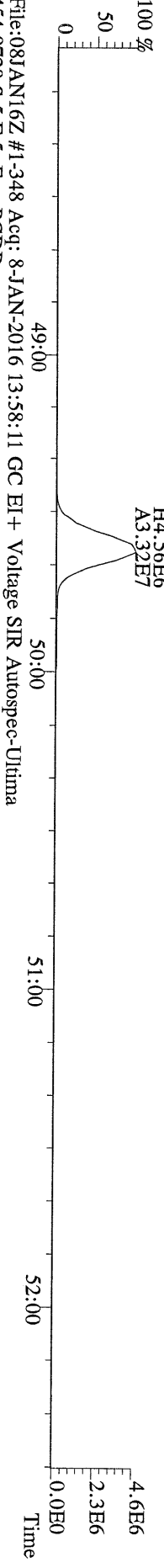
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459.7348 S:5 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory



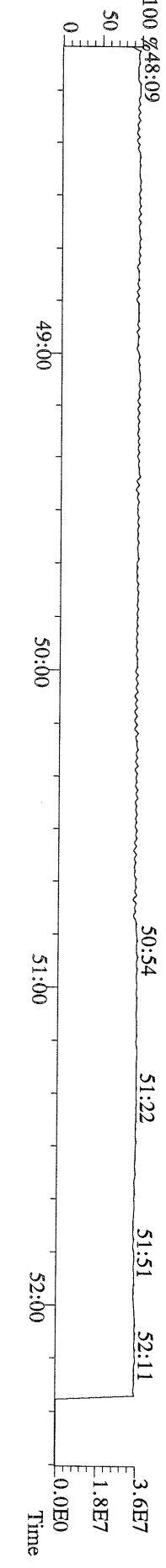
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469.7780 S:5 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory



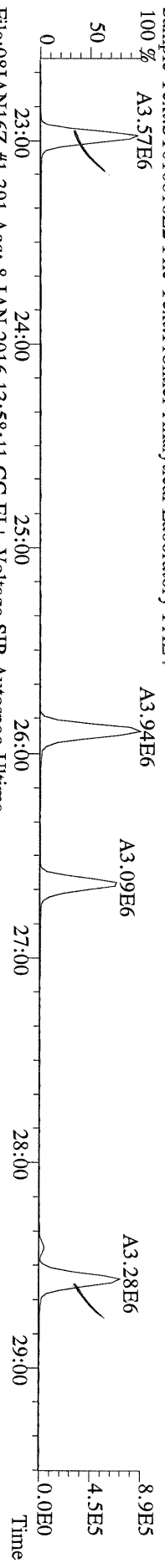
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471.7750 S:5 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory



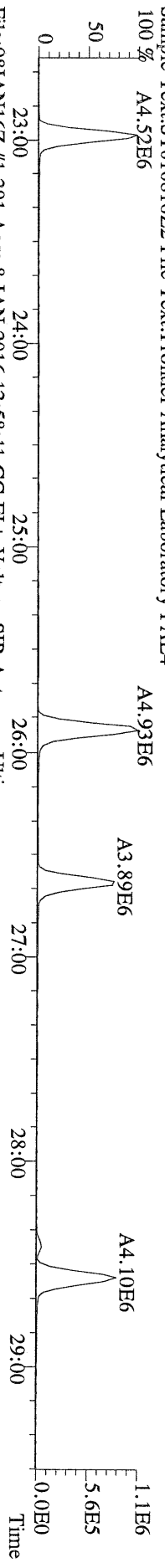
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454.9728 S:5 F:5 Exp:PCDD
Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory



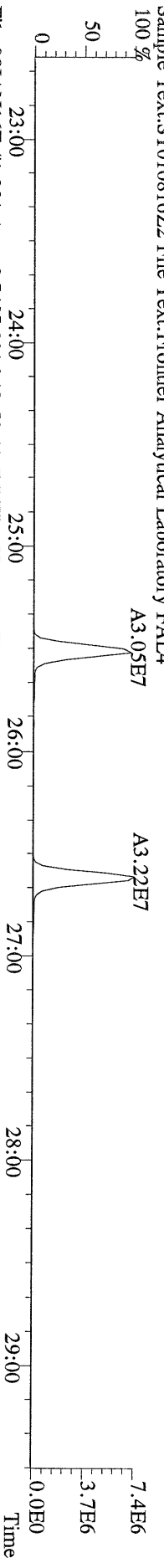
File:08JAN16Z #1-391 Acq: 8-JAN-2016 13:58:11 GC EI+ Voltage SIR Autospec-Ultima
 303.9016 S:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4



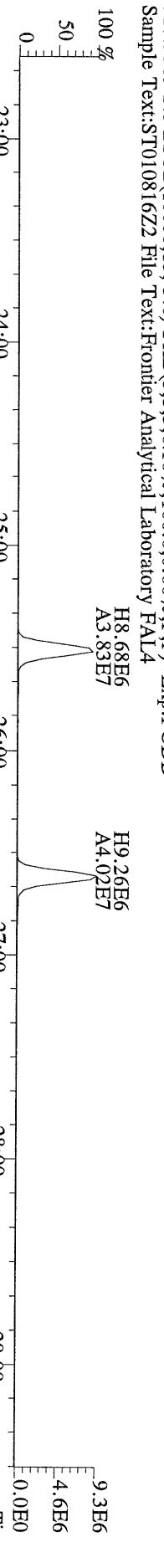
File:08JAN16Z #1-391 Acq: 8-JAN-2016 13:58:11 GC EI+ Voltage SIR Autospec-Ultima
 305.8987 S:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4



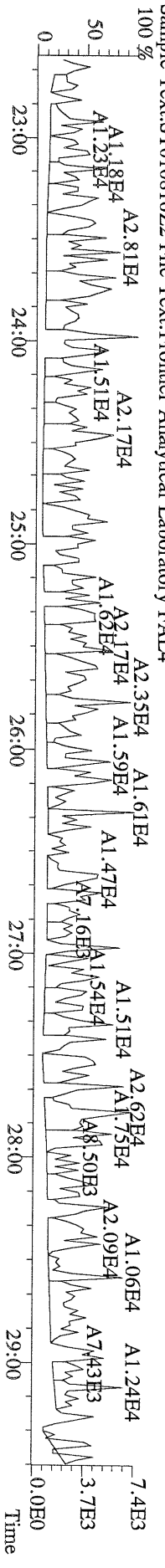
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 315.9419 S:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4



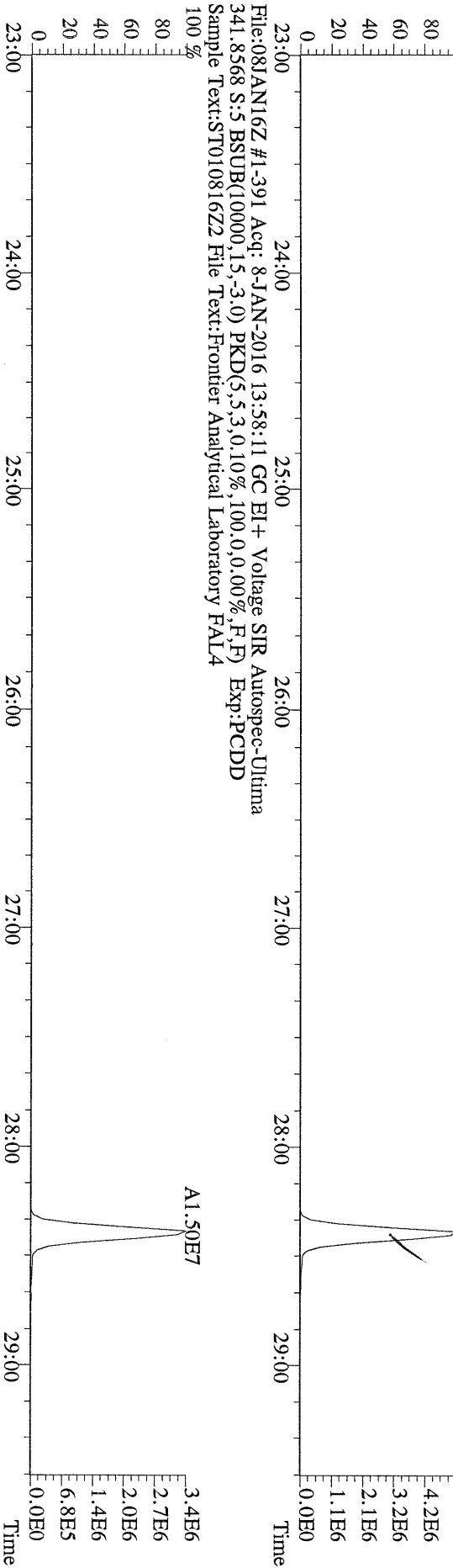
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 317.9389 S:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4



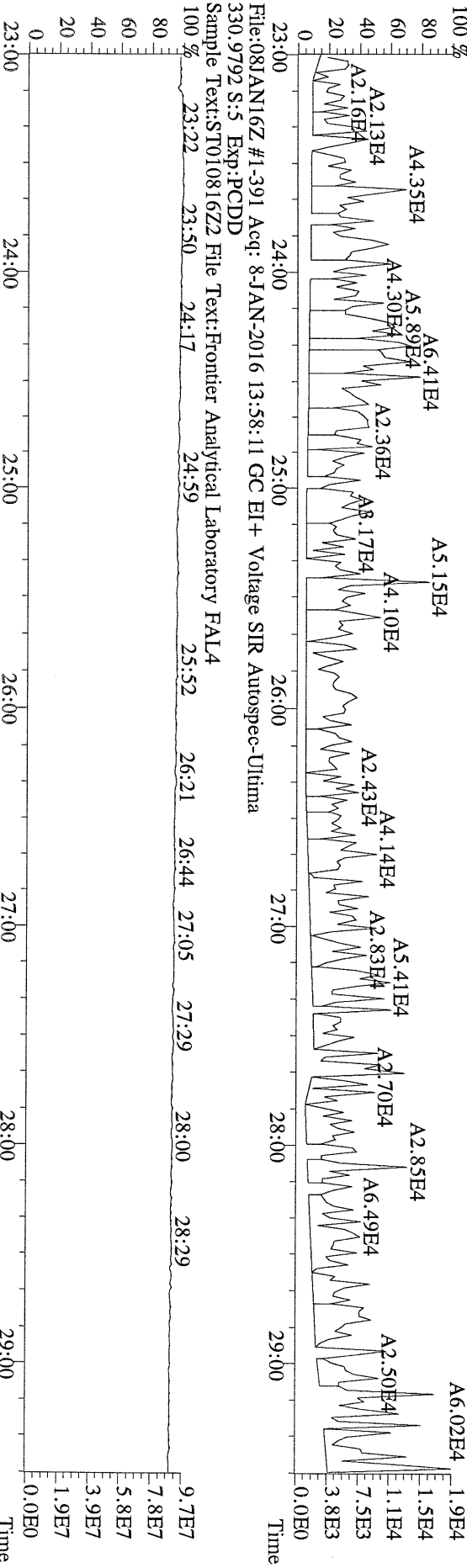
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 375.8364 S:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4



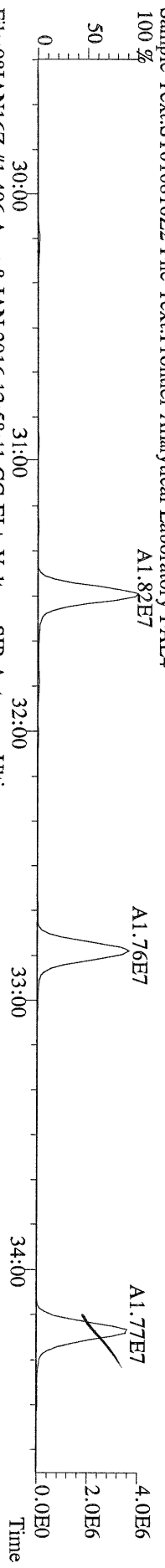
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 339.8597 S:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4



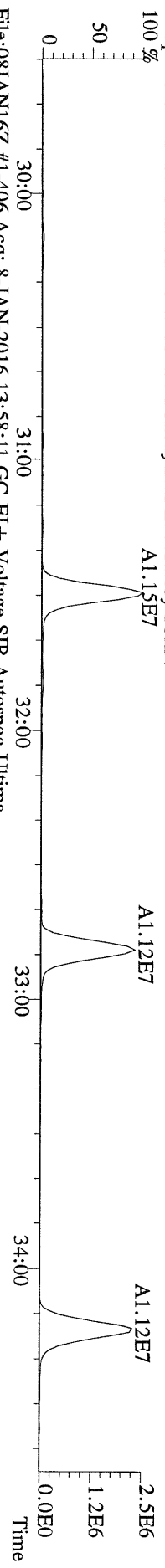
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 409.7974 S:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4



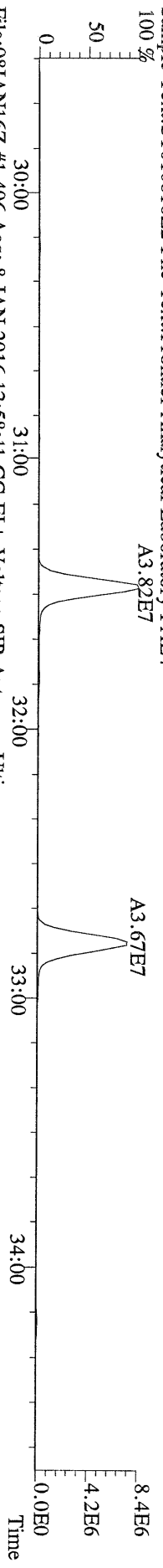
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 339.8597 S:5 F:2 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4



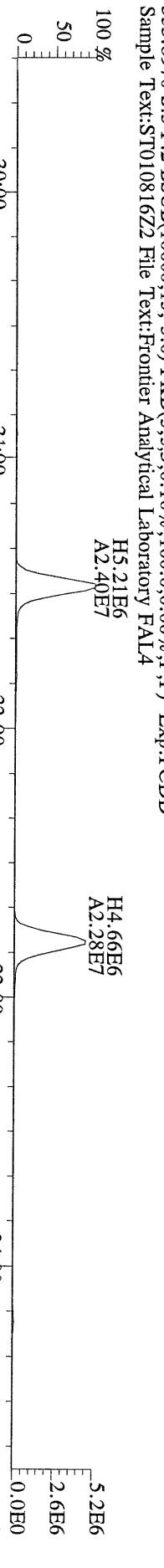
File:08JAN16Z #1-406 Acq: 8-JAN-2016 13:58:11 GC EI+ Voltage SIR Autospec-Ultima
 341.8568 S:5 F:2 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4



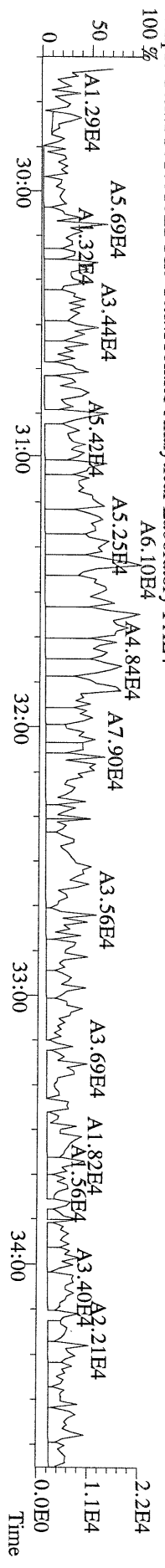
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 351.9000 S:5 F:2 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4



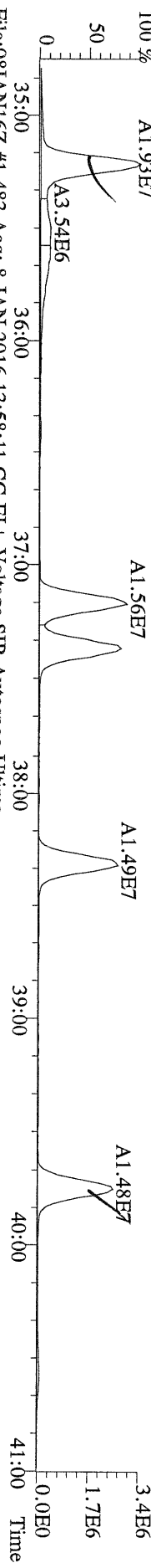
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 353.8970 S:5 F:2 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4



File:08JAN16Z #1-406 Acq: 8-JAN-2016 13:58:11 GC EI+ Voltage SIR Autospec-Ultima
 409.7974 S:5 F:2 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4



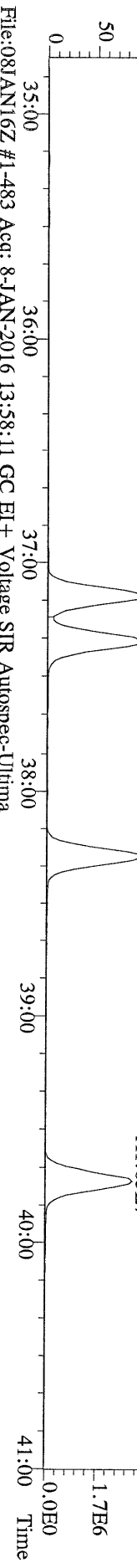
File:08JAN16Z #1-483 Acq: 8-JAN-2016 13:58:11 GC EI+ Voltage SIR Autospec-Ultima
373.8207 S:5 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4



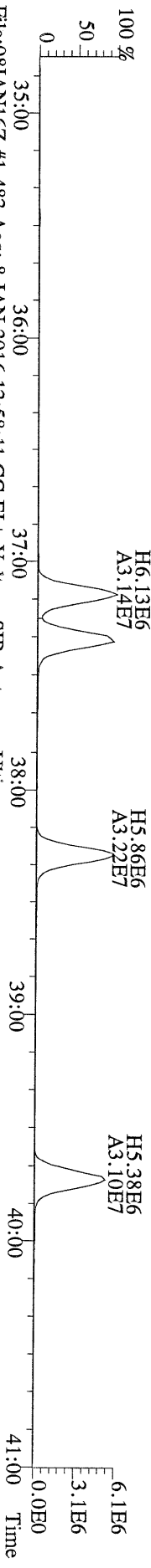
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375.8178 S:5 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4



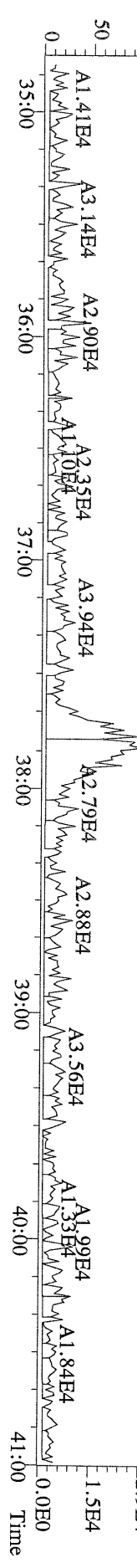
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383.8639 S:5 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4



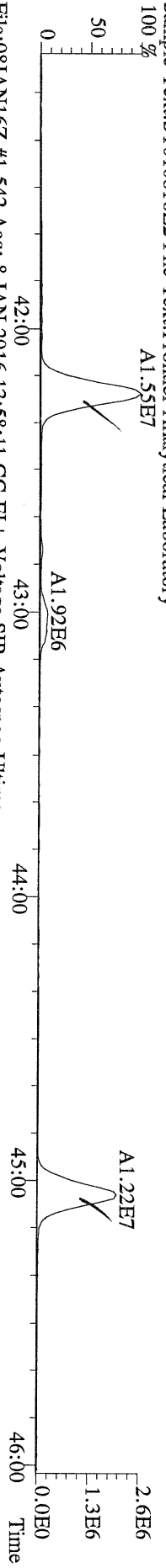
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385.8610 S:5 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4



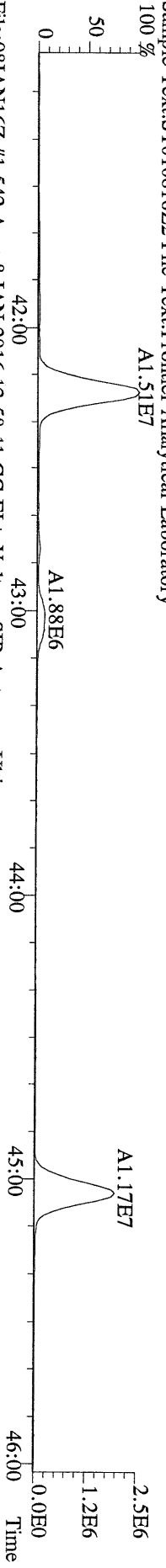
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Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4



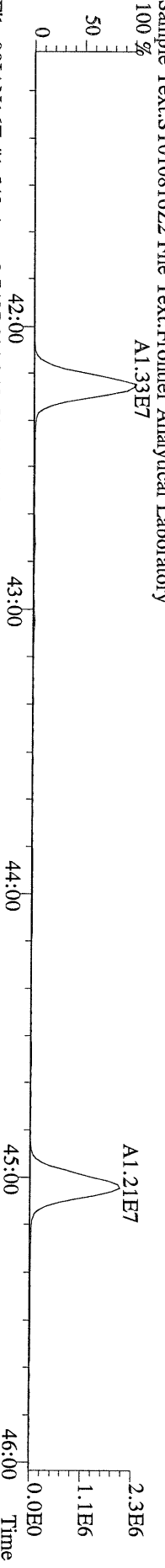
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407.7818 S:5 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory



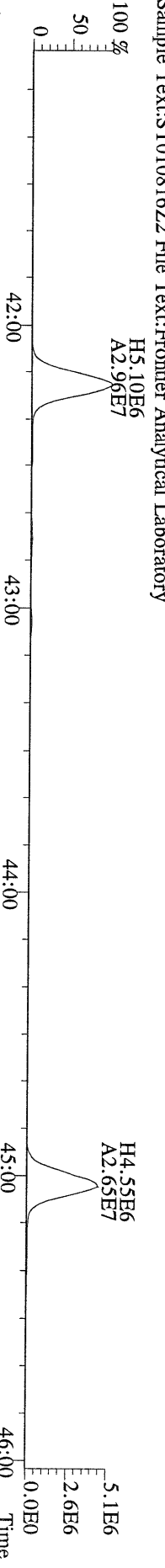
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409.7788 S:5 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory



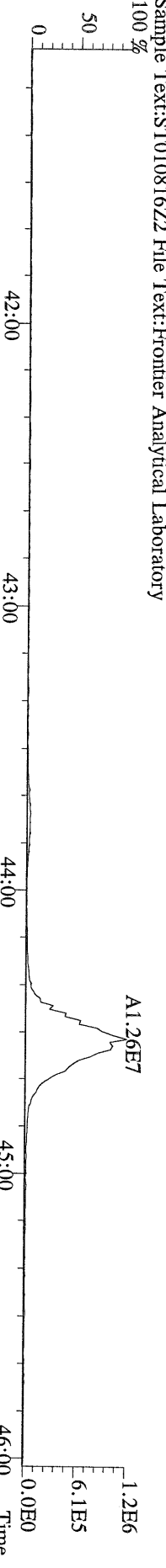
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417.8253 S:5 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory



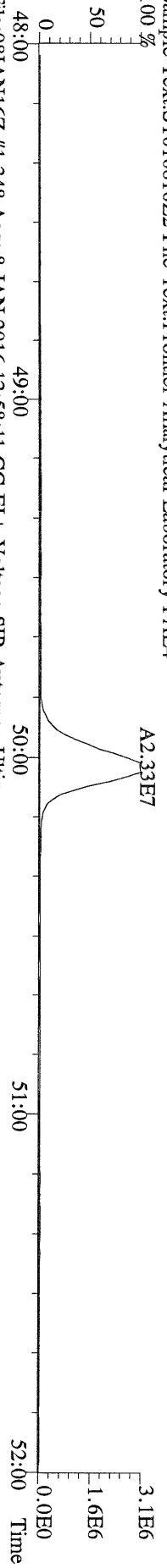
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419.8220 S:5 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory



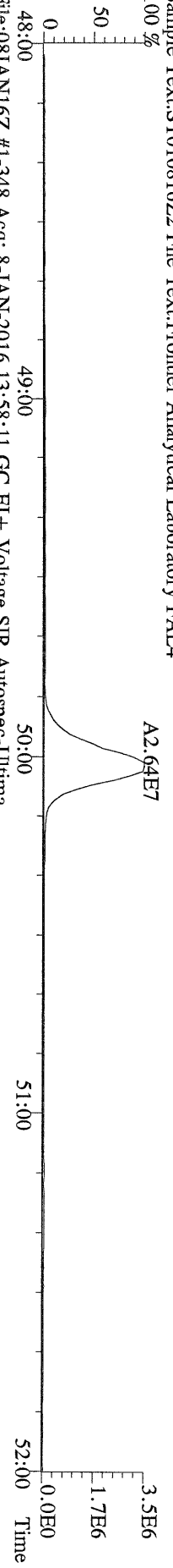
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479.7165 S:5 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory



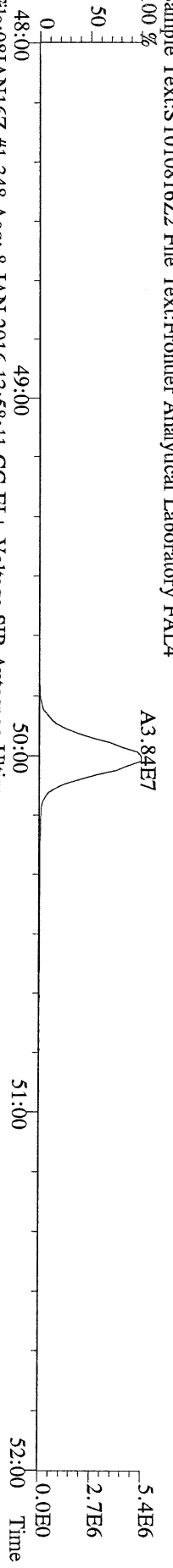
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441.7428 S:5 F:5 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4
100 %



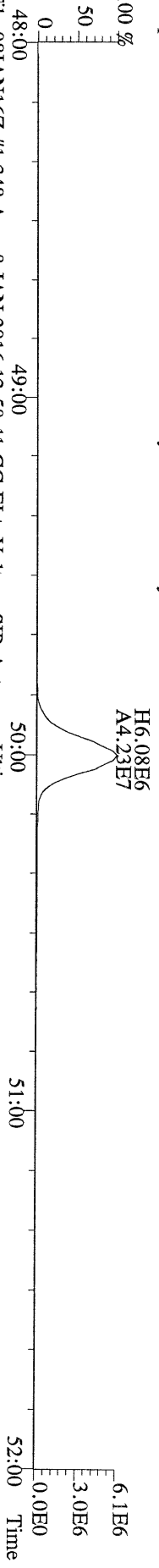
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443.7398 S:5 F:5 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4
100 %



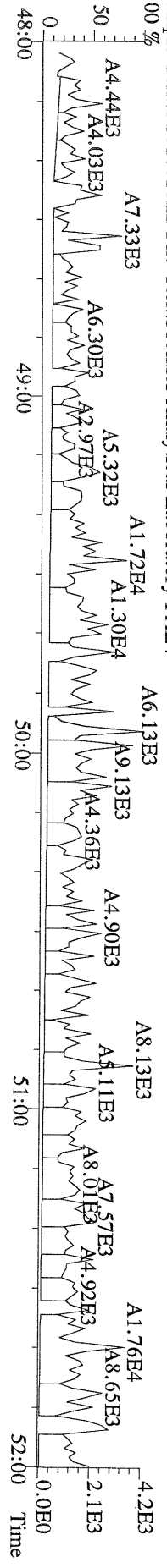
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453.7831 S:5 F:5 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4
100 %

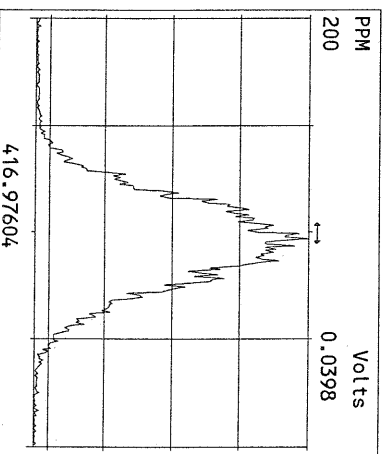
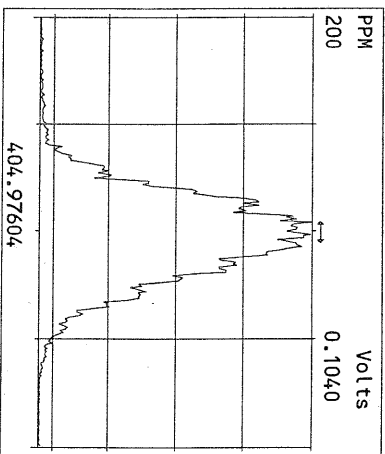
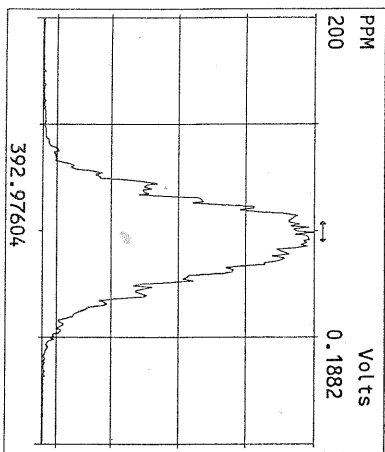
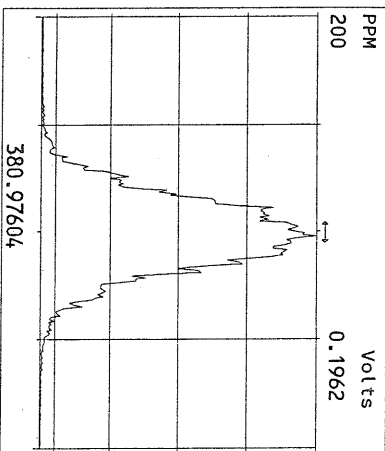
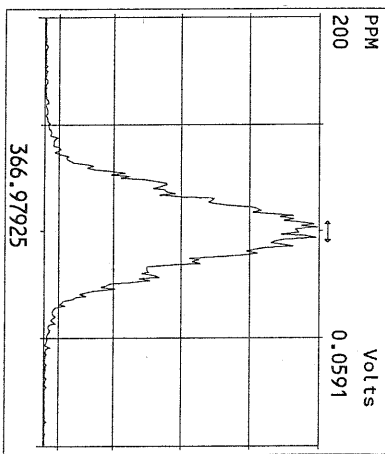
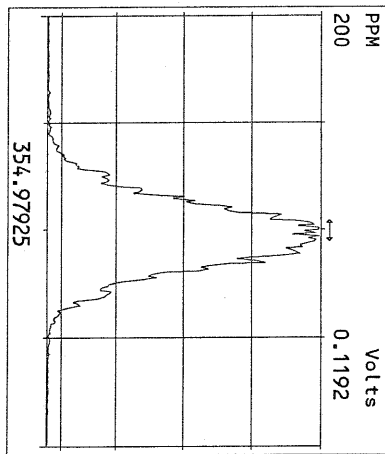
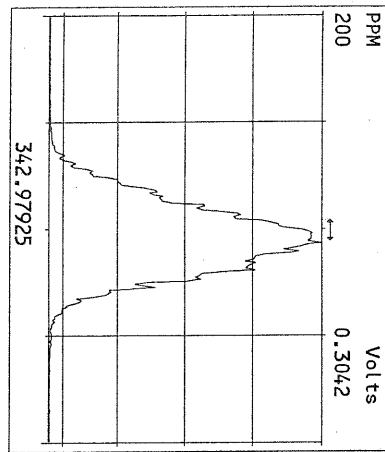
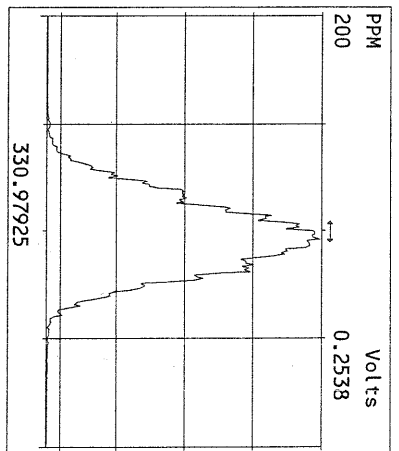
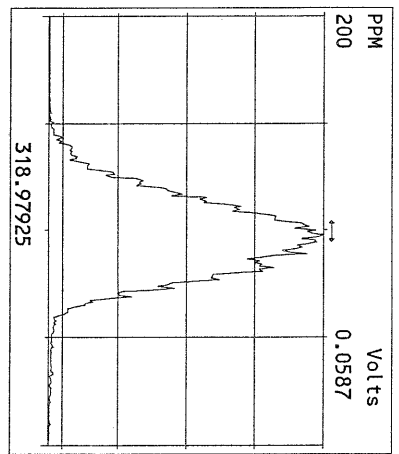
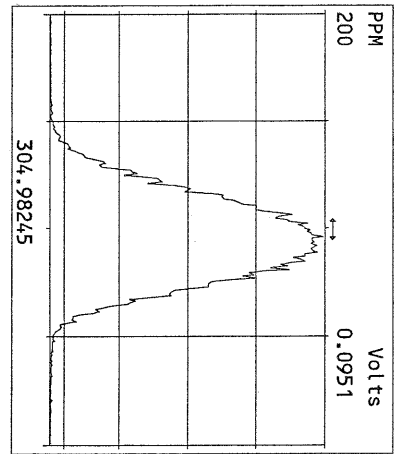
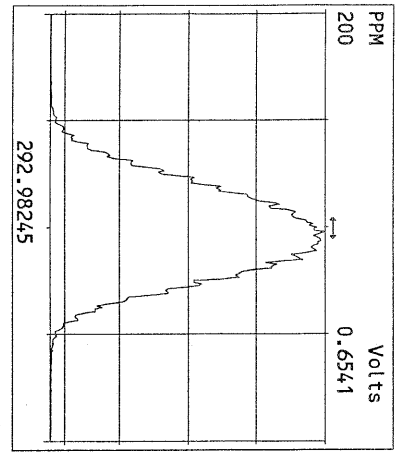


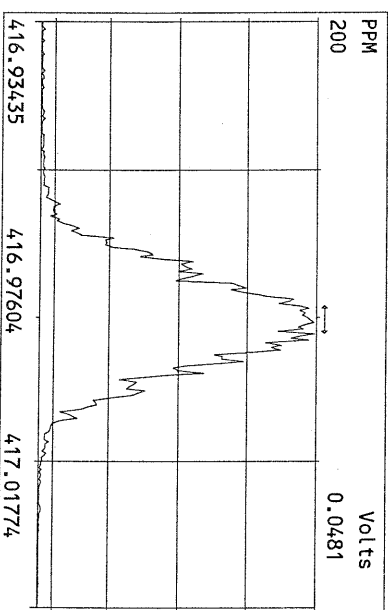
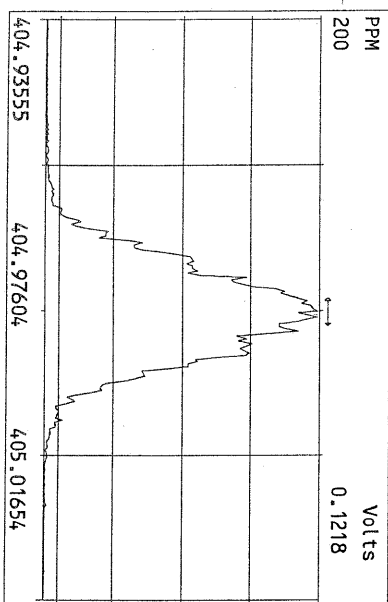
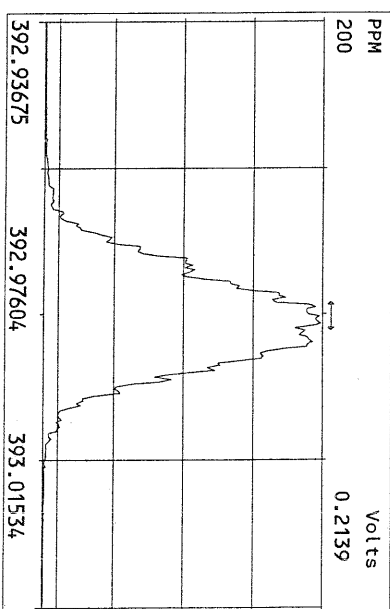
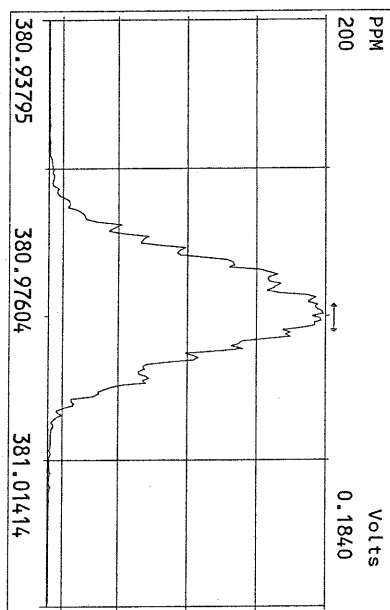
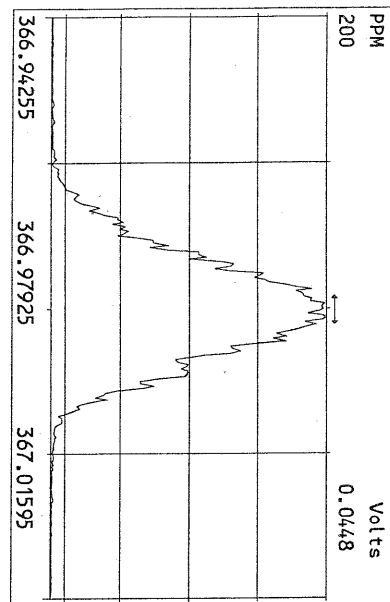
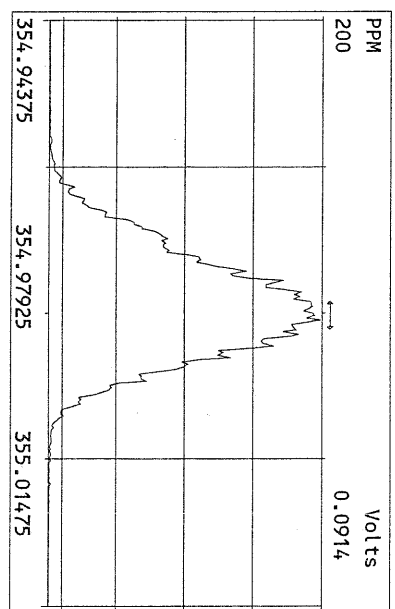
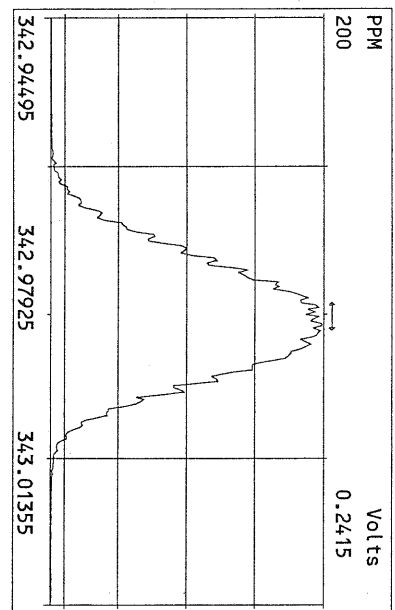
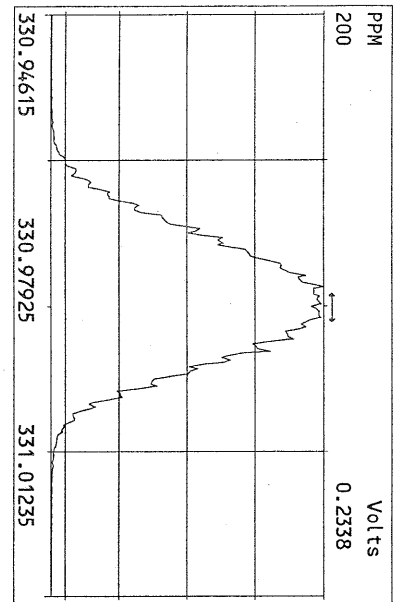
File:08JANI6Z #1-348 Acq: 8-JAN-2016 13:58:11 GC EI+ Voltage SIR Autospec-Ultima
455.7801 S:5 F:5 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4

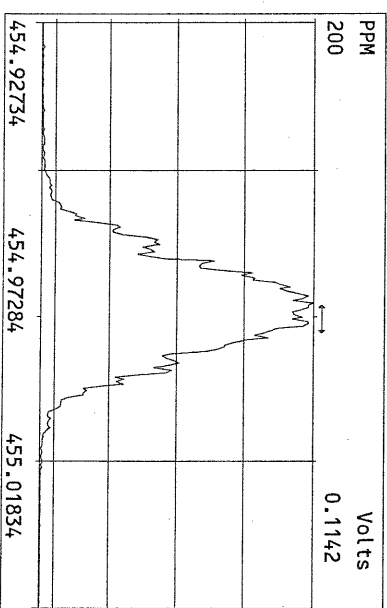
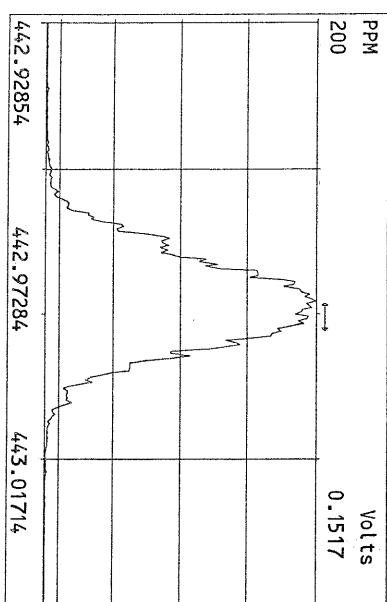
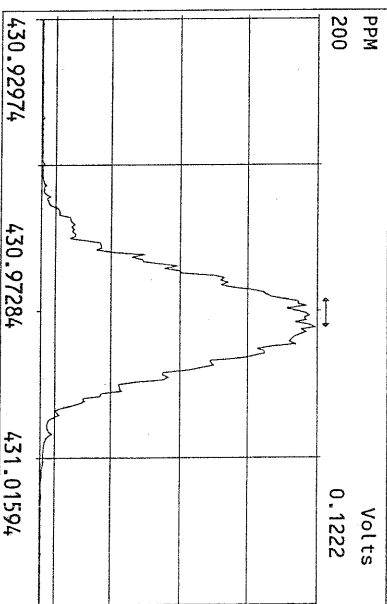
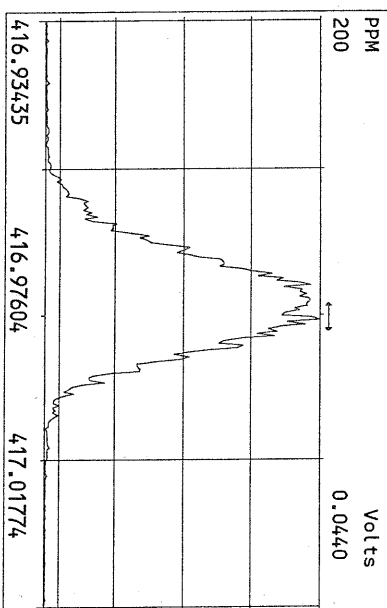
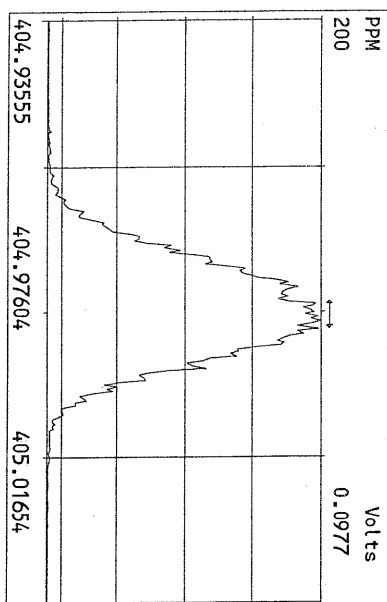
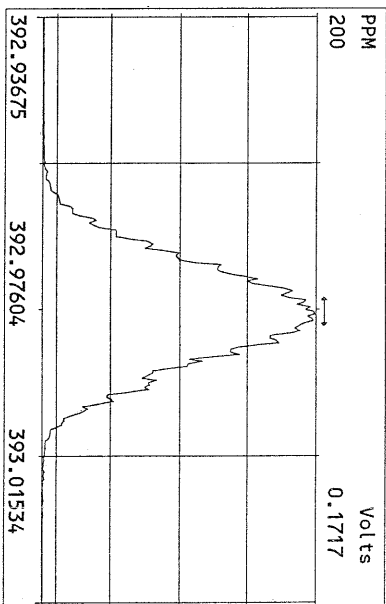
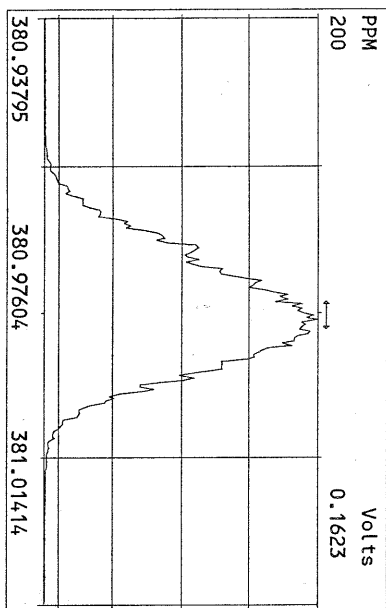
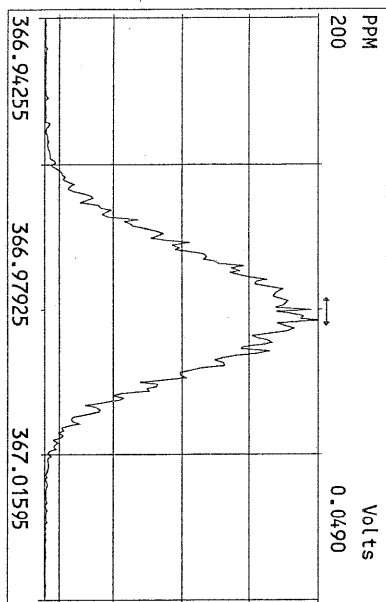


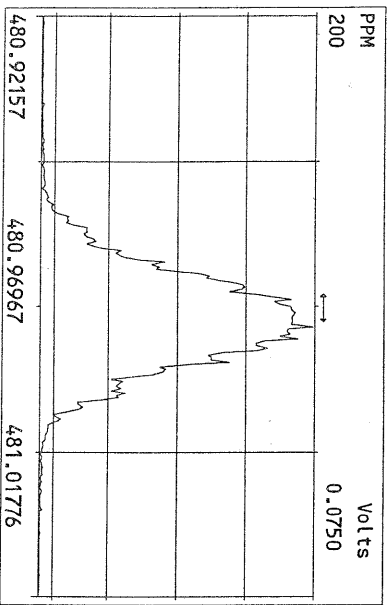
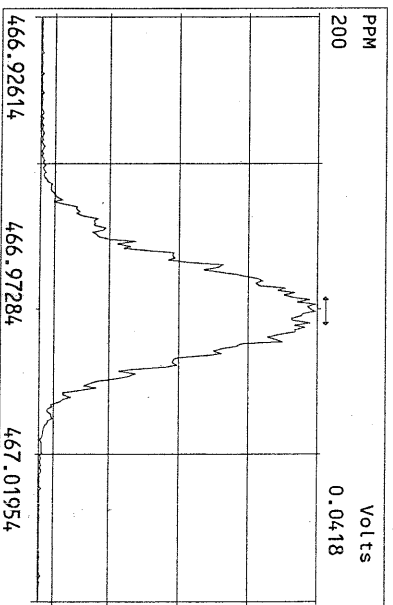
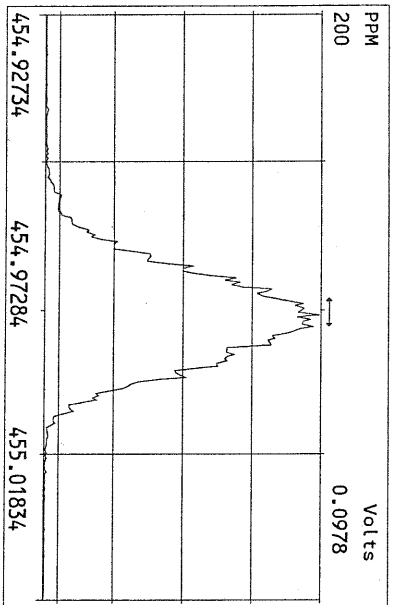
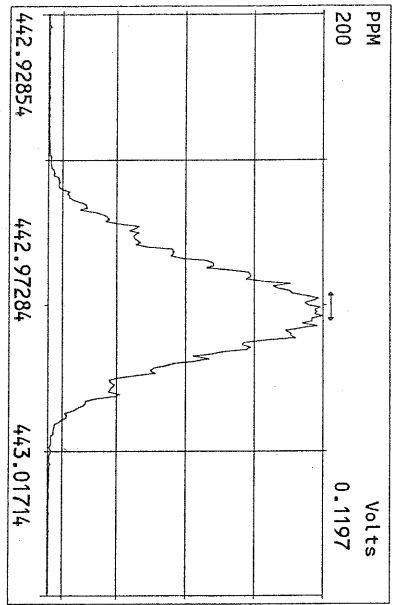
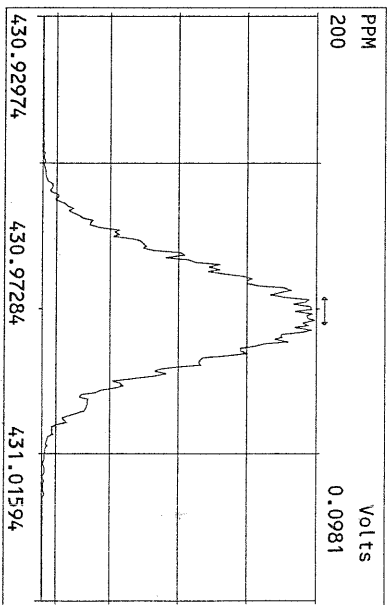
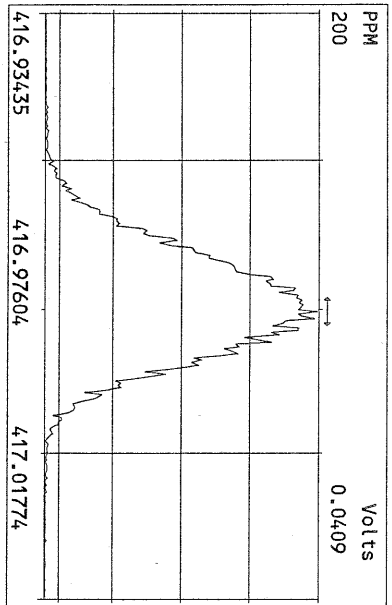
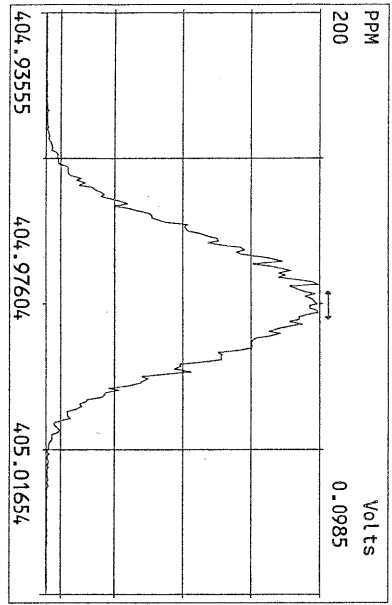
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513.6775 S:5 F:5 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816Z2 File Text:Frontier Analytical Laboratory FAL4
100 %

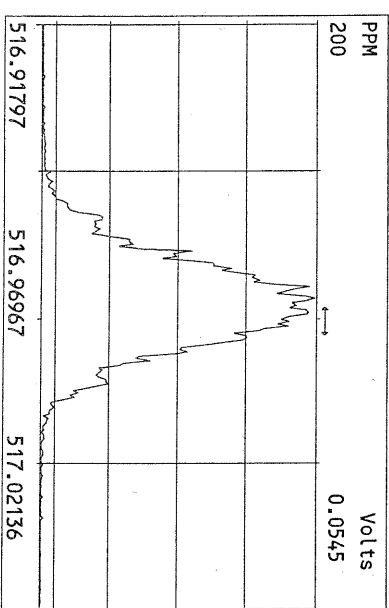
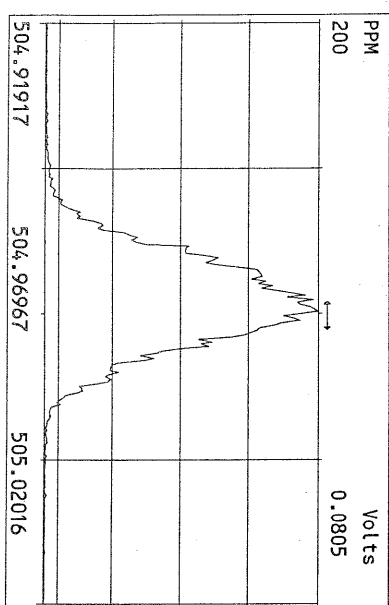
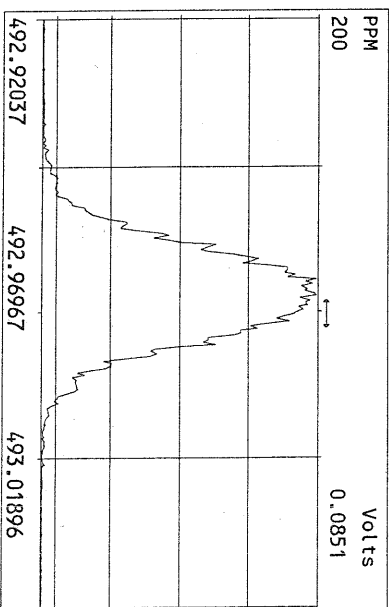
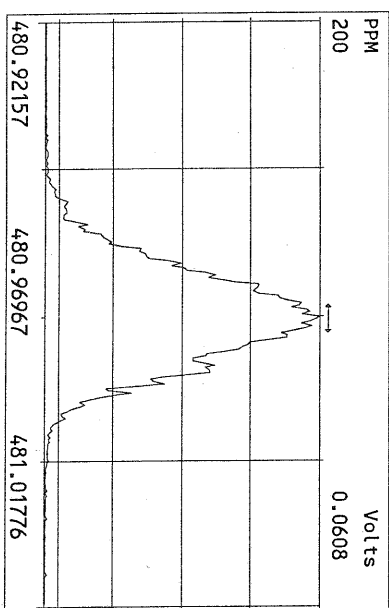
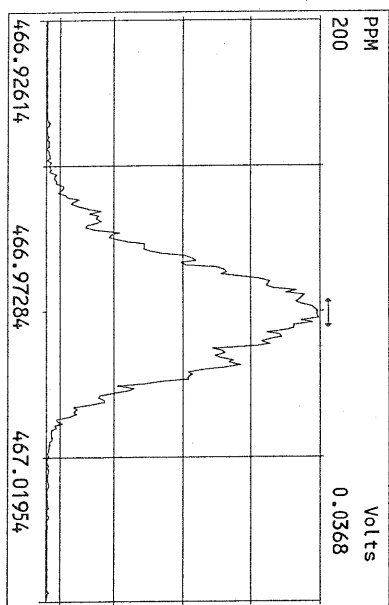
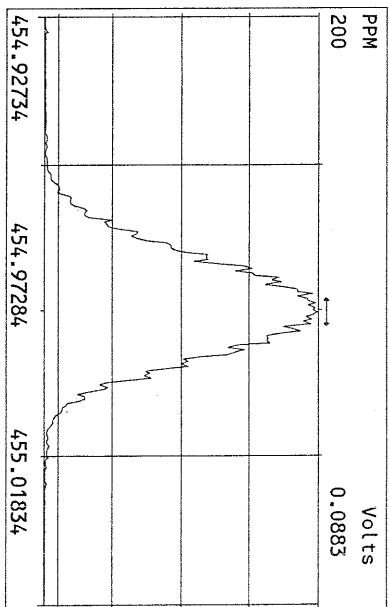
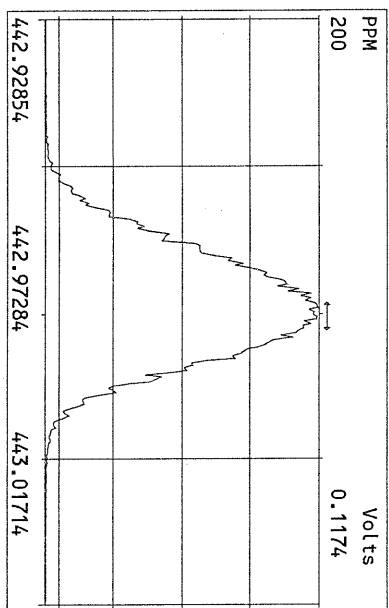
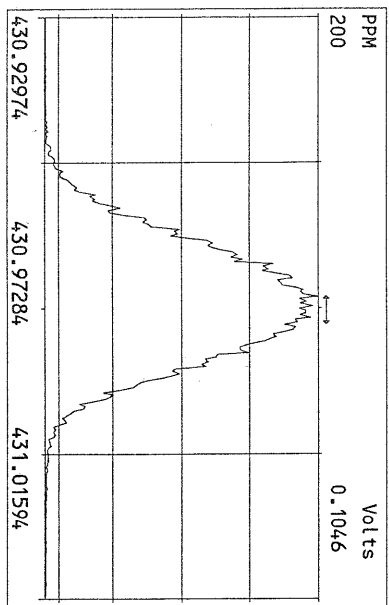














3600 Fremont Ave. N.

Seattle, WA 98103

T: (206) 352-3790

F: (206) 352-7178

info@fremontanalytical.com

Floyd | Snider

Lynn Grochala
601 Union St., Suite 600
Seattle, WA 98101

RE: SIM - 730 EDR

Lab ID: 1512073

February 26, 2016

Attention Lynn Grochala:

Fremont Analytical, Inc. received 23 sample(s) on 12/8/2015 for the analyses presented in the following report.

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Dioxins by EPA Method 1613

Mercury by EPA Method 7471

Pentachlorophenol by EPA Method 8270 (SIM)

Polychlorinated Biphenyls (PCB) by EPA 8082

Sample Moisture (Percent Moisture)

Semi-Volatile Organic Compounds by EPA Method 8270

Total Metals by EPA Method 6020

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

A handwritten signature in black ink, appearing to read "Mike Ridgeway".

Mike Ridgeway
President



CLIENT: Floyd | Snider
Project: SIM - 730 EDR
Lab Order: 1512073

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1512073-001	SB-01-0-2	12/07/2015 10:00 AM	12/08/2015 12:40 PM
1512073-002	SB-01-10	12/07/2015 10:05 AM	12/08/2015 12:40 PM
1512073-003	SB-02-0-2	12/07/2015 10:15 AM	12/08/2015 12:40 PM
1512073-004	SB-02-4-5	12/07/2015 10:20 AM	12/08/2015 12:40 PM
1512073-005	SB-03-10-11	12/07/2015 10:35 AM	12/08/2015 12:40 PM
1512073-006	SB-04-9-10	12/07/2015 2:00 PM	12/08/2015 12:40 PM
1512073-007	SB-06-10-11	12/07/2015 10:55 AM	12/08/2015 12:40 PM
1512073-008	SB-08-0-2	12/07/2015 12:00 PM	12/08/2015 12:40 PM
1512073-009	SB-08-4-5	12/07/2015 12:05 PM	12/08/2015 12:40 PM
1512073-010	SB-08-10-11	12/07/2015 12:10 PM	12/08/2015 12:40 PM
1512073-011	SB-09-7-8	12/07/2015 11:15 AM	12/08/2015 12:40 PM
1512073-012	SB-09-8-9	12/07/2015 11:40 AM	12/08/2015 12:40 PM
1512073-013	SB-09-13-14	12/07/2015 11:25 AM	12/08/2015 12:40 PM
1512073-014	SB-09-17-18	12/07/2015 11:30 AM	12/08/2015 12:40 PM
1512073-015	SB-09-18-19	12/07/2015 11:35 AM	12/08/2015 12:40 PM
1512073-016	SB-10-5-6	12/07/2015 2:40 PM	12/08/2015 12:40 PM
1512073-017	SB-10-12.5-13	12/07/2015 2:45 PM	12/08/2015 12:40 PM
1512073-018	SB-10-14-15	12/07/2015 2:50 PM	12/08/2015 12:40 PM
1512073-019	SB-11-0-2	12/07/2015 12:50 PM	12/08/2015 12:40 PM
1512073-020	SB-11-4-5	12/07/2015 12:55 PM	12/08/2015 12:40 PM
1512073-021	SB-11-6-7	12/07/2015 1:00 PM	12/08/2015 12:40 PM
1512073-022	SB-11-10-11	12/07/2015 1:05 PM	12/08/2015 12:40 PM
1512073-023	SB-12-10-11	12/07/2015 1:10 PM	12/08/2015 12:40 PM

CLIENT: Floyd | Snider
Project: SIM - 730 EDR

WorkOrder Narrative:

I. SAMPLE RECEIPT:

Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:

Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Stoddard Solvent quantitation is an estimated value based on a 3 point initial calibration performed after the initial analysis under NWTPH-Dx, except for sample -018.

Qualifiers:

- * - Flagged value is not within established control limits
- B - Analyte detected in the associated Method Blank
- D - Dilution was required
- E - Value above quantitation range
- H - Holding times for preparation or analysis exceeded
- I - Analyte with an internal standard that does not meet established acceptance criteria
- J - Analyte detected below Reporting Limit
- N - Tentatively Identified Compound (TIC)
- Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)
- S - Spike recovery outside accepted recovery limits
- ND - Not detected at the Reporting Limit
- R - High relative percent difference observed

Acronyms:

- %Rec - Percent Recovery
- CCB - Continued Calibration Blank
- CCV - Continued Calibration Verification
- DF - Dilution Factor
- HEM - Hexane Extractable Material
- ICV - Initial Calibration Verification
- LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
- MB or MBLANK - Method Blank
- MDL - Method Detection Limit
- MS/MSD - Matrix Spike / Matrix Spike Duplicate
- PDS - Post Digestion Spike
- Ref Val - Reference Value
- RL - Reporting Limit
- RPD - Relative Percent Difference
- SD - Serial Dilution
- SGT - Silica Gel Treatment
- SPK - Spike
- Surr - Surrogate



Analytical Report

WO#: 1512073

Date Reported: 2/26/2016

Client: Floyd | Snider

Collection Date: 12/7/2015 10:00:00 AM

Project: SIM - 730 EDR

Lab ID: 1512073-001

Matrix: Soil

Client Sample ID: SB-01-0-2

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Polychlorinated Biphenyls (PCB) by EPA 8082

Batch ID: 12570

Analyst: CM

Aroclor 1016	ND	0.117		mg/Kg-dry	1	12/11/2015 12:44:00 PM
Aroclor 1221	ND	0.117		mg/Kg-dry	1	12/11/2015 12:44:00 PM
Aroclor 1232	ND	0.117		mg/Kg-dry	1	12/11/2015 12:44:00 PM
Aroclor 1242	ND	0.117		mg/Kg-dry	1	12/11/2015 12:44:00 PM
Aroclor 1248	ND	0.117		mg/Kg-dry	1	12/11/2015 12:44:00 PM
Aroclor 1254	ND	0.117		mg/Kg-dry	1	12/11/2015 12:44:00 PM
Aroclor 1260	ND	0.117		mg/Kg-dry	1	12/11/2015 12:44:00 PM
Aroclor 1262	ND	0.117		mg/Kg-dry	1	12/11/2015 12:44:00 PM
Aroclor 1268	ND	0.117		mg/Kg-dry	1	12/11/2015 12:44:00 PM
Total PCBs	ND	0.117		mg/Kg-dry	1	12/11/2015 12:44:00 PM
Surr: Decachlorobiphenyl	101	33.3-140		%Rec	1	12/11/2015 12:44:00 PM
Surr: Tetrachloro-m-xylene	94.0	23.2-142		%Rec	1	12/11/2015 12:44:00 PM

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 12556

Analyst: EC

Stoddard Solvent/Mineral Spirits	ND	23.3	J-est	mg/Kg-dry	1	12/9/2015 4:24:00 PM
Diesel (Fuel Oil)	ND	23.3		mg/Kg-dry	1	12/9/2015 4:24:00 PM
Heavy Oil	1,060	58.1		mg/Kg-dry	1	12/9/2015 4:24:00 PM
Surr: 2-Fluorobiphenyl	108	50-150		%Rec	1	12/9/2015 4:24:00 PM
Surr: o-Terphenyl	101	50-150		%Rec	1	12/9/2015 4:24:00 PM

NOTES:

J-est - Stoddard Solvent quantitation is an estimated value based on a 3 point initial calibration performed after the initial analysis under NWTPH-Dx.

Semi-Volatile Organic Compounds by EPA Method 8270

Batch ID: 12577

Analyst: AK

Phenol	ND	238		µg/Kg-dry	1	12/15/2015 4:42:50 PM
Bis(2-chloroethyl) ether	ND	238		µg/Kg-dry	1	12/15/2015 4:42:50 PM
2-Chlorophenol	ND	119		µg/Kg-dry	1	12/15/2015 4:42:50 PM
1,3-Dichlorobenzene	ND	119		µg/Kg-dry	1	12/15/2015 4:42:50 PM
1,4-Dichlorobenzene	ND	119		µg/Kg-dry	1	12/15/2015 4:42:50 PM
1,2-Dichlorobenzene	ND	119		µg/Kg-dry	1	12/15/2015 4:42:50 PM
Benzyl alcohol	ND	119		µg/Kg-dry	1	12/15/2015 4:42:50 PM
2-Methylphenol (o-cresol)	ND	119		µg/Kg-dry	1	12/15/2015 4:42:50 PM
Hexachloroethane	ND	119		µg/Kg-dry	1	12/15/2015 4:42:50 PM
N-Nitrosodi-n-propylamine	ND	119		µg/Kg-dry	1	12/15/2015 4:42:50 PM
Nitrobenzene	ND	238		µg/Kg-dry	1	12/15/2015 4:42:50 PM
Isophorone	ND	119		µg/Kg-dry	1	12/15/2015 4:42:50 PM
4-Methylphenol (p-cresol)	ND	119		µg/Kg-dry	1	12/15/2015 4:42:50 PM



Analytical Report

WO#: 1512073

Date Reported: 2/26/2016

Client: Floyd | Snider

Collection Date: 12/7/2015 10:00:00 AM

Project: SIM - 730 EDR

Lab ID: 1512073-001

Matrix: Soil

Client Sample ID: SB-01-0-2

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Semi-Volatile Organic Compounds by EPA Method 8270					Batch ID: 12577	Analyst: AK
2-Nitrophenol	ND	238		µg/Kg-dry	1	12/15/2015 4:42:50 PM
2,4-Dimethylphenol	ND	119		µg/Kg-dry	1	12/15/2015 4:42:50 PM
Bis(2-chloroethoxy)methane	ND	119		µg/Kg-dry	1	12/15/2015 4:42:50 PM
2,4-Dichlorophenol	ND	238		µg/Kg-dry	1	12/15/2015 4:42:50 PM
1,2,4-Trichlorobenzene	ND	119		µg/Kg-dry	1	12/15/2015 4:42:50 PM
Naphthalene	ND	95.1		µg/Kg-dry	1	12/15/2015 4:42:50 PM
4-Chloroaniline	ND	594		µg/Kg-dry	1	12/15/2015 4:42:50 PM
Hexachlorobutadiene	ND	119		µg/Kg-dry	1	12/15/2015 4:42:50 PM
4-Chloro-3-methylphenol	ND	594		µg/Kg-dry	1	12/15/2015 4:42:50 PM
2-Methylnaphthalene	ND	95.1		µg/Kg-dry	1	12/15/2015 4:42:50 PM
1-Methylnaphthalene	ND	95.1		µg/Kg-dry	1	12/15/2015 4:42:50 PM
Hexachlorocyclopentadiene	ND	119		µg/Kg-dry	1	12/15/2015 4:42:50 PM
2,4,6-Trichlorophenol	ND	238		µg/Kg-dry	1	12/15/2015 4:42:50 PM
2,4,5-Trichlorophenol	ND	238		µg/Kg-dry	1	12/15/2015 4:42:50 PM
2-Chloronaphthalene	ND	119		µg/Kg-dry	1	12/15/2015 4:42:50 PM
2-Nitroaniline	ND	594		µg/Kg-dry	1	12/15/2015 4:42:50 PM
Acenaphthene	ND	95.1		µg/Kg-dry	1	12/15/2015 4:42:50 PM
Dimethylphthalate	ND	119		µg/Kg-dry	1	12/15/2015 4:42:50 PM
2,6-Dinitrotoluene	ND	119		µg/Kg-dry	1	12/15/2015 4:42:50 PM
Acenaphthylene	ND	95.1		µg/Kg-dry	1	12/15/2015 4:42:50 PM
2,4-Dinitrophenol	ND	238		µg/Kg-dry	1	12/15/2015 4:42:50 PM
Dibenzofuran	ND	119		µg/Kg-dry	1	12/15/2015 4:42:50 PM
2,4-Dinitrotoluene	ND	119		µg/Kg-dry	1	12/15/2015 4:42:50 PM
4-Nitrophenol	ND	594		µg/Kg-dry	1	12/15/2015 4:42:50 PM
Fluorene	ND	95.1		µg/Kg-dry	1	12/15/2015 4:42:50 PM
4-Chlorophenyl phenyl ether	ND	119		µg/Kg-dry	1	12/15/2015 4:42:50 PM
Diethylphthalate	ND	119		µg/Kg-dry	1	12/15/2015 4:42:50 PM
4,6-Dinitro-2-methylphenol	ND	238		µg/Kg-dry	1	12/15/2015 4:42:50 PM
4-Bromophenyl phenyl ether	ND	119		µg/Kg-dry	1	12/15/2015 4:42:50 PM
Hexachlorobenzene	ND	119		µg/Kg-dry	1	12/15/2015 4:42:50 PM
Pentachlorophenol	130	119		µg/Kg-dry	1	12/15/2015 4:42:50 PM
Phenanthrene	ND	95.1		µg/Kg-dry	1	12/15/2015 4:42:50 PM
Anthracene	ND	95.1		µg/Kg-dry	1	12/15/2015 4:42:50 PM
Carbazole	ND	594		µg/Kg-dry	1	12/15/2015 4:42:50 PM
Di-n-butylphthalate	ND	119		µg/Kg-dry	1	12/15/2015 4:42:50 PM
Fluoranthene	ND	95.1		µg/Kg-dry	1	12/15/2015 4:42:50 PM
Pyrene	ND	95.1		µg/Kg-dry	1	12/15/2015 4:42:50 PM
Butyl Benzylphthalate	ND	119		µg/Kg-dry	1	12/15/2015 4:42:50 PM
bis(2-Ethylhexyl)adipate	ND	119		µg/Kg-dry	1	12/15/2015 4:42:50 PM



Analytical Report

WO#: 1512073

Date Reported: 2/26/2016

Client: Floyd | Snider

Collection Date: 12/7/2015 10:00:00 AM

Project: SIM - 730 EDR

Lab ID: 1512073-001

Matrix: Soil

Client Sample ID: SB-01-0-2

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Semi-Volatile Organic Compounds by EPA Method 8270

Batch ID: 12577

Analyst: AK

Benz (a) anthracene	ND	95.1		µg/Kg-dry	1	12/15/2015 4:42:50 PM
Chrysene	ND	95.1		µg/Kg-dry	1	12/15/2015 4:42:50 PM
bis (2-Ethylhexyl) phthalate	142	119		µg/Kg-dry	1	12/15/2015 4:42:50 PM
Di-n-octyl phthalate	ND	119		µg/Kg-dry	1	12/15/2015 4:42:50 PM
Benzo (b) fluoranthene	ND	95.1		µg/Kg-dry	1	12/15/2015 4:42:50 PM
Benzo (k) fluoranthene	ND	95.1		µg/Kg-dry	1	12/15/2015 4:42:50 PM
Benzo (a) pyrene	ND	95.1		µg/Kg-dry	1	12/15/2015 4:42:50 PM
Indeno (1,2,3-cd) pyrene	ND	95.1		µg/Kg-dry	1	12/15/2015 4:42:50 PM
Dibenz (a,h) anthracene	ND	95.1		µg/Kg-dry	1	12/15/2015 4:42:50 PM
Benzo (g,h,i) perylene	ND	95.1		µg/Kg-dry	1	12/15/2015 4:42:50 PM
Surr: 2,4,6-Tribromophenol	56.6	11.1-127		%Rec	1	12/15/2015 4:42:50 PM
Surr: 2-Fluorobiphenyl	75.8	16.1-150		%Rec	1	12/15/2015 4:42:50 PM
Surr: Nitrobenzene-d5	67.2	10-133		%Rec	1	12/15/2015 4:42:50 PM
Surr: Phenol-d6	81.9	11.6-133		%Rec	1	12/15/2015 4:42:50 PM
Surr: p-Terphenyl	88.7	21.8-150		%Rec	1	12/15/2015 4:42:50 PM

Mercury by EPA Method 7471

Batch ID: 12575

Analyst: MW

Mercury	ND	0.262		mg/Kg-dry	1	12/11/2015 12:28:09 PM
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Total Metals by EPA Method 6020

Batch ID: 12564

Analyst: TN

Arsenic	5.00	0.0952		mg/Kg-dry	1	12/10/2015 2:33:49 PM
Barium	41.5	0.476		mg/Kg-dry	1	12/10/2015 2:33:49 PM
Cadmium	0.293	0.190		mg/Kg-dry	1	12/10/2015 2:33:49 PM
Chromium	20.4	0.0952		mg/Kg-dry	1	12/10/2015 2:33:49 PM
Lead	29.9	0.190		mg/Kg-dry	1	12/10/2015 2:33:49 PM
Selenium	1.35	0.476		mg/Kg-dry	1	12/10/2015 2:33:49 PM
Silver	ND	0.0952		mg/Kg-dry	1	12/10/2015 2:33:49 PM

Sample Moisture (Percent Moisture)

Batch ID: R26475

Analyst: SL

Percent Moisture	19.2			wt%	1	12/9/2015 2:30:15 PM
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Analytical Report

WO#: 1512073

Date Reported: 2/26/2016

Client: Floyd | Snider

Collection Date: 12/7/2015 10:05:00 AM

Project: SIM - 730 EDR

Lab ID: 1512073-002

Matrix: Soil

Client Sample ID: SB-01-10

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Polychlorinated Biphenyls (PCB) by EPA 8082

Batch ID: 12570

Analyst: CM

Aroclor 1016	ND	0.0990		mg/Kg-dry	1	12/11/2015 1:18:00 PM
Aroclor 1221	ND	0.0990		mg/Kg-dry	1	12/11/2015 1:18:00 PM
Aroclor 1232	ND	0.0990		mg/Kg-dry	1	12/11/2015 1:18:00 PM
Aroclor 1242	ND	0.0990		mg/Kg-dry	1	12/11/2015 1:18:00 PM
Aroclor 1248	ND	0.0990		mg/Kg-dry	1	12/11/2015 1:18:00 PM
Aroclor 1254	ND	0.0990		mg/Kg-dry	1	12/11/2015 1:18:00 PM
Aroclor 1260	ND	0.0990		mg/Kg-dry	1	12/11/2015 1:18:00 PM
Aroclor 1262	ND	0.0990		mg/Kg-dry	1	12/11/2015 1:18:00 PM
Aroclor 1268	ND	0.0990		mg/Kg-dry	1	12/11/2015 1:18:00 PM
Total PCBs	ND	0.0990		mg/Kg-dry	1	12/11/2015 1:18:00 PM
Surr: Decachlorobiphenyl	200	33.3-140	S	%Rec	1	12/11/2015 1:18:00 PM
Surr: Tetrachloro-m-xylene	118	23.2-142		%Rec	1	12/11/2015 1:18:00 PM

NOTES:

S - Outlying surrogate recovery(ies) observed (high bias). Sample is non-detect; no further action required.

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 12556

Analyst: EC

Stoddard Solvent/Mineral Spirits	ND	19.2	J-est	mg/Kg-dry	1	12/9/2015 5:26:00 PM
Diesel (Fuel Oil)	ND	19.2		mg/Kg-dry	1	12/9/2015 5:26:00 PM
Heavy Oil	ND	48.0		mg/Kg-dry	1	12/9/2015 5:26:00 PM
Surr: 2-Fluorobiphenyl	263	50-150	S	%Rec	1	12/9/2015 5:26:00 PM
Surr: o-Terphenyl	255	50-150	S	%Rec	1	12/9/2015 5:26:00 PM

NOTES:

J-est - Stoddard Solvent quantitation is an estimated value based on a 3 point initial calibration performed after the initial analysis under NWTPH-Dx.

S - Outlying surrogate recovery(ies) observed (high bias). Sample is non-detect; no further action required.

Semi-Volatile Organic Compounds by EPA Method 8270

Batch ID: 12577

Analyst: AK

Phenol	ND	207		µg/Kg-dry	1	12/15/2015 5:27:27 PM
Bis(2-chloroethyl) ether	ND	207		µg/Kg-dry	1	12/15/2015 5:27:27 PM
2-Chlorophenol	ND	104		µg/Kg-dry	1	12/15/2015 5:27:27 PM
1,3-Dichlorobenzene	ND	104		µg/Kg-dry	1	12/15/2015 5:27:27 PM
1,4-Dichlorobenzene	ND	104		µg/Kg-dry	1	12/15/2015 5:27:27 PM
1,2-Dichlorobenzene	ND	104		µg/Kg-dry	1	12/15/2015 5:27:27 PM
Benzyl alcohol	ND	104		µg/Kg-dry	1	12/15/2015 5:27:27 PM
2-Methylphenol (o-cresol)	ND	104		µg/Kg-dry	1	12/15/2015 5:27:27 PM
Hexachloroethane	ND	104		µg/Kg-dry	1	12/15/2015 5:27:27 PM
N-Nitrosodi-n-propylamine	ND	104		µg/Kg-dry	1	12/15/2015 5:27:27 PM



Analytical Report

WO#: 1512073

Date Reported: 2/26/2016

Client: Floyd | Snider

Collection Date: 12/7/2015 10:05:00 AM

Project: SIM - 730 EDR

Lab ID: 1512073-002

Matrix: Soil

Client Sample ID: SB-01-10

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Semi-Volatile Organic Compounds by EPA Method 8270					Batch ID: 12577	Analyst: AK
Nitrobenzene	ND	207		µg/Kg-dry	1	12/15/2015 5:27:27 PM
Isophorone	ND	104		µg/Kg-dry	1	12/15/2015 5:27:27 PM
4-Methylphenol (p-cresol)	ND	104		µg/Kg-dry	1	12/15/2015 5:27:27 PM
2-Nitrophenol	ND	207		µg/Kg-dry	1	12/15/2015 5:27:27 PM
2,4-Dimethylphenol	ND	104		µg/Kg-dry	1	12/15/2015 5:27:27 PM
Bis(2-chloroethoxy)methane	ND	104		µg/Kg-dry	1	12/15/2015 5:27:27 PM
2,4-Dichlorophenol	ND	207		µg/Kg-dry	1	12/15/2015 5:27:27 PM
1,2,4-Trichlorobenzene	ND	104		µg/Kg-dry	1	12/15/2015 5:27:27 PM
Naphthalene	ND	82.8		µg/Kg-dry	1	12/15/2015 5:27:27 PM
4-Chloroaniline	ND	518		µg/Kg-dry	1	12/15/2015 5:27:27 PM
Hexachlorobutadiene	ND	104		µg/Kg-dry	1	12/15/2015 5:27:27 PM
4-Chloro-3-methylphenol	ND	518		µg/Kg-dry	1	12/15/2015 5:27:27 PM
2-Methylnaphthalene	ND	82.8		µg/Kg-dry	1	12/15/2015 5:27:27 PM
1-Methylnaphthalene	ND	82.8		µg/Kg-dry	1	12/15/2015 5:27:27 PM
Hexachlorocyclopentadiene	ND	104		µg/Kg-dry	1	12/15/2015 5:27:27 PM
2,4,6-Trichlorophenol	ND	207		µg/Kg-dry	1	12/15/2015 5:27:27 PM
2,4,5-Trichlorophenol	ND	207		µg/Kg-dry	1	12/15/2015 5:27:27 PM
2-Chloronaphthalene	ND	104		µg/Kg-dry	1	12/15/2015 5:27:27 PM
2-Nitroaniline	ND	518		µg/Kg-dry	1	12/15/2015 5:27:27 PM
Acenaphthene	ND	82.8		µg/Kg-dry	1	12/15/2015 5:27:27 PM
Dimethylphthalate	ND	104		µg/Kg-dry	1	12/15/2015 5:27:27 PM
2,6-Dinitrotoluene	ND	104		µg/Kg-dry	1	12/15/2015 5:27:27 PM
Acenaphthylene	ND	82.8		µg/Kg-dry	1	12/15/2015 5:27:27 PM
2,4-Dinitrophenol	ND	207		µg/Kg-dry	1	12/15/2015 5:27:27 PM
Dibenzofuran	ND	104		µg/Kg-dry	1	12/15/2015 5:27:27 PM
2,4-Dinitrotoluene	ND	104		µg/Kg-dry	1	12/15/2015 5:27:27 PM
4-Nitrophenol	ND	518		µg/Kg-dry	1	12/15/2015 5:27:27 PM
Fluorene	ND	82.8		µg/Kg-dry	1	12/15/2015 5:27:27 PM
4-Chlorophenyl phenyl ether	ND	104		µg/Kg-dry	1	12/15/2015 5:27:27 PM
Diethylphthalate	ND	104		µg/Kg-dry	1	12/15/2015 5:27:27 PM
4,6-Dinitro-2-methylphenol	ND	207		µg/Kg-dry	1	12/15/2015 5:27:27 PM
4-Bromophenyl phenyl ether	ND	104		µg/Kg-dry	1	12/15/2015 5:27:27 PM
Hexachlorobenzene	ND	104		µg/Kg-dry	1	12/15/2015 5:27:27 PM
Pentachlorophenol	ND	104		µg/Kg-dry	1	12/15/2015 5:27:27 PM
Phenanthrene	ND	82.8		µg/Kg-dry	1	12/15/2015 5:27:27 PM
Anthracene	ND	82.8		µg/Kg-dry	1	12/15/2015 5:27:27 PM
Carbazole	ND	518		µg/Kg-dry	1	12/15/2015 5:27:27 PM
Di-n-butylphthalate	ND	104		µg/Kg-dry	1	12/15/2015 5:27:27 PM
Fluoranthene	ND	82.8		µg/Kg-dry	1	12/15/2015 5:27:27 PM



Analytical Report

WO#: 1512073

Date Reported: 2/26/2016

Client: Floyd | Snider

Collection Date: 12/7/2015 10:05:00 AM

Project: SIM - 730 EDR

Lab ID: 1512073-002

Matrix: Soil

Client Sample ID: SB-01-10

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Semi-Volatile Organic Compounds by EPA Method 8270

Batch ID: 12577

Analyst: AK

Pyrene	ND	82.8		µg/Kg-dry	1	12/15/2015 5:27:27 PM
Butyl Benzylphthalate	ND	104		µg/Kg-dry	1	12/15/2015 5:27:27 PM
bis(2-Ethylhexyl)adipate	ND	104		µg/Kg-dry	1	12/15/2015 5:27:27 PM
Benz (a) anthracene	ND	82.8		µg/Kg-dry	1	12/15/2015 5:27:27 PM
Chrysene	ND	82.8		µg/Kg-dry	1	12/15/2015 5:27:27 PM
bis (2-Ethylhexyl) phthalate	ND	104		µg/Kg-dry	1	12/15/2015 5:27:27 PM
Di-n-octyl phthalate	ND	104		µg/Kg-dry	1	12/15/2015 5:27:27 PM
Benzo (b) fluoranthene	ND	82.8		µg/Kg-dry	1	12/15/2015 5:27:27 PM
Benzo (k) fluoranthene	ND	82.8		µg/Kg-dry	1	12/15/2015 5:27:27 PM
Benzo (a) pyrene	ND	82.8		µg/Kg-dry	1	12/15/2015 5:27:27 PM
Indeno (1,2,3-cd) pyrene	ND	82.8		µg/Kg-dry	1	12/15/2015 5:27:27 PM
Dibenz (a,h) anthracene	ND	82.8		µg/Kg-dry	1	12/15/2015 5:27:27 PM
Benzo (g,h,i) perylene	ND	82.8		µg/Kg-dry	1	12/15/2015 5:27:27 PM
Surr: 2,4,6-Tribromophenol	62.7	11.1-127		%Rec	1	12/15/2015 5:27:27 PM
Surr: 2-Fluorobiphenyl	70.5	16.1-150		%Rec	1	12/15/2015 5:27:27 PM
Surr: Nitrobenzene-d5	68.6	10-133		%Rec	1	12/15/2015 5:27:27 PM
Surr: Phenol-d6	83.1	11.6-133		%Rec	1	12/15/2015 5:27:27 PM
Surr: p-Terphenyl	82.1	21.8-150		%Rec	1	12/15/2015 5:27:27 PM

Mercury by EPA Method 7471

Batch ID: 12575

Analyst: MW

Mercury	ND	0.227		mg/Kg-dry	1	12/11/2015 12:34:37 PM
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Total Metals by EPA Method 6020

Batch ID: 12564

Analyst: TN

Arsenic	1.88	0.0849		mg/Kg-dry	1	12/10/2015 2:54:57 PM
Barium	12.8	0.425		mg/Kg-dry	1	12/10/2015 2:54:57 PM
Cadmium	ND	0.170		mg/Kg-dry	1	12/10/2015 2:54:57 PM
Chromium	10.4	0.0849		mg/Kg-dry	1	12/10/2015 2:54:57 PM
Lead	0.979	0.170		mg/Kg-dry	1	12/10/2015 2:54:57 PM
Selenium	0.818	0.425		mg/Kg-dry	1	12/10/2015 2:54:57 PM
Silver	ND	0.0849		mg/Kg-dry	1	12/10/2015 2:54:57 PM

Sample Moisture (Percent Moisture)

Batch ID: R26475

Analyst: SL

Percent Moisture	3.51			wt%	1	12/9/2015 2:30:15 PM
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Analytical Report

WO#: 1512073
Date Reported: 2/26/2016

Client: Floyd | Snider

Collection Date: 12/7/2015 10:15:00 AM

Project: SIM - 730 EDR

Lab ID: 1512073-003

Matrix: Soil

Client Sample ID: SB-02-0-2

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 12556

Analyst: EC

Stoddard Solvent/Mineral Spirits	ND	21.3	J-est	mg/Kg-dry	1	12/9/2015 5:57:00 PM
Diesel (Fuel Oil)	ND	21.3		mg/Kg-dry	1	12/9/2015 5:57:00 PM
Heavy Oil	445	53.3		mg/Kg-dry	1	12/9/2015 5:57:00 PM
Surr: 2-Fluorobiphenyl	95.0	50-150		%Rec	1	12/9/2015 5:57:00 PM
Surr: o-Terphenyl	89.0	50-150		%Rec	1	12/9/2015 5:57:00 PM

NOTES:

J-est - Stoddard Solvent quantitation is an estimated value based on a 3 point initial calibration performed after the initial analysis under NWTPH-Dx.

Pentachlorophenol by EPA Method 8270 (SIM)

Batch ID: 12577

Analyst: AK

Pentachlorophenol	ND	21.7		µg/Kg-dry	1	12/16/2015 6:48:14 PM
Surr: 2,4,6-Tribromophenol	70.1	14-136		%Rec	1	12/16/2015 6:48:14 PM

Sample Moisture (Percent Moisture)

Batch ID: R26475

Analyst: SL

Percent Moisture	8.37	0.500		wt%	1	12/9/2015 2:30:15 PM
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Analytical Report

WO#: 1512073
Date Reported: 2/26/2016

Client: Floyd | Snider
Project: SIM - 730 EDR
Lab ID: 1512073-005
Client Sample ID: SB-03-10-11

Collection Date: 12/7/2015 10:35:00 AM
Matrix: Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 12556 Analyst: EC

Stoddard Solvent/Mineral Spirits	ND	23.5	J-est	mg/Kg-dry	1	12/9/2015 6:28:00 PM
Diesel (Fuel Oil)	ND	23.5		mg/Kg-dry	1	12/9/2015 6:28:00 PM
Heavy Oil	ND	58.9		mg/Kg-dry	1	12/9/2015 6:28:00 PM
Surr: 2-Fluorobiphenyl	100	50-150		%Rec	1	12/9/2015 6:28:00 PM
Surr: o-Terphenyl	92.8	50-150		%Rec	1	12/9/2015 6:28:00 PM

NOTES:

J-est - Stoddard Solvent quantitation is an estimated value based on a 3 point initial calibration performed after the initial analysis under NWTPH-Dx.

Pentachlorophenol by EPA Method 8270 (SIM)

Batch ID: 12577 Analyst: AK

Pentachlorophenol	ND	22.0		µg/Kg-dry	1	12/16/2015 7:10:15 PM
Surr: 2,4,6-Tribromophenol	67.5	14-136		%Rec	1	12/16/2015 7:10:15 PM

Sample Moisture (Percent Moisture)

Batch ID: R26475 Analyst: SL

Percent Moisture	16.0	0.500		wt%	1	12/9/2015 2:30:15 PM
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Analytical Report

WO#: 1512073
Date Reported: 2/26/2016

Client: Floyd | Snider

Collection Date: 12/7/2015 2:00:00 PM

Project: SIM - 730 EDR

Lab ID: 1512073-006

Matrix: Soil

Client Sample ID: SB-04-9-10

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 12556 Analyst: EC

Stoddard Solvent/Mineral Spirits	ND	22.8	J-est	mg/Kg-dry	1	12/9/2015 6:59:00 PM
Diesel (Fuel Oil)	ND	22.8		mg/Kg-dry	1	12/9/2015 6:59:00 PM
Heavy Oil	ND	57.1		mg/Kg-dry	1	12/9/2015 6:59:00 PM
Surr: 2-Fluorobiphenyl	110	50-150		%Rec	1	12/9/2015 6:59:00 PM
Surr: o-Terphenyl	102	50-150		%Rec	1	12/9/2015 6:59:00 PM

NOTES:

J-est - Stoddard Solvent quantitation is an estimated value based on a 3 point initial calibration performed after the initial analysis under NWTPH-Dx.

Pentachlorophenol by EPA Method 8270 (SIM)

Batch ID: 12577 Analyst: AK

Pentachlorophenol	ND	22.2		µg/Kg-dry	1	12/16/2015 7:32:13 PM
Surr: 2,4,6-Tribromophenol	68.4	14-136		%Rec	1	12/16/2015 7:32:13 PM

Sample Moisture (Percent Moisture)

Batch ID: R26475 Analyst: SL

Percent Moisture	14.1	0.500		wt%	1	12/9/2015 2:30:15 PM
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Analytical Report

WO#: 1512073

Date Reported: 2/26/2016

Client: Floyd | Snider

Collection Date: 12/7/2015 10:55:00 AM

Project: SIM - 730 EDR

Lab ID: 1512073-007

Matrix: Soil

Client Sample ID: SB-06-10-11

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 12556

Analyst: EC

Stoddard Solvent/Mineral Spirits	ND	22.3	J-est	mg/Kg-dry	1	12/9/2015 7:30:00 PM
Diesel (Fuel Oil)	ND	22.3		mg/Kg-dry	1	12/9/2015 7:30:00 PM
Heavy Oil	ND	55.7		mg/Kg-dry	1	12/9/2015 7:30:00 PM
Surr: 2-Fluorobiphenyl	138	50-150		%Rec	1	12/9/2015 7:30:00 PM
Surr: o-Terphenyl	130	50-150		%Rec	1	12/9/2015 7:30:00 PM

NOTES:

J-est - Stoddard Solvent quantitation is an estimated value based on a 3 point initial calibration performed after the initial analysis under NWTPH-Dx.

Pentachlorophenol by EPA Method 8270 (SIM)

Batch ID: 12577

Analyst: AK

Pentachlorophenol	ND	22.9		µg/Kg-dry	1	12/16/2015 7:54:10 PM
Surr: 2,4,6-Tribromophenol	66.4	14-136		%Rec	1	12/16/2015 7:54:10 PM

Sample Moisture (Percent Moisture)

Batch ID: R26475

Analyst: SL

Percent Moisture	12.9	0.500		wt%	1	12/9/2015 2:30:15 PM
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Analytical Report

WO#: 1512073

Date Reported: 2/26/2016

Client: Floyd | Snider

Collection Date: 12/7/2015 12:00:00 PM

Project: SIM - 730 EDR

Lab ID: 1512073-008

Matrix: Soil

Client Sample ID: SB-08-0-2

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Polychlorinated Biphenyls (PCB) by EPA 8082

Batch ID: 12570

Analyst: CM

Aroclor 1016	ND	0.110		mg/Kg-dry	1	12/11/2015 1:30:00 PM
Aroclor 1221	ND	0.110		mg/Kg-dry	1	12/11/2015 1:30:00 PM
Aroclor 1232	ND	0.110		mg/Kg-dry	1	12/11/2015 1:30:00 PM
Aroclor 1242	ND	0.110		mg/Kg-dry	1	12/11/2015 1:30:00 PM
Aroclor 1248	ND	0.110		mg/Kg-dry	1	12/11/2015 1:30:00 PM
Aroclor 1254	ND	0.110		mg/Kg-dry	1	12/11/2015 1:30:00 PM
Aroclor 1260	ND	0.110		mg/Kg-dry	1	12/11/2015 1:30:00 PM
Aroclor 1262	ND	0.110		mg/Kg-dry	1	12/11/2015 1:30:00 PM
Aroclor 1268	ND	0.110		mg/Kg-dry	1	12/11/2015 1:30:00 PM
Total PCBs	ND	0.110		mg/Kg-dry	1	12/11/2015 1:30:00 PM
Surr: Decachlorobiphenyl	220	33.3-140	S	%Rec	1	12/11/2015 1:30:00 PM
Surr: Tetrachloro-m-xylene	158	23.2-142	S	%Rec	1	12/11/2015 1:30:00 PM

NOTES:

S - Outlying surrogate recovery(ies) observed (high bias). Sample is non-detect; no further action required.

Semi-Volatile Organic Compounds by EPA Method 8270

Batch ID: 12577

Analyst: AK

Phenol	ND	203		µg/Kg-dry	1	12/15/2015 7:40:57 PM
Bis(2-chloroethyl) ether	ND	203		µg/Kg-dry	1	12/15/2015 7:40:57 PM
2-Chlorophenol	ND	102		µg/Kg-dry	1	12/15/2015 7:40:57 PM
1,3-Dichlorobenzene	ND	102		µg/Kg-dry	1	12/15/2015 7:40:57 PM
1,4-Dichlorobenzene	ND	102		µg/Kg-dry	1	12/15/2015 7:40:57 PM
1,2-Dichlorobenzene	ND	102		µg/Kg-dry	1	12/15/2015 7:40:57 PM
Benzyl alcohol	ND	102		µg/Kg-dry	1	12/15/2015 7:40:57 PM
2-Methylphenol (o-cresol)	ND	102		µg/Kg-dry	1	12/15/2015 7:40:57 PM
Hexachloroethane	ND	102		µg/Kg-dry	1	12/15/2015 7:40:57 PM
N-Nitrosodi-n-propylamine	ND	102		µg/Kg-dry	1	12/15/2015 7:40:57 PM
Nitrobenzene	ND	203		µg/Kg-dry	1	12/15/2015 7:40:57 PM
Isophorone	ND	102		µg/Kg-dry	1	12/15/2015 7:40:57 PM
4-Methylphenol (p-cresol)	ND	102		µg/Kg-dry	1	12/15/2015 7:40:57 PM
2-Nitrophenol	ND	203		µg/Kg-dry	1	12/15/2015 7:40:57 PM
2,4-Dimethylphenol	ND	102		µg/Kg-dry	1	12/15/2015 7:40:57 PM
Bis(2-chloroethoxy)methane	ND	102		µg/Kg-dry	1	12/15/2015 7:40:57 PM
2,4-Dichlorophenol	ND	203		µg/Kg-dry	1	12/15/2015 7:40:57 PM
1,2,4-Trichlorobenzene	ND	102		µg/Kg-dry	1	12/15/2015 7:40:57 PM
Naphthalene	ND	81.4		µg/Kg-dry	1	12/15/2015 7:40:57 PM
4-Chloroaniline	ND	509		µg/Kg-dry	1	12/15/2015 7:40:57 PM
Hexachlorobutadiene	ND	102		µg/Kg-dry	1	12/15/2015 7:40:57 PM
4-Chloro-3-methylphenol	ND	509		µg/Kg-dry	1	12/15/2015 7:40:57 PM



Analytical Report

WO#: 1512073

Date Reported: 2/26/2016

Client: Floyd | Snider

Collection Date: 12/7/2015 12:00:00 PM

Project: SIM - 730 EDR

Lab ID: 1512073-008

Matrix: Soil

Client Sample ID: SB-08-0-2

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Semi-Volatile Organic Compounds by EPA Method 8270

Batch ID: 12577

Analyst: AK

2-Methylnaphthalene	ND	81.4		µg/Kg-dry	1	12/15/2015 7:40:57 PM
1-Methylnaphthalene	ND	81.4		µg/Kg-dry	1	12/15/2015 7:40:57 PM
Hexachlorocyclopentadiene	ND	102		µg/Kg-dry	1	12/15/2015 7:40:57 PM
2,4,6-Trichlorophenol	ND	203		µg/Kg-dry	1	12/15/2015 7:40:57 PM
2,4,5-Trichlorophenol	ND	203		µg/Kg-dry	1	12/15/2015 7:40:57 PM
2-Chloronaphthalene	ND	102		µg/Kg-dry	1	12/15/2015 7:40:57 PM
2-Nitroaniline	ND	509		µg/Kg-dry	1	12/15/2015 7:40:57 PM
Acenaphthene	ND	81.4		µg/Kg-dry	1	12/15/2015 7:40:57 PM
Dimethylphthalate	ND	102		µg/Kg-dry	1	12/15/2015 7:40:57 PM
2,6-Dinitrotoluene	ND	102		µg/Kg-dry	1	12/15/2015 7:40:57 PM
Acenaphthylene	ND	81.4		µg/Kg-dry	1	12/15/2015 7:40:57 PM
2,4-Dinitrophenol	ND	203		µg/Kg-dry	1	12/15/2015 7:40:57 PM
Dibenzofuran	ND	102		µg/Kg-dry	1	12/15/2015 7:40:57 PM
2,4-Dinitrotoluene	ND	102		µg/Kg-dry	1	12/15/2015 7:40:57 PM
4-Nitrophenol	ND	509		µg/Kg-dry	1	12/15/2015 7:40:57 PM
Fluorene	ND	81.4		µg/Kg-dry	1	12/15/2015 7:40:57 PM
4-Chlorophenyl phenyl ether	ND	102		µg/Kg-dry	1	12/15/2015 7:40:57 PM
Diethylphthalate	ND	102		µg/Kg-dry	1	12/15/2015 7:40:57 PM
4,6-Dinitro-2-methylphenol	ND	203		µg/Kg-dry	1	12/15/2015 7:40:57 PM
4-Bromophenyl phenyl ether	ND	102		µg/Kg-dry	1	12/15/2015 7:40:57 PM
Hexachlorobenzene	ND	102		µg/Kg-dry	1	12/15/2015 7:40:57 PM
Pentachlorophenol	ND	102		µg/Kg-dry	1	12/15/2015 7:40:57 PM
Phenanthrene	ND	81.4		µg/Kg-dry	1	12/15/2015 7:40:57 PM
Anthracene	ND	81.4		µg/Kg-dry	1	12/15/2015 7:40:57 PM
Carbazole	ND	509		µg/Kg-dry	1	12/15/2015 7:40:57 PM
Di-n-butylphthalate	ND	102		µg/Kg-dry	1	12/15/2015 7:40:57 PM
Fluoranthene	ND	81.4		µg/Kg-dry	1	12/15/2015 7:40:57 PM
Pyrene	ND	81.4		µg/Kg-dry	1	12/15/2015 7:40:57 PM
Butyl Benzylphthalate	ND	102		µg/Kg-dry	1	12/15/2015 7:40:57 PM
bis(2-Ethylhexyl)adipate	ND	102		µg/Kg-dry	1	12/15/2015 7:40:57 PM
Benz (a) anthracene	ND	81.4		µg/Kg-dry	1	12/15/2015 7:40:57 PM
Chrysene	ND	81.4		µg/Kg-dry	1	12/15/2015 7:40:57 PM
bis (2-Ethylhexyl) phthalate	ND	102		µg/Kg-dry	1	12/15/2015 7:40:57 PM
Di-n-octyl phthalate	ND	102		µg/Kg-dry	1	12/15/2015 7:40:57 PM
Benzo (b) fluoranthene	ND	81.4		µg/Kg-dry	1	12/15/2015 7:40:57 PM
Benzo (k) fluoranthene	ND	81.4		µg/Kg-dry	1	12/15/2015 7:40:57 PM
Benzo (a) pyrene	ND	81.4		µg/Kg-dry	1	12/15/2015 7:40:57 PM
Indeno (1,2,3-cd) pyrene	ND	81.4		µg/Kg-dry	1	12/15/2015 7:40:57 PM
Dibenz (a,h) anthracene	ND	81.4		µg/Kg-dry	1	12/15/2015 7:40:57 PM



Analytical Report

WO#: 1512073

Date Reported: 2/26/2016

Client: Floyd | Snider

Collection Date: 12/7/2015 12:00:00 PM

Project: SIM - 730 EDR

Lab ID: 1512073-008

Matrix: Soil

Client Sample ID: SB-08-0-2

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Semi-Volatile Organic Compounds by EPA Method 8270

Batch ID: 12577

Analyst: AK

Benzo (g,h,l) perylene	ND	81.4		µg/Kg-dry	1	12/15/2015 7:40:57 PM
Surr: 2,4,6-Tribromophenol	63.5	11.1-127		%Rec	1	12/15/2015 7:40:57 PM
Surr: 2-Fluorobiphenyl	79.6	16.1-150		%Rec	1	12/15/2015 7:40:57 PM
Surr: Nitrobenzene-d5	62.8	10-133		%Rec	1	12/15/2015 7:40:57 PM
Surr: Phenol-d6	75.9	11.6-133		%Rec	1	12/15/2015 7:40:57 PM
Surr: p-Terphenyl	96.5	21.8-150		%Rec	1	12/15/2015 7:40:57 PM

Mercury by EPA Method 7471

Batch ID: 12575

Analyst: MW

Mercury	ND	0.248		mg/Kg-dry	1	12/11/2015 12:36:12 PM
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Total Metals by EPA Method 6020

Batch ID: 12564

Analyst: TN

Arsenic	2.87	0.0799		mg/Kg-dry	1	12/10/2015 2:58:28 PM
Barium	20.0	0.400		mg/Kg-dry	1	12/10/2015 2:58:28 PM
Cadmium	ND	0.160		mg/Kg-dry	1	12/10/2015 2:58:28 PM
Chromium	10.6	0.0799		mg/Kg-dry	1	12/10/2015 2:58:28 PM
Lead	11.5	0.160		mg/Kg-dry	1	12/10/2015 2:58:28 PM
Selenium	0.855	0.400		mg/Kg-dry	1	12/10/2015 2:58:28 PM
Silver	ND	0.0799		mg/Kg-dry	1	12/10/2015 2:58:28 PM

Sample Moisture (Percent Moisture)

Batch ID: R26475

Analyst: SL

Percent Moisture	9.98			wt%	1	12/9/2015 2:30:15 PM
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Analytical Report

WO#: 1512073
Date Reported: 2/26/2016

Client: Floyd | Snider
Project: SIM - 730 EDR
Lab ID: 1512073-010
Client Sample ID: SB-08-10-11

Collection Date: 12/7/2015 12:10:00 PM
Matrix: Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 12556 Analyst: EC

Stoddard Solvent/Mineral Spirits	ND	23.6	J-est	mg/Kg-dry	1	12/9/2015 8:01:00 PM
Diesel (Fuel Oil)	ND	23.6		mg/Kg-dry	1	12/9/2015 8:01:00 PM
Heavy Oil	678	58.9		mg/Kg-dry	1	12/9/2015 8:01:00 PM
Surr: 2-Fluorobiphenyl	94.6	50-150		%Rec	1	12/9/2015 8:01:00 PM
Surr: o-Terphenyl	89.5	50-150		%Rec	1	12/9/2015 8:01:00 PM

NOTES:

J-est - Stoddard Solvent quantitation is an estimated value based on a 3 point initial calibration performed after the initial analysis under NWTPH-Dx.

Pentachlorophenol by EPA Method 8270 (SIM)

Batch ID: 12577 Analyst: AK

Pentachlorophenol	ND	24.6		µg/Kg-dry	1	12/16/2015 8:16:11 PM
Surr: 2,4,6-Tribromophenol	67.5	14-136		%Rec	1	12/16/2015 8:16:11 PM

Sample Moisture (Percent Moisture)

Batch ID: R26475 Analyst: SL

Percent Moisture	19.2	0.500		wt%	1	12/9/2015 2:30:15 PM
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Analytical Report

WO#: 1512073
Date Reported: 2/26/2016

Client: Floyd | Snider

Collection Date: 12/7/2015 11:25:00 AM

Project: SIM - 730 EDR

Lab ID: 1512073-013

Matrix: Soil

Client Sample ID: SB-09-13-14

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 12556 Analyst: EC

Stoddard Solvent/Mineral Spirits	2,970	23.8	J-est	mg/Kg-dry	1	12/9/2015 9:33:00 PM
Diesel (Fuel Oil)	ND	23.8		mg/Kg-dry	1	12/9/2015 9:33:00 PM
Heavy Oil	ND	59.5		mg/Kg-dry	1	12/9/2015 9:33:00 PM
Surr: 2-Fluorobiphenyl	101	50-150		%Rec	1	12/9/2015 9:33:00 PM
Surr: o-Terphenyl	96.8	50-150		%Rec	1	12/9/2015 9:33:00 PM

NOTES:

J-est - Stoddard Solvent quantitation is an estimated value based on a 3 point initial calibration performed after the initial analysis under NWTPH-Dx.

Pentachlorophenol by EPA Method 8270 (SIM)

Batch ID: 12577 Analyst: AK

Pentachlorophenol	2,530	21.1		µg/Kg-dry	1	12/16/2015 8:38:08 PM
Surr: 2,4,6-Tribromophenol	72.7	14-136		%Rec	1	12/16/2015 8:38:08 PM

Sample Moisture (Percent Moisture)

Batch ID: R26475 Analyst: SL

Percent Moisture	18.1	0.500		wt%	1	12/9/2015 2:30:15 PM
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Analytical Report

WO#: 1512073
Date Reported: 2/26/2016

Client: Floyd | Snider

Collection Date: 12/7/2015 2:45:00 PM

Project: SIM - 730 EDR

Lab ID: 1512073-017

Matrix: Soil

Client Sample ID: SB-10-12.5-13

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 12556 Analyst: EC

Stoddard Solvent/Mineral Spirits	8,500	23.4	J-est	mg/Kg-dry	1	12/9/2015 10:04:00 PM
Diesel (Fuel Oil)	ND	23.4		mg/Kg-dry	1	12/9/2015 10:04:00 PM
Heavy Oil	393	58.6		mg/Kg-dry	1	12/9/2015 10:04:00 PM
Surr: 2-Fluorobiphenyl	105	50-150		%Rec	1	12/9/2015 10:04:00 PM
Surr: o-Terphenyl	99.6	50-150		%Rec	1	12/9/2015 10:04:00 PM

NOTES:

J-est - Stoddard Solvent quantitation is an estimated value based on a 3 point initial calibration performed after the initial analysis under NWTPH-Dx.

Pentachlorophenol by EPA Method 8270 (SIM)

Batch ID: 12577 Analyst: AK

Pentachlorophenol	14,900	238	D	µg/Kg-dry	10	12/16/2015 10:27:58 PM
Surr: 2,4,6-Tribromophenol	77.9	14-136		%Rec	1	12/16/2015 9:00:05 PM

Sample Moisture (Percent Moisture)

Batch ID: R26475 Analyst: SL

Percent Moisture	17.0	0.500		wt%	1	12/9/2015 2:30:15 PM
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Analytical Report

WO#: 1512073
 Date Reported: 2/26/2016

Client: Floyd | Snider

Collection Date: 12/7/2015 2:50:00 PM

Project: SIM - 730 EDR

Lab ID: 1512073-018

Matrix: Soil

Client Sample ID: SB-10-14-15

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 13093 Analyst: CM

Stoddard Solvent/Mineral Spirits	ND	23.3	H	mg/Kg-dry	1	2/26/2016 9:38:00 AM
Diesel (Fuel Oil)	ND	23.3	H	mg/Kg-dry	1	2/26/2016 9:38:00 AM
Heavy Oil	ND	58.3	H	mg/Kg-dry	1	2/26/2016 9:38:00 AM
Surr: 2-Fluorobiphenyl	101	50-150	H	%Rec	1	2/26/2016 9:38:00 AM
Surr: o-Terphenyl	106	50-150	H	%Rec	1	2/26/2016 9:38:00 AM

Sample Moisture (Percent Moisture)

Batch ID: R27901 Analyst: SB

Percent Moisture	15.8	0.500		wt%	1	2/26/2016 8:01:00 AM
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Analytical Report

WO#: 1512073

Date Reported: 2/26/2016

Client: Floyd | Snider

Collection Date: 12/7/2015 12:50:00 PM

Project: SIM - 730 EDR

Lab ID: 1512073-019

Matrix: Soil

Client Sample ID: SB-11-0-2

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Polychlorinated Biphenyls (PCB) by EPA 8082

Batch ID: 12570

Analyst: CM

Aroclor 1016	ND	0.100		mg/Kg-dry	1	12/11/2015 1:42:00 PM
Aroclor 1221	ND	0.100		mg/Kg-dry	1	12/11/2015 1:42:00 PM
Aroclor 1232	ND	0.100		mg/Kg-dry	1	12/11/2015 1:42:00 PM
Aroclor 1242	ND	0.100		mg/Kg-dry	1	12/11/2015 1:42:00 PM
Aroclor 1248	ND	0.100		mg/Kg-dry	1	12/11/2015 1:42:00 PM
Aroclor 1254	ND	0.100		mg/Kg-dry	1	12/11/2015 1:42:00 PM
Aroclor 1260	ND	0.100		mg/Kg-dry	1	12/11/2015 1:42:00 PM
Aroclor 1262	ND	0.100		mg/Kg-dry	1	12/11/2015 1:42:00 PM
Aroclor 1268	ND	0.100		mg/Kg-dry	1	12/11/2015 1:42:00 PM
Total PCBs	ND	0.100		mg/Kg-dry	1	12/11/2015 1:42:00 PM
Surr: Decachlorobiphenyl	133	33.3-140		%Rec	1	12/11/2015 1:42:00 PM
Surr: Tetrachloro-m-xylene	102	23.2-142		%Rec	1	12/11/2015 1:42:00 PM

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 12738

Analyst: EC

Stoddard Solvent/Mineral Spirits	ND	22.4	J-estH	mg/Kg-dry	1	1/12/2016 3:56:00 AM
Diesel (Fuel Oil)	ND	22.4	H	mg/Kg-dry	1	1/12/2016 3:56:00 AM
Heavy Oil	295	56.0	H	mg/Kg-dry	1	1/12/2016 3:56:00 AM
Surr: 2-Fluorobiphenyl	119	50-150	H	%Rec	1	1/12/2016 3:56:00 AM
Surr: o-Terphenyl	115	50-150	H	%Rec	1	1/12/2016 3:56:00 AM

NOTES:

J-est - Stoddard Solvent quantitation is an estimated value based on a 3 point initial calibration performed after the initial analysis under NWTPH-Dx.

Semi-Volatile Organic Compounds by EPA Method 8270

Batch ID: 12577

Analyst: AK

Phenol	ND	225		µg/Kg-dry	1	12/15/2015 9:09:53 PM
Bis(2-chloroethyl) ether	ND	225		µg/Kg-dry	1	12/15/2015 9:09:53 PM
2-Chlorophenol	ND	112		µg/Kg-dry	1	12/15/2015 9:09:53 PM
1,3-Dichlorobenzene	ND	112		µg/Kg-dry	1	12/15/2015 9:09:53 PM
1,4-Dichlorobenzene	ND	112		µg/Kg-dry	1	12/15/2015 9:09:53 PM
1,2-Dichlorobenzene	ND	112		µg/Kg-dry	1	12/15/2015 9:09:53 PM
Benzyl alcohol	ND	112		µg/Kg-dry	1	12/15/2015 9:09:53 PM
2-Methylphenol (o-cresol)	ND	112		µg/Kg-dry	1	12/15/2015 9:09:53 PM
Hexachloroethane	ND	112		µg/Kg-dry	1	12/15/2015 9:09:53 PM
N-Nitrosodi-n-propylamine	ND	112		µg/Kg-dry	1	12/15/2015 9:09:53 PM
Nitrobenzene	ND	225		µg/Kg-dry	1	12/15/2015 9:09:53 PM
Isophorone	ND	112		µg/Kg-dry	1	12/15/2015 9:09:53 PM
4-Methylphenol (p-cresol)	ND	112		µg/Kg-dry	1	12/15/2015 9:09:53 PM



Analytical Report

WO#: 1512073

Date Reported: 2/26/2016

Client: Floyd | Snider

Collection Date: 12/7/2015 12:50:00 PM

Project: SIM - 730 EDR

Lab ID: 1512073-019

Matrix: Soil

Client Sample ID: SB-11-0-2

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Semi-Volatile Organic Compounds by EPA Method 8270					Batch ID: 12577	Analyst: AK
2-Nitrophenol	ND	225		µg/Kg-dry	1	12/15/2015 9:09:53 PM
2,4-Dimethylphenol	ND	112		µg/Kg-dry	1	12/15/2015 9:09:53 PM
Bis(2-chloroethoxy)methane	ND	112		µg/Kg-dry	1	12/15/2015 9:09:53 PM
2,4-Dichlorophenol	ND	225		µg/Kg-dry	1	12/15/2015 9:09:53 PM
1,2,4-Trichlorobenzene	ND	112		µg/Kg-dry	1	12/15/2015 9:09:53 PM
Naphthalene	ND	89.9		µg/Kg-dry	1	12/15/2015 9:09:53 PM
4-Chloroaniline	ND	562		µg/Kg-dry	1	12/15/2015 9:09:53 PM
Hexachlorobutadiene	ND	112		µg/Kg-dry	1	12/15/2015 9:09:53 PM
4-Chloro-3-methylphenol	ND	562		µg/Kg-dry	1	12/15/2015 9:09:53 PM
2-Methylnaphthalene	ND	89.9		µg/Kg-dry	1	12/15/2015 9:09:53 PM
1-Methylnaphthalene	ND	89.9		µg/Kg-dry	1	12/15/2015 9:09:53 PM
Hexachlorocyclopentadiene	ND	112		µg/Kg-dry	1	12/15/2015 9:09:53 PM
2,4,6-Trichlorophenol	ND	225		µg/Kg-dry	1	12/15/2015 9:09:53 PM
2,4,5-Trichlorophenol	ND	225		µg/Kg-dry	1	12/15/2015 9:09:53 PM
2-Chloronaphthalene	ND	112		µg/Kg-dry	1	12/15/2015 9:09:53 PM
2-Nitroaniline	ND	562		µg/Kg-dry	1	12/15/2015 9:09:53 PM
Acenaphthene	ND	89.9		µg/Kg-dry	1	12/15/2015 9:09:53 PM
Dimethylphthalate	ND	112		µg/Kg-dry	1	12/15/2015 9:09:53 PM
2,6-Dinitrotoluene	ND	112		µg/Kg-dry	1	12/15/2015 9:09:53 PM
Acenaphthylene	ND	89.9		µg/Kg-dry	1	12/15/2015 9:09:53 PM
2,4-Dinitrophenol	ND	225		µg/Kg-dry	1	12/15/2015 9:09:53 PM
Dibenzofuran	ND	112		µg/Kg-dry	1	12/15/2015 9:09:53 PM
2,4-Dinitrotoluene	ND	112		µg/Kg-dry	1	12/15/2015 9:09:53 PM
4-Nitrophenol	ND	562		µg/Kg-dry	1	12/15/2015 9:09:53 PM
Fluorene	ND	89.9		µg/Kg-dry	1	12/15/2015 9:09:53 PM
4-Chlorophenyl phenyl ether	ND	112		µg/Kg-dry	1	12/15/2015 9:09:53 PM
Diethylphthalate	ND	112		µg/Kg-dry	1	12/15/2015 9:09:53 PM
4,6-Dinitro-2-methylphenol	ND	225		µg/Kg-dry	1	12/15/2015 9:09:53 PM
4-Bromophenyl phenyl ether	ND	112		µg/Kg-dry	1	12/15/2015 9:09:53 PM
Hexachlorobenzene	ND	112		µg/Kg-dry	1	12/15/2015 9:09:53 PM
Pentachlorophenol	ND	112		µg/Kg-dry	1	12/15/2015 9:09:53 PM
Phenanthrene	382	89.9		µg/Kg-dry	1	12/15/2015 9:09:53 PM
Anthracene	ND	89.9		µg/Kg-dry	1	12/15/2015 9:09:53 PM
Carbazole	ND	562		µg/Kg-dry	1	12/15/2015 9:09:53 PM
Di-n-butylphthalate	ND	112		µg/Kg-dry	1	12/15/2015 9:09:53 PM
Fluoranthene	967	89.9		µg/Kg-dry	1	12/15/2015 9:09:53 PM
Pyrene	830	89.9		µg/Kg-dry	1	12/15/2015 9:09:53 PM
Butyl Benzylphthalate	859	112		µg/Kg-dry	1	12/15/2015 9:09:53 PM
bis(2-Ethylhexyl)adipate	ND	112		µg/Kg-dry	1	12/15/2015 9:09:53 PM



Analytical Report

WO#: 1512073

Date Reported: 2/26/2016

Client: Floyd | Snider

Collection Date: 12/7/2015 12:50:00 PM

Project: SIM - 730 EDR

Lab ID: 1512073-019

Matrix: Soil

Client Sample ID: SB-11-0-2

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Semi-Volatile Organic Compounds by EPA Method 8270

Batch ID: 12577

Analyst: AK

Benz (a) anthracene	463	89.9		µg/Kg-dry	1	12/15/2015 9:09:53 PM
Chrysene	415	89.9		µg/Kg-dry	1	12/15/2015 9:09:53 PM
bis (2-Ethylhexyl) phthalate	2,600	112		µg/Kg-dry	1	12/15/2015 9:09:53 PM
Di-n-octyl phthalate	ND	112		µg/Kg-dry	1	12/15/2015 9:09:53 PM
Benzo (b) fluoranthene	819	89.9		µg/Kg-dry	1	12/15/2015 9:09:53 PM
Benzo (k) fluoranthene	298	89.9		µg/Kg-dry	1	12/15/2015 9:09:53 PM
Benzo (a) pyrene	635	89.9		µg/Kg-dry	1	12/15/2015 9:09:53 PM
Indeno (1,2,3-cd) pyrene	426	89.9		µg/Kg-dry	1	12/15/2015 9:09:53 PM
Dibenz (a,h) anthracene	ND	89.9		µg/Kg-dry	1	12/15/2015 9:09:53 PM
Benzo (g,h,i) perylene	296	89.9		µg/Kg-dry	1	12/15/2015 9:09:53 PM
Surr: 2,4,6-Tribromophenol	88.2	11.1-127		%Rec	1	12/15/2015 9:09:53 PM
Surr: 2-Fluorobiphenyl	80.1	16.1-150		%Rec	1	12/15/2015 9:09:53 PM
Surr: Nitrobenzene-d5	77.2	10-133		%Rec	1	12/15/2015 9:09:53 PM
Surr: Phenol-d6	91.0	11.6-133		%Rec	1	12/15/2015 9:09:53 PM
Surr: p-Terphenyl	102	21.8-150		%Rec	1	12/15/2015 9:09:53 PM

Mercury by EPA Method 7471

Batch ID: 12575

Analyst: MW

Mercury	ND	0.260		mg/Kg-dry	1	12/11/2015 12:37:47 PM
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Total Metals by EPA Method 6020

Batch ID: 12564

Analyst: TN

Arsenic	8.06	0.0852		mg/Kg-dry	1	12/10/2015 3:02:00 PM
Barium	55.7	0.426		mg/Kg-dry	1	12/10/2015 3:02:00 PM
Cadmium	0.389	0.170		mg/Kg-dry	1	12/10/2015 3:02:00 PM
Chromium	24.0	0.0852		mg/Kg-dry	1	12/10/2015 3:02:00 PM
Lead	35.9	0.170		mg/Kg-dry	1	12/10/2015 3:02:00 PM
Selenium	0.844	0.426		mg/Kg-dry	1	12/10/2015 3:02:00 PM
Silver	ND	0.0852		mg/Kg-dry	1	12/10/2015 3:02:00 PM

Sample Moisture (Percent Moisture)

Batch ID: R26475

Analyst: SL

Percent Moisture	11.0			wt%	1	12/9/2015 2:30:15 PM
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Analytical Report

WO#: 1512073
 Date Reported: 2/26/2016

Client: Floyd | Snider

Collection Date: 12/7/2015 12:55:00 PM

Project: SIM - 730 EDR

Lab ID: 1512073-020

Matrix: Soil

Client Sample ID: SB-11-4-5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 12556 Analyst: EC

Stoddard Solvent/Mineral Spirits	ND	23.5	J-est	mg/Kg-dry	1	12/9/2015 10:35:00 PM
Diesel (Fuel Oil)	ND	23.5		mg/Kg-dry	1	12/9/2015 10:35:00 PM
Heavy Oil	22,900	2,940	D	mg/Kg-dry	50	12/10/2015 9:01:00 AM
Surr: 2-Fluorobiphenyl	92.3	50-150		%Rec	1	12/9/2015 10:35:00 PM
Surr: o-Terphenyl	91.0	50-150		%Rec	1	12/9/2015 10:35:00 PM

NOTES:

J-est - Stoddard Solvent quantitation is an estimated value based on a 3 point initial calibration performed after the initial analysis under NWTPH-Dx.

Sample Moisture (Percent Moisture)

Batch ID: R26475 Analyst: SL

Percent Moisture	18.1	0.500		wt%	1	12/9/2015 2:30:15 PM
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Analytical Report

WO#: 1512073
Date Reported: 2/26/2016

Client: Floyd | Snider

Collection Date: 12/7/2015 1:00:00 PM

Project: SIM - 730 EDR

Lab ID: 1512073-021

Matrix: Soil

Client Sample ID: SB-11-6-7

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 12738 Analyst: EC

Stoddard Solvent/Mineral Spirits	ND	20.9	J-estH	mg/Kg-dry	1	1/12/2016 4:26:00 AM
Diesel (Fuel Oil)	ND	20.9	H	mg/Kg-dry	1	1/12/2016 4:26:00 AM
Heavy Oil	80.2	52.4	H	mg/Kg-dry	1	1/12/2016 4:26:00 AM
Surr: 2-Fluorobiphenyl	143	50-150	H	%Rec	1	1/12/2016 4:26:00 AM
Surr: o-Terphenyl	134	50-150	H	%Rec	1	1/12/2016 4:26:00 AM

NOTES:

J-est - Stoddard Solvent quantitation is an estimated value based on a 3 point initial calibration performed after the initial analysis under NWTPH-Dx.

Sample Moisture (Percent Moisture)

Batch ID: R26955 Analyst: SL

Percent Moisture	12.2	0.500		wt%	1	1/11/2016 12:29:23 PM
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Analytical Report

WO#: 1512073
Date Reported: 2/26/2016

Client: Floyd | Snider

Collection Date: 12/7/2015 1:05:00 PM

Project: SIM - 730 EDR

Lab ID: 1512073-022

Matrix: Soil

Client Sample ID: SB-11-10-11

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 12556 Analyst: EC

Stoddard Solvent/Mineral Spirits	ND	21.7	J-est	mg/Kg-dry	1	12/9/2015 11:06:00 PM
Diesel (Fuel Oil)	ND	21.7		mg/Kg-dry	1	12/9/2015 11:06:00 PM
Heavy Oil	342	54.1		mg/Kg-dry	1	12/9/2015 11:06:00 PM
Surr: 2-Fluorobiphenyl	109	50-150		%Rec	1	12/9/2015 11:06:00 PM
Surr: o-Terphenyl	108	50-150		%Rec	1	12/9/2015 11:06:00 PM

NOTES:

J-est - Stoddard Solvent quantitation is an estimated value based on a 3 point initial calibration performed after the initial analysis under NWTPH-Dx.

Sample Moisture (Percent Moisture)

Batch ID: R26475 Analyst: SL

Percent Moisture	13.2	0.500		wt%	1	12/9/2015 2:30:15 PM
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Analytical Report

WO#: 1512073

Date Reported: 2/26/2016

Client: Floyd | Snider

Collection Date: 12/7/2015 1:10:00 PM

Project: SIM - 730 EDR

Lab ID: 1512073-023

Matrix: Soil

Client Sample ID: SB-12-10-11

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 12556

Analyst: EC

Stoddard Solvent/Mineral Spirits	ND	20.5	J-est	mg/Kg-dry	1	12/9/2015 11:37:00 PM
Diesel (Fuel Oil)	ND	20.5		mg/Kg-dry	1	12/9/2015 11:37:00 PM
Heavy Oil	106	51.4		mg/Kg-dry	1	12/9/2015 11:37:00 PM
Surr: 2-Fluorobiphenyl	94.4	50-150		%Rec	1	12/9/2015 11:37:00 PM
Surr: o-Terphenyl	90.4	50-150		%Rec	1	12/9/2015 11:37:00 PM

NOTES:

J-est - Stoddard Solvent quantitation is an estimated value based on a 3 point initial calibration performed after the initial analysis under NWTPH-Dx.

Pentachlorophenol by EPA Method 8270 (SIM)

Batch ID: 12577

Analyst: AK

Pentachlorophenol	ND	20.3		µg/Kg-dry	1	12/16/2015 9:22:04 PM
Surr: 2,4,6-Tribromophenol	76.5	14-136		%Rec	1	12/16/2015 9:22:04 PM

Sample Moisture (Percent Moisture)

Batch ID: R26475

Analyst: SL

Percent Moisture	4.74	0.500		wt%	1	12/9/2015 2:30:15 PM
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Work Order: 1512073
CLIENT: Floyd | Snider
Project: SIM - 730 EDR

QC SUMMARY REPORT
Total Metals by EPA Method 6020

Sample ID: MB-12564	SampType: MBLK	Units: mg/Kg	Prep Date: 12/10/2015	RunNo: 26511							
Client ID: MBLKS	Batch ID: 12564		Analysis Date: 12/10/2015	SeqNo: 500244							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.100									
Barium	ND	0.500									
Cadmium	ND	0.200									
Chromium	ND	0.100									
Lead	ND	0.200									
Selenium	ND	0.500									
Silver	ND	0.100									

Sample ID: LCS-12564	SampType: LCS	Units: mg/Kg	Prep Date: 12/10/2015	RunNo: 26511							
Client ID: LCSS	Batch ID: 12564		Analysis Date: 12/10/2015	SeqNo: 500247							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	48.4	0.100	50.00	0	96.9	80	120				
Barium	49.9	0.500	50.00	0	99.8	80	120				
Cadmium	2.48	0.200	2.500	0	99.1	80	120				
Chromium	51.3	0.100	50.00	0	103	80	120				
Lead	25.5	0.200	25.00	0	102	80	120				
Selenium	4.88	0.500	5.000	0	97.5	80	120				
Silver	2.36	0.100	2.500	0	94.5	80	120				

Sample ID: 1512073-001ADUP	SampType: DUP	Units: mg/Kg-dry	Prep Date: 12/10/2015	RunNo: 26511							
Client ID: SB-01-0-2	Batch ID: 12564		Analysis Date: 12/10/2015	SeqNo: 500249							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	5.07	0.0952						5.001	1.42	20	
Barium	39.4	0.476						41.49	5.22	20	
Cadmium	0.244	0.190						0.2928	18.3	20	
Chromium	24.6	0.0952						20.44	18.5	20	
Lead	39.3	0.190						29.94	27.0	20	R
Selenium	1.55	0.476						1.350	13.8	20	

Work Order: 1512073
CLIENT: Floyd | Snider
Project: SIM - 730 EDR

QC SUMMARY REPORT
Total Metals by EPA Method 6020

Sample ID: 1512073-001ADUP	SampType: DUP	Units: mg/Kg-dry	Prep Date: 12/10/2015	RunNo: 26511							
Client ID: SB-01-0-2	Batch ID: 12564	Analysis Date: 12/10/2015	SeqNo: 500249								
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Silver	ND	0.0952						0		20	

NOTES:

R - High RPD observed. The method is in control as indicated by the LCS.

Sample ID: 1512073-001AMS	SampType: MS	Units: mg/Kg-dry	Prep Date: 12/10/2015	RunNo: 26511							
Client ID: SB-01-0-2	Batch ID: 12564	Analysis Date: 12/10/2015	SeqNo: 500251								
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	52.6	0.0952	47.59	5.001	100	75	125				
Barium	82.3	0.476	47.59	41.49	85.7	75	125				
Cadmium	2.61	0.190	2.379	0.2928	97.5	75	125				
Chromium	73.8	0.0952	47.59	20.44	112	75	125				
Lead	52.8	0.190	23.79	29.94	96.0	75	125				
Selenium	5.89	0.476	4.759	1.350	95.4	75	125				
Silver	1.75	0.0952	2.379	0.04939	71.7	75	125				S

NOTES:

S - Outlying spike recovery(ies) observed. A duplicate analysis was performed with similar results indicating a possible matrix effect.

Sample ID: 1512073-001AMSD	SampType: MSD	Units: mg/Kg-dry	Prep Date: 12/10/2015	RunNo: 26511							
Client ID: SB-01-0-2	Batch ID: 12564	Analysis Date: 12/10/2015	SeqNo: 500252								
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	55.8	0.0952	47.59	5.001	107	75	125	52.61	5.79	20	
Barium	86.3	0.476	47.59	41.49	94.2	75	125	82.28	4.79	20	
Cadmium	2.67	0.190	2.379	0.2928	100	75	125	2.613	2.23	20	
Chromium	78.8	0.0952	47.59	20.44	123	75	125	73.79	6.52	20	
Lead	58.3	0.190	23.79	29.94	119	75	125	52.78	9.93	20	
Selenium	6.13	0.476	4.759	1.350	100	75	125	5.889	3.98	20	
Silver	1.82	0.0952	2.379	0.04939	74.3	75	125	1.755	3.56	20	S

NOTES:

S - Outlying spike recovery(ies) observed. A duplicate analysis was performed with similar results indicating a possible matrix effect.

Work Order: 1512073
CLIENT: Floyd | Snider
Project: SIM - 730 EDR

QC SUMMARY REPORT
Total Metals by EPA Method 6020

Sample ID: 1512073-001APDS	SampType: PDS	Units: mg/Kg-dry	Prep Date: 12/10/2015	RunNo: 26511							
Client ID: SB-01-0-2	Batch ID: 12564		Analysis Date: 12/10/2015	SeqNo: 500253							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Silver	3.82	0.0952	2.50	0.104	74.3	80	120				S

NOTES:

S - Spike recovery indicates a possible matrix effect. The method is in control as indicated by the Laboratory Control Sample (LCS).

Work Order: 1512073
CLIENT: Floyd | Snider
Project: SIM - 730 EDR

QC SUMMARY REPORT
Mercury by EPA Method 7471

Sample ID: MB-12575	SampType: MBLK	Units: mg/Kg	Prep Date: 12/11/2015	RunNo: 26529							
Client ID: MBLKS	Batch ID: 12575		Analysis Date: 12/11/2015	SeqNo: 500499							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.250									

Sample ID: LCS-12575	SampType: LCS	Units: mg/Kg	Prep Date: 12/11/2015	RunNo: 26529							
Client ID: LCSS	Batch ID: 12575		Analysis Date: 12/11/2015	SeqNo: 500500							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.557	0.250	0.5000	0	111	80	120				

Sample ID: 1512073-001ADUP	SampType: DUP	Units: mg/Kg-dry	Prep Date: 12/11/2015	RunNo: 26529							
Client ID: SB-01-0-2	Batch ID: 12575		Analysis Date: 12/11/2015	SeqNo: 500502							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.292						0		20	

Sample ID: 1512073-001AMS	SampType: MS	Units: mg/Kg-dry	Prep Date: 12/11/2015	RunNo: 26529							
Client ID: SB-01-0-2	Batch ID: 12575		Analysis Date: 12/11/2015	SeqNo: 500503							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.628	0.262	0.5243	0.07025	106	70	130				

Sample ID: 1512073-001AMSD	SampType: MSD	Units: mg/Kg-dry	Prep Date: 12/11/2015	RunNo: 26529							
Client ID: SB-01-0-2	Batch ID: 12575		Analysis Date: 12/11/2015	SeqNo: 500504							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.693	0.292	0.5836	0.07025	107	70	130	0.6281	9.88	20	

Work Order: 1512073
CLIENT: Floyd | Snider
Project: SIM - 730 EDR

QC SUMMARY REPORT
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Sample ID: LCS-12556	SampType: LCS	Units: mg/Kg	Prep Date: 12/9/2015	RunNo: 26486							
Client ID: LCSS	Batch ID: 12556		Analysis Date: 12/9/2015	SeqNo: 499864							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Diesel (Fuel Oil)	500	20.0	500.0	0	99.9	65	135				
Surr: 2-Fluorobiphenyl	20.7		20.00		103	50	150				
Surr: o-Terphenyl	18.4		20.00		92.2	50	150				

Sample ID: 1512073-001ADUP	SampType: DUP	Units: mg/Kg-dry	Prep Date: 12/9/2015	RunNo: 26486							
Client ID: SB-01-0-2	Batch ID: 12556		Analysis Date: 12/9/2015	SeqNo: 499842							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Stoddard Solvent/Mineral Spirits	ND	24.4						0		30	J-est
Diesel (Fuel Oil)	ND	24.4						0		30	
Heavy Oil	859	60.9						1,060	20.9	30	
Surr: 2-Fluorobiphenyl	20.4		24.38		83.7	50	150		0		
Surr: o-Terphenyl	19.1		24.38		78.3	50	150		0		

Sample ID: 1512073-023ADUP	SampType: DUP	Units: mg/Kg-dry	Prep Date: 12/9/2015	RunNo: 26486							
Client ID: SB-12-10-11	Batch ID: 12556		Analysis Date: 12/10/2015	SeqNo: 499847							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Stoddard Solvent/Mineral Spirits	ND	19.8						0		30	J-est
Diesel (Fuel Oil)	ND	19.8						0		30	
Heavy Oil	103	49.4						105.7	2.73	30	
Surr: 2-Fluorobiphenyl	18.7		19.77		94.8	50	150		0		
Surr: o-Terphenyl	17.9		19.77		90.7	50	150		0		

Sample ID: MB-12556	SampType: MBLK	Units: mg/Kg	Prep Date: 12/9/2015	RunNo: 26486							
Client ID: MBLKS	Batch ID: 12556		Analysis Date: 12/10/2015	SeqNo: 499868							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Stoddard Solvent/Mineral Spirits	ND	20.0									
Diesel (Fuel Oil)	ND	20.0									



Work Order: 1512073
CLIENT: Floyd | Snider
Project: SIM - 730 EDR

QC SUMMARY REPORT
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Sample ID: MB-12556	SampType: MBLK	Units: mg/Kg	Prep Date: 12/9/2015	RunNo: 26486							
Client ID: MBLKS	Batch ID: 12556		Analysis Date: 12/10/2015	SeqNo: 499868							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Heavy Oil	ND	50.0									
Surr: 2-Fluorobiphenyl	19.6		20.00		98.2	50	150				
Surr: o-Terphenyl	19.2		20.00		96.1	50	150				

Sample ID: MB-12738	SampType: MBLK	Units: mg/Kg	Prep Date: 1/11/2016	RunNo: 26989							
Client ID: MBLKS	Batch ID: 12738		Analysis Date: 1/11/2016	SeqNo: 509179							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Diesel (Fuel Oil)	ND	20.0									
Heavy Oil	ND	50.0									
Surr: 2-Fluorobiphenyl	22.2		20.00		111	50	150				
Surr: o-Terphenyl	21.9		20.00		109	50	150				

Sample ID: LCS-12738	SampType: LCS	Units: mg/Kg	Prep Date: 1/11/2016	RunNo: 26989							
Client ID: LCSS	Batch ID: 12738		Analysis Date: 1/11/2016	SeqNo: 509178							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Diesel (Fuel Oil)	492	20.0	500.0	0	98.4	65	135				
Surr: 2-Fluorobiphenyl	24.7		20.00		124	50	150				
Surr: o-Terphenyl	25.3		20.00		126	50	150				

Sample ID: 1601049-001ADUP	SampType: DUP	Units: mg/Kg-dry	Prep Date: 1/11/2016	RunNo: 26989							
Client ID: BATCH	Batch ID: 12738		Analysis Date: 1/11/2016	SeqNo: 509153							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Diesel (Fuel Oil)	ND	23.9						0		30	
Heavy Oil	ND	59.9						0		30	
Surr: 2-Fluorobiphenyl	28.6		23.94		119	50	150		0		
Surr: o-Terphenyl	27.7		23.94		116	50	150		0		

Work Order: 1512073
CLIENT: Floyd | Snider
Project: SIM - 730 EDR

QC SUMMARY REPORT
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Sample ID: 1601056-018ADUP	SampType: DUP	Units: mg/Kg-dry	Prep Date: 1/11/2016	RunNo: 26989							
Client ID: BATCH	Batch ID: 12738		Analysis Date: 1/11/2016	SeqNo: 509162							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Diesel (Fuel Oil)	ND	18.7						0		30	
Heavy Oil	ND	46.6						0		30	
Surr: 2-Fluorobiphenyl	23.3		18.65		125	50	150		0		
Surr: o-Terphenyl	22.5		18.65		120	50	150		0		

Sample ID: MB-13093	SampType: MBLK	Units: mg/Kg	Prep Date: 2/25/2016	RunNo: 27906							
Client ID: MBLKS	Batch ID: 13093		Analysis Date: 2/25/2016	SeqNo: 524673							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Stoddard Solvent/Mineral Spirits	ND	20.0									
Diesel (Fuel Oil)	ND	20.0									
Heavy Oil	ND	50.0									
Surr: 2-Fluorobiphenyl	20.8		20.00		104	50	150				
Surr: o-Terphenyl	21.5		20.00		108	50	150				

Sample ID: LCS-13093	SampType: LCS	Units: mg/Kg	Prep Date: 2/25/2016	RunNo: 27906							
Client ID: LCSS	Batch ID: 13093		Analysis Date: 2/25/2016	SeqNo: 524672							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Diesel (Fuel Oil)	489	20.0	500.0	0	97.9	65	135				
Surr: 2-Fluorobiphenyl	22.7		20.00		114	50	150				
Surr: o-Terphenyl	23.6		20.00		118	50	150				

Sample ID: 1602278-001ADUP	SampType: DUP	Units: mg/Kg-dry	Prep Date: 2/25/2016	RunNo: 27906							
Client ID: BATCH	Batch ID: 13093		Analysis Date: 2/25/2016	SeqNo: 524663							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Diesel (Fuel Oil)	ND	22.7						0		30	H
Heavy Oil	335	56.8						1,216	114	30	RH
Surr: 2-Fluorobiphenyl	36.9		22.73		162	50	150		0		SH

Work Order: 1512073
CLIENT: Floyd | Snider
Project: SIM - 730 EDR

QC SUMMARY REPORT
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Sample ID: 1602278-001ADUP	SampType: DUP	Units: mg/Kg-dry	Prep Date: 2/25/2016	RunNo: 27906							
Client ID: BATCH	Batch ID: 13093	Analysis Date: 2/25/2016	SeqNo: 524663								
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Surr: o-Terphenyl	35.6		22.73		157	50	150		0		SH
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NOTES:

S - Outlying surrogate recovery(ies) observed. A duplicate analysis was performed and recovered within range.
R - High RPD due to suspected sample inhomogeneity. The method is in control as indicated by the Laboratory Control Sample (LCS).

Sample ID: 1602278-001AMS	SampType: MS	Units: mg/Kg-dry	Prep Date: 2/25/2016	RunNo: 27906							
Client ID: BATCH	Batch ID: 13093	Analysis Date: 2/25/2016	SeqNo: 524664								
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Diesel (Fuel Oil)	329	23.8	593.8	8.405	53.9	65	135				SH
Surr: 2-Fluorobiphenyl	19.1		23.75		80.6	50	150				H
Surr: o-Terphenyl	20.1		23.75		84.7	50	150				H

NOTES:

S - Outlying spike recovery(ies) observed. A duplicate analysis was performed and recovered within range.

Sample ID: 1602278-001AMSD	SampType: MSD	Units: mg/Kg-dry	Prep Date: 2/25/2016	RunNo: 27906							
Client ID: BATCH	Batch ID: 13093	Analysis Date: 2/25/2016	SeqNo: 524665								
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Diesel (Fuel Oil)	439	24.6	615.8	8.405	70.0	65	135	328.5	28.8	30	H
Surr: 2-Fluorobiphenyl	26.0		24.63		105	50	150		0	0	H
Surr: o-Terphenyl	26.6		24.63		108	50	150		0	0	H

Work Order: 1512073
 CLIENT: Floyd | Snider
 Project: SIM - 730 EDR

QC SUMMARY REPORT
Polychlorinated Biphenyls (PCB) by EPA 8082

Sample ID: MB-12570	SampType: MBLK	Units: mg/Kg	Prep Date: 12/10/2015	RunNo: 26548							
Client ID: MBLKS	Batch ID: 12570		Analysis Date: 12/11/2015	SeqNo: 500771							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	ND	0.100									
Aroclor 1221	ND	0.100									
Aroclor 1232	ND	0.100									
Aroclor 1242	ND	0.100									
Aroclor 1248	ND	0.100									
Aroclor 1254	ND	0.100									
Aroclor 1260	ND	0.100									
Aroclor 1262	ND	0.100									
Aroclor 1268	ND	0.100									
Total PCBs	ND	0.100									
Surr: Decachlorobiphenyl	73.9		50.00		148	33.3	140				S
Surr: Tetrachloro-m-xylene	42.0		50.00		84.0	23.2	142				

NOTES:

S - Outlying surrogate recovery(ies) observed (high bias). Sample is non-detect; no further action required.

Sample ID: LCS1-12570	SampType: LCS	Units: mg/Kg	Prep Date: 12/10/2015	RunNo: 26548							
Client ID: LCSS	Batch ID: 12570		Analysis Date: 12/11/2015	SeqNo: 500763							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	0.887	0.100	1.000	0	88.7	42.3	147				
Aroclor 1260	1.21	0.100	1.000	0	121	45.2	151				
Surr: Decachlorobiphenyl	82.2		50.00		164	33.3	140				S
Surr: Tetrachloro-m-xylene	44.2		50.00		88.3	23.2	142				

NOTES:

S - Outlying surrogate recovery(ies) observed. A duplicate analysis was performed and recovered within range.

Sample ID: LCS1D-12570	SampType: LCSD	Units: mg/Kg	Prep Date: 12/10/2015	RunNo: 26548							
Client ID: LCSS02	Batch ID: 12570		Analysis Date: 12/11/2015	SeqNo: 500764							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	0.914	0.100	1.000	0	91.4	42.3	147	0.8874	3.00	20	
Aroclor 1260	1.01	0.100	1.000	0	101	45.2	151	1.207	17.6	20	

Work Order: 1512073
CLIENT: Floyd | Snider
Project: SIM - 730 EDR

QC SUMMARY REPORT
Polychlorinated Biphenyls (PCB) by EPA 8082

Sample ID: LCS1D-12570	SampType: LCSD	Units: mg/Kg	Prep Date: 12/10/2015	RunNo: 26548							
Client ID: LCSS02	Batch ID: 12570		Analysis Date: 12/11/2015	SeqNo: 500764							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Surr: Decachlorobiphenyl	65.2		50.00		130	33.3	140		0		
Surr: Tetrachloro-m-xylene	53.1		50.00		106	23.2	142		0		

Sample ID: LCS2-12570	SampType: LCS	Units: mg/Kg	Prep Date: 12/10/2015	RunNo: 26548							
Client ID: LCSS	Batch ID: 12570		Analysis Date: 12/11/2015	SeqNo: 500770							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aroclor 1254	0.914	0.100	1.000	0	91.4	44	117				
Surr: Decachlorobiphenyl	62.5		50.00		125	33.3	140				
Surr: Tetrachloro-m-xylene	44.5		50.00		88.9	23.2	142				

Sample ID: 1512073-001AMS	SampType: MS	Units: mg/Kg-dry	Prep Date: 12/10/2015	RunNo: 26548							
Client ID: SB-01-0-2	Batch ID: 12570		Analysis Date: 12/11/2015	SeqNo: 500755							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aroclor 1016	1.11	0.108	1.079	0	103	61.7	139				
Aroclor 1260	1.17	0.108	1.079	0	109	63.1	138				
Surr: Decachlorobiphenyl	64.4		53.93		119	33.3	140				
Surr: Tetrachloro-m-xylene	57.4		53.93		106	23.2	142				

Sample ID: 1512073-001AMSD	SampType: MSD	Units: mg/Kg-dry	Prep Date: 12/10/2015	RunNo: 26548							
Client ID: SB-01-0-2	Batch ID: 12570		Analysis Date: 12/11/2015	SeqNo: 500756							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aroclor 1016	1.09	0.111	1.114	0	97.8	61.7	139	1.112	2.09	30	
Aroclor 1260	0.979	0.111	1.114	0	87.9	63.1	138	1.172	17.9	30	
Surr: Decachlorobiphenyl	54.9		55.68		98.6	33.3	140		0		
Surr: Tetrachloro-m-xylene	67.5		55.68		121	23.2	142		0		

Work Order: 1512073
CLIENT: Floyd | Snider
Project: SIM - 730 EDR

QC SUMMARY REPORT
Pentachlorophenol by EPA Method 8270 (SIM)

Sample ID: MB-12577	SampType: MBLK	Units: µg/Kg				Prep Date: 12/11/2015	RunNo: 26600				
Client ID: MBLKS	Batch ID: 12577					Analysis Date: 12/16/2015	SeqNo: 501589				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Pentachlorophenol	ND	20.0									
Surr: 2,4,6-Tribromophenol	290		1,000		29.0	14	136				

Sample ID: LCS-12577	SampType: LCS	Units: µg/Kg				Prep Date: 12/11/2015	RunNo: 26600				
Client ID: LCSS	Batch ID: 12577					Analysis Date: 12/16/2015	SeqNo: 501590				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Pentachlorophenol	215	20.0	1,000	0	21.5	21.4	135				
Surr: 2,4,6-Tribromophenol	599		1,000		59.9	14	136				

Sample ID: 1512073-001ADUP	SampType: DUP	Units: µg/Kg-dry				Prep Date: 12/11/2015	RunNo: 26600				
Client ID: SB-01-0-2	Batch ID: 12577					Analysis Date: 12/16/2015	SeqNo: 501592				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Pentachlorophenol	ND	22.8						0		30	
Surr: 2,4,6-Tribromophenol	713		1,138		62.7	14	136		0	0	

Sample ID: 1512073-002AMS	SampType: MS	Units: µg/Kg-dry				Prep Date: 12/11/2015	RunNo: 26600				
Client ID: SB-01-10	Batch ID: 12577					Analysis Date: 12/16/2015	SeqNo: 501594				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Pentachlorophenol	722	20.4	1,019	0	70.9	15	151				
Surr: 2,4,6-Tribromophenol	814		1,019		79.9	14	136				

Work Order: 1512073
CLIENT: Floyd | Snider
Project: SIM - 730 EDR

QC SUMMARY REPORT
Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID: MB-12577	SampType: MBLK	Units: µg/Kg	Prep Date: 12/11/2015	RunNo: 26590							
Client ID: MBLKS	Batch ID: 12577		Analysis Date: 12/15/2015	SeqNo: 501429							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phenol	ND	200									
Bis(2-chloroethyl) ether	ND	200									
2-Chlorophenol	ND	100									
1,3-Dichlorobenzene	ND	100									
1,4-Dichlorobenzene	ND	100									
1,2-Dichlorobenzene	ND	100									
Benzyl alcohol	ND	100									
2-Methylphenol (o-cresol)	ND	100									
Hexachloroethane	ND	100									
N-Nitrosodi-n-propylamine	ND	100									
Nitrobenzene	ND	200									
Isophorone	ND	100									
4-Methylphenol (p-cresol)	ND	100									
2-Nitrophenol	ND	200									
2,4-Dimethylphenol	ND	100									
Bis(2-chloroethoxy)methane	ND	100									
2,4-Dichlorophenol	ND	200									
1,2,4-Trichlorobenzene	ND	100									
Naphthalene	ND	80.0									
4-Chloroaniline	ND	500									
Hexachlorobutadiene	ND	100									
4-Chloro-3-methylphenol	ND	500									
2-Methylnaphthalene	ND	80.0									
1-Methylnaphthalene	ND	80.0									
Hexachlorocyclopentadiene	ND	100									
2,4,6-Trichlorophenol	ND	200									
2,4,5-Trichlorophenol	ND	200									
2-Chloronaphthalene	ND	100									
2-Nitroaniline	ND	500									
Acenaphthene	ND	80.0									
Dimethylphthalate	ND	100									



Work Order: 1512073
CLIENT: Floyd | Snider
Project: SIM - 730 EDR

QC SUMMARY REPORT
Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID: MB-12577	SampType: MBLK	Units: µg/Kg	Prep Date: 12/11/2015	RunNo: 26590
Client ID: MBLKS	Batch ID: 12577		Analysis Date: 12/15/2015	SeqNo: 501429

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
2,6-Dinitrotoluene	ND	100									
Acenaphthylene	ND	80.0									
2,4-Dinitrophenol	ND	200									
Dibenzofuran	ND	100									
2,4-Dinitrotoluene	ND	100									
4-Nitrophenol	ND	500									
Fluorene	ND	80.0									
4-Chlorophenyl phenyl ether	ND	100									
Diethylphthalate	ND	100									
4,6-Dinitro-2-methylphenol	ND	200									
4-Bromophenyl phenyl ether	ND	100									
Hexachlorobenzene	ND	100									
Pentachlorophenol	ND	100									
Phenanthrene	ND	80.0									
Anthracene	ND	80.0									
Carbazole	ND	500									
Di-n-butylphthalate	ND	100									
Fluoranthene	ND	80.0									
Pyrene	ND	80.0									
Butyl Benzylphthalate	ND	100									
bis(2-Ethylhexyl)adipate	ND	100									
Benz (a) anthracene	ND	80.0									
Chrysene	ND	80.0									
bis (2-Ethylhexyl) phthalate	ND	100									
Di-n-octyl phthalate	ND	100									
Benzo (b) fluoranthene	ND	80.0									
Benzo (k) fluoranthene	ND	80.0									
Benzo (a) pyrene	ND	80.0									
Indeno (1,2,3-cd) pyrene	ND	80.0									
Dibenz (a,h) anthracene	ND	80.0									
Benzo (g,h,i) perylene	ND	80.0									

Work Order: 1512073
 CLIENT: Floyd | Snider
 Project: SIM - 730 EDR

QC SUMMARY REPORT
Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID: MB-12577		SampType: MBLK		Units: µg/Kg		Prep Date: 12/11/2015		RunNo: 26590			
Client ID: MBLKS		Batch ID: 12577				Analysis Date: 12/15/2015		SeqNo: 501429			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: 2,4,6-Tribromophenol	254		1,000		25.4	11.1	127				
Surr: 2-Fluorobiphenyl	427		500.0		85.4	16.1	150				
Surr: Nitrobenzene-d5	288		500.0		57.5	10	133				
Surr: Phenol-d6	839		1,000		83.9	11.6	133				
Surr: p-Terphenyl	419		500.0		83.7	21.8	150				

Sample ID: LCS-12577		SampType: LCS		Units: µg/Kg		Prep Date: 12/11/2015		RunNo: 26590			
Client ID: LCSS		Batch ID: 12577				Analysis Date: 12/15/2015		SeqNo: 501430			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phenol	1,050	200	1,000	0	105	41.8	138				
Bis(2-chloroethyl) ether	1,060	200	1,000	0	106	65	116				
2-Chlorophenol	1,030	100	1,000	0	103	49.3	132				
1,3-Dichlorobenzene	1,070	100	1,000	0	107	50.9	133				
1,4-Dichlorobenzene	791	100	1,000	0	79.1	51.3	133				
1,2-Dichlorobenzene	1,050	100	1,000	0	105	54.2	129				
Benzyl alcohol	920	100	1,000	0	92.0	42.4	131				
2-Methylphenol (o-cresol)	1,000	100	1,000	0	100	47.2	134				
Hexachloroethane	1,010	100	1,000	0	101	25.4	144				
N-Nitrosodi-n-propylamine	978	100	1,000	0	97.8	39.8	135				
Nitrobenzene	1,040	200	1,000	0	104	62.3	126				
Isophorone	1,050	100	1,000	0	105	62.7	131				
4-Methylphenol (p-cresol)	512	100	500.0	0	102	57.4	131				
2-Nitrophenol	854	200	1,000	0	85.4	44.2	129				
2,4-Dimethylphenol	1,010	100	1,000	0	101	57.8	121				
Bis(2-chloroethoxy)methane	1,040	100	1,000	0	104	67.5	124				
2,4-Dichlorophenol	1,050	200	1,000	0	105	57.1	128				
1,2,4-Trichlorobenzene	1,040	100	1,000	0	104	36.2	140				
Naphthalene	1,010	80.0	1,000	0	101	56.8	130				
4-Chloroaniline	1,010	500	1,000	0	101	10.4	130				
Hexachlorobutadiene	1,020	100	1,000	0	102	55.9	131				

Work Order: 1512073
CLIENT: Floyd | Snider
Project: SIM - 730 EDR

QC SUMMARY REPORT
Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID: LCS-12577	SampType: LCS	Units: µg/Kg	Prep Date: 12/11/2015	RunNo: 26590
Client ID: LCSS	Batch ID: 12577		Analysis Date: 12/15/2015	SeqNo: 501430

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
4-Chloro-3-methylphenol	973	500	1,000	0	97.3	49.4	138				
2-Methylnaphthalene	1,010	80.0	1,000	0	101	68.3	121				
1-Methylnaphthalene	992	80.0	1,000	0	99.2	64.1	126				
Hexachlorocyclopentadiene	921	100	1,000	0	92.1	21	130				
2,4,6-Trichlorophenol	584	200	1,000	0	58.4	36.4	132				
2,4,5-Trichlorophenol	879	200	1,000	0	87.9	52.3	128				
2-Chloronaphthalene	1,050	100	1,000	0	105	67.1	123				
2-Nitroaniline	935	500	1,000	0	93.5	43.9	135				
Acenaphthene	985	80.0	1,000	0	98.5	49.2	127				
Dimethylphthalate	1,030	100	1,000	0	103	62.4	130				
2,6-Dinitrotoluene	1,000	100	1,000	0	100	54.6	127				
Acenaphthylene	1,040	80.0	1,000	0	104	64.8	127				
2,4-Dinitrophenol	547	200	1,000	0	54.7	7.9	119				
Dibenzofuran	1,000	100	1,000	0	100	67.5	123				
2,4-Dinitrotoluene	907	100	1,000	0	90.7	21.9	136				
4-Nitrophenol	796	500	1,000	0	79.6	25.4	138				
Fluorene	1,030	80.0	1,000	0	103	64.8	126				
4-Chlorophenyl phenyl ether	1,020	100	1,000	0	102	66.6	124				
Diethylphthalate	1,020	100	1,000	0	102	42.9	132				
4,6-Dinitro-2-methylphenol	442	200	1,000	0	44.2	12.9	110				
4-Bromophenyl phenyl ether	928	100	1,000	0	92.8	61.8	128				
Hexachlorobenzene	954	100	1,000	0	95.4	66.8	124				
Pentachlorophenol	203	100	1,000	0	20.3	10	123				
Phenanthrene	979	80.0	1,000	0	97.9	61.2	130				
Anthracene	1,040	80.0	1,000	0	104	68.9	122				
Carbazole	1,060	500	1,000	0	106	64.5	135				
Di-n-butylphthalate	931	100	1,000	0	93.1	50.6	130				
Fluoranthene	1,010	80.0	1,000	0	101	66	129				
Pyrene	1,030	80.0	1,000	0	103	45.4	140				
Butyl Benzylphthalate	805	100	1,000	0	80.5	31.1	157				
bis(2-Ethylhexyl)adipate	779	100	1,000	0	77.9	28.7	160				

Work Order: 1512073
 CLIENT: Floyd | Snider
 Project: SIM - 730 EDR

QC SUMMARY REPORT
Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID: LCS-12577	SampType: LCS	Units: µg/Kg	Prep Date: 12/11/2015	RunNo: 26590							
Client ID: LCSS	Batch ID: 12577		Analysis Date: 12/15/2015	SeqNo: 501430							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Benz (a) anthracene	936	80.0	1,000	0	93.6	44	150				
Chrysene	1,070	80.0	1,000	0	107	65.8	128				
bis (2-Ethylhexyl) phthalate	805	100	1,000	0	80.5	36.3	149				
Di-n-octyl phthalate	837	100	1,000	0	83.7	31.5	152				
Benzo (b) fluoranthene	841	80.0	1,000	0	84.1	45.6	146				
Benzo (k) fluoranthene	1,050	80.0	1,000	0	105	45.5	138				
Benzo (a) pyrene	921	80.0	1,000	0	92.1	49.2	137				
Indeno (1,2,3-cd) pyrene	860	80.0	1,000	0	86.0	44.2	146				
Dibenz (a,h) anthracene	942	80.0	1,000	0	94.2	37.5	152				
Benzo (g,h,i) perylene	1,020	80.0	1,000	0	102	24.1	156				
Surr: 2,4,6-Tribromophenol	569		1,000		56.9	11.1	127				
Surr: 2-Fluorobiphenyl	483		500.0		96.6	16.1	150				
Surr: Nitrobenzene-d5	369		500.0		73.9	10	133				
Surr: Phenol-d6	1,020		1,000		102	11.6	133				
Surr: p-Terphenyl	483		500.0		96.6	21.8	150				

Sample ID: 1512073-001ADUP	SampType: DUP	Units: µg/Kg-dry	Prep Date: 12/11/2015	RunNo: 26590							
Client ID: SB-01-0-2	Batch ID: 12577		Analysis Date: 12/15/2015	SeqNo: 501432							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Phenol	ND	228						0		50	
Bis(2-chloroethyl) ether	ND	228						0		50	
2-Chlorophenol	ND	114						0		50	
1,3-Dichlorobenzene	ND	114						0		50	
1,4-Dichlorobenzene	ND	114						0		50	
1,2-Dichlorobenzene	ND	114						0		50	
Benzyl alcohol	ND	114						0		50	
2-Methylphenol (o-cresol)	ND	114						0		50	
Hexachloroethane	ND	114						0		50	
N-Nitrosodi-n-propylamine	ND	114						0		50	
Nitrobenzene	ND	228						0		50	



Work Order: 1512073
 CLIENT: Floyd | Snider
 Project: SIM - 730 EDR

QC SUMMARY REPORT
Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID: 1512073-001ADUP	SampType: DUP	Units: µg/Kg-dry	Prep Date: 12/11/2015	RunNo: 26590							
Client ID: SB-01-0-2	Batch ID: 12577		Analysis Date: 12/15/2015	SeqNo: 501432							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Isophorone	ND	114						0		50	
4-Methylphenol (p-cresol)	ND	114						0		50	
2-Nitrophenol	ND	228						0		50	
2,4-Dimethylphenol	ND	114						0		50	
Bis(2-chloroethoxy)methane	ND	114						0		50	
2,4-Dichlorophenol	ND	228						0		50	
1,2,4-Trichlorobenzene	ND	114						0		50	
Naphthalene	ND	91.1						0		50	
4-Chloroaniline	ND	569						0		50	
Hexachlorobutadiene	ND	114						0		50	
4-Chloro-3-methylphenol	ND	569						0		50	
2-Methylnaphthalene	ND	91.1						0		50	
1-Methylnaphthalene	ND	91.1						0		50	
Hexachlorocyclopentadiene	ND	114						0		50	
2,4,6-Trichlorophenol	ND	228						0		50	
2,4,5-Trichlorophenol	ND	228						0		50	
2-Chloronaphthalene	ND	114						0		50	
2-Nitroaniline	ND	569						0		50	
Acenaphthene	ND	91.1						0		50	
Dimethylphthalate	ND	114						0		50	
2,6-Dinitrotoluene	ND	114						0		50	
Acenaphthylene	ND	91.1						0		50	
2,4-Dinitrophenol	ND	228						0		50	
Dibenzofuran	ND	114						0		50	
2,4-Dinitrotoluene	ND	114						0		50	
4-Nitrophenol	ND	569						0		50	
Fluorene	ND	91.1						0		50	
4-Chlorophenyl phenyl ether	ND	114						0		50	
Diethylphthalate	ND	114						0		50	
4,6-Dinitro-2-methylphenol	ND	228						0		50	
4-Bromophenyl phenyl ether	ND	114						0		50	

Work Order: 1512073
CLIENT: Floyd | Snider
Project: SIM - 730 EDR

QC SUMMARY REPORT
Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID: 1512073-001ADUP	SampType: DUP	Units: µg/Kg-dry	Prep Date: 12/11/2015	RunNo: 26590
Client ID: SB-01-0-2	Batch ID: 12577		Analysis Date: 12/15/2015	SeqNo: 501432

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexachlorobenzene	ND	114						0		50	
Pentachlorophenol	ND	114						129.5	200	50	R
Phenanthrene	ND	91.1						0		50	
Anthracene	ND	91.1						0		50	
Carbazole	ND	569						0		50	
Di-n-butylphthalate	ND	114						0		50	
Fluoranthene	ND	91.1						0		50	
Pyrene	ND	91.1						0		50	
Butyl Benzylphthalate	ND	114						0		50	
bis(2-Ethylhexyl)adipate	ND	114						0		50	
Benz (a) anthracene	ND	91.1						0		50	
Chrysene	ND	91.1						0		50	
bis (2-Ethylhexyl) phthalate	ND	114						141.9	122	50	
Di-n-octyl phthalate	ND	114						0		50	
Benzo (b) fluoranthene	ND	91.1						0		50	
Benzo (k) fluoranthene	ND	91.1						0		50	
Benzo (a) pyrene	ND	91.1						0		50	
Indeno (1,2,3-cd) pyrene	ND	91.1						0		50	
Dibenz (a,h) anthracene	ND	91.1						0		50	
Benzo (g,h,i) perylene	ND	91.1						0		50	
Surr: 2,4,6-Tribromophenol	692		1,138		60.8	11.1	127		0		
Surr: 2-Fluorobiphenyl	419		569.1		73.6	16.1	150		0		
Surr: Nitrobenzene-d5	389		569.1		68.4	10	133		0		
Surr: Phenol-d6	878		1,138		77.1	11.6	133		0		
Surr: p-Terphenyl	498		569.1		87.5	21.8	150		0		

NOTES:

R - High RPD observed. The method is in control as indicated by the Laboratory Control Sample (LCS).

Work Order: 1512073
CLIENT: Floyd | Snider
Project: SIM - 730 EDR

QC SUMMARY REPORT
Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID: 1512073-002AMS	SampType: MS	Units: µg/Kg-dry	Prep Date: 12/11/2015	RunNo: 26590
Client ID: SB-01-10	Batch ID: 12577		Analysis Date: 12/15/2015	SeqNo: 501434

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phenol	952	204	1,019	0	93.4	29.2	146				
Bis(2-chloroethyl) ether	971	204	1,019	0	95.3	34.4	135				
2-Chlorophenol	945	102	1,019	0	92.7	44	134				
1,3-Dichlorobenzene	923	102	1,019	0	90.6	21.1	133				
1,4-Dichlorobenzene	897	102	1,019	0	88.0	20.9	131				
1,2-Dichlorobenzene	922	102	1,019	0	90.5	35	131				
Benzyl alcohol	679	102	1,019	0	66.6	30.8	159				
2-Methylphenol (o-cresol)	931	102	1,019	0	91.4	57.7	125				
Hexachloroethane	931	102	1,019	0	91.4	15.4	139				
N-Nitrosodi-n-propylamine	1,000	102	1,019	0	98.2	26.4	151				
Nitrobenzene	1,010	204	1,019	0	98.6	61.4	130				
Isophorone	1,030	102	1,019	0	101	61.8	132				
4-Methylphenol (p-cresol)	483	102	509.5	0	94.7	65.5	127				
2-Nitrophenol	1,040	204	1,019	0	102	46.3	118				
2,4-Dimethylphenol	993	102	1,019	0	97.5	46	158				
Bis(2-chloroethoxy)methane	1,020	102	1,019	0	99.8	66.8	124				
2,4-Dichlorophenol	1,040	204	1,019	0	102	56.2	128				
1,2,4-Trichlorobenzene	990	102	1,019	0	97.2	29.2	140				
Naphthalene	911	81.5	1,019	0	89.4	44.4	136				
4-Chloroaniline	952	510	1,019	0	93.4	27	126				
Hexachlorobutadiene	946	102	1,019	0	92.8	38.2	138				
4-Chloro-3-methylphenol	953	510	1,019	0	93.5	36.8	159				
2-Methylnaphthalene	963	81.5	1,019	0	94.5	51.7	138				
1-Methylnaphthalene	949	81.5	1,019	0	93.1	51.8	131				
Hexachlorocyclopentadiene	420	102	1,019	0	41.2	10	133				
2,4,6-Trichlorophenol	915	204	1,019	0	89.8	62.7	122				
2,4,5-Trichlorophenol	959	204	1,019	0	94.2	54.7	127				
2-Chloronaphthalene	961	102	1,019	0	94.3	69.8	126				
2-Nitroaniline	931	510	1,019	0	91.4	39.3	145				
Acenaphthene	923	81.5	1,019	0	90.6	49.6	129				
Dimethylphthalate	960	102	1,019	0	94.2	61.5	131				

Work Order: 1512073
CLIENT: Floyd | Snider
Project: SIM - 730 EDR

QC SUMMARY REPORT
Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID: 1512073-002AMS	SampType: MS	Units: µg/Kg-dry	Prep Date: 12/11/2015	RunNo: 26590
Client ID: SB-01-10	Batch ID: 12577		Analysis Date: 12/15/2015	SeqNo: 501434

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
2,6-Dinitrotoluene	986	102	1,019	0	96.8	56.8	137				
Acenaphthylene	1,010	81.5	1,019	0	99.2	64	128				
2,4-Dinitrophenol	984	204	1,019	0	96.6	10	149				
Dibenzofuran	926	102	1,019	0	90.9	64.7	131				
2,4-Dinitrotoluene	878	102	1,019	0	86.2	30.9	139				
4-Nitrophenol	855	510	1,019	0	83.9	15.6	160				
Fluorene	896	81.5	1,019	0	88.0	64.2	127				
4-Chlorophenyl phenyl ether	888	102	1,019	0	87.1	70.9	128				
Diethylphthalate	986	102	1,019	0	96.8	61.7	129				
4,6-Dinitro-2-methylphenol	594	204	1,019	0	58.3	21.9	143				
4-Bromophenyl phenyl ether	820	102	1,019	0	80.5	69.6	136				
Hexachlorobenzene	847	102	1,019	0	83.1	66.5	123				
Pentachlorophenol	716	102	1,019	0	70.3	28.2	156				
Phenanthrene	907	81.5	1,019	0	89.0	57	134				
Anthracene	977	81.5	1,019	0	95.9	68.2	123				
Carbazole	1,010	510	1,019	0	99.1	64.1	152				
Di-n-butylphthalate	994	102	1,019	0	97.6	52.4	130				
Fluoranthene	943	81.5	1,019	0	92.6	46.5	165				
Pyrene	972	81.5	1,019	0	95.4	31.4	151				
Butyl Benzylphthalate	956	102	1,019	0	93.8	30.4	138				
bis(2-Ethylhexyl)adipate	852	102	1,019	0	83.6	32	136				
Benz (a) anthracene	988	81.5	1,019	0	97.0	43.9	151				
Chrysene	934	81.5	1,019	0	91.7	71.1	126				
bis (2-Ethylhexyl) phthalate	998	102	1,019	0	98.0	40.8	170				
Di-n-octyl phthalate	1,060	102	1,019	0	105	34.6	142				
Benzo (b) fluoranthene	957	81.5	1,019	0	93.9	52.1	136				
Benzo (k) fluoranthene	983	81.5	1,019	0	96.5	45	140				
Benzo (a) pyrene	786	81.5	1,019	0	77.1	50.5	137				
Indeno (1,2,3-cd) pyrene	928	81.5	1,019	0	91.1	38.1	155				
Dibenz (a,h) anthracene	851	81.5	1,019	0	83.5	40.7	152				
Benzo (g,h,i) perylene	815	81.5	1,019	0	80.0	34	157				

Work Order: 1512073
CLIENT: Floyd | Snider
Project: SIM - 730 EDR

QC SUMMARY REPORT
Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID: 1512073-002AMS	SampType: MS	Units: µg/Kg-dry	Prep Date: 12/11/2015	RunNo: 26590
Client ID: SB-01-10	Batch ID: 12577		Analysis Date: 12/15/2015	SeqNo: 501434

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: 2,4,6-Tribromophenol	753		1,019		73.9	11.1	127				
Surr: 2-Fluorobiphenyl	431		509.5		84.6	16.1	150				
Surr: Nitrobenzene-d5	395		509.5		77.6	10	133				
Surr: Phenol-d6	879		1,019		86.3	11.6	133				
Surr: p-Terphenyl	450		509.5		88.4	21.8	150				



Work Order: 1512073
CLIENT: Floyd | Snider
Project: SIM - 730 EDR

QC SUMMARY REPORT
Sample Moisture (Percent Moisture)

Sample ID: 1512073-001ADUP	SampType: DUP	Units: wt%	Prep Date: 12/9/2015	RunNo: 26475							
Client ID: SB-01-0-2	Batch ID: R26475		Analysis Date: 12/9/2015	SeqNo: 499581							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	23.9	0.500						19.17	22.0	20	R

Sample ID: 1512073-002ADUP	SampType: DUP	Units: wt%	Prep Date: 12/9/2015	RunNo: 26475							
Client ID: SB-01-10	Batch ID: R26475		Analysis Date: 12/9/2015	SeqNo: 499583							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	3.54	0.500						3.507	0.928	20	

Sample ID: 1512073-021ADUP	SampType: DUP	Units: wt%	Prep Date: 1/11/2016	RunNo: 26955							
Client ID: SB-11-6-7	Batch ID: R26955		Analysis Date: 1/11/2016	SeqNo: 508481							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	13.3	0.500						12.16	8.64	20	

Sample ID: 1512246-001ADUP	SampType: DUP	Units: wt%	Prep Date: 1/11/2016	RunNo: 26955							
Client ID: BATCH	Batch ID: R26955		Analysis Date: 1/11/2016	SeqNo: 508483							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	11.0	0.500						9.465	15.2	20	

Sample ID: 1512073-018ADUP	SampType: DUP	Units: wt%	Prep Date: 2/26/2016	RunNo: 27901							
Client ID: SB-10-14-15	Batch ID: R27901		Analysis Date: 2/26/2016	SeqNo: 524613							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	15.3	0.500						15.79	3.31	20	

February 1, 2016

Mr. Michael Ridgeway
Fremont Analytical, Inc.
3600 Fremont Ave., N.
Seattle, WA 98103

Dear Mr. Ridgeway,

The following results are for Frontier Analytical Laboratory project **9558**. This corresponds to your project number **1512073**. One soil sample was received on 1/15/2016 in good condition. This sample was extracted and analyzed by EPA Method 1613 for tetra through octa chlorinated dibenzo dioxins and furans. The Toxic Equivalency (TEQ) for your sample has been calculated using the 2005 World Health Organization's (WHO's) toxic equivalency factors (TEFs). Fremont Analytical, Inc. requested a turnaround time of fifteen business days for project **9558**.

The following Level IV report consists of an Analytical Data section, a Sample Receipt section, a Laboratory Raw Data section, and an Instrument Raw Data section. The Analytical Data section contains our project-sample tracking log and the analytical results. The Sample Receipt section contains your original chain of custody, our sample login form and a sample photo. The Laboratory Raw Data section contains our project request sheet, a percent solids sheet, an extraction bench sheet and the cleanup bench sheet. The instrument raw data section contains three sub-sections; the sample results section, the initial calibration section and the continuing/ending calibration section. The sample results sub-section consists of the quantitation summary forms and chromatograms for all samples and QC. The initial calibration sub-section consists of the individual quantitation summary forms and chromatograms for each point of the initial calibration curve as well as an overall quantitation summary form of the initial calibration curve. The continuing/ending calibration sub-section consists of the quantitation summary forms and chromatograms for all beginning and ending calibration injections associated with the samples and QC. A portable document format (PDF) file of the Level I data package and EDD have been emailed to you. A compact disk of the Level IV data package along with the Electronic Data Deliverable (EDD) has been sent to you via overnight courier. The enclosed results are specifically for the samples referenced in this report only. These results meet all National Environmental Laboratory Accreditation Program (NELAP) requirements and shall not be reproduced except in full. Frontier Analytical Laboratory's State of Oregon NELAP certificate number is **4041** and our State of Washington certificate number is **C844**.

If you have any questions regarding project **9558**, please feel free to contact me at (916) 934-0900. Thank you for choosing Frontier Analytical Laboratory for your analytical testing needs.

Sincerely,



Bradley B. Silverbush
Director of Operations

Frontier Analytical Laboratory

Sample Tracking Log

FAL Project ID: 9558

Received on: 01/15/2016

Project Due: 02/08/2016 Storage: R3

FAL Sample ID	Dup	Client Project ID	Client Sample ID	Requested Method	Matrix	Sampling Date	Sampling Time	Hold Time Due Date
9558-001-SA	0	1512073	SB-10-14-15	EPA 1613 D/F	Soil	12/07/2015	02:50 pm	12/06/2016

EPA Method 1613
PCDD/F



FAL ID: 9558-001-MB
Client ID: Method Blank
Matrix: Soil
Batch No: X3566

Date Extracted: 01-27-2016
Date Received: NA
Amount: 5.00 g

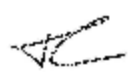
Ical: PCDDFAL3-1-8-16
GC Column: DB5
Units: pg/g


Acquired: 01-28-2016
2005 WHO TEQ: 0.00
Basis: Dry Weight

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.262		-	0.0184				
1,2,3,7,8-PeCDD	ND	0.534		-	0.0275				
1,2,3,4,7,8-HxCDD	ND	0.566		-	0.0314				
1,2,3,6,7,8-HxCDD	ND	0.596		-	0.0335	Total TCDD	ND	0.262	
1,2,3,7,8,9-HxCDD	ND	0.533		-	0.0296	Total PeCDD	ND	0.534	
1,2,3,4,6,7,8-HpCDD	ND	1.01		-	0.0492	Total HxCDD	ND	0.596	
OCDD	ND	1.22		-	0.136	Total HpCDD	ND	1.01	
2,3,7,8-TCDF	ND	0.290		-	0.0211				
1,2,3,7,8-PeCDF	ND	0.391		-	0.0235				
2,3,4,7,8-PeCDF	ND	0.426		-	0.0247				
1,2,3,4,7,8-HxCDF	ND	0.382		-	0.0251				
1,2,3,6,7,8-HxCDF	ND	0.413		-	0.0235				
2,3,4,6,7,8-HxCDF	ND	0.444		-	0.0271				
1,2,3,7,8,9-HxCDF	ND	0.571		-	0.0320	Total TCDF	ND	0.290	
1,2,3,4,6,7,8-HpCDF	ND	0.546		-	0.0280	Total PeCDF	ND	0.426	
1,2,3,4,7,8,9-HpCDF	ND	0.710		-	0.0359	Total HxCDF	ND	0.571	
OCDF	ND	1.16		-	0.0531	Total HpCDF	ND	0.710	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	69.7	25.0 - 164	
13C-1,2,3,7,8-PeCDD	69.3	25.0 - 181	
13C-1,2,3,4,7,8-HxCDD	73.4	32.0 - 141	
13C-1,2,3,6,7,8-HxCDD	79.1	28.0 - 130	
13C-1,2,3,4,6,7,8-HpCDD	67.4	23.0 - 140	
13C-OCDD	59.6	17.0 - 157	
13C-2,3,7,8-TCDF	72.1	24.0 - 169	
13C-1,2,3,7,8-PeCDF	71.0	24.0 - 185	
13C-2,3,4,7,8-PeCDF	69.6	21.0 - 178	
13C-1,2,3,4,7,8-HxCDF	70.2	26.0 - 152	
13C-1,2,3,6,7,8-HxCDF	73.3	26.0 - 123	
13C-2,3,4,6,7,8-HxCDF	69.5	28.0 - 136	
13C-1,2,3,7,8,9-HxCDF	67.2	29.0 - 147	
13C-1,2,3,4,6,7,8-HpCDF	74.2	28.0 - 143	
13C-1,2,3,4,7,8,9-HpCDF	82.6	26.0 - 138	
13C-OCDF	62.1	17.0 - 157	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	72.2	35.0 - 197	

- A Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
- B Analyte is present in Method Blank
- C Chemical Interference
- D Presence of Diphenyl Ethers
- DNQ Analyte concentration is below calibration range
- E Analyte concentration is above calibration range
- F Analyte confirmation on secondary column
- J Analyte concentration is below calibration range
- M Maximum possible concentration
- ND Analyte Not Detected at Detection Limit Level
- NP Not Provided
- P Pre-filtered through a Whatman 0.7um GF/F filter
- S Sample acceptance criteria not met
- X Matrix interferences
- * Result taken from dilution or reinjection

Analyst: 
Date: 2/1/2016

Reviewed By: 
Date: 2/1/2016

EPA Method 1613
PCDD/F



FAL ID: 9558-001-OPR
Client ID: OPR
Matrix: Soil
Batch No: X3566

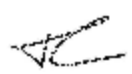
Date Extracted: 01-27-2016
Date Received: NA
Amount: 5.00 g


ICal: PCDDFAL3-1-8-16
GC Column: DB5
Units: ng/ml

Acquired: 01-28-2016
2005 WHO TEQ: NA

Compound	Conc	QC Limits	Qual
2,3,7,8-TCDD	10.4	6.70 - 15.8	
1,2,3,7,8-PeCDD	48.5	35.0 - 71.0	
1,2,3,4,7,8-HxCDD	48.7	35.0 - 82.0	
1,2,3,6,7,8-HxCDD	48.8	38.0 - 67.0	
1,2,3,7,8,9-HxCDD	47.7	32.0 - 81.0	
1,2,3,4,6,7,8-HpCDD	48.9	35.0 - 70.0	
OCDD	100	78.0 - 144	
2,3,7,8-TCDF	10.3	7.50 - 15.8	
1,2,3,7,8-PeCDF	50.3	40.0 - 67.0	
2,3,4,7,8-PeCDF	50.6	34.0 - 80.0	
1,2,3,4,7,8-HxCDF	52.5	36.0 - 67.0	
1,2,3,6,7,8-HxCDF	56.0	42.0 - 65.0	
2,3,4,6,7,8-HxCDF	53.1	35.0 - 78.0	
1,2,3,7,8,9-HxCDF	56.0	39.0 - 65.0	
1,2,3,4,6,7,8-HpCDF	51.9	41.0 - 61.0	
1,2,3,4,7,8,9-HpCDF	52.6	39.0 - 69.0	
OCDF	100	63.0 - 170	
Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	73.8	20.0 - 175	
13C-1,2,3,7,8-PeCDD	75.4	21.0 - 227	
13C-1,2,3,4,7,8-HxCDD	79.0	21.0 - 193	
13C-1,2,3,6,7,8-HxCDD	81.8	25.0 - 163	
13C-1,2,3,4,6,7,8-HpCDD	68.4	26.0 - 166	
13C-OCDD	58.3	13.0 - 198	
13C-2,3,7,8-TCDF	77.7	22.0 - 152	
13C-1,2,3,7,8-PeCDF	78.3	21.0 - 192	
13C-2,3,4,7,8-PeCDF	76.0	13.0 - 328	
13C-1,2,3,4,7,8-HxCDF	73.1	19.0 - 202	
13C-1,2,3,6,7,8-HxCDF	73.4	21.0 - 159	
13C-2,3,4,6,7,8-HxCDF	74.2	22.0 - 176	
13C-1,2,3,7,8,9-HxCDF	66.3	17.0 - 205	
13C-1,2,3,4,6,7,8-HpCDF	76.1	21.0 - 158	
13C-1,2,3,4,7,8,9-HpCDF	80.3	20.0 - 186	
13C-OCDF	60.5	13.0 - 198	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	76.2	31.0 - 191	

- A Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
- B Analyte is present in Method Blank
- C Chemical Interference
- D Presence of Diphenyl Ethers
- DNQ Analyte concentration is below calibration range
- E Analyte concentration is above calibration range
- F Analyte confirmation on secondary column
- J Analyte concentration is below calibration range
- M Maximum possible concentration
- ND Analyte Not Detected at Detection Limit Level
- NP Not Provided
- P Pre-filtered through a Whatman 0.7um GF/F filter
- S Sample acceptance criteria not met
- X Matrix interferences
- * Result taken from dilution or reinjection

Analyst: 
Date: 2/1/2016

Reviewed By: 
Date: 2/1/2016

EPA Method 1613
PCDD/F



FAL ID: 9558-001-SA
Client ID: SB-10-14-15
Matrix: Soil
Batch No: X3566

Date Extracted: 01-27-2016
Date Received: 01-15-2016
Amount: 5.47 g
% Solids: 83.33

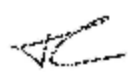
ICal: PCDDFAL3-1-8-16
GC Column: DB5
Units: pg/g


Acquired: 01-28-2016
2005 WHO TEQ: 8.14
Basis: Dry Weight

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.233		-	0.0184				
1,2,3,7,8-PeCDD	ND	0.417		-	0.0275				
1,2,3,4,7,8-HxCDD	ND	0.465		-	0.0314				
1,2,3,6,7,8-HxCDD	15.2	-		1.52	0.0335	Total TCDD	ND	0.233	
1,2,3,7,8,9-HxCDD	1.17	-	J	0.117	0.0296	Total PeCDD	ND	0.417	
1,2,3,4,6,7,8-HpCDD	321	-		3.21	0.0492	Total HxCDD	37.0	-	
OCDD	2370	-		0.711	0.136	Total HpCDD	503	-	
2,3,7,8-TCDF	ND	0.206		-	0.0211				
1,2,3,7,8-PeCDF	ND	0.391		-	0.0235				
2,3,4,7,8-PeCDF	ND	0.391		-	0.0247				
1,2,3,4,7,8-HxCDF	2.45	-	J	0.245	0.0251				
1,2,3,6,7,8-HxCDF	1.16	-	J	0.116	0.0235				
2,3,4,6,7,8-HxCDF	2.04	-	J	0.204	0.0271				
1,2,3,7,8,9-HpCDF	ND	0.505		-	0.0320	Total TCDF	0.429	-	J
1,2,3,4,6,7,8-HpCDF	166	-		1.66	0.0280	Total PeCDF	2.56	-	J
1,2,3,4,7,8,9-HpCDF	8.98	-		0.0898	0.0359	Total HxCDF	151	-	
OCDF	881	-		0.264	0.0531	Total HpCDF	797	-	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	82.2	25.0 - 164	
13C-1,2,3,7,8-PeCDD	89.6	25.0 - 181	
13C-1,2,3,4,7,8-HxCDD	83.8	32.0 - 141	
13C-1,2,3,6,7,8-HxCDD	86.5	28.0 - 130	
13C-1,2,3,4,6,7,8-HpCDD	89.2	23.0 - 140	
13C-OCDD	81.3	17.0 - 157	
13C-2,3,7,8-TCDF	84.7	24.0 - 169	
13C-1,2,3,7,8-PeCDF	84.3	24.0 - 185	
13C-2,3,4,7,8-PeCDF	90.6	21.0 - 178	
13C-1,2,3,4,7,8-HxCDF	76.6	26.0 - 152	
13C-1,2,3,6,7,8-HxCDF	76.8	26.0 - 123	
13C-2,3,4,6,7,8-HxCDF	80.0	28.0 - 136	
13C-1,2,3,7,8,9-HxCDF	73.8	29.0 - 147	
13C-1,2,3,4,6,7,8-HpCDF	89.8	28.0 - 143	
13C-1,2,3,4,7,8,9-HpCDF	91.0	26.0 - 138	
13C-OCDF	78.8	17.0 - 157	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	81.0	35.0 - 197	

- A Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
- B Analyte is present in Method Blank
- C Chemical Interference
- D Presence of Diphenyl Ethers
- DNQ Analyte concentration is below calibration range
- E Analyte concentration is above calibration range
- F Analyte confirmation on secondary column
- J Analyte concentration is below calibration range
- M Maximum possible concentration
- ND Analyte Not Detected at Detection Limit Level
- NP Not Provided
- P Pre-filtered through a Whatman 0.7um GF/F filter
- S Sample acceptance criteria not met
- X Matrix interferences
- * Result taken from dilution or reinjection

Analyst: 
Date: 2/1/2016

Reviewed By: 
Date: 2/1/2016



CHAIN OF CUSTODY RECORD

Omega COCID 208

PAGE: 1 OF 1

ADDRESS
Fremont Analytical, Inc.
3600 Fremont Ave. N.
Seattle, WA 98103
TEL: 206-352-3790
FAX: 206-352-7178
Website: www.fremontanalytical.com

9558
0°C

SUB CONTRACTOR: **Frontier Analytical La** COMPANY: **Frontier Analytical Laboratory**

ADDRESS: **5172 Hillisdale Circle**

CITY, STATE, ZIP: **El Dorado Hills, CA 95762**

PHONE: **(916) 934-0900** FAX: **(916) 934-0999** EMAIL:

ACCOUNT #:

SPECIAL INSTRUCTIONS / COMMENTS:
Please email results to mridgeway@fremontanalytical.com and cward@fremontanalytical.com
LEVEL 4 DATA PACKAGE
15 DAY TAT
EMC EDD

ITEM # **1** SAMPLE ID **1512073-018B** CLIENT SAMPLE ID **SB-10-14-15** BOTTLE TYPE **AMBER JAR 40Z Soil** MATRIX DATE COLLECTED **12/7/2015 2:50:00 PM** NUMBER OF CONTAINERS **1** COMMENTS: Methanol Preserved Weights HOT Sample Notation, Additional Sample Description.

1 **O-DIOXIN (SW6299)**

EPA 1613
R2
1/15/16

Mike to Kathy - Full list, (1512073) Project name.
ICC 1/15/16

Relinquished By: *[Signature]* Date: **1/13/16** Time: **1620**

Received By: *[Signature]* Date: **1/13/16** Time: **1620**

Relinquished By: *[Signature]* Date: **1/15/16** Time: **1015**

Received By: **Kathy SPP** Date: **1/15/16** Time: **1015**

TAT: Standard RUSH

REPORT TRANSMITTAL DESIRED:
 HARDCOPY (extra cost) FAX EMAIL ONLINE
 Temp of samples _____ °C Attempt to Cool? _____
 Comments: _____

Note: RUSH requests will incur surcharges!

000006 of 000210

Frontier Analytical Laboratory

Sample Login Form

FAL Project ID: **9558**

Client:	Fremont Analytical
Client Project ID:	1512073
Date Received:	01/15/2016
Time Received:	10:05 am
Received By:	KZ
Logged In By:	KZ
# of Samples Received:	1
Duplicates:	0
Storage Location:	R3

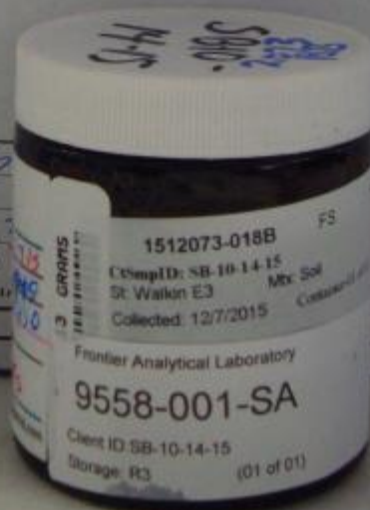
Method of Delivery:	UPS
Tracking Number:	1ZX6192X0394319194
Shipping Container Received Intact	Yes
Custody seals(s) present?	Yes
Custody seals(s) intact?	Yes
Sample Arrival Temperature (C)	0
Cooling Method	Blue Ice
Chain Of Custody Present?	Yes
Return Shipping Container To Client	Yes
Test aqueous sample for residual Chlorine	No
Sodium Thiosulfate Added	No
Adequate Sample Volume	Yes
Appropriate Sample Container	Yes
pH Range of Aqueous Sample	N/A
Anomalies or additional comments:	

7758 10/9/2012
Website: www.frontieranalytical.com

SUB CONTRACTOR Frontier Analytical La		COMPANY Frontier Analytical Laboratory		SPECIAL INSTRUCTIONS / COMMENTS Please email results to mridgeway@frontieranalytical.com and cward@frontieranalytical.com				
ADDRESS 5172 Hillsdale Circle		LEVEL 4 DATA PACKAGE 15 DAY TAT EMC EDD <i>[Signature]</i>						
CITY, STATE, ZIP El Dorado Hills, CA 95762								
PHONE (916) 934-0900	FAX (916) 934-0999							EMAIL
ACCOUNT #								
ITEM #	SAMPLE ID	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	DATE COLLECTED	NUMBER OF CONTAINERS	COMMENTS: Method of Preservation, Weights, HOT Sample Notation, Additional Sample Description	
1	1512073-018B D-DIOXIN (SWB299)	SB-10-14-15	AMBER JAR 4OZ	Soil	12/7/2015 2:50:00 PM	1		

EPA 1613
R2
1/15/16

Mike to Kathy - Full list, (1512073) project name.
ICC 1/15/16



Subsampled By: <i>[Signature]</i>	Qty: <i>13</i>	Size: <i>1620</i>	Received By: <i>[Signature]</i>	REPORT TRANSMITTAL DESIRED <input type="checkbox"/> HARDCOPY (extra cost) <input type="checkbox"/> FAX <input type="checkbox"/> EMAIL <input type="checkbox"/> ONLINE			
Date: <i>1/13/16</i>	Date:	Date:	Faceted By:	FOR LAB USE ONLY			
Subsampled By:	Date:	Time:	Received By: <i>[Signature]</i>	Temp of sample: _____ °C	Allyage to Cool: _____		
TAT: <i>[Signature]</i>	RE/BE:	Next ID:	Ref: RE/BE:	Comments: _____			

2016/01/16

Client Name: FS	Work Order Number: 1512073
Logged by: Erica Silva	Date Received: 12/8/2015 12:40:00 PM

Chain of Custody

1. Is Chain of Custody complete? Yes No Not Present
2. How was the sample delivered? Courier

Log In

3. Coolers are present? Yes No NA
4. Shipping container/cooler in good condition? Yes No
5. Custody Seals present on shipping container/cooler?
(Refer to comments for Custody Seals not intact) Yes No Not Required
6. Was an attempt made to cool the samples? Yes No NA
7. Were all items received at a temperature of >0°C to 10.0°C * Yes No NA
8. Sample(s) in proper container(s)? Yes No
9. Sufficient sample volume for indicated test(s)? Yes No
10. Are samples properly preserved? Yes No
11. Was preservative added to bottles? Yes No NA
12. Is there headspace in the VOA vials? Yes No NA
13. Did all samples containers arrive in good condition(unbroken)? Yes No
14. Does paperwork match bottle labels? Yes No
15. Are matrices correctly identified on Chain of Custody? Yes No
16. Is it clear what analyses were requested? Yes No
17. Were all holding times able to be met? Yes No

Special Handling (if applicable)

18. Was client notified of all discrepancies with this order? Yes No NA

Person Notified:	Amanda McKay	Date:	12/8/2015
By Whom:	Erica Silva	Via:	<input type="checkbox"/> eMail <input checked="" type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	Combination of COCs, method/analyte confirmation		
Client Instructions:	Authorized, confirmed		

19. Additional remarks:

Item Information

Item #	Temp °C
Cooler	6.1
Sample	3.3

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C



Fremont

3600 Fremont Ave N, Seattle, WA 98103
 Tel: 206-352-3790 Fax: 206-352-7178

Date: 12/7/15

Page: 1 of 3

Laboratory Project No (Internal): 1512073

Chain of Custody Record

Project Name: SIM-730 EDR

Project No: 730 S Myrtle St, Seattle

Location: Lynn Grochala

Report To (PM): Lynn Grochala @ lgrochala.com

PM Email: llyn.grochala@llyn.grochala.com

Client: Floyd J Snider

Address: 601 Duth St, Ste 600

City, State, Zip: Seattle, WA 98101

Telephone: 206-292-2078 Fax: _____

Matrix Codes: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOCs (EPA 8260 / 624)	GX/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DX)	SVOCs (EPA 8270/225)	PAHs (EPA 8270 - SIM)	PCBs (EPA 8082 / 608)	Metal** (EPA 6020 / 200.8)	Total (T) Dissolved (D)	Anions (IC)***	EDB (801)	HOLD	Perchlorate ppmol	Diast. Fema 1023	Comments
1 SB-01-0-2	12/7/15	1000	S	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
2 SB-01-10		1005		X	X	X	X	X	X	X	X	X	X	X	X	X	X			
3 SB-02-0-2		1015		X	X	X	X	X	X	X	X	X	X	X	X	X	X			
4 SB-02-4-5		1020		X	X	X	X	X	X	X	X	X	X	X	X	X	X			
5 SB-03-10-11		1035		X	X	X	X	X	X	X	X	X	X	X	X	X	X			
6 SB-04-9-10		1400		X	X	X	X	X	X	X	X	X	X	X	X	X	X			2 jars
7 SB-06-10-11		1055		X	X	X	X	X	X	X	X	X	X	X	X	X	X			2 jars
8 SB-08-0-2		1200		X	X	X	X	X	X	X	X	X	X	X	X	X	X			2 jars
9 SB-08-4-5		1205		X	X	X	X	X	X	X	X	X	X	X	X	X	X			2 jars
10 SB-08-10-11		1210		X	X	X	X	X	X	X	X	X	X	X	X	X	X			2 jars

Special Remarks: edit 12/8/15 per Amanda McKay

Requisitioned: [Signature] Date/Time: 12/8/15 12:08pm

Retinquished: [Signature] Date/Time: 12/8/15 12:40

Received: [Signature] Date/Time: 12/8/15 12:08

Received: [Signature] Date/Time: 12/8/15 12:40

(Fremont)



Fremont

ANALYTICAL

3600 Fremont Ave N.
Seattle, WA 98103

Tel: 206-352-3790
Fax: 206-352-7178

Date: 12/7/15

Laboratory Project No (Internal): 1512073
Page: 2 of 3

Chain of Custody Record

(Fremont)

Client: Floyd Snider
Address: _____
City, State, Zip: (see p. 1)
Telephone: _____

Project Name: _____
Project No: _____
Location: _____
Report To (PM): _____
PM Email: _____
Collected by: _____

*Matrix Codes: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	Analytes											Comments				
				VOCs (EPA 8260 / 624)	GX/BTEX	BTEX	Gasoline Range Organics (GX)	Diesel/Heavy Oil Range Organics (DX)	SVOCs (EPA 8270 / 225)	PAHs (EPA 8270 - SIM)	PCBs (EPA 8082 / 608)	Metals** (EPA 8020 / 3042)	Total (T) Dissolved (D)	Anions (IC)***		EDB (8011)			
1 SB-09-7-8	12/7/15	1115	S																2 jars
2 SB-09-8-9		1140																	2 jars
3 SB-09-13-14		1125																	2 jars
4 SB-09-17-18		1130																	2 jars
5 SB-09-18-19		1135																	2 jars
6 SB-10-5-6		1440																	2 jars
7 SB-10-12.5-13		1415																	2 jars
8 SB-10-14-15		1450																	2 jars
9 SB-11-0-2		1250																	2 jars
10 SB-11-4-5		1255																	2 jars

**Metals Analysis (Circle): MTCA-5 PCRA-8 Priority Pollutants TAL Individual: Ag Al As Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sn Tl U V Zn

***Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide D-phosphate Fluoride Nitrate/Nitrite
 Return to Client Disposal by Lab (A Fee may be assessed if samples are retained after 30 days.)
 Turn-around times for samples received after 4:00pm will begin on the following business day.

