

Memorandum

To	Brian Gouran, Port of Bellingham	Page	1
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Subject	Technical Memorandum for Central Waterfront RI/FS Work Plan Addendum 2 - Port of Bellingham, Washington		
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From	Jason Palmer and Halah Voges (Anchor QEA)		
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Date	August 30, 2012		
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AECOM is submitting this technical memorandum to summarize the field activities performed and analytical data collected during the Chevron Subarea investigation conducted on May 7-8, 2012 at the Central Waterfront Site in Bellingham, Washington. The investigation was conducted under Agreed Order DE3441 and in accordance with the Central Waterfront RI/FS Work Plan Addendum 2 (AECOM 2012), approved by the Washington State Department of Ecology (Ecology) on April 11, 2012. The intent of the investigation was to augment existing data from previous investigations and provide additional information to allow for the development of potential interim remedial action(s) along the Chevron Subarea shoreline.

Field Preparation Activities

Field preparation activities were conducted on May 4, 2012. Wilson Engineering and Survey marked the locations of the predetermined upland boring locations and surveyed ground surface elevations. In addition, they installed two rows of survey stakes perpendicular to the water in the beach area for elevation reference during beach test pit excavation and comparison to the upland boring elevations. Several of the upland borings were adjusted landward due to debris along the shoreline that prevented access to the geoprobe rig. Private (APS) and public utility locators were also on site May 4th to identify any underground utilities in the work area.

Sampling Techniques and Locations

Surface and subsurface soils were characterized within the Chevron Subarea at the locations shown on Figure 1. Upland subsurface soil sampling was completed at five pre-determined locations using a direct push geoprobe rig to a maximum depth of 35 feet below ground surface [bgs]. Cascade Drilling provided geoprobe equipment, operation, and assistance with sampling. Two to three soil samples were collected at each location from 1-2 foot intervals exhibiting the strongest observed evidence of contamination (i.e. olfactory, PID, visual, sheen and/or "paper towel" test). A "clean" sample was also collected at each location at a depth where the soils appeared to be free of contaminants to delineate the vertical extent of contamination. Subsurface soil samples collected in the uplands are designated in the Sample ID as CWSB-# (Central Waterfront Soil Boring).

A 1-inch monitoring well (CWMW-18) was installed adjacent to the bulkhead that runs along the southeast portion of the site (also known as the "Chevron dock"). The monitoring well location was selected in consultation with Ecology for use in potential future sampling events at the site. Soil sampling was conducted using the same methodology as described above. Groundwater sampling was not performed as it was not included in the scope of the work plan addendum.

Beach soil samples were collected at eight locations using a hand driven corer barrel to a maximum depth of five feet, the locations of which are shown on Figure 1. One to two soil samples were collected at each location from 1-2 foot intervals exhibiting the strongest observed evidence of contamination (i.e. olfactory, PID, visual, sheen and/or "paper towel" test). Beach soil samples are designated in the Sample ID as CBASB-# (Chevron Beach Area Soil Boring). Prior to collecting the beach soil samples, 20 shallow test pits were dug along transects extending outward from the shoreline to determine the appropriate locations for the core samples. Visual observations were noted on field logs, and are presented in Table 1. Only one analytical sample was collected from the test pits at location CBATP-7. The beach area test pits are designated in the Sample ID as CBATP-# (Chevron Beach Area Test Pit).

Table 2 lists all samples collected during the investigation, including coordinates, elevations, and laboratory analyses. Boring logs for the upland and beach area soil borings are included as Attachment A.

Sample Results and Summary

In accordance with the Work Plan, all samples were submitted for laboratory analysis of Total Petroleum Hydrocarbon gasoline range (NWTPH-G), and Total Petroleum Hydrocarbon diesel range extended (NWTPH-Dx). Several samples were also submitted for Total Organic Carbon (TOC), and one beach sample was submitted for benzene, toluene, ethylbenzene and xylenes (BTEX), semi-volatile organic compounds (SVOCs), and extractable petroleum hydrocarbons/volatile petroleum hydrocarbons (EPH/VPH). Table 2 lists all samples collected during the investigation, including coordinates, elevations, and laboratory analyses.

Tables 3 and 4 show the analytical results (NWTPH-Dx, NWTPH-G and TOC) for the upland and beach area samples collected during the May 2012 investigation, respectively. Table 5 shows the BTEX, SVOCs, EPH and VPH analytical results for soil sample CBA-SB-8. Figures 2 and 3 summarize the highest concentrations for NWTPH-G and NWTPH-Dx results for these locations, respectively. Attachment B includes copies of the laboratory reports and data validation results for this event.

Gasoline range TPH concentrations were detected above the MTCA Method A cleanup level of 100 milligrams per kilogram (mg/kg) in 4 of the 6 upland boring locations and 2 of the 9 beach locations. The highest concentration in the upland was 4,200 mg/kg at CWSB-16 at 8 to 10 feet bgs or at a corresponding elevation of 5.52 to 3.52 feet MLLW. The highest detected concentration in the beach area was 1,200 mg/kg at CBA-SB-1 at 1.5 to 2.5 feet bgs or at a corresponding elevation of 5.17 to 4.17 feet MLLW. Gasoline range TPH did not exceed MTCA Method A cleanup level below -0.15 feet MLLW in the upland area and 4.05 feet MLLW in the beach area. However, gasoline range TPH was detected below Method A cleanup level down to -2.48 feet MLLW.