Relinquished	Date/Time	Received	Date/Time
<u>Paul A</u>	12/18/15 12:09pm	<u>Paul A</u>	12/18/15 12:08
<u>Paul A</u>	12/18/15 12:40	<u>Paul A</u>	12/18/15 12:40

TAT → SameDay* NextDay* 2 Day 3 Day STD
 *Please coordinate with the lab in advance



Fremont

ANALYTICAL

3600 Fremont Ave N.
Seattle, WA 98103

Tel: 206-352-3790
Fax: 206-352-7178

Chain of Custody Record

Laboratory Project No (Internal): 1512073

Date: 12/11/15

Page: 3 of 3

(Fremont)

Project Name: SIM-730 EDR

Project No: _____

Location: _____

Report To (PM): _____

PM Email: _____

Collected by: _____

Client: Floyd I Snyder

Address: _____

City, State, Zip: (see p. 1)

Telephone: _____

*Matrix Codes: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOCs (EPA 8260 / 624)	GX/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DYO)	SVOCs (EPA 8270 / 625)	PCBs (EPA 8270 - SIM)	Metals** (EPA 8082 / 608)	Total (T) Dissolved (D)	Anions (IC)***	ED8 (8011)	HOLD	Perchlorate	8270 SIM	DIKAN/FURAN NO3	Comments
1 SB-11-6-7	12/11/15	1300	S										X							
2 SB-11-10-11		1305											X							
3 SB-12-10-11		1310											X							
4																				
5																				
6																				
7																				
8																				
9																				
10																				

**Metals Analysis (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL Individual: Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Tl U V Zn

***Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide Fluoride Nitrate-Nitrite Turn-around times for samples received after 4:00pm will begin on the following business day.

Sample Disposal: Return to Client Disposal by Lab (A fee may be assessed if samples are retained after 90 days.)

Relinquished-	Date/Time	Received	Date/Time
<u>[Signature]</u>	<u>12/11/15 12:08pm</u>	<u>[Signature]</u>	<u>12/11/15 12:08</u>
<u>[Signature]</u>	<u>12/11/15 12:40</u>	<u>[Signature]</u>	<u>12/11/15 12:40</u>

TAT → SameDaySM NextDaySM 2 Day 3 Day STD
*Please coordinate with the lab in advance

(Fremont)

Chain of Custody Record



Fremont
ANALYTICAL

3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Date: 12/7/15

Page: 4 of 3

Laboratory Project No (Internal): 1512073

Client: Floyd J Snider
Address: 601 1/2th St, Ste 600
City, State, Zip: Seattle, WA 98101
Telephone: 206-292-2078 Fax:

Project Name: SIM-730 EDR
Project No: _____
Location: 730 S Myrtle St, Seattle
Report To (PM): Lynn Grochala
PM Email: Lynn.grochala@floydsnyder.com
Collected by: E. Anderson

*Matrix Codes: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOCs (EPA 2060 / 624)	GV/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCD)	Diesel/Heavy Oil Range Organics (DRO)	SVOCs (EPA 8270-8285)	PAHs (EPA 8270 - SIM)	PCBs (EPA 8082 / 808)	Metals** (EPA 6240 / 200.8)†	Total (T) Dissolved (D)	Anions (IC)**	EDR (808)†††	HOLD	Perchloroethylene	Diem / Eran 1010	Comments
1 SB-01-0-Z	12/7/15	1000	S	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
2 SB-01-1b		1005		X	X	X	X	X	X	X	X	X	X	X	X	X	X			
3 SB-02-0-2		1015		X	X	X	X	X	X	X	X	X	X	X	X	X	X			
4 SB-02-4-5		1020		X	X	X	X	X	X	X	X	X	X	X	X	X	X			
5 SB-03-10-11		1035		X	X	X	X	X	X	X	X	X	X	X	X	X	X			2 yrs
6 SB-04-9-10		1400		X	X	X	X	X	X	X	X	X	X	X	X	X	X			2 yrs
7 SB-06-10-11		1055		X	X	X	X	X	X	X	X	X	X	X	X	X	X			2 yrs
8 SB-08-0-2		1200		X	X	X	X	X	X	X	X	X	X	X	X	X	X			
9 SB-08-4-5		1205		X	X	X	X	X	X	X	X	X	X	X	X	X	X			
10 SB-08-10-11		1210		X	X	X	X	X	X	X	X	X	X	X	X	X	X			2 yrs

Sample Disposal: Return to Client Disposal by Lab (A see may be assumed if sample not retained after 30 days.)

Requested: [Signature] Date/Time: 12/10/15 12:08pm

Relinquished: [Signature] Date/Time: 12/15/15 12:40

Received: [Signature] Date/Time: 12/15/15 12:08

Approved: [Signature] Date/Time: 12/15/15 12:40

Special Remarks: edits 12/15/15 per Appendix M key

TAT → Same Day Monday 2 Day 3 Day STD

Please coordinate with the lab in advance

Distribution: White - Lab, Yellow - File, Pink - Originator

www.fremontanalytical.com



Fremont

3600 Fremont Ave N.
Seattle, WA 98103

Tel: 206-352-3790
Fax: 206-352-7178

Date: 12/7/15

Page: 2 of 3

Laboratory Project No (Internal):

1612073

Chain of Custody Record

(Fremont)

Client:

Floyd Snider

Project No:

SIM-730 EDR

Collected by:

Address:

(see p. 1)

Location:

(see p. 1)

City, State, Zip:

Report To (PM):

PM Email:

*Matrix Codes: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Wastewater

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOCs (EPA 8260 / 624)	GV/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DH)	SVOCs (EPA 8270) (P25)	PAHs (EPA 8270 - SIM)	PCBs (EPA 8270 - SIM)	Metals** (EPA 8220 / 808)	Total (T) Dissolved (D)	Anions (IC)**	EDR (8011)	HOLD	Perchloropheno	Diethyl Furan	Diethyl	Comments
1 SB-09-7-8	12/7/15	11:15	S												X	X	X				2 years
2 SB-09-8-9		11:40													X	X	X				2 years
3 SB-09-13-14		11:25													X	X	X				2 years
4 SB-09-17-18		11:30													X	X	X				2 years
5 SB-09-18-19		11:35													X	X	X				2 years
6 SB-10-5-6		14:40													X	X	X				2 years
7 SB-10-12-5-13		14:45													X	X	X				2 years
8 SB-10-14-15		14:50													X	X	X				2 years
9 SB-11-0-2		12:50													X	X	X				2 years
10 SB-11-4-5		12:55													X	X	X				2 years

**Metals Analysis (Circle): MATC-A-5 RCB-A-8 Priority Pollutants TAL Individual: Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Ni Pb Sb Se Sr Sn Ti Tl U V Zn

***Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate/Nitrite Turn-around times for samples received after 4:00pm will begin on the following business day.

Sample Disposal: Return to Client Disposal by Lab (a fee may be assessed if samples are retained after 30 days.)
Retrieved Date/Time: 12/18/15 12:08pm
Received Date/Time: 12/8/15 12:40
Date/Time: 12/8/15 12:40
Special Remarks: TAT -> SameDay* NextDay* 2 Day 3 Day STD

(Fremont)



3600 Fremont Ave N.
Seattle, WA 98103

Tel: 206-352-3790
Fax: 206-352-7178

Date: 12/7/15

Page 3 of 3

Laboratory Project No (Internal): 1512073

Chain of Custody Record

Client: Floyd I Snider
Address: (see p. 1)
City, State, Zip: (see p. 1)
Telephone: (see p. 1)

Project Name: SIM-730 EDR
Project No: (see p. 1)
Location: (see p. 1)
Report To (PM): (see p. 1)
FAX: (see p. 1)
Collected By: (see p. 1)

*Matrix Codes: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOCs (EPA 8260 / 824)	GV/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DX)	SVOCs (EPA 8270 / 825)	PAHs (EPA 8270 - SW)	PCBs (EPA 8082 / 808)	Metals** (EPA 6020 / 200.8)	Total (T) Dissolved (D)	Anions (IC)***	EDS (8011)	Hold Perchlorate	Diagnose/Plan (625)	Comments
1. SG-11-6-7	12/7/15	1300	S																
2. SG-11-10-11		1305																	
3. SG-12-10-11		1310																	
4.																			
5.																			
6.																			
7.																			
8.																			
9.																			
10.																			

Special Remarks:
Cancel 6/20/15 per
L-9. 12/14/15 JS

(Fremont)

Chain of Custody Record



3600 Fremont Ave N, Seattle, WA 98103

Tel: 206-332-3790 Fax: 206-332-7178

Date: 12/7/15

Page: 2 of 3

1612073

Client: Floyd Snider

Address: (see p. 1)

Project Name: SM-430 EDR
Project No: _____
Location: _____
Report To (PM): _____
PMA Email: _____
Collected by: (see p. 1)

Matrix Code: A = Air, AD = Aquatic, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, WY = Drinking Water, QM = Ground Water, SW = Storm Water, WYV = Vapor, WYR = Water

Sample Name	Sample Date	Sample Time	Sample Type (Abbrev)	Analytes																Comments				
				VOC (EPA 400 / 401)	Chlorides	Gasoline Range Organics (GRO)	Polynuclear Aromatic Hydrocarbons (PNAH)	SVOCs (EPA 420 / 421)	EPA (EPA 400 / 401)	KOH (EPA 400 / 401)	Nitrate** (EPA 400 / 401)	Total (T) Dissolved (D)	Asbestos (Asst)	Lead (Pb)	Cadmium (Cd)	Copper (Cu)	Iron (Fe)	Manganese (Mn)	Zinc (Zn)					
SB-09-7-8	12/7/15	11:15	S																					2 jars
SB-09-8-9		11:40	S																					2 jars
SB-09-13-14		11:25	S																					2 jars
SB-09-17-18		11:30	S																					2 jars
SB-09-18-19		11:35	S																					2 jars
SB-10-5-6		14:40	S																					2 jars
SB-10-12-13		14:15	S																					2 jars
SB-10-14-15		14:50	S																					2 jars Add per Lynn G.
SB-11-0-2		12:50	S																					2 jars Add per AK. (see holdover)
SB-11-4-5		12:55	S																					2 jars Add per AK. (see holdover)

Requester: Buck 12/8/15 12:08pm

Received: Buck 13/11/15 12:08

Date/Time: 12/8/15 12:40

Special Remarks: Add Analysis per client request 5/15/16 CUC

Distribution: White - Lab, Yellow - File, Pink - Analyst

www.fremontanalytical.com



3600 Fremont Ave. N.

Seattle, WA 98103

T: (206) 352-3790

F: (206) 352-7178

info@fremontanalytical.com

Floyd | Snider

Lynn Grochala
601 Union St., Suite 600
Seattle, WA 98101

RE: SIM - 730 EDR

Lab ID: 1512092

February 26, 2016

Attention Lynn Grochala:

Fremont Analytical, Inc. received 10 sample(s) on 12/9/2015 for the analyses presented in the following report.

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Dioxins by EPA Method 1613

Mercury by EPA Method 7471

Pentachlorophenol by EPA Method 8270 (SIM)

Polychlorinated Biphenyls (PCB) by EPA 8082

Sample Moisture (Percent Moisture)

Semi-Volatile Organic Compounds by EPA Method 8270

Total Metals by EPA Method 6020

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Mike Ridgeway
President



Date: 02/26/2016

CLIENT: Floyd | Snider
Project: SIM - 730 EDR
Lab Order: 1512092

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1512092-001	SB-07-7-8	12/09/2015 8:30 AM	12/09/2015 3:15 PM
1512092-002	SB-07-9-10	12/09/2015 8:50 AM	12/09/2015 3:15 PM
1512092-003	SB-07-12-13	12/09/2015 8:35 AM	12/09/2015 3:15 PM
1512092-004	SB-07-14-15	12/09/2015 8:40 AM	12/09/2015 3:15 PM
1512092-005	SB-07-19-20	12/09/2015 8:45 AM	12/09/2015 3:15 PM
1512092-006	SB-05-0-2	12/09/2015 10:00 AM	12/09/2015 3:15 PM
1512092-007	SB-05-4-5	12/09/2015 10:05 AM	12/09/2015 3:15 PM
1512092-008	SB-05-9-10	12/09/2015 10:10 AM	12/09/2015 3:15 PM
1512092-009	SB-05-17-18	12/09/2015 10:15 AM	12/09/2015 3:15 PM
1512092-010	SB-05-19-20	12/09/2015 10:20 AM	12/09/2015 3:15 PM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

CLIENT: Floyd | Snider
Project: SIM - 730 EDR

WorkOrder Narrative:

I. SAMPLE RECEIPT:

Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:

Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Stoddard Solvent quantitation is an estimated value based on a 3 point initial calibration performed after the initial analysis under NWTPH-Dx, except sample -004.

Qualifiers:

- * - Flagged value is not within established control limits
- B - Analyte detected in the associated Method Blank
- D - Dilution was required
- E - Value above quantitation range
- H - Holding times for preparation or analysis exceeded
- I - Analyte with an internal standard that does not meet established acceptance criteria
- J - Analyte detected below Reporting Limit
- N - Tentatively Identified Compound (TIC)
- Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)
- S - Spike recovery outside accepted recovery limits
- ND - Not detected at the Reporting Limit
- R - High relative percent difference observed

Acronyms:

- %Rec - Percent Recovery
- CCB - Continued Calibration Blank
- CCV - Continued Calibration Verification
- DF - Dilution Factor
- HEM - Hexane Extractable Material
- ICV - Initial Calibration Verification
- LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
- MB or MBLANK - Method Blank
- MDL - Method Detection Limit
- MS/MSD - Matrix Spike / Matrix Spike Duplicate
- PDS - Post Digestion Spike
- Ref Val - Reference Value
- RL - Reporting Limit
- RPD - Relative Percent Difference
- SD - Serial Dilution
- SGT - Silica Gel Treatment
- SPK - Spike
- Surr - Surrogate



Analytical Report

WO#: 1512092
Date Reported: 2/26/2016

Client: Floyd | Snider
Project: SIM - 730 EDR
Lab ID: 1512092-003
Client Sample ID: SB-07-12-13

Collection Date: 12/9/2015 8:35:00 AM
Matrix: Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 12568 Analyst: CM

Stoddard Solvent/Mineral Spirits	6,550	22.6	J-est	mg/Kg-dry	1	12/12/2015 1:58:00 AM
Diesel (Fuel Oil)	111	22.6		mg/Kg-dry	1	12/12/2015 1:58:00 AM
Heavy Oil	177	56.4		mg/Kg-dry	1	12/12/2015 1:58:00 AM
Surr: 2-Fluorobiphenyl	109	50-150		%Rec	1	12/12/2015 1:58:00 AM
Surr: o-Terphenyl	99.8	50-150		%Rec	1	12/12/2015 1:58:00 AM

NOTES:

J-est - Stoddard Solvent quantitation is an estimated value based on a 3 point initial calibration performed after the initial analysis under NWTPH-Dx.

Pentachlorophenol by EPA Method 8270 (SIM)

Batch ID: 12577 Analyst: AK

Pentachlorophenol	11,500	210	D	µg/Kg-dry	10	12/16/2015 10:49:53 PM
Surr: 2,4,6-Tribromophenol	74.0	14-136		%Rec	1	12/16/2015 9:44:02 PM

Sample Moisture (Percent Moisture)

Batch ID: R26508 Analyst: SL

Percent Moisture	17.2	0.500		wt%	1	12/10/2015 5:22:00 PM
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Analytical Report

WO#: 1512092
Date Reported: 2/26/2016

Client: Floyd | Snider

Collection Date: 12/9/2015 8:40:00 AM

Project: SIM - 730 EDR

Lab ID: 1512092-004

Matrix: Soil

Client Sample ID: SB-07-14-15

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u>					Batch ID: 13093	Analyst: CM
Stoddard Solvent/Mineral Spirits	ND	23.0	H	mg/Kg-dry	1	2/26/2016 10:10:00 AM
Diesel (Fuel Oil)	ND	23.0	H	mg/Kg-dry	1	2/26/2016 10:10:00 AM
Heavy Oil	ND	57.6	H	mg/Kg-dry	1	2/26/2016 10:10:00 AM
Surr: 2-Fluorobiphenyl	101	50-150	H	%Rec	1	2/26/2016 10:10:00 AM
Surr: o-Terphenyl	105	50-150	H	%Rec	1	2/26/2016 10:10:00 AM
<u>Sample Moisture (Percent Moisture)</u>					Batch ID: R27901	Analyst: SB
Percent Moisture	18.0	0.500		wt%	1	2/26/2016 8:01:00 AM



Analytical Report

WO#: 1512092

Date Reported: 2/26/2016

Client: Floyd | Snider

Collection Date: 12/9/2015 10:00:00 AM

Project: SIM - 730 EDR

Lab ID: 1512092-006

Matrix: Soil

Client Sample ID: SB-05-0-2

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Polychlorinated Biphenyls (PCB) by EPA 8082

Batch ID: 12570

Analyst: CM

Aroclor 1016	ND	0.117		mg/Kg-dry	1	12/11/2015 1:54:00 PM
Aroclor 1221	ND	0.117		mg/Kg-dry	1	12/11/2015 1:54:00 PM
Aroclor 1232	ND	0.117		mg/Kg-dry	1	12/11/2015 1:54:00 PM
Aroclor 1242	ND	0.117		mg/Kg-dry	1	12/11/2015 1:54:00 PM
Aroclor 1248	ND	0.117		mg/Kg-dry	1	12/11/2015 1:54:00 PM
Aroclor 1254	ND	0.117		mg/Kg-dry	1	12/11/2015 1:54:00 PM
Aroclor 1260	ND	0.117		mg/Kg-dry	1	12/11/2015 1:54:00 PM
Aroclor 1262	ND	0.117		mg/Kg-dry	1	12/11/2015 1:54:00 PM
Aroclor 1268	ND	0.117		mg/Kg-dry	1	12/11/2015 1:54:00 PM
Total PCBs	ND	0.117		mg/Kg-dry	1	12/11/2015 1:54:00 PM
Surr: Decachlorobiphenyl	129	33.3-140		%Rec	1	12/11/2015 1:54:00 PM
Surr: Tetrachloro-m-xylene	95.6	23.2-142		%Rec	1	12/11/2015 1:54:00 PM

Semi-Volatile Organic Compounds by EPA Method 8270

Batch ID: 12577

Analyst: AK

Phenol	ND	224		µg/Kg-dry	1	12/15/2015 10:16:30 PM
Bis(2-chloroethyl) ether	ND	224		µg/Kg-dry	1	12/15/2015 10:16:30 PM
2-Chlorophenol	ND	112		µg/Kg-dry	1	12/15/2015 10:16:30 PM
1,3-Dichlorobenzene	ND	112		µg/Kg-dry	1	12/15/2015 10:16:30 PM
1,4-Dichlorobenzene	ND	112		µg/Kg-dry	1	12/15/2015 10:16:30 PM
1,2-Dichlorobenzene	ND	112		µg/Kg-dry	1	12/15/2015 10:16:30 PM
Benzyl alcohol	ND	112		µg/Kg-dry	1	12/15/2015 10:16:30 PM
2-Methylphenol (o-cresol)	ND	112		µg/Kg-dry	1	12/15/2015 10:16:30 PM
Hexachloroethane	ND	112		µg/Kg-dry	1	12/15/2015 10:16:30 PM
N-Nitrosodi-n-propylamine	ND	112		µg/Kg-dry	1	12/15/2015 10:16:30 PM
Nitrobenzene	ND	224		µg/Kg-dry	1	12/15/2015 10:16:30 PM
Isophorone	ND	112		µg/Kg-dry	1	12/15/2015 10:16:30 PM
4-Methylphenol (p-cresol)	ND	112		µg/Kg-dry	1	12/15/2015 10:16:30 PM
2-Nitrophenol	ND	224		µg/Kg-dry	1	12/15/2015 10:16:30 PM
2,4-Dimethylphenol	ND	112		µg/Kg-dry	1	12/15/2015 10:16:30 PM
Bis(2-chloroethoxy)methane	ND	112		µg/Kg-dry	1	12/15/2015 10:16:30 PM
2,4-Dichlorophenol	ND	224		µg/Kg-dry	1	12/15/2015 10:16:30 PM
1,2,4-Trichlorobenzene	ND	112		µg/Kg-dry	1	12/15/2015 10:16:30 PM
Naphthalene	ND	89.5		µg/Kg-dry	1	12/15/2015 10:16:30 PM
4-Chloroaniline	ND	559		µg/Kg-dry	1	12/15/2015 10:16:30 PM
Hexachlorobutadiene	ND	112		µg/Kg-dry	1	12/15/2015 10:16:30 PM
4-Chloro-3-methylphenol	ND	559		µg/Kg-dry	1	12/15/2015 10:16:30 PM
2-Methylnaphthalene	ND	89.5		µg/Kg-dry	1	12/15/2015 10:16:30 PM
1-Methylnaphthalene	ND	89.5		µg/Kg-dry	1	12/15/2015 10:16:30 PM



Analytical Report

WO#: 1512092

Date Reported: 2/26/2016

Client: Floyd | Snider

Collection Date: 12/9/2015 10:00:00 AM

Project: SIM - 730 EDR

Lab ID: 1512092-006

Matrix: Soil

Client Sample ID: SB-05-0-2

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Semi-Volatile Organic Compounds by EPA Method 8270					Batch ID: 12577	Analyst: AK
Hexachlorocyclopentadiene	ND	112		µg/Kg-dry	1	12/15/2015 10:16:30 PM
2,4,6-Trichlorophenol	ND	224		µg/Kg-dry	1	12/15/2015 10:16:30 PM
2,4,5-Trichlorophenol	ND	224		µg/Kg-dry	1	12/15/2015 10:16:30 PM
2-Chloronaphthalene	ND	112		µg/Kg-dry	1	12/15/2015 10:16:30 PM
2-Nitroaniline	ND	559		µg/Kg-dry	1	12/15/2015 10:16:30 PM
Acenaphthene	ND	89.5		µg/Kg-dry	1	12/15/2015 10:16:30 PM
Dimethylphthalate	ND	112		µg/Kg-dry	1	12/15/2015 10:16:30 PM
2,6-Dinitrotoluene	ND	112		µg/Kg-dry	1	12/15/2015 10:16:30 PM
Acenaphthylene	ND	89.5		µg/Kg-dry	1	12/15/2015 10:16:30 PM
2,4-Dinitrophenol	ND	224		µg/Kg-dry	1	12/15/2015 10:16:30 PM
Dibenzofuran	ND	112		µg/Kg-dry	1	12/15/2015 10:16:30 PM
2,4-Dinitrotoluene	ND	112		µg/Kg-dry	1	12/15/2015 10:16:30 PM
4-Nitrophenol	ND	559		µg/Kg-dry	1	12/15/2015 10:16:30 PM
Fluorene	ND	89.5		µg/Kg-dry	1	12/15/2015 10:16:30 PM
4-Chlorophenyl phenyl ether	ND	112		µg/Kg-dry	1	12/15/2015 10:16:30 PM
Diethylphthalate	ND	112		µg/Kg-dry	1	12/15/2015 10:16:30 PM
4,6-Dinitro-2-methylphenol	ND	224		µg/Kg-dry	1	12/15/2015 10:16:30 PM
4-Bromophenyl phenyl ether	ND	112		µg/Kg-dry	1	12/15/2015 10:16:30 PM
Hexachlorobenzene	ND	112		µg/Kg-dry	1	12/15/2015 10:16:30 PM
Pentachlorophenol	ND	112		µg/Kg-dry	1	12/15/2015 10:16:30 PM
Phenanthrene	ND	89.5		µg/Kg-dry	1	12/15/2015 10:16:30 PM
Anthracene	ND	89.5		µg/Kg-dry	1	12/15/2015 10:16:30 PM
Carbazole	ND	559		µg/Kg-dry	1	12/15/2015 10:16:30 PM
Di-n-butylphthalate	ND	112		µg/Kg-dry	1	12/15/2015 10:16:30 PM
Fluoranthene	ND	89.5		µg/Kg-dry	1	12/15/2015 10:16:30 PM
Pyrene	ND	89.5		µg/Kg-dry	1	12/15/2015 10:16:30 PM
Butyl Benzylphthalate	ND	112		µg/Kg-dry	1	12/15/2015 10:16:30 PM
bis(2-Ethylhexyl)adipate	ND	112		µg/Kg-dry	1	12/15/2015 10:16:30 PM
Benz (a) anthracene	ND	89.5		µg/Kg-dry	1	12/15/2015 10:16:30 PM
Chrysene	ND	89.5		µg/Kg-dry	1	12/15/2015 10:16:30 PM
bis (2-Ethylhexyl) phthalate	ND	112		µg/Kg-dry	1	12/15/2015 10:16:30 PM
Di-n-octyl phthalate	ND	112		µg/Kg-dry	1	12/15/2015 10:16:30 PM
Benzo (b) fluoranthene	ND	89.5		µg/Kg-dry	1	12/15/2015 10:16:30 PM
Benzo (k) fluoranthene	ND	89.5		µg/Kg-dry	1	12/15/2015 10:16:30 PM
Benzo (a) pyrene	ND	89.5		µg/Kg-dry	1	12/15/2015 10:16:30 PM
Indeno (1,2,3-cd) pyrene	ND	89.5		µg/Kg-dry	1	12/15/2015 10:16:30 PM
Dibenz (a,h) anthracene	ND	89.5		µg/Kg-dry	1	12/15/2015 10:16:30 PM
Benzo (g,h,i) perylene	ND	89.5		µg/Kg-dry	1	12/15/2015 10:16:30 PM
Surr: 2,4,6-Tribromophenol	71.6	11.1-127		%Rec	1	12/15/2015 10:16:30 PM



Analytical Report

WO#: 1512092
Date Reported: 2/26/2016

Client: Floyd | Snider

Collection Date: 12/9/2015 10:00:00 AM

Project: SIM - 730 EDR

Lab ID: 1512092-006

Matrix: Soil

Client Sample ID: SB-05-0-2

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Semi-Volatile Organic Compounds by EPA Method 8270

Batch ID: 12577 Analyst: AK

Surr: 2-Fluorobiphenyl	61.2	16.1-150		%Rec	1	12/15/2015 10:16:30 PM
Surr: Nitrobenzene-d5	64.7	10-133		%Rec	1	12/15/2015 10:16:30 PM
Surr: Phenol-d6	79.0	11.6-133		%Rec	1	12/15/2015 10:16:30 PM
Surr: p-Terphenyl	90.3	21.8-150		%Rec	1	12/15/2015 10:16:30 PM

Mercury by EPA Method 7471

Batch ID: 12575 Analyst: MW

Mercury	ND	0.272		mg/Kg-dry	1	12/11/2015 12:39:23 PM
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Total Metals by EPA Method 6020

Batch ID: 12564 Analyst: TN

Arsenic	3.18	0.0994		mg/Kg-dry	1	12/10/2015 3:12:36 PM
Barium	27.8	0.497		mg/Kg-dry	1	12/10/2015 3:12:36 PM
Cadmium	ND	0.199		mg/Kg-dry	1	12/10/2015 3:12:36 PM
Chromium	14.2	0.0994		mg/Kg-dry	1	12/10/2015 3:12:36 PM
Lead	6.18	0.199		mg/Kg-dry	1	12/10/2015 3:12:36 PM
Selenium	1.24	0.497		mg/Kg-dry	1	12/10/2015 3:12:36 PM
Silver	ND	0.0994		mg/Kg-dry	1	12/10/2015 3:12:36 PM

Sample Moisture (Percent Moisture)

Batch ID: R26508 Analyst: SL

Percent Moisture	22.1			wt%	1	12/10/2015 5:22:00 PM
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Analytical Report

WO#: 1512092
Date Reported: 2/26/2016

Client: Floyd | Snider

Collection Date: 12/9/2015 10:10:00 AM

Project: SIM - 730 EDR

Lab ID: 1512092-008

Matrix: Soil

Client Sample ID: SB-05-9-10

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 12568 Analyst: CM

Stoddard Solvent/Mineral Spirits	ND	22.8	J-est	mg/Kg-dry	1	12/12/2015 2:59:00 AM
Diesel (Fuel Oil)	ND	22.8		mg/Kg-dry	1	12/12/2015 2:59:00 AM
Heavy Oil	ND	56.9		mg/Kg-dry	1	12/12/2015 2:59:00 AM
Surr: 2-Fluorobiphenyl	109	50-150		%Rec	1	12/12/2015 2:59:00 AM
Surr: o-Terphenyl	106	50-150		%Rec	1	12/12/2015 2:59:00 AM

NOTES:

J-est - Stoddard Solvent quantitation is an estimated value based on a 3 point initial calibration performed after the initial analysis under NWTPH-Dx.

Pentachlorophenol by EPA Method 8270 (SIM)

Batch ID: 12577 Analyst: AK

Pentachlorophenol	328	22.7		µg/Kg-dry	1	12/16/2015 10:06:00 PM
Surr: 2,4,6-Tribromophenol	64.8	14-136		%Rec	1	12/16/2015 10:06:00 PM

Sample Moisture (Percent Moisture)

Batch ID: R26508 Analyst: SL

Percent Moisture	13.6	0.500		wt%	1	12/10/2015 5:22:00 PM
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Work Order: 1512092
CLIENT: Floyd | Snider
Project: SIM - 730 EDR

QC SUMMARY REPORT
Total Metals by EPA Method 6020

Sample ID: MB-12564	SampType: MBLK	Units: mg/Kg	Prep Date: 12/10/2015	RunNo: 26511							
Client ID: MBLKS	Batch ID: 12564		Analysis Date: 12/10/2015	SeqNo: 500244							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.100									
Barium	ND	0.500									
Cadmium	ND	0.200									
Chromium	ND	0.100									
Lead	ND	0.200									
Selenium	ND	0.500									
Silver	ND	0.100									

Sample ID: LCS-12564	SampType: LCS	Units: mg/Kg	Prep Date: 12/10/2015	RunNo: 26511							
Client ID: LCSS	Batch ID: 12564		Analysis Date: 12/10/2015	SeqNo: 500247							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	48.4	0.100	50.00	0	96.9	80	120				
Barium	49.9	0.500	50.00	0	99.8	80	120				
Cadmium	2.48	0.200	2.500	0	99.1	80	120				
Chromium	51.3	0.100	50.00	0	103	80	120				
Lead	25.5	0.200	25.00	0	102	80	120				
Selenium	4.88	0.500	5.000	0	97.5	80	120				
Silver	2.36	0.100	2.500	0	94.5	80	120				

Sample ID: 1512073-001ADUP	SampType: DUP	Units: mg/Kg-dry	Prep Date: 12/10/2015	RunNo: 26511							
Client ID: BATCH	Batch ID: 12564		Analysis Date: 12/10/2015	SeqNo: 500249							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	5.07	0.0952						5.001	1.42	20	
Barium	39.4	0.476						41.49	5.22	20	
Cadmium	0.244	0.190						0.2928	18.3	20	
Chromium	24.6	0.0952						20.44	18.5	20	
Lead	39.3	0.190						29.94	27.0	20	R
Selenium	1.55	0.476						1.350	13.8	20	

Work Order: 1512092
CLIENT: Floyd | Snider
Project: SIM - 730 EDR

QC SUMMARY REPORT
Total Metals by EPA Method 6020

Sample ID: 1512073-001ADUP	SampType: DUP	Units: mg/Kg-dry	Prep Date: 12/10/2015	RunNo: 26511							
Client ID: BATCH	Batch ID: 12564	Analysis Date: 12/10/2015	SeqNo: 500249								
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Silver	ND	0.0952						0		20	

NOTES:

R - High RPD observed. The method is in control as indicated by the LCS.

Sample ID: 1512073-001AMS	SampType: MS	Units: mg/Kg-dry	Prep Date: 12/10/2015	RunNo: 26511							
Client ID: BATCH	Batch ID: 12564	Analysis Date: 12/10/2015	SeqNo: 500251								
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	52.6	0.0952	47.59	5.001	100	75	125				
Barium	82.3	0.476	47.59	41.49	85.7	75	125				
Cadmium	2.61	0.190	2.379	0.2928	97.5	75	125				
Chromium	73.8	0.0952	47.59	20.44	112	75	125				
Lead	52.8	0.190	23.79	29.94	96.0	75	125				
Selenium	5.89	0.476	4.759	1.350	95.4	75	125				
Silver	1.75	0.0952	2.379	0.04939	71.7	75	125				S

NOTES:

S - Outlying spike recovery(ies) observed. A duplicate analysis was performed with similar results indicating a possible matrix effect.

Sample ID: 1512073-001AMSD	SampType: MSD	Units: mg/Kg-dry	Prep Date: 12/10/2015	RunNo: 26511							
Client ID: BATCH	Batch ID: 12564	Analysis Date: 12/10/2015	SeqNo: 500252								
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	55.8	0.0952	47.59	5.001	107	75	125	52.61	5.79	20	
Barium	86.3	0.476	47.59	41.49	94.2	75	125	82.28	4.79	20	
Cadmium	2.67	0.190	2.379	0.2928	100	75	125	2.613	2.23	20	
Chromium	78.8	0.0952	47.59	20.44	123	75	125	73.79	6.52	20	
Lead	58.3	0.190	23.79	29.94	119	75	125	52.78	9.93	20	
Selenium	6.13	0.476	4.759	1.350	100	75	125	5.889	3.98	20	
Silver	1.82	0.0952	2.379	0.04939	74.3	75	125	1.755	3.56	20	S

NOTES:

S - Outlying spike recovery(ies) observed. A duplicate analysis was performed with similar results indicating a possible matrix effect.

Work Order: 1512092
CLIENT: Floyd | Snider
Project: SIM - 730 EDR

QC SUMMARY REPORT
Total Metals by EPA Method 6020

Sample ID: 1512073-001APDS	SampType: PDS	Units: mg/Kg-dry	Prep Date: 12/10/2015	RunNo: 26511							
Client ID: BATCH	Batch ID: 12564		Analysis Date: 12/10/2015	SeqNo: 500253							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Silver	1.82	0.0952	2.38	0.0494	74.3	80	120				S
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NOTES:

S - Spike recovery indicates a possible matrix effect. The method is in control as indicated by the Laboratory Control Sample (LCS).

Work Order: 1512092
CLIENT: Floyd | Snider
Project: SIM - 730 EDR

QC SUMMARY REPORT
Mercury by EPA Method 7471

Sample ID: MB-12575	SampType: MBLK	Units: mg/Kg	Prep Date: 12/11/2015	RunNo: 26529							
Client ID: MBLKS	Batch ID: 12575		Analysis Date: 12/11/2015	SeqNo: 500499							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Mercury ND 0.250

Sample ID: LCS-12575	SampType: LCS	Units: mg/Kg	Prep Date: 12/11/2015	RunNo: 26529							
Client ID: LCSS	Batch ID: 12575		Analysis Date: 12/11/2015	SeqNo: 500500							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Mercury 0.557 0.250 0.5000 0 111 80 120

Sample ID: 1512073-001ADUP	SampType: DUP	Units: mg/Kg-dry	Prep Date: 12/11/2015	RunNo: 26529							
Client ID: BATCH	Batch ID: 12575		Analysis Date: 12/11/2015	SeqNo: 500502							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Mercury ND 0.292 0 20

Sample ID: 1512073-001AMS	SampType: MS	Units: mg/Kg-dry	Prep Date: 12/11/2015	RunNo: 26529							
Client ID: BATCH	Batch ID: 12575		Analysis Date: 12/11/2015	SeqNo: 500503							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Mercury 0.628 0.262 0.5243 0.07025 106 70 130

Sample ID: 1512073-001AMSD	SampType: MSD	Units: mg/Kg-dry	Prep Date: 12/11/2015	RunNo: 26529							
Client ID: BATCH	Batch ID: 12575		Analysis Date: 12/11/2015	SeqNo: 500504							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Mercury 0.693 0.292 0.5836 0.07025 107 70 130 0.6281 9.88 20



Work Order: 1512092
CLIENT: Floyd | Snider
Project: SIM - 730 EDR

QC SUMMARY REPORT
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Sample ID: MB-12568	SampType: MBLK	Units: mg/Kg	Prep Date: 12/10/2015	RunNo: 26531							
Client ID: MBLKS	Batch ID: 12568		Analysis Date: 12/10/2015	SeqNo: 500565							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Stoddard Solvent/Mineral Spirits	ND	20.0									
Diesel (Fuel Oil)	ND	20.0									
Heavy Oil	ND	50.0									
Surr: 2-Fluorobiphenyl	19.2		20.00		96.1	50	150				
Surr: o-Terphenyl	18.0		20.00		90.0	50	150				

Sample ID: LCS-12568	SampType: LCS	Units: mg/Kg	Prep Date: 12/10/2015	RunNo: 26531							
Client ID: LCSS	Batch ID: 12568		Analysis Date: 12/10/2015	SeqNo: 500564							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	499	20.0	500.0	0	99.8	65	135				
Surr: 2-Fluorobiphenyl	19.2		20.00		96.0	50	150				
Surr: o-Terphenyl	17.9		20.00		89.5	50	150				

Sample ID: 1512092-003ADUP	SampType: DUP	Units: mg/Kg-dry	Prep Date: 12/10/2015	RunNo: 26531							
Client ID: SB-07-12-13	Batch ID: 12568		Analysis Date: 12/12/2015	SeqNo: 500681							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Stoddard Solvent/Mineral Spirits	9,050	22.2						6,551	32.0	30	RJ-est
Diesel (Fuel Oil)	109	22.2						111.3	2.03	30	
Heavy Oil	173	55.5						177.3	2.45	30	
Surr: 2-Fluorobiphenyl	21.9		22.21		98.4	50	150		0		
Surr: o-Terphenyl	20.7		22.21		93.1	50	150		0		

NOTES:
R - High RPD observed. The method is in control as indicated by the LCS.

Sample ID: MB-13093	SampType: MBLK	Units: mg/Kg	Prep Date: 2/25/2016	RunNo: 27906							
Client ID: MBLKS	Batch ID: 13093		Analysis Date: 2/25/2016	SeqNo: 524673							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Stoddard Solvent/Mineral Spirits	ND	20.0									

Work Order: 1512092
CLIENT: Floyd | Snider
Project: SIM - 730 EDR

QC SUMMARY REPORT
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Sample ID: MB-13093	SampType: MBLK	Units: mg/Kg			Prep Date: 2/25/2016	RunNo: 27906					
Client ID: MBLKS	Batch ID: 13093				Analysis Date: 2/25/2016	SeqNo: 524673					
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	20.0									
Heavy Oil	ND	50.0									
Surr: 2-Fluorobiphenyl	20.8		20.00		104	50	150				
Surr: o-Terphenyl	21.5		20.00		108	50	150				

Sample ID: LCS-13093	SampType: LCS	Units: mg/Kg			Prep Date: 2/25/2016	RunNo: 27906					
Client ID: LCSS	Batch ID: 13093				Analysis Date: 2/25/2016	SeqNo: 524672					
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	489	20.0	500.0	0	97.9	65	135				
Surr: 2-Fluorobiphenyl	22.7		20.00		114	50	150				
Surr: o-Terphenyl	23.6		20.00		118	50	150				

Sample ID: 1602278-001ADUP	SampType: DUP	Units: mg/Kg-dry			Prep Date: 2/25/2016	RunNo: 27906					
Client ID: BATCH	Batch ID: 13093				Analysis Date: 2/25/2016	SeqNo: 524663					
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	22.7						0		30	H
Heavy Oil	335	56.8						1,216	114	30	RH
Surr: 2-Fluorobiphenyl	36.9		22.73		162	50	150		0		SH
Surr: o-Terphenyl	35.6		22.73		157	50	150		0		SH

NOTES:

S - Outlying surrogate recovery(ies) observed. A duplicate analysis was performed and recovered within range.
R - High RPD due to suspected sample inhomogeneity. The method is in control as indicated by the Laboratory Control Sample (LCS).

Sample ID: 1602278-001AMS	SampType: MS	Units: mg/Kg-dry			Prep Date: 2/25/2016	RunNo: 27906					
Client ID: BATCH	Batch ID: 13093				Analysis Date: 2/25/2016	SeqNo: 524664					
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	329	23.8	593.8	8.405	53.9	65	135				SH
Surr: 2-Fluorobiphenyl	19.1		23.75		80.6	50	150				H

Work Order: 1512092
 CLIENT: Floyd | Snider
 Project: SIM - 730 EDR

QC SUMMARY REPORT
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Sample ID: 1602278-001AMS	SampType: MS	Units: mg/Kg-dry	Prep Date: 2/25/2016	RunNo: 27906							
Client ID: BATCH	Batch ID: 13093		Analysis Date: 2/25/2016	SeqNo: 524664							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Surr: o-Terphenyl	20.1		23.75		84.7	50	150				H
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NOTES:

S - Outlying spike recovery(ies) observed. A duplicate analysis was performed and recovered within range.

Sample ID: 1602278-001AMSD	SampType: MSD	Units: mg/Kg-dry	Prep Date: 2/25/2016	RunNo: 27906							
Client ID: BATCH	Batch ID: 13093		Analysis Date: 2/25/2016	SeqNo: 524665							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Diesel (Fuel Oil)	439	24.6	615.8	8.405	70.0	65	135	328.5	28.8	30	H
Surr: 2-Fluorobiphenyl	26.0		24.63		105	50	150		0	0	H
Surr: o-Terphenyl	26.6		24.63		108	50	150		0	0	H

Work Order: 1512092
 CLIENT: Floyd | Snider
 Project: SIM - 730 EDR

QC SUMMARY REPORT
Polychlorinated Biphenyls (PCB) by EPA 8082

Sample ID: MB-12570	SampType: MBLK	Units: mg/Kg	Prep Date: 12/10/2015	RunNo: 26548							
Client ID: MBLKS	Batch ID: 12570		Analysis Date: 12/11/2015	SeqNo: 500771							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	ND	0.100									
Aroclor 1221	ND	0.100									
Aroclor 1232	ND	0.100									
Aroclor 1242	ND	0.100									
Aroclor 1248	ND	0.100									
Aroclor 1254	ND	0.100									
Aroclor 1260	ND	0.100									
Aroclor 1262	ND	0.100									
Aroclor 1268	ND	0.100									
Total PCBs	ND	0.100									
Surr: Decachlorobiphenyl	73.9		50.00		148	33.3	140				S
Surr: Tetrachloro-m-xylene	42.0		50.00		84.0	23.2	142				

NOTES:

S - Outlying surrogate recovery(ies) observed (high bias). Sample is non-detect; no further action required.

Sample ID: LCS1-12570	SampType: LCS	Units: mg/Kg	Prep Date: 12/10/2015	RunNo: 26548							
Client ID: LCSS	Batch ID: 12570		Analysis Date: 12/11/2015	SeqNo: 500763							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	0.887	0.100	1.000	0	88.7	42.3	147				
Aroclor 1260	1.21	0.100	1.000	0	121	45.2	151				
Surr: Decachlorobiphenyl	82.2		50.00		164	33.3	140				S
Surr: Tetrachloro-m-xylene	44.2		50.00		88.3	23.2	142				

NOTES:

S - Outlying surrogate recovery(ies) observed. A duplicate analysis was performed and recovered within range.

Sample ID: LCS1D-12570	SampType: LCSD	Units: mg/Kg	Prep Date: 12/10/2015	RunNo: 26548							
Client ID: LCSS02	Batch ID: 12570		Analysis Date: 12/11/2015	SeqNo: 500764							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	0.914	0.100	1.000	0	91.4	42.3	147	0.8874	3.00	20	
Aroclor 1260	1.01	0.100	1.000	0	101	45.2	151	1.207	17.6	20	

Work Order: 1512092
CLIENT: Floyd | Snider
Project: SIM - 730 EDR

QC SUMMARY REPORT
Polychlorinated Biphenyls (PCB) by EPA 8082

Sample ID: LCS1D-12570	SampType: LCSD	Units: mg/Kg	Prep Date: 12/10/2015	RunNo: 26548							
Client ID: LCSS02	Batch ID: 12570		Analysis Date: 12/11/2015	SeqNo: 500764							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Surr: Decachlorobiphenyl	65.2		50.00		130	33.3	140		0		
Surr: Tetrachloro-m-xylene	53.1		50.00		106	23.2	142		0		

Sample ID: LCS2-12570	SampType: LCS	Units: mg/Kg	Prep Date: 12/10/2015	RunNo: 26548							
Client ID: LCSS	Batch ID: 12570		Analysis Date: 12/11/2015	SeqNo: 500770							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aroclor 1254	0.914	0.100	1.000	0	91.4	44	117				
Surr: Decachlorobiphenyl	62.5		50.00		125	33.3	140				
Surr: Tetrachloro-m-xylene	44.5		50.00		88.9	23.2	142				

Sample ID: 1512073-001AMS	SampType: MS	Units: mg/Kg-dry	Prep Date: 12/10/2015	RunNo: 26548							
Client ID: BATCH	Batch ID: 12570		Analysis Date: 12/11/2015	SeqNo: 500755							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aroclor 1016	1.11	0.108	1.079	0	103	61.7	139				
Aroclor 1260	1.17	0.108	1.079	0	109	63.1	138				
Surr: Decachlorobiphenyl	64.4		53.93		119	33.3	140				
Surr: Tetrachloro-m-xylene	57.4		53.93		106	23.2	142				

Sample ID: 1512073-001AMSD	SampType: MSD	Units: mg/Kg-dry	Prep Date: 12/10/2015	RunNo: 26548							
Client ID: BATCH	Batch ID: 12570		Analysis Date: 12/11/2015	SeqNo: 500756							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aroclor 1016	1.09	0.111	1.114	0	97.8	61.7	139	1.112	2.09	30	
Aroclor 1260	0.979	0.111	1.114	0	87.9	63.1	138	1.172	17.9	30	
Surr: Decachlorobiphenyl	54.9		55.68		98.6	33.3	140		0		
Surr: Tetrachloro-m-xylene	67.5		55.68		121	23.2	142		0		

Work Order: 1512092
CLIENT: Floyd | Snider
Project: SIM - 730 EDR

QC SUMMARY REPORT
Pentachlorophenol by EPA Method 8270 (SIM)

Sample ID: MB-12577	SampType: MBLK	Units: µg/Kg			Prep Date: 12/11/2015	RunNo: 26600					
Client ID: MBLKS	Batch ID: 12577				Analysis Date: 12/16/2015	SeqNo: 501589					
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Pentachlorophenol	ND	20.0									
Surr: 2,4,6-Tribromophenol	290		1,000		29.0	14	136				

Sample ID: LCS-12577	SampType: LCS	Units: µg/Kg			Prep Date: 12/11/2015	RunNo: 26600					
Client ID: LCSS	Batch ID: 12577				Analysis Date: 12/16/2015	SeqNo: 501590					
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Pentachlorophenol	215	20.0	1,000	0	21.5	21.4	135				
Surr: 2,4,6-Tribromophenol	599		1,000		59.9	14	136				

Sample ID: 1512073-001ADUP	SampType: DUP	Units: µg/Kg-dry			Prep Date: 12/11/2015	RunNo: 26600					
Client ID: BATCH	Batch ID: 12577				Analysis Date: 12/16/2015	SeqNo: 501592					
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Pentachlorophenol	ND	22.8						0		30	
Surr: 2,4,6-Tribromophenol	713		1,138		62.7	14	136		0	0	

Sample ID: 1512073-002AMS	SampType: MS	Units: µg/Kg-dry			Prep Date: 12/11/2015	RunNo: 26600					
Client ID: BATCH	Batch ID: 12577				Analysis Date: 12/16/2015	SeqNo: 501594					
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Pentachlorophenol	722	20.4	1,019	0	70.9	15	151				
Surr: 2,4,6-Tribromophenol	814		1,019		79.9	14	136				

Work Order: 1512092
CLIENT: Floyd | Snider
Project: SIM - 730 EDR

QC SUMMARY REPORT
Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID: MB-12577	SampType: MBLK	Units: µg/Kg	Prep Date: 12/11/2015	RunNo: 26590							
Client ID: MBLKS	Batch ID: 12577		Analysis Date: 12/15/2015	SeqNo: 501429							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phenol	ND	200									
Bis(2-chloroethyl) ether	ND	200									
2-Chlorophenol	ND	100									
1,3-Dichlorobenzene	ND	100									
1,4-Dichlorobenzene	ND	100									
1,2-Dichlorobenzene	ND	100									
Benzyl alcohol	ND	100									
2-Methylphenol (o-cresol)	ND	100									
Hexachloroethane	ND	100									
N-Nitrosodi-n-propylamine	ND	100									
Nitrobenzene	ND	200									
Isophorone	ND	100									
4-Methylphenol (p-cresol)	ND	100									
2-Nitrophenol	ND	200									
2,4-Dimethylphenol	ND	100									
Bis(2-chloroethoxy)methane	ND	100									
2,4-Dichlorophenol	ND	200									
1,2,4-Trichlorobenzene	ND	100									
Naphthalene	ND	80.0									
4-Chloroaniline	ND	500									
Hexachlorobutadiene	ND	100									
4-Chloro-3-methylphenol	ND	500									
2-Methylnaphthalene	ND	80.0									
1-Methylnaphthalene	ND	80.0									
Hexachlorocyclopentadiene	ND	100									
2,4,6-Trichlorophenol	ND	200									
2,4,5-Trichlorophenol	ND	200									
2-Chloronaphthalene	ND	100									
2-Nitroaniline	ND	500									
Acenaphthene	ND	80.0									
Dimethylphthalate	ND	100									



Work Order: 1512092
CLIENT: Floyd | Snider
Project: SIM - 730 EDR

QC SUMMARY REPORT
Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID: MB-12577	SampType: MBLK	Units: µg/Kg	Prep Date: 12/11/2015	RunNo: 26590
Client ID: MBLKS	Batch ID: 12577		Analysis Date: 12/15/2015	SeqNo: 501429

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
2,6-Dinitrotoluene	ND	100									
Acenaphthylene	ND	80.0									
2,4-Dinitrophenol	ND	200									
Dibenzofuran	ND	100									
2,4-Dinitrotoluene	ND	100									
4-Nitrophenol	ND	500									
Fluorene	ND	80.0									
4-Chlorophenyl phenyl ether	ND	100									
Diethylphthalate	ND	100									
4,6-Dinitro-2-methylphenol	ND	200									
4-Bromophenyl phenyl ether	ND	100									
Hexachlorobenzene	ND	100									
Pentachlorophenol	ND	100									
Phenanthrene	ND	80.0									
Anthracene	ND	80.0									
Carbazole	ND	500									
Di-n-butylphthalate	ND	100									
Fluoranthene	ND	80.0									
Pyrene	ND	80.0									
Butyl Benzylphthalate	ND	100									
bis(2-Ethylhexyl)adipate	ND	100									
Benz (a) anthracene	ND	80.0									
Chrysene	ND	80.0									
bis (2-Ethylhexyl) phthalate	ND	100									
Di-n-octyl phthalate	ND	100									
Benzo (b) fluoranthene	ND	80.0									
Benzo (k) fluoranthene	ND	80.0									
Benzo (a) pyrene	ND	80.0									
Indeno (1,2,3-cd) pyrene	ND	80.0									
Dibenz (a,h) anthracene	ND	80.0									
Benzo (g,h,i) perylene	ND	80.0									

Work Order: 1512092
CLIENT: Floyd | Snider
Project: SIM - 730 EDR

QC SUMMARY REPORT
Semi-Volatile Organic Compounds by EPA Method 8270

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: 2,4,6-Tribromophenol	254		1,000		25.4	11.1	127				
Surr: 2-Fluorobiphenyl	427		500.0		85.4	16.1	150				
Surr: Nitrobenzene-d5	288		500.0		57.5	10	133				
Surr: Phenol-d6	839		1,000		83.9	11.6	133				
Surr: p-Terphenyl	419		500.0		83.7	21.8	150				

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phenol	1,050	200	1,000	0	105	41.8	138				
Bis(2-chloroethyl) ether	1,060	200	1,000	0	106	65	116				
2-Chlorophenol	1,030	100	1,000	0	103	49.3	132				
1,3-Dichlorobenzene	1,070	100	1,000	0	107	50.9	133				
1,4-Dichlorobenzene	791	100	1,000	0	79.1	51.3	133				
1,2-Dichlorobenzene	1,050	100	1,000	0	105	54.2	129				
Benzyl alcohol	920	100	1,000	0	92.0	42.4	131				
2-Methylphenol (o-cresol)	1,000	100	1,000	0	100	47.2	134				
Hexachloroethane	1,010	100	1,000	0	101	25.4	144				
N-Nitrosodi-n-propylamine	978	100	1,000	0	97.8	39.8	135				
Nitrobenzene	1,040	200	1,000	0	104	62.3	126				
Isophorone	1,050	100	1,000	0	105	62.7	131				
4-Methylphenol (p-cresol)	512	100	500.0	0	102	57.4	131				
2-Nitrophenol	854	200	1,000	0	85.4	44.2	129				
2,4-Dimethylphenol	1,010	100	1,000	0	101	57.8	121				
Bis(2-chloroethoxy)methane	1,040	100	1,000	0	104	67.5	124				
2,4-Dichlorophenol	1,050	200	1,000	0	105	57.1	128				
1,2,4-Trichlorobenzene	1,040	100	1,000	0	104	36.2	140				
Naphthalene	1,010	80.0	1,000	0	101	56.8	130				
4-Chloroaniline	1,010	500	1,000	0	101	10.4	130				
Hexachlorobutadiene	1,020	100	1,000	0	102	55.9	131				

Work Order: 1512092
CLIENT: Floyd | Snider
Project: SIM - 730 EDR

QC SUMMARY REPORT
Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID: LCS-12577	SampType: LCS	Units: µg/Kg				Prep Date: 12/11/2015	RunNo: 26590				
Client ID: LCSS	Batch ID: 12577					Analysis Date: 12/15/2015	SeqNo: 501430				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
4-Chloro-3-methylphenol	973	500	1,000	0	97.3	49.4	138				
2-Methylnaphthalene	1,010	80.0	1,000	0	101	68.3	121				
1-Methylnaphthalene	992	80.0	1,000	0	99.2	64.1	126				
Hexachlorocyclopentadiene	921	100	1,000	0	92.1	21	130				
2,4,6-Trichlorophenol	584	200	1,000	0	58.4	36.4	132				
2,4,5-Trichlorophenol	879	200	1,000	0	87.9	52.3	128				
2-Chloronaphthalene	1,050	100	1,000	0	105	67.1	123				
2-Nitroaniline	935	500	1,000	0	93.5	43.9	135				
Acenaphthene	985	80.0	1,000	0	98.5	49.2	127				
Dimethylphthalate	1,030	100	1,000	0	103	62.4	130				
2,6-Dinitrotoluene	1,000	100	1,000	0	100	54.6	127				
Acenaphthylene	1,040	80.0	1,000	0	104	64.8	127				
2,4-Dinitrophenol	547	200	1,000	0	54.7	7.9	119				
Dibenzofuran	1,000	100	1,000	0	100	67.5	123				
2,4-Dinitrotoluene	907	100	1,000	0	90.7	21.9	136				
4-Nitrophenol	796	500	1,000	0	79.6	25.4	138				
Fluorene	1,030	80.0	1,000	0	103	64.8	126				
4-Chlorophenyl phenyl ether	1,020	100	1,000	0	102	66.6	124				
Diethylphthalate	1,020	100	1,000	0	102	42.9	132				
4,6-Dinitro-2-methylphenol	442	200	1,000	0	44.2	12.9	110				
4-Bromophenyl phenyl ether	928	100	1,000	0	92.8	61.8	128				
Hexachlorobenzene	954	100	1,000	0	95.4	66.8	124				
Pentachlorophenol	203	100	1,000	0	20.3	10	123				
Phenanthrene	979	80.0	1,000	0	97.9	61.2	130				
Anthracene	1,040	80.0	1,000	0	104	68.9	122				
Carbazole	1,060	500	1,000	0	106	64.5	135				
Di-n-butylphthalate	931	100	1,000	0	93.1	50.6	130				
Fluoranthene	1,010	80.0	1,000	0	101	66	129				
Pyrene	1,030	80.0	1,000	0	103	45.4	140				
Butyl Benzylphthalate	805	100	1,000	0	80.5	31.1	157				
bis(2-Ethylhexyl)adipate	779	100	1,000	0	77.9	28.7	160				

Work Order: 1512092
 CLIENT: Floyd | Snider
 Project: SIM - 730 EDR

QC SUMMARY REPORT
Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID: LCS-12577	SampType: LCS	Units: µg/Kg	Prep Date: 12/11/2015	RunNo: 26590							
Client ID: LCSS	Batch ID: 12577		Analysis Date: 12/15/2015	SeqNo: 501430							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Benz (a) anthracene	936	80.0	1,000	0	93.6	44	150				
Chrysene	1,070	80.0	1,000	0	107	65.8	128				
bis (2-Ethylhexyl) phthalate	805	100	1,000	0	80.5	36.3	149				
Di-n-octyl phthalate	837	100	1,000	0	83.7	31.5	152				
Benzo (b) fluoranthene	841	80.0	1,000	0	84.1	45.6	146				
Benzo (k) fluoranthene	1,050	80.0	1,000	0	105	45.5	138				
Benzo (a) pyrene	921	80.0	1,000	0	92.1	49.2	137				
Indeno (1,2,3-cd) pyrene	860	80.0	1,000	0	86.0	44.2	146				
Dibenz (a,h) anthracene	942	80.0	1,000	0	94.2	37.5	152				
Benzo (g,h,i) perylene	1,020	80.0	1,000	0	102	24.1	156				
Surr: 2,4,6-Tribromophenol	569		1,000		56.9	11.1	127				
Surr: 2-Fluorobiphenyl	483		500.0		96.6	16.1	150				
Surr: Nitrobenzene-d5	369		500.0		73.9	10	133				
Surr: Phenol-d6	1,020		1,000		102	11.6	133				
Surr: p-Terphenyl	483		500.0		96.6	21.8	150				

Sample ID: 1512073-001ADUP	SampType: DUP	Units: µg/Kg-dry	Prep Date: 12/11/2015	RunNo: 26590							
Client ID: BATCH	Batch ID: 12577		Analysis Date: 12/15/2015	SeqNo: 501432							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Phenol	ND	228						0		50	
Bis(2-chloroethyl) ether	ND	228						0		50	
2-Chlorophenol	ND	114						0		50	
1,3-Dichlorobenzene	ND	114						0		50	
1,4-Dichlorobenzene	ND	114						0		50	
1,2-Dichlorobenzene	ND	114						0		50	
Benzyl alcohol	ND	114						0		50	
2-Methylphenol (o-cresol)	ND	114						0		50	
Hexachloroethane	ND	114						0		50	
N-Nitrosodi-n-propylamine	ND	114						0		50	
Nitrobenzene	ND	228						0		50	

Work Order: 1512092
CLIENT: Floyd | Snider
Project: SIM - 730 EDR

QC SUMMARY REPORT
Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID: 1512073-001ADUP	SampType: DUP	Units: µg/Kg-dry	Prep Date: 12/11/2015	RunNo: 26590							
Client ID: BATCH	Batch ID: 12577		Analysis Date: 12/15/2015	SeqNo: 501432							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Isophorone	ND	114						0		50	
4-Methylphenol (p-cresol)	ND	114						0		50	
2-Nitrophenol	ND	228						0		50	
2,4-Dimethylphenol	ND	114						0		50	
Bis(2-chloroethoxy)methane	ND	114						0		50	
2,4-Dichlorophenol	ND	228						0		50	
1,2,4-Trichlorobenzene	ND	114						0		50	
Naphthalene	ND	91.1						0		50	
4-Chloroaniline	ND	569						0		50	
Hexachlorobutadiene	ND	114						0		50	
4-Chloro-3-methylphenol	ND	569						0		50	
2-Methylnaphthalene	ND	91.1						0		50	
1-Methylnaphthalene	ND	91.1						0		50	
Hexachlorocyclopentadiene	ND	114						0		50	
2,4,6-Trichlorophenol	ND	228						0		50	
2,4,5-Trichlorophenol	ND	228						0		50	
2-Chloronaphthalene	ND	114						0		50	
2-Nitroaniline	ND	569						0		50	
Acenaphthene	ND	91.1						0		50	
Dimethylphthalate	ND	114						0		50	
2,6-Dinitrotoluene	ND	114						0		50	
Acenaphthylene	ND	91.1						0		50	
2,4-Dinitrophenol	ND	228						0		50	
Dibenzofuran	ND	114						0		50	
2,4-Dinitrotoluene	ND	114						0		50	
4-Nitrophenol	ND	569						0		50	
Fluorene	ND	91.1						0		50	
4-Chlorophenyl phenyl ether	ND	114						0		50	
Diethylphthalate	ND	114						0		50	
4,6-Dinitro-2-methylphenol	ND	228						0		50	
4-Bromophenyl phenyl ether	ND	114						0		50	

Work Order: 1512092
 CLIENT: Floyd | Snider
 Project: SIM - 730 EDR

QC SUMMARY REPORT
Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID: 1512073-001ADUP	SampType: DUP	Units: µg/Kg-dry	Prep Date: 12/11/2015	RunNo: 26590
Client ID: BATCH	Batch ID: 12577		Analysis Date: 12/15/2015	SeqNo: 501432

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexachlorobenzene	ND	114						0		50	
Pentachlorophenol	ND	114						129.5	200	50	R
Phenanthrene	ND	91.1						0		50	
Anthracene	ND	91.1						0		50	
Carbazole	ND	569						0		50	
Di-n-butylphthalate	ND	114						0		50	
Fluoranthene	ND	91.1						0		50	
Pyrene	ND	91.1						0		50	
Butyl Benzylphthalate	ND	114						0		50	
bis(2-Ethylhexyl)adipate	ND	114						0		50	
Benz (a) anthracene	ND	91.1						0		50	
Chrysene	ND	91.1						0		50	
bis (2-Ethylhexyl) phthalate	ND	114						141.9	122	50	
Di-n-octyl phthalate	ND	114						0		50	
Benzo (b) fluoranthene	ND	91.1						0		50	
Benzo (k) fluoranthene	ND	91.1						0		50	
Benzo (a) pyrene	ND	91.1						0		50	
Indeno (1,2,3-cd) pyrene	ND	91.1						0		50	
Dibenz (a,h) anthracene	ND	91.1						0		50	
Benzo (g,h,i) perylene	ND	91.1						0		50	
Surr: 2,4,6-Tribromophenol	692		1,138		60.8	11.1	127		0		
Surr: 2-Fluorobiphenyl	419		569.1		73.6	16.1	150		0		
Surr: Nitrobenzene-d5	389		569.1		68.4	10	133		0		
Surr: Phenol-d6	878		1,138		77.1	11.6	133		0		
Surr: p-Terphenyl	498		569.1		87.5	21.8	150		0		

NOTES:

R - High RPD observed. The method is in control as indicated by the Laboratory Control Sample (LCS).

Work Order: 1512092
CLIENT: Floyd | Snider
Project: SIM - 730 EDR

QC SUMMARY REPORT
Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID: 1512073-002AMS	SampType: MS	Units: µg/Kg-dry	Prep Date: 12/11/2015	RunNo: 26590
Client ID: BATCH	Batch ID: 12577		Analysis Date: 12/15/2015	SeqNo: 501434

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phenol	952	204	1,019	0	93.4	29.2	146				
Bis(2-chloroethyl) ether	971	204	1,019	0	95.3	34.4	135				
2-Chlorophenol	945	102	1,019	0	92.7	44	134				
1,3-Dichlorobenzene	923	102	1,019	0	90.6	21.1	133				
1,4-Dichlorobenzene	897	102	1,019	0	88.0	20.9	131				
1,2-Dichlorobenzene	922	102	1,019	0	90.5	35	131				
Benzyl alcohol	679	102	1,019	0	66.6	30.8	159				
2-Methylphenol (o-cresol)	931	102	1,019	0	91.4	57.7	125				
Hexachloroethane	931	102	1,019	0	91.4	15.4	139				
N-Nitrosodi-n-propylamine	1,000	102	1,019	0	98.2	26.4	151				
Nitrobenzene	1,010	204	1,019	0	98.6	61.4	130				
Isophorone	1,030	102	1,019	0	101	61.8	132				
4-Methylphenol (p-cresol)	483	102	509.5	0	94.7	65.5	127				
2-Nitrophenol	1,040	204	1,019	0	102	46.3	118				
2,4-Dimethylphenol	993	102	1,019	0	97.5	46	158				
Bis(2-chloroethoxy)methane	1,020	102	1,019	0	99.8	66.8	124				
2,4-Dichlorophenol	1,040	204	1,019	0	102	56.2	128				
1,2,4-Trichlorobenzene	990	102	1,019	0	97.2	29.2	140				
Naphthalene	911	81.5	1,019	0	89.4	44.4	136				
4-Chloroaniline	952	510	1,019	0	93.4	27	126				
Hexachlorobutadiene	946	102	1,019	0	92.8	38.2	138				
4-Chloro-3-methylphenol	953	510	1,019	0	93.5	36.8	159				
2-Methylnaphthalene	963	81.5	1,019	0	94.5	51.7	138				
1-Methylnaphthalene	949	81.5	1,019	0	93.1	51.8	131				
Hexachlorocyclopentadiene	420	102	1,019	0	41.2	10	133				
2,4,6-Trichlorophenol	915	204	1,019	0	89.8	62.7	122				
2,4,5-Trichlorophenol	959	204	1,019	0	94.2	54.7	127				
2-Chloronaphthalene	961	102	1,019	0	94.3	69.8	126				
2-Nitroaniline	931	510	1,019	0	91.4	39.3	145				
Acenaphthene	923	81.5	1,019	0	90.6	49.6	129				
Dimethylphthalate	960	102	1,019	0	94.2	61.5	131				

Work Order: 1512092
CLIENT: Floyd | Snider
Project: SIM - 730 EDR

QC SUMMARY REPORT
Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID: 1512073-002AMS	SampType: MS	Units: µg/Kg-dry	Prep Date: 12/11/2015	RunNo: 26590
Client ID: BATCH	Batch ID: 12577		Analysis Date: 12/15/2015	SeqNo: 501434

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
2,6-Dinitrotoluene	986	102	1,019	0	96.8	56.8	137				
Acenaphthylene	1,010	81.5	1,019	0	99.2	64	128				
2,4-Dinitrophenol	984	204	1,019	0	96.6	10	149				
Dibenzofuran	926	102	1,019	0	90.9	64.7	131				
2,4-Dinitrotoluene	878	102	1,019	0	86.2	30.9	139				
4-Nitrophenol	855	510	1,019	0	83.9	15.6	160				
Fluorene	896	81.5	1,019	0	88.0	64.2	127				
4-Chlorophenyl phenyl ether	888	102	1,019	0	87.1	70.9	128				
Diethylphthalate	986	102	1,019	0	96.8	61.7	129				
4,6-Dinitro-2-methylphenol	594	204	1,019	0	58.3	21.9	143				
4-Bromophenyl phenyl ether	820	102	1,019	0	80.5	69.6	136				
Hexachlorobenzene	847	102	1,019	0	83.1	66.5	123				
Pentachlorophenol	716	102	1,019	0	70.3	28.2	156				
Phenanthrene	907	81.5	1,019	0	89.0	57	134				
Anthracene	977	81.5	1,019	0	95.9	68.2	123				
Carbazole	1,010	510	1,019	0	99.1	64.1	152				
Di-n-butylphthalate	994	102	1,019	0	97.6	52.4	130				
Fluoranthene	943	81.5	1,019	0	92.6	46.5	165				
Pyrene	972	81.5	1,019	0	95.4	31.4	151				
Butyl Benzylphthalate	956	102	1,019	0	93.8	30.4	138				
bis(2-Ethylhexyl)adipate	852	102	1,019	0	83.6	32	136				
Benz (a) anthracene	988	81.5	1,019	0	97.0	43.9	151				
Chrysene	934	81.5	1,019	0	91.7	71.1	126				
bis (2-Ethylhexyl) phthalate	998	102	1,019	0	98.0	40.8	170				
Di-n-octyl phthalate	1,060	102	1,019	0	105	34.6	142				
Benzo (b) fluoranthene	957	81.5	1,019	0	93.9	52.1	136				
Benzo (k) fluoranthene	983	81.5	1,019	0	96.5	45	140				
Benzo (a) pyrene	786	81.5	1,019	0	77.1	50.5	137				
Indeno (1,2,3-cd) pyrene	928	81.5	1,019	0	91.1	38.1	155				
Dibenz (a,h) anthracene	851	81.5	1,019	0	83.5	40.7	152				
Benzo (g,h,i) perylene	815	81.5	1,019	0	80.0	34	157				

Work Order: 1512092
CLIENT: Floyd | Snider
Project: SIM - 730 EDR

QC SUMMARY REPORT
Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID: 1512073-002AMS	SampType: MS	Units: µg/Kg-dry	Prep Date: 12/11/2015	RunNo: 26590
Client ID: BATCH	Batch ID: 12577		Analysis Date: 12/15/2015	SeqNo: 501434

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: 2,4,6-Tribromophenol	753		1,019		73.9	11.1	127				
Surr: 2-Fluorobiphenyl	431		509.5		84.6	16.1	150				
Surr: Nitrobenzene-d5	395		509.5		77.6	10	133				
Surr: Phenol-d6	879		1,019		86.3	11.6	133				
Surr: p-Terphenyl	450		509.5		88.4	21.8	150				



Date: 2/26/2016

Work Order: 1512092
CLIENT: Floyd | Snider
Project: SIM - 730 EDR

QC SUMMARY REPORT
Sample Moisture (Percent Moisture)

Sample ID: 1512092-003ADUP	SampType: DUP	Units: wt%			Prep Date: 12/10/2015	RunNo: 26508					
Client ID: SB-07-12-13	Batch ID: R26508				Analysis Date: 12/10/2015	SeqNo: 500293					
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	17.6	0.500						17.25	2.07	20	

Sample ID: 1512073-018ADUP	SampType: DUP	Units: wt%			Prep Date: 2/26/2016	RunNo: 27901					
Client ID: BATCH	Batch ID: R27901				Analysis Date: 2/26/2016	SeqNo: 524613					
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	15.3	0.500						15.79	3.31	20	



January 11, 2016

Mr. Michael Ridgeway
Fremont Analytical, Inc.
3600 Fremont Ave., N.
Seattle, WA 98103

Dear Mr. Ridgeway,

The following results are for Frontier Analytical Laboratory project **9486**. This corresponds to your project number **1512092**. Two soil samples were received on 12/11/2015 in good condition. Both samples were extracted and analyzed by EPA Method 1613 for tetra through octa chlorinated dibenzo dioxins and furans. The Toxic Equivalency (TEQ) for your samples has been calculated using the 2005 World Health Organization's (WHO's) toxic equivalency factors (TEFs). Please note if a congener was not detected the data sheets reflects a value of zero for that congener when determining the TEQ. Fremont Analytical, Inc. requested a turnaround time of fifteen business days for project **9486**.

Please note that due to high levels of OCDD, sample 9486-001-SA (Fremont Analytical ID: SB-07-12-13) required dilution and reanalysis. All values taken from the dilution reanalysis are noted with the "*" qualifier.

The following Level IV report consists of an Analytical Data section, a Sample Receipt section, a Laboratory Raw Data section, and an Instrument Raw Data section. The Analytical Data section contains our project-sample tracking log and the analytical results. The Sample Receipt section contains your original chain of custody, our sample login form and a sample photo. The Laboratory Raw Data section contains our project request sheet, a percent solids sheet, an extraction bench sheet and the cleanup bench sheet. The instrument raw data section contains three sub-sections; the sample results section, the initial calibration section and the continuing/ending calibration section. The sample results sub-section consists of the quantitation summary forms and chromatograms for all samples and QC. The initial calibration sub-section consists of the individual quantitation summary forms and chromatograms for each point of the initial calibration curve as well as an overall quantitation summary form of the initial calibration curve. The continuing/ending calibration sub-section consists of the quantitation summary forms and chromatograms for all beginning and ending calibration injections associated with the samples and QC. A portable document format (PDF) file of the Level I data package and EDD have been emailed to you. A compact disk of the Level IV data package along with the Electronic Data Deliverable (EDD) has been sent to you via overnight courier. The enclosed results are specifically for the samples referenced in this report only. These results meet all National Environmental Laboratory Accreditation Program (NELAP) requirements and shall not be reproduced except in full. Frontier Analytical Laboratory's State of Oregon NELAP certificate number is **4041** and our State of Washington certificate number is **C844**.

If you have any questions regarding project **9486**, please feel free to contact me at (916) 934-0900. Thank you for choosing Frontier Analytical Laboratory for your analytical testing needs.

Sincerely,

Daniel P. Vickers
Vice President

FRONTIER ANALYTICAL LABORATORY

5172 Hillsdale Circle * El Dorado Hills, CA 95762

Tel (916) 934-0900 * Fax (916) 934-0999

www.frontieranalytical.com

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Frontier Analytical Laboratory

Sample Tracking Log

FAL Project ID: 9486

Received on: 12/11/2015

Project Due: 01/06/2016 Storage: R2

FAL Sample ID	Dup	Client Project ID	Client Sample ID	Requested Method	Matrix	Sampling Date	Sampling Time	Hold Time Due Date
9486-001-SA	0	1512092	SB-07-12-13	EPA 1613 D/F	Soil	12/09/2015	08:35 am	12/08/2016
9486-002-SA	0	1512092	SB-05-9-10	EPA 1613 D/F	Soil	12/09/2015	10:10 am	12/08/2016

EPA Method 1613
PCDD/F



FAL ID: 9486-001-MB
Client ID: Method Blank
Matrix: Soil
Batch No: X3543

Date Extracted: 01-05-2016
Date Received: NA
Amount: 5.00 g


Ical: PCDDFAL4-12-29-15-7PT
GC Column: DB5
Units: pg/g

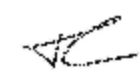
Acquired: 01-07-2016
2005 WHO TEQ: 0.00
Basis: Dry Weight

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.172		-	0.0143				
1,2,3,7,8-PeCDD	ND	0.448		-	0.0256				
1,2,3,4,7,8-HxCDD	ND	0.468		-	0.0300				
1,2,3,6,7,8-HxCDD	ND	0.495		-	0.0329	Total TCDD	ND	0.172	
1,2,3,7,8,9-HxCDD	ND	0.429		-	0.0287	Total PeCDD	ND	0.448	
1,2,3,4,6,7,8-HpCDD	ND	0.614		-	0.0463	Total HxCDD	ND	0.495	
OCDD	ND	2.41		-	0.115	Total HpCDD	ND	0.614	
2,3,7,8-TCDF	ND	0.137		-	0.0115				
1,2,3,7,8-PeCDF	ND	0.322		-	0.0184				
2,3,4,7,8-PeCDF	ND	0.339		-	0.0172				
1,2,3,4,7,8-HxCDF	ND	0.340		-	0.0171				
1,2,3,6,7,8-HxCDF	ND	0.369		-	0.0181				
2,3,4,6,7,8-HxCDF	ND	0.429		-	0.0198				
1,2,3,7,8,9-HxCDF	ND	0.457		-	0.0240	Total TCDF	ND	0.137	
1,2,3,4,6,7,8-HpCDF	ND	0.491		-	0.0263	Total PeCDF	ND	0.339	
1,2,3,4,7,8,9-HpCDF	ND	0.595		-	0.0338	Total HxCDF	ND	0.457	
OCDF	ND	1.52		-	0.0565	Total HpCDF	ND	0.595	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	94.0	25.0 - 164	
13C-1,2,3,7,8-PeCDD	88.4	25.0 - 181	
13C-1,2,3,4,7,8-HxCDD	92.3	32.0 - 141	
13C-1,2,3,6,7,8-HxCDD	91.4	28.0 - 130	
13C-1,2,3,4,6,7,8-HpCDD	92.3	23.0 - 140	
13C-OCDD	83.9	17.0 - 157	
13C-2,3,7,8-TCDF	92.7	24.0 - 169	
13C-1,2,3,7,8-PeCDF	86.2	24.0 - 185	
13C-2,3,4,7,8-PeCDF	88.9	21.0 - 178	
13C-1,2,3,4,7,8-HxCDF	95.8	26.0 - 152	
13C-1,2,3,6,7,8-HxCDF	95.1	26.0 - 123	
13C-2,3,4,6,7,8-HxCDF	90.9	28.0 - 136	
13C-1,2,3,7,8,9-HxCDF	89.9	29.0 - 147	
13C-1,2,3,4,6,7,8-HpCDF	89.2	28.0 - 143	
13C-1,2,3,4,7,8,9-HpCDF	98.1	26.0 - 138	
13C-OCDF	83.7	17.0 - 157	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	90.9	35.0 - 197	

- A Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
- B Analyte is present in Method Blank
- C Chemical Interference
- D Presence of Diphenyl Ethers
- DNQ Analyte concentration is below calibration range
- E Analyte concentration is above calibration range
- F Analyte confirmation on secondary column
- J Analyte concentration is below calibration range
- M Maximum possible concentration
- ND Analyte Not Detected at Detection Limit Level
- NP Not Provided
- P Pre-filtered through a Whatman 0.7um GF/F filter
- S Sample acceptance criteria not met
- X Matrix interferences
- * Result taken from dilution or reinjection

Analyst: 
Date: 1/8/2016

Reviewed By: 
Date: 1/8/2016

EPA Method 1613
PCDD/F



FAL ID: 9486-001-OPR
Client ID: OPR
Matrix: Soil
Batch No: X3543


Date Extracted: 01-05-2016
Date Received: NA
Amount: 5.00 g

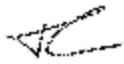
ICal: PCDDFAL4-12-29-15-7PT
GC Column: DB5
Units: ng/ml

Acquired: 01-07-2016
2005 WHO TEQ: NA

Compound	Conc	QC Limits	Qual
2,3,7,8-TCDD	10.1	6.70 - 15.8	
1,2,3,7,8-PeCDD	52.0	35.0 - 71.0	
1,2,3,4,7,8-HxCDD	51.0	35.0 - 82.0	
1,2,3,6,7,8-HxCDD	52.9	38.0 - 67.0	
1,2,3,7,8,9-HxCDD	49.2	32.0 - 81.0	
1,2,3,4,6,7,8-HpCDD	47.7	35.0 - 70.0	
OCDD	101	78.0 - 144	
2,3,7,8-TCDF	9.54	7.50 - 15.8	
1,2,3,7,8-PeCDF	49.6	40.0 - 67.0	
2,3,4,7,8-PeCDF	50.5	34.0 - 80.0	
1,2,3,4,7,8-HxCDF	49.1	36.0 - 67.0	
1,2,3,6,7,8-HxCDF	49.4	42.0 - 65.0	
2,3,4,6,7,8-HxCDF	50.0	35.0 - 78.0	
1,2,3,7,8,9-HxCDF	50.2	39.0 - 65.0	
1,2,3,4,6,7,8-HpCDF	50.7	41.0 - 61.0	
1,2,3,4,7,8,9-HpCDF	51.6	39.0 - 69.0	
OCDF	102	63.0 - 170	
Internal Standards			
13C-2,3,7,8-TCDD	90.7	20.0 - 175	
13C-1,2,3,7,8-PeCDD	85.7	21.0 - 227	
13C-1,2,3,4,7,8-HxCDD	99.3	21.0 - 193	
13C-1,2,3,6,7,8-HxCDD	99.1	25.0 - 163	
13C-1,2,3,4,6,7,8-HpCDD	96.6	26.0 - 166	
13C-OCDD	85.4	13.0 - 198	
13C-2,3,7,8-TCDF	93.9	22.0 - 152	
13C-1,2,3,7,8-PeCDF	88.1	21.0 - 192	
13C-2,3,4,7,8-PeCDF	90.0	13.0 - 328	
13C-1,2,3,4,7,8-HxCDF	102	19.0 - 202	
13C-1,2,3,6,7,8-HxCDF	102	21.0 - 159	
13C-2,3,4,6,7,8-HxCDF	97.8	22.0 - 176	
13C-1,2,3,7,8,9-HxCDF	92.9	17.0 - 205	
13C-1,2,3,4,6,7,8-HpCDF	93.9	21.0 - 158	
13C-1,2,3,4,7,8,9-HpCDF	95.7	20.0 - 186	
13C-OCDF	85.0	13.0 - 198	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	89.9	31.0 - 191	

- A Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
- B Analyte is present in Method Blank
- C Chemical Interference
- D Presence of Diphenyl Ethers
- DNQ Analyte concentration is below calibration range
- E Analyte concentration is above calibration range
- F Analyte confirmation on secondary column
- J Analyte concentration is below calibration range
- M Maximum possible concentration
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- NP Not Provided
- P Pre-filtered through a Whatman 0.7um GF/F filter
- S Sample acceptance criteria not met
- X Matrix interferences
- * Result taken from dilution or reinjection

Analyst: 
Date: 1/8/2016

Reviewed By: 
Date: 1/8/2016

EPA Method 1613
PCDD/F



FAL ID: 9486-001-SA
Client ID: SB-07-12-13
Matrix: Soil
Batch No: X3543

Date Extracted: 01-05-2016
Date Received: 12-11-2015
Amount: 5.11 g
% Solids: 83.17


ICal: PCDDFAL4-12-29-15-7PT
GC Column: DB5
Units: pg/g

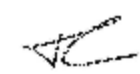
Acquired: 01-08-2016
2005 WHO TEQ: 892
Basis: Dry Weight

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.159		-	0.0143				
1,2,3,7,8-PeCDD	3.47	-	J	3.47	0.0256				
1,2,3,4,7,8-HxCDD	34.3	-		3.43	0.0300				
1,2,3,6,7,8-HxCDD	1730	-		173	0.0329	Total TCDD	1.05	-	
1,2,3,7,8,9-HxCDD	99.3	-		9.93	0.0287	Total PeCDD	24.0	-	
1,2,3,4,6,7,8-HpCDD	34900	-		349	0.0463	Total HxCDD	3700	-	
OCDD	270000	-	*	81.0	0.115	Total HpCDD	51400	-	
2,3,7,8-TCDF	9.33	-	F	0.933	0.0115				
1,2,3,7,8-PeCDF	28.6	-		0.858	0.0184				
2,3,4,7,8-PeCDF	31.6	-		9.48	0.0172				
1,2,3,4,7,8-HxCDF	212	-		21.2	0.0171				
1,2,3,6,7,8-HxCDF	133	-		13.3	0.0181				
2,3,4,6,7,8-HxCDF	363	-		36.3	0.0198				
1,2,3,7,8,9-HpCDF	75.1	-		7.51	0.0240	Total TCDF	117	-	D,M
1,2,3,4,6,7,8-HpCDF	15500	-		155	0.0263	Total PeCDF	561	-	D,M
1,2,3,4,7,8,9-HpCDF	834	-		8.34	0.0338	Total HxCDF	20200	-	D,M
OCDF	64400	-		19.3	0.0565	Total HpCDF	75400	-	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	91.8	25.0 - 164	
13C-1,2,3,7,8-PeCDD	89.0	25.0 - 181	
13C-1,2,3,4,7,8-HxCDD	94.2	32.0 - 141	
13C-1,2,3,6,7,8-HxCDD	98.5	28.0 - 130	
13C-1,2,3,4,6,7,8-HpCDD	102	23.0 - 140	
13C-OCDD	114	17.0 - 157	*
13C-2,3,7,8-TCDF	95.1	24.0 - 169	
13C-1,2,3,7,8-PeCDF	92.8	24.0 - 185	
13C-2,3,4,7,8-PeCDF	93.9	21.0 - 178	
13C-1,2,3,4,7,8-HxCDF	89.4	26.0 - 152	
13C-1,2,3,6,7,8-HxCDF	88.5	26.0 - 123	
13C-2,3,4,6,7,8-HxCDF	85.5	28.0 - 136	
13C-1,2,3,7,8,9-HxCDF	85.6	29.0 - 147	
13C-1,2,3,4,6,7,8-HpCDF	88.5	28.0 - 143	
13C-1,2,3,4,7,8,9-HpCDF	93.6	26.0 - 138	
13C-OCDF	99.4	17.0 - 157	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	90.8	35.0 - 197	

- A Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
- B Analyte is present in Method Blank
- C Chemical Interference
- D Presence of Diphenyl Ethers
- DNQ Analyte concentration is below calibration range
- E Analyte concentration is above calibration range
- F Analyte confirmation on secondary column
- J Analyte concentration is below calibration range
- M Maximum possible concentration
- ND Analyte Not Detected at Detection Limit Level
- NP Not Provided
- P Pre-filtered through a Whatman 0.7um GF/F filter
- S Sample acceptance criteria not met
- X Matrix interferences
- * Result taken from dilution or reinjection

Analyst: 
Date: 1/8/2016

Reviewed By: 
Date: 1/8/2016

EPA Method 1613
PCDD/F



FAL ID: 9486-002-SA
Client ID: SB-05-9-10
Matrix: Soil
Batch No: X3543

Date Extracted: 01-05-2016
Date Received: 12-11-2015
Amount: 5.03 g
% Solids: 86.80


ICal: PCDDFAL4-12-29-15-7PT
GC Column: DB5
Units: pg/g

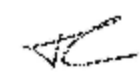
Acquired: 01-07-2016
2005 WHO TEQ: 1.60
Basis: Dry Weight

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.159		-	0.0143				
1,2,3,7,8-PeCDD	ND	0.337		-	0.0256				
1,2,3,4,7,8-HxCDD	ND	0.498		-	0.0300				
1,2,3,6,7,8-HxCDD	3.28	-	J	0.328	0.0329	Total TCDD	ND	0.159	
1,2,3,7,8,9-HxCDD	1.12	-	J	0.112	0.0287	Total PeCDD	ND	0.337	
1,2,3,4,6,7,8-HpCDD	66.2	-		0.662	0.0463	Total HxCDD	9.97	-	
OCDD	1510	-		0.453	0.115	Total HpCDD	111	-	
2,3,7,8-TCDF	ND	0.158		-	0.0115				
1,2,3,7,8-PeCDF	ND	0.226		-	0.0184				
2,3,4,7,8-PeCDF	ND	0.238		-	0.0172				
1,2,3,4,7,8-HxCDF	ND	0.261		-	0.0171				
1,2,3,6,7,8-HxCDF	ND	0.286		-	0.0181				
2,3,4,6,7,8-HxCDF	ND	0.307		-	0.0198				
1,2,3,7,8,9-HpCDF	ND	0.339		-	0.0240	Total TCDF	ND	0.158	
1,2,3,4,6,7,8-HpCDF	3.89	-	J	0.0389	0.0263	Total PeCDF	ND	0.238	
1,2,3,4,7,8,9-HpCDF	ND	0.476		-	0.0338	Total HxCDF	3.32	-	J
OCDF	19.4	-		0.00582	0.0565	Total HpCDF	16.1	-	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	90.9	25.0 - 164	
13C-1,2,3,7,8-PeCDD	92.1	25.0 - 181	
13C-1,2,3,4,7,8-HxCDD	95.3	32.0 - 141	
13C-1,2,3,6,7,8-HxCDD	94.2	28.0 - 130	
13C-1,2,3,4,6,7,8-HpCDD	99.1	23.0 - 140	
13C-OCDD	92.8	17.0 - 157	
13C-2,3,7,8-TCDF	92.2	24.0 - 169	
13C-1,2,3,7,8-PeCDF	91.4	24.0 - 185	
13C-2,3,4,7,8-PeCDF	96.7	21.0 - 178	
13C-1,2,3,4,7,8-HxCDF	98.2	26.0 - 152	
13C-1,2,3,6,7,8-HxCDF	97.4	26.0 - 123	
13C-2,3,4,6,7,8-HxCDF	96.3	28.0 - 136	
13C-1,2,3,7,8,9-HpCDF	96.2	29.0 - 147	
13C-1,2,3,4,6,7,8-HpCDF	96.1	28.0 - 143	
13C-1,2,3,4,7,8,9-HpCDF	104	26.0 - 138	
13C-OCDF	92.1	17.0 - 157	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	90.0	35.0 - 197	

- A Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
- B Analyte is present in Method Blank
- C Chemical Interference
- D Presence of Diphenyl Ethers
- DNQ Analyte concentration is below calibration range
- E Analyte concentration is above calibration range
- F Analyte confirmation on secondary column
- J Analyte concentration is below calibration range
- M Maximum possible concentration
- ND Analyte Not Detected at Detection Limit Level
- NP Not Provided
- P Pre-filtered through a Whatman 0.7um GF/F filter
- S Sample acceptance criteria not met
- X Matrix interferences
- * Result taken from dilution or reinjection

Analyst: 
Date: 1/8/2016

Reviewed By: 
Date: 1/8/2016



CHAIN OF CUSTODY RECORD

Omega COCID 195 PAGE: 1 OF: 1

ADDRESS: Fremont Analytical, Inc. 3600 Fremont Ave. N. Seattle, WA 98103 TEL: 206-352-3790 FAX: 206-352-7178 Website: www.fremontanalytical.com

9486
OAC

SUB CONTRACTOR: Frontier Analytical Lab COMPANY: Frontier Analytical Laboratory
ADDRESS: 5172 Hillside Circle
CITY, STATE, ZIP: El Dorado Hills, CA 95762
PHONE: (916) 934-0900 FAX: (916) 934-0999 EMAIL:
ACCOUNT #:

SPECIAL INSTRUCTIONS / COMMENTS:

Please email results to Michael Ridgeway and Chelsea Ward - mridgeway@fremontanalytical.com; cward@fremontanalytical.com

Table with columns: ITEM #, SAMPLE ID, CLIENT SAMPLE ID, BOTTLE TYPE, MATRIX, DATE COLLECTED, NUMBER OF CONTAINERS, COMMENTS: Methanol Preserved Weights HOT Sample Notation, Additional Sample Description.

Mike to Kathy - L4 data package, 1512092 for project name & use Client sample ID. Elm or Equised!

Relinquished By: [Signature] Date: 12/9/15 Time: 16:48 Received By: UPS Date: 12-11-15 Time: 10:15AM
Relinquished By: UPS Date: Date: Time: Received By: R. Hill Date: Date: Time:
TAT: Standard [checked] RUSH Next BD [] 2nd BD [] 3rd BD []
REPORT TRANSMITTAL DESIRED: [] HARD COPY (extra cost) [] FAX [] EMAIL [] ONLINE
Temp of samples: °C Attempt to Cool? °C
Comments: 000007 of 000348

Frontier Analytical Laboratory

Sample Login Form

FAL Project ID: **9486**

Client:	Fremont Analytical
Client Project ID:	1512092
Date Received:	12/11/2015
Time Received:	10:15 am
Received By:	KH
Logged In By:	KZ
# of Samples Received:	2
Duplicates:	0
Storage Location:	R2

Method of Delivery:	UPS
Tracking Number:	1ZX6192X0324639747
Shipping Container Received Intact	Yes
Custody seals(s) present?	Yes
Custody seals(s) intact?	Yes
Sample Arrival Temperature (C)	0
Cooling Method	Blue Ice
Chain Of Custody Present?	Yes
Return Shipping Container To Client	Yes
Test aqueous sample for residual Chlorine	No
Sodium Thiosulfate Added	No
Adequate Sample Volume	Yes
Appropriate Sample Container	Yes
pH Range of Aqueous Sample	N/A
Anomalies or additional comments:	

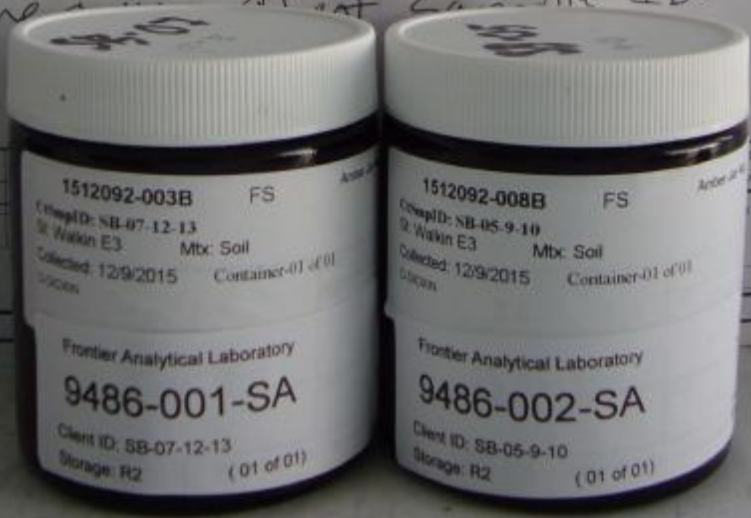
9486
0**

3000 Fremont Ave. N.
Seattle, WA 98103
TEL: 206-352-1790
FAX: 206-352-7178
Website: www.frontieranalytical.com

SUB CONTRACTOR: Frontier Analytical La COMPANY: Frontier Analytical Laboratory		SPECIAL INSTRUCTIONS / COMMENTS: Please email results to Michael Ridgway and Chelsea Ward - mridgway@frontieranalytical.com, cward@frontieranalytical.com	
ADDRESS: 5172 Hillside Circle			
CITY, STATE, ZIP: El Dorado Hills, CA 95762			
PHONE: (916) 934-0900	FAX: (916) 934-0999	EMAIL:	
ACCOUNT #			

ITEM #	SAMPLE ID	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	DATE COLLECTED	NUMBER OF CONTAINERS	COMMENTS: Method Prescribed Weight (OT Sample Totals), Additional Sample Description
1	1512092-003B O-DIOXIN (SW08290) EPA 1613	SB-07-12-13	AMBER JAR 4OZ	Soil	12/9/2015 8:35:00 AM	1	
2	1512092-008B O-DIOXIN (SW08290) EPA 1613	SB-05-9-10	AMBER JAR 4OZ	Soil	12/9/2015 10:10:00 AM	1	

Mike to Kathy - L4 data package, 1512092 for project name... client sample ID. ELM or Equis EDD.



Subcontractor By: <i>[Signature]</i>	Date: 12/9/15
Revised By: UPS	Date:
Subcontracted By:	Date:
TAT: <input checked="" type="checkbox"/>	Standard: <input checked="" type="checkbox"/>

METAL DISPOSED:	AN <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> ONLINE <input type="checkbox"/>
USE ONLY:	Assign to Cust? _____

2015/12/1

Client Name: **FS**
 Logged by: **Erica Silva**

Work Order Number: **1512092**
 Date Received: **12/9/2015 3:15:00 PM**

Chain of Custody

1. Is Chain of Custody complete? Yes No Not Present
 2. How was the sample delivered? Courier

Log In

3. Coolers are present? Yes No NA
 4. Shipping container/cooler in good condition? Yes No
 5. Custody Seals present on shipping container/cooler?
 (Refer to comments for Custody Seals not intact) Yes No Not Required
 6. Was an attempt made to cool the samples? Yes No NA
 7. Were all items received at a temperature of >0°C to 10.0°C* Yes No NA
 8. Sample(s) in proper container(s)? Yes No
 9. Sufficient sample volume for indicated test(s)? Yes No
 10. Are samples properly preserved? Yes No
 11. Was preservative added to bottles? Yes No NA
 12. Is there headspace in the VOA vials? Yes No NA
 13. Did all samples containers arrive in good condition(unbroken)? Yes No
 14. Does paperwork match bottle labels? Yes No
 15. Are matrices correctly identified on Chain of Custody? Yes No
 16. Is it clear what analyses were requested? Yes No
 17. Were all holding times able to be met? Yes No

Special Handling (if applicable)

18. Was client notified of all discrepancies with this order? Yes No NA

Person Notified:	<input type="text"/>	Date:	<input type="text"/>
By Whom:	<input type="text"/>	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	<input type="text"/>		
Client Instructions:	<input type="text"/>		

19. Additional remarks:

Item Information

Item #	Temp °C
Cooler	4.2
Sample	2.4
Temp Blank	2.9



Fremont

ANALYTICAL

3600 Fremont Ave N.
Seattle, WA 98103

Tel: 206-352-3790
Fax: 206-352-7178

Date: 12/19/15

Page: 1 of 1

Laboratory Project No (Internal):

15122092

Chain of Custody Record

(Fremont)

Client: Floyd Smith
Address: 601 Union St Ste 600
City, State, Zip: Seattle WA 98101
Telephone: 206-292-2072 Fax: _____

Project Name: SIM-730 EDR
Project No: _____
Location: 730 S. Hurst Ct, Seattle
Report To (PM): Lynn Goodale
PM Email: lynn-goodale@Playdsnyder.com

Matrix Codes: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)	Analytes											Comments			
				VOCs (EPA 8260/824)	GX/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DH)	SVOCs (EPA 8270/825)	PAHs (EPA 8270/825)	PCBs (EPA 8270 - SIM)	Metals** (EPA 8220/608)	Total (T) / Dissolved (D)		Amors (IC)**	EDB (8031)	
1 SB-07-4-8	12/11/15	0830	S															2 jars
2 SB-07-7-10		0850																2 jars
3 SB-07-12-13		0835					X											2 jars
4 SB-07-14-15		0840																2 jars
5 SB-07-19-20		0845																2 jars
6 SB-05-0-2		1000					X			X	X							2 jars
7 SB-05-4-5		1005																
8 SB-05-9-10		1010					X											
9 SB-05-17-18		1015																
10 SB-05-19-20		1020																

Priority Pollutants: TAL Individual: Ag Al As B Ba Be Ca Cd Co Cr Pb Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Tl U V W

Other Analytes: Nitrate Nitrite Chloride Sulfate Bromide Fluoride Nitrate-Nitrite

Turn-around times for samples received after 4:00pm will begin on the following business day.

Special Remarks: Cancel 2/3 per LG. 12/14/15 JSS

TAT → Same Day Next Day 2 Day 3 Day STD

Please coordinate with the lab in advance

Sample Disposal: Return to Client Disposal by Lab (As the user has assessed if samples are retained after 30 days.)

Requisitioned: 12/19/15 2:40pm Date/Time

Received: 12/19/15 3:15pm Date/Time

Received: 12/19/15 2:40 Date/Time

Received: 12/19/15 3:15pm Date/Time

Distribution: White - Lab, Yellow - File, Pink - Originator

3:15pm www.fremontanalytical.com



Fremont

3500 Fremont Ave N.
Seattle, WA 98103

Tel: 206-352-3790
Fax: 206-352-7178

Date: 12/14/15

Laboratory Project No (Internal): 1512092-W
Page: 1 of 1

Chain of Custody Record

(Fremont)

Client: Floyd Snider
Address: 601 Union St Ste 600
City, State, Zip: Seattle WA 98101
Telephone: 206-472-2076 Fax: _____

Project Name: SIM-730 EDR
Project No: _____
Location: 730 S Myrtle Ct, Seattle
Report To (PM): Lynn Goodale
PM Email: lynn-goodale@physnider.com

Matrix Codes: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)	Analytes												Comments		
				VOCs (EPA 8260/8241)	SVOCs (EPA 8270/8255)	PAHs (EPA 8270/8255)	PCBs (EPA 808/809)	Metals** (EPA 601/608)	Total (T) Dissolved (D)	Amions (IC)***	EDs (8031)	Residuals	H-OCs	Picnals				
1 SB-07-4-8	12/11/15	0830	S															2 jars
2 SB-07-7-10		0850																2 jars
3 SB-07-12-13		0835																2 jars
4 SB-07-14-15		0840				X												2 jars
5 SB-07-19-20		0845																2 jars
6 SB-09-0-2		1000																2 jars
7 SB-05-4-5		1005																2 jars
8 SB-05-9-10		1010																2 jars
9 SB-05-17-18		1015																2 jars
10 SB-05-19-20		1020																2 jars

Add Analysis per client request 2/25/16 dwo

Metals Analysis (Circle): MTCA-5 PCBs Priority Pollutants TAL Individual: Ag Al As B Ba Be Ca Cd Co Cr Fe Hg K Mg Mn Mo Na Ni Pb Sn Sr Ti U V Zn

Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphat Fluoride Nitrate/Nitrite

Special Remarks: Added 2/25/16 per client request

Received: Paul K. 12/19/15 2:40pm **Date/Time:** 12/19/15 2:40

Received: Paul K. 12/19/15 2:40 **Date/Time:** 12/19/15 2:40

Received: Paul K. 12/19/15 3:15pm **Date/Time:** 12/19/15 3:15

February 3, 2016

FAL Project: 9548

Mr. Michael Ridgeway
Fremont Analytical, Inc.
3600 Fremont Ave., N.
Seattle, WA 98103

Dear Mr. Ridgeway,

The following results are for Frontier Analytical Laboratory project **9548**. This corresponds to your project number **1601048**. Three aqueous samples were received on 1/13/2016 in good condition. All three samples were extracted and analyzed by EPA Method 1613 for tetra through octa chlorinated dibenzo dioxins and furans. The Toxic Equivalency (TEQ) for your samples has been calculated using the 2005 World Health Organization's (WHO's) toxic equivalency factors (TEFs). Fremont Analytical, Inc. requested a turnaround time of fifteen business days for project **9548**.

The following Level IV report consists of an Analytical Data section, a Sample Receipt section, a Laboratory Raw Data section, and an Instrument Raw Data section. The Analytical Data section contains our project-sample tracking log and the analytical results. The Sample Receipt section contains your original chain of custody, our sample login form and a sample photo. The Laboratory Raw Data section contains our project request sheet, a percent solids sheet, an extraction bench sheet and the cleanup bench sheet. The instrument raw data section contains three sub-sections; the sample results section, the initial calibration section and the continuing/ending calibration section. The sample results sub-section consists of the quantitation summary forms and chromatograms for all samples and QC. The initial calibration sub-section consists of the individual quantitation summary forms and chromatograms for each point of the initial calibration curve as well as an overall quantitation summary form of the initial calibration curve. The continuing/ending calibration sub-section consists of the quantitation summary forms and chromatograms for all beginning and ending calibration injections associated with the samples and QC. A portable document format (PDF) file of the Level I data package and EDD have been emailed to you. A compact disk of the Level IV data package along with the Electronic Data Deliverable (EDD) has been sent to you via overnight courier. The enclosed results are specifically for the samples referenced in this report only. These results meet all National Environmental Laboratory Accreditation Program (NELAP) requirements and shall not be reproduced except in full. Frontier Analytical Laboratory's State of Oregon NELAP certificate number is **4041** and our State of Washington certificate number is **C844**.

If you have any questions regarding project **9548**, please feel free to contact me at (916) 934-0900. Thank you for choosing Frontier Analytical Laboratory for your analytical testing needs.

Sincerely,



Bradley B. Silverbush
Director of Operations

Frontier Analytical Laboratory

Sample Tracking Log

FAL Project ID: 9548

Received on: 01/13/2016

Project Due: 02/04/2016 Storage: R3

FAL Sample ID	Dup	Client Project ID	Client Sample ID	Requested Method	Matrix	Sampling Date	Sampling Time	Hold Time Due Date
9548-001-SA	0	1601048	MW-01-010716	EPA 1613 D/F	Aqueous	01/07/2016	12:10 pm	01/06/2017
9548-002-SA	0	1601048	MW-108-010716	EPA 1613 D/F	Aqueous	01/07/2016	01:20 pm	01/06/2017
9548-003-SA	0	1601048	MW-05-010716	EPA 1613 D/F	Aqueous	01/07/2016	02:55 pm	01/06/2017

EPA Method 1613
PCDD/F



FAL ID: 9548-001-MB
Client ID: Method Blank
Matrix: Aqueous
Batch No: X3570

Date Extracted: 01-29-2016
Date Received: NA
Amount: 1.000 L

ICal: PCDDFAL3-1-8-16
GC Column: DB5
Units: pg/L


Acquired: 01-31-2016
2005 WHO TEQ: 0.00

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.447		-	0.177				
1,2,3,7,8-PeCDD	ND	0.654		-	0.270				
1,2,3,4,7,8-HxCDD	ND	1.24		-	0.350				
1,2,3,6,7,8-HxCDD	ND	1.25		-	0.380	Total TCDD	ND	0.447	
1,2,3,7,8,9-HxCDD	ND	1.14		-	0.332	Total PeCDD	ND	0.654	
1,2,3,4,6,7,8-HpCDD	ND	1.54		-	0.407	Total HxCDD	ND	1.25	
OCDD	ND	3.62		-	0.712	Total HpCDD	ND	1.54	
2,3,7,8-TCDF	ND	0.261		-	0.122				
1,2,3,7,8-PeCDF	ND	0.863		-	0.186				
2,3,4,7,8-PeCDF	ND	0.864		-	0.190				
1,2,3,4,7,8-HxCDF	ND	0.859		-	0.205				
1,2,3,6,7,8-HxCDF	ND	0.919		-	0.193				
2,3,4,6,7,8-HxCDF	ND	0.937		-	0.207				
1,2,3,7,8,9-HxCDF	ND	1.17		-	0.278	Total TCDF	ND	0.261	
1,2,3,4,6,7,8-HpCDF	ND	1.14		-	0.256	Total PeCDF	ND	0.864	
1,2,3,4,7,8,9-HpCDF	ND	1.66		-	0.336	Total HxCDF	ND	1.17	
OCDF	ND	2.04		-	0.531	Total HpCDF	ND	1.66	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	80.9	25.0 - 164	
13C-1,2,3,7,8-PeCDD	83.0	25.0 - 181	
13C-1,2,3,4,7,8-HxCDD	79.4	32.0 - 141	
13C-1,2,3,6,7,8-HxCDD	79.6	28.0 - 130	
13C-1,2,3,4,6,7,8-HpCDD	75.8	23.0 - 140	
13C-OCDD	74.5	17.0 - 157	
13C-2,3,7,8-TCDF	87.6	24.0 - 169	
13C-1,2,3,7,8-PeCDF	74.9	24.0 - 185	
13C-2,3,4,7,8-PeCDF	81.7	21.0 - 178	
13C-1,2,3,4,7,8-HxCDF	66.2	26.0 - 152	
13C-1,2,3,6,7,8-HxCDF	69.3	26.0 - 123	
13C-2,3,4,6,7,8-HxCDF	71.3	28.0 - 136	
13C-1,2,3,7,8,9-HxCDF	65.9	29.0 - 147	
13C-1,2,3,4,6,7,8-HpCDF	70.6	28.0 - 143	
13C-1,2,3,4,7,8,9-HpCDF	67.7	26.0 - 138	
13C-OCDF	64.3	17.0 - 157	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	82.8	35.0 - 197	

- A Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
- B Analyte is present in Method Blank
- C Chemical Interference
- D Presence of Diphenyl Ethers
- DNQ Analyte concentration is below calibration range
- E Analyte concentration is above calibration range
- F Analyte confirmation on secondary column
- J Analyte concentration is below calibration range
- M Maximum possible concentration
- ND Analyte Not Detected at Detection Limit Level
- NP Not Provided
- P Pre-filtered through a Whatman 0.7um GF/F filter
- S Sample acceptance criteria not met
- X Matrix interferences
- * Result taken from dilution or reinjection

Analyst: 
Date: 2/3/2016

Reviewed By: 
Date: 2/3/2016

EPA Method 1613
PCDD/F



FAL ID: 9548-001-OPR
Client ID: OPR
Matrix: Aqueous
Batch No: X3570

Date Extracted: 01-29-2016
Date Received: NA
Amount: 1.000 L


ICal: PCDDFAL3-1-8-16
GC Column: DB5
Units: ng/ml

Acquired: 01-31-2016
2005 WHO TEQ: NA

Compound	Conc	QC Limits	Qual
2,3,7,8-TCDD	9.79	6.70 - 15.8	
1,2,3,7,8-PeCDD	44.5	35.0 - 71.0	
1,2,3,4,7,8-HxCDD	44.3	35.0 - 82.0	
1,2,3,6,7,8-HxCDD	44.7	38.0 - 67.0	
1,2,3,7,8,9-HxCDD	44.6	32.0 - 81.0	
1,2,3,4,6,7,8-HpCDD	44.1	35.0 - 70.0	
OCDD	94.7	78.0 - 144	
2,3,7,8-TCDF	8.98	7.50 - 15.8	
1,2,3,7,8-PeCDF	46.9	40.0 - 67.0	
2,3,4,7,8-PeCDF	48.1	34.0 - 80.0	
1,2,3,4,7,8-HxCDF	47.7	36.0 - 67.0	
1,2,3,6,7,8-HxCDF	48.3	42.0 - 65.0	
2,3,4,6,7,8-HxCDF	48.5	35.0 - 78.0	
1,2,3,7,8,9-HxCDF	48.1	39.0 - 65.0	
1,2,3,4,6,7,8-HpCDF	47.5	41.0 - 61.0	
1,2,3,4,7,8,9-HpCDF	47.5	39.0 - 69.0	
OCDF	92.8	63.0 - 170	
Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	74.3	20.0 - 175	
13C-1,2,3,7,8-PeCDD	72.0	21.0 - 227	
13C-1,2,3,4,7,8-HxCDD	69.1	21.0 - 193	
13C-1,2,3,6,7,8-HxCDD	68.4	25.0 - 163	
13C-1,2,3,4,6,7,8-HpCDD	64.5	26.0 - 166	
13C-OCDD	60.3	13.0 - 198	
13C-2,3,7,8-TCDF	77.4	22.0 - 152	
13C-1,2,3,7,8-PeCDF	65.4	21.0 - 192	
13C-2,3,4,7,8-PeCDF	70.2	13.0 - 328	
13C-1,2,3,4,7,8-HxCDF	57.6	19.0 - 202	
13C-1,2,3,6,7,8-HxCDF	58.1	21.0 - 159	
13C-2,3,4,6,7,8-HxCDF	61.9	22.0 - 176	
13C-1,2,3,7,8,9-HxCDF	54.8	17.0 - 205	
13C-1,2,3,4,6,7,8-HpCDF	58.5	21.0 - 158	
13C-1,2,3,4,7,8,9-HpCDF	55.0	20.0 - 186	
13C-OCDF	51.2	13.0 - 198	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	83.5	31.0 - 191	

- A Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
- B Analyte is present in Method Blank
- C Chemical Interference
- D Presence of Diphenyl Ethers
- DNQ Analyte concentration is below calibration range
- E Analyte concentration is above calibration range
- F Analyte confirmation on secondary column
- J Analyte concentration is below calibration range
- M Maximum possible concentration
- ND Analyte Not Detected at Detection Limit Level
- NP Not Provided
- P Pre-filtered through a Whatman 0.7um GF/F filter
- S Sample acceptance criteria not met
- X Matrix interferences
- * Result taken from dilution or reinjection

Analyst: 
Date: 2/3/2016

Reviewed By: 
Date: 2/3/2016

EPA Method 1613
PCDD/F



FAL ID: 9548-001-SA
Client ID: MW-01-010716
Matrix: Aqueous
Batch No: X3570

Date Extracted: 01-29-2016
Date Received: 01-13-2016
Amount: 1.017 L

ICal: PCDDFAL3-1-8-16
GC Column: DB5
Units: pg/L


Acquired: 01-31-2016
2005 WHO TEQ: 90.4

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.445		-	0.177				
1,2,3,7,8-PeCDD	ND	1.08		-	0.270				
1,2,3,4,7,8-HxCDD	3.88	-	J	0.388	0.350				
1,2,3,6,7,8-HxCDD	73.6	-		7.36	0.380	Total TCDD	0.689	-	J
1,2,3,7,8,9-HxCDD	5.29	-	J	0.529	0.332	Total PeCDD	12.4	-	J
1,2,3,4,6,7,8-HpCDD	3940	-		39.4	0.407	Total HxCDD	270	-	
OCDD	73900	-	E	22.2	0.712	Total HpCDD	6610	-	
2,3,7,8-TCDF	4.16	-	J	0.416	0.122				
1,2,3,7,8-PeCDF	2.48	-	J	0.0744	0.186				
2,3,4,7,8-PeCDF	ND	0.776		-	0.190				
1,2,3,4,7,8-HxCDF	9.41	-	J	0.941	0.205				
1,2,3,6,7,8-HxCDF	40.9	-		4.09	0.193				
2,3,4,6,7,8-HxCDF	19.1	-	J	1.91	0.207				
1,2,3,7,8,9-HxCDF	3.58	-	J	0.358	0.278	Total TCDF	122	-	D,M
1,2,3,4,6,7,8-HpCDF	961	-		9.61	0.256	Total PeCDF	293	-	D,M
1,2,3,4,7,8,9-HpCDF	71.1	-		0.711	0.336	Total HxCDF	1710	-	D,M
OCDF	8280	-		2.48	0.531	Total HpCDF	4760	-	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	76.2	25.0 - 164	
13C-1,2,3,7,8-PeCDD	81.1	25.0 - 181	
13C-1,2,3,4,7,8-HxCDD	78.8	32.0 - 141	
13C-1,2,3,6,7,8-HxCDD	79.1	28.0 - 130	
13C-1,2,3,4,6,7,8-HpCDD	80.4	23.0 - 140	
13C-OCDD	94.4	17.0 - 157	
13C-2,3,7,8-TCDF	77.6	24.0 - 169	
13C-1,2,3,7,8-PeCDF	69.4	24.0 - 185	
13C-2,3,4,7,8-PeCDF	73.6	21.0 - 178	
13C-1,2,3,4,7,8-HxCDF	67.7	26.0 - 152	
13C-1,2,3,6,7,8-HxCDF	68.5	26.0 - 123	
13C-2,3,4,6,7,8-HxCDF	71.3	28.0 - 136	
13C-1,2,3,7,8,9-HxCDF	66.1	29.0 - 147	
13C-1,2,3,4,6,7,8-HpCDF	76.4	28.0 - 143	
13C-1,2,3,4,7,8,9-HpCDF	71.0	26.0 - 138	
13C-OCDF	77.6	17.0 - 157	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	76.5	35.0 - 197	

- A Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
- B Analyte is present in Method Blank
- C Chemical Interference
- D Presence of Diphenyl Ethers
- DNQ Analyte concentration is below calibration range
- E Analyte concentration is above calibration range
- F Analyte confirmation on secondary column
- J Analyte concentration is below calibration range
- M Maximum possible concentration
- ND Analyte Not Detected at Detection Limit Level
- NP Not Provided
- P Pre-filtered through a Whatman 0.7um GF/F filter
- S Sample acceptance criteria not met
- X Matrix interferences
- * Result taken from dilution or reinjection

Analyst: 
Date: 2/3/2016

Reviewed By: 
Date: 2/3/2016

EPA Method 1613
PCDD/F



FAL ID: 9548-002-SA
Client ID: MW-108-010716
Matrix: Aqueous
Batch No: X3570

Date Extracted: 01-29-2016
Date Received: 01-13-2016
Amount: 1.050 L

ICal: PCDDFAL3-1-8-16
GC Column: DB5
Units: pg/L


Acquired: 01-31-2016
2005 WHO TEQ: 0.468

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.500		-	0.177				
1,2,3,7,8-PeCDD	ND	0.545		-	0.270				
1,2,3,4,7,8-HxCDD	ND	1.06		-	0.350				
1,2,3,6,7,8-HxCDD	ND	1.07		-	0.380	Total TCDD	ND	0.500	
1,2,3,7,8,9-HxCDD	ND	0.971		-	0.332	Total PeCDD	9.43	-	J
1,2,3,4,6,7,8-HpCDD	11.3	-	J	0.113	0.407	Total HxCDD	16.8	-	J
OCDD	123	-		0.0369	0.712	Total HpCDD	20.6	-	J
2,3,7,8-TCDF	ND	0.338		-	0.122				
1,2,3,7,8-PeCDF	1.52	-	J	0.0456	0.186				
2,3,4,7,8-PeCDF	ND	0.412		-	0.190				
1,2,3,4,7,8-HxCDF	ND	0.502		-	0.205				
1,2,3,6,7,8-HxCDF	2.38	-	J	0.238	0.193				
2,3,4,6,7,8-HxCDF	ND	0.560		-	0.207				
1,2,3,7,8,9-HxCDF	ND	0.709		-	0.278	Total TCDF	4.78	-	
1,2,3,4,6,7,8-HpCDF	3.13	-	J	0.0313	0.256	Total PeCDF	21.3	-	D,J,M
1,2,3,4,7,8,9-HpCDF	ND	0.976		-	0.336	Total HxCDF	38.5	-	D,M
OCDF	11.9	-	J	0.00357	0.531	Total HpCDF	9.76	-	J

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	80.3	25.0 - 164	
13C-1,2,3,7,8-PeCDD	86.9	25.0 - 181	
13C-1,2,3,4,7,8-HxCDD	87.4	32.0 - 141	
13C-1,2,3,6,7,8-HxCDD	88.9	28.0 - 130	
13C-1,2,3,4,6,7,8-HpCDD	88.8	23.0 - 140	
13C-OCDD	88.2	17.0 - 157	
13C-2,3,7,8-TCDF	83.9	24.0 - 169	
13C-1,2,3,7,8-PeCDF	80.0	24.0 - 185	
13C-2,3,4,7,8-PeCDF	84.8	21.0 - 178	
13C-1,2,3,4,7,8-HxCDF	77.2	26.0 - 152	
13C-1,2,3,6,7,8-HxCDF	78.0	26.0 - 123	
13C-2,3,4,6,7,8-HxCDF	81.9	28.0 - 136	
13C-1,2,3,7,8,9-HxCDF	73.8	29.0 - 147	
13C-1,2,3,4,6,7,8-HpCDF	85.3	28.0 - 143	
13C-1,2,3,4,7,8,9-HpCDF	80.3	26.0 - 138	
13C-OCDF	80.3	17.0 - 157	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	82.4	35.0 - 197	

- A Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
- B Analyte is present in Method Blank
- C Chemical Interference
- D Presence of Diphenyl Ethers
- DNQ Analyte concentration is below calibration range
- E Analyte concentration is above calibration range
- F Analyte confirmation on secondary column
- J Analyte concentration is below calibration range
- M Maximum possible concentration
- ND Analyte Not Detected at Detection Limit Level
- NP Not Provided
- P Pre-filtered through a Whatman 0.7um GF/F filter
- S Sample acceptance criteria not met
- X Matrix interferences
- * Result taken from dilution or reinjection

Analyst: 
Date: 2/3/2016

Reviewed By: 
Date: 2/3/2016

EPA Method 1613
PCDD/F



FAL ID: 9548-003-SA
Client ID: MW-05-010716
Matrix: Aqueous
Batch No: X3570

Date Extracted: 01-29-2016
Date Received: 01-13-2016
Amount: 1.048 L

ICal: PCDDFAL3-1-8-16
GC Column: DB5
Units: pg/L


Acquired: 02-02-2016
2005 WHO TEQ: 18.1

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.387		-	0.177				
1,2,3,7,8-PeCDD	ND	0.626		-	0.270				
1,2,3,4,7,8-HxCDD	ND	1.46		-	0.350				
1,2,3,6,7,8-HxCDD	38.8	-		3.88	0.380	Total TCDD	3.01	-	J
1,2,3,7,8,9-HxCDD	3.21	-	J	0.321	0.332	Total PeCDD	8.87	-	J,M
1,2,3,4,6,7,8-HpCDD	555	-		5.55	0.407	Total HxCDD	108	-	
OCDD	3060	-		0.918	0.712	Total HpCDD	859	-	
2,3,7,8-TCDF	1.34	-	J	0.134	0.122				
1,2,3,7,8-PeCDF	3.66	-	J	0.110	0.186				
2,3,4,7,8-PeCDF	2.96	-	J	0.888	0.190				
1,2,3,4,7,8-HxCDF	5.71	-	J	0.571	0.205				
1,2,3,6,7,8-HxCDF	13.7	-	J	1.37	0.193				
2,3,4,6,7,8-HxCDF	9.58	-	J	0.958	0.207				
1,2,3,7,8,9-HxCDF	2.03	-	J	0.203	0.278	Total TCDF	88.1	-	D,M
1,2,3,4,6,7,8-HpCDF	274	-		2.74	0.256	Total PeCDF	183	-	D,M
1,2,3,4,7,8,9-HpCDF	14.9	-	J	0.149	0.336	Total HxCDF	793	-	D,M
OCDF	1090	-		0.327	0.531	Total HpCDF	1310	-	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	82.1	25.0 - 164	
13C-1,2,3,7,8-PeCDD	78.8	25.0 - 181	
13C-1,2,3,4,7,8-HxCDD	77.6	32.0 - 141	
13C-1,2,3,6,7,8-HxCDD	86.6	28.0 - 130	
13C-1,2,3,4,6,7,8-HpCDD	75.8	23.0 - 140	
13C-OCDD	68.2	17.0 - 157	
13C-2,3,7,8-TCDF	80.2	24.0 - 169	
13C-1,2,3,7,8-PeCDF	69.7	24.0 - 185	
13C-2,3,4,7,8-PeCDF	73.1	21.0 - 178	
13C-1,2,3,4,7,8-HxCDF	70.1	26.0 - 152	
13C-1,2,3,6,7,8-HxCDF	78.4	26.0 - 123	
13C-2,3,4,6,7,8-HxCDF	76.4	28.0 - 136	
13C-1,2,3,7,8,9-HxCDF	68.9	29.0 - 147	
13C-1,2,3,4,6,7,8-HpCDF	73.1	28.0 - 143	
13C-1,2,3,4,7,8,9-HpCDF	66.1	26.0 - 138	
13C-OCDF	57.4	17.0 - 157	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	85.2	35.0 - 197	

- A Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
- B Analyte is present in Method Blank
- C Chemical Interference
- D Presence of Diphenyl Ethers
- DNQ Analyte concentration is below calibration range
- E Analyte concentration is above calibration range
- F Analyte confirmation on secondary column
- J Analyte concentration is below calibration range
- M Maximum possible concentration
- ND Analyte Not Detected at Detection Limit Level
- NP Not Provided
- P Pre-filtered through a Whatman 0.7um GF/F filter
- S Sample acceptance criteria not met
- X Matrix interferences
- * Result taken from dilution or reinjection

Analyst: 
Date: 2/3/2016

Reviewed By: 
Date: 2/3/2016



CHAIN OF CUSTODY RECORD

Omega COCID 203

PAGE: 1

OF: 1

ADDRESS

Fremont Analytical, Inc.
3600 Fremont Ave. N.
Seattle, WA 98103
TEL: 206-352-3790
FAX: 206-352-7178

Website: www.fremontanalytical.com

9548
000

SUB CONTRACTOR: Frontier Analytical La COMPANY: Frontier Analytical Laboratory		SPECIAL INSTRUCTIONS / COMMENTS: Please email results to Michael Ridgeway and Chelsea Ward - mridgeway@fremontanalytical.com; eward@fremontanalytical.com
ADDRESS: 5172 Hillsdale Circle		
CITY, STATE, ZIP: El Dorado Hills, CA 95762		
PHONE: (916) 934-0900 FAX: (916) 934-0999 EMAIL:		
ACCOUNT #:		

ITEM #	SAMPLE ID	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	DATE COLLECTED	NUMBER OF CONTAINERS	COMMENTS: Methanol Preserved Weights HOT Sample Notation, Additional Sample Description.
1	1601048-001A	MW-01-010716	AMBER_1L UNP	Water	1/7/2015 12:10:00 PM	1	Level IV QC
	O-DIOXIN (SW8290) EPA 1613						
2	1601048-002A	MW-108-010716	AMBER_1L UNP	Water	1/7/2015 1:20:00 PM	1	Level IV QC
	O-DIOXIN (SW8290) EPA 1613						
3	1601048-003A	MW-05-010716	AMBER_1L UNP	Water	1/7/2015 2:55:00 PM	1	Level IV QC
	O-DIOXIN (SW8290) EPA 1613						

[Signature] 1/8/16

[Signature] 1/8/16

Relinquished By: <i>[Signature]</i>	Date: 1/11/16	Time: 12:15	Received By: <i>[Signature]</i>	Date: 1-13-16	Time: 1110
Relinquished By: <i>[Signature]</i>	Date:	Time:	Received By: <i>[Signature]</i>	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard RUSH Next BD 2nd BD 3rd BD

Note: RUSH requests will incur surcharges!

REPORT TRANSMITTAL DESIRED:

HARD COPY (extra cost) FAX EMAIL ONLINE

FOR LAB USE ONLY

Temp of samples _____ °C Attempt to Cool? _____

Comments: _____

000008 of 000311

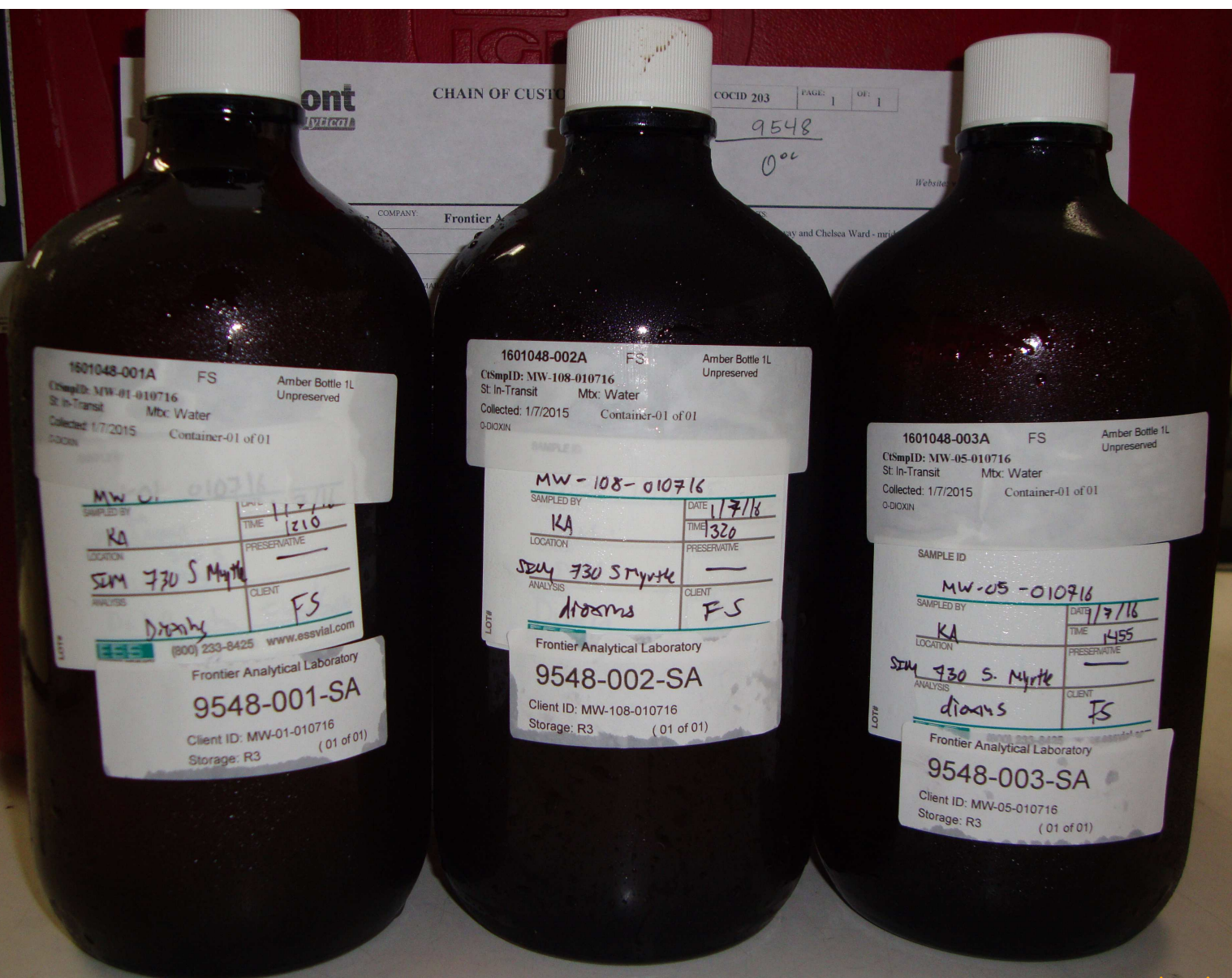
Frontier Analytical Laboratory

Sample Login Form

FAL Project ID: **9548**

Client:	Fremont Analytical
Client Project ID:	1601048
Date Received:	01/13/2016
Time Received:	11:10 am
Received By:	KZ
Logged In By:	KZ
# of Samples Received:	3
Duplicates:	0
Storage Location:	R3

Method of Delivery:	UPS
Tracking Number:	1ZX6192X0394293579
Shipping Container Received Intact	Yes
Custody seals(s) present?	Yes
Custody seals(s) intact?	Yes
Sample Arrival Temperature (C)	0
Cooling Method	Blue Ice
Chain Of Custody Present?	Yes
Return Shipping Container To Client	Yes
Test aqueous sample for residual Chlorine	Yes
Sodium Thiosulfate Added	No
Adequate Sample Volume	Yes
Appropriate Sample Container	Yes
pH Range of Aqueous Sample	Between 4 and 9
Anomalies or additional comments:	



2016/01/13

Frontier Analytical Laboratory

PROJECT REQUEST SHEET

Project #: 9548 Sample #: 1-3 Client Manager: BS
 Client: Fremont Analytical Hold Time: 01/06/2017
 Matrix: Aqueous Extraction Batch: 3570 Due Date: 02/04/2016
 Method: EPA 1613 D/F Storage: R3
 SOP: SOPs: EP2A Rev.12 IP2A Rev.14

COMMENTS/INSTRUCTIONS: - NO CAPS -

Sample	Full Weight (g)	Empty Weight (g)
9548-001-0001-SA	1518.82g	501.45g 501.45g
9548-002-0001-SA	1551.42g	501.68g
9548-003-0001-SA	1558.42g	510.67g

Results: 9548
 9548-03RI

Instrument: Fab3
 DB5 _____
 DB225 _____
 DB1 _____
 Other _____

Extract/s located in box: "Triangle Man"

Standards: 9496 / RI = 9570

L4 DATA package
 EIM EDD.

Frontier Analytical Laboratory Percent Solids

FAL Project: 9548

Sample ID	Chemist	Date	Boat Weight (g)	Wet Sample Weight (g)	Dry Sample Weight (g)	% Solids	Wet Wt Oven Temp	Dry Wt Oven Temp
9548-001-0001-SA	KH	1.29.16	1.30g	6.37g	0.00g	0.00%	110°C	111°C
9548-002-0001-SA	↓	↓	1.31g	7.13g	0.00g	0.00%	↓	↓
9548-003-0001-SA	↓	↓	1.29g	8.64g	0.00g	0.00%	↓	↓

% Solids Summary:

Non-Filtered Determination

1. Place an aliquot of sample into a pre-weighed aluminum weighing boat. Use approximately two to ten grams for solid samples, approximately ten milliliters for aqueous samples.
2. Record the weight.
3. Dry sample overnight at approximately 110°C.

Filtered Determination

1. Pre-weigh a glass fiber filter of appropriate pore size and pressure filter a sample aliquot (200-1000mL) through it.
2. Air dry the filter and record the dry weight.

Percent Solids calculation

$$\% \text{ solids} = \text{aliquot after drying} / \text{aliquot before drying} \times 100$$

- Samples containing one percent solids or less are prepared as aqueous samples.
- Samples containing greater than one percent solids are prepared as solid samples.

Frontier Analytical Laboratory
EXTRACTION SHEET

Project #: 9548 Extraction Date: 2016-01-29 Extraction Chemist: KH

Method/Analysis: EPA 1613 D/F

Procedure: SPE/SOX Solvent: Toluene

Sample ID	Wet wt. (g/L)	Dry wt. (g/L)	IS		NS		CSS ✓	
			Amt: 10.0uL ID: 151209A Vial: 1 2 Chemist/Witness/Date	Amt: 10.0uL ID: 151209B Vial: 1 Chemist/Witness/Date	Amt: 10.0uL ID: 151209C ✓ Vial: 1 ✓ Chemist/Witness/Date			
3570-001-0001-MB	(1.000L)	NA	KH	1/29/16	NA		KH	NOT Available 30/16
3570-001-0001-OPR	(1.000L)	↓		↓	KH	1/29/16		↓
9548-001-0001-SA	1.017L	↓		↓	NA			↓
9548-002-0001-SA	1.050L	↓		↓				↓
9548-003-0001-SA	1.048L	↓		↓				↓

AX-21 Charcoal Cleaned	130410	Acetone	156456	Acid Alumina	A0325890	Hexane	157202
Methanol	156225	Methylene Chloride (DCM)	55281	Silica Gel	TA1975634	Sodium Hydroxide 1N	151965
Sodium Sulfate	XK07C	Sulfuric Acid	153943	Tetradecane	147332	Toluene	55282
Water	55215	C-18 Empore Discs	320818D	Cyclohexane	54303		

Comments:

Frontier Analytical Laboratory
CLEANUP SHEET

Project #: 9548

Method/Analysis: EPA 1613 D/F

Splits: 0 Split Date: N/A Final Volume: 20.0uL

Sample ID	Cleanup 1	Cleanup 2	Cleanup 3	RS /
	MSG-AA	NA	NA	Amt: 10.0uL <u>D</u> ID: 151209 <u>KH 1-30-16</u> Vial: 3 / Chemist/Witness/Date
	Chemist/Date	Chemist/Date	Chemist/Date	Chemist/Witness/Date
3570-001-0001-MB	<u>KH 1-30-16</u>	<u>NA</u>	<u>NA</u>	<u>KH Not Avail. 1-30-16</u>
3570-001-0001-OPR	↓	↓	↓	↓
9548-001-0001-SA	↓	↓	↓	↓
9548-002-0001-SA	↓	↓	↓	↓
9548-003-0001-SA	↓	↓	↓	↓

AX-21 Charcoal Cleaned	130410	Acetone	156456	Acid Alumina	A0325890	Hexane	157202
Methanol	156225	Methylene Chloride (DCM)	55281	Silica Gel	TA1975634	Sodium Hydroxide 1N	151965
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Water	55215	C-18 Empore Discs	320818D	Cyclohexane	54303		

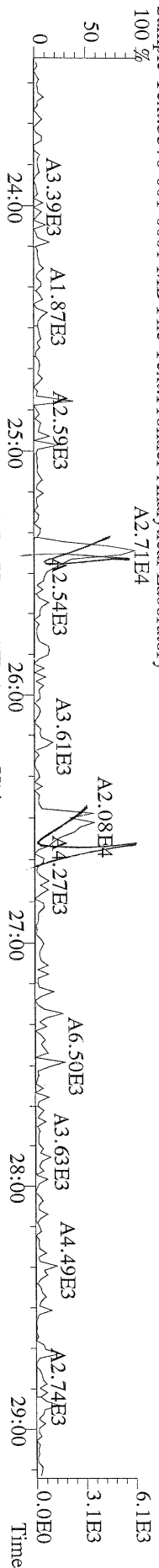
Comments:

Name	Resp	RA	RT	RRF	Conc	Qual	Fac Noise-1	Noise-2	DL	#Hom	
2,3,7,8-TCDD	*	* n	NotFnd	1.27	*		2.50	566	634	0.447	
1,2,3,7,8-PeCDD	*	* n	NotFnd	1.01	*		2.50	688	399	0.654	
1,2,3,4,7,8-HxCDD	*	* n	NotFnd	1.04	*		2.50	1060	623	1.24	
1,2,3,6,7,8-HxCDD	*	* n	NotFnd	1.05	*		2.50	1060	623	1.25	
1,2,3,7,8,9-HxCDD	*	* n	NotFnd	1.14	*		2.50	1060	623	1.14	
1,2,3,4,6,7,8-HpCDD	*	* n	NotFnd	1.01	*		2.50	814	809	1.54	
OCDD	*	* n	NotFnd	1.08	*		2.50	1160	1450	3.62	
2,3,7,8-TCDF	*	* n	NotFnd	1.02	*		2.50	360	459	0.261	
1,2,3,7,8-PeCDF	*	* n	NotFnd	0.90	*		2.50	791	997	0.863	
2,3,4,7,8-PeCDF	*	* n	NotFnd	0.93	*		2.50	791	997	0.864	
1,2,3,4,7,8-HxCDF	*	* n	NotFnd	1.13	*		2.50	903	661	0.859	
1,2,3,6,7,8-HxCDF	*	* n	NotFnd	1.08	*		2.50	903	661	0.919	
2,3,4,6,7,8-HxCDF	*	* n	NotFnd	1.03	*		2.50	903	661	0.937	
1,2,3,7,8,9-HxCDF	*	* n	NotFnd	1.05	*		2.50	903	661	1.17	
1,2,3,4,6,7,8-HpCDF	*	* n	NotFnd	1.24	*		2.50	948	746	1.14	
1,2,3,4,7,8,9-HpCDF	*	* n	NotFnd	1.12	*		2.50	948	746	1.66	
OCDF	*	* n	NotFnd	1.09	*		2.50	627	1110	2.04	
											Rec
13C-2,3,7,8-TCDD	4.90e+07	0.82	y	27:16	1.10	1620					80.9
13C-1,2,3,7,8-PeCDD	4.05e+07	1.57	y	33:07	0.89	1660					83.0
13C-1,2,3,4,7,8-HxCDD	3.22e+07	1.23	y	38:29	0.87	1590					79.4
13C-1,2,3,6,7,8-HxCDD	3.24e+07	1.24	y	38:39	0.87	1590					79.6
13C-1,2,3,4,6,7,8-HpCDD	2.96e+07	1.06	y	44:04	0.84	1520					75.8
13C-OCDD	4.83e+07	0.90	y	49:36	0.69	2980					74.5
13C-2,3,7,8-TCDF	6.74e+07	0.80	y	26:32	1.02	1750					87.6
13C-1,2,3,7,8-PeCDF	5.62e+07	1.58	y	31:23	1.00	1500					74.9
13C-2,3,4,7,8-PeCDF	5.44e+07	1.57	y	32:43	0.89	1630					81.7
13C-1,2,3,4,7,8-HxCDF	3.91e+07	0.53	y	37:05	1.26	1320					66.2
13C-1,2,3,6,7,8-HxCDF	4.21e+07	0.53	y	37:18	1.30	1390					69.3
13C-2,3,4,6,7,8-HxCDF	4.15e+07	0.53	y	38:14	1.25	1430					71.3
13C-1,2,3,7,8,9-HxCDF	3.53e+07	0.54	y	39:41	1.15	1320					65.9
13C-1,2,3,4,6,7,8-HpCDF	3.15e+07	0.47	y	42:10	0.96	1410					70.6
13C-1,2,3,4,7,8,9-HpCDF	2.62e+07	0.47	y	44:59	0.83	1350					67.7
13C-OCDF	5.58e+07	0.85	y	49:58	0.93	2570					64.3
37Cl-2,3,7,8-TCDD	1.81e+07			27:18	1.00	662					82.8
13C-1,2,3,4-TCDD	5.48e+07	0.81	y	26:41	-	79.3					
13C-1,2,3,4-TCDF	7.51e+07	0.80	y	25:25	-	69.3					
13C-1,2,3,7,8,9-HxCDD	4.67e+07	1.25	y	39:06	-	78.6					
Total Tetra-Dioxins	*		NotFnd	1.27	*		2.50	566	634	0.447	0
Total Penta-Dioxins	*		NotFnd	1.01	*		2.50	688	399	0.654	0
Total Hexa-Dioxins	*		NotFnd	1.08	*		2.50	1060	623	1.25	0
Total Hepta-Dioxins	*		NotFnd	1.01	*		2.50	814	809	1.54	0
Total Tetra-Furans	*		NotFnd	1.02	*		2.50	360	459	0.261	0
1st Fn. Tot Penta-Furans	*		NotFnd	0.91	*		2.50	791	997	0.864	PeCDF 0
Total Penta-Furans	*		NotFnd	0.91	*		2.50	791	997	0.864	* 0
Total Hexa-Furans	*		NotFnd	1.07	*		2.50	903	661	1.17	0
Total Hepta-Furans	*		NotFnd	1.19	*		2.50	948	746	1.66	0

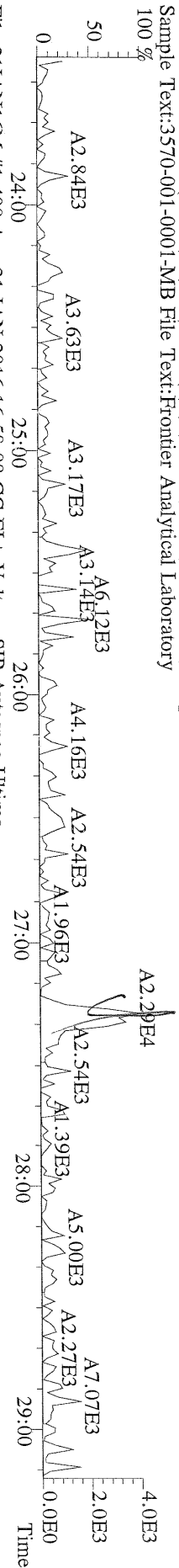
Analyst: [Signature]

Date: 2/11/14

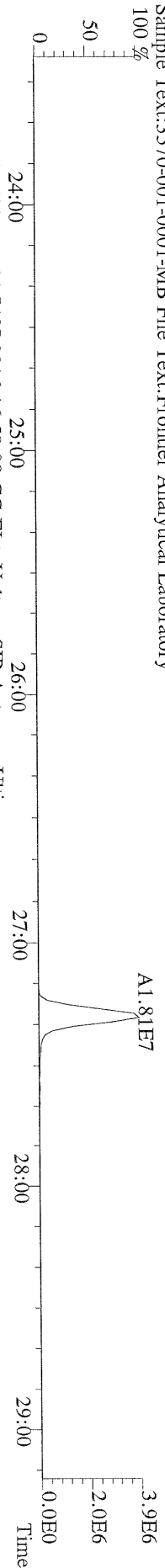
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319.8965 S:3 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-MB File Text:Frontier Analytical Laboratory



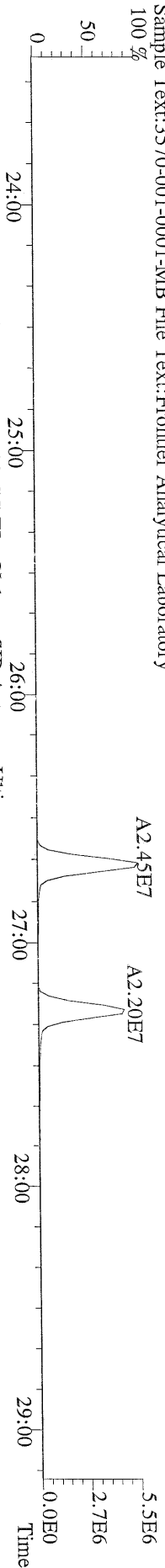
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321.8936 S:3 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-MB File Text:Frontier Analytical Laboratory



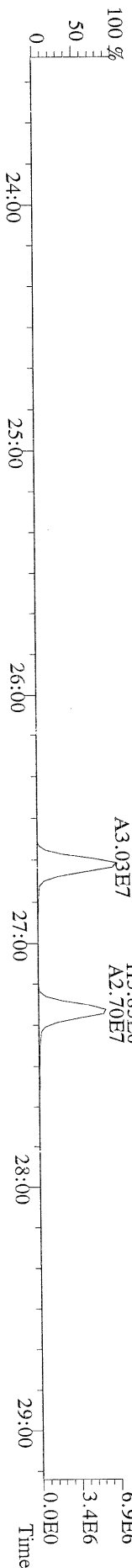
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327.8847 S:3 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-MB File Text:Frontier Analytical Laboratory



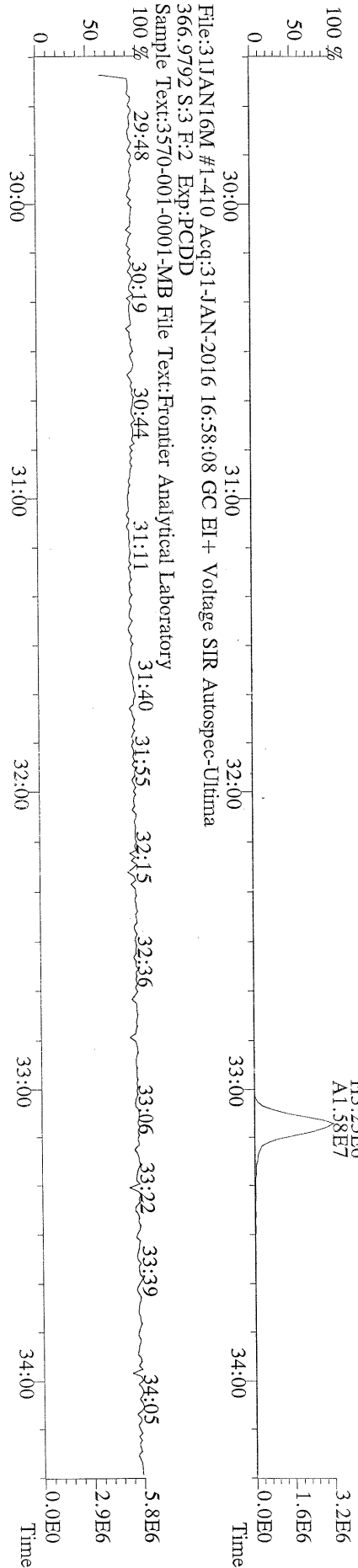
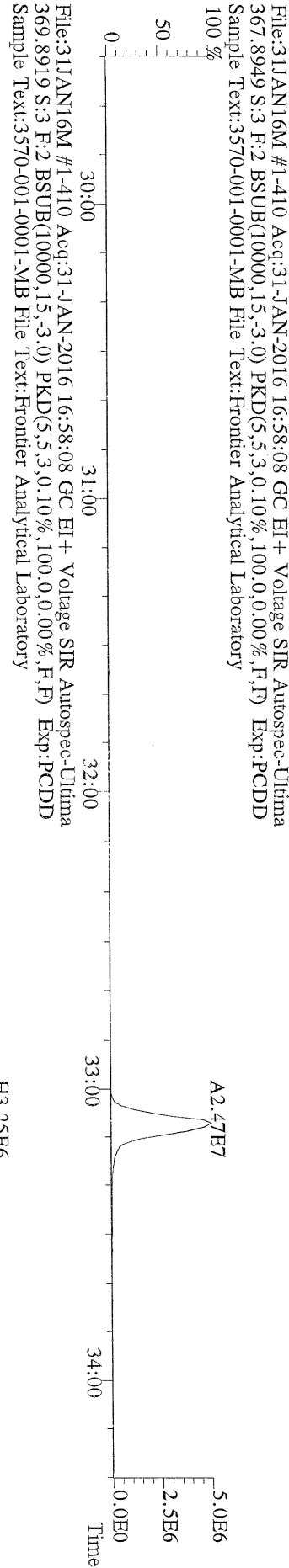
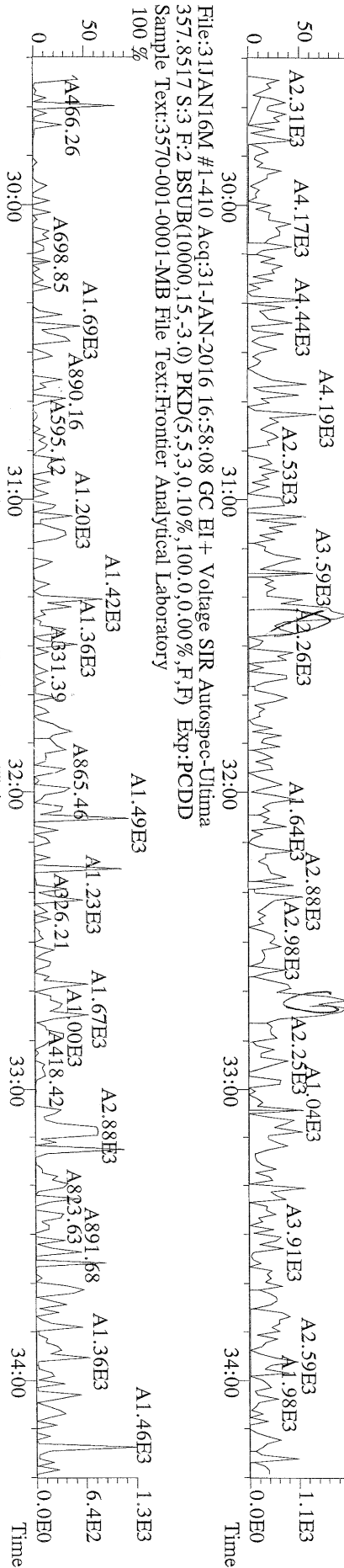
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331.9368 S:3 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD
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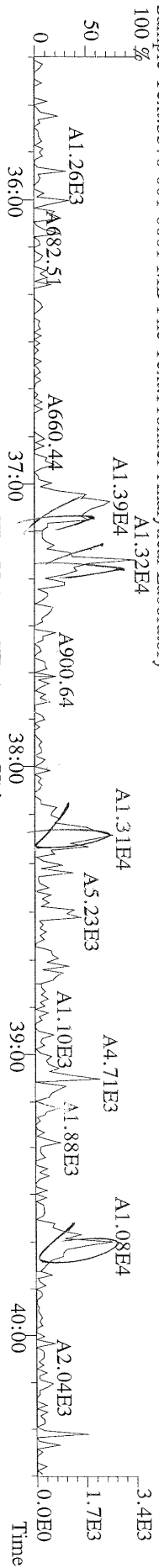
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333.9339 S:3 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-MB File Text:Frontier Analytical Laboratory



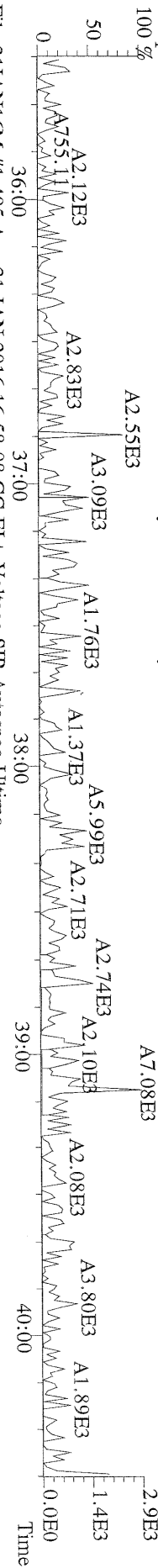
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355.8546 S:3 F:2 BSTUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-MB File Text:Frontier Analytical Laboratory



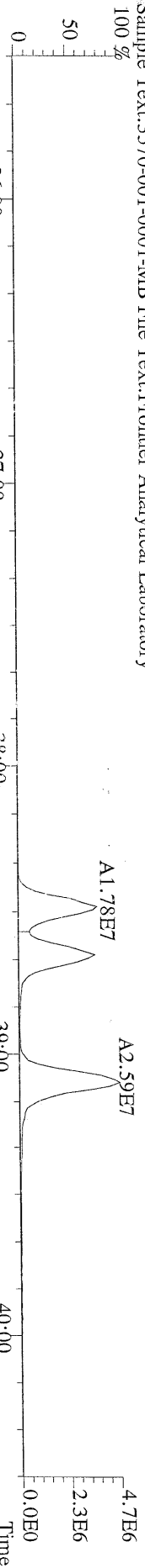
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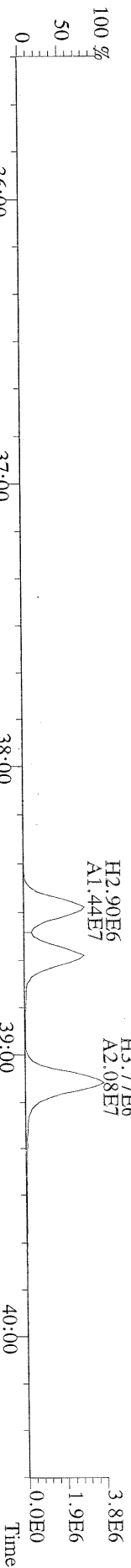
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 391.8127 S:3 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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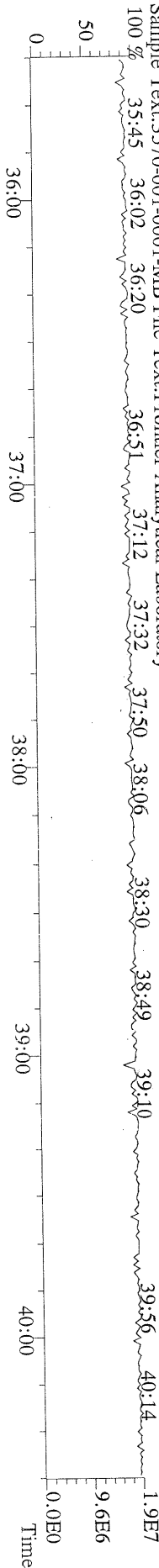
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 401.8530 S:3 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:3570-001-0001-MB File Text:Frontier Analytical Laboratory



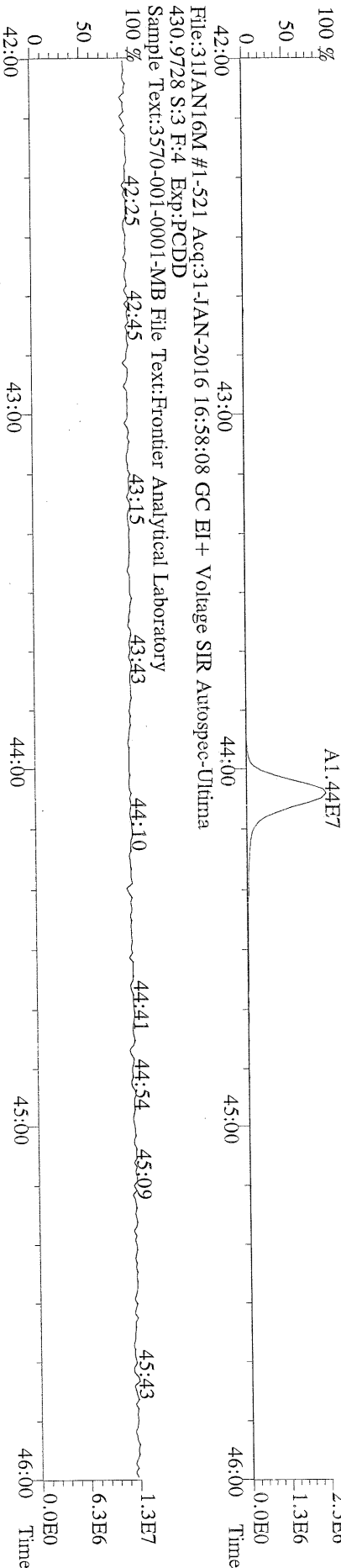
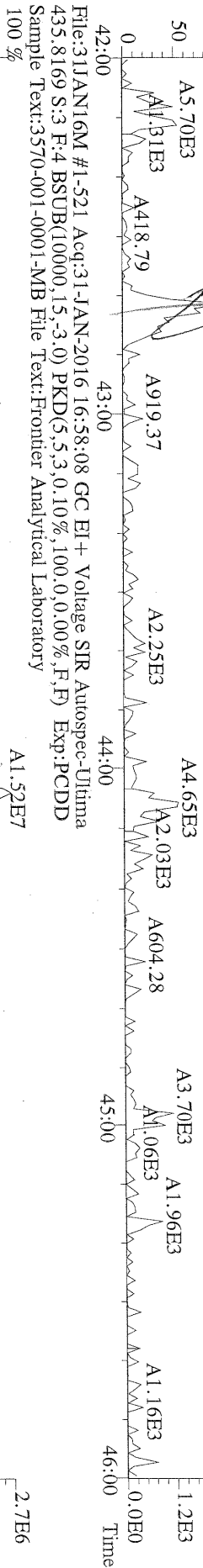
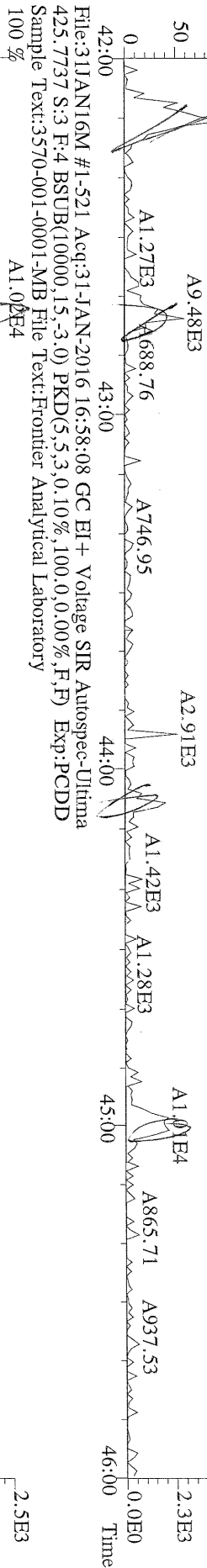
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 Sample Text:3570-001-0001-MB File Text:Frontier Analytical Laboratory



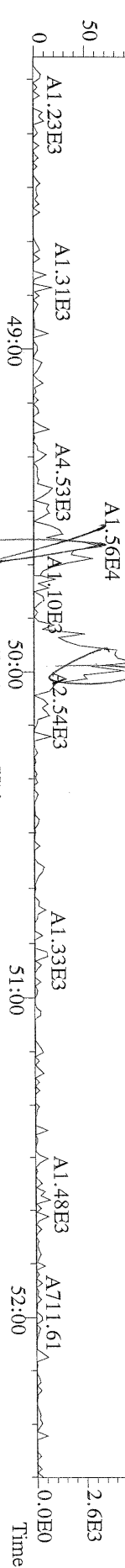
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 380.9760 S:3 F:3 Exp:PCDD
 Sample Text:3570-001-0001-MB File Text:Frontier Analytical Laboratory



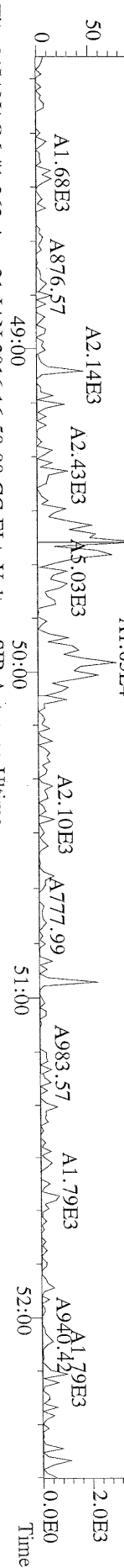
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423.7767 S:3 F:4 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-MB File Text:Frontier Analytical Laboratory
100 % A1.84E4



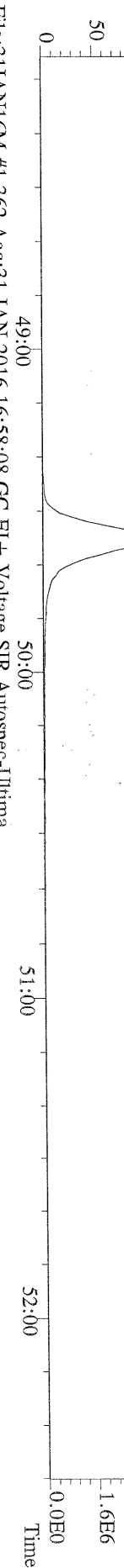
File:31JAN16M #1-362 Acq:31-JAN-2016 16:58:08 GC EI+ Voltage SIR Autospec-Ultima
457.7377 S:3 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-MB File Text:Frontier Analytical Laboratory



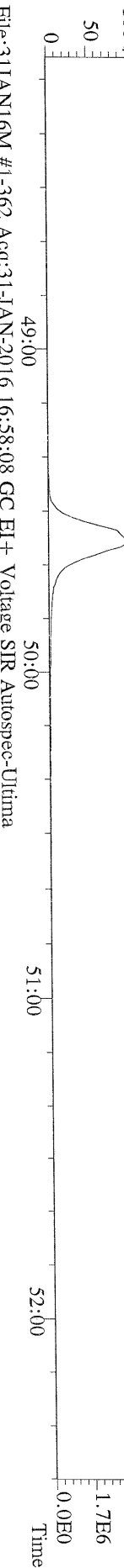
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459.7348 S:3 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-MB File Text:Frontier Analytical Laboratory



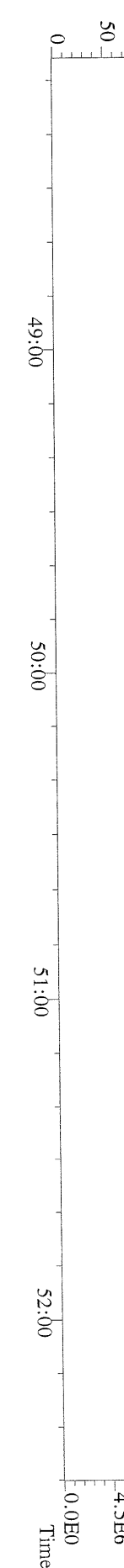
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469.7780 S:3 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-MB File Text:Frontier Analytical Laboratory



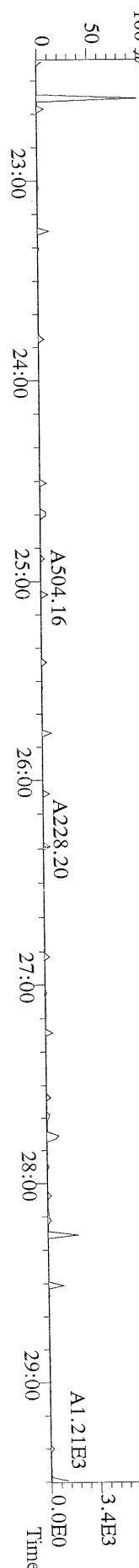
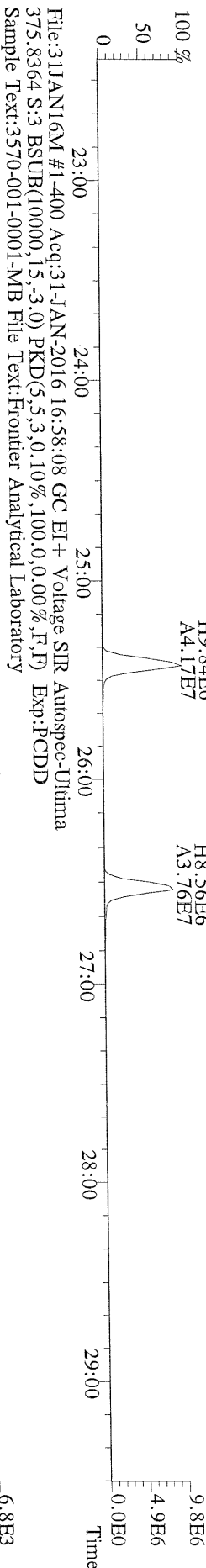
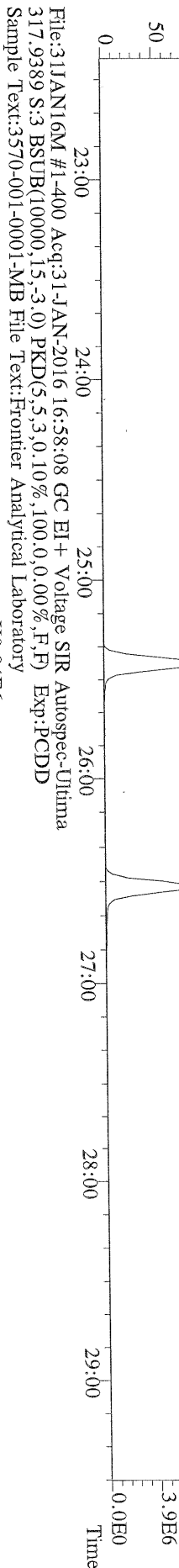
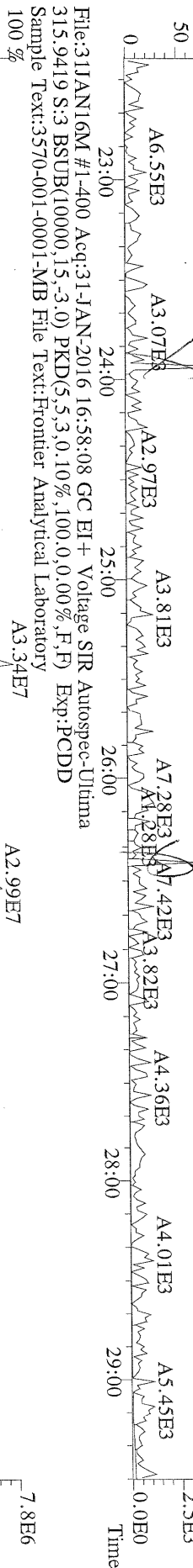
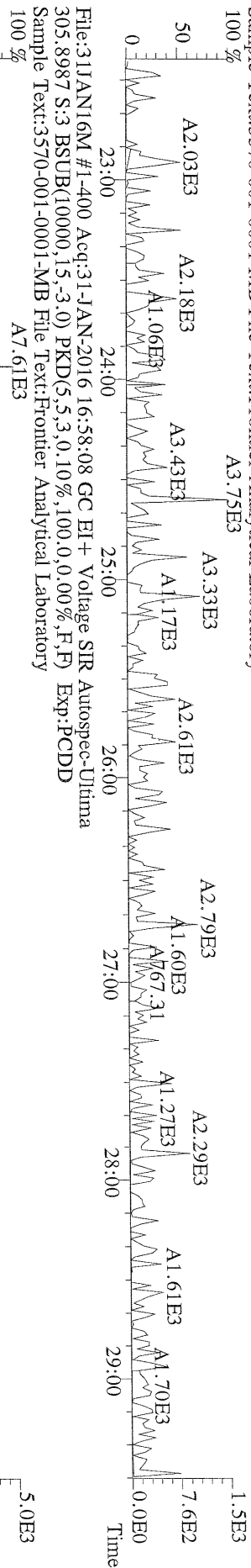
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471.7750 S:3 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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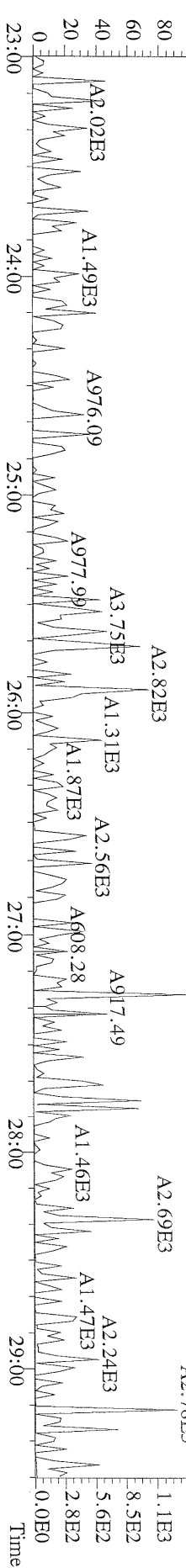
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454.9728 S:3 F:5 Exp:PCDD
Sample Text:3570-001-0001-MB File Text:Frontier Analytical Laboratory



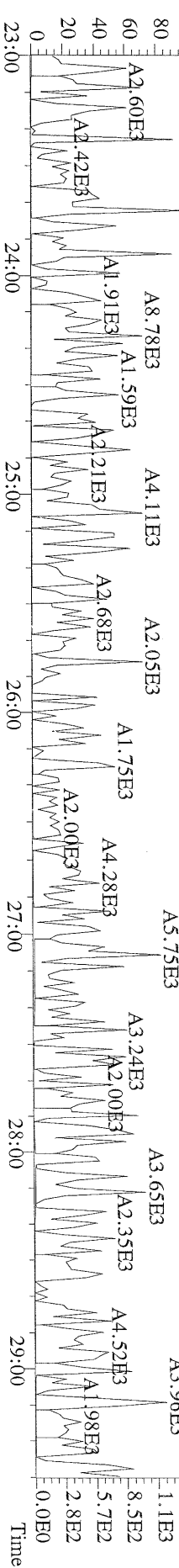
File:31JAN16M #1-400 Acq:31-JAN-2016 16:58:08 GC EI+ Voltage SIR Autospec-Ultima
303.9016 S:3 BSUB(10000,15,-3.0) PKD(5.5,3.0,100.0,0.000% ,F,F) Exp:PCDD
Sample Text:3570-001-0001-MB File Text:Frontier Analytical Laboratory



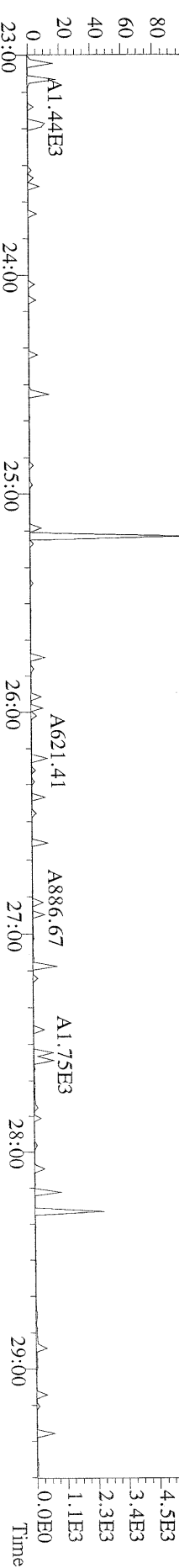
File:31JIAN16M #1-400 Acq:31-JAN-2016 16:58:08 GC EI + Voltage SIR Autospec-Ultima
 339.8568 S:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:3570-001-0001-MB File Text:Frontier Analytical Laboratory



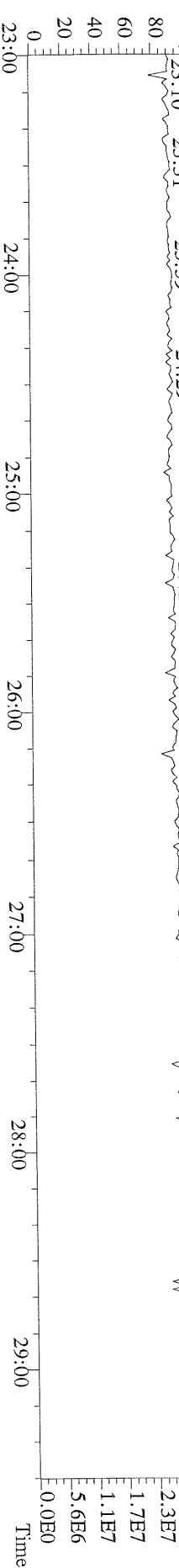
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 341.8568 S:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:3570-001-0001-MB File Text:Frontier Analytical Laboratory



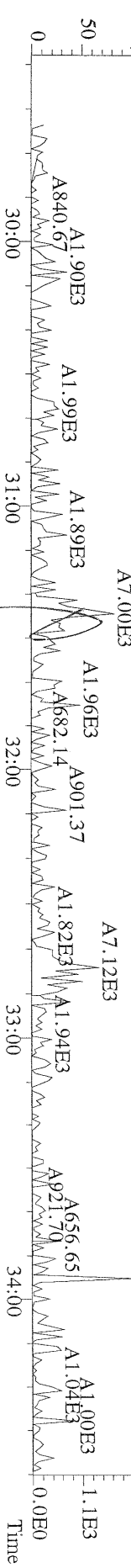
File:31JIAN16M #1-400 Acq:31-JAN-2016 16:58:08 GC EI + Voltage SIR Autospec-Ultima
 409.7974 S:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
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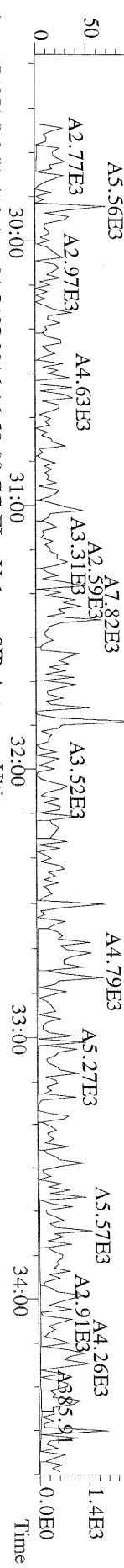
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 330.9792 S:3 Exp:PCDD
 Sample Text:3570-001-0001-MB File Text:Frontier Analytical Laboratory



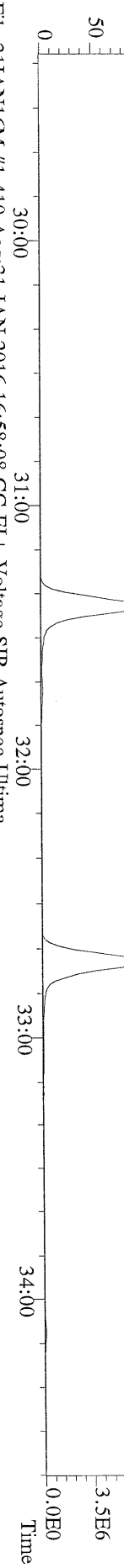
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339.8597 S:3 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0.00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-MB File Text:Frontier Analytical Laboratory



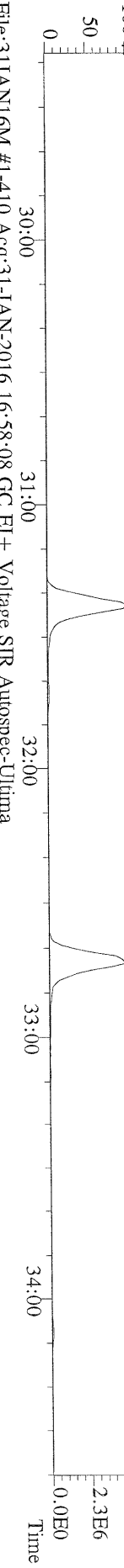
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341.8568 S:3 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0.00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-MB File Text:Frontier Analytical Laboratory



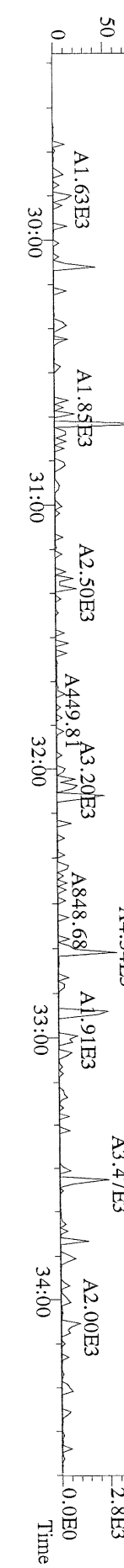
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351.9000 S:3 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0.00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-MB File Text:Frontier Analytical Laboratory



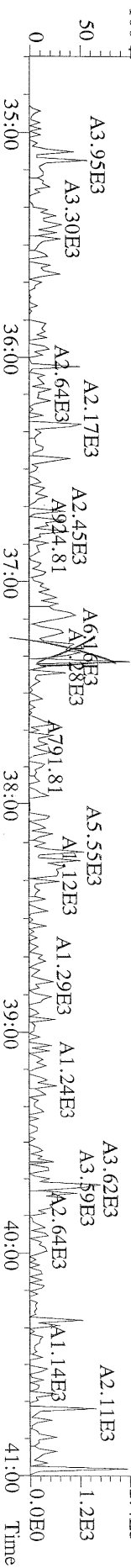
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353.8970 S:3 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0.00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-MB File Text:Frontier Analytical Laboratory



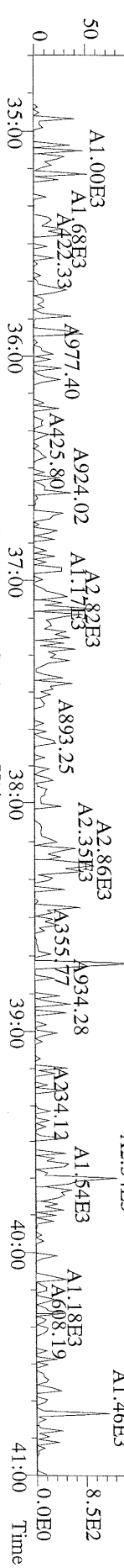
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409.7974 S:3 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0.00%,F,F) Exp:PCDD
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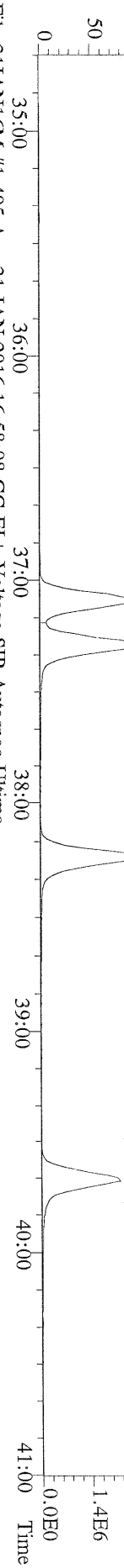
File:31JAN16M #1-495 Acq:31-JAN-2016 16:58:08 GC EI+ Voltage SIR Autospec-Ultima
373.8207 S:3 F:3 BSTUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-MB File Text:Frontier Analytical Laboratory



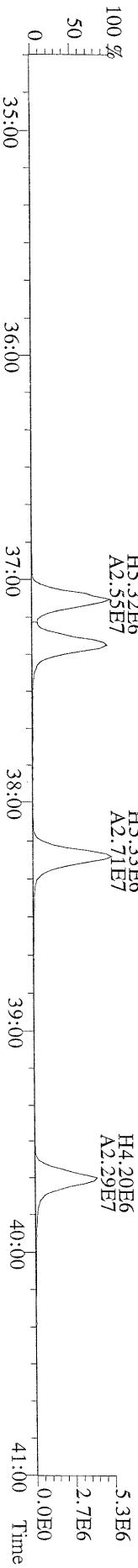
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375.8178 S:3 F:3 BSTUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-MB File Text:Frontier Analytical Laboratory



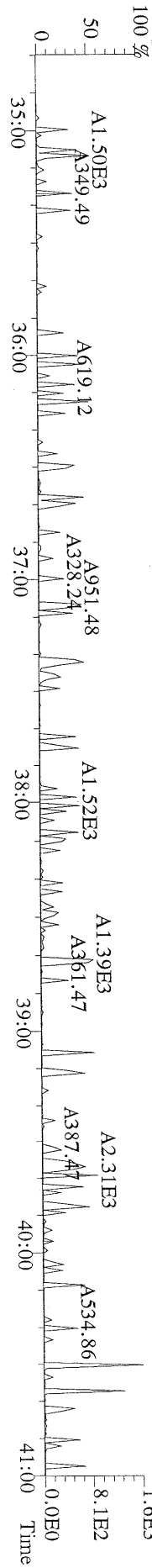
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383.8639 S:3 F:3 BSTUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-MB File Text:Frontier Analytical Laboratory



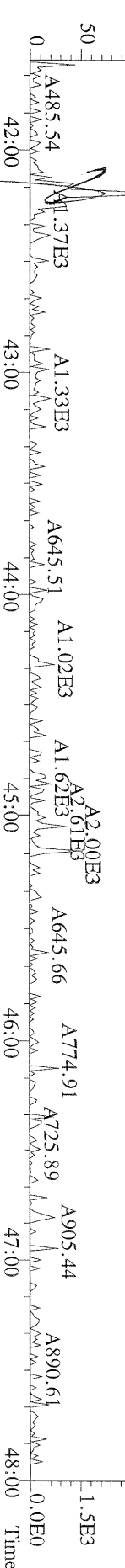
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385.8610 S:3 F:3 BSTUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-MB File Text:Frontier Analytical Laboratory



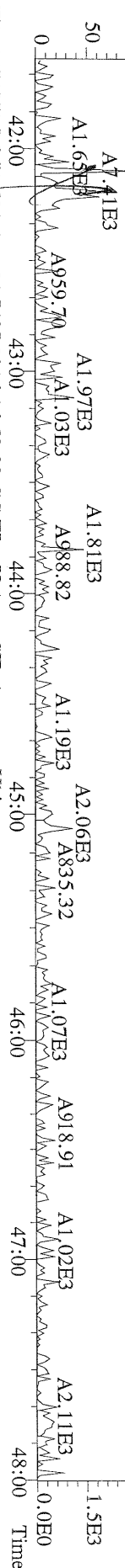
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445.7555 S:3 F:3 BSTUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-MB File Text:Frontier Analytical Laboratory



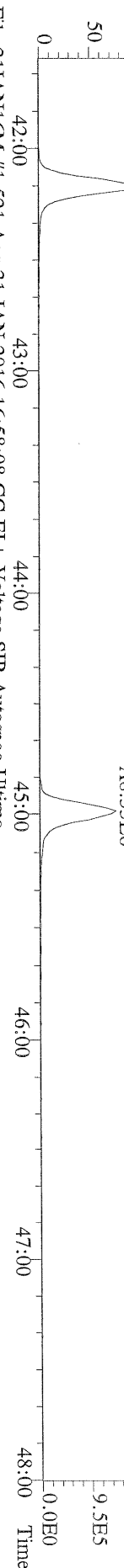
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407.7818 S:3 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0%,F,F) Exp:PCDD
Sample Text:3570-001-0001-MB File Text:Frontier Analytical Laboratory



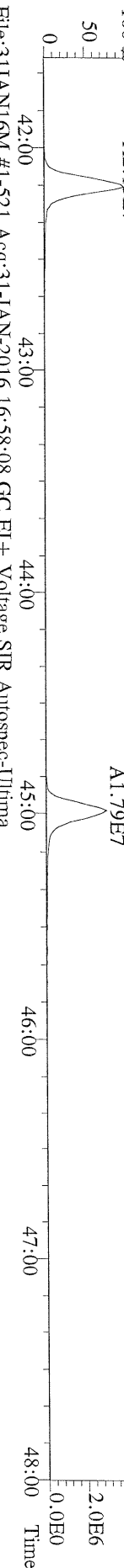
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409.7788 S:3 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0%,F,F) Exp:PCDD
Sample Text:3570-001-0001-MB File Text:Frontier Analytical Laboratory



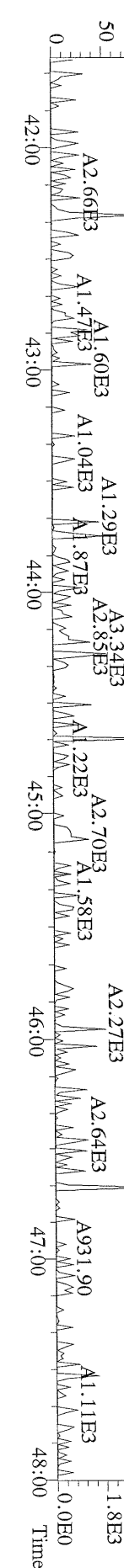
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417.8253 S:3 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0%,F,F) Exp:PCDD
Sample Text:3570-001-0001-MB File Text:Frontier Analytical Laboratory



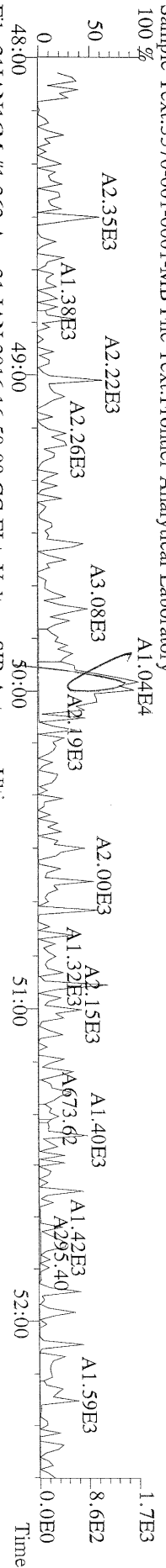
File:31JAN16M #1-521 Acq:31-JAN-2016 16:58:08 GC EI+ Voltage SIR Autospec-Ultima
419.8220 S:3 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0%,F,F) Exp:PCDD
Sample Text:3570-001-0001-MB File Text:Frontier Analytical Laboratory



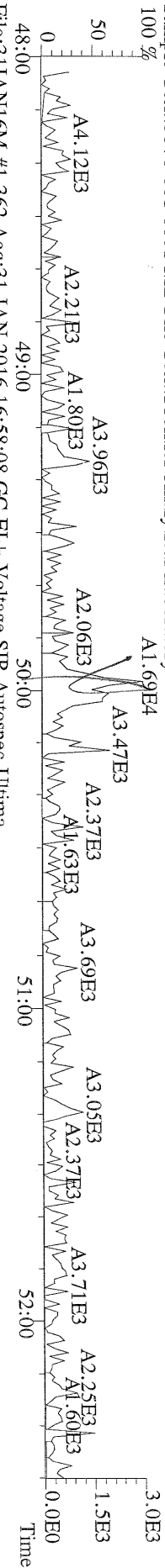
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479.7165 S:3 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0%,F,F) Exp:PCDD
Sample Text:3570-001-0001-MB File Text:Frontier Analytical Laboratory



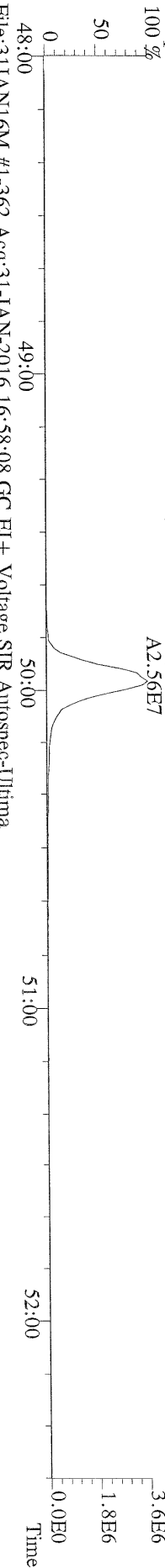
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441.7428 S:3 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,100,0,0.00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-MB File Text:Frontier Analytical Laboratory



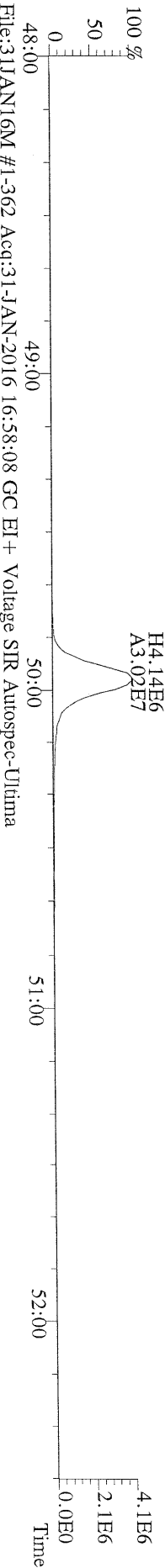
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443.7398 S:3 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,100,0,0.00%,F,F) Exp:PCDD
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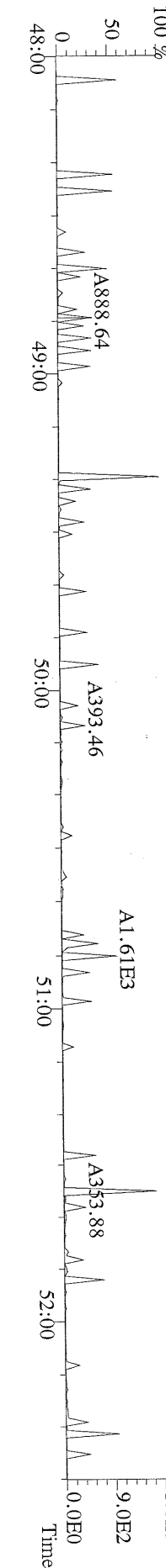
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453.7831 S:3 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,100,0,0.00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-MB File Text:Frontier Analytical Laboratory



File:31JAN16M #1-362 Acq:31-JAN-2016 16:58:08 GC EI+ Voltage SIR Autospec-Ultima
455.7801 S:3 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,100,0,0.00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-MB File Text:Frontier Analytical Laboratory



File:31JAN16M #1-362 Acq:31-JAN-2016 16:58:08 GC EI+ Voltage SIR Autospec-Ultima
513.6775 S:3 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,100,0,0.00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-MB File Text:Frontier Analytical Laboratory



3570-001-0001-OPR

USEPA - ITD

FORM 8A
PCDD/PCDF ONGOING PRECISION AND RECOVERY (OPR)

Lab Name: Frontier Analytical Laboratory Episode No.:
Contract No.: SAS No.:
Matrix (aqueous/solid/leachate): Aqueous OPR Data Filename: 31JAN16M Sam:2
Ext. Date: 1/29/16 Shift: Day Analysis Date: 31-JAN-16 16:03:22

ALL CONCENTRATIONS REPORTED ON THIS FORM ARE CONCENTRATIONS IN EXTRACT.

	SPIKE CONC. (ng/mL)	CONC. FOUND (ng/mL)	OPR CONC. LIMITS (1) (ng/mL)
NATIVE ANALYTES			
2,3,7,8-TCDD	10	9.79	6.70 - 15.8
1,2,3,7,8-PeCDD	50	44.5	35.0 - 71.0
1,2,3,4,7,8-HxCDD	50	44.3	35.0 - 82.0
1,2,3,6,7,8-HxCDD	50	44.7	38.0 - 67.0
1,2,3,7,8,9-HxCDD	50	44.6	32.0 - 81.0
1,2,3,4,6,7,8-HpCDD	50	44.1	35.0 - 70.0
OCDD	100	94.7	78.0 - 144
2,3,7,8-TCDF	10	8.93	7.50 - 15.8
1,2,3,7,8-PeCDF	50	46.9	40.0 - 67.0
2,3,4,7,8-PeCDF	50	48.1	34.0 - 80.0
1,2,3,4,7,8-HxCDF	50	47.7	36.0 - 67.0
1,2,3,6,7,8-HxCDF	50	48.3	42.0 - 65.0
2,3,4,6,7,8-HxCDF	50	48.5	35.0 - 78.0
1,2,3,7,8,9-HxCDF	50	48.1	39.0 - 65.0
1,2,3,4,6,7,8-HpCDF	50	47.5	41.0 - 61.0
1,2,3,4,7,8,9-HpCDF	50	47.5	39.0 - 69.0
OCDF	100	92.8	63.0 - 170

(1) Contract-required concentration limits for OPR as specified in Table 6, Method 1613

Analyst: 

Date: 2/1/16

USEPA - ITD

FORM 8B

PCDD/PCDF ONGOING PRECISION AND RECOVERY (OPR)

Lab Name: Frontier Analytical Laboratory Episode No.:

Contract No.: SAS No.:

Matrix (aqueous/solid/leachate): Aqueous OPR Data Filename: 31JAN16M Sam:2

Ext. Date: 1/29/16 Shift: Day Analysis Date: 31-JAN-16 16:03:22

ALL CONCENTRATIONS REPORTED ON THIS FORM ARE CONCENTRATIONS IN EXTRACT.

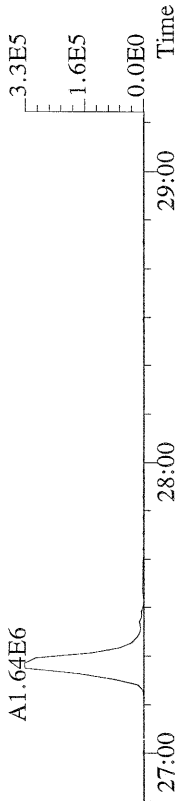
	SPIKE CONC. (ng/mL)	CONC. FOUND (ng/mL)	OPR CONC. LIMITS (1) (ng/mL)
LABELED COMPOUNDS			
13C-2,3,7,8-TCDD	100	74.3	20.0 - 175
13C-1,2,3,7,8-PeCDD	100	72.0	21.0 - 227
13C-1,2,3,4,7,8-HxCDD	100	69.1	21.0 - 193
13C-1,2,3,6,7,8-HxCDD	100	68.4	25.0 - 163
13C-1,2,3,4,6,7,8-HpCDD	100	64.5	26.0 - 166
13C-OCDD	200	121	26.0 - 397
13C-2,3,7,8-TCDF	100	77.4	22.0 - 152
13C-1,2,3,7,8-PeCDF	100	65.4	21.0 - 192
13C-2,3,4,7,8-PeCDF	100	70.2	13.0 - 328
13C-1,2,3,4,7,8-HxCDF	100	57.6	19.0 - 202
13C-1,2,3,6,7,8-HxCDF	100	58.1	21.0 - 159
13C-2,3,4,6,7,8-HxCDF	100	61.9	22.0 - 176
13C-1,2,3,7,8,9-HxCDF	100	54.8	17.0 - 205
13C-1,2,3,4,6,7,8-HpCDF	100	58.5	21.0 - 158
13C-1,2,3,4,7,8,9-HpCDF	100	55.0	20.0 - 186
13C-OCDF	200	102	26.0 - 397
CLEANUP STANDARD			
37Cl-2,3,7,8-TCDD	40	33.4	12.4 - 76.4

(1) Contract-required concentration limits for OPR as specified in Table 6, Method 1613
Labeled compound concentration limits are based on required percent recovery of 25%-150%.

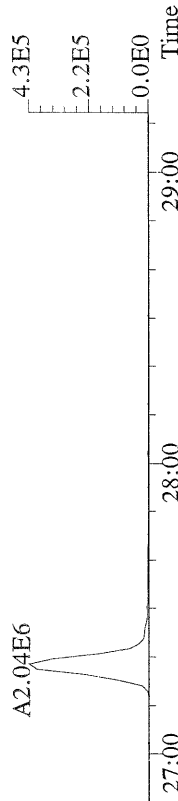
Analyst: 

Date: 2/1/16

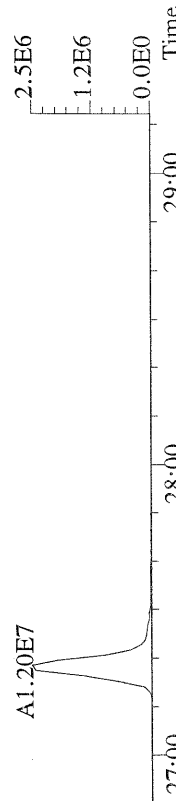
File:31JAN16M #1-400 Acq:31-JAN-2016 16:03:22 GC EI+ Voltage SIR Autospec-Ultima
319.8965 S:2 BSUB(10000,15,-3.0) PKD(5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



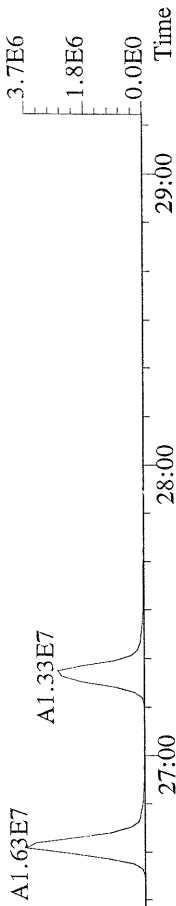
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321.8936 S:2 BSUB(10000,15,-3.0) PKD(5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



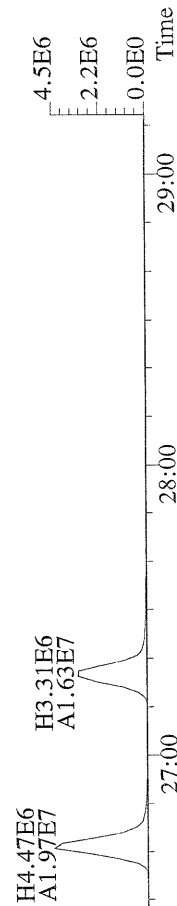
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327.8847 S:2 BSUB(10000,15,-3.0) PKD(5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



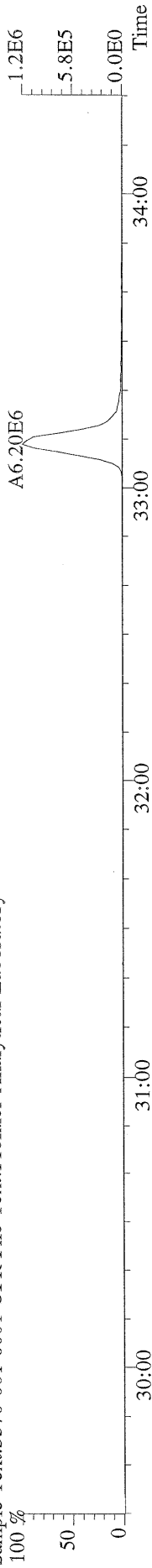
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331.9368 S:2 BSUB(10000,15,-3.0) PKD(5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



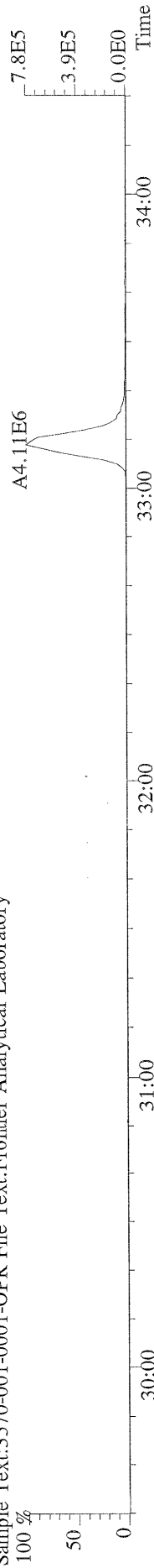
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333.9339 S:2 BSUB(10000,15,-3.0) PKD(5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



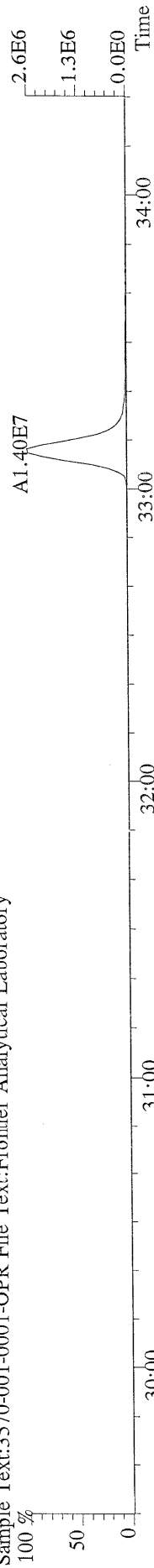
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355.8546 S:2 F:2 BSUB(10000,15-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



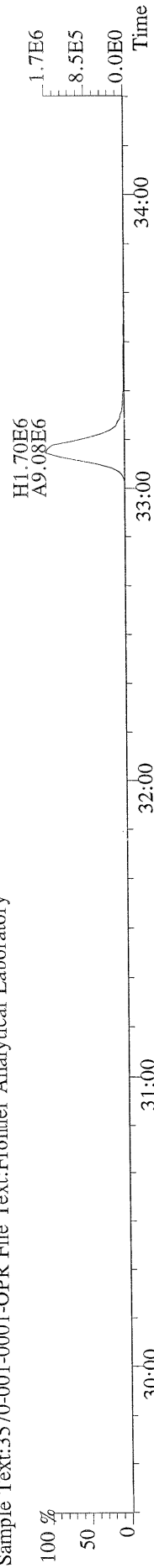
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357.8517 S:2 F:2 BSUB(10000,15-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



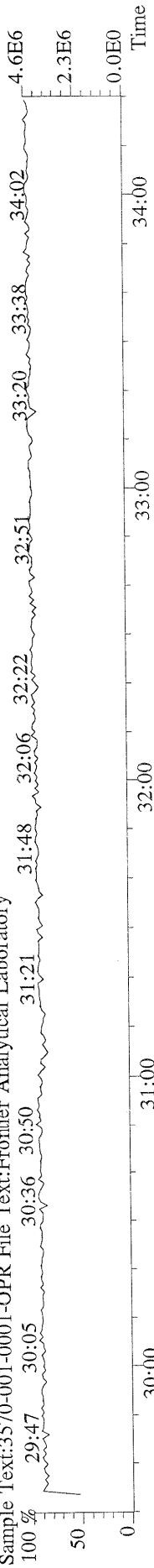
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367.8949 S:2 F:2 BSUB(10000,15-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



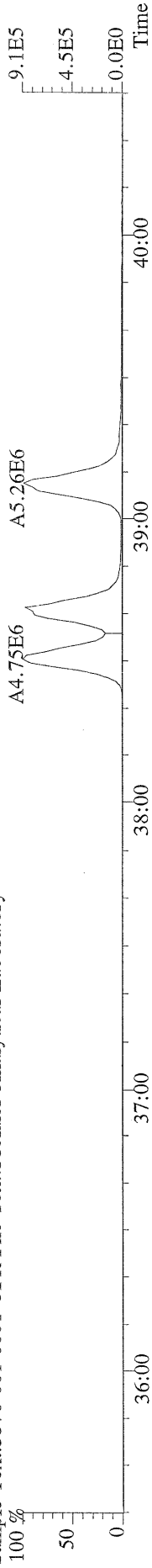
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369.8919 S:2 F:2 BSUB(10000,15-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



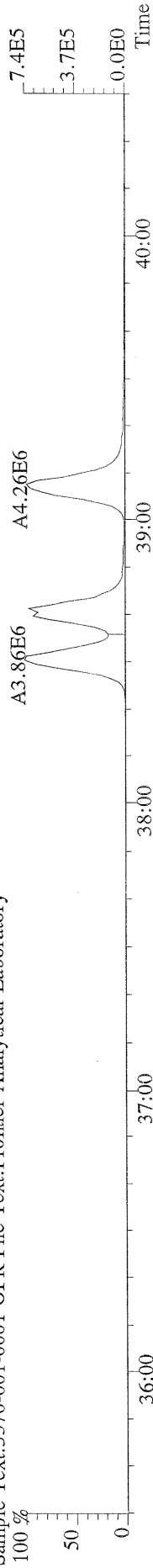
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366.9792 S:2 F:2 Exp:PCDD
Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



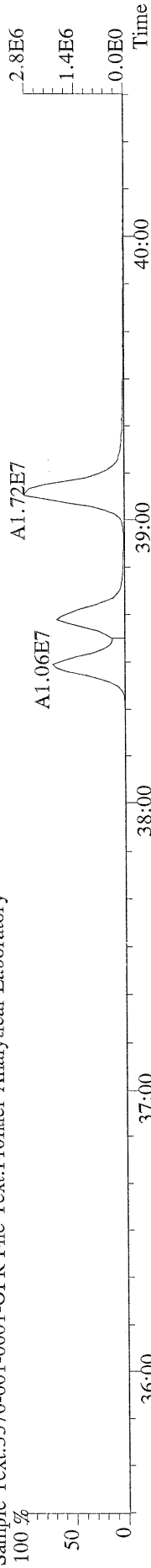
File:31JAN16M #1-495 Acq:31-JAN-2016 16:03:22 GC EI+ Voltage SIR Autospec-Ultima
389.8156 S:2 F:3 BSUB(10000,15 -3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



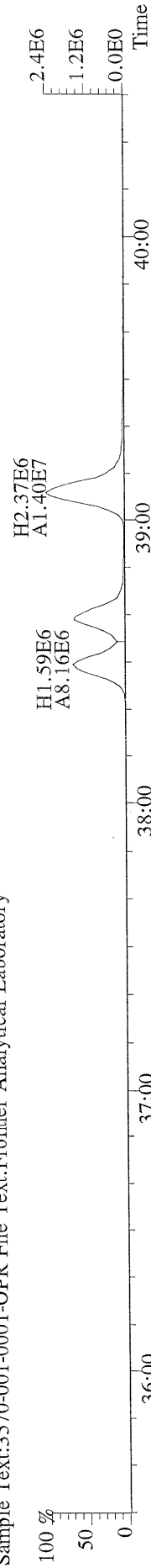
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391.8127 S:2 F:3 BSUB(10000,15 -3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



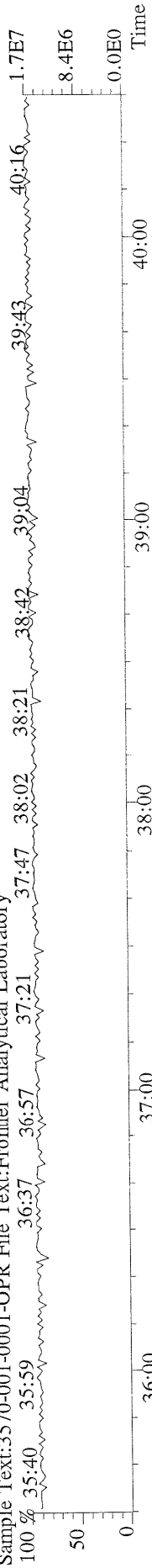
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401.8559 S:2 F:3 BSUB(10000,15 -3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



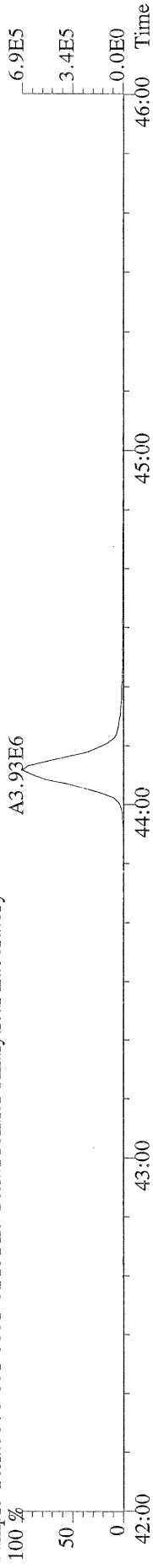
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403.8530 S:2 F:3 BSUB(10000,15 -3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



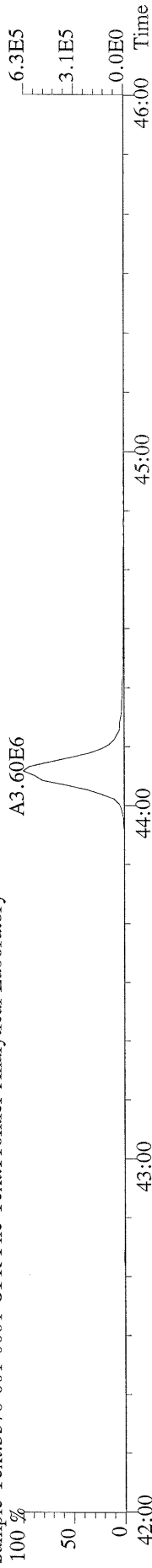
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380.9760 S:2 F:3 Exp:PCDD
Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



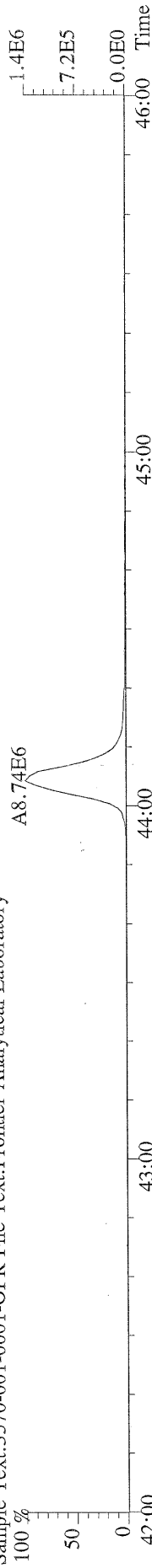
File:31JAN16M #1-521 Acq:31-JAN-2016 16:03:22 GC EI+ Voltage SIR Autospec-Ultima
423.7767 S:2 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



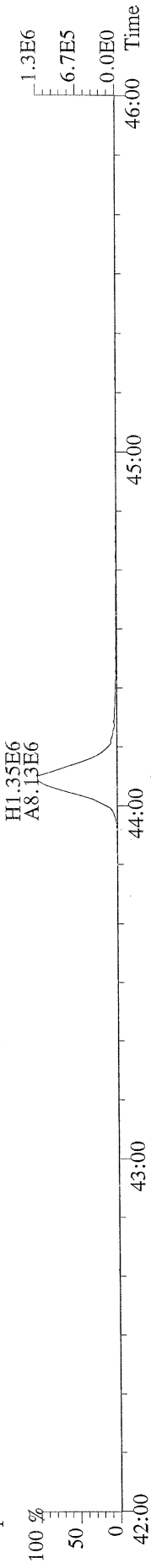
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425.7737 S:2 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



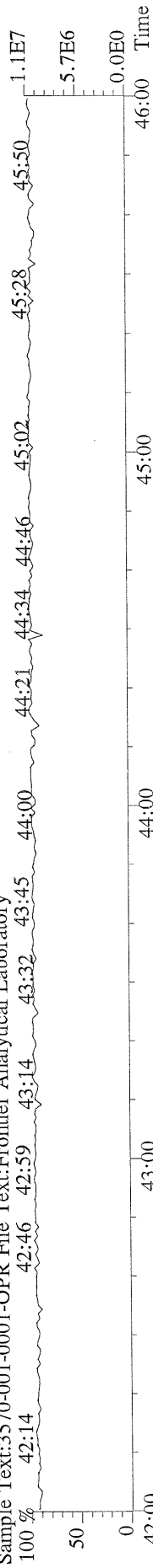
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435.8169 S:2 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



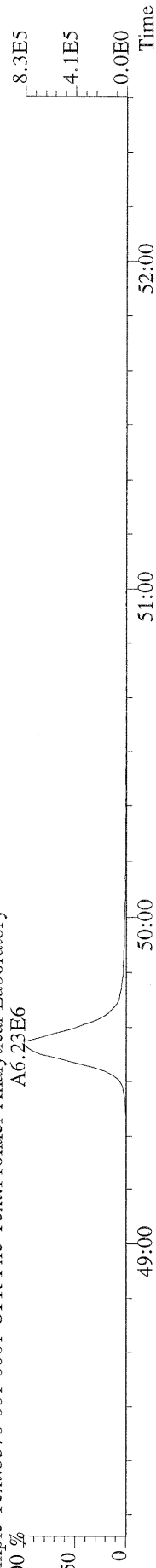
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437.8140 S:2 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



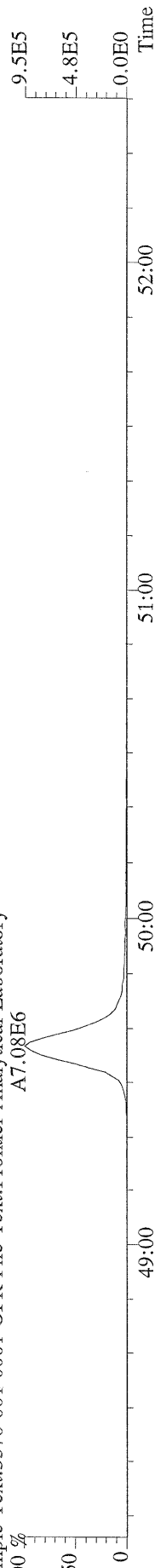
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430.9728 S:2 F:4 Exp:PCDD
Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



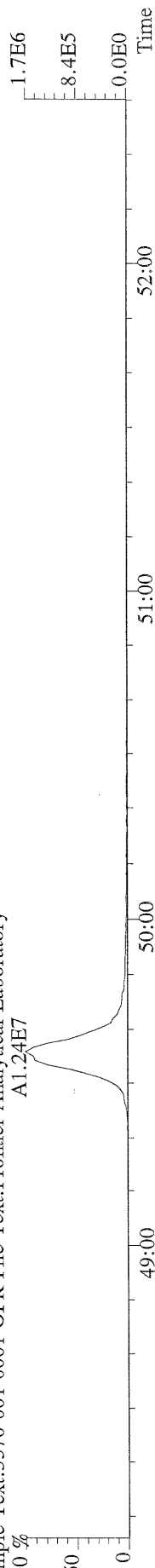
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457.7377 S:2 F:5 BSUB(10000,15,-3.0) PKD(5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



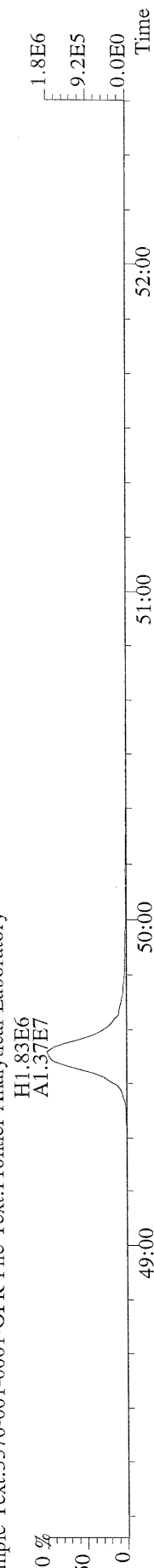
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459.7348 S:2 F:5 BSUB(10000,15,-3.0) PKD(5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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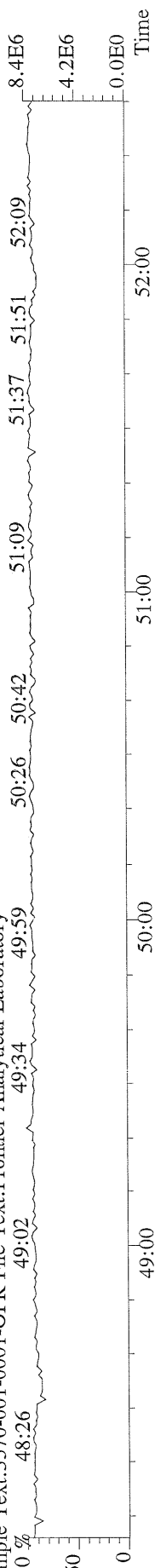
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469.7780 S:2 F:5 BSUB(10000,15,-3.0) PKD(5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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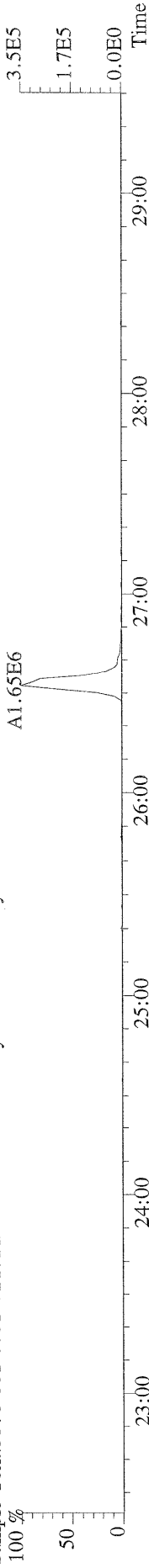
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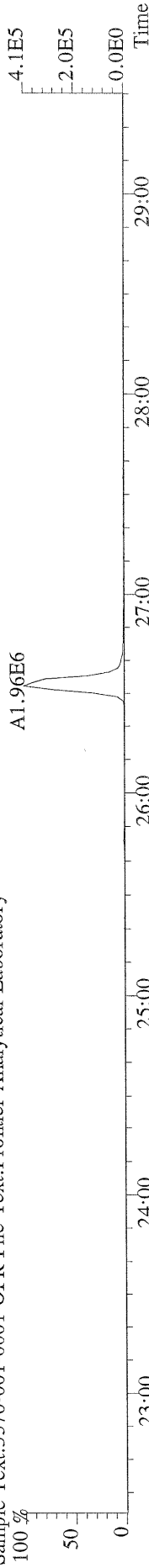
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454.9728 S:2 F:5 Exp:PCDD
Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



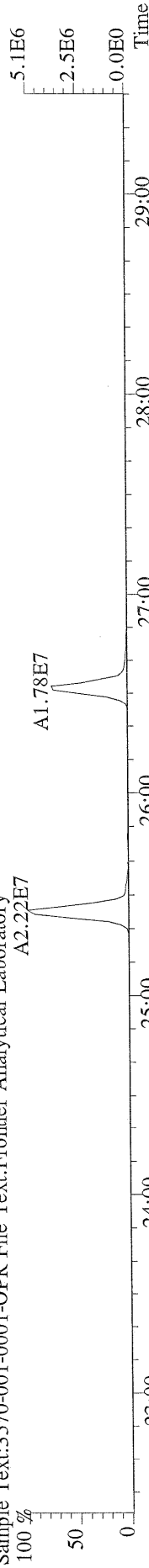
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303.9016 S:2 BSUB(10000,15,-3.0) PKD(5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
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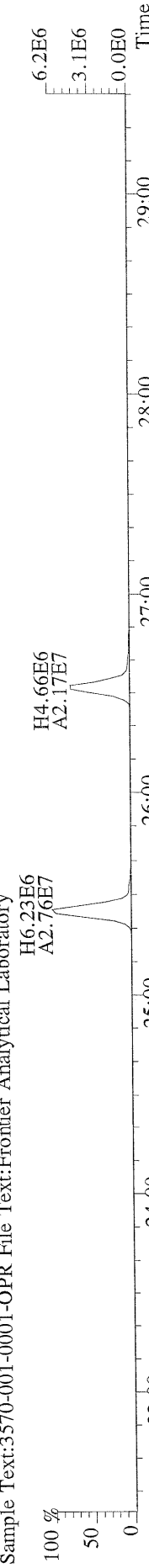
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305.8987 S:2 BSUB(10000,15,-3.0) PKD(5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



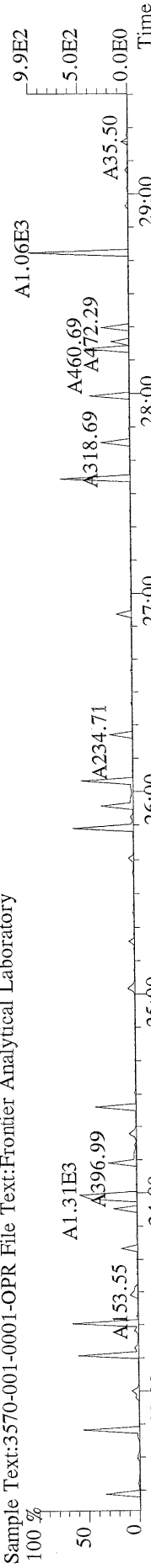
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315.9419 S:2 BSUB(10000,15,-3.0) PKD(5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



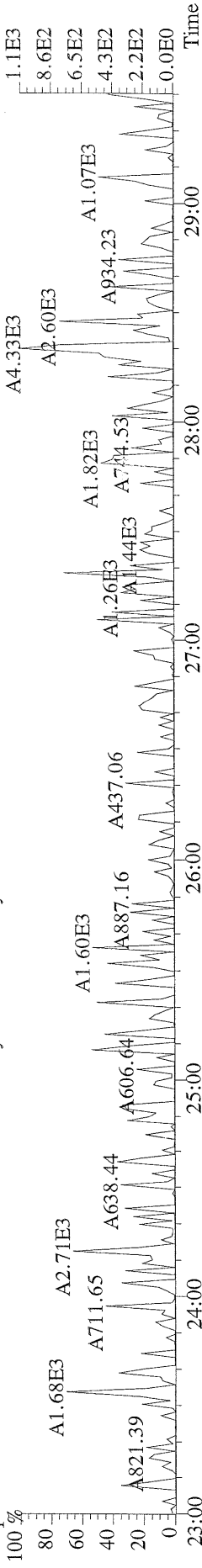
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317.9389 S:2 BSUB(10000,15,-3.0) PKD(5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



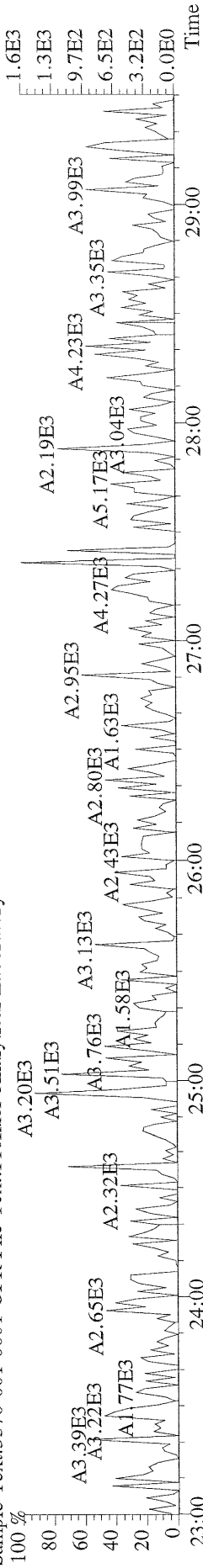
File:31JAN16M #1-400 Acq:31-JAN-2016 16:03:22 GC EI+ Voltage SIR Autospec-Ultima
375.8364 S:2 BSUB(10000,15,-3.0) PKD(5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



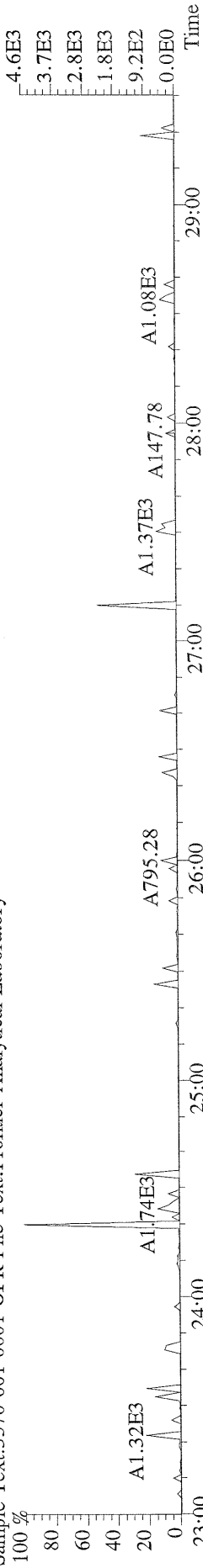
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 339.8597 S:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



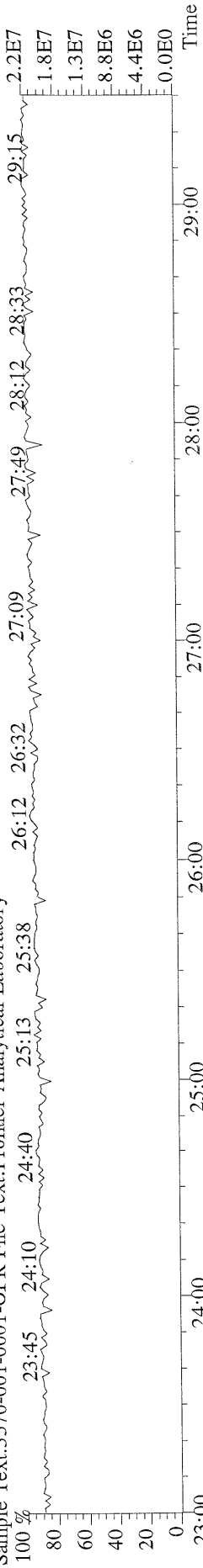
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 Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



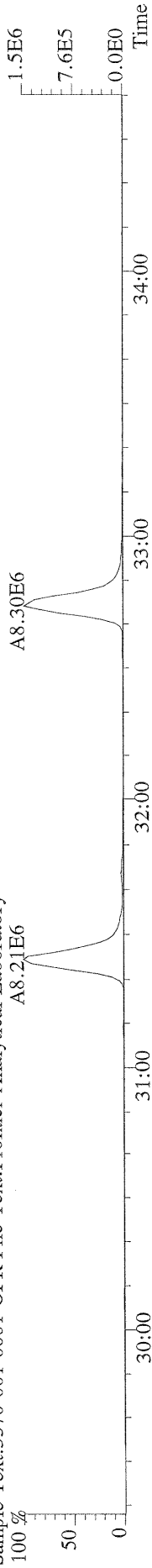
File:31JAN16M #1-400 Acq:31-JAN-2016 16:03:22 GC EI+ Voltage SIR Autospec-Ultima
 409.7974 S:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



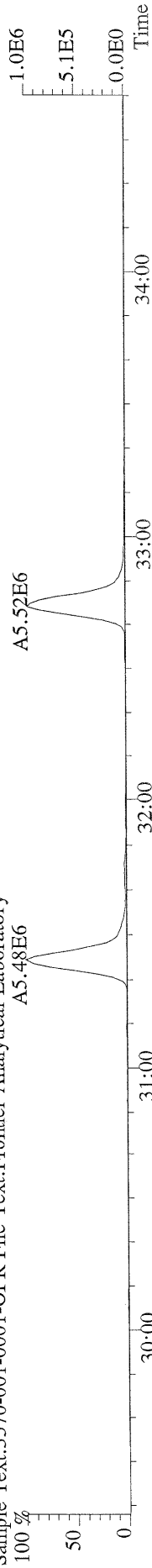
File:31JAN16M #1-400 Acq:31-JAN-2016 16:03:22 GC EI+ Voltage SIR Autospec-Ultima
 330.9792 S:2 Exp:PCDD
 Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



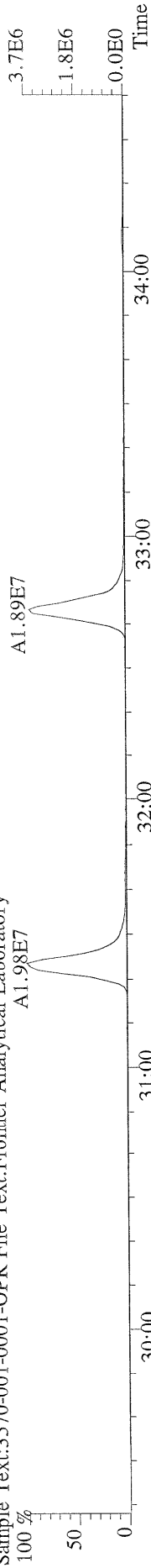
File:31JAN16M #1-410 Acq:31-JAN-2016 16:03:22 GC EI+ Voltage SIR Autospec-Ultima
339.8597 S:2 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



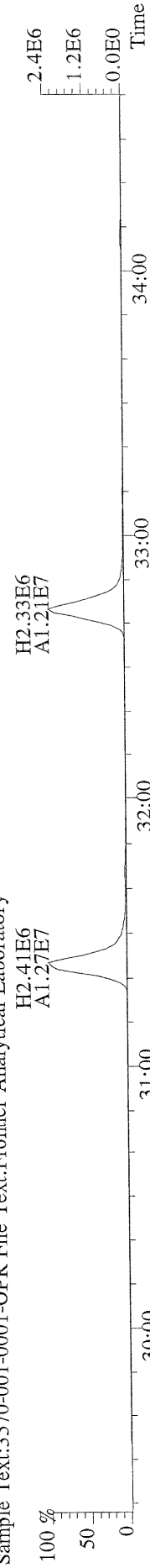
File:31JAN16M #1-410 Acq:31-JAN-2016 16:03:22 GC EI+ Voltage SIR Autospec-Ultima
341.8568 S:2 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



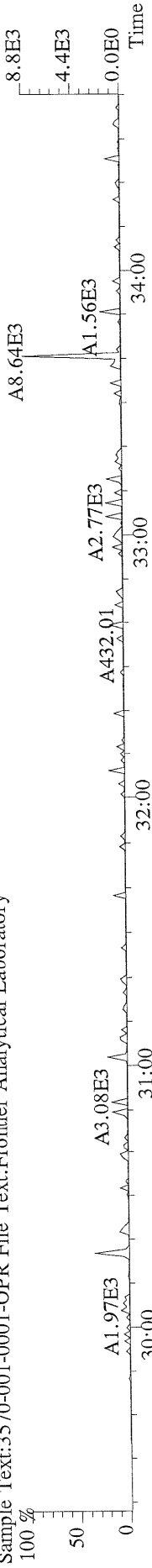
File:31JAN16M #1-410 Acq:31-JAN-2016 16:03:22 GC EI+ Voltage SIR Autospec-Ultima
351.9000 S:2 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



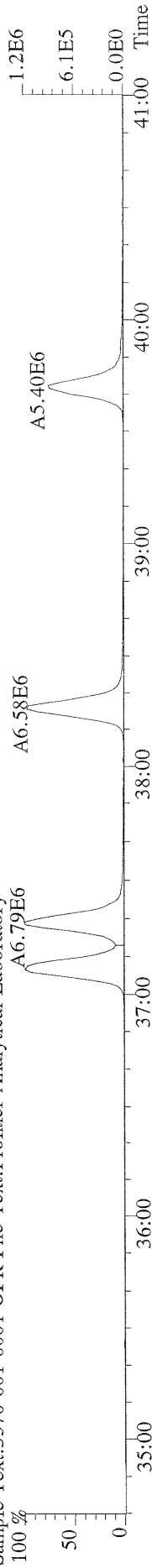
File:31JAN16M #1-410 Acq:31-JAN-2016 16:03:22 GC EI+ Voltage SIR Autospec-Ultima
353.8970 S:2 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



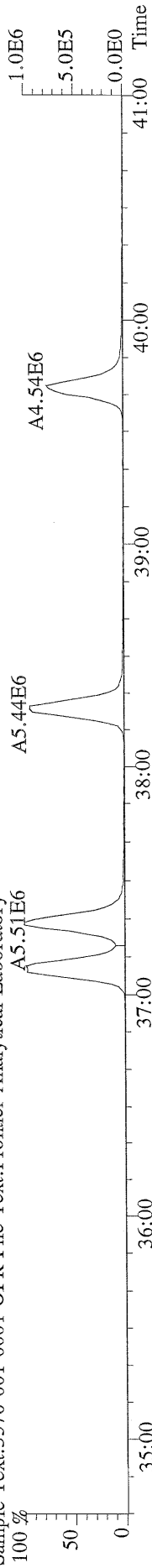
File:31JAN16M #1-410 Acq:31-JAN-2016 16:03:22 GC EI+ Voltage SIR Autospec-Ultima
409.7974 S:2 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



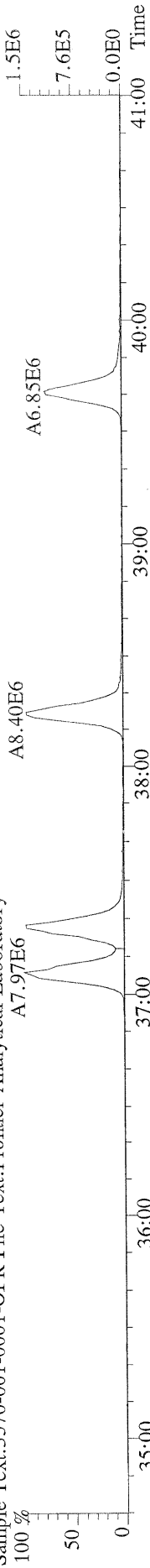
File:31JAN16M #1-495 Acq:31-JAN-2016 16:03:22 GC EI+ Voltage SIR Autospec-Ultima
373.8207 S:2 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



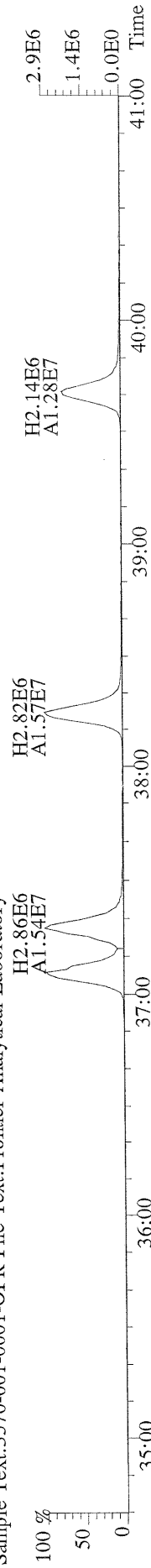
File:31JAN16M #1-495 Acq:31-JAN-2016 16:03:22 GC EI+ Voltage SIR Autospec-Ultima
375.8178 S:2 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



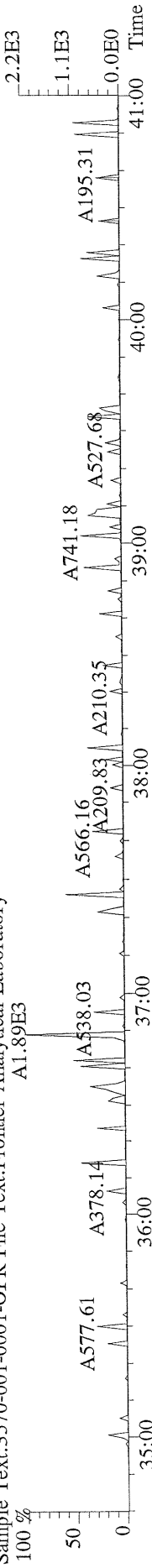
File:31JAN16M #1-495 Acq:31-JAN-2016 16:03:22 GC EI+ Voltage SIR Autospec-Ultima
383.8639 S:2 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



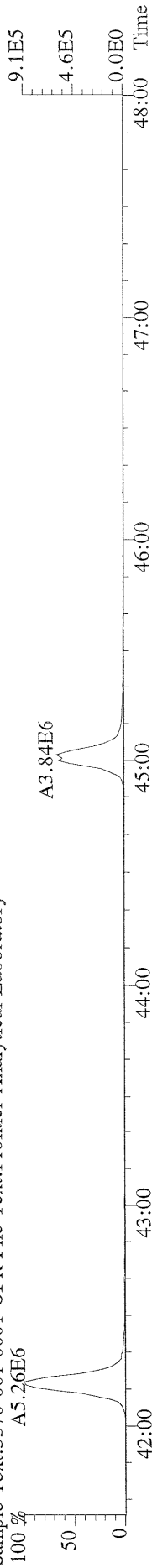
File:31JAN16M #1-495 Acq:31-JAN-2016 16:03:22 GC EI+ Voltage SIR Autospec-Ultima
385.8610 S:2 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



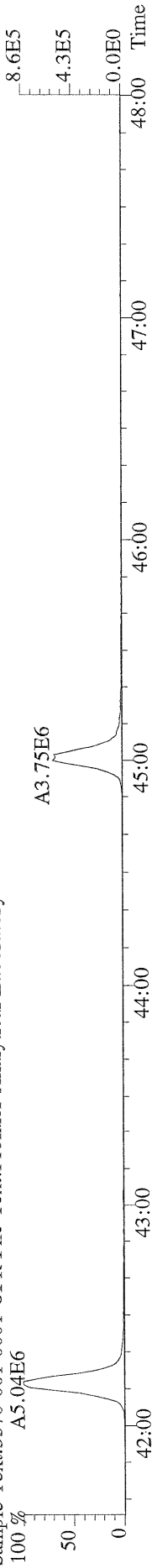
File:31JAN16M #1-495 Acq:31-JAN-2016 16:03:22 GC EI+ Voltage SIR Autospec-Ultima
445.7555 S:2 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



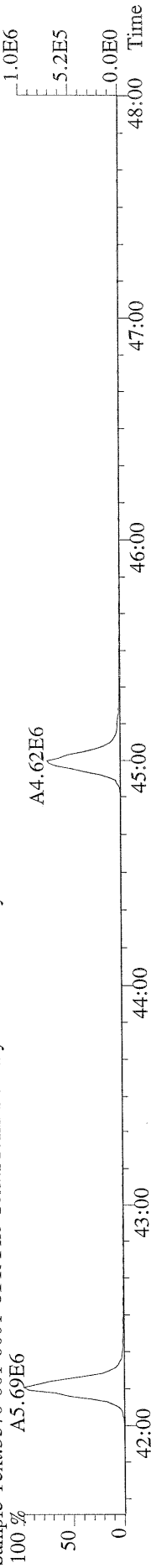
File:31JAN16M #1-521 Acq:31-JAN-2016 16:03:22 GC EI+ Voltage SIR Autospec-Ultima
407.7818 S:2 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



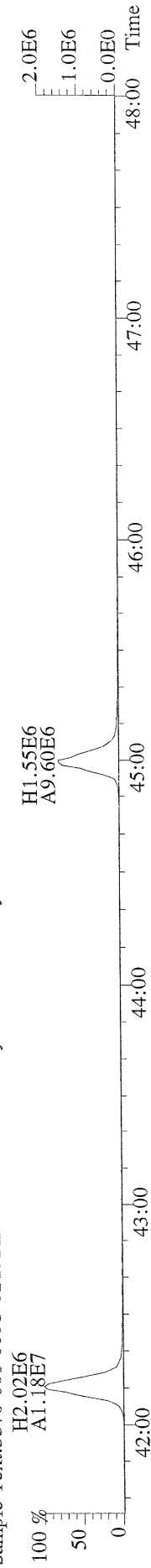
File:31JAN16M #1-521 Acq:31-JAN-2016 16:03:22 GC EI+ Voltage SIR Autospec-Ultima
409.7788 S:2 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



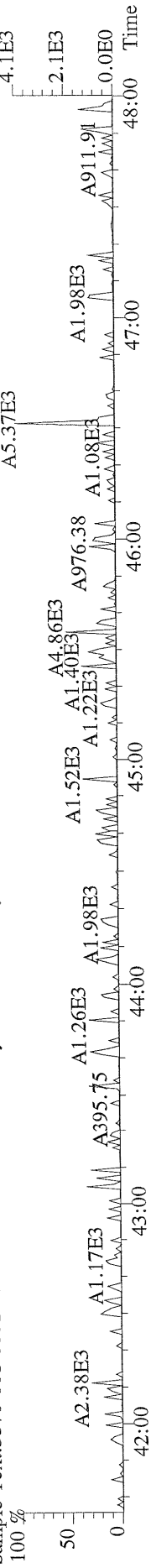
File:31JAN16M #1-521 Acq:31-JAN-2016 16:03:22 GC EI+ Voltage SIR Autospec-Ultima
417.8253 S:2 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



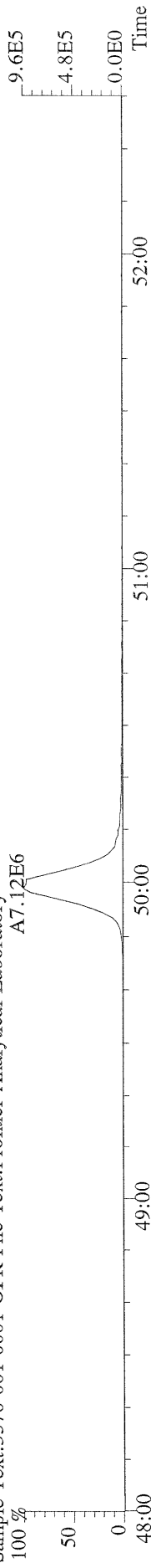
File:31JAN16M #1-521 Acq:31-JAN-2016 16:03:22 GC EI+ Voltage SIR Autospec-Ultima
419.8220 S:2 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



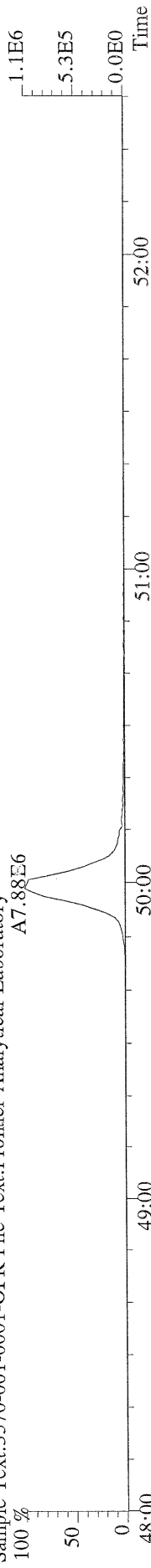
File:31JAN16M #1-521 Acq:31-JAN-2016 16:03:22 GC EI+ Voltage SIR Autospec-Ultima
479.7165 S:2 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



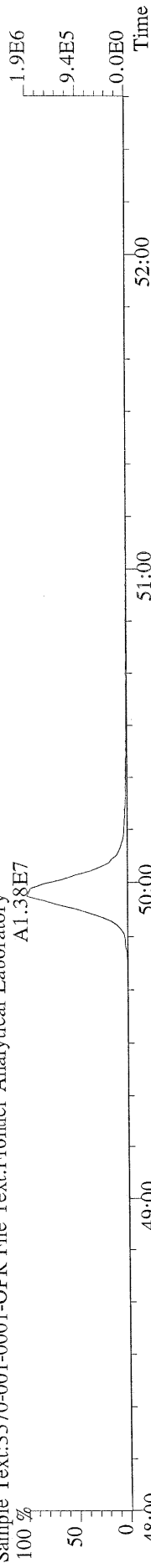
File:31JAN16M #1-360 Acq:31-JAN-2016 16:03:22 GC EI+ Voltage SIR Autospec-Ultima
441.7428 S:2 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



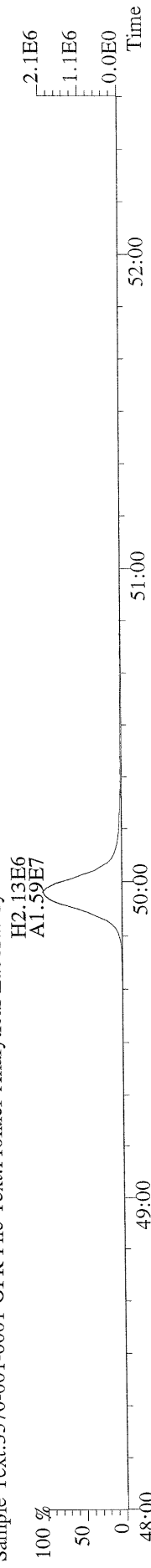
File:31JAN16M #1-360 Acq:31-JAN-2016 16:03:22 GC EI+ Voltage SIR Autospec-Ultima
443.7398 S:2 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



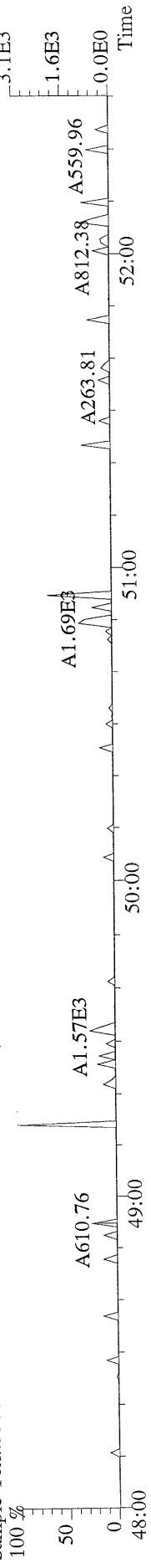
File:31JAN16M #1-360 Acq:31-JAN-2016 16:03:22 GC EI+ Voltage SIR Autospec-Ultima
453.7831 S:2 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



File:31JAN16M #1-360 Acq:31-JAN-2016 16:03:22 GC EI+ Voltage SIR Autospec-Ultima
455.7801 S:2 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



File:31JAN16M #1-360 Acq:31-JAN-2016 16:03:22 GC EI+ Voltage SIR Autospec-Ultima
513.6775 S:2 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:3570-001-0001-OPR File Text:Frontier Analytical Laboratory



Name	Resp	RA	RT	RRF	Conc	Qual	Fac	Noise-1	Noise-2	DL	Rec	#Hom
2,3,7,8-TCDD	*	* n	NotFnd	1.27	*		2.50	467	945	0.445		
1,2,3,7,8-PeCDD	*	* n	NotFnd	1.01	*		2.50	1510	584	1.08		
1,2,3,4,7,8-HxCDD	8.20e+04	1.18	y	38:27	1.04	3.88	J	2.50	-	*		
1,2,3,6,7,8-HxCDD	1.59e+06	1.24	y	38:38	1.05	73.6		2.50	-	*		
1,2,3,7,8,9-HxCDD	1.23e+05	1.21	y	39:05	1.14	5.29	J	2.50	-	*		
1,2,3,4,6,7,8-HpCDD	7.98e+07	1.08	y	44:04	1.01	3940		2.50	-	*		
OCDD	1.55e+09	0.91	y	49:35	1.08	73900	E	2.50	-	*		
2,3,7,8-TCDF	1.70e+05	0.79	y	26:32	1.02	4.16	J	2.50	-	*		
1,2,3,7,8-PeCDF	7.77e+04	1.47	y	31:24	0.90	2.48	J	2.50	-	*		
2,3,4,7,8-PeCDF	*	* n	NotFnd	0.93	*			2.50	995	779	0.776	
1,2,3,4,7,8-HxCDF	2.71e+05	1.32	y	37:05	1.13	9.41	J	2.50	-	*		
1,2,3,6,7,8-HxCDF	1.17e+06	1.23	y	37:16	1.08	40.9		2.50	-	*		
2,3,4,6,7,8-HxCDF	5.21e+05	1.28	y	38:14	1.03	19.1	J	2.50	-	*		
1,2,3,7,8,9-HxCDF	8.49e+04	1.22	y	39:43	1.05	3.58	J	2.50	-	*		
1,2,3,4,6,7,8-HpCDF	2.59e+07	1.03	y	42:10	1.24	961		2.50	-	*		
1,2,3,4,7,8,9-HpCDF	1.40e+06	0.96	y	44:58	1.12	71.1		2.50	-	*		
OCDF	1.93e+08	0.88	y	49:57	1.09	8280		2.50	-	*		
13C-2,3,7,8-TCDD	5.57e+07	0.81	y	27:15	1.10	1500					76.2	
13C-1,2,3,7,8-PeCDD	4.78e+07	1.58	y	33:07	0.89	1590					81.1	
13C-1,2,3,4,7,8-HxCDD	4.00e+07	1.25	y	38:27	0.87	1550					78.8	
13C-1,2,3,6,7,8-HxCDD	4.03e+07	1.25	y	38:37	0.87	1550					79.1	
13C-1,2,3,4,6,7,8-HpCDD	3.94e+07	1.07	y	44:03	0.84	1580					80.4	
13C-OCDD	7.67e+07	0.91	y	49:34	0.69	3710					94.4	
13C-2,3,7,8-TCDF	7.88e+07	0.80	y	26:30	1.02	1530					77.6	
13C-1,2,3,7,8-PeCDF	6.87e+07	1.60	y	31:22	1.00	1360					69.4	
13C-2,3,4,7,8-PeCDF	6.47e+07	1.59	y	32:42	0.89	1450					73.6	
13C-1,2,3,4,7,8-HxCDF	5.00e+07	0.52	y	37:05	1.26	1330					67.7	
13C-1,2,3,6,7,8-HxCDF	5.21e+07	0.53	y	37:15	1.30	1350					68.5	
13C-2,3,4,6,7,8-HxCDF	5.20e+07	0.54	y	38:13	1.25	1400					71.3	
13C-1,2,3,7,8,9-HxCDF	4.43e+07	0.53	y	39:39	1.15	1300					66.1	
13C-1,2,3,4,6,7,8-HpCDF	4.27e+07	0.47	y	42:08	0.96	1500					76.4	
13C-1,2,3,4,7,8,9-HpCDF	3.44e+07	0.47	y	44:58	0.83	1400					71.0	
13C-OCDF	8.42e+07	0.86	y	49:56	0.93	3050					77.6	
37Cl-2,3,7,8-TCDD	2.02e+07			27:16	1.00	602					76.5	
13C-1,2,3,4-TCDD	6.62e+07	0.81	y	26:41	-	94.2						
13C-1,2,3,4-TCDF	9.91e+07	0.80	y	25:24	-	89.9						
13C-1,2,3,7,8,9-HxCDD	5.84e+07	1.25	y	39:05	-	96.8						
Total Tetra-Dioxins	2.48e+04			24:14	1.27	0.689	J	2.50	-	*		1
Total Penta-Dioxins	3.03e+05			30:07	1.01	12.4	J	2.50	-	*		2
Total Hexa-Dioxins	5.91e+06			36:01	1.08	270		2.50	-	*		7
Total Hepta-Dioxins	1.34e+08			42:41	1.01	6610		2.50	-	*		2
Total Tetra-Furans	4.98e+06			22:50	1.02	122	D,M	2.50	-	*		15
1st Fn. Tot Penta-Furans	3.77e+05			28:20	0.91	12.2	D,M	2.50	-	*	PeCDF	1
Total Penta-Furans	8.67e+06			30:07	0.91	281	D,M	2.50	-	*	293	9
Total Hexa-Furans	4.63e+07			35:08	1.07	1710	D,M	2.50	-	*		12
Total Hepta-Furans	1.14e+08			42:10	1.19	4760		2.50	-	*		4

Analyst:  Date: 2/1/16

Totals class: Total Penta-Dioxins

Entry #: 39

Run: 15 File: 31JAN16M S: 8 I: 1 F: 2
Acquired: 31-JAN-16 21:32:01

Total Concentration: 12.4

Unnamed Concentration: 12.409

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
30:07	1.51e+05	1.01e+05	1.49 y	2.53e+05	10.3	
31:07	3.06e+04	1.98e+04	1.54 y	5.04e+04	2.06	

Totals class: Total Hexa-Dioxins

Entry #: 40

Run: 15

File: 31JAN16M

S: 8 I: 1 F: 3

Acquired: 31-JAN-16 21:32:01

Total Concentration: 270

Unnamed Concentration: 186.856

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
36:01	1.25e+06	9.91e+05	1.26 y	2.24e+06	102	
36:56	9.80e+04	8.86e+04	1.11 y	1.87e+05	8.47	
37:23	9.17e+05	6.87e+05	1.33 y	1.60e+06	72.9	
37:32	4.78e+04	3.48e+04	1.37 y	8.26e+04	3.75	
38:27	4.44e+04	3.76e+04	1.18 y	8.20e+04	3.88	1,2,3,4,7,8-HxCDD
38:38	8.83e+05	7.09e+05	1.24 y	1.59e+06	73.6	1,2,3,6,7,8-HxCDD
39:05	6.75e+04	5.59e+04	1.21 y	1.23e+05	5.29	1,2,3,7,8,9-HxCDD

Totals class: Total Hepta-Dioxins

Entry #: 41

Run: 15

File: 31JAN16M

S: 8 I: 1 F: 4

Acquired: 31-JAN-16 21:32:01

Total Concentration: 6610

Unnamed Concentration: 2669.847

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
42:41	2.80e+07	2.61e+07	1.07 y	5.41e+07	2670	
44:04	4.14e+07	3.84e+07	1.08 y	7.98e+07	3940	1,2,3,4,6,7,8-HpCDD

Totals class: Total Tetra-Furans

Entry #: 42

Run: 15 File: 31JAN16M
Acquired: 31-JAN-16 21:32:01

S: 8 I: 1 F: 1

Total Concentration: 122

Unnamed Concentration: 117.834

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
22:50	3.30e+04	4.54e+04	0.73 y	7.84e+04	1.92	
23:18	9.33e+03	1.27e+04	0.73 y	2.21e+04	0.540	
23:31	1.99e+04	2.39e+04	0.83 y	4.38e+04	1.07	
24:18	2.39e+04	3.48e+04	0.69 y	5.87e+04	1.44	
25:27	1.61e+05	2.09e+05	0.77 y	3.70e+05	9.05	
25:39	1.59e+05	1.90e+05	0.83 y	3.49e+05	8.53	
26:14	1.01e+04	1.41e+04	0.71 y	2.42e+04	0.591	
26:19	3.84e+04	4.46e+04	0.86 y	8.30e+04	2.03	
26:32	7.52e+04	9.48e+04	0.79 y	1.70e+05	4.16	2,3,7,8-TCDF
27:15	5.10e+04	5.99e+04	0.85 y	1.11e+05	2.71	
27:28	1.43e+05	1.71e+05	0.84 y	3.13e+05	7.67	
27:35	5.06e+04	5.72e+04	0.88 y	1.08e+05	2.64	
27:45	1.16e+06	1.37e+06	0.85 y	2.53e+06	62.0	
27:58	1.98e+05	2.33e+05	0.85 y	4.31e+05	10.6	
28:47	1.33e+05	1.58e+05	0.84 y	2.91e+05	7.13	

Totals class: 1st Fn. Tot Penta-Furans Entry #: 43

Run: 15 File: 31JAN16M S: 8 I: 1 F: 1
Acquired: 31-JAN-16 21:32:01

Total Concentration: 12.2 Unnamed Concentration: 12.234

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
28:20	2.34e+05	1.44e+05	1.63 y	3.77e+05	12.2	

Totals class: Total Penta-Furans

Entry #: 44

Run: 15 File: 31JAN16M
Acquired: 31-JAN-16 21:32:01

S: 8 I: 1 F: 2

Total Concentration: 281

Unnamed Concentration: 278.488

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
30:07	4.79e+04	3.04e+04	1.57 y	7.83e+04	2.54	
31:14	5.70e+04	4.16e+04	1.37 y	9.86e+04	3.20	
31:24	4.63e+04	3.14e+04	1.47 y	7.77e+04	2.48	1,2,3,7,8-PeCDF
31:38	2.59e+06	1.76e+06	1.47 y	4.36e+06	141	
31:58	1.25e+06	8.10e+05	1.54 y	2.06e+06	66.7	
32:57	8.98e+04	6.50e+04	1.38 y	1.55e+05	5.02	
33:39	5.37e+04	3.92e+04	1.37 y	9.29e+04	3.01	
33:50	5.60e+04	3.88e+04	1.44 y	9.48e+04	3.07	
34:01	9.91e+05	6.67e+05	1.49 y	1.66e+06	53.7	

Totals class: Total Hexa-Furans

Entry #: 45

Run: 15

File: 31JAN16M

S: 8 I: 1 F: 3

Acquired: 31-JAN-16 21:32:01

Total Concentration: 1710

Unnamed Concentration: 1634.254

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
35:08	4.55e+05	3.75e+05	1.21 y	8.30e+05	30.6	
35:24	2.10e+06	1.74e+06	1.21 y	3.84e+06	142	
36:19	7.54e+06	6.22e+06	1.21 y	1.38e+07	508	
36:36	1.38e+05	1.20e+05	1.15 y	2.58e+05	9.53	
36:58	4.17e+04	2.96e+04	1.41 y	7.13e+04	2.63	
37:05	1.54e+05	1.17e+05	1.32 y	2.71e+05	9.41	1,2,3,4,7,8-HxCDF
37:16	6.46e+05	5.24e+05	1.23 y	1.17e+06	40.9	1,2,3,6,7,8-HxCDF
37:32	5.38e+04	4.63e+04	1.16 y	1.00e+05	3.69	
37:59	1.39e+07	1.14e+07	1.22 y	2.53e+07	934	
38:14	2.93e+05	2.28e+05	1.28 y	5.21e+05	19.1	2,3,4,6,7,8-HxCDF
38:37	6.47e+04	5.55e+04	1.16 y	1.20e+05	4.43	
39:43	4.67e+04	3.82e+04	1.22 y	8.49e+04	3.58	1,2,3,7,8,9-HxCDF

Totals class: Total Hepta-Furans

Entry #: 46

Run: 15

File: 31JAN16M

S: 8 I: 1 F: 4

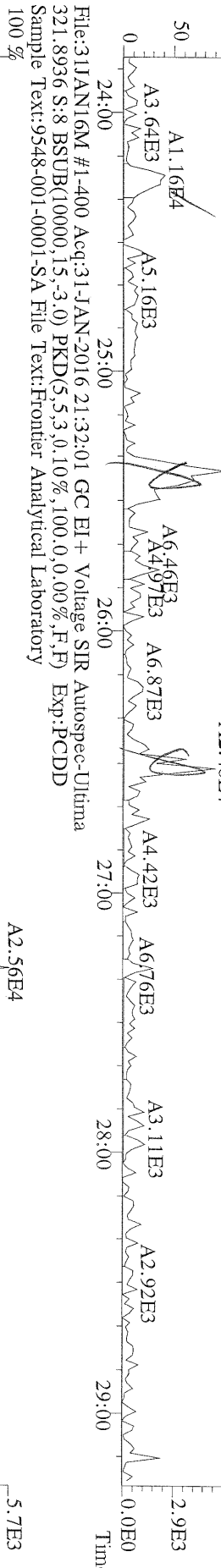
Acquired: 31-JAN-16 21:32:01

Total Concentration: 4760

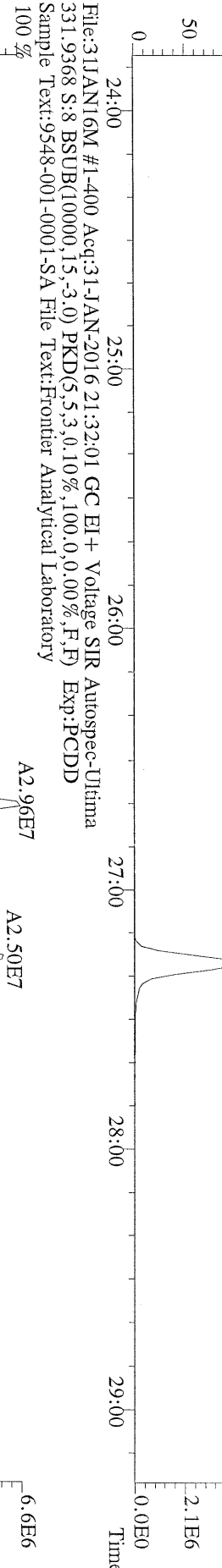
Unnamed Concentration: 3732.136

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
42:10	1.31e+07	1.28e+07	1.03 y	2.59e+07	961	1,2,3,4,6,7,8-HpCDF
42:42	1.34e+05	1.37e+05	0.98 y	2.71e+05	11.6	
42:59	4.41e+07	4.25e+07	1.04 y	8.66e+07	3720	
44:58	6.84e+05	7.13e+05	0.96 y	1.40e+06	71.1	1,2,3,4,7,8,9-HpCDF

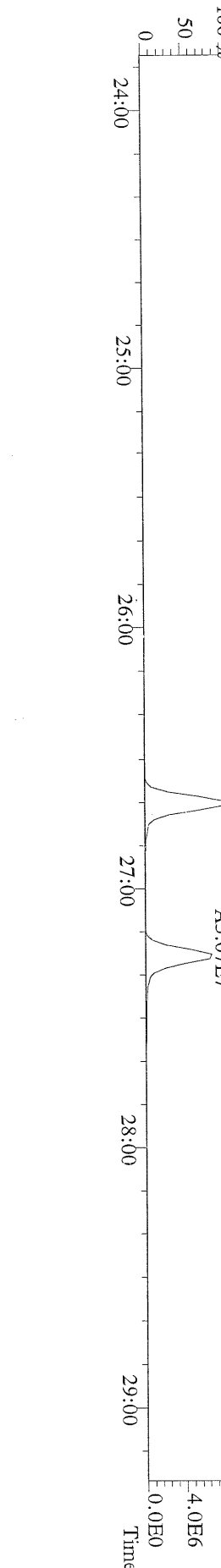
File:31JAN16M #1-400 Acq:31-JAN-2016 21:32:01 GC EI + Voltage SIR Autospec-Ultima
 319.8965 S:8 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD
 Sample Text:9548-001-0001-SA File Text:Frontier Analytical Laboratory



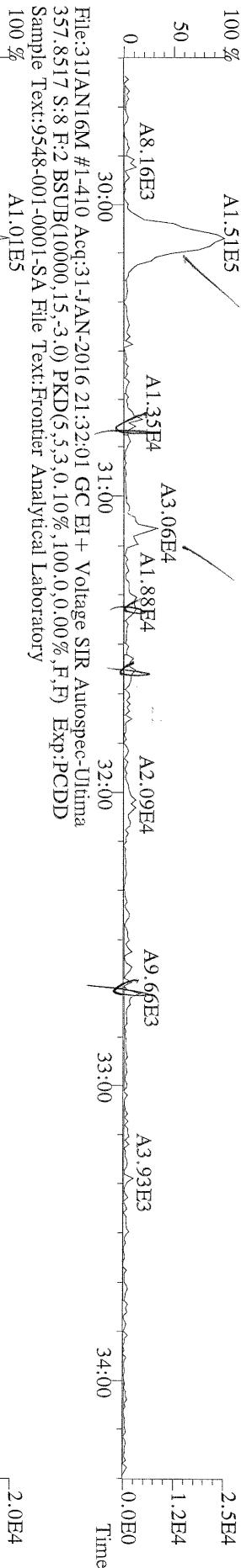
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 327.8847 S:8 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD
 Sample Text:9548-001-0001-SA File Text:Frontier Analytical Laboratory



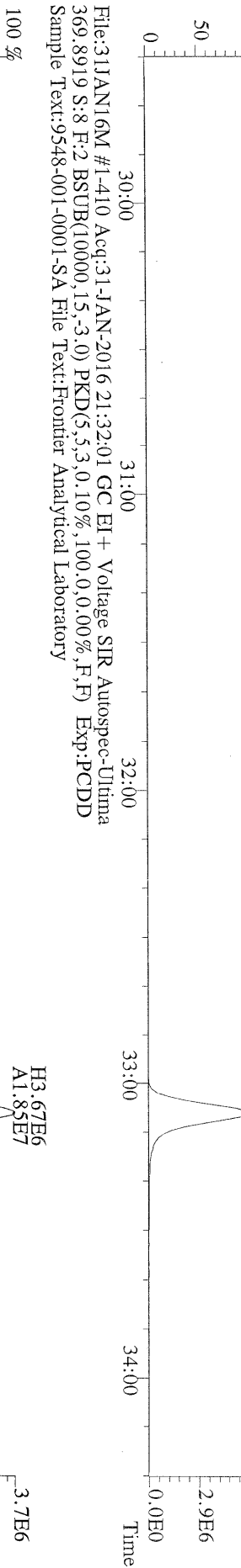
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 333.9339 S:8 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD
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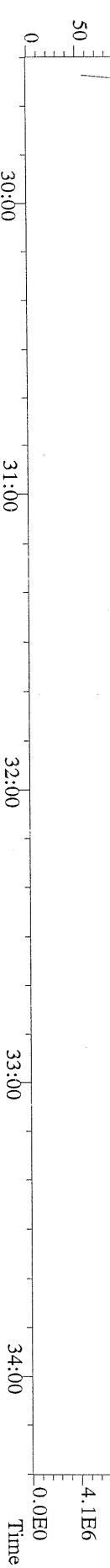
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355.8546 S:8 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:9548-001-0001-SA File Text:Frontier Analytical Laboratory



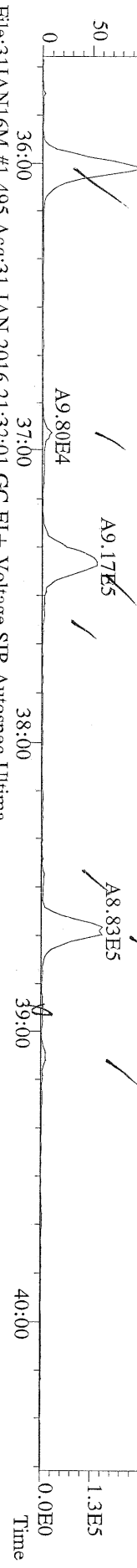
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367.8949 S:8 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:9548-001-0001-SA File Text:Frontier Analytical Laboratory



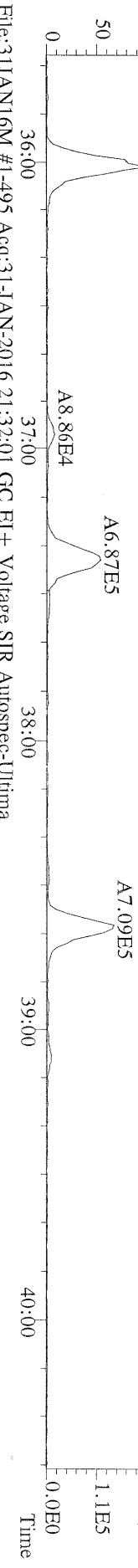
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366.9792 S:8 F:2 Exp:PCDD
Sample Text:9548-001-0001-SA File Text:Frontier Analytical Laboratory



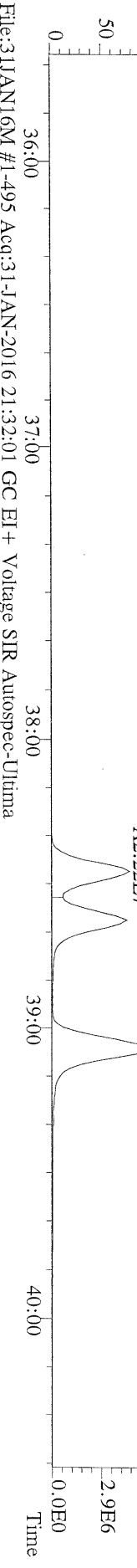
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 389.8156 S:8 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:9548-001-0001-SA File Text:Frontier Analytical Laboratory



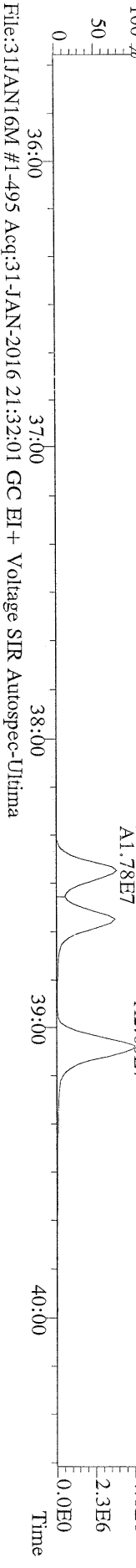
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 Sample Text:9548-001-0001-SA File Text:Frontier Analytical Laboratory



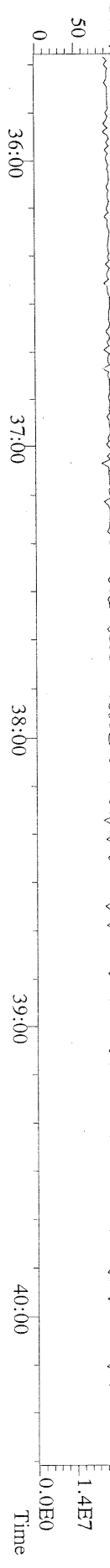
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 401.8559 S:8 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:9548-001-0001-SA File Text:Frontier Analytical Laboratory



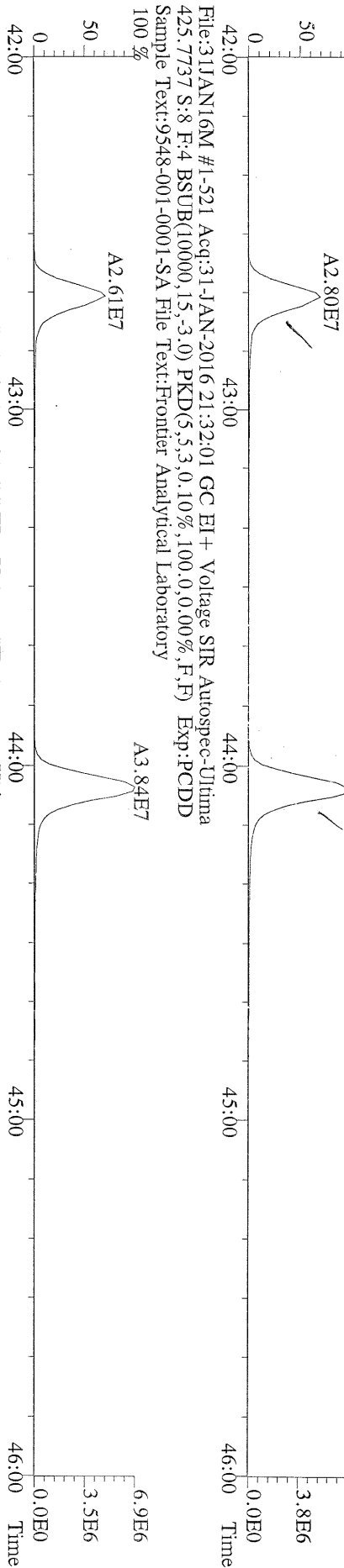
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 403.8530 S:8 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:9548-001-0001-SA File Text:Frontier Analytical Laboratory



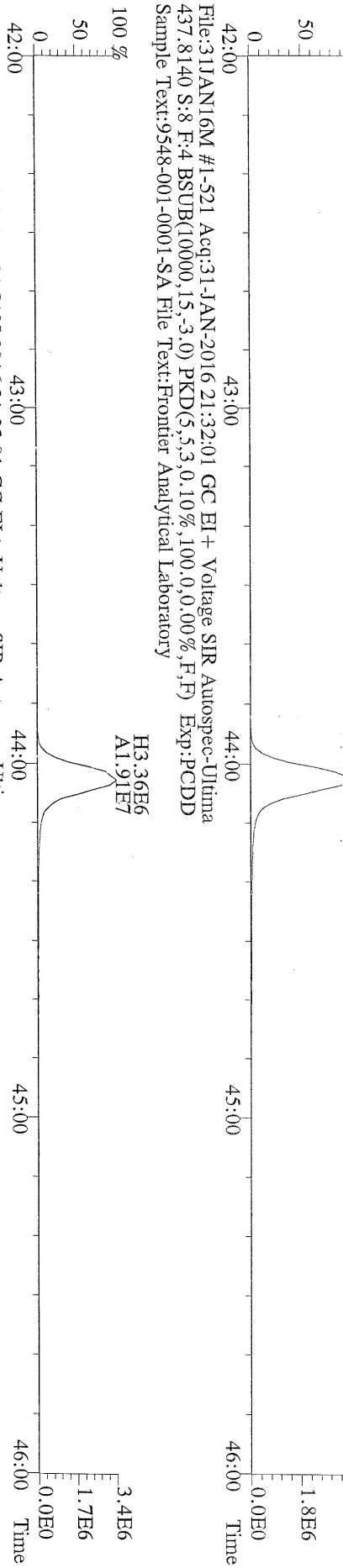
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 380.9760 S:8 F:3 Exp:PCDD
 Sample Text:9548-001-0001-SA File Text:Frontier Analytical Laboratory



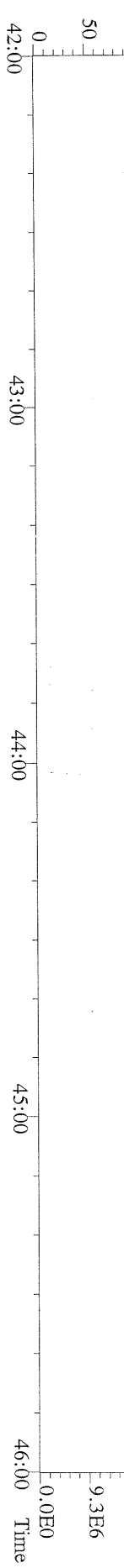
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423.7767 S:8 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:9548-001-0001-SA File Text:Frontier Analytical Laboratory



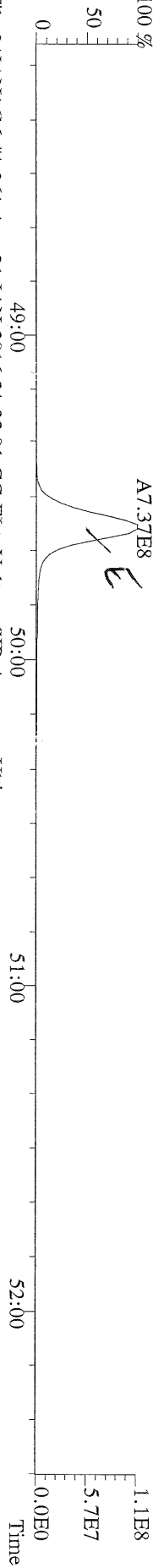
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435.8169 S:8 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:9548-001-0001-SA File Text:Frontier Analytical Laboratory



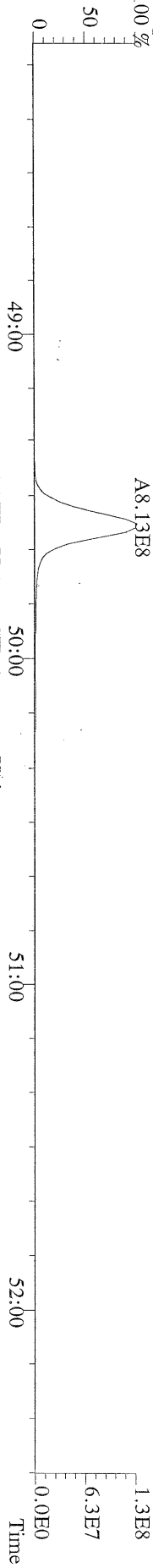
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430.9728 S:8 F:4 Exp:PCDD
Sample Text:9548-001-0001-SA File Text:Frontier Analytical Laboratory



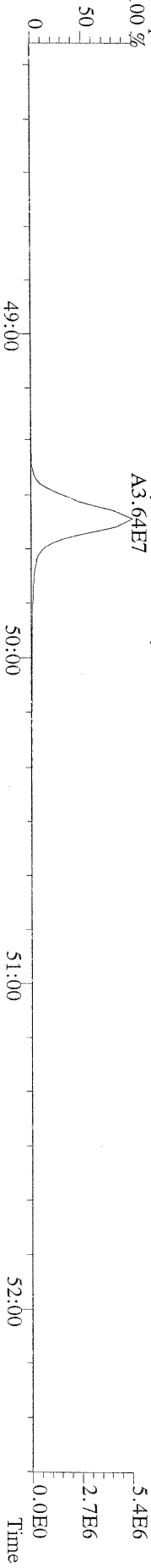
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 457.7377 S:8 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:9548-001-0001-SA File Text:Frontier Analytical Laboratory
 100 %



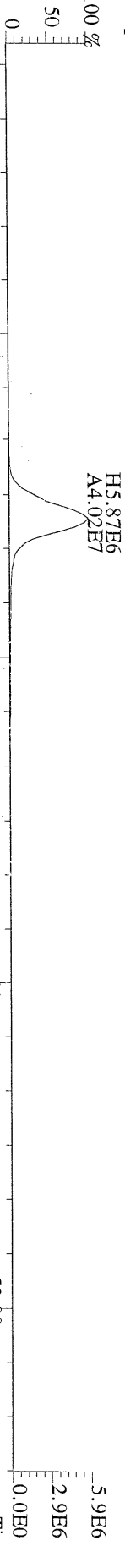
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 459.7348 S:8 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:9548-001-0001-SA File Text:Frontier Analytical Laboratory
 100 %



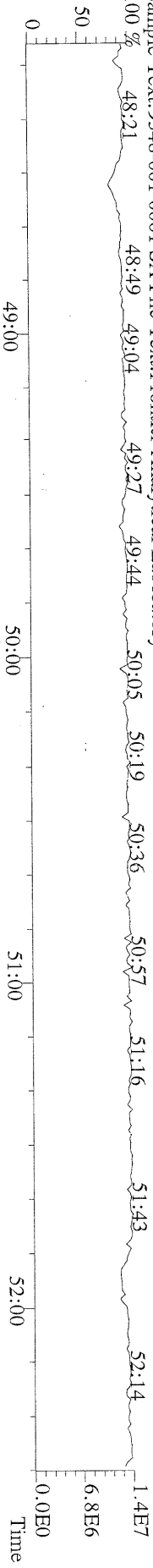
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 469.7780 S:8 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:9548-001-0001-SA File Text:Frontier Analytical Laboratory
 100 %



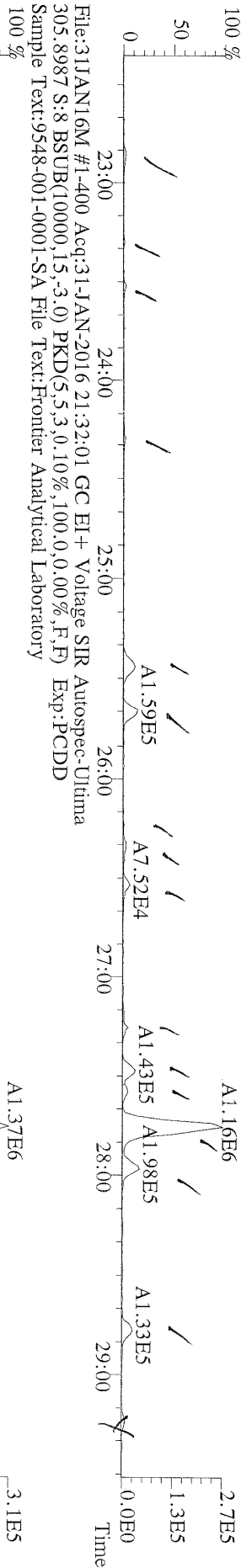
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 471.7750 S:8 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:9548-001-0001-SA File Text:Frontier Analytical Laboratory
 100 %



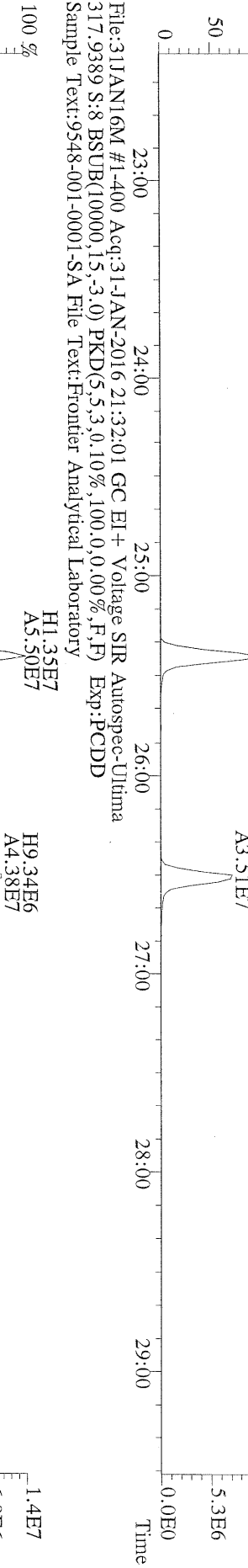
File:31JAN16M #1-361 Acq:31-JAN-2016 21:32:01 GC EI+ Voltage SIR Autospec-Ultima
 454.9728 S:8 F:5 Exp:PCDD
 Sample Text:9548-001-0001-SA File Text:Frontier Analytical Laboratory
 100 %



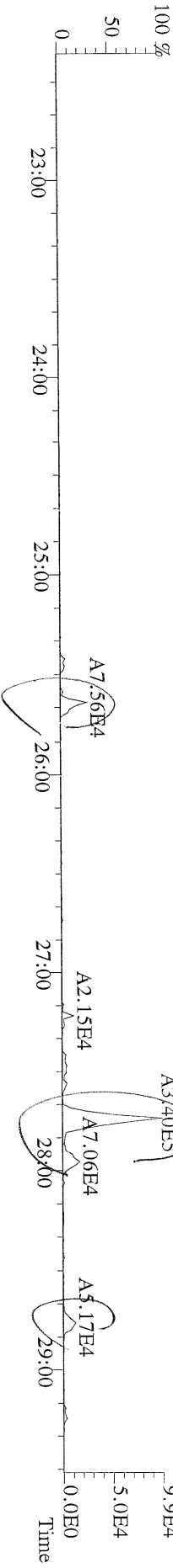
File:311JAN16M #1-400 Acq:31-JAN-2016 21:32:01 GC EI+ Voltage SIR Autospec-Ultima
303.9016 S:8 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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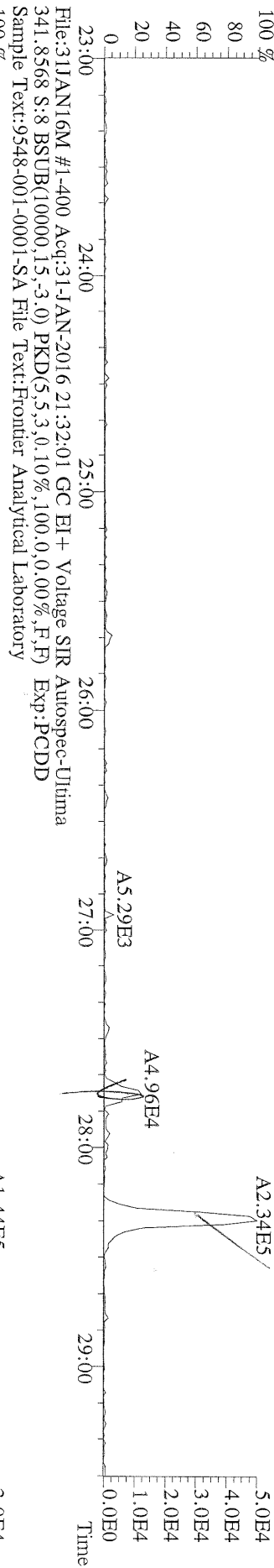
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315.9419 S:8 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:9548-001-0001-SA File Text:Frontier Analytical Laboratory



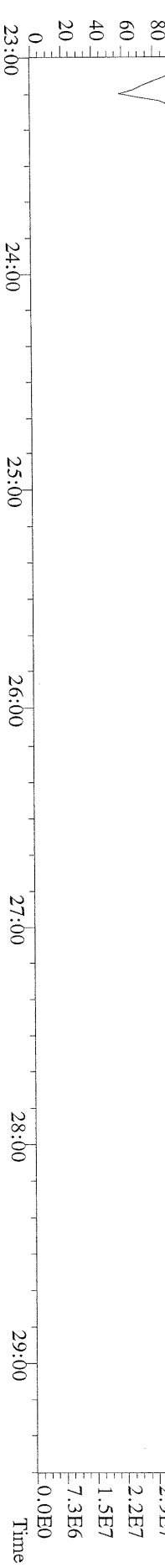
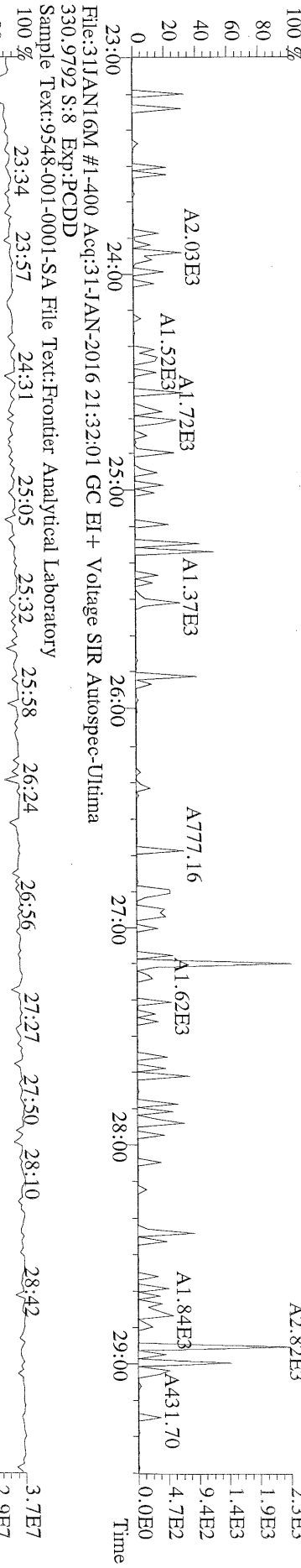
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375.8364 S:8 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:9548-001-0001-SA File Text:Frontier Analytical Laboratory



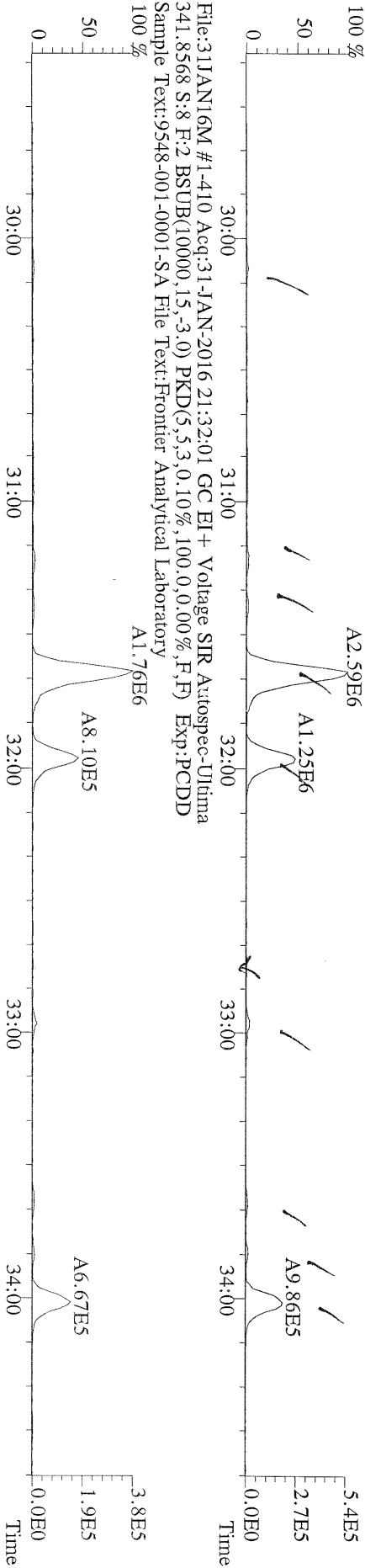
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 339.8568 S:8 BSUB(10000,15,-3.0) PKD(5,5,3,0,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:9548-001-0001-SA File Text:Frontier Analytical Laboratory



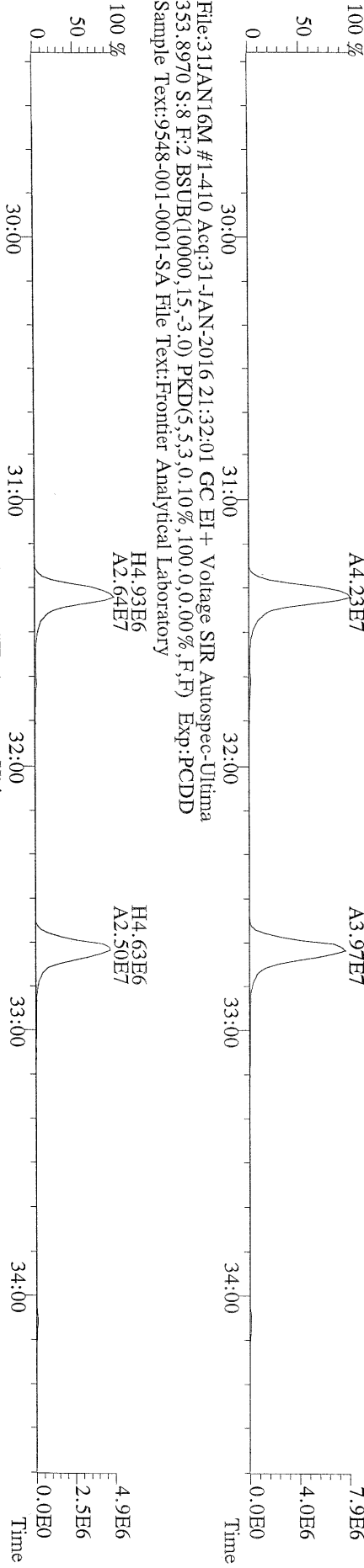
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 409.7974 S:8 BSUB(10000,15,-3.0) PKD(5,5,3,0,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:9548-001-0001-SA File Text:Frontier Analytical Laboratory



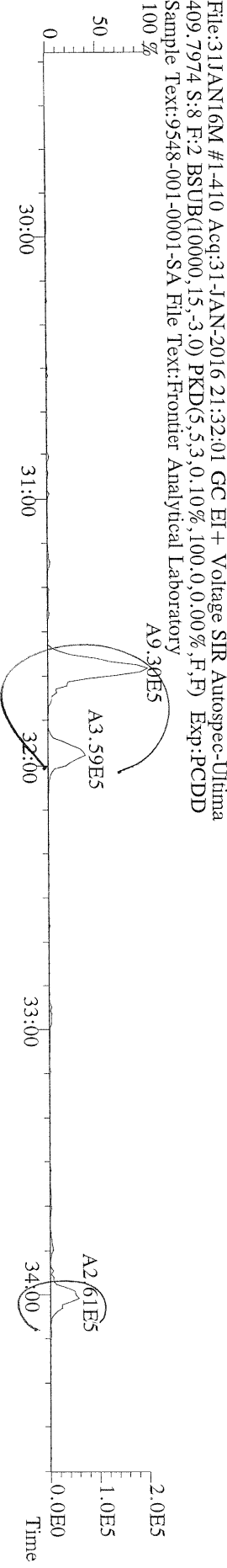
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339.8597 S:8 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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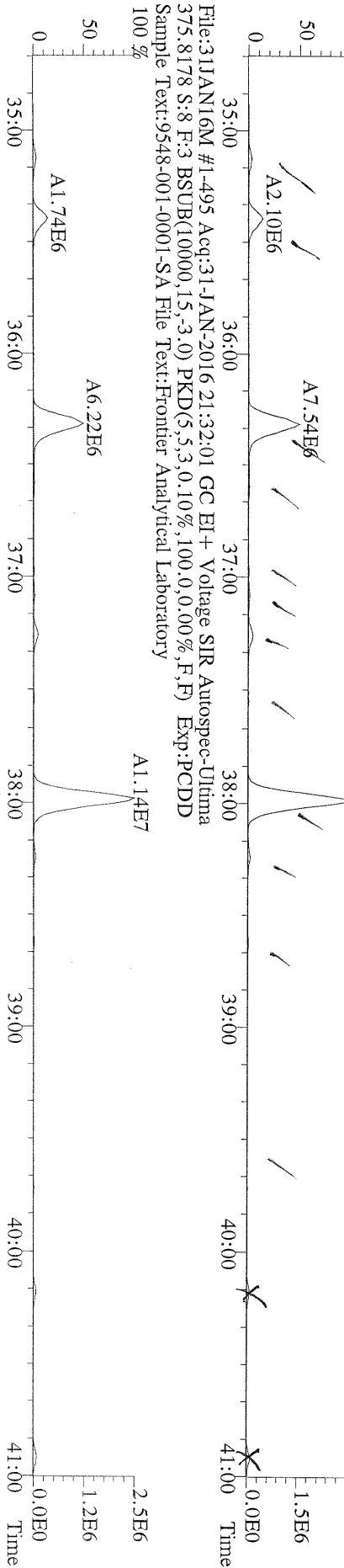
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351.9000 S:8 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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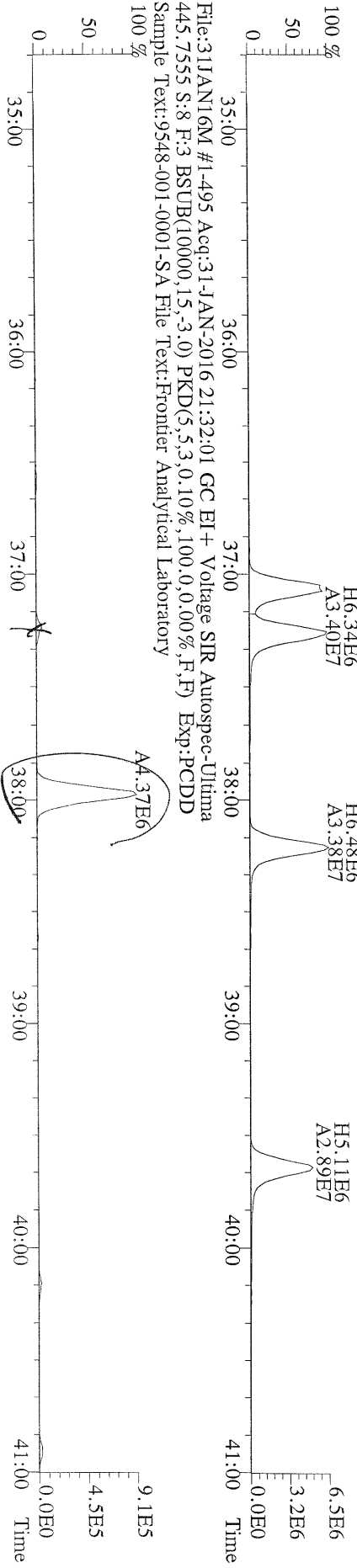
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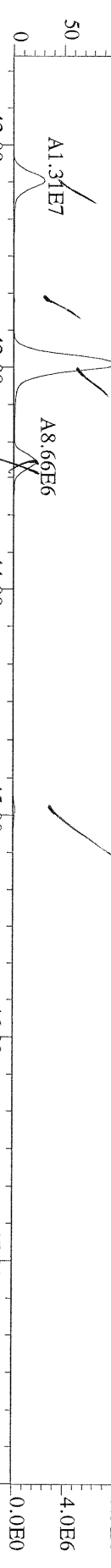
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373.8207 S:8 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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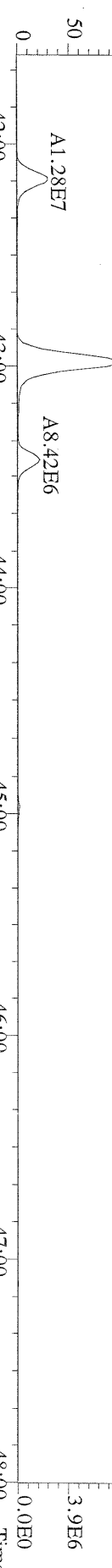
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383.8639 S:8 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:9548-001-0001-SA File Text:Frontier Analytical Laboratory



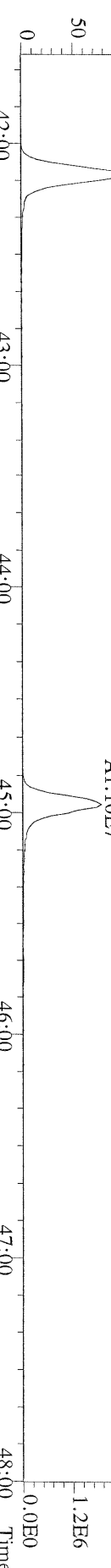
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407.7818 S:8 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0,0,0,0) Exp:PCDD
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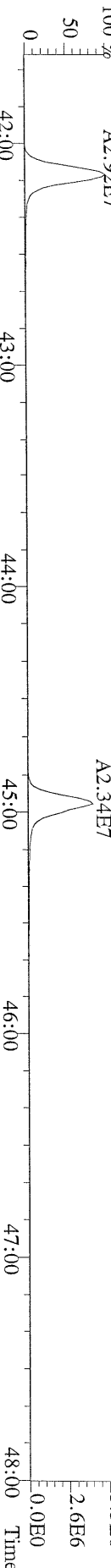
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Sample Text:9548-001-0001-SA File Text:Frontier Analytical Laboratory



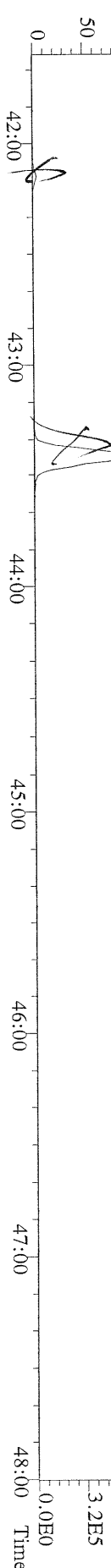
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417.8253 S:8 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0,0,0) Exp:PCDD
Sample Text:9548-001-0001-SA File Text:Frontier Analytical Laboratory



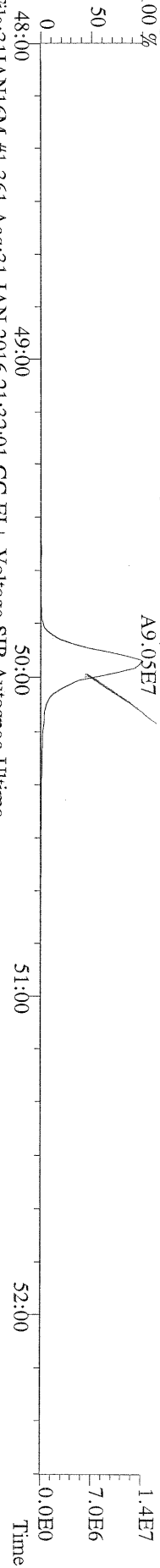
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419.8220 S:8 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0,0,0) Exp:PCDD
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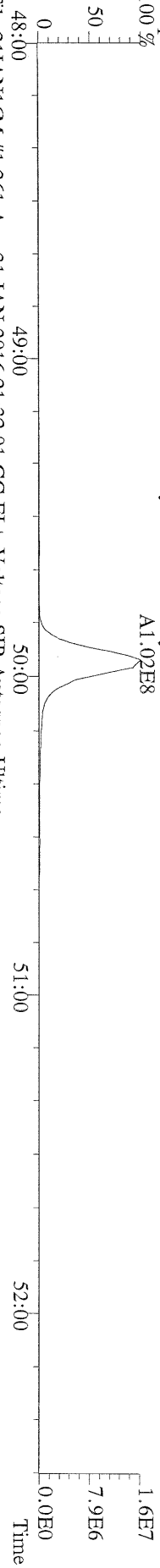
File:311AN16M #1-521 Acq:31-JAN-2016 21:32:01 GC EI + Voltage SIR Autospec-Ultima
479.7165 S:8 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0,0,0) Exp:PCDD
Sample Text:9548-001-0001-SA File Text:Frontier Analytical Laboratory



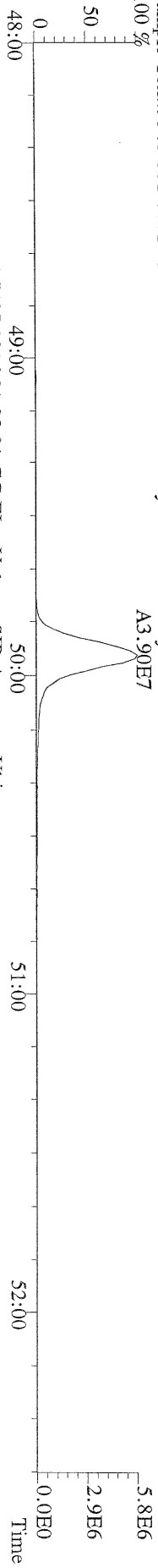
File:311JAN16M #1-361 Acq:31-JAN-2016 21:32:01 GC EI+ Voltage SIR Autospec-Ultima
441.7428 S:8 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:9548-001-0001-SA File Text:Frontier Analytical Laboratory
100 %



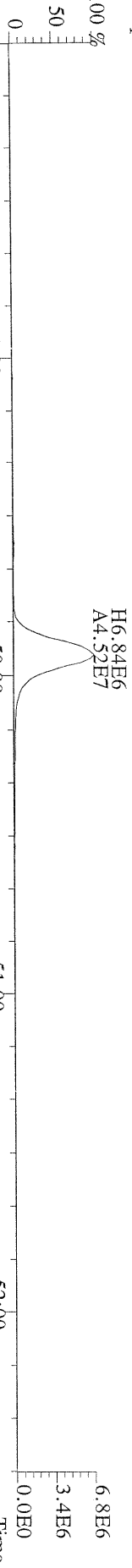
File:311JAN16M #1-361 Acq:31-JAN-2016 21:32:01 GC EI+ Voltage SIR Autospec-Ultima
443.7398 S:8 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:9548-001-0001-SA File Text:Frontier Analytical Laboratory
100 %



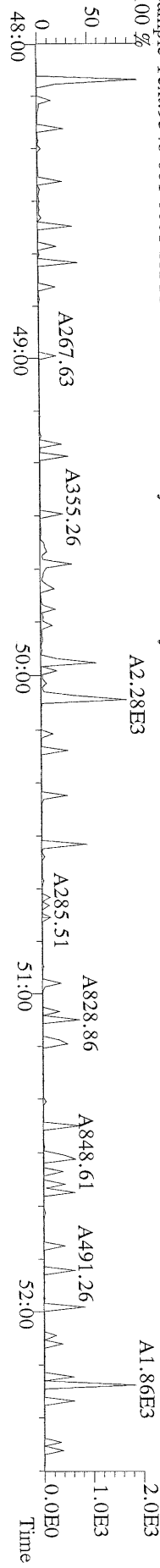
File:311JAN16M #1-361 Acq:31-JAN-2016 21:32:01 GC EI+ Voltage SIR Autospec-Ultima
453.7831 S:8 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:9548-001-0001-SA File Text:Frontier Analytical Laboratory
100 %



File:311JAN16M #1-361 Acq:31-JAN-2016 21:32:01 GC EI+ Voltage SIR Autospec-Ultima
455.7801 S:8 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:9548-001-0001-SA File Text:Frontier Analytical Laboratory



File:311JAN16M #1-361 Acq:31-JAN-2016 21:32:01 GC EI+ Voltage SIR Autospec-Ultima
513.6775 S:8 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:9548-001-0001-SA File Text:Frontier Analytical Laboratory
100 %



Totals class: Total Penta-Dioxins

Entry #: 39

Run: 16 File: 31JAN16M S: 9 I: 1 F: 2
Acquired: 31-JAN-16 22:26:48

Total Concentration: 9.43

Unnamed Concentration: 9.428

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
30:43	1.50e+04	1.07e+04	1.40 y	2.58e+04	0.888	
31:20	2.10e+04	1.20e+04	1.75 y	3.30e+04	1.14	
33:14	1.34e+05	8.09e+04	1.65 y	2.15e+05	7.40	

Totals class: Total Hexa-Dioxins

Entry #: 40

Run: 16 File: 31JAN16M S: 9 I: 1 F: 3
Acquired: 31-JAN-16 22:26:48

Total Concentration: 16.8

Unnamed Concentration: 16.773

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
36:01	4.17e+04	3.05e+04	1.37 y	7.22e+04	2.78	
37:20	2.04e+05	1.60e+05	1.28 y	3.64e+05	14.0	

Totals class: Total Hepta-Dioxins

Entry #: 41

Run: 16 File: 31JAN16M S: 9 I: 1 F: 4
Acquired: 31-JAN-16 22:26:48

Total Concentration: 20.6

Unnamed Concentration: 9.259

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
42:41	1.12e+05	1.07e+05	1.05 y	2.19e+05	9.26	
44:04	1.42e+05	1.27e+05	1.12 y	2.69e+05	11.3	1,2,3,4,6,7,8-HpCDD

Totals class: Total Tetra-Furans

Entry #: 42

Run: 16 File: 31JAN16M S: 9 I: 1 F: 1
Acquired: 31-JAN-16 22:26:48

Total Concentration: 4.78

Unnamed Concentration: 4.779

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
25:36	2.15e+04	2.76e+04	0.78 y	4.91e+04	1.04	
26:01	1.71e+04	2.46e+04	0.70 y	4.17e+04	0.888	
26:25	1.26e+04	1.61e+04	0.79 y	2.87e+04	0.610	
27:28	1.69e+04	2.45e+04	0.69 y	4.14e+04	0.880	
27:45	1.60e+04	2.39e+04	0.67 y	3.99e+04	0.849	
27:57	9.70e+03	1.42e+04	0.68 y	2.39e+04	0.508	

Totals class: Total Penta-Furans

Entry #: 44

Run: 16 File: 31JAN16M S: 9 I: 1 F: 2
Acquired: 31-JAN-16 22:26:48

Total Concentration: 21.3

Unnamed Concentration: 19.787

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
30:58	4.35e+04	3.08e+04	1.41 y	7.43e+04	1.96	
31:13	1.55e+05	1.08e+05	1.43 y	2.63e+05	6.93	
31:22	3.39e+04	2.43e+04	1.39 y	5.82e+04	1.52	1,2,3,7,8-PeCDF
31:38	8.29e+04	5.76e+04	1.44 y	1.41e+05	3.71	
31:54	4.83e+04	3.39e+04	1.43 y	8.22e+04	2.17	
32:34	2.52e+04	1.90e+04	1.32 y	4.42e+04	1.17	
33:40	4.44e+04	3.10e+04	1.43 y	7.54e+04	1.99	
34:01	4.03e+04	3.01e+04	1.34 y	7.04e+04	1.86	

Totals class: Total Hexa-Furans

Entry #: 45

Run: 16 File: 31JAN16M S: 9 I: 1 F: 3
Acquired: 31-JAN-16 22:26:48

Total Concentration: 38.5

Unnamed Concentration: 36.137

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
35:24	2.76e+04	2.46e+04	1.12 y	5.22e+04	1.60	
36:19	3.15e+04	2.51e+04	1.25 y	5.66e+04	1.74	
37:15	4.44e+04	3.78e+04	1.17 y	8.22e+04	2.38	1,2,3,6,7,8-HxCDF
37:32	3.69e+05	3.10e+05	1.19 y	6.79e+05	20.8	
37:59	2.19e+05	1.71e+05	1.28 y	3.89e+05	12.0	

Totals class: Total Hepta-Furans

Entry #: 46

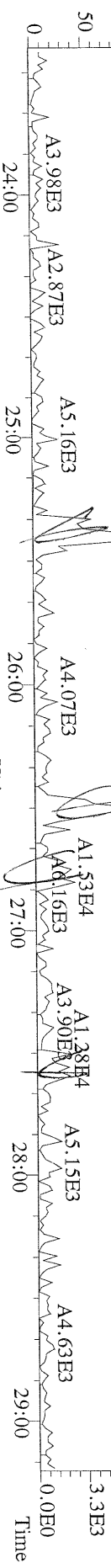
Run: 16 File: 31JAN16M S: 9 I: 1 F: 4
Acquired: 31-JAN-16 22:26:48

Total Concentration: 9.76

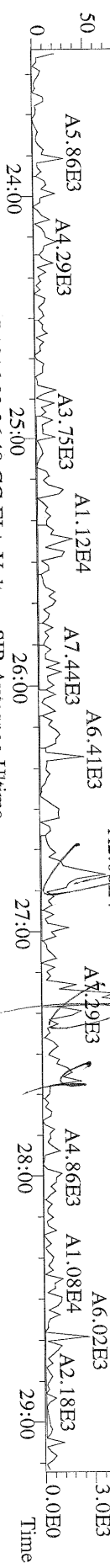
Unnamed Concentration: 6.638

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
42:10	5.03e+04	4.92e+04	1.02 y	9.95e+04	3.13	1,2,3,4,6,7,8-HpCDF
43:00	9.69e+04	8.65e+04	1.12 y	1.83e+05	6.64	

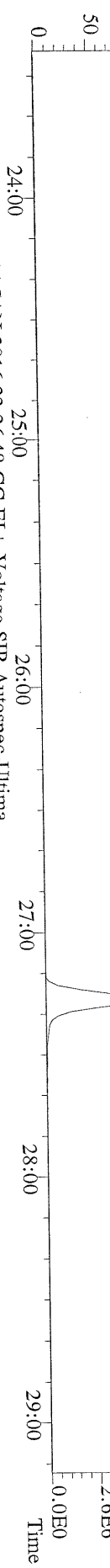
File:31JAN16M #1-400 Acq:31-JAN-2016 22:26:48 GC EI+ Voltage SIR Autospec-Ultima
 319.8965 S:9 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:9548-002-0001-SA File Text:Frontier Analytical Laboratory



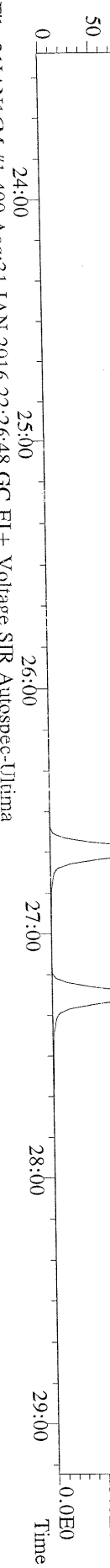
File:31JAN16M #1-400 Acq:31-JAN-2016 22:26:48 GC EI+ Voltage SIR Autospec-Ultima
 321.8936 S:9 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:9548-002-0001-SA File Text:Frontier Analytical Laboratory



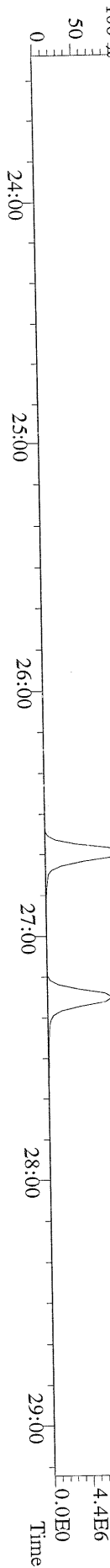
File:31JAN16M #1-400 Acq:31-JAN-2016 22:26:48 GC EI+ Voltage SIR Autospec-Ultima
 327.8847 S:9 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:9548-002-0001-SA File Text:Frontier Analytical Laboratory



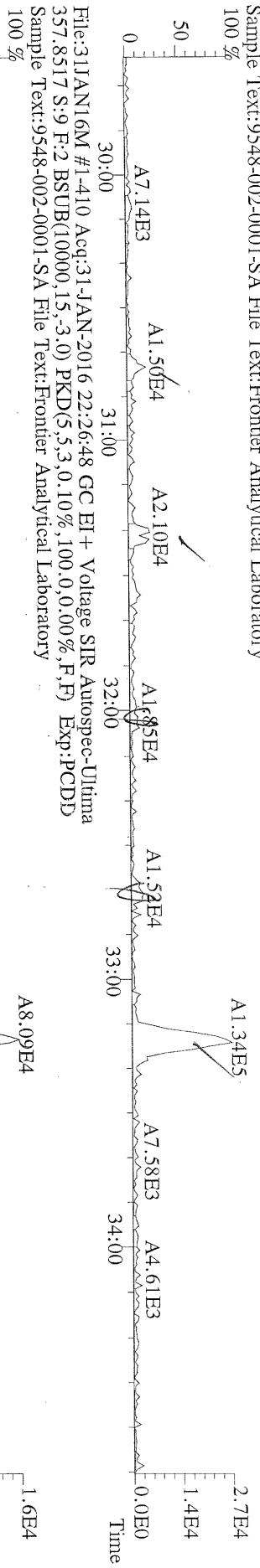
File:31JAN16M #1-400 Acq:31-JAN-2016 22:26:48 GC EI+ Voltage SIR Autospec-Ultima
 331.9368 S:9 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:9548-002-0001-SA File Text:Frontier Analytical Laboratory



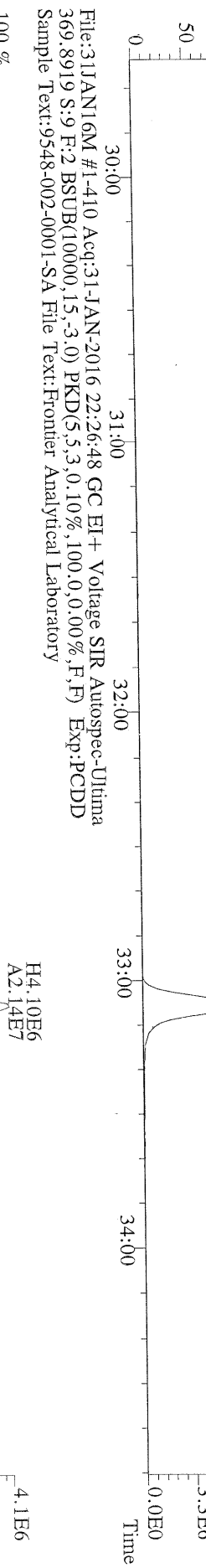
File:31JAN16M #1-400 Acq:31-JAN-2016 22:26:48 GC EI+ Voltage SIR Autospec-Ultima
 333.9339 S:9 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:9548-002-0001-SA File Text:Frontier Analytical Laboratory



File:31JAN16M #1-410 Acq:31-JAN-2016 22:26:48 GC EI+ Voltage SIR Autospec-Ultima
 355.8546 S:9 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0,0) Exp:PCDD
 Sample Text:9548-002-0001-SA File Text:Frontier Analytical Laboratory
 100 %



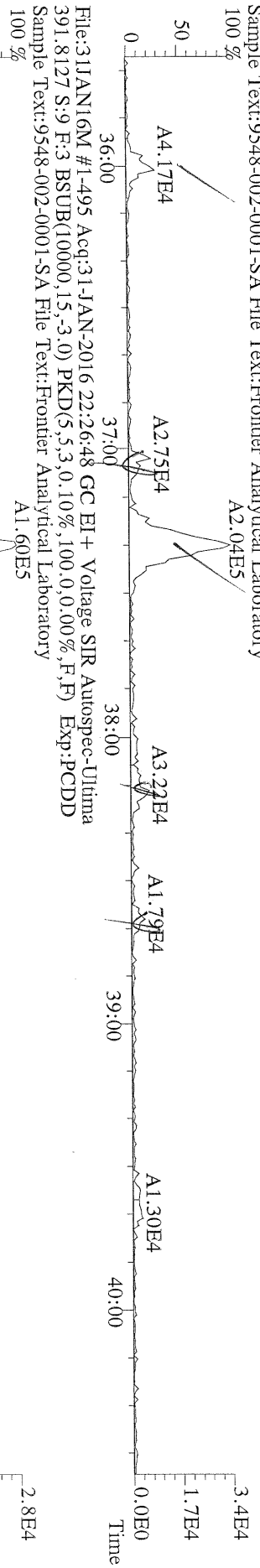
File:31JAN16M #1-410 Acq:31-JAN-2016 22:26:48 GC EI+ Voltage SIR Autospec-Ultima
 367.8949 S:9 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0,0) Exp:PCDD
 Sample Text:9548-002-0001-SA File Text:Frontier Analytical Laboratory
 100 %



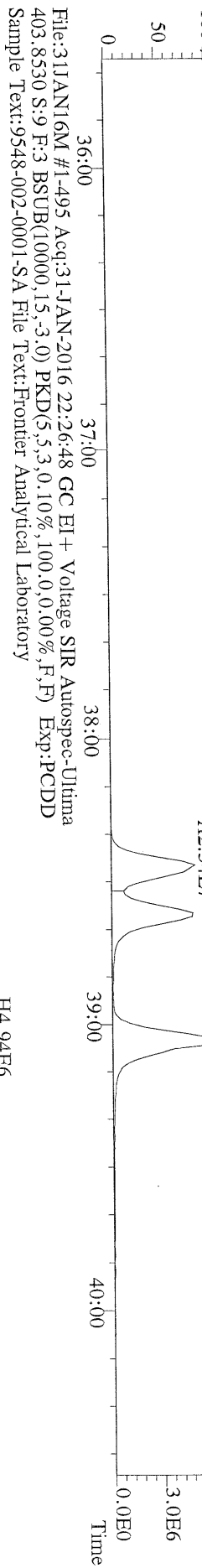
File:31JAN16M #1-410 Acq:31-JAN-2016 22:26:48 GC EI+ Voltage SIR Autospec-Ultima
 366.9792 S:9 F:2 Exp:PCDD
 Sample Text:9548-002-0001-SA File Text:Frontier Analytical Laboratory



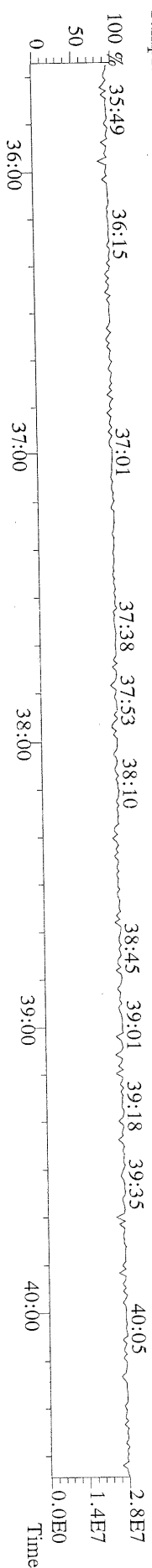
File:31JAN16M #1-495 Acq:31-JAN-2016 22:26:48 GC EI+ Voltage SIR Autospec-Ultima
389.8156 S:9 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:9548-002-0001-SA File Text:Frontier Analytical Laboratory



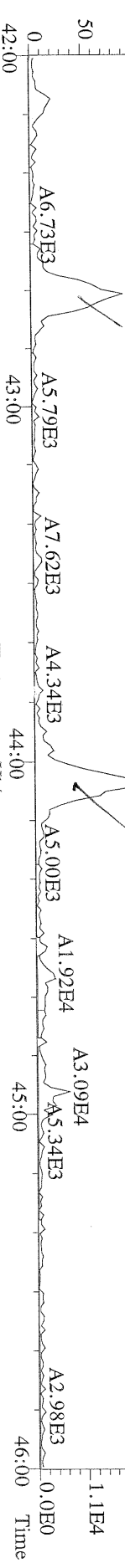
File:31JAN16M #1-495 Acq:31-JAN-2016 22:26:48 GC EI+ Voltage SIR Autospec-Ultima
401.8559 S:9 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:9548-002-0001-SA File Text:Frontier Analytical Laboratory



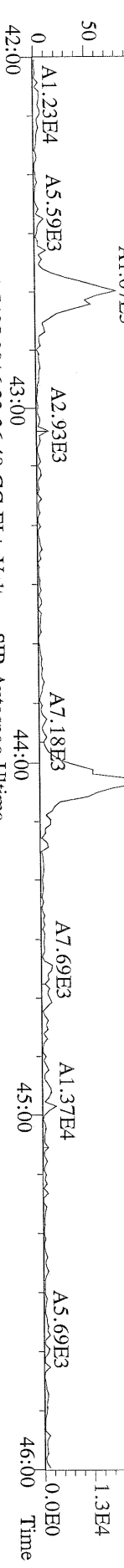
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380.9760 S:9 F:3 Exp:PCDD
Sample Text:9548-002-0001-SA File Text:Frontier Analytical Laboratory



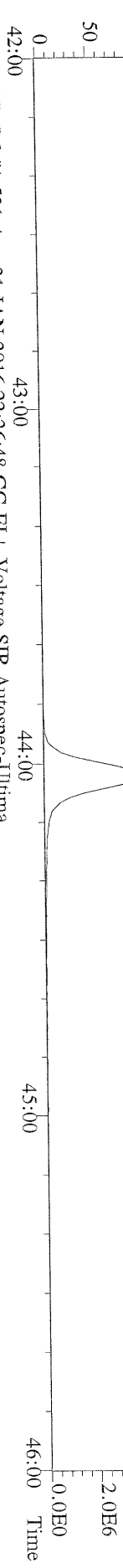
File:31JAN16M #1-521 Acq:31-JAN-2016 22:26:48 GC EI+ Voltage SIR Autospec-Ultima
423.7767 S:9 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:9548-002-0001-SA File Text:Frontier Analytical Laboratory



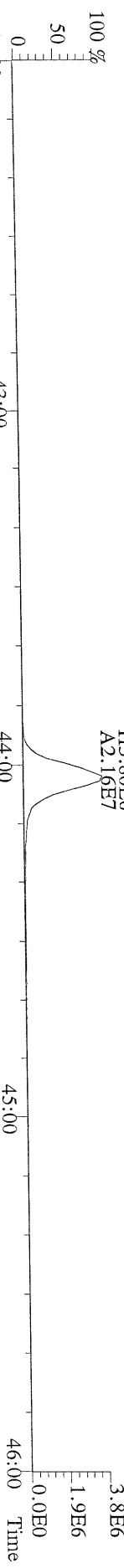
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425.7737 S:9 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
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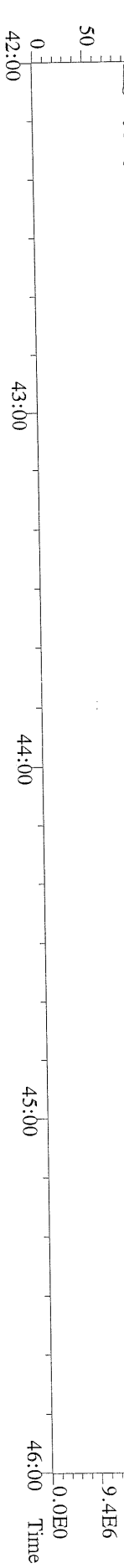
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435.8169 S:9 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:9548-002-0001-SA File Text:Frontier Analytical Laboratory



File:31JAN16M #1-521 Acq:31-JAN-2016 22:26:48 GC EI+ Voltage SIR Autospec-Ultima
437.8140 S:9 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:9548-002-0001-SA File Text:Frontier Analytical Laboratory



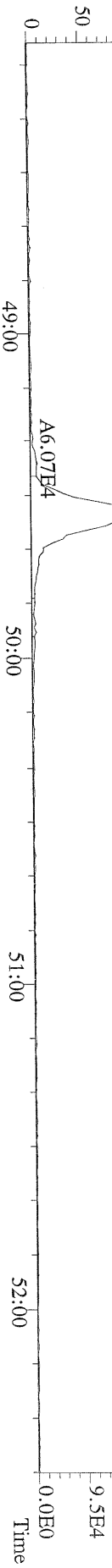
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430.9728 S:9 F:4 Exp:PCDD
Sample Text:9548-002-0001-SA File Text:Frontier Analytical Laboratory



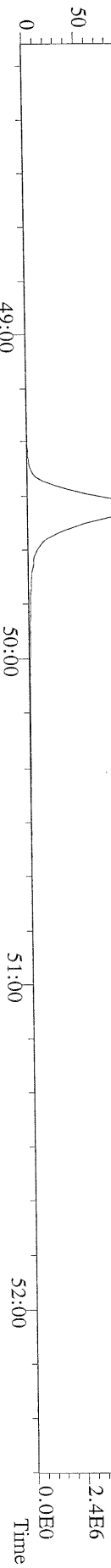
File:31JAN16M #1-361 Acq:31-JAN-2016 22:26:48 GC EI + Voltage SIR Autospec-Ultima
457.7377 S:9 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
Sample Text:9548-002-0001-SA File Text:Frontier Analytical Laboratory
100 %



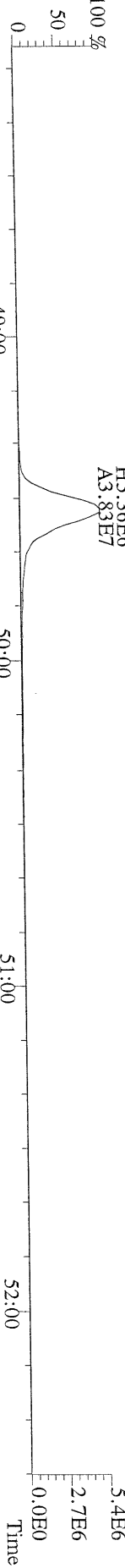
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459.7348 S:9 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
Sample Text:9548-002-0001-SA File Text:Frontier Analytical Laboratory
100 %



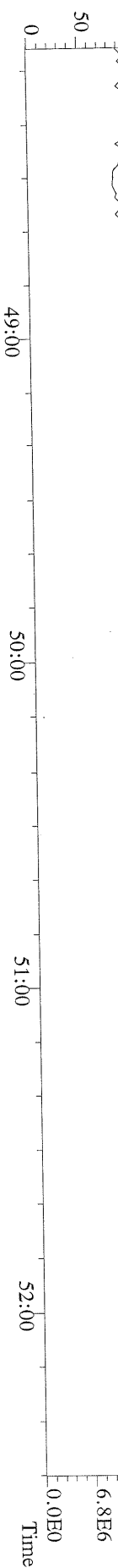
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469.7780 S:9 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
Sample Text:9548-002-0001-SA File Text:Frontier Analytical Laboratory
100 %



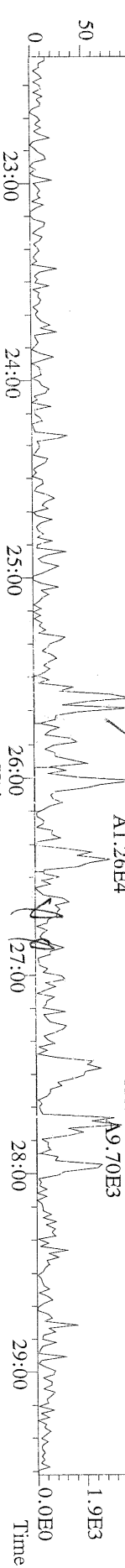
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471.7750 S:9 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
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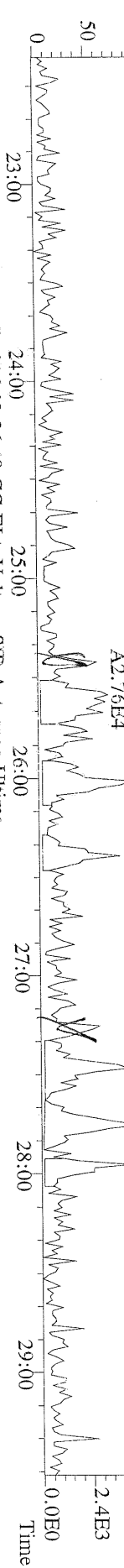
File:31JAN16M #1-361 Acq:31-JAN-2016 22:26:48 GC EI + Voltage SIR Autospec-Ultima
454.9728 S:9 F:5 Exp:PCDD
Sample Text:9548-002-0001-SA File Text:Frontier Analytical Laboratory



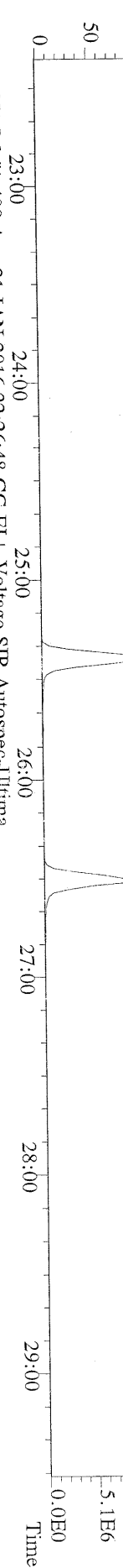
File:31JAN16M #1-400 Acq:31-JAN-2016 22:26:48 GC EI + Voltage SIR Autospec-Ultima
 303.9016 S:9 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:9548-002-0001-SA File Text:Frontier Analytical Laboratory



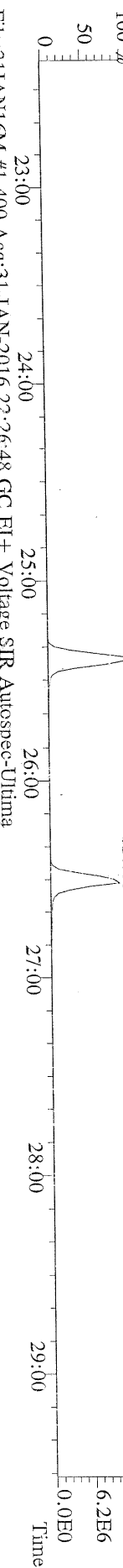
File:31JAN16M #1-400 Acq:31-JAN-2016 22:26:48 GC EI + Voltage SIR Autospec-Ultima
 305.8987 S:9 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:9548-002-0001-SA File Text:Frontier Analytical Laboratory



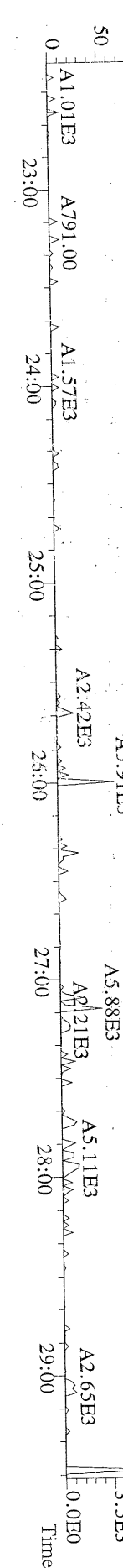
File:31JAN16M #1-400 Acq:31-JAN-2016 22:26:48 GC EI + Voltage SIR Autospec-Ultima
 315.9419 S:9 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:9548-002-0001-SA File Text:Frontier Analytical Laboratory



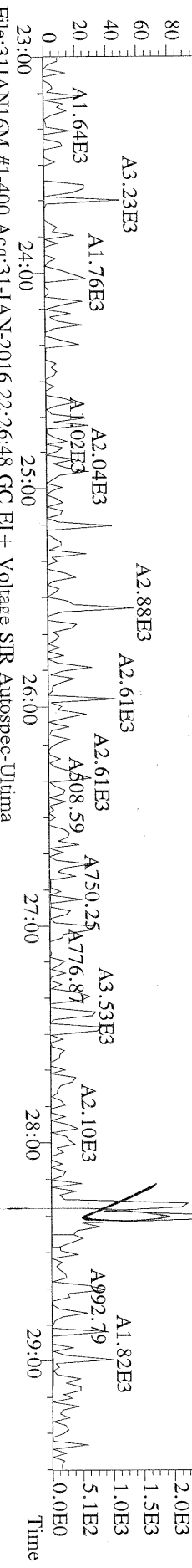
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 317.9389 S:9 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:9548-002-0001-SA File Text:Frontier Analytical Laboratory



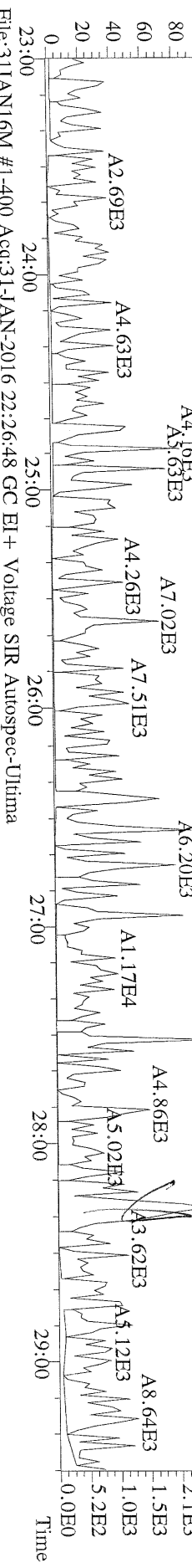
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 375.8364 S:9 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:9548-002-0001-SA File Text:Frontier Analytical Laboratory



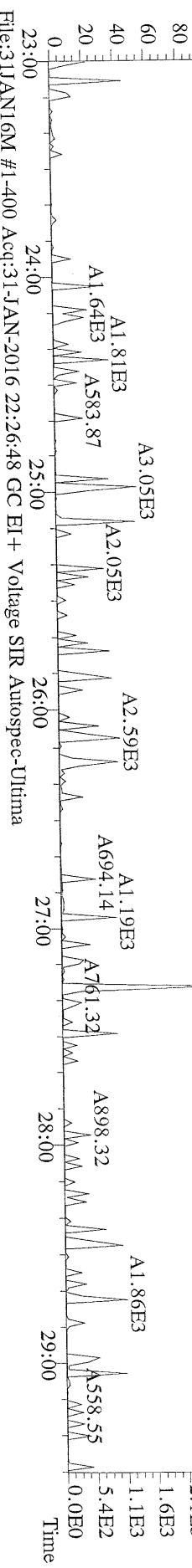
File:31JAN16M #1-400 Acq:31-JAN-2016 22:26:48 GC EI+ Voltage SIR Autospec-Ultima
 339.8597 S:9 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:9548-002-0001-SA File Text:Frontier Analytical Laboratory



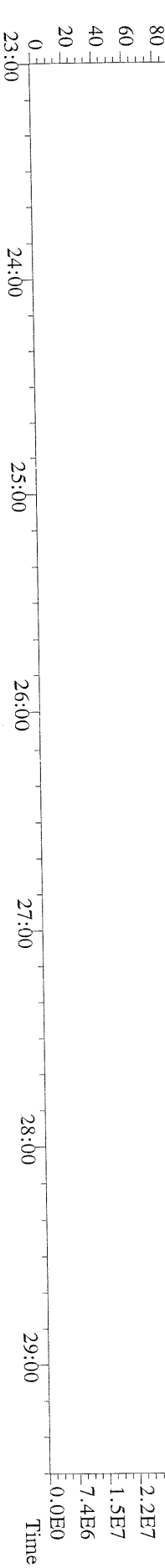
File:31JAN16M #1-400 Acq:31-JAN-2016 22:26:48 GC EI+ Voltage SIR Autospec-Ultima
 341.8568 S:9 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:9548-002-0001-SA File Text:Frontier Analytical Laboratory



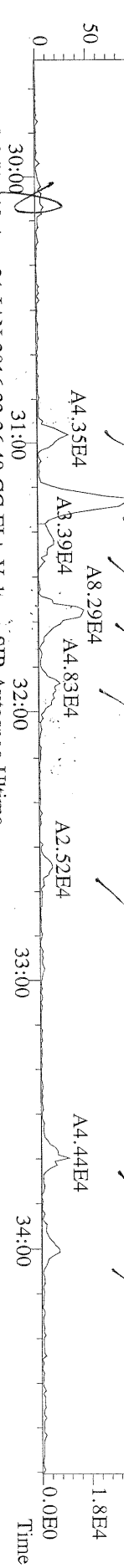
File:31JAN16M #1-400 Acq:31-JAN-2016 22:26:48 GC EI+ Voltage SIR Autospec-Ultima
 409.7974 S:9 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:9548-002-0001-SA File Text:Frontier Analytical Laboratory



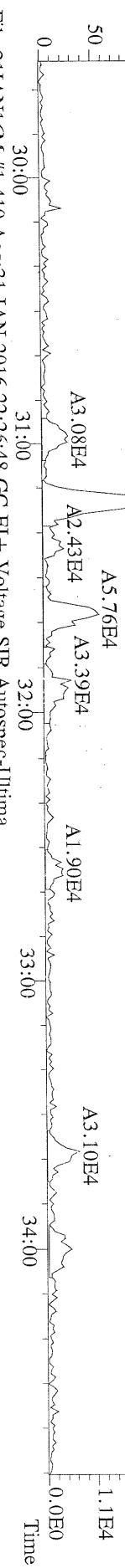
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 330.9792 S:9 Exp:PCDD
 Sample Text:9548-002-0001-SA File Text:Frontier Analytical Laboratory



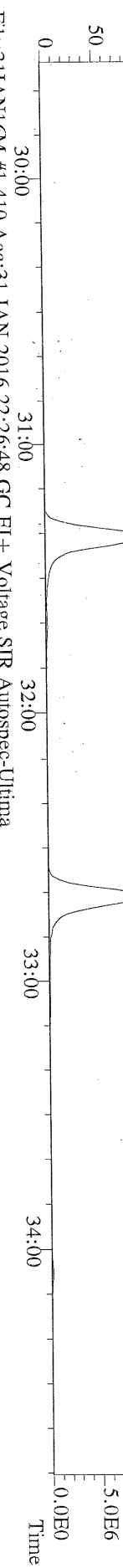
File:31JAN16M #1-410 Acq:31-JAN-2016 22:26:48 GC EI+ Voltage SIR Autospec-Ultima
 339.8597 S:9 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
 Sample Text:9548-002-0001-SA File Text:Frontier Analytical Laboratory



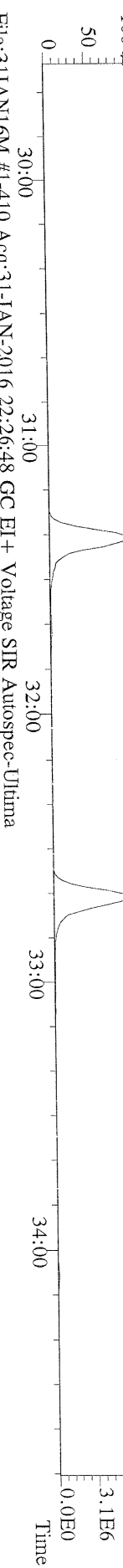
File:31JAN16M #1-410 Acq:31-JAN-2016 22:26:48 GC EI+ Voltage SIR Autospec-Ultima
 341.8568 S:9 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
 Sample Text:9548-002-0001-SA File Text:Frontier Analytical Laboratory



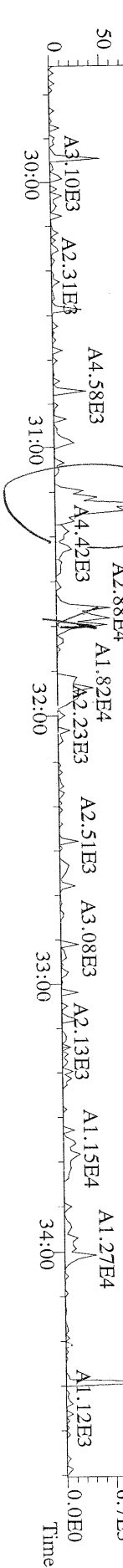
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 351.9000 S:9 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
 Sample Text:9548-002-0001-SA File Text:Frontier Analytical Laboratory



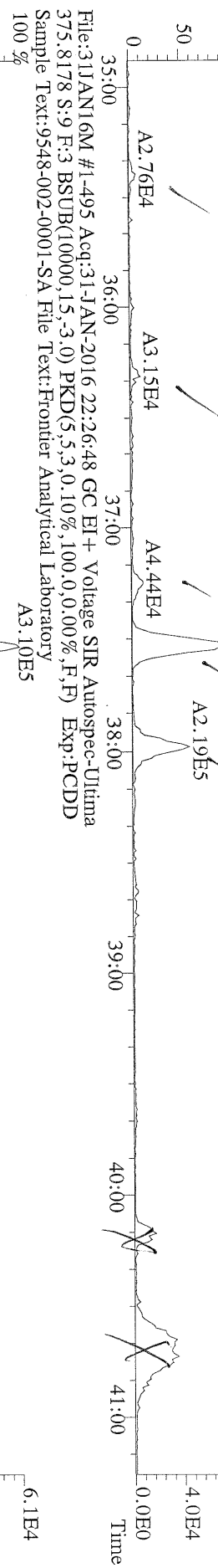
File:31JAN16M #1-410 Acq:31-JAN-2016 22:26:48 GC EI+ Voltage SIR Autospec-Ultima
 409.7974 S:9 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
 Sample Text:9548-002-0001-SA File Text:Frontier Analytical Laboratory



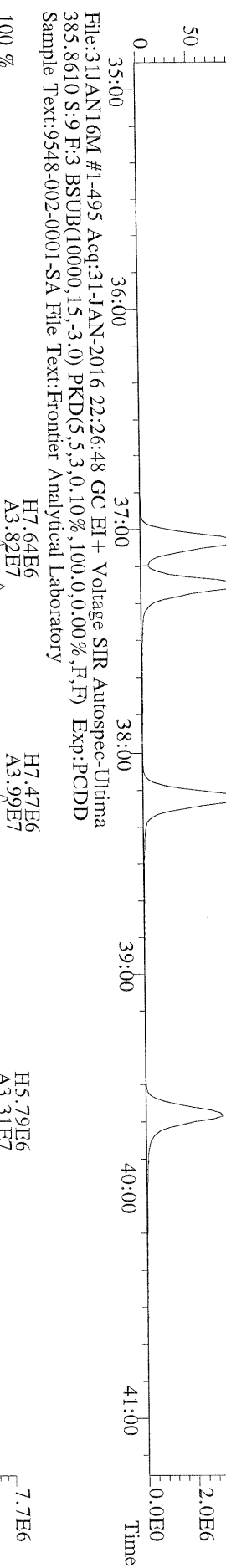
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 Sample Text:9548-002-0001-SA File Text:Frontier Analytical Laboratory



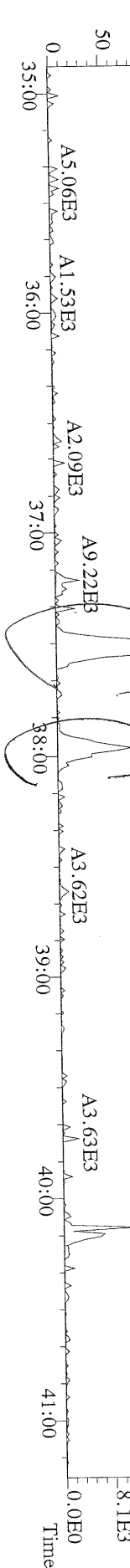
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 373.8207 S:9 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
 Sample Text:9548-002-0001-SA File Text:Frontier Analytical Laboratory



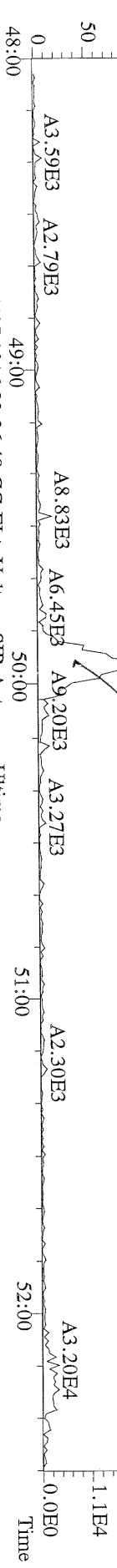
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 383.8639 S:9 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
 Sample Text:9548-002-0001-SA File Text:Frontier Analytical Laboratory



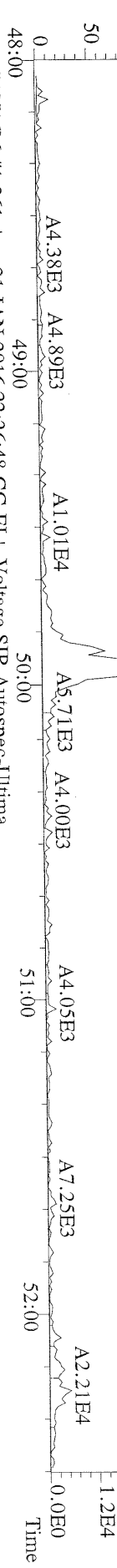
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 445.7555 S:9 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
 Sample Text:9548-002-0001-SA File Text:Frontier Analytical Laboratory



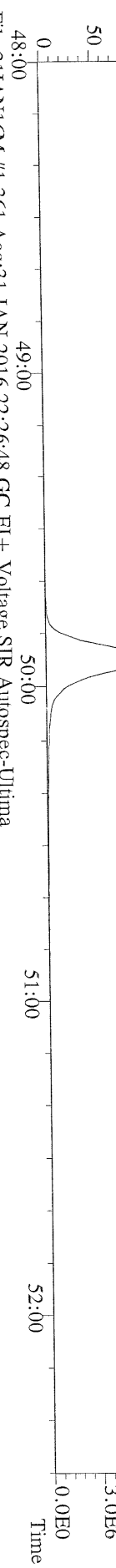
File:31JAN16M #1-361 Acq:31-JAN-2016 22:26:48 GC EI+ Voltage SIR Autospec-Ultima
 441.7428 S:9 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
 Sample Text:9548-002-0001-SA File Text:Frontier Analytical Laboratory



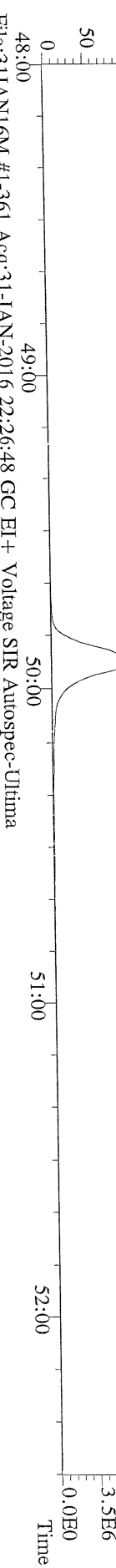
File:31JAN16M #1-361 Acq:31-JAN-2016 22:26:48 GC EI+ Voltage SIR Autospec-Ultima
 443.7398 S:9 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
 Sample Text:9548-002-0001-SA File Text:Frontier Analytical Laboratory



File:31JAN16M #1-361 Acq:31-JAN-2016 22:26:48 GC EI+ Voltage SIR Autospec-Ultima
 453.7831 S:9 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
 Sample Text:9548-002-0001-SA File Text:Frontier Analytical Laboratory




File:31JAN16M #1-361 Acq:31-JAN-2016 22:26:48 GC EI+ Voltage SIR Autospec-Ultima
 455.7801 S:9 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
 Sample Text:9548-002-0001-SA File Text:Frontier Analytical Laboratory



File:31JAN16M #1-361 Acq:31-JAN-2016 22:26:48 GC EI+ Voltage SIR Autospec-Ultima
 513.6775 S:9 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
 Sample Text:9548-002-0001-SA File Text:Frontier Analytical Laboratory



Name	Resp	RA	RT	RRF	Conc	Qual	Fac Noise-1	Noise-2	DL	Rec	#Hom
2,3,7,8-TCDD	*	* n	NotFnd	1.27	*		2.50	679	916	0.387	
1,2,3,7,8-PeCDD	*	* n	NotFnd	1.01	*		2.50	720	523	0.626	
1,2,3,4,7,8-HxCDD	*	* n	NotFnd	1.04	*		2.50	1070	988	1.46	
1,2,3,6,7,8-HxCDD	9.22e+05	1.17	y	38:37	1.05	38.8	2.50	-	-	*	
1,2,3,7,8,9-HxCDD	7.84e+04	1.30	y	39:02	1.14	3.21	J 2.50	-	-	*	
1,2,3,4,6,7,8-HpCDD	1.07e+07	1.15	y	44:02	1.01	555	2.50	-	-	*	
OCDD	4.66e+07	0.90	y	49:32	1.08	3060	2.50	-	-	*	
2,3,7,8-TCDF	6.77e+04	0.78	y	26:31	1.02	1.34	J 2.50	-	-	*	
1,2,3,7,8-PeCDF	1.38e+05	1.45	y	31:22	0.90	3.66	J 2.50	-	-	*	
2,3,4,7,8-PeCDF	1.07e+05	1.55	y	32:43	0.93	2.96	J 2.50	-	-	*	
1,2,3,4,7,8-HxCDF	1.71e+05	1.18	y	37:03	1.13	5.71	J 2.50	-	-	*	
1,2,3,6,7,8-HxCDF	4.51e+05	1.30	y	37:14	1.08	13.7	J 2.50	-	-	*	
2,3,4,6,7,8-HxCDF	2.81e+05	1.21	y	38:12	1.03	9.58	J 2.50	-	-	*	
1,2,3,7,8,9-HxCDF	5.03e+04	1.28	y	39:41	1.05	2.03	J 2.50	-	-	*	
1,2,3,4,6,7,8-HpCDF	7.10e+06	1.02	y	42:09	1.24	274	2.50	-	-	*	
1,2,3,4,7,8,9-HpCDF	2.74e+05	0.94	y	44:57	1.12	14.9	J 2.50	-	-	*	
OCDF	1.89e+07	0.89	y	49:55	1.09	1090	2.50	-	-	*	
13C-2,3,7,8-TCDD	6.70e+07	0.80	y	27:14	1.10	1570				82.1	
13C-1,2,3,7,8-PeCDD	5.18e+07	1.58	y	33:05	0.89	1500				78.8	
13C-1,2,3,4,7,8-HxCDD	3.84e+07	1.26	y	38:27	0.87	1480				77.6	
13C-1,2,3,6,7,8-HxCDD	4.30e+07	1.27	y	38:36	0.87	1650				86.6	
13C-1,2,3,4,6,7,8-HpCDD	3.62e+07	1.04	y	44:02	0.84	1450				75.8	
13C-OCDD	5.40e+07	0.93	y	49:32	0.69	2600				68.2	
13C-2,3,7,8-TCDF	9.46e+07	0.80	y	26:28	1.02	1530				80.2	
13C-1,2,3,7,8-PeCDF	8.01e+07	1.55	y	31:20	1.00	1330				69.7	
13C-2,3,4,7,8-PeCDF	7.47e+07	1.55	y	32:41	0.89	1400				75.1	
13C-1,2,3,4,7,8-HxCDF	5.05e+07	0.54	y	37:02	1.26	1340				70.1	
13C-1,2,3,6,7,8-HxCDF	5.82e+07	0.54	y	37:15	1.30	1500				78.4	
13C-2,3,4,6,7,8-HxCDF	5.43e+07	0.54	y	38:11	1.25	1460				76.4	
13C-1,2,3,7,8,9-HxCDF	4.50e+07	0.55	y	39:38	1.15	1310				68.9	
13C-1,2,3,4,6,7,8-HpCDF	3.98e+07	0.47	y	42:07	0.96	1400				73.1	
13C-1,2,3,4,7,8,9-HpCDF	3.12e+07	0.47	y	44:56	0.83	1260				66.1	
13C-OCDF	6.07e+07	0.80	y	49:53	0.93	2190				57.4	
37Cl-2,3,7,8-TCDD	2.51e+07			27:15	1.00	651				85.2	
13C-1,2,3,4-TCDD	7.39e+07	0.81	y	26:38	-	102					
13C-1,2,3,4-TCDF	1.15e+08	0.79	y	25:22	-	101					
13C-1,2,3,7,8,9-HxCDD	5.70e+07	1.25	y	39:03	-	91.6					
Total Tetra-Dioxins	1.34e+05			24:12	1.27	3.01	J 2.50	-	-	*	2
Total Penta-Dioxins	2.42e+05			30:06	1.01	8.87	J,M 2.50	-	-	*	2
Total Hexa-Dioxins	2.53e+06			35:59	1.08	108	2.50	-	-	*	5
Total Hepta-Dioxins	1.65e+07			42:39	1.01	859	2.50	-	-	*	2
Total Tetra-Furans	4.45e+06			23:29	1.02	88.1	D,M 2.50	-	-	*	10
1st Fn. Tot Penta-Furans	6.03e+05			28:17	0.91	16.3	D,M 2.50	-	-	*	PeCDF 1
Total Penta-Furans	6.15e+06			30:03	0.91	167	D,M 2.50	-	-	*	183 10
Total Hexa-Furans	2.33e+07			35:06	1.07	793	D,M 2.50	-	-	*	11
Total Hepta-Furans	2.99e+07			42:09	1.19	1310	2.50	-	-	*	3

Analyst: 

Date: 2/3/16

Totals class: Total Tetra-Dioxins

Entry #: 38

Run: 15

File: 02FEB16N

S: 7 I: 1 F: 1

Acquired: 2-FEB-16 21:57:03

Total Concentration: 3.01

Unnamed Concentration: 3.007

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
24:12	2.91e+04	3.54e+04	0.82 y	6.46e+04	1.45	
27:57	3.23e+04	3.74e+04	0.86 y	6.96e+04	1.56	

Totals class: Total Penta-Dioxins

Entry #: 39

Run: 15

File: 02FEB16N

S: 7 I: 1 F: 2

Acquired: 2-FEB-16 21:57:03

Total Concentration: 8.87

Unnamed Concentration: 8.872

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
30:06	1.06e+05	7.15e+04	1.49 y	1.78e+05	6.51	
31:20	5.40e+04	2.53e+04	2.14 n	6.45e+04	2.36	

Totals class: Total Hexa-Dioxins

Entry #: 40

Run: 15

File: 02FEB16N

S: 7 I: 1 F: 3

Acquired: 2-FEB-16 21:57:03

Total Concentration: 108

Unnamed Concentration: 66.432

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
35:59	2.50e+05	2.11e+05	1.19 y	4.62e+05	20.1	
36:56	8.60e+04	6.57e+04	1.31 y	1.52e+05	6.59	
37:21	5.12e+05	4.03e+05	1.27 y	9.16e+05	39.8	
38:37	4.97e+05	4.25e+05	1.17 y	9.22e+05	38.8	1,2,3,6,7,8-HxCDD
39:02	4.43e+04	3.42e+04	1.30 y	7.84e+04	3.21	1,2,3,7,8,9-HxCDD

Totals class: Total Hepta-Dioxins

Entry #: 41

Run: 15 File: 02FEB16N
Acquired: 2-FEB-16 21:57:03

S: 7 I: 1 F: 4

Total Concentration: 859

Unnamed Concentration: 303.797

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
42:39	3.06e+06	2.77e+06	1.10 y	5.83e+06	304	
44:02	5.70e+06	4.96e+06	1.15 y	1.07e+07	555	1,2,3,4,6,7,8-HpCDD

Totals class: Total Tetra-Furans

Entry #: 42

Run: 15 File: 02FEB16N S: 7 I: 1 F: 1
Acquired: 2-FEB-16 21:57:03

Total Concentration: 88.1

Unnamed Concentration: 86.758

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
23:29	2.68e+04	3.41e+04	0.79 y	6.09e+04	1.21	
23:56	3.88e+04	5.05e+04	0.77 y	8.93e+04	1.77	
24:14	2.73e+04	4.12e+04	0.66 y	6.85e+04	1.36	
25:25	7.18e+04	8.62e+04	0.83 y	1.58e+05	3.13	
25:38	2.32e+05	2.74e+05	0.85 y	5.05e+05	10.00	
26:31	2.97e+04	3.80e+04	0.78 y	6.77e+04	1.34	2,3,7,8-TCDF
27:14	4.61e+04	6.09e+04	0.76 y	1.07e+05	2.12	
27:44	1.14e+06	1.34e+06	0.85 y	2.48e+06	49.2	
27:56	2.70e+05	3.21e+05	0.84 y	5.91e+05	11.7	
28:44	1.44e+05	1.77e+05	0.81 y	3.21e+05	6.35	

Totals class: 1st Fn. Tot Penta-Furans Entry #: 43

Run: 15 File: 02FEB16N S: 7 I: 1 F: 1
Acquired: 2-FEB-16 21:57:03

Total Concentration: 16.3 Unnamed Concentration: 16.326

RT	ml Resp	m2 Resp RA	Resp	Concentration	Name
28:17	3.80e+05	2.23e+05	1.70 y	6.03e+05	16.3

Totals class: Total Penta-Furans

Entry #: 44

Run: 15

File: 02FEB16N

S: 7 I: 1 F: 2

Acquired: 2-FEB-16 21:57:03

Total Concentration: 167

Unnamed Concentration: 159.911

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
30:03	1.17e+05	8.82e+04	1.33 y	2.05e+05	5.56	
31:13	3.69e+04	2.42e+04	1.52 y	6.11e+04	1.65	
31:22	8.13e+04	5.63e+04	1.45 y	1.38e+05	3.66	1,2,3,7,8-PeCDF
31:38	1.78e+06	1.22e+06	1.46 y	2.99e+06	81.1	
31:56	7.52e+05	5.15e+05	1.46 y	1.27e+06	34.3	
32:43	6.52e+04	4.22e+04	1.55 y	1.07e+05	2.96	2,3,4,7,8-PeCDF
32:56	6.87e+04	4.49e+04	1.53 y	1.14e+05	3.08	
33:38	2.50e+04	1.77e+04	1.41 y	4.27e+04	1.16	
33:49	3.02e+04	2.10e+04	1.44 y	5.13e+04	1.39	
34:00	6.96e+05	4.73e+05	1.47 y	1.17e+06	31.6	

Totals class: Total Hexa-Furans

Entry #: 45

Run: 15

File: 02FEB16N

S: 7 I: 1 F: 3

Acquired: 2-FEB-16 21:57:03

Total Concentration: 793

Unnamed Concentration: 762.209

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
35:06	2.33e+05	1.78e+05	1.31 y	4.11e+05	14.0	
35:23	1.37e+06	1.13e+06	1.20 y	2.50e+06	85.4	
35:47	8.24e+04	6.64e+04	1.24 y	1.49e+05	5.08	
36:18	5.31e+06	4.38e+06	1.21 y	9.69e+06	331	
37:03	9.25e+04	7.84e+04	1.18 y	1.71e+05	5.71	1,2,3,4,7,8-HxCDF
37:14	2.55e+05	1.96e+05	1.30 y	4.51e+05	13.7	1,2,3,6,7,8-HxCDF
37:30	8.34e+04	6.44e+04	1.30 y	1.48e+05	5.04	
37:57	5.10e+06	4.24e+06	1.20 y	9.35e+06	319	
38:12	1.54e+05	1.27e+05	1.21 y	2.81e+05	9.58	2,3,4,6,7,8-HxCDF
38:36	3.98e+04	3.28e+04	1.21 y	7.26e+04	2.48	
39:41	2.83e+04	2.21e+04	1.28 y	5.03e+04	2.03	1,2,3,7,8,9-HxCDF

Totals class: Total Hepta-Furans

Entry #: 46

Run: 15

File: 02FEB16N

S: 7 I: 1 F: 4

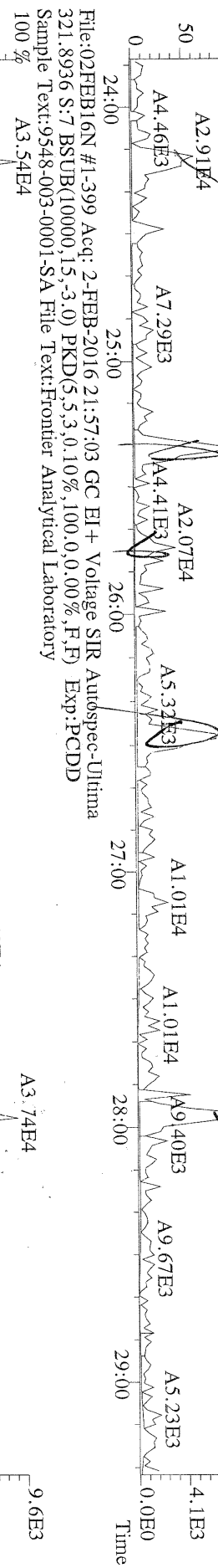
Acquired: 2-FEB-16 21:57:03

Total Concentration: 1310

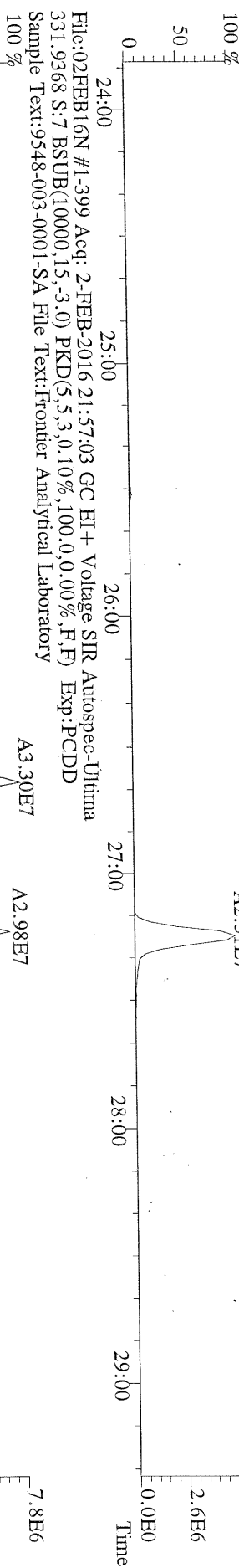
Unnamed Concentration: 1020.756

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
42:09	3.58e+06	3.51e+06	1.02 y	7.10e+06	274	1,2,3,4,6,7,8-HpCDF
42:58	1.14e+07	1.12e+07	1.02 y	2.26e+07	1020	
44:57	1.33e+05	1.41e+05	0.94 y	2.74e+05	14.9	1,2,3,4,7,8,9-HpCDF

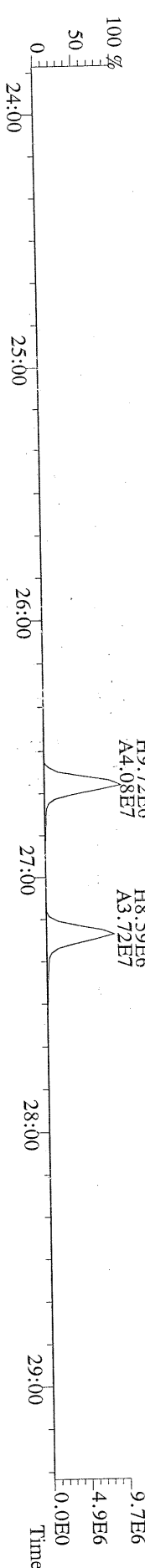
File:02FEB16N #1-399 Acq: 2-FEB-2016 21:57:03 GC EI+ Voltage SIR Autospec-Ultima
 319.8965 S:7 BSUB(10000,15,-3,0) PKD(5,5,3,0,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:9548-003-0001-SA File Text:Frontier Analytical Laboratory



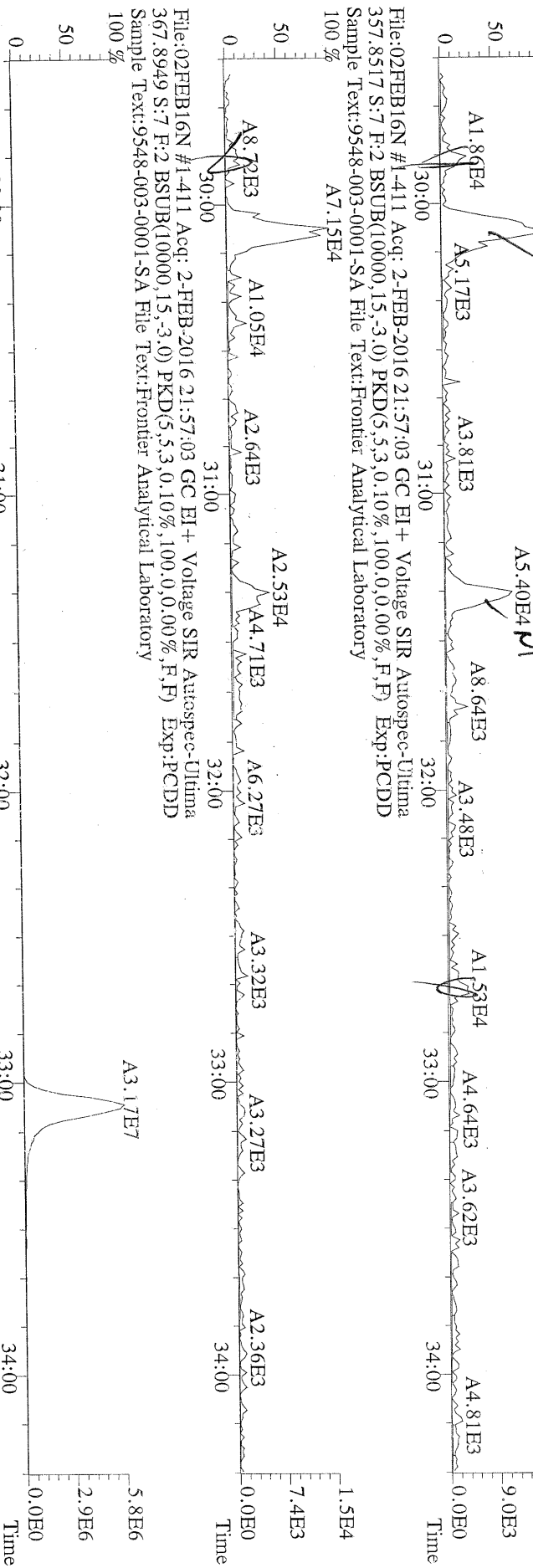
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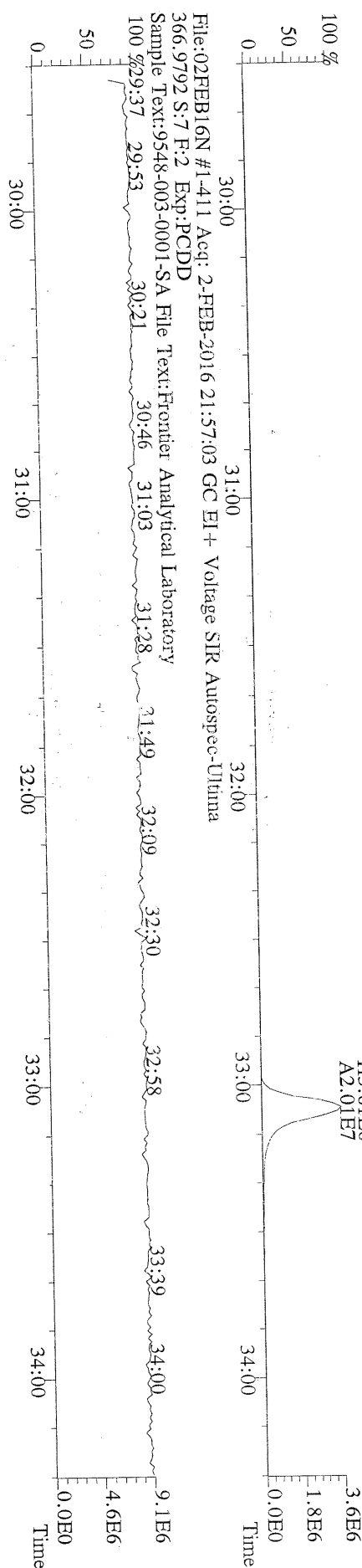
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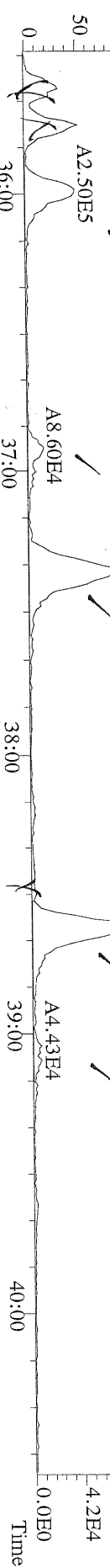
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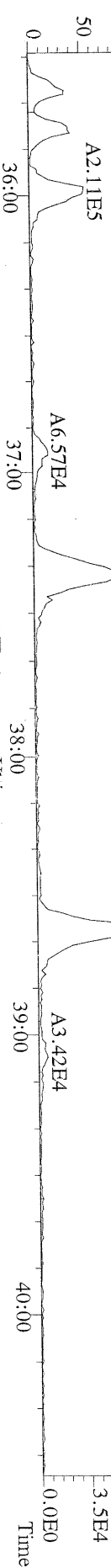
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 369.8919 S:7 F:2 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:9548-003-0001-SA File Text:Frontier Analytical Laboratory
 100 %



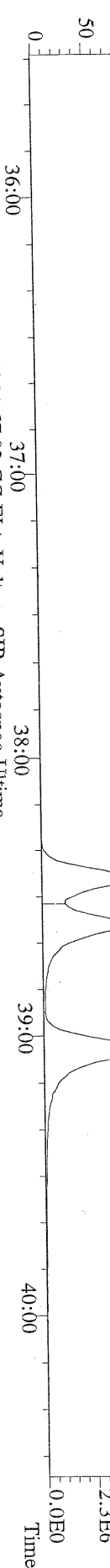
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 389.8156 S:7 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
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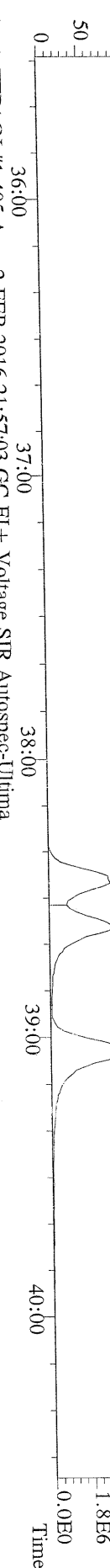
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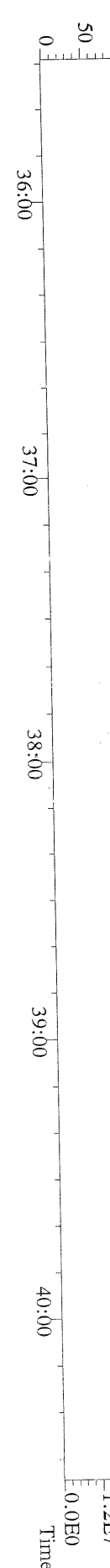
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 Sample Text:9548-003-0001-SA File Text:Frontier Analytical Laboratory



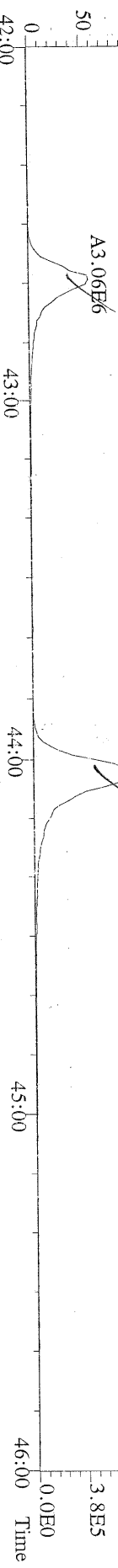
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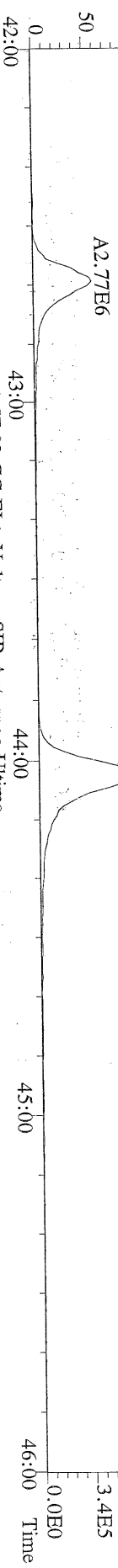
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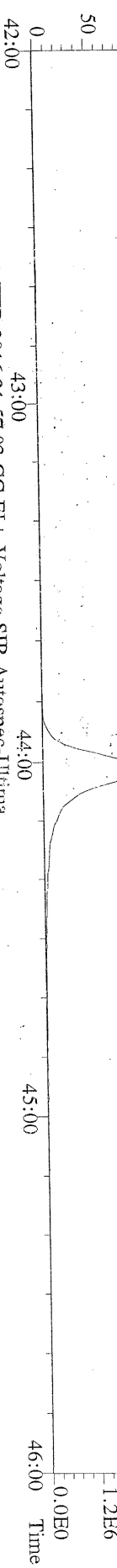
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423.7767 S:7 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:9548-003-0001-SA File Text:Frontier Analytical Laboratory
100 %



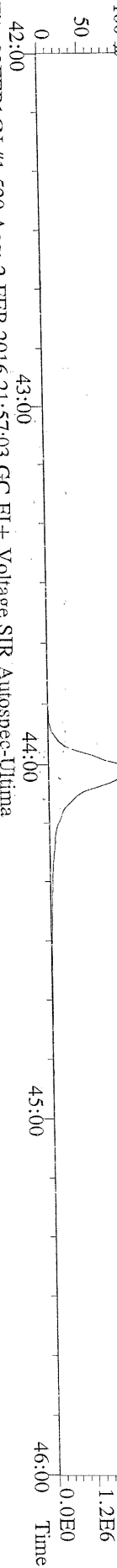
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Sample Text:9548-003-0001-SA File Text:Frontier Analytical Laboratory
100 %



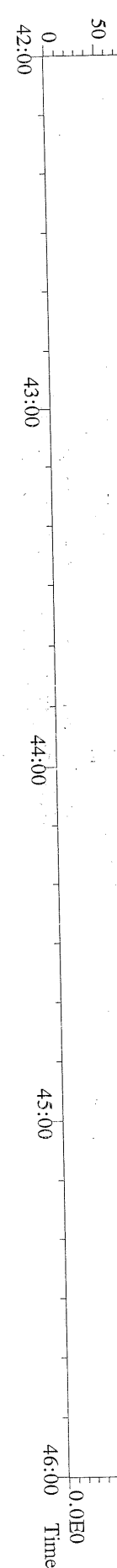
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Sample Text:9548-003-0001-SA File Text:Frontier Analytical Laboratory
100 %



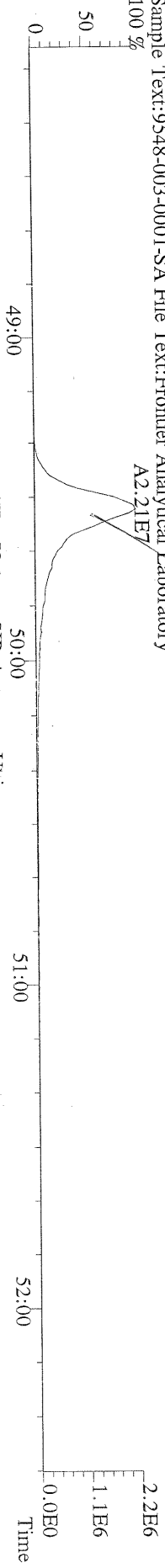
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Sample Text:9548-003-0001-SA File Text:Frontier Analytical Laboratory



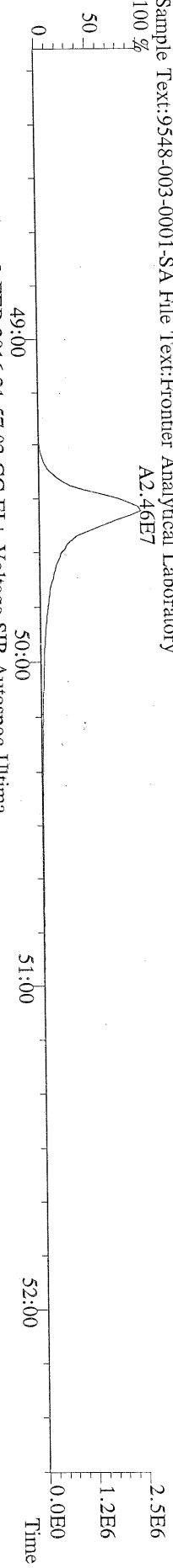
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430.9728 S:7 F:4 Exp:PCDD
Sample Text:9548-003-0001-SA File Text:Frontier Analytical Laboratory



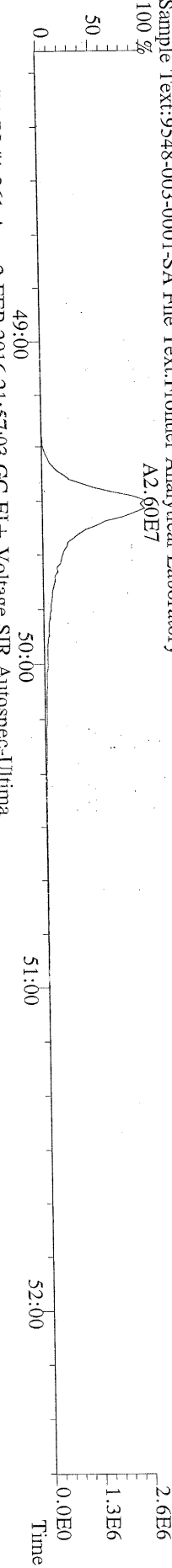
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457.7377 S:7 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,100,0,0,00%,F,F) Exp:PCDD
Sample Text:9548-003-0001-SA File Text:Frontier Analytical Laboratory



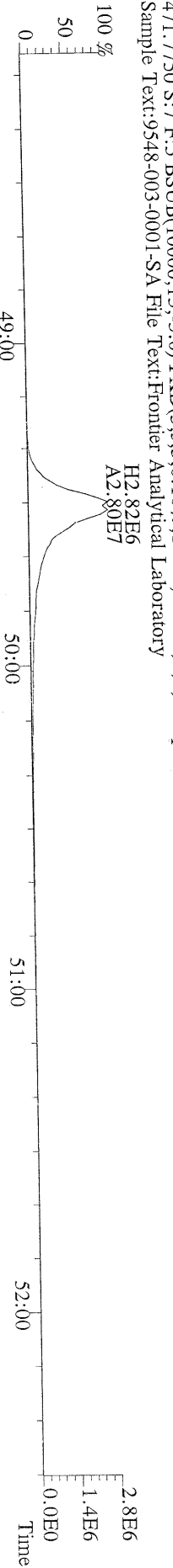
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Sample Text:9548-003-0001-SA File Text:Frontier Analytical Laboratory



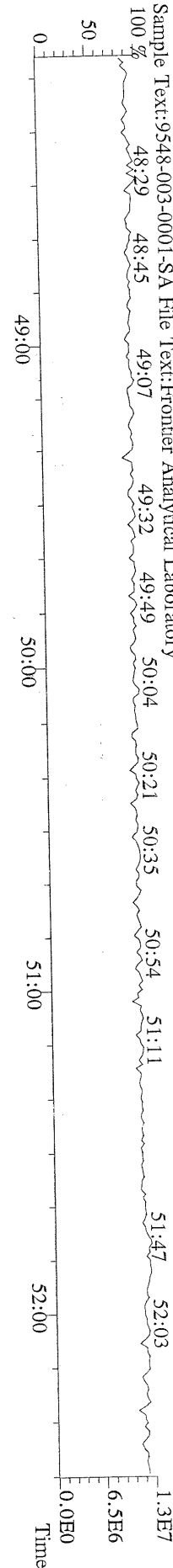
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469.7780 S:7 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,100,0,0,00%,F,F) Exp:PCDD
Sample Text:9548-003-0001-SA File Text:Frontier Analytical Laboratory



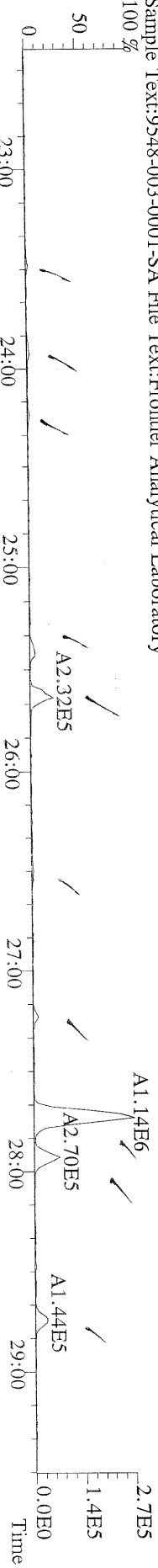
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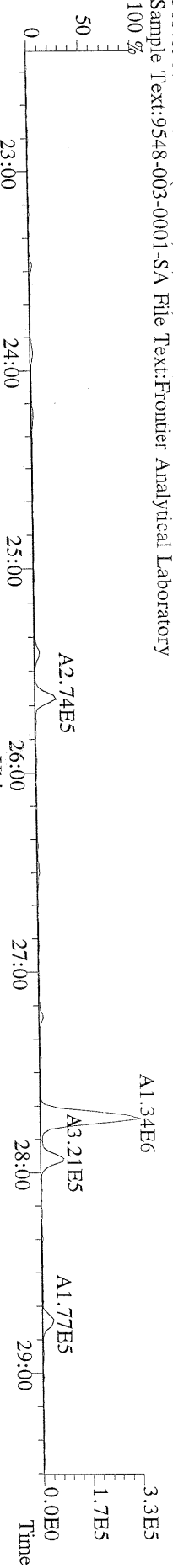
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Sample Text:9548-003-0001-SA File Text:Frontier Analytical Laboratory



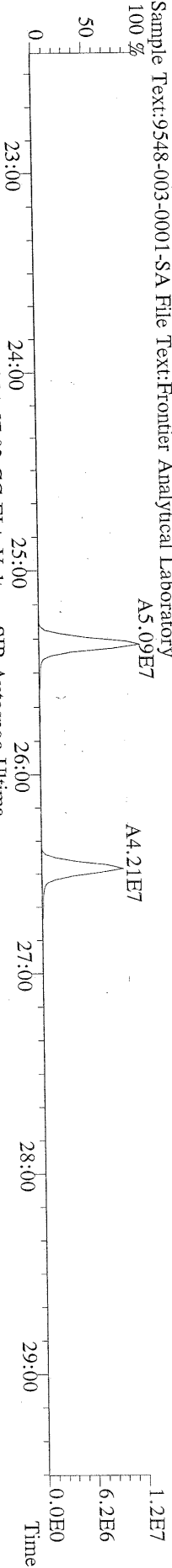
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 Sample Text:9548-003-0001-SA File Text:Frontier Analytical Laboratory
 100 %



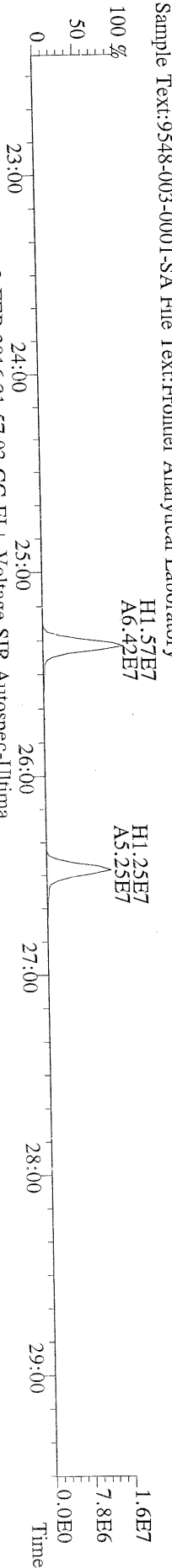
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 Sample Text:9548-003-0001-SA File Text:Frontier Analytical Laboratory
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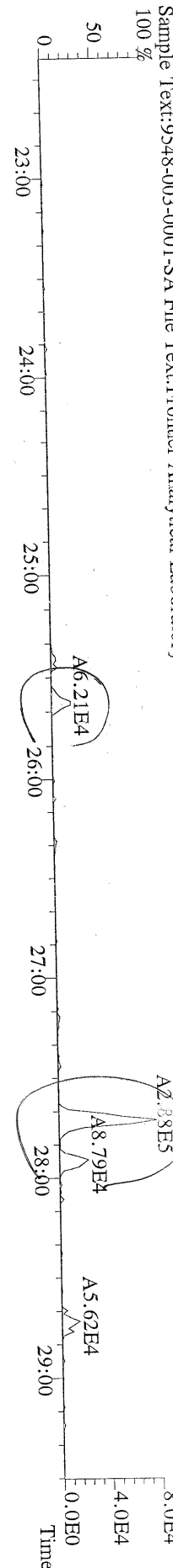
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 Sample Text:9548-003-0001-SA File Text:Frontier Analytical Laboratory
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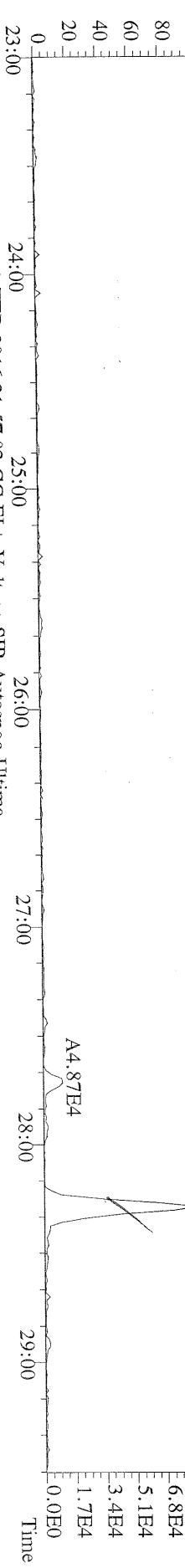
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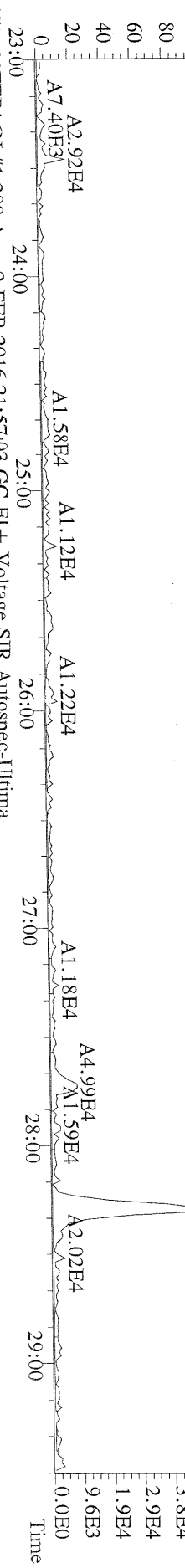
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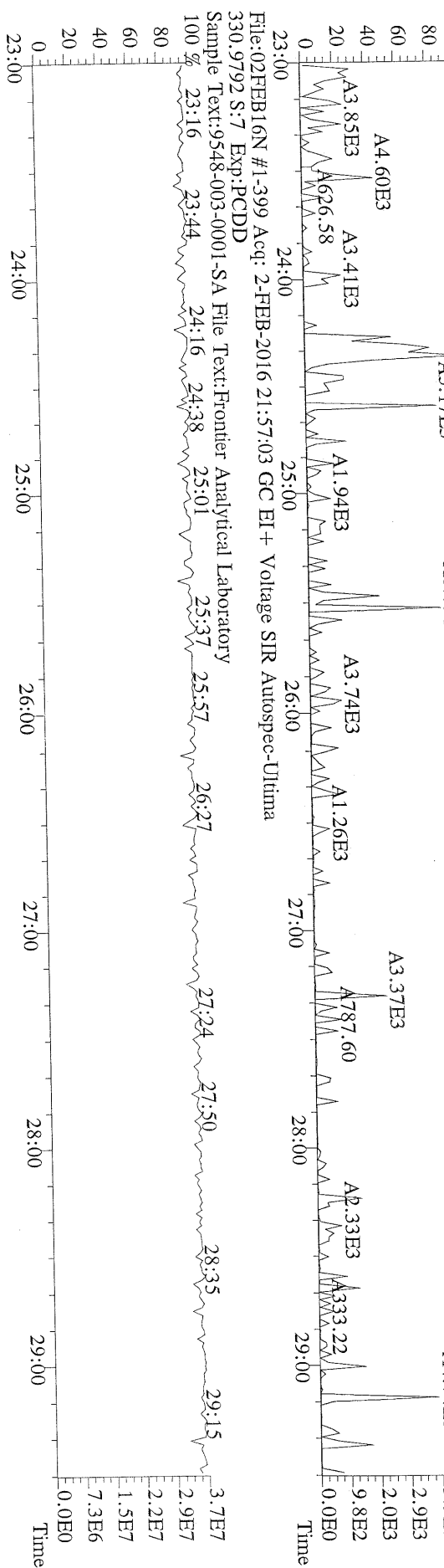
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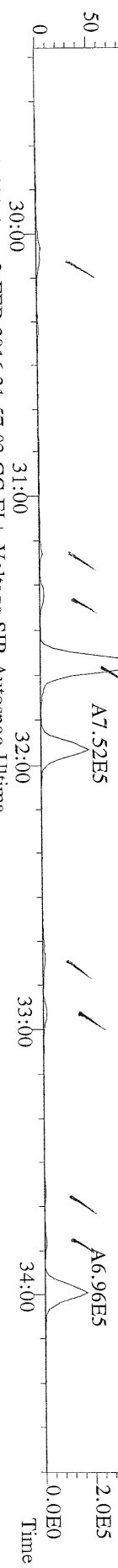
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 Sample Text:9548-003-0001-SA File Text:Frontier Analytical Laboratory



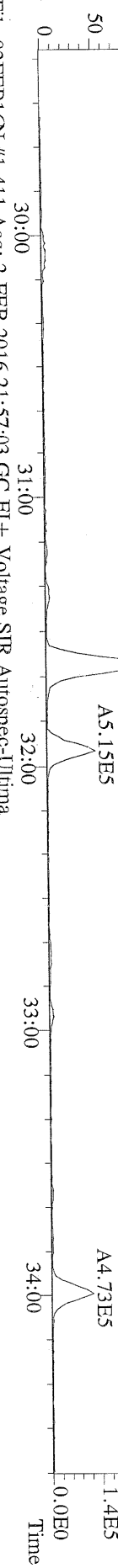
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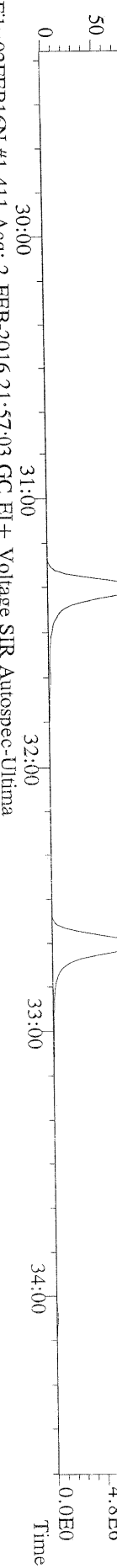
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Sample Text:9548-003-0001-SA File Text:Frontier Analytical Laboratory
100 %



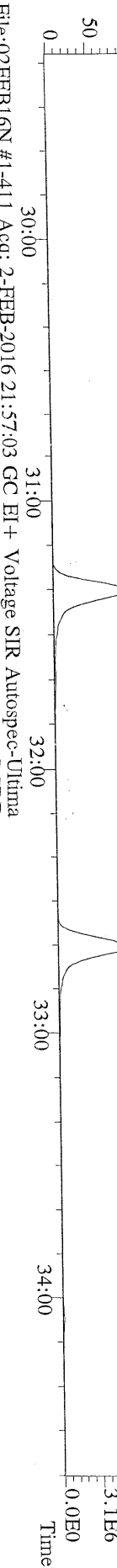
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Sample Text:9548-003-0001-SA File Text:Frontier Analytical Laboratory
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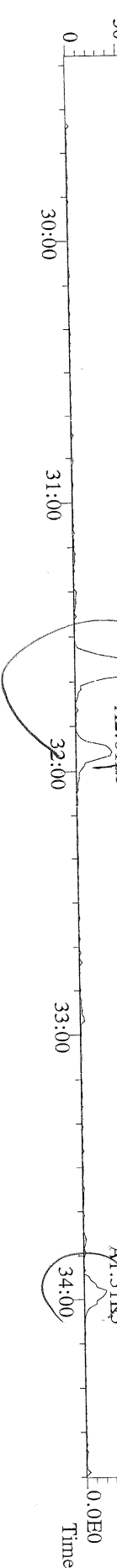
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Sample Text:9548-003-0001-SA File Text:Frontier Analytical Laboratory
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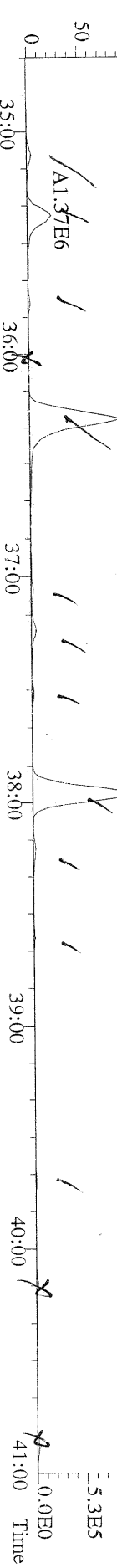
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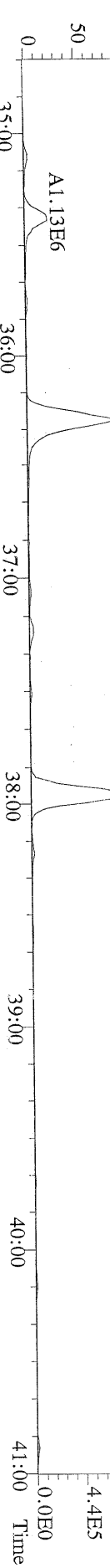
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409.7974 S:7 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD
Sample Text:9548-003-0001-SA File Text:Frontier Analytical Laboratory
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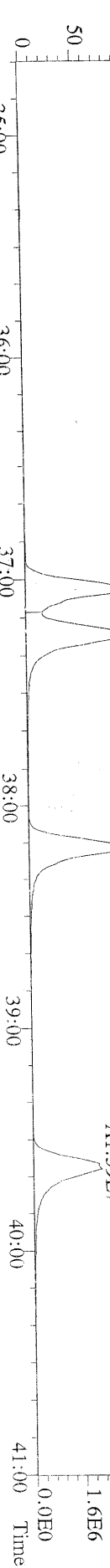
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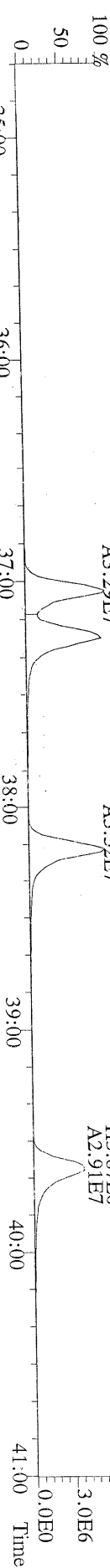
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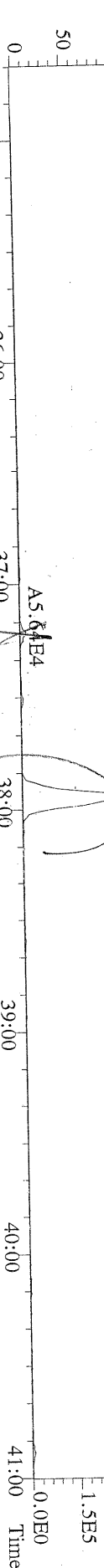
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 383.8639 S:7 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
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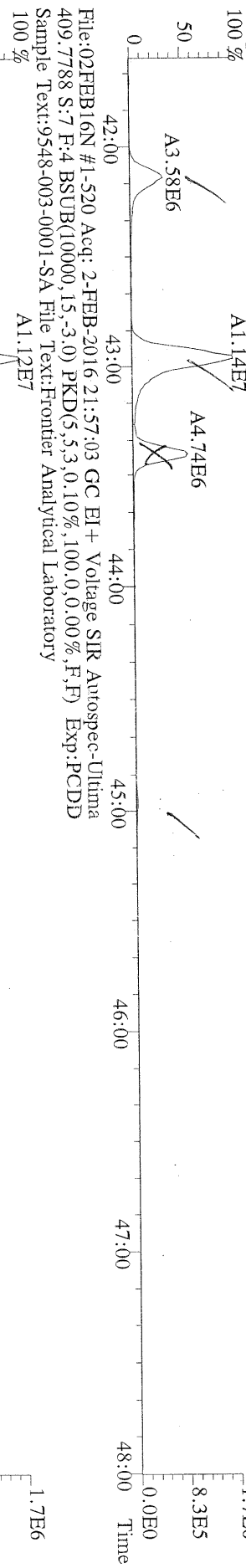
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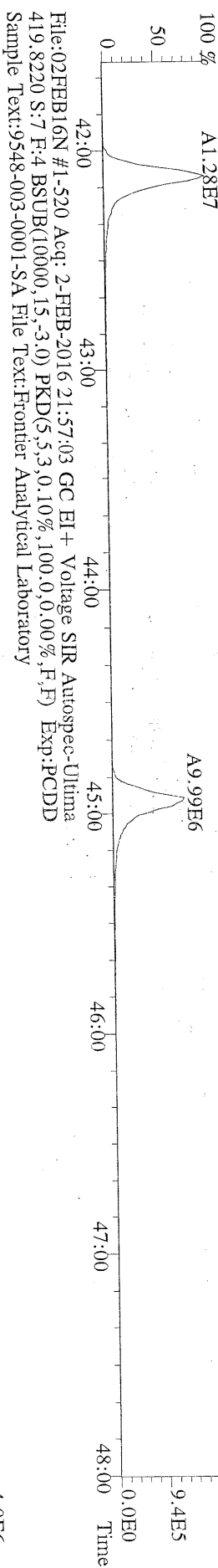
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 Sample Text:9548-003-0001-SA File Text:Frontier Analytical Laboratory
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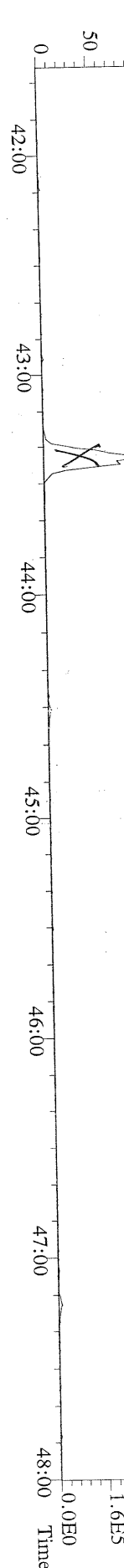
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407.7818 S:7 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9548-003-0001-SA File Text:Frontier Analytical Laboratory



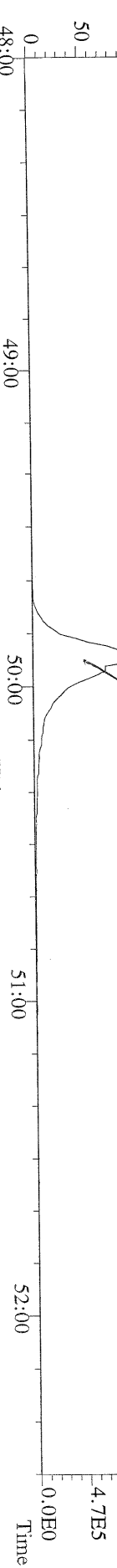
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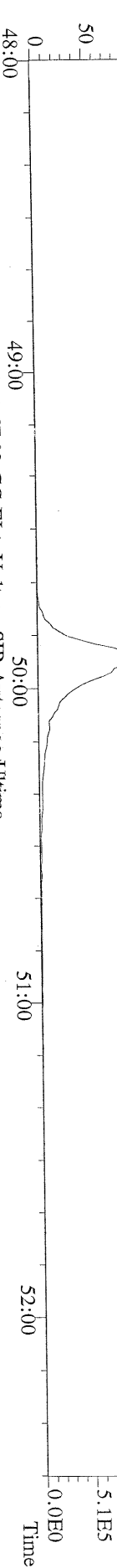
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Sample Text:9548-003-0001-SA File Text:Frontier Analytical Laboratory