Diesel and motor oil range TPH concentrations were detected above the MTCA Method A cleanup level of 2,000 mg/kg in 2 of the 6 upland boring locations and 2 of the 9 beach locations. The diesel and motor oil range TPH concentrations were summed for comparison with applicable screening levels. One-half the reporting limit was used in the summation if one of the TPH ranges (diesel or

motor oil) was not detected. The highest detected concentration in the upland was 25,100 mg/kg at CWSB-17 at 6 to 8 feet bgs or 7.36 to 5.36 feet MLLW. The highest detected concentration in the beach area was 9,200 mg/kg at CBA-SB-1 at 1.5 to 2.5 feet bgs or 5.17 to 4.17 feet MLLW. Diesel and motor oil range TPH did not exceed the Method A cleanup level below 3.52 feet MLLW in the upland area and 4.05 feet MLLW in the beach area. However, along the beach concentrations of diesel and motor oil range TPH were detected to a depth of -2.48 feet MLLW.

Attachments:

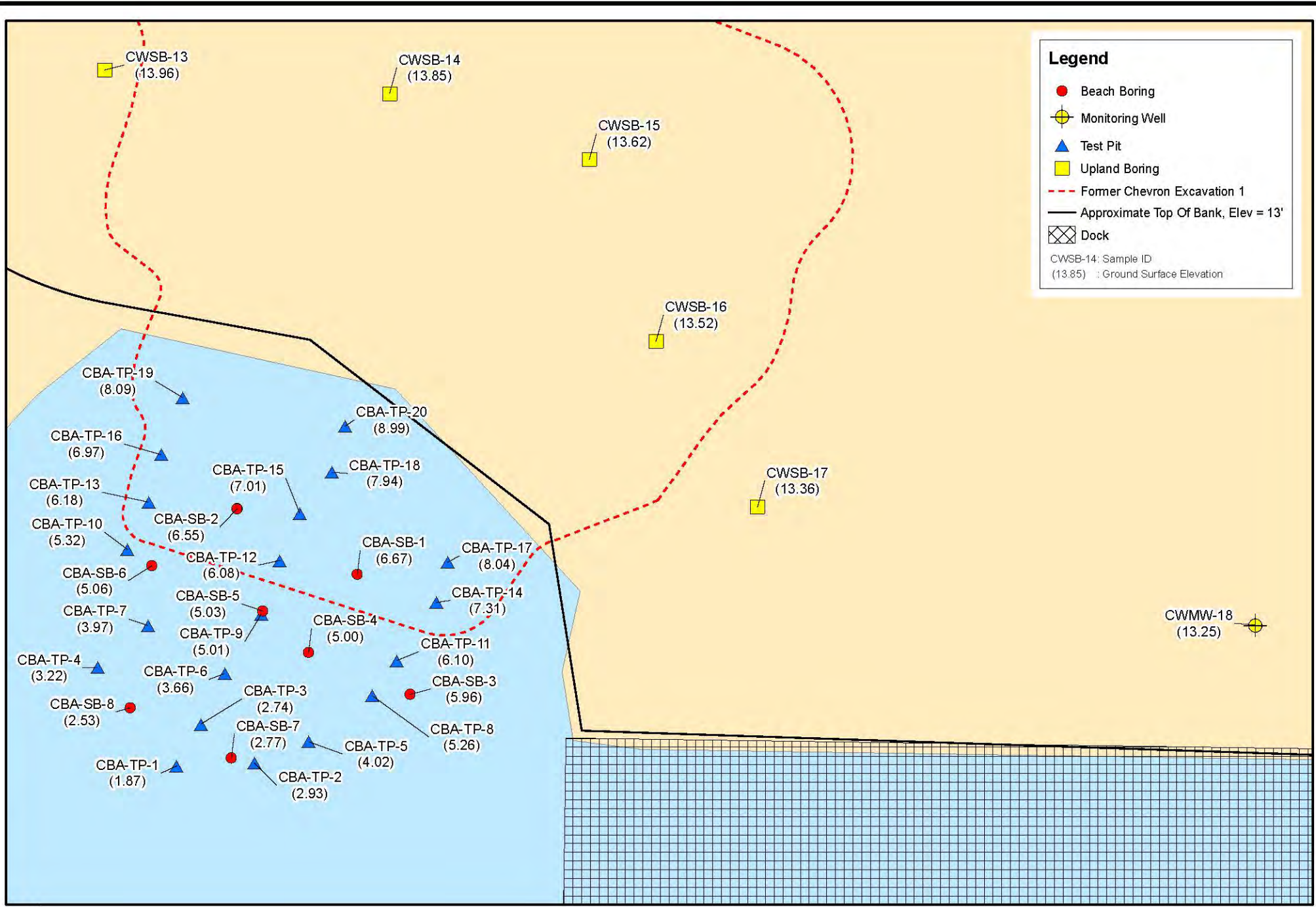
Figures

Tables

Attachment A: Boring Logs

Attachment B: Data Verification Report and Analytical Laboratory Report

Figures



Legend

- Beach Boring
- ⊕ Monitoring Well
- ▲ Test Pit
- Upland Boring
- - - Former Chevron Excavation 1
- Approximate Top Of Bank, Elev = 13'
- ▣ Dock