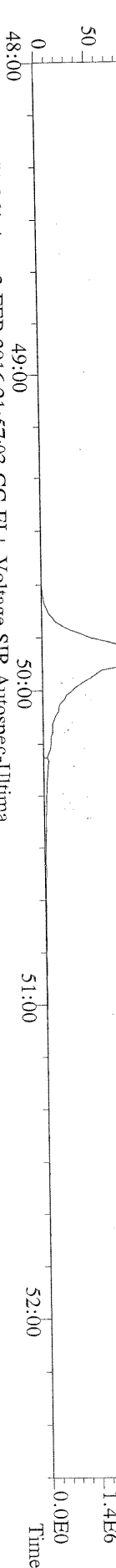
File:02FEB16N #1-361 Acq: 2-FEB-2016 21:57:03 GC EI+ Voltage SIR Autospec-Ultima
441.7428 S:7 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9548-003-0001-SA File Text:Frontier Analytical Laboratory



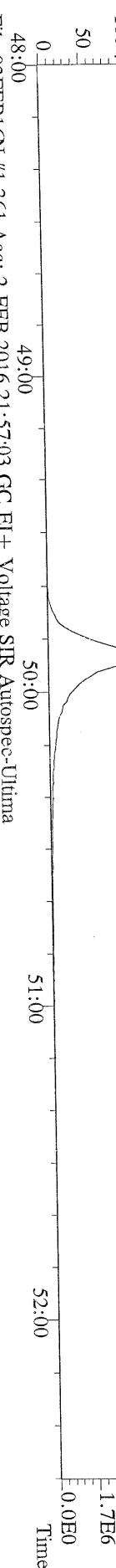
File:02FEB16N #1-361 Acq: 2-FEB-2016 21:57:03 GC EI+ Voltage SIR Autospec-Ultima
443.7398 S:7 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9548-003-0001-SA File Text:Frontier Analytical Laboratory



File:02FEB16N #1-361 Acq: 2-FEB-2016 21:57:03 GC EI+ Voltage SIR Autospec-Ultima
453.7831 S:7 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9548-003-0001-SA File Text:Frontier Analytical Laboratory



File:02FEB16N #1-361 Acq: 2-FEB-2016 21:57:03 GC EI+ Voltage SIR Autospec-Ultima
455.7801 S:7 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9548-003-0001-SA File Text:Frontier Analytical Laboratory



File:02FEB16N #1-361 Acq: 2-FEB-2016 21:57:03 GC EI+ Voltage SIR Autospec-Ultima
513.6775 S:7 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:9548-003-0001-SA File Text:Frontier Analytical Laboratory



Frontier Analytical Laboratory

Data Filename: 08JAN16M

Analyte:

Cal: PCDDFAL3-1-8-16

Name	RRF	S. D.	%RSD	S1 RRF#1	S2 RRF#2	S3 RRF#3	S4 RRF#4	S5 RRF#5	S6 RRF#6
2,3,7,8-TCDD	1.27	0.119	9.38 %	1.34	1.39	1.35	1.30	1.13	1.11
1,2,3,7,8-PeCDD	1.01	0.0740	7.36 %	1.09	1.07	1.04	0.97	0.93	0.92
1,2,3,4,7,8-HxCDD	1.04	0.0844	8.13 %	1.14	1.11	1.09	1.00	0.96	0.94
1,2,3,6,7,8-HxCDD	1.05	0.0925	8.77 %	1.17	1.12	1.11	1.01	0.97	0.95
1,2,3,7,8,9-HxCDD	1.14	0.0968	8.46 %	1.28	1.21	1.19	1.10	1.06	1.03
1,2,3,4,6,7,8-HpCDD	1.01	0.0711	7.02 %	1.11	1.05	1.05	0.98	0.94	0.93
OCDD	1.08	0.0860	7.99 %	1.20	1.13	1.12	1.03	1.01	0.98
2,3,7,8-TCDF	1.02	0.101	9.96 %	1.12	1.11	1.08	1.01	0.90	0.90
1,2,3,7,8-PeCDF	0.90	0.0567	6.33 %	0.98	0.92	0.91	0.89	0.84	0.83
2,3,4,7,8-PeCDF	0.93	0.0560	6.04 %	1.01	0.96	0.95	0.90	0.88	0.86
1,2,3,4,7,8-HxCDF	1.13	0.0646	5.71 %	1.21	1.17	1.18	1.09	1.07	1.06
1,2,3,6,7,8-HxCDF	1.08	0.0653	6.04 %	1.16	1.12	1.13	1.05	1.02	1.00
2,3,4,6,7,8-HxCDF	1.03	0.0659	6.40 %	1.11	1.08	1.07	1.00	0.96	0.95
1,2,3,7,8,9-HxCDF	1.05	0.0680	6.45 %	1.14	1.12	1.07	1.03	1.00	0.97
1,2,3,4,6,7,8-HpCDF	1.24	0.0713	5.74 %	1.32	1.30	1.29	1.21	1.17	1.15
1,2,3,4,7,8,9-HpCDF	1.12	0.0686	6.10 %	1.20	1.17	1.18	1.10	1.06	1.04
OCDF	1.09	0.0721	6.63 %	1.20	1.12	1.12	1.06	1.03	1.00
13C-2,3,7,8-TCDD	1.10	0.0197	1.78 %	1.11	1.09	1.09	1.09	1.14	1.10
13C-1,2,3,7,8-PeCDD	0.89	0.0289	3.25 %	0.87	0.88	0.89	0.86	0.93	0.91
13C-1,2,3,4,7,8-HxCDD	0.87	0.0186	2.14 %	0.84	0.87	0.88	0.88	0.89	0.86
13C-1,2,3,6,7,8-HxCDD	0.87	0.0258	2.95 %	0.83	0.87	0.88	0.88	0.91	0.85
13C-1,2,3,4,6,7,8-HpCDD	0.84	0.0160	1.91 %	0.83	0.82	0.87	0.85	0.83	0.84
13C-OCDD	0.69	0.0194	2.79 %	0.66	0.70	0.70	0.71	0.68	0.70
13C-2,3,7,8-TCDF	1.02	0.0210	2.05 %	1.03	1.04	0.99	1.02	1.05	1.01
13C-1,2,3,7,8-PeCDF	1.00	0.0310	3.10 %	0.96	1.04	0.99	0.98	1.03	0.99
13C-2,3,4,7,8-PeCDF	0.89	0.0230	2.59 %	0.86	0.90	0.88	0.86	0.90	0.91
13C-1,2,3,4,7,8-HxCDF	1.26	0.0402	3.18 %	1.22	1.28	1.28	1.27	1.32	1.22
13C-1,2,3,6,7,8-HxCDF	1.30	0.0373	2.86 %	1.26	1.30	1.31	1.33	1.35	1.26
13C-2,3,4,6,7,8-HxCDF	1.25	0.0270	2.16 %	1.23	1.26	1.25	1.26	1.28	1.21
13C-1,2,3,7,8,9-HxCDF	1.15	0.0262	2.28 %	1.11	1.14	1.16	1.14	1.19	1.14
13C-1,2,3,4,6,7,8-HpCDF	0.96	0.0224	2.34 %	0.94	0.93	0.98	0.98	0.98	0.94
13C-1,2,3,4,7,8,9-HpCDF	0.83	0.0197	2.38 %	0.82	0.80	0.84	0.85	0.84	0.82
13C-OCDF	0.93	0.0270	2.90 %	0.88	0.94	0.95	0.95	0.92	0.93
37Cl-2,3,7,8-TCDD	1.00	0.0735	7.37 %	1.14	0.97	0.96	1.01	0.96	0.95
13C-1,2,3,4-TCDD	-	-	- %	-	-	-	-	-	-
13C-1,2,3,4-TCDF	-	-	- %	-	-	-	-	-	-
13C-1,2,3,7,8,9-HxCDD	-	-	- %	-	-	-	-	-	-
Total Tetra-Dioxins	1.27	0.119	9.38 %	1.34	1.39	1.35	1.30	1.13	1.11
Total Penta-Dioxins	1.01	0.0740	7.36 %	1.09	1.07	1.04	0.97	0.93	0.92
Total Hexa-Dioxins	1.08	0.0911	8.44 %	1.20	1.15	1.13	1.04	0.99	0.97
Total Hepta-Dioxins	1.01	0.0711	7.02 %	1.11	1.05	1.05	0.98	0.94	0.93
Total Tetra-Furans	1.02	0.101	9.96 %	1.12	1.11	1.08	1.01	0.90	0.90
1st Fn. Tot Penta-Furans	0.91	0.0560	6.15 %	0.99	0.94	0.93	0.89	0.85	0.85
Total Penta-Furans	0.91	0.0560	6.15 %	0.99	0.94	0.93	0.89	0.85	0.85
Total Hexa-Furans	1.07	0.0654	6.09 %	1.16	1.12	1.11	1.05	1.01	0.99
Total Hepta-Furans	1.19	0.0699	5.89 %	1.26	1.24	1.24	1.16	1.12	1.10

Analyst: 

Date: 1/9/16

Typ	Name	Amount	Resp	RA	RT	RF	RRF
1	Unk 2,3,7,8-TCDD	0.25	2.94e+05	0.80 y	27:12	-	1.34 y
2	Unk 1,2,3,7,8-PeCDD	1.25	9.36e+05	1.56 y	33:02	-	1.09 y
3	Unk 1,2,3,4,7,8-HxCDD	1.25	8.31e+05	1.27 y	38:22	-	1.14 y
4	Unk 1,2,3,6,7,8-HxCDD	1.25	8.50e+05	1.25 y	38:33	-	1.17 y
5	Unk 1,2,3,7,8,9-HxCDD	1.25	9.28e+05	1.26 y	38:59	-	1.28 y
6	Unk 1,2,3,4,6,7,8-HpCDD	1.25	7.98e+05	1.15 y	43:57	-	1.11 y
7	Unk OCDD	2.50	1.38e+06	0.86 y	49:25	-	1.20 y
8	Unk 2,3,7,8-TCDF	0.25	3.68e+05	0.74 y	26:25	-	1.12 y
9	Unk 1,2,3,7,8-PeCDF	1.25	1.50e+06	1.57 y	31:17	-	0.981 y
10	Unk 2,3,4,7,8-PeCDF	1.25	1.38e+06	1.50 y	32:37	-	1.01 y
11	Unk 1,2,3,4,7,8-HxCDF	1.25	1.29e+06	1.22 y	36:59	-	1.21 y
12	Unk 1,2,3,6,7,8-HxCDF	1.25	1.27e+06	1.28 y	37:11	-	1.16 y
13	Unk 2,3,4,6,7,8-HxCDF	1.25	1.18e+06	1.24 y	38:08	-	1.11 y
14	Unk 1,2,3,7,8,9-HxCDF	1.25	1.10e+06	1.23 y	39:33	-	1.14 y
15	Unk 1,2,3,4,6,7,8-HpCDF	1.25	1.08e+06	1.04 y	42:02	-	1.32 y
16	Unk 1,2,3,4,7,8,9-HpCDF	1.25	8.56e+05	1.05 y	44:51	-	1.20 y
17	Unk OCDF	2.50	1.83e+06	0.90 y	49:48	-	1.20 y
18	IS/RT 13C-2,3,7,8-TCDD	100.00	8.77e+07	0.84 y	27:09	-	1.11 y
19	IS 13C-1,2,3,7,8-PeCDD	100.00	6.86e+07	1.61 y	33:00	-	0.867 y
20	IS 13C-1,2,3,4,7,8-HxCDD	100.00	5.83e+07	1.30 y	38:22	-	0.838 y
21	IS 13C-1,2,3,6,7,8-HxCDD	100.00	5.80e+07	1.24 y	38:32	-	0.834 y
22	IS 13C-1,2,3,4,6,7,8-HpCDD	100.00	5.75e+07	1.06 y	43:55	-	0.827 y
23	IS 13C-OCDD	200.00	9.21e+07	0.90 y	49:24	-	0.662 y
24	IS 13C-2,3,7,8-TCDF	100.00	1.31e+08	0.81 y	26:24	-	1.03 y
25	IS 13C-1,2,3,7,8-PeCDF	100.00	1.22e+08	1.59 y	31:15	-	0.959 y
26	IS 13C-2,3,4,7,8-PeCDF	100.00	1.09e+08	1.59 y	32:35	-	0.859 y
27	IS 13C-1,2,3,4,7,8-HxCDF	100.00	8.51e+07	0.53 y	36:57	-	1.22 y
28	IS 13C-1,2,3,6,7,8-HxCDF	100.00	8.75e+07	0.52 y	37:09	-	1.26 y
29	IS 13C-2,3,4,6,7,8-HxCDF	100.00	8.53e+07	0.53 y	38:06	-	1.23 y
30	IS 13C-1,2,3,7,8,9-HxCDF	100.00	7.74e+07	0.53 y	39:32	-	1.11 y
31	IS 13C-1,2,3,4,6,7,8-HpCDF	100.00	6.52e+07	0.46 y	42:02	-	0.937 y
32	IS 13C-1,2,3,4,7,8,9-HpCDF	100.00	5.73e+07	0.45 y	44:50	-	0.823 y
33	IS 13C-OCDF	200.00	1.22e+08	0.87 y	49:46	-	0.878 y
34	C/Up 37Cl-2,3,7,8-TCDD	0.25	2.26e+05		27:12	-	1.14 y
35	RS 13C-1,2,3,4-TCDD	100.00	7.92e+07	0.83 y	26:34	7.92e+05	- n
36	RS 13C-1,2,3,4-TCDF	100.00	1.27e+08	0.80 y	25:17	1.27e+06	- n
37	RS/RT 13C-1,2,3,7,8,9-HxCDD	100.00	6.96e+07	1.28 y	38:58	6.96e+05	- n
38	Tot Total Tetra-Dioxins	0.00	-	- n	-	-	1.34 y
39	Tot Total Penta-Dioxins	0.00	-	- n	-	-	1.09 y
40	Tot Total Hexa-Dioxins	0.00	-	- n	-	-	1.20 y
41	Tot Total Hepta-Dioxins	0.00	-	- n	-	-	1.11 y
42	Tot Total Tetra-Furans	0.00	-	- n	-	-	1.12 y
43	Tot 1st Fn. Tot Penta-Furans	0.00	-	- n	-	-	0.993 y
44	Tot Total Penta-Furans	0.00	-	- n	-	-	0.993 y
45	Tot Total Hexa-Furans	0.00	-	- n	-	-	1.16 y
46	Tot Total Hepta-Furans	0.00	-	- n	-	-	1.26 y

Analyst: 

Date: 1/9/16

Typ	Name	Amount	Resp	RA	RT	RF	RRF
1	Unk	2,3,7,8-TCDD	0.50	6.67e+05	0.82 y	27:10	- 1.39 y
2	Unk	1,2,3,7,8-PeCDD	2.50	2.07e+06	1.56 y	33:01	- 1.07 y
3	Unk	1,2,3,4,7,8-HxCDD	2.50	1.76e+06	1.23 y	38:22	- 1.11 y
4	Unk	1,2,3,6,7,8-HxCDD	2.50	1.78e+06	1.31 y	38:33	- 1.12 y
5	Unk	1,2,3,7,8,9-HxCDD	2.50	1.92e+06	1.24 y	38:58	- 1.21 y
6	Unk	1,2,3,4,6,7,8-HpCDD	2.50	1.58e+06	1.06 y	43:57	- 1.05 y
7	Unk	OCDD	5.00	2.91e+06	0.89 y	49:25	- 1.13 y
8	Unk	2,3,7,8-TCDF	0.50	7.61e+05	0.76 y	26:25	- 1.11 y
9	Unk	1,2,3,7,8-PeCDF	2.50	3.16e+06	1.52 y	31:16	- 0.925 y
10	Unk	2,3,4,7,8-PeCDF	2.50	2.86e+06	1.50 y	32:36	- 0.964 y
11	Unk	1,2,3,4,7,8-HxCDF	2.50	2.74e+06	1.25 y	36:58	- 1.17 y
12	Unk	1,2,3,6,7,8-HxCDF	2.50	2.66e+06	1.27 y	37:11	- 1.12 y
13	Unk	2,3,4,6,7,8-HxCDF	2.50	2.49e+06	1.24 y	38:07	- 1.08 y
14	Unk	1,2,3,7,8,9-HxCDF	2.50	2.32e+06	1.21 y	39:33	- 1.12 y
15	Unk	1,2,3,4,6,7,8-HpCDF	2.50	2.21e+06	1.05 y	42:02	- 1.30 y
16	Unk	1,2,3,4,7,8,9-HpCDF	2.50	1.71e+06	1.08 y	44:51	- 1.17 y
17	Unk	OCDF	5.00	3.85e+06	0.89 y	49:47	- 1.12 y
18	IS/RT	13C-2,3,7,8-TCDD	100.00	9.57e+07	0.83 y	27:09	- 1.09 y
19	IS	13C-1,2,3,7,8-PeCDD	100.00	7.70e+07	1.60 y	33:00	- 0.879 y
20	IS	13C-1,2,3,4,7,8-HxCDD	100.00	6.35e+07	1.29 y	38:21	- 0.868 y
21	IS	13C-1,2,3,6,7,8-HxCDD	100.00	6.36e+07	1.27 y	38:31	- 0.869 y
22	IS	13C-1,2,3,4,6,7,8-HpCDD	100.00	6.00e+07	1.07 y	43:55	- 0.820 y
23	IS	13C-OCDD	200.00	1.03e+08	0.91 y	49:24	- 0.705 y
24	IS	13C-2,3,7,8-TCDF	100.00	1.37e+08	0.81 y	26:24	- 1.04 y
25	IS	13C-1,2,3,7,8-PeCDF	100.00	1.37e+08	1.59 y	31:15	- 1.04 y
26	IS	13C-2,3,4,7,8-PeCDF	100.00	1.19e+08	1.59 y	32:36	- 0.900 y
27	IS	13C-1,2,3,4,7,8-HxCDF	100.00	9.35e+07	0.53 y	36:58	- 1.28 y
28	IS	13C-1,2,3,6,7,8-HxCDF	100.00	9.53e+07	0.53 y	37:09	- 1.30 y
29	IS	13C-2,3,4,6,7,8-HxCDF	100.00	9.22e+07	0.53 y	38:06	- 1.26 y
30	IS	13C-1,2,3,7,8,9-HxCDF	100.00	8.33e+07	0.53 y	39:32	- 1.14 y
31	IS	13C-1,2,3,4,6,7,8-HpCDF	100.00	6.82e+07	0.45 y	42:01	- 0.932 y
32	IS	13C-1,2,3,4,7,8,9-HpCDF	100.00	5.86e+07	0.46 y	44:51	- 0.801 y
33	IS	13C-OCDF	200.00	1.38e+08	0.87 y	49:46	- 0.942 y
34	C/Up	37Cl-2,3,7,8-TCDD	0.50	4.23e+05		27:10	- 0.966 y
35	RS	13C-1,2,3,4-TCDD	100.00	8.76e+07	0.84 y	26:34	8.76e+05 - n
36	RS	13C-1,2,3,4-TCDF	100.00	1.32e+08	0.80 y	25:16	1.32e+06 - n
37	RS/RT	13C-1,2,3,7,8,9-HxCDD	100.00	7.32e+07	1.28 y	38:58	7.32e+05 - n
38	Tot	Total Tetra-Dioxins	0.00	-	- n	-	- 1.39 y
39	Tot	Total Penta-Dioxins	0.00	-	- n	-	- 1.07 y
40	Tot	Total Hexa-Dioxins	0.00	-	- n	-	- 1.15 y
41	Tot	Total Hepta-Dioxins	0.00	-	- n	-	- 1.05 y
42	Tot	Total Tetra-Furans	0.00	-	- n	-	- 1.11 y
43	Tot	1st Fn. Tot Penta-Furans	0.00	-	- n	-	- 0.943 y
44	Tot	Total Penta-Furans	0.00	-	- n	-	- 0.943 y
45	Tot	Total Hexa-Furans	0.00	-	- n	-	- 1.12 y
46	Tot	Total Hepta-Furans	0.00	-	- n	-	- 1.24 y

Analyst:  Date: 1/9/16

Typ	Name	Amount	Resp	RA	RT	RF	RRF
1	Unk	2,3,7,8-TCDD	40.00	3.43e+07	0.81 y	27:10	- 1.13 y
2	Unk	1,2,3,7,8-PeCDD	200.00	1.15e+08	1.57 y	33:02	- 0.927 y
3	Unk	1,2,3,4,7,8-HxCDD	200.00	9.71e+07	1.27 y	38:22	- 0.957 y
4	Unk	1,2,3,6,7,8-HxCDD	200.00	1.00e+08	1.27 y	38:32	- 0.967 y
5	Unk	1,2,3,7,8,9-HxCDD	200.00	1.08e+08	1.28 y	38:59	- 1.06 y
6	Unk	1,2,3,4,6,7,8-HpCDD	200.00	8.98e+07	1.06 y	43:56	- 0.944 y
7	Unk	OCDD	400.00	1.57e+08	0.87 y	49:25	- 1.01 y
8	Unk	2,3,7,8-TCDF	40.00	4.00e+07	0.77 y	26:25	- 0.902 y
9	Unk	1,2,3,7,8-PeCDF	200.00	1.82e+08	1.56 y	31:17	- 0.835 y
10	Unk	2,3,4,7,8-PeCDF	200.00	1.67e+08	1.56 y	32:37	- 0.876 y
11	Unk	1,2,3,4,7,8-HxCDF	200.00	1.62e+08	1.24 y	36:58	- 1.07 y
12	Unk	1,2,3,6,7,8-HxCDF	200.00	1.58e+08	1.25 y	37:11	- 1.02 y
13	Unk	2,3,4,6,7,8-HxCDF	200.00	1.40e+08	1.23 y	38:07	- 0.959 y
14	Unk	1,2,3,7,8,9-HxCDF	200.00	1.35e+08	1.24 y	39:33	- 0.996 y
15	Unk	1,2,3,4,6,7,8-HpCDF	200.00	1.31e+08	1.03 y	42:02	- 1.17 y
16	Unk	1,2,3,4,7,8,9-HpCDF	200.00	1.01e+08	1.05 y	44:51	- 1.06 y
17	Unk	OCDF	400.00	2.17e+08	0.91 y	49:47	- 1.03 y
18	IS/RT	13C-2,3,7,8-TCDD	100.00	7.57e+07	0.83 y	27:09	- 1.14 y
19	IS	13C-1,2,3,7,8-PeCDD	100.00	6.18e+07	1.62 y	33:00	- 0.933 y
20	IS	13C-1,2,3,4,7,8-HxCDD	100.00	5.07e+07	1.29 y	38:21	- 0.889 y
21	IS	13C-1,2,3,6,7,8-HxCDD	100.00	5.18e+07	1.27 y	38:31	- 0.907 y
22	IS	13C-1,2,3,4,6,7,8-HpCDD	100.00	4.76e+07	1.07 y	43:55	- 0.833 y
23	IS	13C-OCDD	200.00	7.78e+07	0.93 y	49:24	- 0.681 y
24	IS	13C-2,3,7,8-TCDF	100.00	1.11e+08	0.80 y	26:24	- 1.05 y
25	IS	13C-1,2,3,7,8-PeCDF	100.00	1.09e+08	1.59 y	31:15	- 1.03 y
26	IS	13C-2,3,4,7,8-PeCDF	100.00	9.53e+07	1.60 y	32:36	- 0.904 y
27	IS	13C-1,2,3,4,7,8-HxCDF	100.00	7.56e+07	0.53 y	36:57	- 1.32 y
28	IS	13C-1,2,3,6,7,8-HxCDF	100.00	7.72e+07	0.53 y	37:09	- 1.35 y
29	IS	13C-2,3,4,6,7,8-HxCDF	100.00	7.32e+07	0.53 y	38:06	- 1.28 y
30	IS	13C-1,2,3,7,8,9-HxCDF	100.00	6.79e+07	0.53 y	39:32	- 1.19 y
31	IS	13C-1,2,3,4,6,7,8-HpCDF	100.00	5.57e+07	0.46 y	42:01	- 0.976 y
32	IS	13C-1,2,3,4,7,8,9-HpCDF	100.00	4.79e+07	0.45 y	44:50	- 0.840 y
33	IS	13C-OCDF	200.00	1.05e+08	0.88 y	49:46	- 0.922 y
34	C/Up	37Cl-2,3,7,8-TCDD	40.00	2.54e+07		27:10	- 0.957 y
35	RS	13C-1,2,3,4-TCDD	100.00	6.62e+07	0.84 y	26:33	6.62e+05 - n
36	RS	13C-1,2,3,4-TCDF	100.00	1.05e+08	0.80 y	25:16	1.05e+06 - n
37	RS/RT	13C-1,2,3,7,8,9-HxCDD	100.00	5.71e+07	1.27 y	38:58	5.71e+05 - n
38	Tot	Total Tetra-Dioxins	0.00	-	- n	-	- 1.13 y
39	Tot	Total Penta-Dioxins	0.00	-	- n	-	- 0.927 y
40	Tot	Total Hexa-Dioxins	0.00	-	- n	-	- 0.993 y
41	Tot	Total Hepta-Dioxins	0.00	-	- n	-	- 0.944 y
42	Tot	Total Tetra-Furans	0.00	-	- n	-	- 0.902 y
43	Tot	1st Fn. Tot Penta-Furans	0.00	-	- n	-	- 0.854 y
44	Tot	Total Penta-Furans	0.00	-	- n	-	- 0.854 y
45	Tot	Total Hexa-Furans	0.00	-	- n	-	- 1.01 y
46	Tot	Total Hepta-Furans	0.00	-	- n	-	- 1.12 y

Analyst:  Date: 1/9/16

Typ	Name	Amount	Resp	RA	RT	RF	RRF
1	Unk	2,3,7,8-TCDD	200.00	1.51e+08	0.79 y	27:10	- 1.11 y
2	Unk	1,2,3,7,8-PeCDD	1000.00	5.22e+08	1.58 y	33:01	- 0.924 y
3	Unk	1,2,3,4,7,8-HxCDD	1000.00	4.57e+08	1.27 y	38:23	- 0.941 y
4	Unk	1,2,3,6,7,8-HxCDD	1000.00	4.59e+08	1.27 y	38:32	- 0.947 y
5	Unk	1,2,3,7,8,9-HxCDD	1000.00	4.99e+08	1.27 y	38:58	- 1.03 y
6	Unk	1,2,3,4,6,7,8-HpCDD	1000.00	4.40e+08	1.06 y	43:57	- 0.929 y
7	Unk	OCDD	2000.00	7.80e+08	0.87 y	49:25	- 0.977 y
8	Unk	2,3,7,8-TCDF	200.00	1.74e+08	0.78 y	26:24	- 0.896 y
9	Unk	1,2,3,7,8-PeCDF	1000.00	7.95e+08	1.56 y	31:17	- 0.833 y
10	Unk	2,3,4,7,8-PeCDF	1000.00	7.59e+08	1.56 y	32:36	- 0.863 y
11	Unk	1,2,3,4,7,8-HxCDF	1000.00	7.28e+08	1.23 y	36:58	- 1.06 y
12	Unk	1,2,3,6,7,8-HxCDF	1000.00	7.15e+08	1.23 y	37:10	- 0.998 y
13	Unk	2,3,4,6,7,8-HxCDF	1000.00	6.53e+08	1.23 y	38:07	- 0.954 y
14	Unk	1,2,3,7,8,9-HxCDF	1000.00	6.27e+08	1.24 y	39:33	- 0.967 y
15	Unk	1,2,3,4,6,7,8-HpCDF	1000.00	6.14e+08	1.04 y	42:02	- 1.15 y
16	Unk	1,2,3,4,7,8,9-HpCDF	1000.00	4.79e+08	1.02 y	44:52	- 1.04 y
17	Unk	OCDF	2000.00	1.06e+09	0.91 y	49:48	- 1.00 y
18	IS/RT	13C-2,3,7,8-TCDD	100.00	6.80e+07	0.83 y	27:08	- 1.10 y
19	IS	13C-1,2,3,7,8-PeCDD	100.00	5.65e+07	1.59 y	33:00	- 0.915 y
20	IS	13C-1,2,3,4,7,8-HxCDD	100.00	4.86e+07	1.29 y	38:21	- 0.857 y
21	IS	13C-1,2,3,6,7,8-HxCDD	100.00	4.84e+07	1.26 y	38:31	- 0.854 y
22	IS	13C-1,2,3,4,6,7,8-HpCDD	100.00	4.73e+07	1.07 y	43:55	- 0.835 y
23	IS	13C-OCDD	200.00	7.98e+07	0.94 y	49:25	- 0.704 y
24	IS	13C-2,3,7,8-TCDF	100.00	9.73e+07	0.80 y	26:23	- 1.01 y
25	IS	13C-1,2,3,7,8-PeCDF	100.00	9.55e+07	1.59 y	31:15	- 0.993 y
26	IS	13C-2,3,4,7,8-PeCDF	100.00	8.79e+07	1.59 y	32:35	- 0.914 y
27	IS	13C-1,2,3,4,7,8-HxCDF	100.00	6.89e+07	0.53 y	36:57	- 1.22 y
28	IS	13C-1,2,3,6,7,8-HxCDF	100.00	7.16e+07	0.53 y	37:08	- 1.26 y
29	IS	13C-2,3,4,6,7,8-HxCDF	100.00	6.84e+07	0.53 y	38:06	- 1.21 y
30	IS	13C-1,2,3,7,8,9-HxCDF	100.00	6.48e+07	0.53 y	39:32	- 1.14 y
31	IS	13C-1,2,3,4,6,7,8-HpCDF	100.00	5.33e+07	0.46 y	42:01	- 0.941 y
32	IS	13C-1,2,3,4,7,8,9-HpCDF	100.00	4.62e+07	0.46 y	44:51	- 0.816 y
33	IS	13C-OCDF	200.00	1.06e+08	0.86 y	49:46	- 0.933 y
34	C/Up	37Cl-2,3,7,8-TCDD	200.00	1.17e+08		27:10	- 0.946 y
35	RS	13C-1,2,3,4-TCDD	100.00	6.18e+07	0.84 y	26:32	6.18e+05 - n
36	RS	13C-1,2,3,4-TCDF	100.00	9.61e+07	0.80 y	25:16	9.61e+05 - n
37	RS/RT	13C-1,2,3,7,8,9-HxCDD	100.00	5.67e+07	1.26 y	38:58	5.67e+05 - n
38	Tot	Total Tetra-Dioxins	0.00	-	- n	-	- 1.11 y
39	Tot	Total Penta-Dioxins	0.00	-	- n	-	- 0.924 y
40	Tot	Total Hexa-Dioxins	0.00	-	- n	-	- 0.972 y
41	Tot	Total Hepta-Dioxins	0.00	-	- n	-	- 0.929 y
42	Tot	Total Tetra-Furans	0.00	-	- n	-	- 0.896 y
43	Tot	1st Fn. Tot Penta-Furans	0.00	-	- n	-	- 0.847 y
44	Tot	Total Penta-Furans	0.00	-	- n	-	- 0.847 y
45	Tot	Total Hexa-Furans	0.00	-	- n	-	- 0.995 y
46	Tot	Total Hepta-Furans	0.00	-	- n	-	- 1.10 y

Analyst:  Date: 1/9/16

USEPA - ITD

FORM 3A

PCDD/PCDF INITIAL CALIBRATION RELATIVE RESPONSES

Lab Name: Frontier Analytical Laboratory Episode No.:

Contract No.: SAS No.:

Initial Calibration Date: 1/8/16

Instrument ID: FAL3

GC Column ID: db5

CS0 Data Filename: 08JAN16M S1 CS3 Data Filename: 08JAN16M S4

CS1 Data Filename: 08JAN16M S2 CS4 Data Filename: 08JAN16M S5

CS2 Data Filename: 08JAN16M S3 CS5 Data Filename: 08JAN16M S6

	RELATIVE RESPONSE (RR)						MEAN RR	Cv (%RSD)
	CS1	CS2	CS3	CS4	CS5	CS6		
NATIVE ANALYTES								
2,3,7,8-TCDD	1.34	1.39	1.35	1.30	1.13	1.11	1.27	9.38
1,2,3,7,8-PeCDD	1.09	1.07	1.04	0.97	0.93	0.92	1.01	7.36
1,2,3,4,7,8-HxCDD	1.14	1.11	1.09	1.00	0.96	0.94	1.04	8.13
1,2,3,6,7,8-HxCDD	1.17	1.12	1.11	1.01	0.97	0.95	1.05	8.77
1,2,3,7,8,9-HxCDD	1.28	1.21	1.19	1.10	1.06	1.03	1.14	8.46
1,2,3,4,6,7,8-HpCDD	1.11	1.05	1.05	0.98	0.94	0.93	1.01	7.02
OCDD	1.20	1.13	1.12	1.03	1.01	0.98	1.08	7.99
2,3,7,8-TCDF	1.12	1.11	1.08	1.01	0.90	0.90	1.02	9.96
1,2,3,7,8-PeCDF	0.98	0.92	0.91	0.89	0.84	0.83	0.90	6.33
2,3,4,7,8-PeCDF	1.01	0.96	0.95	0.90	0.88	0.86	0.93	6.04
1,2,3,4,7,8-HxCDF	1.21	1.17	1.18	1.09	1.07	1.06	1.13	5.71
1,2,3,6,7,8-HxCDF	1.16	1.12	1.13	1.05	1.02	1.00	1.08	6.04
2,3,4,6,7,8-HxCDF	1.11	1.08	1.07	1.00	0.96	0.95	1.03	6.40
1,2,3,7,8,9-HxCDF	1.14	1.12	1.07	1.03	1.00	0.97	1.05	6.45
1,2,3,4,6,7,8-HpCDF	1.32	1.30	1.29	1.21	1.17	1.15	1.24	5.74
1,2,3,4,7,8,9-HpCDF	1.20	1.17	1.18	1.10	1.06	1.04	1.12	6.10
OCDF	1.20	1.12	1.12	1.06	1.03	1.00	1.09	6.63

Analyst: Date: 1/9/16

USEPA - ITD

FORM 3B

PCDD/PCDF INITIAL CALIBRATION RELATIVE RESPONSES

Lab Name: Frontier Analytical Laboratory Episode No.:

Contract No.: SAS No.:

Initial Calibration Date: 1/8/16

Instrument ID: FAL3 GC Column ID: db5

CS0 Data Filename: 08JAN16M S1 CS4 Data Filename: 08JAN16M S4

CS1 Data Filename: 08JAN16M S2 CS4 Data Filename: 08JAN16M S5

CS2 Data Filename: 08JAN16M S3 CS5 Data Filename: 08JAN16M S6

Labeled Compounds	RELATIVE RESPONSE (RR)						MEAN RR	Cv (%RSD)
	CS1	CS2	CS3	CS4	CS5	CS6		
13C-2,3,7,8-TCDD	1.11	1.09	1.09	1.09	1.14	1.10	1.10	1.78
13C-1,2,3,7,8-PeCDD	0.87	0.88	0.89	0.86	0.93	0.91	0.89	3.25
13C-1,2,3,4,7,8-HxCDD	0.84	0.87	0.88	0.88	0.89	0.86	0.87	2.14
13C-1,2,3,6,7,8-HxCDD	0.83	0.87	0.88	0.88	0.91	0.85	0.87	2.95
13C-1,2,3,4,6,7,8-HpCDD	0.83	0.82	0.87	0.85	0.83	0.84	0.84	1.91
13C-OCDD	0.66	0.70	0.70	0.71	0.68	0.70	0.69	2.79
13C-2,3,7,8-TCDF	1.03	1.04	0.99	1.02	1.05	1.01	1.02	2.05
13C-1,2,3,7,8-PeCDF	0.96	1.04	0.99	0.98	1.03	0.99	1.00	3.10
13C-2,3,4,7,8-PeCDF	0.86	0.90	0.88	0.86	0.90	0.91	0.89	2.59
13C-1,2,3,4,7,8-HxCDF	1.22	1.28	1.28	1.27	1.32	1.22	1.26	3.18
13C-1,2,3,6,7,8-HxCDF	1.26	1.30	1.31	1.33	1.35	1.26	1.30	2.86
13C-2,3,4,6,7,8-HxCDF	1.23	1.26	1.25	1.26	1.28	1.21	1.25	2.16
13C-1,2,3,7,8,9-HxCDF	1.11	1.14	1.16	1.14	1.19	1.14	1.15	2.28
13C-1,2,3,4,6,7,8-HpCDF	0.94	0.93	0.98	0.98	0.98	0.94	0.96	2.34
13C-1,2,3,4,7,8,9-HpCDF	0.82	0.80	0.84	0.85	0.84	0.82	0.83	2.38
13C-OCDF	0.88	0.94	0.95	0.95	0.92	0.93	0.93	2.90
CLEANUP STANDARD								
37Cl-2,3,7,8-TCDD	1.14	0.97	0.96	1.01	0.96	0.95	1.00	7.37

Analyst: 

Date: 1/9/16

USEPA - ITD

FORM 3C

PCDD/PCDF INITIAL CALIBRATION ION ABUNDANCE RATIOS

Lab Name: Frontier Analytical Laboratory Episode No.:

Contract No.: SAS No.:

Initial Calibration Date: 1/8/16

Instrument ID: FAL3 GC Column ID: db5

CS0 Data Filename: 08JAN16M S1 CS3 Data Filename: 08JAN16M S4

CS1 Data Filename: 08JAN16M S2 CS4 Data Filename: 08JAN16M S5

CS2 Data Filename: 08JAN16M S3 CS5 Data Filename: 08JAN16M S6

NATIVE ANALYTES	M/Z'S FORMING RATIO	ION ABUNDANCE RATIOS						QC LIMITS
		CS1	CS2	CS3	CS4	CS5	CS6	
2,3,7,8-TCDD	M/M+2	0.80	0.82	0.82	0.79	0.81	0.79	0.65-0.89
1,2,3,7,8-PeCDD	M+2/M+4	1.56	1.56	1.54	1.56	1.57	1.58	1.32-1.78
1,2,3,4,7,8-HxCDD	M+2/M+4	1.27	1.23	1.26	1.26	1.27	1.27	1.05-1.43
1,2,3,6,7,8-HxCDD	M+2/M+4	1.25	1.31	1.29	1.26	1.27	1.27	1.05-1.43
1,2,3,7,8,9-HxCDD	M+2/M+4	1.26	1.24	1.23	1.26	1.28	1.27	1.05-1.43
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.15	1.06	1.07	1.07	1.06	1.06	0.88-1.20
OCDD	M+2/M+4	0.86	0.89	0.89	0.89	0.87	0.87	0.76-1.02
2,3,7,8-TCDF	M/M+2	0.74	0.76	0.78	0.78	0.77	0.78	0.65-0.89
1,2,3,7,8-PeCDF	M+2/M+4	1.57	1.52	1.51	1.56	1.56	1.56	1.32-1.78
2,3,4,7,8-PeCDF	M+2/M+4	1.50	1.50	1.49	1.53	1.56	1.56	1.32-1.78
1,2,3,4,7,8-HxCDF	M+2/M+4	1.22	1.25	1.23	1.22	1.24	1.23	1.05-1.43
1,2,3,6,7,8-HxCDF	M+2/M+4	1.28	1.27	1.23	1.23	1.25	1.23	1.05-1.43
2,3,4,6,7,8-HxCDF	M+2/M+4	1.24	1.24	1.25	1.23	1.23	1.23	1.05-1.43
1,2,3,7,8,9-HxCDF	M+2/M+4	1.23	1.21	1.22	1.22	1.24	1.24	1.05-1.43
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.04	1.05	1.03	1.05	1.03	1.04	0.88-1.20
1,2,3,4,7,8,9-HpCDF	M+2/M+4	1.05	1.08	1.03	1.05	1.05	1.02	0.88-1.20
OCDF	M+2/M+4	0.90	0.89	0.92	0.91	0.91	0.91	0.76-1.02

Analyst: [Signature]

Date: 1/9/16

USEPA - ITD

FORM 3D

PCDD/PCDF INITIAL CALIBRATION ION ABUNDANCE RATIOS

Lab Name: Frontier Analytical Laboratory Episode No.:

Contract No.: SAS No.:

Initial Calibration Date: 1/8/16

Instrument ID: FAL3 GC Column ID: db5

CS0 Data Filename: 08JAN16M S1 CS3 Data Filename: 08JAN16M S4

CS1 Data Filename: 08JAN16M S2 CS4 Data Filename: 08JAN16M S5

CS2 Data Filename: 08JAN16M S3 CS5 Data Filename: 08JAN16M S6

Labeled Compounds	M/Z'S FORMING RATIO	ION ABUNDANCE RATIOS						QC LIMITS
		CS1	CS2	CS3	CS4	CS5	CS6	
13C-2,3,7,8-TCDD	M/M+2	0.84	0.83	0.82	0.84	0.83	0.83	0.65-0.89
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.61	1.60	1.62	1.62	1.62	1.59	1.32-1.78
13C-1,2,3,4,7,8-HxCDD	M+2/M+4	1.30	1.29	1.29	1.28	1.29	1.29	1.05-1.43
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.24	1.27	1.26	1.28	1.27	1.26	1.05-1.43
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.06	1.07	1.06	1.06	1.07	1.07	0.88-1.20
13C-OCDD	M+2/M+4	0.90	0.91	0.92	0.92	0.93	0.94	0.76-1.02
13C-2,3,7,8-TCDF	M/M+2	0.81	0.81	0.79	0.81	0.80	0.80	0.65-0.89
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.59	1.59	1.58	1.59	1.59	1.59	1.32-1.78
13C-2,3,4,7,8-PeCDF	M+2/M+4	1.59	1.59	1.60	1.59	1.60	1.59	1.32-1.78
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.53	0.53	0.53	0.53	0.53	0.53	0.43-0.59
13C-1,2,3,6,7,8-HxCDF	M/M+2	0.52	0.53	0.53	0.54	0.53	0.53	0.43-0.59
13C-2,3,4,6,7,8-HxCDF	M/M+2	0.53	0.53	0.53	0.53	0.53	0.53	0.43-0.59
13C-1,2,3,7,8,9-HxCDF	M/M+2	0.53	0.53	0.53	0.54	0.53	0.53	0.43-0.59
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.46	0.45	0.46	0.45	0.46	0.46	0.37-0.51
13C-1,2,3,4,7,8,9-HpCDF	M/M+2	0.45	0.46	0.46	0.45	0.45	0.46	0.37-0.51
13C-OCDF	M+2/M+4	0.87	0.87	0.87	0.86	0.88	0.86	0.76-1.02

Analyst: 

Date: 1/9/16

USEPA - ITD

FORM 4A
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: Frontier Analytical Laboratory Episode No.:

Contract No.: SAS No.:

Initial Calibration Date: 1/8/16

Instrument ID: FAL3

GC Column ID: db5

VER Data Filename: 08JAN16M Sam:4

Analysis Date: 8-JAN-16 18:16:54

NATIVE ANALYTES	M/Z'S	ION	QC	ACCEPT	CONC. FOUND	CONC. RANGE (ng/mL) (3)
	FORMING RATIO (1)	ABUND. RATIO	LIMITS (2)			
2,3,7,8-TCDD	M/M+2	0.79	0.65-0.89	y	10.2	7.80 - 12.9
1,2,3,7,8-PeCDD	M+2/M+4	1.56	1.32-1.78	y	48.4	39.0 - 65.0
1,2,3,4,7,8-HxCDD	M+2/M+4	1.26	1.05-1.43	y	48.0	39.0 - 64.0
1,2,3,6,7,8-HxCDD	M+2/M+4	1.26	1.05-1.43	y	47.8	39.0 - 64.0
1,2,3,7,8,9-HxCDD	M+2/M+4	1.26	1.05-1.43	y	48.1	41.0 - 61.0
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.07	0.88-1.20	y	48.6	43.0 - 58.0
OCDD	M+2/M+4	0.89	0.76-1.02	y	95.4	79.0 - 126
2,3,7,8-TCDF	M/M+2	0.78	0.65-0.89	y	9.89	8.40 - 12.0
1,2,3,7,8-PeCDF	M+2/M+4	1.56	1.32-1.78	y	49.7	41.0 - 60.0
2,3,4,7,8-PeCDF	M+2/M+4	1.53	1.32-1.78	y	48.5	41.0 - 60.0
1,2,3,4,7,8-HxCDF	M+2/M+4	1.22	1.05-1.43	y	48.3	45.0 - 56.0
1,2,3,6,7,8-HxCDF	M+2/M+4	1.23	1.05-1.43	y	48.7	44.0 - 57.0
2,3,4,6,7,8-HxCDF	M+2/M+4	1.23	1.05-1.43	y	48.8	44.0 - 57.0
1,2,3,7,8,9-HxCDF	M+2/M+4	1.22	1.05-1.43	y	48.8	45.0 - 56.0
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.05	0.88-1.20	y	48.9	45.0 - 55.0
1,2,3,4,7,8,9-HpCDF	M+2/M+4	1.05	0.88-1.20	y	49.0	43.0 - 58.0
OCDF	M+2/M+4	0.91	0.76-1.02	y	97.2	63.0 - 159

(1) See Table 8, Method 1613, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613.

(3) Contract-required concentration range as specified in Table 6, Method 1613.

Analyst: Date: 1/9/16

USEPA - ITD

FORM 4B
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: Frontier Analytical Laboratory

Episode No.:

Contract No.:

SAS No.:

Initial Calibration Date: 1/8/16

Instrument ID: FAL3

GC Column ID: db5

VER Data Filename: 08JAN16M

Sam:4

Analysis Date: 8-JAN-16 18:16:54


LABELLED COMPOUNDS	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	ACCEPT	CONC. FOUND	CONC. RANGE (ng/mL) (3)
13C-2,3,7,8-TCDD	M/M+2	0.84	0.65-0.89	y	98.8	82.0 - 121
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.62	1.32-1.78	y	96.4	62.0 - 160
13C-1,2,3,4,7,8-HxCDD	M+2/M+4	1.28	1.05-1.43	y	102	85.0 - 117
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.28	1.05-1.43	y	101	85.0 - 118
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.06	0.88-1.20	y	101	72.0 - 138
13C-OCDD	M+2/M+4	0.92	0.76-1.02	y	205	96.0 - 415
13C-2,3,7,8-TCDF	M/M+2	0.81	0.65-0.89	y	99.5	71.0 - 140
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.59	1.32-1.78	y	98.1	76.0 - 130
13C-2,3,4,7,8-PeCDF	M+2/M+4	1.59	1.32-1.78	y	97.2	77.0 - 130
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.53	0.43-0.59	y	100	76.0 - 131
13C-1,2,3,6,7,8-HxCDF	M/M+2	0.54	0.43-0.59	y	102	70.0 - 143
13C-2,3,4,6,7,8-HxCDF	M/M+2	0.53	0.43-0.59	y	101	73.0 - 137
13C-1,2,3,7,8,9-HxCDF	M/M+2	0.54	0.43-0.59	y	99.3	74.0 - 135
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.45	0.37-0.51	y	102	78.0 - 129
13C-1,2,3,4,7,8,9-HpCDF	M/M+2	0.45	0.37-0.51	y	103	77.0 - 129
13C-OCDF	M+2/M+4	0.86	0.76-1.02	y	204	96.0 - 415
CLEANUP STANDARD (4)						
37Cl-2,3,7,8-TCDD					10.1	7.90 - 12.7

(1) See Table 8, Method 1613, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613.

(3) Contract-required concentration range as specified in Table 6, Method 1613.

(4) No ion abundance ratio; report concentration found.

Analyst: 

Date: 1/9/16

USEPA - ITD

FORM 6B
PCDD/PCDF RELATIVE RETENTION TIMES

Lab Name: Frontier Analytical Laboratory

Episode No.:

Contract No.:

SAS No.:

Init. Cal. Date: 1/8/16

Instrument ID: FAL3

GC Column ID: db5

Analysis Date: 8-JAN-16 18:16:54

CS3 or VER Data Filename: 08JAN16M

Sam:4

NATIVE ANALYTES	RETENTION TIME	RRT	RRT
	REFERENCE		QC LIMITS (1)
1,2,3,4,7,8-HxCDD	13C-1,2,3,4,7,8-HxCDD	1.000	0.999-1.001
1,2,3,6,7,8-HxCDD	13C-1,2,3,6,7,8-HxCDD	1.000	0.999-1.003
1,2,3,7,8,9-HxCDD	13C-1,2,3,6,7,8-HxCDD	1.012	1.000-1.019
1,2,3,4,7,8-HxCDF	13C-1,2,3,4,7,8-HxCDF	1.001	0.999-1.001
1,2,3,6,7,8-HxCDF	13C-1,2,3,6,7,8-HxCDF	1.001	0.999-1.003
2,3,4,6,7,8-HxCDF	13C-2,3,4,6,7,8-HxCDF	1.000	0.999-1.001
1,2,3,7,8,9-HxCDF	13C-1,2,3,7,8,9-HxCDF	1.000	0.999-1.001
1,2,3,4,6,7,8-HpCDD	13C-1,2,3,4,6,7,8-HpCDD	1.001	0.999-1.001
1,2,3,4,6,7,8-HpCDF	13C-1,2,3,4,6,7,8-HpCDF	1.001	0.999-1.001
1,2,3,4,7,8,9-HpCDF	13C-1,2,3,4,7,8,9-HpCDF	1.001	0.999-1.001
OCDD	13C-OCDD	1.000	0.999-1.001
OCDF	13C-OCDF	1.001	0.999-1.001
LABELED COMPOUNDS			
13C-1,2,3,4,7,8-HxCDD	13C-1,2,3,7,8,9-HxCDD	0.984	0.977-1.000
13C-1,2,3,6,7,8-HxCDD		0.989	0.981-1.003
13C-1,2,3,4,7,8-HxCDF		0.948	0.944-0.970
13C-1,2,3,6,7,8-HxCDF		0.954	0.949-0.975
13C-2,3,4,6,7,8-HxCDF		0.978	0.959-1.021
13C-1,2,3,7,8,9-HxCDF		1.015	0.977-1.047
13C-1,2,3,4,6,7,8-HpCDD		1.127	1.086-1.130
13C-1,2,3,4,6,7,8-HpCDF		1.078	1.043-1.085
13C-1,2,3,4,7,8,9-HpCDF		1.151	1.057-1.151
13C-OCDD		1.268	1.032-1.311
13C-OCDF		1.277	1.000-1.311

(1) Contract-required limits for Relative Retention Times (RRT) as specified in Table 2, Method 1613.

Analyst: Date:

FAL ID: ST010816M3

Filename: 08JAN16M

Sam:4

Acquired: 8-JAN-16 18:16:54

ICal: PCDDFAL3-1-8-16

Client ID: 1613 CS3 151209J

ConCal: NA

EndCal: NA

Results:

GC Column: db5

Amount: 1.000

NATO 1989 Tox: 97.7

WHO 1998 Tox: 122

WHO 2005 Tox:

111

Name	Resp	RA	RT	RRF	Conc	Qual	Fac Noise-1	Noise-2	DL	DL
2,3,7,8-TCDD	8.60e+06	0.79 y	27:10	1.27	10.2	2.50	-	-	*	
1,2,3,7,8-PeCDD	2.53e+07	1.56 y	33:01	1.01	48.4	2.50	-	-	*	
1,2,3,4,7,8-HxCDD	2.15e+07	1.26 y	38:22	1.04	48.0	2.50	-	-	*	
1,2,3,6,7,8-HxCDD	2.18e+07	1.26 y	38:32	1.05	47.8	2.50	-	-	*	
1,2,3,7,8,9-HxCDD	2.38e+07	1.26 y	38:58	1.14	48.1	2.50	-	-	*	
1,2,3,4,6,7,8-HpCDD	2.04e+07	1.07 y	43:57	1.01	48.6	2.50	-	-	*	
OCDD	3.58e+07	0.89 y	49:25	1.08	95.4	2.50	-	-	*	
2,3,7,8-TCDF	9.74e+06	0.78 y	26:25	1.02	9.89	2.50	-	-	*	
1,2,3,7,8-PeCDF	4.13e+07	1.56 y	31:17	0.90	49.7	2.50	-	-	*	
2,3,4,7,8-PeCDF	3.67e+07	1.53 y	32:36	0.93	48.5	2.50	-	-	*	
1,2,3,4,7,8-HxCDF	3.39e+07	1.22 y	36:58	1.13	48.3	2.50	-	-	*	
1,2,3,6,7,8-HxCDF	3.42e+07	1.23 y	37:11	1.08	48.7	2.50	-	-	*	
2,3,4,6,7,8-HxCDF	3.09e+07	1.23 y	38:07	1.03	48.8	2.50	-	-	*	
1,2,3,7,8,9-HxCDF	2.87e+07	1.22 y	39:33	1.05	48.8	2.50	-	-	*	
1,2,3,4,6,7,8-HpCDF	2.90e+07	1.05 y	42:02	1.24	48.9	2.50	-	-	*	
1,2,3,4,7,8,9-HpCDF	2.30e+07	1.05 y	44:52	1.12	49.0	2.50	-	-	*	
OCDF	4.90e+07	0.91 y	49:48	1.09	97.2	2.50	-	-	*	
13C-2,3,7,8-TCDD	6.60e+07	0.84 y	27:09	1.10	98.8					Rec
13C-1,2,3,7,8-PeCDD	5.19e+07	1.62 y	32:60	0.89	96.4					98.8
13C-1,2,3,4,7,8-HxCDD	4.31e+07	1.28 y	38:21	0.87	102					96.4
13C-1,2,3,6,7,8-HxCDD	4.32e+07	1.28 y	38:31	0.87	101					102
13C-1,2,3,4,6,7,8-HpCDD	4.14e+07	1.06 y	43:55	0.84	101					101
13C-OCDD	6.98e+07	0.92 y	49:24	0.69	205					101
13C-2,3,7,8-TCDF	9.67e+07	0.81 y	26:24	1.02	99.5					103
13C-1,2,3,7,8-PeCDF	9.29e+07	1.59 y	31:15	1.00	98.1					99.5
13C-2,3,4,7,8-PeCDF	8.17e+07	1.59 y	32:35	0.89	97.2					98.1
13C-1,2,3,4,7,8-HxCDF	6.20e+07	0.53 y	36:57	1.26	100					97.2
13C-1,2,3,6,7,8-HxCDF	6.50e+07	0.54 y	37:09	1.30	102					100
13C-2,3,4,6,7,8-HxCDF	6.15e+07	0.53 y	38:06	1.25	101					102
13C-1,2,3,7,8,9-HxCDF	5.57e+07	0.54 y	39:32	1.15	99.3					101
13C-1,2,3,4,6,7,8-HpCDF	4.77e+07	0.45 y	42:01	0.96	102					101
13C-1,2,3,4,7,8,9-HpCDF	4.17e+07	0.45 y	44:50	0.83	103					99.3
13C-OCDF	9.27e+07	0.86 y	49:46	0.93	204					102
37Cl-2,3,7,8-TCDD	6.11e+06		27:10	1.00	10.1					103
13C-1,2,3,4-TCDD	6.05e+07	0.83 y	26:32	-	87.5					
13C-1,2,3,4-TCDF	9.48e+07	0.80 y	25:16	-	87.5					
13C-1,2,3,7,8,9-HxCDD	4.89e+07	1.26 y	38:58	-	82.3					
Total Tetra-Dioxins	3.77e+07		22:59	1.27	44.9	2.50	-	-	*	DL
Total Penta-Dioxins	8.14e+07		30:02	1.01	156	2.50	-	-	*	#Hom
Total Hexa-Dioxins	9.71e+07		35:54	1.08	208	2.50	-	-	*	20
Total Hepta-Dioxins	4.26e+07		42:34	1.01	102	2.50	-	-	*	10
Total Tetra-Furans	4.51e+07		22:44	1.02	45.8	2.50	-	-	*	11
1st Fn. Tot Penta-Furans	4.03e+07		28:10	0.91	50.7	2.50	-	-	*	6
Total Penta-Furans	1.16e+08		29:57	0.91	146	2.50	-	-	*	20
Total Hexa-Furans	1.64e+08		35:01	1.07	249	2.50	-	-	*	* PeCDF
Total Hepta-Furans	5.27e+07		42:02	1.19	99.2	2.50	-	-	*	13

Analyst: 

Date: 1/9/16

Frontier Analytical Laboratory - Acquisition Log

Run Name:08JAN16M

Instrument: FAL3

GC: DB5

Experiment:PCDD

Data File	S	FAL ID	Client ID	Acquired	ConCal	EndCal	Analyst
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08JAN16M	4	ST010816M3	1613 CS3 151209J	8-JAN-16 18:16:54	NA	NA	TC
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08JAN16M	7	ST010816M6	1613 CS6 151209M	8-JAN-16 21:01:12	NA	NA	TC
08JAN16M	8	SB010816M1	Solvent Blank	8-JAN-16 21:55:55	NA	NA	TC
08JAN16M	9	SB010816M2	Solvent Blank	8-JAN-16 22:50:37	NA	NA	TC
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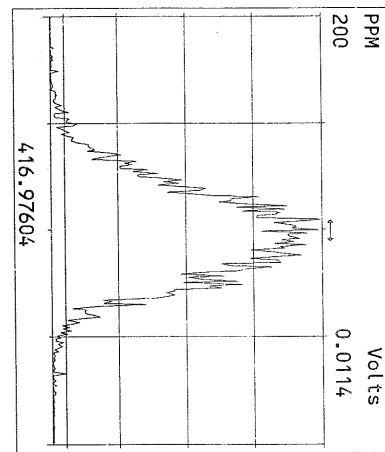
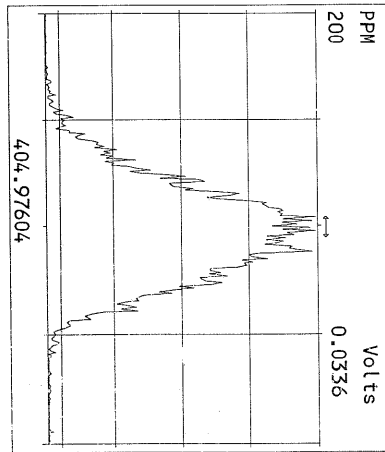
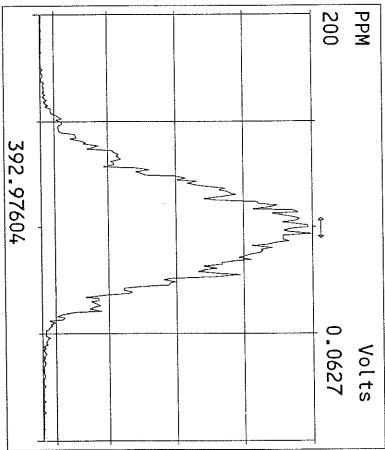
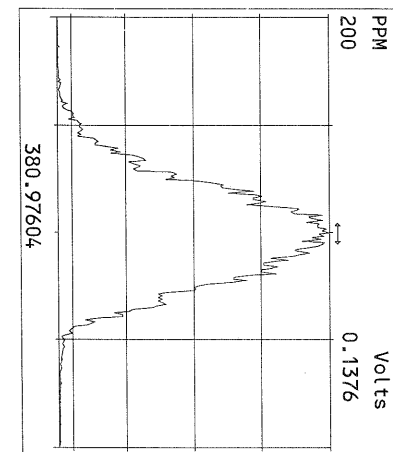
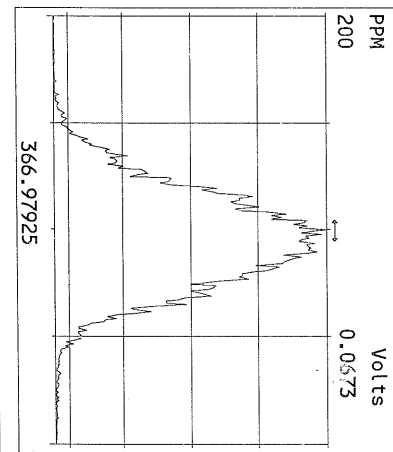
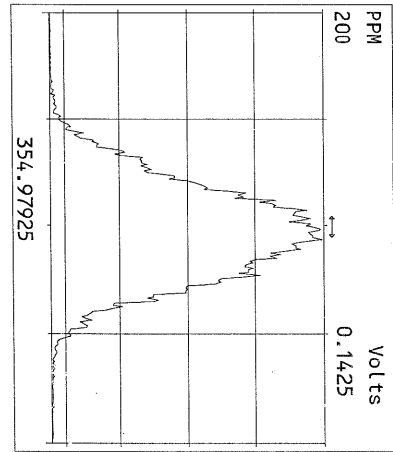
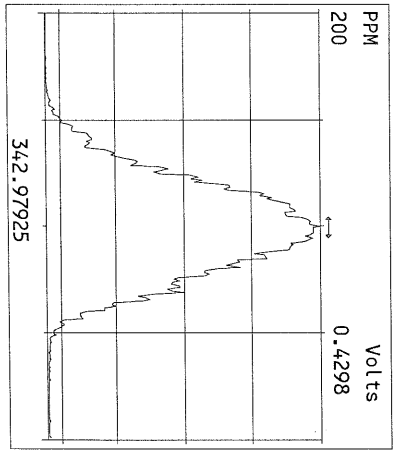
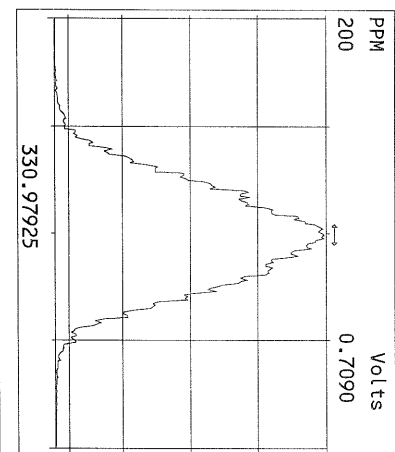
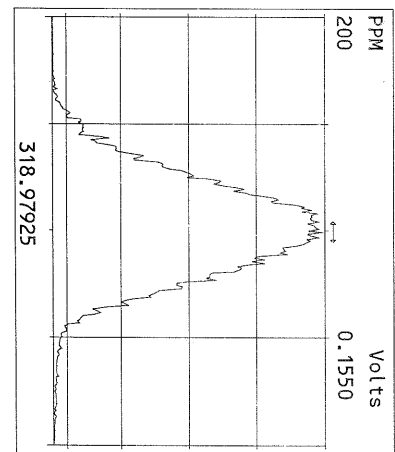
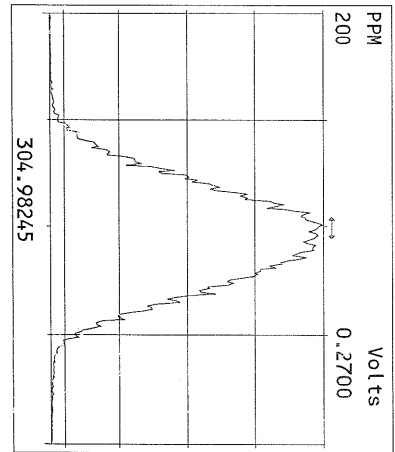
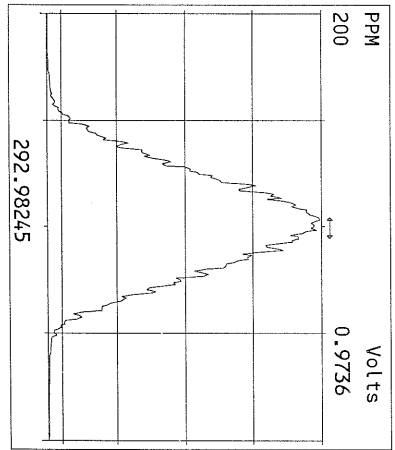


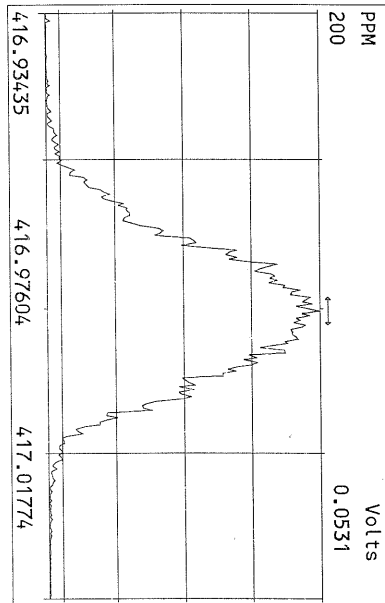
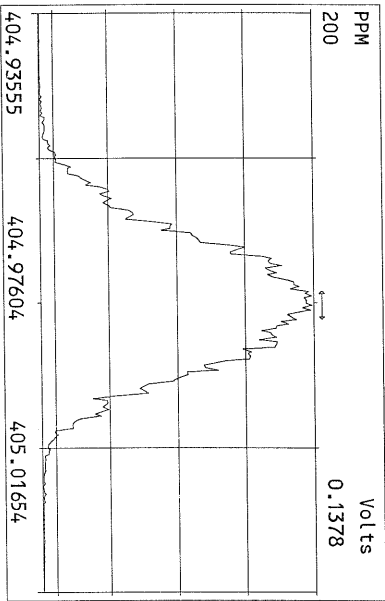
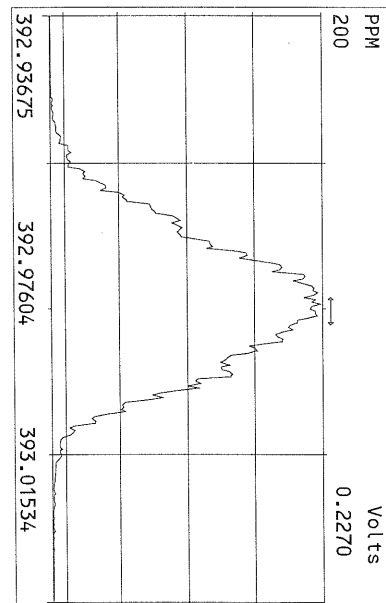
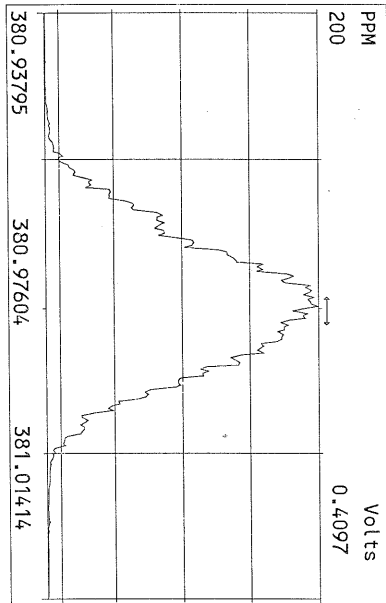
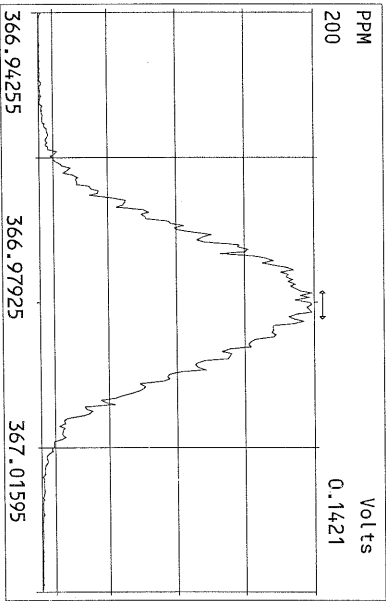
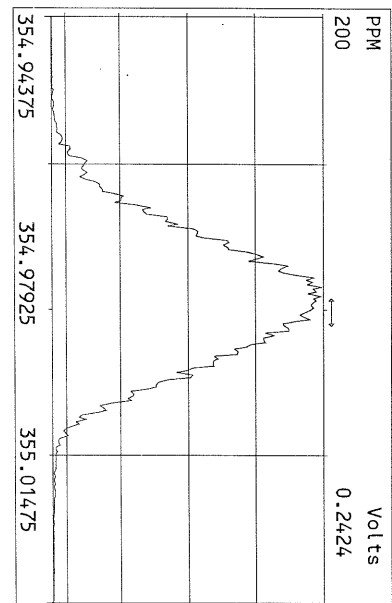
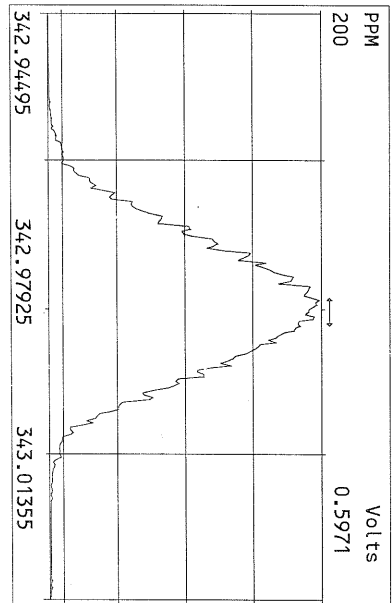
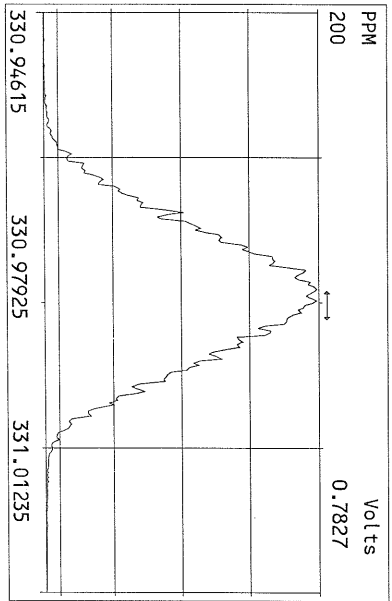
1/9/16

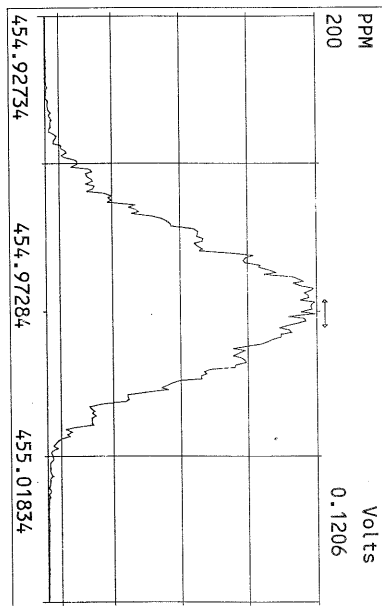
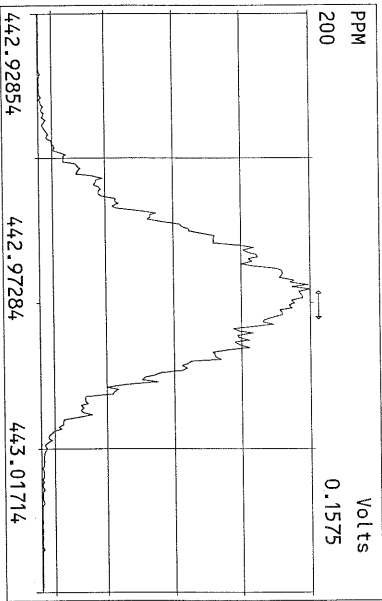
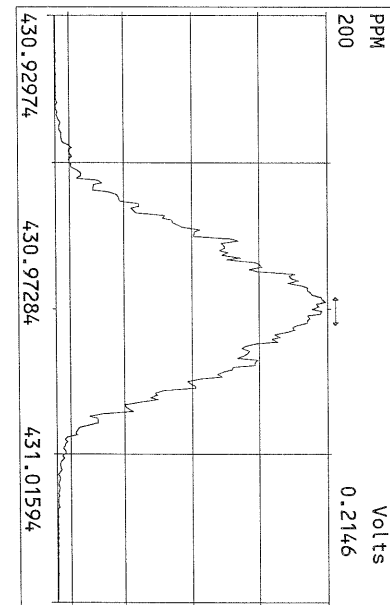
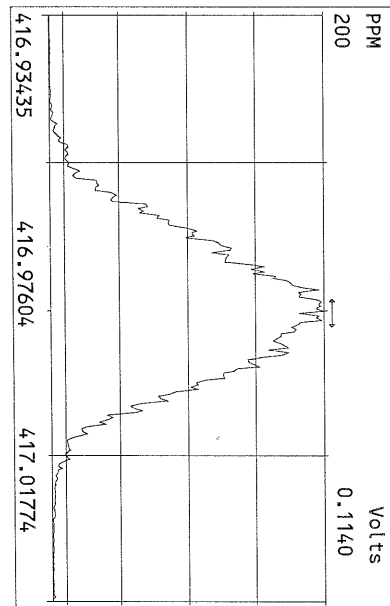
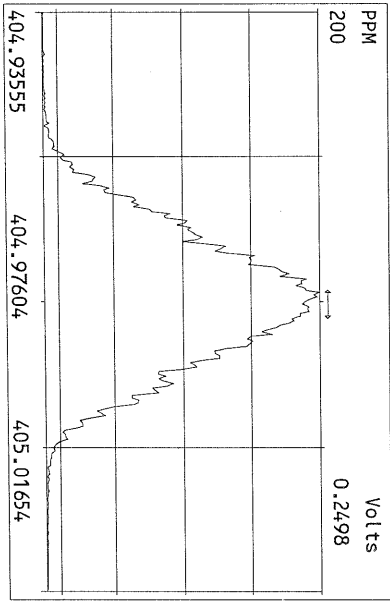
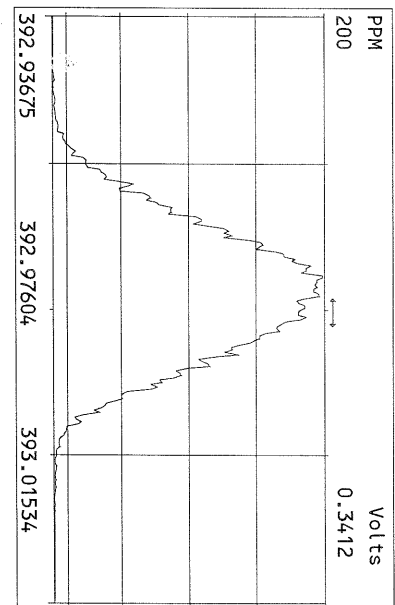
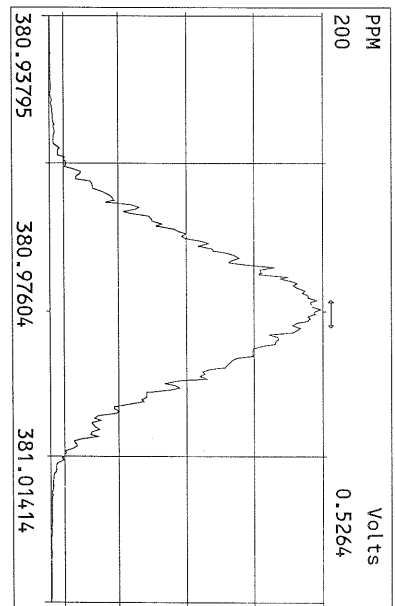
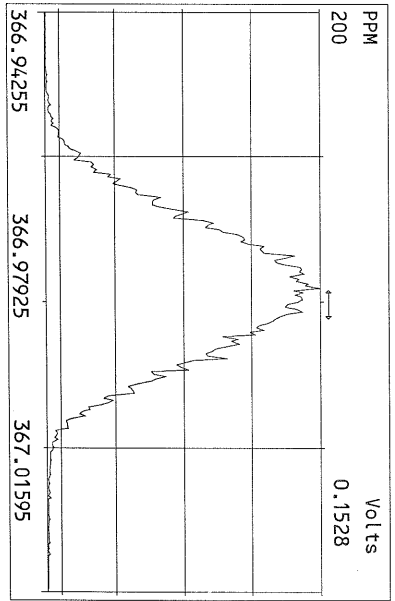
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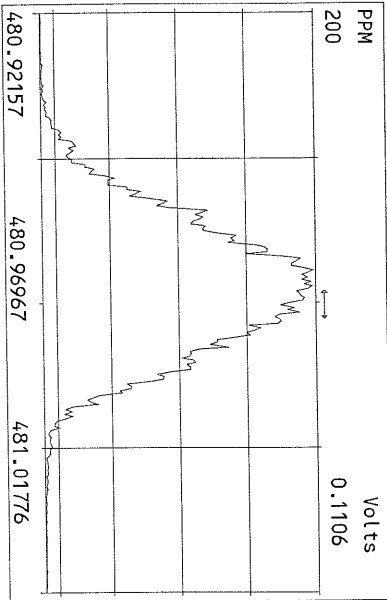
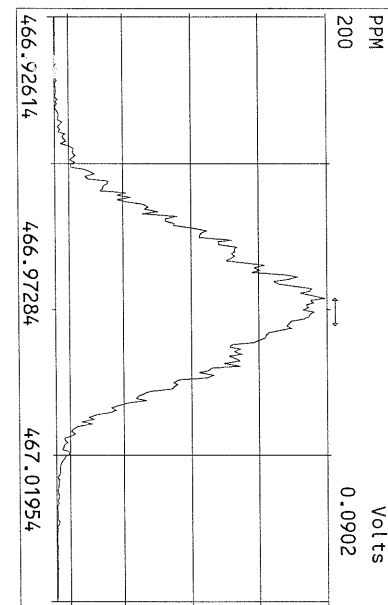
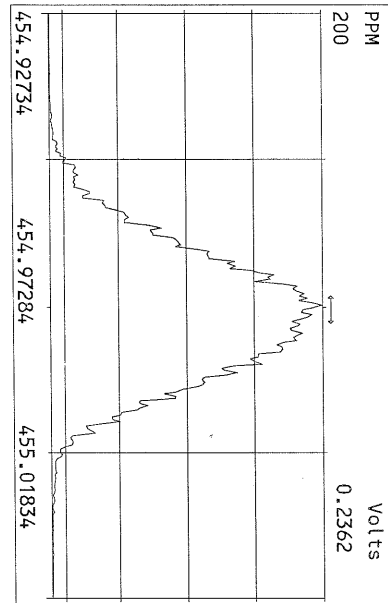
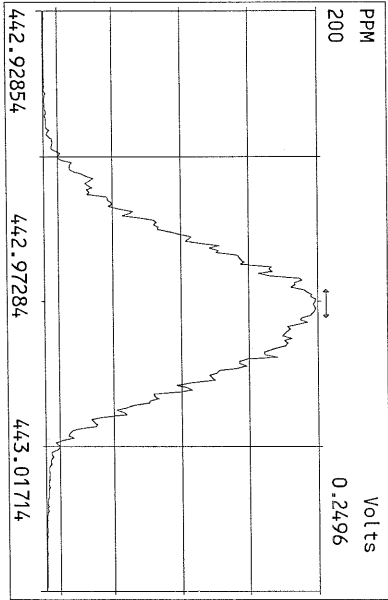
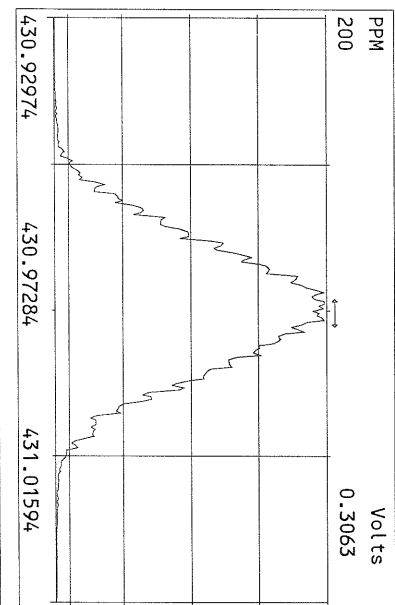
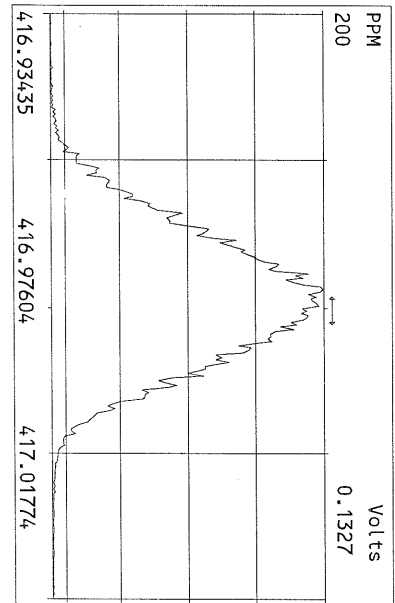
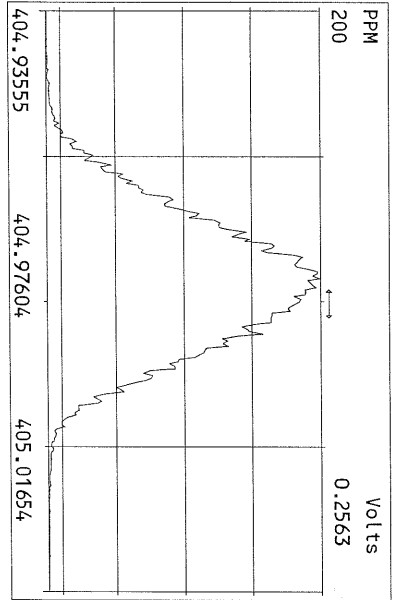
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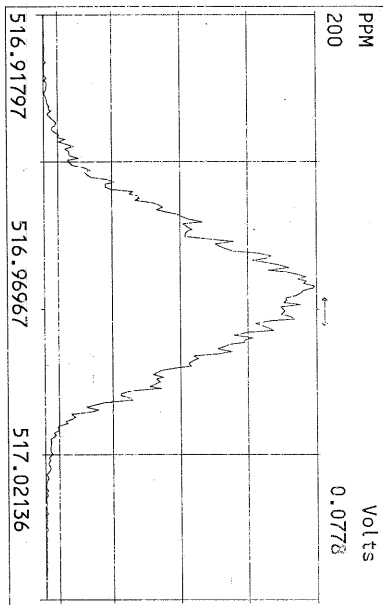
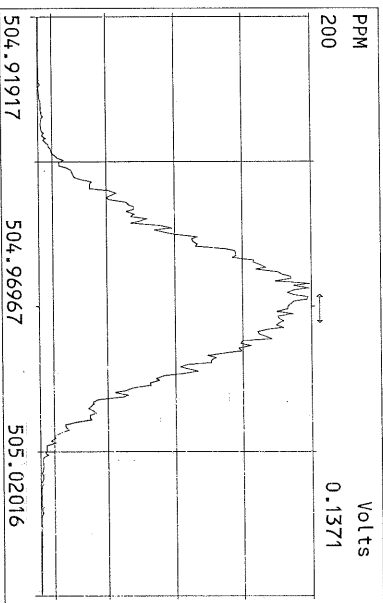
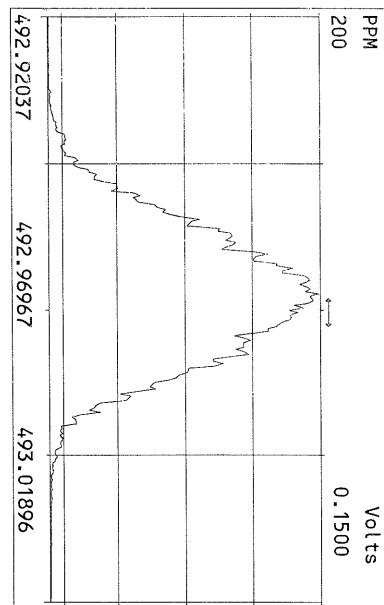
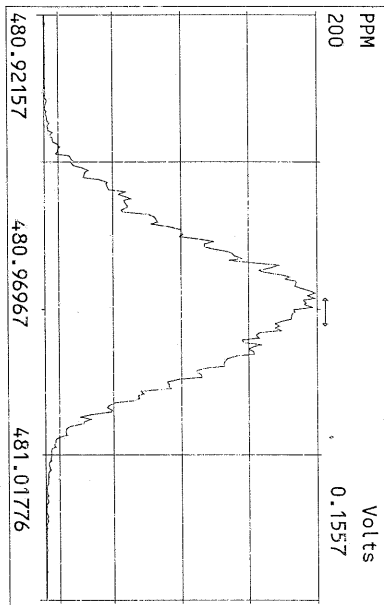
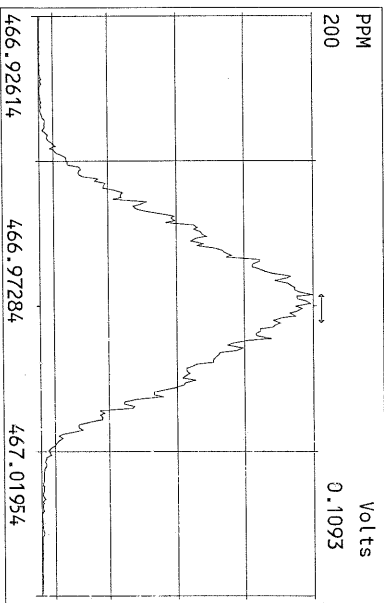
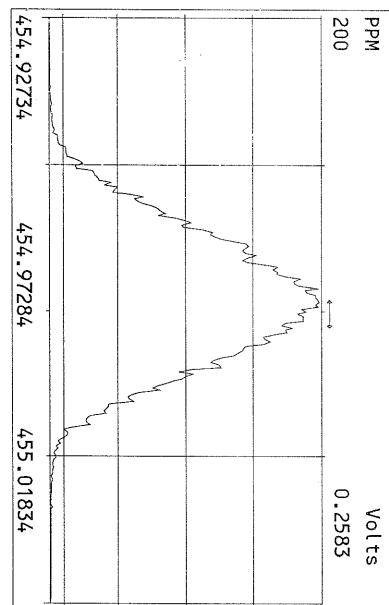
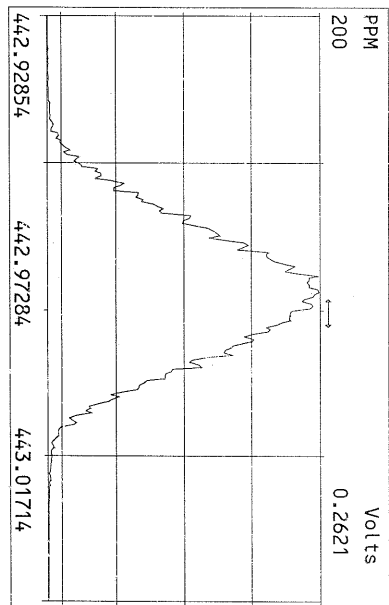
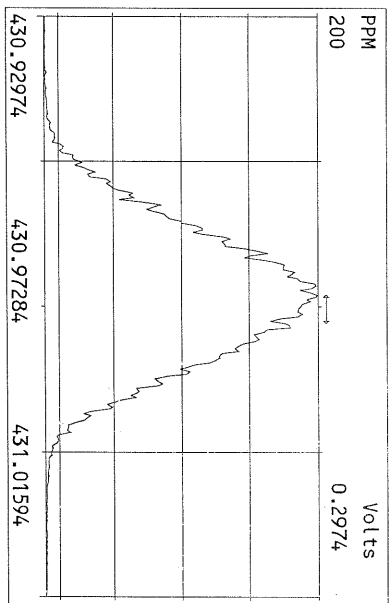
Peak Locate Examination: 8-JAN-2016:15:30 File:08JAN16M
Experiment:PCDD Function:1 Reference:PFK



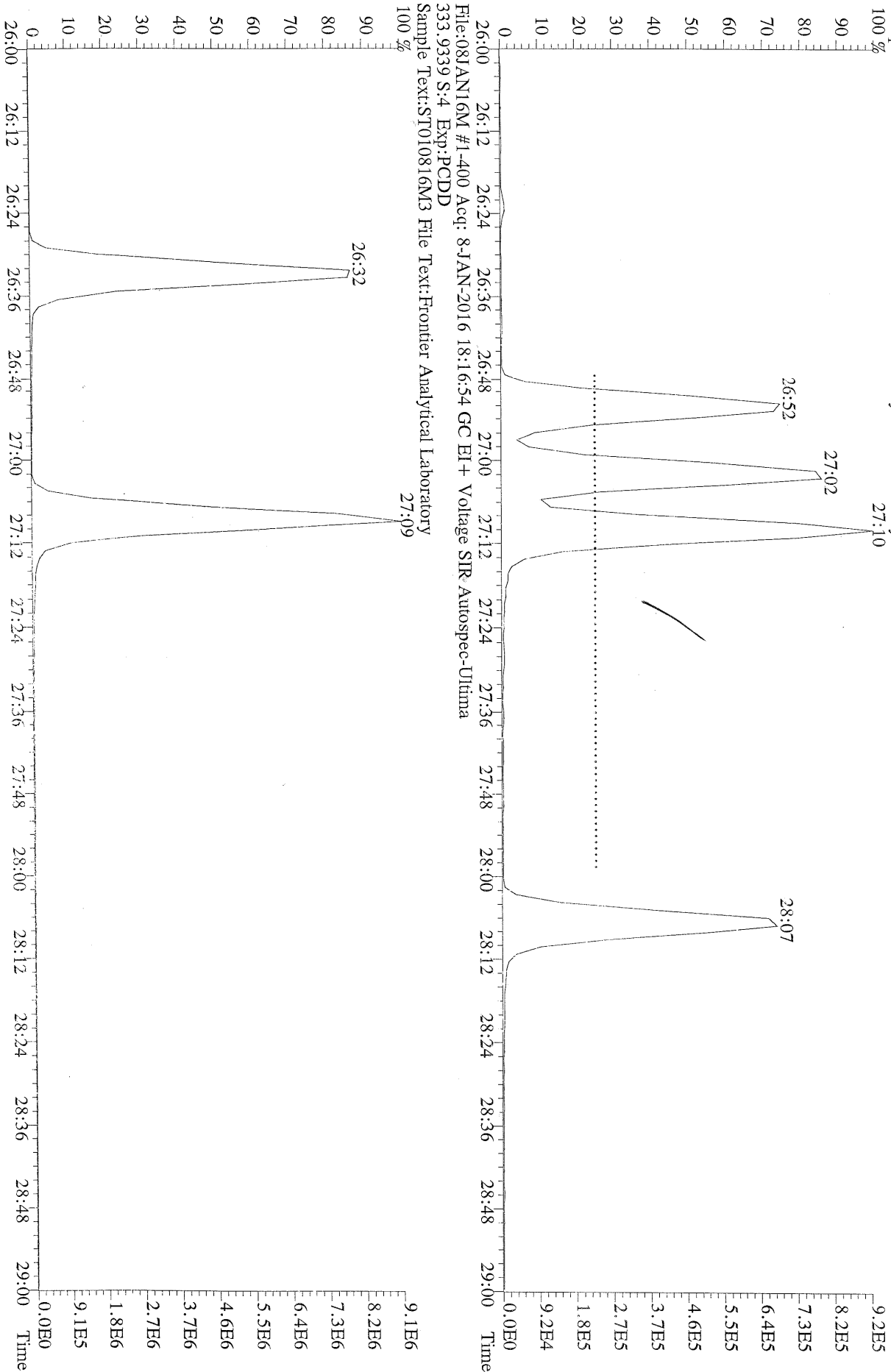




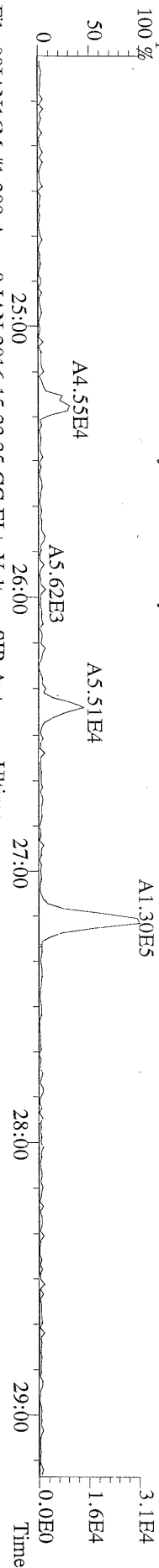




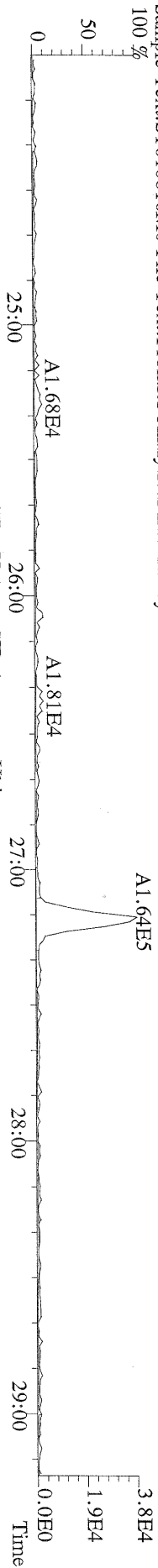
File:08JAN16M #1-400 Acq: 8-JAN-2016 18:16:54 GC EI+ Voltage SIR Autospec-Ultima
319.8965 S:4 Exp:PCDD
Sample Text:ST010816M3 File Text:Frontier Analytical Laboratory
100 %



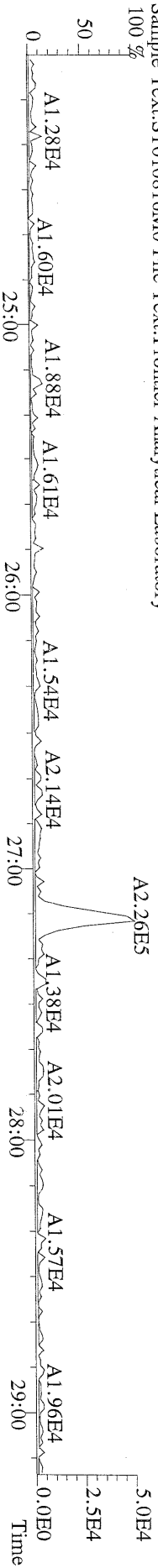
File:08JAN16M #1-399 Acq: 8-JAN-2016 15:32:35 GC EI+ Voltage SIR Autospec-Ultima
 319.8965 BSUB(10000,15,-3,0) PKD(5,5,3,0,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:ST010816M0 File Text:Fronter Analytical Laboratory
 100 %



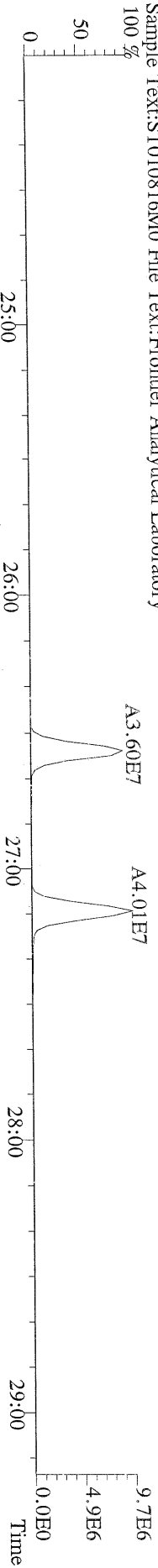
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 321.8936 BSUB(10000,15,-3,0) PKD(5,5,3,0,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:ST010816M0 File Text:Fronter Analytical Laboratory
 100 %



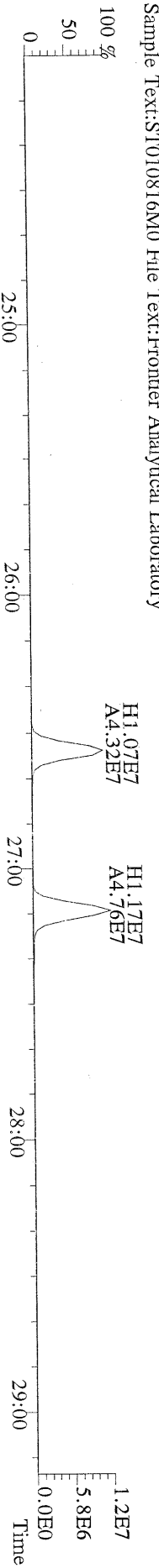
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 327.8847 BSUB(10000,15,-3,0) PKD(5,5,3,0,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:ST010816M0 File Text:Fronter Analytical Laboratory
 100 %



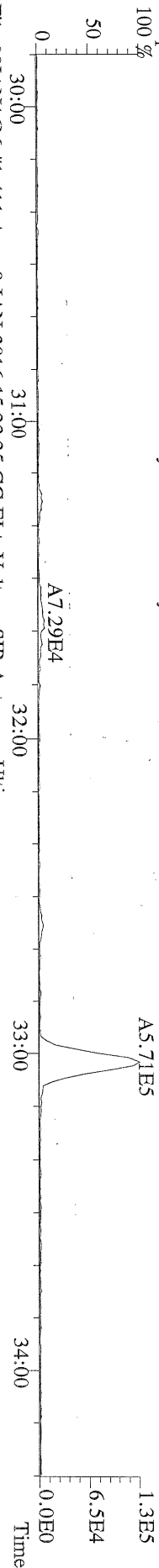
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 331.9368 BSUB(10000,15,-3,0) PKD(5,5,3,0,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:ST010816M0 File Text:Fronter Analytical Laboratory
 100 %



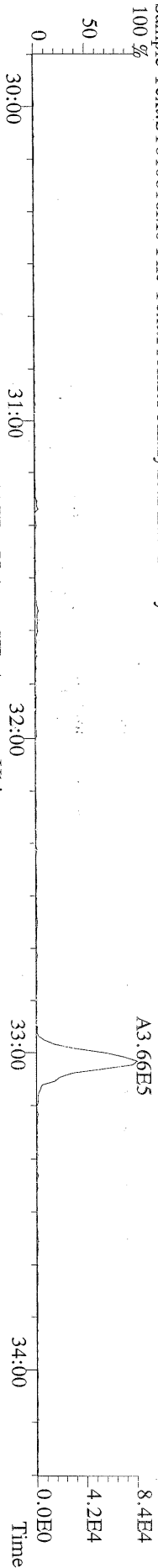
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 333.9339 BSUB(10000,15,-3,0) PKD(5,5,3,0,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:ST010816M0 File Text:Fronter Analytical Laboratory



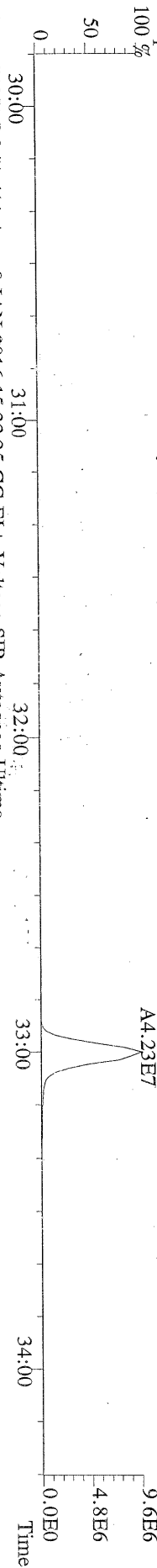
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355.8546 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M0 File Text:Fronter Analytical Laboratory
100 %



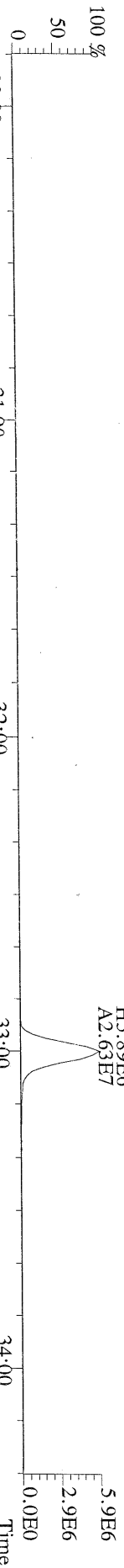
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357.8517 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M0 File Text:Fronter Analytical Laboratory
100 %



File:08JAN16M #1-411 Acq: 8-JAN-2016 15:32:35 GC EI+ Voltage SIR Autospec-Ultima
367.8949 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M0 File Text:Fronter Analytical Laboratory
100 %



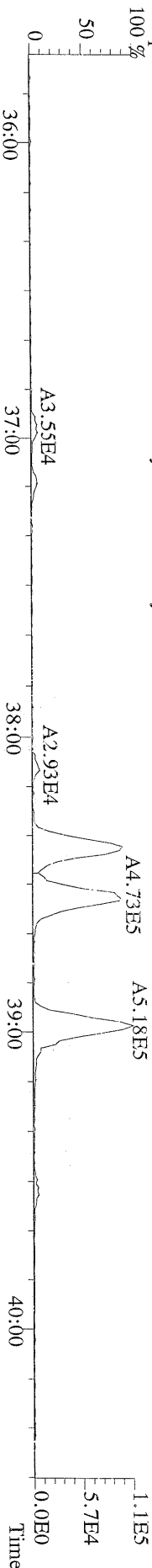
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369.8919 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M0 File Text:Fronter Analytical Laboratory



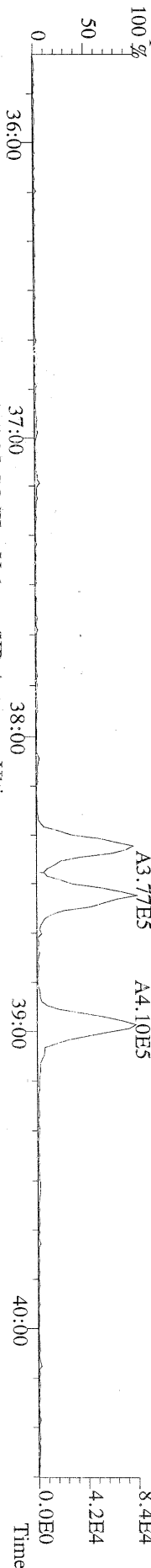
File:08JAN16M #1-411 Acq: 8-JAN-2016 15:32:35 GC EI+ Voltage SIR Autospec-Ultima
366.9792 F:2 Exp:PCDD
Sample Text:ST010816M0 File Text:Fronter Analytical Laboratory
100 %



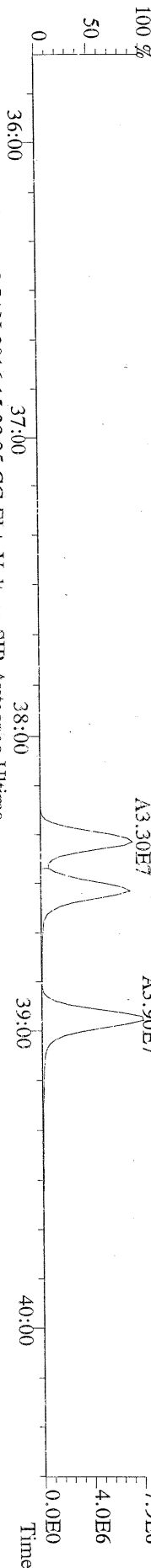
File:08JANI6M #1-495 Acq: 8-JAN-2016 15:32:35 GC EI+ Voltage SIR Autospec-Ultima
389.8156 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M0 File Text:Frontier Analytical Laboratory
100 %



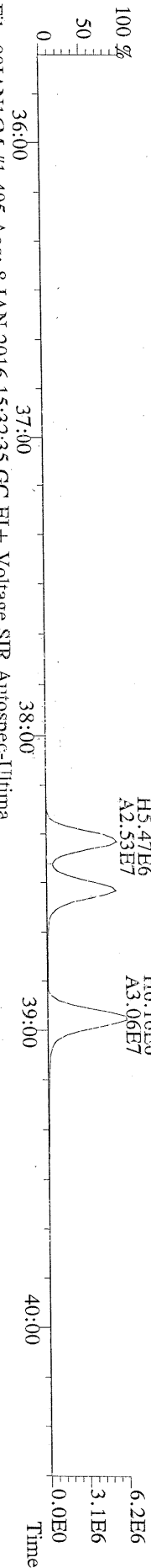
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391.8127 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M0 File Text:Frontier Analytical Laboratory
100 %



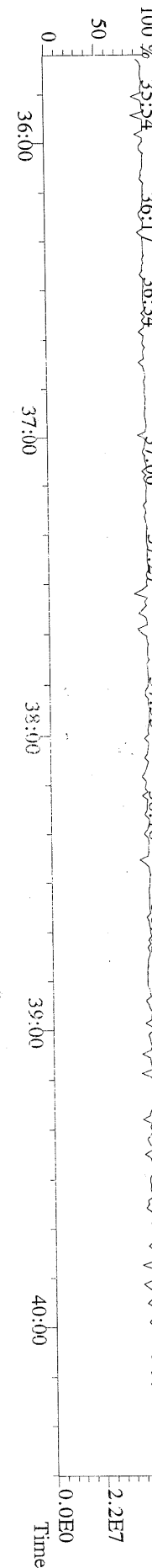
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401.8559 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M0 File Text:Frontier Analytical Laboratory
100 %



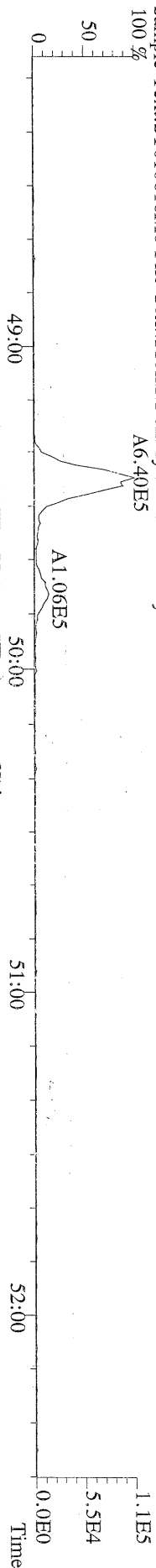
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403.8530 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M0 File Text:Frontier Analytical Laboratory
100 %



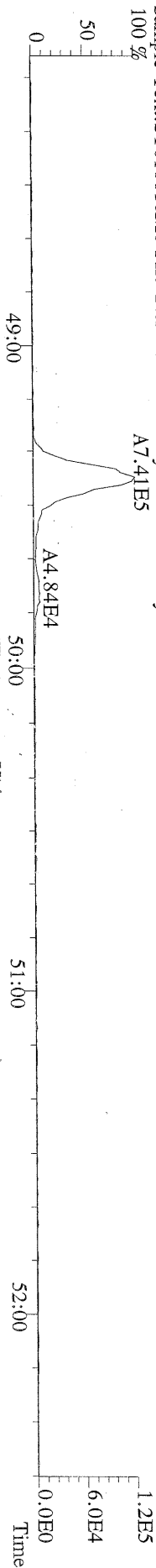
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380.9760 F:3 Exp:PCDD
Sample Text:ST010816M0 File Text:Frontier Analytical Laboratory
100 %



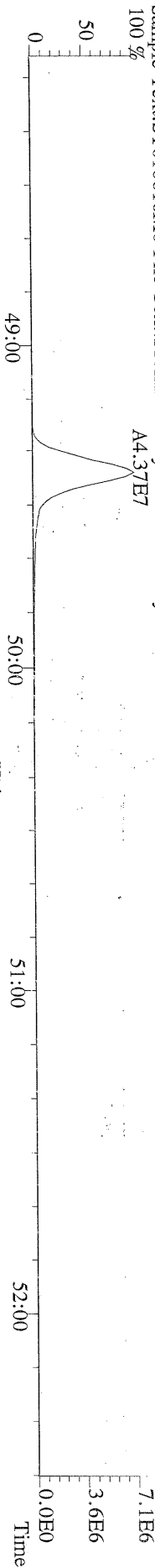
File:08JAN16M #1-360 Acq: 8-JAN-2016 15:32:35 GC EI + Voltage SIR Autospec-Ultima
457.7377 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD
Sample Text:ST010816M0 File Text:Frontier Analytical Laboratory
100 % A6.40E5



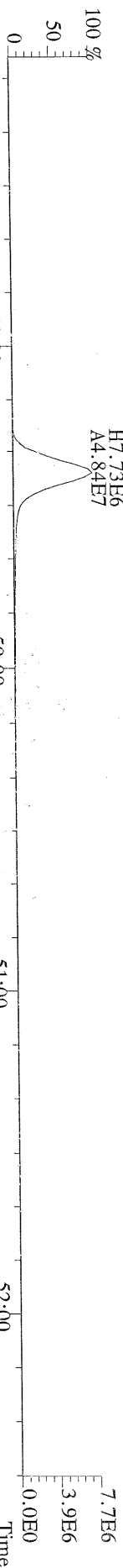
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459.7348 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD
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100 % A7.41E5



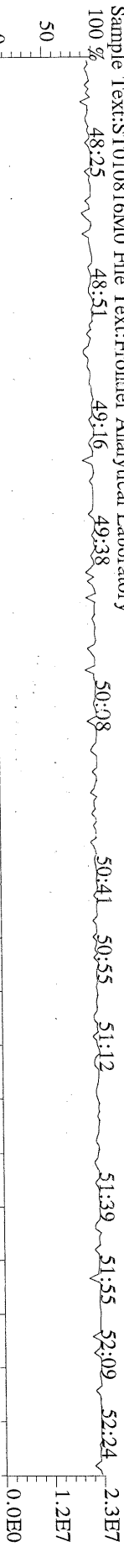
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469.7780 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD
Sample Text:ST010816M0 File Text:Frontier Analytical Laboratory
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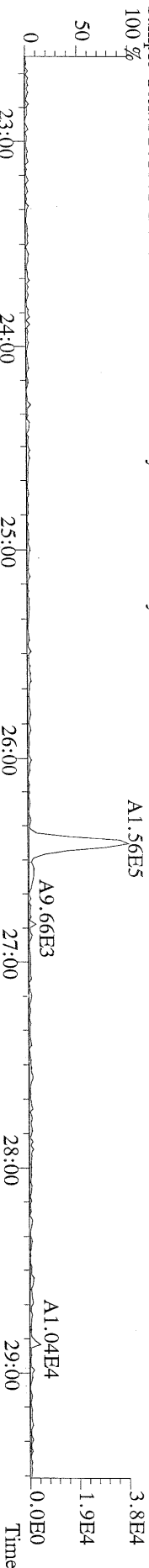
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471.7750 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD
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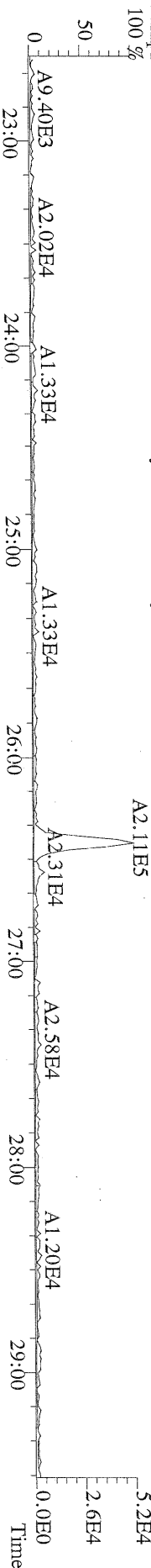
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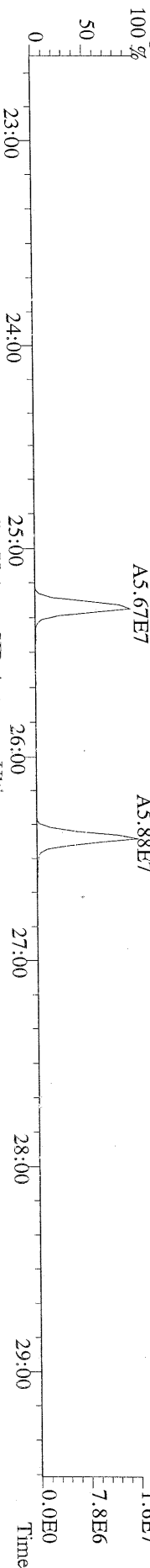
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303.9016 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,P) Exp:PCDD
Sample Text:ST010816M0 File Text:Frontier Analytical Laboratory



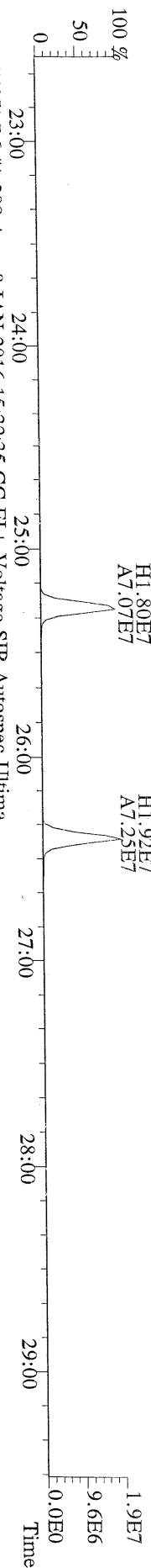
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Sample Text:ST010816M0 File Text:Frontier Analytical Laboratory



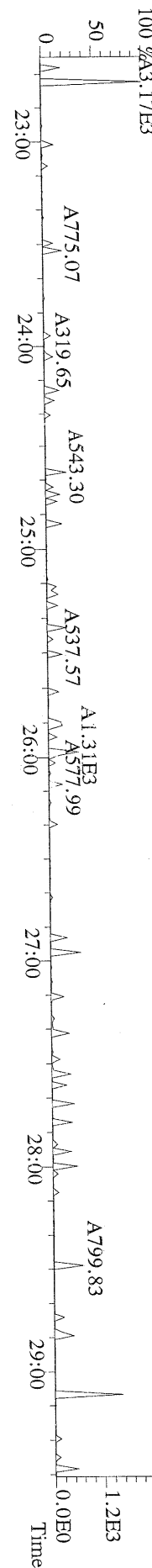
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315.9419 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,P) Exp:PCDD
Sample Text:ST010816M0 File Text:Frontier Analytical Laboratory



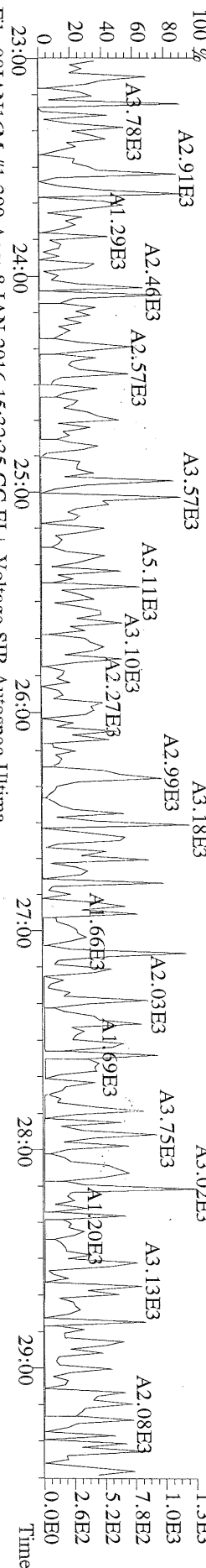
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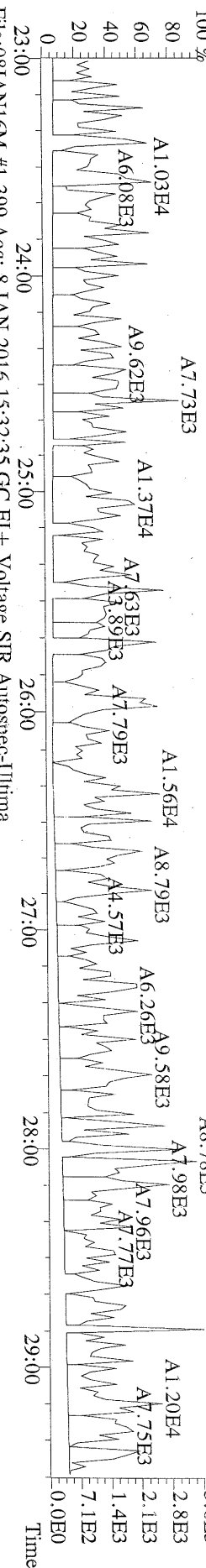
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Sample Text:ST010816M0 File Text:Frontier Analytical Laboratory



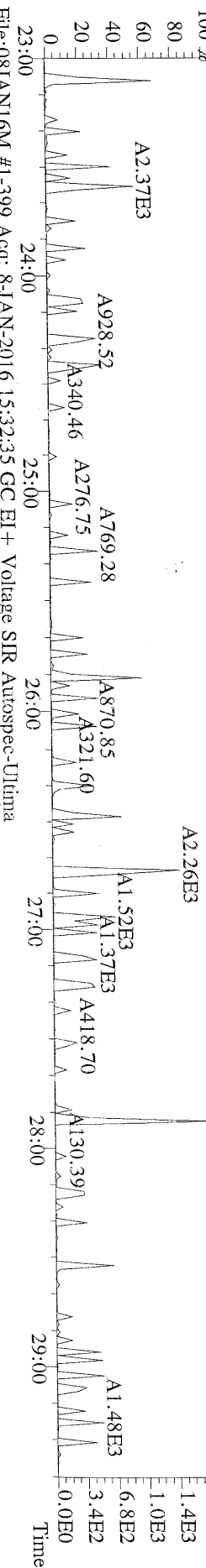
File:081JAN16M #1-399 Acq: 8-JAN-2016 15:32:35 GC EI+ Voltage SIR Autospec-Ultima
339.8597 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M0 File Text:Frontier Analytical Laboratory



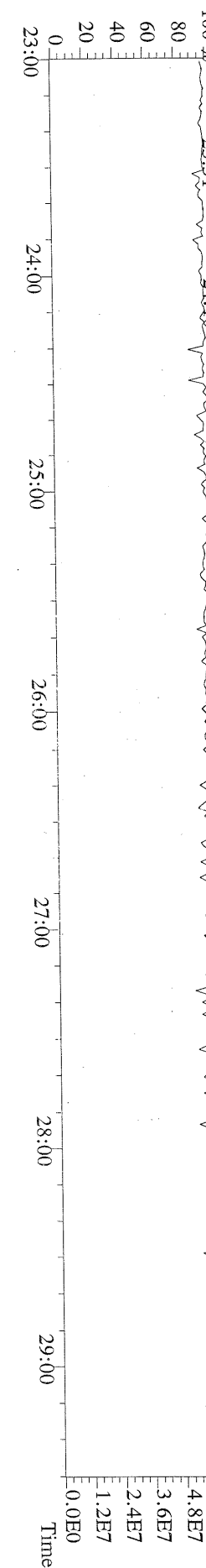
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341.8568 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M0 File Text:Frontier Analytical Laboratory



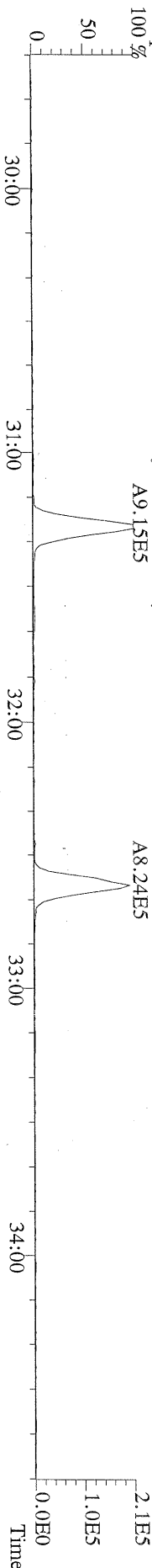
File:081JAN16M #1-399 Acq: 8-JAN-2016 15:32:35 GC EI+ Voltage SIR Autospec-Ultima
409.7974 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M0 File Text:Frontier Analytical Laboratory



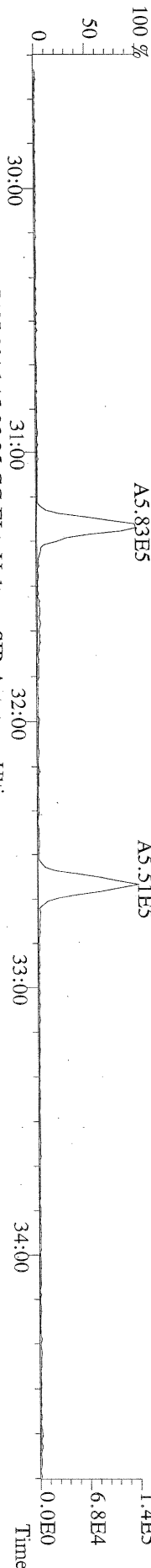
File:081JAN16M #1-399 Acq: 8-JAN-2016 15:32:35 GC EI+ Voltage SIR Autospec-Ultima
330.9792 Exp:PCDD
Sample Text:ST010816M0 File Text:Frontier Analytical Laboratory



File:081JANI6M #1-411 Acq: 8-JAN-2016 15:32:35 GC EI+ Voltage SIR Autospec-Ultima
 339.8597 F:2.BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010816M0 File Text:Frontier Analytical Laboratory



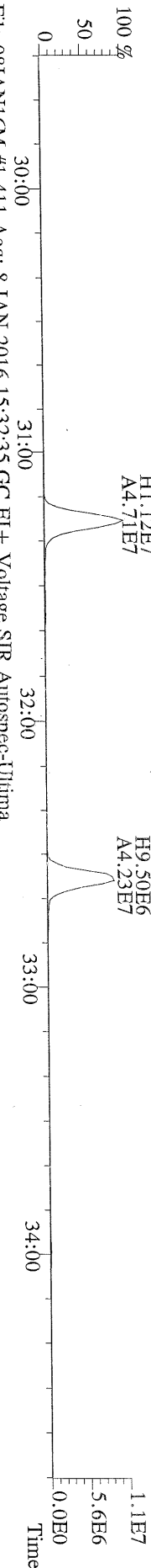
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 341.8568 F:2.BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010816M0 File Text:Frontier Analytical Laboratory



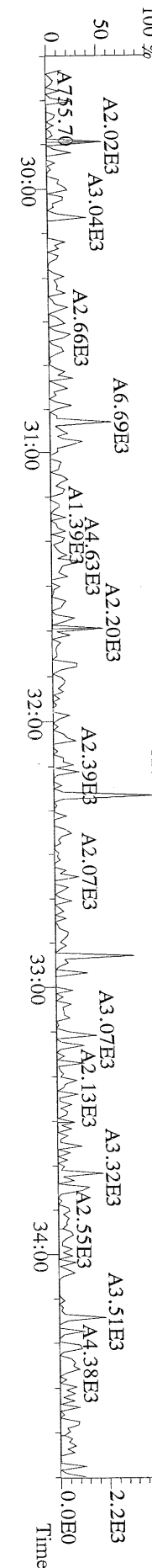
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 351.9000 F:2.BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010816M0 File Text:Frontier Analytical Laboratory



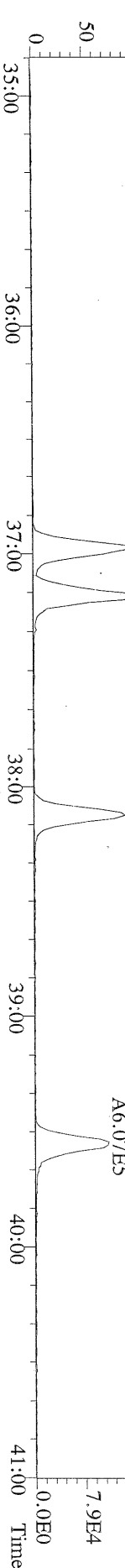
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 353.8970 F:2.BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010816M0 File Text:Frontier Analytical Laboratory



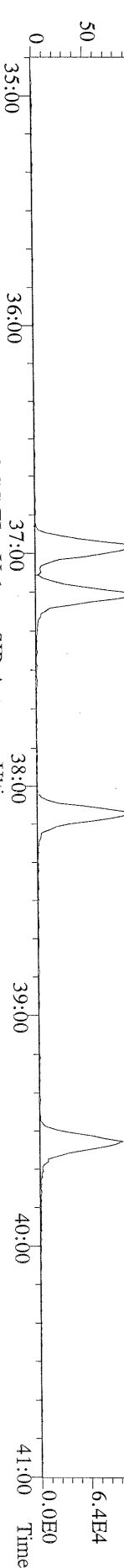
File:081JANI6M #1-411 Acq: 8-JAN-2016 15:32:35 GC EI+ Voltage SIR Autospec-Ultima
 409.7974 F:2.BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010816M0 File Text:Frontier Analytical Laboratory



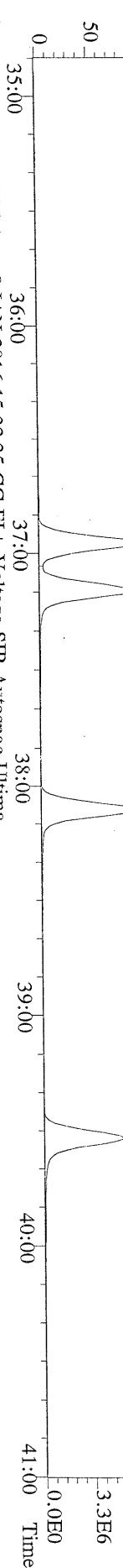
File:081JAN16M #1-495 Acq: 8-JAN-2016 15:32:35 GC EI+ Voltage SIR Autospec-Ultima
 373.8207 F:3 BSUB(10000,15,3,0) PKD(5,5,3,0,100,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010816M0 File Text:Frontier Analytical Laboratory



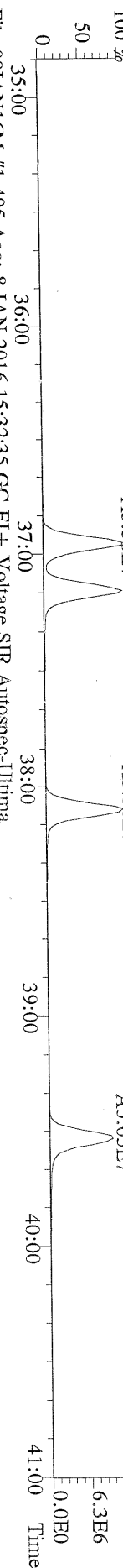
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 375.8178 F:3 BSUB(10000,15,3,0) PKD(5,5,3,0,100,0,0.00%,F,F) Exp:PCDD
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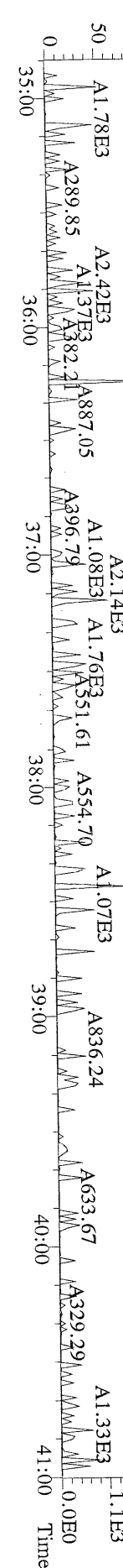
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 383.8639 F:3 BSUB(10000,15,3,0) PKD(5,5,3,0,100,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010816M0 File Text:Frontier Analytical Laboratory



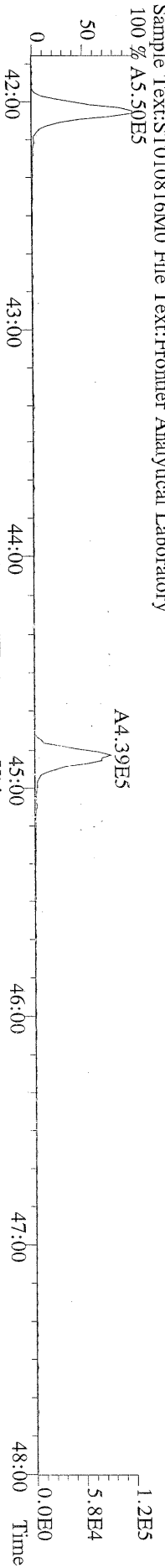
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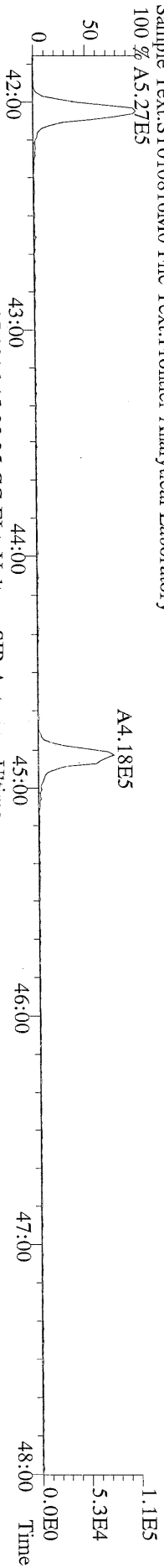
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 445.7555 F:3 BSUB(10000,15,3,0) PKD(5,5,3,0,100,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010816M0 File Text:Frontier Analytical Laboratory



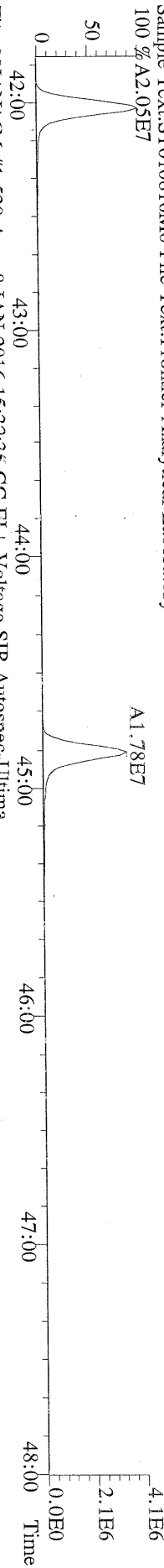
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407.7818 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD
Sample Text:ST010816M0 File Text:Frontier Analytical Laboratory
100 % A5.50E5



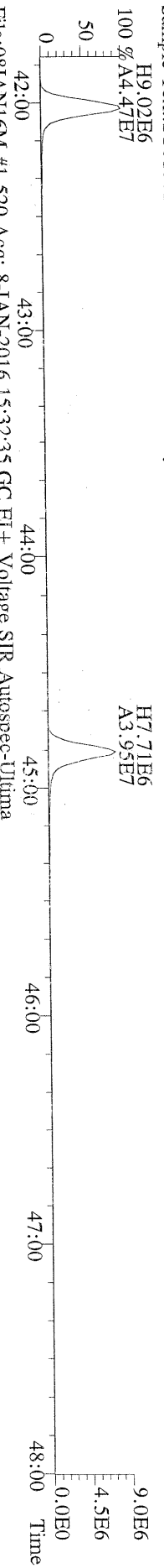
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409.7788 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD
Sample Text:ST010816M0 File Text:Frontier Analytical Laboratory
100 % A5.27E5



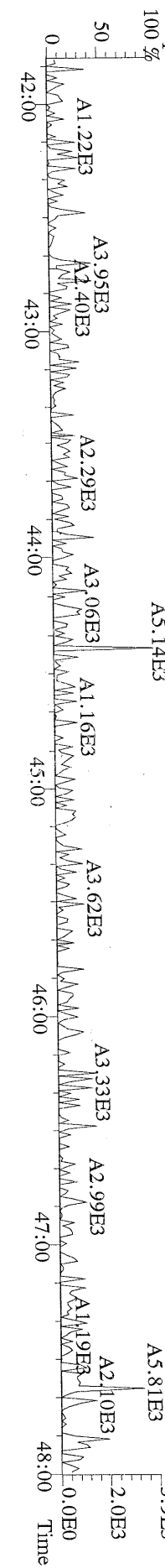
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417.8253 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD
Sample Text:ST010816M0 File Text:Frontier Analytical Laboratory
100 % A2.05E7



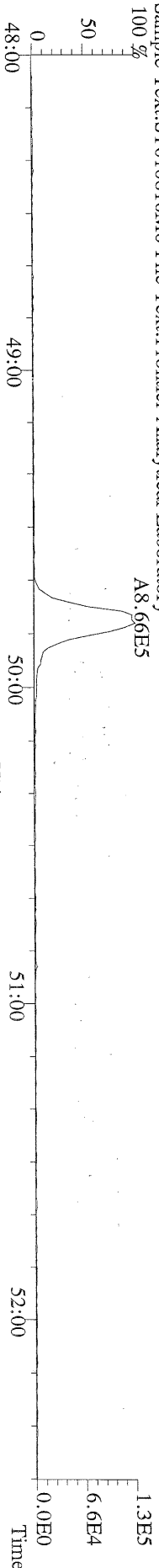
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419.8220 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD
Sample Text:ST010816M0 File Text:Frontier Analytical Laboratory
H9.02E6
100 % A4.47E7



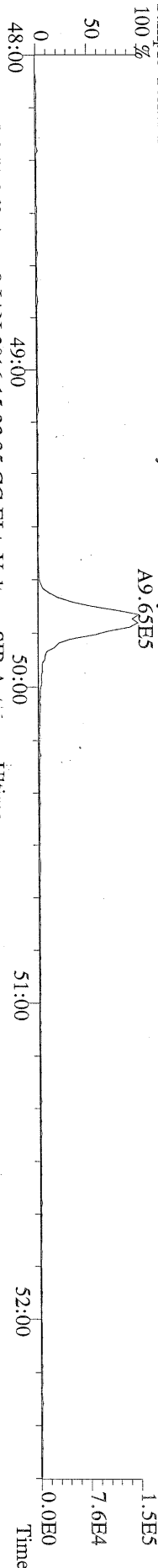
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479.7165 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD
Sample Text:ST010816M0 File Text:Frontier Analytical Laboratory
A5.14E3



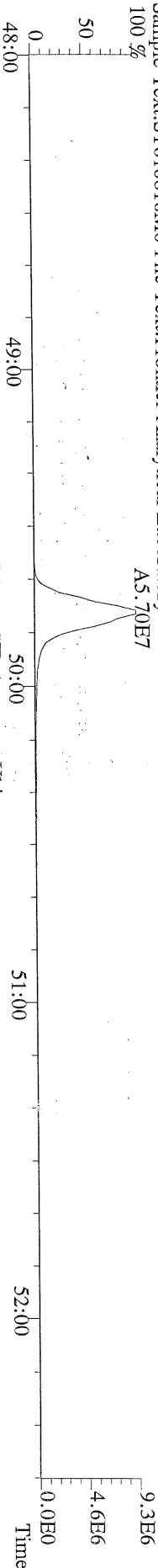
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 441.7428 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010816M0 File Text:Frontier Analytical Laboratory
 100 %



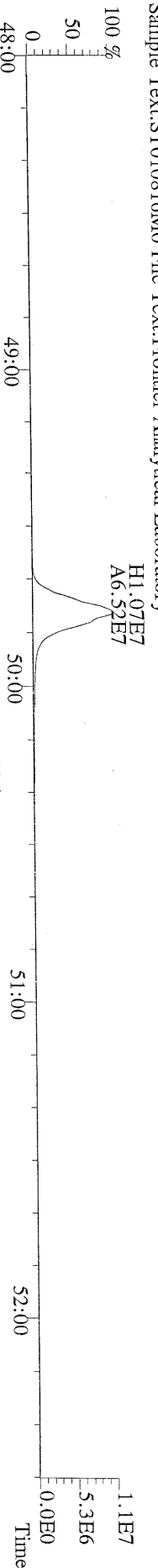
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 Sample Text:ST010816M0 File Text:Frontier Analytical Laboratory
 100 %



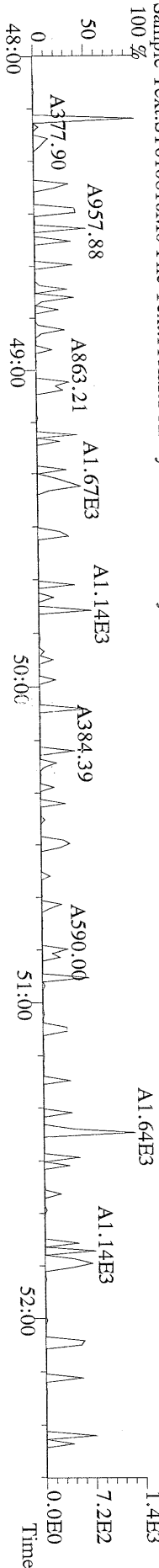
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 453.7831 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010816M0 File Text:Frontier Analytical Laboratory
 100 %



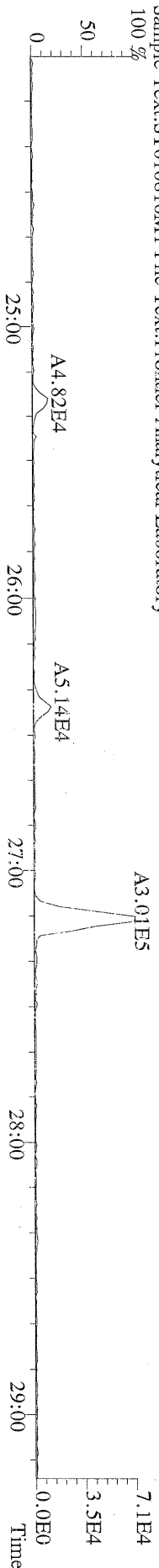
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 455.7801 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0.00%,F,F) Exp:PCDD
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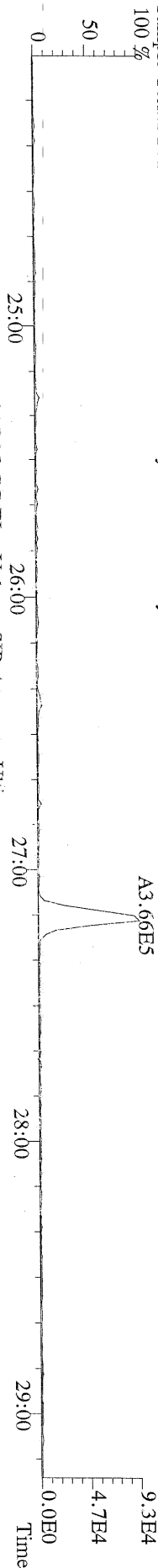
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 513.6775 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010816M0 File Text:Frontier Analytical Laboratory
 100 %



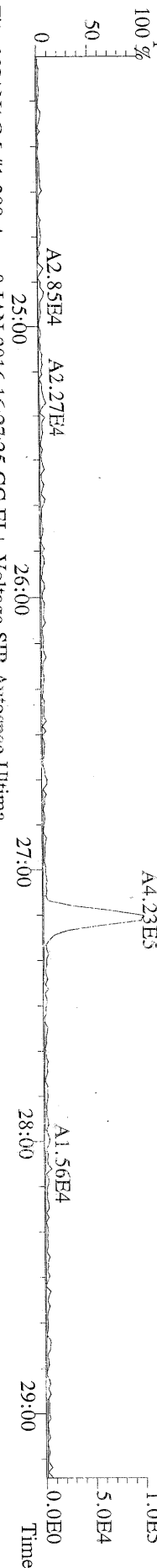
File:08JAN16M #1-399 Acq: 8-JAN-2016 16:27:25 GC EI+ Voltage SIR Autospec-Ultima
319.8965 S:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory
100 %



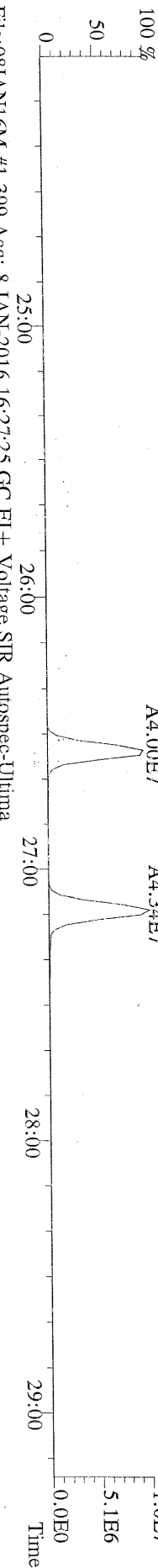
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321.8936 S:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory
100 %



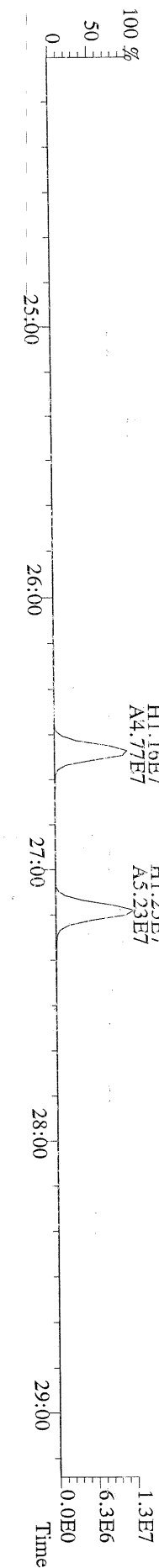
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327.8847 S:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory
100 %



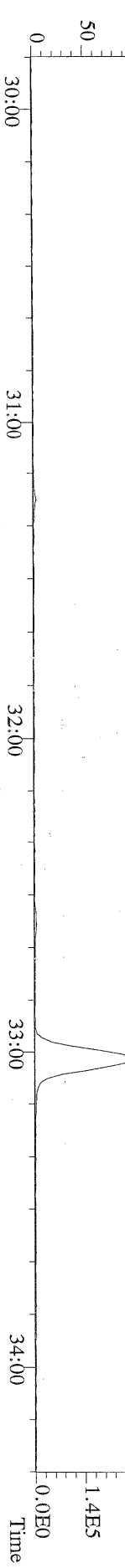
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Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory
100 %



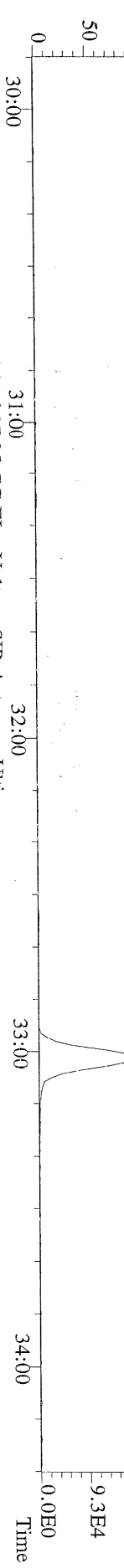
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Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory
100 %



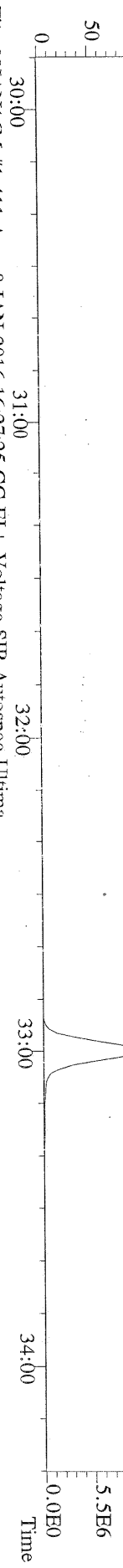
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 355.8546 S:2 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory
 100 %



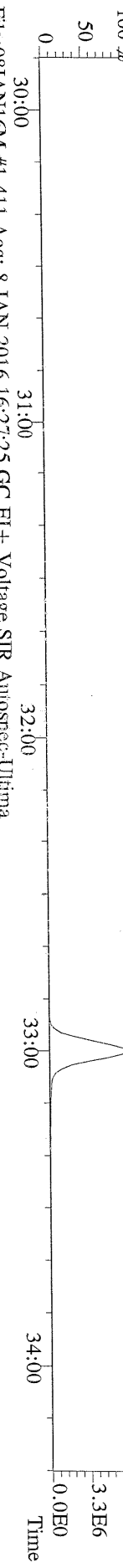
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 357.8517 S:2 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory
 100 %



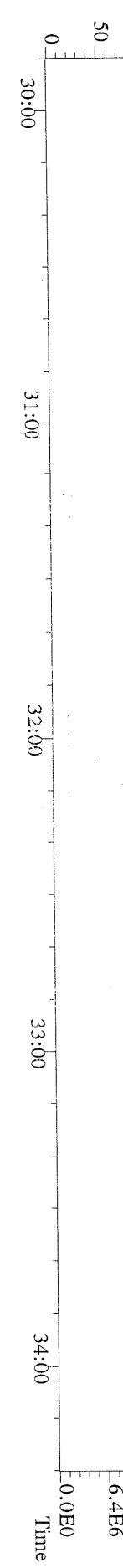
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 367.8949 S:2 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory
 100 %



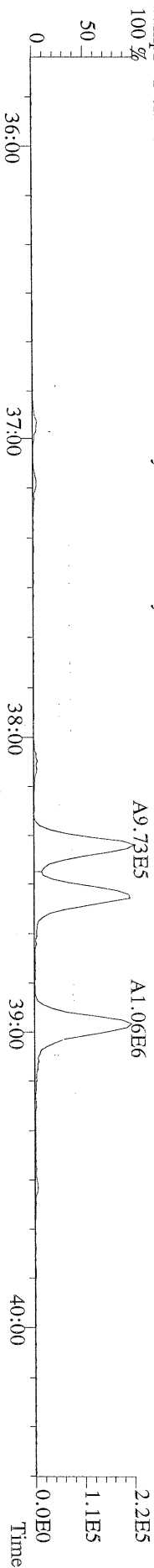
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 369.8919 S:2 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory
 100 %



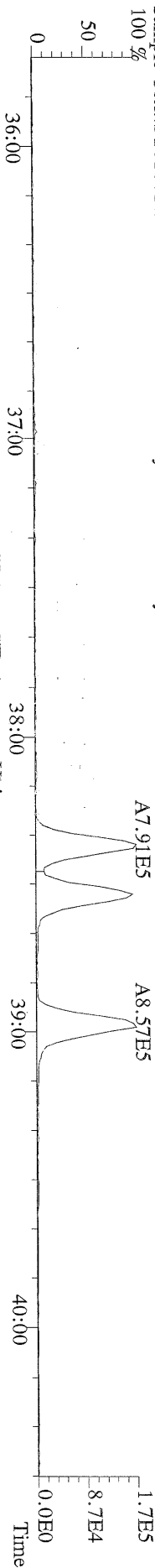
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 366.9792 S:2 F:2 Exp:PCDD
 Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory
 100 %



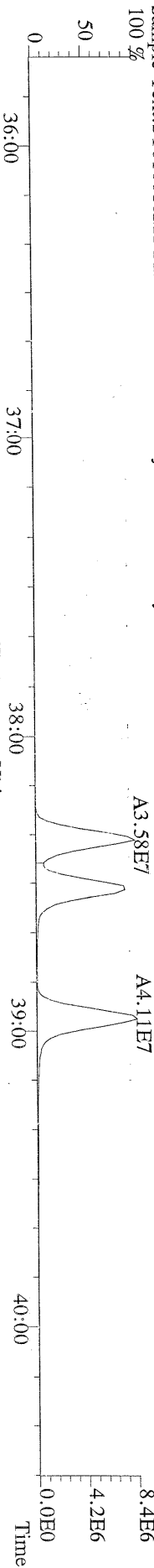
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389.8156 S.2: F.3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory
100 %



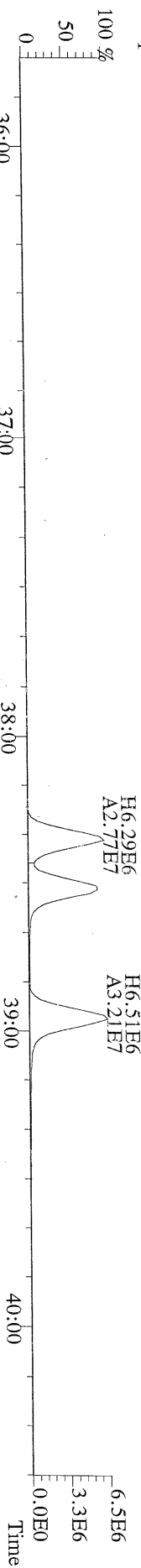
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391.8127 S.2: F.3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory
100 %



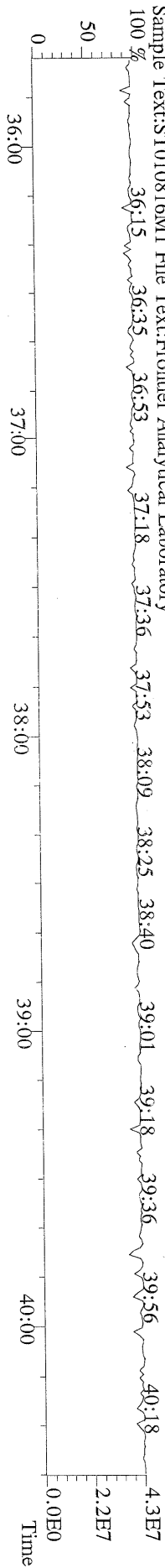
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401.8559 S.2: F.3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory
100 %



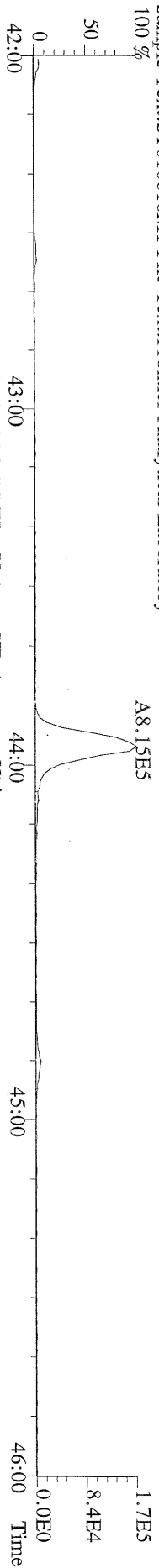
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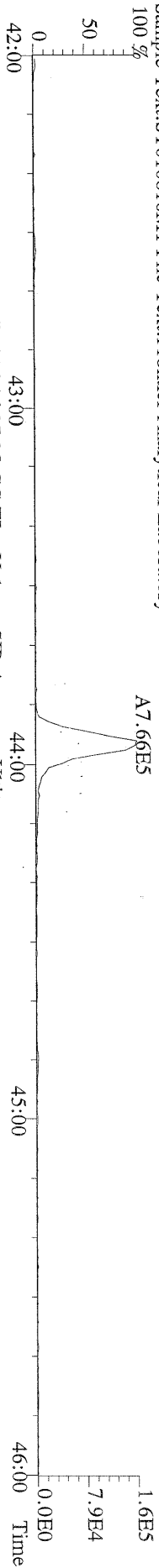
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380.9760 S.2: F.3 Exp:PCDD
Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory
100 %



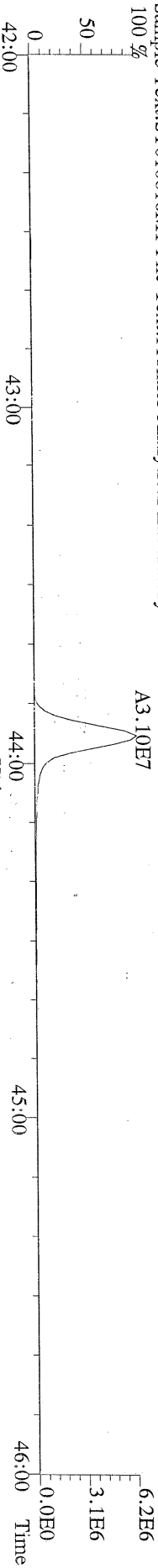
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423.7767 S:2 F:4 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100,0.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory



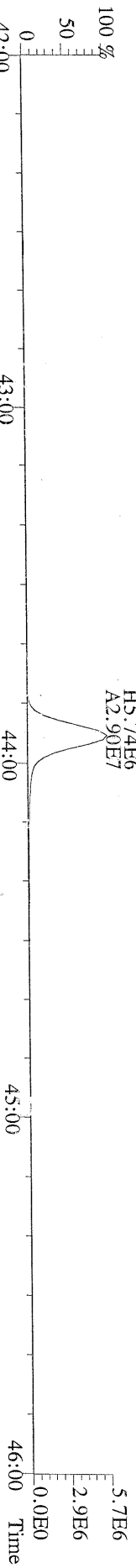
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425.7737 S:2 F:4 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100,0.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory



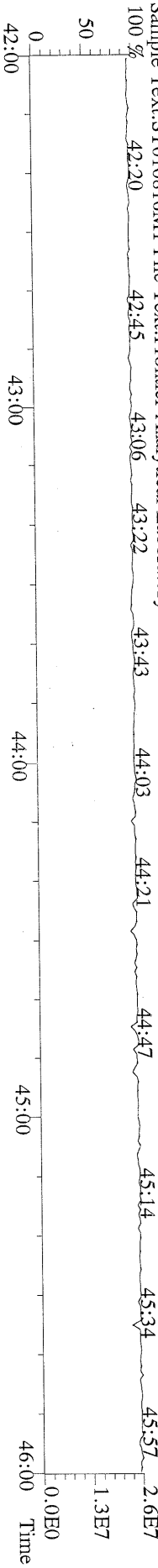
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435.8169 S:2 F:4 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100,0.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory



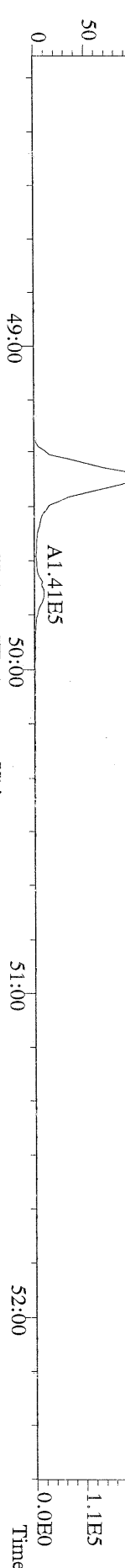
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437.8140 S:2 F:4 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100,0.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory



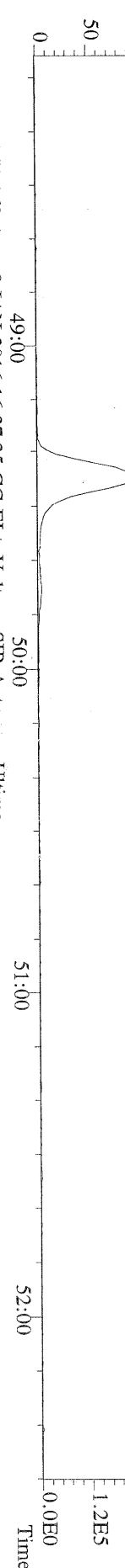
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430.9728 S:2 F:4 Exp:PCDD
Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory



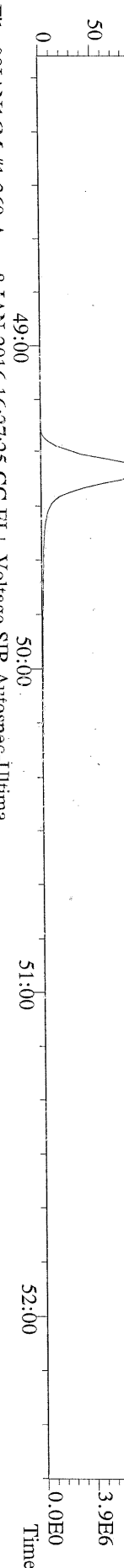
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457.7377 S:2 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory
100 % A1.37E6



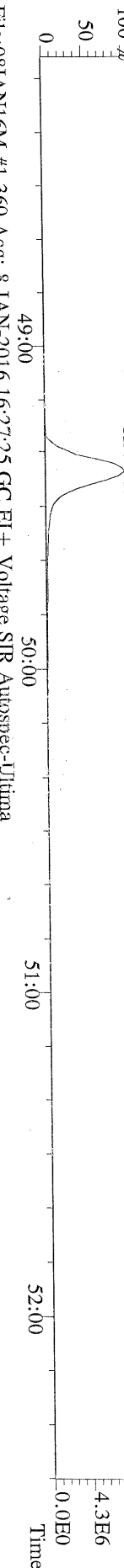
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459.7348 S:2 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory
100 % A1.54E6



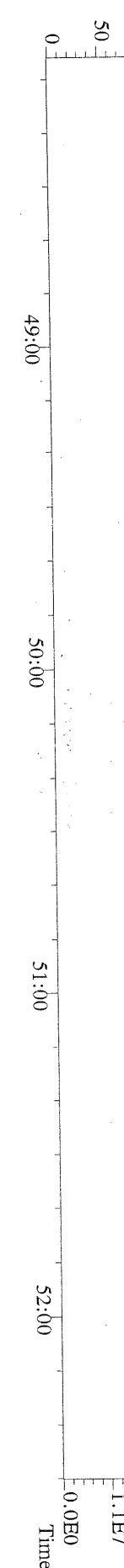
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469.7780 S:2 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory
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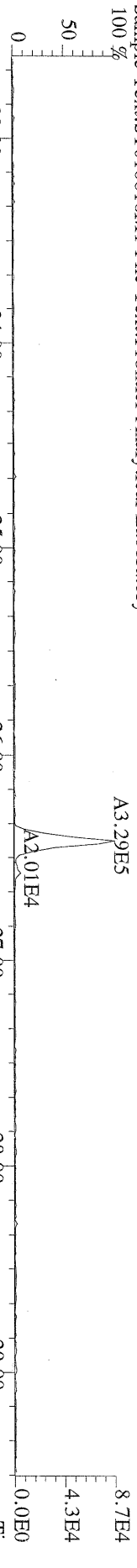
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471.7750 S:2 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory
100 % H8.60E6
A5.39E7



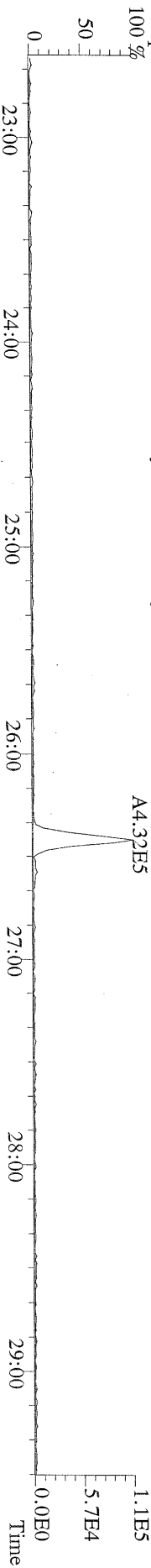
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Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory
100 % 48:15 48:31 48:57 49:15 49:30 49:52



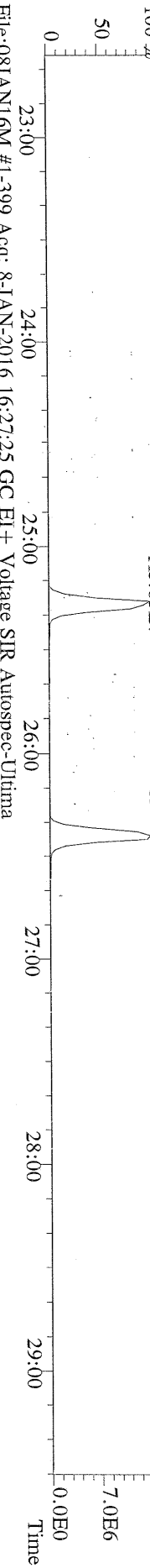
File:08JAN16M #1-399 Acq: 8-JAN-2016 16:27:25 GC EI + Voltage SIR Autospec-Ultima
 303.9016 S:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD
 Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory



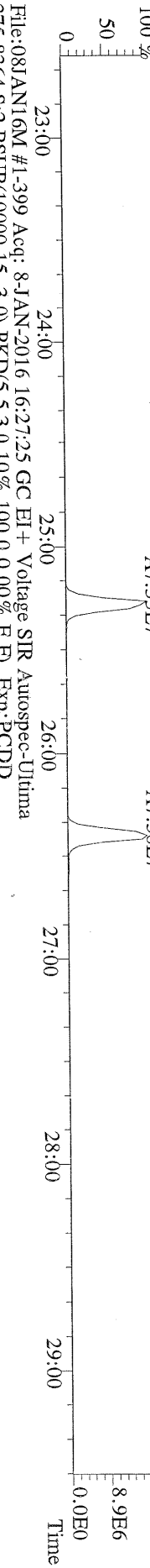
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 305.8987 S:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD
 Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory



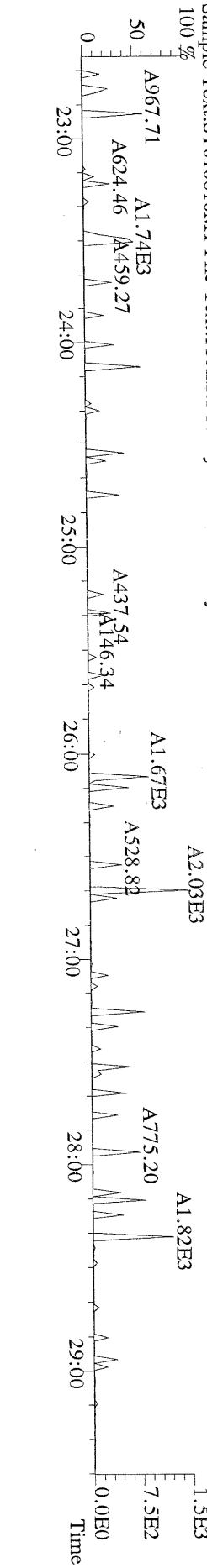
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 315.9419 S:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD
 Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory



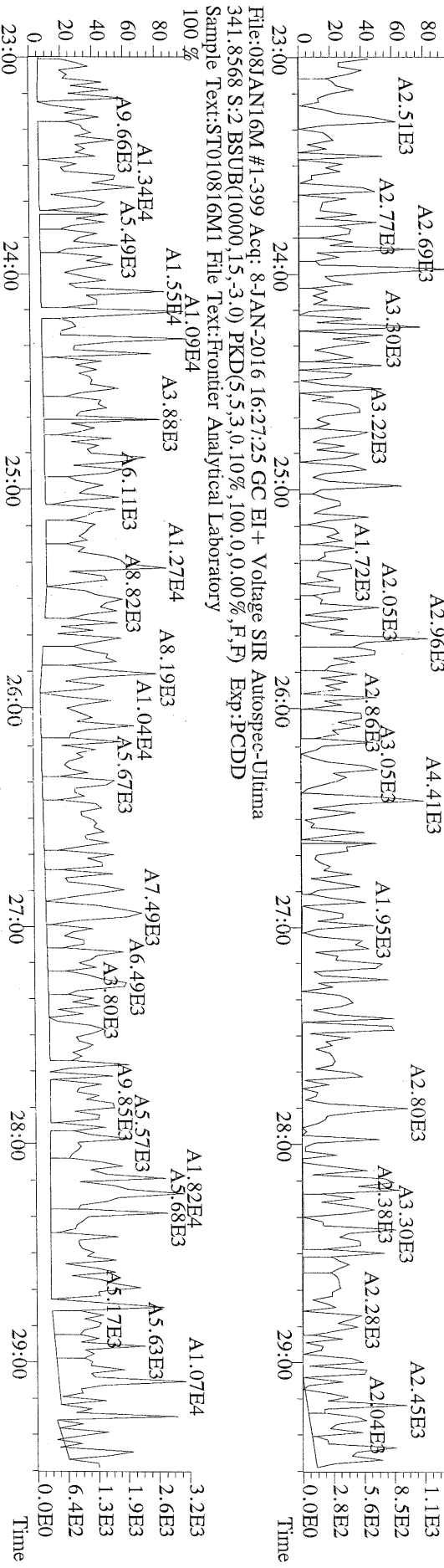
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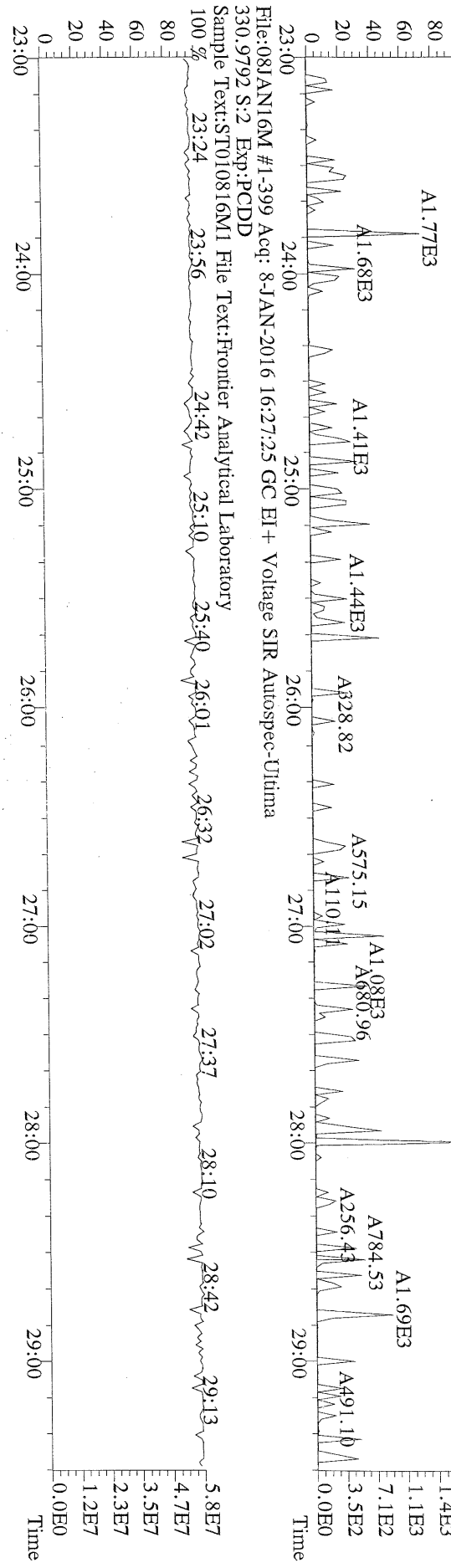
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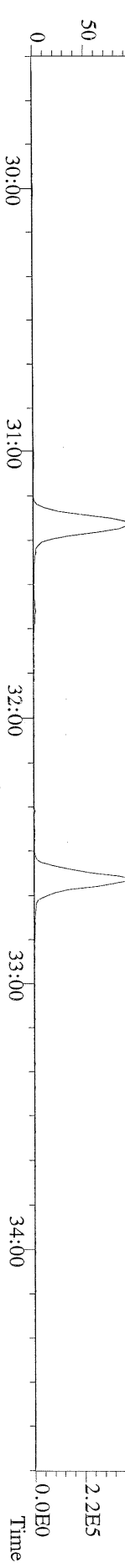
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 339.8597 S:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory



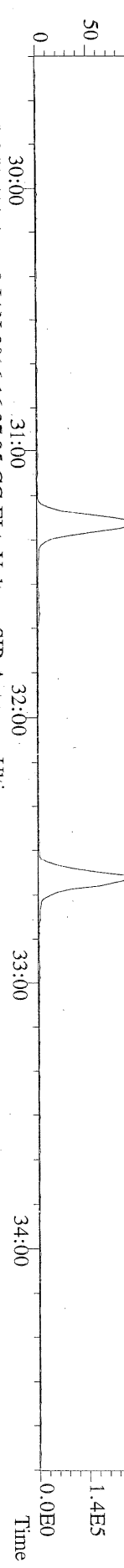
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 409.7974 S:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory



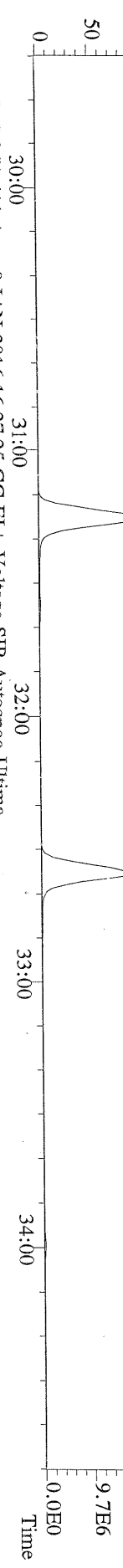
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 339.8597 S:2 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0,0,0,0) Exp:PCDD
 Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory



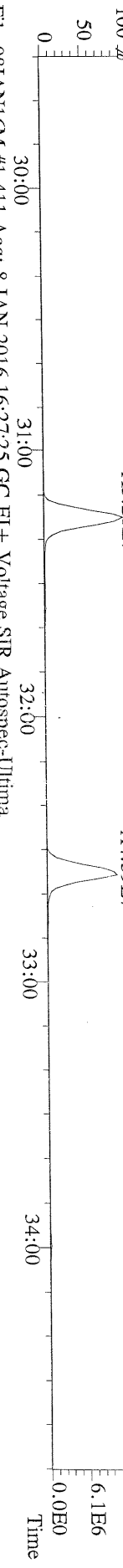
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 341.8568 S:2 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0,0,0) Exp:PCDD
 Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory



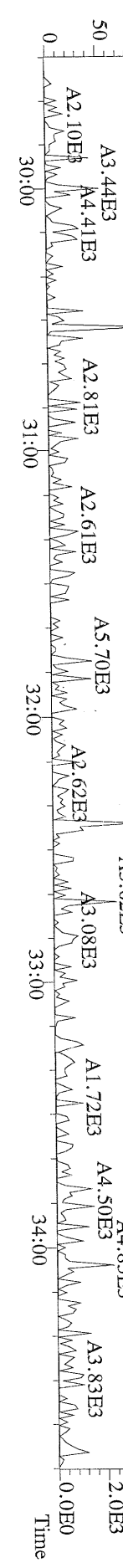
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 351.9000 S:2 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0,0,0) Exp:PCDD
 Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory



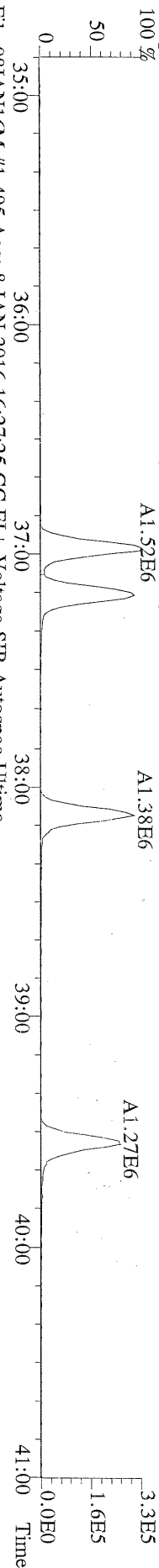
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 353.8970 S:2 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0,0,0) Exp:PCDD
 Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory



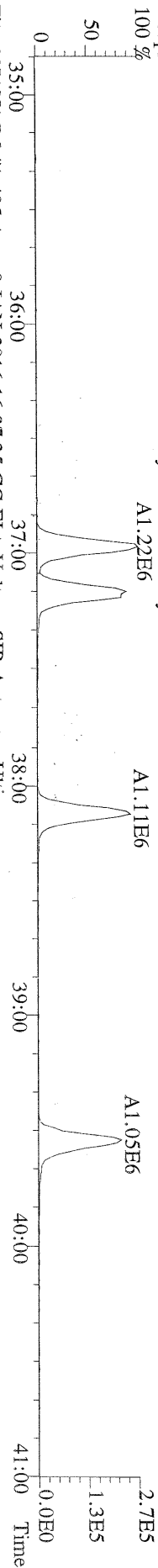
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 409.7974 S:2 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0,0,0) Exp:PCDD
 Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory



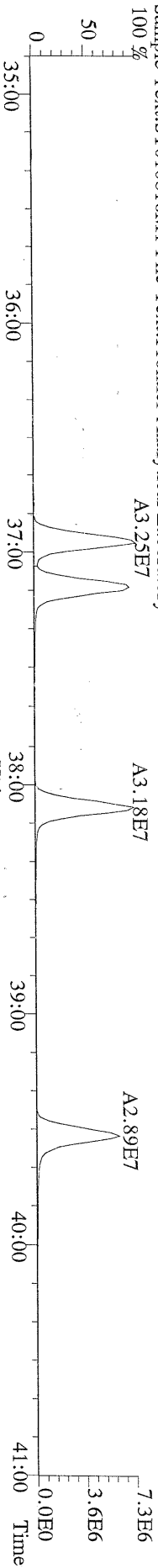
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 373.8207 S:2 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,100,0,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory
 100 %



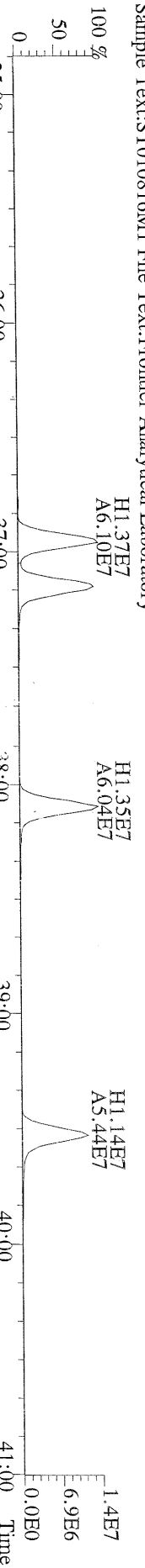
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 375.8178 S:2 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,100,0,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory
 100 %



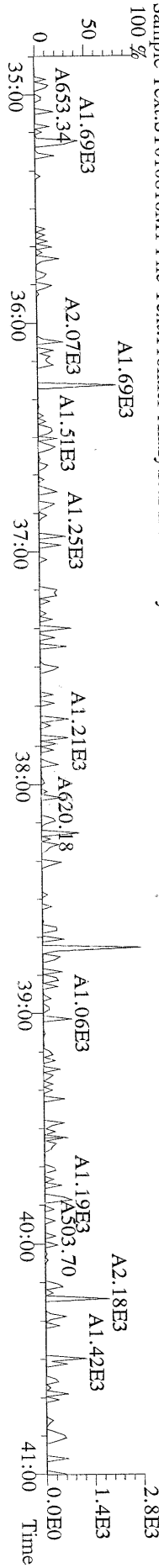
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 383.8639 S:2 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,100,0,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory
 100 %



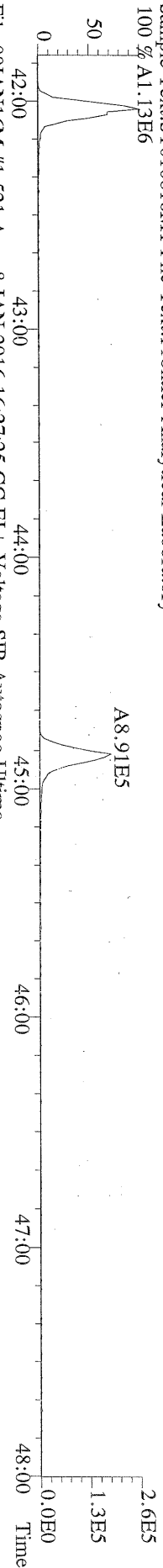
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 385.8610 S:2 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,100,0,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory
 100 %



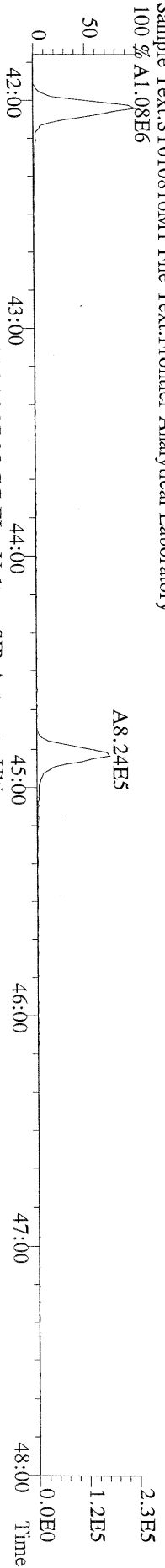
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 445.7555 S:2 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,100,0,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory
 100 %



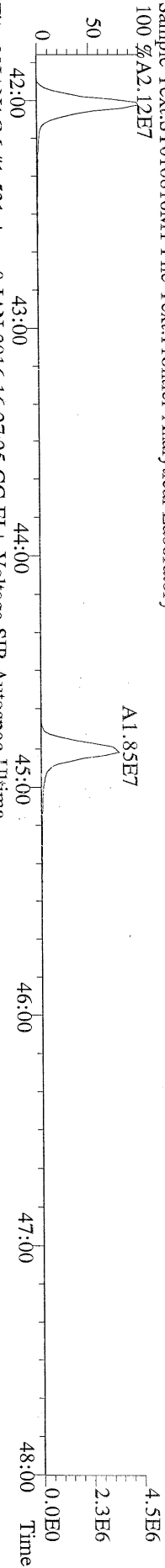
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407.7818 S:2 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory
100 % A1.13E6



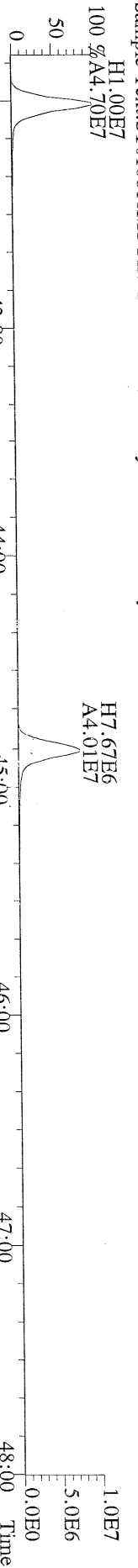
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409.7788 S:2 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory
100 % A1.08E6



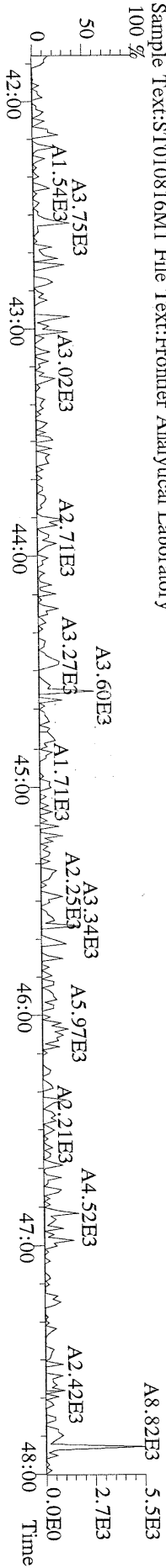
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417.8253 S:2 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory
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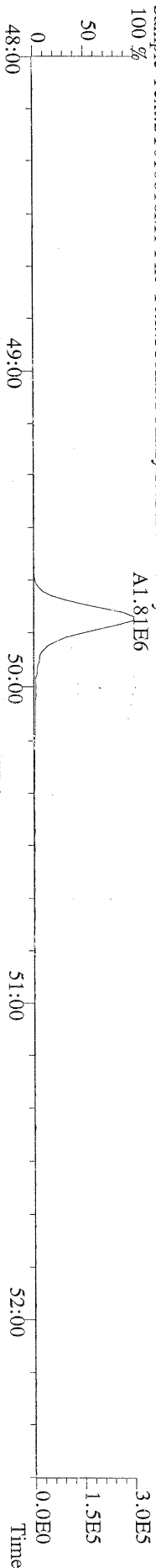
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419.8220 S:2 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory



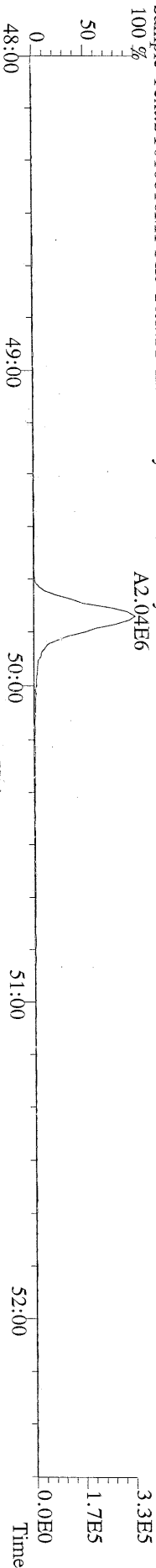
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479.7165 S:2 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory



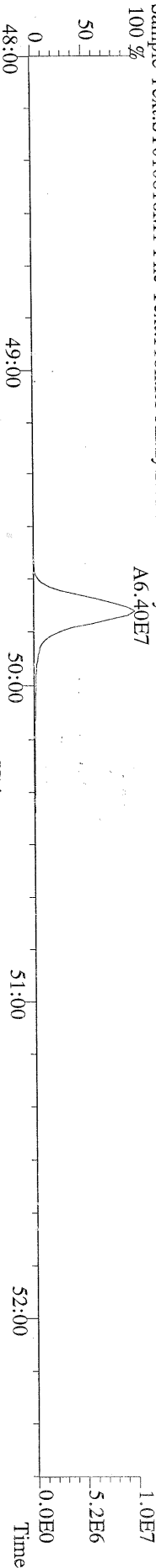
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441.7428 S:2 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory
100 %



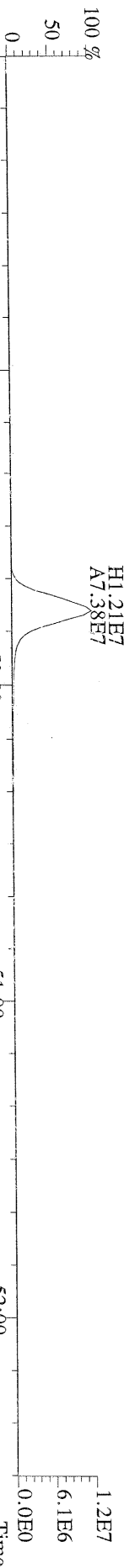
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443.7398 S:2 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory
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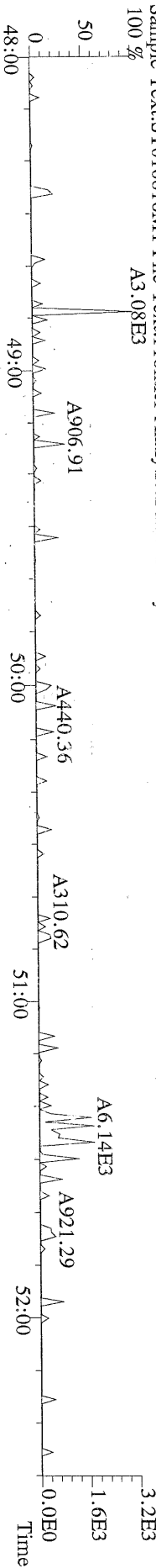
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453.7831 S:2 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory
100 %



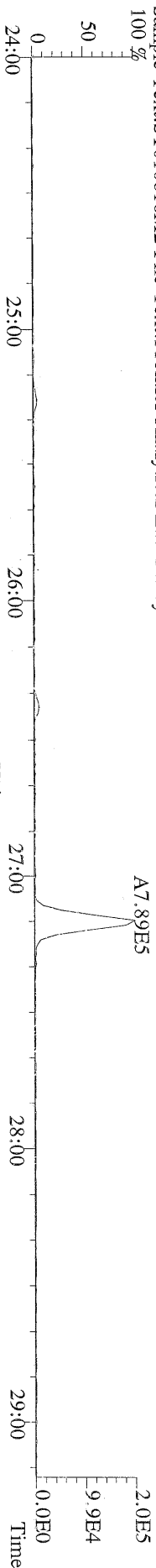
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Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory



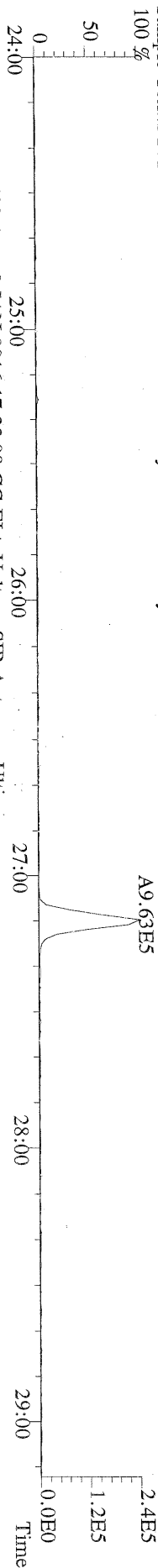
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513.6775 S:2 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M1 File Text:Frontier Analytical Laboratory
100 %



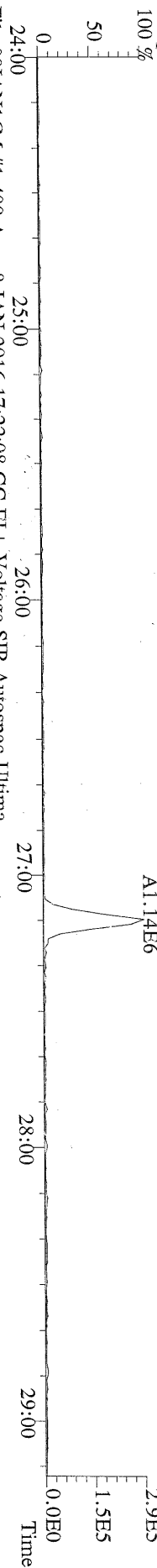
File:08JAN16M #1-400 Acq: 8-JAN-2016 17:22:08 GC EI + Voltage SIR Autospec-Ultima
319.8965 S:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M2 File Text:Frontier Analytical Laboratory
100 %



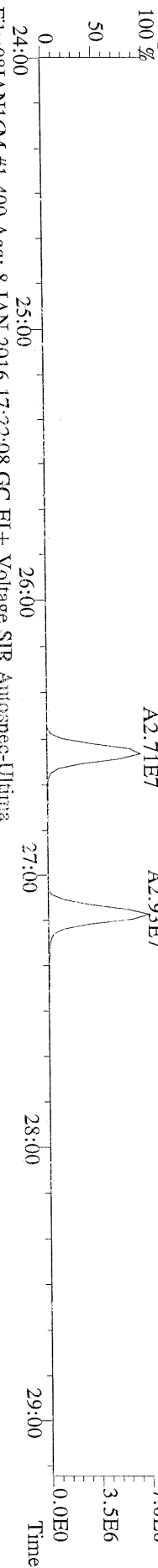
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321.8936 S:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M2 File Text:Frontier Analytical Laboratory
100 %



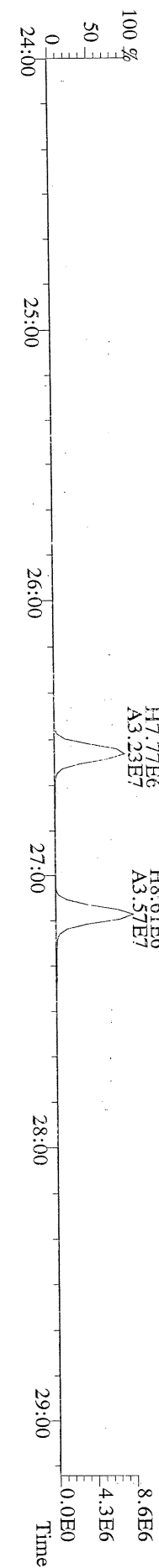
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327.8847 S:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M2 File Text:Frontier Analytical Laboratory
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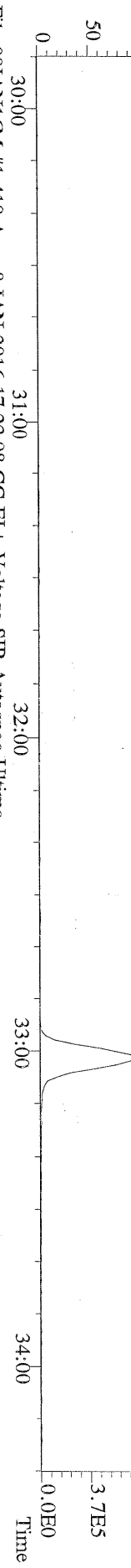
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331.9368 S:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M2 File Text:Frontier Analytical Laboratory
100 %



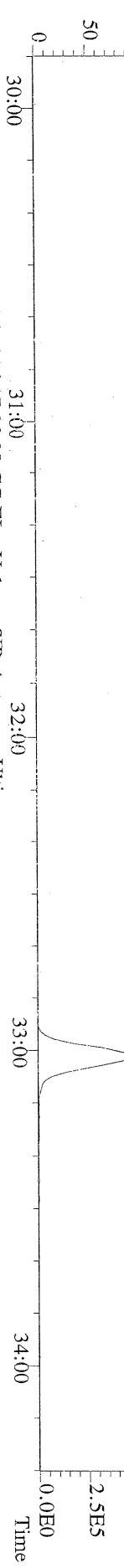
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333.9339 S:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M2 File Text:Frontier Analytical Laboratory



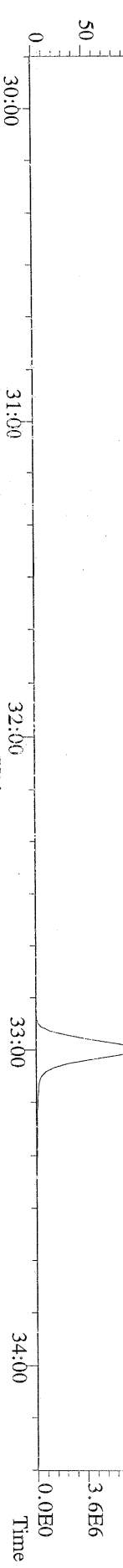
File:08JAN16M #1-410 Acq: 8-JAN-2016 17:22:08 GC EI+ Voltage SIR Autospec-Ultima
355.8546 S:3 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0,0,0,0) Exp:PCDD
Sample Text:ST010816M2 File Text:Frontier Analytical Laboratory
100 %



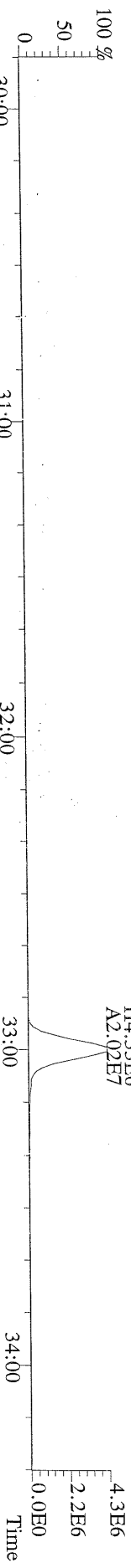
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Sample Text:ST010816M2 File Text:Frontier Analytical Laboratory
100 %



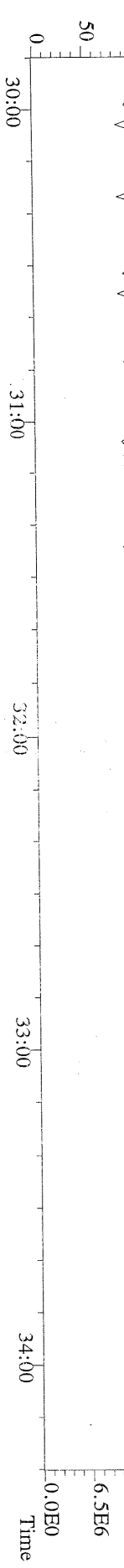
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367.8949 S:3 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0,0,0) Exp:PCDD
Sample Text:ST010816M2 File Text:Frontier Analytical Laboratory
100 %



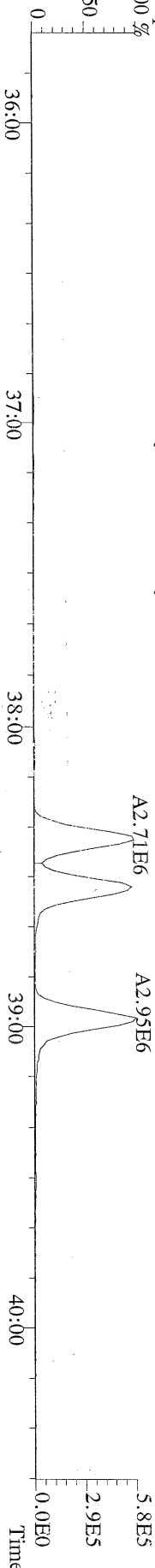
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369.8919 S:3 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0,0,0) Exp:PCDD
Sample Text:ST010816M2 File Text:Frontier Analytical Laboratory



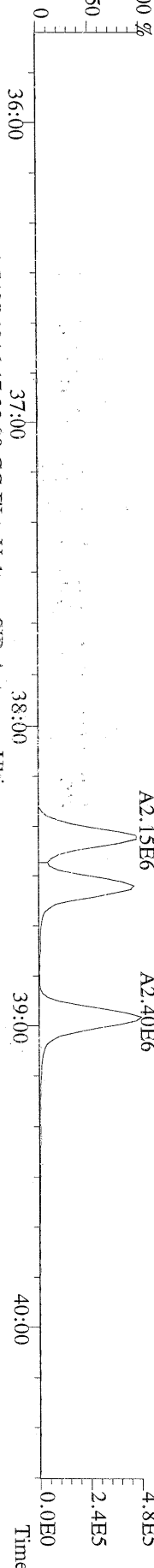
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366.9792 S:3 F:2 Exp:PCDD
Sample Text:ST010816M2 File Text:Frontier Analytical Laboratory



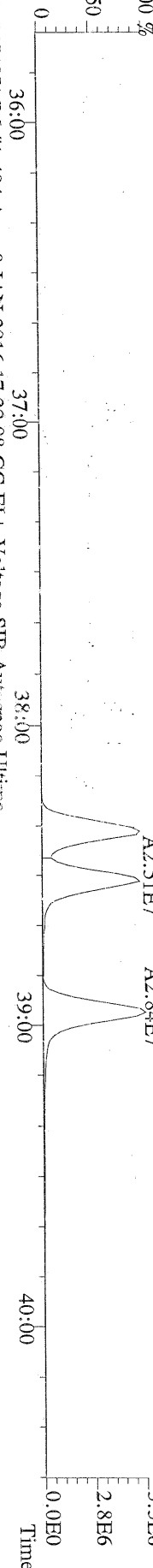
File:08JAN16M #1-494 Acq: 8-JAN-2016 17:22:08 GC EI + Voltage SIR Autospec-Ultima
389.8156 S.3 F.3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M2 File Text:Frontier Analytical Laboratory
100 %



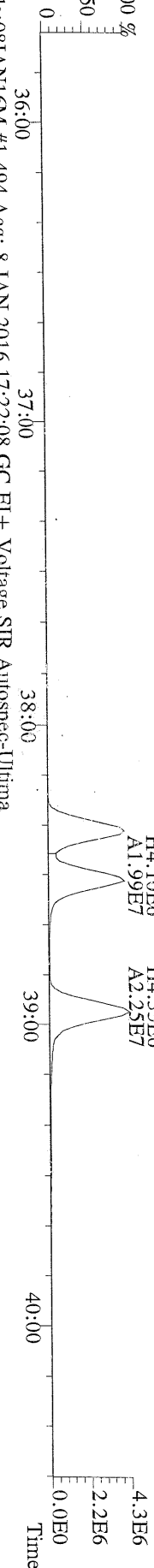
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391.8127 S.3 F.3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M2 File Text:Frontier Analytical Laboratory
100 %



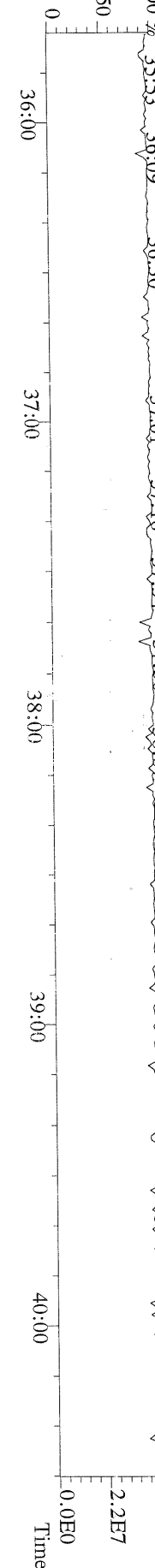
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401.8559 S.3 F.3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M2 File Text:Frontier Analytical Laboratory
100 %



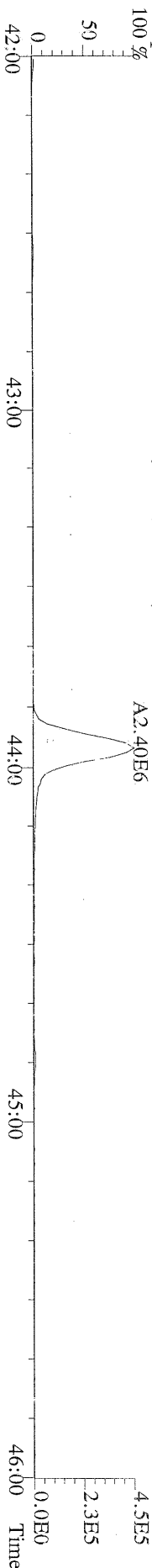
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403.8530 S.3 F.3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
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100 %



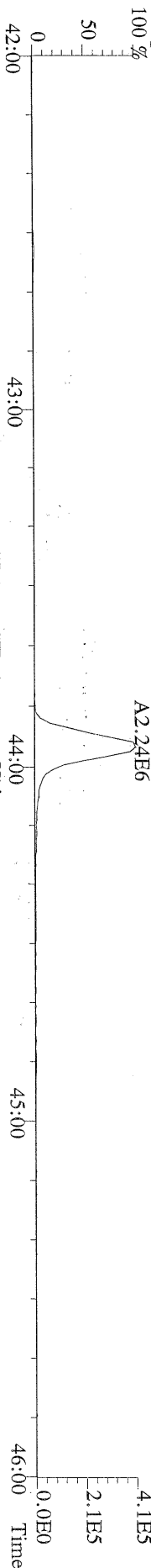
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380.9760 S.3 F.3 Exp:PCDD
Sample Text:ST010816M2 File Text:Frontier Analytical Laboratory
100 %



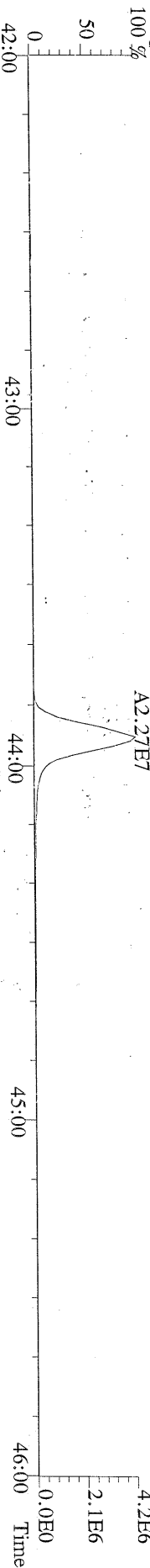
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423.7767 S:3 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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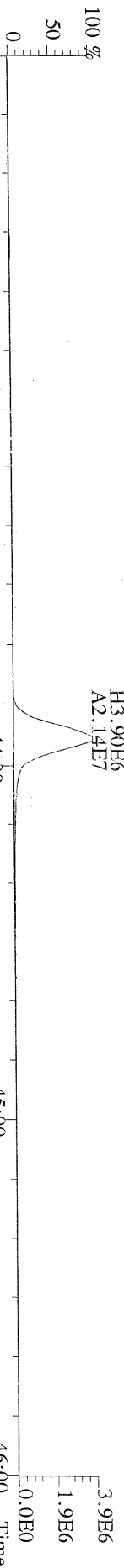
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100 %



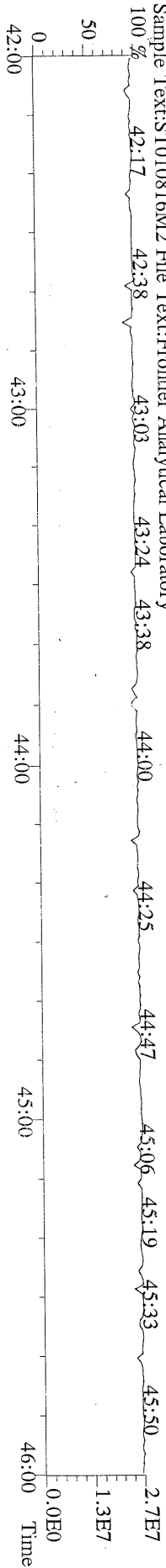
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100 %



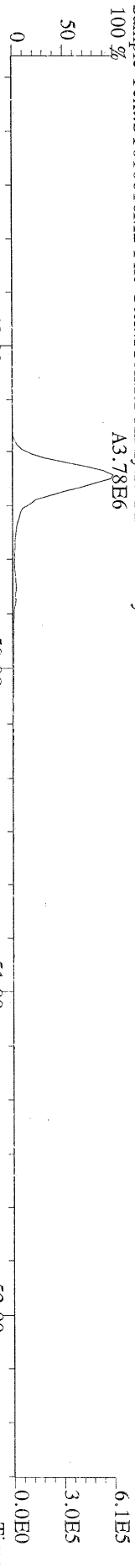
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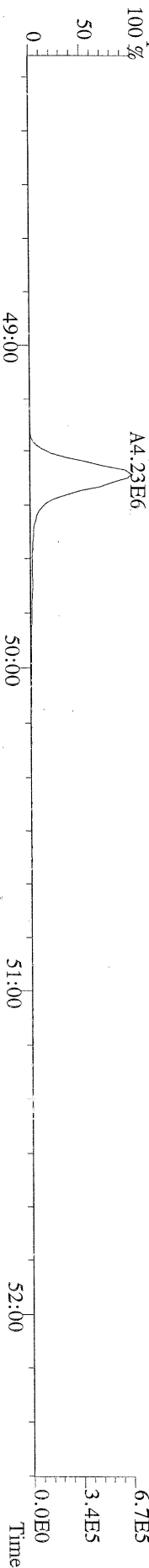
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100 %



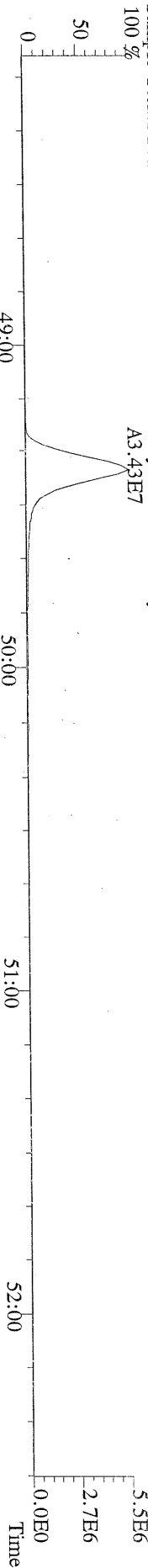
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Sample Text:ST010816M2 File Text:Frontier Analytical Laboratory



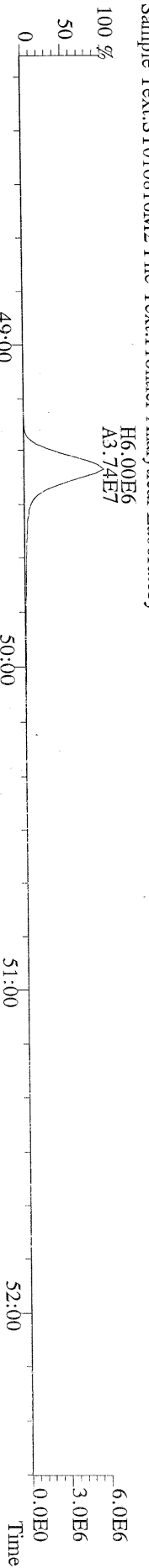
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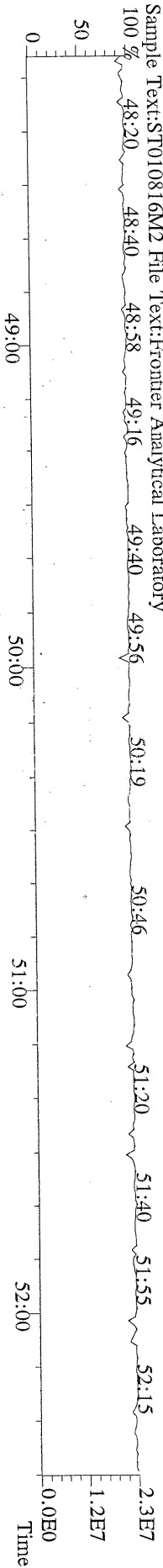
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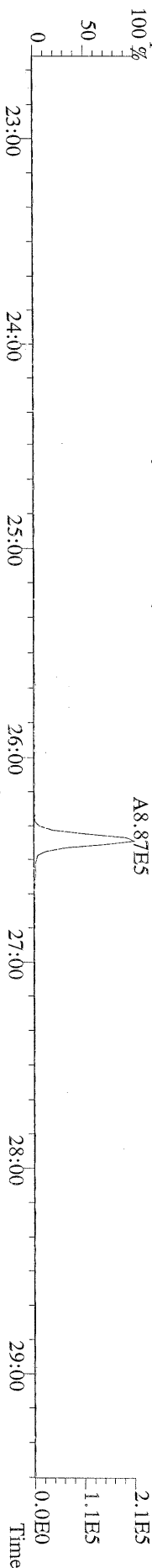
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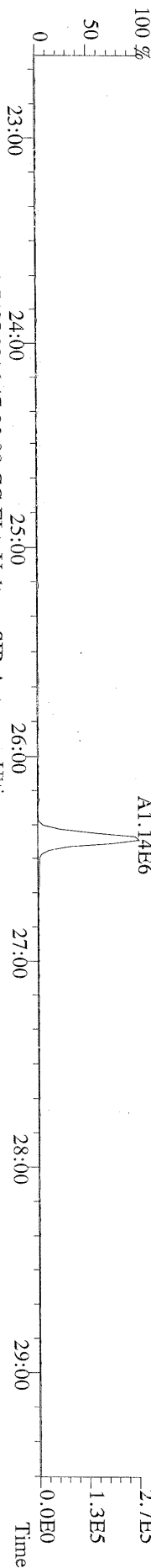
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Sample Text:ST010816M2 File Text:Frontier Analytical Laboratory



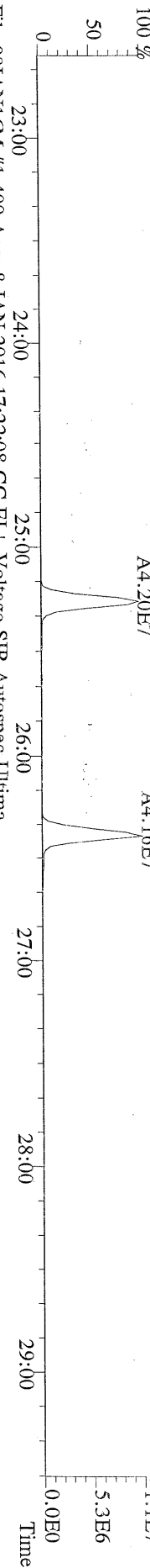
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303.9016 S.3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M2 File Text:Frontier Analytical Laboratory



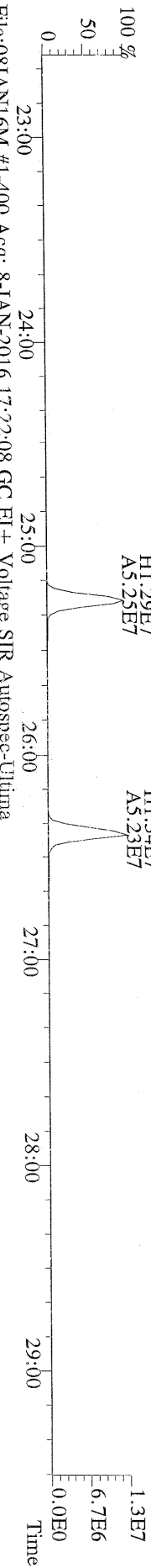
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Sample Text:ST010816M2 File Text:Frontier Analytical Laboratory



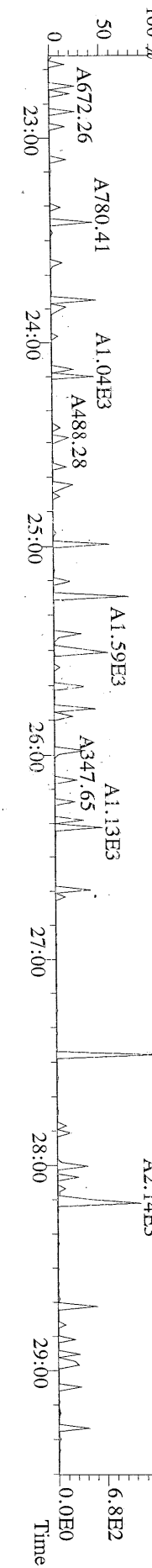
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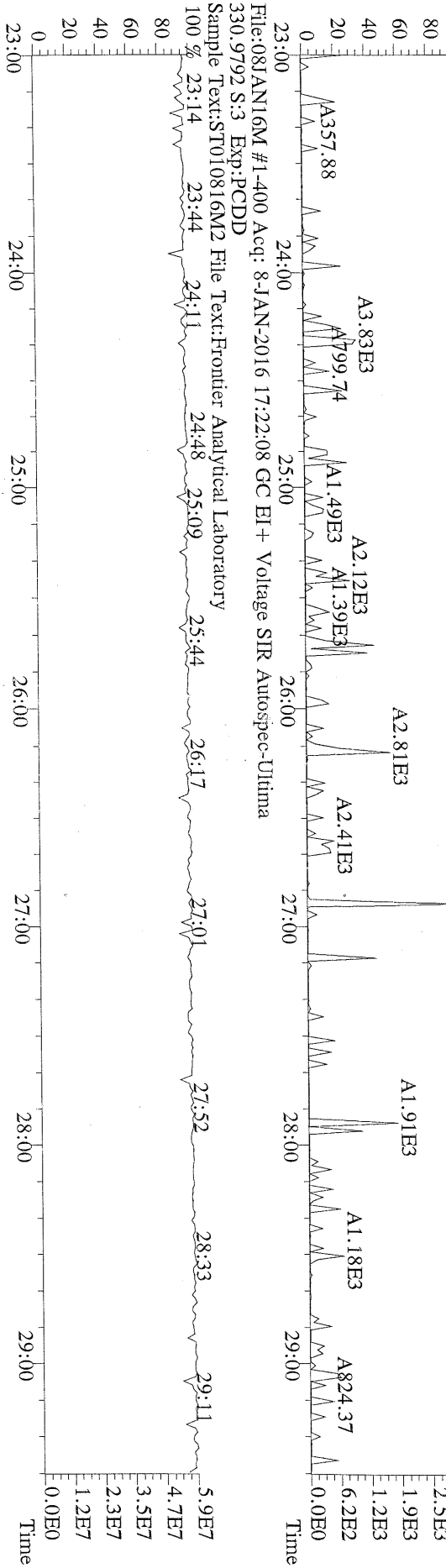
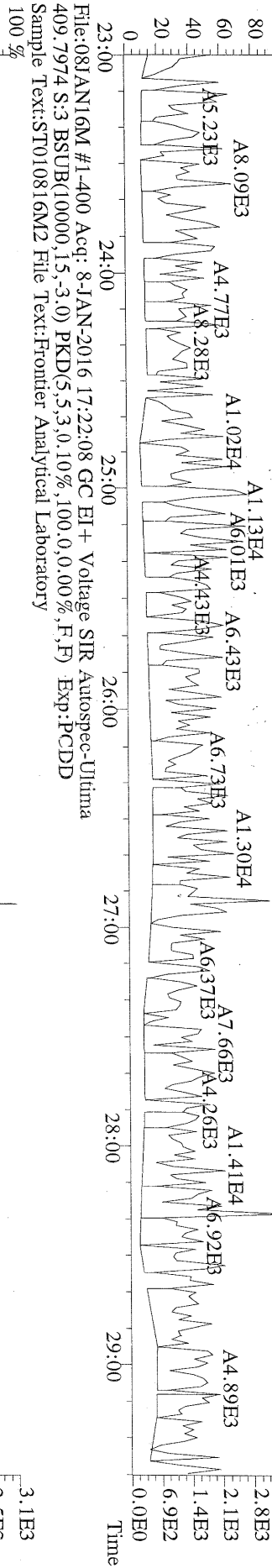
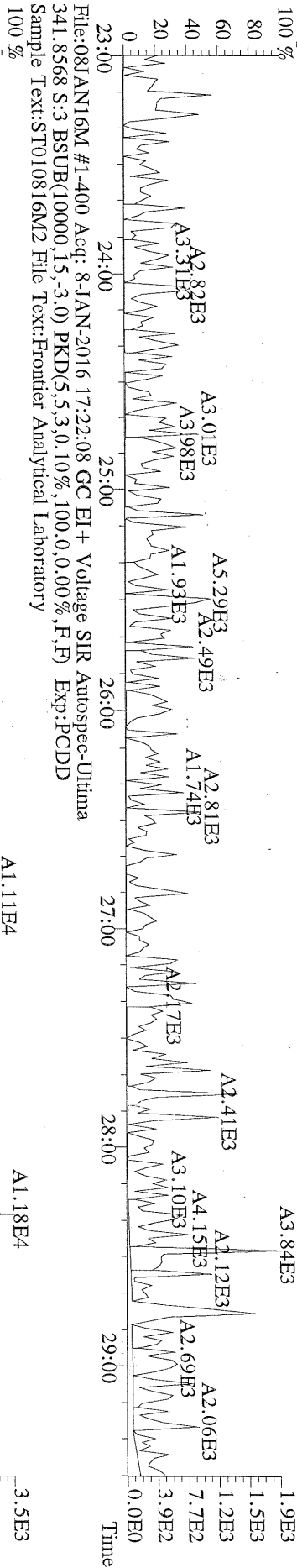
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317.9389 S.3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0,0.00%,F,F) Exp:PCDD
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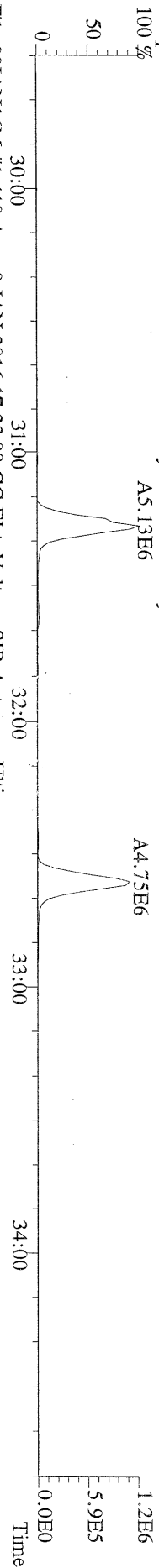
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375.8364 S.3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0,0.00%,F,F) Exp:PCDD
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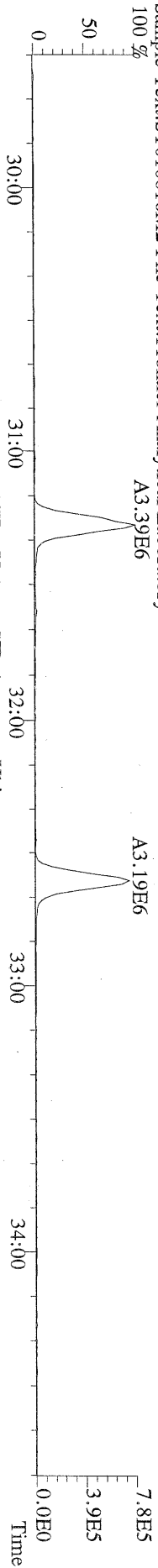
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339.8568 S:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M2 File Text:Frontier Analytical Laboratory



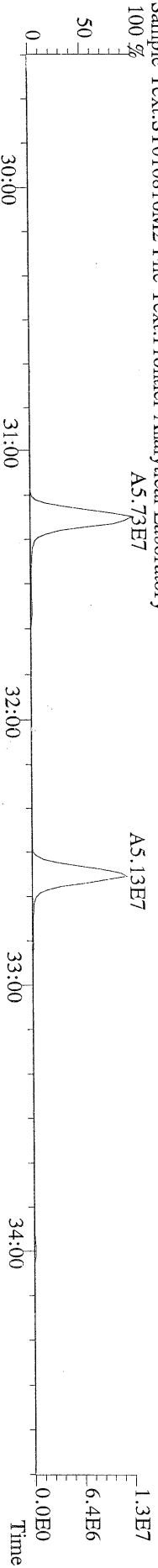
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339.8597 S:3 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010816M2 File Text:Frontier Analytical Laboratory



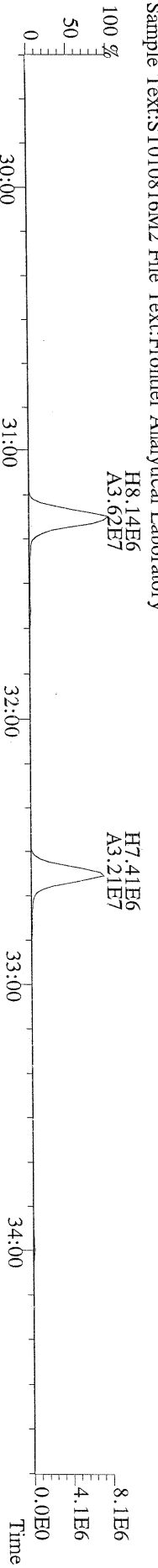
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341.8568 S:3 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010816M2 File Text:Frontier Analytical Laboratory



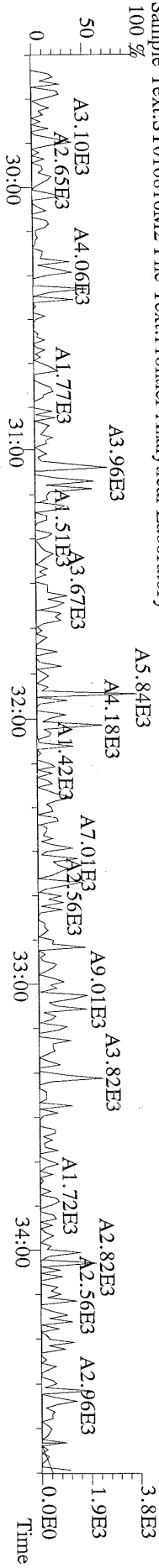
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Sample Text:ST010816M2 File Text:Frontier Analytical Laboratory



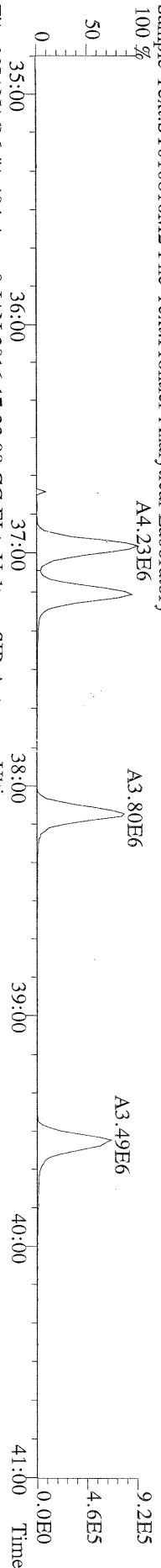
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353.8970 S:3 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010816M2 File Text:Frontier Analytical Laboratory



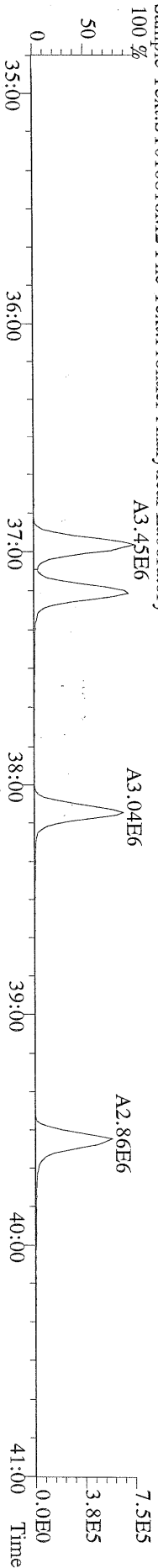
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Sample Text:ST010816M2 File Text:Frontier Analytical Laboratory



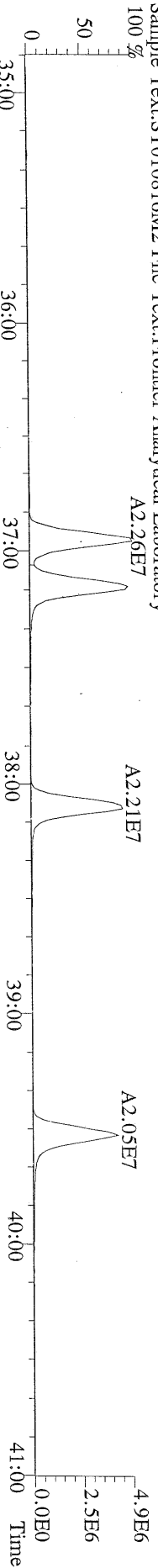
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373.8207 S:3 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M2 File Text:Fronter Analytical Laboratory



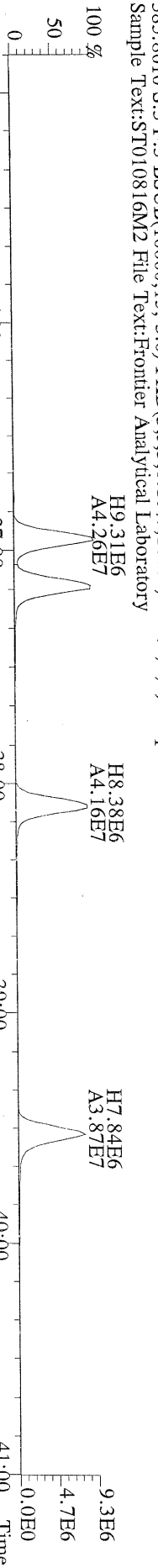
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375.8178 S:3 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
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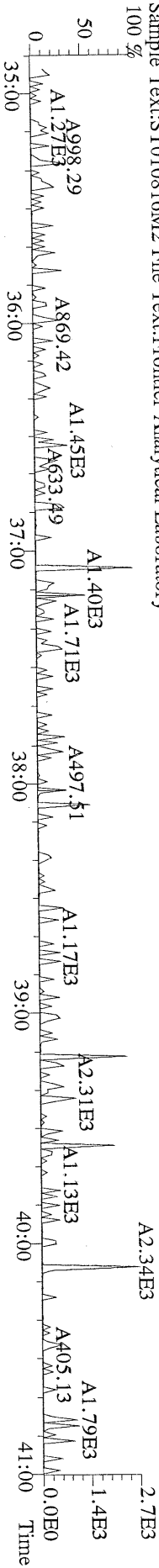
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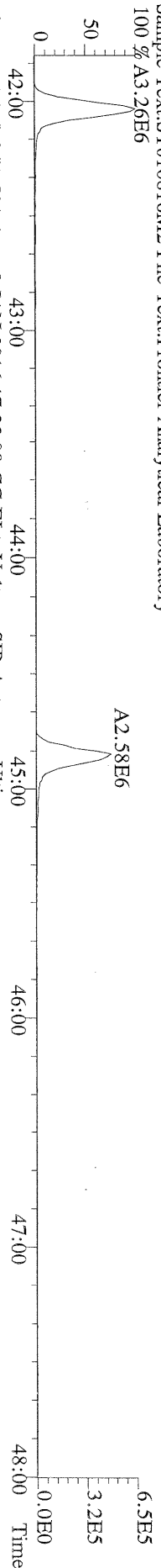
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Sample Text:ST010816M2 File Text:Fronter Analytical Laboratory



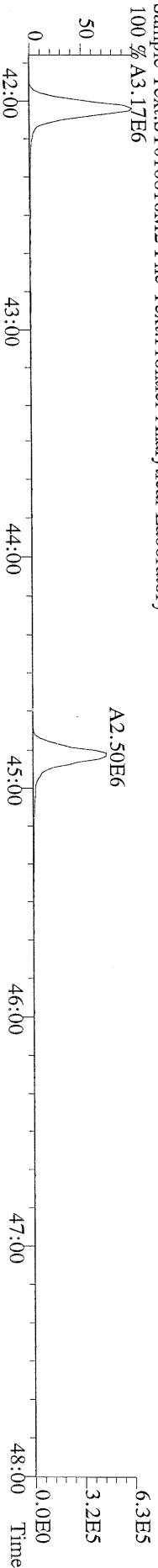
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Sample Text:ST010816M2 File Text:Fronter Analytical Laboratory



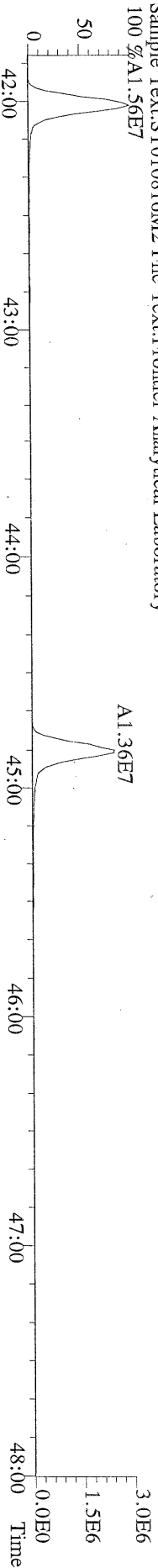
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407.7818 S:3 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
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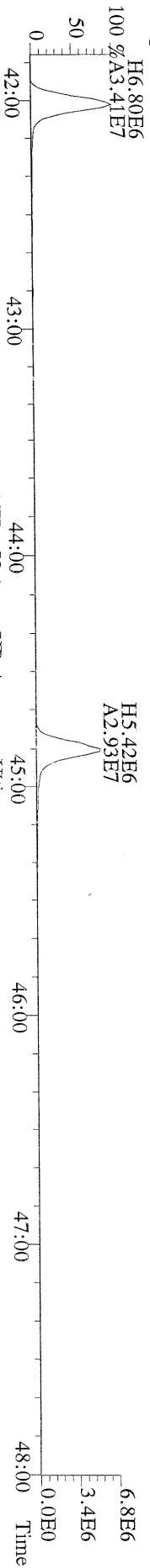
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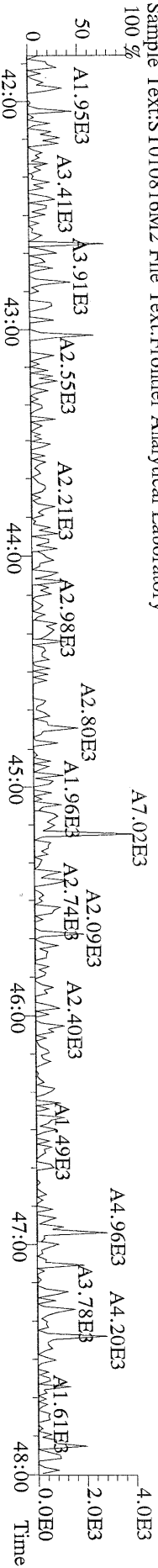
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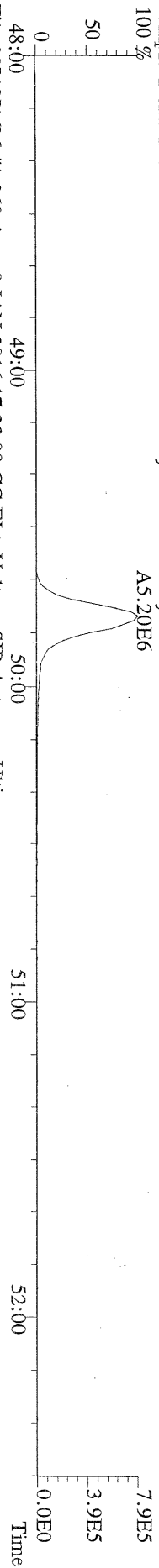
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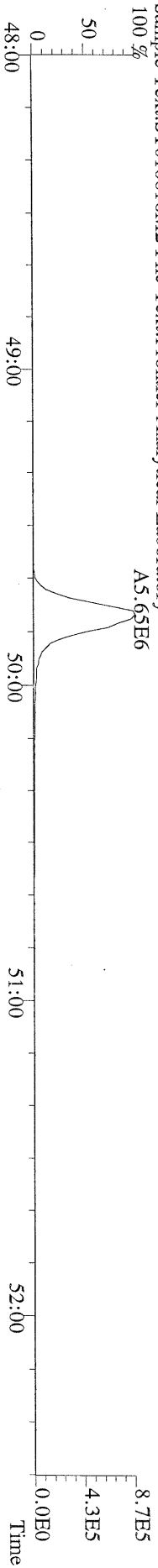
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Sample Text:ST010816M2 File Text:Frontier Analytical Laboratory



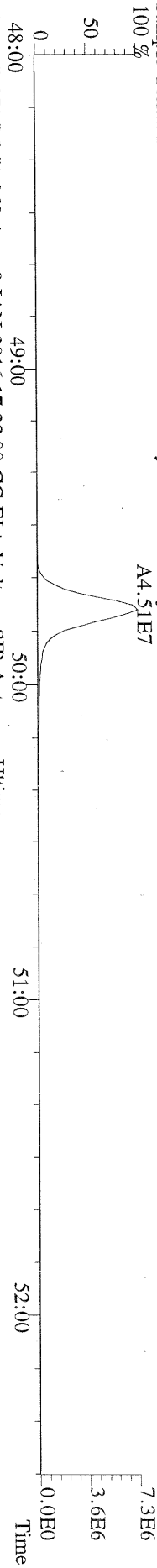
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441.7428 S:3 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,100,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M2 File Text:Frontier Analytical Laboratory
100 %



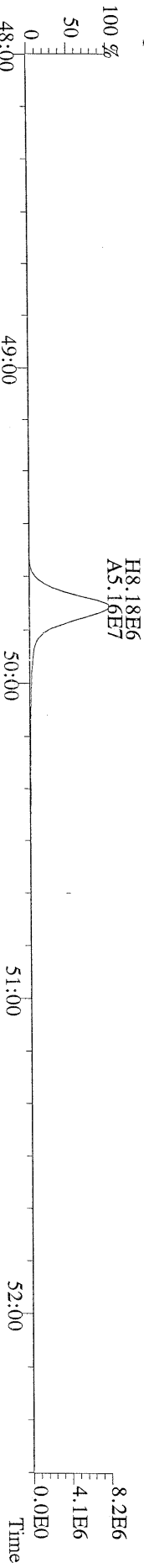
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443.7398 S:3 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,100,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M2 File Text:Frontier Analytical Laboratory
100 %



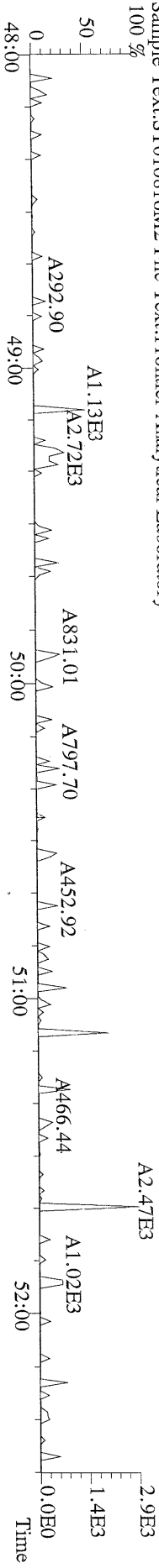
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453.7831 S:3 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,100,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M2 File Text:Frontier Analytical Laboratory
100 %



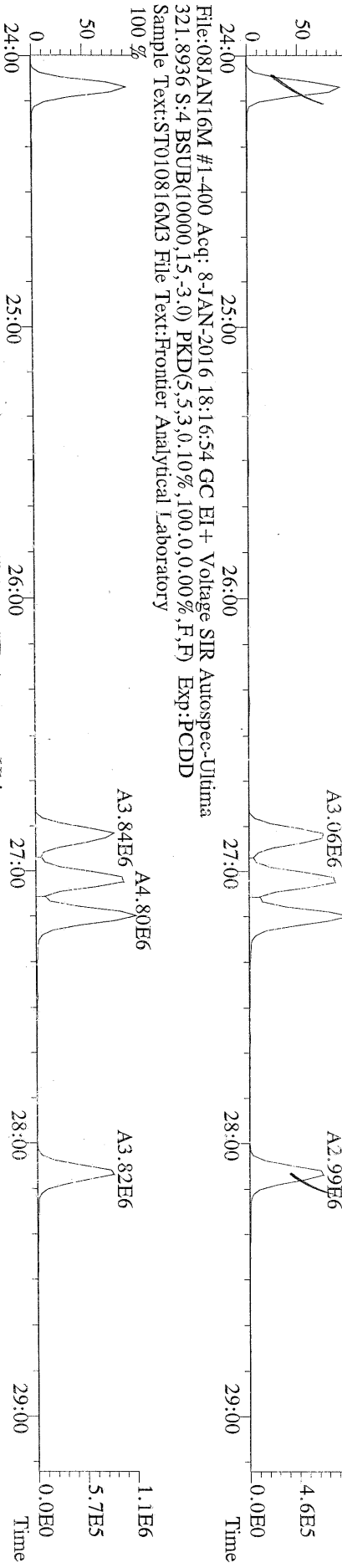
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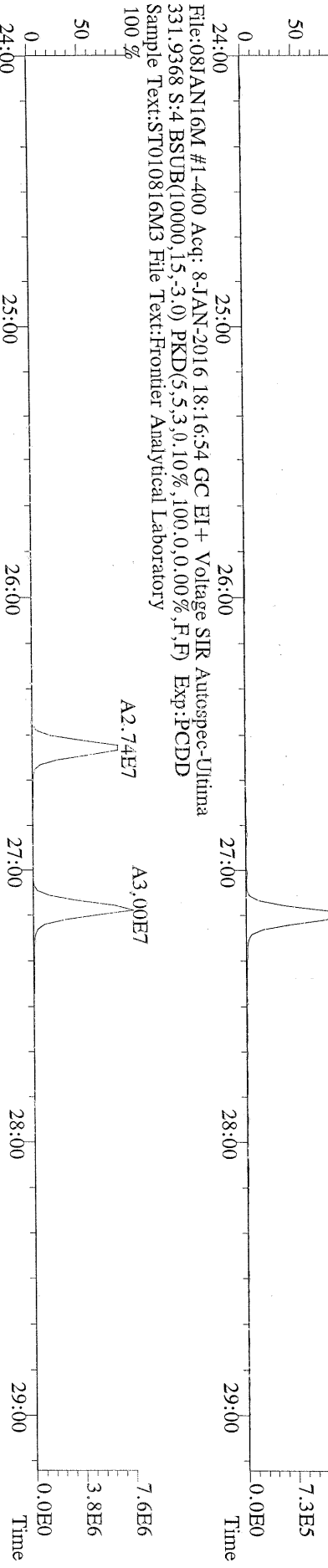
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513.6775 S:3 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,100,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M2 File Text:Frontier Analytical Laboratory
100 %



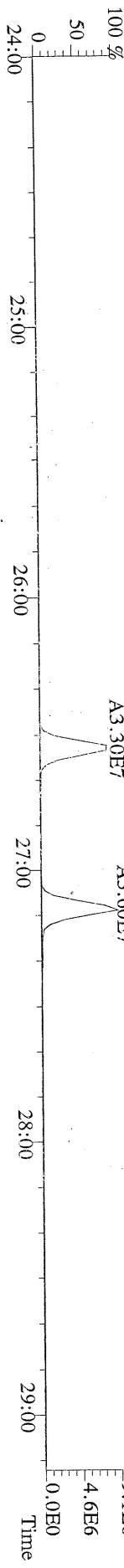
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319.8965 S:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010816M3 File Text:Fronter Analytical Laboratory
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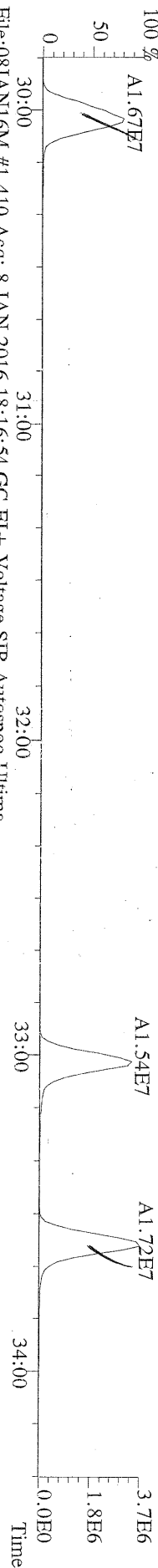
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327.8847 S:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010816M3 File Text:Fronter Analytical Laboratory
100 %



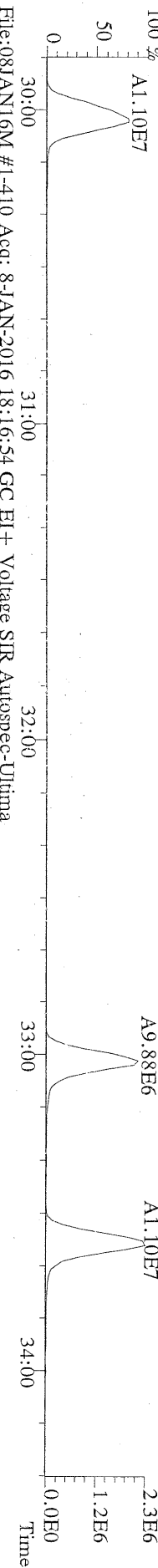
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333.9339 S:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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100 %



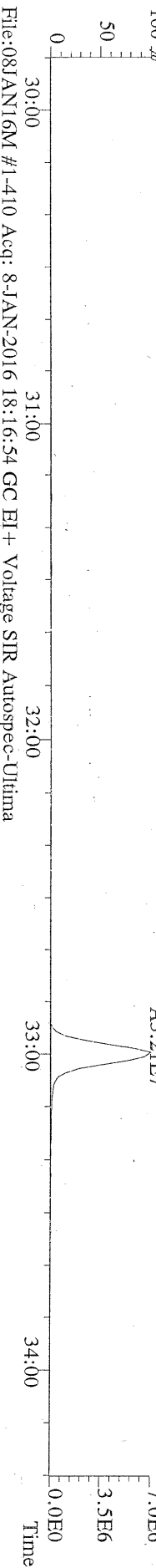
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355.8546 S:4 F:2 BSTUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M3 File Text:Frontier Analytical Laboratory



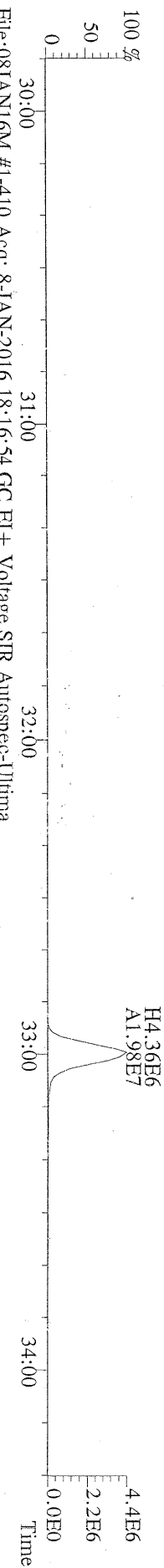
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357.8517 S:4 F:2 BSTUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M3 File Text:Frontier Analytical Laboratory



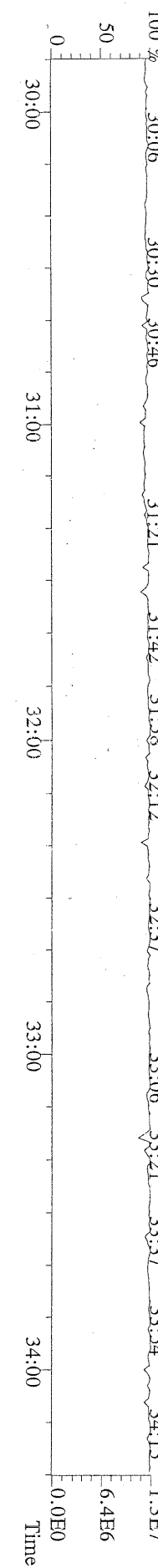
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367.8949 S:4 F:2 BSTUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M3 File Text:Frontier Analytical Laboratory



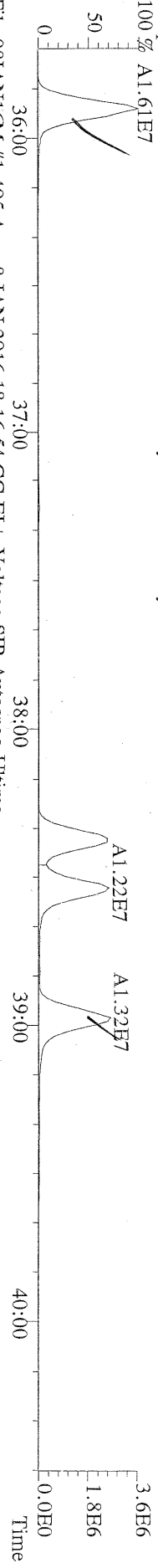
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369.8919 S:4 F:2 BSTUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0,0.00%,F,F) Exp:PCDD
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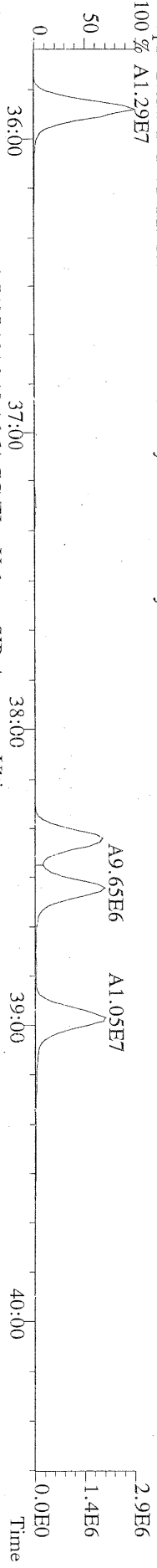
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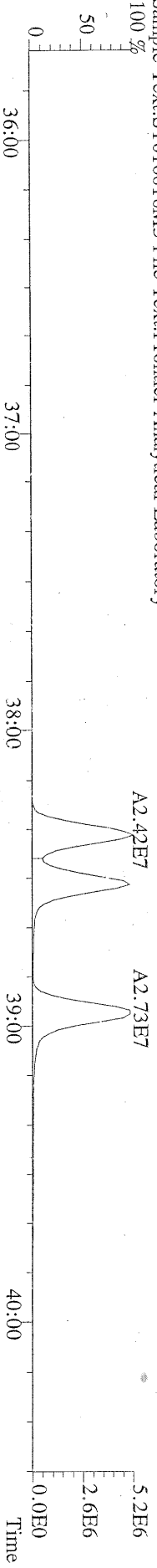
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389.8156 S:4 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M3 File Text:Frontier Analytical Laboratory
100% A1.61E7



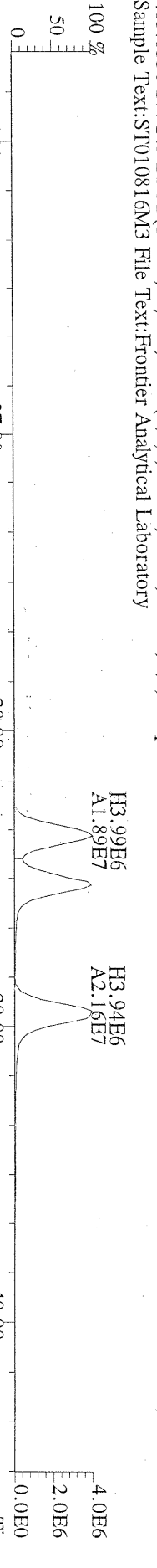
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Sample Text:ST010816M3 File Text:Frontier Analytical Laboratory
100% A1.29E7



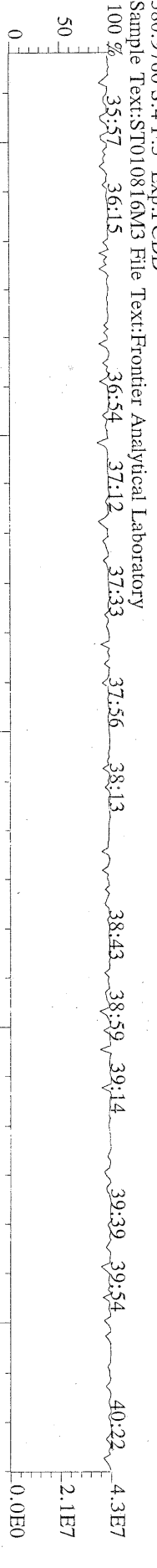
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Sample Text:ST010816M3 File Text:Frontier Analytical Laboratory
100%



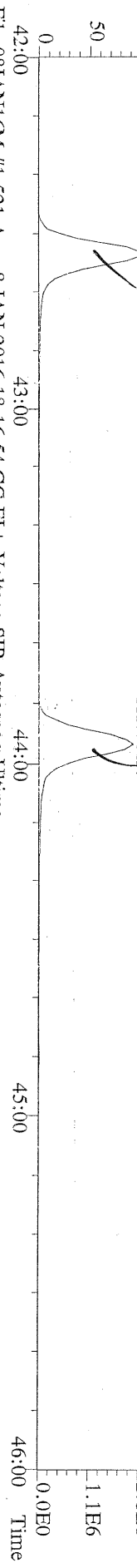
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403.8530 S:4 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
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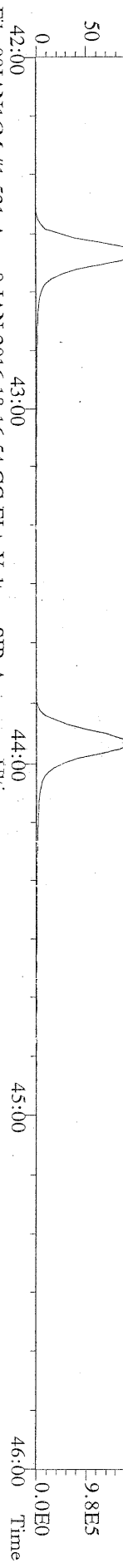
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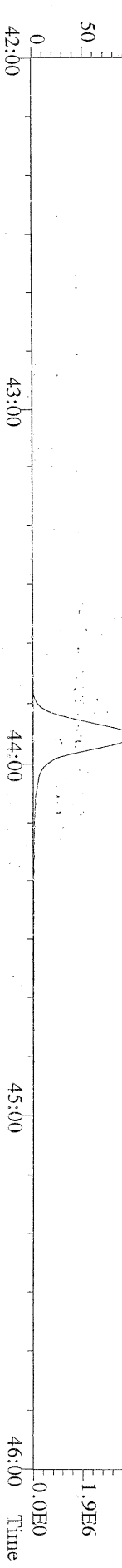
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423.7767 S:4 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M3 File Text:Frontier Analytical Laboratory



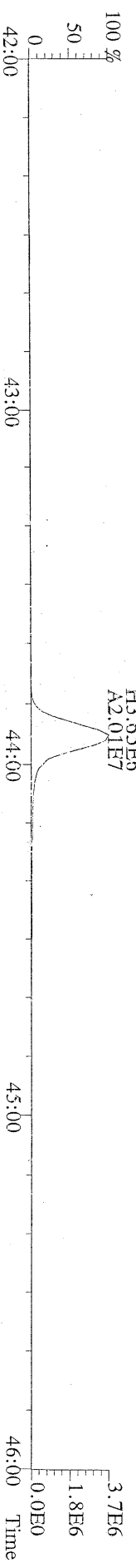
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425.7737 S:4 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M3 File Text:Frontier Analytical Laboratory



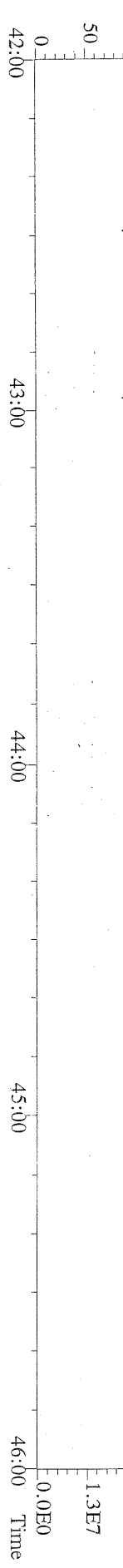
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435.8169 S:4 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M3 File Text:Frontier Analytical Laboratory



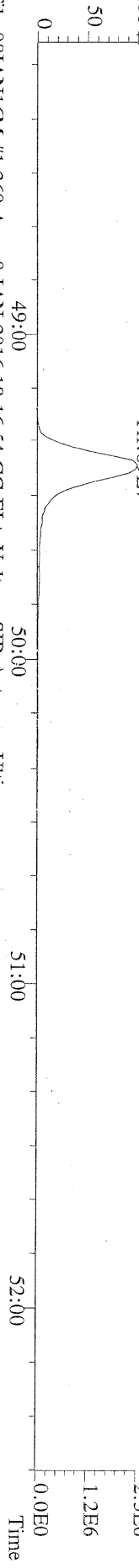
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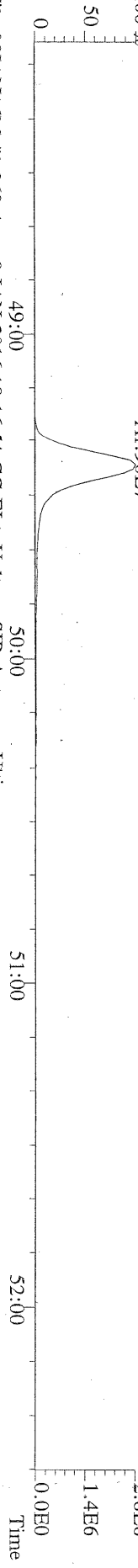
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430.9728 S:4 F:4 Exp:PCDD
Sample Text:ST010816M3 File Text:Frontier Analytical Laboratory



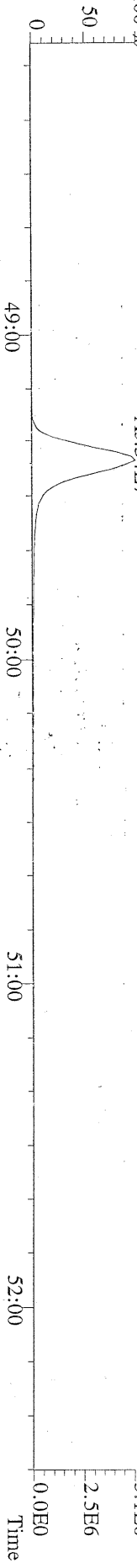
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457.7377 S:4 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M3 File Text:Frontier Analytical Laboratory
100 % A1.69E7



File:08JAN16M #1-360 Acq: 8-JAN-2016 18:16:54 GC EI+ Voltage SIR Autospec-Ultima
459.7348 S:4 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M3 File Text:Frontier Analytical Laboratory
100 % A1.90E7

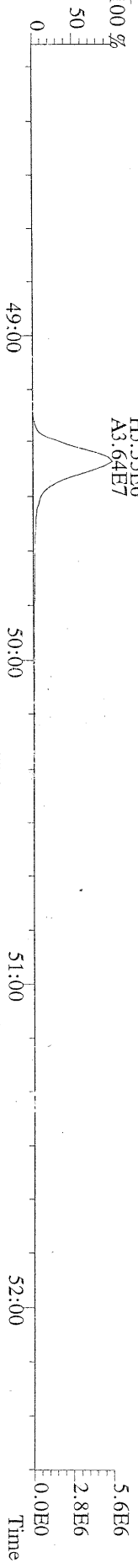


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100 % A3.34E7

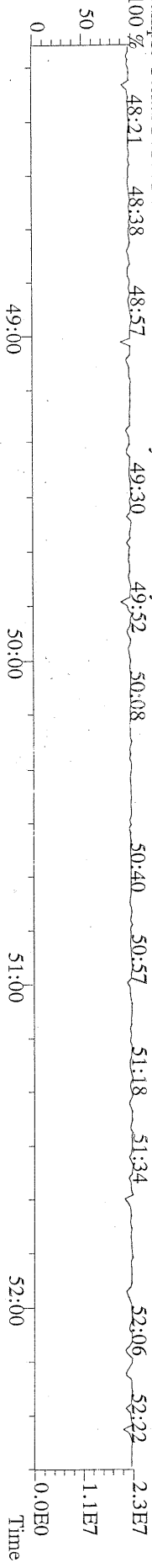


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471.7750 S:4 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
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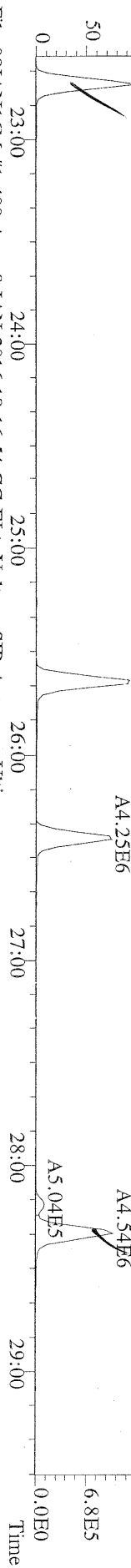
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A3.64E7



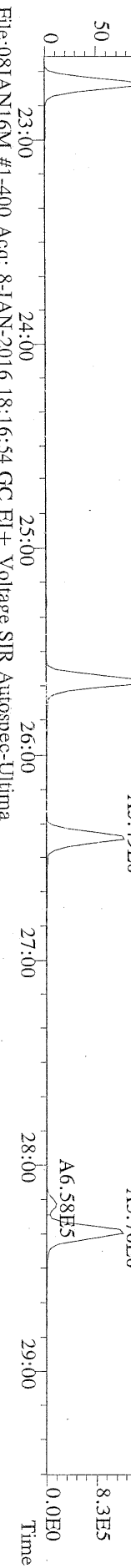
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454.9728 S:4 F:5 Exp:PCDD
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100 % 48:21 48:38 48:57 49:30 49:52 50:08 50:40 50:57 51:18 51:34 52:06 52:22



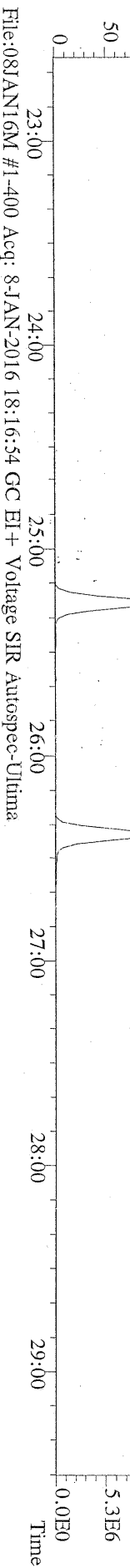
File:081JAN16M #1-400 Acq: 8-JAN-2016 18:16:34 GC EI+ Voltage SIR Autospec-Utima
303.9016 S:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010816M3 File Text:Frontier Analytical Laboratory
100 %A4.96E6



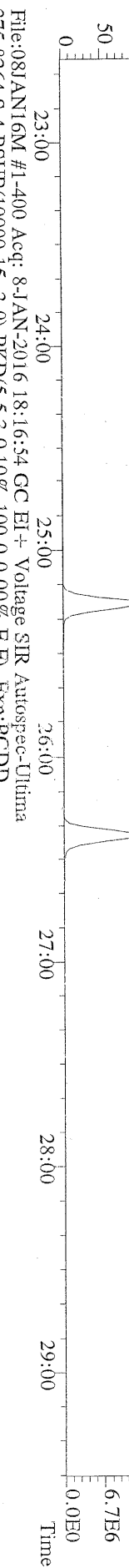
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305.8987 S:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010816M3 File Text:Frontier Analytical Laboratory
100 %A6.21E6



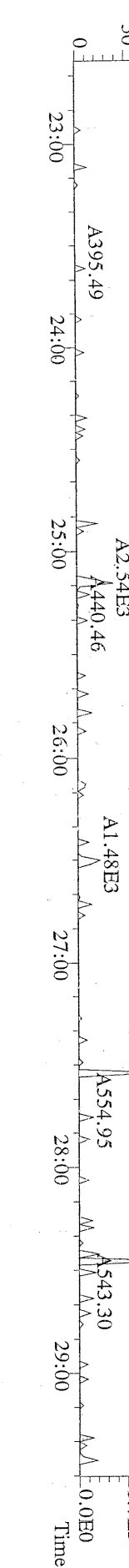
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315.9419 S:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010816M3 File Text:Frontier Analytical Laboratory
100 %



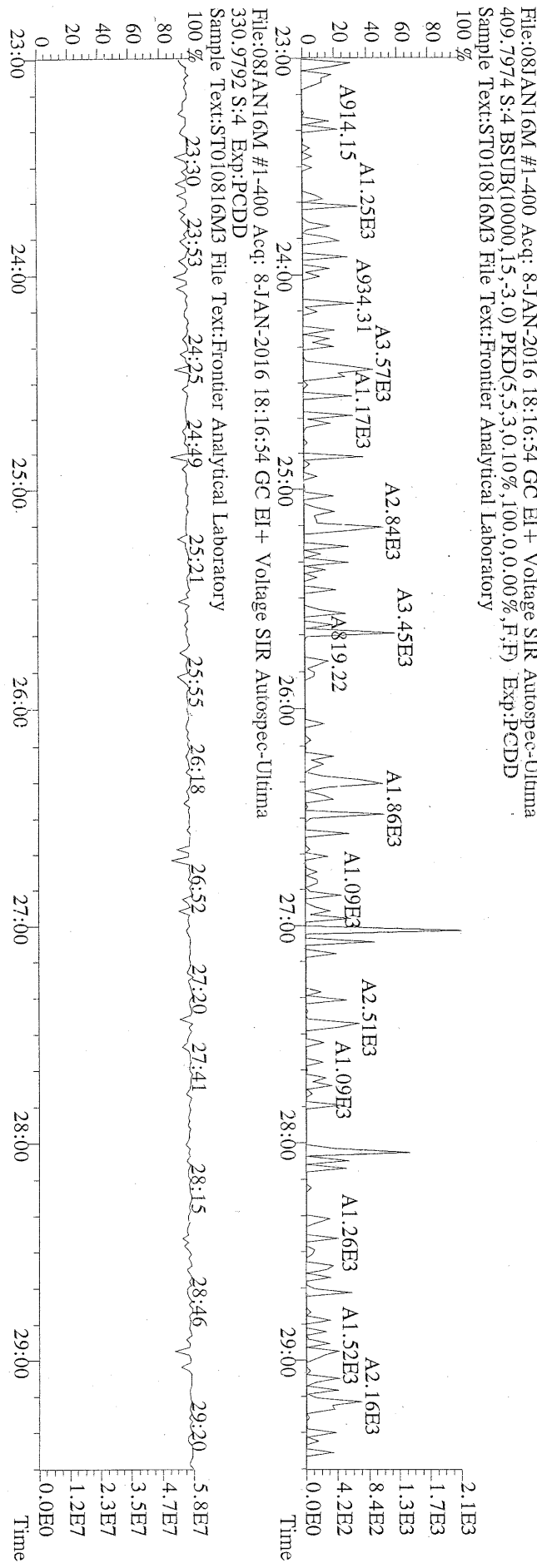
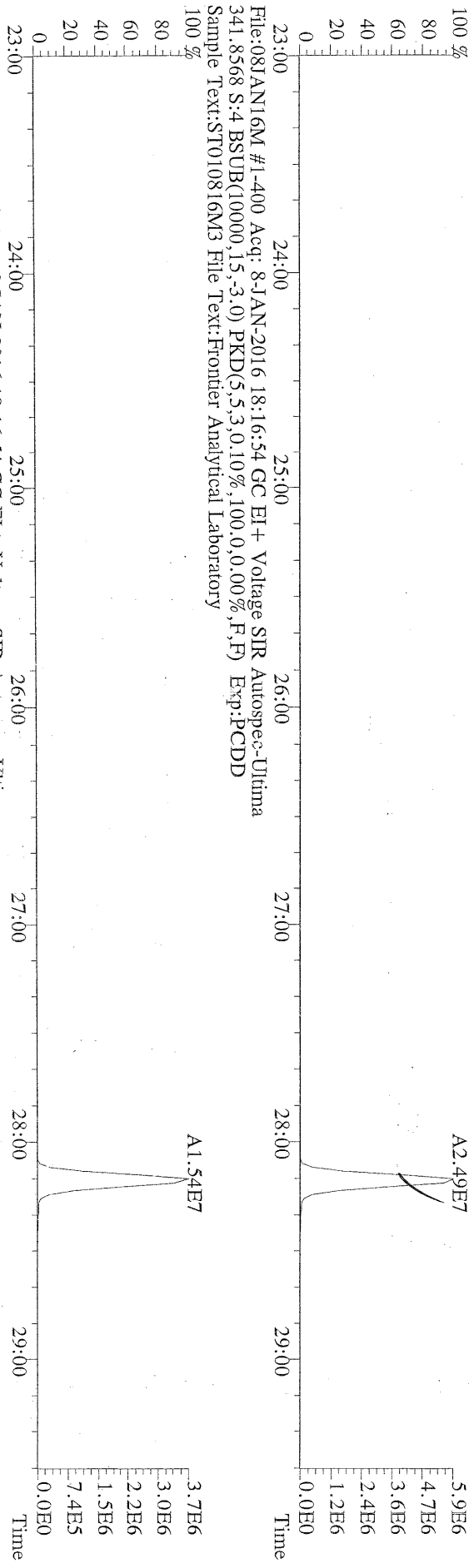
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Sample Text:ST010816M3 File Text:Frontier Analytical Laboratory
100 %



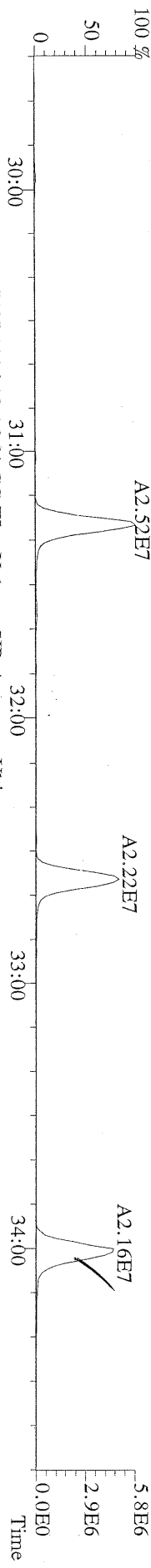
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375.8364 S:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010816M3 File Text:Frontier Analytical Laboratory
100 %



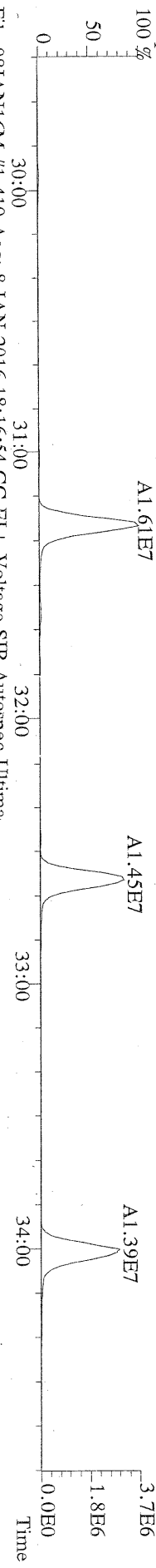
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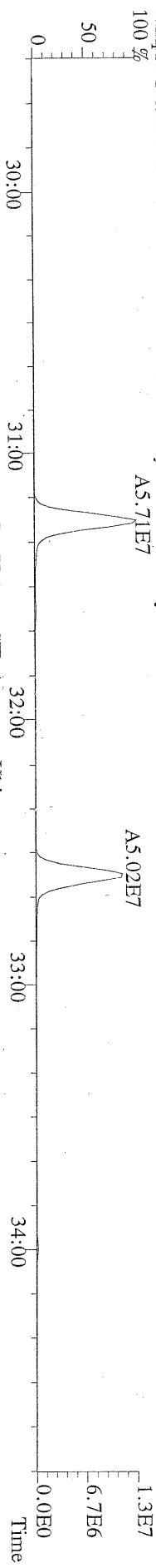
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 339.8597 S:4 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
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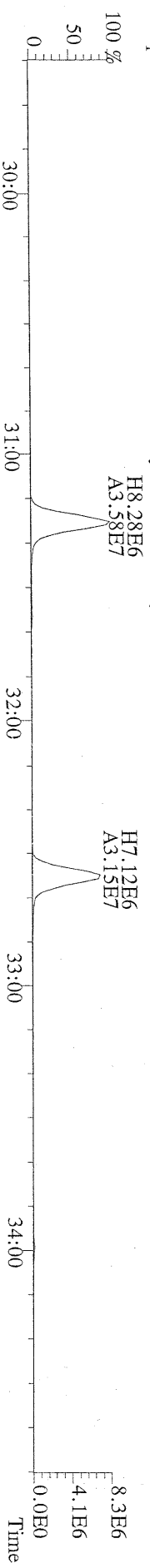
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 341.8568 S:4 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
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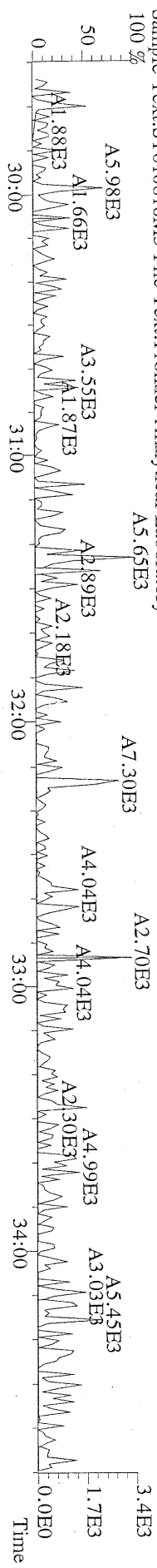
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 351.9000 S:4 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010816M3 File Text:Frontier Analytical Laboratory



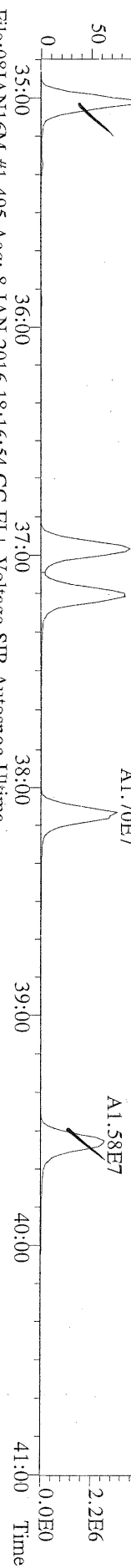
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 353.8970 S:4 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
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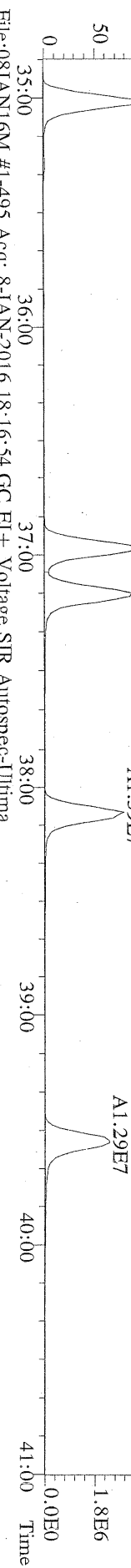
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 409.7974 S:4 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010816M3 File Text:Frontier Analytical Laboratory



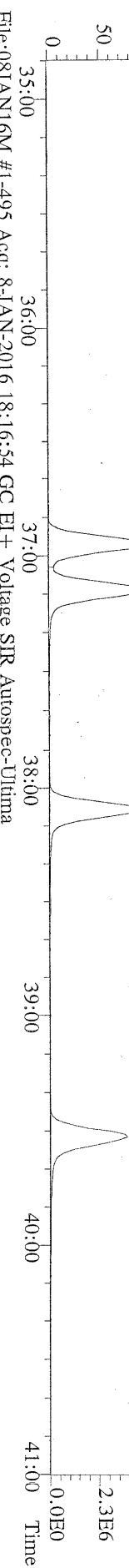
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373.8207 S:4 F:3 BSUB(10000,15,-3,0) PKD(5.5,3,0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M3 File Text:Frontier Analytical Laboratory
100 %A1.93E7



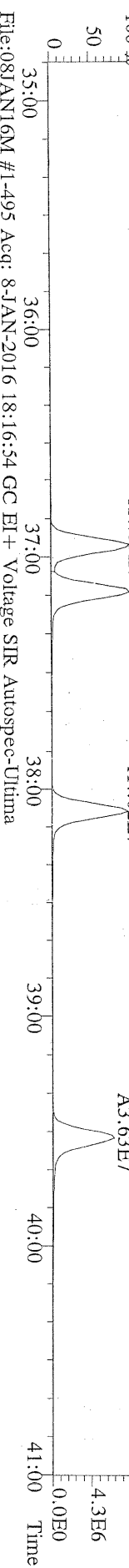
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375.8178 S:4 F:3 BSUB(10000,15,-3,0) PKD(5.5,3,0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M3 File Text:Frontier Analytical Laboratory
100 %A1.56E7



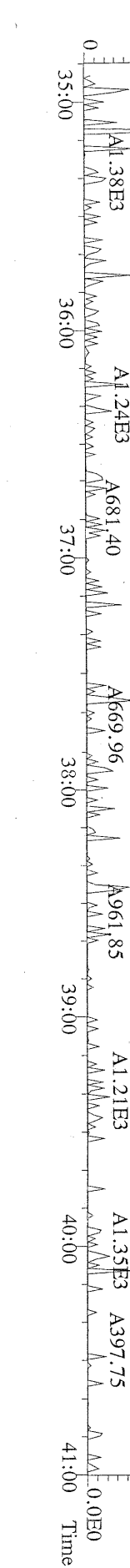
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385.8610 S:4 F:3 BSUB(10000,15,-3,0) PKD(5.5,3,0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M3 File Text:Frontier Analytical Laboratory



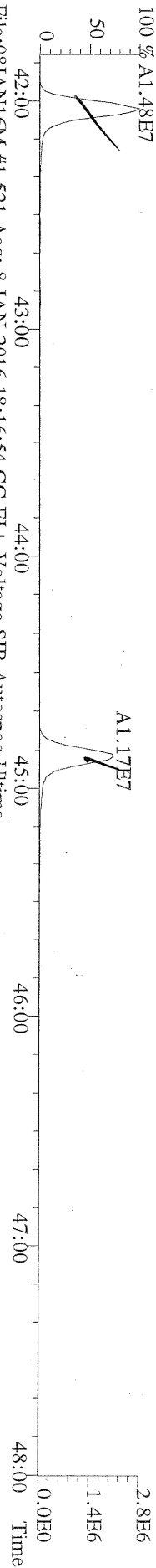
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Sample Text:ST010816M3 File Text:Frontier Analytical Laboratory



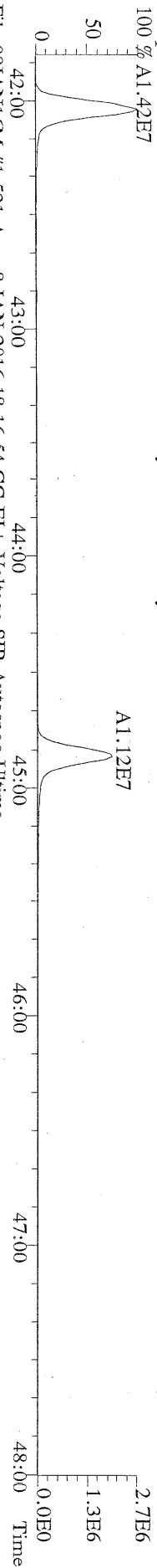
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445.7555 S:4 F:3 BSUB(10000,15,-3,0) PKD(5.5,3,0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M3 File Text:Frontier Analytical Laboratory



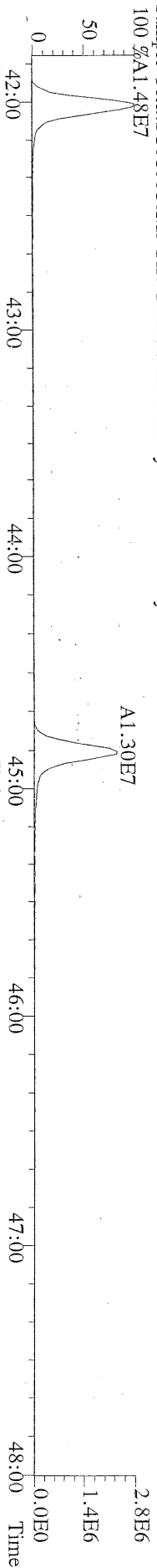
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407.7818 S:4 F:4 BSUB(10000,15,-3,0) PKD(5.5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010816M3 File Text:Frontier Analytical Laboratory
100 % A1.48E7



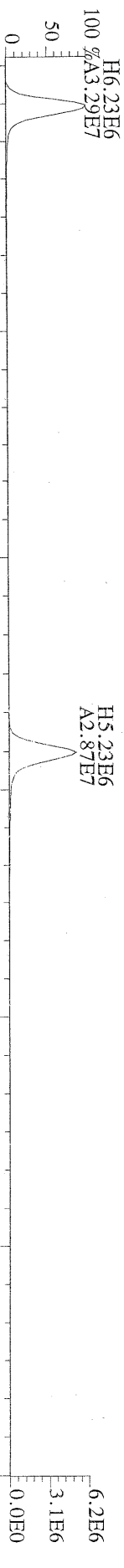
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409.7788 S:4 F:4 BSUB(10000,15,-3,0) PKD(5.5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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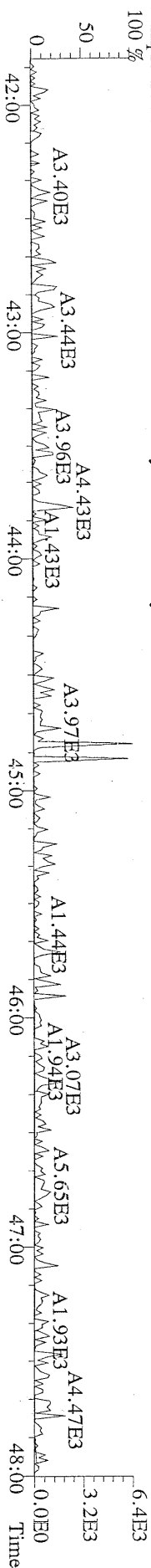
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417.8253 S:4 F:4 BSUB(10000,15,-3,0) PKD(5.5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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100 % A1.48E7



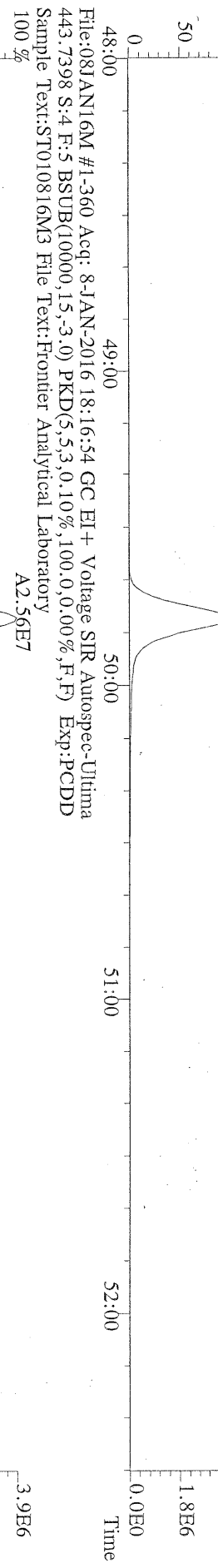
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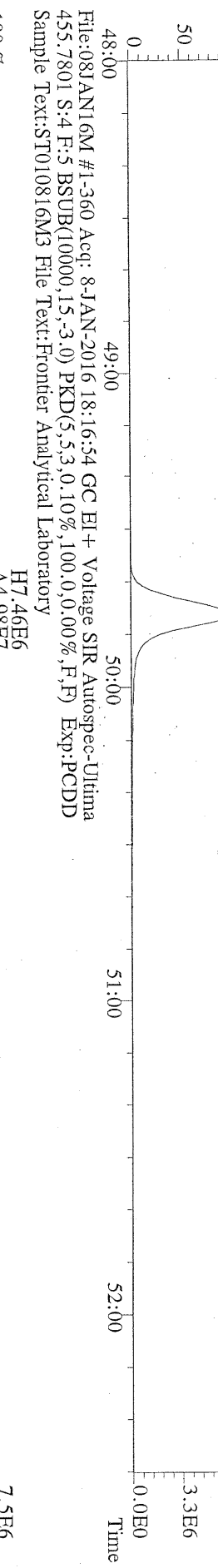
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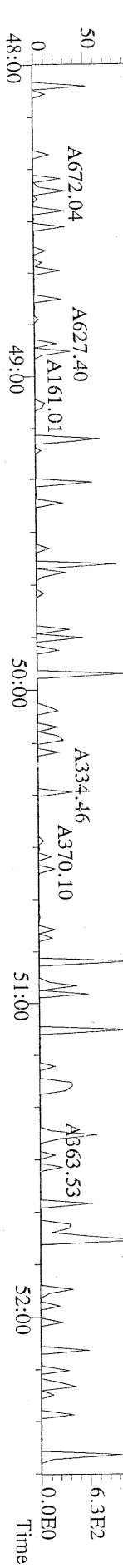
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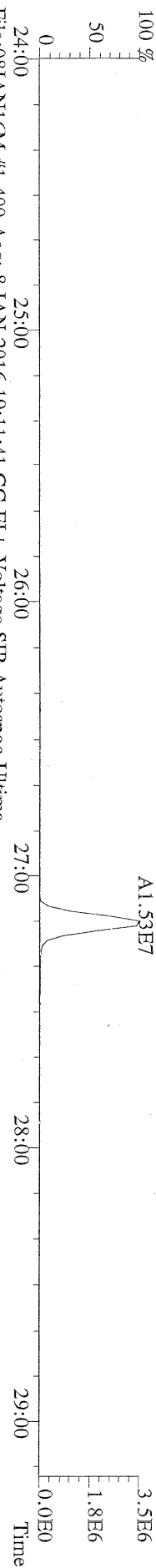
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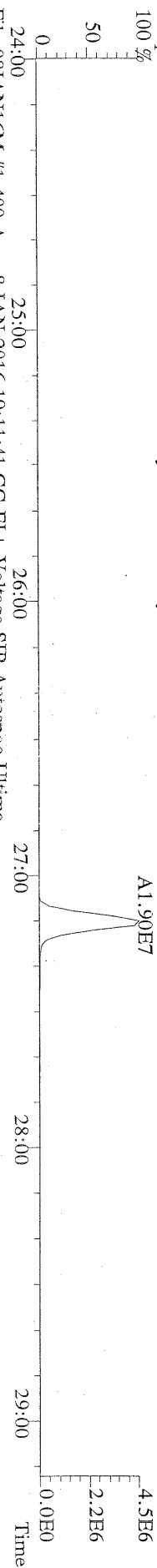
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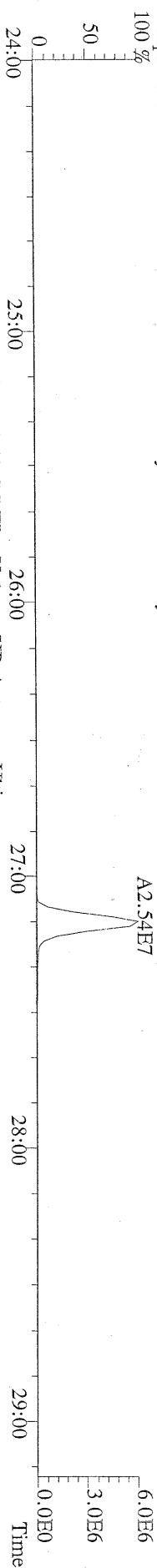
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Sample Text:ST010816M4 File Text:Frontier Analytical Laboratory
100 %



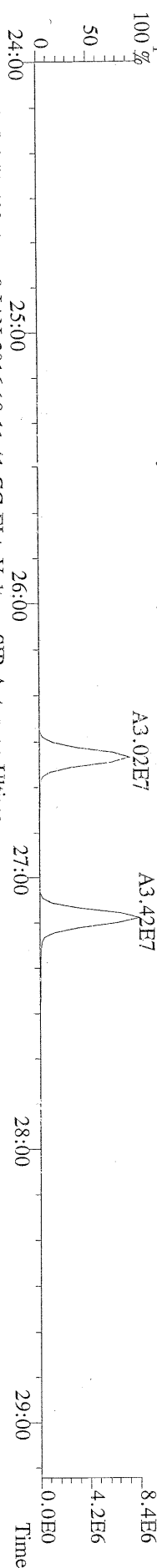
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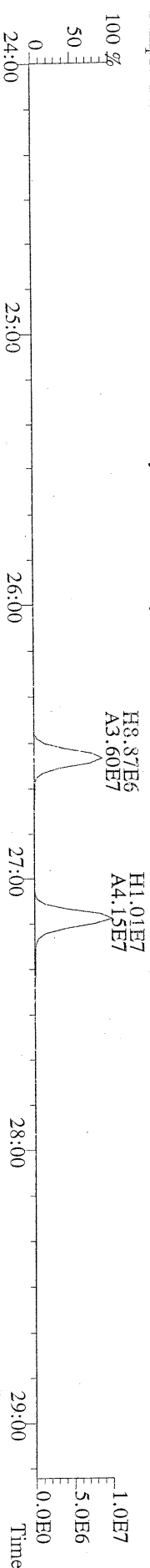
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Sample Text:ST010816M4 File Text:Frontier Analytical Laboratory
100 %



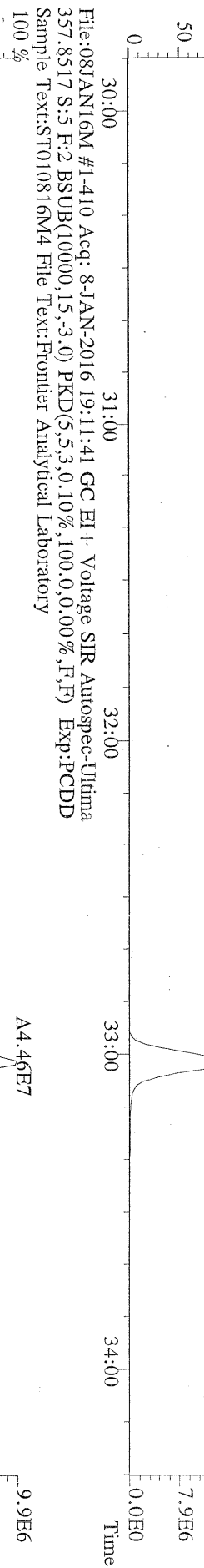
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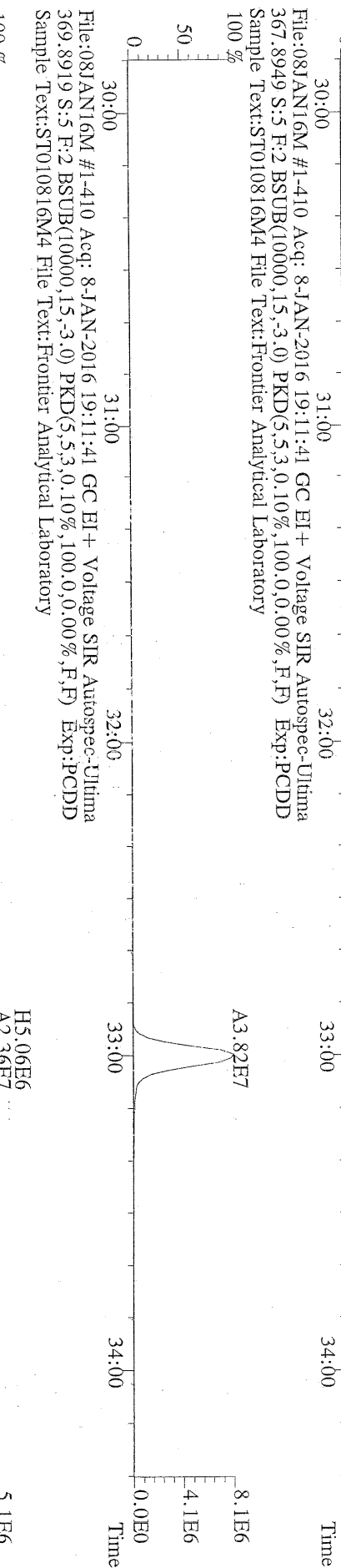
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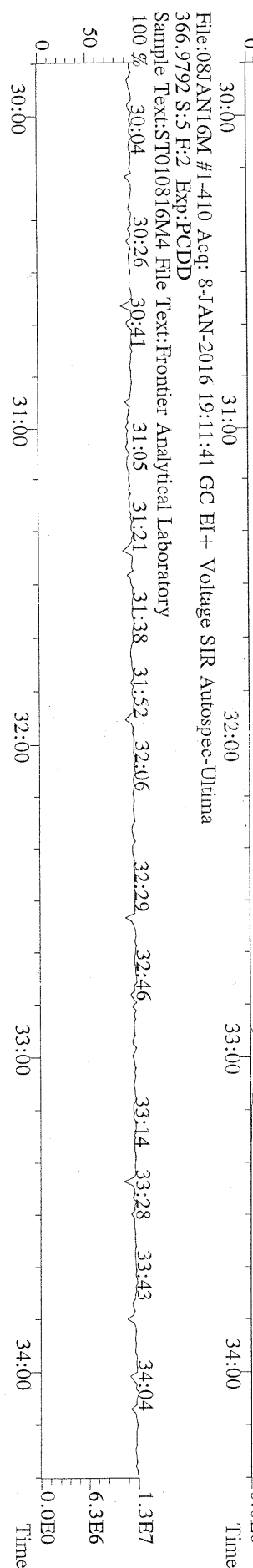
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Sample Text:ST010816M4 File Text:Frontier Analytical Laboratory
100 %



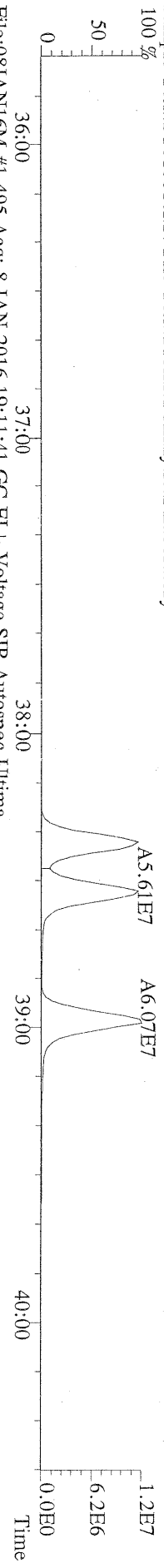
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Sample Text:ST010816M4 File Text:Frontier Analytical Laboratory
100 %



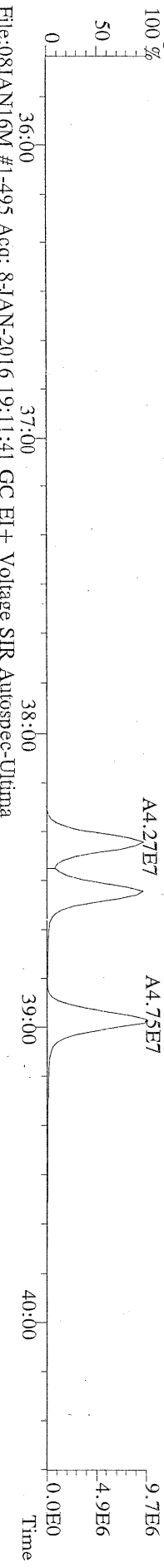
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100 %



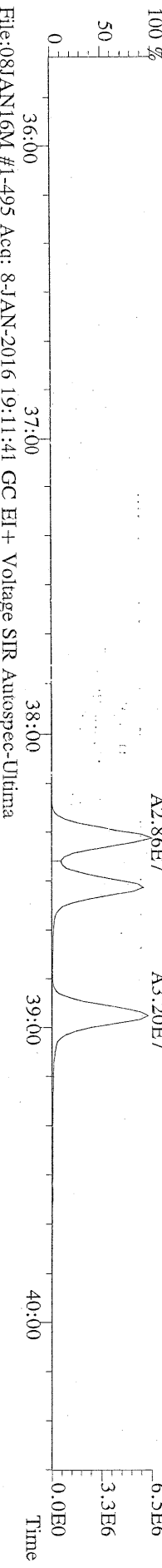
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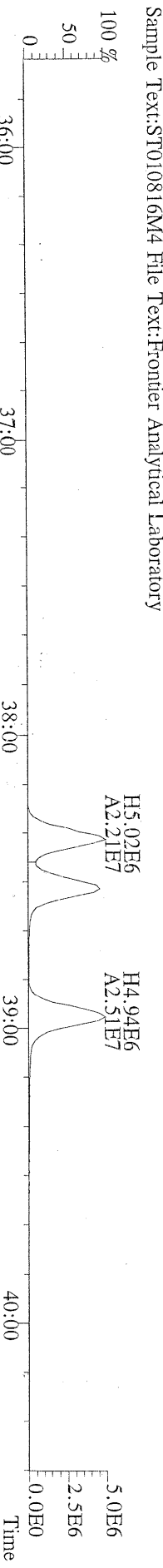
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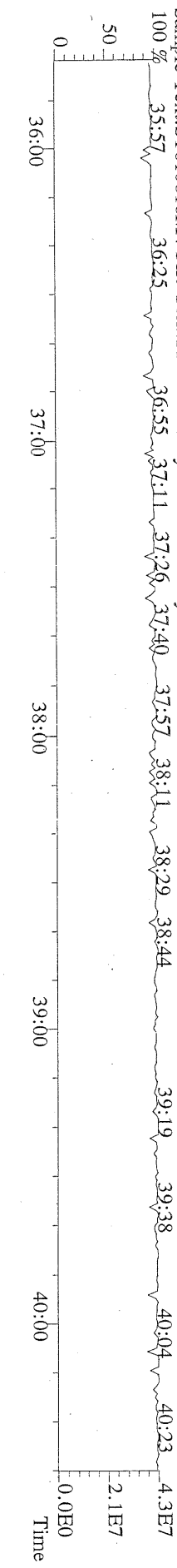
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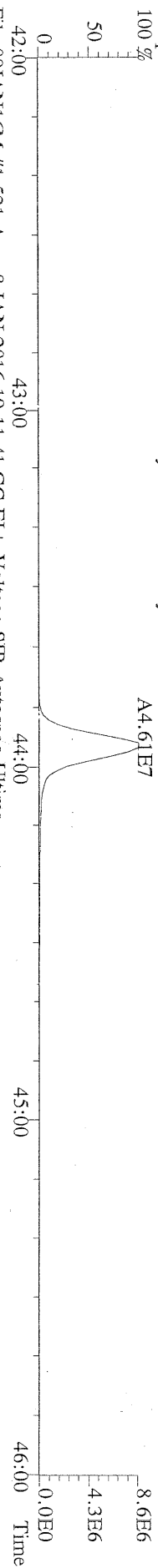
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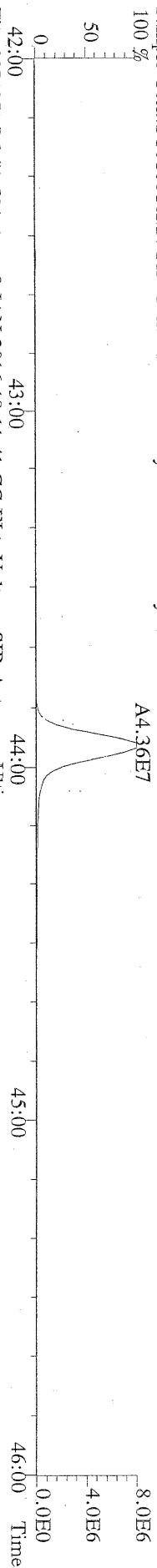
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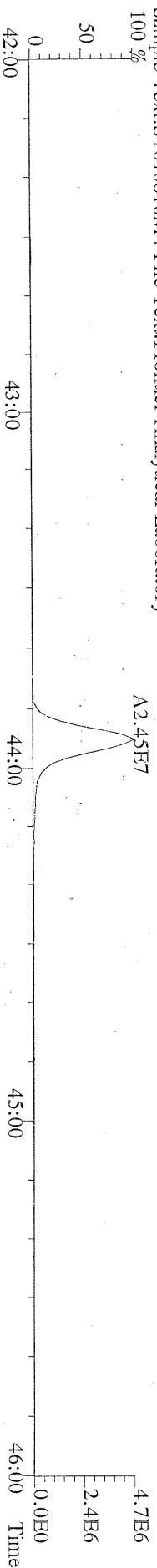
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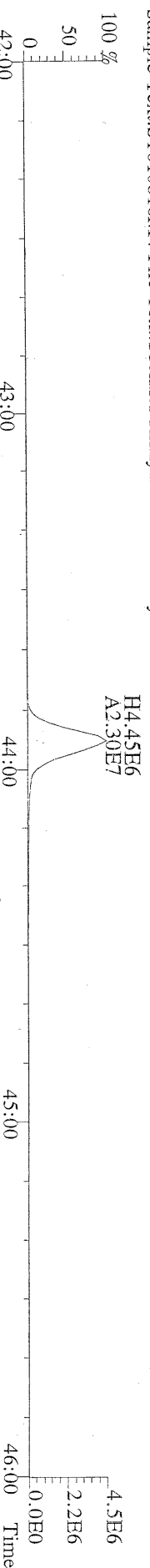
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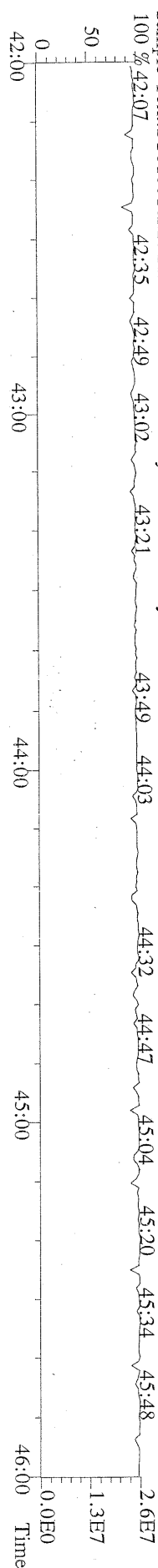
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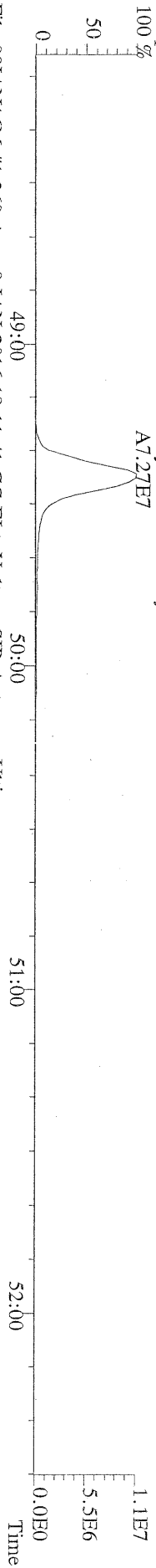
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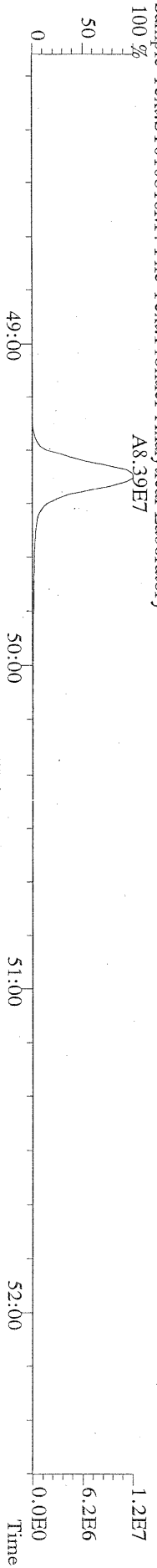
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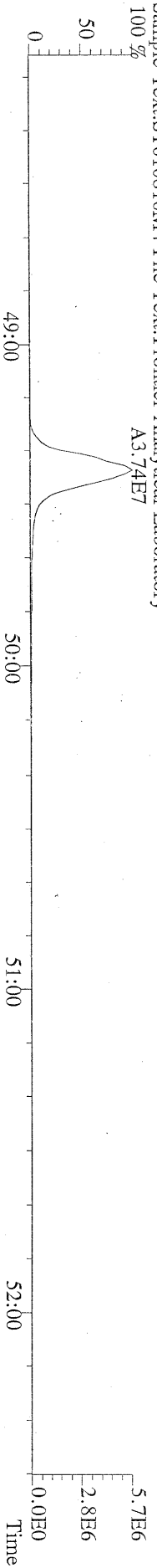
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Sample Text:ST010816M4 File Text:Frontier Analytical Laboratory
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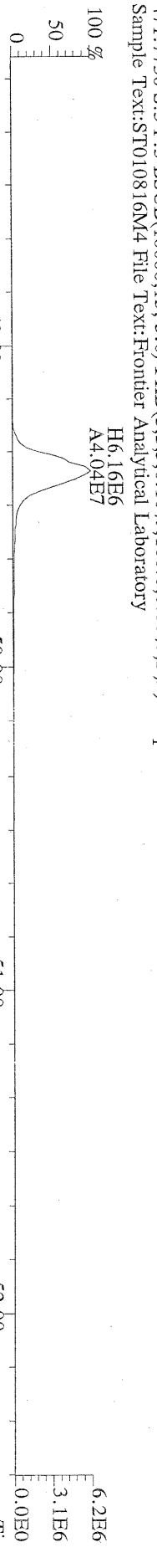
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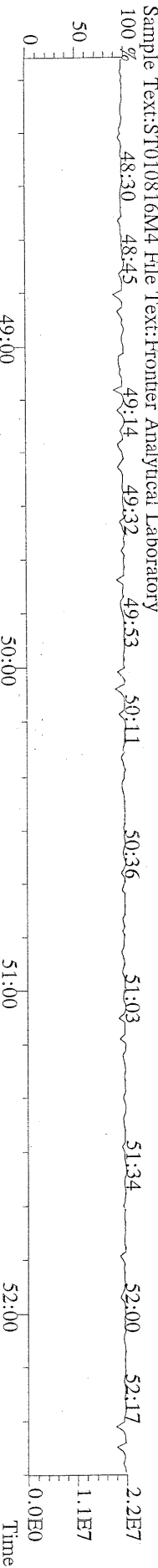
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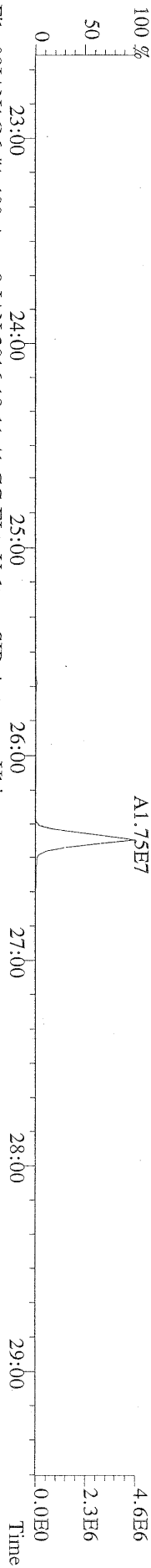
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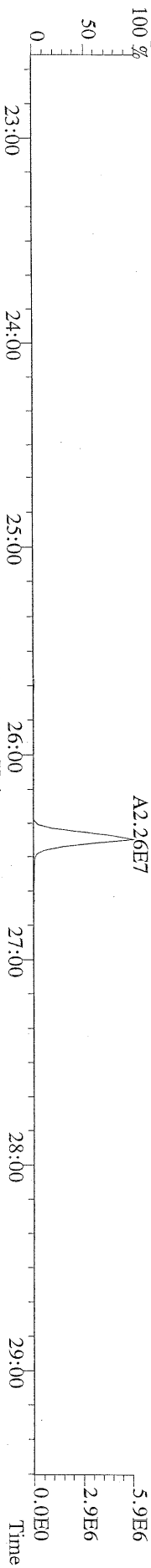
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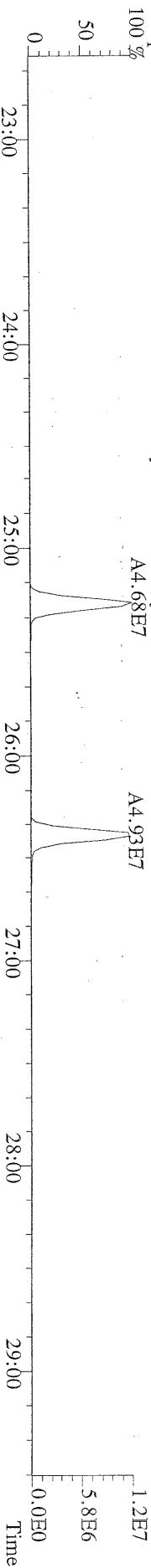
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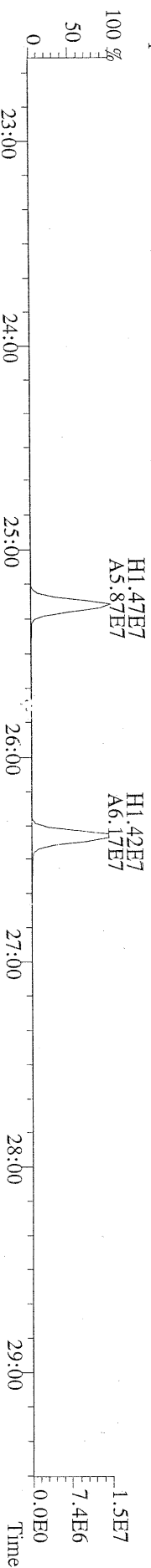
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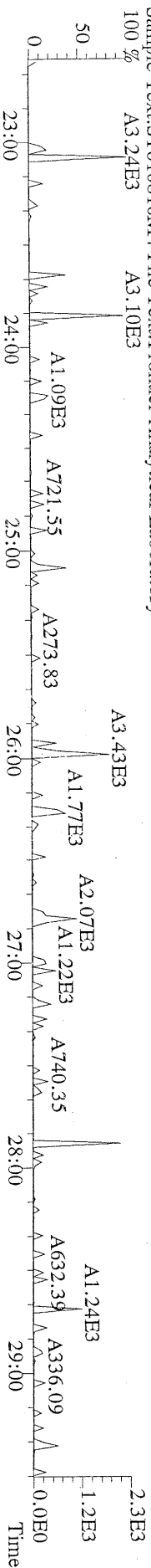
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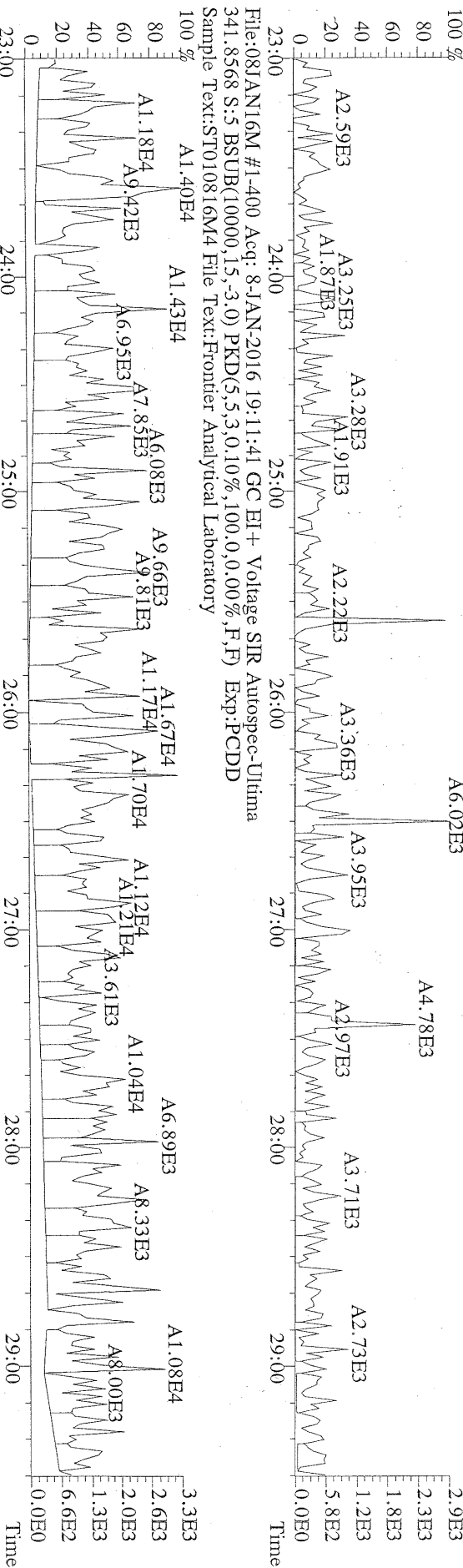
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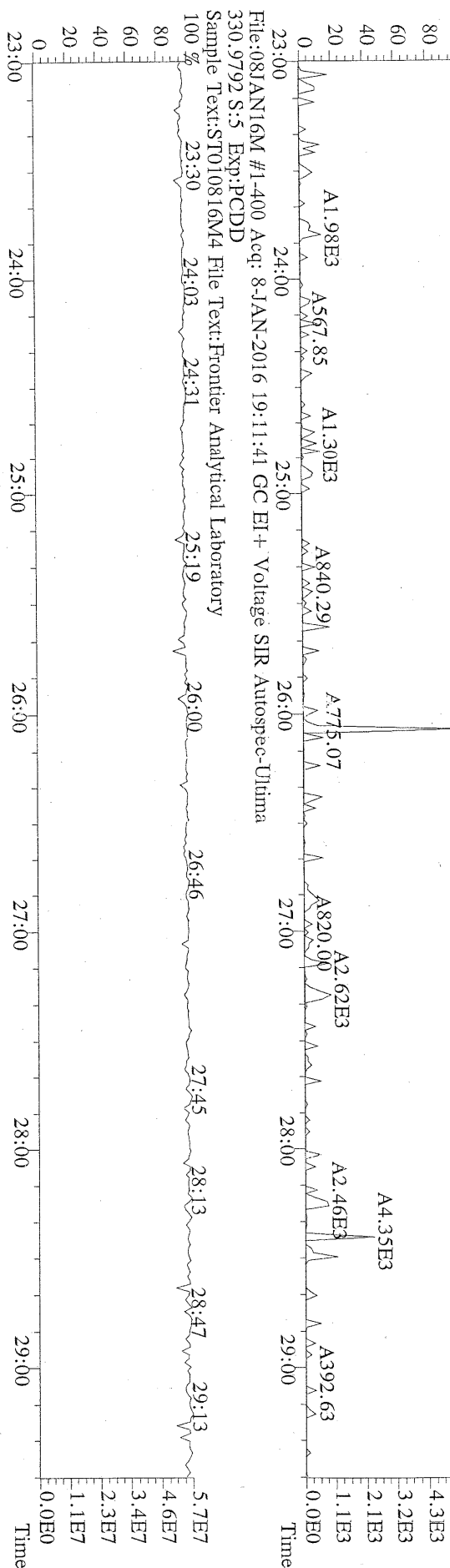
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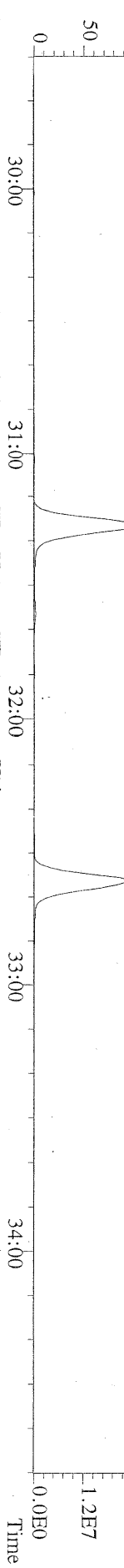
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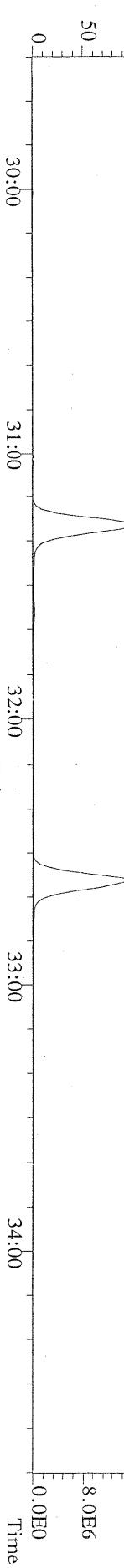
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409.7974 S:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
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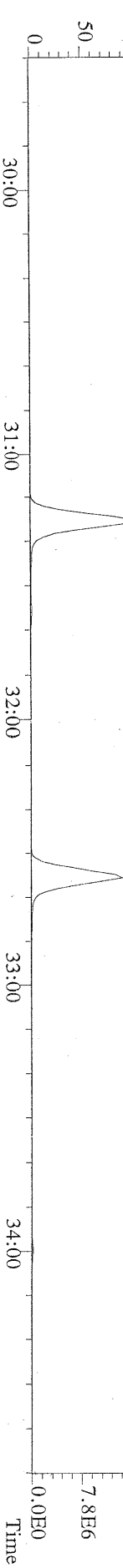
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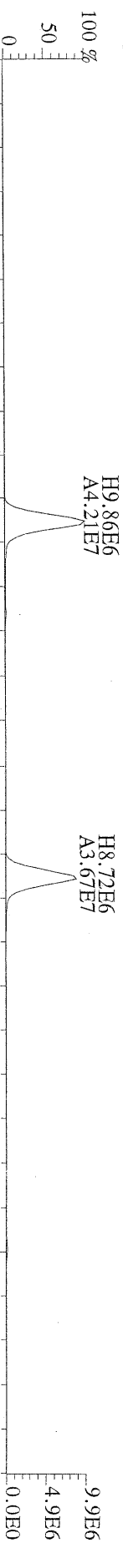
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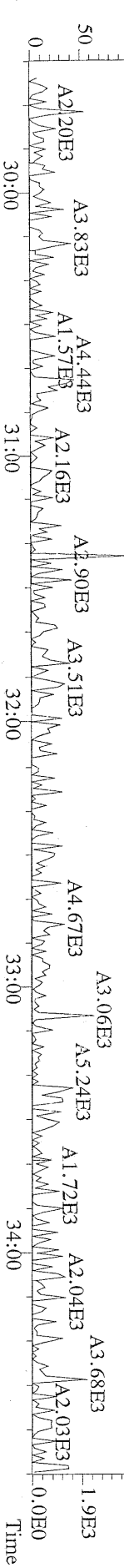
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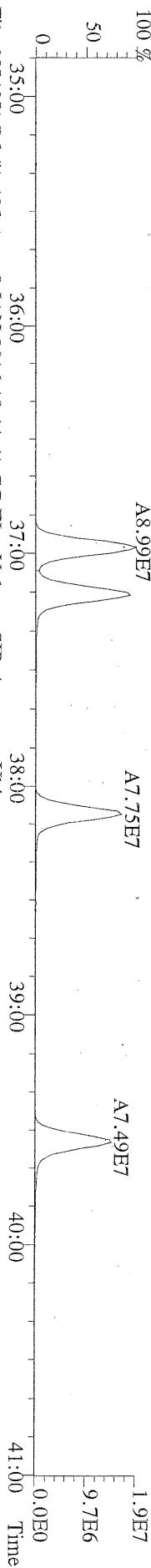
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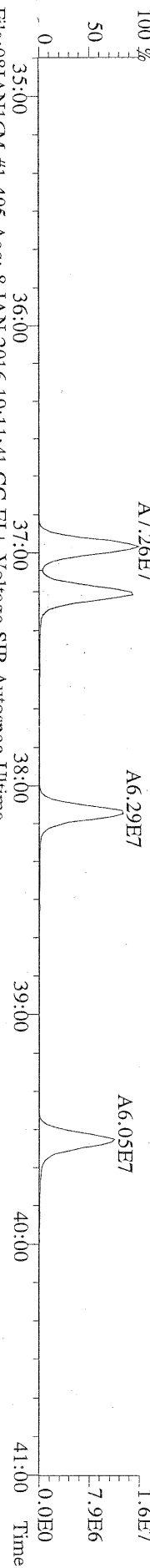
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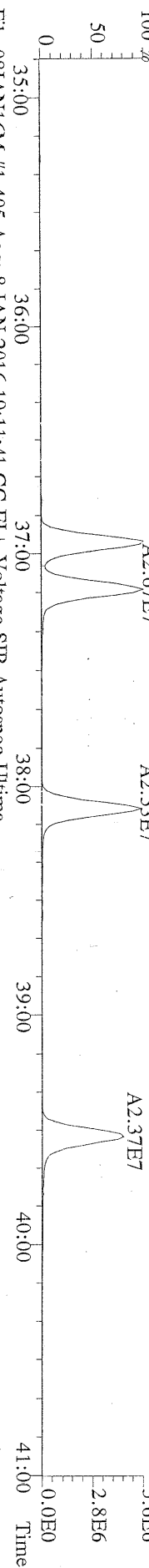
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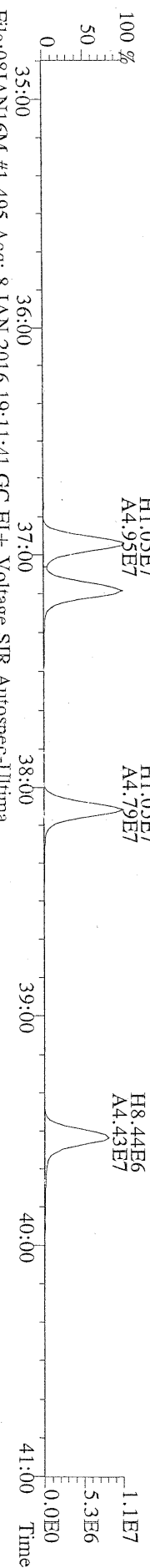
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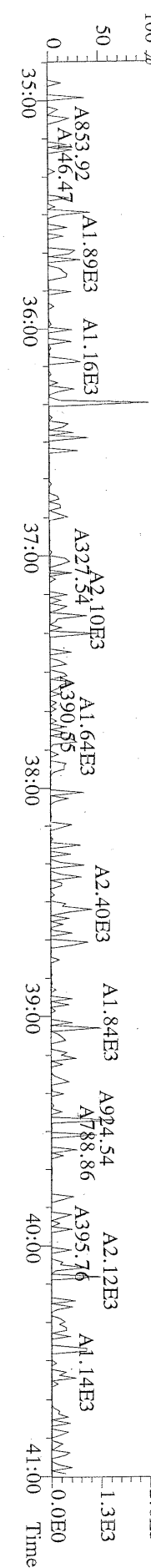
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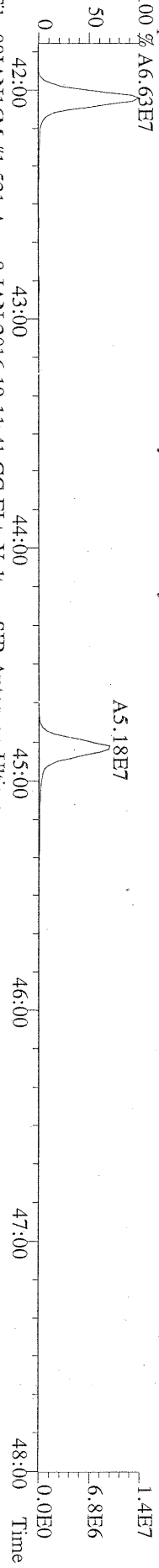
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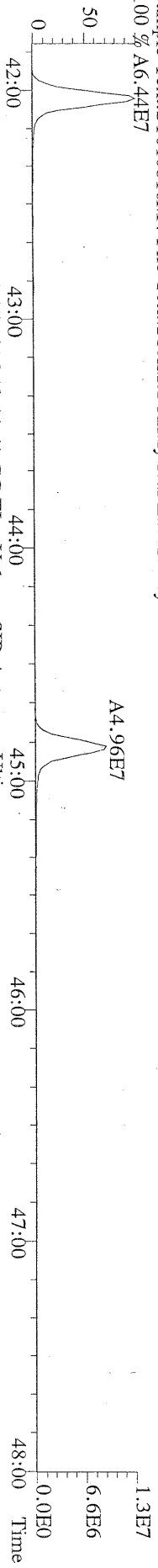
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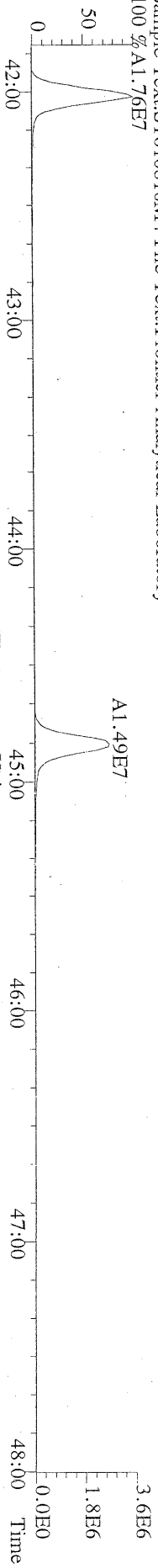
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100 % A6.63E7



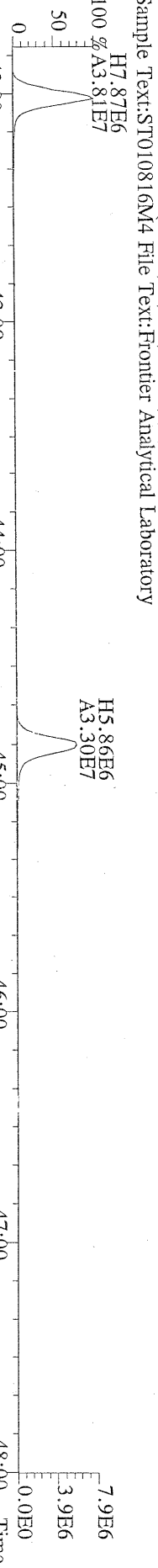
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100 % A6.44E7



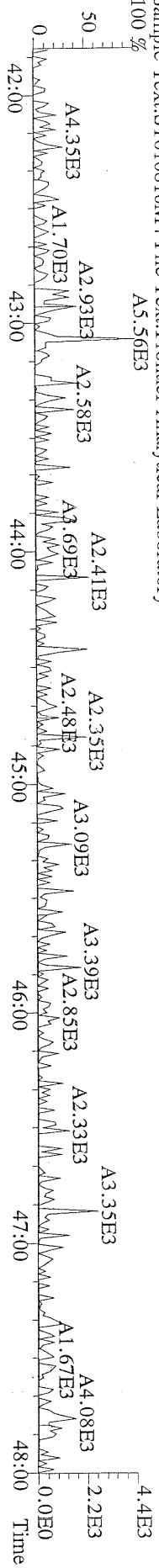
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100 % A1.76E7



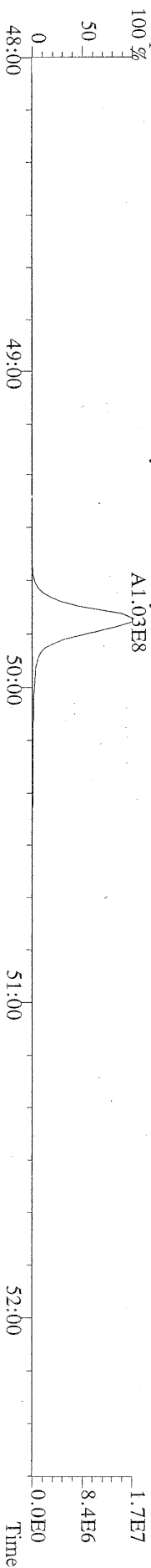
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Sample Text:ST010816M4 File Text:Frontier Analytical Laboratory



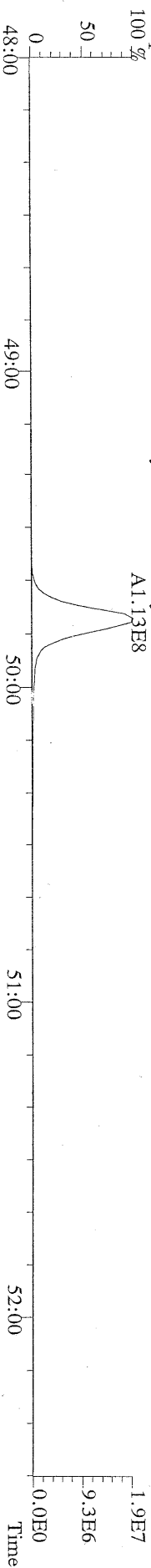
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Sample Text:ST010816M4 File Text:Frontier Analytical Laboratory



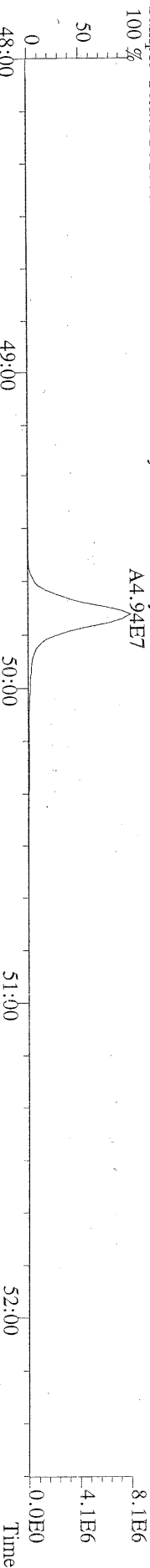
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Sample Text:ST010816M4 File Text:Frontier Analytical Laboratory
100 %



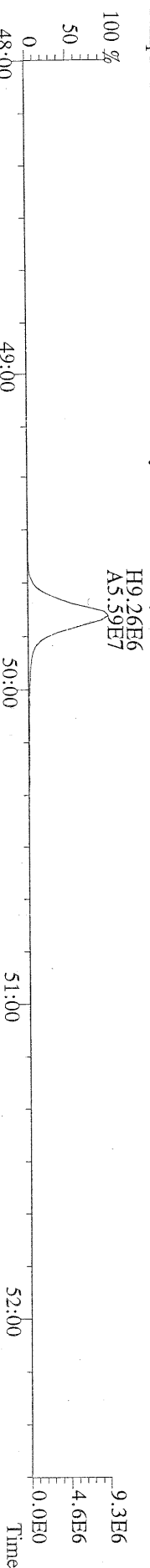
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Sample Text:ST010816M4 File Text:Frontier Analytical Laboratory
100 %



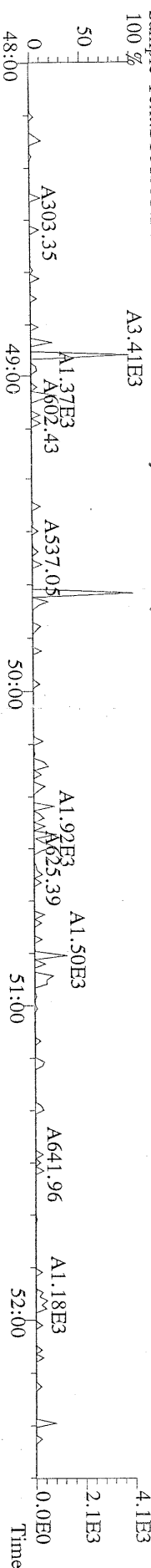
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Sample Text:ST010816M4 File Text:Frontier Analytical Laboratory
100 %



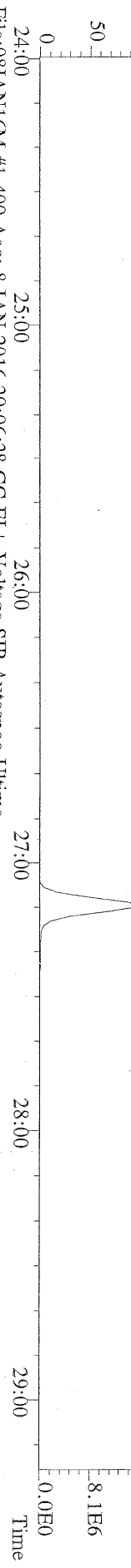
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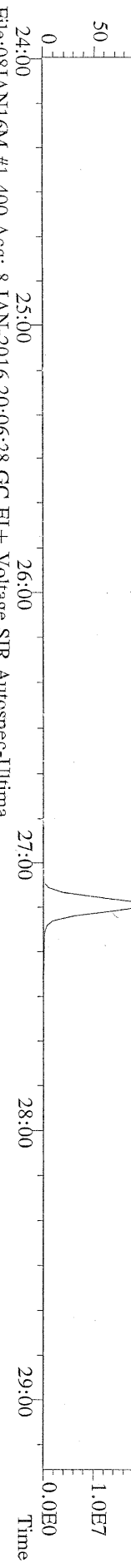
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Sample Text:ST010816M4 File Text:Frontier Analytical Laboratory
100 %



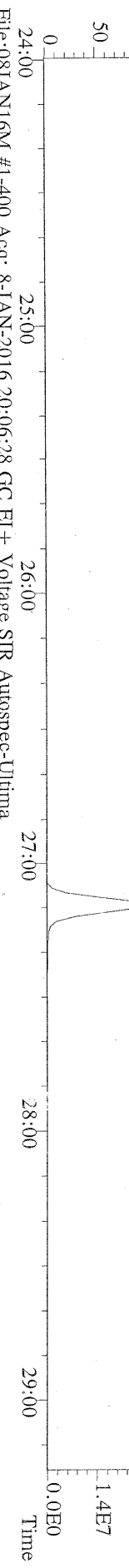
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Sample Text:ST010816M5 File Text:Frontier Analytical Laboratory
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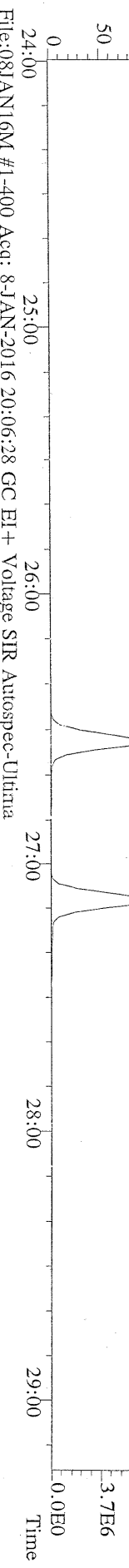
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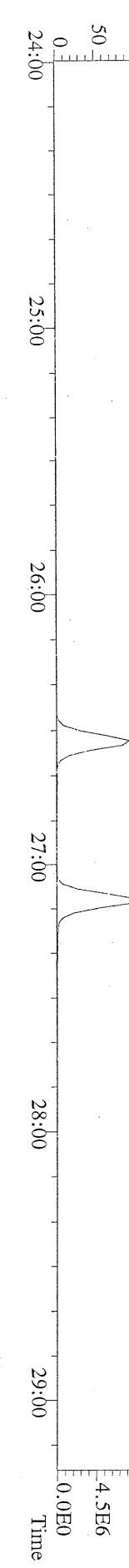
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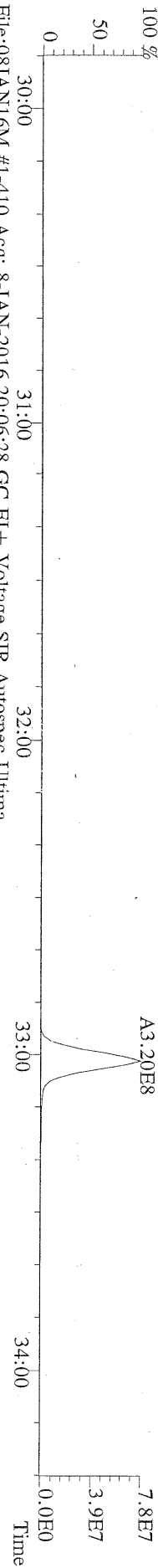
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Sample Text:ST010816M5 File Text:Frontier Analytical Laboratory
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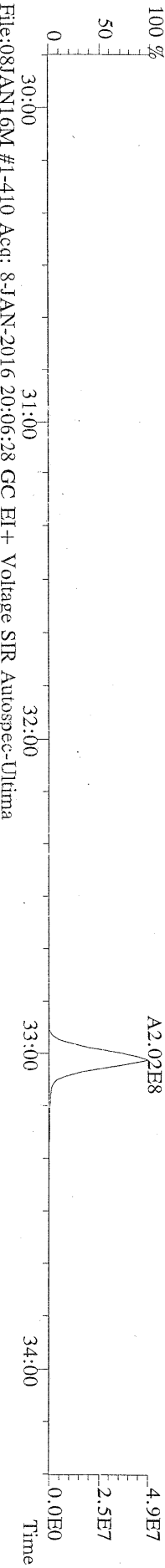
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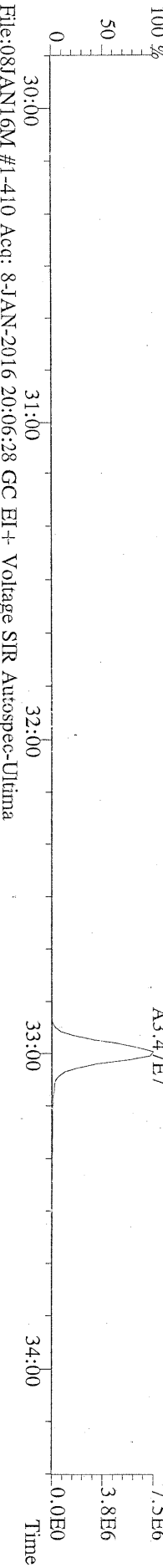
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Sample Text:ST010816M5 File Text:Frontier Analytical Laboratory



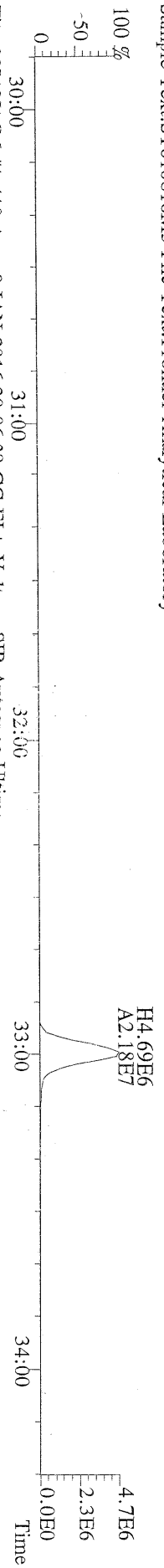
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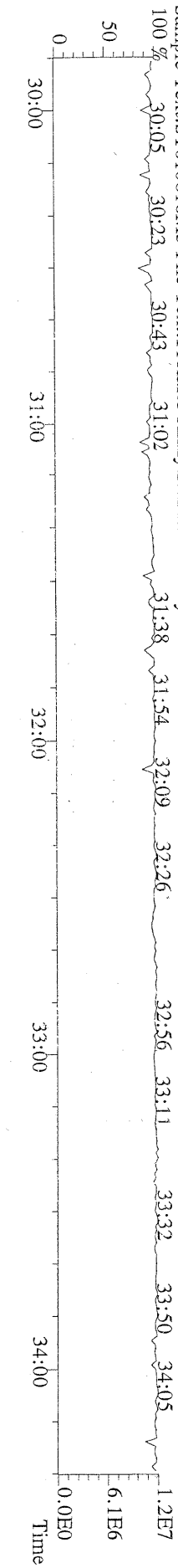
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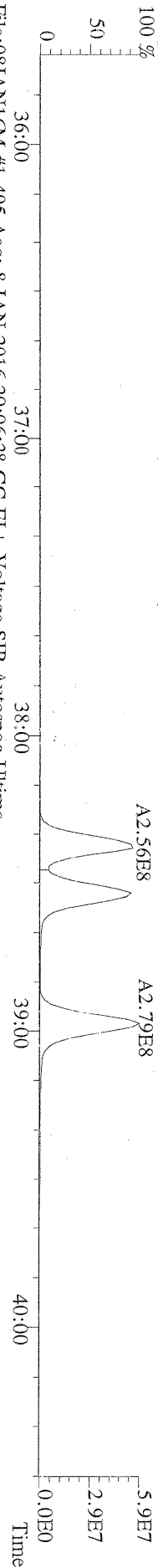
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Sample Text:ST010816M5 File Text:Frontier Analytical Laboratory



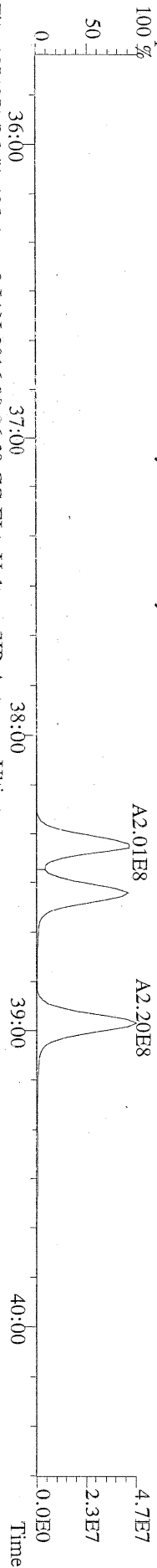
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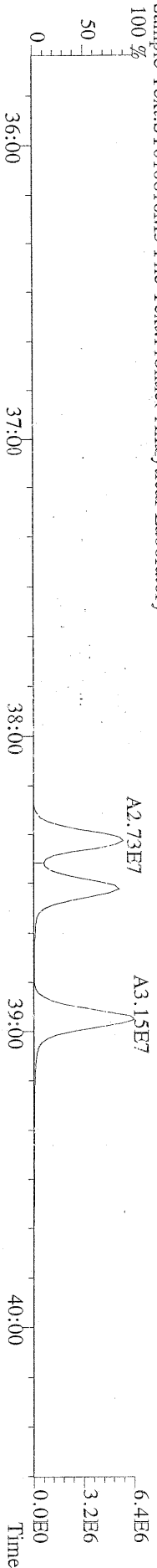
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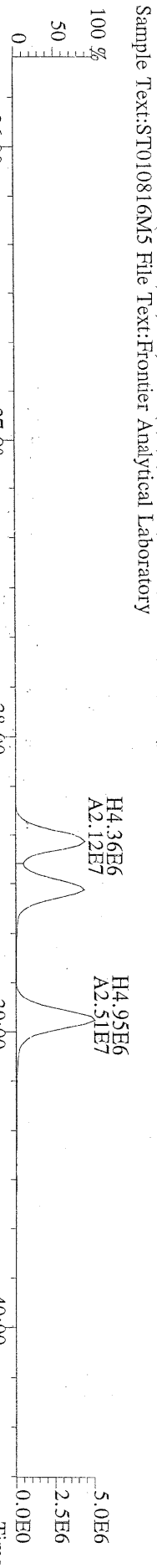
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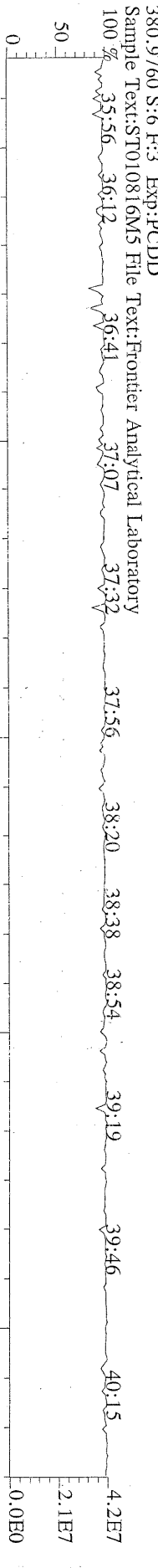
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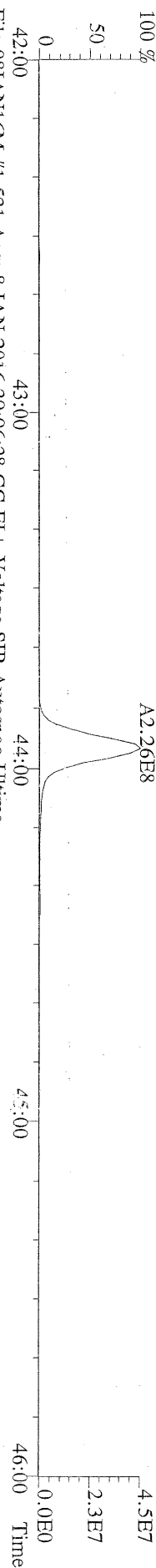
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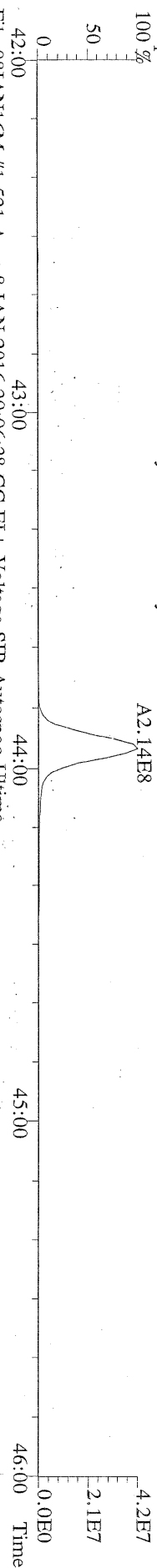
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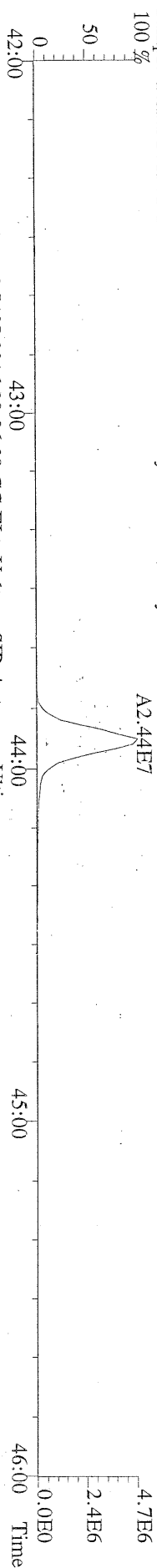
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Sample Text:ST010816M5 File Text:Frontier Analytical Laboratory
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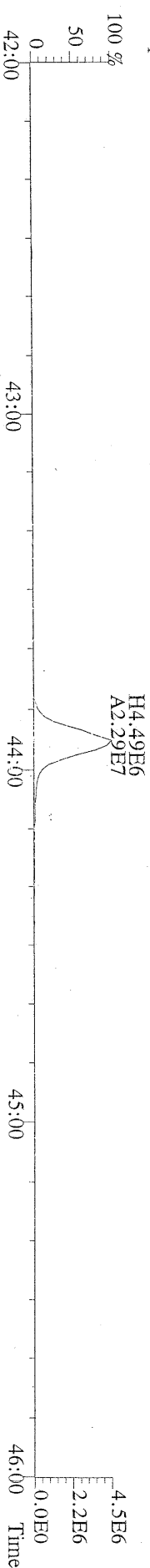
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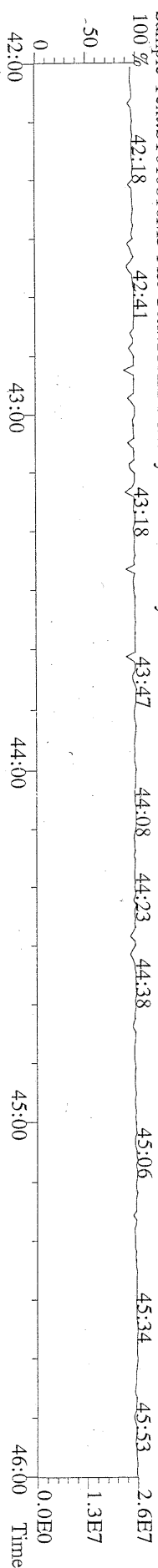
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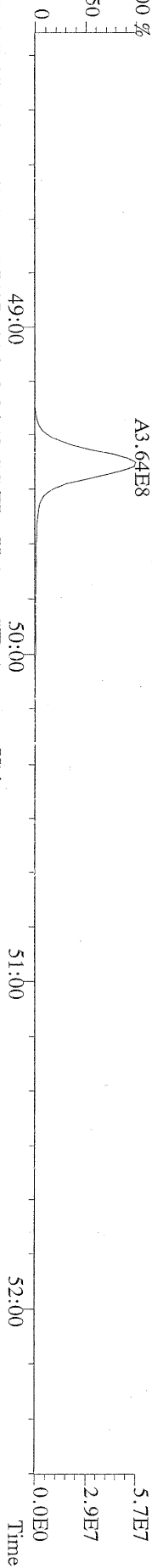
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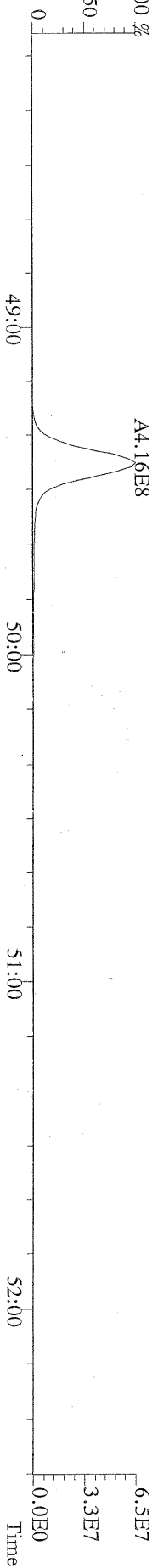
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Sample Text:ST010816M5 File Text:Frontier Analytical Laboratory
100 %



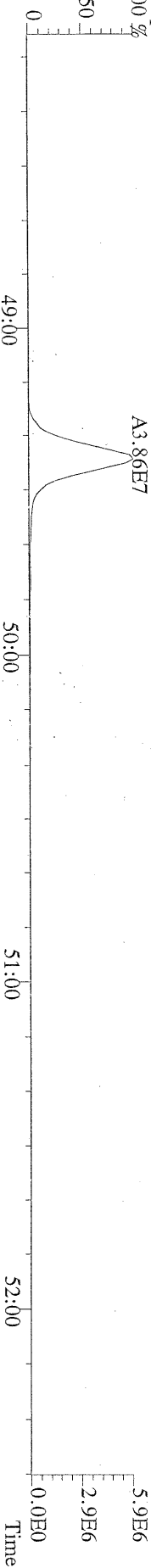
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Sample Text:ST010816M5 File Text:Frontier Analytical Laboratory
100 %



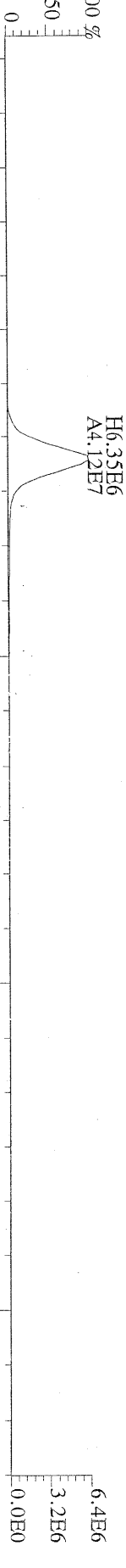
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Sample Text:ST010816M5 File Text:Frontier Analytical Laboratory
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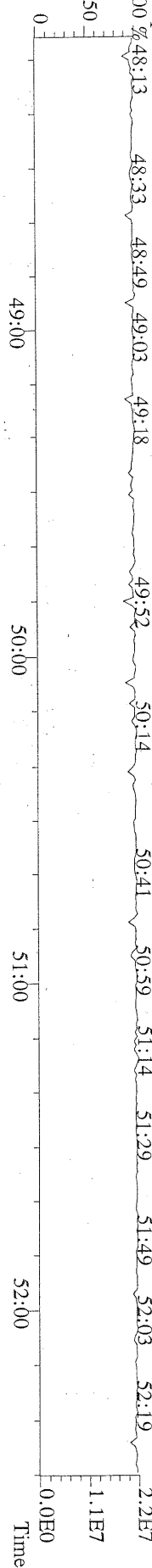
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Sample Text:ST010816M5 File Text:Frontier Analytical Laboratory
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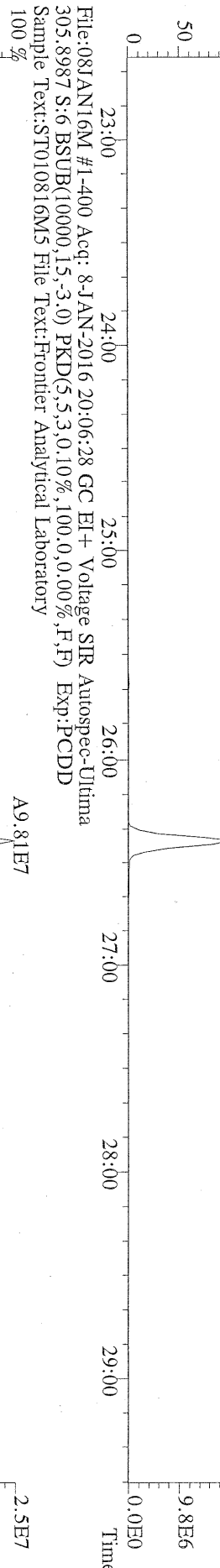
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Sample Text:ST010816M5 File Text:Frontier Analytical Laboratory



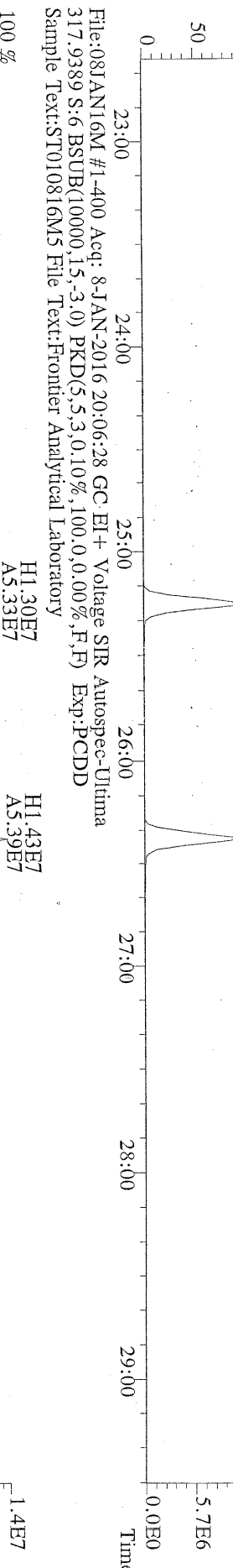
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Sample Text:ST010816M5 File Text:Frontier Analytical Laboratory
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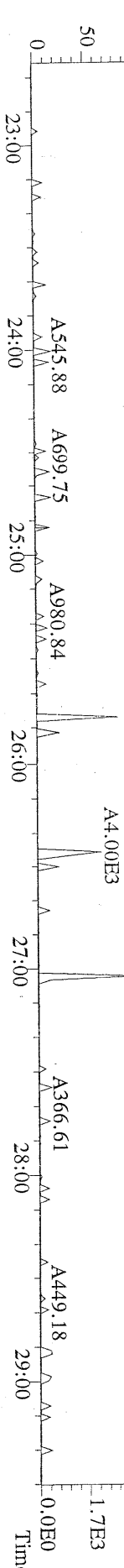
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Sample Text:ST010816M5 File Text:Frontier Analytical Laboratory
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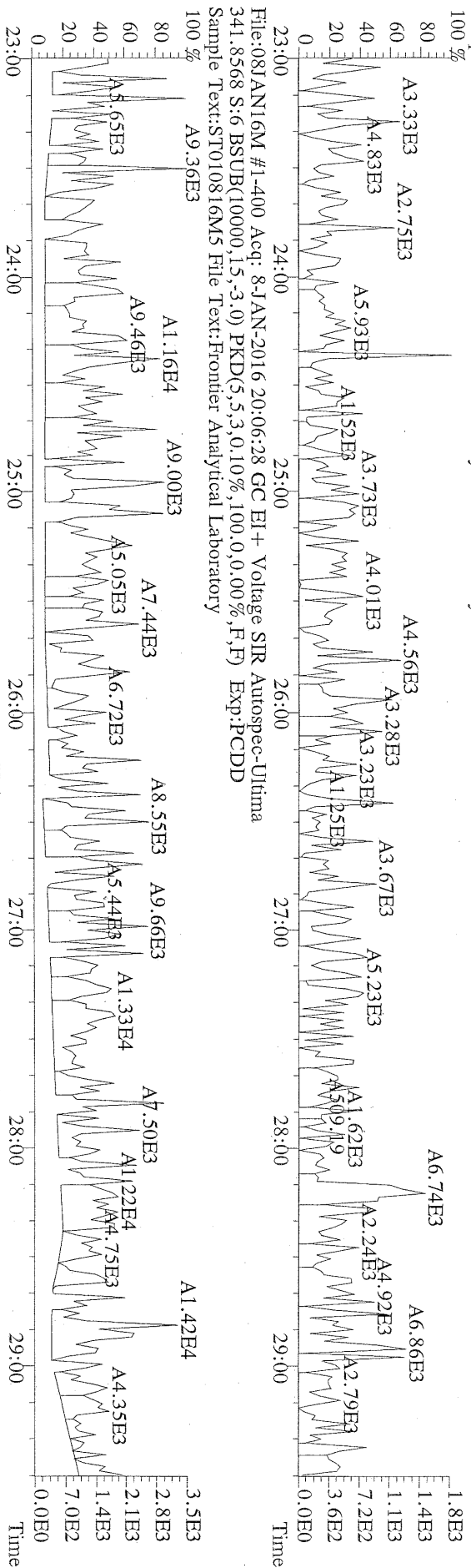
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Sample Text:ST010816M5 File Text:Frontier Analytical Laboratory
100 %



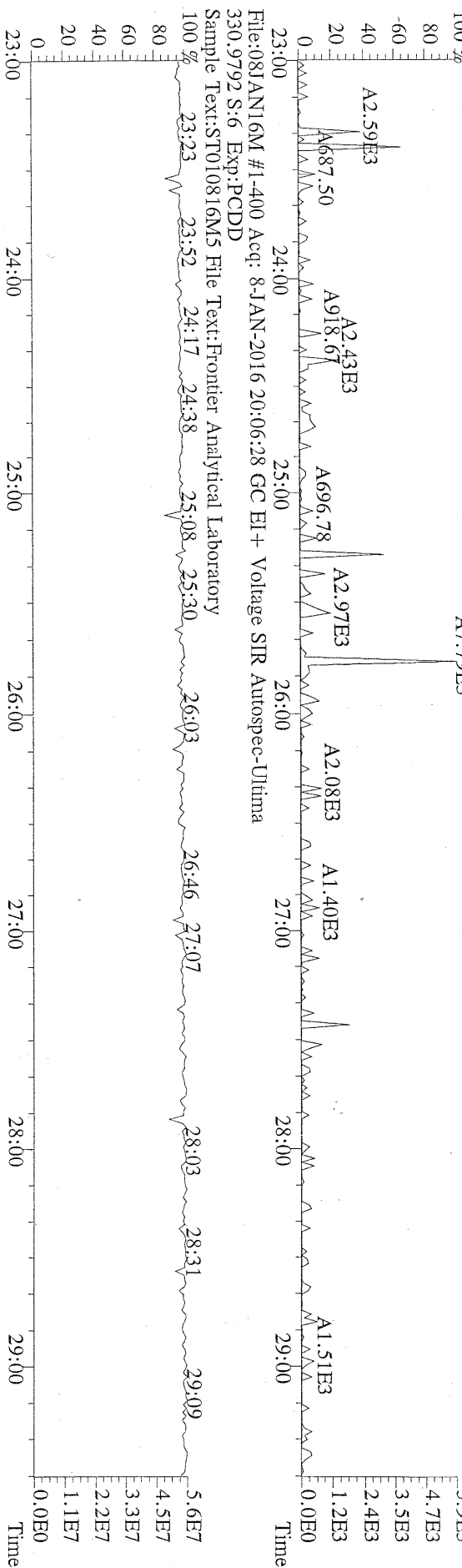
File:081JAN16M #1-400 Acq: 8-JAN-2016 20:06:28 GC EI+ Voltage SIR Autospec-Ultima
317.9389 S:6 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0,0,0) Exp:PCDD
Sample Text:ST010816M5 File Text:Frontier Analytical Laboratory



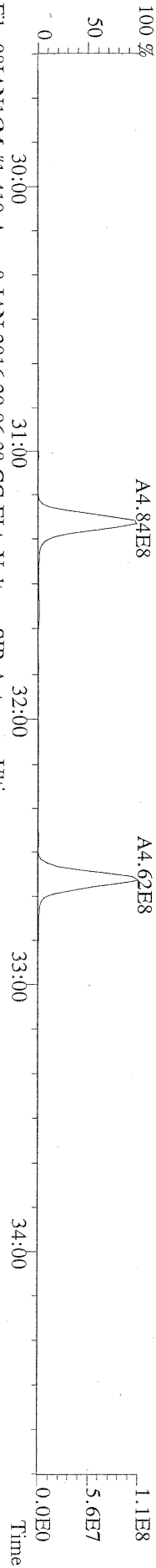
File:08JAN16M #1-400 Acq: 8-JAN-2016 20:06:28 GC EI+ Voltage SIR Autospec-Ultima
 339.8597 S:6 BSUB(10000,15,-3,0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010816M5 File Text:Frontier Analytical Laboratory



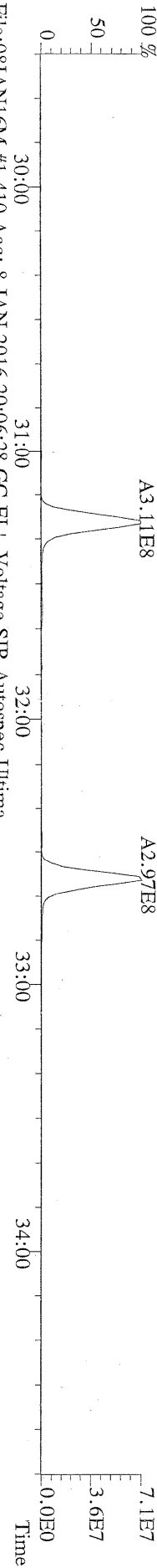
File:08JAN16M #1-400 Acq: 8-JAN-2016 20:06:28 GC EI+ Voltage SIR Autospec-Ultima
 409.7974 S:6 BSUB(10000,15,-3,0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:ST010816M5 File Text:Frontier Analytical Laboratory



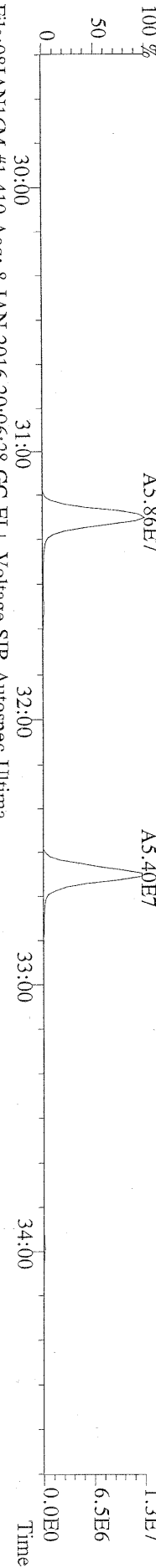
File:08JAN16M #1-410 Acq: 8-JAN-2016 20:06:28 GC EI+ Voltage SIR Autospec-Ultima
 339.8597 S:6 F:2 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp.:PCDD
 Sample Text:ST010816M5 File Text:Frontier Analytical Laboratory



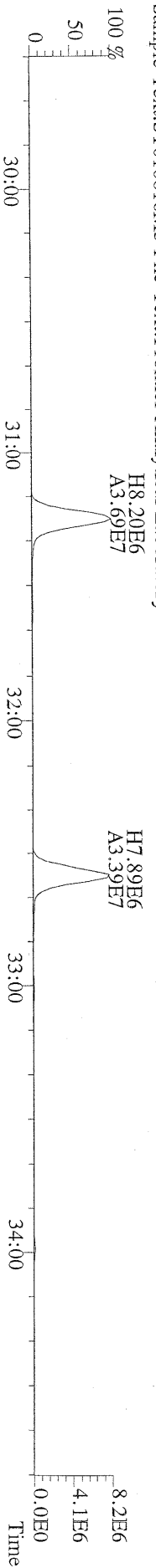
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 341.8568 S:6 F:2 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp.:PCDD
 Sample Text:ST010816M5 File Text:Frontier Analytical Laboratory



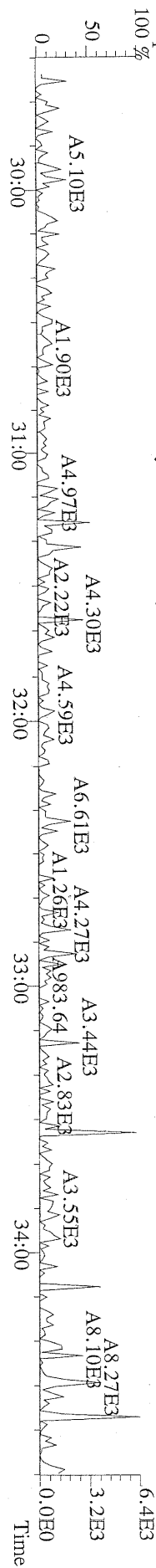
File:08JAN16M #1-410 Acq: 8-JAN-2016 20:06:28 GC EI+ Voltage SIR Autospec-Ultima
 351.9000 S:6 F:2 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp.:PCDD
 Sample Text:ST010816M5 File Text:Frontier Analytical Laboratory



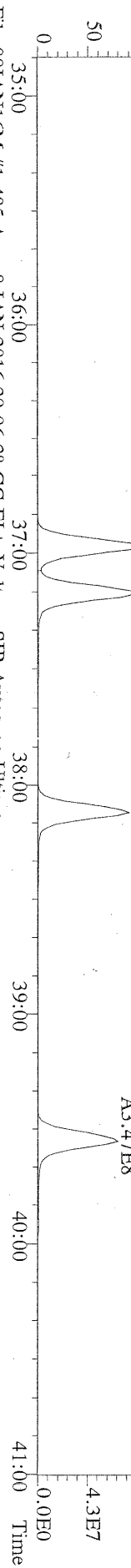
File:08JAN16M #1-410 Acq: 8-JAN-2016 20:06:28 GC EI+ Voltage SIR Autospec-Ultima
 353.8970 S:6 F:2 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp.:PCDD
 Sample Text:ST010816M5 File Text:Frontier Analytical Laboratory



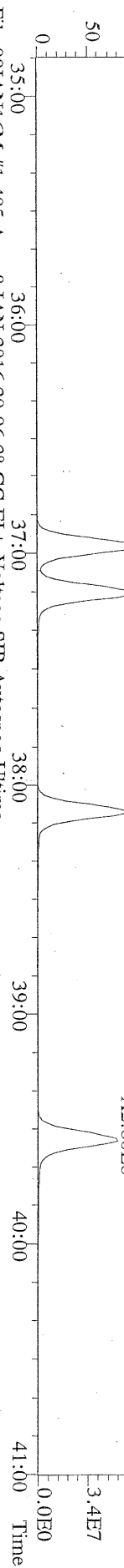
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 409.7974 S:6 F:2 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp.:PCDD
 Sample Text:ST010816M5 File Text:Frontier Analytical Laboratory



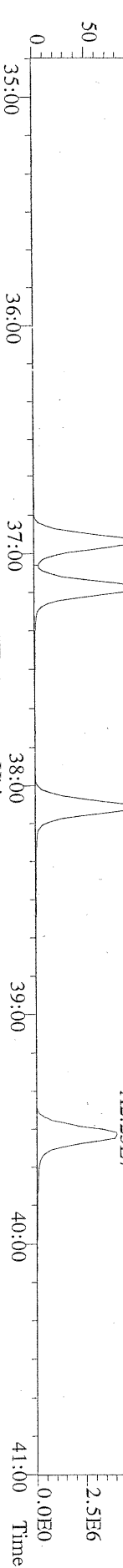
File:081JAN16M #1-495 Acq: 8-JAN-2016 20:06:28 GC EI+ Voltage SIR Autospec-Ultima
373.8207 S:6 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010816M5 File Text:Frontier Analytical Laboratory



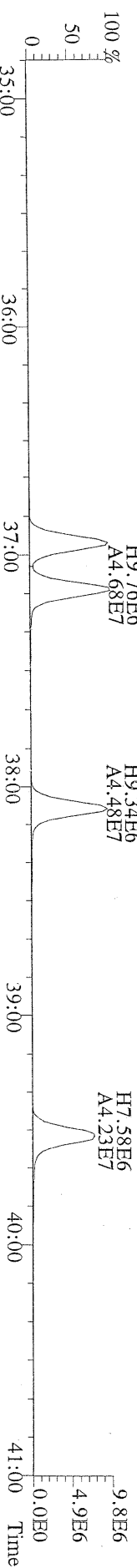
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375.8178 S:6 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010816M5 File Text:Frontier Analytical Laboratory



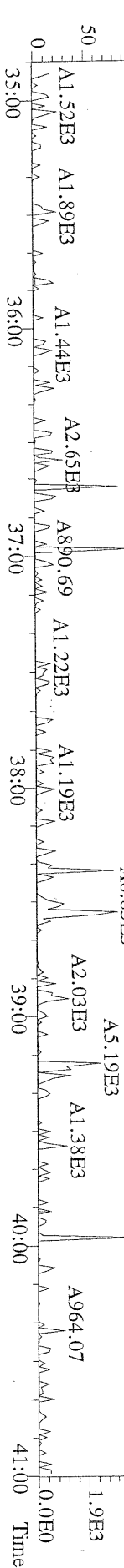
File:081JAN16M #1-495 Acq: 8-JAN-2016 20:06:28 GC EI+ Voltage SIR Autospec-Ultima
383.8639 S:6 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010816M5 File Text:Frontier Analytical Laboratory



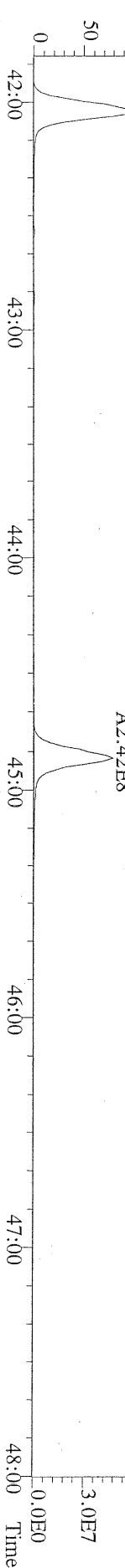
File:081JAN16M #1-495 Acq: 8-JAN-2016 20:06:28 GC EI+ Voltage SIR Autospec-Ultima
385.8610 S:6 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010816M5 File Text:Frontier Analytical Laboratory



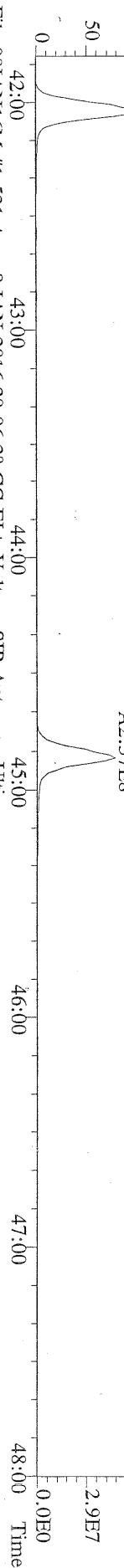
File:081JAN16M #1-495 Acq: 8-JAN-2016 20:06:28 GC EI+ Voltage SIR Autospec-Ultima
445.7555 S:6 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST010816M5 File Text:Frontier Analytical Laboratory



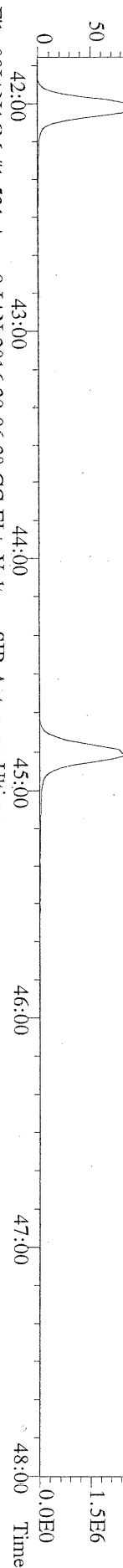
File:081JAN16M #1-521 Acq: 8-JAN-2016 20:06:28 GC EI+ Voltage SIR Autospec-Ultima
407.7818 S:6 F:4 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:STO10816M5 File Text:Frontier Analytical Laboratory
100 % A3.13E8



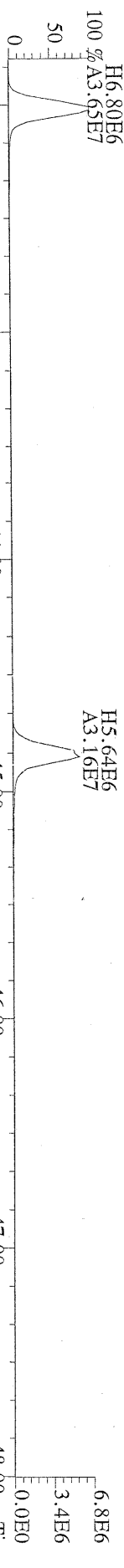
File:081JAN16M #1-521 Acq: 8-JAN-2016 20:06:28 GC EI+ Voltage SIR Autospec-Ultima
409.7788 S:6 F:4 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:STO10816M5 File Text:Frontier Analytical Laboratory
100 % A3.02E8



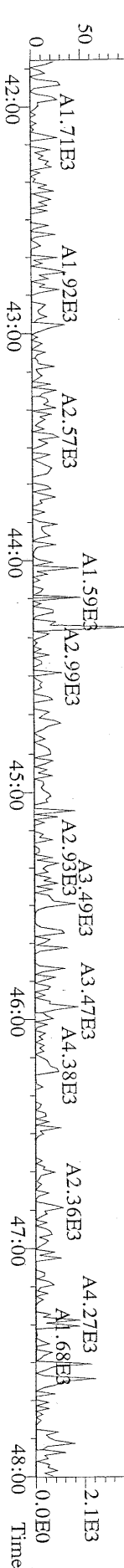
File:081JAN16M #1-521 Acq: 8-JAN-2016 20:06:28 GC EI+ Voltage SIR Autospec-Ultima
417.8253 S:6 F:4 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:STO10816M5 File Text:Frontier Analytical Laboratory
100 % A1.68E7



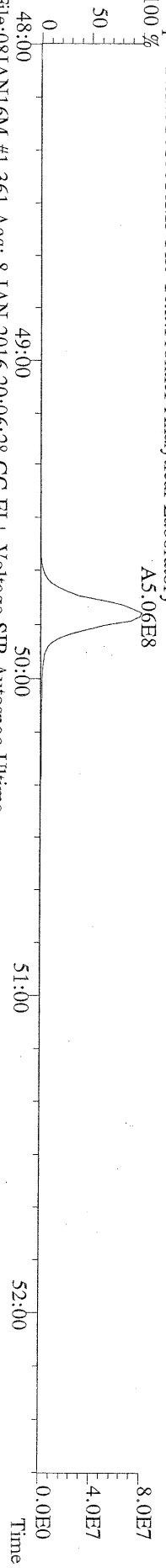
File:081JAN16M #1-521 Acq: 8-JAN-2016 20:06:28 GC EI+ Voltage SIR Autospec-Ultima
419.8220 S:6 F:4 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:STO10816M5 File Text:Frontier Analytical Laboratory



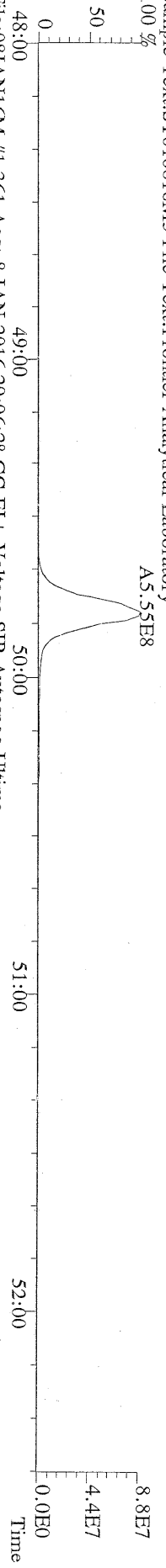
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479.7165 S:6 F:4 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:STO10816M5 File Text:Frontier Analytical Laboratory



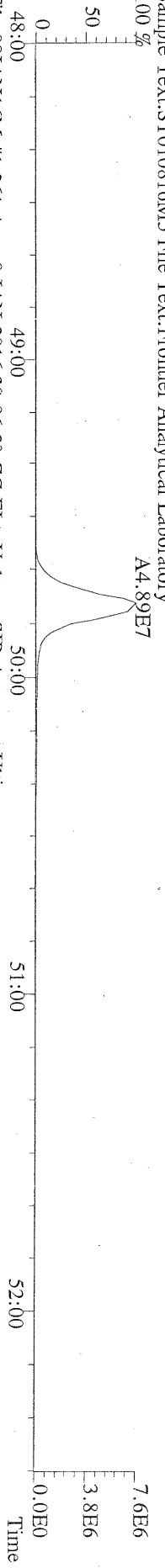
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441.7428 S:6 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M5 File Text:Frontier Analytical Laboratory



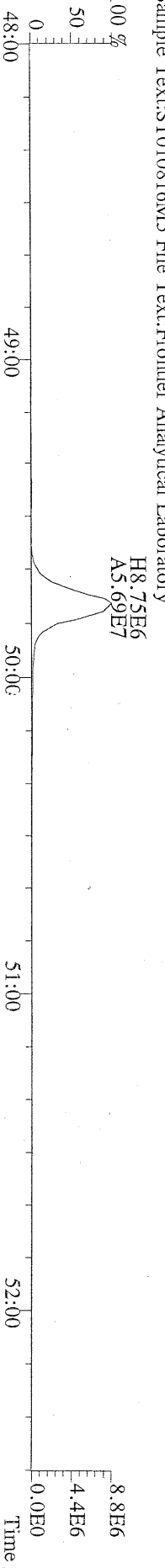
File:08JAN16M #1-361 Acq: 8-JAN-2016 20:06:28 GC EI+ Voltage SIR Autospec-Ultima
443.7398 S:6 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M5 File Text:Frontier Analytical Laboratory



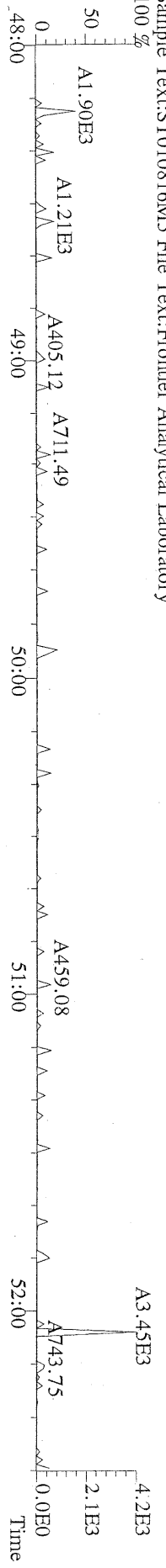
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453.7831 S:6 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M5 File Text:Frontier Analytical Laboratory



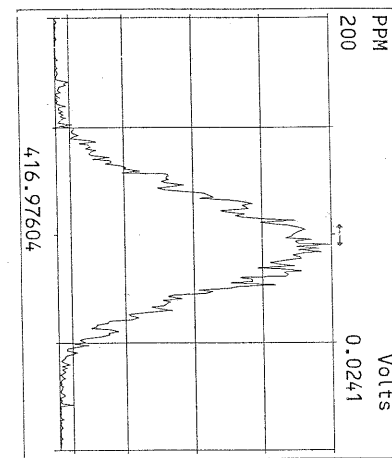
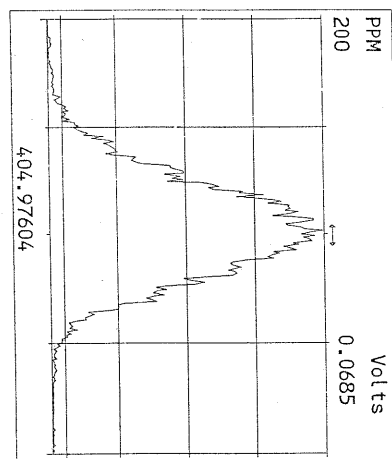
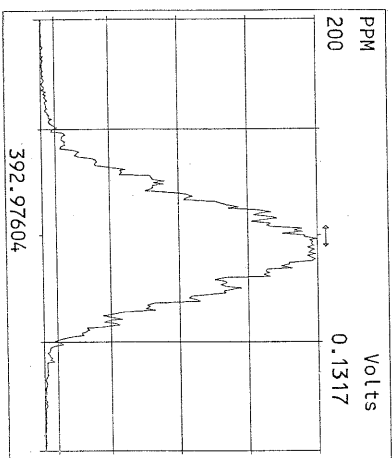
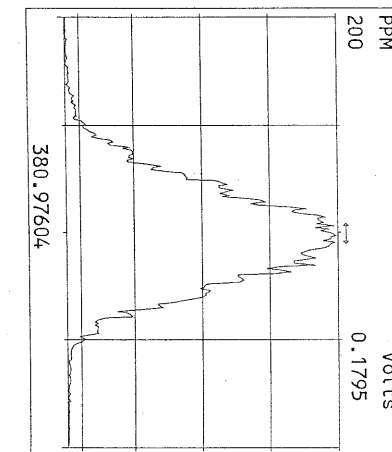
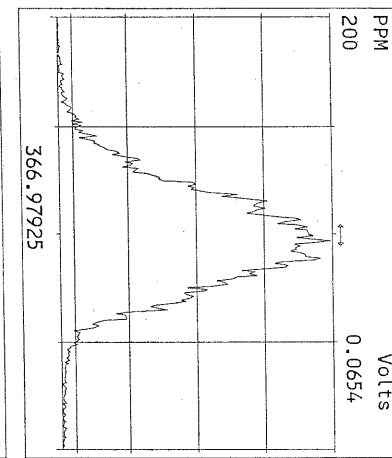
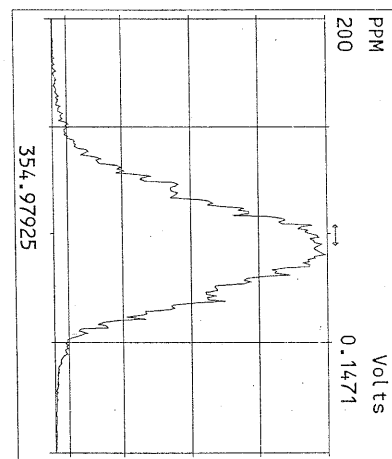
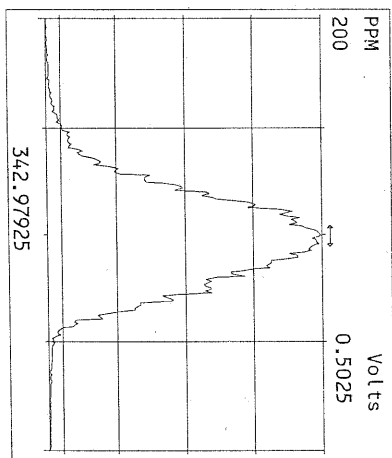
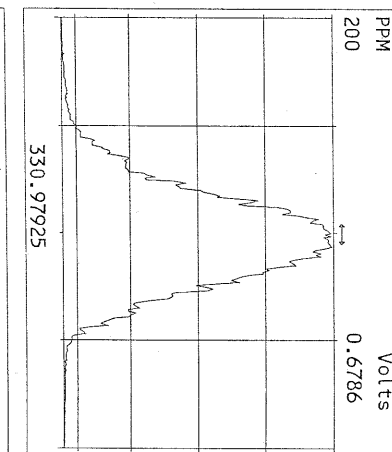
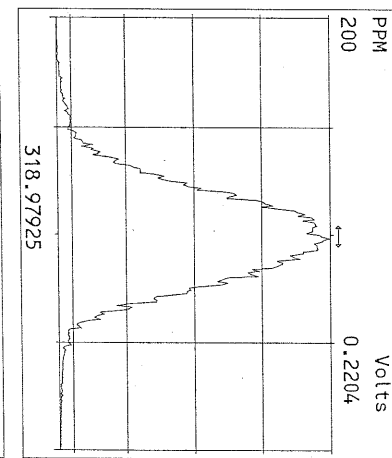
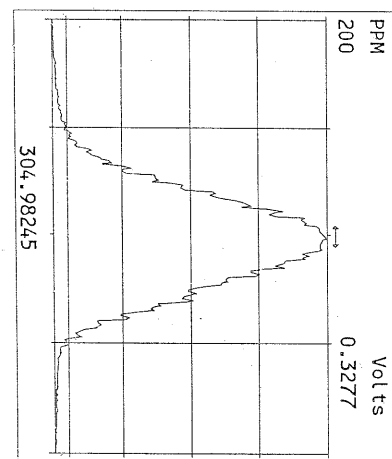
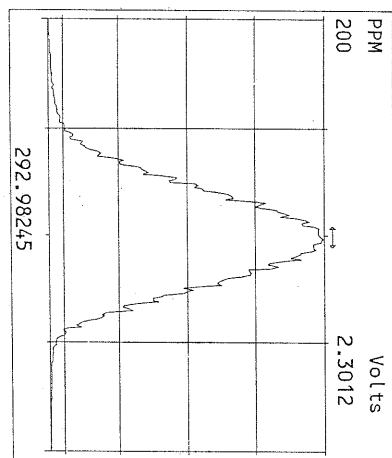
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455.7801 S:6 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M5 File Text:Frontier Analytical Laboratory



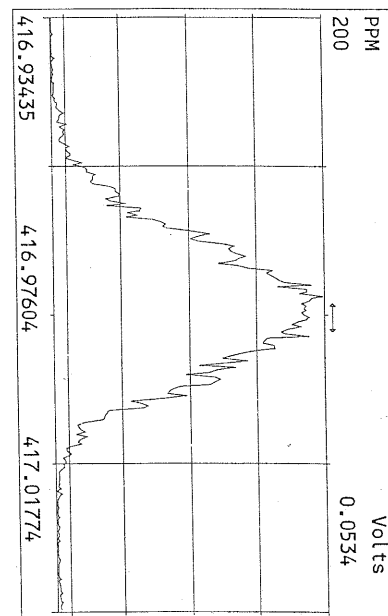
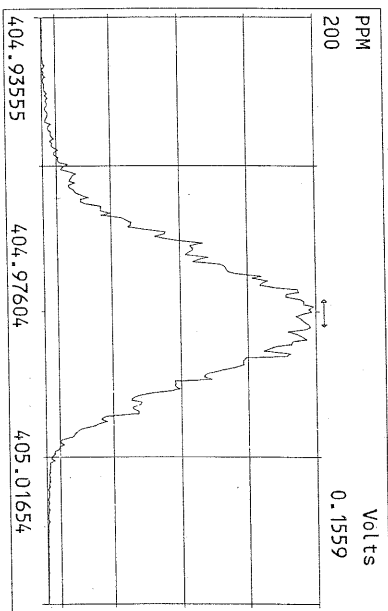
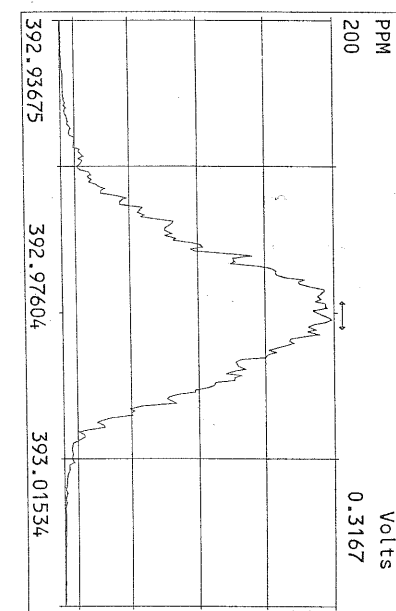
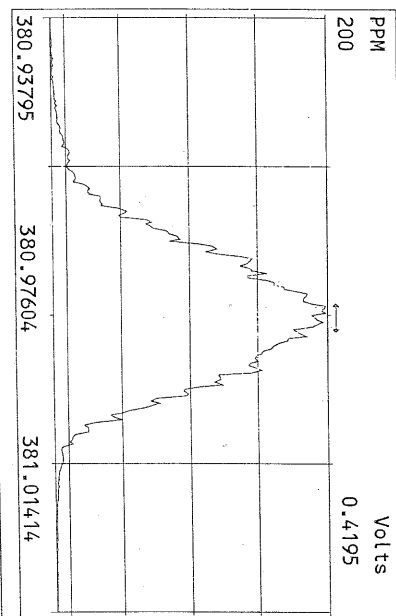
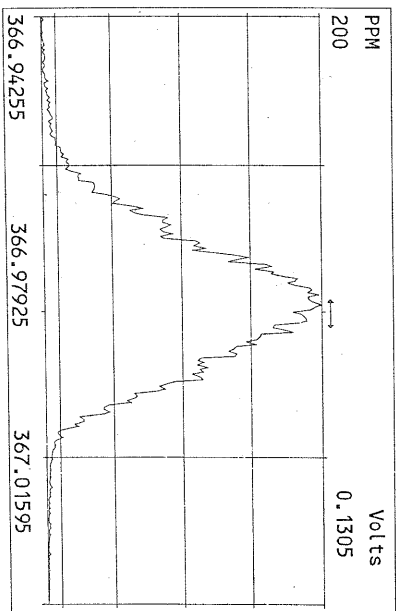
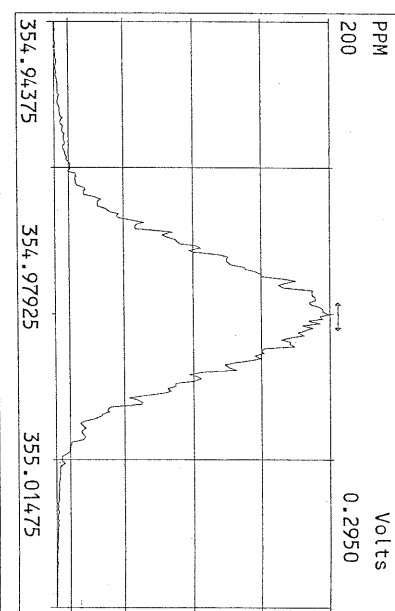
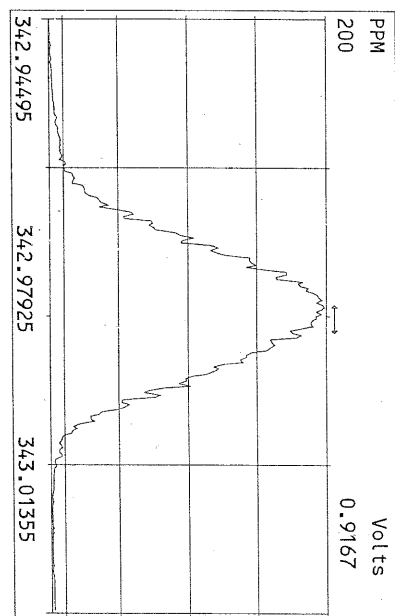
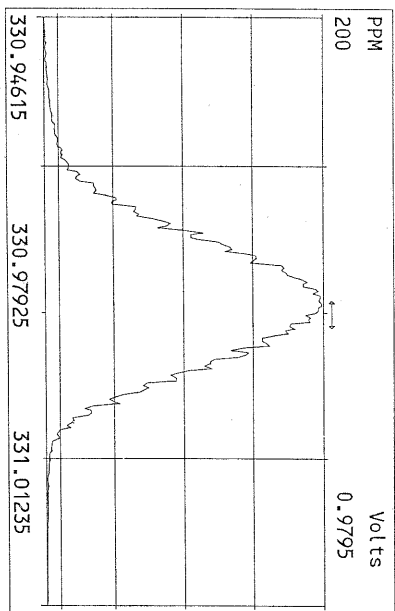
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513.6775 S:6 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST010816M5 File Text:Frontier Analytical Laboratory



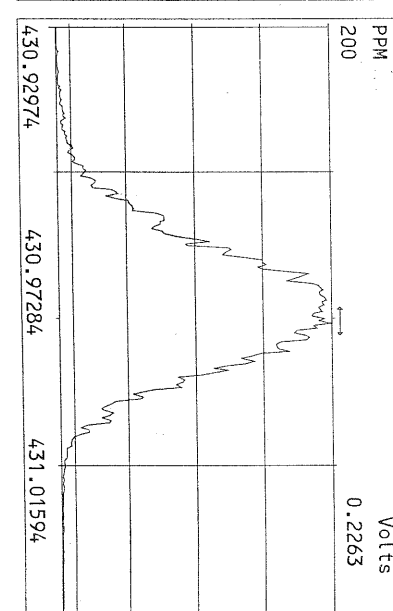
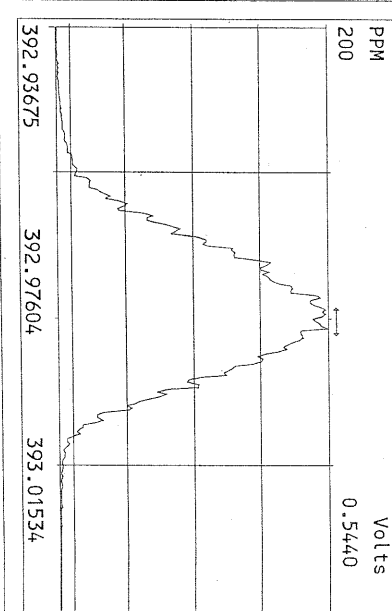
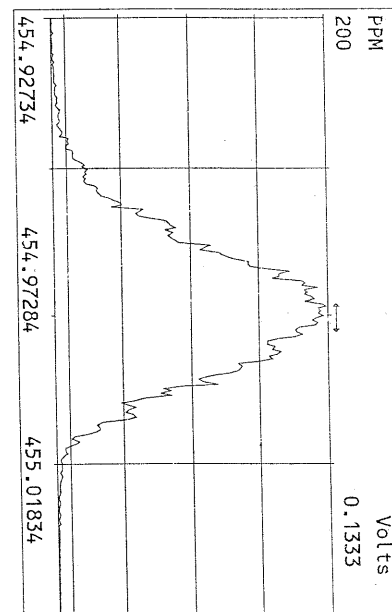
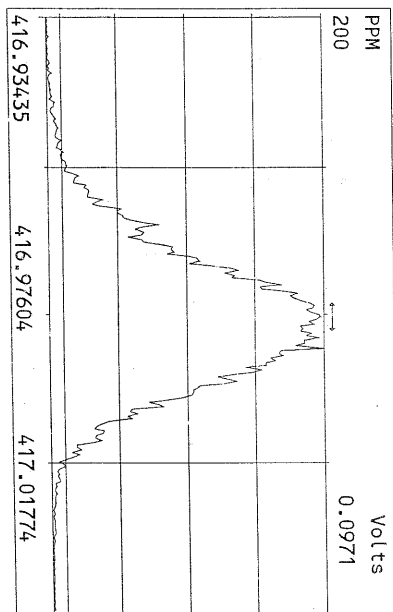
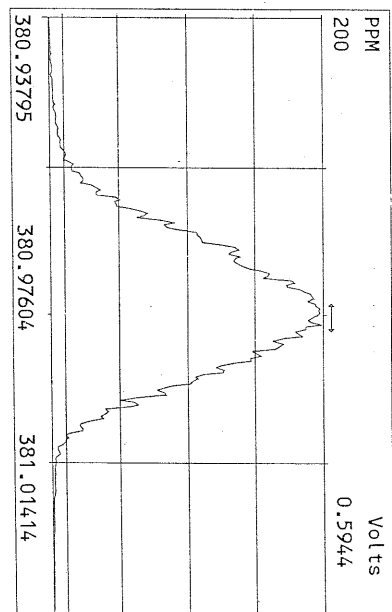
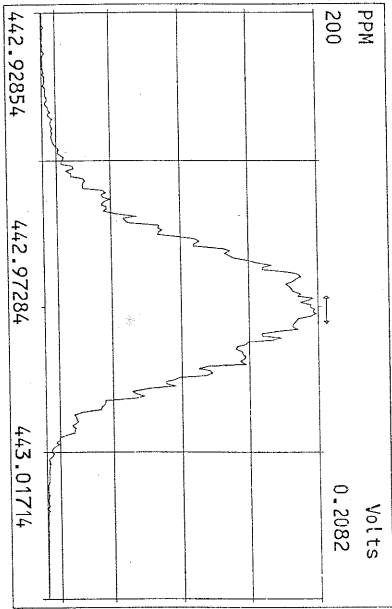
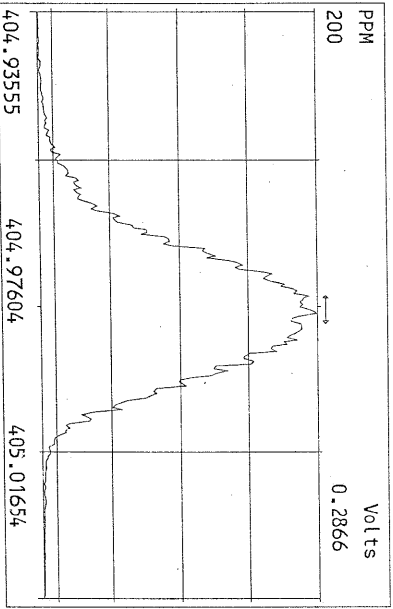
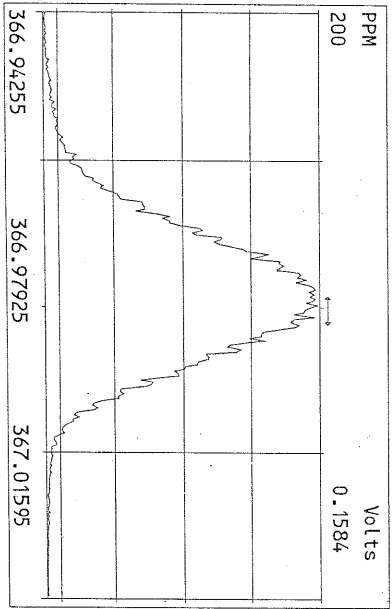
Peak Locate Examination: 9-JAN-2016:00:41 File:08JAN16M_RES_CHECK
Experiment:PCDD Function:1 Reference:PFK



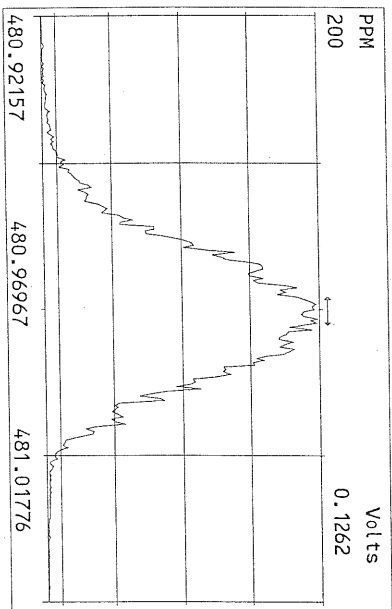
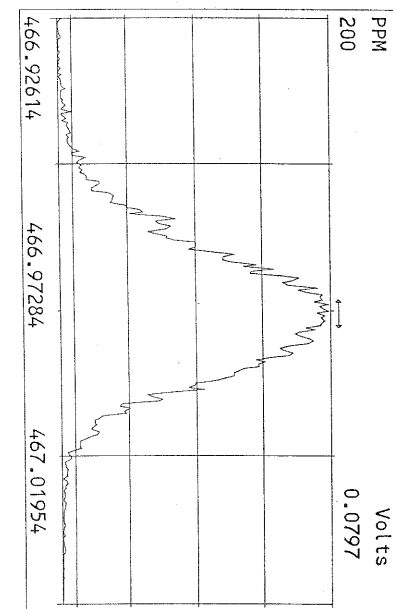
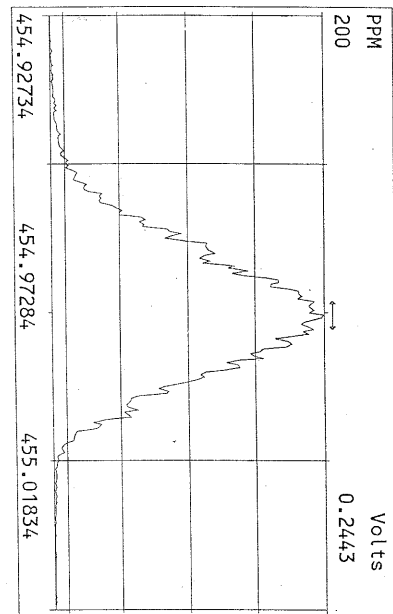
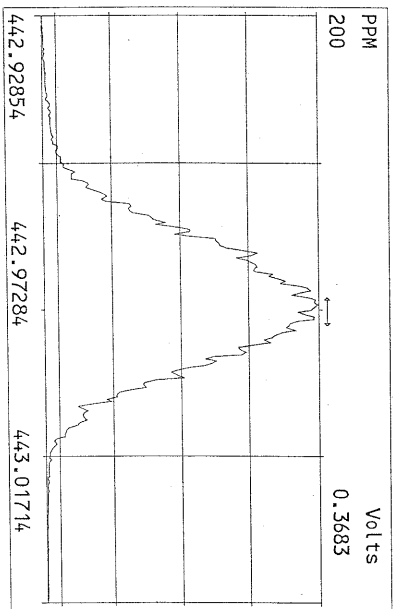
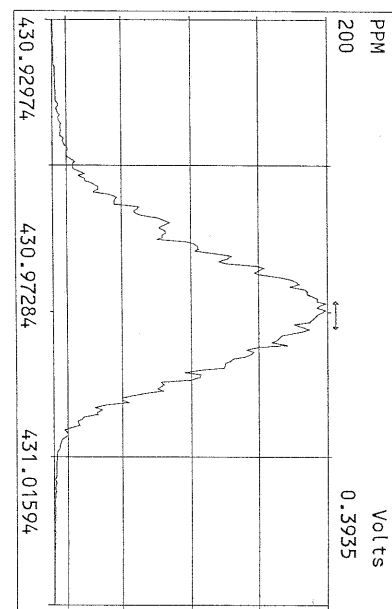
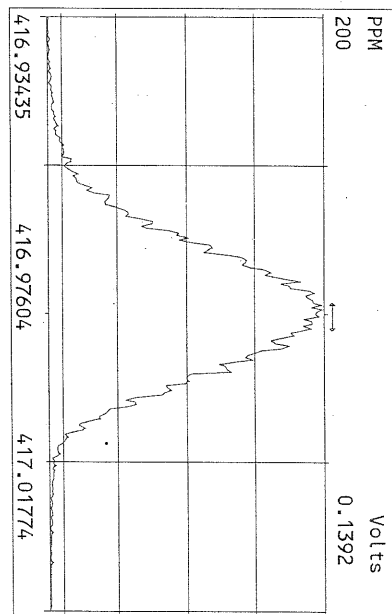
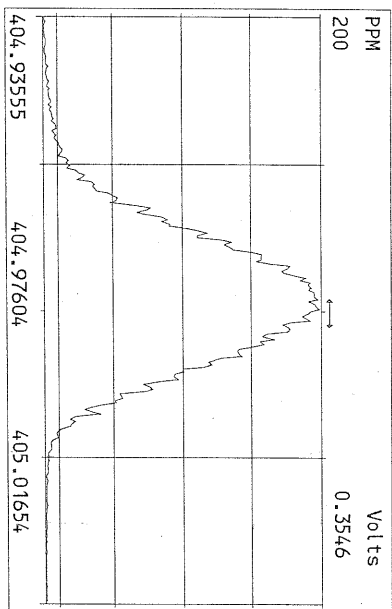
Peak Locate Examination: 9-JAN-2016:00:42 File:08JAN16M_RES_CHECK
 Experiment:PCDD Function:2 Reference:PFK



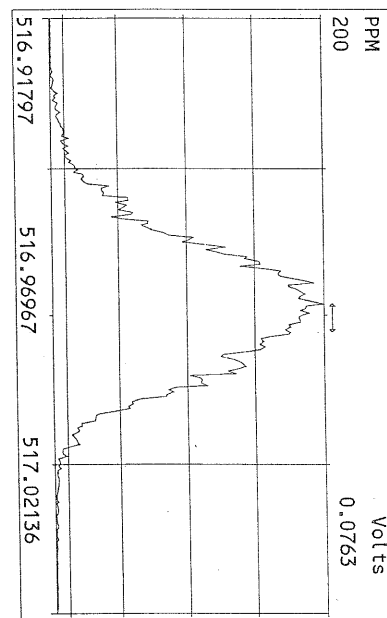
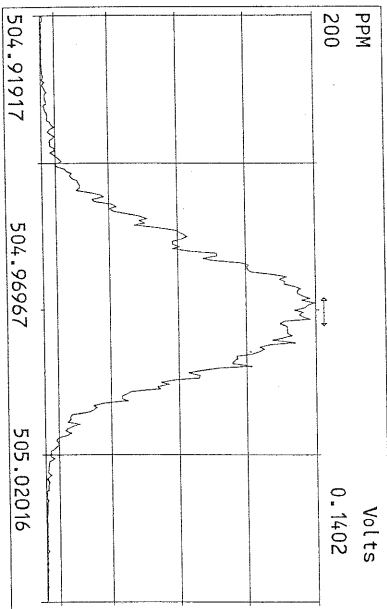
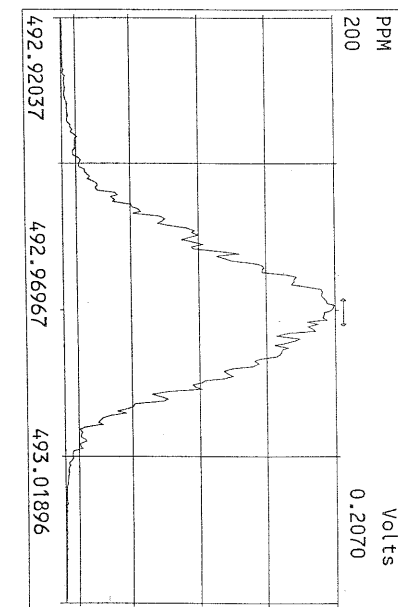
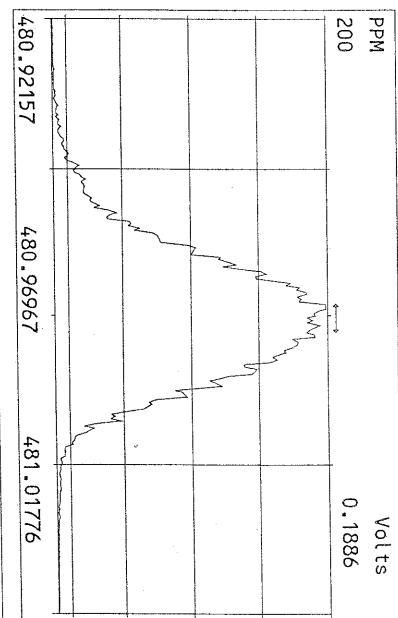
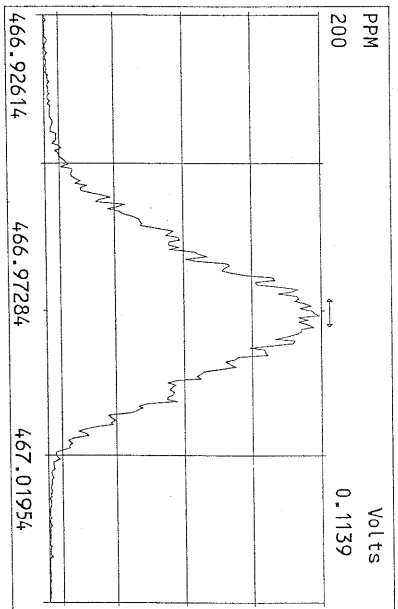
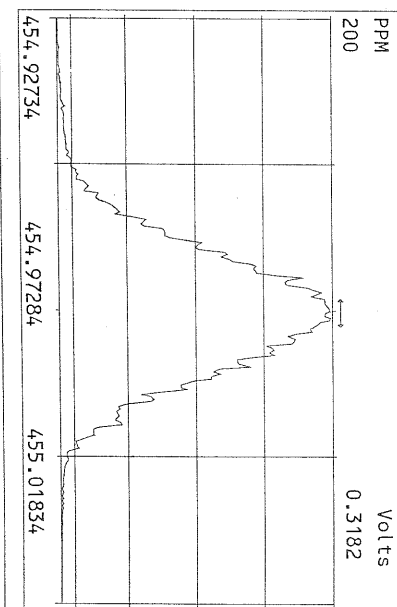
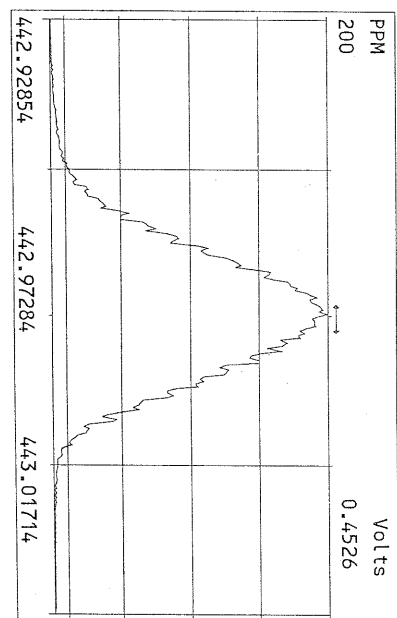
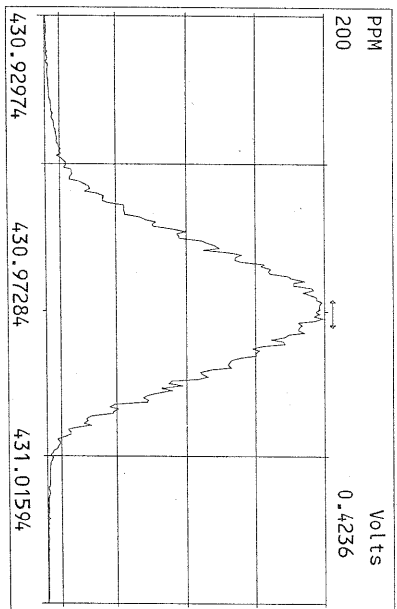
Peak Locate Examination: 9-JAN-2016:00:42 File:08JAN16M_RES_CHECK
Experiment:PCDD Function:3 Reference:PFK



Peak Locate Examination: 9-JAN-2016:00:43 File:08JAN16M_RES_CHECK
Experiment:PCDD Function:4 Reference:PFK



Peak Locate Examination: 9-JAN-2016:00:43 File:08JAN16M_RES_CHECK
Experiment:PCDD Function:5 Reference:PFK



USEPA - ITD

FORM 4A
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: Frontier Analytical Laboratory Episode No.:

Contract No.: SAS No.:

Initial Calibration Date: 1/8/16

Instrument ID: FAL3 GC Column ID: DB5


VER Data Filename: 31JAN16M Sam:1 Analysis Date: 31-JAN-16 15:08:36

NATIVE ANALYTES	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	ACCEPT	CONC. FOUND	CONC. RANGE (ng/mL) (3)
2,3,7,8-TCDD	M/M+2	0.81	0.65-0.89	y	10.6	7.80 - 12.9
1,2,3,7,8-PeCDD	M+2/M+4	1.51	1.32-1.78	y	45.5	39.0 - 65.0
1,2,3,4,7,8-HxCDD	M+2/M+4	1.23	1.05-1.43	y	45.8	39.0 - 64.0
1,2,3,6,7,8-HxCDD	M+2/M+4	1.25	1.05-1.43	y	46.3	39.0 - 64.0
1,2,3,7,8,9-HxCDD	M+2/M+4	1.21	1.05-1.43	y	47.0	41.0 - 61.0
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.10	0.88-1.20	y	46.0	43.0 - 58.0
OCDD	M+2/M+4	0.88	0.76-1.02	y	95.8	79.0 - 126
2,3,7,8-TCDF	M/M+2	0.83	0.65-0.89	y	9.62	8.40 - 12.0
1,2,3,7,8-PeCDF	M+2/M+4	1.47	1.32-1.78	y	52.0	41.0 - 60.0
2,3,4,7,8-PeCDF	M+2/M+4	1.47	1.32-1.78	y	49.1	41.0 - 60.0
1,2,3,4,7,8-HxCDF	M+2/M+4	1.22	1.05-1.43	y	48.7	45.0 - 56.0
1,2,3,6,7,8-HxCDF	M+2/M+4	1.20	1.05-1.43	y	48.8	44.0 - 57.0
2,3,4,6,7,8-HxCDF	M+2/M+4	1.20	1.05-1.43	y	49.1	44.0 - 57.0
1,2,3,7,8,9-HxCDF	M+2/M+4	1.21	1.05-1.43	y	48.8	45.0 - 56.0
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.04	0.88-1.20	y	49.2	45.0 - 55.0
1,2,3,4,7,8,9-HpCDF	M+2/M+4	1.04	0.88-1.20	y	48.4	43.0 - 58.0
OCDF	M+2/M+4	0.91	0.76-1.02	y	92.6	63.0 - 159

(1) See Table 8, Method 1613, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613.