CWSB-14: Sample ID
 (13.85) : Ground Surface Elevation

Notes:
 1. Former Chevron Excavation 1 location approximate; digitized from "not to scale" pre-existing figure.
 2. CBA-Chevron Beach Area.
 3. Ground surface elevation in feet above Mean Lower Low Water.

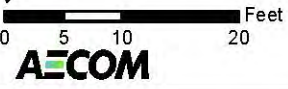
Port of Bellingham
 Central Waterfront
 (60139509)

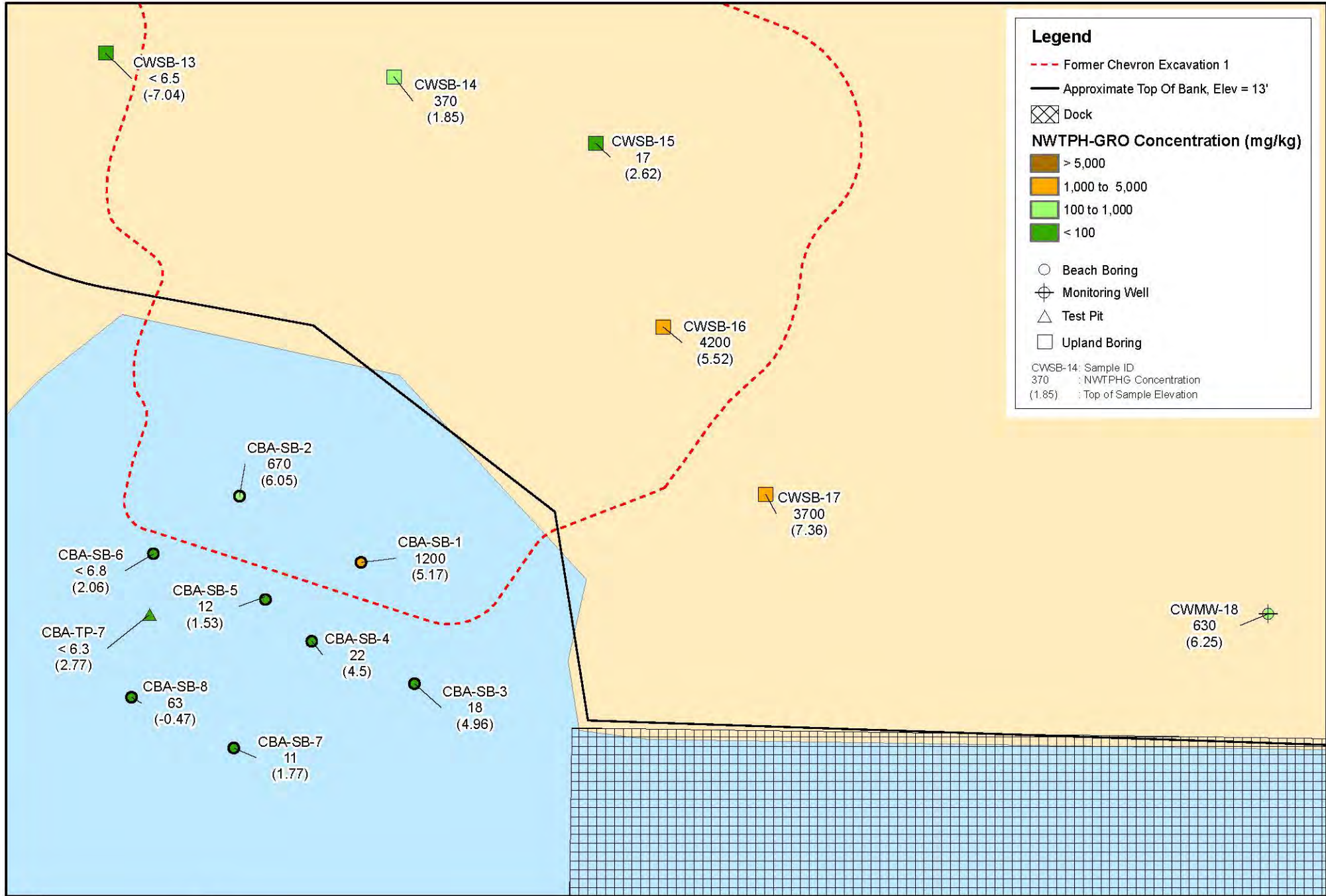
DATE: 07/25/12 DWNR: mrf/SEA Revision: 0

May 2012 Chevron Subarea Shoreline
 Investigation Locations

FIGURE 1

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Legend

- - - Former Chevron Excavation 1
- Approximate Top Of Bank, Elev = 13'
- ▣ Dock

NWTPH-GRO Concentration (mg/kg)

- > 5,000
- 1,000 to 5,000
- 100 to 1,000
- < 100

- Beach Boring
- ⊕ Monitoring Well
- △ Test Pit
- Upland Boring

CWSB-14: Sample ID
 370 : NWTPHG Concentration
 (1.85) : Top of Sample Elevation

CWSB-13
< 6.5
(-7.04)

CWSB-14
370
(1.85)

CWSB-15
17
(2.62)

CWSB-16
4200
(5.52)

CWSB-17
3700
(7.36)

CMMW-18
630
(6.25)

CBA-SB-2
670
(6.05)

CBA-SB-1
1200
(5.17)

CBA-SB-6
< 6.8
(2.06)

CBA-SB-5
12
(1.53)

CBA-SB-4
22
(4.5)

CBA-SB-3
18
(4.96)

CBA-SB-8
63
(-0.47)

CBA-SB-7
11
(1.77)

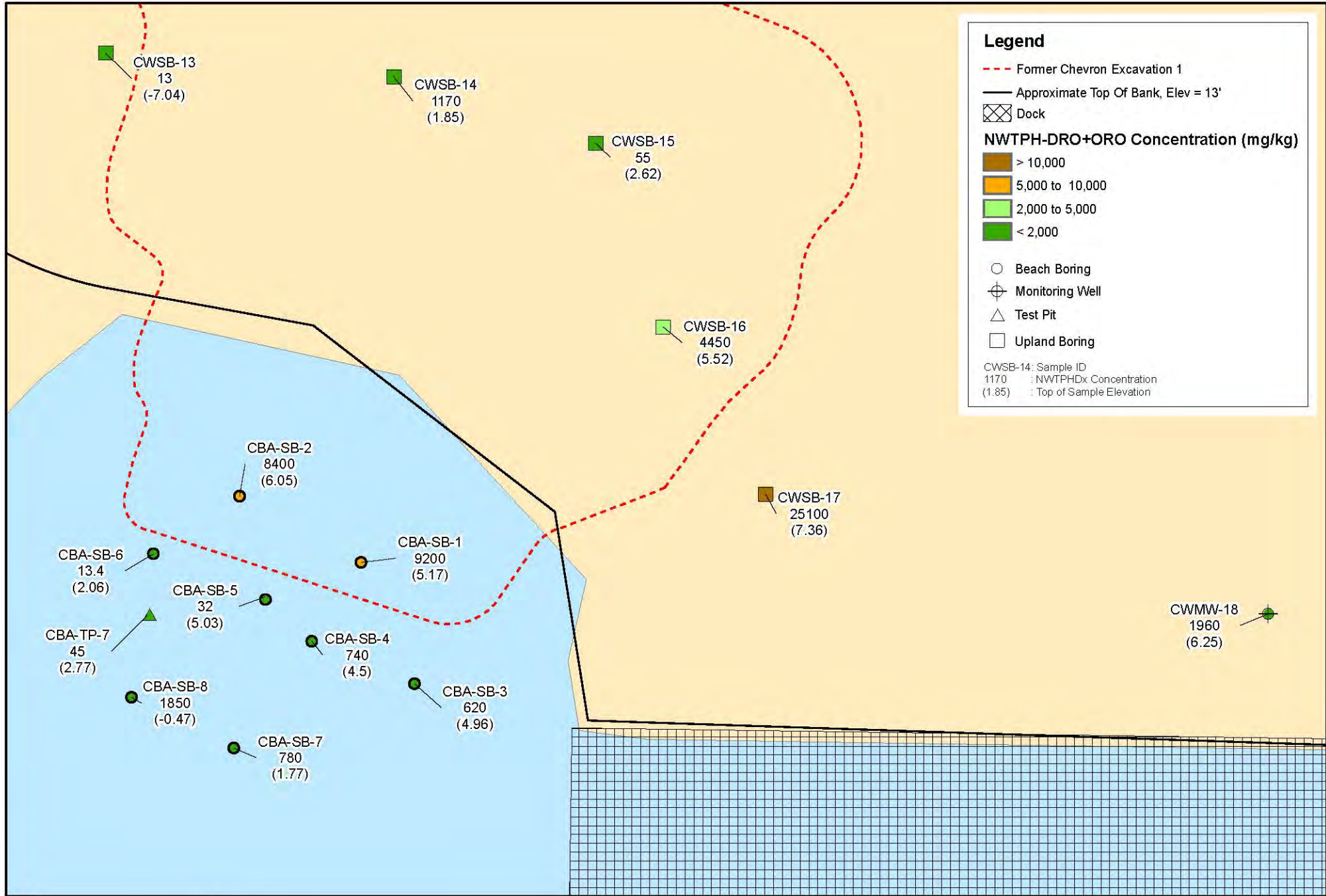
CBA-TP-7
< 6.3
(2.77)

Notes:

1. The highest concentration at each sample location was used when samples were collected at multiple depth intervals.
2. For non-detected values the reporting limit is displayed.
3. Former Chevron Excavation 1 location approximate; digitized from "not to scale" pre-existing figure.
4. CBA-Chevron Beach Area.
5. Ground surface elevation in feet above Mean Lower Low Water.