(3) Contract-required concentration range as specified in Table 6, Method 1613.

Analyst: Date: 2/1/16

USEPA - ITD

FORM 4B
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: Frontier Analytical Laboratory

Episode No.:

Contract No.:

SAS No.:

Initial Calibration Date: 1/8/16

Instrument ID: FAL3

GC Column ID: DB5

VER Data Filename: 31JAN16M

Sam:1

Analysis Date: 31-JAN-16 15:08:36


LABELLED COMPOUNDS	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	ACCEPT	CONC. FOUND	CONC. RANGE (ng/mL) (3)
13C-2,3,7,8-TCDD	M/M+2	0.80	0.65-0.89	y	99.0	82.0 - 121
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.54	1.32-1.78	y	109	62.0 - 160
13C-1,2,3,4,7,8-HxCDD	M+2/M+4	1.29	1.05-1.43	y	97.6	85.0 - 117
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.24	1.05-1.43	y	101	85.0 - 118
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.06	0.88-1.20	y	100	72.0 - 138
13C-OCDD	M+2/M+4	0.90	0.76-1.02	y	195	96.0 - 415
13C-2,3,7,8-TCDF	M/M+2	0.82	0.65-0.89	y	99.3	71.0 - 140
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.57	1.32-1.78	y	90.4	76.0 - 130
13C-2,3,4,7,8-PeCDF	M+2/M+4	1.56	1.32-1.78	y	103	77.0 - 130
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.53	0.43-0.59	y	84.8	76.0 - 131
13C-1,2,3,6,7,8-HxCDF	M/M+2	0.54	0.43-0.59	y	87.1	70.0 - 143
13C-2,3,4,6,7,8-HxCDF	M/M+2	0.53	0.43-0.59	y	89.3	73.0 - 137
13C-1,2,3,7,8,9-HxCDF	M/M+2	0.54	0.43-0.59	y	82.1	74.0 - 135
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.47	0.37-0.51	y	91.2	78.0 - 129
13C-1,2,3,4,7,8,9-HpCDF	M/M+2	0.46	0.37-0.51	y	85.0	77.0 - 129
13C-OCDF	M+2/M+4	0.86	0.76-1.02	y	166	96.0 - 415
CLEANUP STANDARD (4)						
37Cl-2,3,7,8-TCDD					10.9	7.90 - 12.7

(1) See Table 8, Method 1613, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613.

(3) Contract-required concentration range as specified in Table 6, Method 1613.

(4) No ion abundance ratio; report concentration found.

Analyst: Date: 2/11/16

Results: GC Column: DB5 Amount: 1.000 NATO 1989 Tox: 96.5
 WHO 1998 Tox: 119 WHO 2005 Tox: 108

Name	Resp	RA	RT	RRF	Conc	Qual	Fac Noise-1	Noise-2	DL	Rec	#Hom
2,3,7,8-TCDD	3.72e+06	0.81 y	27:18	1.27	10.6		2.50	-	*		
1,2,3,7,8-PeCDD	1.12e+07	1.51 y	33:10	1.01	45.5		2.50	-	*		
1,2,3,4,7,8-HxCDD	9.82e+06	1.23 y	38:31	1.04	45.8		2.50	-	*		
1,2,3,6,7,8-HxCDD	1.04e+07	1.25 y	38:41	1.05	46.3		2.50	-	*		
1,2,3,7,8,9-HxCDD	1.13e+07	1.21 y	39:08	1.14	47.0		2.50	-	*		
1,2,3,4,6,7,8-HpCDD	9.51e+06	1.10 y	44:07	1.01	46.0		2.50	-	*		
OCDD	1.70e+07	0.88 y	49:37	1.08	95.8		2.50	-	*		
2,3,7,8-TCDF	3.50e+06	0.83 y	26:33	1.02	9.62		2.50	-	*		
1,2,3,7,8-PeCDF	1.48e+07	1.47 y	31:24	0.90	52.0		2.50	-	*		
2,3,4,7,8-PeCDF	1.46e+07	1.47 y	32:45	0.93	49.1		2.50	-	*		
1,2,3,4,7,8-HxCDF	1.44e+07	1.22 y	37:08	1.13	48.7		2.50	-	*		
1,2,3,6,7,8-HxCDF	1.46e+07	1.20 y	37:19	1.08	48.8		2.50	-	*		
2,3,4,6,7,8-HxCDF	1.37e+07	1.20 y	38:16	1.03	49.1		2.50	-	*		
1,2,3,7,8,9-HxCDF	1.18e+07	1.21 y	39:42	1.05	48.8		2.50	-	*		
1,2,3,4,6,7,8-HpCDF	1.30e+07	1.04 y	42:12	1.24	49.2		2.50	-	*		
1,2,3,4,7,8,9-HpCDF	9.33e+06	1.04 y	45:02	1.12	48.4		2.50	-	*		
OCDF	1.89e+07	0.91 y	49:60	1.09	92.6		2.50	-	*		
13C-2,3,7,8-TCDD	2.77e+07	0.80 y	27:17	1.10	99.0					99.0	
13C-1,2,3,7,8-PeCDD	2.45e+07	1.54 y	33:08	0.89	109					109	
13C-1,2,3,4,7,8-HxCDD	2.07e+07	1.29 y	38:30	0.87	97.6					97.6	
13C-1,2,3,6,7,8-HxCDD	2.14e+07	1.24 y	38:40	0.87	101					101	
13C-1,2,3,4,6,7,8-HpCDD	2.04e+07	1.06 y	44:04	0.84	100					100	
13C-OCDD	3.30e+07	0.90 y	49:35	0.69	195					97.3	
13C-2,3,7,8-TCDF	3.57e+07	0.82 y	26:30	1.02	99.3					99.3	
13C-1,2,3,7,8-PeCDF	3.17e+07	1.57 y	31:23	1.00	90.4					90.4	
13C-2,3,4,7,8-PeCDF	3.20e+07	1.56 y	32:43	0.89	103					103	
13C-1,2,3,4,7,8-HxCDF	2.61e+07	0.53 y	37:05	1.26	84.8					84.8	
13C-1,2,3,6,7,8-HxCDF	2.76e+07	0.54 y	37:18	1.30	87.1					87.1	
13C-2,3,4,6,7,8-HxCDF	2.71e+07	0.53 y	38:15	1.25	89.3					89.3	
13C-1,2,3,7,8,9-HxCDF	2.30e+07	0.54 y	39:41	1.15	82.1					82.1	
13C-1,2,3,4,6,7,8-HpCDF	2.13e+07	0.47 y	42:11	0.96	91.2					91.2	
13C-1,2,3,4,7,8,9-HpCDF	1.72e+07	0.46 y	45:00	0.83	85.0					85.0	
13C-OCDF	3.76e+07	0.86 y	49:58	0.93	166					83.1	
37Cl-2,3,7,8-TCDD	2.75e+06		27:18	1.00	10.9					109	
13C-1,2,3,4-TCDD	2.53e+07	0.82 y	26:41	-	36.6						
13C-1,2,3,4-TCDF	3.50e+07	0.81 y	25:24	-	32.3						
13C-1,2,3,7,8,9-HxCDD	2.44e+07	1.24 y	39:07	-	41.0						
Total Tetra-Dioxins	1.62e+07		23:54	1.27	46.0		2.50	-	*	17	
Total Penta-Dioxins	3.61e+07		30:09	1.01	146		2.50	-	*	16	
Total Hexa-Dioxins	4.55e+07		36:03	1.08	200		2.50	-	*	24	
Total Hepta-Dioxins	2.03e+07		42:43	1.01	98.1		2.50	-	*	27	
Total Tetra-Furans	1.65e+07		22:52	1.02	45.4		2.50	-	*	17	
1st Fn. Tot Penta-Furans	1.96e+07		28:18	0.91	67.5		2.50	-	*	PeCDF 2	
Total Penta-Furans	4.44e+07		30:05	0.91	153		2.50	-	*	220 16	
Total Hexa-Furans	7.01e+07		35:10	1.07	251		2.50	-	*	21	
Total Hepta-Furans	2.27e+07		42:12	1.19	99.2		2.50	-	*	21	

Analyst: 

Date: 2/1/16

Frontier Analytical Laboratory - Acquisition Log

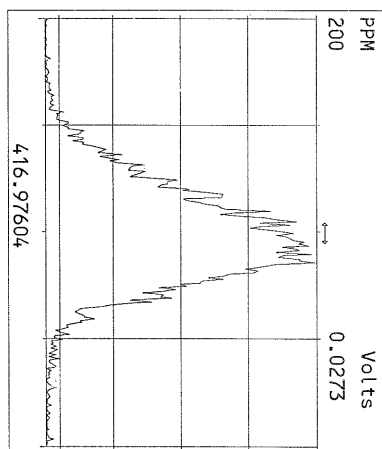
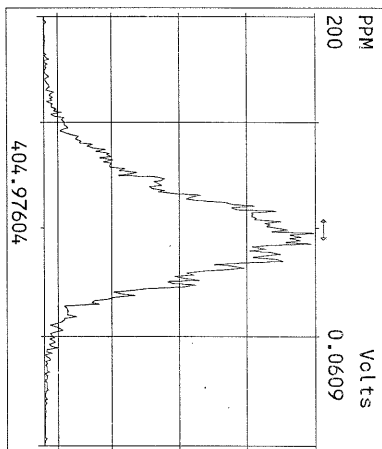
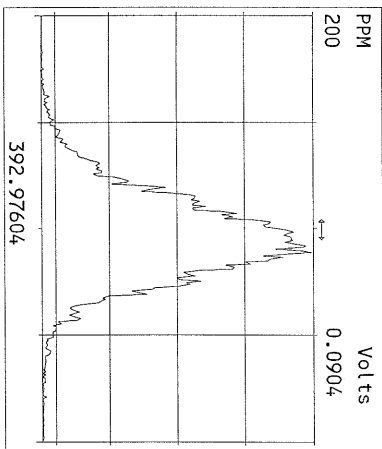
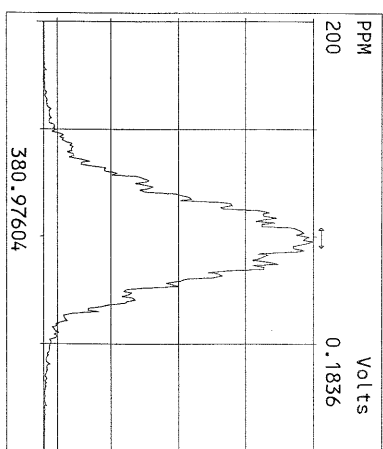
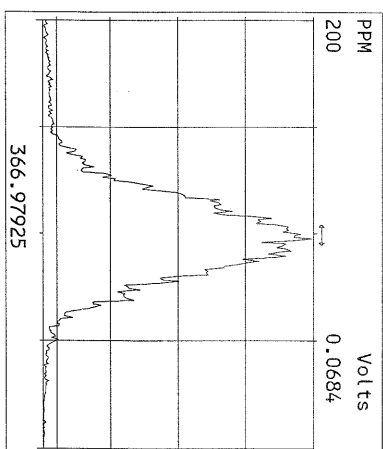
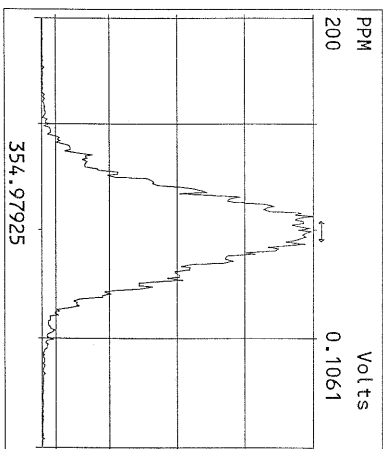
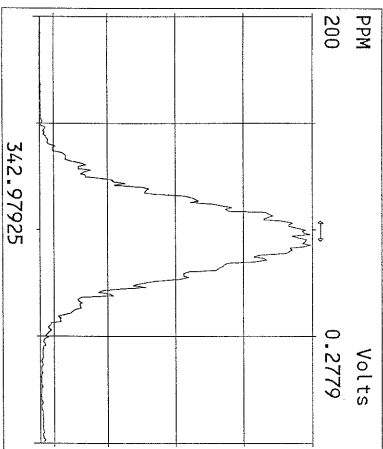
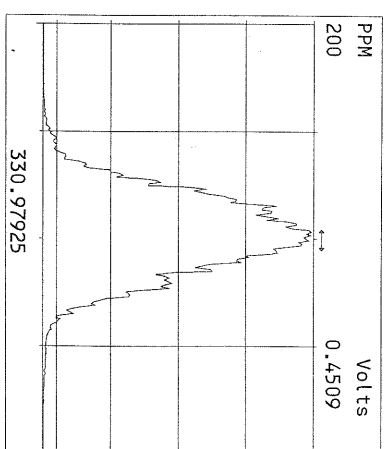
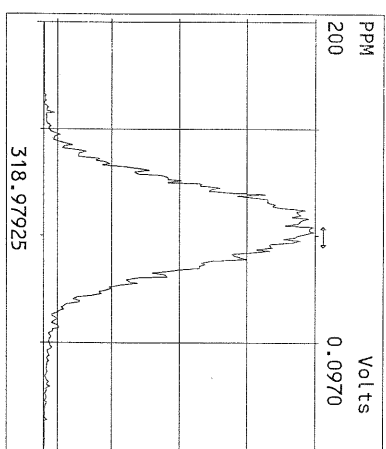
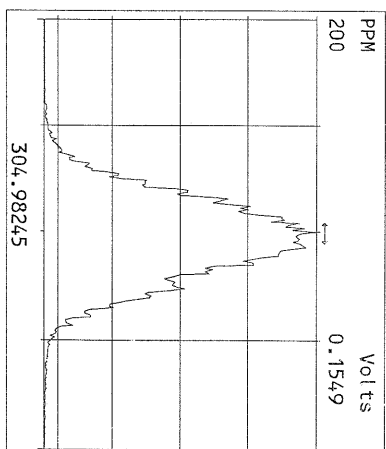
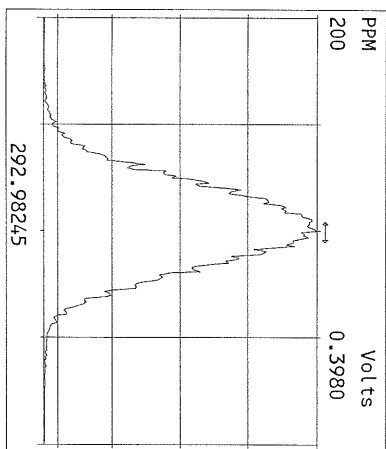
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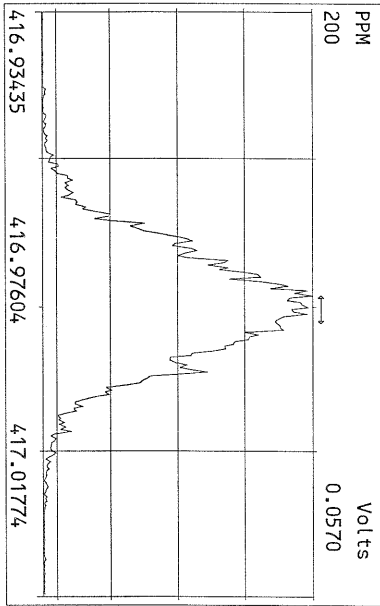
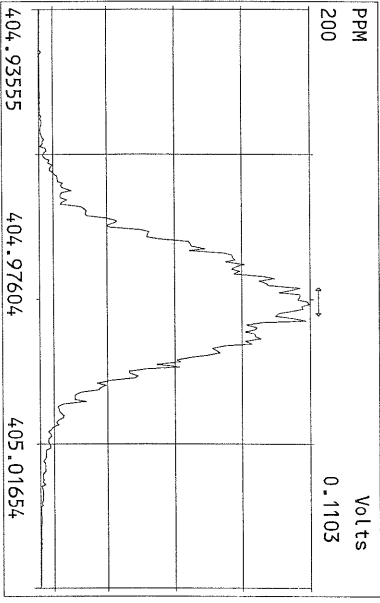
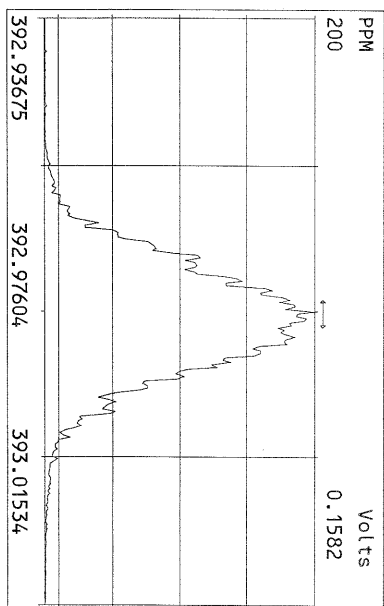
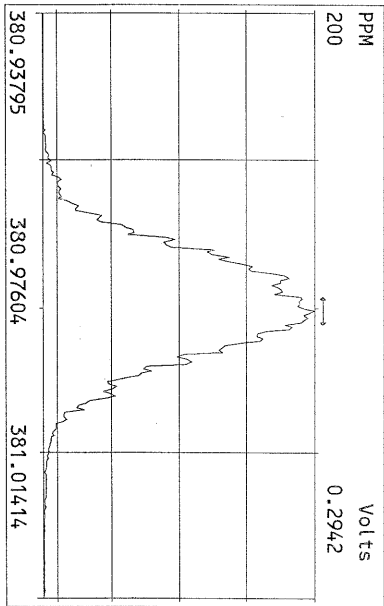
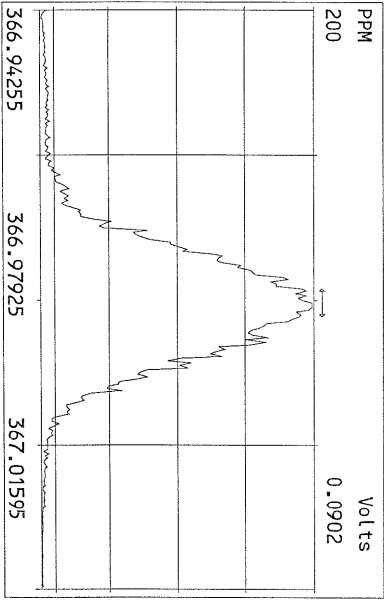
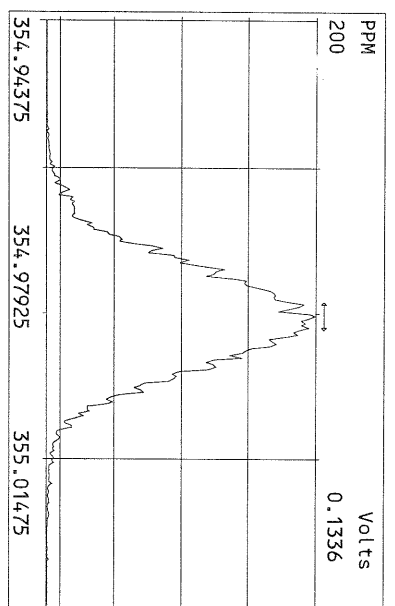
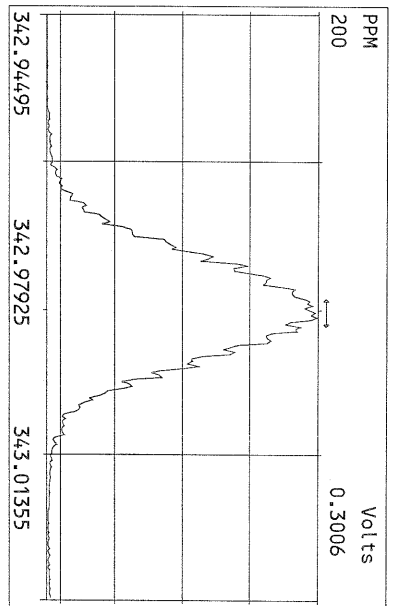
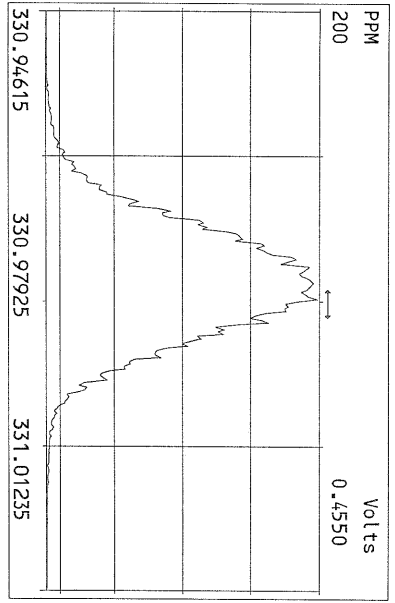
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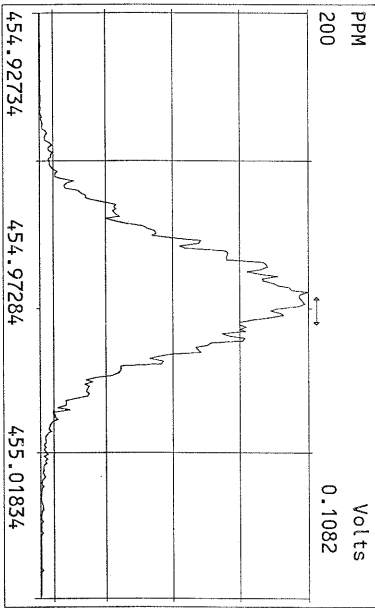
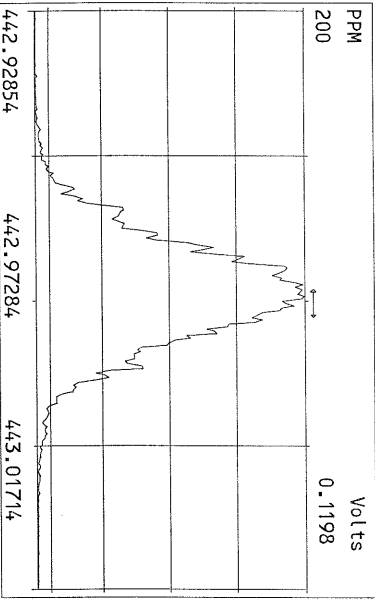
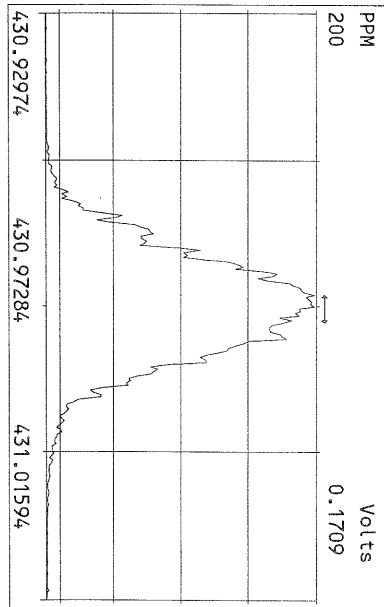
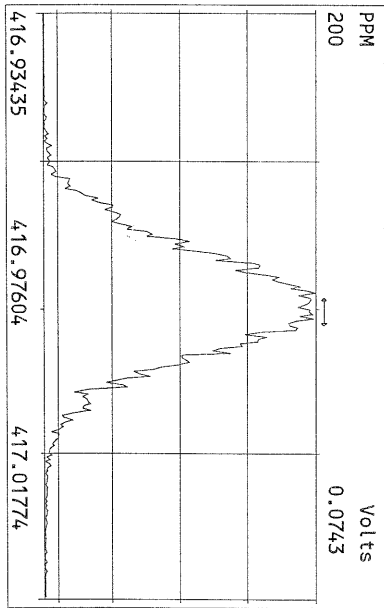
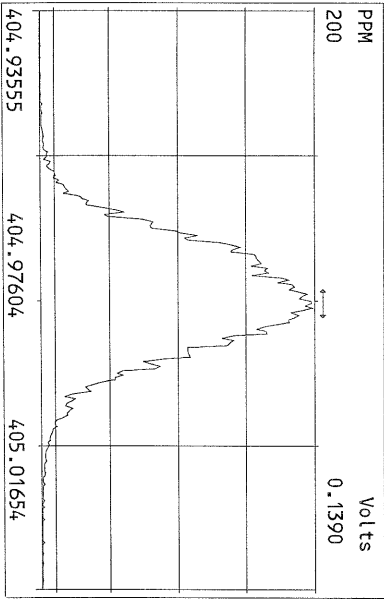
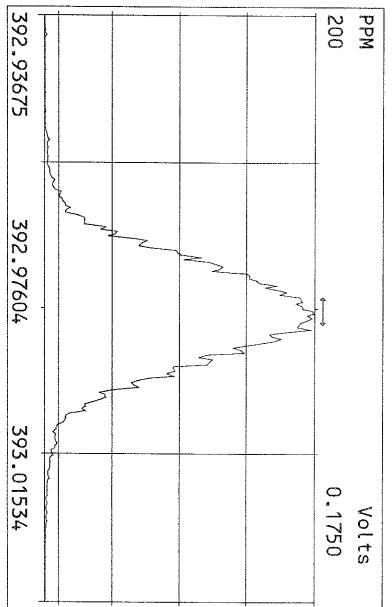
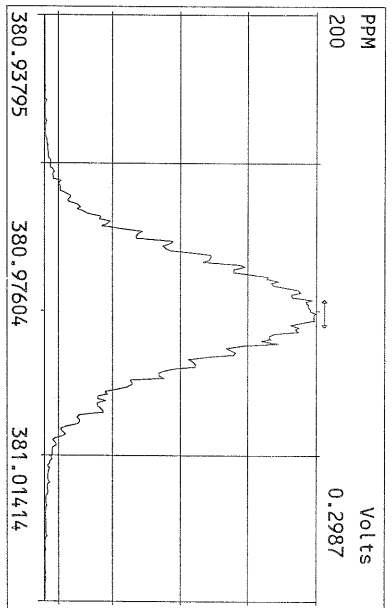
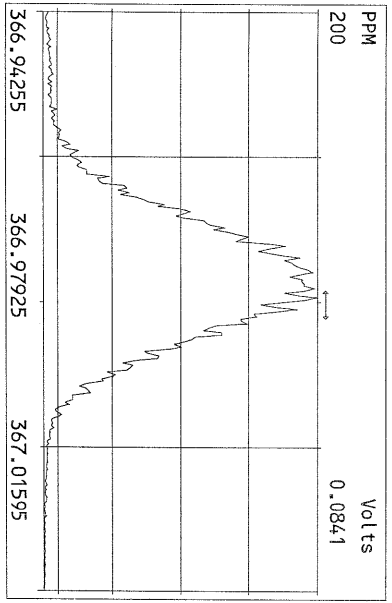
 2/1/16

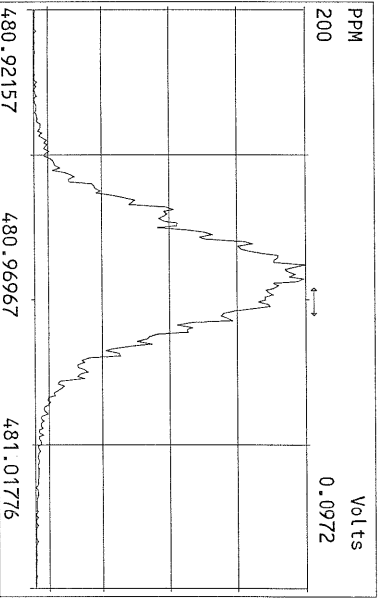
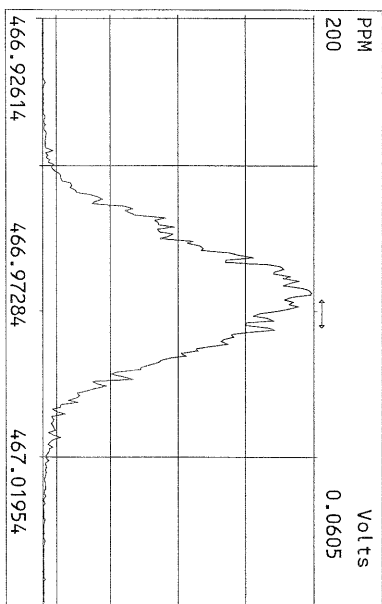
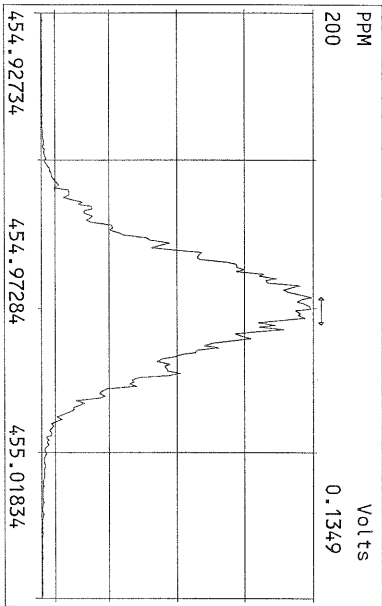
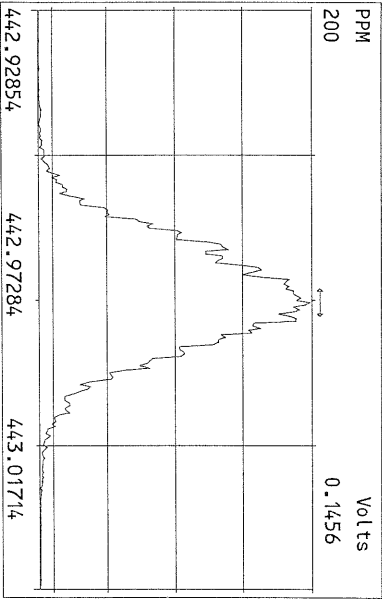
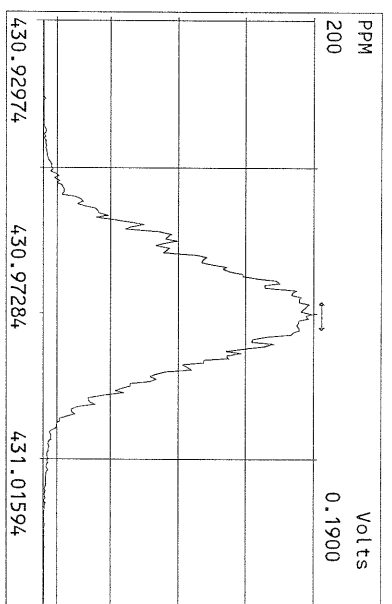
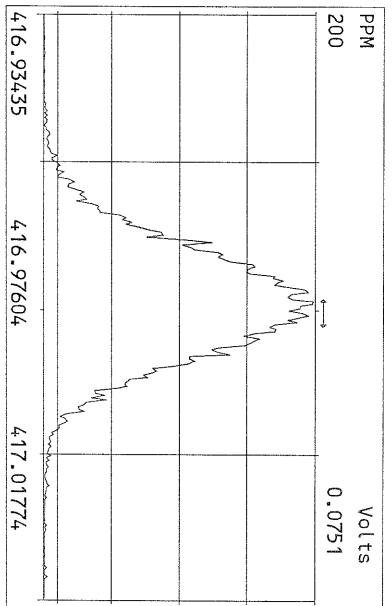
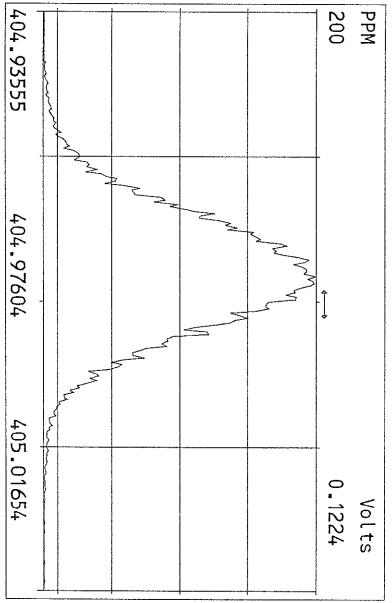
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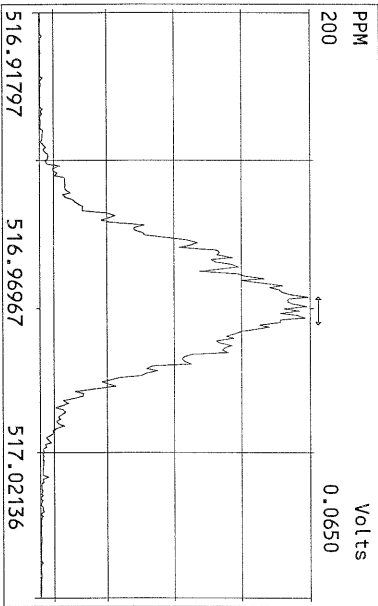
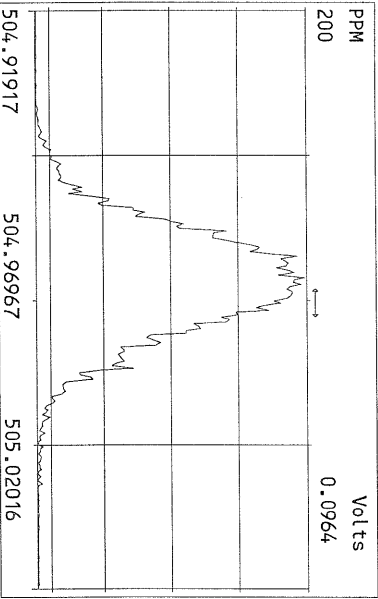
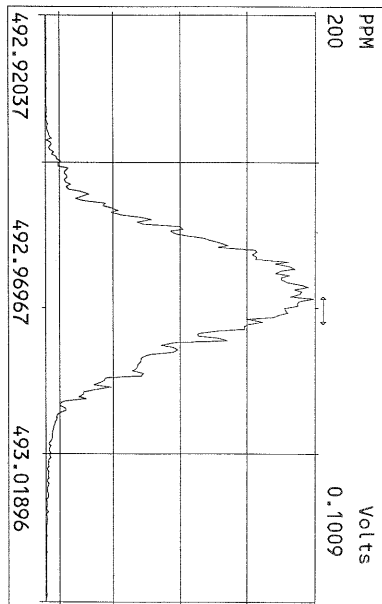
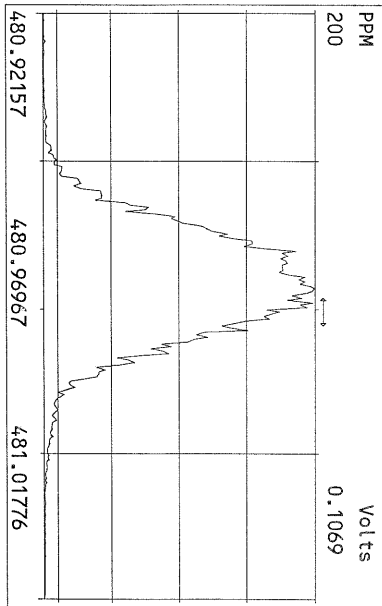
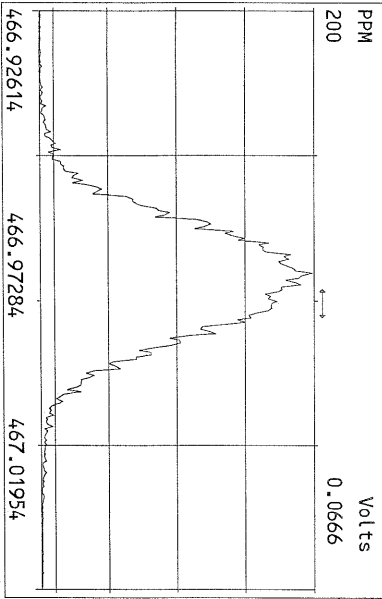
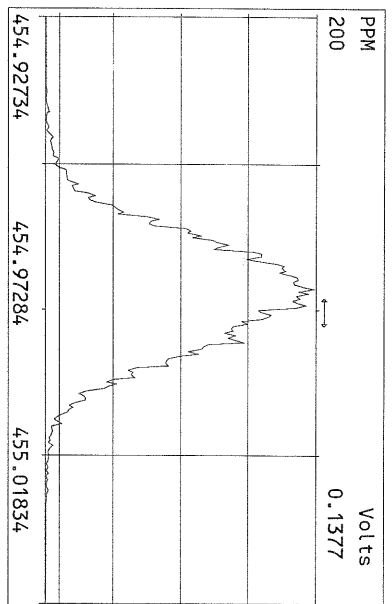
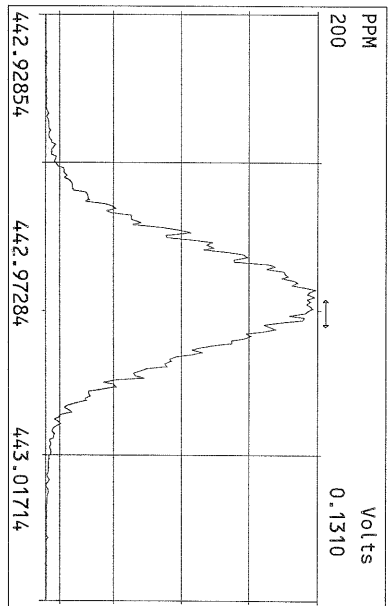
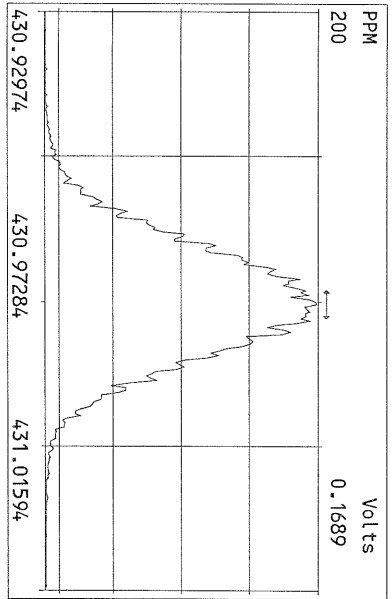
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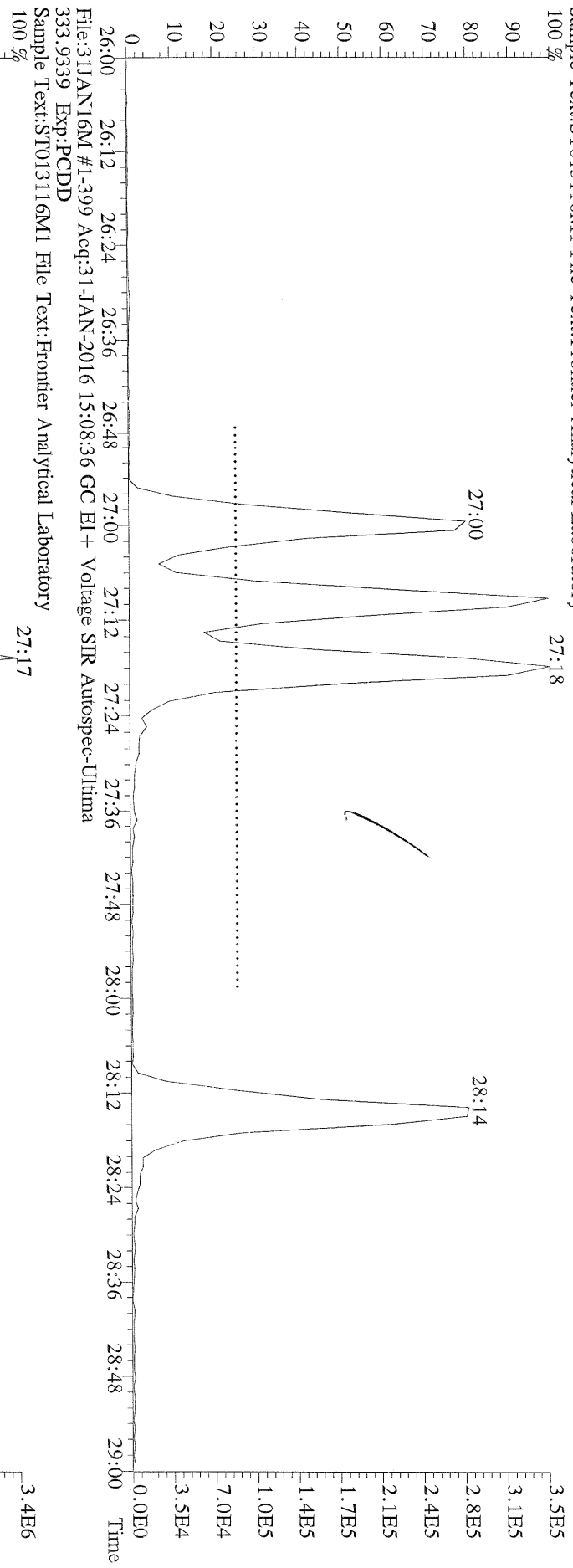




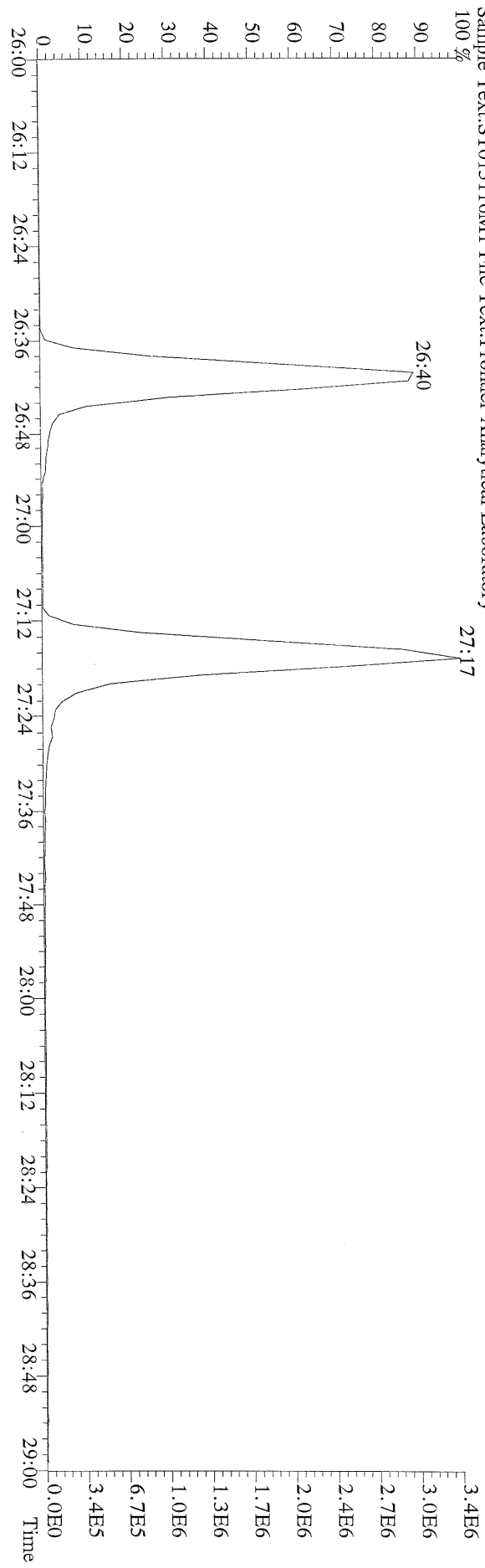




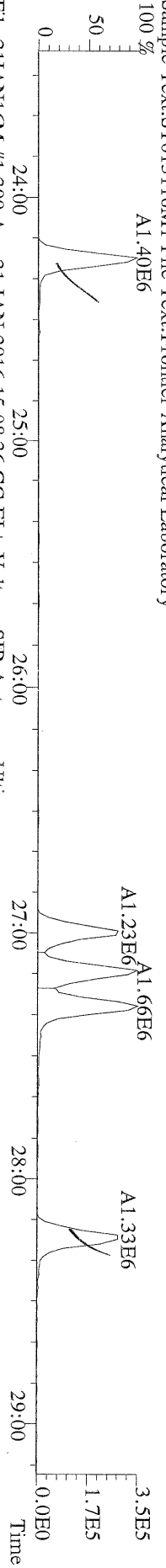
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319.8965 Exp:PCDD
Sample Text:ST013116M1 File Text:Frontier Analytical Laboratory



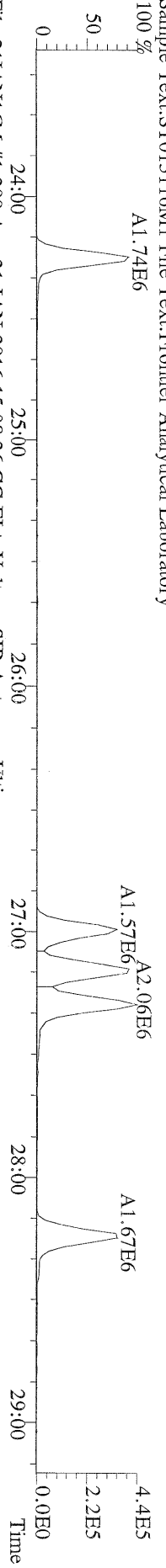
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333.9339 Exp:PCDD
Sample Text:ST013116M1 File Text:Frontier Analytical Laboratory



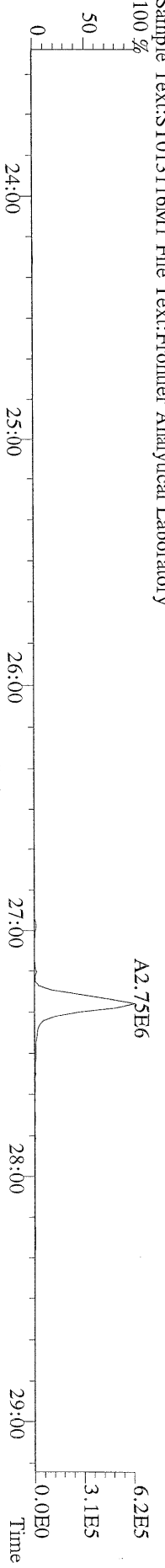
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319.8965 BSUB(10000,15,-3.0) PKD(5,5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST013116M1 File Text:Frontier Analytical Laboratory



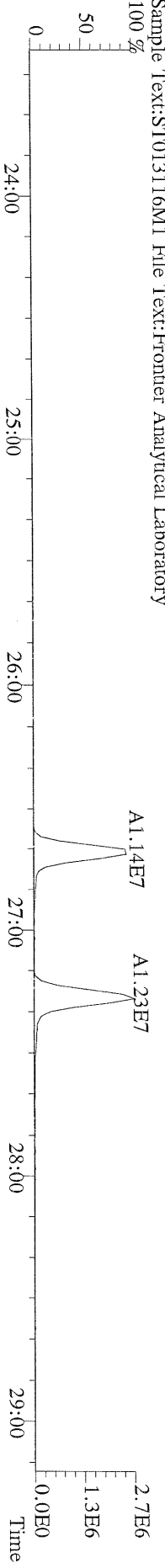
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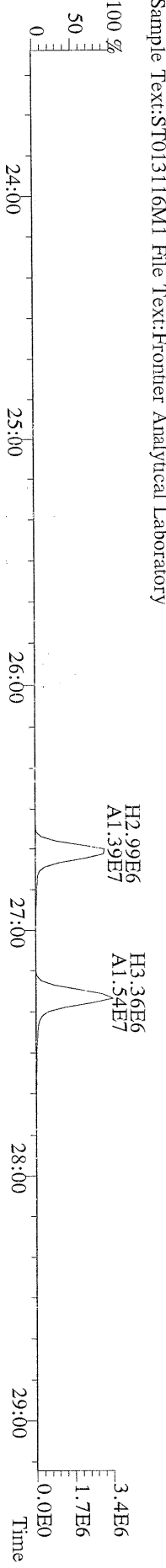
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327.8847 BSUB(10000,15,-3.0) PKD(5,5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST013116M1 File Text:Frontier Analytical Laboratory



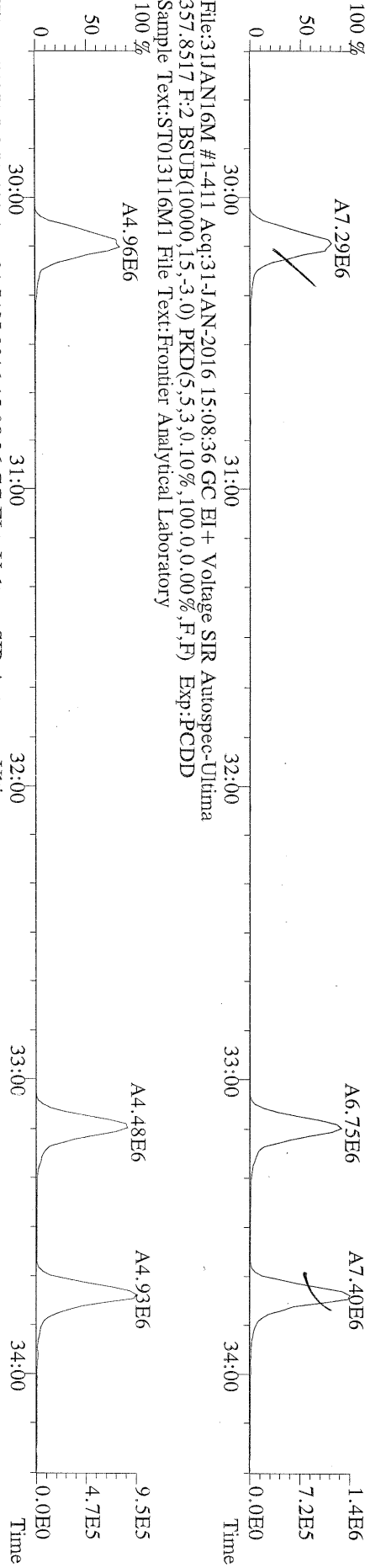
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Sample Text:ST013116M1 File Text:Frontier Analytical Laboratory



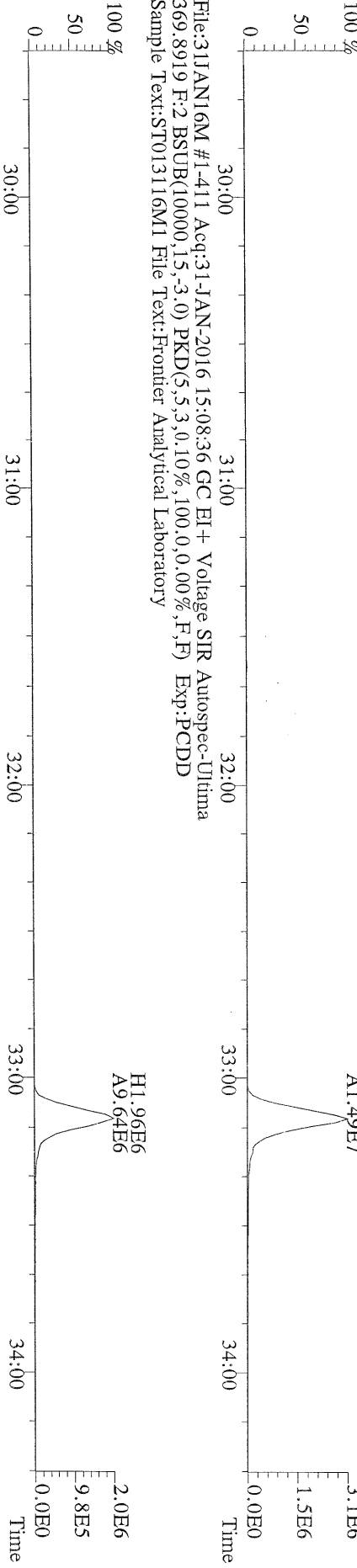
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333.9339 BSUB(10000,15,-3.0) PKD(5,5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST013116M1 File Text:Frontier Analytical Laboratory



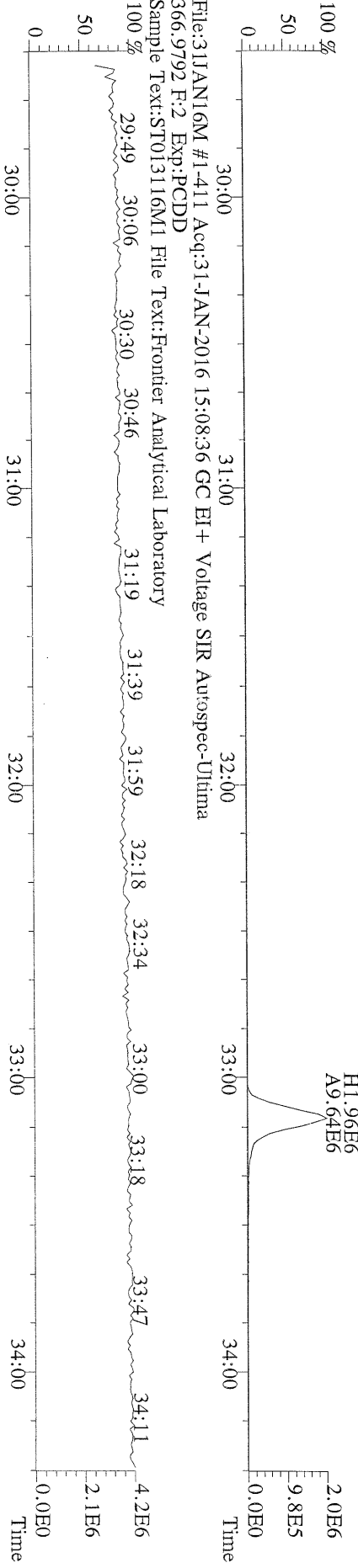
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Sample Text:ST013116M1 File Text:Frontier Analytical Laboratory



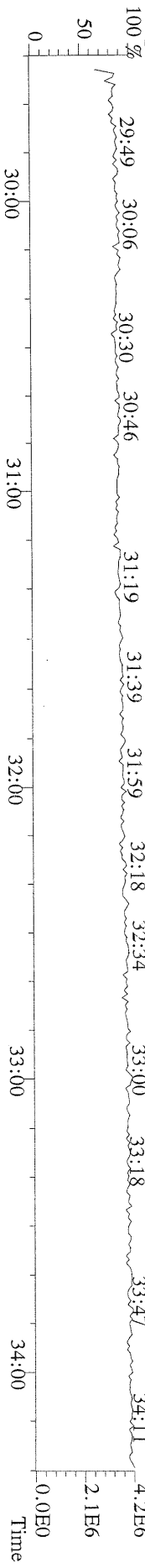
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367.8949 F:2 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST013116M1 File Text:Frontier Analytical Laboratory



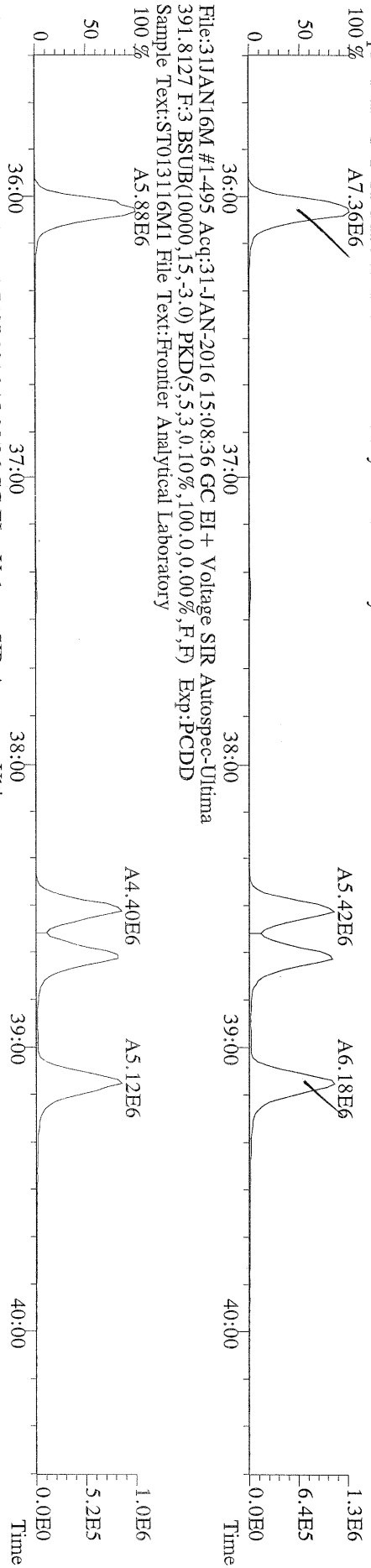
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369.8919 F:2 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:ST013116M1 File Text:Frontier Analytical Laboratory



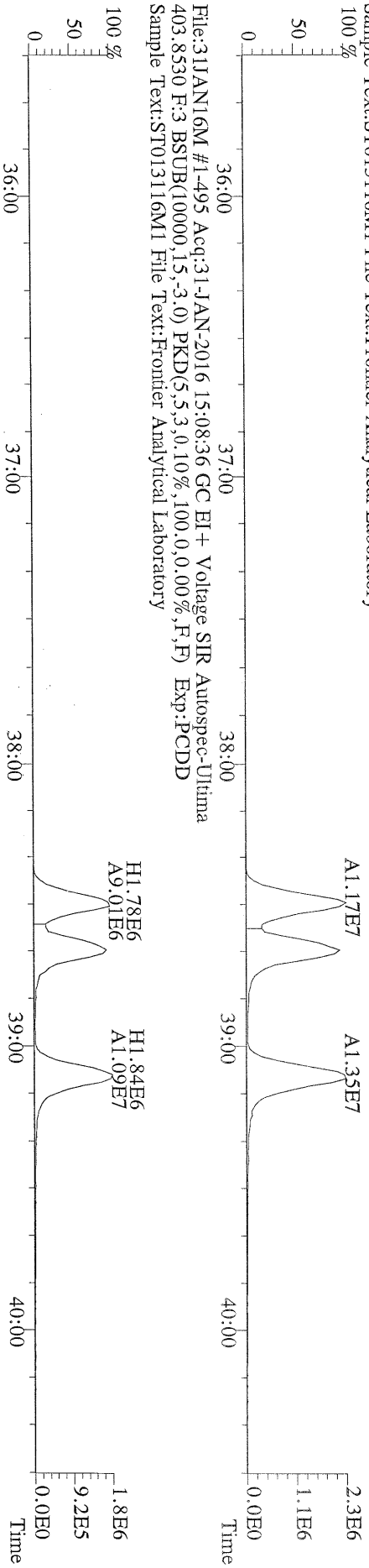
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366.9792 F:2 Exp:PCDD
Sample Text:ST013116M1 File Text:Frontier Analytical Laboratory



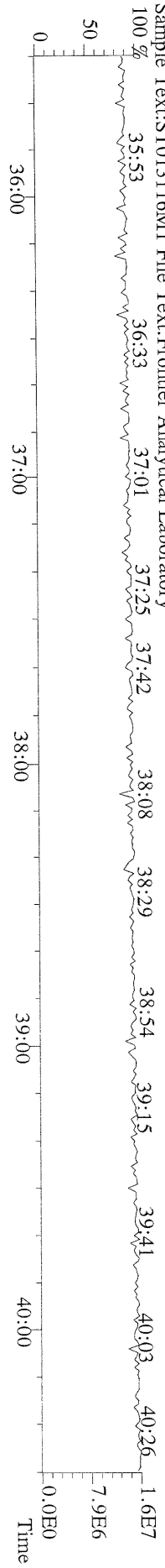
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389.8156 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST013116M1 File Text:Frontier Analytical Laboratory



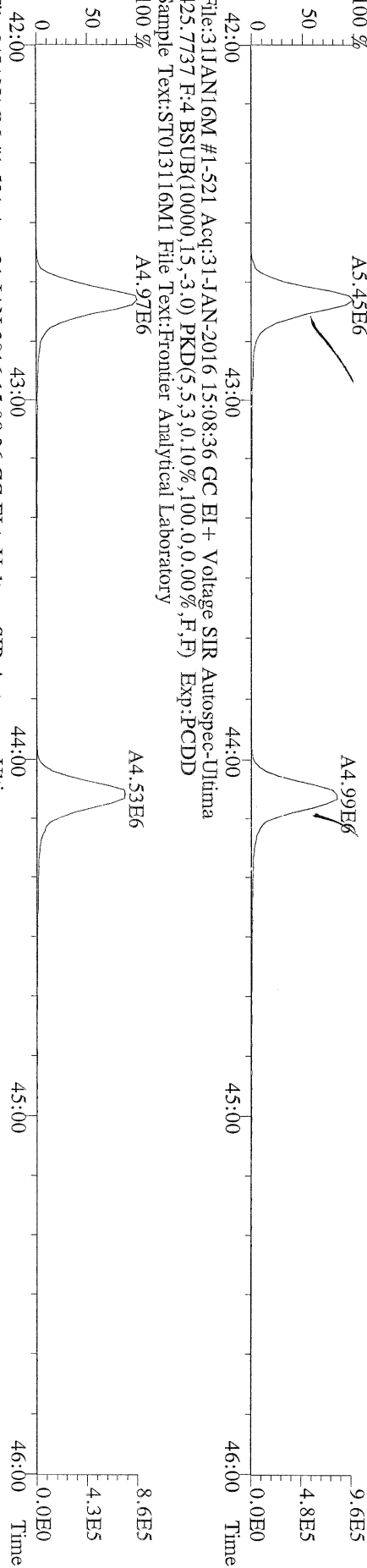
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Sample Text:ST013116M1 File Text:Frontier Analytical Laboratory



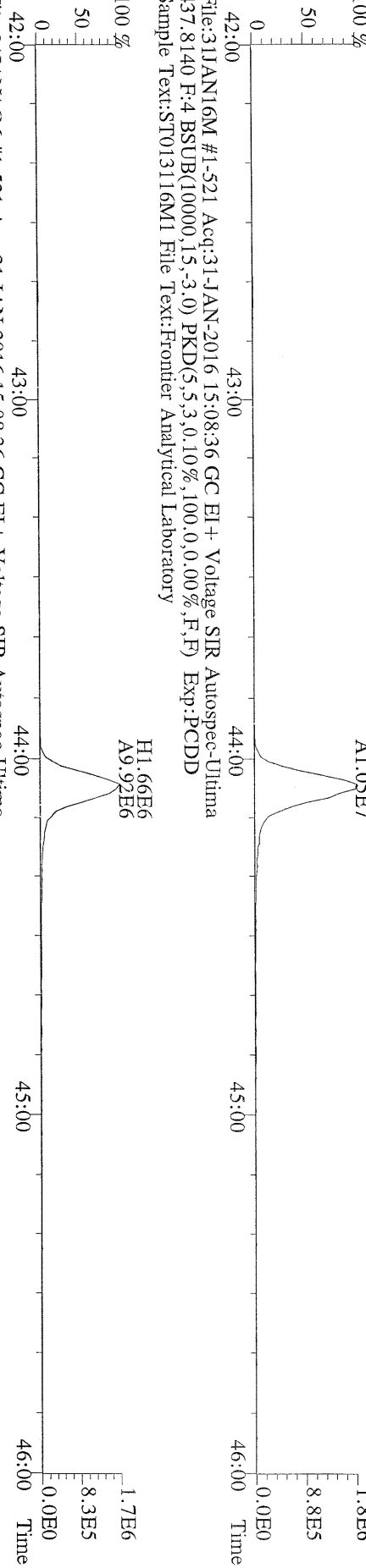
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380.9760 F:3 Exp:PCDD
Sample Text:ST013116M1 File Text:Frontier Analytical Laboratory



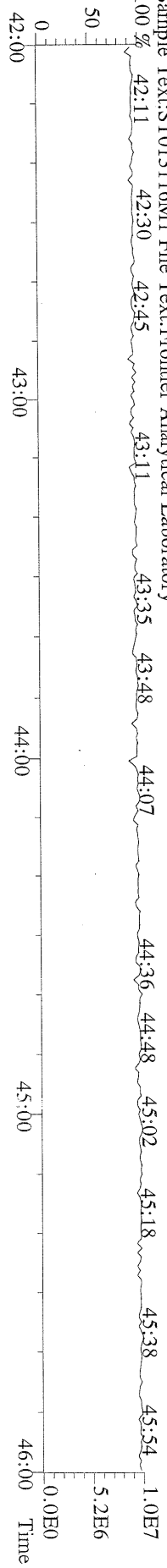
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423.7767 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0.0,0.00%,F,F) Exp:PCDD
Sample Text:ST013116M1 File Text:Frontier Analytical Laboratory
100 %



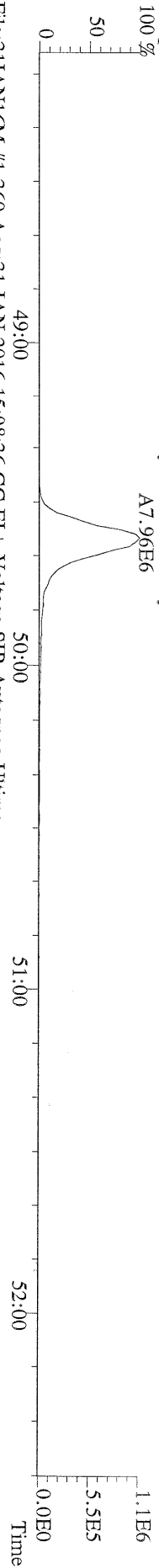
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435.8169 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0.0,0.00%,F,F) Exp:PCDD
Sample Text:ST013116M1 File Text:Frontier Analytical Laboratory
100 %



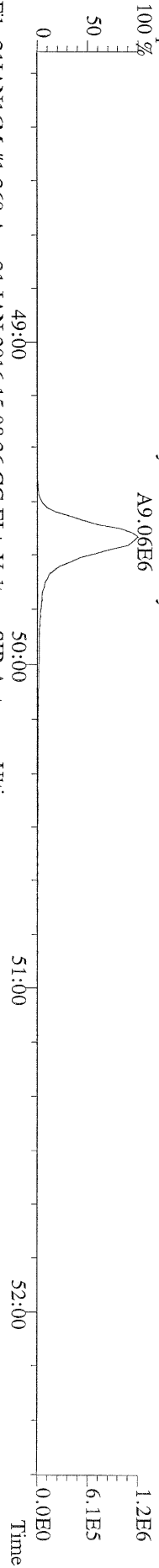
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100 %



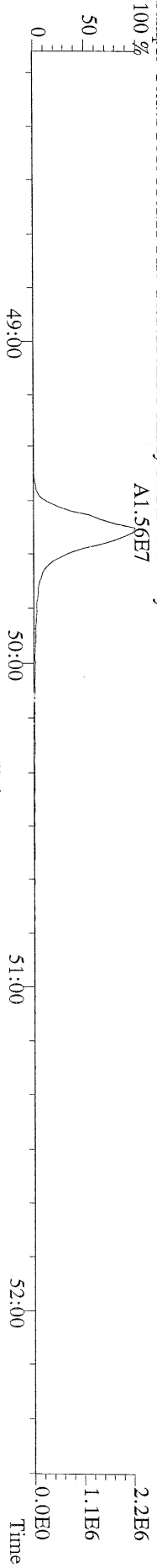
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457.7377 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
Sample Text:STO13116M1 File Text:Frontier Analytical Laboratory



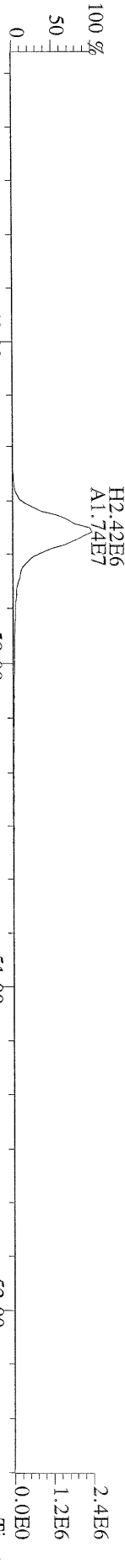
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Sample Text:STO13116M1 File Text:Frontier Analytical Laboratory



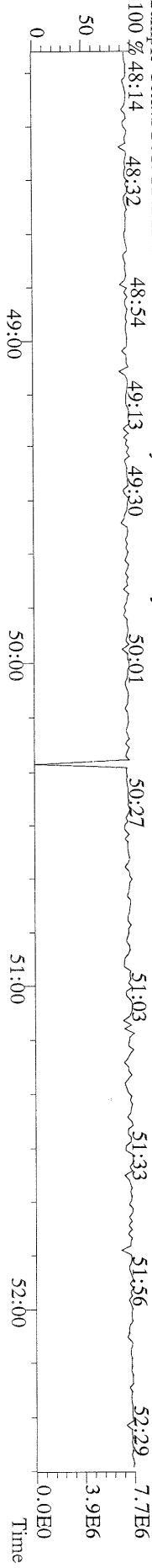
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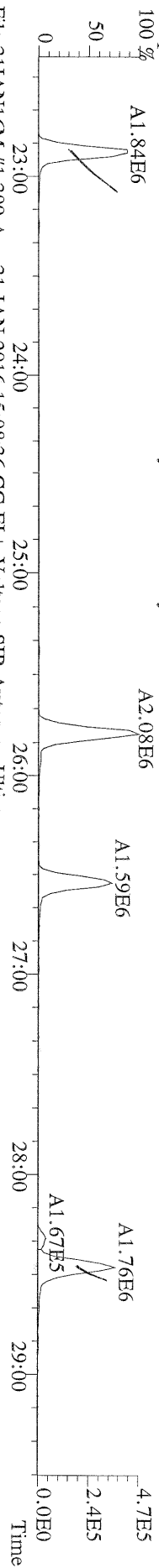
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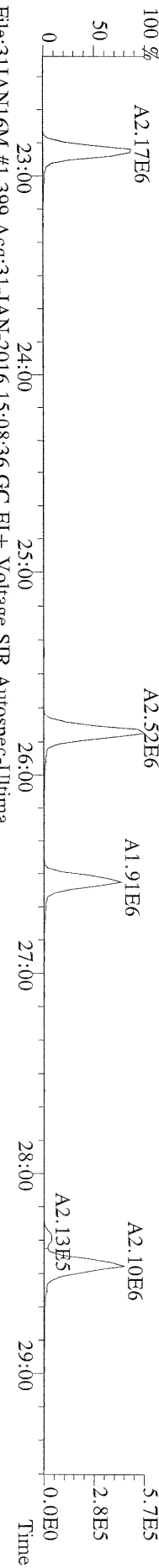
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Sample Text:STO13116M1 File Text:Frontier Analytical Laboratory



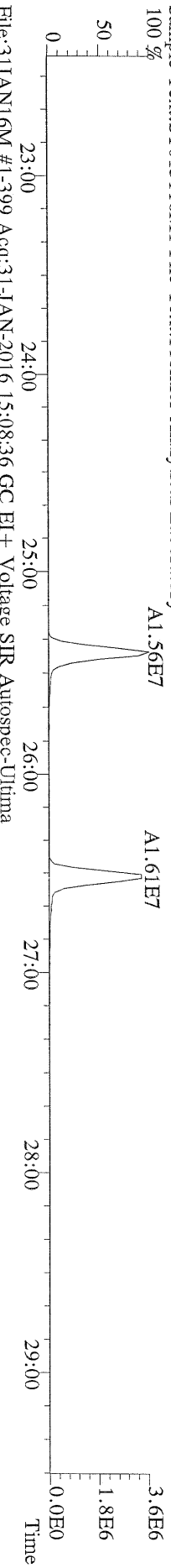
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Sample Text:STO13116M1 File Text:Frontier Analytical Laboratory



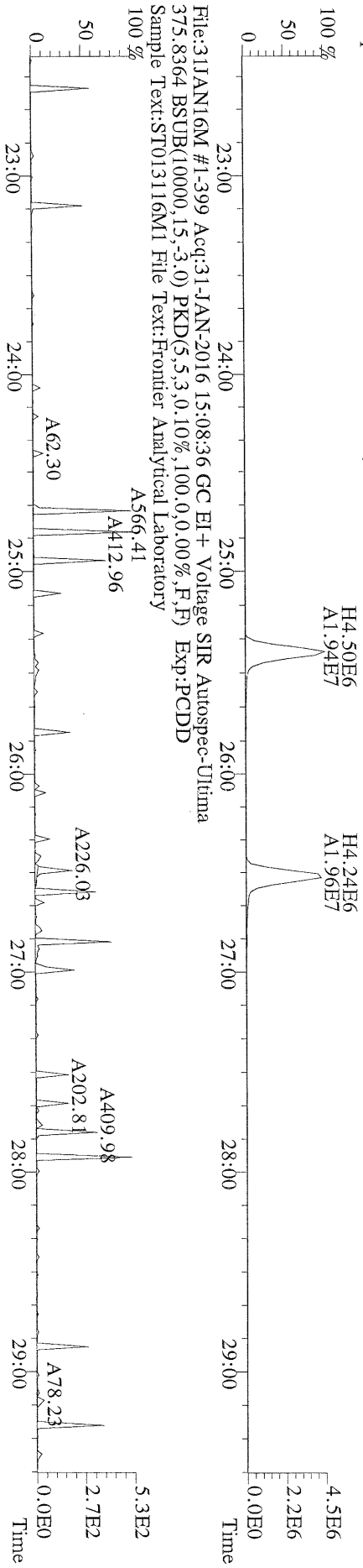
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Sample Text:STO13116M1 File Text:Frontier Analytical Laboratory



File:31JAN16M #1-399 Acq:31-JAN-2016 15:08:36 GC EI+ Voltage SIR Autospec-Ultima
315.9419 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0.00%,F,F) Exp:PCDD
Sample Text:STO13116M1 File Text:Frontier Analytical Laboratory

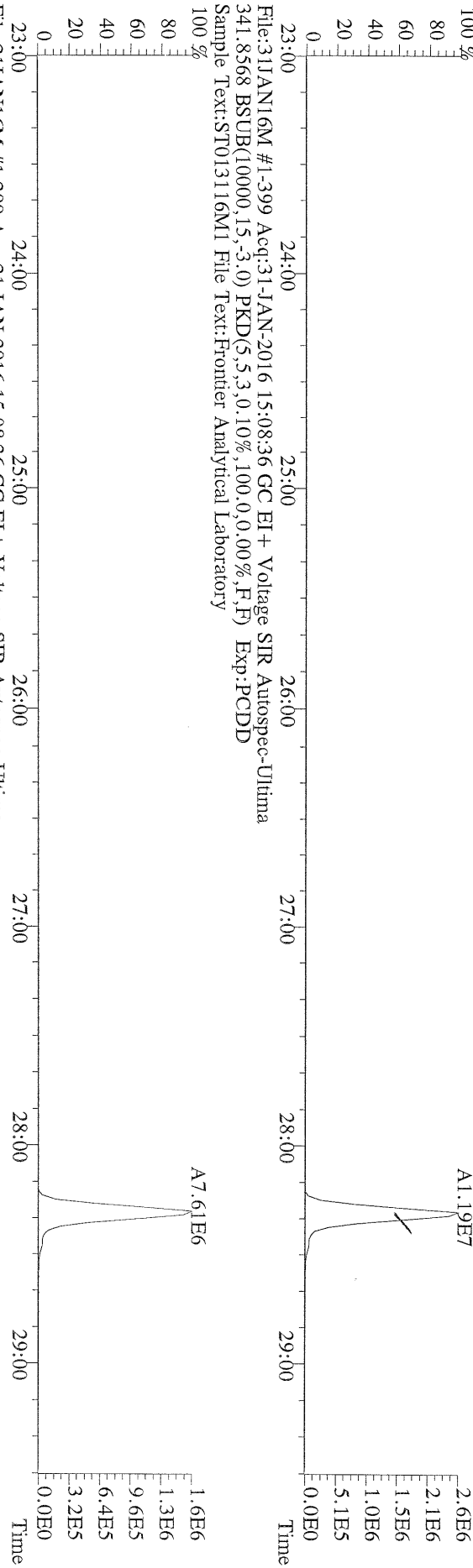


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Sample Text:STO13116M1 File Text:Frontier Analytical Laboratory

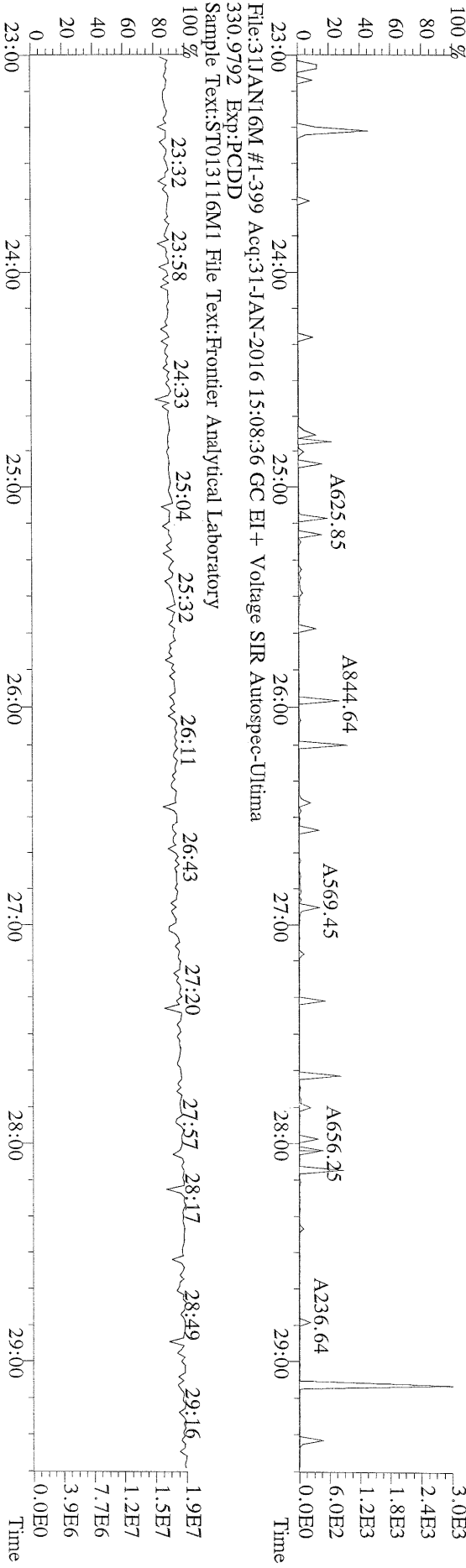


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375.8364 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0.00%,F,F) Exp:PCDD
Sample Text:STO13116M1 File Text:Frontier Analytical Laboratory

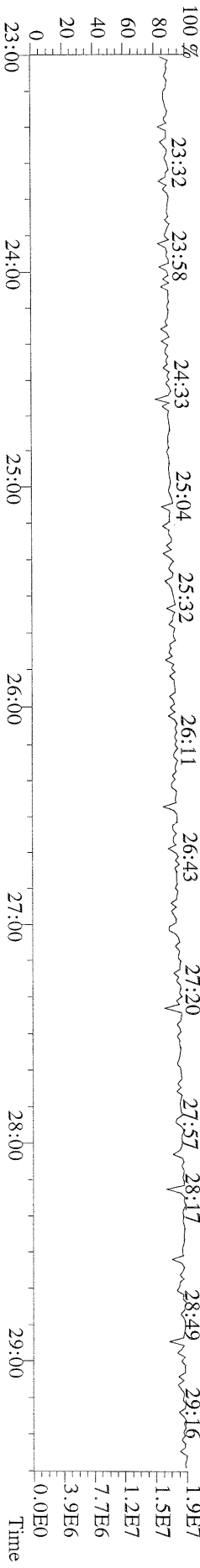
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339.8597 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
Sample Text:STO13116M1 File Text:Frontier Analytical Laboratory



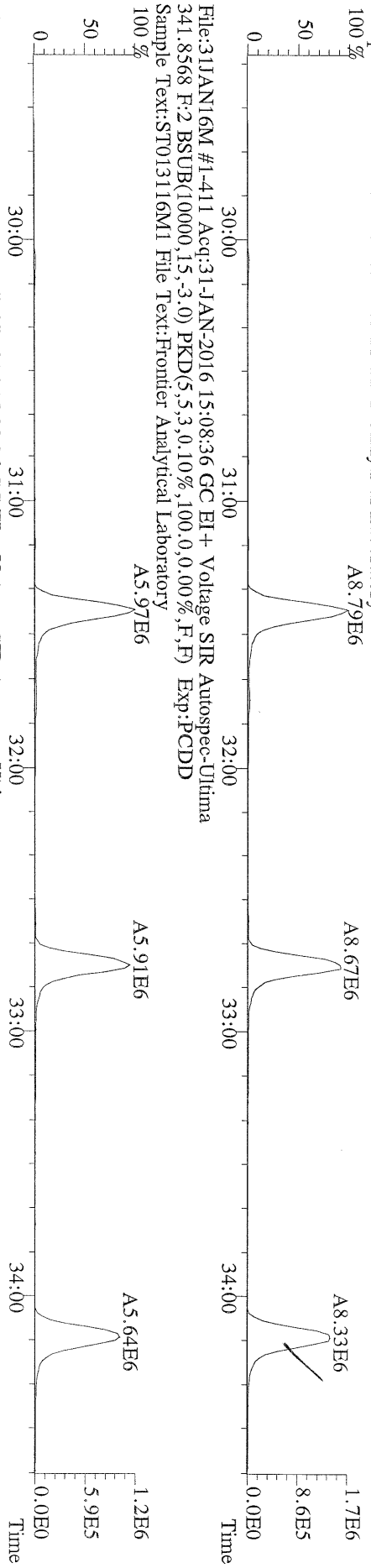
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Sample Text:STO13116M1 File Text:Frontier Analytical Laboratory



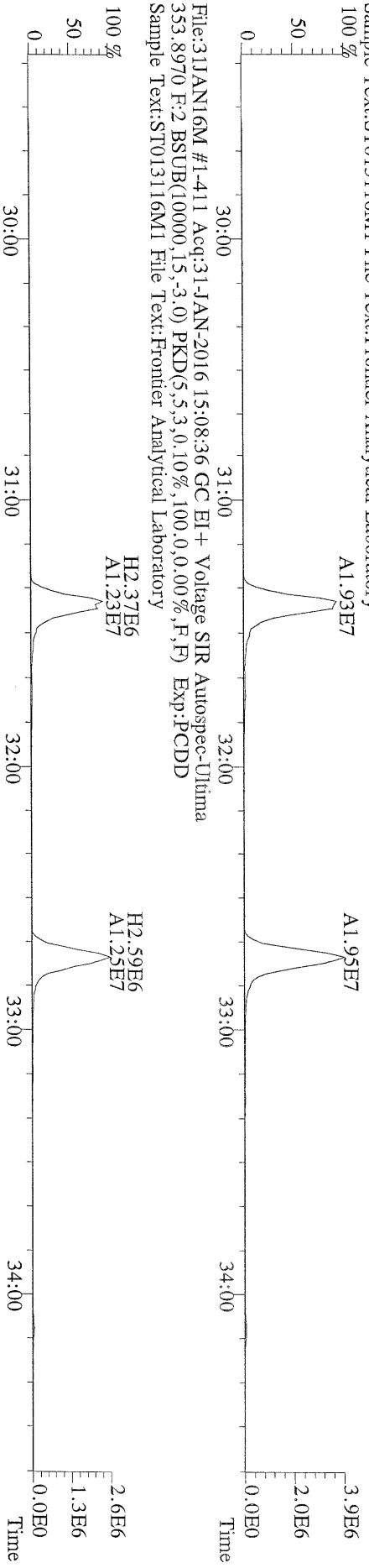
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330.9792 Exp:PCDD
Sample Text:STO13116M1 File Text:Frontier Analytical Laboratory



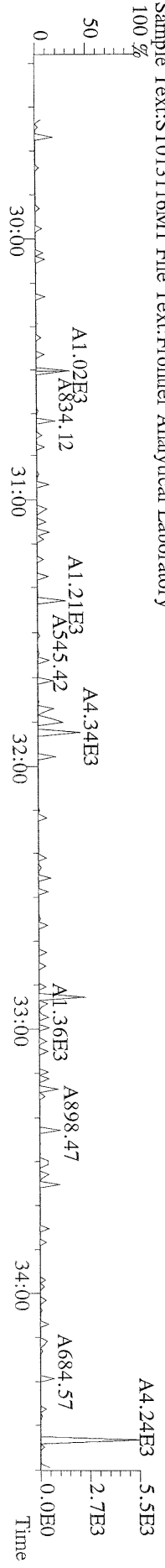
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Sample Text:ST013116M1 File Text:Fronier Analytical Laboratory



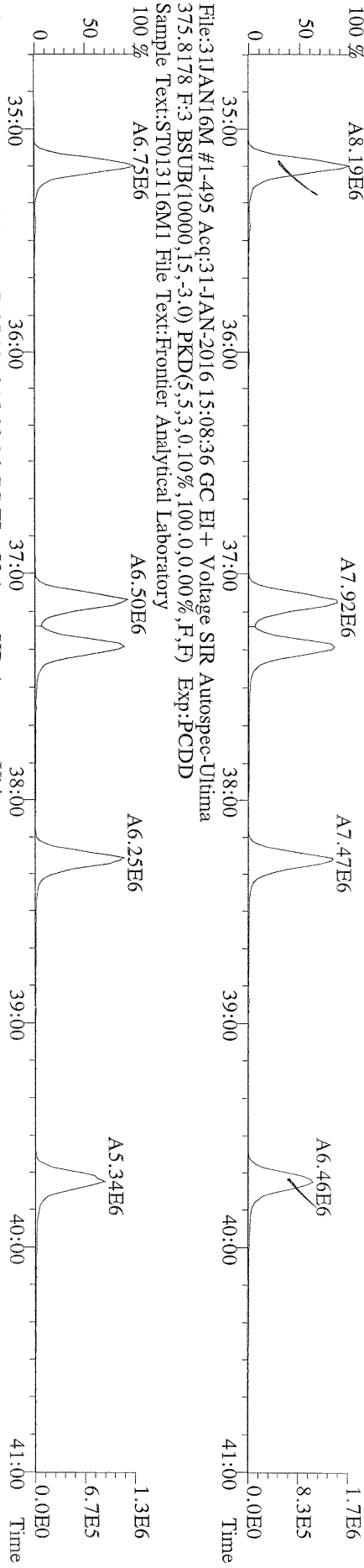
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Sample Text:ST013116M1 File Text:Fronier Analytical Laboratory



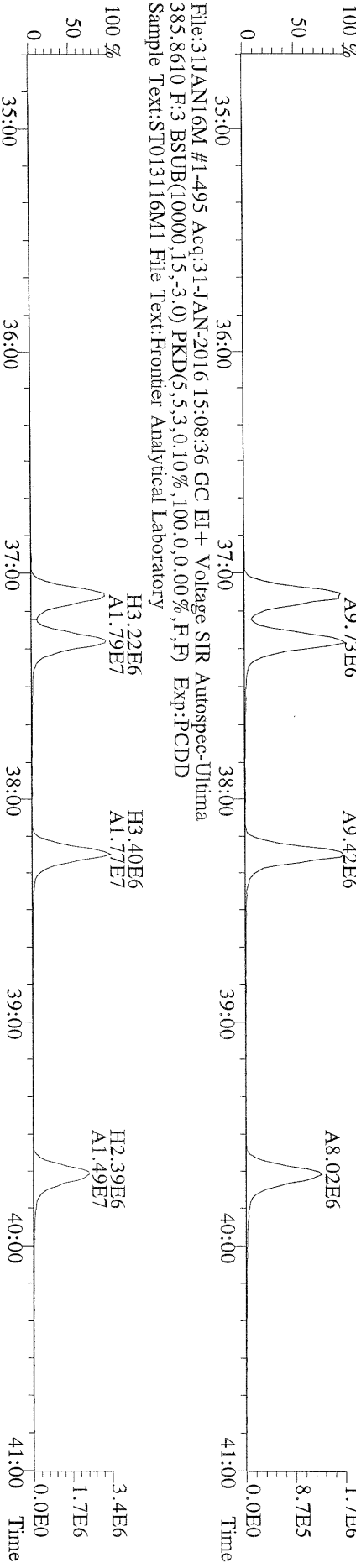
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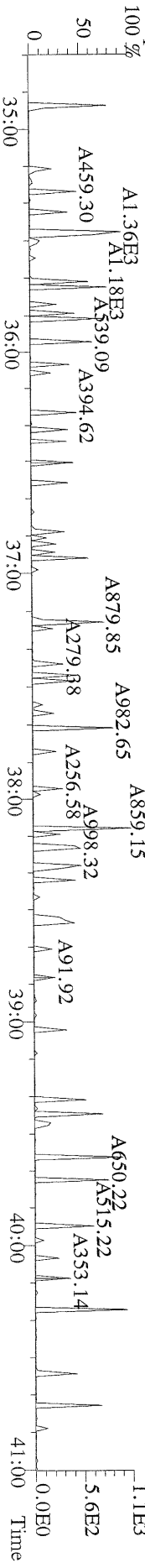
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373.8207 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST013116M1 File Text:Fronier Analytical Laboratory



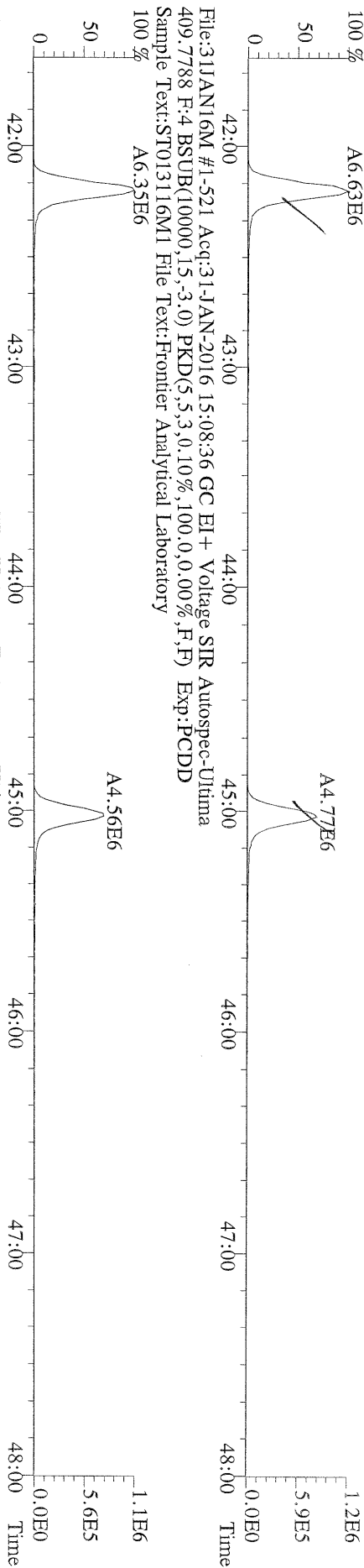
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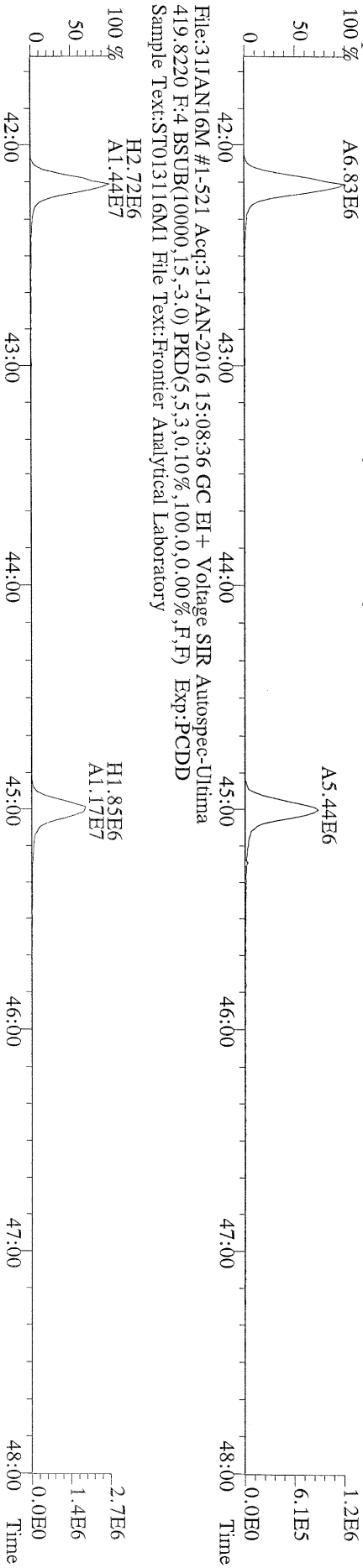
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Sample Text:ST013116M1 File Text:Fronier Analytical Laboratory



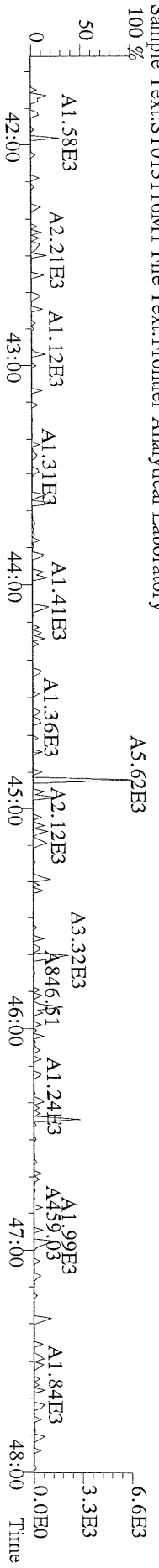
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407.7818 F:4 BSUBR(10000,15,-3.0) PKD(5,5,3,0.10%,100,0.0,0.00%,F,F) Exp:PCDD
Sample Text:ST013116M1 File Text:Frontier Analytical Laboratory



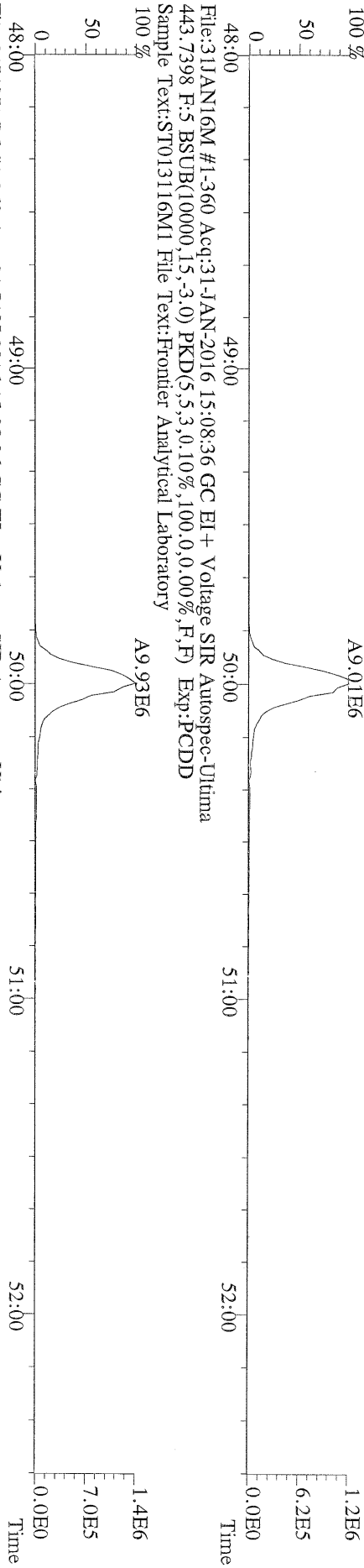
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417.8253 F:4 BSUBR(10000,15,-3.0) PKD(5,5,3,0.10%,100,0.0,0.00%,F,F) Exp:PCDD
Sample Text:ST013116M1 File Text:Frontier Analytical Laboratory



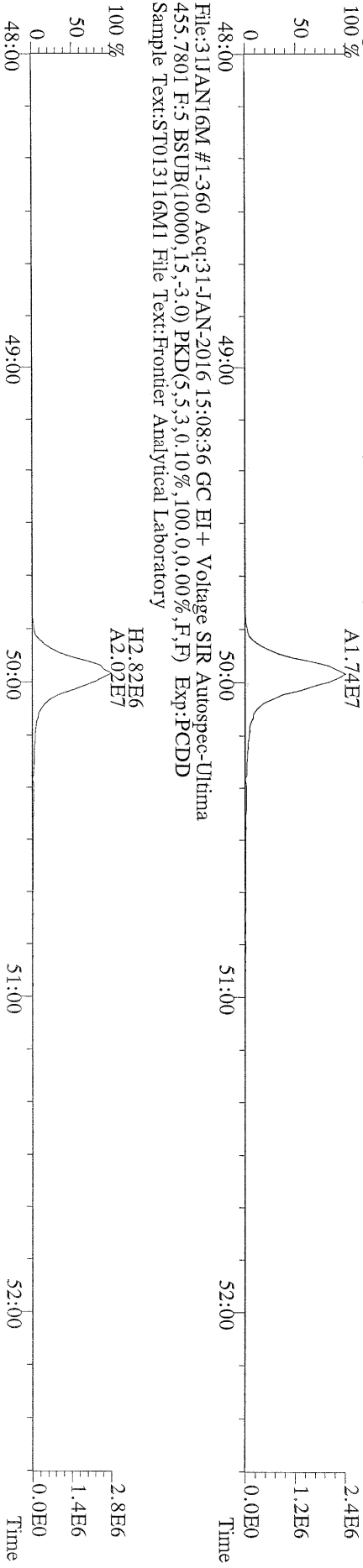
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479.7165 F:4 BSUBR(10000,15,-3.0) PKD(5,5,3,0.10%,100,0.0,0.00%,F,F) Exp:PCDD
Sample Text:ST013116M1 File Text:Frontier Analytical Laboratory



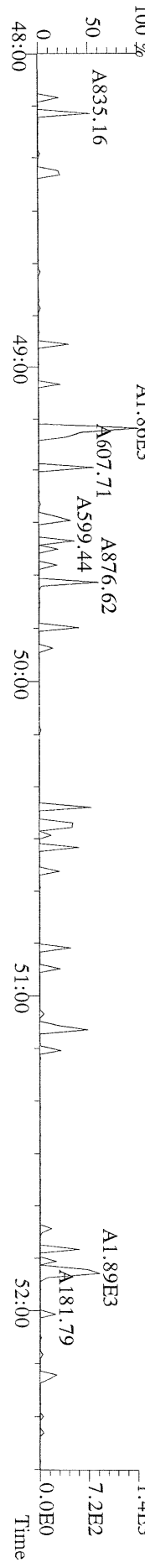
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Sample Text:ST013116M1 File Text:Frontier Analytical Laboratory

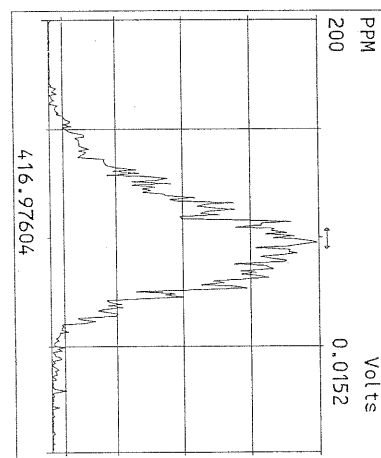
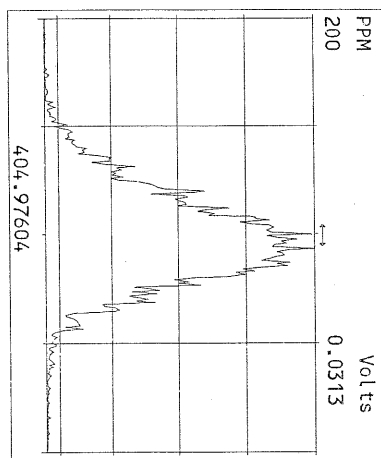
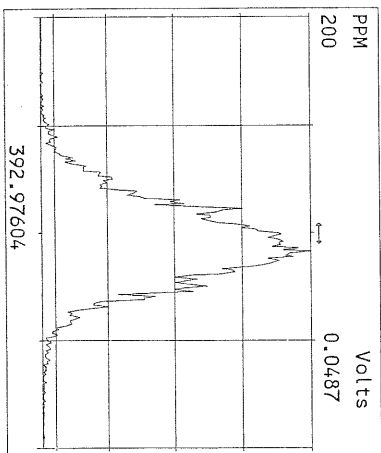
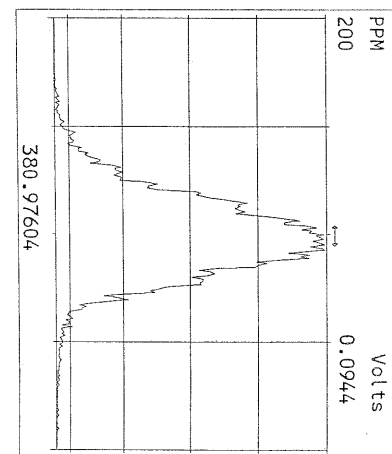
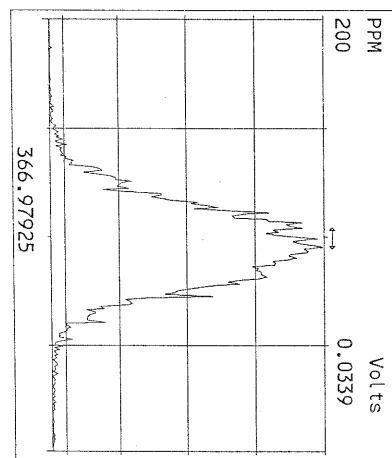
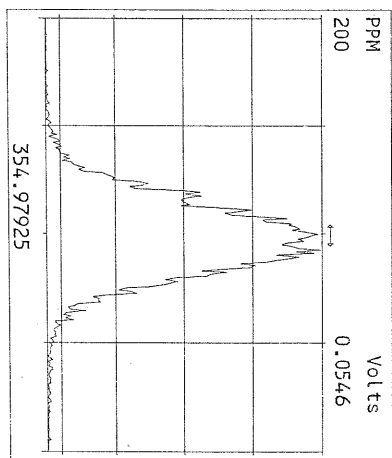
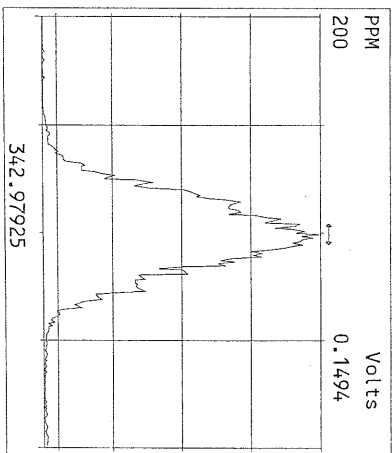
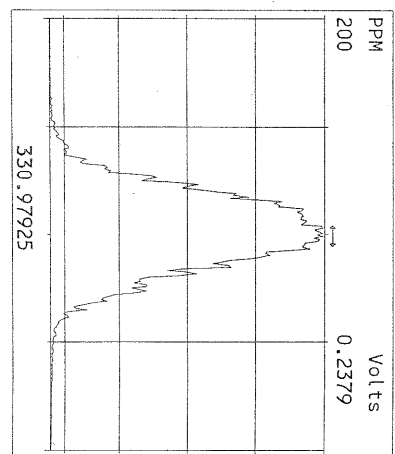
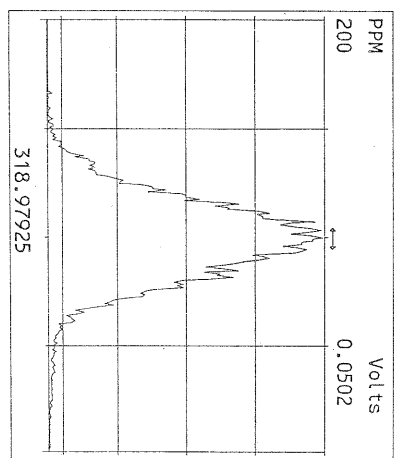
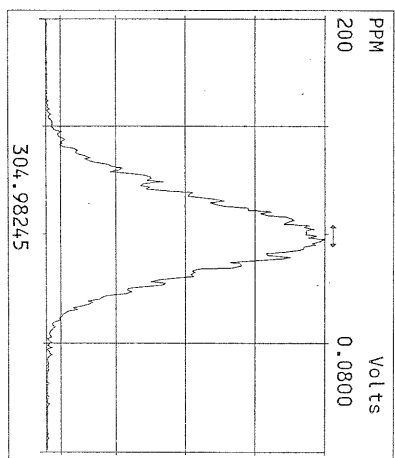
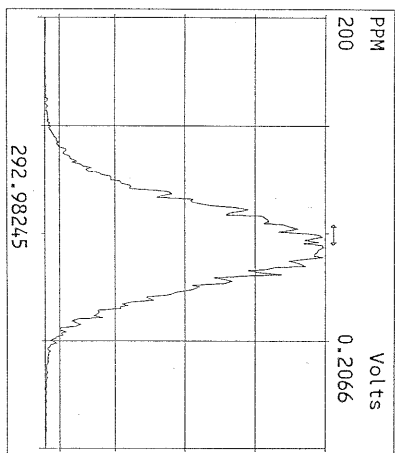


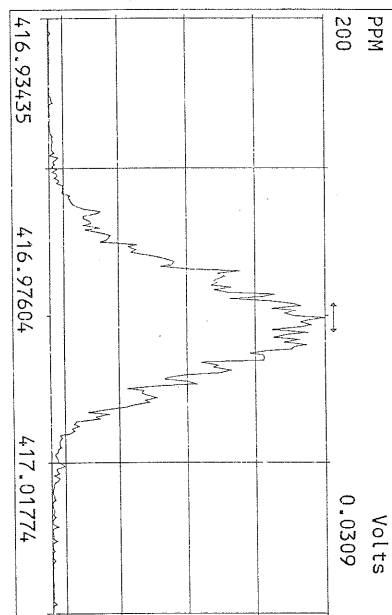
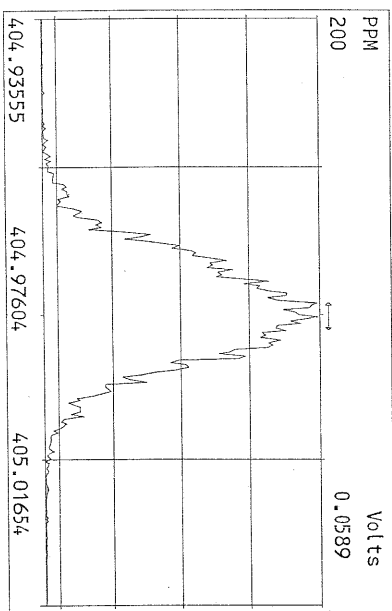
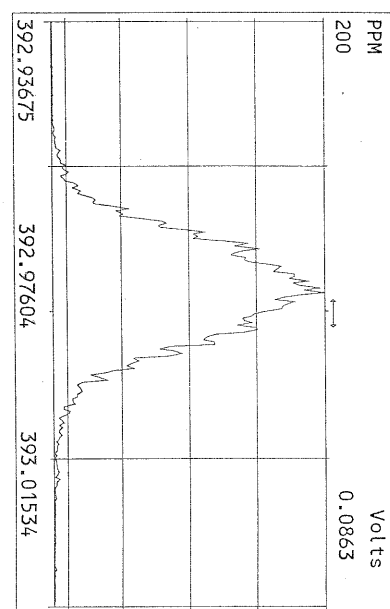
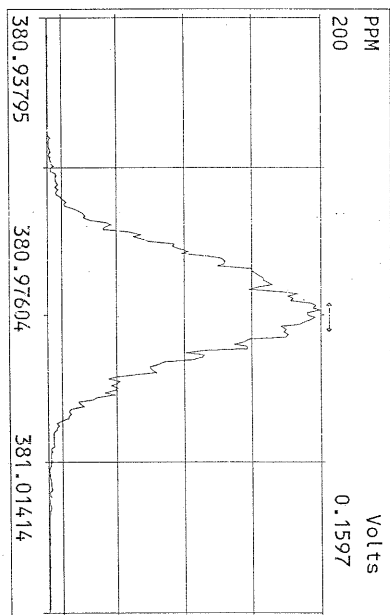
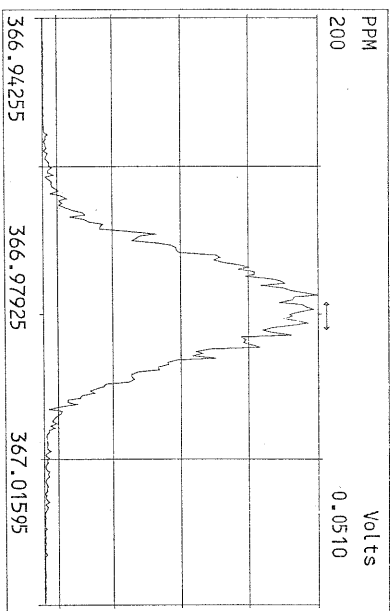
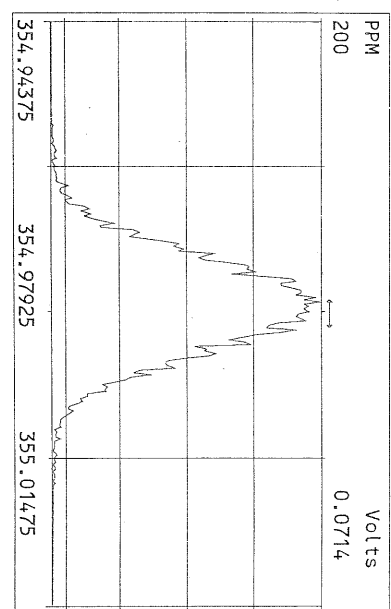
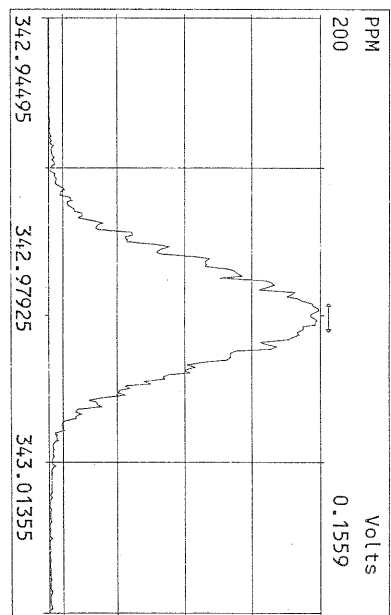
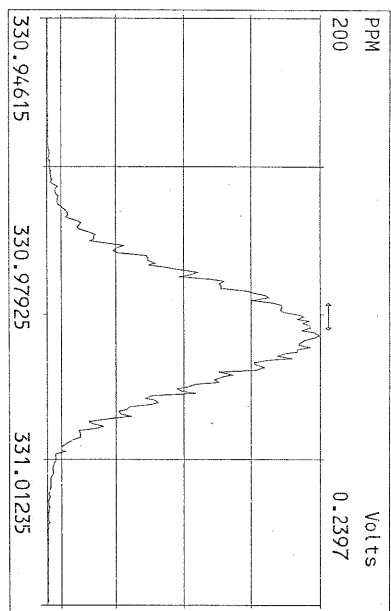
File:31JAN16M #1-360 Acq:31-JAN-2016 15:08:36 GC EI+ Voltage SIR Autospec-Ultima
453.7831 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST013116M1 File Text:Frontier Analytical Laboratory

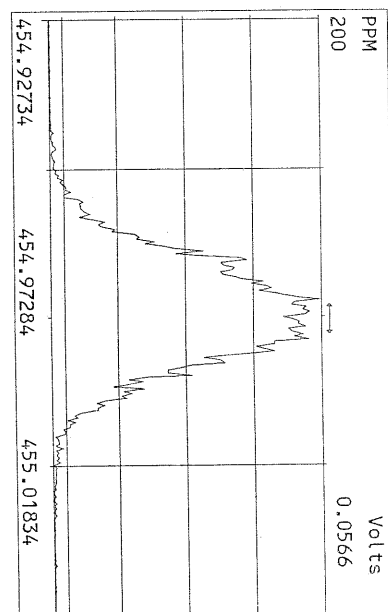
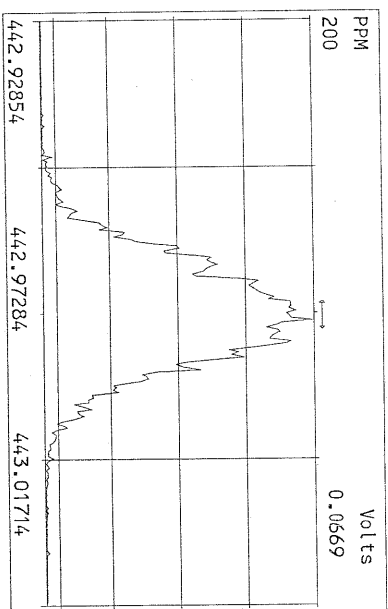
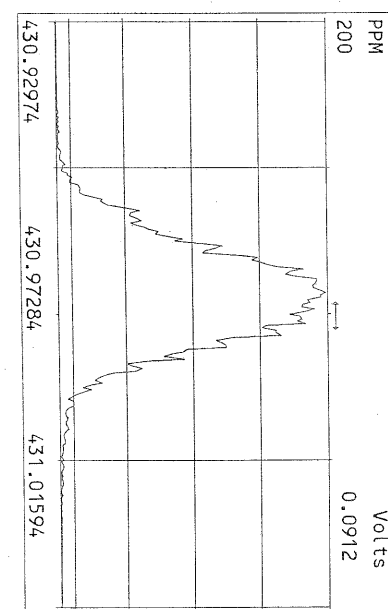
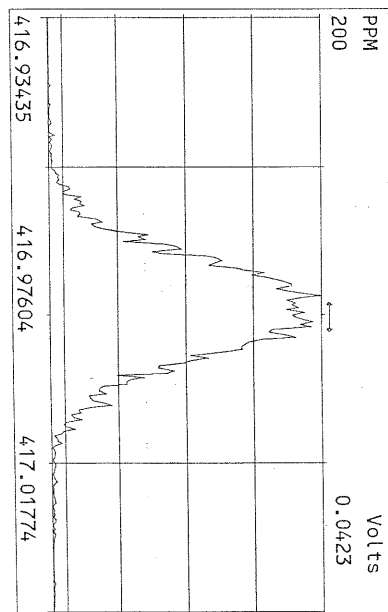
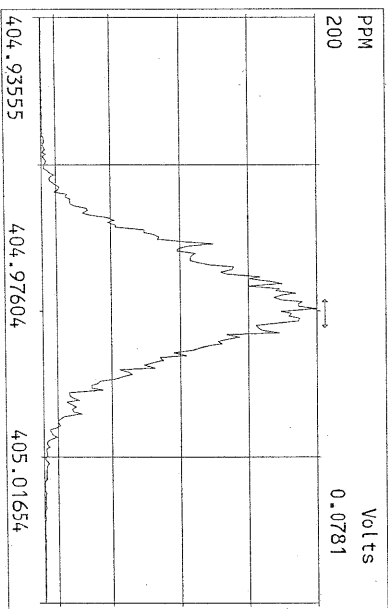
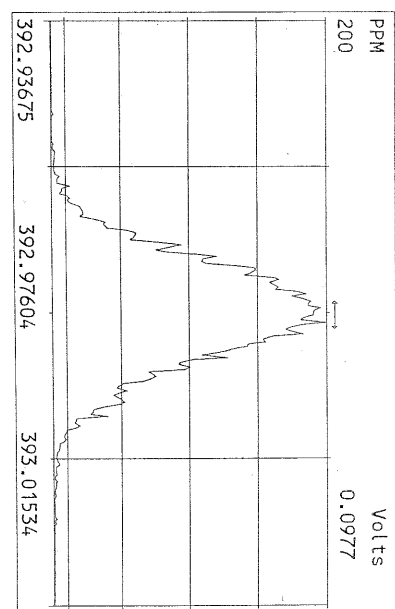
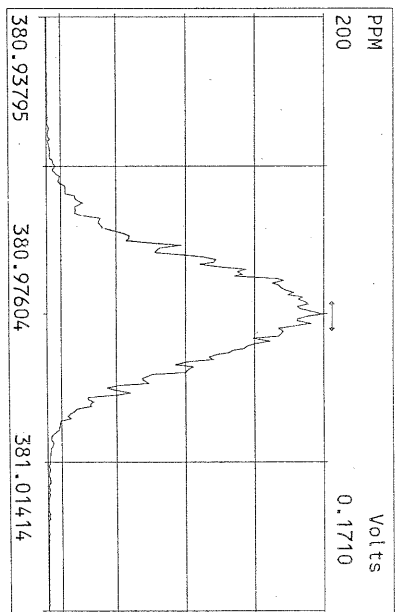
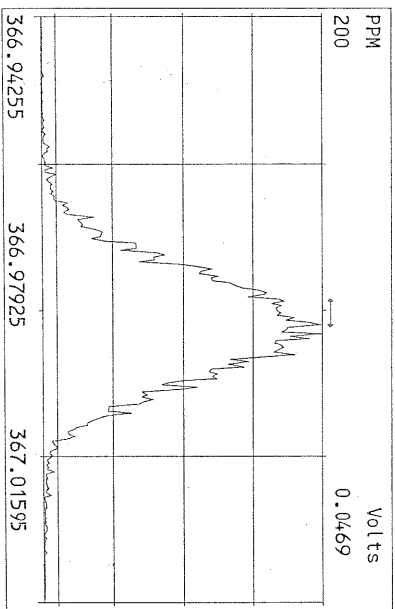


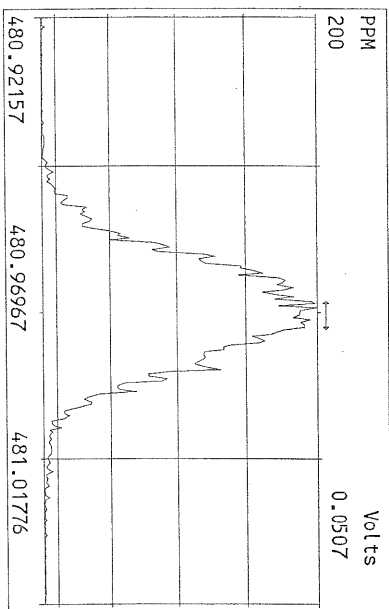
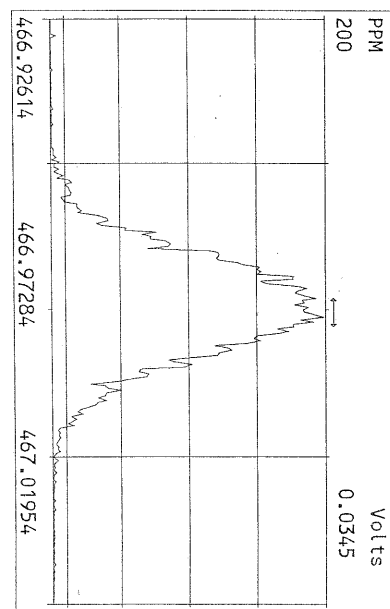
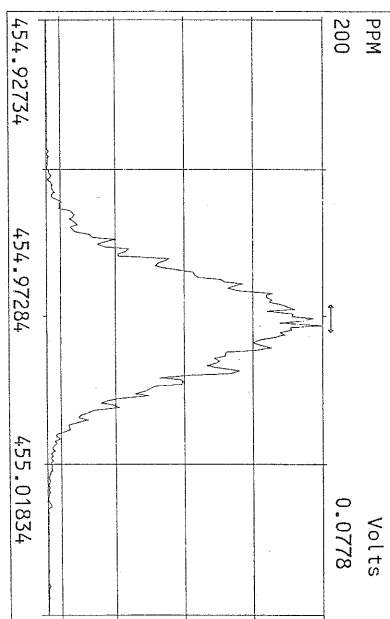
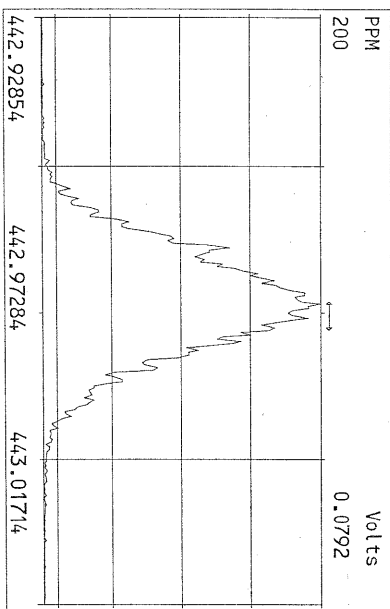
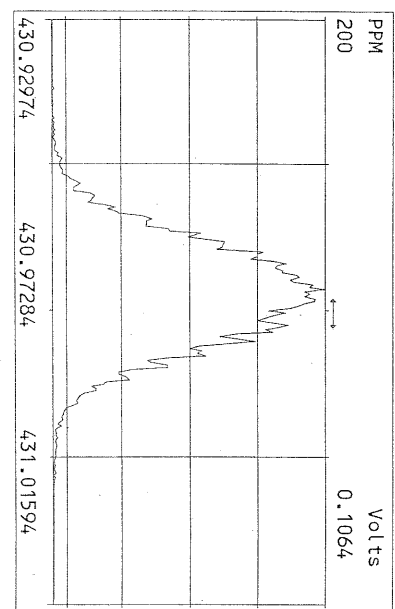
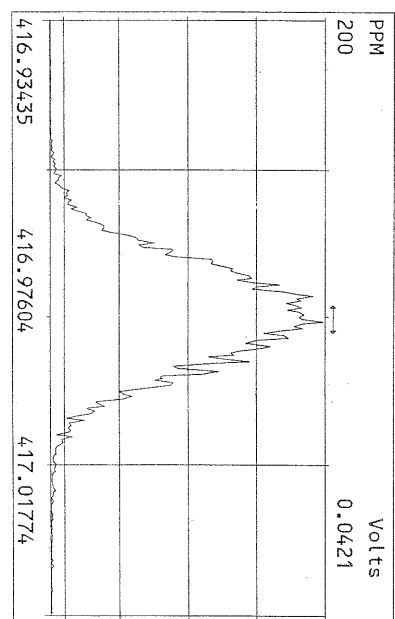
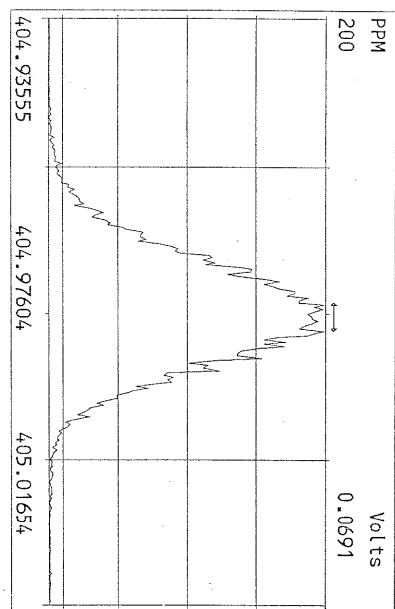
File:31JAN16M #1-360 Acq:31-JAN-2016 15:08:36 GC EI+ Voltage SIR Autospec-Ultima
513.6775 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST013116M1 File Text:Frontier Analytical Laboratory

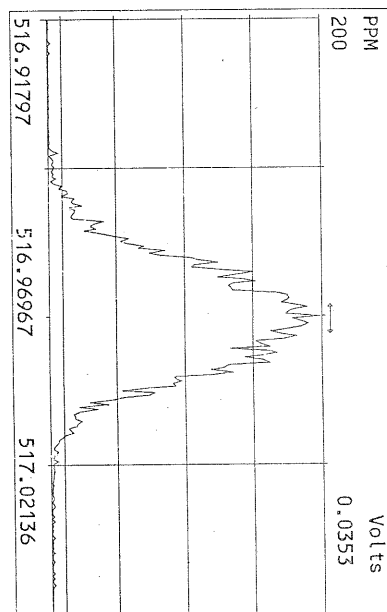
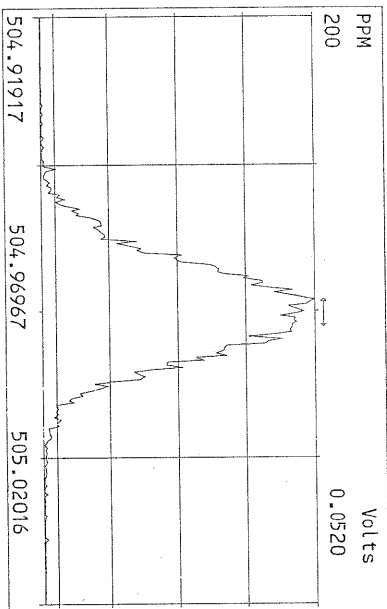
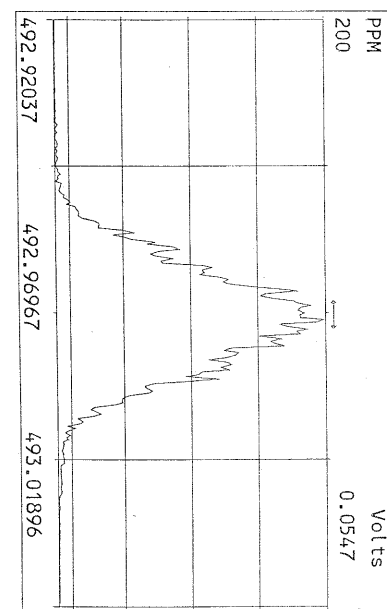
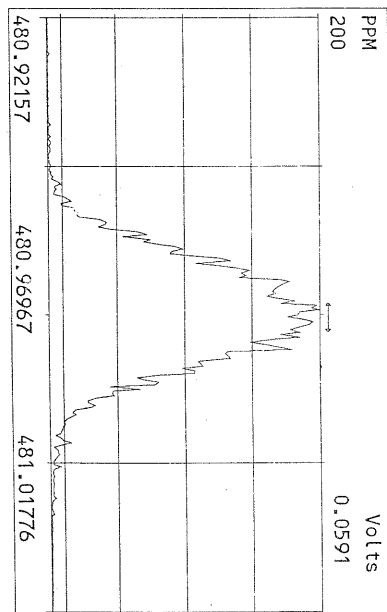
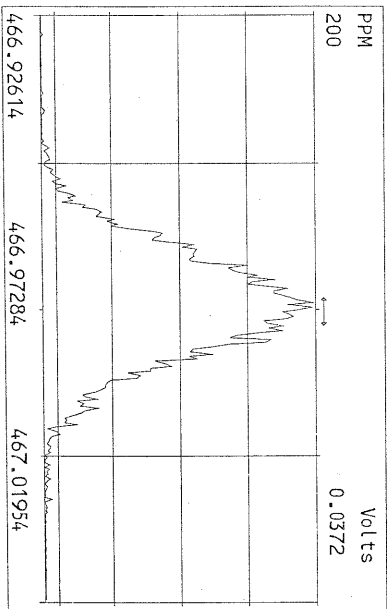
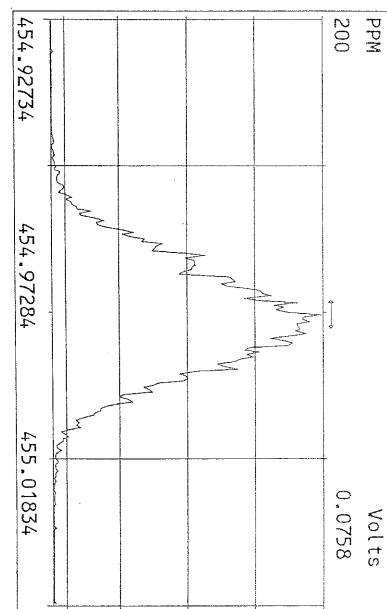
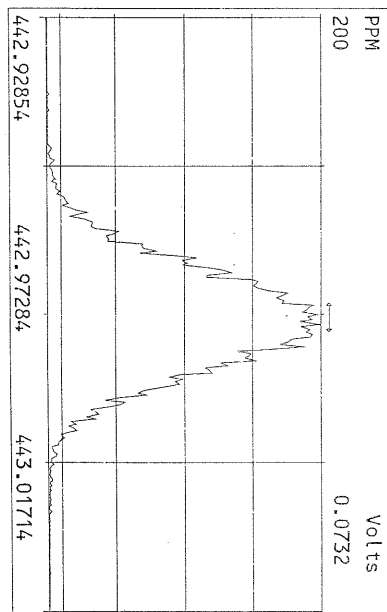
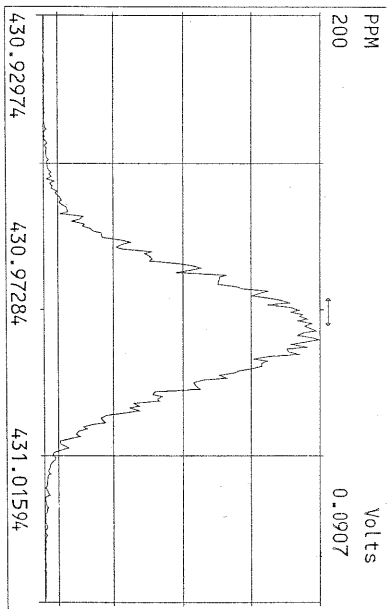












USEPA - ITD

FORM 4A
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: Frontier Analytical Laboratory Episode No.:

Contract No.: SAS No.:

Initial Calibration Date: 1/8/16

Instrument ID: FAL3

GC Column ID: DB5

VER Data Filename: 31JAN16M Sam:17


Analysis Date: 1-FEB-16 05:45:00

NATIVE ANALYTES	M/Z'S	ION	QC	ACCEPT	CONC. FOUND	CONC. RANGE (ng/mL) (3)
	FORMING RATIO (1)	ABUND. RATIO	LIMITS (2)			
2,3,7,8-TCDD	M/M+2	0.78	0.65-0.89	y	10.3	7.80 - 12.9
1,2,3,7,8-PeCDD	M+2/M+4	1.50	1.32-1.78	y	45.2	39.0 - 65.0
1,2,3,4,7,8-HxCDD	M+2/M+4	1.24	1.05-1.43	y	44.4	39.0 - 64.0
1,2,3,6,7,8-HxCDD	M+2/M+4	1.23	1.05-1.43	y	46.1	39.0 - 64.0
1,2,3,7,8,9-HxCDD	M+2/M+4	1.24	1.05-1.43	y	46.3	41.0 - 61.0
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.07	0.88-1.20	y	46.3	43.0 - 58.0
OCDD	M+2/M+4	0.88	0.76-1.02	y	94.0	79.0 - 126
2,3,7,8-TCDF	M/M+2	0.83	0.65-0.89	y	9.74	8.40 - 12.0
1,2,3,7,8-PeCDF	M+2/M+4	1.52	1.32-1.78	y	49.3	41.0 - 60.0
2,3,4,7,8-PeCDF	M+2/M+4	1.51	1.32-1.78	y	49.2	41.0 - 60.0
1,2,3,4,7,8-HxCDF	M+2/M+4	1.22	1.05-1.43	y	49.2	45.0 - 56.0
1,2,3,6,7,8-HxCDF	M+2/M+4	1.22	1.05-1.43	y	49.0	44.0 - 57.0
2,3,4,6,7,8-HxCDF	M+2/M+4	1.22	1.05-1.43	y	49.7	44.0 - 57.0
1,2,3,7,8,9-HxCDF	M+2/M+4	1.22	1.05-1.43	y	50.1	45.0 - 56.0
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.03	0.88-1.20	y	49.1	45.0 - 55.0
1,2,3,4,7,8,9-HpCDF	M+2/M+4	1.05	0.88-1.20	y	49.1	43.0 - 58.0
OCDF	M+2/M+4	0.90	0.76-1.02	y	92.5	63.0 - 159

(1) See Table 8, Method 1613, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613.

(3) Contract-required concentration range as specified in Table 6, Method 1613.

Analyst: Date: 

USEPA - ITD

FORM 4B

PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: Frontier Analytical Laboratory

Episode No.:

Contract No.:

SAS No.:

Initial Calibration Date: 1/8/16

Instrument ID: FAL3

GC Column ID: DB5

VER Data Filename: 31JAN16M Sam:17

Analysis Date: 1-FEB-16 05:45:00


LABELLED COMPOUNDS	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	ACCEPT	CONC. FOUND	CONC. RANGE (ng/mL) (3)
13C-2,3,7,8-TCDD	M/M+2	0.83	0.65-0.89	y	97.0	82.0 - 121
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.54	1.32-1.78	y	96.8	62.0 - 160
13C-1,2,3,4,7,8-HxCDD	M+2/M+4	1.25	1.05-1.43	y	99.9	85.0 - 117
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.24	1.05-1.43	y	101	85.0 - 118
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.05	0.88-1.20	y	99.4	72.0 - 138
13C-OCDD	M+2/M+4	0.91	0.76-1.02	y	193	96.0 - 415
13C-2,3,7,8-TCDF	M/M+2	0.82	0.65-0.89	y	95.0	71.0 - 140
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.59	1.32-1.78	y	90.7	76.0 - 130
13C-2,3,4,7,8-PeCDF	M+2/M+4	1.60	1.32-1.78	y	92.5	77.0 - 130
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.53	0.43-0.59	y	85.6	76.0 - 131
13C-1,2,3,6,7,8-HxCDF	M/M+2	0.53	0.43-0.59	y	87.5	70.0 - 143
13C-2,3,4,6,7,8-HxCDF	M/M+2	0.52	0.43-0.59	y	89.1	73.0 - 137
13C-1,2,3,7,8,9-HxCDF	M/M+2	0.52	0.43-0.59	y	82.6	74.0 - 135
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.46	0.37-0.51	y	91.8	78.0 - 129
13C-1,2,3,4,7,8,9-HpCDF	M/M+2	0.47	0.37-0.51	y	86.1	77.0 - 129
13C-OCDF	M+2/M+4	0.88	0.76-1.02	y	171	96.0 - 415
CLEANUP STANDARD (4)						
37Cl-2,3,7,8-TCDD					10.1	7.90 - 12.7

(1) See Table 8, Method 1613, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613.

(3) Contract-required concentration range as specified in Table 6, Method 1613.

(4) No ion abundance ratio; report concentration found.

Analyst: Date: 2/1/16

FORM 5
PCDD/PCDF RT WINDOW AND ISOMER SPECIFICITY STANDARDS

Lab Name: Frontier Analytical Laboratory Episode No.:
Contract No.: SAS No.:
Instrument ID: FAL3 Initial Calibration Date: 1/8/16
RT Window Data Filename: 31JAN16M Sam:17 Analysis Date: 1-FEB-16 Time: 05:45:00
DB-5 IS Data Filename: 31JAN16M Sam:17 Analysis Date: 1-FEB-16 Time: 05:45:00
DB-225 IS Data Filename: Analysis Date: Time:

DB-5 RT WINDOW DEFINING STANDARDS RESULTS

ISOMERS	ABSOLUTE RT	ISOMERS	ABSOLUTE RT
1,3,6,8-TCDD (F)	24:13	1,3,6,8-TCDF (F)	22:52
1,2,8,9-TCDD (L)	28:11	1,2,8,9-TCDF (L)	28:24
1,2,4,7,9-PeCDD (F)	30:06	1,3,4,6,8-PeCDF (F)	28:16
1,2,3,8,9-PeCDD (L)	33:39	1,2,3,8,9-PeCDF (L)	34:05
1,2,4,6,7,9-HxCDD (F)	35:59	1,2,3,4,6,8-HxCDF (F)	35:06
1,2,3,7,8,9-HxCDD (L)	39:03	1,2,3,7,8,9-HxCDF (L)	39:38
1,2,3,4,6,7,9-HpCDD (F)	42:38	1,2,3,4,6,7,8-HpCDF (F)	42:07
1,2,3,4,6,7,8-HpCDD (L)	44:01	1,2,3,4,7,8,9-HpCDF (L)	44:57

(F) = First eluting isomer (DB-5); (L) = Last eluting isomer (DB-5)


=====

ISOMER SPECIFICITY (IS) TEST STANDARD RESULTS

% VALLEY HEIGHT
BETWEEN
COMPARED PEAKS (1)

<25%

(1) To meet contract requirement, %Valley Height Between Compared Peaks shall not exceed 25% (section 15.4.2.2, Method 1613).

Analyst: 

Date: 2/1/16

USEPA - ITD
FORM 6A
PCDD/PCDF RELATIVE RETENTION TIMES

Lab Name: Frontier Analytical Laboratory Episode No.:

Contract No.: SAS No.: Init. Cal. Date: 1/8/16

Instrument ID: FAL3 GC Column ID: DB5

Analysis Date: 1-FEB-16 05:45:00 CS3 or VER Data Filename: 31JAN16M Sam:17

NATIVE ANALYTES	RETENTION TIME		RRT	RRT
	REFERENCE			QC LIMITS (1)
2,3,7,8-TCDD	13C-2,3,7,8-TCDD		1.001	0.999-1.002
2,3,7,8-TCDF	13C-2,3,7,8-TCDF		1.001	0.999-1.003
1,2,3,7,8-PeCDD	13C-1,2,3,7,8-PeCDD		1.000	0.999-1.002
1,2,3,7,8-PeCDF	13C-1,2,3,7,8-PeCDF		1.001	0.999-1.002
2,3,4,7,8-PeCDF	13C-2,3,4,7,8-PeCDF		1.000	0.999-1.002
LABELED COMPOUNDS				
37Cl-2,3,7,8-TCDD	13C-1,2,3,4-TCDD		1.023	0.989-1.052
13C-2,3,7,8-TCDD			1.022	0.976-1.043
13C-2,3,7,8-TCDF			0.995	0.923-1.103
13C-1,2,3,7,8-PeCDD			1.242	1.000-1.567
13C-1,2,3,7,8-PeCDF			1.176	1.000-1.425
13C-2,3,4,7,8-PeCDF			1.227	1.011-1.526

(1) Contract-required limits for Relative Retention Times (RRT) as specified in Table 2, Method 1613.

Analyst:  Date: 2/1/16

USEPA - ITD

FORM 6B
PCDD/PCDF RELATIVE RETENTION TIMES

Lab Name: Frontier Analytical Laboratory

Episode No.:

Contract No.:

SAS No.:

Init. Cal. Date: 1/8/16

Instrument ID: FAL3

GC Column ID: DB5

Analysis Date: 1-FEB-16 05:45:00

CS3 or VER Data Filename: 31JAN16M

Sam:17

NATIVE ANALYTES	RETENTION TIME	RRT	RRT
	REFERENCE		QC LIMITS (1)
1,2,3,4,7,8-HxCDD	13C-1,2,3,4,7,8-HxCDD	1.001	0.999-1.001
1,2,3,6,7,8-HxCDD	13C-1,2,3,6,7,8-HxCDD	1.000	0.999-1.003
1,2,3,7,8,9-HxCDD	13C-1,2,3,6,7,8-HxCDD	1.012	1.000-1.019
1,2,3,4,7,8-HxCDF	13C-1,2,3,4,7,8-HxCDF	1.001	0.999-1.001
1,2,3,6,7,8-HxCDF	13C-1,2,3,6,7,8-HxCDF	1.001	0.999-1.003
2,3,4,6,7,8-HxCDF	13C-2,3,4,6,7,8-HxCDF	1.001	0.999-1.001
1,2,3,7,8,9-HxCDF	13C-1,2,3,7,8,9-HxCDF	1.001	0.999-1.001
1,2,3,4,6,7,8-HpCDD	13C-1,2,3,4,6,7,8-HpCDD	1.001	0.999-1.001
1,2,3,4,6,7,8-HpCDF	13C-1,2,3,4,6,7,8-HpCDF	1.001	0.999-1.001
1,2,3,4,7,8,9-HpCDF	13C-1,2,3,4,7,8,9-HpCDF	1.001	0.999-1.001
OCDD	13C-OCDD	1.001	0.999-1.001
OCDF	13C-OCDF	1.001	0.999-1.001
LABELED COMPOUNDS			
13C-1,2,3,4,7,8-HxCDD	13C-1,2,3,7,8,9-HxCDD	0.984	0.977-1.000
13C-1,2,3,6,7,8-HxCDD		0.988	0.981-1.003
13C-1,2,3,4,7,8-HxCDF		0.948	0.944-0.970
13C-1,2,3,6,7,8-HxCDF		0.953	0.949-0.975
13C-2,3,4,6,7,8-HxCDF		0.978	0.959-1.021
13C-1,2,3,7,8,9-HxCDF		1.015	0.977-1.047
13C-1,2,3,4,6,7,8-HpCDD		1.127	1.086-1.130
13C-1,2,3,4,6,7,8-HpCDF		1.078	1.043-1.085
13C-1,2,3,4,7,8,9-HpCDF		1.150	1.057-1.151
13C-OCDD		1.268	1.032-1.311
13C-OCDF		1.278	1.000-1.311

(1) Contract-required limits for Relative Retention Times (RRT) as specified
in Table 2, Method 1613.

Analyst: Date: 2/1/16

Name	Resp	RA	RT	RRF	Conc	Qual	Fac Noise-1	Noise-2	DL	#Hom
2,3,7,8-TCDD	8.08e+06	0.78 y	27:15	1.27	10.3	2.50	-	-	*	
1,2,3,7,8-PeCDD	2.26e+07	1.50 y	33:04	1.01	45.2	2.50	-	-	*	
1,2,3,4,7,8-HxCDD	1.89e+07	1.24 y	38:27	1.04	44.4	2.50	-	-	*	
1,2,3,6,7,8-HxCDD	2.02e+07	1.23 y	38:36	1.05	46.1	2.50	-	-	*	
1,2,3,7,8,9-HxCDD	2.18e+07	1.24 y	39:03	1.14	46.3	2.50	-	-	*	
1,2,3,4,6,7,8-HpCDD	1.84e+07	1.07 y	44:01	1.01	46.3	2.50	-	-	*	
OCDD	3.20e+07	0.88 y	49:31	1.08	94.0	2.50	-	-	*	
2,3,7,8-TCDF	7.85e+06	0.83 y	26:30	1.02	9.74	2.50	-	-	*	
1,2,3,7,8-PeCDF	3.25e+07	1.52 y	31:21	0.90	49.3	2.50	-	-	*	
2,3,4,7,8-PeCDF	3.03e+07	1.51 y	32:40	0.93	49.2	2.50	-	-	*	
1,2,3,4,7,8-HxCDF	2.85e+07	1.22 y	37:03	1.13	49.2	2.50	-	-	*	
1,2,3,6,7,8-HxCDF	2.85e+07	1.22 y	37:15	1.08	49.0	2.50	-	-	*	
2,3,4,6,7,8-HxCDF	2.69e+07	1.22 y	38:12	1.03	49.7	2.50	-	-	*	
1,2,3,7,8,9-HxCDF	2.36e+07	1.22 y	39:38	1.05	50.1	2.50	-	-	*	
1,2,3,4,6,7,8-HpCDF	2.53e+07	1.03 y	42:07	1.24	49.1	2.50	-	-	*	
1,2,3,4,7,8,9-HpCDF	1.86e+07	1.05 y	44:57	1.12	49.1	2.50	-	-	*	
OCDF	3.77e+07	0.90 y	49:54	1.09	92.5	2.50	-	-	*	
										Rec
13C-2,3,7,8-TCDD	6.17e+07	0.83 y	27:13	1.10	97.0					97.0
13C-1,2,3,7,8-PeCDD	4.96e+07	1.54 y	33:03	0.89	96.8					96.8
13C-1,2,3,4,7,8-HxCDD	4.09e+07	1.25 y	38:25	0.87	99.9					99.9
13C-1,2,3,6,7,8-HxCDD	4.15e+07	1.24 y	38:35	0.87	101					101
13C-1,2,3,4,6,7,8-HpCDD	3.93e+07	1.05 y	43:60	0.84	99.4					99.4
13C-OCDD	6.32e+07	0.91 y	49:30	0.69	193					96.3
13C-2,3,7,8-TCDF	7.91e+07	0.82 y	26:29	1.02	95.0					95.0
13C-1,2,3,7,8-PeCDF	7.36e+07	1.59 y	31:19	1.00	90.7					90.7
13C-2,3,4,7,8-PeCDF	6.66e+07	1.60 y	32:39	0.89	92.5					92.5
13C-1,2,3,4,7,8-HxCDF	5.11e+07	0.53 y	37:01	1.26	85.6					85.6
13C-1,2,3,6,7,8-HxCDF	5.38e+07	0.53 y	37:13	1.30	87.5					87.5
13C-2,3,4,6,7,8-HxCDF	5.25e+07	0.52 y	38:10	1.25	89.1					89.1
13C-1,2,3,7,8,9-HxCDF	4.47e+07	0.52 y	39:36	1.15	82.6					82.6
13C-1,2,3,4,6,7,8-HpCDF	4.14e+07	0.46 y	42:06	0.96	91.8					91.8
13C-1,2,3,4,7,8,9-HpCDF	3.37e+07	0.47 y	44:55	0.83	86.1					86.1
13C-OCDF	7.49e+07	0.88 y	49:53	0.93	171					85.4
37Cl-2,3,7,8-TCDD	5.79e+06		27:14	1.00	10.1					101
13C-1,2,3,4-TCDD	5.76e+07	0.82 y	26:38	-	83.3					
13C-1,2,3,4-TCDF	8.12e+07	0.82 y	25:22	-	74.9					
13C-1,2,3,7,8,9-HxCDD	4.72e+07	1.26 y	39:02	-	79.5					
Total Tetra-Dioxins	3.55e+07		23:57	1.27	45.3	2.50	-	-	*	19
Total Penta-Dioxins	7.27e+07		30:06	1.01	146	2.50	-	-	*	14
Total Hexa-Dioxins	8.77e+07		35:59	1.08	197	2.50	-	-	*	21
Total Hepta-Dioxins	3.86e+07		42:05	1.01	96.9	2.50	-	-	*	18
Total Tetra-Furans	3.69e+07		22:52	1.02	45.8	2.50	-	-	*	16
1st Fn. Tot Penta-Furans	4.11e+07		28:16	0.91	64.4	2.50	-	-	*	PeCDF 2
Total Penta-Furans	9.34e+07		30:01	0.91	146	2.50	-	-	*	211 21
Total Hexa-Furans	1.38e+08		35:06	1.07	254	2.50	-	-	*	26
Total Hepta-Furans	4.44e+07		42:07	1.19	99.3	2.50	-	-	*	13

Analyst:  Date: 2/1/16

Frontier Analytical Laboratory - Acquisition Log

Run Name:31JAN16M

Instrument: FAL3

GC: DB5

Experiment:PCDD

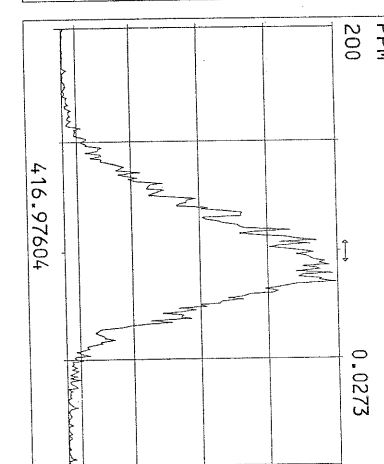
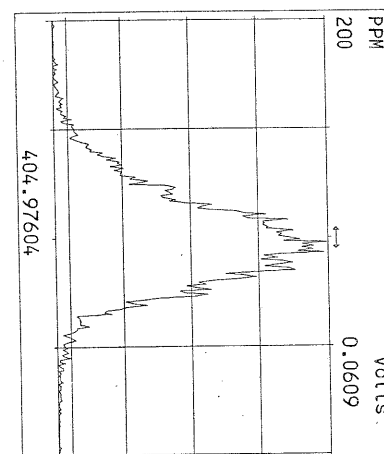
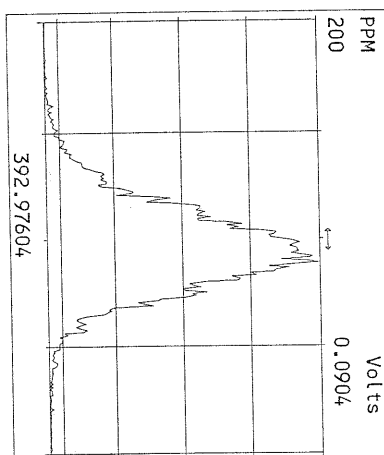
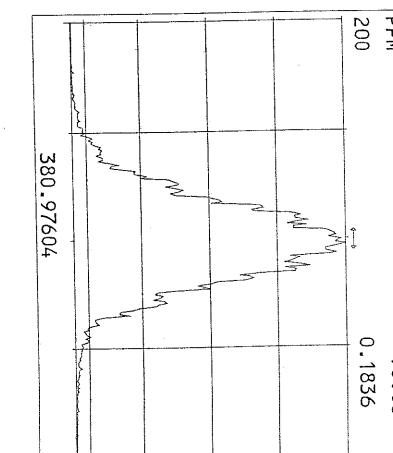
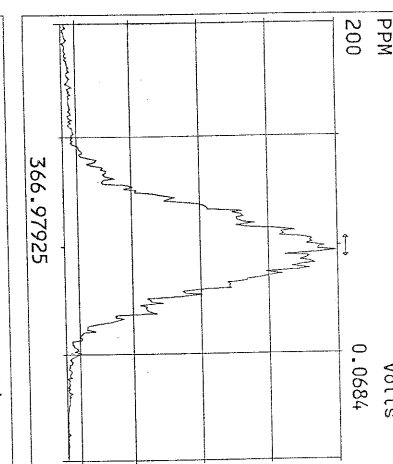
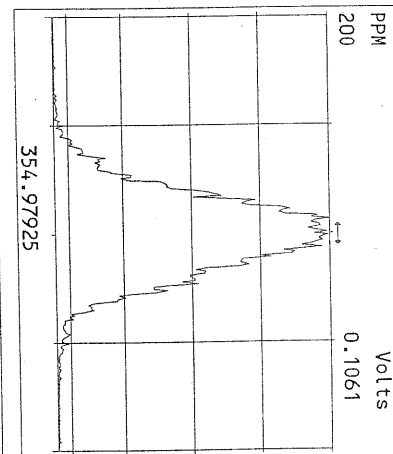
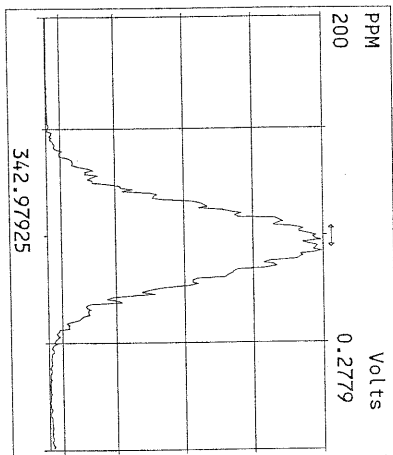
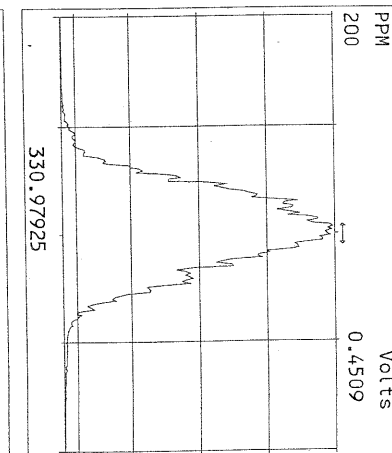
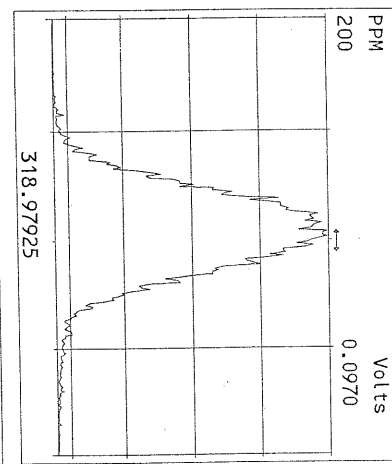
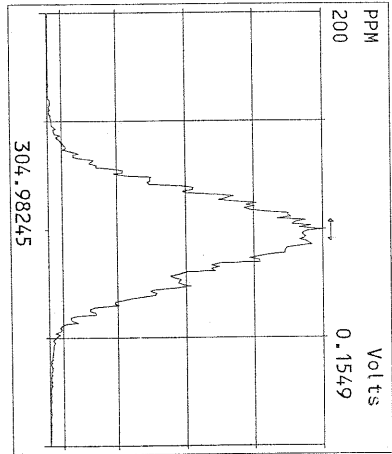
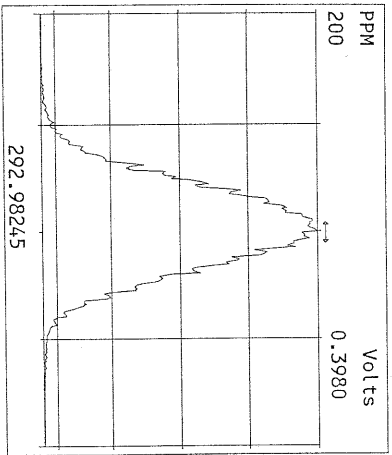
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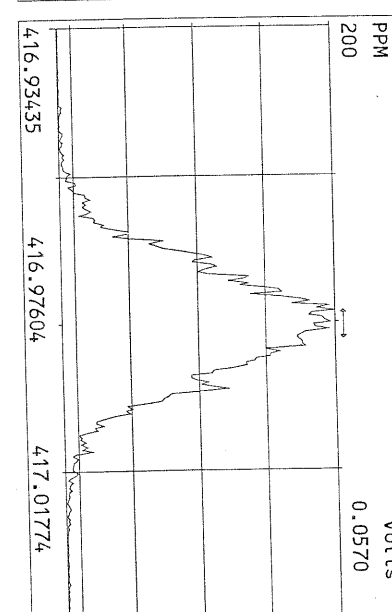
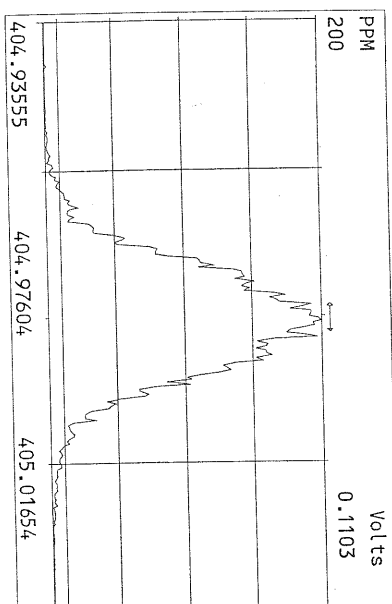
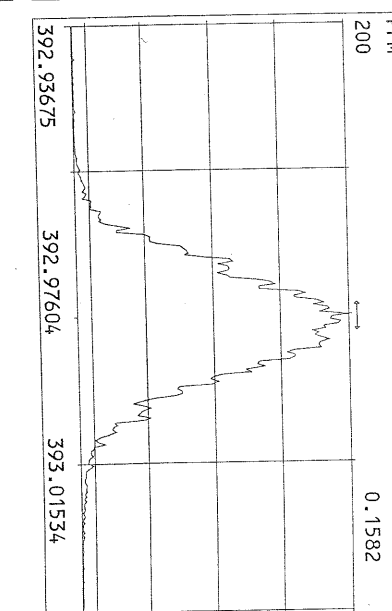
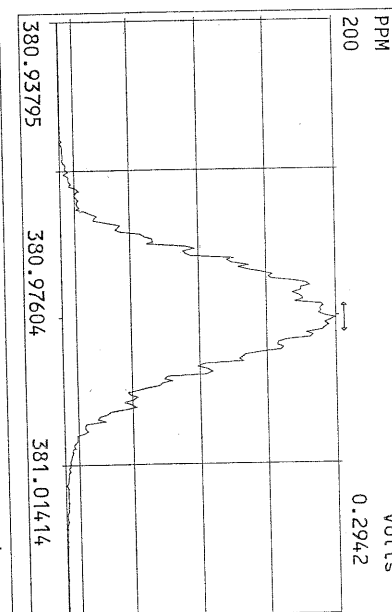
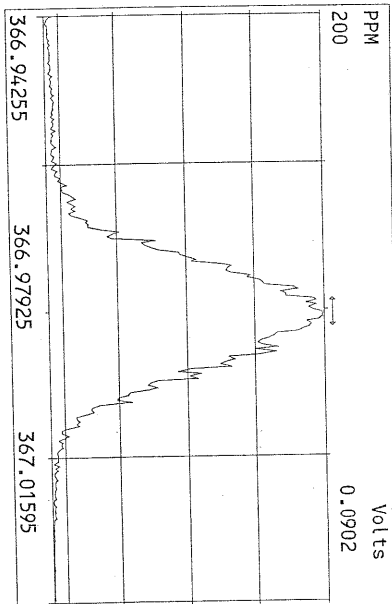
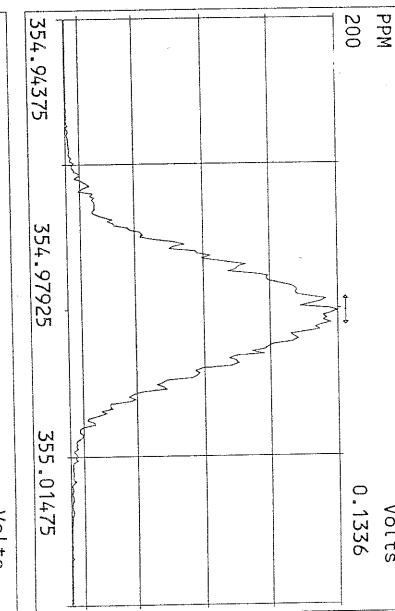
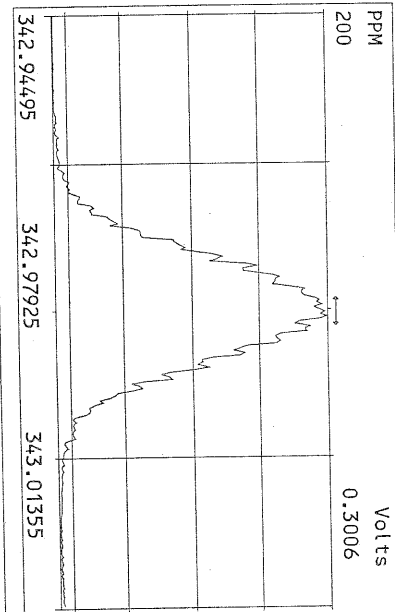
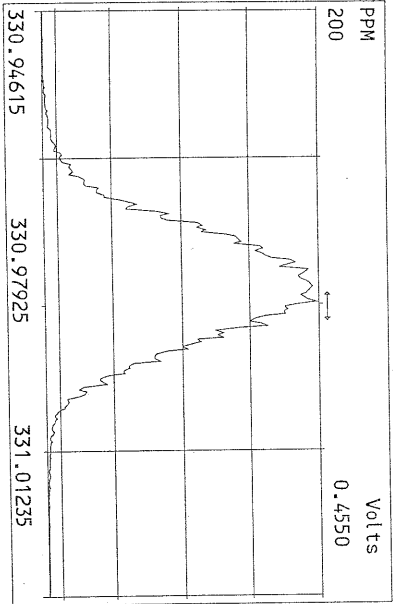
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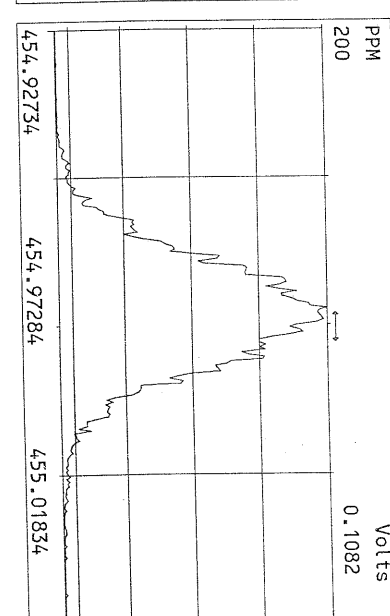
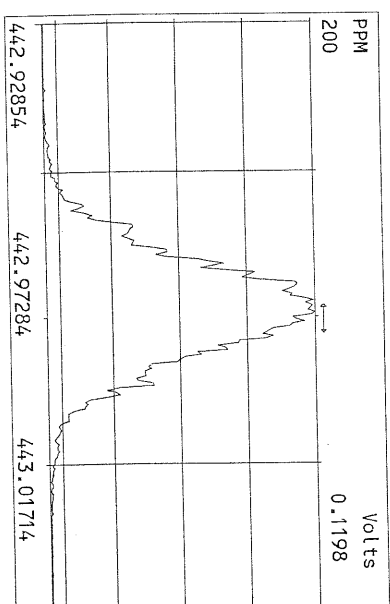
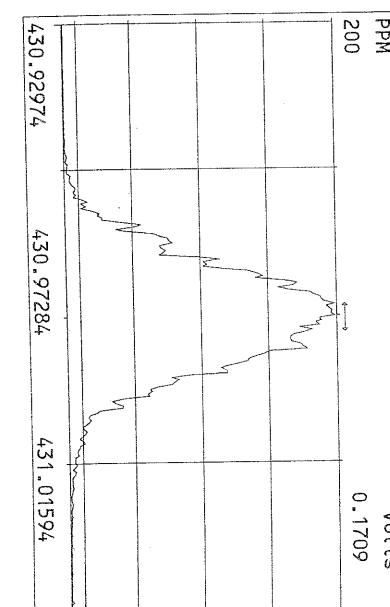
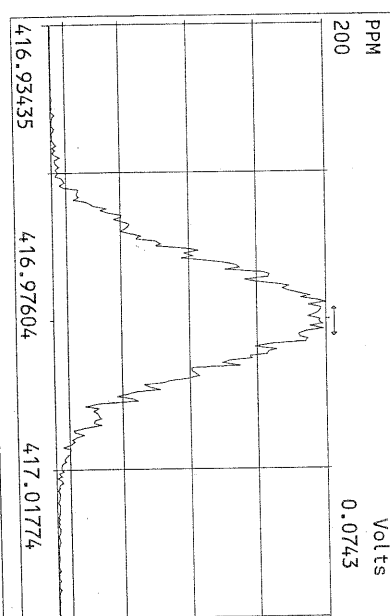
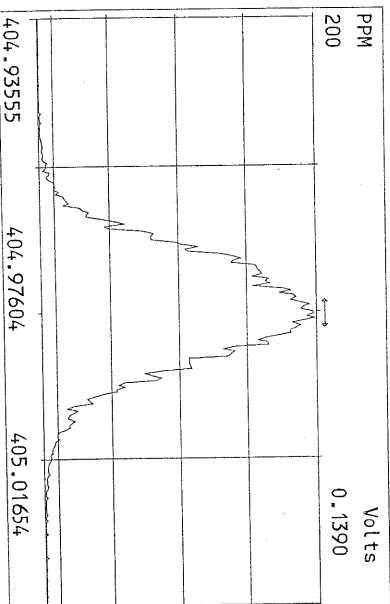
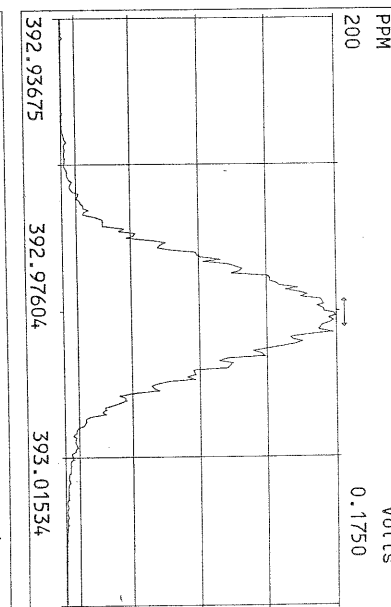
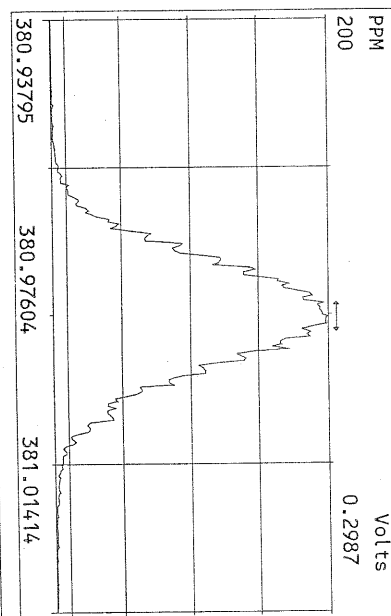
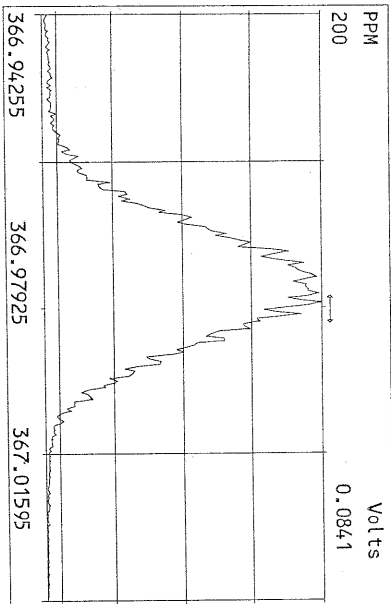
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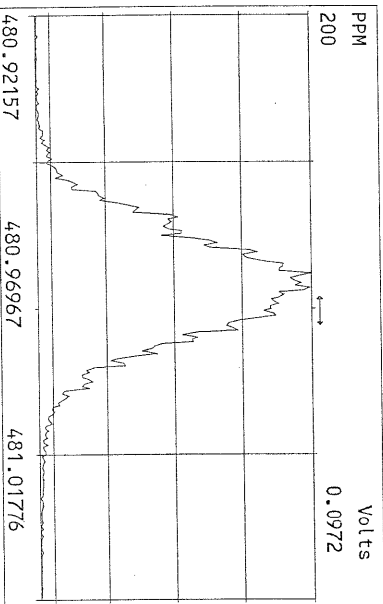
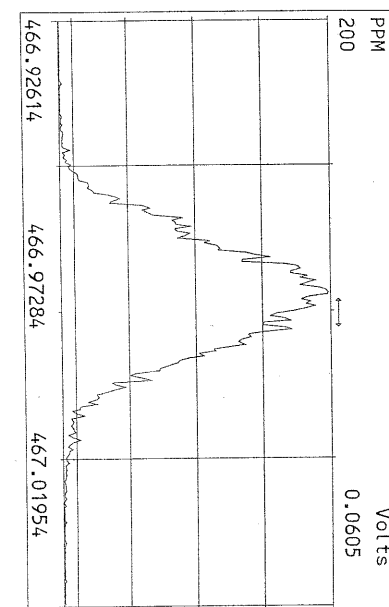
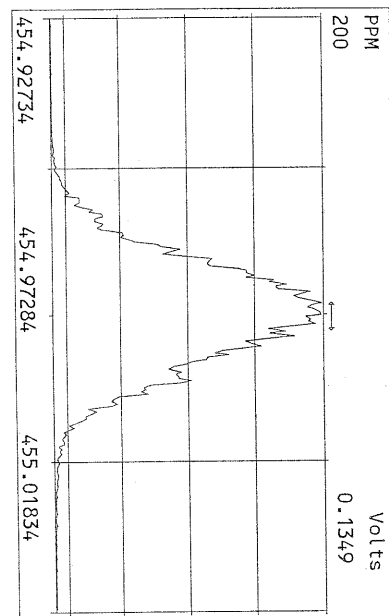
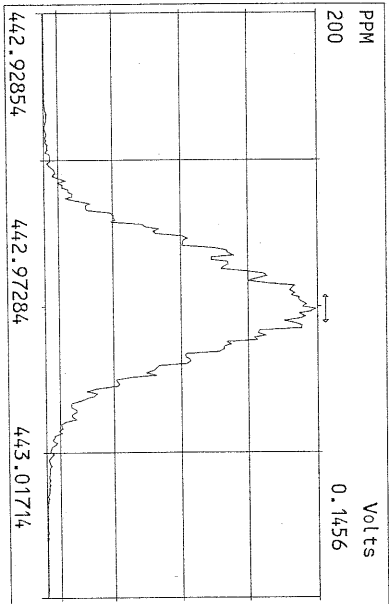
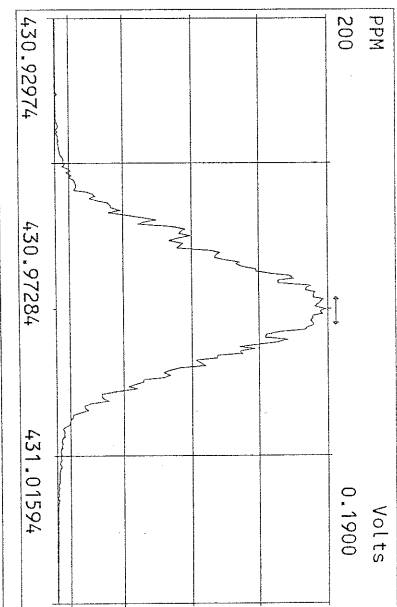
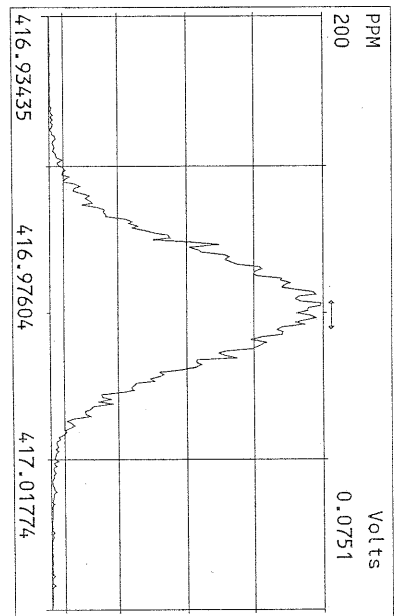
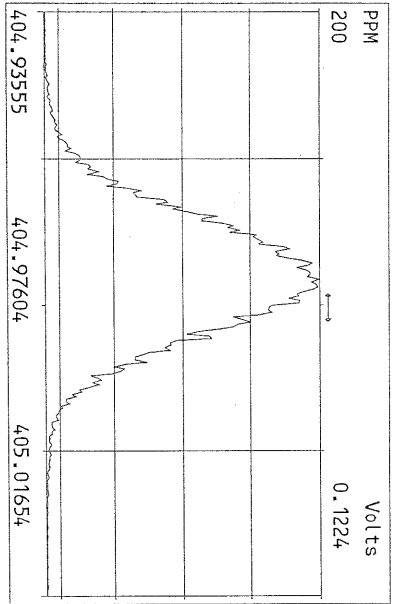
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Experiment:PCDD Function:1 Reference:PFK

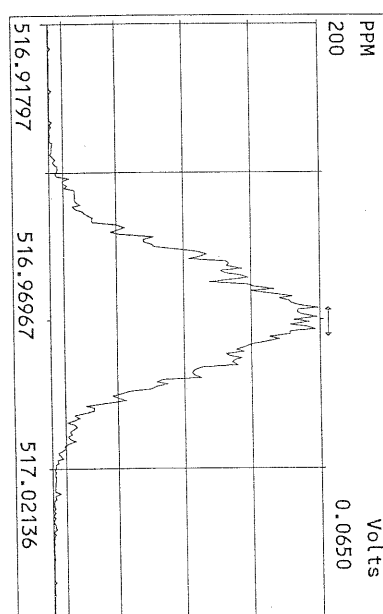
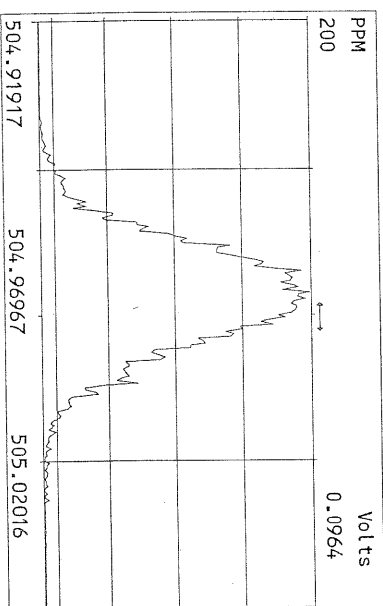
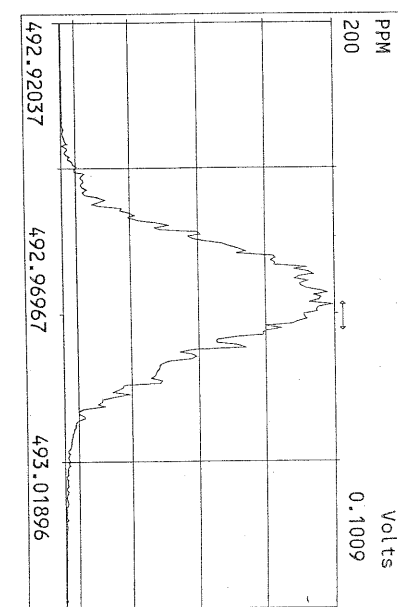
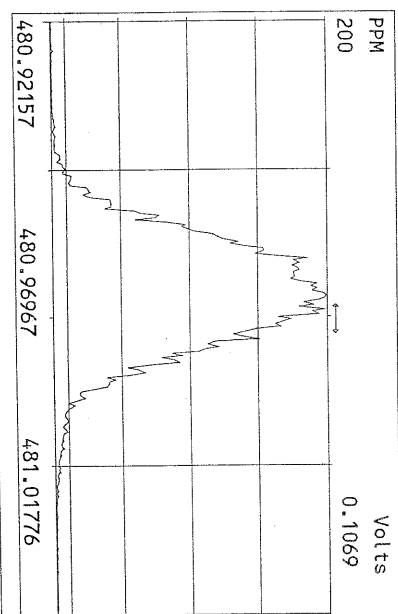
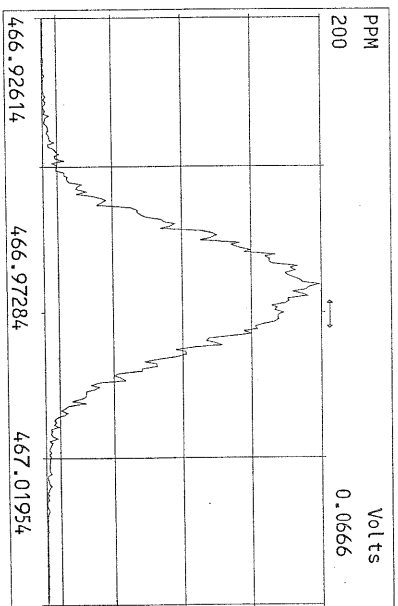
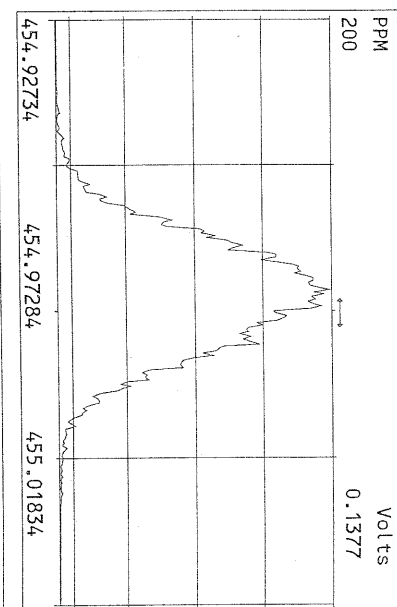
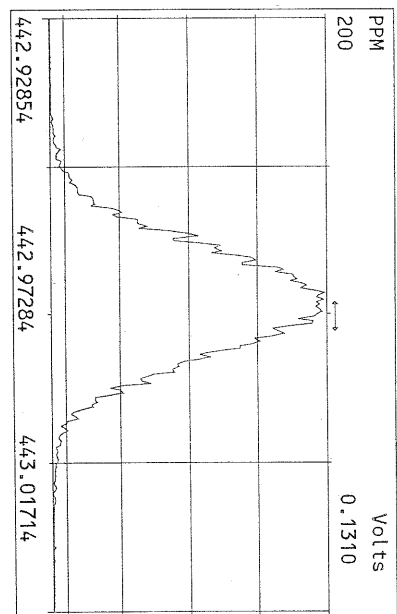
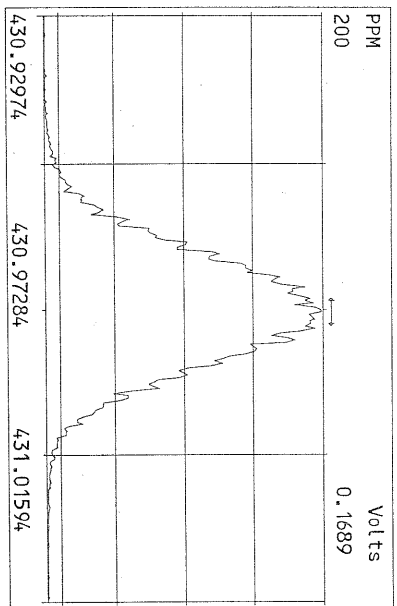




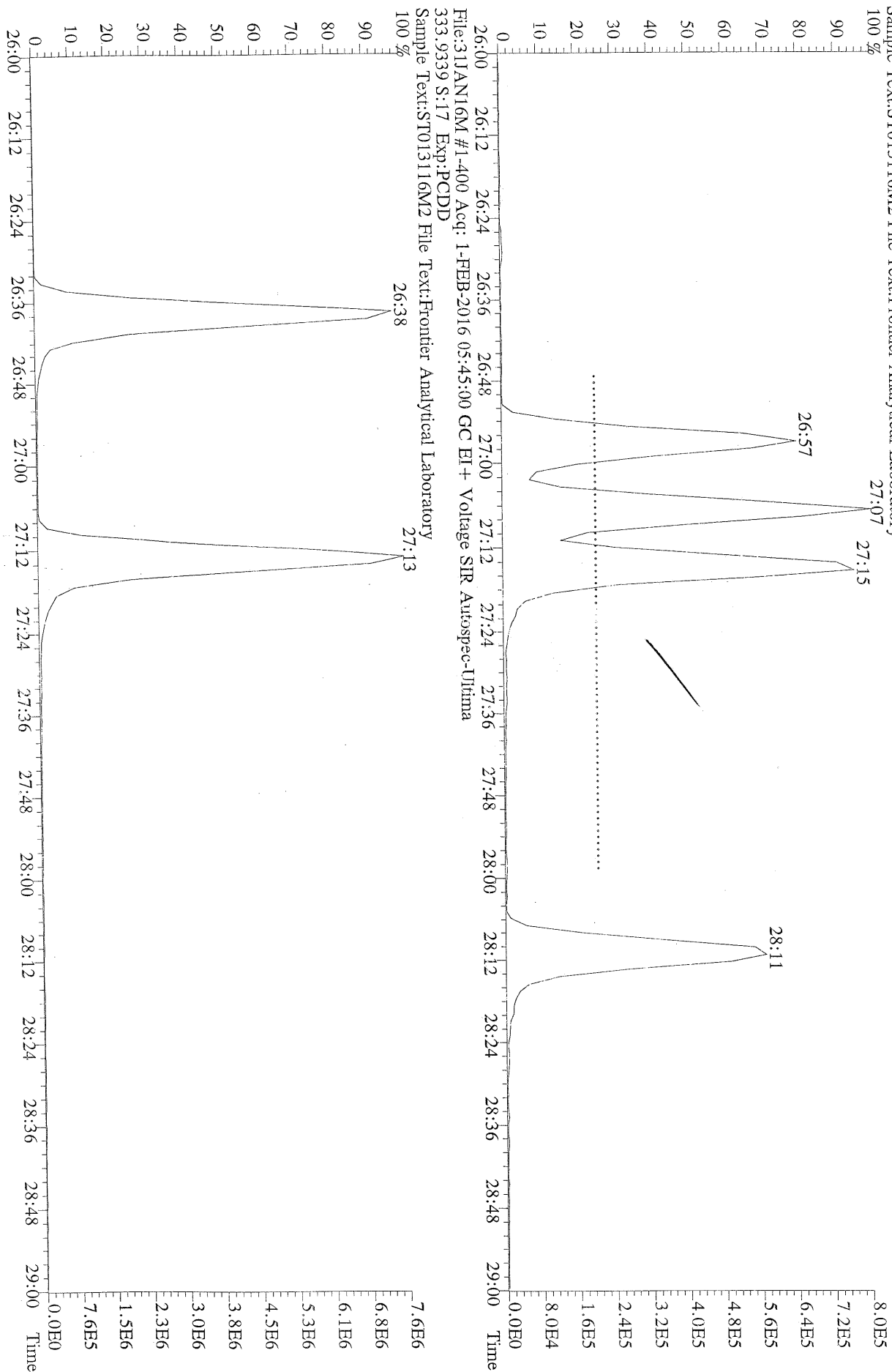




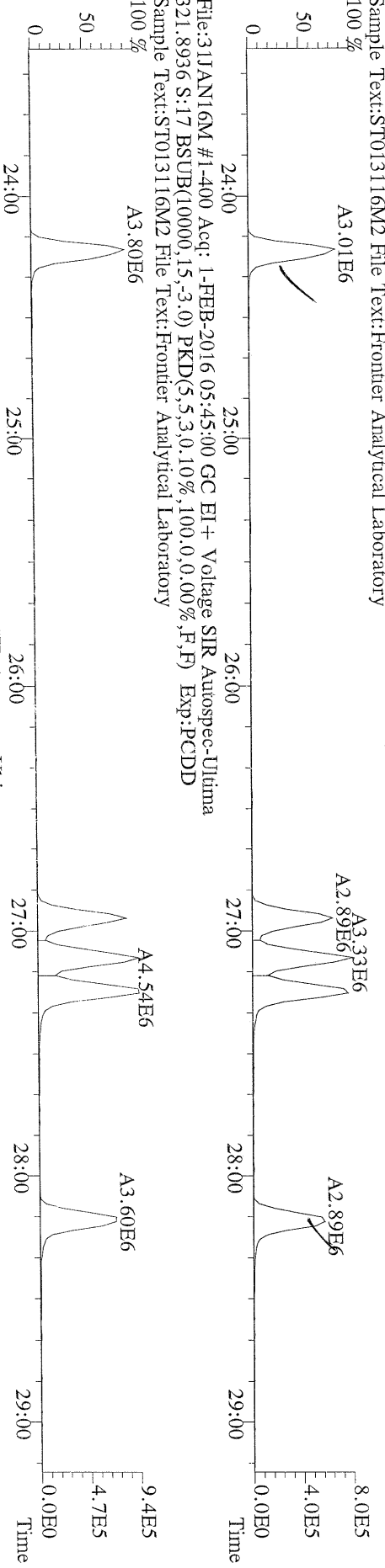
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Experiment:PCDD Function:5 Reference:PFK



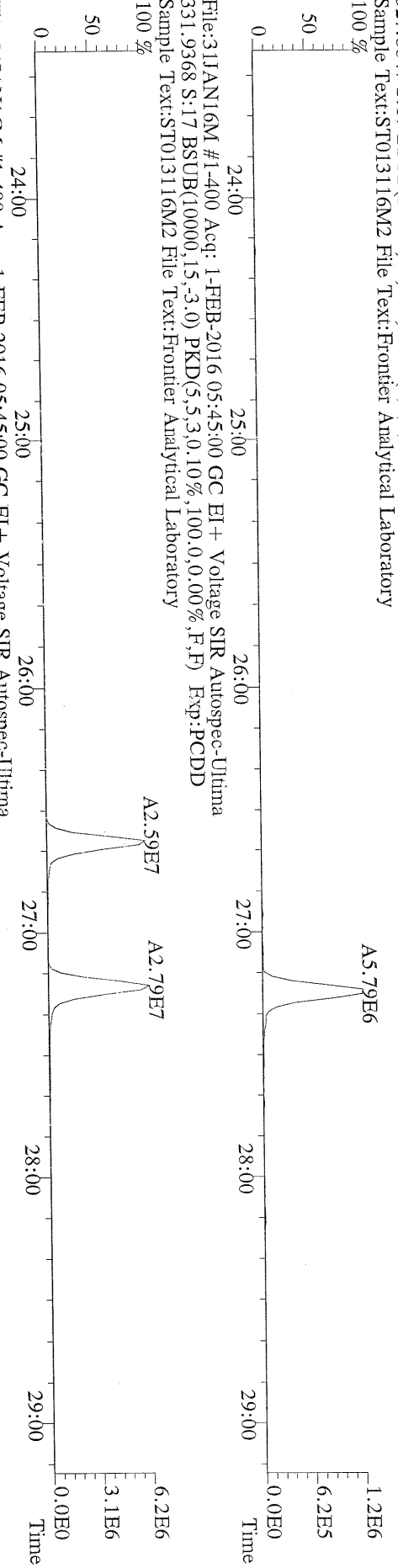
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100 %



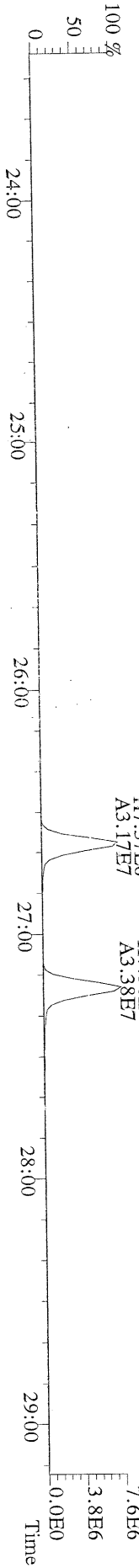
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319.8965 S:17 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST013116M2 File Text:Frontier Analytical Laboratory



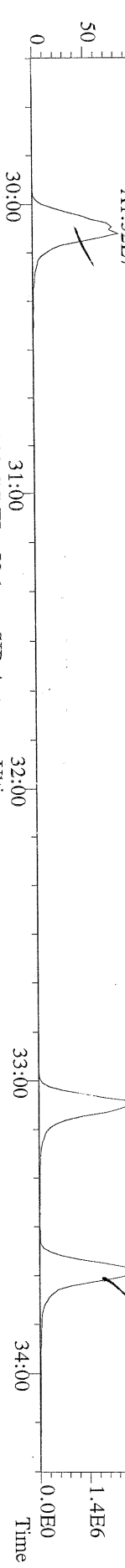
File:31JIAN16M #1-400 Acq: 1-FEB-2016 05:45:00 GC EI+ Voltage SIR Autospec-Ultima
327.8847 S:17 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST013116M2 File Text:Frontier Analytical Laboratory



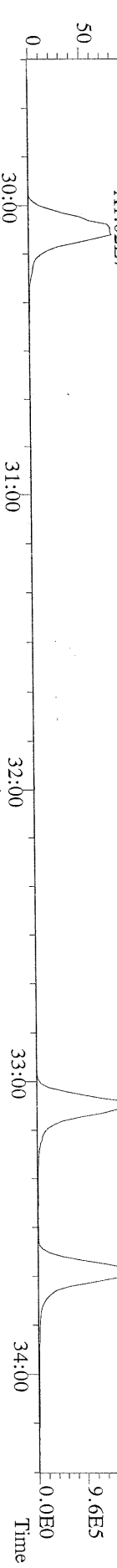
File:31JIAN16M #1-400 Acq: 1-FEB-2016 05:45:00 GC EI+ Voltage SIR Autospec-Ultima
333.9339 S:17 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST013116M2 File Text:Frontier Analytical Laboratory



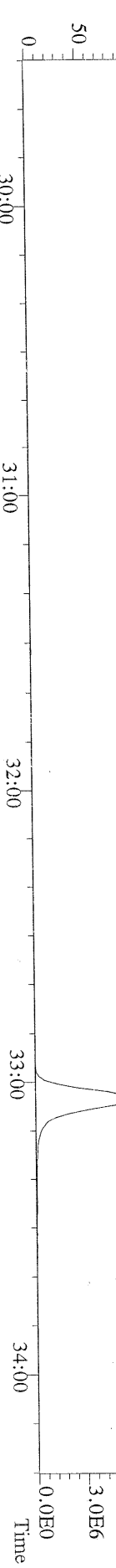
File:31JIAN16M #1-410 Acq: 1-FEB-2016 05:45:00 GC EI+ Voltage SIR Autospec-Ultima
 355.8546 S:17 F:2 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:ST013116M2 File Text:Fronier Analytical Laboratory



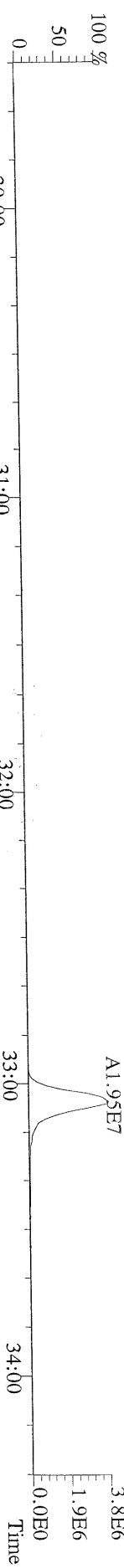
File:31JIAN16M #1-410 Acq: 1-FEB-2016 05:45:00 GC EI+ Voltage SIR Autospec-Ultima
 357.8517 S:17 F:2 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:ST013116M2 File Text:Fronier Analytical Laboratory



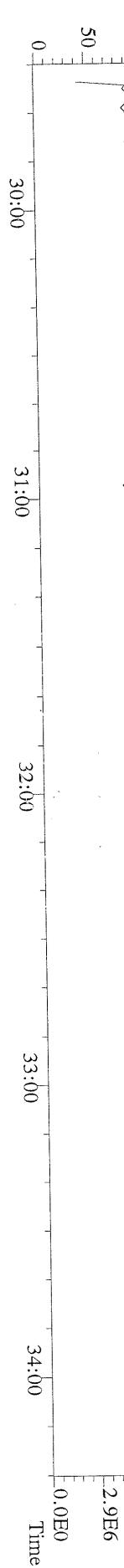
File:31JIAN16M #1-410 Acq: 1-FEB-2016 05:45:00 GC EI+ Voltage SIR Autospec-Ultima
 367.8949 S:17 F:2 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:ST013116M2 File Text:Fronier Analytical Laboratory



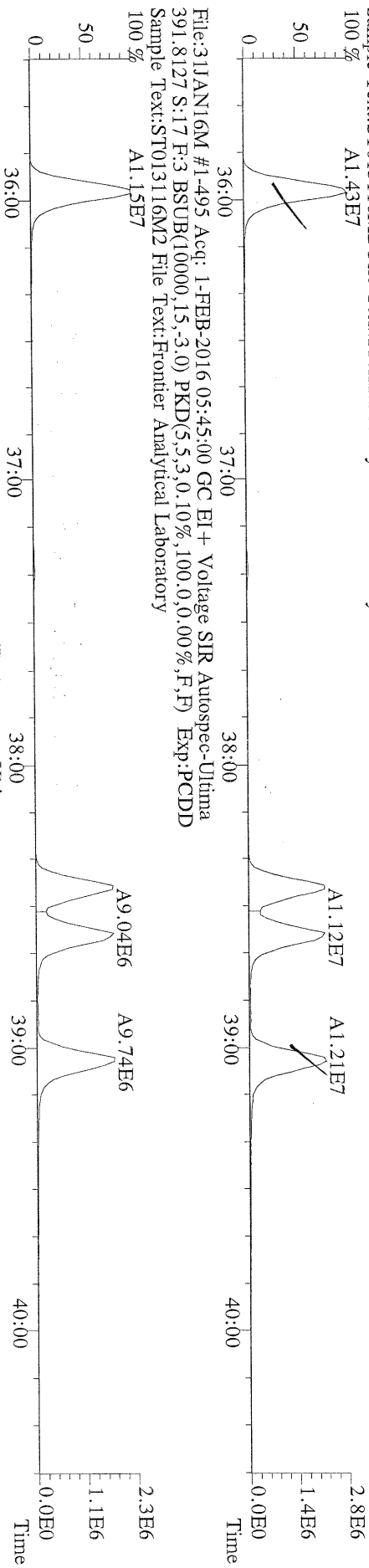
File:31JIAN16M #1-410 Acq: 1-FEB-2016 05:45:00 GC EI+ Voltage SIR Autospec-Ultima
 369.8919 S:17 F:2 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:ST013116M2 File Text:Fronier Analytical Laboratory



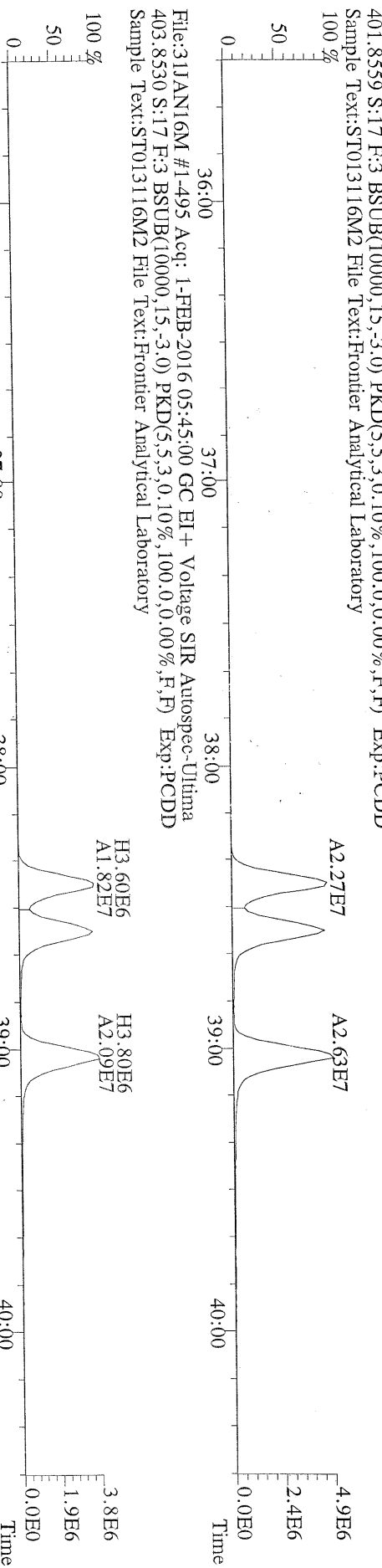
File:31JIAN16M #1-410 Acq: 1-FEB-2016 05:45:00 GC EI+ Voltage SIR Autospec-Ultima
 366.9792 S:17 F:2 Exp:PCDD
 Sample Text:ST013116M2 File Text:Fronier Analytical Laboratory



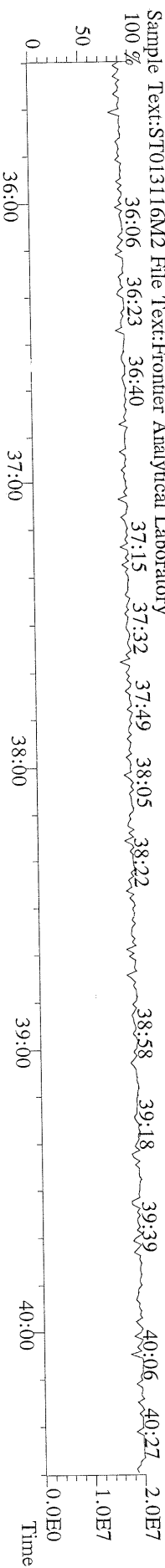
File:31JAN16M #1-495 Acq: 1-FEB-2016 05:45:00 GC EI+ Voltage SIR Autospec-Ultima
389.8156 S:17 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST013116M2 File Text:Frontier Analytical Laboratory



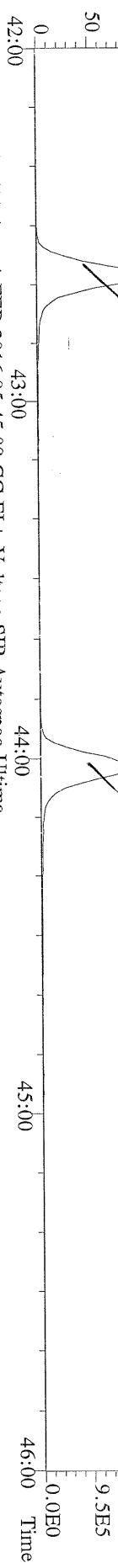
File:31JAN16M #1-495 Acq: 1-FEB-2016 05:45:00 GC EI+ Voltage SIR Autospec-Ultima
401.8559 S:17 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST013116M2 File Text:Frontier Analytical Laboratory



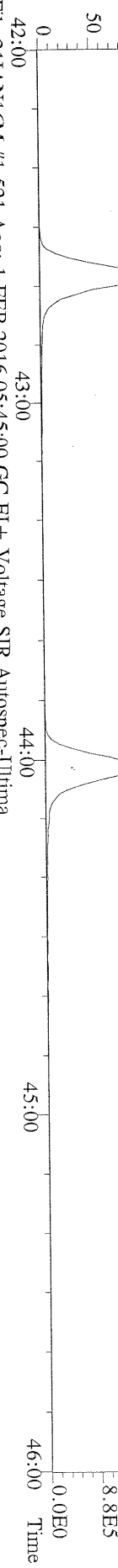
File:31JAN16M #1-495 Acq: 1-FEB-2016 05:45:00 GC EI+ Voltage SIR Autospec-Ultima
380.9760 S:17 F:3 Exp:PCDD
Sample Text:ST013116M2 File Text:Frontier Analytical Laboratory



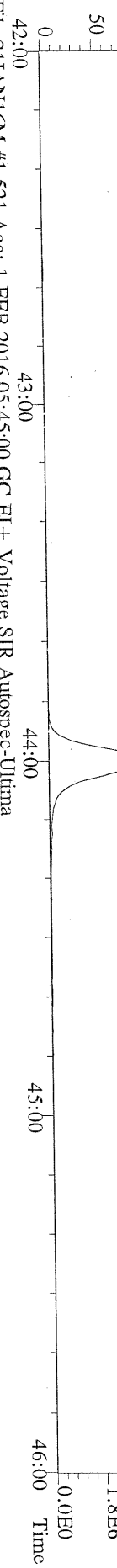
File:31JAN16M #1-521 Acq: 1-FEB-2016 05:45:00 GC EI+ Voltage SIR Autospec-Ultima
423.7767 S:17 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST013116M2 File Text:Frontier Analytical Laboratory



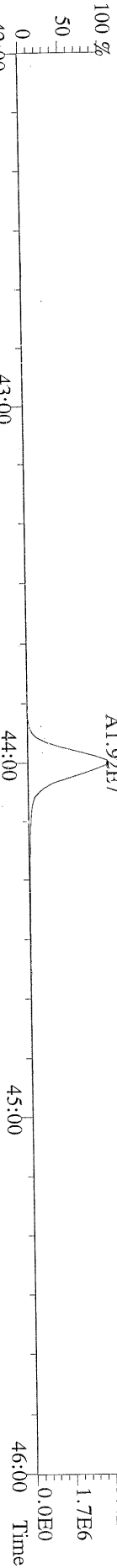
File:31JAN16M #1-521 Acq: 1-FEB-2016 05:45:00 GC EI+ Voltage SIR Autospec-Ultima
425.7737 S:17 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST013116M2 File Text:Frontier Analytical Laboratory



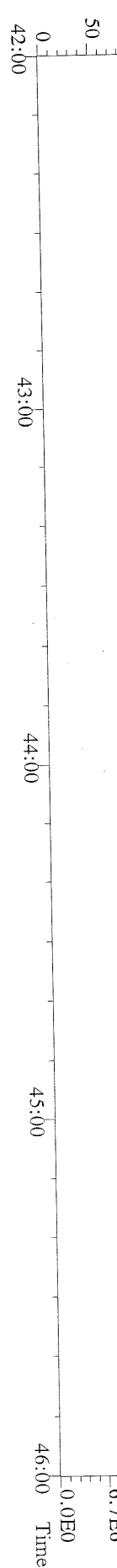
File:31JAN16M #1-521 Acq: 1-FEB-2016 05:45:00 GC EI+ Voltage SIR Autospec-Ultima
435.8169 S:17 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST013116M2 File Text:Frontier Analytical Laboratory



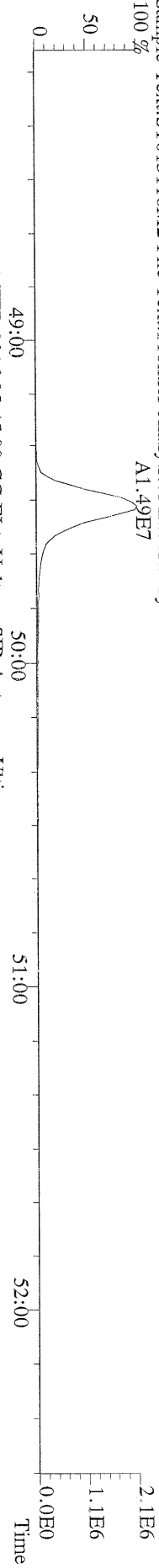
File:31JAN16M #1-521 Acq: 1-FEB-2016 05:45:00 GC EI+ Voltage SIR Autospec-Ultima
437.8140 S:17 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST013116M2 File Text:Frontier Analytical Laboratory



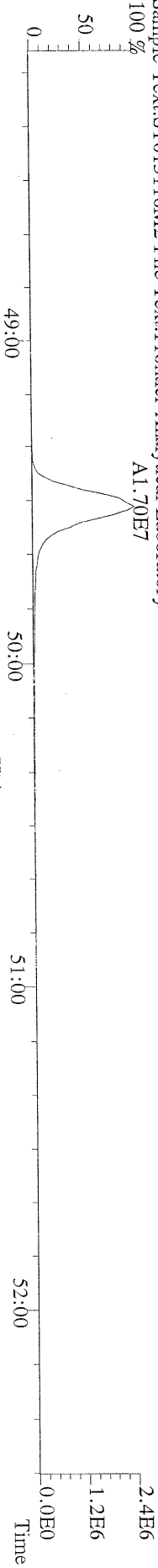
File:31JAN16M #1-521 Acq: 1-FEB-2016 05:45:00 GC EI+ Voltage SIR Autospec-Ultima
430.9728 S:17 F:4 Exp:PCDD
Sample Text:ST013116M2 File Text:Frontier Analytical Laboratory



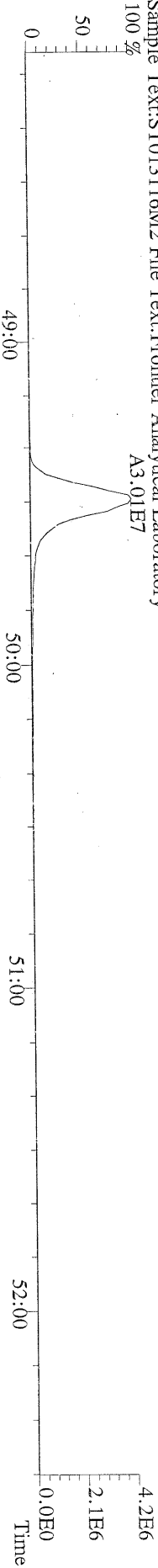
File:31JAN16M #1-360 Acq: 1-FEB-2016 05:45:00 GC EI+ Voltage SIR Autospec-Ultima
 457.7377 S:17 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:ST013116M2 File Text:Frontier Analytical Laboratory
 100 %



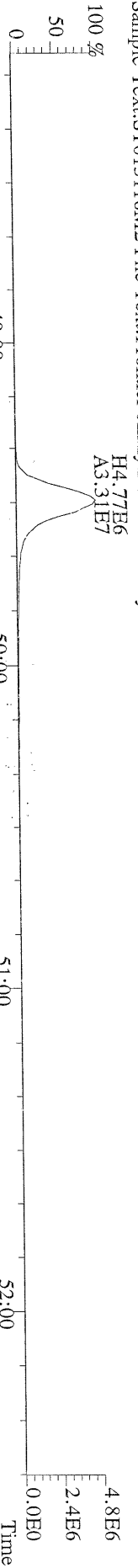
File:31JAN16M #1-360 Acq: 1-FEB-2016 05:45:00 GC EI+ Voltage SIR Autospec-Ultima
 459.7348 S:17 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:ST013116M2 File Text:Frontier Analytical Laboratory
 100 %



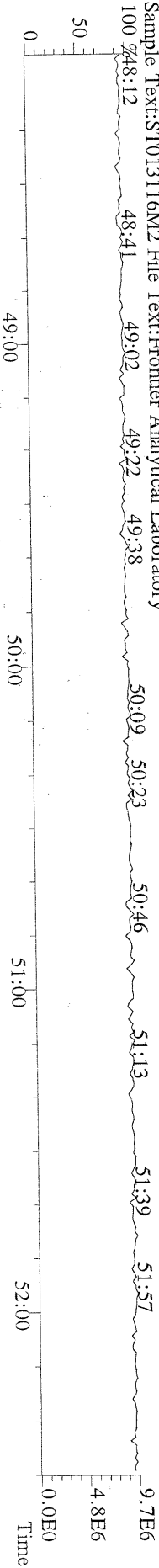
File:31JAN16M #1-360 Acq: 1-FEB-2016 05:45:00 GC EI+ Voltage SIR Autospec-Ultima
 469.7780 S:17 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:ST013116M2 File Text:Frontier Analytical Laboratory
 100 %



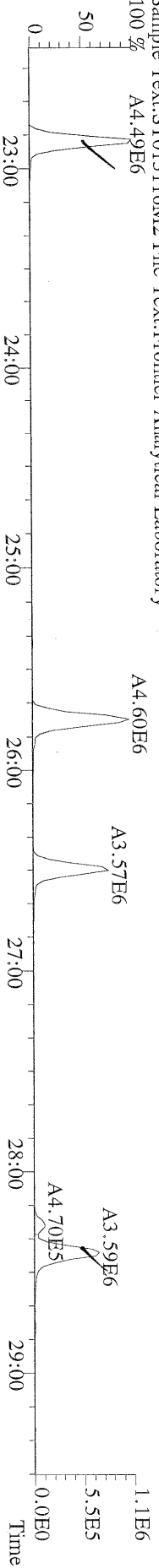
File:31JAN16M #1-360 Acq: 1-FEB-2016 05:45:00 GC EI+ Voltage SIR Autospec-Ultima
 471.7750 S:17 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:ST013116M2 File Text:Frontier Analytical Laboratory



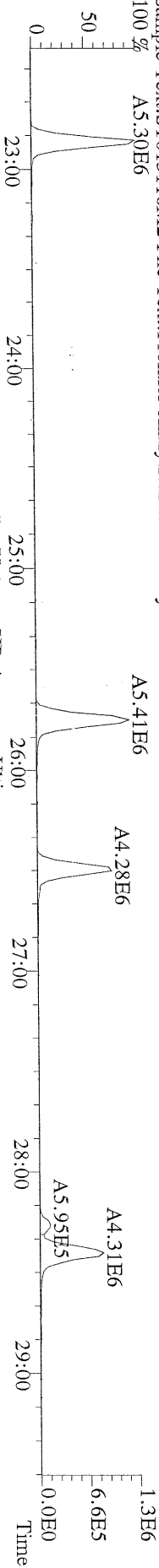
File:31JAN16M #1-360 Acq: 1-FEB-2016 05:45:00 GC EI+ Voltage SIR Autospec-Ultima
 454.9728 S:17 F:5 Exp:PCDD
 Sample Text:ST013116M2 File Text:Frontier Analytical Laboratory



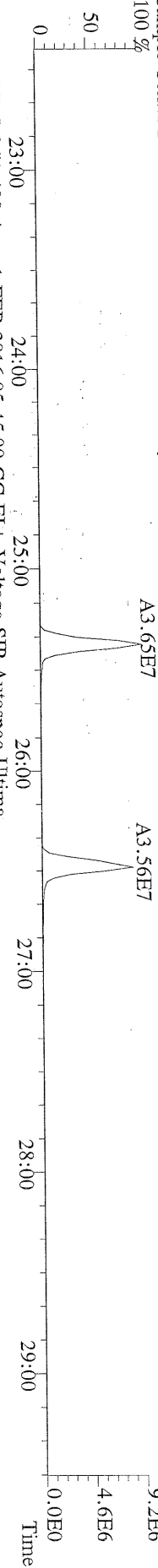
File:31JAN16M #1-400 Acq: 1-FEB-2016 05:45:00 GC EI+ Voltage SIR Autospec-Ultima
303.9016 S:17 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST013116M2 File Text:Frontier Analytical Laboratory



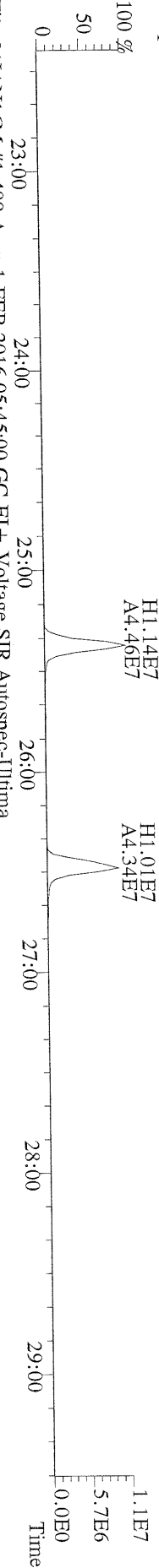
File:31JAN16M #1-400 Acq: 1-FEB-2016 05:45:00 GC EI+ Voltage SIR Autospec-Ultima
305.8987 S:17 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST013116M2 File Text:Frontier Analytical Laboratory



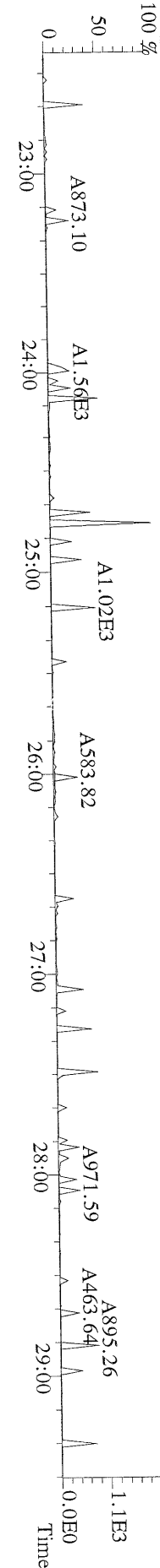
File:31JAN16M #1-400 Acq: 1-FEB-2016 05:45:00 GC EI+ Voltage SIR Autospec-Ultima
315.9419 S:17 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST013116M2 File Text:Frontier Analytical Laboratory



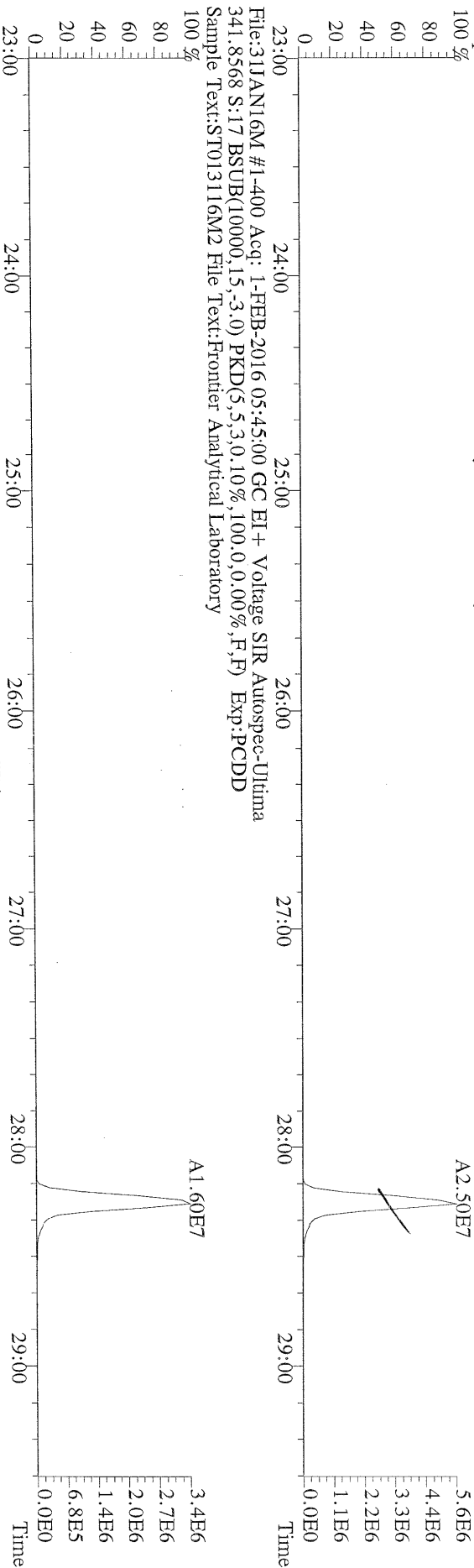
File:31JAN16M #1-400 Acq: 1-FEB-2016 05:45:00 GC EI+ Voltage SIR Autospec-Ultima
317.9389 S:17 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST013116M2 File Text:Frontier Analytical Laboratory



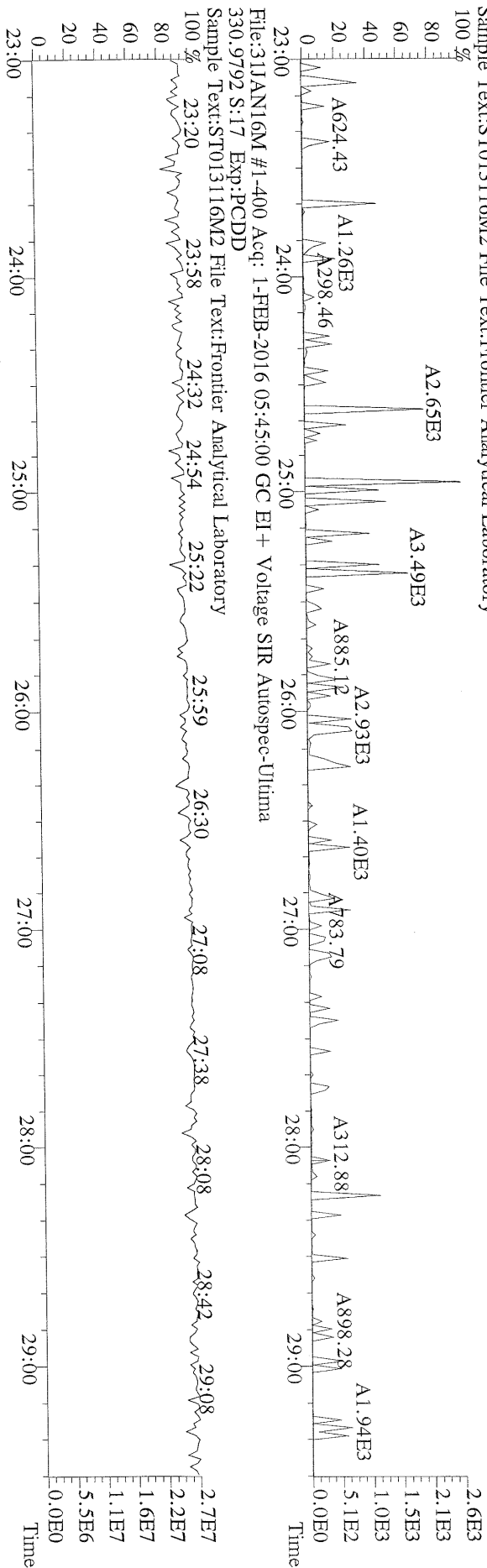
File:31JAN16M #1-400 Acq: 1-FEB-2016 05:45:00 GC EI+ Voltage SIR Autospec-Ultima
375.8364 S:17 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST013116M2 File Text:Frontier Analytical Laboratory



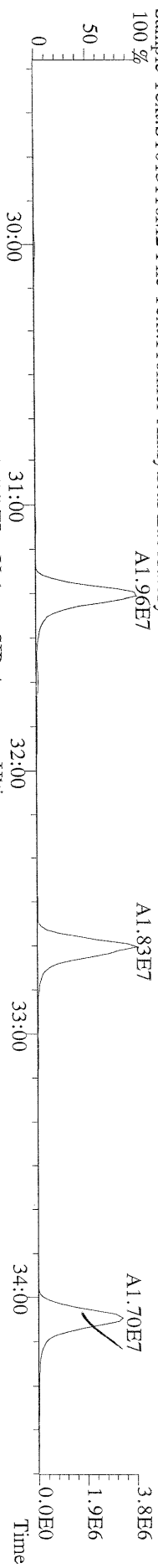
File:31JAN16M #1-400 Acq: 1-FEB-2016 05:45:00 GC EI+ Voltage SIR Autospec-Utima
 339.8597 S:17 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:ST013116M2 File Text:Frontier Analytical Laboratory



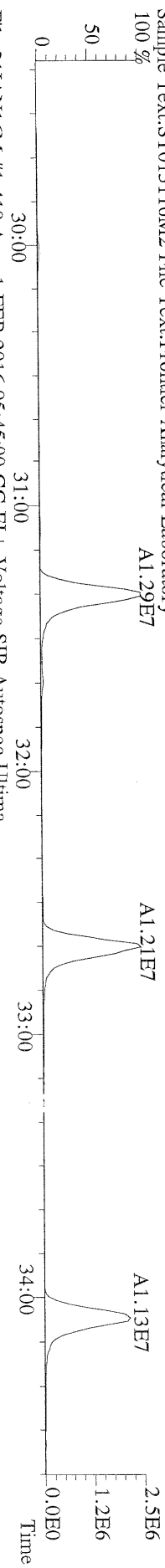
File:31JAN16M #1-400 Acq: 1-FEB-2016 05:45:00 GC EI+ Voltage SIR Autospec-Utima
 409.7974 S:17 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:ST013116M2 File Text:Frontier Analytical Laboratory



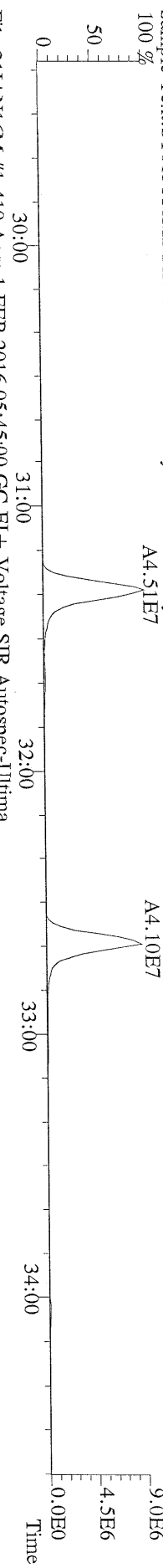
File:31JIANI6M #1-410 Acq: 1-FEB-2016 05:45:00 GC EI+ Voltage SIR Autospec-Ultima
 339.8597 S:17 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:ST013116M2 File Text:Frontier Analytical Laboratory



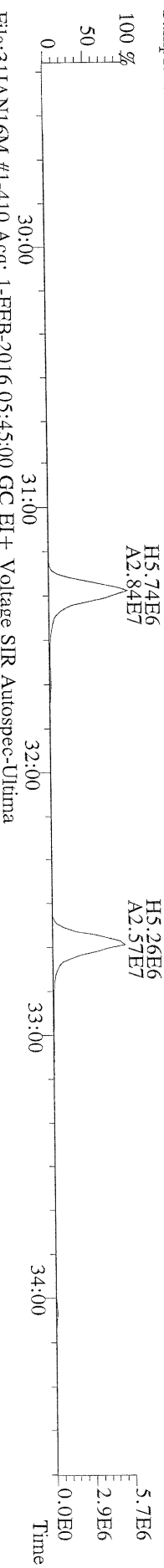
File:31JIANI6M #1-410 Acq: 1-FEB-2016 05:45:00 GC EI+ Voltage SIR Autospec-Ultima
 341.8568 S:17 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:ST013116M2 File Text:Frontier Analytical Laboratory



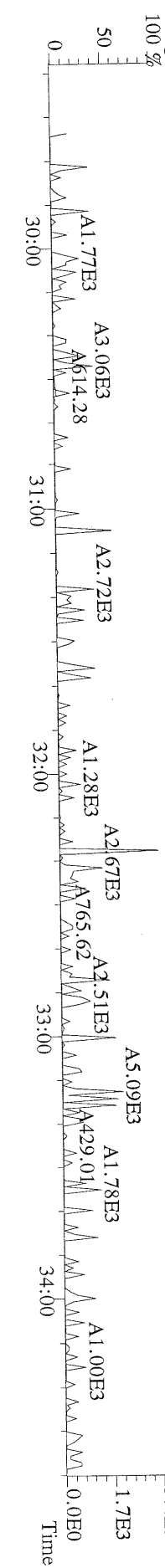
File:31JIANI6M #1-410 Acq: 1-FEB-2016 05:45:00 GC EI+ Voltage SIR Autospec-Ultima
 351.9000 S:17 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:ST013116M2 File Text:Frontier Analytical Laboratory



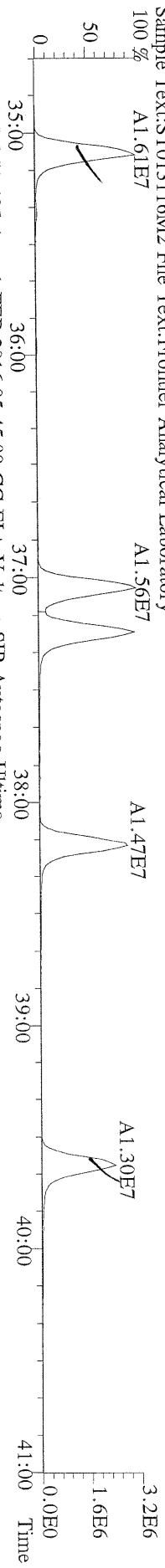
File:31JIANI6M #1-410 Acq: 1-FEB-2016 05:45:00 GC EI+ Voltage SIR Autospec-Ultima
 353.8970 S:17 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:ST013116M2 File Text:Frontier Analytical Laboratory



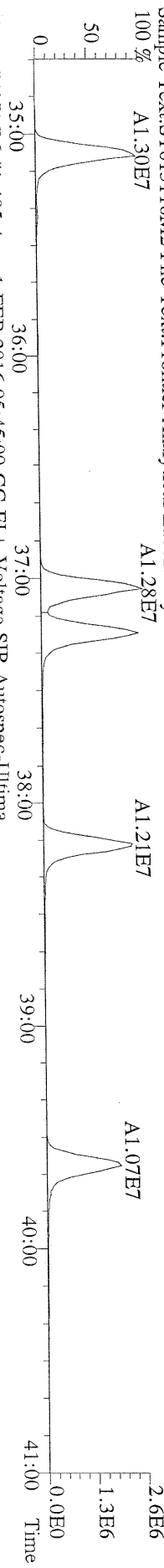
File:31JIANI6M #1-410 Acq: 1-FEB-2016 05:45:00 GC EI+ Voltage SIR Autospec-Ultima
 409.7974 S:17 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD
 Sample Text:ST013116M2 File Text:Frontier Analytical Laboratory



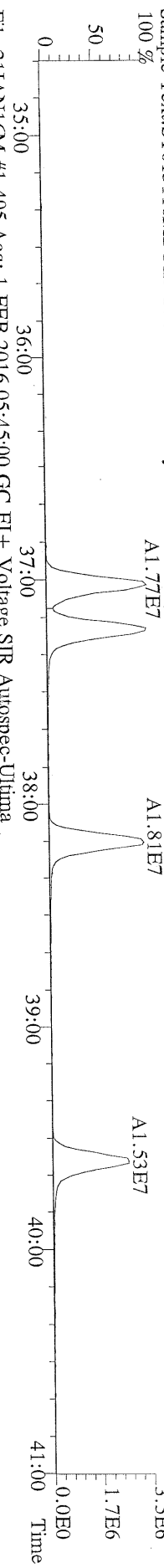
File:311AN16M #1-495 Acq: 1-FEB-2016 05:45:00 GC EI+ Voltage SIR Autospec-Ultima
373.8207 S:17 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
Sample Text:ST013116M2 File Text:Frontier Analytical Laboratory



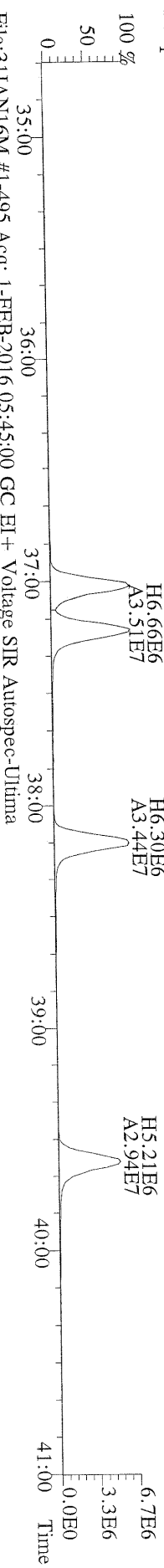
File:311AN16M #1-495 Acq: 1-FEB-2016 05:45:00 GC EI+ Voltage SIR Autospec-Ultima
375.8178 S:17 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
Sample Text:ST013116M2 File Text:Frontier Analytical Laboratory



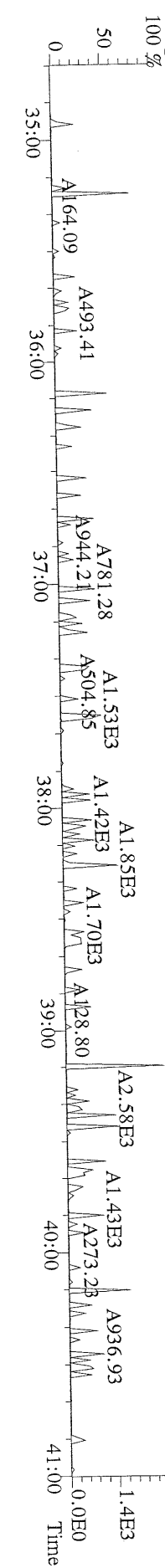
File:311AN16M #1-495 Acq: 1-FEB-2016 05:45:00 GC EI+ Voltage SIR Autospec-Ultima
383.8639 S:17 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
Sample Text:ST013116M2 File Text:Frontier Analytical Laboratory



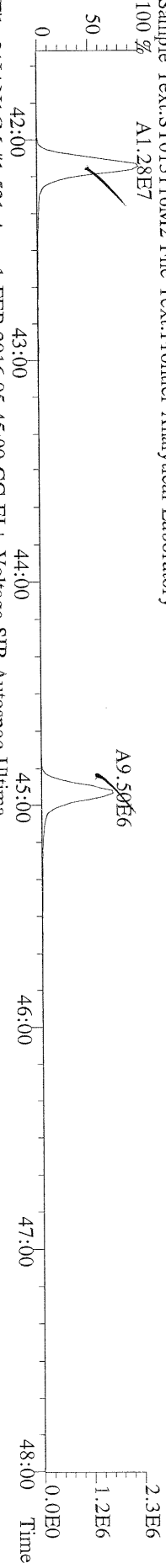
File:311AN16M #1-495 Acq: 1-FEB-2016 05:45:00 GC EI+ Voltage SIR Autospec-Ultima
385.8610 S:17 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
Sample Text:ST013116M2 File Text:Frontier Analytical Laboratory



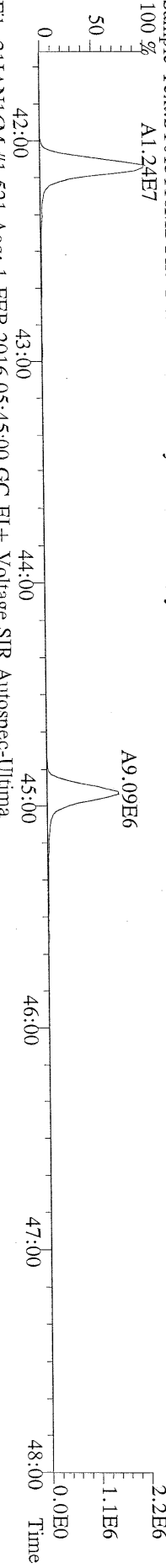
File:311AN16M #1-495 Acq: 1-FEB-2016 05:45:00 GC EI+ Voltage SIR Autospec-Ultima
445.7555 S:17 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
Sample Text:ST013116M2 File Text:Frontier Analytical Laboratory



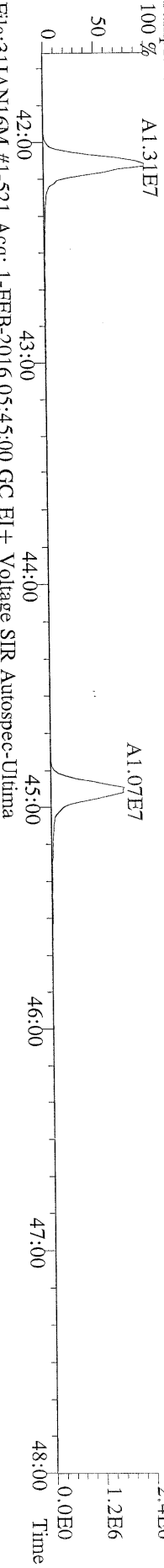
File:31JAN16M #1-521 Acq: 1-FEB-2016 05:45:00 GC EI+ Voltage SIR Autospec-Ultima
 407.7818 S:17 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD
 Sample Text:ST013116M2 File Text:Frontier Analytical Laboratory
 100 % A1.28E7



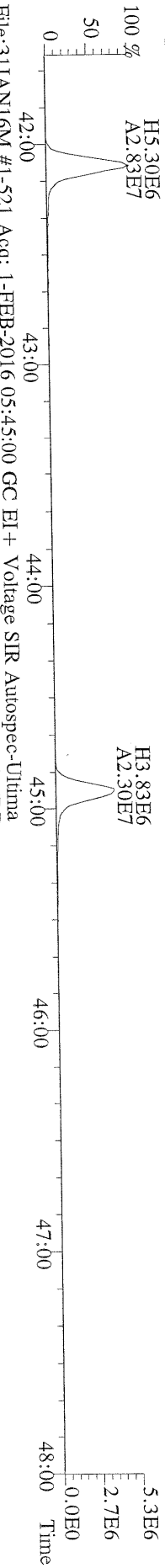
File:31JAN16M #1-521 Acq: 1-FEB-2016 05:45:00 GC EI+ Voltage SIR Autospec-Ultima
 409.7788 S:17 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD
 Sample Text:ST013116M2 File Text:Frontier Analytical Laboratory
 100 % A1.24E7



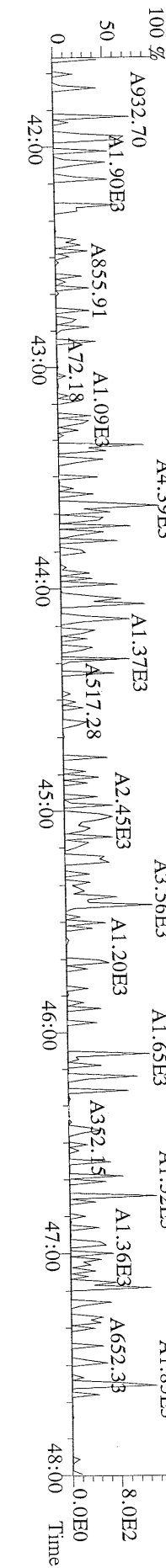
File:31JAN16M #1-521 Acq: 1-FEB-2016 05:45:00 GC EI+ Voltage SIR Autospec-Ultima
 417.8253 S:17 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD
 Sample Text:ST013116M2 File Text:Frontier Analytical Laboratory
 100 % A1.31E7



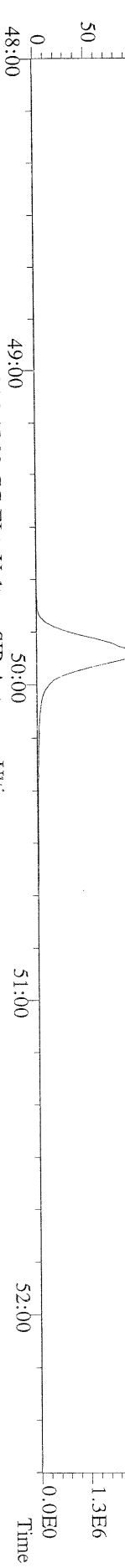
File:31JAN16M #1-521 Acq: 1-FEB-2016 05:45:00 GC EI+ Voltage SIR Autospec-Ultima
 419.8220 S:17 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD
 Sample Text:ST013116M2 File Text:Frontier Analytical Laboratory
 100 % H5.30E6
 A2.83E7



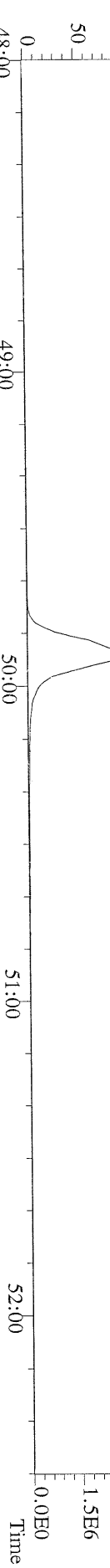
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 479.7165 S:17 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD
 Sample Text:ST013116M2 File Text:Frontier Analytical Laboratory
 100 % A932.70
 A1.90E3
 A855.91
 A72.18
 A1.09E3
 A4.39E3
 A1.37E3
 A517.28
 A2.45E3
 A3.56E3
 A1.20E3
 A1.65E3
 A352.15
 A1.52E3
 A1.36E3
 A652.35
 A1.85E3



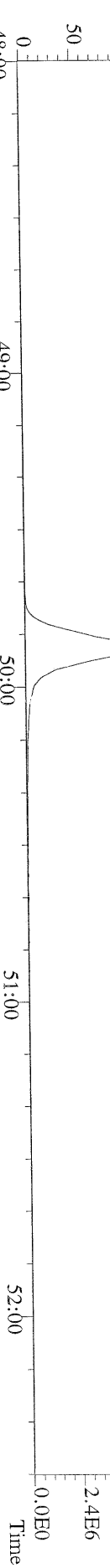
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441.7428 S:17 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST013116M2 File Text:Frontier Analytical Laboratory



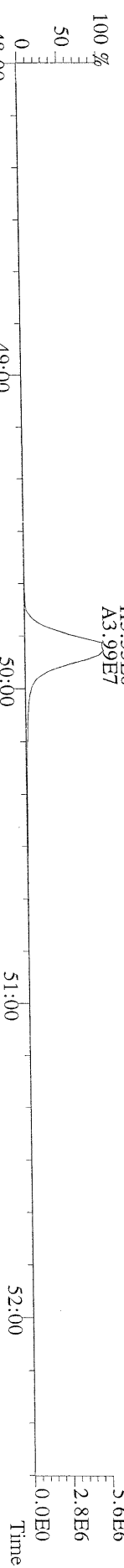
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443.7398 S:17 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST013116M2 File Text:Frontier Analytical Laboratory



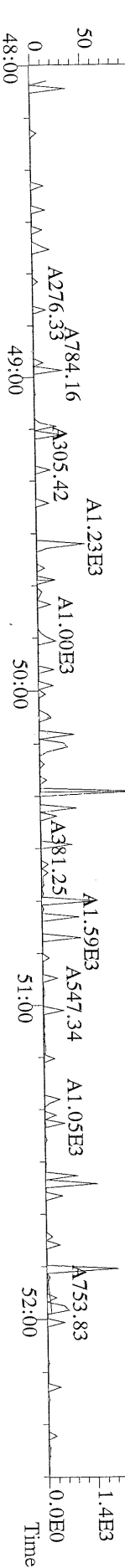
File:311JAN16M #1-360 Acq: 1-FEB-2016 05:45:00 GC EI+ Voltage SIR Autospec-Ultima
453.7831 S:17 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST013116M2 File Text:Frontier Analytical Laboratory



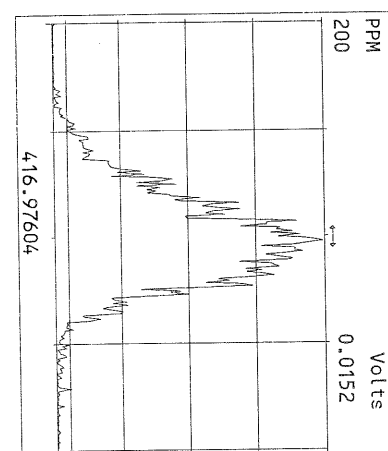
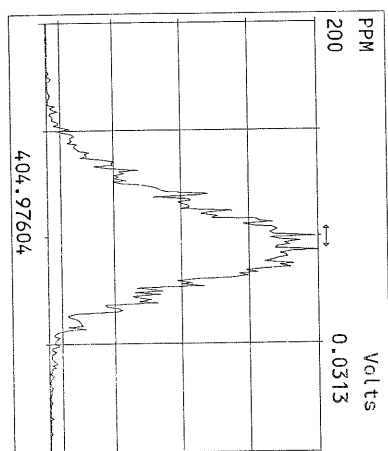
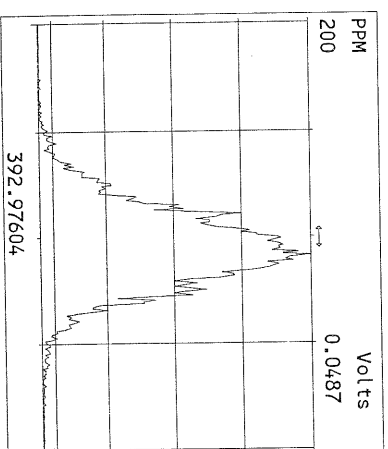
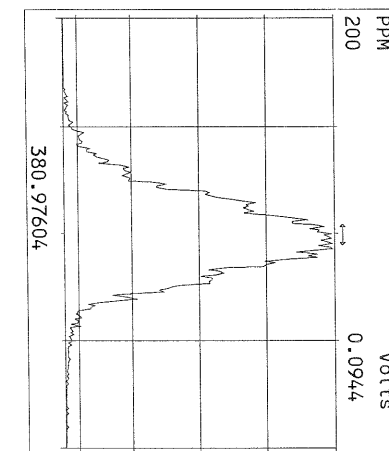
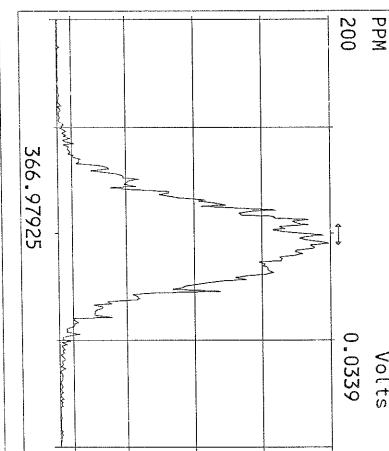
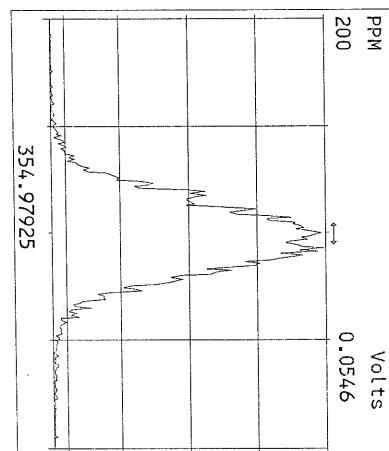
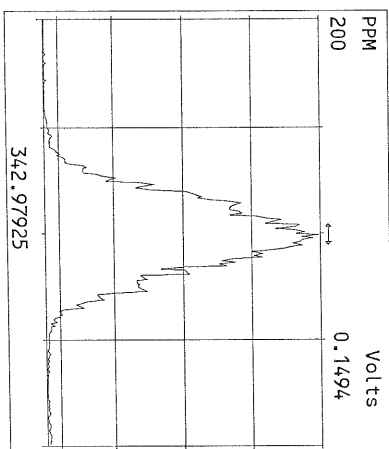
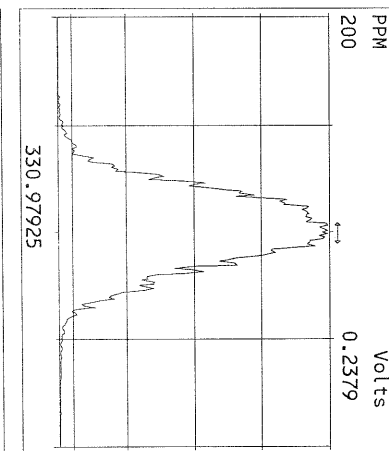
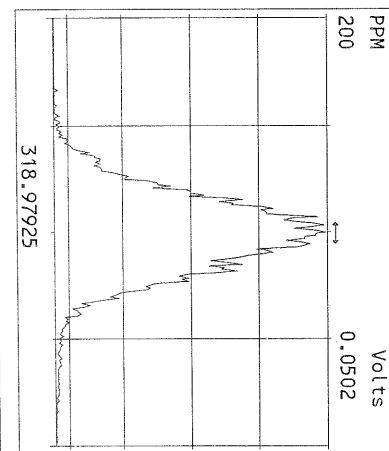
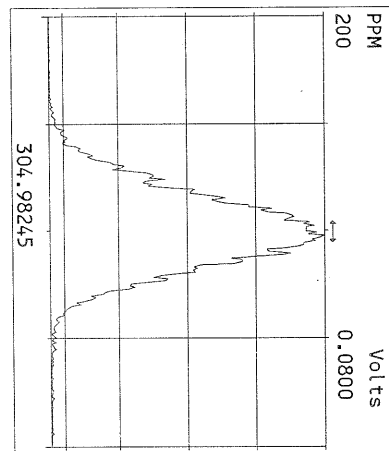
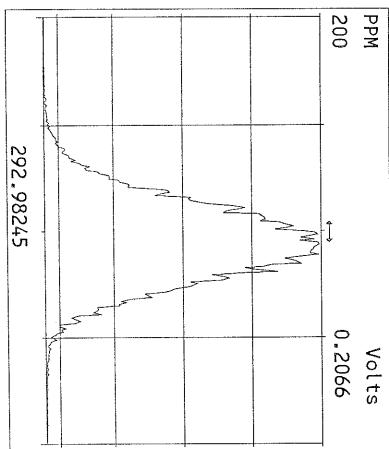
File:311JAN16M #1-360 Acq: 1-FEB-2016 05:45:00 GC EI+ Voltage SIR Autospec-Ultima
455.7801 S:17 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST013116M2 File Text:Frontier Analytical Laboratory



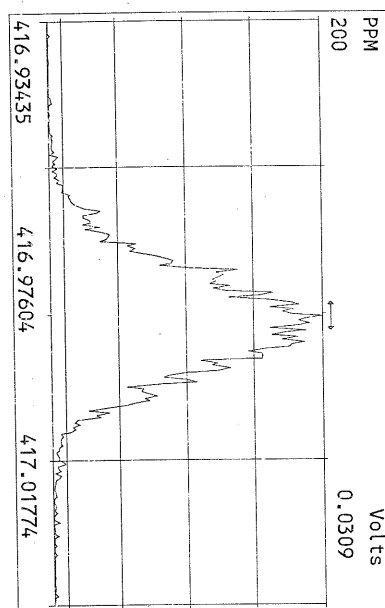
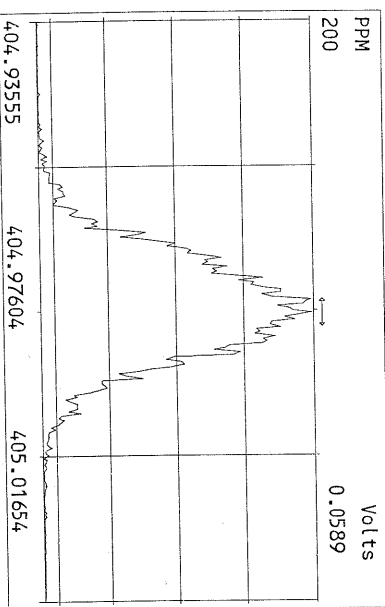
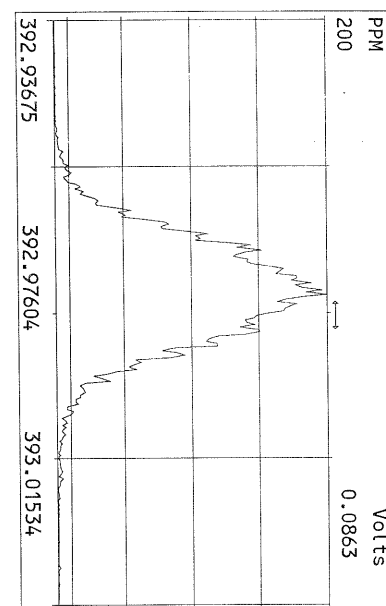
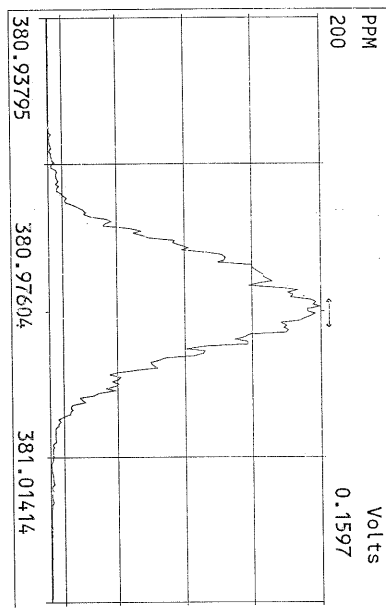
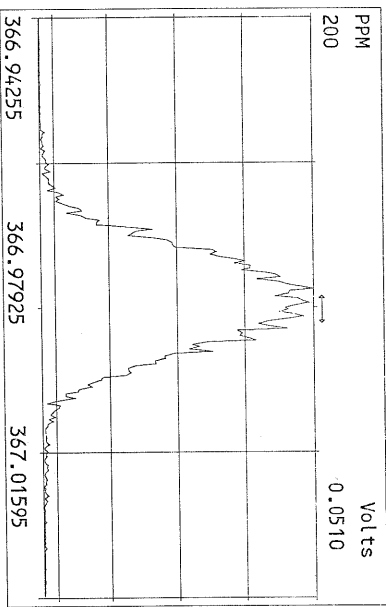
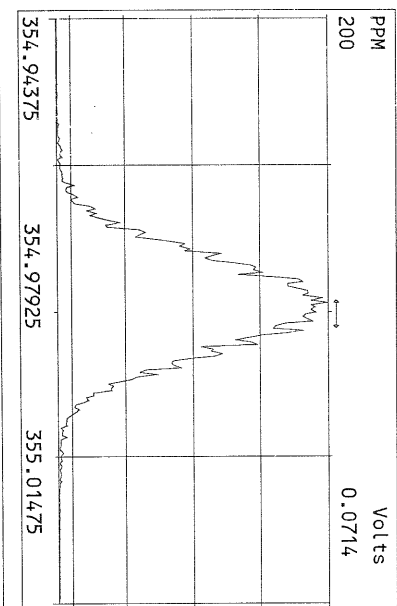
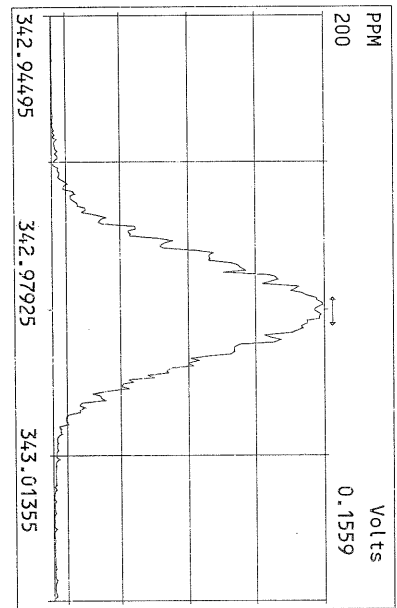
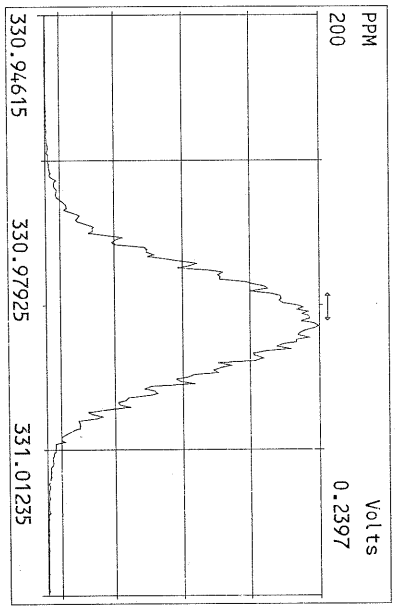
File:311JAN16M #1-360 Acq: 1-FEB-2016 05:45:00 GC EI+ Voltage SIR Autospec-Ultima
513.6775 S:17 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST013116M2 File Text:Frontier Analytical Laboratory



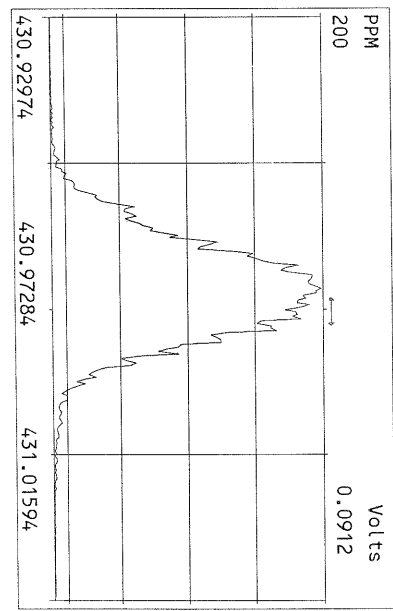
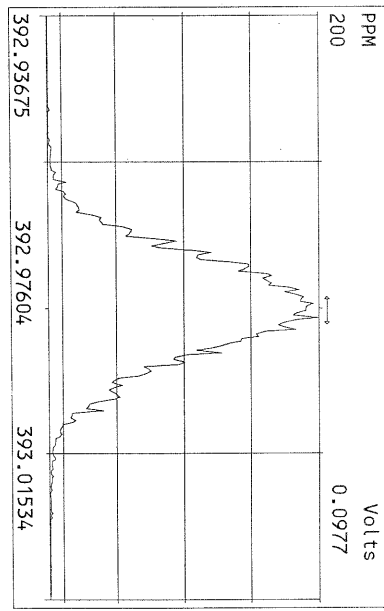
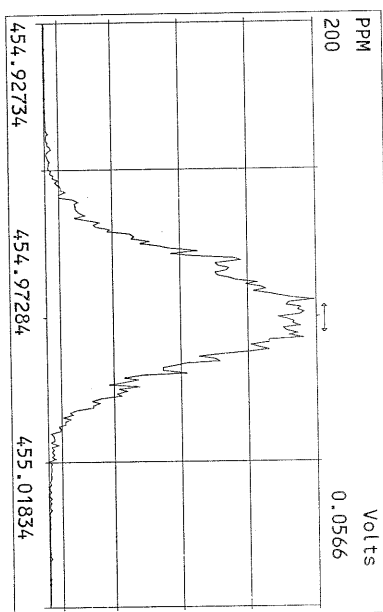
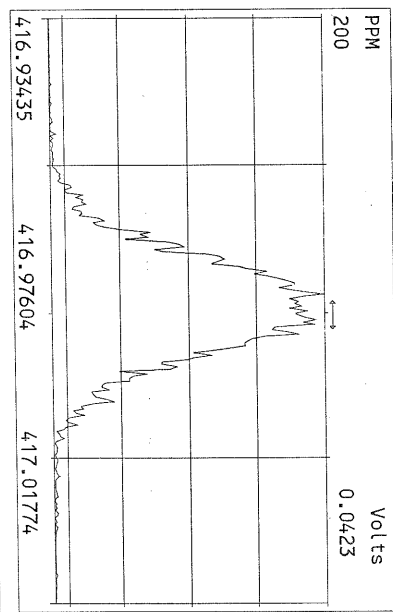
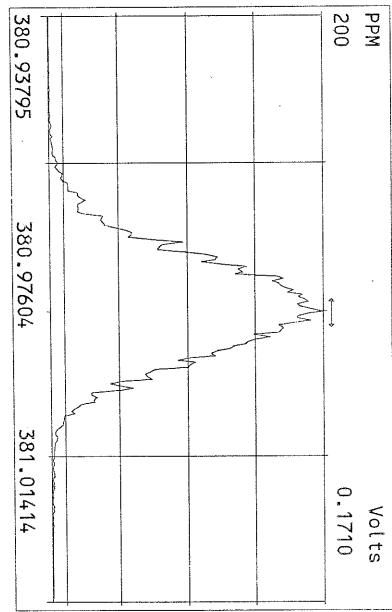
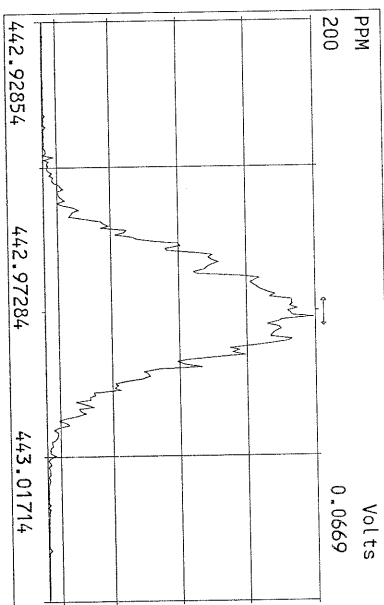
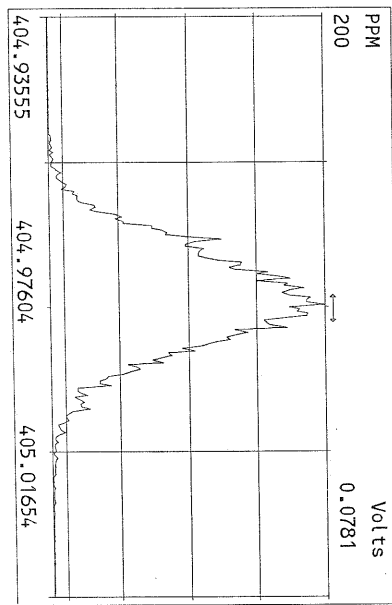
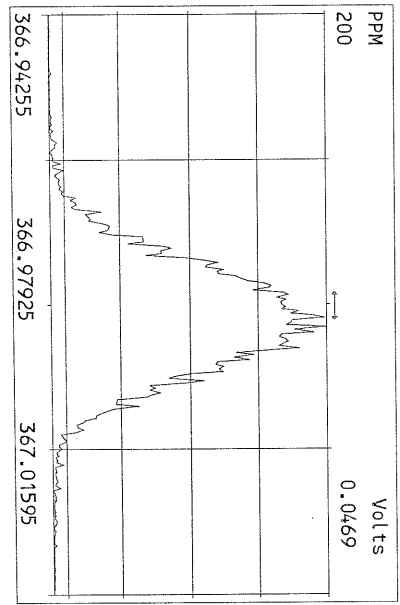
Peak Locate Examination: 1-FEB-2016:06:41 File:31JAN16M_RES_CHECK
Experiment:PCDD Function:1 Reference:PFK



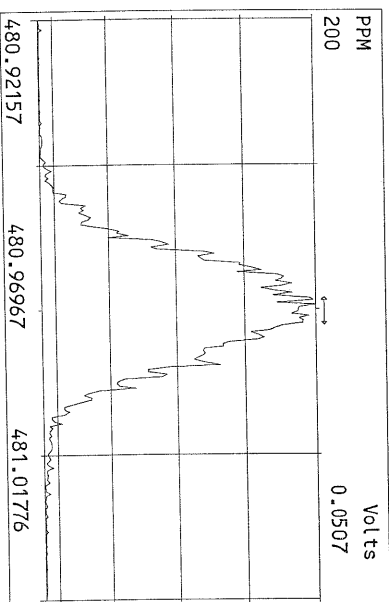
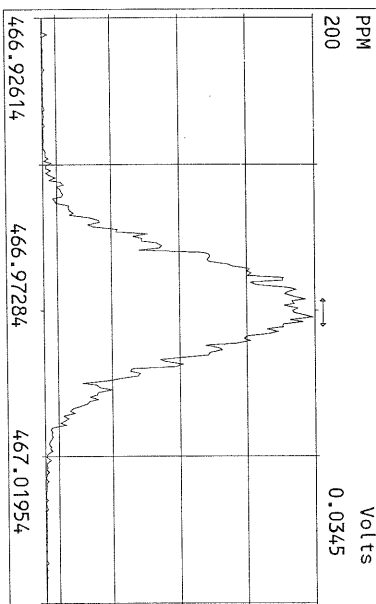
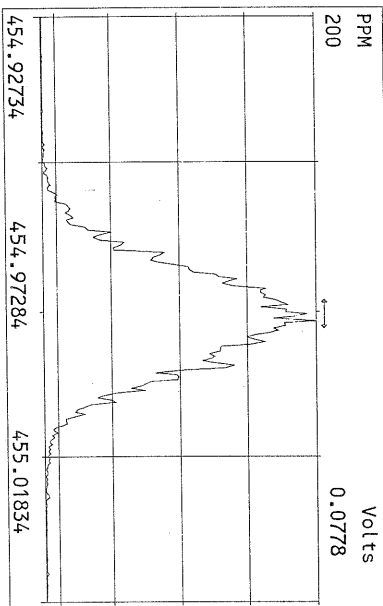
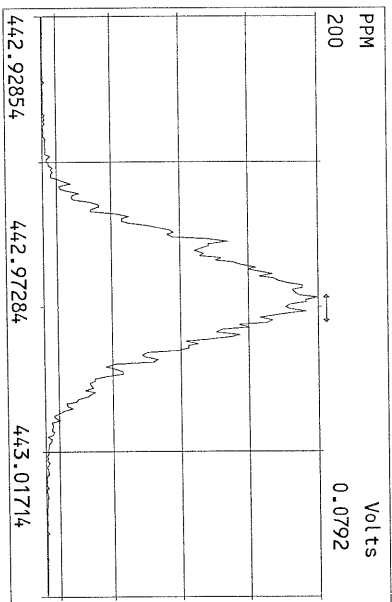
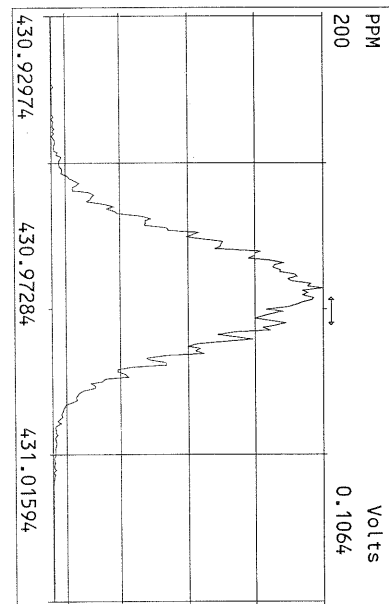
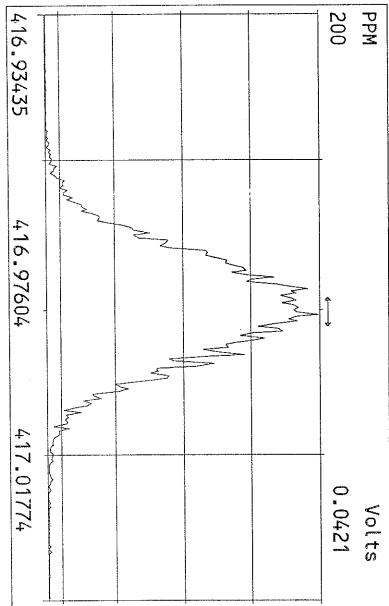
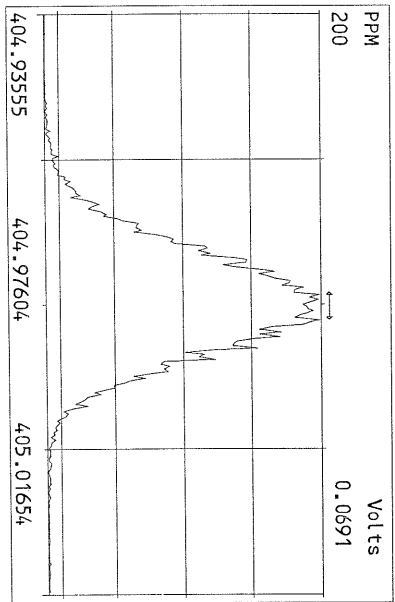
Peak Locate Examination: 1-FEB-2016:06:43 File:31JAN16M_RES_CHECK
Experiment:PDD Function:2 Reference:PFK

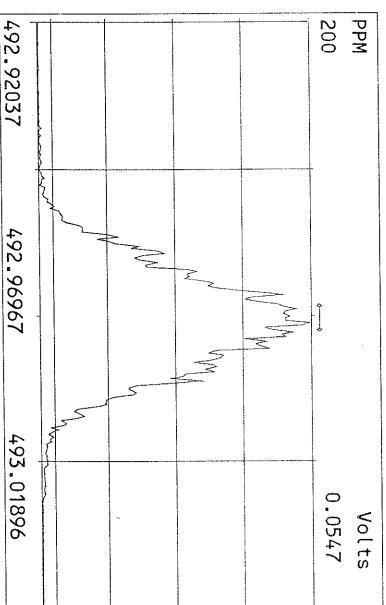
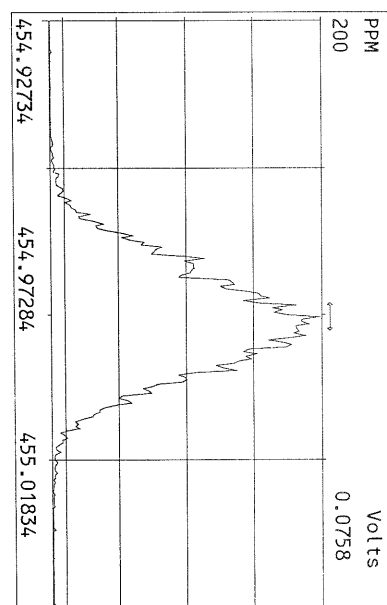
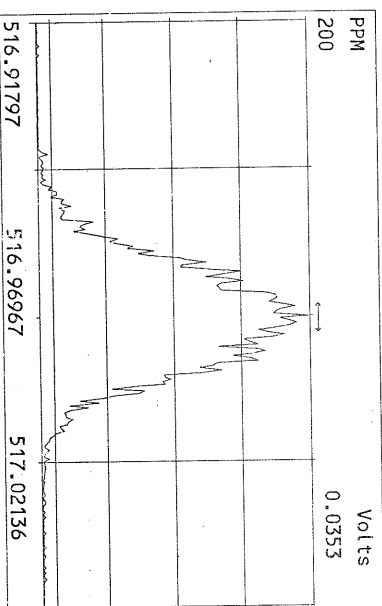
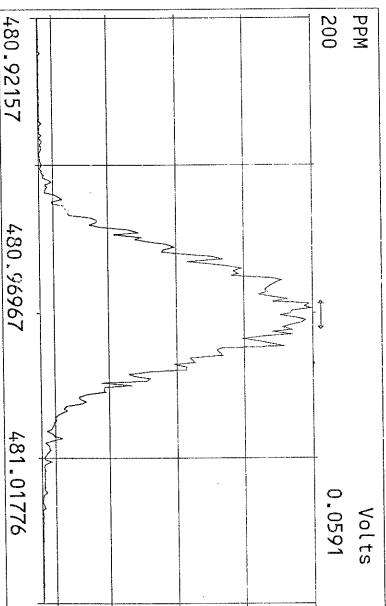
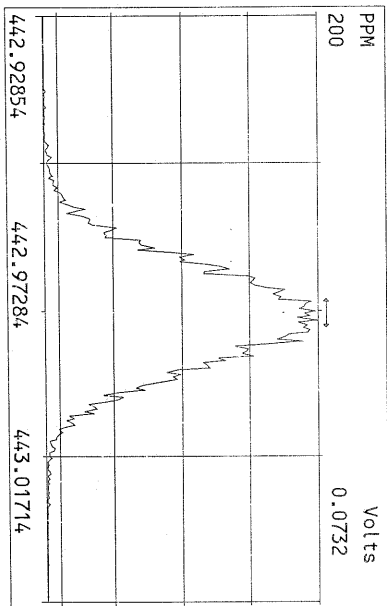
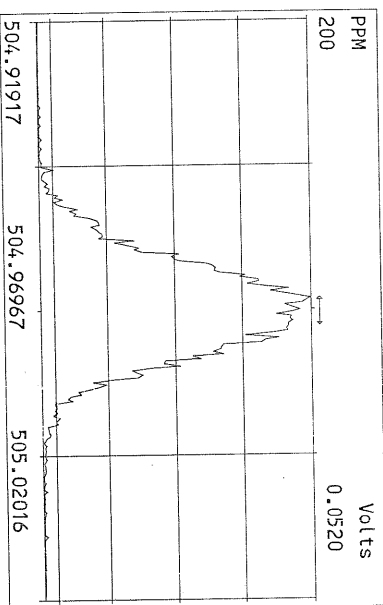
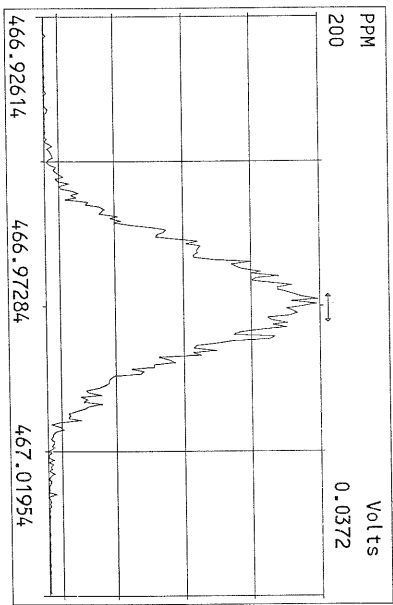
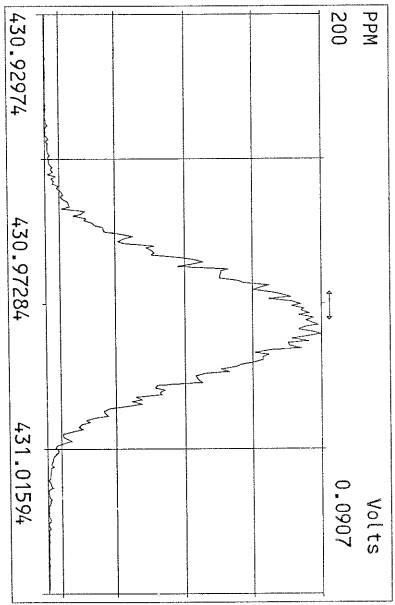


Peak Locate Examination: 1-FEB-2016:06:45 File:31JAN16M_RES_CHECK
Experiment:PCDD Function:3 Reference:PFK



Peak Locate Examination: 1-FEB-2016:06:47 File:31JAN16M_RES_CHECK
Experiment:PCDD Function:4 Reference:PFK





FORM 4A
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: Frontier Analytical Laboratory Episode No.:

Contract No.: SAS No.:

Initial Calibration Date: 1/8/16

Instrument ID: FAL3

GC Column ID: DB5

VER Data Filename: 02FEB16N Sam:1


Analysis Date: 2-FEB-16 16:28:33

	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	ACCEPT	CONC. FOUND	CONC. RANGE (ng/mL) (3)
NATIVE ANALYTES						
2,3,7,8-TCDD	M/M+2	0.80	0.65-0.89	y	9.89	7.80 - 12.9
1,2,3,7,8-PeCDD	M+2/M+4	1.54	1.32-1.78	y	47.2	39.0 - 65.0
1,2,3,4,7,8-HxCDD	M+2/M+4	1.25	1.05-1.43	y	47.0	39.0 - 64.0
1,2,3,6,7,8-HxCDD	M+2/M+4	1.24	1.05-1.43	y	46.3	39.0 - 64.0
1,2,3,7,8,9-HxCDD	M+2/M+4	1.23	1.05-1.43	y	49.2	41.0 - 61.0
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.11	0.88-1.20	y	45.0	43.0 - 58.0
OCDD	M+2/M+4	0.88	0.76-1.02	y	93.9	79.0 - 126
2,3,7,8-TCDF	M/M+2	0.85	0.65-0.89	y	8.95	8.40 - 12.0
1,2,3,7,8-PeCDF	M+2/M+4	1.52	1.32-1.78	y	47.6	41.0 - 60.0
2,3,4,7,8-PeCDF	M+2/M+4	1.51	1.32-1.78	y	46.6	41.0 - 60.0
1,2,3,4,7,8-HxCDF	M+2/M+4	1.22	1.05-1.43	y	47.7	45.0 - 56.0
1,2,3,6,7,8-HxCDF	M+2/M+4	1.22	1.05-1.43	y	48.4	44.0 - 57.0
2,3,4,6,7,8-HxCDF	M+2/M+4	1.21	1.05-1.43	y	47.8	44.0 - 57.0
1,2,3,7,8,9-HxCDF	M+2/M+4	1.22	1.05-1.43	y	48.9	45.0 - 56.0
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.03	0.88-1.20	y	47.4	45.0 - 55.0
1,2,3,4,7,8,9-HpCDF	M+2/M+4	1.03	0.88-1.20	y	47.6	43.0 - 58.0
OCDF	M+2/M+4	0.91	0.76-1.02	y	95.3	63.0 - 159

(1) See Table 8, Method 1613, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613.

(3) Contract-required concentration range as specified in Table 6, Method 1613.

Analyst: Date: 2/3/16

FORM 4B
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: Frontier Analytical Laboratory

Episode No.:

Contract No.:

SAS No.:

Initial Calibration Date: 1/8/16

Instrument ID: FAL3

GC Column ID: DB5

VER Data Filename: 02FEB16N Sam:1

Analysis Date: 2-FEB-16 16:28:33


LABELLED COMPOUNDS	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	ACCEPT	CONC. FOUND	CONC. RANGE (ng/mL) (3)
13C-2,3,7,8-TCDD	M/M+2	0.81	0.65-0.89	y	93.0	82.0 - 121
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.59	1.32-1.78	y	91.7	62.0 - 160
13C-1,2,3,4,7,8-HxCDD	M+2/M+4	1.28	1.05-1.43	y	97.9	85.0 - 117
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.28	1.05-1.43	y	95.8	85.0 - 118
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.06	0.88-1.20	y	101	72.0 - 138
13C-OCDD	M+2/M+4	0.91	0.76-1.02	y	197	96.0 - 415
13C-2,3,7,8-TCDF	M/M+2	0.80	0.65-0.89	y	114	71.0 - 140
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.58	1.32-1.78	y	88.4	76.0 - 130
13C-2,3,4,7,8-PeCDF	M+2/M+4	1.57	1.32-1.78	y	94.8	77.0 - 130
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.53	0.43-0.59	y	90.5	76.0 - 131
13C-1,2,3,6,7,8-HxCDF	M/M+2	0.53	0.43-0.59	y	92.5	70.0 - 143
13C-2,3,4,6,7,8-HxCDF	M/M+2	0.53	0.43-0.59	y	93.0	73.0 - 137
13C-1,2,3,7,8,9-HxCDF	M/M+2	0.54	0.43-0.59	y	89.1	74.0 - 135
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.46	0.37-0.51	y	91.8	78.0 - 129
13C-1,2,3,4,7,8,9-HpCDF	M/M+2	0.46	0.37-0.51	y	91.5	77.0 - 129
13C-OCDF	M+2/M+4	0.85	0.76-1.02	y	172	96.0 - 415
CLEANUP STANDARD (4)						
37Cl-2,3,7,8-TCDD					9.77	7.90 - 12.7

(1) See Table 8, Method 1613, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613.

(3) Contract-required concentration range as specified in Table 6, Method 1613.

(4) No ion abundance ratio; report concentration found.

Analyst: Date: 2/3/16

FORM 5
PCDD/PCDF RT WINDOW AND ISOMER SPECIFICITY STANDARDS

Lab Name: Frontier Analytical Laboratory Episode No.:
Contract No.: SAS No.:
Instrument ID: FAL3 Initial Calibration Date: 1/8/16
RT Window Data Filename: 02FEB16N Sam:1 Analysis Date: 2-FEB-16 Time: 16:28:33
DB-5 IS Data Filename: 02FEB16N Sam:1 Analysis Date: 2-FEB-16 Time: 16:28:33
DB-225 IS Date Filename: Analysis Date: Time:

DB-5 RT WINDOW DEFINING STANDARDS RESULTS

ISOMERS	ABSOLUTE RT	ISOMERS	ABSOLUTE RT
1,3,6,8-TCDD (F)	24:04	1,3,6,8-TCDF (F)	22:42
1,2,8,9-TCDD (L)	28:02	1,2,8,9-TCDF (L)	28:15
1,2,4,7,9-PeCDD (F)	29:58	1,3,4,6,8-PeCDF (F)	28:06
1,2,3,8,9-PeCDD (L)	33:35	1,2,3,8,9-PeCDF (L)	33:60
1,2,4,6,7,9-HxCDD (F)	35:55	1,2,3,4,6,8-HxCDF (F)	35:02
1,2,3,7,8,9-HxCDD (L)	39:01	1,2,3,7,8,9-HxCDF (L)	39:35
1,2,3,4,6,7,9-HpCDD (F)	42:38	1,2,3,4,6,7,8-HpCDF (F)	42:06
1,2,3,4,6,7,8-HpCDD (L)	44:01	1,2,3,4,7,8,9-HpCDF (L)	44:56

(F) = First eluting isomer (DB-5); (L) = Last eluting isomer (DB-5)

=====

ISOMER SPECIFICITY (IS) TEST STANDARD RESULTS

% VALLEY HEIGHT
BETWEEN
COMPARED PEAKS (1)

<25%

(1) To meet contract requirement, %Valley Height Between Compared Peaks shall not exceed 25% (section 15.4.2.2, Method 1613).

Analyst: 

Date: 2/3/16

USEPA - ITD
FORM 6A
PCDD/PCDF RELATIVE RETENTION TIMES

Lab Name: Frontier Analytical Laboratory Episode No.:
Contract No.: SAS No.: Init. Cal. Date: 1/8/16
Instrument ID: FAL3 GC Column ID: DB5
Analysis Date: 2-FEB-16 16:28:33 CS3 or VER Data Filename: 02FEB16N Sam:1

NATIVE ANALYTES	RETENTION TIME REFERENCE	RRT	RRT QC LIMITS (1)
2,3,7,8-TCDD	13C-2,3,7,8-TCDD	1.001	0.999-1.002
2,3,7,8-TCDF	13C-2,3,7,8-TCDF	1.000	0.999-1.003
1,2,3,7,8-PeCDD	13C-1,2,3,7,8-PeCDD	1.000	0.999-1.002
1,2,3,7,8-PeCDF	13C-1,2,3,7,8-PeCDF	1.000	0.999-1.002
2,3,4,7,8-PeCDF	13C-2,3,4,7,8-PeCDF	1.001	0.999-1.002
LABELED COMPOUNDS			
37Cl-2,3,7,8-TCDD	13C-1,2,3,4-TCDD	1.023	0.989-1.052
13C-2,3,7,8-TCDD		1.022	0.976-1.043
13C-2,3,7,8-TCDF		0.995	0.923-1.103
13C-1,2,3,7,8-PeCDD		1.246	1.000-1.567
13C-1,2,3,7,8-PeCDF		1.180	1.000-1.425
13C-2,3,4,7,8-PeCDF		1.230	1.011-1.526

(1) Contract-required limits for Relative Retention Times (RRT) as specified in Table 2, Method 1613.

Analyst: 

Date: 2/3/16

FORM 6B
PCDD/PCDF RELATIVE RETENTION TIMES

Lab Name: Frontier Analytical Laboratory

Episode No.:

Contract No.:

SAS No.:

Init. Cal. Date: 1/8/16

Instrument ID: FAL3

GC Column ID: DB5


Analysis Date: 2-FEB-16 16:28:33

CS3 or VER Data Filename: 02FEB16N

Sam:1

NATIVE ANALYTES	RETENTION TIME	RRT	RRT
	REFERENCE		QC LIMITS (1)
1,2,3,4,7,8-HxCDD	13C-1,2,3,4,7,8-HxCDD	1.001	0.999-1.001
1,2,3,6,7,8-HxCDD	13C-1,2,3,6,7,8-HxCDD	1.000	0.999-1.003
1,2,3,7,8,9-HxCDD	13C-1,2,3,6,7,8-HxCDD	1.012	1.000-1.019
1,2,3,4,7,8-HxCDF	13C-1,2,3,4,7,8-HxCDF	1.001	0.999-1.001
1,2,3,6,7,8-HxCDF	13C-1,2,3,6,7,8-HxCDF	1.001	0.999-1.003
2,3,4,6,7,8-HxCDF	13C-2,3,4,6,7,8-HxCDF	1.001	0.999-1.001
1,2,3,7,8,9-HxCDF	13C-1,2,3,7,8,9-HxCDF	1.000	0.999-1.001
1,2,3,4,6,7,8-HpCDD	13C-1,2,3,4,6,7,8-HpCDD	1.001	0.999-1.001
1,2,3,4,6,7,8-HpCDF	13C-1,2,3,4,6,7,8-HpCDF	1.000	0.999-1.001
1,2,3,4,7,8,9-HpCDF	13C-1,2,3,4,7,8,9-HpCDF	1.001	0.999-1.001
OCDD	13C-OCDD	1.001	0.999-1.001
OCDF	13C-OCDF	1.001	0.999-1.001
LABELED COMPOUNDS			
13C-1,2,3,4,7,8-HxCDD	13C-1,2,3,7,8,9-HxCDD	0.984	0.977-1.000
13C-1,2,3,6,7,8-HxCDD		0.989	0.981-1.003
13C-1,2,3,4,7,8-HxCDF		0.948	0.944-0.970
13C-1,2,3,6,7,8-HxCDF		0.953	0.949-0.975
13C-2,3,4,6,7,8-HxCDF		0.978	0.959-1.021
13C-1,2,3,7,8,9-HxCDF		1.015	0.977-1.047
13C-1,2,3,4,6,7,8-HpCDD		1.128	1.086-1.130
13C-1,2,3,4,6,7,8-HpCDF		1.079	1.043-1.085
13C-1,2,3,4,7,8,9-HpCDF		1.152	1.057-1.151
13C-OCDD		1.270	1.032-1.311
13C-OCDF		1.279	1.000-1.311

(1) Contract-required limits for Relative Retention Times (RRT) as specified in Table 2, Method 1613.

Analyst: 

Date: 2/3/16

FAL ID: ST020216N1

Filename: 02FEB16N

Sam:1

Acquired: 2-FEB-16 16:28:33

ICal: PCDDFAL3-1-8-16

Client ID: 1613 CS3 151209J

ConCal: ST020216N1

EndCal: ST020216N2

Results:

GC Column: DB5

Amount: 1.000

NATO 1989 Tox: 95.2

WHO 1998 Tox: 119

WHO 2005 Tox:

108

Name	Resp	RA	RT	RRF	Conc	Qual	Fac Noise-1	Noise-2	DL
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2,3,7,8-TCDD	1.31e+07	0.80 y	27:05	1.27	9.89	2.50	-	-	*
1,2,3,7,8-PeCDD	3.94e+07	1.54 y	33:00	1.01	47.2	2.50	-	-	*
1,2,3,4,7,8-HxCDD	3.32e+07	1.25 y	38:25	1.04	47.0	2.50	-	-	*
1,2,3,6,7,8-HxCDD	3.27e+07	1.24 y	38:34	1.05	46.3	2.50	-	-	*
1,2,3,7,8,9-HxCDD	3.79e+07	1.23 y	39:01	1.14	49.2	2.50	-	-	*
1,2,3,4,6,7,8-HpCDD	3.07e+07	1.11 y	44:01	1.01	45.0	2.50	-	-	*
OCDD	5.54e+07	0.88 y	49:32	1.08	93.9	2.50	-	-	*

2,3,7,8-TCDF	1.55e+07	0.85 y	26:20	1.02	8.95	2.50	-	-	*
1,2,3,7,8-PeCDF	5.48e+07	1.52 y	31:14	0.90	47.6	2.50	-	-	*
2,3,4,7,8-PeCDF	5.29e+07	1.51 y	32:36	0.93	46.6	2.50	-	-	*
1,2,3,4,7,8-HxCDF	4.94e+07	1.22 y	37:01	1.13	47.7	2.50	-	-	*
1,2,3,6,7,8-HxCDF	5.04e+07	1.22 y	37:12	1.08	48.4	2.50	-	-	*
2,3,4,6,7,8-HxCDF	4.57e+07	1.21 y	38:09	1.03	47.8	2.50	-	-	*
1,2,3,7,8,9-HxCDF	4.22e+07	1.22 y	39:35	1.05	48.9	2.50	-	-	*
1,2,3,4,6,7,8-HpCDF	4.13e+07	1.03 y	42:06	1.24	47.4	2.50	-	-	*
1,2,3,4,7,8,9-HpCDF	3.25e+07	1.03 y	44:56	1.12	47.6	2.50	-	-	*
OCDF	6.63e+07	0.91 y	49:54	1.09	95.3	2.50	-	-	*

										Rec
13C-2,3,7,8-TCDD	1.04e+08	0.81 y	27:04	1.10	93.0					93.0
13C-1,2,3,7,8-PeCDD	8.29e+07	1.59 y	32:60	0.89	91.7					91.7
13C-1,2,3,4,7,8-HxCDD	6.80e+07	1.28 y	38:23	0.87	97.9					97.9
13C-1,2,3,6,7,8-HxCDD	6.69e+07	1.28 y	38:33	0.87	95.8					95.8
13C-1,2,3,4,6,7,8-HpCDD	6.74e+07	1.06 y	43:60	0.84	101					101
13C-OCDD	1.10e+08	0.91 y	49:30	0.69	197					98.6

13C-2,3,7,8-TCDF	1.70e+08	0.80 y	26:20	1.02	114					114
13C-1,2,3,7,8-PeCDF	1.29e+08	1.58 y	31:13	1.00	88.4					88.4
13C-2,3,4,7,8-PeCDF	1.22e+08	1.57 y	32:34	0.89	94.8					94.8
13C-1,2,3,4,7,8-HxCDF	9.16e+07	0.53 y	36:58	1.26	90.5					90.5
13C-1,2,3,6,7,8-HxCDF	9.64e+07	0.53 y	37:11	1.30	92.5					92.5
13C-2,3,4,6,7,8-HxCDF	9.28e+07	0.53 y	38:08	1.25	93.0					93.0
13C-1,2,3,7,8,9-HxCDF	8.18e+07	0.54 y	39:35	1.15	89.1					89.1
13C-1,2,3,4,6,7,8-HpCDF	7.02e+07	0.46 y	42:05	0.96	91.8					91.8
13C-1,2,3,4,7,8,9-HpCDF	6.07e+07	0.46 y	44:55	0.83	91.5					91.5
13C-OCDF	1.28e+08	0.85 y	49:53	0.93	172					86.0

37Cl-2,3,7,8-TCDD	9.89e+06		27:05	1.00	9.77					97.7
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13C-1,2,3,4-TCDD	1.02e+08	0.81 y	26:28	-	147					
13C-1,2,3,4-TCDF	1.46e+08	0.80 y	25:12	-	134					
13C-1,2,3,7,8,9-HxCDD	8.00e+07	1.25 y	38:60	-	135					

										Fac Noise-1	Noise-2	DL	#Hom
Total Tetra-Dioxins	6.12e+07		22:50	1.27	46.1	2.50	-	-	*	17			
Total Penta-Dioxins	1.27e+08		29:58	1.01	152	2.50	-	-	*	6			
Total Hexa-Dioxins	1.48e+08		35:55	1.08	203	2.50	-	-	*	5			
Total Hepta-Dioxins	6.38e+07		42:38	1.01	93.5	2.50	-	-	*	19			

Total Tetra-Furans	6.52e+07		22:42	1.02	37.5	2.50	-	-	*	17
1st Fn. Tot Penta-Furans	6.42e+07		28:06	0.91	56.2	2.50	-	-	*	PeCDF 4
Total Penta-Furans	1.61e+08		29:53	0.91	141	2.50	-	-	*	197 15
Total Hexa-Furans	2.38e+08		35:02	1.07	244	2.50	-	-	*	17
Total Hepta-Furans	7.40e+07		42:06	1.19	95.3	2.50	-	-	*	5

Analyst: 

Date: 2/3/16

Frontier Analytical Laboratory - Acquisition Log

Run Name:02FEB16N

Instrument: FAL3

GC: DB5

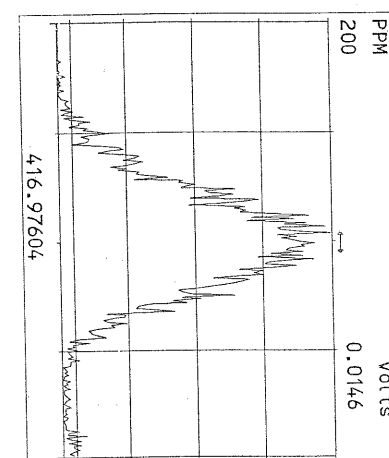
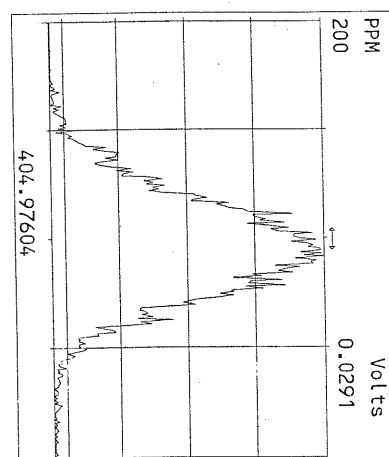
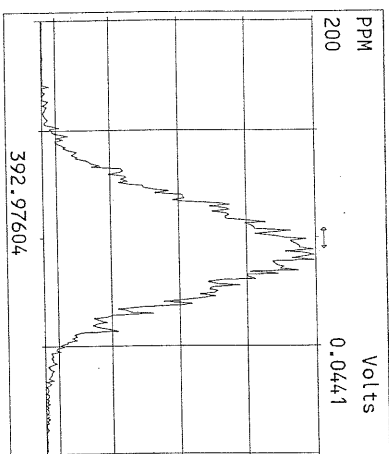
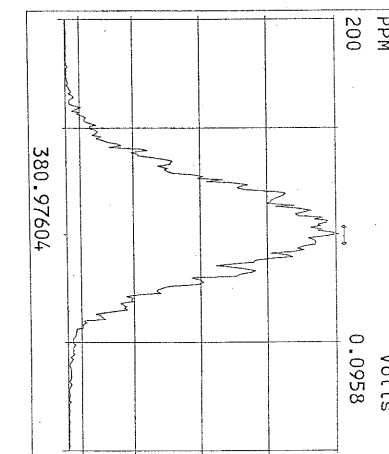
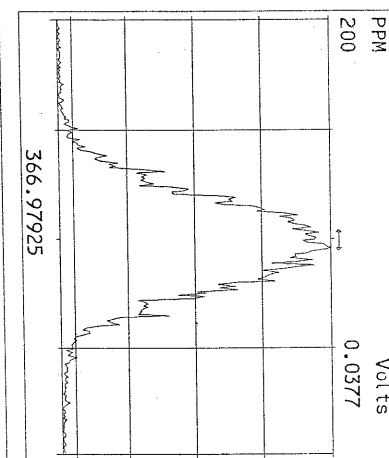
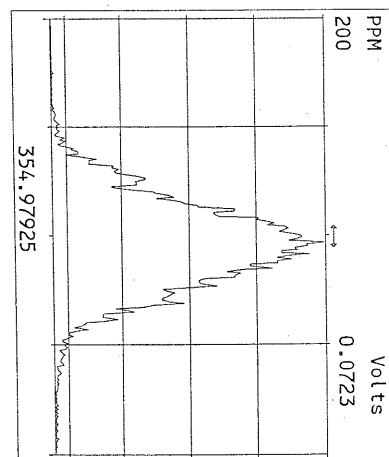
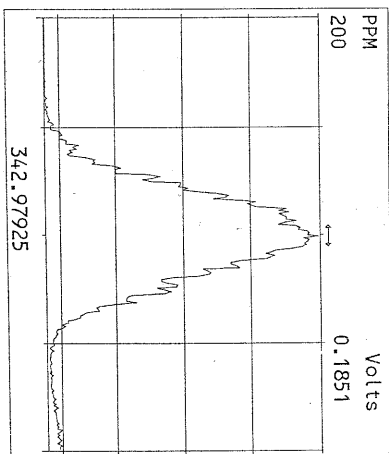
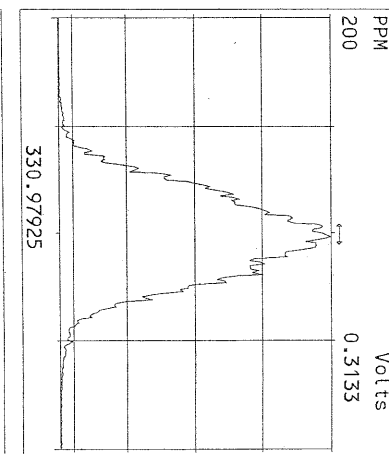
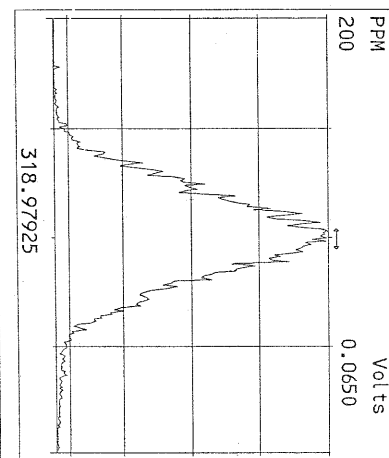
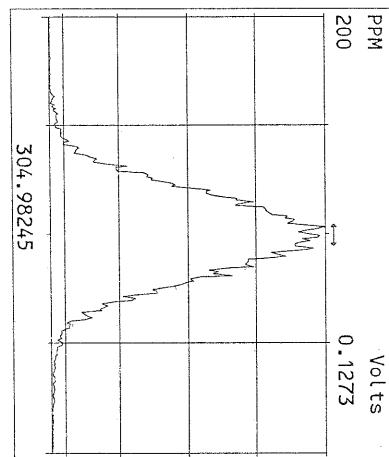
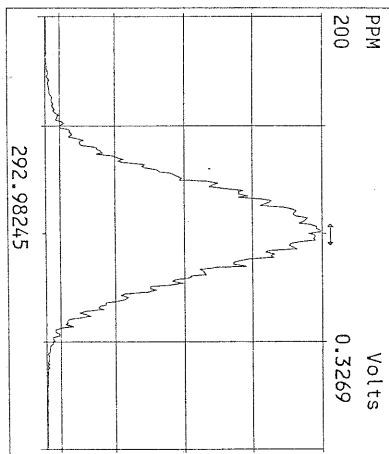
Experiment:PCDD

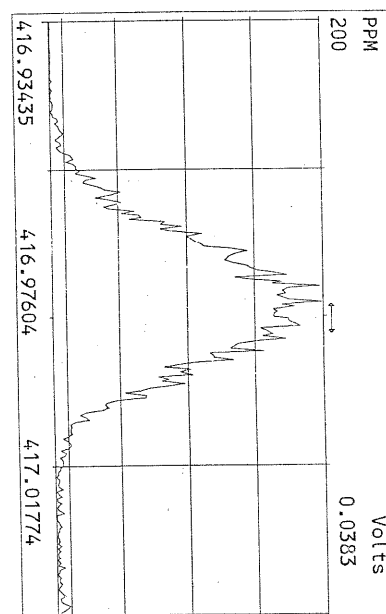
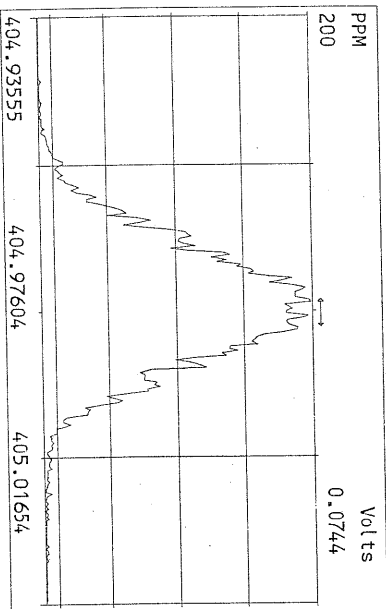
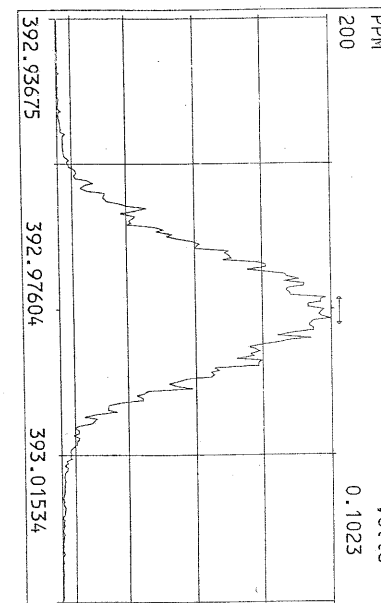
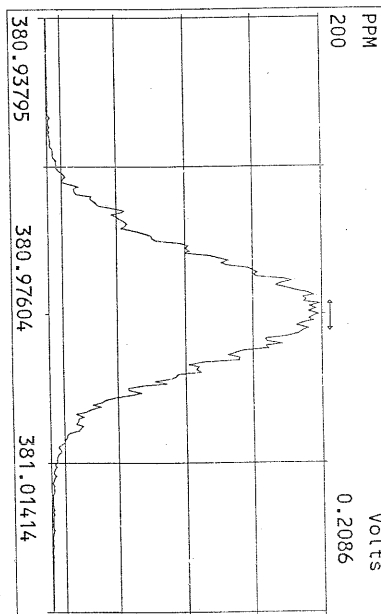
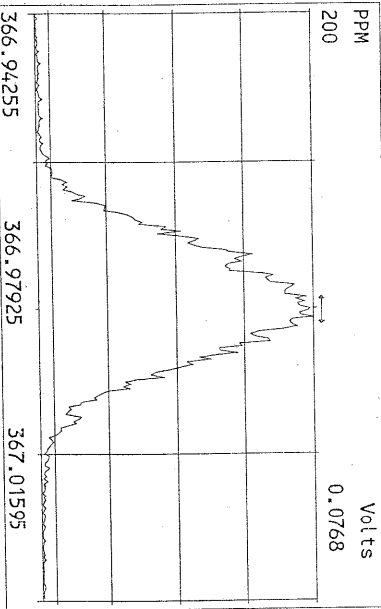
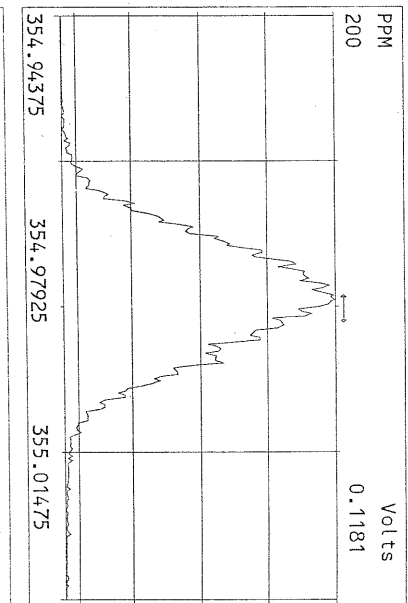
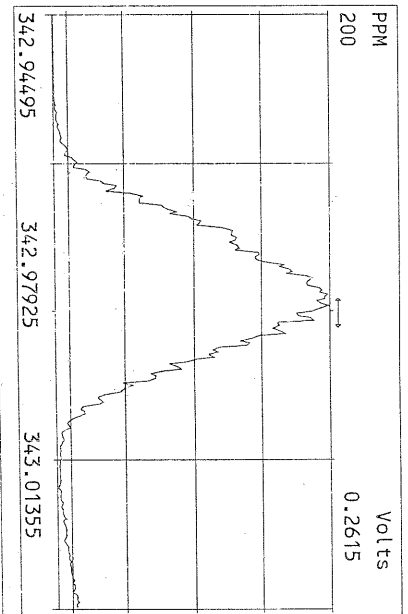
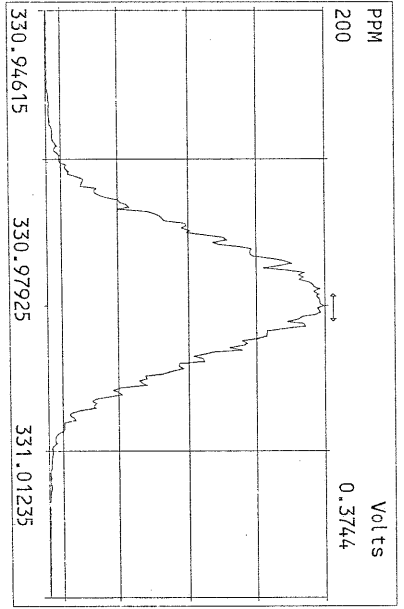
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02FEB16N 3	3571-001-0001-MB	Method Blank	2-FEB-16 18:18:07	ST020216N1	ST020216N2	TC
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02FEB16N 6	SB020216N1	Solvent Blank	2-FEB-16 21:02:18	ST020216N1	ST020216N2	TC
02FEB16N 7	9548-003-0001-SA	MW-05-010716	2-FEB-16 21:57:03	ST020216N1	ST020216N2	TC
02FEB16N 8	SB020216N2	Solvent Blank	2-FEB-16 22:51:50	ST020216N1	ST020216N2	TC
02FEB16N 9	SB020216N3	Solvent Blank	2-FEB-16 23:46:34	ST020216N1	ST020216N2	TC
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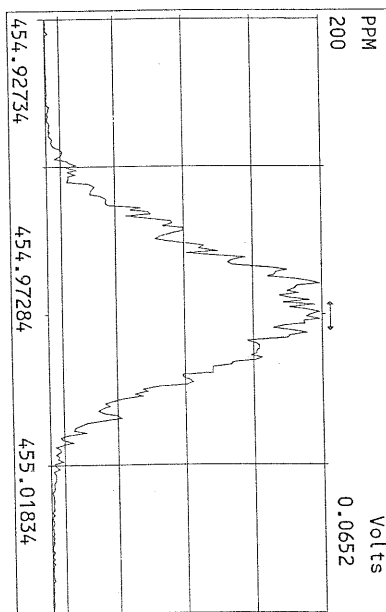
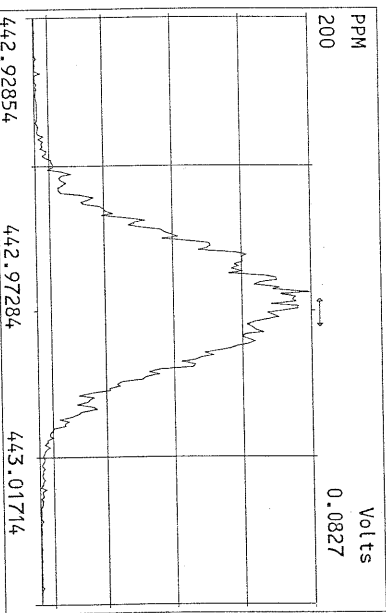
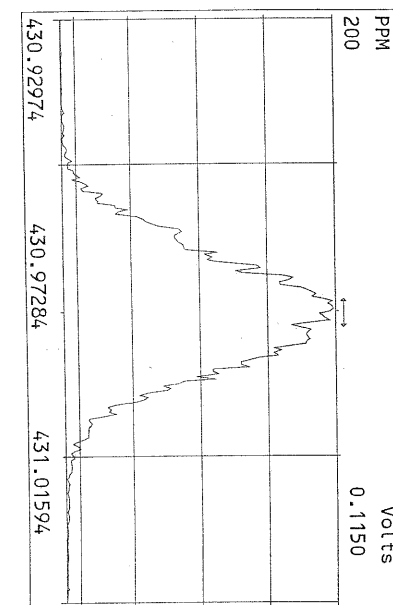
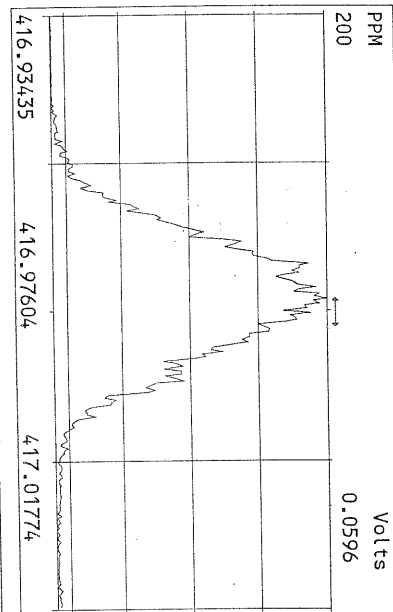
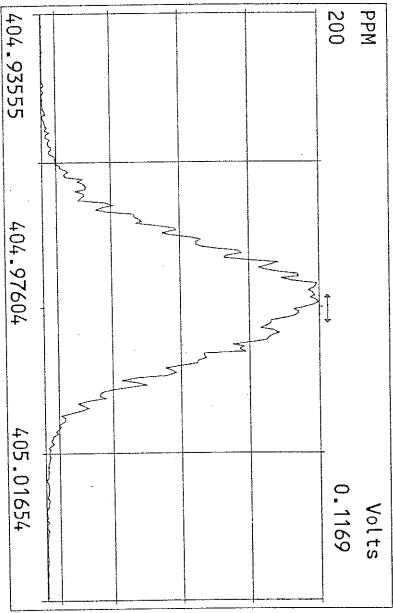
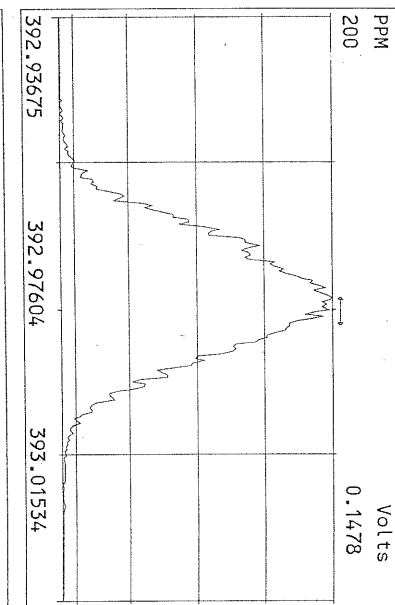
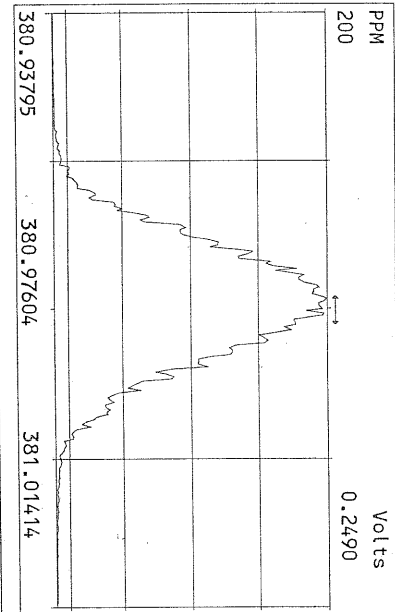
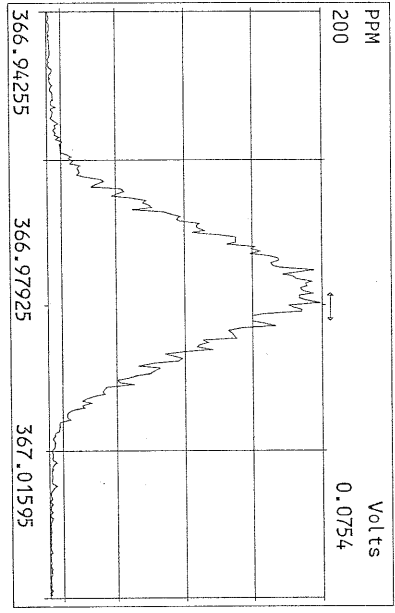
 2/3/16

Data Backed Up: _____

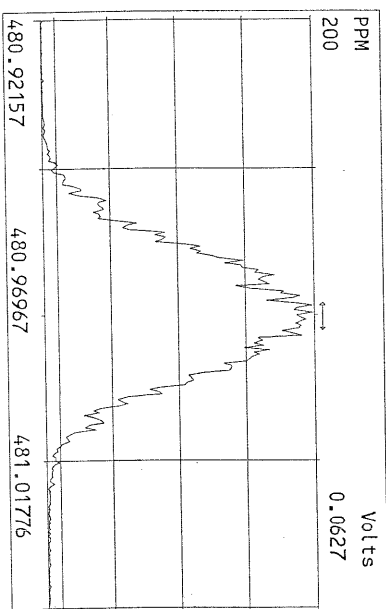
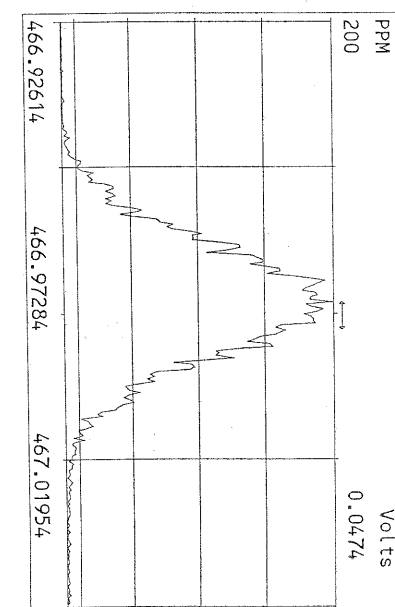
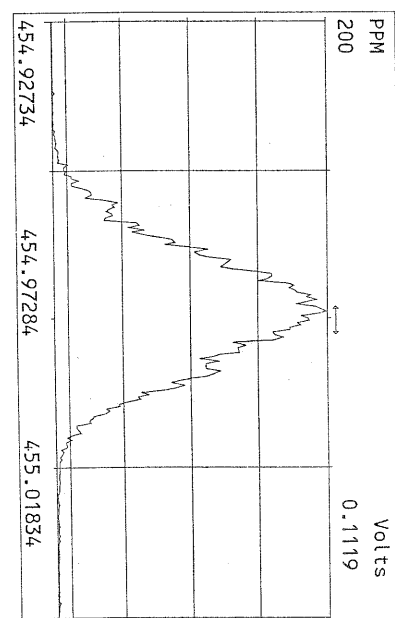
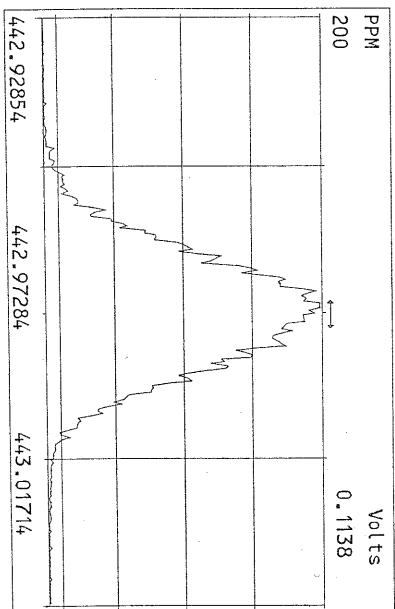
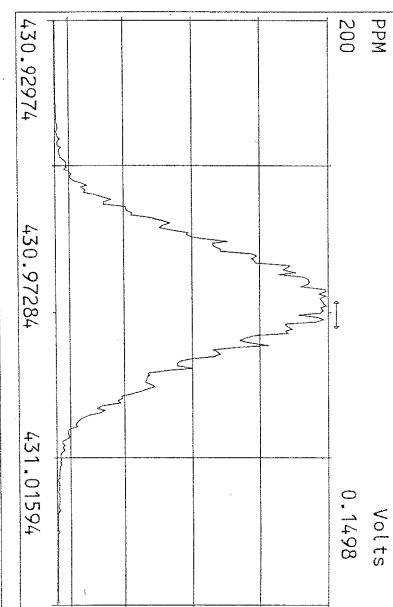
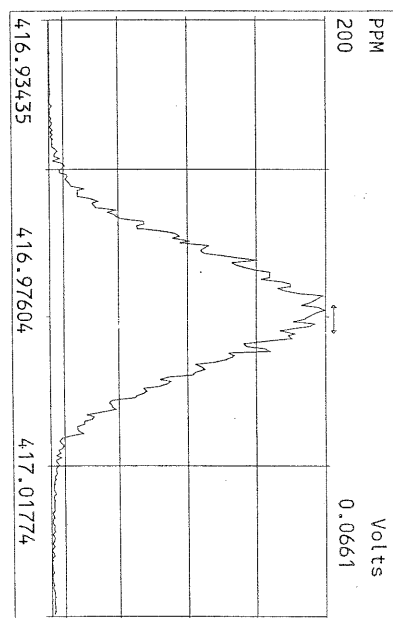
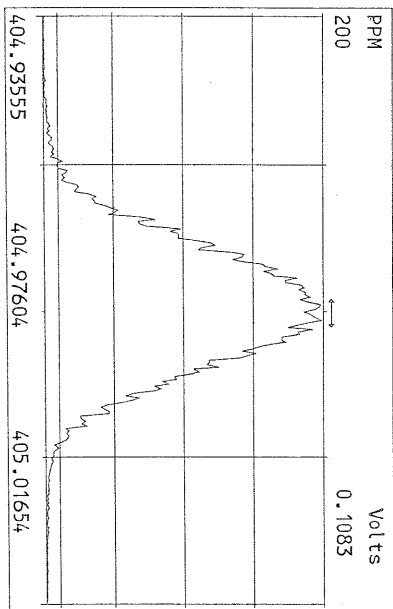
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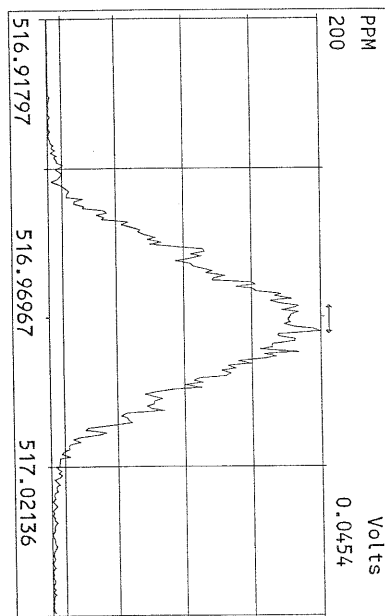
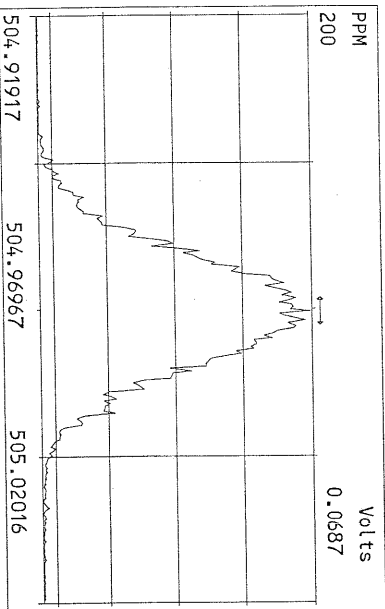
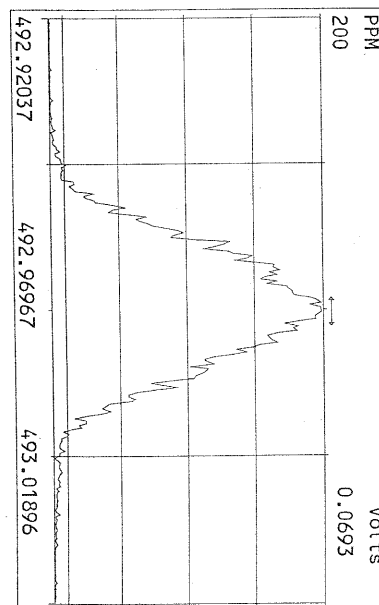
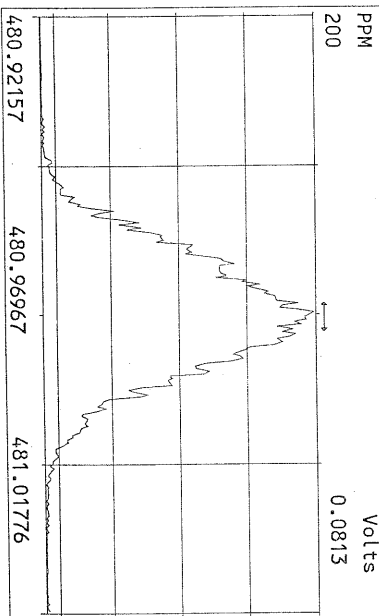
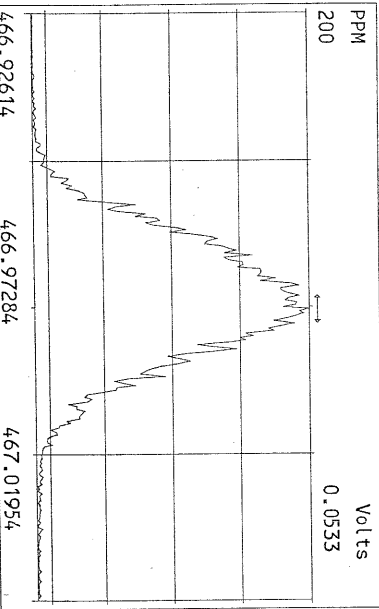
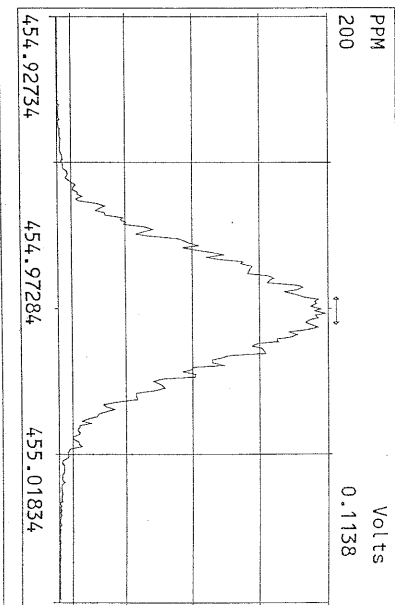
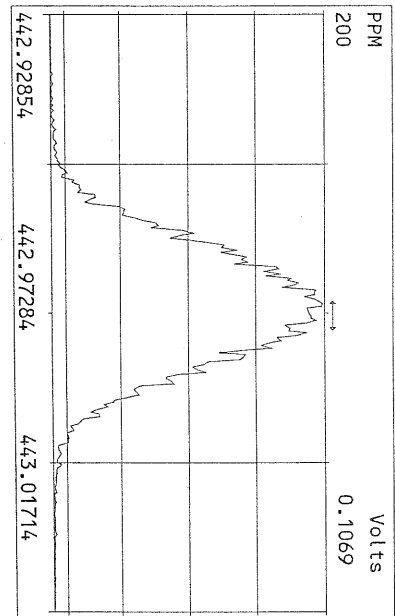
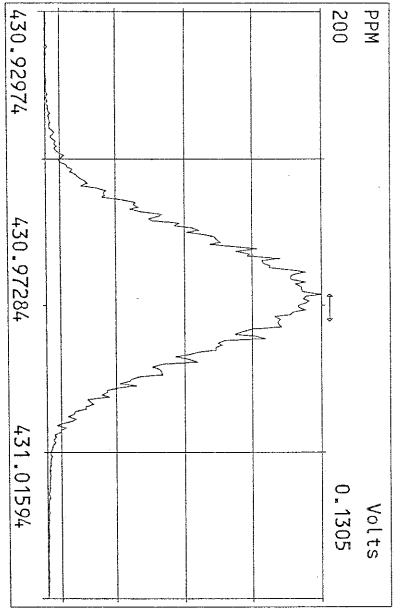




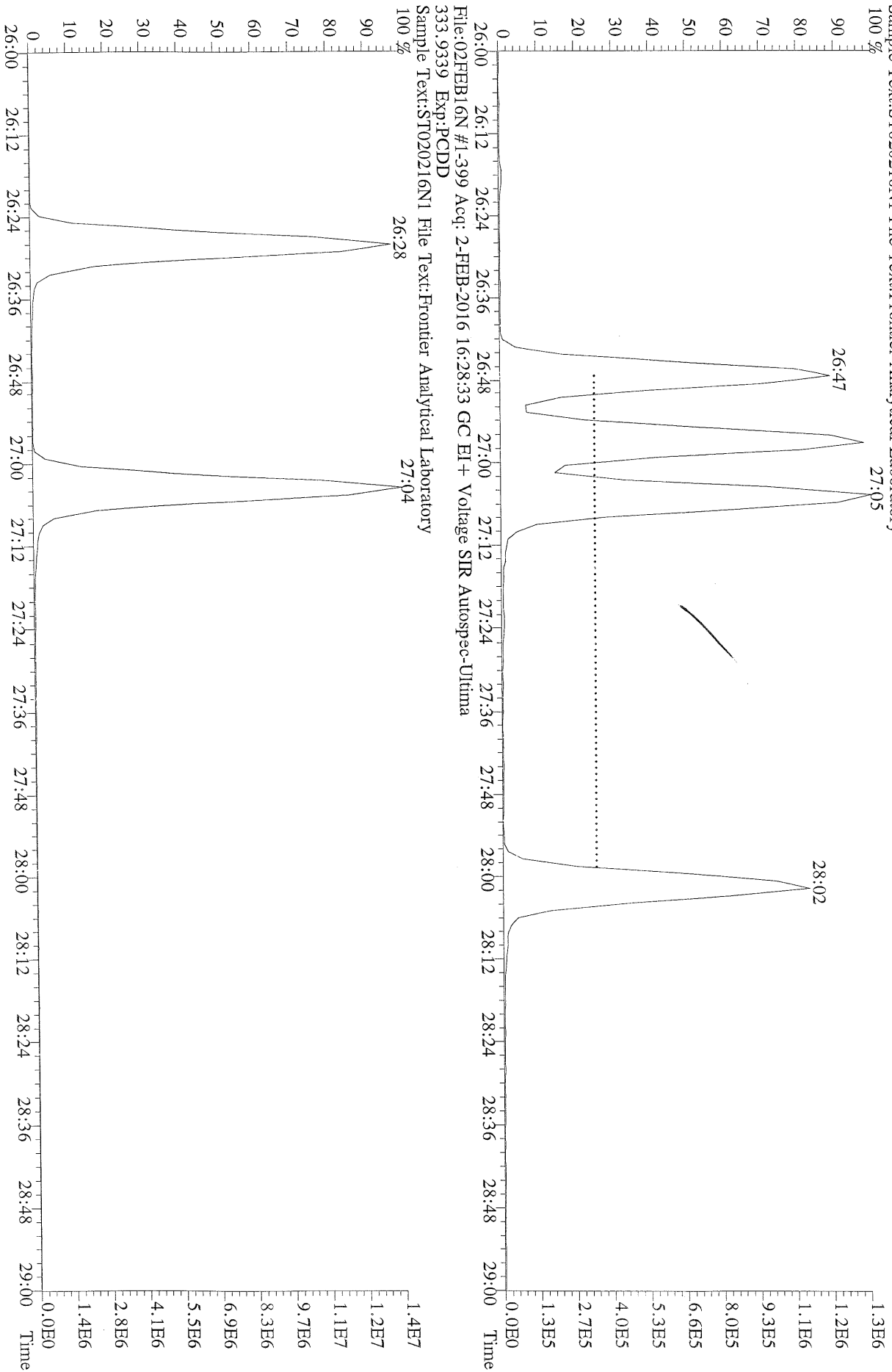


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Experiment:PDD Function:4 Reference:PFK





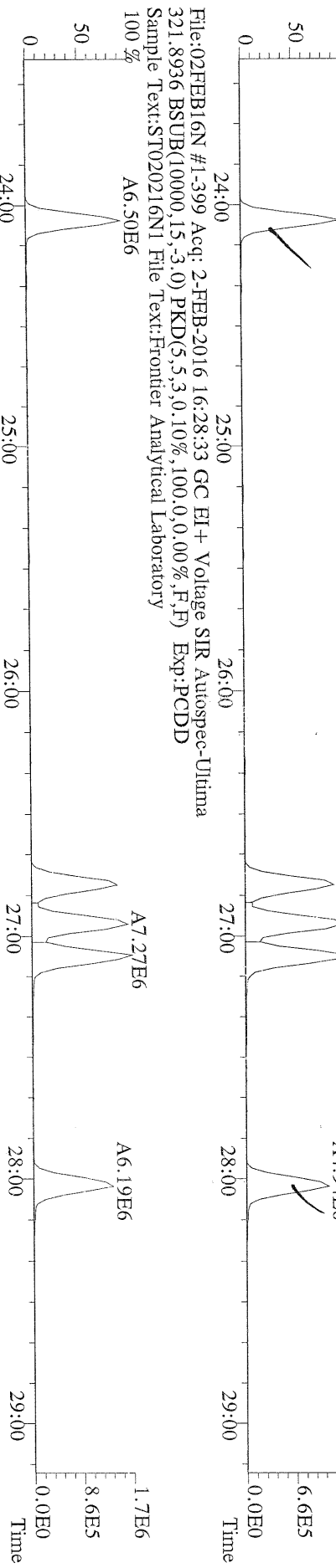
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100 %



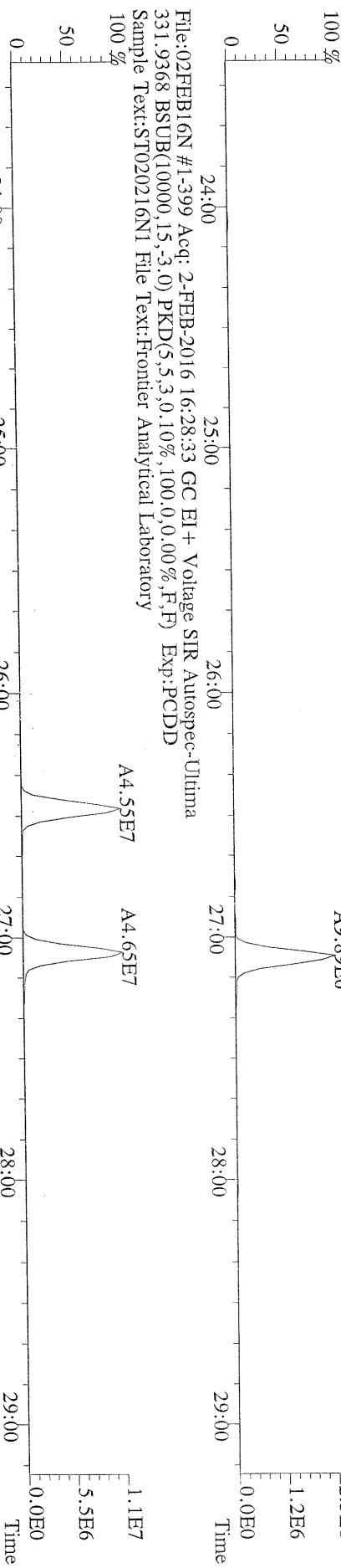
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333.9339 Exp:PCDD
Sample Text:ST020216N1 File Text:Frontier Analytical Laboratory
100 %



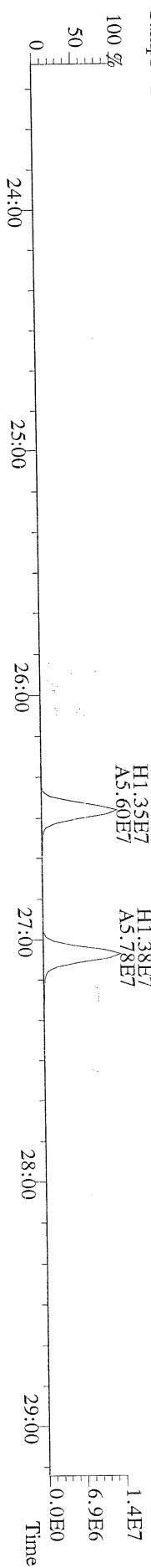
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319.8965 BSUB(10000,15,-3,0) PKD(5,5,3,0.10%,100,0,0,0.00%,F,F) Exp:PCDD
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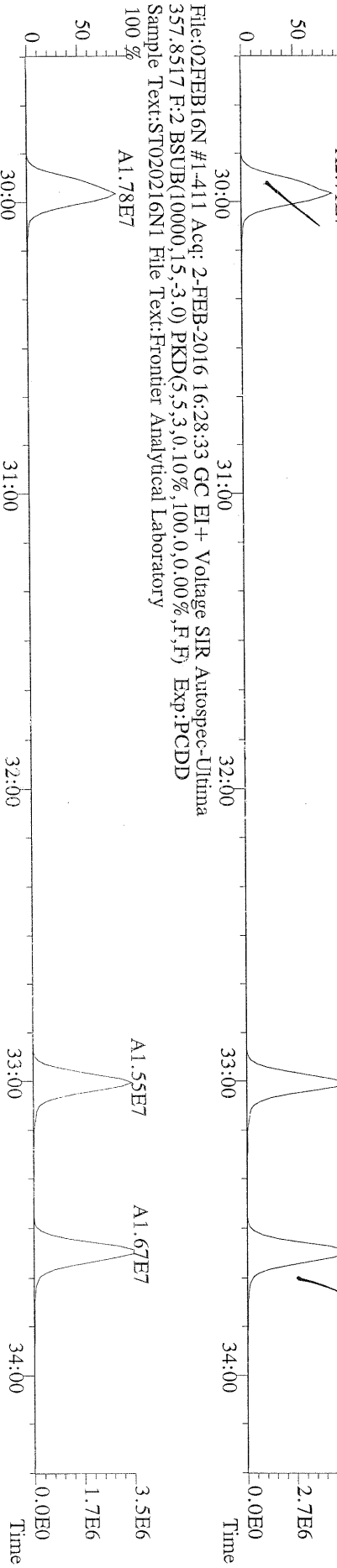
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327.8847 BSUB(10000,15,-3,0) PKD(5,5,3,0.10%,100,0,0,0.00%,F,F) Exp:PCDD
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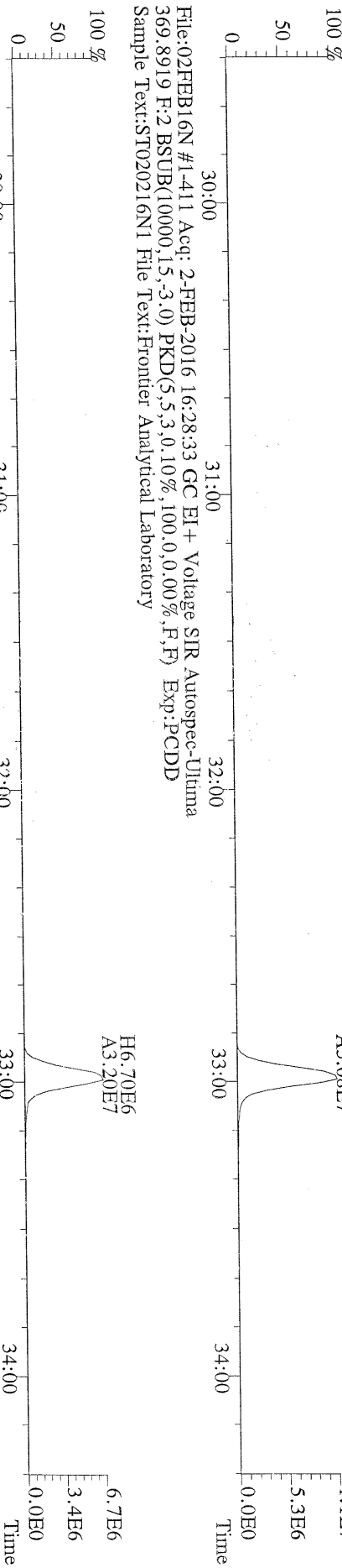
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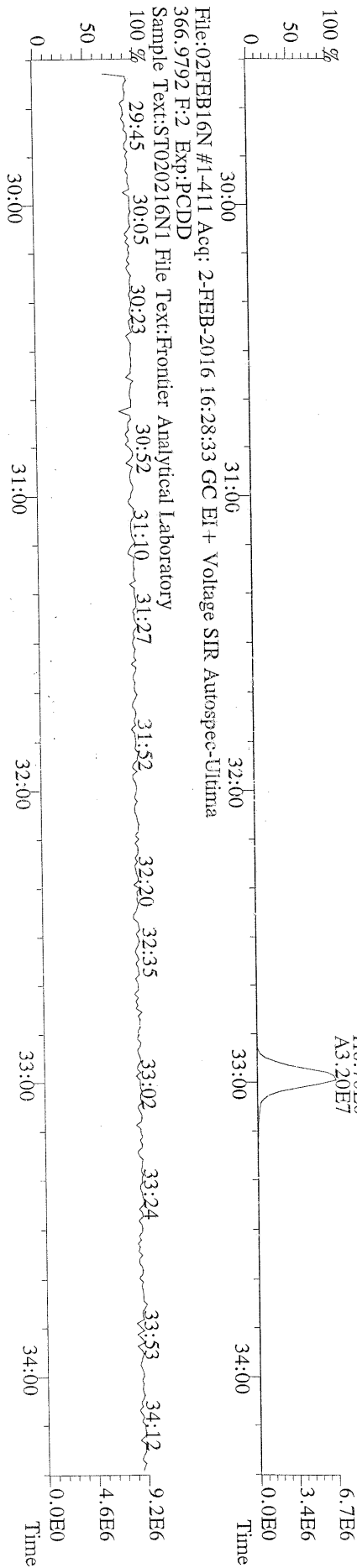
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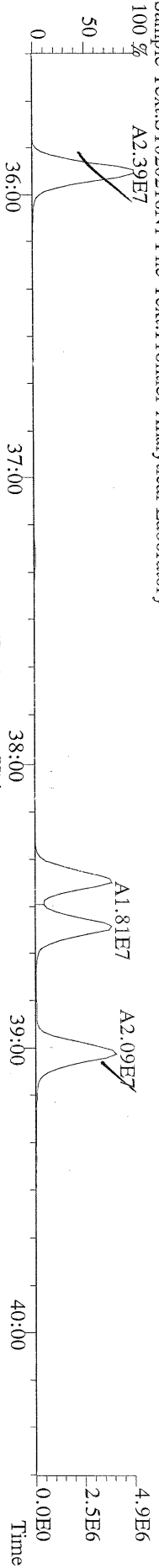
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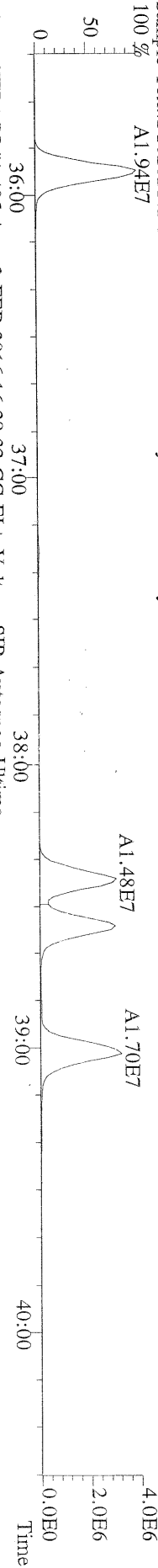
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Sample Text:ST020216N1 File Text:Frontier Analytical Laboratory



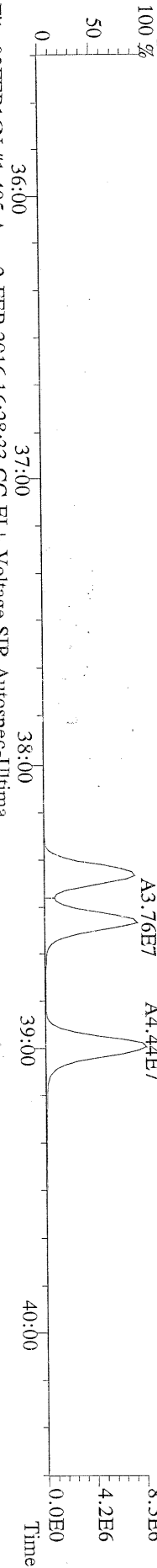
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389.8156 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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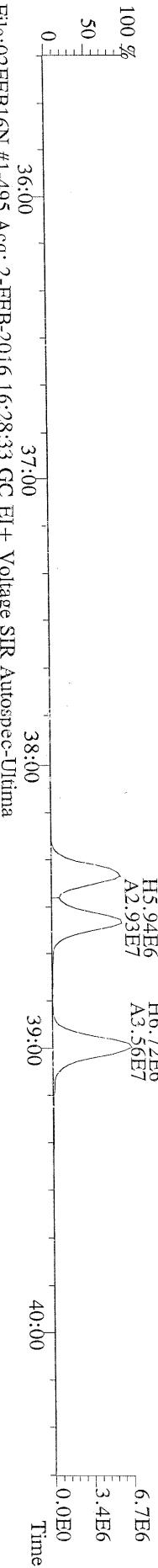
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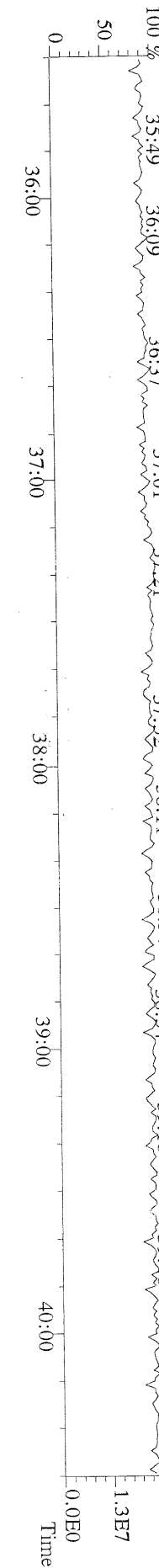
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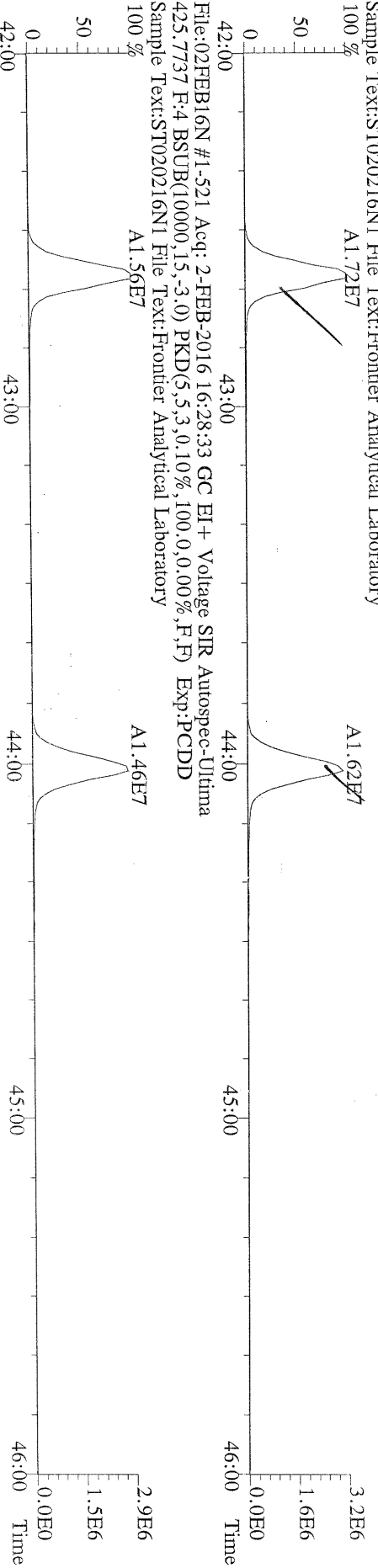
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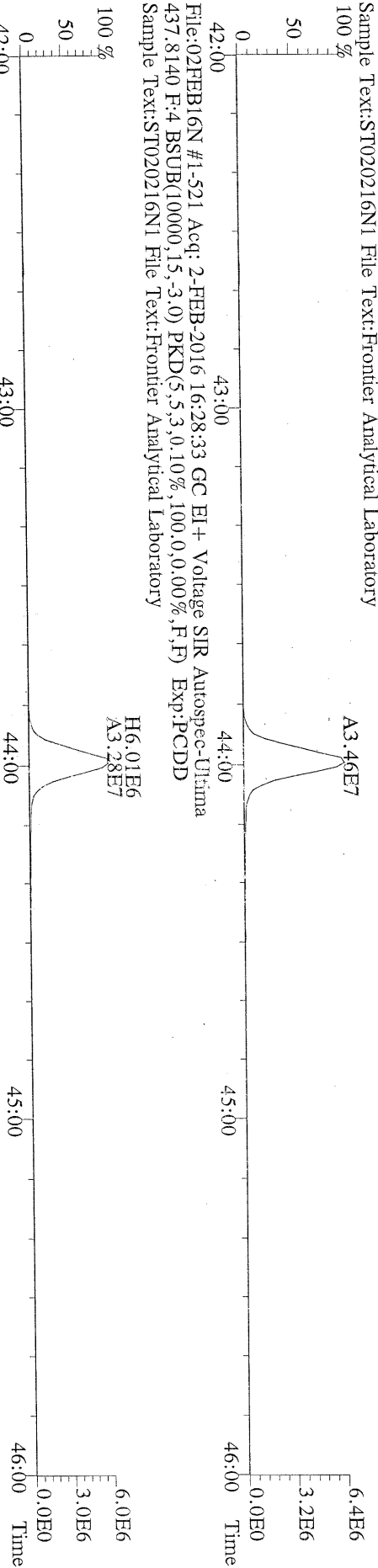
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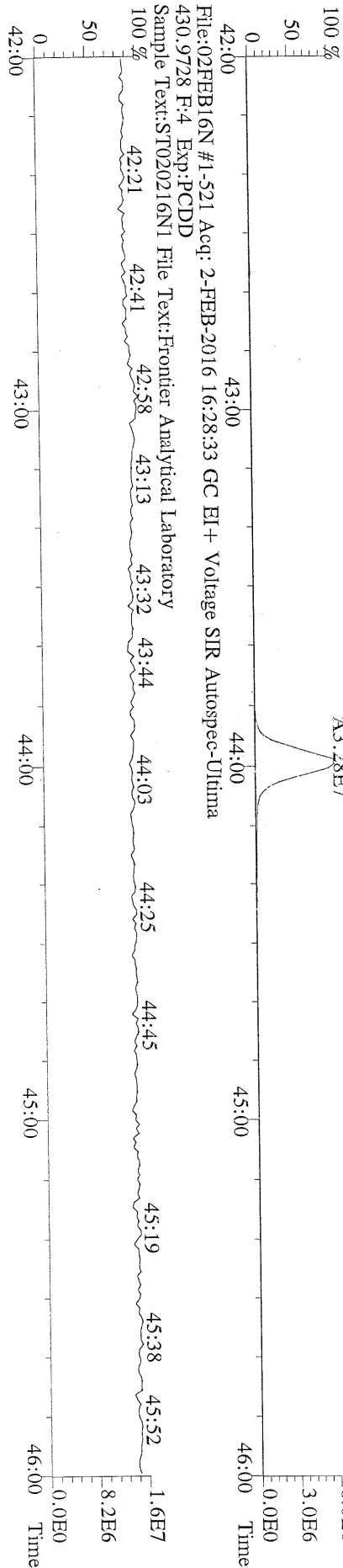
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423.7767 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST020216N1 File Text:Frontier Analytical Laboratory
100 %



File:02FEB16N #1-521 Acq: 2-FEB-2016 16:28:33 GC EI+ Voltage SIR Autospec-Utima
435.8169 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST020216N1 File Text:Frontier Analytical Laboratory
100 %

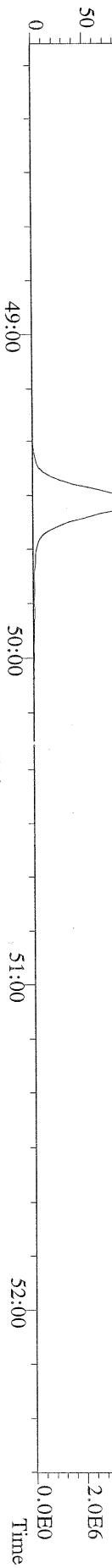


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100 %

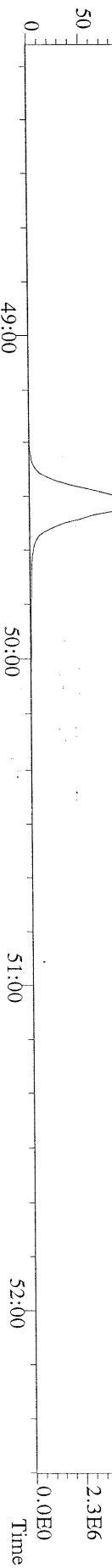


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430.9728 F:4 Exp:PCDD
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100 %

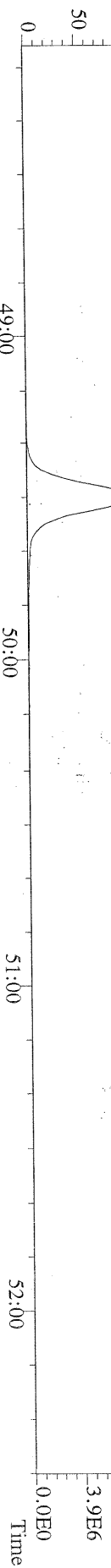
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457.7377 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST020216N1 File Text:Frontier Analytical Laboratory
100 %
A2.60E7



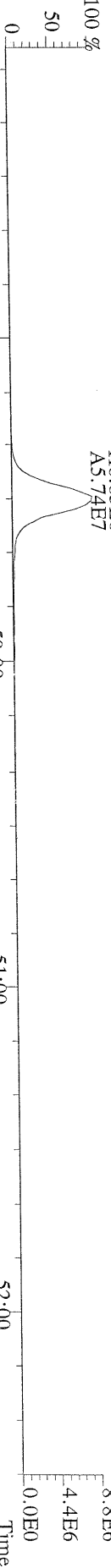
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459.7348 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST020216N1 File Text:Frontier Analytical Laboratory
100 %
A2.94E7



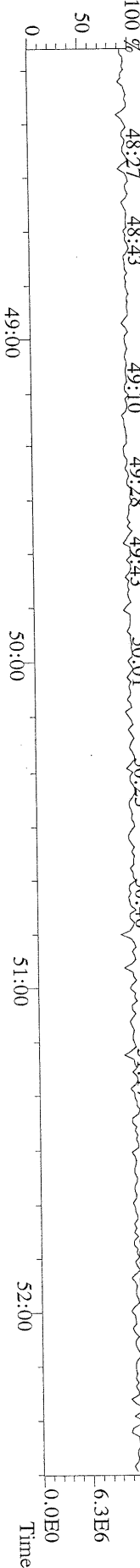
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469.7780 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST020216N1 File Text:Frontier Analytical Laboratory
100 %
A5.22E7



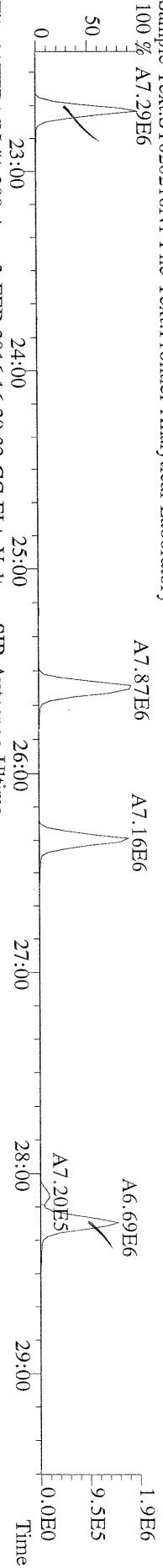
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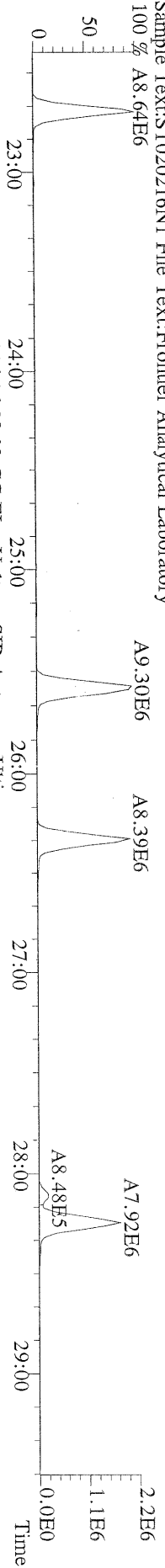
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454.9728 F:5 Exp:PCDD
Sample Text:ST020216N1 File Text:Frontier Analytical Laboratory



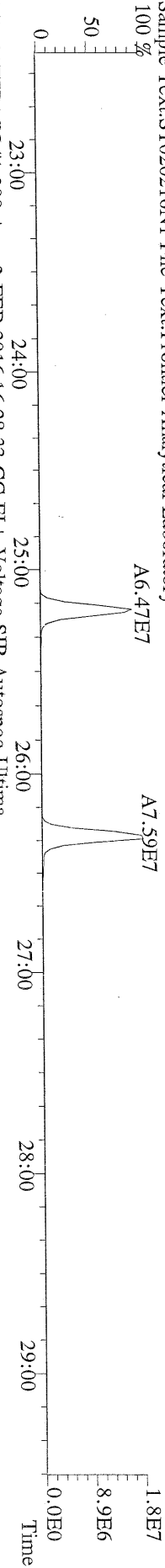
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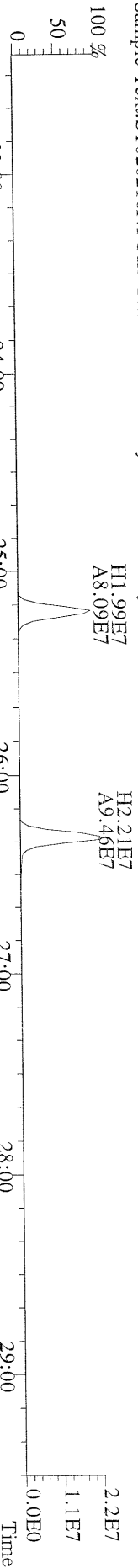
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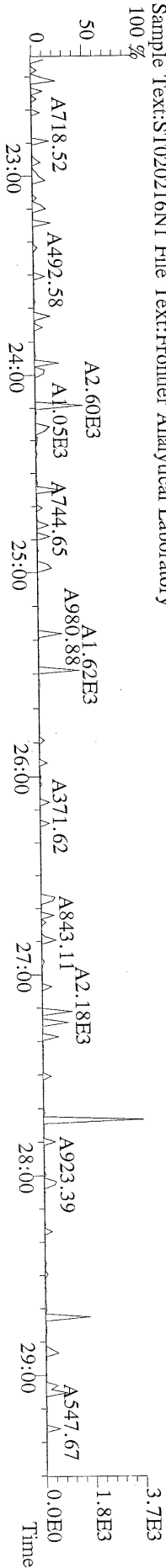
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315.9419 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST020216N1 File Text:Frontier Analytical Laboratory
100 %



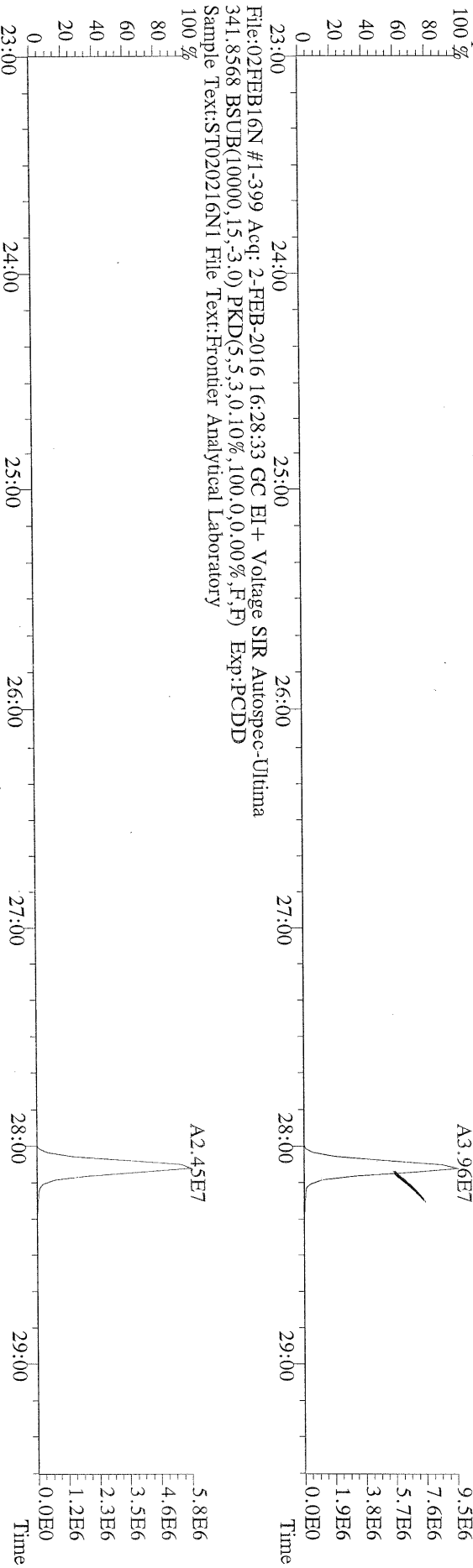
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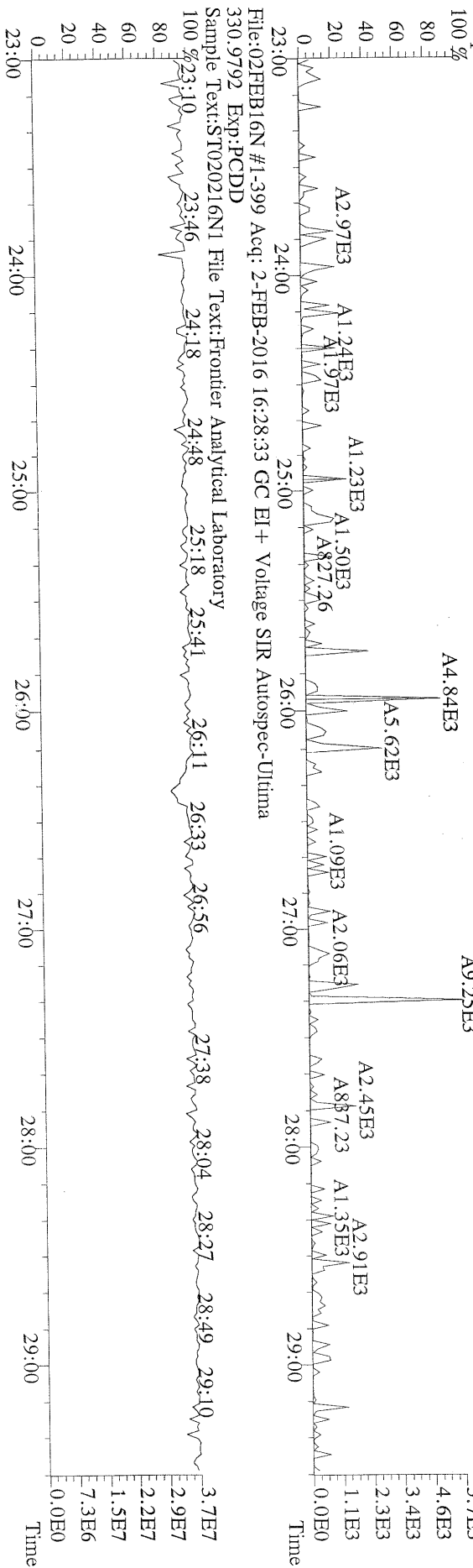
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375.8364 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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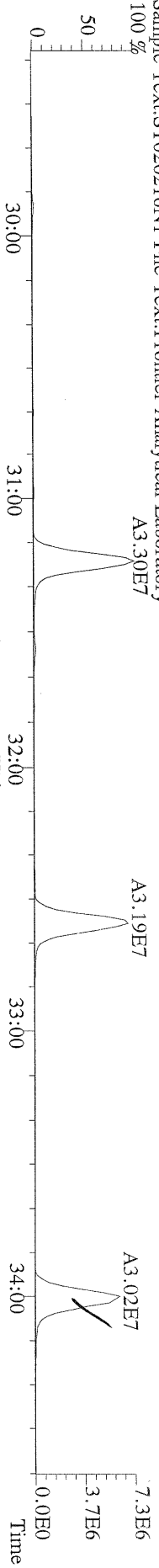
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 339.8597 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0.00%,F,F) Exp:PCDD
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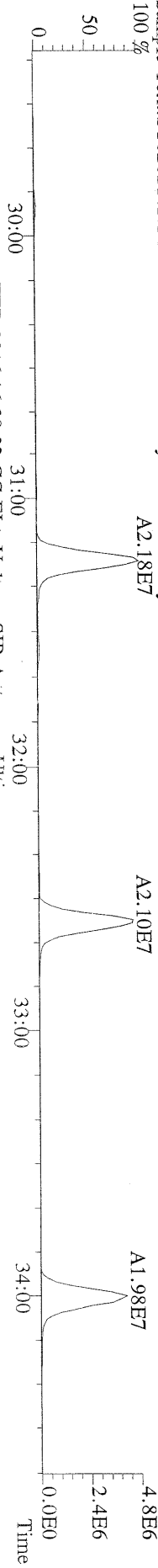
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 409.7974 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0.00%,F,F) Exp:PCDD
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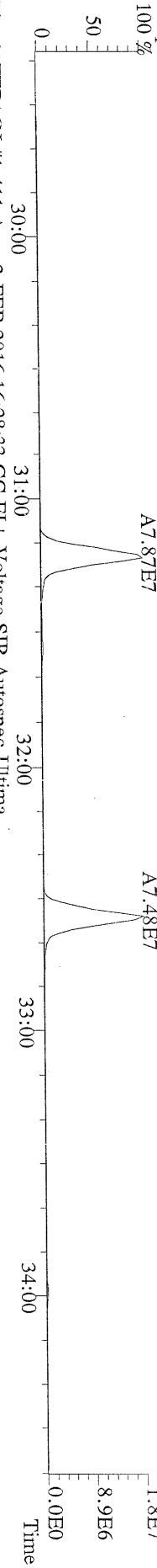
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 339.8597 F:2.BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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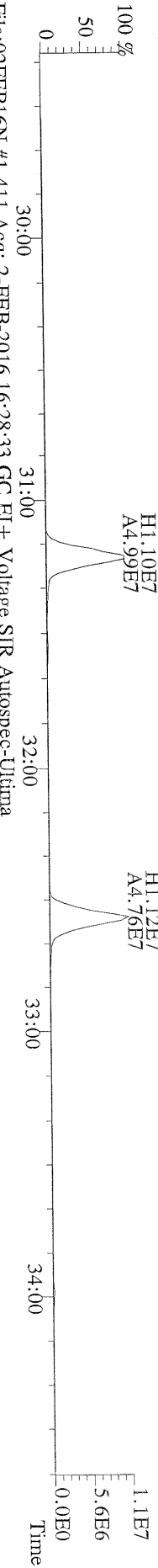
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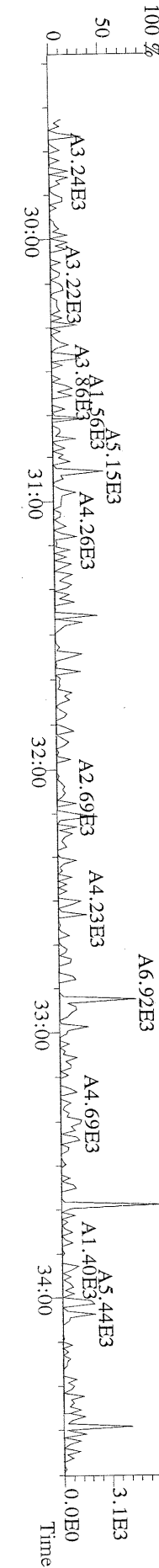
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 351.9000 F:2.BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:ST020216N1 File Text:Frontier Analytical Laboratory
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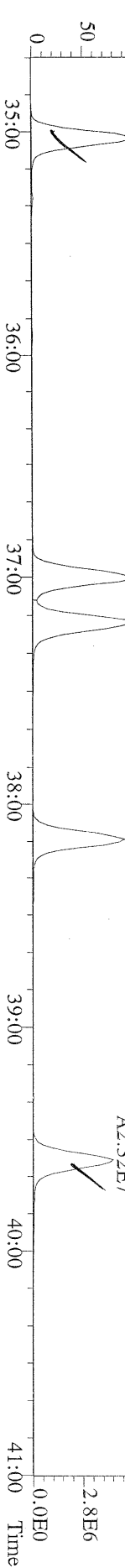
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 353.8970 F:2.BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:ST020216N1 File Text:Frontier Analytical Laboratory
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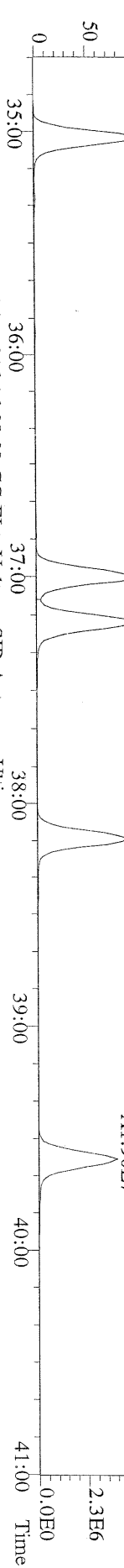
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 409.7974 F:2.BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
 Sample Text:ST020216N1 File Text:Frontier Analytical Laboratory
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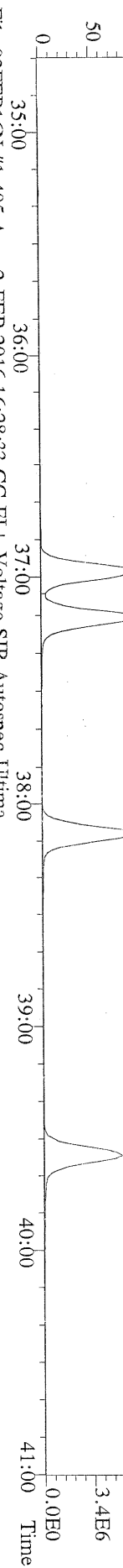
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373.8207 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,100,0,0,00%,F,F) Exp:PCDD
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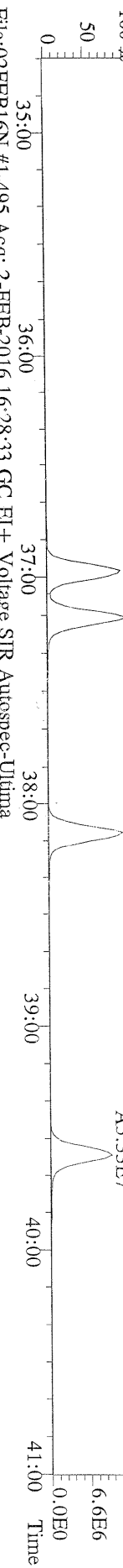
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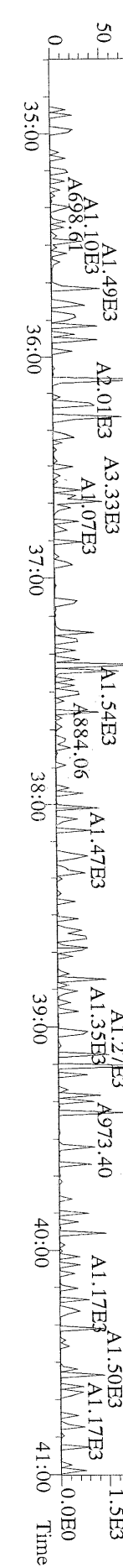
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383.8639 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,100,0,0,00%,F,F) Exp:PCDD
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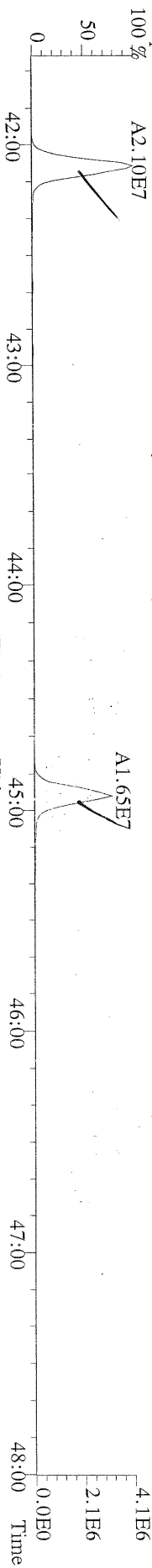
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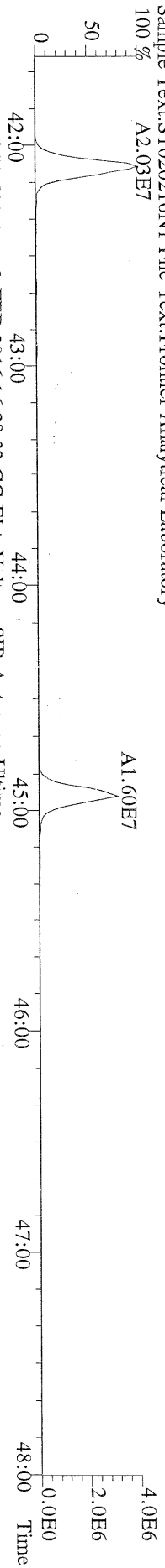
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445.7555 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST020216N1 File Text:Frontier Analytical Laboratory



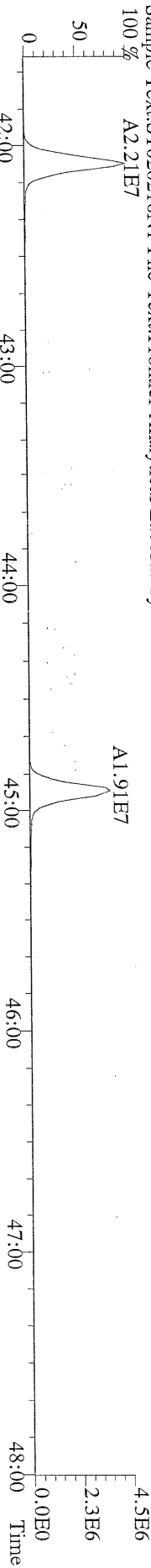
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407.7818 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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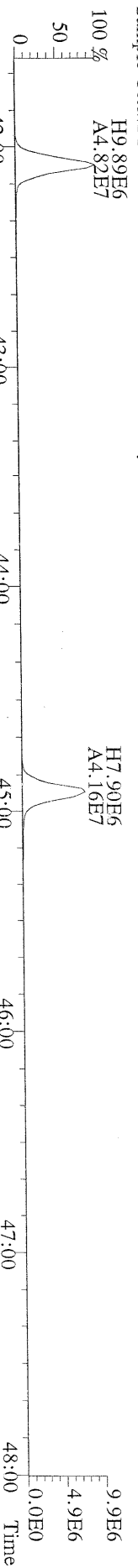
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409.7788 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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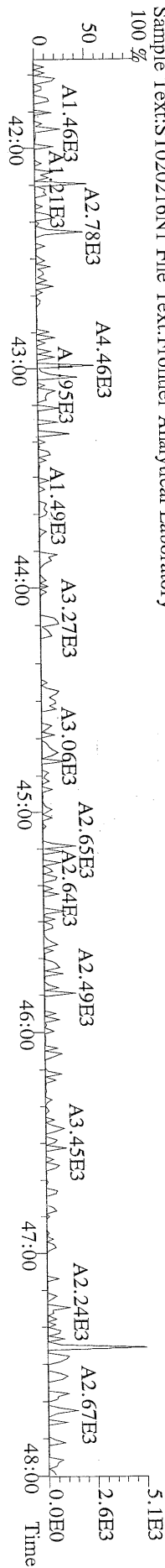
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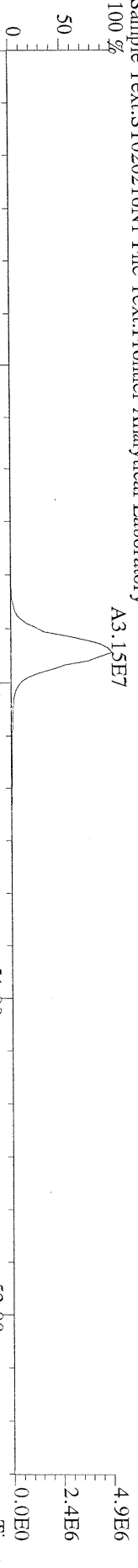
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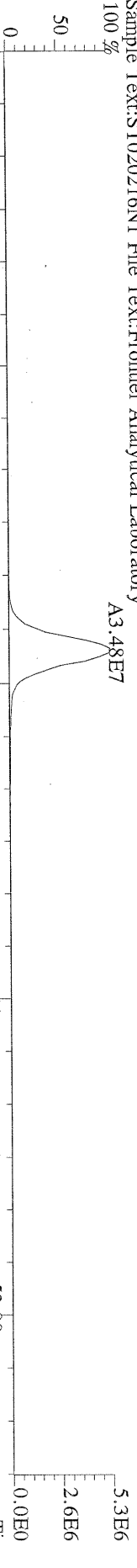
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479.7165 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST020216N1 File Text:Frontier Analytical Laboratory



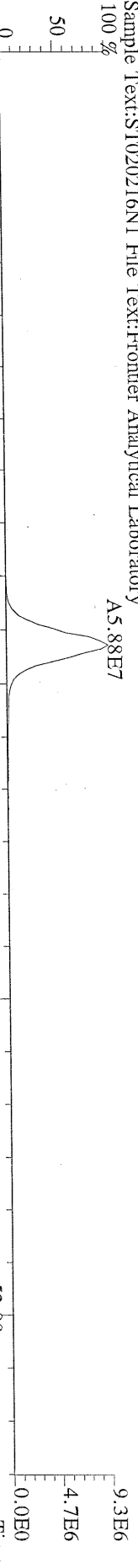
File:02FEB16N #1-361 Acq: 2-FEB-2016 16:28:33 GC EI+ Voltage SIR Autospec-Ultima
441.7428 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0%) Exp:PCDD
Sample Text:ST020216N1 File Text:Frontier Analytical Laboratory
100 %



File:02FEB16N #1-361 Acq: 2-FEB-2016 16:28:33 GC EI+ Voltage SIR Autospec-Ultima
443.7398 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0%) Exp:PCDD
Sample Text:ST020216N1 File Text:Frontier Analytical Laboratory
100 %



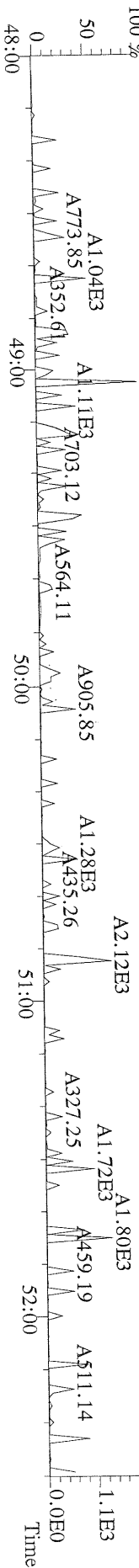
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453.7831 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0%) Exp:PCDD
Sample Text:ST020216N1 File Text:Frontier Analytical Laboratory
100 %



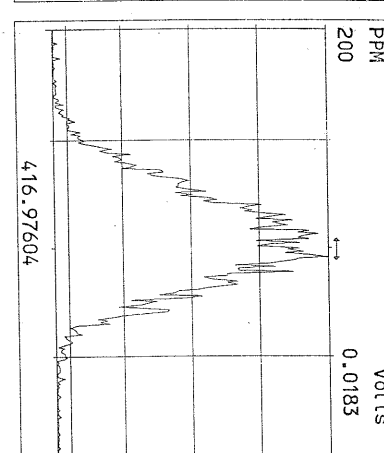
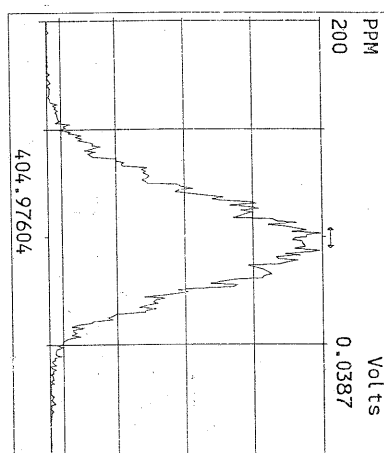
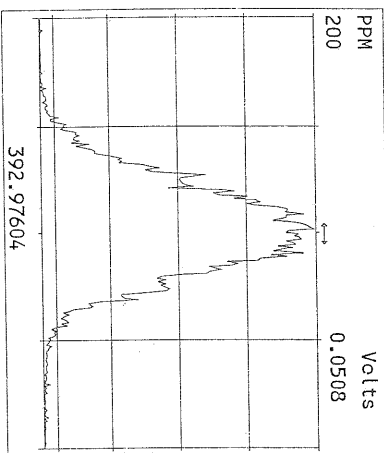
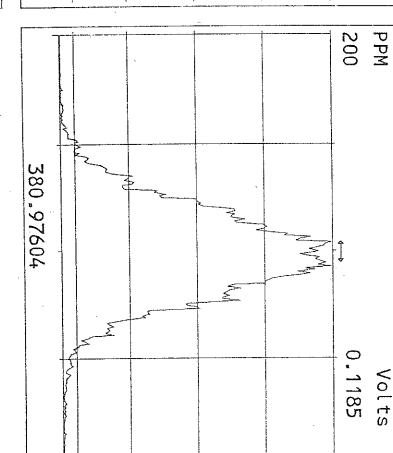
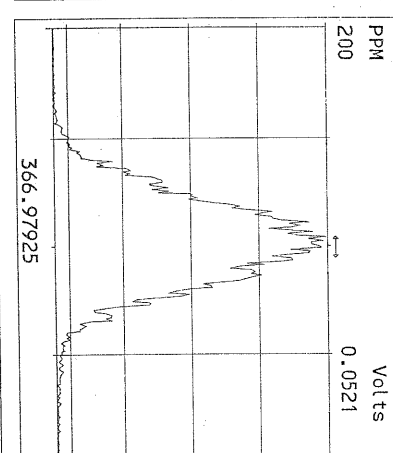
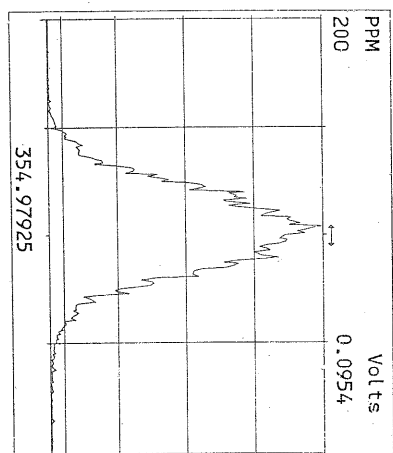
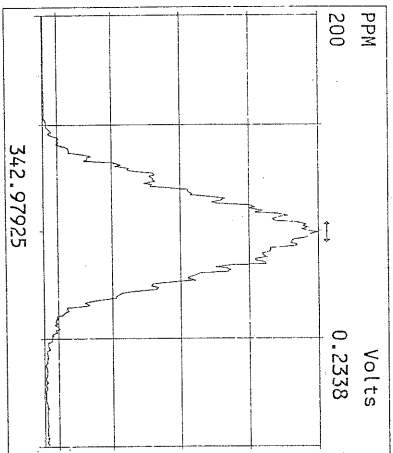
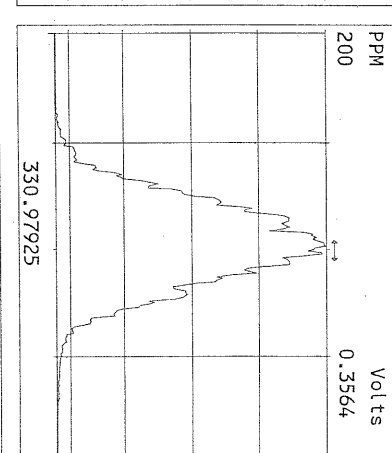
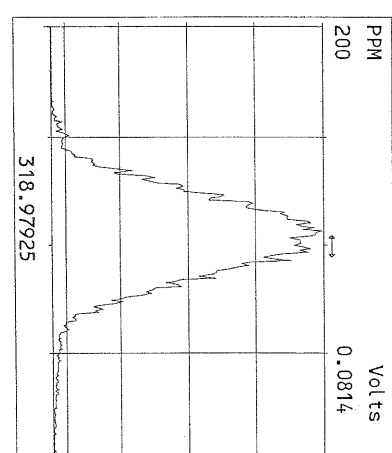
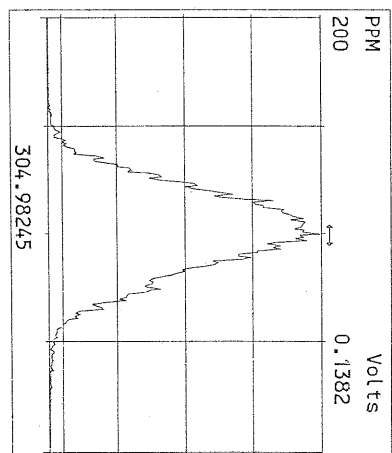
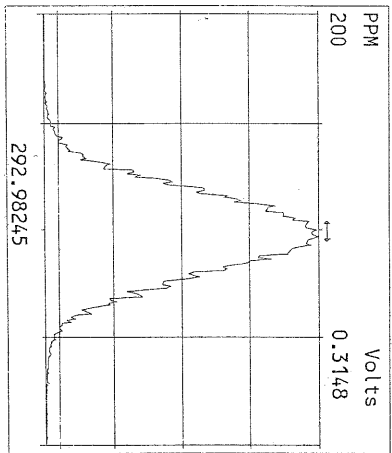
File:02FEB16N #1-361 Acq: 2-FEB-2016 16:28:33 GC EI+ Voltage SIR Autospec-Ultima
455.7801 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0%) Exp:PCDD
Sample Text:ST020216N1 File Text:Frontier Analytical Laboratory



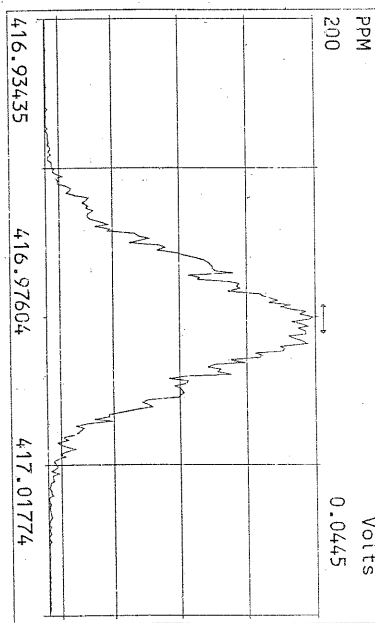
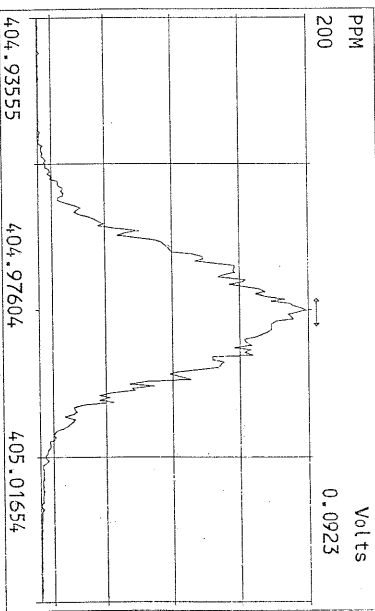
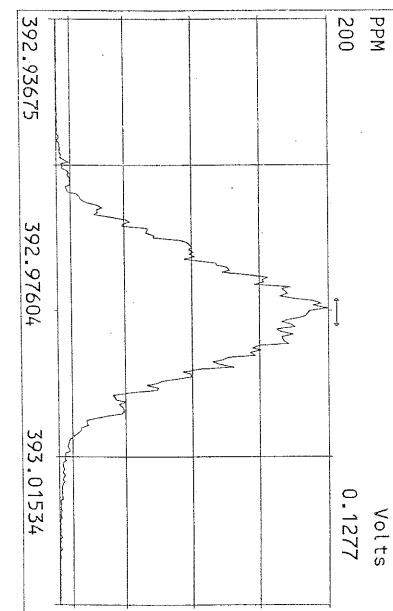
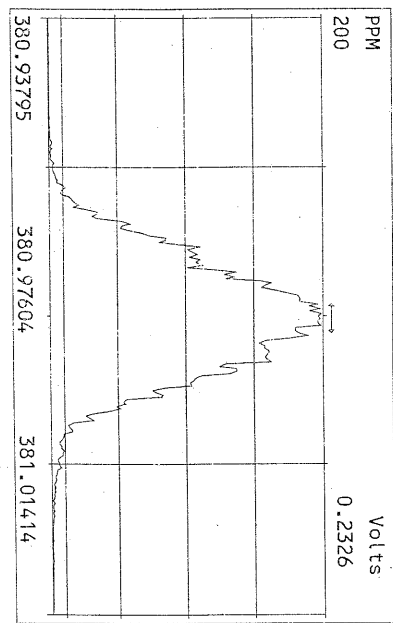
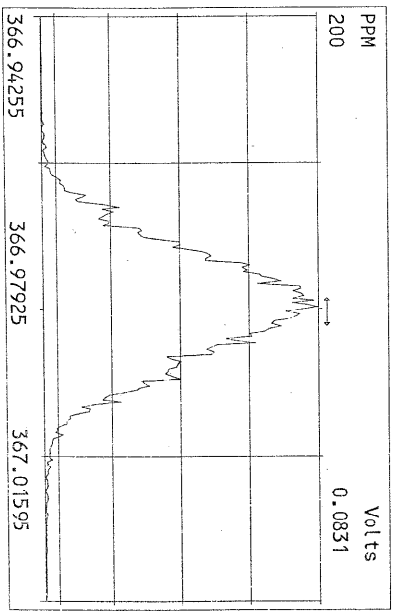
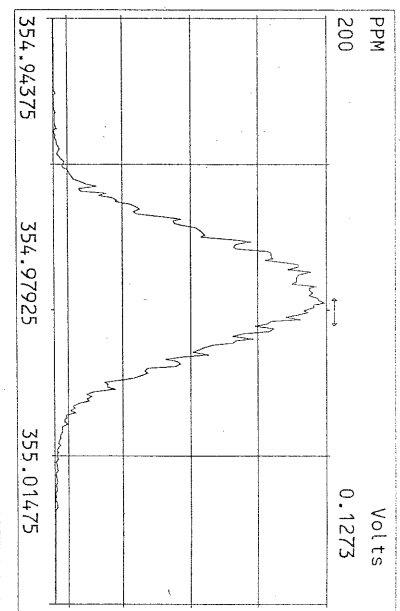
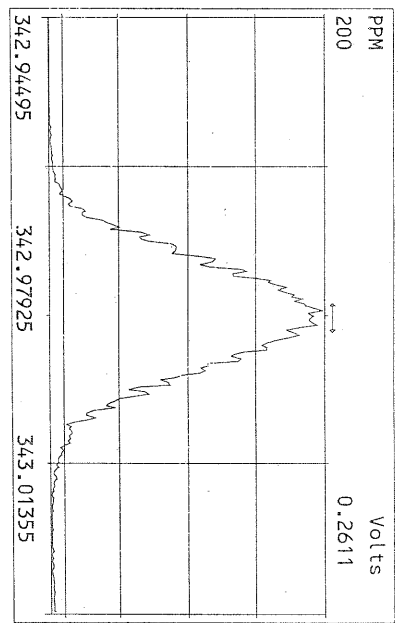
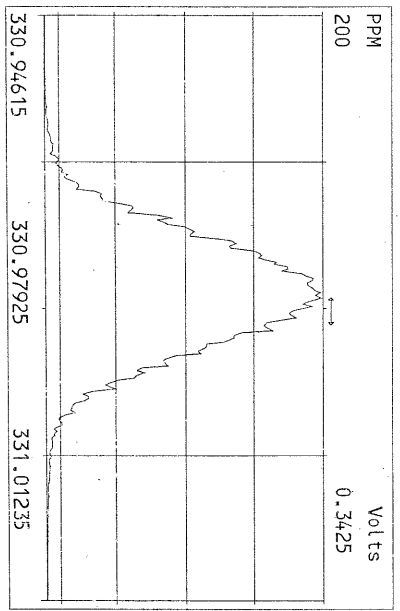
File:02FEB16N #1-361 Acq: 2-FEB-2016 16:28:33 GC EI+ Voltage SIR Autospec-Ultima
513.6775 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,0%) Exp:PCDD
Sample Text:ST020216N1 File Text:Frontier Analytical Laboratory

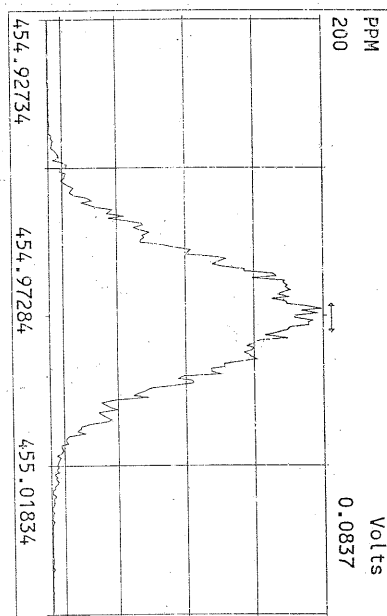
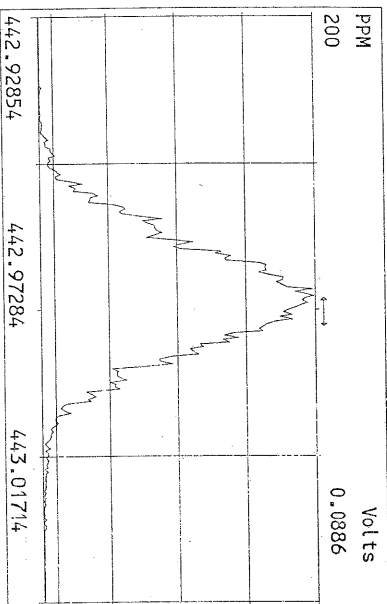
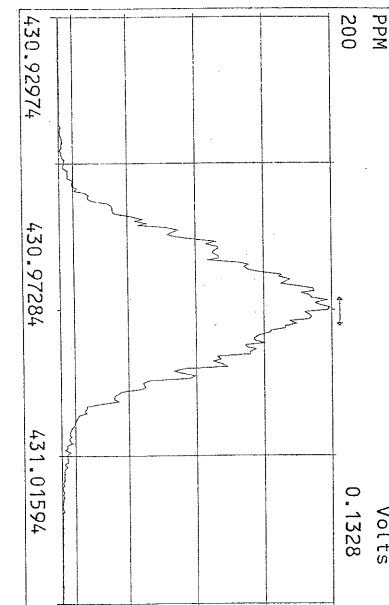
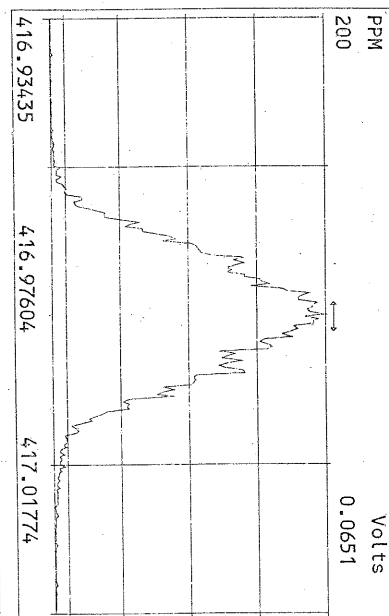
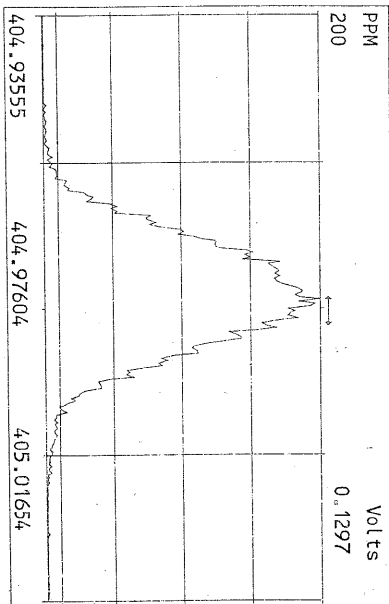
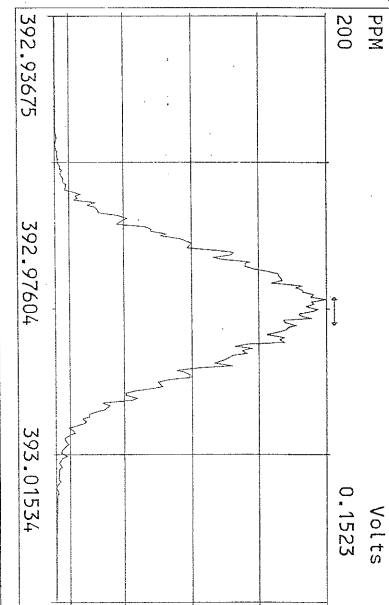
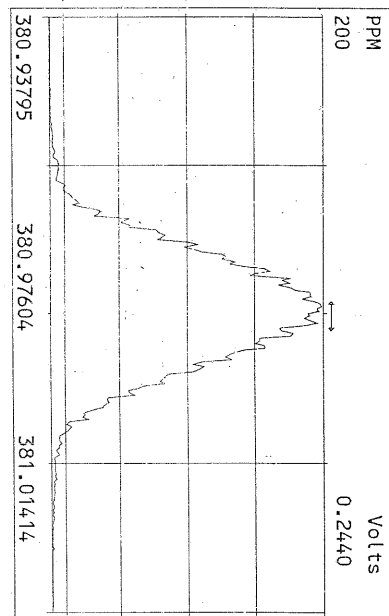
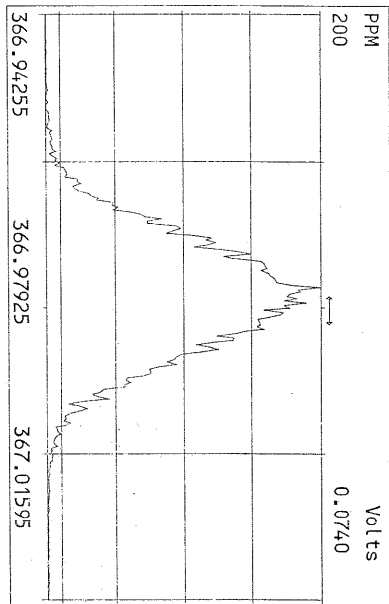


Peak Locate Examination: 3-FEB-2016:01:38 File:02FEB16N_RES_CHECK
Experiment:PCDD Function:1 Reference:PFK

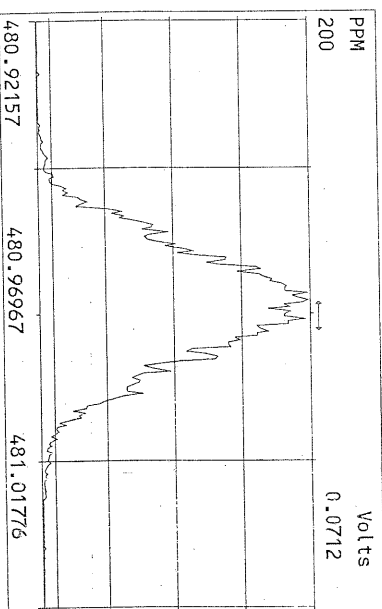
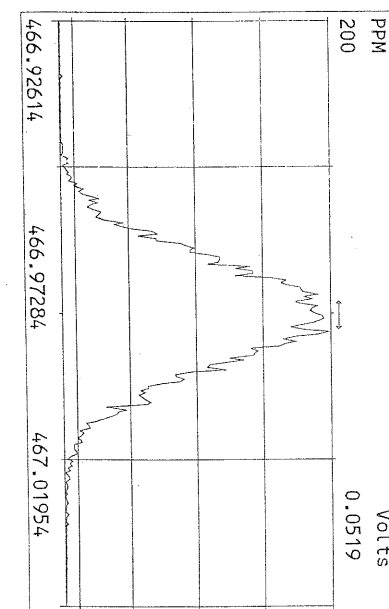
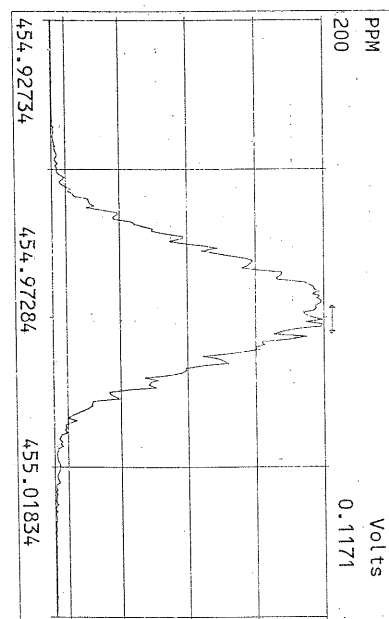
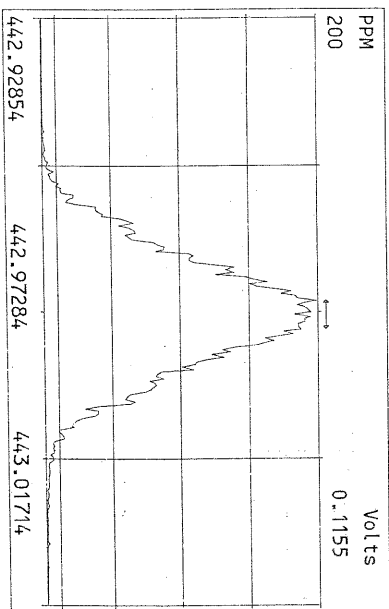
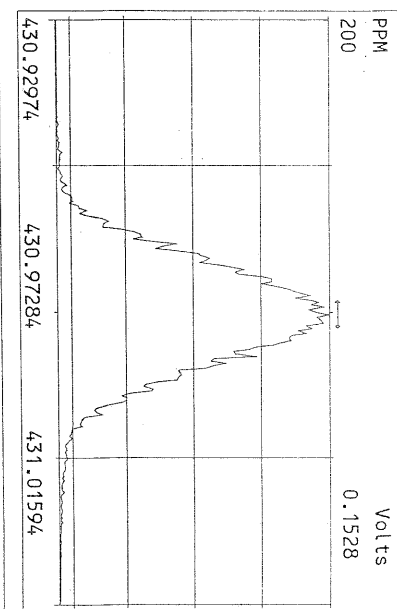
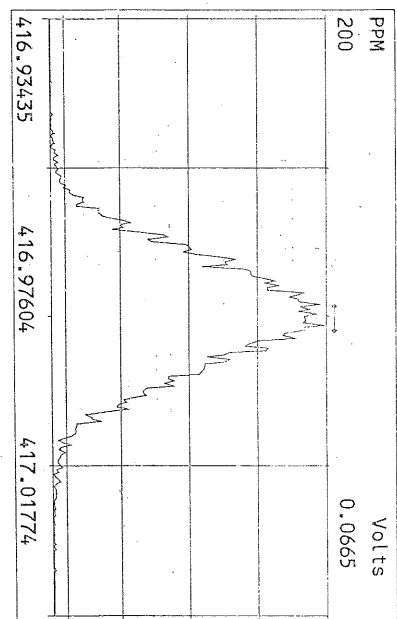
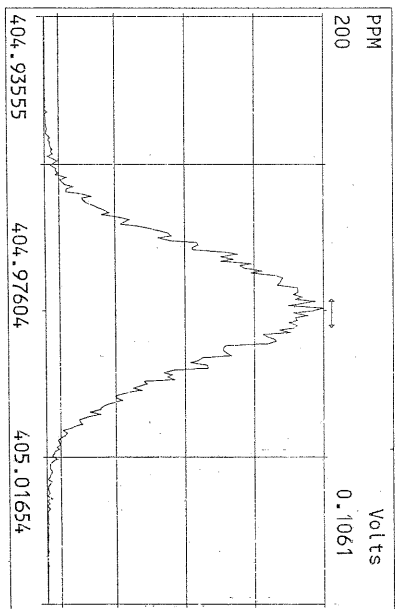


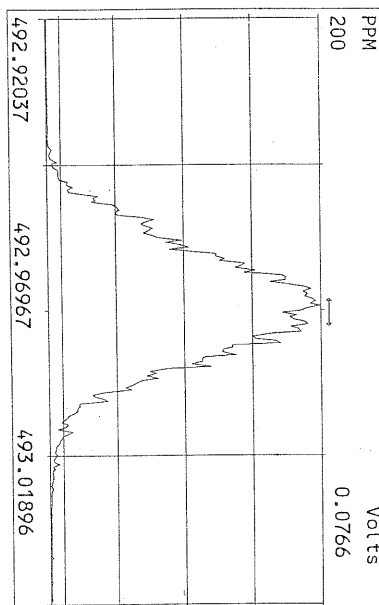
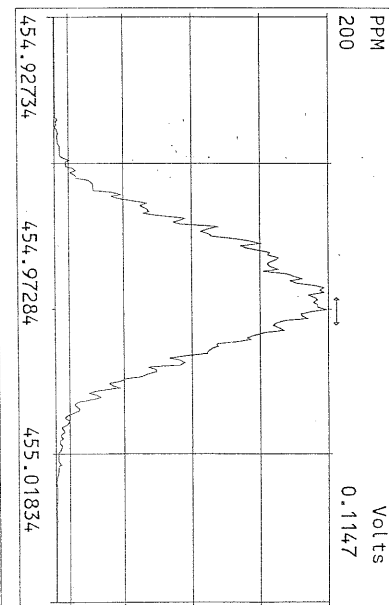
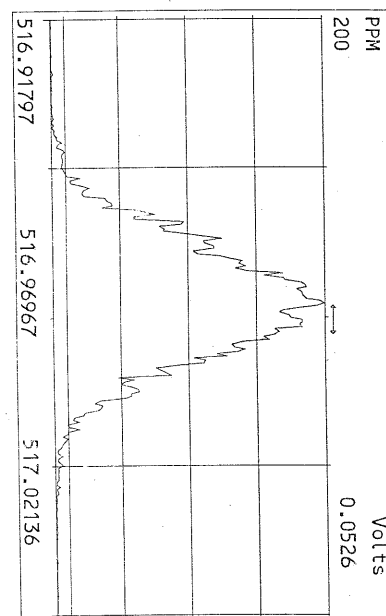
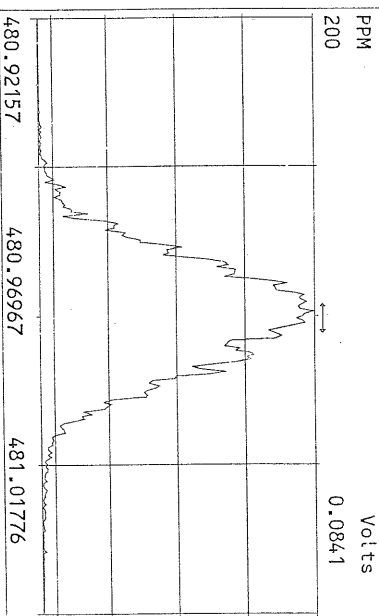
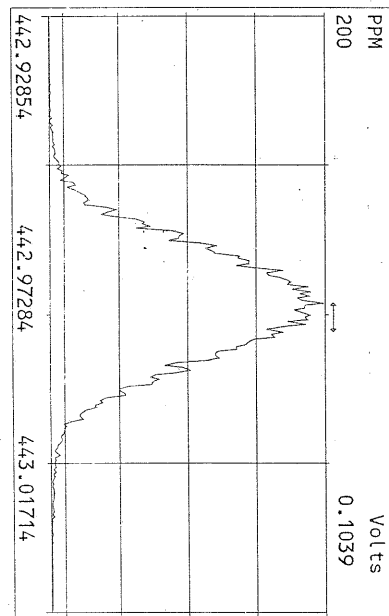
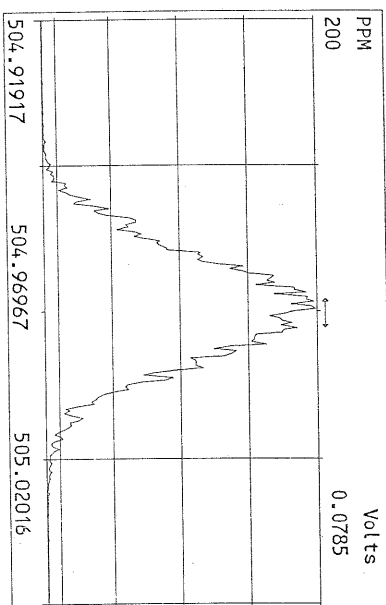
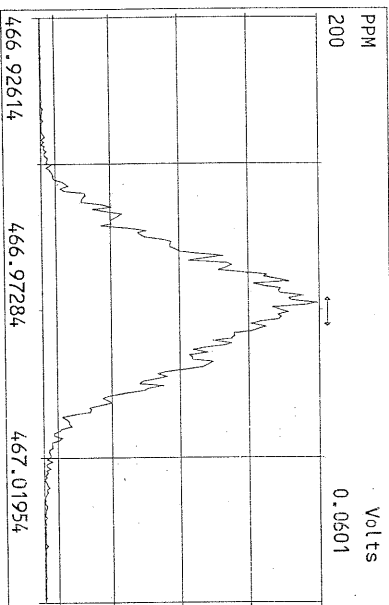
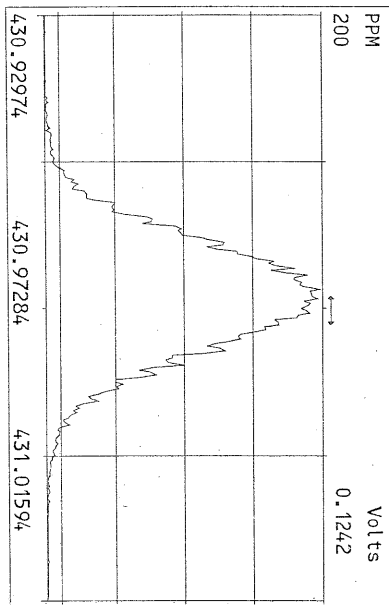
Peak Locate Examination: 3-FEB-2016:01:38 File:02FEB16N_RES_CHECK
Experiment:PCDD Function:2 Reference:PFK





Peak Locate Examination: 3-FEB-2016:01:39 File:02FEB16N_RES_CHECK
Experiment:PCDD Function:4 Reference:PFK





USEPA - ITD

FORM 4A
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: Frontier Analytical Laboratory Episode No.:

Contract No.: SAS No.:

Initial Calibration Date: 1/8/16

Instrument ID: FAL3

GC Column ID: DB5

VER Data Filename: 02FEB16N Sam:10


Analysis Date: 3-FEB-16 00:41:13

	M/Z'S	ION	QC	ACCEPT	CONC.	CONC.
	FORMING	ABUND.	LIMITS		FOUND	RANGE
NATIVE ANALYTES	RATIO (1)	RATIO	(2)			(ng/mL) (3)
2,3,7,8-TCDD	M/M+2	0.81	0.65-0.89	y	10.7	7.80 - 12.9
1,2,3,7,8-PeCDD	M+2/M+4	1.50	1.32-1.78	y	47.0	39.0 - 65.0
1,2,3,4,7,8-HxCDD	M+2/M+4	1.23	1.05-1.43	y	47.3	39.0 - 64.0
1,2,3,6,7,8-HxCDD	M+2/M+4	1.23	1.05-1.43	y	47.0	39.0 - 64.0
1,2,3,7,8,9-HxCDD	M+2/M+4	1.29	1.05-1.43	y	47.8	41.0 - 61.0
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.17	0.88-1.20	y	47.6	43.0 - 58.0
OCDD	M+2/M+4	0.89	0.76-1.02	y	87.5	79.0 - 126
2,3,7,8-TCDF	M/M+2	0.86	0.65-0.89	y	9.22	8.40 - 12.0
1,2,3,7,8-PeCDF	M+2/M+4	1.50	1.32-1.78	y	48.0	41.0 - 60.0
2,3,4,7,8-PeCDF	M+2/M+4	1.51	1.32-1.78	y	47.0	41.0 - 60.0
1,2,3,4,7,8-HxCDF	M+2/M+4	1.21	1.05-1.43	y	48.3	45.0 - 56.0
1,2,3,6,7,8-HxCDF	M+2/M+4	1.22	1.05-1.43	y	48.0	44.0 - 57.0
2,3,4,6,7,8-HxCDF	M+2/M+4	1.18	1.05-1.43	y	48.4	44.0 - 57.0
1,2,3,7,8,9-HxCDF	M+2/M+4	1.20	1.05-1.43	y	49.9	45.0 - 56.0
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.02	0.88-1.20	y	48.3	45.0 - 55.0
1,2,3,4,7,8,9-HpCDF	M+2/M+4	1.03	0.88-1.20	y	48.6	43.0 - 58.0
OCDF	M+2/M+4	0.90	0.76-1.02	y	94.5	63.0 - 159

(1) See Table 8, Method 1613, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613.