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Legend

- Former Chevron Excavation 1
- Approximate Top Of Bank, Elev = 13'
- ▨ Dock

NWTPH-DRO+ORO Concentration (mg/kg)

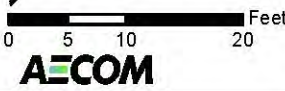
- > 10,000
- 5,000 to 10,000
- 2,000 to 5,000
- < 2,000

- Beach Boring
- ⊕ Monitoring Well
- △ Test Pit
- Upland Boring

CWSB-14: Sample ID
 1170 : NWTPHDx Concentration
 (1.85) : Top of Sample Elevation

Notes:

1. The highest concentration at each sample location was used when samples were collected at multiple depth intervals.
2. For non-detect values the reporting limit is displayed.
3. Former Chevron Excavation 1 location approximate, digitized from "not to scale" pre-existing figure.
4. CBA-Chevron Beach Area.
5. Ground surface elevation in feet above Mean Lower Low Water.



Port of Bellingham Central Waterfront (60139509)		MAY 2012 Chevron Subarea Shoreline NWTPH-DRO+ORO Concentrations	
DATE: 07/26/12	DWRN.mv/SEA	Revision: 0	FIGURE 3

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Tables

Table 1 Central Waterfront – Beach Test Pit Observations

Sample ID	Type	Elev	X_NAD27	Y_NAD27	Observations
CBA-TP-1	Test Pit	1.87	1600884.795	642866.875	Slight white, block sheen after hole sits a while (biological)
CBA-TP-2	Test Pit	2.93	1600891.660	642874.296	White, blocky sheen (appears biological)
CBA-TP-3	Test Pit	2.74	1600883.157	642872.959	White, blocky sheen (appears biological)
CBA-TP-4	Test Pit	3.22	1600868.408	642868.717	Very slight rainbow sheen when first disturbed, then no sheen. White, blocky sheen develops in hole with time.
CBA-TP-5	Test Pit	4.02	1600894.689	642881.247	White, blocky sheen (appears biological)
CBA-TP-6	Test Pit	3.66	1600880.701	642879.811	White, blocky sheen (appears biological)
CBA-TP-7	Test Pit	3.97	1600869.184	642877.203	Silver and rainbow, swirling sheen observed, occasional product bubbles up and turns a heavy sheen on water surface. Sample collected.
CBA-TP-8	Test Pit	5.26	1600896.347	642891.394	Silver sheen and trace product. Staining at ~6", foam with trace product
CBA-TP-9	Test Pit	5.01	1600878.591	642888.735	Silver, swirling, heavy sheen, slight rainbow sheen
CBA-TP-10	Test Pit	5.32	1600860.280	642882.312	Rainbow sheen with small black blebs of product
CBA-TP-11	Test Pit	6.10	1600895.369	642896.889	Sheen; silver, swirling, trace brown product, staining below 6". Foam with trace product
CBA-TP-12	Test Pit	6.08	1600875.340	642895.357	Product, brown product seeping from edge of hole. Staining below ~2".
CBA-TP-13	Test Pit	6.18	1600857.820	642888.663	Product, brown product seeping from edge of hole. Staining below ~2".
CBA-TP-14	Test Pit	7.31	1600893.652	642905.911	Product, brown product, staining below ~6"
CBA-TP-15	Test Pit	7.01	1600872.817	642901.557	Product below 1'. Staining below 1'.
CBA-TP-16	Test Pit	6.97	1600854.597	642894.183	Heavy sheen (silver) observed below 1.5'
CBA-TP-17	Test Pit	8.04	1600890.965	642910.658	Light product and staining below 1.5'
CBA-TP-18	Test Pit	7.94	1600871.941	642908.314	Light product and staining below 1.5'
CBA-TP-19	Test Pit	8.09	1600851.356	642901.472	Light product, heavy sheen only slight odor all below 2'
CBA-TP-20	Test Pit	8.99	1600868.930	642913.761	Some staining below ~1.5'. Product below 2'. Strong odor.