(3) Contract-required concentration range as specified in Table 6, Method 1613.


Analyst: Date: 

USEPA - ITD
FORM 6A
PCDD/PCDF RELATIVE RETENTION TIMES

Lab Name: Frontier Analytical Laboratory Episode No.:
Contract No.: SAS No.: Init. Cal. Date: 1/8/16
Instrument ID: FAL3 GC Column ID: DB5
Analysis Date: 3-FEB-16 00:41:13 CS3 or VER Data Filename: 02FEB16N Sam:10

NATIVE ANALYTES	RETENTION TIME		RRT	RRT
	REFERENCE			QC LIMITS (1)
2,3,7,8-TCDD	13C-2,3,7,8-TCDD		1.001	0.999-1.002
2,3,7,8-TCDF	13C-2,3,7,8-TCDF		1.001	0.999-1.003
1,2,3,7,8-PeCDD	13C-1,2,3,7,8-PeCDD		1.001	0.999-1.002
1,2,3,7,8-PeCDF	13C-1,2,3,7,8-PeCDF		1.001	0.999-1.002
2,3,4,7,8-PeCDF	13C-2,3,4,7,8-PeCDF		1.000	0.999-1.002
LABELED COMPOUNDS				
37Cl-2,3,7,8-TCDD	13C-1,2,3,4-TCDD		1.023	0.989-1.052
13C-2,3,7,8-TCDD			1.022	0.976-1.043
13C-2,3,7,8-TCDF			0.994	0.923-1.103
13C-1,2,3,7,8-PeCDD			1.241	1.000-1.567
13C-1,2,3,7,8-PeCDF			1.176	1.000-1.425
13C-2,3,4,7,8-PeCDF			1.226	1.011-1.526

(1) Contract-required limits for Relative Retention Times (RRT) as specified in Table 2, Method 1613.

Analyst:  Date: 2/3/16

Results:

GC Column: DB5

Amount: 1.000

NATO 1989 Tox: 96.3

WHO 1998 Tox: 120

WHO 2005 Tox:

109

Name	Resp	RA	RT	RRF	Conc	Qual	Fac Noise-1	Noise-2	DL	DL
2,3,7,8-TCDD	1.01e+07	0.81 y	27:16	1.27	10.7	2.50	-	-	*	*
1,2,3,7,8-PeCDD	2.68e+07	1.50 y	33:07	1.01	47.0	2.50	-	-	*	*
1,2,3,4,7,8-HxCDD	1.98e+07	1.23 y	38:27	1.04	47.3	2.50	-	-	*	*
1,2,3,6,7,8-HxCDD	2.20e+07	1.23 y	38:38	1.05	47.0	2.50	-	-	*	*
1,2,3,7,8,9-HxCDD	2.31e+07	1.29 y	39:04	1.14	47.8	2.50	-	-	*	*
1,2,3,4,6,7,8-HpCDD	1.61e+07	1.17 y	44:03	1.01	47.6	2.50	-	-	*	*
OCDD	2.48e+07	0.89 y	49:33	1.08	87.5	2.50	-	-	*	*
2,3,7,8-TCDF	1.01e+07	0.86 y	26:30	1.02	9.22	2.50	-	-	*	*
1,2,3,7,8-PeCDF	3.91e+07	1.50 y	31:22	0.90	48.0	2.50	-	-	*	*
2,3,4,7,8-PeCDF	3.68e+07	1.51 y	32:42	0.93	47.0	2.50	-	-	*	*
1,2,3,4,7,8-HxCDF	3.03e+07	1.21 y	37:04	1.13	48.3	2.50	-	-	*	*
1,2,3,6,7,8-HxCDF	3.37e+07	1.22 y	37:16	1.08	48.0	2.50	-	-	*	*
2,3,4,6,7,8-HxCDF	2.96e+07	1.18 y	38:13	1.03	48.4	2.50	-	-	*	*
1,2,3,7,8,9-HxCDF	2.41e+07	1.20 y	39:39	1.05	49.9	2.50	-	-	*	*
1,2,3,4,6,7,8-HpCDF	2.35e+07	1.02 y	42:08	1.24	48.3	2.50	-	-	*	*
1,2,3,4,7,8,9-HpCDF	1.86e+07	1.03 y	44:58	1.12	48.6	2.50	-	-	*	*
OCDF	3.15e+07	0.90 y	49:54	1.09	94.5	2.50	-	-	*	*
13C-2,3,7,8-TCDD	7.48e+07	0.80 y	27:14	1.10	97.1					Rec 97.1
13C-1,2,3,7,8-PeCDD	5.67e+07	1.57 y	33:05	0.89	91.4					91.4
13C-1,2,3,4,7,8-HxCDD	4.03e+07	1.29 y	38:27	0.87	95.7					95.7
13C-1,2,3,6,7,8-HxCDD	4.43e+07	1.24 y	38:36	0.87	105					105
13C-1,2,3,4,6,7,8-HpCDD	3.34e+07	1.12 y	44:02	0.84	82.3					82.3
13C-OCDD	5.26e+07	0.91 y	49:31	0.69	156					78.0
13C-2,3,7,8-TCDF	1.08e+08	0.81 y	26:29	1.02	96.4					96.4
13C-1,2,3,7,8-PeCDF	9.11e+07	1.56 y	31:21	1.00	83.7					83.7
13C-2,3,4,7,8-PeCDF	8.45e+07	1.60 y	32:41	0.89	87.5					87.5
13C-1,2,3,4,7,8-HxCDF	5.56e+07	0.52 y	37:02	1.26	90.6					90.6
13C-1,2,3,6,7,8-HxCDF	6.49e+07	0.52 y	37:15	1.30	103					103
13C-2,3,4,6,7,8-HxCDF	5.94e+07	0.54 y	38:12	1.25	98.2					98.2
13C-1,2,3,7,8,9-HxCDF	4.58e+07	0.55 y	39:38	1.15	82.3					82.3
13C-1,2,3,4,6,7,8-HpCDF	3.92e+07	0.46 y	42:07	0.96	84.5					84.5
13C-1,2,3,4,7,8,9-HpCDF	3.42e+07	0.47 y	44:57	0.83	84.9					84.9
13C-OCDF	6.13e+07	0.87 y	49:54	0.93	136					68.0
37Cl-2,3,7,8-TCDD	7.47e+06		27:16	1.00	10.7					107
13C-1,2,3,4-TCDD	6.97e+07	0.81 y	26:39	-	101					
13C-1,2,3,4-TCDF	1.09e+08	0.79 y	25:23	-	101					
13C-1,2,3,7,8,9-HxCDD	4.85e+07	1.34 y	39:03	-	81.7					
Total Tetra-Dioxins	4.46e+07		23:25	1.27	47.0	2.50	-	-	*	20
Total Penta-Dioxins	8.86e+07		30:07	1.01	156	2.50	-	-	*	16
Total Hexa-Dioxins	9.46e+07		35:59	1.08	207	2.50	-	-	*	11
Total Hepta-Dioxins	3.63e+07		42:40	1.01	107	2.50	-	-	*	38
Total Tetra-Furans	4.84e+07		22:52	1.02	44.1	2.50	-	-	*	15
1st Fn. Tot Penta-Furans	4.88e+07		28:17	0.91	61.0	2.50	-	-	*	PeCDF 1
Total Penta-Furans	1.12e+08		29:52	0.91	140	2.50	-	-	*	201 14
Total Hexa-Furans	1.53e+08		35:07	1.07	253	2.50	-	-	*	26
Total Hepta-Furans	4.29e+07		42:08	1.19	98.7	2.50	-	-	*	6

Analyst: [Signature]

Date: 2/3/16

Frontier Analytical Laboratory - Acquisition Log

Run Name:02FEB16N

Instrument: FAL3

GC: DB5

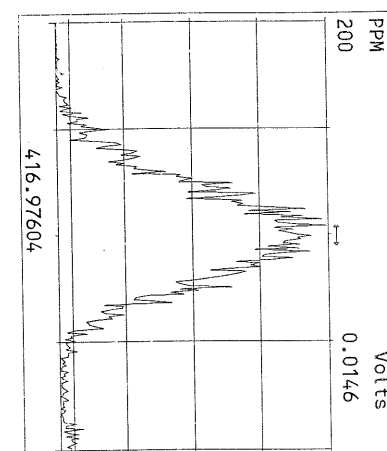
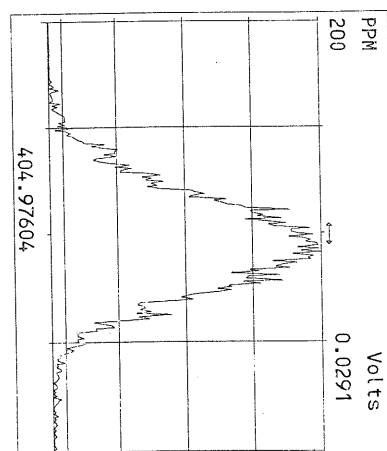
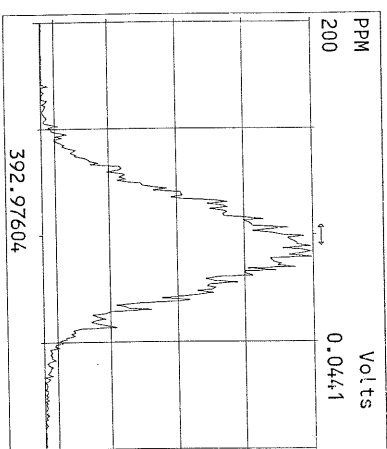
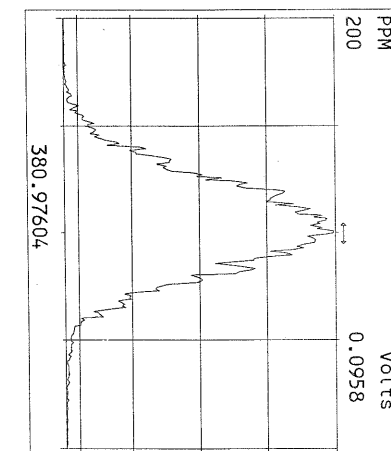
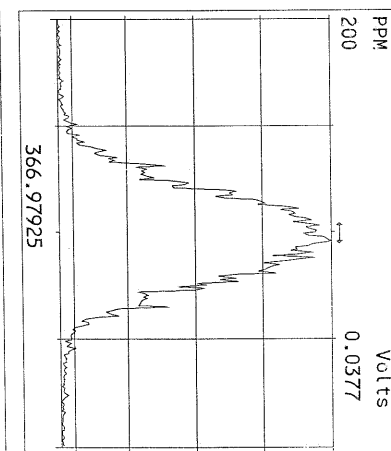
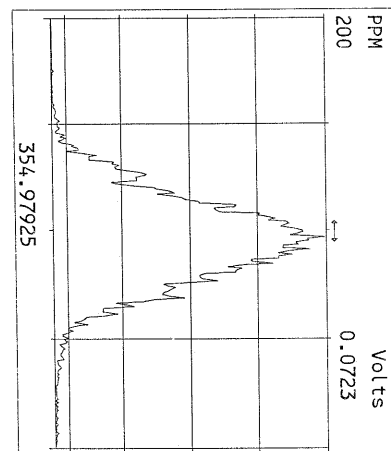
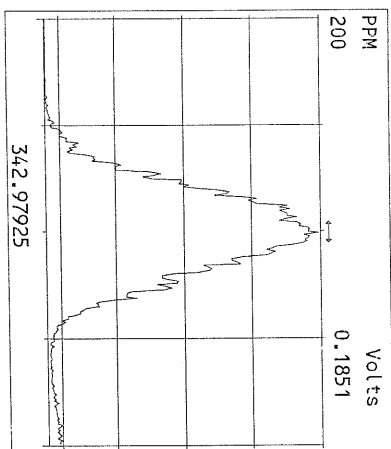
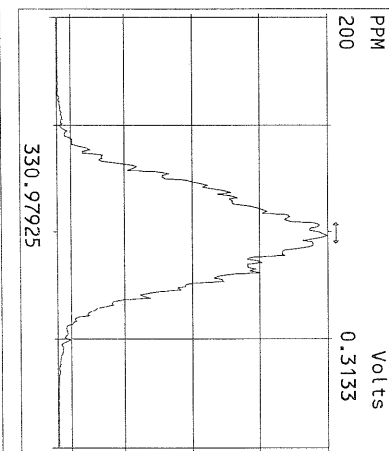
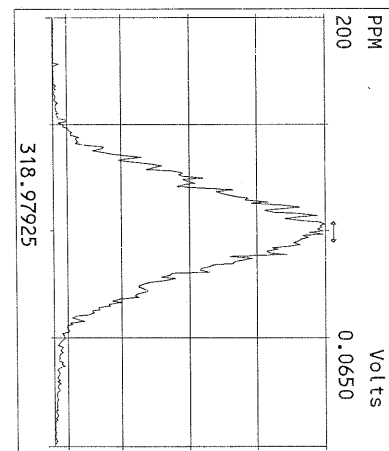
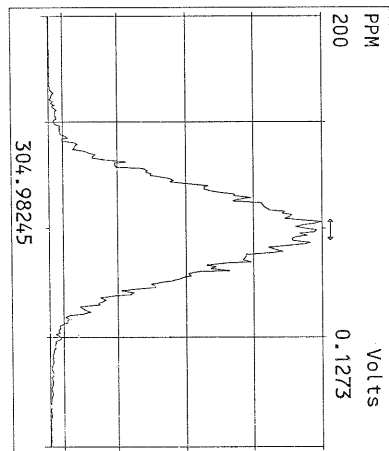
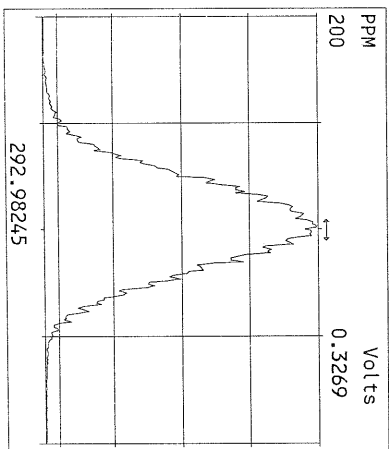
Experiment:PCDD

Data File S	FAL ID	Client ID	Acquired	ConCal	EndCal	Analyst
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02FEB16N 2	3571-001-0001-OPR	OPR	2-FEB-16 17:23:20	ST020216N1	ST020216N2	TC
02FEB16N 3	3571-001-0001-MB	Method Blank	2-FEB-16 18:18:07	ST020216N1	ST020216N2	TC
02FEB16N 4	9570-001-0001-SA	RM#51156 Lot#837701 DHA-s	2-FEB-16 19:12:48	ST020216N1	ST020216N2	TC
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02FEB16N 6	SB020216N1	Solvent Blank	2-FEB-16 21:02:18	ST020216N1	ST020216N2	TC
02FEB16N 7	9548-003-0001-SA	MW-05-010716	2-FEB-16 21:57:03	ST020216N1	ST020216N2	TC
02FEB16N 8	SB020216N2	Solvent Blank	2-FEB-16 22:51:50	ST020216N1	ST020216N2	TC
02FEB16N 9	SB020216N3	Solvent Blank	2-FEB-16 23:46:34	ST020216N1	ST020216N2	TC
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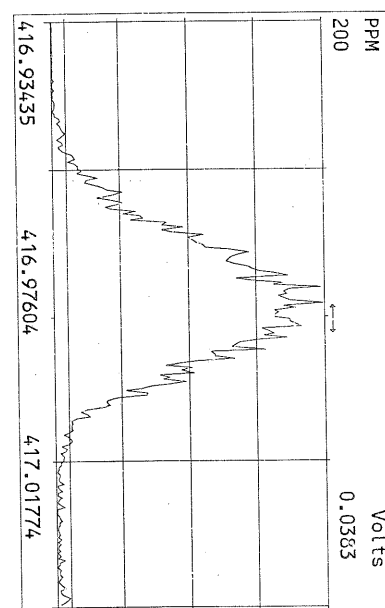
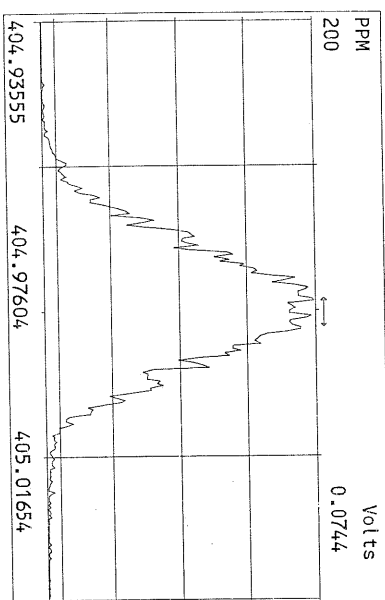
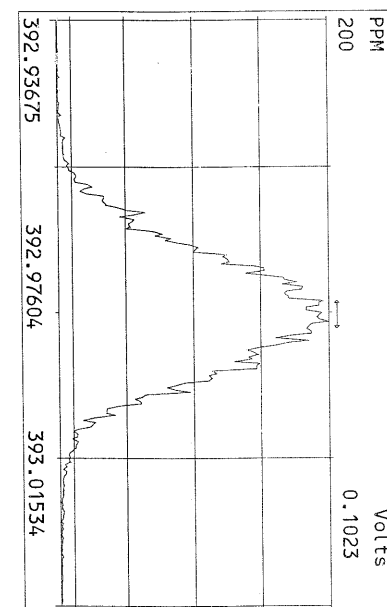
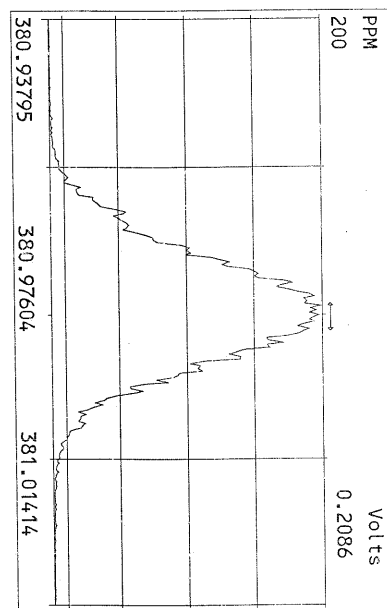
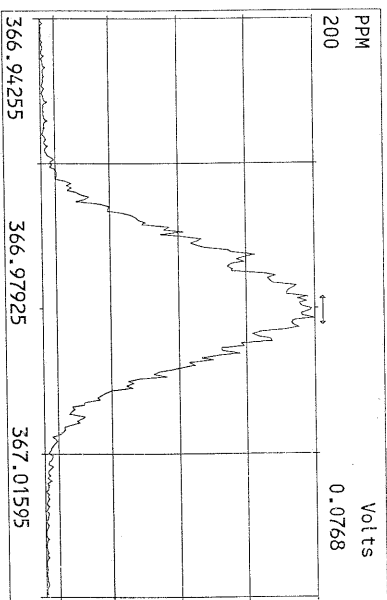
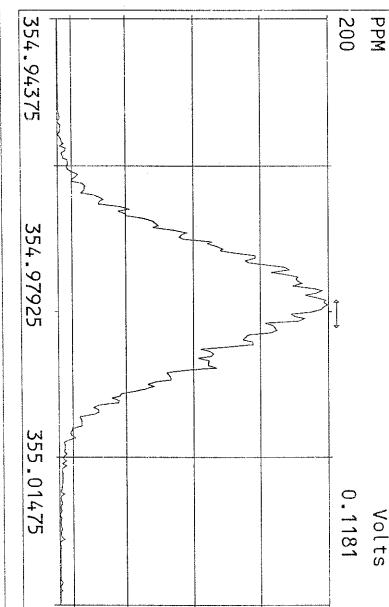
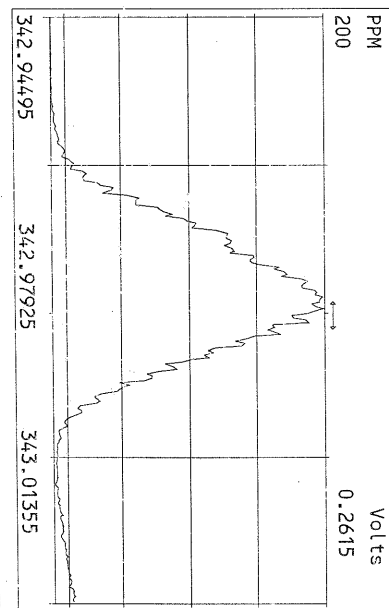
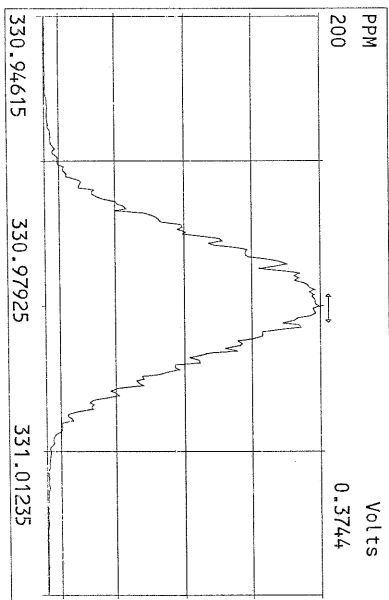
2/3/16

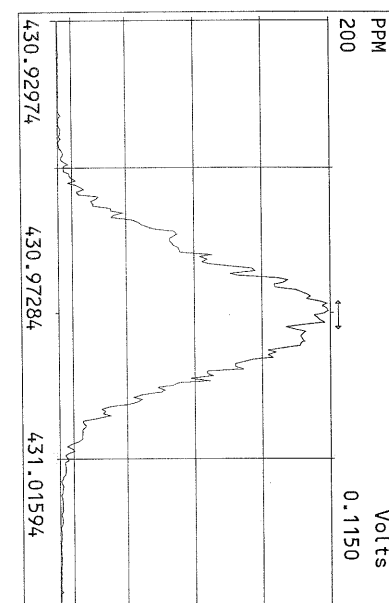
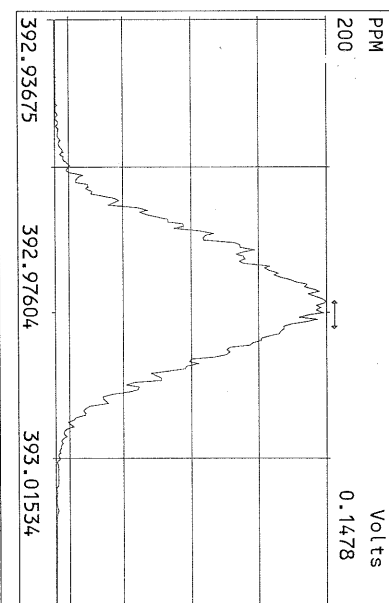
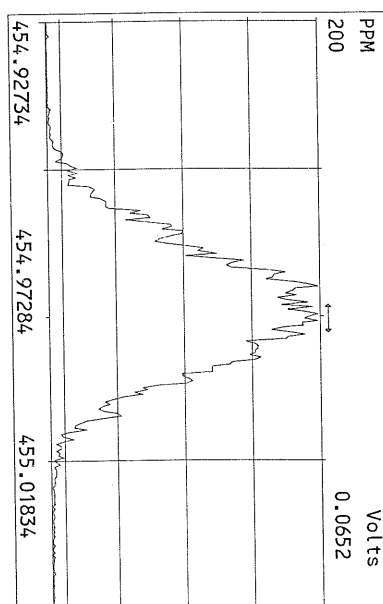
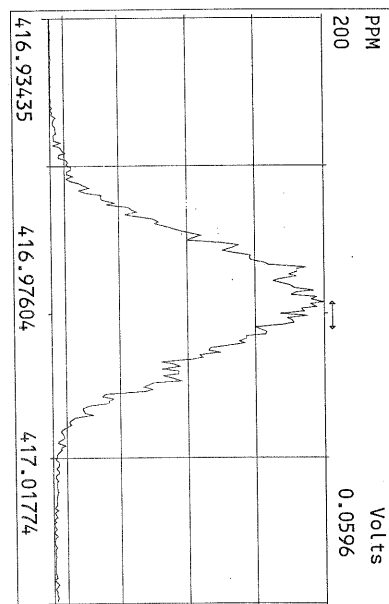
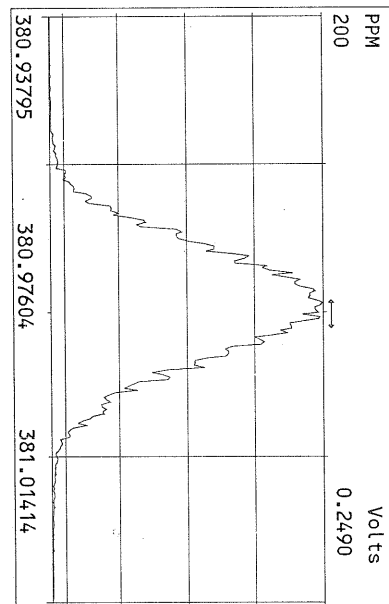
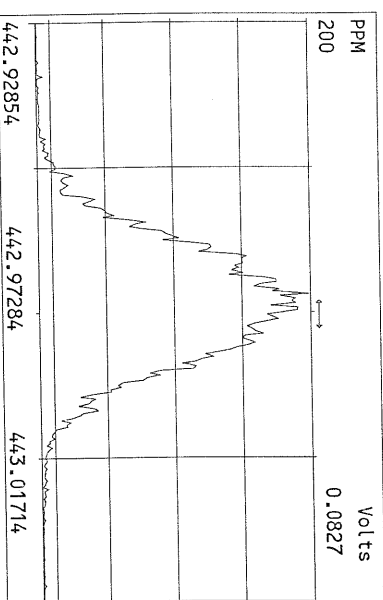
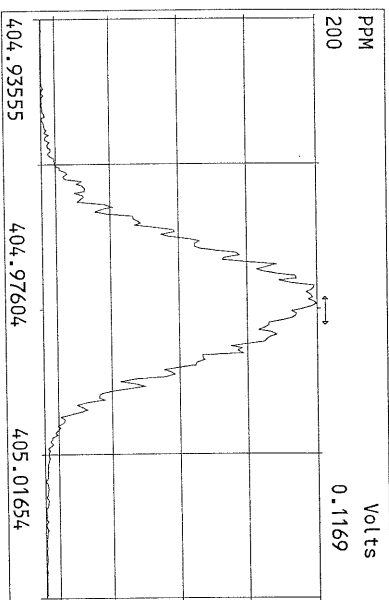
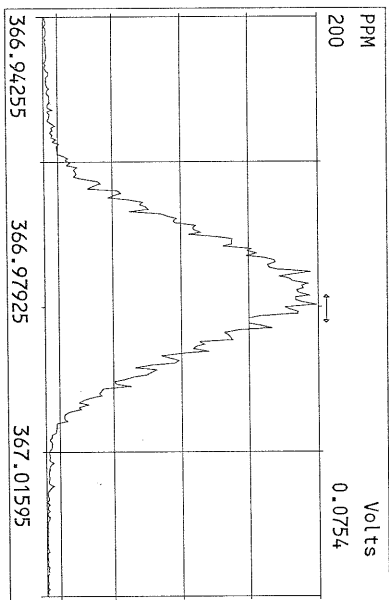
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Date: _____

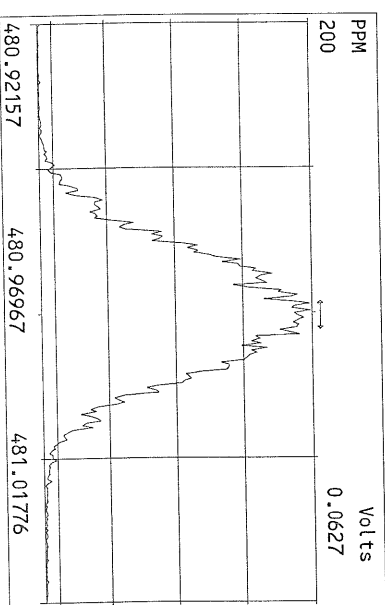
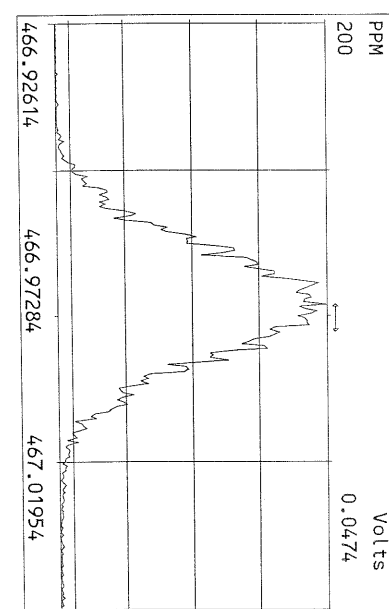
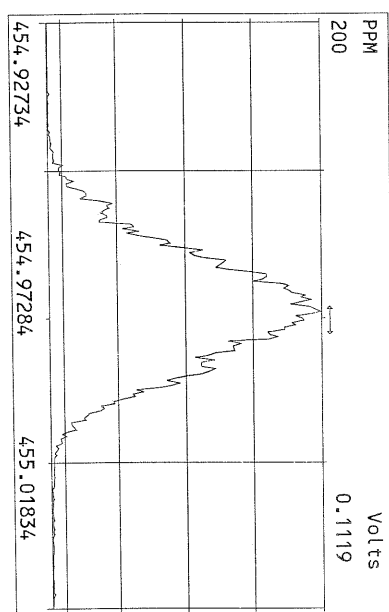
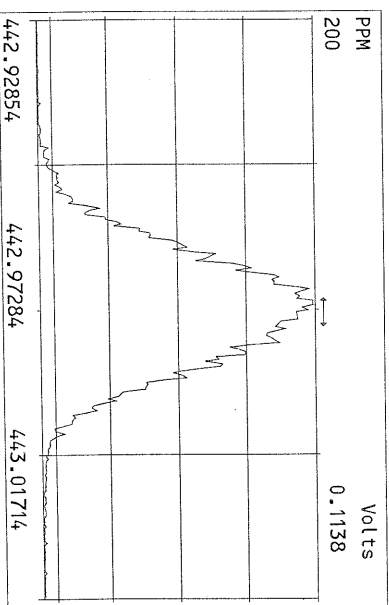
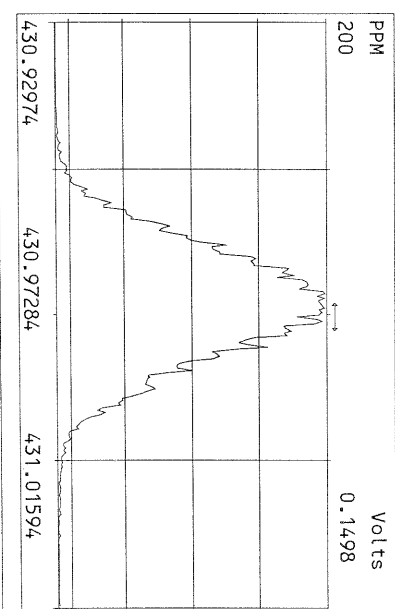
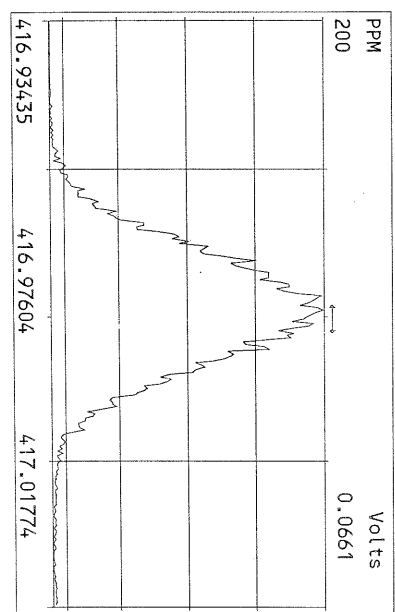
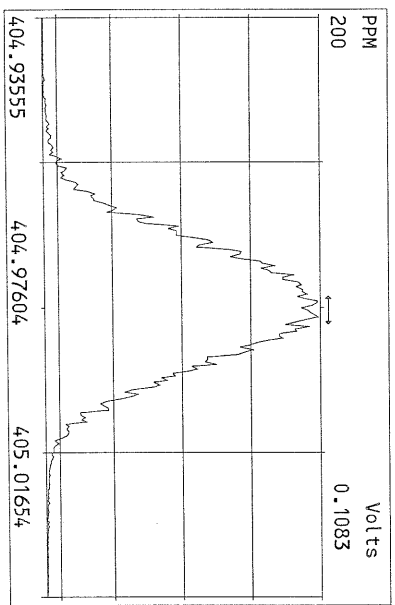


Peak Locate Examination: 2-FEB-2016:16:27 File:02FEB16N
Experiment:PCDD Function:2 Reference:PFK

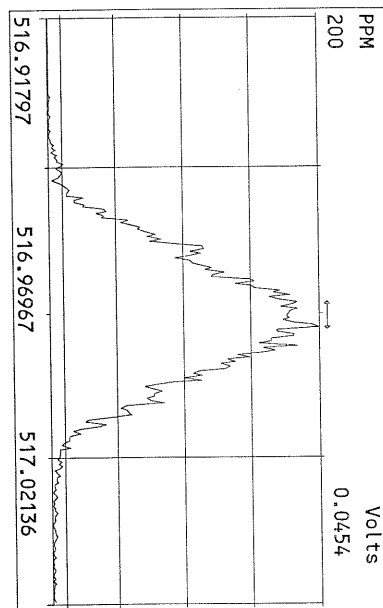
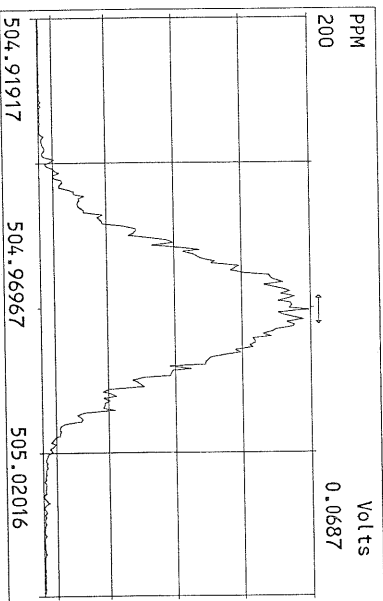
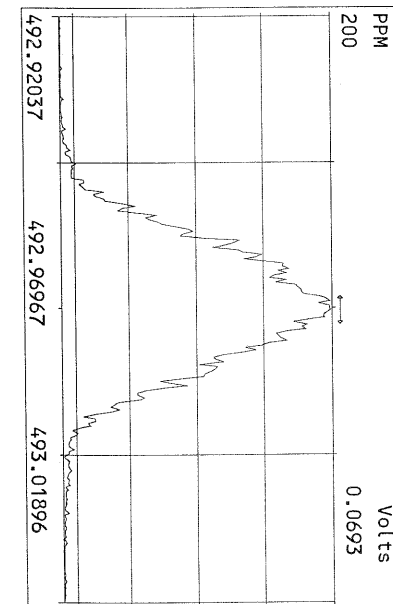
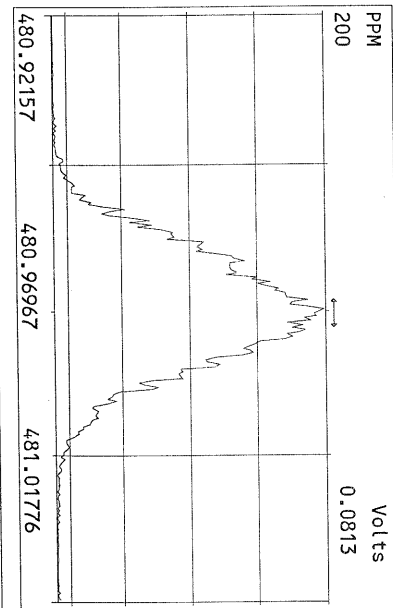
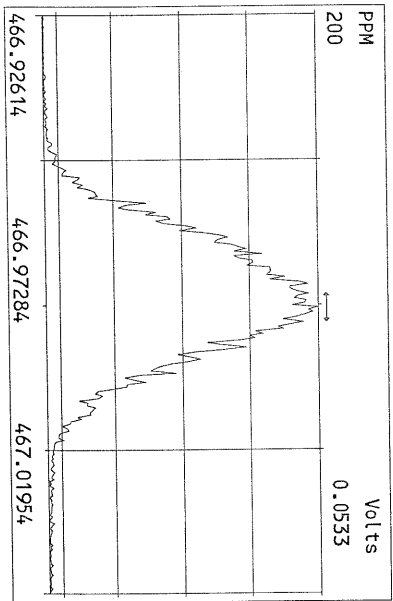
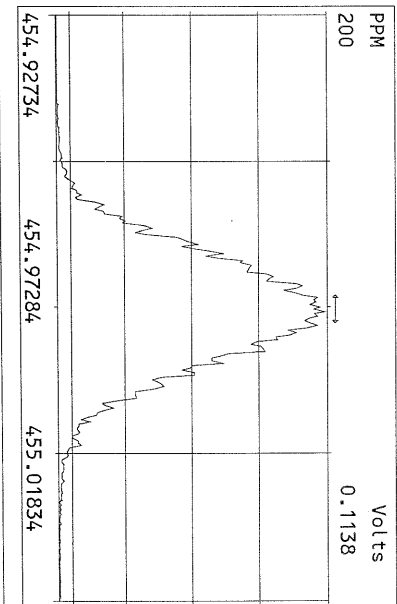
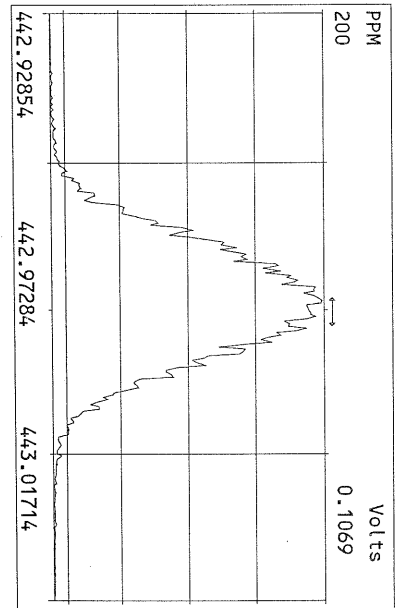
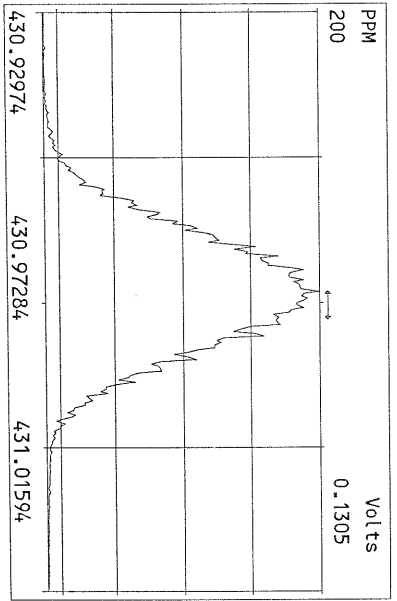




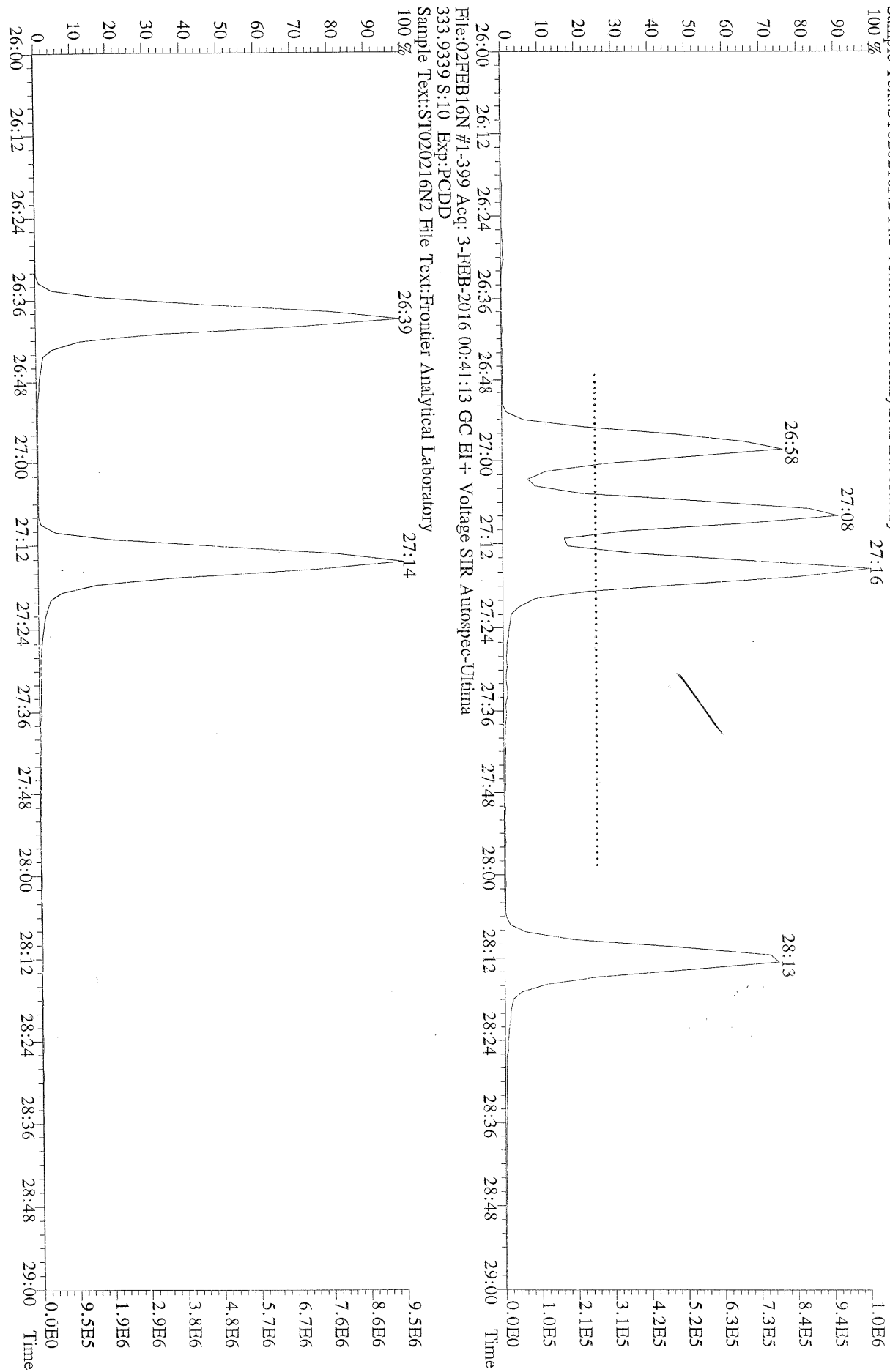
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Experiment:PCDD Function:4 Reference:PFK



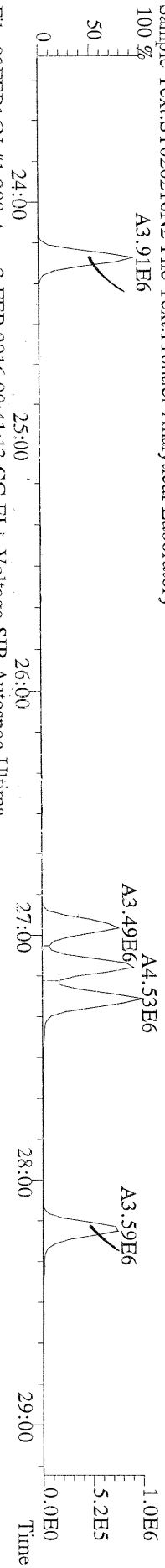
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Experiment:PCDD Function:5 Reference:PFK



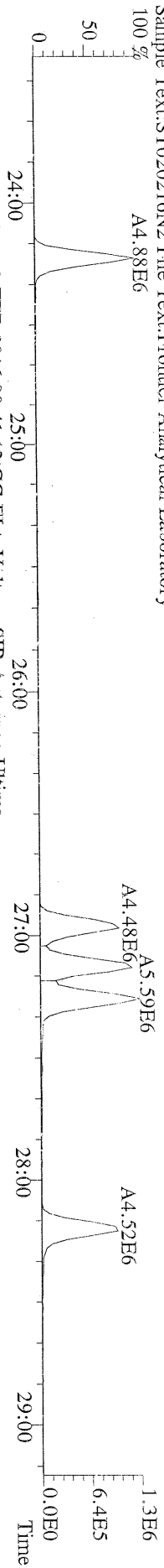
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319.8965 S:10 Exp:PCDD
Sample Text:ST020216N2 File Text:Frontier Analytical Laboratory
100 %



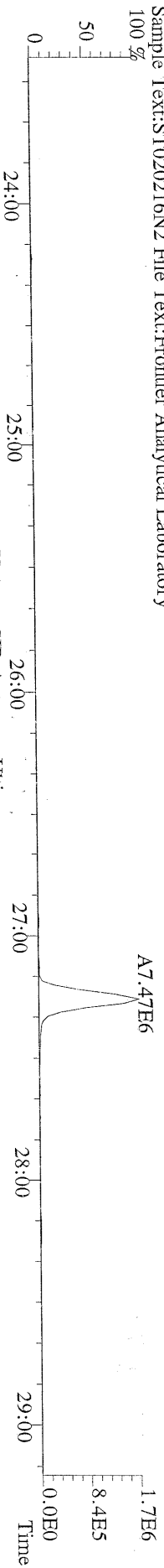
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319.8965 S:10 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,00%,F,F) Exp:PCDD
Sample Text:ST020216N2 File Text:Frontier Analytical Laboratory



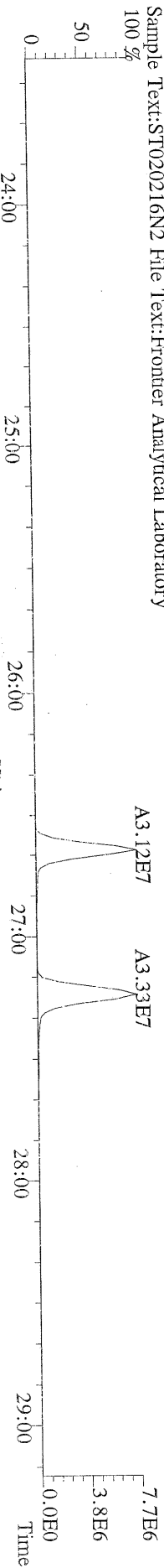
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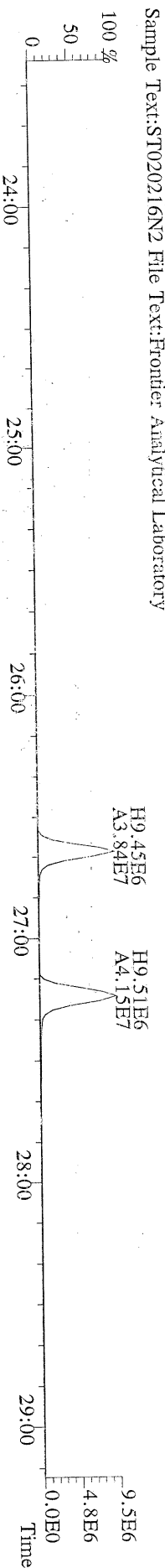
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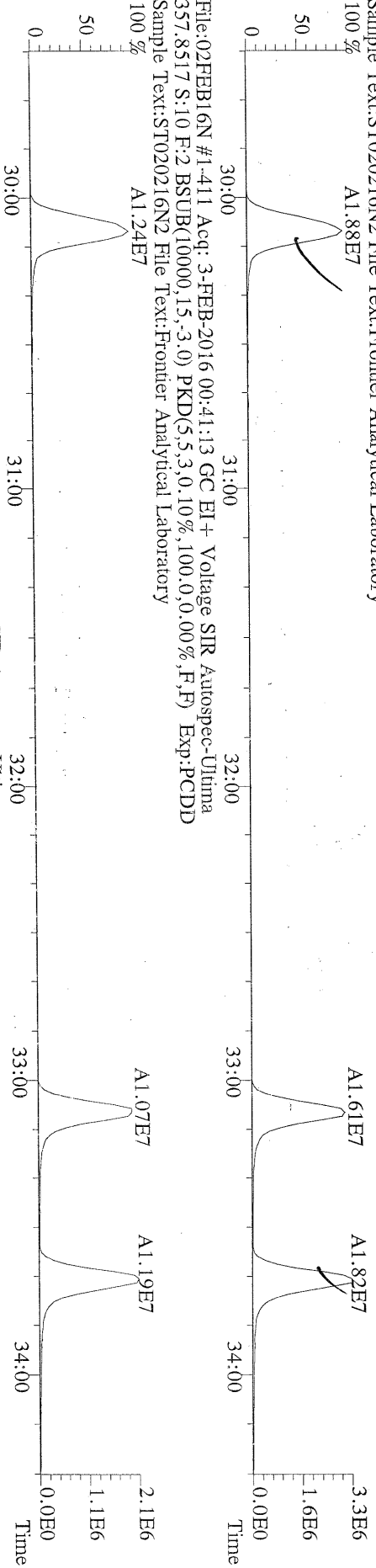
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Sample Text:ST020216N2 File Text:Frontier Analytical Laboratory



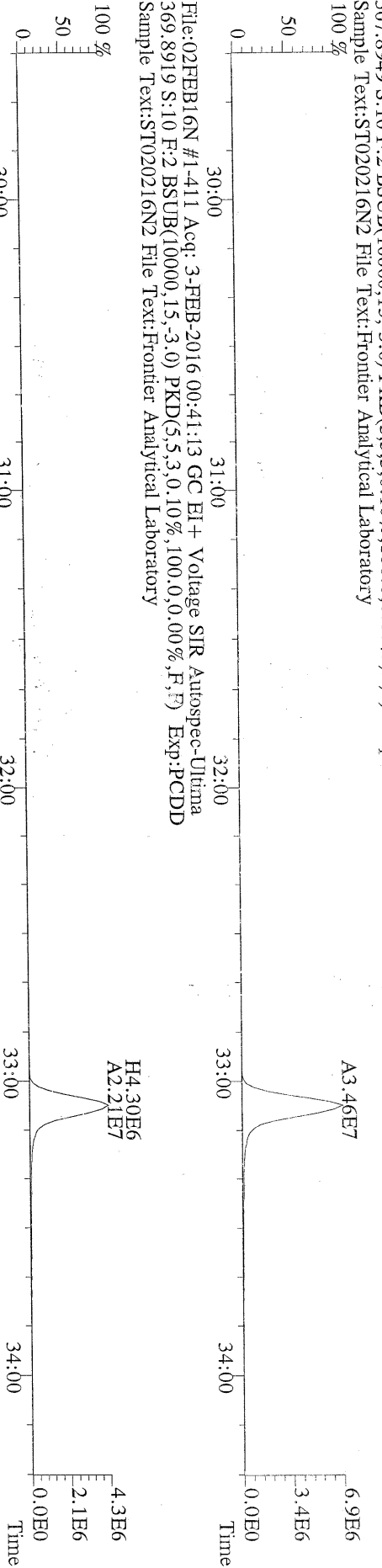
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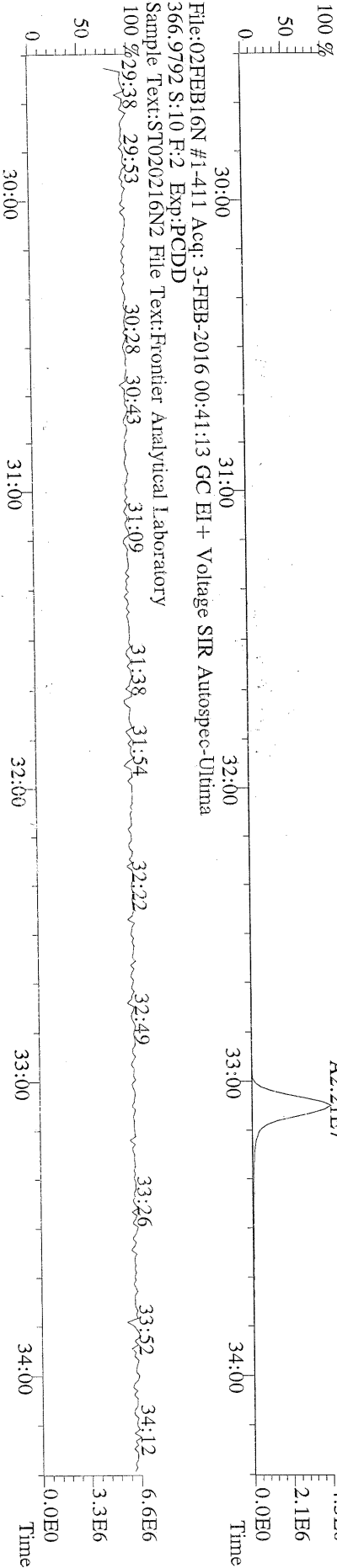
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 Sample Text:ST020216N2 File Text:Frontier Analytical Laboratory
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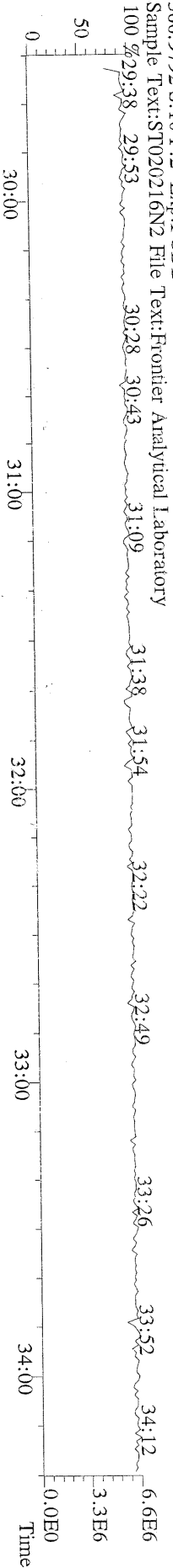
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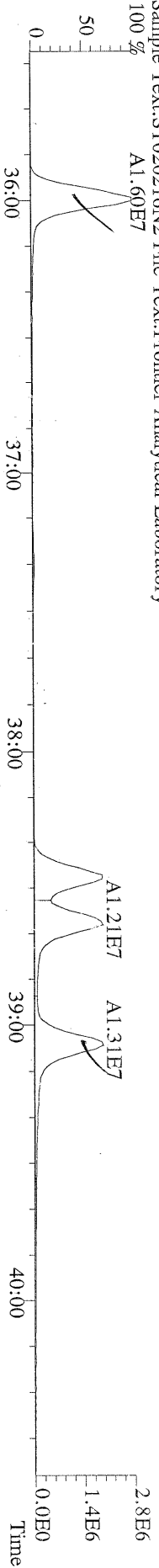
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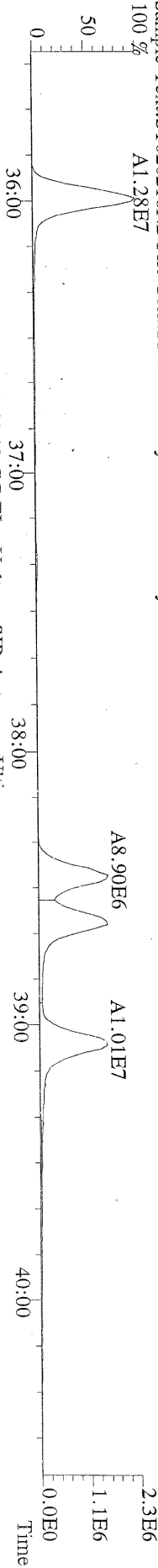
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 100 %



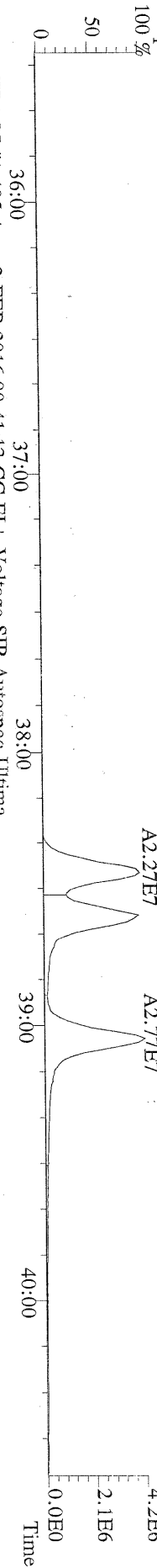
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Sample Text:ST020216N2 File Text:Frontier Analytical Laboratory



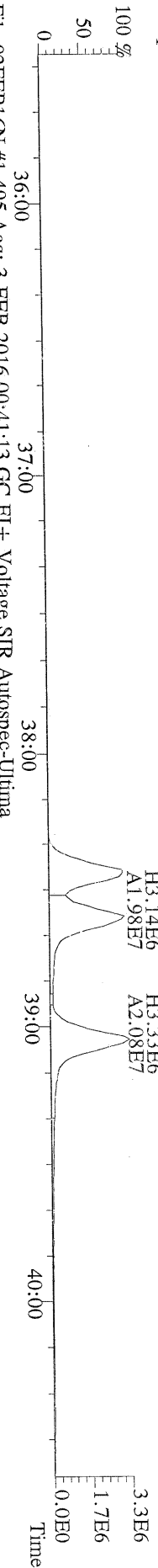
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391.8127 S:10 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
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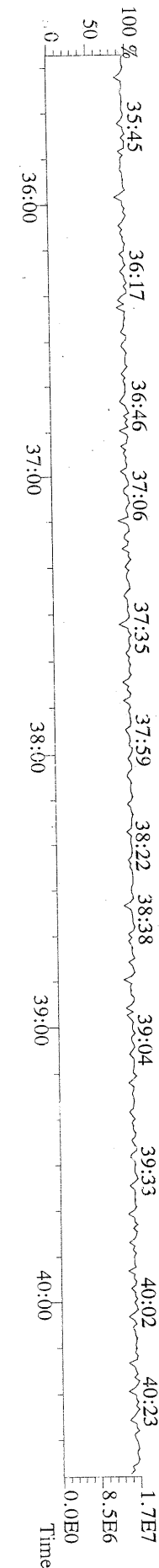
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Sample Text:ST020216N2 File Text:Frontier Analytical Laboratory



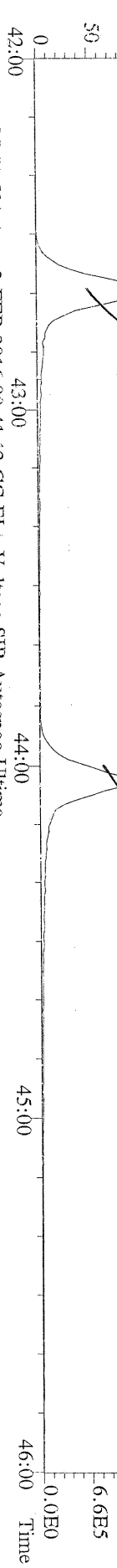
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403.8530 S:10 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST020216N2 File Text:Frontier Analytical Laboratory



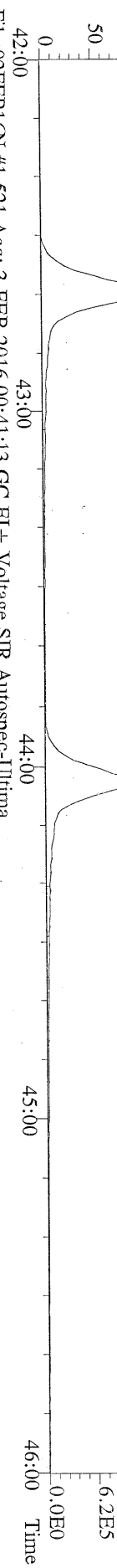
File:02FEB16N #1-495 Acq: 3-FEB-2016 00:41:13 GC EI+ Voltage SIR Autospec-Ultima
LOCK MASS CHECK S:10 F:3 Exp:PCDD
Sample Text:ST020216N2 File Text:Frontier Analytical Laboratory



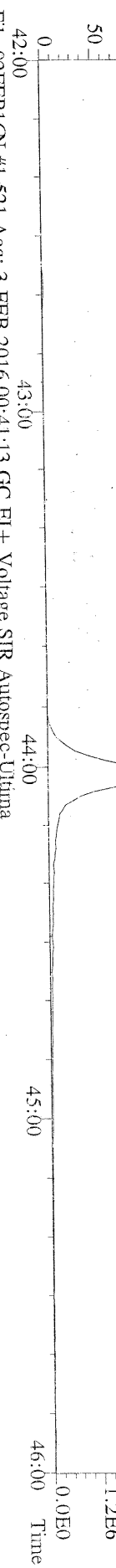
File:02FEB16N #1-521 Acq: 3-FEB-2016 00:41:13 GC EI+ Voltage SIR Autospec-Ultima
423.7767 S:10 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
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100% A9.09E6



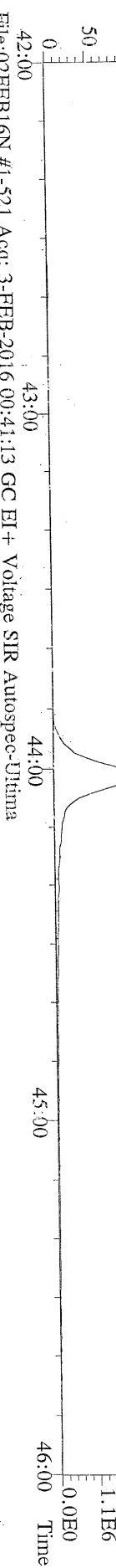
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Sample Text:ST020216N2 File Text:Frontier Analytical Laboratory
100% A8.66E6



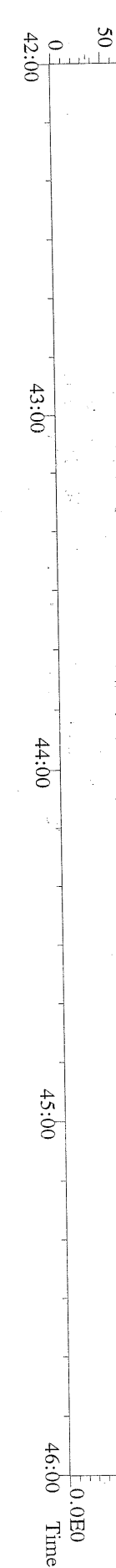
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435.8169 S:10 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD
Sample Text:ST020216N2 File Text:Frontier Analytical Laboratory
100% A1.77E7



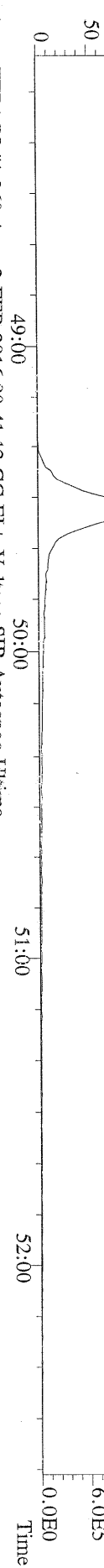
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Sample Text:ST020216N2 File Text:Frontier Analytical Laboratory



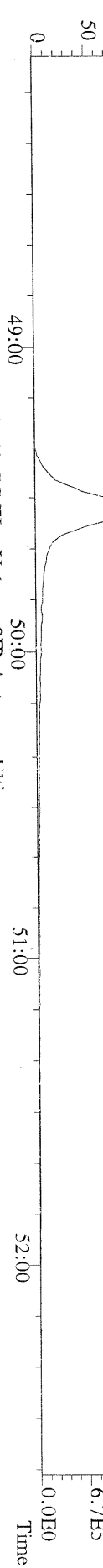
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430.9728 S:10 F:4 Exp:PCDD
Sample Text:ST020216N2 File Text:Frontier Analytical Laboratory
100% 42:10 42:28 43:02 43:19 43:47 44:00 44:16 44:31 44:54 45:10 45:23 45:49



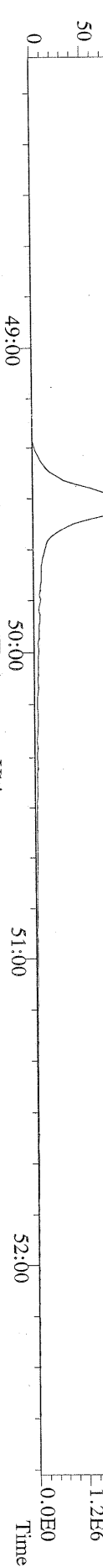
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457.7377 S:10 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST020216N2 File Text:Frontier Analytical Laboratory
100 %



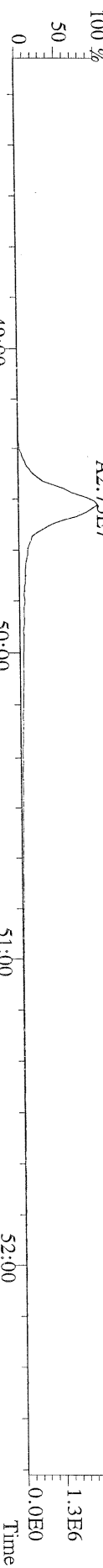
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459.7348 S:10 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST020216N2 File Text:Frontier Analytical Laboratory
100 %



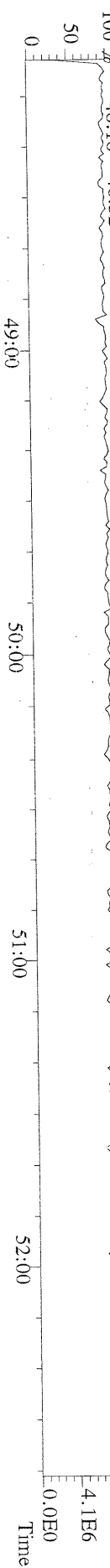
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469.7780 S:10 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST020216N2 File Text:Frontier Analytical Laboratory
100 %



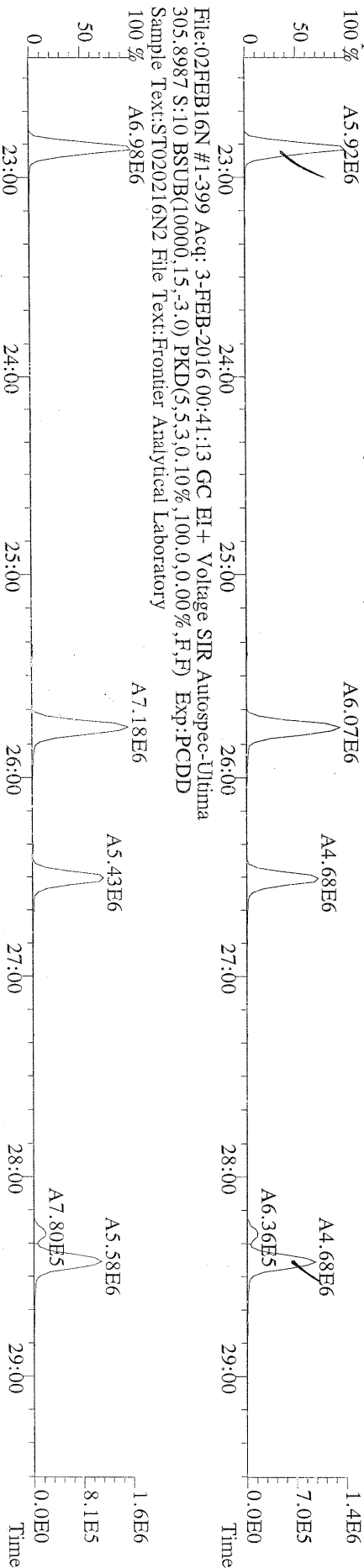
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471.7750 S:10 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST020216N2 File Text:Frontier Analytical Laboratory



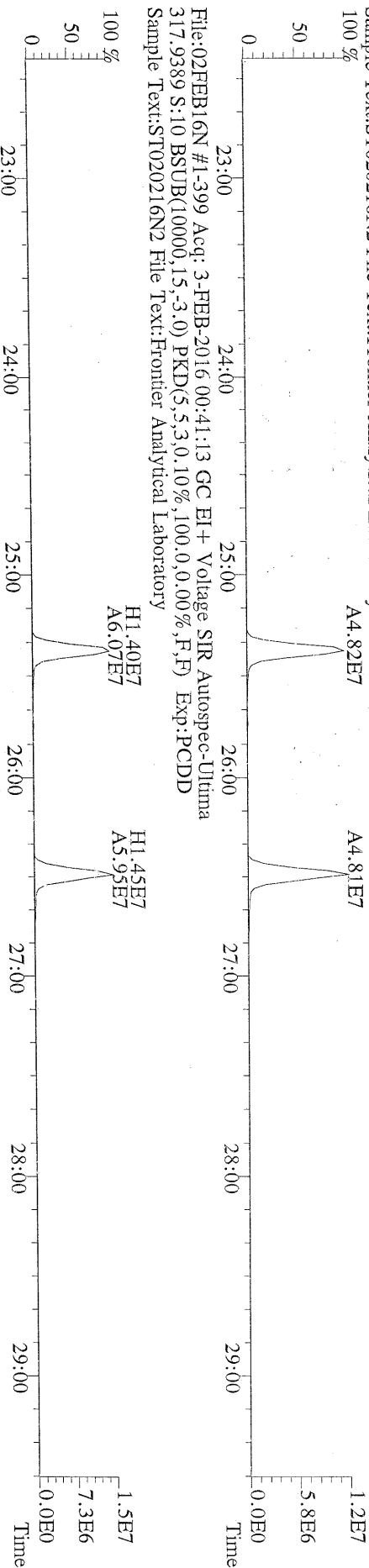
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454.9728 S:10 F:5 Exp:PCDD
Sample Text:ST020216N2 File Text:Frontier Analytical Laboratory



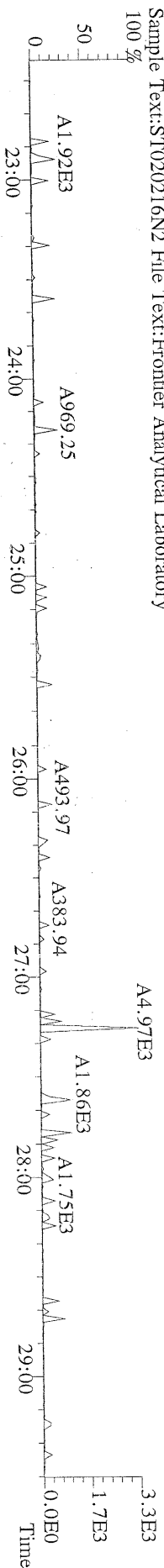
File:02FEB16N #1-399 Acq: 3-FEB-2016 00:41:13 GC EI+ Voltage SIR Autospec-Ultima
303.9016 S:10 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST020216N2 File Text:Frontier Analytical Laboratory
100% A5.92E6



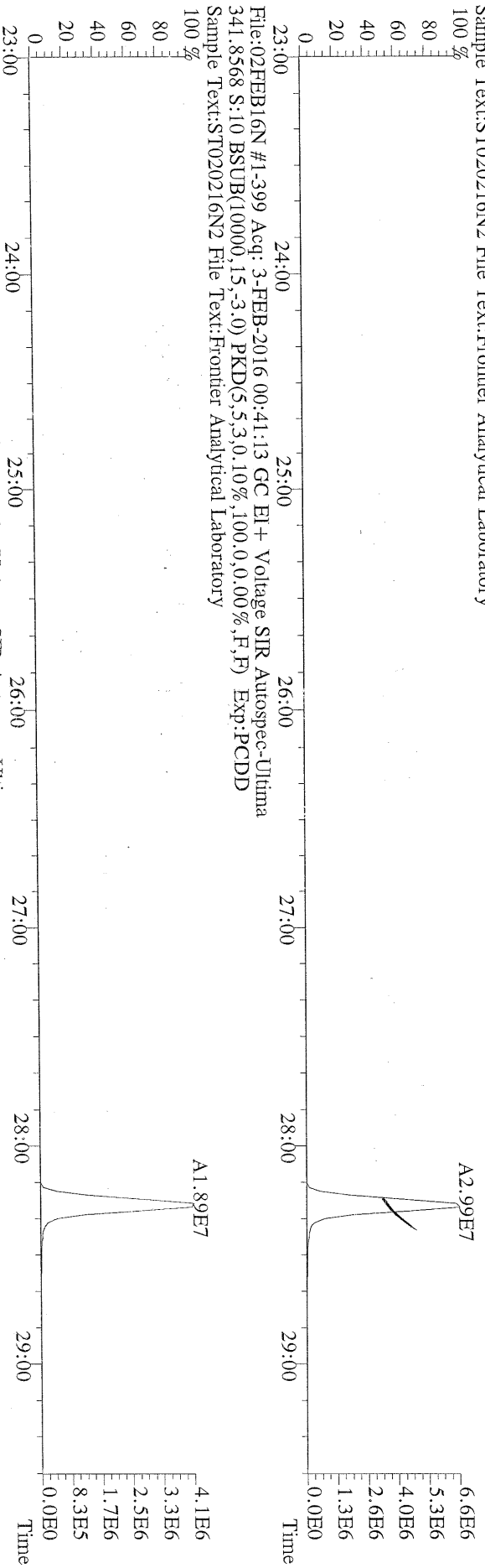
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315.9419 S:10 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST020216N2 File Text:Frontier Analytical Laboratory
100% A4.82E7



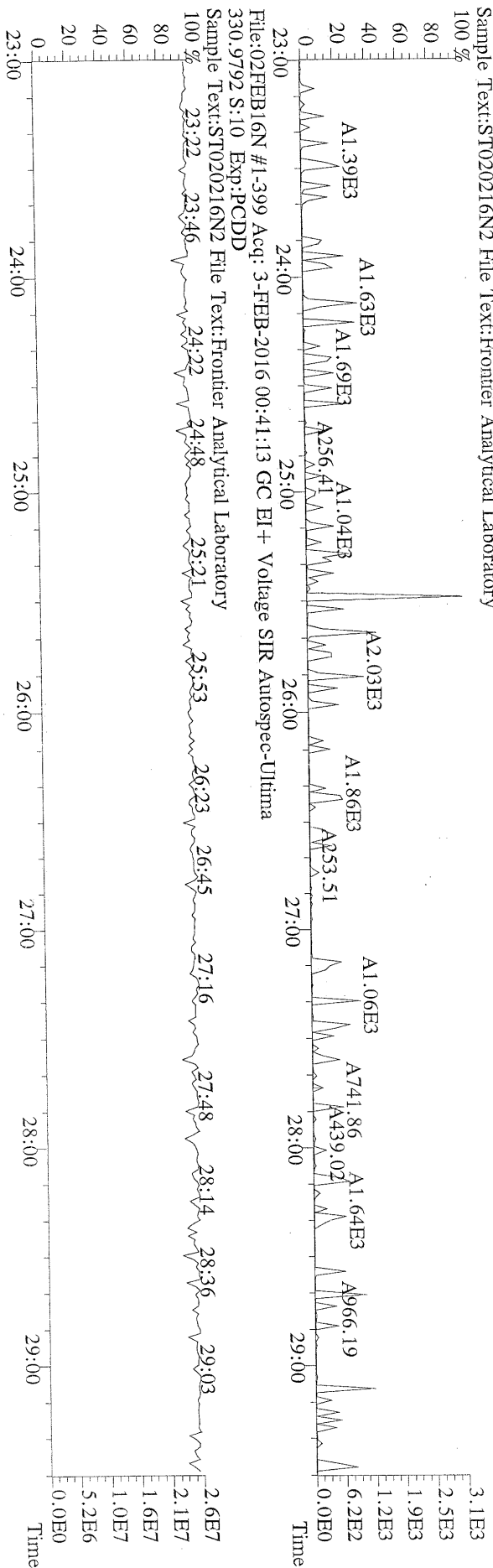
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375.8364 S:10 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD
Sample Text:ST020216N2 File Text:Frontier Analytical Laboratory
100%



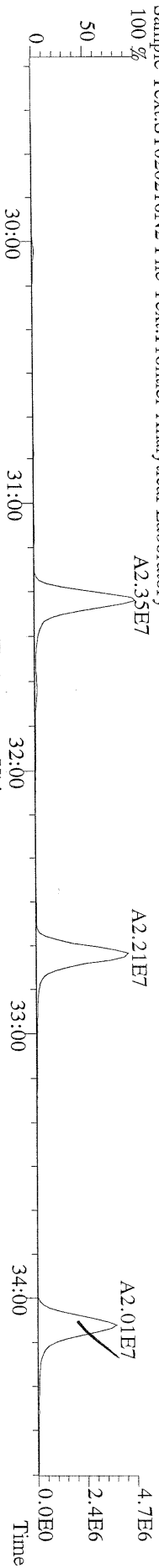
File:02FEB16N #1-399 Acq: 3-FEB-2016 00:41:13 GC EI+ Voltage SIR Autospec-Ultima
 339.8597 S:10 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST020216N2 File Text:Frontier Analytical Laboratory



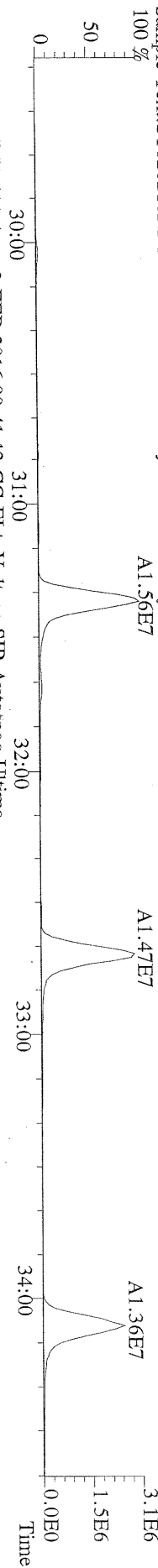
File:02FEB16N #1-399 Acq: 3-FEB-2016 00:41:13 GC EI+ Voltage SIR Autospec-Ultima
 409.7974 S:10 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
 Sample Text:ST020216N2 File Text:Frontier Analytical Laboratory



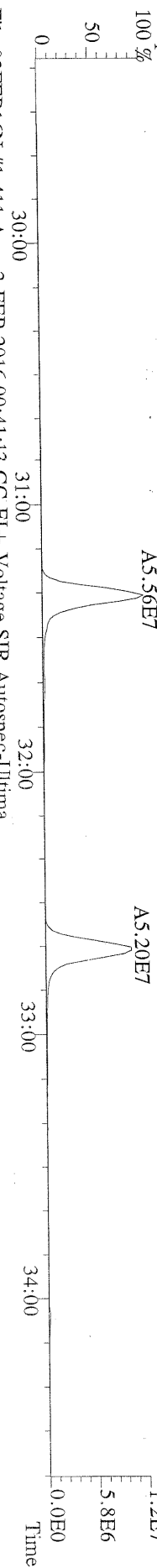
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339.8597 S:10 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST020216N2 File Text:Frontier Analytical Laboratory



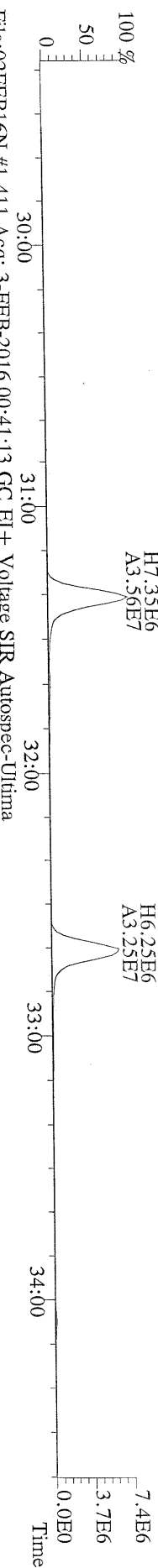
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341.8568 S:10 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST020216N2 File Text:Frontier Analytical Laboratory



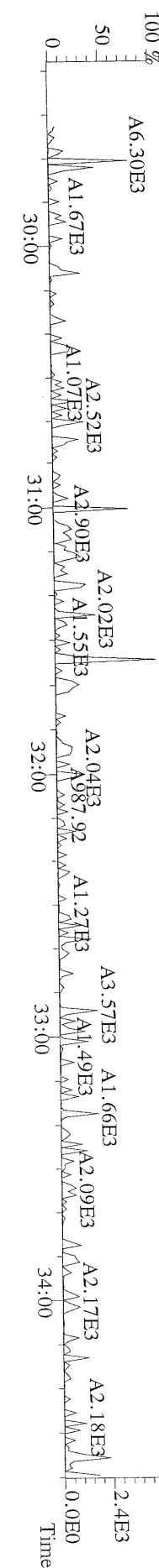
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351.9000 S:10 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST020216N2 File Text:Frontier Analytical Laboratory



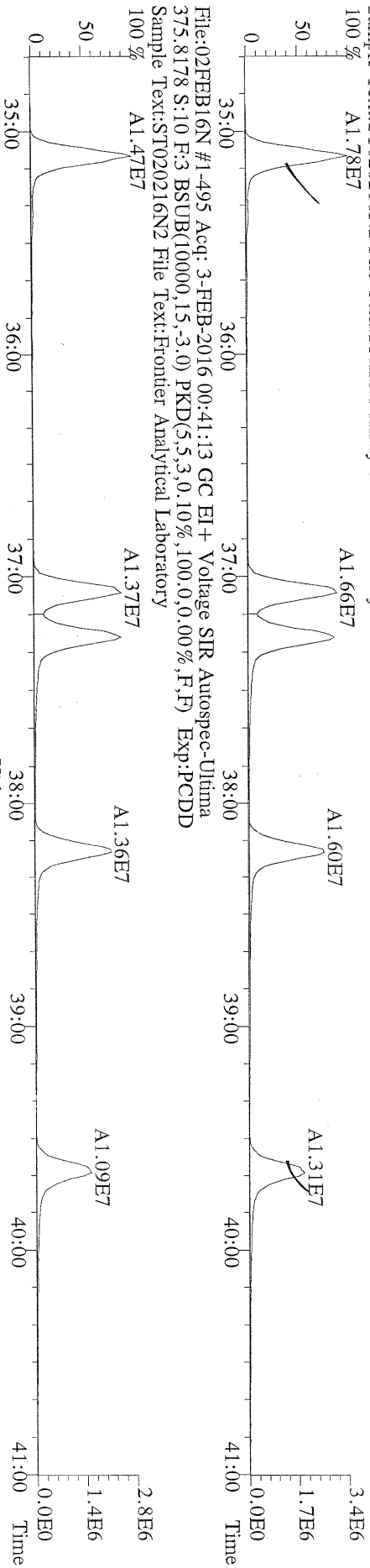
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353.8970 S:10 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST020216N2 File Text:Frontier Analytical Laboratory



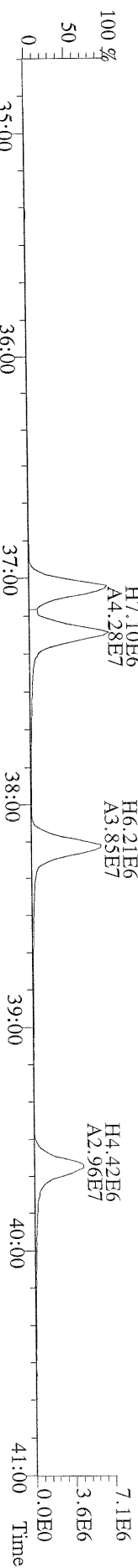
File:02FEB16N #1-411 Acq: 3-FEB-2016 00:41:13 GC EI+ Voltage SIR Autospec-Ultima
409.7974 S:10 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST020216N2 File Text:Frontier Analytical Laboratory



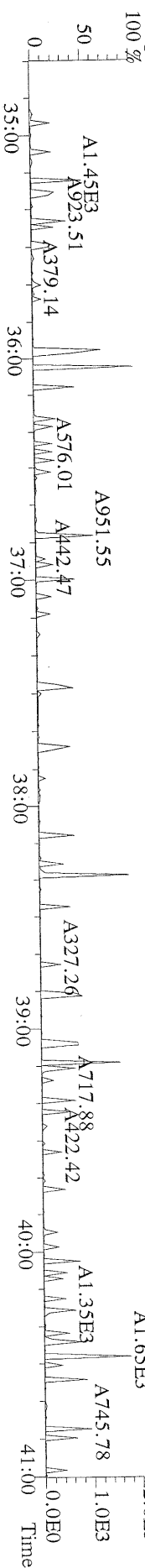
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373.8207 S:10 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST020216N2 File Text:Frontier Analytical Laboratory



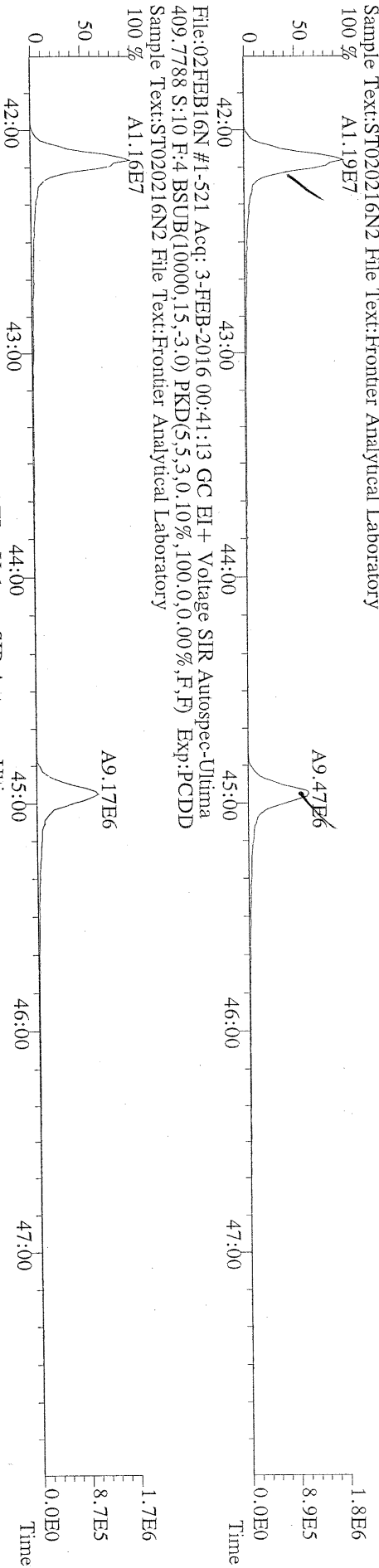
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383.8639 S:10 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST020216N2 File Text:Frontier Analytical Laboratory



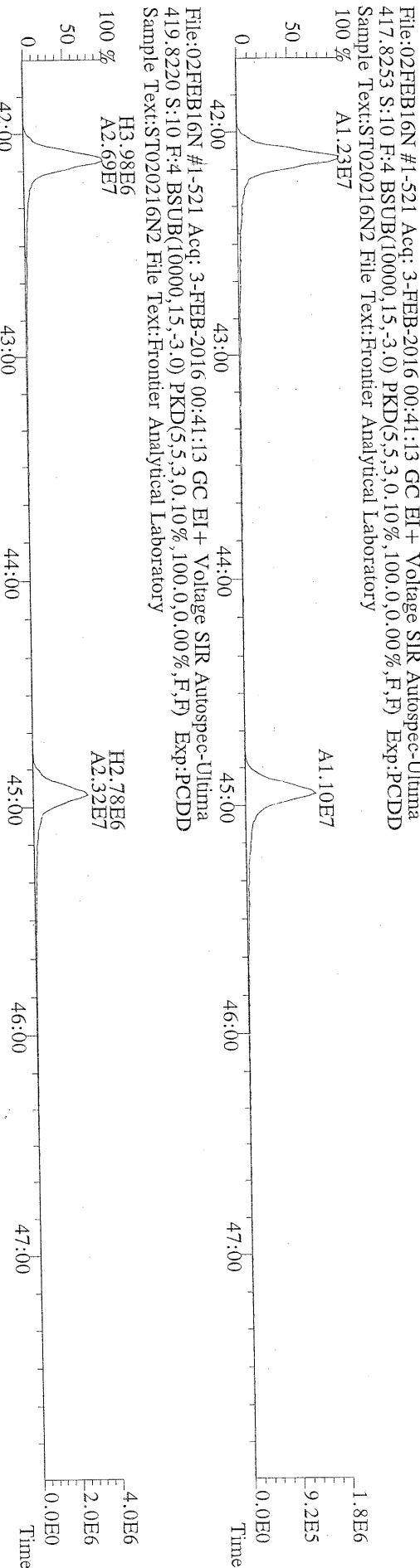
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445.7555 S:10 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST020216N2 File Text:Frontier Analytical Laboratory



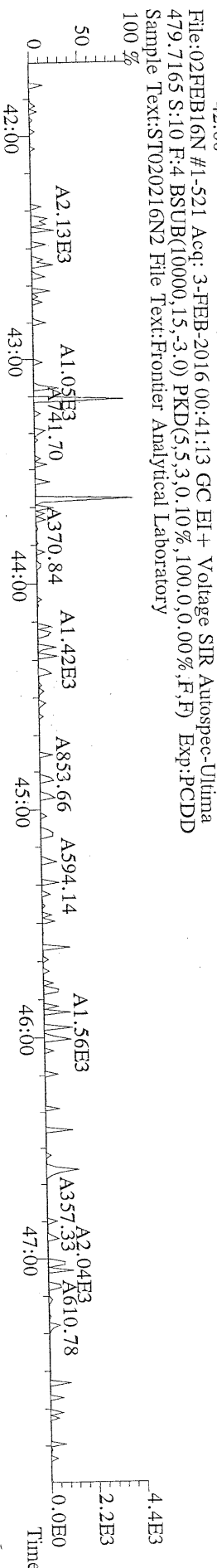
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407.7818 S:10 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST020216N2 File Text:Frontier Analytical Laboratory

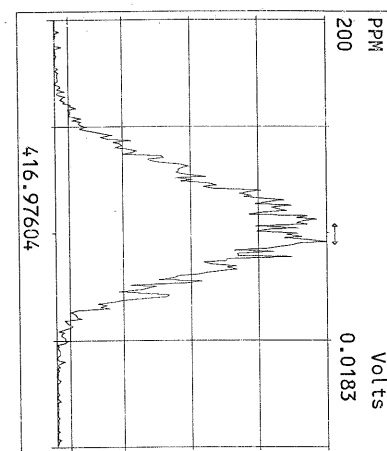
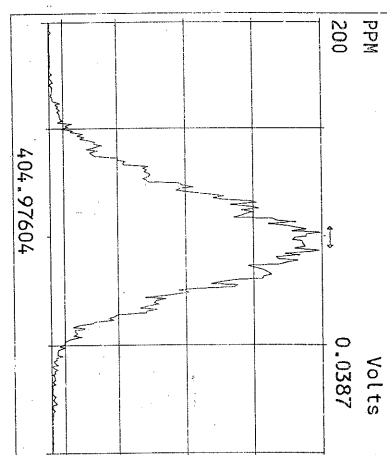
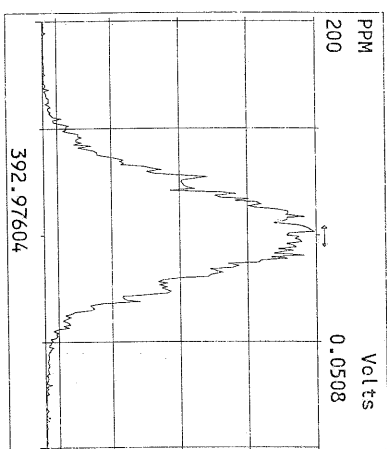
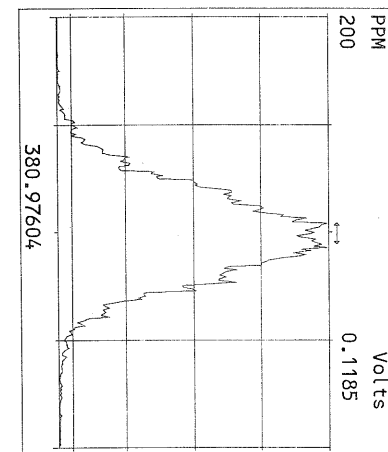
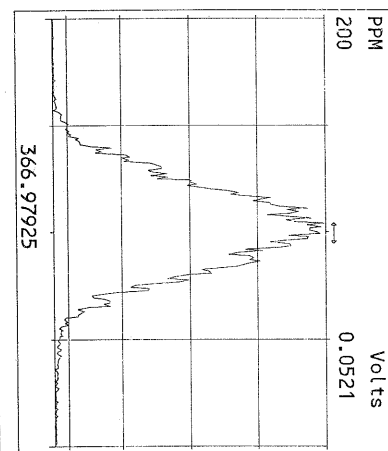
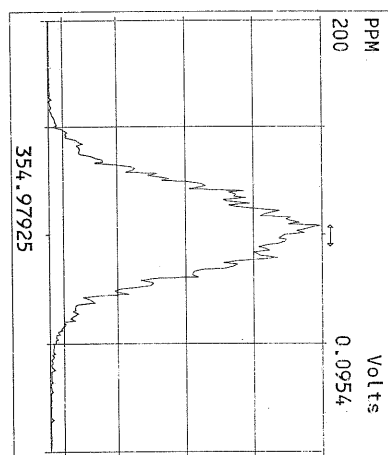
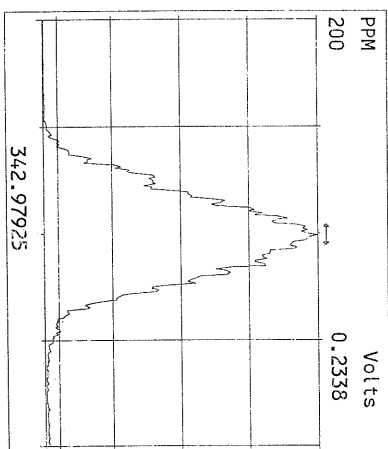
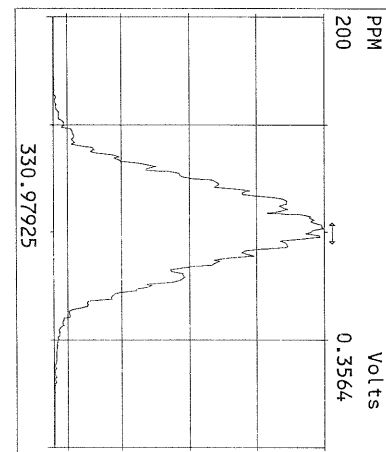
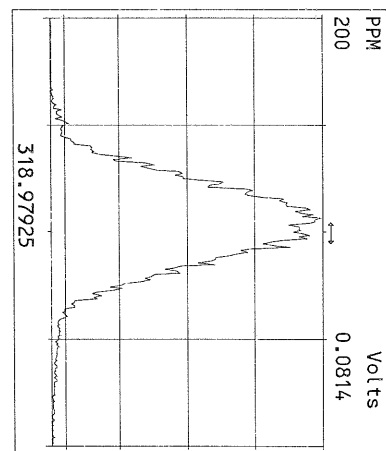
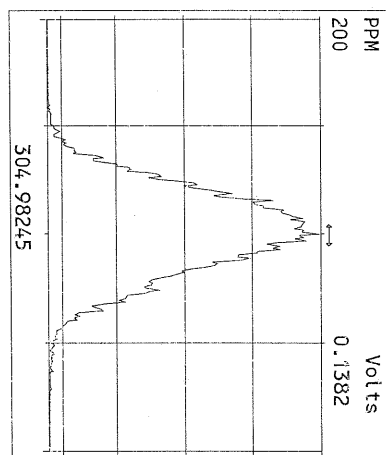
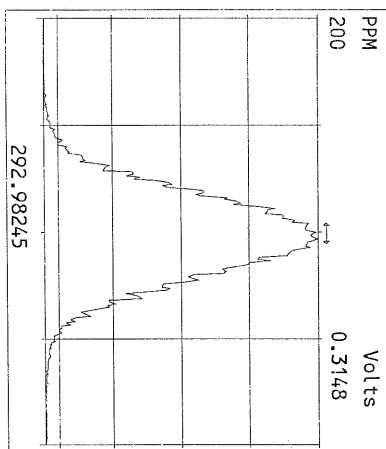


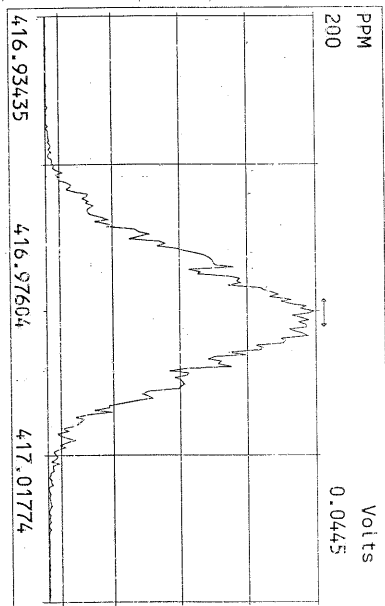
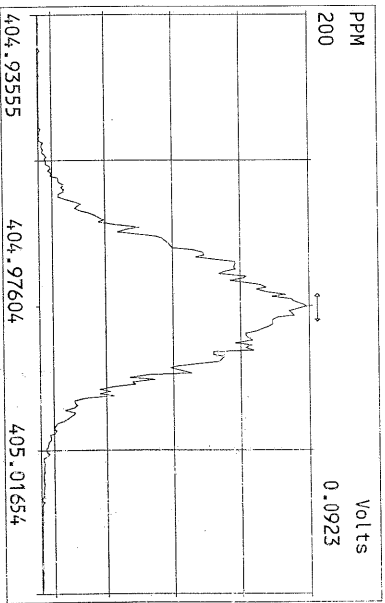
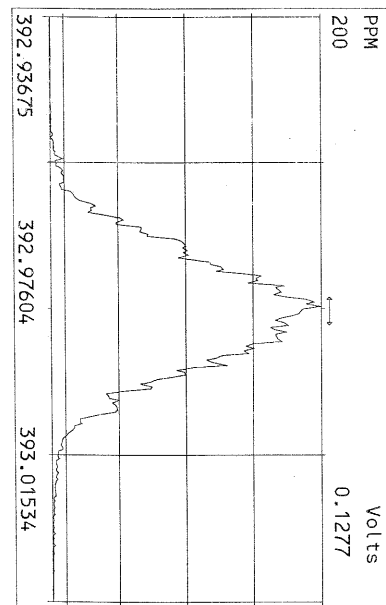
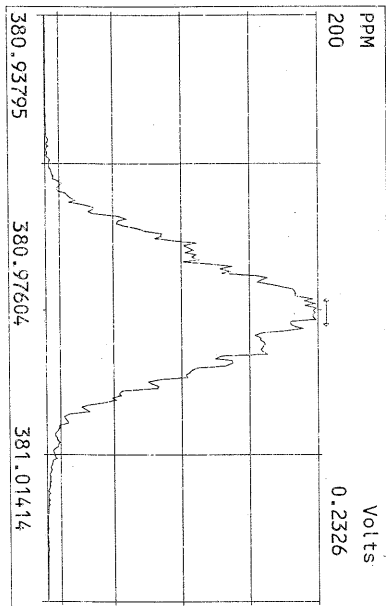
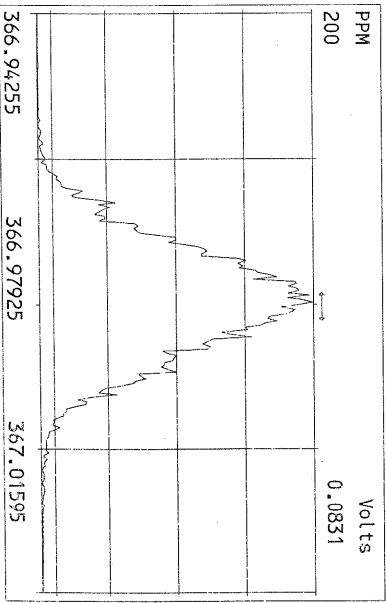
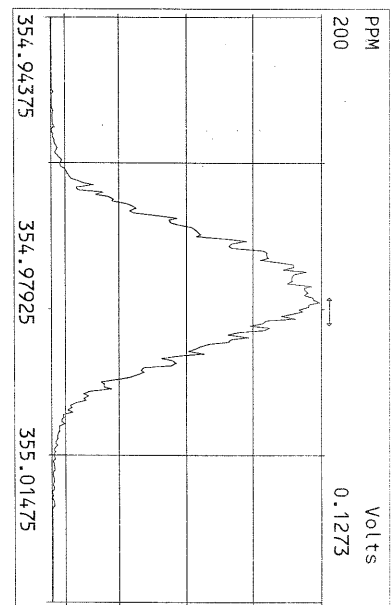
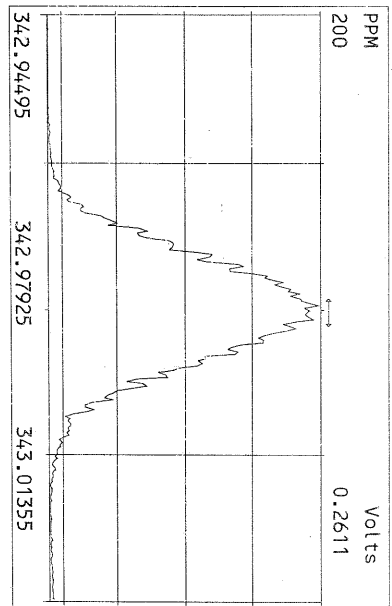
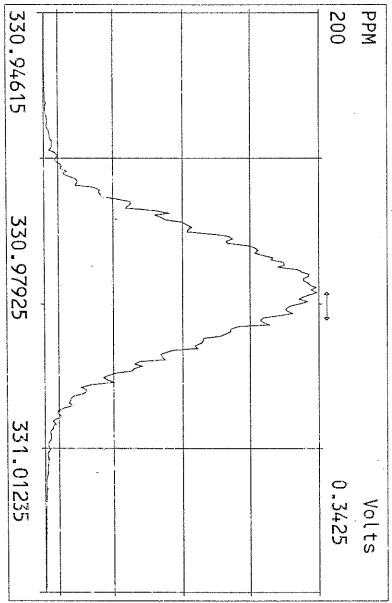
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417.8253 S:10 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST020216N2 File Text:Frontier Analytical Laboratory

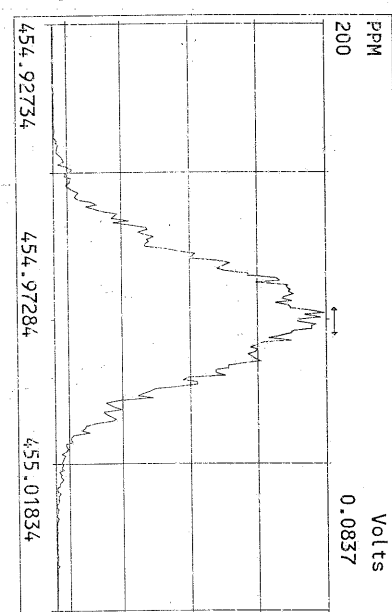
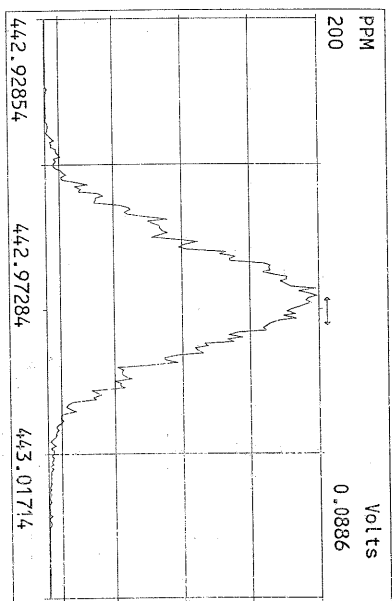
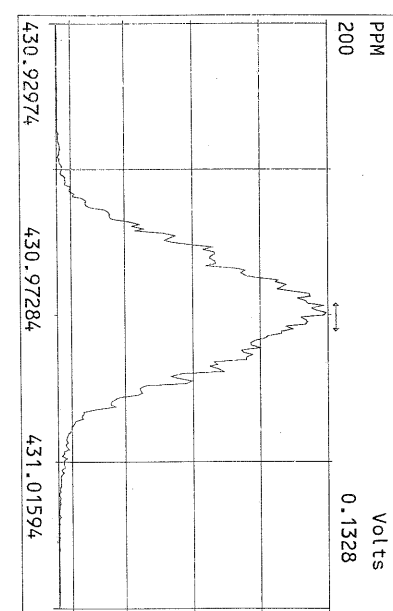
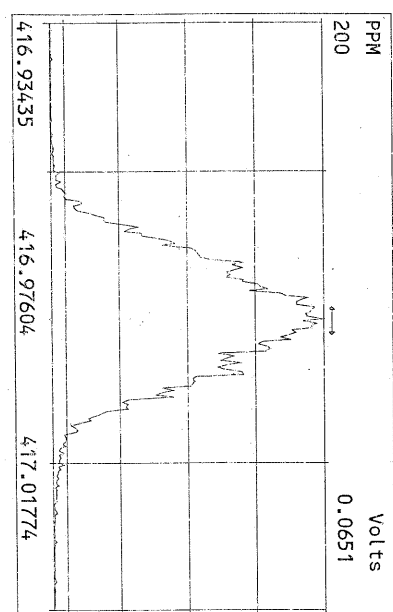
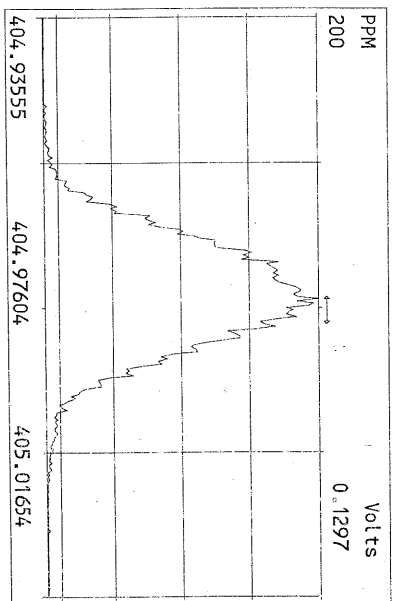
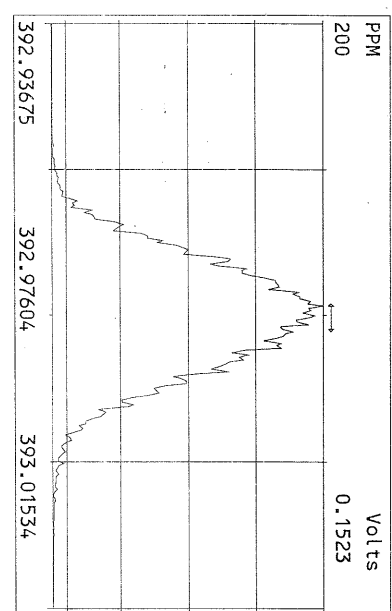
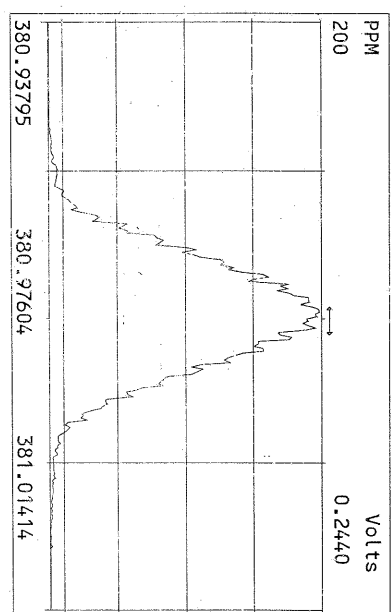
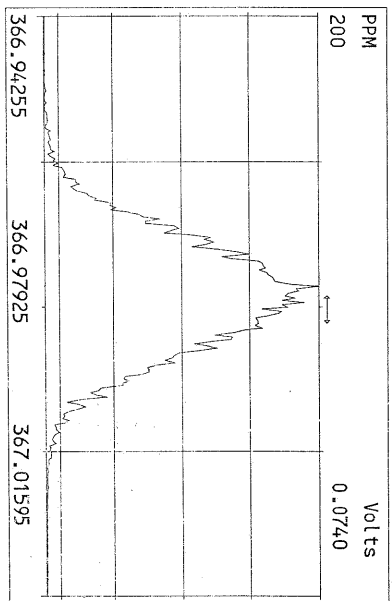


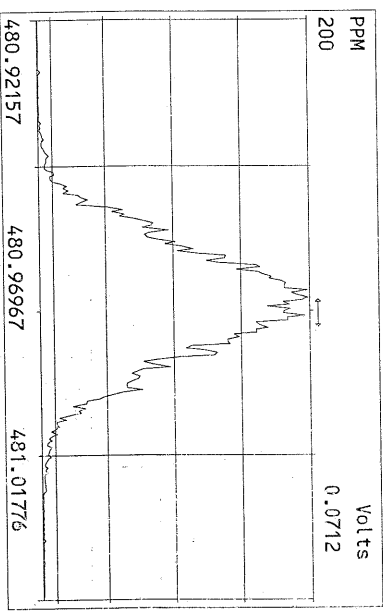
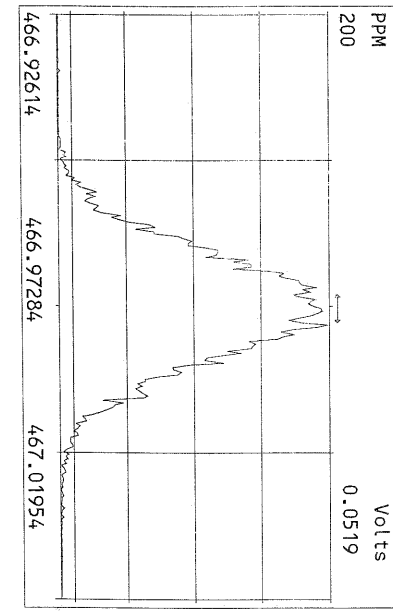
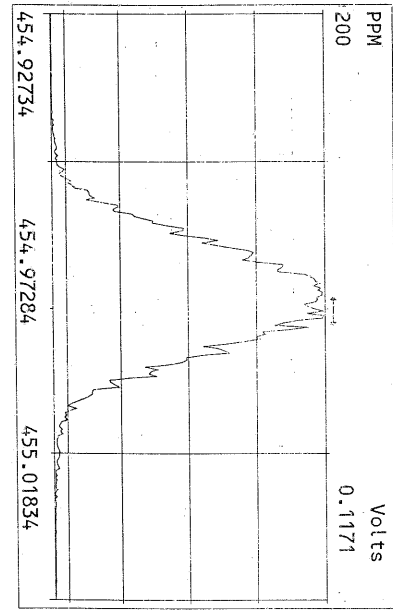
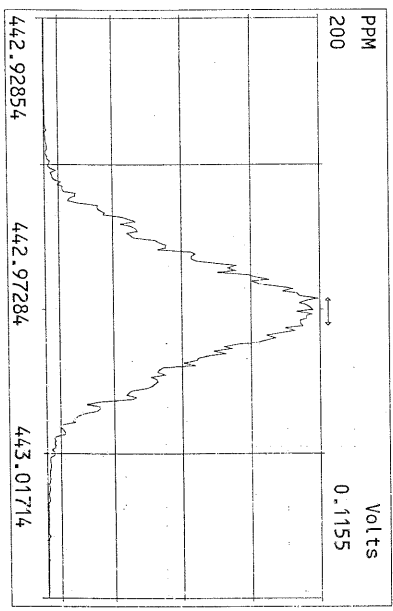
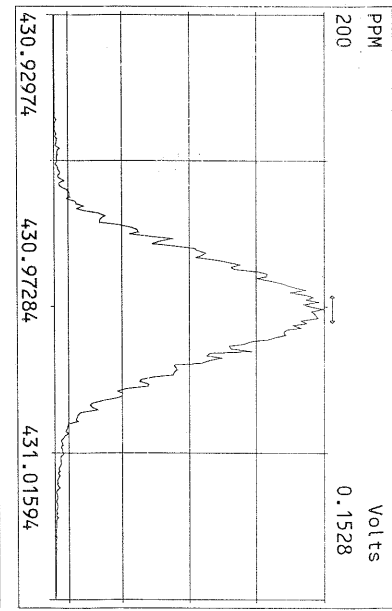
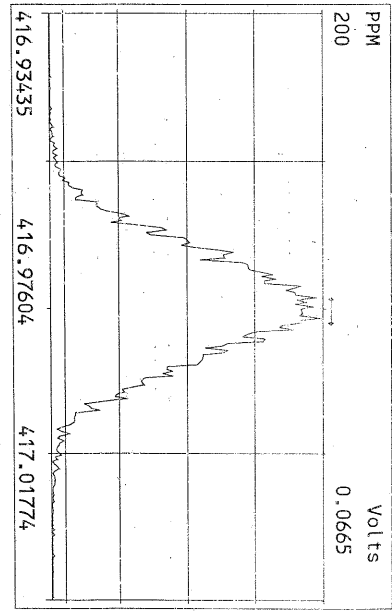
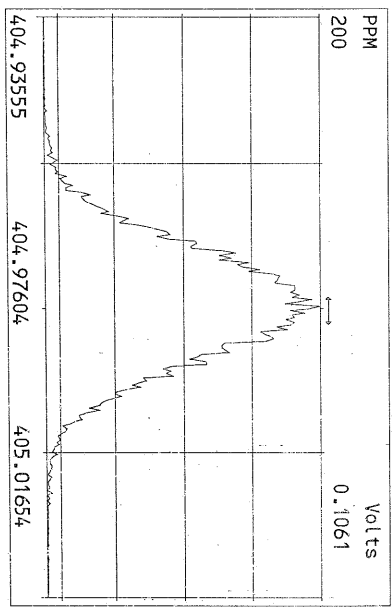
File:02FEB16N #1-521 Acq: 3-FEB-2016 00:41:13 GC EI+ Voltage SIR Autospec-Ultima
419.8220 S:10 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD
Sample Text:ST020216N2 File Text:Frontier Analytical Laboratory

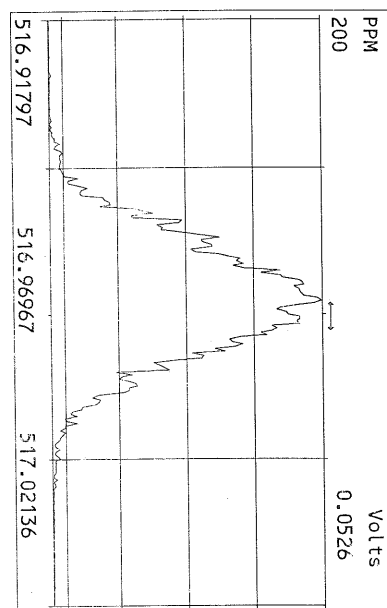
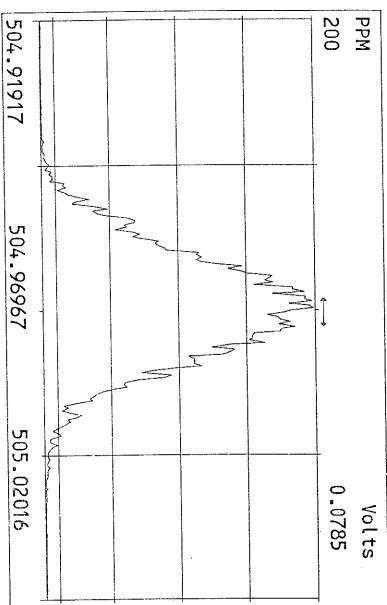
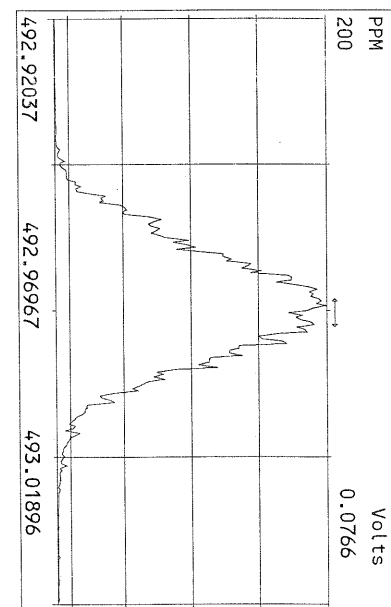
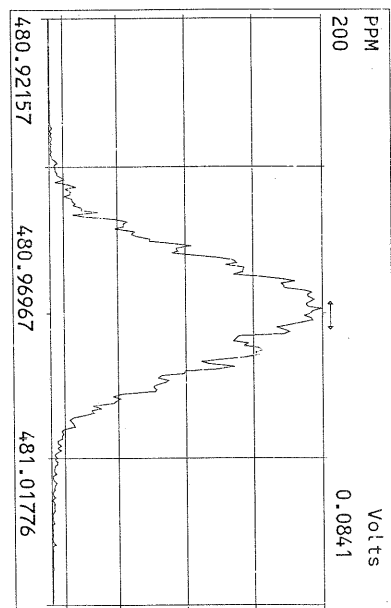
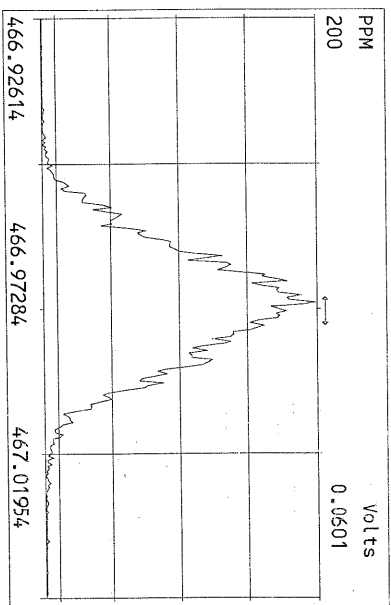
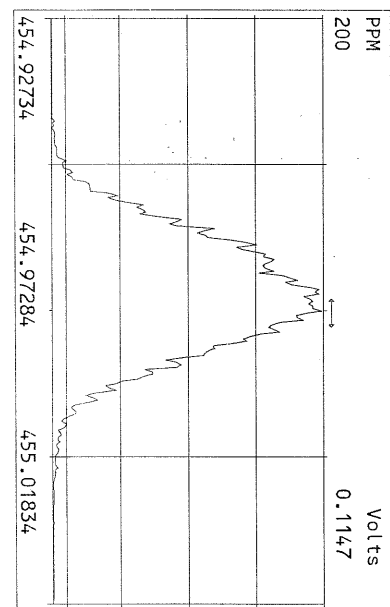
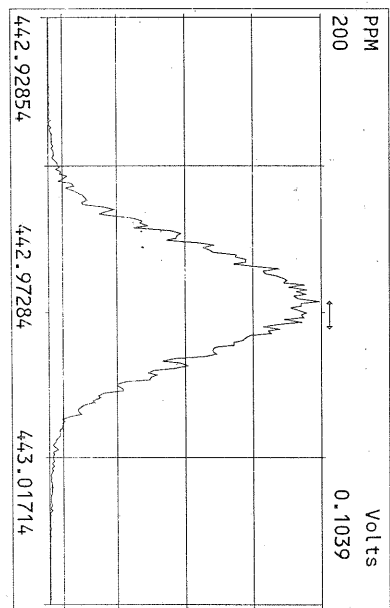
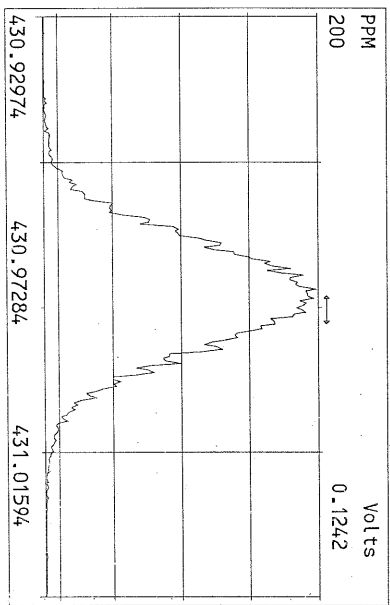














3600 Fremont Ave. N.

Seattle, WA 98103

T: (206) 352-3790

F: (206) 352-7178

info@fremontanalytical.com

Floyd | Snider

Lynn Grochala
601 Union St., Suite 600
Seattle, WA 98101

RE: SIM - 730 EDR

Lab ID: 1601048

Attention Lynn Grochala:

Fremont Analytical, Inc. received 3 sample(s) on 1/7/2015 for the analyses presented in the following report.

Dioxins by EPA Method 1613

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

A handwritten signature in black ink, appearing to read "Mike Ridgeway", written in a cursive style.

Mike Ridgeway
President



Date: 02/04/2016

CLIENT: Floyd | Snider
Project: SIM - 730 EDR
Lab Order: 1601048

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1601048-001	MW-01-010716	01/07/2015 12:10 PM	01/07/2015 3:59 PM
1601048-002	MW-108-010716	01/07/2015 1:20 PM	01/07/2015 3:59 PM
1601048-003	MW-05-010716	01/07/2015 2:55 PM	01/07/2015 3:59 PM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

CLIENT: Floyd | Snider
Project: SIM - 730 EDR

WorkOrder Narrative:

I. SAMPLE RECEIPT:

Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:

Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.



February 3, 2016

FAL Project: 9548

Mr. Michael Ridgeway
Fremont Analytical, Inc.
3600 Fremont Ave., N.
Seattle, WA 98103

Dear Mr. Ridgeway,

The following results are for Frontier Analytical Laboratory project **9548**. This corresponds to your project number **1601048**. Three aqueous samples were received on 1/13/2016 in good condition. All three samples were extracted and analyzed by EPA Method 1613 for tetra through octa chlorinated dibenzo dioxins and furans. The Toxic Equivalency (TEQ) for your samples has been calculated using the 2005 World Health Organization's (WHO's) toxic equivalency factors (TEFs). Fremont Analytical, Inc. requested a turnaround time of fifteen business days for project **9548**.

The following Level IV report consists of an Analytical Data section, a Sample Receipt section, a Laboratory Raw Data section, and an Instrument Raw Data section. The Analytical Data section contains our project-sample tracking log and the analytical results. The Sample Receipt section contains your original chain of custody, our sample login form and a sample photo. The Laboratory Raw Data section contains our project request sheet, a percent solids sheet, an extraction bench sheet and the cleanup bench sheet. The instrument raw data section contains three sub-sections; the sample results section, the initial calibration section and the continuing/ending calibration section. The sample results sub-section consists of the quantitation summary forms and chromatograms for all samples and QC. The initial calibration sub-section consists of the individual quantitation summary forms and chromatograms for each point of the initial calibration curve as well as an overall quantitation summary form of the initial calibration curve. The continuing/ending calibration sub-section consists of the quantitation summary forms and chromatograms for all beginning and ending calibration injections associated with the samples and QC. A portable document format (PDF) file of the Level I data package and EDD have been emailed to you. A compact disk of the Level IV data package along with the Electronic Data Deliverable (EDD) has been sent to you via overnight courier. The enclosed results are specifically for the samples referenced in this report only. These results meet all National Environmental Laboratory Accreditation Program (NELAP) requirements and shall not be reproduced except in full. Frontier Analytical Laboratory's State of Oregon NELAP certificate number is **4041** and our State of Washington certificate number is **C844**.

If you have any questions regarding project **9548**, please feel free to contact me at (916) 934-0900. Thank you for choosing Frontier Analytical Laboratory for your analytical testing needs.

Sincerely,

A handwritten signature in black ink, appearing to read "Bradley B. Silverbush".

Bradley B. Silverbush
Director of Operations

FRONTIER ANALYTICAL LABORATORY
5172 Hillside Circle * El Dorado Hills, CA 95762
Tel (916) 934-0900 * Fax (916) 934-0999
www.frontieranalytical.com

000001 of 000311

Frontier Analytical Laboratory

Sample Tracking Log

FAL Project ID: 9548

Received on: 01/13/2016

Project Due: 02/04/2016

Storage: R3

FAL Sample ID	Dup	Client Project ID	Client Sample ID	Requested Method	Matrix	Sampling Date	Sampling Time	Hold Time Due Date
9548-001-SA	0	1601048	MW-01-010716	EPA 1613 D/F	Aqueous	01/07/2016	12:10 pm	01/06/2017
9548-002-SA	0	1601048	MW-108-010716	EPA 1613 D/F	Aqueous	01/07/2016	01:20 pm	01/06/2017
9548-003-SA	0	1601048	MW-05-010716	EPA 1613 D/F	Aqueous	01/07/2016	02:55 pm	01/06/2017

EPA Method 1613
PCDD/F



FAL ID: 9548-001-MB
Client ID: Method Blank
Matrix: Aqueous
Batch No: X3570

Date Extracted: 01-29-2016
Date Received: NA
Amount: 1.000 L

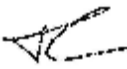
ICal: PCDDFAL3-1-8-16
GC Column: DB5
Units: pg/L


Acquired: 01-31-2016
2005 WHO TEQ: 0.00

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.447		-	0.177				
1,2,3,7,8-PeCDD	ND	0.654		-	0.270				
1,2,3,4,7,8-HxCDD	ND	1.24		-	0.350				
1,2,3,6,7,8-HxCDD	ND	1.25		-	0.380	Total TCDD	ND	0.447	
1,2,3,7,8,9-HxCDD	ND	1.14		-	0.332	Total PeCDD	ND	0.654	
1,2,3,4,6,7,8-HpCDD	ND	1.54		-	0.407	Total HxCDD	ND	1.25	
OCDD	ND	3.62		-	0.712	Total HpCDD	ND	1.54	
2,3,7,8-TCDF	ND	0.261		-	0.122				
1,2,3,7,8-PeCDF	ND	0.863		-	0.186				
2,3,4,7,8-PeCDF	ND	0.864		-	0.190				
1,2,3,4,7,8-HxCDF	ND	0.859		-	0.205				
1,2,3,6,7,8-HxCDF	ND	0.919		-	0.193				
2,3,4,6,7,8-HxCDF	ND	0.937		-	0.207				
1,2,3,7,8,9-HxCDF	ND	1.17		-	0.278	Total TCDF	ND	0.261	
1,2,3,4,6,7,8-HpCDF	ND	1.14		-	0.256	Total PeCDF	ND	0.864	
1,2,3,4,7,8,9-HpCDF	ND	1.66		-	0.336	Total HxCDF	ND	1.17	
OCDF	ND	2.04		-	0.531	Total HpCDF	ND	1.66	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	80.9	25.0 - 164	
13C-1,2,3,7,8-PeCDD	83.0	25.0 - 181	
13C-1,2,3,4,7,8-HxCDD	79.4	32.0 - 141	
13C-1,2,3,6,7,8-HxCDD	79.6	28.0 - 130	
13C-1,2,3,4,6,7,8-HpCDD	75.8	23.0 - 140	
13C-OCDD	74.5	17.0 - 157	
13C-2,3,7,8-TCDF	87.6	24.0 - 169	
13C-1,2,3,7,8-PeCDF	74.9	24.0 - 185	
13C-2,3,4,7,8-PeCDF	81.7	21.0 - 178	
13C-1,2,3,4,7,8-HxCDF	66.2	26.0 - 152	
13C-1,2,3,6,7,8-HxCDF	69.3	26.0 - 123	
13C-2,3,4,6,7,8-HxCDF	71.3	28.0 - 136	
13C-1,2,3,7,8,9-HxCDF	65.9	29.0 - 147	
13C-1,2,3,4,6,7,8-HpCDF	70.6	28.0 - 143	
13C-1,2,3,4,7,8,9-HpCDF	67.7	26.0 - 138	
13C-OCDF	64.3	17.0 - 157	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	82.8	35.0 - 197	

- A Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
- B Analyte is present in Method Blank
- C Chemical Interference
- D Presence of Diphenyl Ethers
- DNQ Analyte concentration is below calibration range
- E Analyte concentration is above calibration range
- F Analyte confirmation on secondary column
- J Analyte concentration is below calibration range
- M Maximum possible concentration
- ND Analyte Not Detected at Detection Limit Level
- NP Not Provided
- P Pre-filtered through a Whatman 0.7um GF/F filter
- S Sample acceptance criteria not met
- X Matrix interferences
- * Result taken from dilution or reinjection

Analyst: 
Date: 2/3/2016

Reviewed By: 
Date: 2/3/2016

EPA Method 1613
PCDD/F



FAL ID: 9548-001-OPR
Client ID: OPR
Matrix: Aqueous
Batch No: X3570

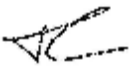
Date Extracted: 01-29-2016
Date Received: NA
Amount: 1.000 L


ICal: PCDDFAL3-1-8-16
GC Column: DB5
Units: ng/ml

Acquired: 01-31-2016
2005 WHO TEQ: NA

Compound	Conc	QC Limits	Qual
2,3,7,8-TCDD	9.79	6.70 - 15.8	
1,2,3,7,8-PeCDD	44.5	35.0 - 71.0	
1,2,3,4,7,8-HxCDD	44.3	35.0 - 82.0	
1,2,3,6,7,8-HxCDD	44.7	38.0 - 67.0	
1,2,3,7,8,9-HxCDD	44.6	32.0 - 81.0	
1,2,3,4,6,7,8-HpCDD	44.1	35.0 - 70.0	
OCDD	94.7	78.0 - 144	
2,3,7,8-TCDF	8.98	7.50 - 15.8	
1,2,3,7,8-PeCDF	46.9	40.0 - 67.0	
2,3,4,7,8-PeCDF	48.1	34.0 - 80.0	
1,2,3,4,7,8-HxCDF	47.7	36.0 - 67.0	
1,2,3,6,7,8-HxCDF	48.3	42.0 - 65.0	
2,3,4,6,7,8-HxCDF	48.5	35.0 - 78.0	
1,2,3,7,8,9-HxCDF	48.1	39.0 - 65.0	
1,2,3,4,6,7,8-HpCDF	47.5	41.0 - 61.0	
1,2,3,4,7,8,9-HpCDF	47.5	39.0 - 69.0	
OCDF	92.8	63.0 - 170	
Internal Standards			
	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	74.3	20.0 - 175	
13C-1,2,3,7,8-PeCDD	72.0	21.0 - 227	
13C-1,2,3,4,7,8-HxCDD	69.1	21.0 - 193	
13C-1,2,3,6,7,8-HxCDD	68.4	25.0 - 163	
13C-1,2,3,4,6,7,8-HpCDD	64.5	26.0 - 166	
13C-OCDD	60.3	13.0 - 198	
13C-2,3,7,8-TCDF	77.4	22.0 - 152	
13C-1,2,3,7,8-PeCDF	65.4	21.0 - 192	
13C-2,3,4,7,8-PeCDF	70.2	13.0 - 328	
13C-1,2,3,4,7,8-HxCDF	57.6	19.0 - 202	
13C-1,2,3,6,7,8-HxCDF	58.1	21.0 - 159	
13C-2,3,4,6,7,8-HxCDF	61.9	22.0 - 176	
13C-1,2,3,7,8,9-HxCDF	54.8	17.0 - 205	
13C-1,2,3,4,6,7,8-HpCDF	58.5	21.0 - 158	
13C-1,2,3,4,7,8,9-HpCDF	55.0	20.0 - 186	
13C-OCDF	51.2	13.0 - 198	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	83.5	31.0 - 191	

- A Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
- B Analyte is present in Method Blank
- C Chemical Interference
- D Presence of Diphenyl Ethers
- DNQ Analyte concentration is below calibration range
- E Analyte concentration is above calibration range
- F Analyte confirmation on secondary column
- J Analyte concentration is below calibration range
- M Maximum possible concentration
- ND Analyte Not Detected at Detection Limit Level
- NP Not Provided
- P Pre-filtered through a Whatman 0.7um GF/F filter
- S Sample acceptance criteria not met
- X Matrix interferences
- * Result taken from dilution or reinjection

Analyst: 
Date: 2/3/2016

Reviewed By: 
Date: 2/3/2016

EPA Method 1613
PCDD/F



FAL ID: 9548-001-SA
Client ID: MW-01-010716
Matrix: Aqueous
Batch No: X3570

Date Extracted: 01-29-2016
Date Received: 01-13-2016
Amount: 1.017 L

ICal: PCDDFAL3-1-8-16
GC Column: DB5
Units: pg/L

Acquired: 01-31-2016
2005 WHO TEQ: 90.4

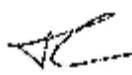
Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.445		-	0.177				
1,2,3,7,8-PeCDD	ND	1.08		-	0.270				
1,2,3,4,7,8-HxCDD	3.88	-	J	0.388	0.350				
1,2,3,6,7,8-HxCDD	73.6	-		7.36	0.380	Total TCDD	0.689	-	J
1,2,3,7,8,9-HxCDD	5.29	-	J	0.529	0.332	Total PeCDD	12.4	-	J
1,2,3,4,6,7,8-HpCDD	3940	-		39.4	0.407	Total HxCDD	270	-	
OCDD	73900	-	E	22.2	0.712	Total HpCDD	6610	-	
2,3,7,8-TCDF	4.16	-	J	0.416	0.122				
1,2,3,7,8-PeCDF	2.48	-	J	0.0744	0.186				
2,3,4,7,8-PeCDF	ND	0.776		-	0.190				
1,2,3,4,7,8-HxCDF	9.41	-	J	0.941	0.205				
1,2,3,6,7,8-HxCDF	40.9	-		4.09	0.193				
2,3,4,6,7,8-HxCDF	19.1	-	J	1.91	0.207				
1,2,3,7,8,9-HxCDF	3.58	-	J	0.358	0.278	Total TCDF	122	-	D,M
1,2,3,4,6,7,8-HpCDF	961	-		9.61	0.256	Total PeCDF	293	-	D,M
1,2,3,4,7,8,9-HpCDF	71.1	-		0.711	0.336	Total HxCDF	1710	-	D,M
OCDF	8280	-		2.48	0.531	Total HpCDF	4760	-	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	76.2	25.0 - 164	
13C-1,2,3,7,8-PeCDD	81.1	25.0 - 181	
13C-1,2,3,4,7,8-HxCDD	78.8	32.0 - 141	
13C-1,2,3,6,7,8-HxCDD	79.1	28.0 - 130	
13C-1,2,3,4,6,7,8-HpCDD	80.4	23.0 - 140	
13C-OCDD	94.4	17.0 - 157	
13C-2,3,7,8-TCDF	77.6	24.0 - 169	
13C-1,2,3,7,8-PeCDF	69.4	24.0 - 185	
13C-2,3,4,7,8-PeCDF	73.6	21.0 - 178	
13C-1,2,3,4,7,8-HxCDF	67.7	26.0 - 152	
13C-1,2,3,6,7,8-HxCDF	68.5	26.0 - 123	
13C-2,3,4,6,7,8-HxCDF	71.3	28.0 - 136	
13C-1,2,3,7,8,9-HxCDF	66.1	29.0 - 147	
13C-1,2,3,4,6,7,8-HpCDF	76.4	28.0 - 143	
13C-1,2,3,4,7,8,9-HpCDF	71.0	26.0 - 138	
13C-OCDF	77.6	17.0 - 157	

Cleanup Surrogate

37Cl-2,3,7,8-TCDD 76.5 35.0 - 197

- A Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
- B Analyte is present in Method Blank
- C Chemical Interference
- D Presence of Diphenyl Ethers
- DNQ Analyte concentration is below calibration range
- E Analyte concentration is above calibration range
- F Analyte confirmation on secondary column
- J Analyte concentration is below calibration range
- M Maximum possible concentration
- ND Analyte Not Detected at Detection Limit Level
- NP Not Provided
- P Pre-filtered through a Whatman 0.7um GF/F filter
- S Sample acceptance criteria not met
- X Matrix interferences
- * Result taken from dilution or reinjection

Analyst: 

Date: 2/3/2016

Reviewed By: 

Date: 2/3/2016

EPA Method 1613
PCDD/F



FAL ID: 9548-002-SA
Client ID: MW-108-010716
Matrix: Aqueous
Batch No: X3570

Date Extracted: 01-29-2016
Date Received: 01-13-2016
Amount: 1.050 L


ICal: PCDDFAL3-1-8-16
GC Column: DB5
Units: pg/L


Acquired: 01-31-2016
2005 WHO TEQ: 0.468

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.500		-	0.177				
1,2,3,7,8-PeCDD	ND	0.545		-	0.270				
1,2,3,4,7,8-HxCDD	ND	1.06		-	0.350				
1,2,3,6,7,8-HxCDD	ND	1.07		-	0.380	Total TCDD	ND	0.500	
1,2,3,7,8,9-HxCDD	ND	0.971		-	0.332	Total PeCDD	9.43		J
1,2,3,4,6,7,8-HpCDD	11.3	-	J	0.113	0.407	Total HxCDD	16.8		J
OCDD	123	-		0.0369	0.712	Total HpCDD	20.6		J
2,3,7,8-TCDF	ND	0.338		-	0.122				
1,2,3,7,8-PeCDF	1.52	-	J	0.0456	0.186				
2,3,4,7,8-PeCDF	ND	0.412		-	0.190				
1,2,3,4,7,8-HxCDF	ND	0.502		-	0.205				
1,2,3,6,7,8-HxCDF	2.38	-	J	0.238	0.193				
2,3,4,6,7,8-HxCDF	ND	0.560		-	0.207				
1,2,3,7,8,9-HxCDF	ND	0.709		-	0.278	Total TCDF	4.78		
1,2,3,4,6,7,8-HpCDF	3.13	-	J	0.0313	0.256	Total PeCDF	21.3		D,J,M
1,2,3,4,7,8,9-HpCDF	ND	0.976		-	0.336	Total HxCDF	38.5		D,M
OCDF	11.9	-	J	0.00357	0.531	Total HpCDF	9.76		J

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	80.3	25.0 - 164	
13C-1,2,3,7,8-PeCDD	86.9	25.0 - 181	
13C-1,2,3,4,7,8-HxCDD	87.4	32.0 - 141	
13C-1,2,3,6,7,8-HxCDD	88.9	28.0 - 130	
13C-1,2,3,4,6,7,8-HpCDD	88.8	23.0 - 140	
13C-OCDD	88.2	17.0 - 157	
13C-2,3,7,8-TCDF	83.9	24.0 - 169	
13C-1,2,3,7,8-PeCDF	80.0	24.0 - 185	
13C-2,3,4,7,8-PeCDF	84.8	21.0 - 178	
13C-1,2,3,4,7,8-HxCDF	77.2	26.0 - 152	
13C-1,2,3,6,7,8-HxCDF	78.0	26.0 - 123	
13C-2,3,4,6,7,8-HxCDF	81.9	28.0 - 136	
13C-1,2,3,7,8,9-HxCDF	73.8	29.0 - 147	
13C-1,2,3,4,6,7,8-HpCDF	85.3	28.0 - 143	
13C-1,2,3,4,7,8,9-HpCDF	80.3	26.0 - 138	
13C-OCDF	80.3	17.0 - 157	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	82.4	35.0 - 197	

- A Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
- B Analyte is present in Method Blank
- C Chemical Interference
- D Presence of Diphenyl Ethers
- DNQ Analyte concentration is below calibration range
- E Analyte concentration is above calibration range
- F Analyte confirmation on secondary column
- J Analyte concentration is below calibration range
- M Maximum possible concentration
- ND Analyte Not Detected at Detection Limit Level
- NP Not Provided
- P Pre-filtered through a Whatman 0.7um GF/F filter
- S Sample acceptance criteria not met
- X Matrix interferences
- * Result taken from dilution or reinjection

Analyst: 
Date: 2/3/2016

Reviewed By: 
Date: 2/3/2016

EPA Method 1613
PCDD/F



FAL ID: 9548-003-SA
Client ID: MW-05-010716
Matrix: Aqueous
Batch No: X3570

Date Extracted: 01-29-2016
Date Received: 01-13-2016
Amount: 1.048 L

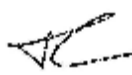
ICal: PCDDFAL3-1-8-16
GC Column: DB5
Units: pg/L


Acquired: 02-02-2016
2005 WHO TEQ: 18.1

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.387		-	0.177				
1,2,3,7,8-PeCDD	ND	0.626		-	0.270				
1,2,3,4,7,8-HxCDD	ND	1.46		-	0.350				
1,2,3,6,7,8-HxCDD	38.8	-		3.88	0.380	Total TCDD	3.01	-	J
1,2,3,7,8,9-HxCDD	3.21	-	J	0.321	0.332	Total PeCDD	8.87	-	J,M
1,2,3,4,6,7,8-HpCDD	555	-		5.55	0.407	Total HxCDD	108	-	
OCDD	3060	-		0.918	0.712	Total HpCDD	859	-	
2,3,7,8-TCDF	1.34	-	J	0.134	0.122				
1,2,3,7,8-PeCDF	3.66	-	J	0.110	0.186				
2,3,4,7,8-PeCDF	2.96	-	J	0.888	0.190				
1,2,3,4,7,8-HxCDF	5.71	-	J	0.571	0.205				
1,2,3,6,7,8-HxCDF	13.7	-	J	1.37	0.193				
2,3,4,6,7,8-HxCDF	9.58	-	J	0.958	0.207				
1,2,3,7,8,9-HxCDF	2.03	-	J	0.203	0.278	Total TCDF	88.1	-	D,M
1,2,3,4,6,7,8-HpCDF	274	-		2.74	0.256	Total PeCDF	183	-	D,M
1,2,3,4,7,8,9-HpCDF	14.9	-	J	0.149	0.336	Total HxCDF	793	-	D,M
OCDF	1090	-		0.327	0.531	Total HpCDF	1310	-	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	82.1	25.0 - 164	
13C-1,2,3,7,8-PeCDD	78.8	25.0 - 181	
13C-1,2,3,4,7,8-HxCDD	77.6	32.0 - 141	
13C-1,2,3,6,7,8-HxCDD	86.6	28.0 - 130	
13C-1,2,3,4,6,7,8-HpCDD	75.8	23.0 - 140	
13C-OCDD	68.2	17.0 - 157	
13C-2,3,7,8-TCDF	80.2	24.0 - 169	
13C-1,2,3,7,8-PeCDF	69.7	24.0 - 185	
13C-2,3,4,7,8-PeCDF	73.1	21.0 - 178	
13C-1,2,3,4,7,8-HxCDF	70.1	26.0 - 152	
13C-1,2,3,6,7,8-HxCDF	78.4	26.0 - 123	
13C-2,3,4,6,7,8-HxCDF	76.4	28.0 - 136	
13C-1,2,3,7,8,9-HxCDF	68.9	29.0 - 147	
13C-1,2,3,4,6,7,8-HpCDF	73.1	28.0 - 143	
13C-1,2,3,4,7,8,9-HpCDF	66.1	26.0 - 138	
13C-OCDF	57.4	17.0 - 157	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	85.2	35.0 - 197	

- A Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
- B Analyte is present in Method Blank
- C Chemical Interference
- D Presence of Diphenyl Ethers
- DNQ Analyte concentration is below calibration range
- E Analyte concentration is above calibration range
- F Analyte confirmation on secondary column
- J Analyte concentration is below calibration range
- M Maximum possible concentration
- ND Analyte Not Detected at Detection Limit Level
- NP Not Provided
- P Pre-filtered through a Whatman 0.7um GF/F filter
- S Sample acceptance criteria not met
- X Matrix interferences
- * Result taken from dilution or reinjection

Analyst: 
Date: 2/3/2016

Reviewed By: 
Date: 2/3/2016



CHAIN OF CUSTODY RECORD

Omega COCID 203 PAGE: 1 OF: 1

ADDRESS
Fremont Analytical, Inc.
3600 Fremont Ave. N.
Seattle, WA 98103
TEL: 206-352-3790
FAX: 206-352-7178
Website: www.fremontanalytical.com

9548

006

SUB CONTRACTOR: Frontier Analytical Lab		COMPANY: Frontier Analytical Laboratory		SPECIAL INSTRUCTIONS / COMMENTS:			
ADDRESS: 5172 Hillside Circle		Please email results to Michael Ridgeway and Chelsea Ward - miridgeway@fremontanalytical.com; cward@fremontanalytical.com					
CITY, STATE, ZIP: El Dorado Hills, CA 95762							
PHONE: (916) 934-0900		FAX: (916) 934-0999					
ACCOUNT #:		EMAIL:					
ITEM #	SAMPLE ID	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	DATE COLLECTED	NUMBER OF CONTAINERS	COMMENTS: Metanol Preserved Weights HOT Sample Notation, Additional Sample Description
1	1601048-001A	MW-01-010716	AMBER_1L UNP	Water	1/7/2015 12:10:00 PM	1	Level II RC
2	1601048-002A	MW-108-010716	AMBER_1L UNP	Water	1/7/2015 1:20:00 PM	1	Level II RC
3	1601048-003A	MW-05-010716	AMBER_1L UNP	Water	1/7/2015 2:55:00 PM	1	Level II RC
		EPA 1613				SS 1/8/16	
Relinquished By: <i>Michael Ridgeway</i>		Date: 1/14/16	Time: 12:15	Received By: <i>URS</i>	Date:	Time:	REPORT TRANSMITTAL DESIRED:
Relinquished By: <i>URS</i>		Date:	Time:	Received By: <i>Rocky Doo</i>	Date: 1-13-16	Time: 1110	<input type="checkbox"/> HARD COPY (extra cost) <input type="checkbox"/> FAX <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> ONLINE
Relinquished By:		Date:	Time:	Received By:	Date:	Time:	FOR LAB USE ONLY
TAT: Standard <input checked="" type="checkbox"/> RUSH		Next BD <input type="checkbox"/> 2nd BD <input type="checkbox"/> 3rd BD <input type="checkbox"/>		Temp of samples _____ °C		Attempt to Cool? _____	
		Note: RUSH requests will incur surcharges!		Comments:		000008 of 000311	

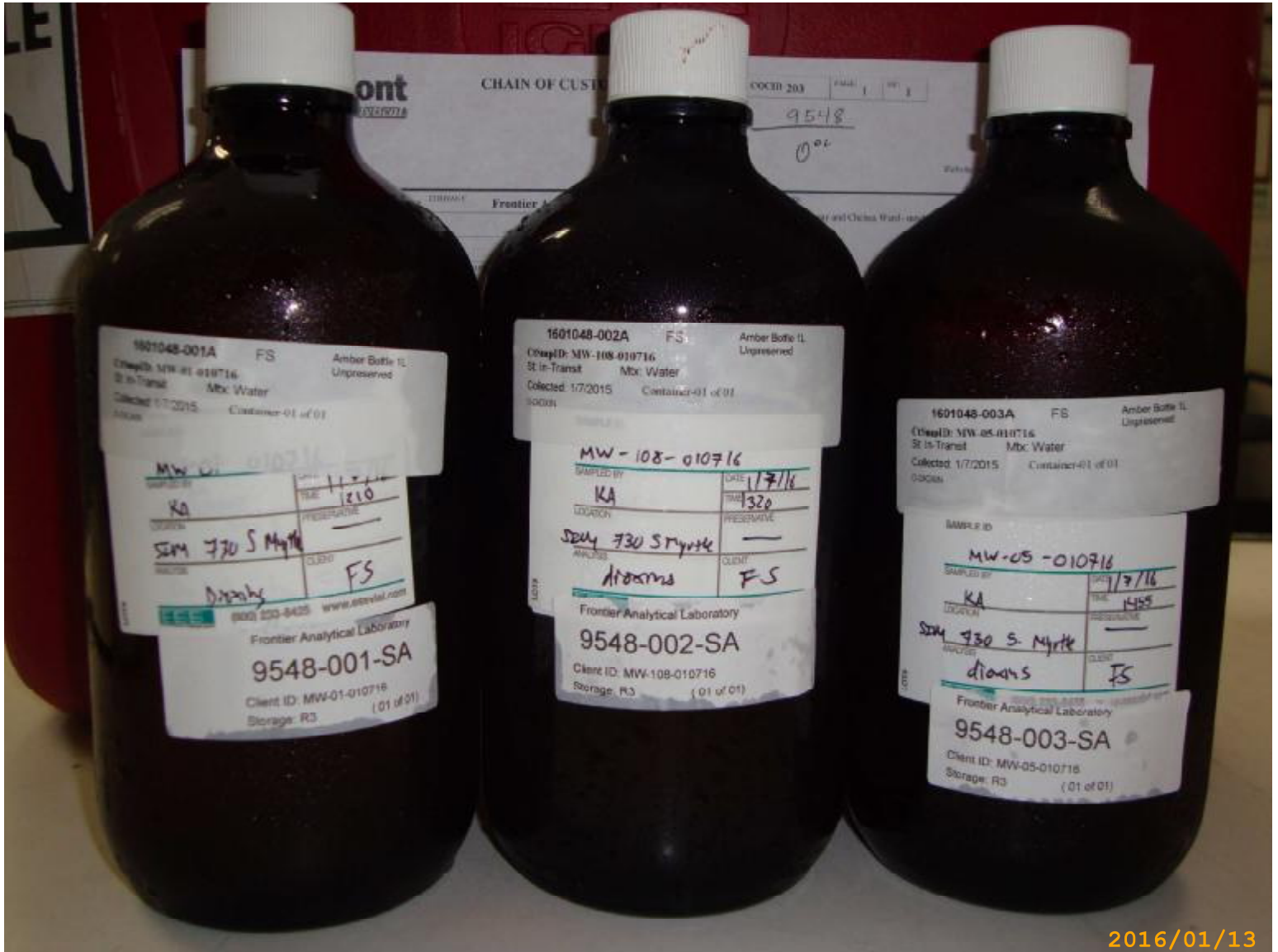
Frontier Analytical Laboratory

Sample Login Form

FAL Project ID: **9548**

Client:	Fremont Analytical
Client Project ID:	1601048
Date Received:	01/13/2016
Time Received:	11:10 am
Received By:	KZ
Logged In By:	KZ
# of Samples Received:	3
Duplicates:	0
Storage Location:	R3

Method of Delivery:	UPS
Tracking Number:	1ZX6192X0394293579
Shipping Container Received Intact	Yes
Custody seals(s) present?	Yes
Custody seals(s) intact?	Yes
Sample Arrival Temperature (C)	0
Cooling Method	Blue Ice
Chain Of Custody Present?	Yes
Return Shipping Container To Client	Yes
Test aqueous sample for residual Chlorine	Yes
Sodium Thiosulfate Added	No
Adequate Sample Volume	Yes
Appropriate Sample Container	Yes
pH Range of Aqueous Sample	Between 4 and 9
Anomalies or additional comments:	



Client Name: **FS**
 Logged by: **Erica Silva**

 Work Order Number: **1601048**
 Date Received: **1/7/2015 3:59:00 PM**

Chain of Custody

1. Is Chain of Custody complete? Yes No Not Present
2. How was the sample delivered? Client

Log In

3. Coolers are present? Yes No NA
4. Shipping container/cooler in good condition? Yes No
5. Custody Seals present on shipping container/cooler?
(Refer to comments for Custody Seals not intact) Yes No Not Required
6. Was an attempt made to cool the samples? Yes No NA
7. Were all items received at a temperature of >0°C to 10.0°C * Yes No NA
8. Sample(s) in proper container(s)? Yes No
9. Sufficient sample volume for indicated test(s)? Yes No
10. Are samples properly preserved? Yes No
11. Was preservative added to bottles? Yes No NA
12. Is there headspace in the VOA vials? Yes No NA
13. Did all samples containers arrive in good condition(unbroken)? Yes No
14. Does paperwork match bottle labels? Yes No
15. Are matrices correctly identified on Chain of Custody? Yes No
16. Is it clear what analyses were requested? Yes No
17. Were all holding times able to be met? Yes No

Special Handling (if applicable)

18. Was client notified of all discrepancies with this order? Yes No NA

Person Notified:	<input type="text"/>	Date	<input type="text"/>
By Whom:	<input type="text"/>	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	<input type="text"/>		
Client Instructions:	<input type="text"/>		

19. Additional remarks:

Item Information

Item #	Temp °C
Cooler 1	5.5
Cooler 2	7.1
Sample 1	2.2
Sample 2	1.5

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

Attachment 3
Data Validation Reports

Tier I Data Validation Summary

Prepared by: Chell Black, Floyd | Snider

Date: March 7, 2016

Project No: SIM-730 EDR

Sample Event(s): December 2015 Subsurface Soil Investigation

Sample Delivery Group(s): FA1512073, FA1512092, FA1512189, and FA1512203

Sample Media: Soil and Groundwater

A Compliance Screening, Tier 1, data quality review was performed on total petroleum hydrocarbons (TPH), semivolatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), and metals resulting from laboratory analysis. The analytical data were validated in accordance with the U.S. Environmental Protection Agency (USEPA) *National Functional Guidelines for Superfund Organic Methods Data Review* (2014) and the USEPA *National Functional Guidelines for Inorganic Superfund Data Review* (2014). The analytical results for dioxins/furans were validated by EcoChem, Inc., and documented in a separate report.

A total of 33 soil samples and 15 groundwater samples were submitted in four sample delivery groups (FA1512073, FA1512092, FA1512189, and FA1512203) to Fremont Analytical of Seattle, Washington, for chemical analysis. For all sample delivery groups, the analytical holding times were met, and the method blanks had no detections. The surrogate, matrix spike (MS), matrix spike duplicate (MSD), laboratory control sample (LCS), and laboratory control sample duplicate (LCSD) recoveries and the MS/MSD and LCS/LCSD relative percent differences (RPDs) all met USEPA requirements.

The sample/sample duplicate RPD for lead in sample SB-01-0-2 was 27 percent and outside the laboratory control limit of 20 percent. Per the laboratory, the method is in control as indicated by the LCS recovery. The MS/MSD was also performed on this sample, and the RPD was within control limits. Because of the nonhomogenous nature of the soil matrix and on the basis of professional judgment, only the lead result for sample SB-01-0-2 is qualified "J," indicating that it should be considered an estimate.

Stoddard solvent was quantified using the NWTPH-Dx method instead of the NWTPH-Gx method. An estimated value for Stoddard solvent was quantified based on a three-point calibration performed after the initial analysis by NWTPH-Dx.

Based on the data quality review, the data are determined to be of acceptable quality for use as reported by the laboratory unless specifically qualified above.



DATA VALIDATION REPORT

FLOYD | SNIDER

SEATTLE IRON AND METALS – SUBSURFACE INVESTIGATION

Prepared for:

Floyd | Snider
601 Union Street, Suite 600
Seattle, WA 98101

Prepared by:

EcoChem, Inc.
1011 Western Avenue, Suite 1006
Seattle, Washington 98104

EcoChem Project: C15213-2

March 3, 2016

Approved for Release:

Christine Ransom
Technical Manager
EcoChem, Inc.

PROJECT NARRATIVE

Basis for the Data Validation

This report summarizes the results of data validation performed on soil and quality control (QC) sample data for the Seattle Iron and Metals Subsurface Investigation. The data received a full level validation (EPA Stage 4). A complete list of samples is provided in the **Sample Index**.

Samples were analyzed Frontier Analytical Laboratory (El Dorado Hills, California). The analytical methods and EcoChem project chemists are listed in the following table:

ANALYSIS	METHOD	PRIMARY REVIEW	SECONDARY REVIEW
Dioxin/Furan Compounds	1613A	M. Swanson C. Ransom	C. Ransom E. Strout

The data were reviewed using guidance and quality control criteria documented in the analytical methods; *Current Situation Report and Subsurface Investigation Work Plan* (Floyd Snider, December 2015); and *National Functional Guidelines for Chlorinated Dioxin/Furan Data Review* (USEPA 2011).

EcoChem's goal in assigning data assessment qualifiers is to assist in proper data interpretation. If values are estimated (J or UJ), data may be used for site evaluation and risk assessment purposes but reasons for data qualification should be taken into consideration when interpreting sample concentrations. If values are assigned an R, the data are to be rejected and should not be used for any site evaluation purposes. If values have no data qualifier assigned, then the data meet the data quality objectives as stated in the documents and methods referenced above.

Data qualifier definitions, reason codes, and validation criteria are included as **APPENDIX A**. A Qualified Data Summary Table is included in **APPENDIX B**. Data Validation Worksheets and project associated communications will be kept on file at EcoChem, Inc. A qualified laboratory electronic data deliverable (EDD) and ADEC worksheets are also submitted with this report.

Sample Index
Seattle Iron and Metals - Subsurface Investigation

SDG	Sample ID	Laboratory ID	Dioxin
9486	SB-07-12-13	9486-001-SA	✓
9486	SB-05-9-10	9486-002-SA	✓
9487	SB-10-12.5-13	9487-001-SA	✓
9548	MW-01-010716	9548-001-SA	✓
9548	MW-05-010716	9548-002-SA	✓
9548	MW-108-010716	9548-003-SA	✓
9558	SB-10-14-15	9558-001-SA	✓

DATA VALIDATION REPORT
Seattle Iron and Metals – Subsurface Investigation
Dioxin/Furan Compounds by Method 1613A

This report documents the review of analytical data from the analysis of soil and groundwater samples and the associated laboratory and field quality control (QC) samples. Samples were analyzed by Frontier Analytical Laboratory, El Dorado Hills, California. Refer to the **SAMPLE INDEX** for a complete list of samples.

SDG	NUMBER OF SAMPLES	VALIDATION LEVEL
9486	2 Soil	EPA Stage 4
9487	3 Soil	EPA Stage 4
9548	3 Groundwater	EPA Stage 4
9558	1 Soil	EPA Stage 4

DATA PACKAGE COMPLETENESS

The laboratory submitted all required deliverables. The laboratory followed adequate corrective action processes and all anomalies were discussed in the case narrative. The following issue was noted:

SDG 9548: The transfer sheet from Fremont Analytical to Frontier Analytical Laboratory noted the sample collection dates as 1/7/15; the actual collection dates are 1/7/16. No action was taken beyond noting this discrepancy.

EDD TO HARDCOPY VERIFICATION

Sample results and related quality control data were received as an electronic data deliverable (EDD) and laboratory report. The EDD was verified against the laboratory report (10%). The following correction was made:

SDG 9548: The sample matrix field in the EDD was populated with solid/sediment. This was changed to groundwater to reflect the actual sample matrix.

TECHNICAL DATA VALIDATION

The quality control (QC) requirements reviewed are summarized in the following table:

✓	Sample Receipt, Preservation, and Holding Times	✓	Ongoing Precision and Recovery (OPR)
✓	System Performance and Resolution Checks	1	Field Duplicates
✓	Initial Calibration (ICAL)	✓	Target Analyte List
✓	Calibration Verification	2	Reported Results
1	Blanks (Laboratory and Field)	2	Compound Identification
✓	Labeled Compound Recovery	1	Calculation Verification
1	Matrix Spike/Matrix Spike Duplicates (MS/MSD)		

✓ Stated method quality objectives (MQO) and QC criteria have been met. No outliers are noted or discussed.

1 Quality control results are discussed below, but no data were qualified.

2 Quality control outliers that impact the reported data were noted. Data qualifiers were issued as discussed below.

Blanks

No field blanks were submitted.

Matrix Spike/Matrix Spike Duplicates

Matrix spike/matrix spike duplicate analyses were not performed. They are not required by the method. Accuracy was evaluated using the labeled compound and ongoing precision and recovery (OPR) standard results. The acceptable OPR results indicates acceptable precision from analytical batch to batch; however absence of a replicate analysis means that precision within the analytical batch could not be assessed.

Field Duplicates

No field duplicates were submitted.

Reported Results

SDG 9486: Sample SB-05-9-10 was reanalyzed at dilution (2.5x) due to high concentrations of target analytes. Only the most appropriate result for each analyte was reported.

SDG 9487: Sample SB-10-12.5-13 was reanalyzed at dilution (2.5x) due to high concentrations of target analytes. Only the most appropriate result for each analyte was reported.

SDG 9548: The OCDD result for Sample MW-01-01076 exceeded the calibration range of the instrument. This result was estimated (J-20).

Compound Identification

The method requires the confirmation of 2,3,7,8-TCDF using an alternate GC column if the column that is typically used cannot fully separate 2,3,7,8-TCDF from closely eluting non-target TCDF isomers. The laboratory performed a second column confirmation as necessary. Confirmation is not required for results less than the reporting limit.

SDG 9486: For Sample SB-07-12-13, the result for 2,3,7,8-TCDF was confirmed on a DB-225 column as required. The results fell within normal analytical precision criteria. The result from the DB-5 column was reported for this sample. No action was taken on this basis.

SDG 9487: The 2,3,7,8-TCDF result for Sample SB-10-12.5-13 was less than the reporting limit and was not confirmed. This result was estimated (J-14) to indicate a potential high bias.

SDG 9548: The 2,3,7,8-TCDF results for Samples MW-01-010716 and MW-05-010716 were less than the reporting limits and were not confirmed. These results were estimated (J-14) to indicate a potential high bias.

The laboratory assigned an "M" flag to some total homolog group results to indicate that the ion ratio criterion for positive identification was not met for one or more of the individual congeners in the group. Since the ion abundance ratio is the primary identification criterion for high resolution mass spectroscopy, an outlier indicates that the reported result may be a false positive. These "M" flagged results were qualified estimated (J-25). The following results were qualified:

SDG 9486: Sample SB-07-12-13 – Total TCDF, Total PeCDF, Total HxCDF

SDG 9487: Sample SB-10-12.5-13 – Total TCDF, Total PeCDF, Total HxCDF

SDG 9548:

Sample	Analyte	Qualifier
MW-01-010716	Total TCDF, Total PeCDF, Total HxCDF	J-25
MW-05-010716	Total TCDF, Total PeCDD, Total PeCDF, Total HxCDF	J-25
MW-108-010716	Total PeCDF, Total HxCDF	J-25

Diphenyl ether interferences were present in some samples. The laboratory assigned a "D" flag to the results affected by these interferences. These results were estimated (J-23H) to indicate a potential high bias. The following results were qualified:

SDG 9486: Sample SB-07-12-13 – Total TCDF, Total PeCDF, Total HxCDF

SDG 9487: Sample SB-10-12.5-13 – Total TCDF, Total PeCDF, Total HxCDF

SDG 9548:

Sample	Analyte	Qualifier
MW-01-010716	Total TCDF, Total PeCDF, Total HxCDF	J-25
MW-05-010716	Total TCDF, Total PeCDF, Total HxCDF	J-25
MW-108-010716	Total PeCDF, Total HxCDF	J-25

Calculation Verification

Several results were verified by recalculation from the raw data. No calculation or transcription errors were found.

OVERALL ASSESSMENT

As determined by this evaluation, the laboratory followed the specified analytical method. Accuracy was acceptable as demonstrated by the labeled compound and OPR recoveries. Precision within an analytical batch could not be assessed.

Results were estimated because the calibration range was exceeded, due to ion ratio outliers, and due to diphenyl ether interferences. Results for 2,3,7,8-TCDF that were less than the RL were not confirmed on a secondary column and were estimated.

All data, as qualified, are acceptable for use.



ECO-CHEM
Data Quality

APPENDIX A

DATA QUALIFIER DEFINITIONS

REASON CODES

AND CRITERIA TABLES

DATA VALIDATION QUALIFIER CODES **Based on National Functional Guidelines**

The following definitions provide brief explanations of the qualifiers assigned to results in the data review process.

U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
NJ	The analysis indicates the presence of an analyte that has been “tentatively identified” and the associated numerical value represents the approximate concentration.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

The following is an EcoChem qualifier that may also be assigned during the data review process:

DNR	Do not report; a more appropriate result is reported from another analysis or dilution.
-----	---

DATA QUALIFIER REASON CODES

Group	Code	Reason for Qualification
Sample Handling	1	Improper Sample Handling or Sample Preservation (i.e., headspace, cooler temperature, pH, summa canister pressure); Exceeded Holding Times
Instrument Performance	24	Instrument Performance (i.e., tune, resolution, retention time window, endrin breakdown, lock-mass)
	5A	Initial Calibration (RF, %RSD, r^2)
	5B	Calibration Verification (CCV, CCAL; RF, %D, %R) Use bias flags (H,L) ¹ where appropriate
	5C	Initial Calibration Verification (ICV %D, %R) Use bias flags (H,L) ¹ where appropriate
Blank Contamination	6	Field Blank Contamination (Equipment Rinsate, Trip Blank, etc.)
	7	Lab Blank Contamination (i.e., method blank, instrument blank, etc.) Use low bias flag (L) ¹ for negative instrument blanks
Precision and Accuracy	8	Matrix Spike (MS and/or MSD) Recoveries Use bias flags (H,L) ¹ where appropriate
	9	Precision (all replicates: LCS/LCSD, MS/MSD, Lab Replicate, Field Replicate)
	10	Laboratory Control Sample Recoveries (a.k.a. Blank Spikes) Use bias flags (H,L) ¹ where appropriate
	12	Reference Material Use bias flags (H,L) ¹ where appropriate
	13	Surrogate Spike Recoveries (a.k.a. labeled compounds, recovery standards) Use bias flags (H,L) ¹ where appropriate
Interferences	16	ICP/ICP-MS Serial Dilution Percent Difference
	17	ICP/ICP-MS Interference Check Standard Recovery Use bias flags (H,L) ¹ where appropriate
	19	Internal Standard Performance (i.e., area, retention time, recovery)
	22	Elevated Detection Limit due to Interference (i.e., chemical and/or matrix)
	23	Bias from Matrix Interference (i.e. diphenyl ether, PCB/pesticides)
Identification and Quantitation	2	Chromatographic pattern in sample does not match pattern of calibration standard
	3	2 nd column confirmation (RPD or %D)
	4	Tentatively Identified Compound (TIC) (associated with NJ only)
	20	Calibration Range or Linear Range Exceeded
	25	Compound Identification (i.e., ion ratio, retention time, relative abundance, etc.)
Miscellaneous	11	A more appropriate result is reported (multiple reported analyses i.e., dilutions, re-extractions, etc. Associated with "R" and "DNR" only)
	14	Other (See DV report for details)
	26	Method QC information not provided

¹H = high bias indicated

L = low bias indicated

Dioxin/Furan Analysis by HRMS
(Based on Dioxin NFG 2011 and Methods EPA 1613B and SW-846 8290)

QC Element	Acceptance Criteria	Source of Criteria	Action for Non-Conformance	Reason Code	Discussion and Comments
Sample Handling					
Cooler/Storage Temperature Preservation	Waters/Solids ≤ 6°C & in the dark Tissues < -10°C & in the dark Preservation Aqueous: If Cl ₂ is present Thiosulfate must be added and if pH > 9 it must be adjusted to 7 - 9	NFG ⁽¹⁾ Method ⁽²⁾	J(pos)/R(ND) if thiosulfate not added if Cl ₂ present; J(pos)/UJ(ND) if pH not adjusted J(pos)/UJ(ND) if temp > 20°C	1	EcoChem PJ, see TM-05
Holding Time	If properly stored, 1 year or: Extraction (all matrices): 30 days from collection Analysis (all matrices): 45 days from extraction	NFG ⁽¹⁾ Method ⁽²⁾	If not properly stored or HT exceedance: J(pos)/UJ(ND)	1	EcoChem PJ, see TM-05 Gross exceedance = > 1 year 2011 NFG Note: Under CWA, SDWA, and RCRA the HT for H ₂ O is 7 days.
Instrument Performance					
Mass Resolution (Tuning)	PFK (Perfluorokerosene) ≥10,000 resolving power at m/z 304.9824. Exact mass of m/z 380.9760 w/in 5 ppm of theoretical value (380.97410 to 380.97790) . Analyzed prior to ICAL and at the start and end of each 12 hr. shift.	NFG ⁽¹⁾ Method ⁽²⁾	R(pos/ND) all analytes in all samples associated with the tune	24	Notify PM
Windows Defining Mix	Peaks for first and last eluters must be within established retention time windows for each selector group (chlorination level)	NFG ⁽¹⁾ Method ⁽²⁾	If peaks are not completely within windows (clipped): If natives are ok, J(pos)/UJ(ND) homologs (Totals) If natives are affected, R all results for that selector group	24	Notify PM
Column Performance Mix	Both mixes must be analyzed before ICAL and CCAL Valley < 25% (valley = (x/y)*100%) where x = ht. of TCDD (or TCDF) & y = baseline to bottom of valley For all isomers eluting near the 2378-TCDD (TCDF) peak (TCDD only for 8290)	NFG ⁽¹⁾ Method ⁽²⁾	J(pos) if valley > 25%	24	EcoChem PJ, see TM-05, Rev. 2; Note: TCDF is evaluated only if second column confirmation is performed
Initial Calibration Sensitivity	S/N ratio > 10 for all native and labeled compounds in CS1 std.	NFG ⁽¹⁾ Method ⁽²⁾	If <10, elevate Det. Limit or R(ND)	5A	
Initial Calibration Selectivity	Ion Abundance ratios within QC limits (Table 8 of method 8290) (Table 9 of method 1613B)	NFG ⁽¹⁾ Method ⁽²⁾	If 2 or more ion ratios are out for one compound in ICAL, J(pos)	5A	EcoChem PJ, see TM-05, Rev. 2

**Dioxin/Furan Analysis by HRMS
(Based on Dioxin NFG 2011 and Methods EPA 1613B and SW-846 8290)**

QC Element	Acceptance Criteria	Source of Criteria	Action for Non-Conformance	Reason Code	Discussion and Comments
Instrument Performance (continued)					
Initial Calibration (Minimum 5 stds.) Stability	%RSD < 20% for native compounds %RSD < 30% for labeled compounds (%RSD < 35% for labeled compounds under 1613b)	NFG ⁽¹⁾ Method ⁽²⁾	J(pos) natives if %RSD > 20%	5A	EcoChem PJ, see TM-05, Rev. 2
	Absolute RT of ¹³ C ₁₂ -1234-TCDD >25 min on DB5 & >15 min on DB-225	NFG ⁽¹⁾ Method ⁽²⁾	Narrate, no action		
Continuing Calibration (Prior to each 12 hr. shift) Sensitivity	S/N ratio for CS3 standard > 10	NFG ⁽¹⁾ Method ⁽²⁾	If <10, elevate Det. Limit or R(ND)	5B	
Continuing Calibration (Prior to each 12 hr. shift) Selectivity	Ion Abundance ratios within QC limits (Table 8 of method 8290) (Table 9 of method 1613B)	NFG ⁽¹⁾ Method ⁽²⁾	For congener with ion ratio outlier, J(pos) natives in all samples associated with CCAL. No action for labeled congener ion ratio outliers.	25	EcoChem PJ, see TM-05
Continuing Calibration (Prior to each 12 hr. shift) Stability	%D +/-20% for native compounds %D +/-30% for labeled compounds (Must meet limits in Table 6, Method 1613B) If %D in the closing CCAL are within 25%/35%, the mean RF from the two CCAL may be used to calculate samples (Section 8.3.2.4 of 8290).	NFG ⁽¹⁾ Method ⁽²⁾	Labeled compounds: Narrate, no action. Native compounds: 1613: J(pos)/UJ(ND) if %D is outside Table 6 limits J(pos)/R(ND) if %D is +/-75% of Table 6 limits 8290: J(pos)/UJ(ND) if %D = 20% - 75% J(pos)/R(ND) if %D > 75%	5B (H,L) ³	EcoChem PJ, see TM-05
	Absolute RT of ¹³ C ₁₂ -1234-TCDD and ¹³ C ₁₂ -123789-HxCDD should be ± 15 seconds of ICAL RRT for all other compounds must meet criteria listed in Table 2 Method 1316.		NFG ⁽¹⁾ Method ⁽²⁾		
Blank Contamination					
Method Blank (MB)	MB: One per matrix per batch of (of ≤ 20 samples) No detected compounds > RL	NFG ⁽¹⁾ Method ⁽²⁾	U(pos) if result is < 5X action level.	7	Hierarchy of blank review: #1 - Review MB, qualify as needed #2 - Review FB, qualify as needed
Field Blank (FB)	FB: frequency as per QAPP No detected compounds > RL		U(pos) if result is < 5X action level.	6	

**Dioxin/Furan Analysis by HRMS
(Based on Dioxin NFG 2011 and Methods EPA 1613B and SW-846 8290)**

QC Element	Acceptance Criteria	Source of Criteria	Action for Non-Conformance	Reason Code	Discussion and Comments
Precision and Accuracy					
MS/MSD (recovery)	MS/MSD not typically required for HRMS analyses. If lab analyzes MS/MSD then one set per matrix per batch (of ≤ 20 samples) Use most current laboratory control limits	EcoChem standard policy	J(pos) if both %R > UCL - high bias J(pos)/UJ(ND) if both %R < LCL - low bias J(pos)/R(ND) if both %R < 10% - very low bias J(pos)/UJ(ND) if one > UCL & one < LCL, with no bias PJ if only one %R outlier	8 (H,L) ³	No action if only one spike %R is outside criteria. No action if parent concentration is > 4x the amount spiked. Qualify parent sample only unless other QC indicates systematic problems.
MS/MSD (RPD)	MS/MSD not typically required for HRMS analyses. If lab analyzes MS/MSD then one set per matrix per batch (of ≤ 20 samples) Use most current laboratory control limits	EcoChem standard policy	J(pos) in parent sample if RPD > CL	9	Qualify parent sample only.
LCS (or OPR)	One per lab batch (of ≤ 20 samples) Use most current laboratory control limits or Limits from Table 6 of 1613B	NFG ⁽¹⁾ Method ⁽²⁾	J(pos) if %R > UCL - high bias J(pos)/UJ(ND) if %R < LCL - low bias J(pos)/R(ND) if %R < 10% - very low bias	10 (H,L) ³	No action if only one spike %R is outside criteria, when LCSD is analyzed. Qualify all associated samples.
LCS/LCSD (RPD)	LCSD not typically required for HRMS analyses. One set per matrix and batch of 20 samples RPD < 35%	Method ⁽²⁾ EcoChem standard policy	J(pos) assoc. compound in all samples if RPD > CL	9	Qualify all associated samples.
Lab Duplicate (RPD)	Lab Dup not typically required for HRMS analyses. One per lab batch (of ≤ 20 samples) Use most current laboratory control limits	EcoChem standard policy	J(pos)/UJ(ND) if RPD > CL	9	
Labeled Compounds (Internal Standards)	Added to all samples %R = 40% - 135% in all samples 8290 %R must meet limits in Table 7 Method 1613B	NFG ⁽¹⁾ Method ⁽²⁾	J(pos) if %R > UCL - high bias J(pos)/UJ(ND) if %R < LCL - low bias J(pos)/R(ND) if %R < 10% - very low bias	13 (H,L) ³	
Field Duplicates	Solids: RPD < 50% OR difference < 2X RL (for results < 5X RL) Aqueous: RPD < 35% OR difference < 1X RL (for results < 5X RL)	EcoChem standard policy	Narrate and qualify if required by project	9	Use professional judgment

**Dioxin/Furan Analysis by HRMS
(Based on Dioxin NFG 2011 and Methods EPA 1613B and SW-846 8290)**

QC Element	Acceptance Criteria	Source of Criteria	Action for Non-Conformance	Reason Code	Discussion and Comments
Compound ID and Calculation					
Quantitation/ Identification	All ions for each isomer must maximize within ± 2 seconds. S/N ratio >2.5 Ion ratios must meet criteria listed in Table 8 Method 8290, or Table 9 of 1613B; RRTs w/in limits in Table 2 of 1613B	NFG ⁽¹⁾ Method ⁽²⁾	Narrate in report; qualify if necessary NJ(pos) for retention time outliers. U(pos) for ion ratio outliers.	25	EcoChem PJ, see TM-05
EMPC (estimated maximum possible concentration)	If quantitation identification criteria are not met, laboratory should report an EMPC value.	NFG ⁽¹⁾ Method ⁽²⁾	If laboratory correctly reported an EMPC value, qualify the native compound U(pos) to indicate that the value is a detection limit and qualify total homolog groups J (pos)	25	Use professional judgment See TM-18
Interferences	Interferences from chlorodiphenyl ether compounds	NFG ⁽¹⁾ Method ⁽²⁾	J(pos)/UJ(ND) if present	23	See TM-16
	Lock masses must not deviate $\pm 20\%$ from values in Table 8 of 1613B	Method ⁽²⁾	J(pos)/UJ(ND) if present	24	See TM-17
Second Column Confirmation	All 2,3,7,8-TCDF hits must be confirmed on a DB-225 (or equiv) column. All QC criteria must also be met for the confirmation analysis.	NFG ⁽¹⁾ Method ⁽²⁾	Report the DB-225 value. If not performed use PJ.	3	DNR-11 DB5 result if both results from both columns are reported. EcoChem PJ, see TM-05
Calculation Check	Check 10% of field & QC sample results	EcoChem standard policy	Contact laboratory for resolution and/or corrective action	na	Full data validation only.
Electronic Data Deliverable (EDD)					
Verification of EDD to hardcopy data	EcoChem verify @ 10% unless problems noted; then increase level up to 100% for next several packages.		Depending on scope of problem, correct at EcoChem (minor issues) to resubmittal by laboratory (major issues).	na	EcoChem Project Manager and/or Database Administrator will work with lab to provide long-term corrective action.
Dilutions, Re-extractions and/or Reanalyses	Report only one result per analyte	Standard reporting policy	Use "DNR" to flag results that will not be reported.	11	

(pos) - positive (detected) results; (ND) - not detected results

¹ National Functional Guidelines for Chlorinated Dibenzo-p-Dioxins (CDDs) & Chlorinated Dibenzofurans (CDFs) Data Review, September 2011

² Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry (HRGC/HRMS), USEPA SW-846, Method 8290

² EPA Method 1613, Rev.B, Tetra-through Octa-Chlorinated Dioxins and Furans by Isotope Dilution HRGS/HRMS, October 1994

³ NFG 2013 suggests using "+" / "-" to indicate bias; EcoChem has chosen "H" = high bias indicated; "L" = low bias indicated.



ECO-CHEM
Data Quality

APPENDIX B

QUALIFIED DATA SUMMARY TABLE

Qualified Data Summary Table
Seattle Iron and Metals - Subsurface Investigation

SDG	Sample ID	Lab ID	Method	Analyte	Result	Units	Lab Flag	DV Qualifier	DV Reason Code
9486	SB-07-12-13	9486-001-SA	E1613A	Total TCDF	117	pg/g	D,M	J	23H,25
9486	SB-07-12-13	9486-001-SA	E1613A	Total PeCDF	561	pg/g	D,M	J	23H,25
9486	SB-07-12-13	9486-001-SA	E1613A	Total HxCDF	20200	pg/g	D,M	J	23H,25
9487	SB-10-12.5-13	9487-001-SA	E1613A	2,3,7,8-TCDF	1.59	pg/g		J	14
9487	SB-10-12.5-13	9487-001-SA	E1613A	Total TCDF	256	pg/g	D,M	J	23H,25
9487	SB-10-12.5-13	9487-001-SA	E1613A	Total PeCDF	881	pg/g	D,M	J	23H,25
9487	SB-10-12.5-13	9487-001-SA	E1613A	Total HxCDF	60700	pg/g	D,M	J	23H,25
9548	MW-01-010716	9548-001-SA	E1613A	2,3,7,8-TCDF	4.16	pg/L	J	J	14
9548	MW-01-010716	9548-001-SA	E1613A	OCDD	73900	pg/L	E	J	20
9548	MW-01-010716	9548-001-SA	E1613A	Total TCDF	122	pg/L	D,M	J	23H,25
9548	MW-01-010716	9548-001-SA	E1613A	Total PeCDF	293	pg/L	D,M	J	23H,25
9548	MW-01-010716	9548-001-SA	E1613A	Total HxCDF	1710	pg/L	D,M	J	23H,25
9548	MW-05-010716	9548-002-SA	E1613A	2,3,7,8-TCDF	1.34	pg/L	J	J	14
9548	MW-05-010716	9548-002-SA	E1613A	Total PeCDD	8.87	pg/L	J,M	J	25
9548	MW-05-010716	9548-002-SA	E1613A	Total TCDF	88.1	pg/L	D,M	J	23H,25
9548	MW-05-010716	9548-002-SA	E1613A	Total PeCDF	183	pg/L	D,M	J	23H,25
9548	MW-05-010716	9548-002-SA	E1613A	Total HxCDF	793	pg/L	D,M	J	23H,25
9548	MW-108-010716	9548-003-SA	E1613A	Total PeCDF	21.3	pg/L	D,J,M	J	23H,25
9548	MW-108-010716	9548-003-SA	E1613A	Total HxCDF	38.5	pg/L	D,M	J	23H,25