Notes:

X_NAD27 and Y_NAD27 Horizontal datum
 Elev Ground surface elevation in feet above Mean Lower Low Water
 ID Identification
 ' = feet
 " = inches

Table 2 Central Waterfront Sample Location and Laboratory Analytical Details

Location ID	X_NAD27	Y_NAD27	Ground Surface Elevation	Sample ID	Depth Interval (ft)	NWTPH-G	NWTPH-Dx	TOC	EPH, VPH, SVOC, BTEX
CWSB-13	1600813.8490	642924.4730	13.96	CWSB-13-14.0-14.5-0512	14 - 14.5	x	x	x	—
				CWSB-13-21-22-0512	21 - 22	x	x	AC	—
				CWSB-13-25-27-0512	25 - 27	x	x	AC	—
				CWSB-13-28-30-0512	28 - 30	AC	AC	AC	—
CWSB-14	1600842.3210	642948.6150	13.85	CWSB-14-12-14-0512	12 - 14	x	x	x	AC
				CWSB-14-25-27-0512	25 - 27	x	x	x	—
				CWSB-14-29-30-0512	29 - 30	x	x	x	—
CWSB-15	1600866.8100	642960.9530	13.62	CWSB-15-11-13-0512	11 - 13	x	x	AC	—
				CWSB-15-18-20-0512	18 - 20	x	x	x	—
				CWSB-15-23-25-0512	23 - 25	x	x	AC	—
				CWSB-15-29-30-0512	29 - 30	AC	AC	AC	—
CWSB-16	1600889.7630	642950.3410	13.52	CWSB-16-8-10-0512	8 - 10	x	x	x	—
				CWSB-16-13-15-0512	13 - 15	x	x	x	—
				CWSB-16-18-20-0512	18 - 20	x	x	AC	—
				CWSB-16-23-25-0512	23 - 25	AC	AC	AC	—
CWSB-17	1600914.4170	642944.4060	13.36	CWSB-17-6-8-0512	6 - 8	x	x	x	AC
				CWSB-17-23-25-0512	23 - 25	x	x	x	—
				CWSB-170-23-25-0512	23 - 25	x	x	x	—
				CWSB-17-28-30-0512	28 - 30	x	x	x	—
CWMW-18	1600971.2670	642979.3300	13.25	CWMW-18-7-9-0512	7 - 9	x	x	x	—
				CWMW-18-13-15-0512	13 - 15	x	x	x	—
CBA-TP-7	1600869.1840	642877.2030	3.97	CBA-TP-7-0-1-0512	0 - 1	x	x	x	—
CBA-SB-1	1600883.7570	642901.2180	6.67	CBA-SB-1-1.5-2.5-0512	1.5 - 2.5	x	x	x	—
				CBA-SB-1-3-5-0512	3 - 5	x	x	x	—
CBA-SB-2	1600866.6160	642896.2160	6.55	CBA-SB-2-0.5-2.5-0512	0.5 - 2.5	x	x	AC	—
				CBA-SB-20-0.5-2.5-0512	0.5 - 2.5	x	x	AC	—
				CBA-SB-2-3-5-0512	3 - 5	x	x	AC	—
CBA-SB-3	1600899.7260	642895.0140	5.96	CBA-SB-3-1-3-0512	1 - 3	x	x	x	—
CBA-SB-4	1600886.4650	642889.5200	5.00	CBA-SB-4-0.5-2.5-0512	0.5 - 2.5	x	x	x	—
				CBA-SB-4-3-5-0512	3 - 5	x	x	x	—
CBA-SB-5	1600878.4430	642889.1060	5.03	CBA-SB-5-0-2-0512	0 - 2	x	x	AC	—
				CBA-SB-50-3-5-0512	3 - 5	x	x	AC	—
				CBA-SB-5-3-5-0512	3 - 5	x	x	AC	—
CBA-SB-6	1600864.0080	642883.0640	5.06	CBA-SB-6-3-5-0512	3 - 5	x	x	x	—
CBA-SB-7	1600889.1040	642872.6550	2.77	CBA-SB-7-1-3-0512	1 - 3	x	x	x	—
				CBA-SB-7-3-5-0512	3 - 5	AC	—	—	—
CBA-SB-8	1600875.1350	642867.9330	2.53	CBA-SB-8-1-3-0512	1 - 3	x	x	x	x
				CBA-SB-80-3-5-0512	3 - 5	x	x	x	—
				CBA-SB-8-3-5-0512	3 - 5	x	x	x	—

Notes:

- X_NAD27 and Y_NAD27 Horizontal datum
- Ground Surface Elevation Datum in feet above Mean Lower Low Water
- ID Identification
- NWTPH-G Northwest Total Petroleum Hydrocarbons – Gasoline Range
- NWTPH-Dx Northwest Total Petroleum Hydrocarbons – Diesel Extended Range
- TOC Total Organic Carbon
- EPH Extractable Petroleum Hydrocarbons
- VPH Volatile Petroleum Hydrocarbons
- SVOC Semi-volatile Organic Compounds
- BTEX Benzene, Toluene, Ethylbenzene and Xylenes
- x Analyzed
- AC Archived Sample
- Not Sampled
- CWSB-170-23-25-0512 is a duplicate sample of CWSB-17-23-25-0512
- CBA-SB-20-0.5-2.5-0512 is a duplicate sample of CBA-SB-2-0.5-2.5-0512
- CBA-SB-50-3-5-0512 is a duplicate sample of CBA-SB-5-3-5-0512
- CBA-SB-80-3-5-0512 is a duplicate sample of CBA-SB-8-3-5-0512

Table 3 Central Waterfront Upland Analytical Results

Location	Sample	Sample Date	Depth Range (ft bgs)	Elevation Depth Range (MLLW)	Chemical Name	Total Organic Carbon	Total Solids	Gasoline Range Hydrocarbons	Diesel Range Hydrocarbons	Motor Oil	TPH-Dx (calc)
					Unit	%	%	mg/kg	mg/kg	mg/kg	mg/kg
CWMW-18	CWMW-18-7-9-0512	05/08/2012	7 – 9	6.25 - 4.25		1.71	75.10	630	1300	660	1960
	CWMW-18-13-15-0512	05/08/2012	13 – 15	0.25 – -1.75		0.584	79.90	< 7.1	7.4	< 12	13.4
CWSB-13	CWSB-13-14.0-14.5-0512	05/07/2012	14 – 14.5	-0.04 – -0.54		0.500	82.30	< 6.2	< 5.9	< 12	8.95
	CWSB-13-21-22-0512	05/07/2012	21 – 22	-7.04 – -8.04		NA	NA	< 6.5	6.5	< 13	13
	CWSB-13-25-27-0512	05/07/2012	25 – 27	11.04 – -13.04		NA	NA	< 6.8	< 6.3	< 13	9.65
CWSB-14	CWSB-14-12-14-0512	05/07/2012	12 – 14	1.85 – -0.15		0.532	81.90	370	850	320	1170
	CWSB-14-25-27-0512	05/07/2012	25 – 27	11.15 – -13.15		0.489	75.50	< 9.2	< 6.3	< 12	9.15
	CWSB-14-29-30-0512	05/07/2012	29 – 30	-15.15 – -16.15		0.383	78.10	< 8.1	< 6.3	< 13	9.65
CWSB-15	CWSB-15-11-13-0512	05/07/2012	11 – 13	2.62 - 0.62		NA	NA	17	40	15	55
	CWSB-15-18-20-0512	05/07/2012	18 – 20	-4.38 – -6.38		0.801	78.60	< 6.4	6.4	< 12	12.4
	CWSB-15-23-25-0512	05/07/2012	23 – 25	-9.38 – -11.38		NA	NA	< 7.1	< 6.4	< 13	9.7
CWSB-16	CWSB-16-8-10-0512	05/07/2012	8 – 10	5.52 - 3.52		0.794	87.00	4200	3800	650	4450
	CWSB-16-13-15-0512	05/07/2012	13 – 15	0.52 – -1.48		0.405	74.70	< 7.6	22	< 13	28.5
	CWSB-16-18-20-0512	05/07/2012	18 – 20	-4.48 – -6.48		NA	NA	< 7.0	9.1	< 12	15.1
CWSB-17	CWSB-17-6-8-0512	05/08/2012	6 – 8	7.36 - 5.36		3.49	86.80	3700	21000	4100	25100
	CWSB-17-23-25-0512	05/08/2012	23 – 25	-9.64 – -11.64		0.549	77.90	< 7.6	< 6.2	< 12	9.1
	CWSB-170-23-25-0512	05/08/2012	23 – 25	-9.64 – -11.64		0.393	78.50	< 7.1	< 6.3	< 12	9.15
	CWSB-17-28-30-0512	05/08/2012	28 – 30	-14.64 – -16.64		0.265	79.00	< 6.9	< 6.2	< 12	9.1

Notes:

Bold result indicates detected analyte.

NWTPH-G Northwest Total Petroleum Hydrocarbons – Gasoline Range

NWTPH-Dx Northwest Total Petroleum Hydrocarbons – Diesel Extended Range

bgs below ground surface

% percentage

mg/kg milligrams per kilogram

TPH-Dx (calc) Sum of the motor oil range and diesel range hydrocarbons by Method NWTPH-Dx. One-half (1/2) the reporting limit was used for all non-detect results.

Elevation in feet above MLLW

MLLW Mean Lower Low Water

NA Not Analyzed

< Below the reporting limit

CWSB-170-23-25-0512 is a duplicate sample of CWSB-17-23-25-0512

Table 4 Central Waterfront Beach Area Analytical Results

Location	Sample	Sample Date	Depth Range (ft bgs)	Elevation Depth Range (MLLW)	Chemical Unit	Total Organic Carbon	Total Solids	Gasoline Range Hydrocarbons	Diesel Range Hydrocarbons	Motor Oil	TPH-Dx (calc)
						%	%	mg/kg	mg/kg	mg/kg	mg/kg
CBA-SB-1	CBA-SB-1-1.5-2.5-0512	05/08/2012	1.5 - 2.5	5.17 - 4.17		1.29	85.40	1200	7400	1800 NJ	9200
	CBA-SB-1-3-5-0512	05/08/2012	3 - 5	3.67 - 1.67		1.06	76.50	< 7.4	48	21 NJ	69
CBA-SB-2	CBA-SB-2-0.5-2.5-0512	05/08/2012	0.5 - 2.5	6.05 - 4.05		NA	NA	670 J	6600	1800 NJ	8400
	CBA-SB-20-0.5-2.5-0512	05/08/2012	0.5 - 2.5	6.05 - 4.05		NA	NA	540 J	5500	1400 NJ	6900
	CBA-SB-2-3-5-0512	05/08/2012	3 - 5	3.55 - 1.55		NA	NA	19	26	12 NJ	38
CBA-SB-3	CBA-SB-3-1-3-0512	05/08/2012	1 - 3	4.96 - 2.96		2.05	82.80	18	200	420	620
CBA-SB-4	CBA-SB-4-0.5-2.5-0512	05/08/2012	0.5 - 2.5	4.5 - 2.5		1.35	81.70	22	220	520	740
	CBA-SB-4-3-5-0512	05/08/2012	3 - 5	2 - 0		0.523	85.50	< 6.9	82	130	212
CBA-SB-5	CBA-SB-5-0-2-0512	05/08/2012	0 - 2	5.03 - 3.03		NA	NA	< 6.4	16	16	32
	CBA-SB-50-3-5-0512	05/08/2012	3 - 5	2.03 - 0.03		NA	NA	< 6.2	9.8	< 12	15.8
	CBA-SB-5-3-5-0512	05/08/2012	3 - 5	2.03 - 0.03		NA	NA	12	10	< 12	16
CBA-SB-6	CBA-SB-6-3-5-0512	05/08/2012	3 - 5	2.06 - 0.06		0.449	79.60	< 6.8	7.4	< 12	13.4
CBA-SB-7	CBA-SB-7-1-3-0512	05/08/2012	1 - 3	1.77 - -0.23		2.21	83.60	11	260	500	760
CBA-SB-8	CBA-SB-8-1-3-0512	5/8/2012	1 - 3	1.53 - -0.47		1.28	77.50	28	570	1100	1670
	CBA-SB-80-3-5-0512	05/08/2012	3 - 5	-0.47 - -2.47		2.44	72.30	43	560	960	1520
	CBA-SB-8-3-5-0512	05/08/2012	3 - 5	-0.47 - -2.48		2.55	68.40	63	650	1200	1850
CBA-TP-7	CBA-TP-7-0-1-0512	05/07/2012	0 - 1	2.77 - 1.77		0.283	82.50	< 6.3	18	27	45

Notes:

Bold result indicates detected analyte.

NWTPH-G Northwest Total Petroleum Hydrocarbons – Gasoline Range

NWTPH-Dx Northwest Total Petroleum Hydrocarbons – Diesel Extended Range

bgs below ground surface

% percentage

mg/kg milligrams per kilogram

TPH-Dx (calc) Sum of the motor oil range and diesel range hydrocarbons by Method NWTPH-Dx. One-half (1/2) the reporting limit was used for all non-detect results.

Elevation in feet above MLLW

MLLW Mean Lower Low Water

NJ The analysis indicates the presence of an analyte that has been tentatively identified and the associated numerical value represents its approximate concentration.

J The analyte was positively identified. The associated numerical value is the approximate concentration of the analyte in the sample.

NA Not Analyzed

< Below the reporting limit

CBA-SB-20-0.5-2.5-0512 is a duplicate sample of CBA-SB-2-0.5-2.5-0512

CBA-SB-50-3-5-0512 is a duplicate sample of CBA-SB-5-3-5-0512

CBA-SB-80-3-5-0512 is a duplicate sample of CBA-SB-8-3-5-0512

Table 5 Central Waterfront BTEX, SVOC, EPH and VPH Analytical Results

Location Sample Sample Date Depth Range (feet bgs) Elevation Depth Range (MLLW)		CBA-SB-8 CBA-SB-8-1-3-0512 05/08/2012 1 - 3 1.53 - -0.47
Chemical Name	Unit	
SW8260C-SIM		
Benzene	µg/kg	22
Ethylbenzene	µg/kg	21
m,p-Xylene	µg/kg	60
o-Xylene	µg/kg	25
Toluene	µg/kg	68
SW8270D		
1,2,4-Trichlorobenzene	µg/kg	< 60
1,2-Dichlorobenzene	µg/kg	< 60
1,3-Dichlorobenzene	µg/kg	< 60
1,4-Dichlorobenzene	µg/kg	< 60
1-Methylnaphthalene	µg/kg	160
2,2'-Oxybis(1-Chloropropane)	µg/kg	< 60
2,4,5-Trichlorophenol	µg/kg	< 300
2,4,6-Trichlorophenol	µg/kg	< 300
2,4-Dichlorophenol	µg/kg	< 300
2,4-Dimethylphenol	µg/kg	< 60
2,4-Dinitrophenol	µg/kg	< 600
2,4-Dinitrotoluene	µg/kg	< 300
2,6-Dinitrotoluene	µg/kg	< 300
2-Chloronaphthalene	µg/kg	< 60
2-Chlorophenol	µg/kg	< 60
2-Methylnaphthalene	µg/kg	250
2-Methylphenol	µg/kg	< 60
2-Nitroaniline	µg/kg	< 300
2-Nitrophenol	µg/kg	< 60
3,3'-Dichlorobenzidine	µg/kg	< 300
3-Nitroaniline	µg/kg	< 300
4,6-Dinitro-2-Methylphenol	µg/kg	< 600
4-Bromophenyl-phenylether	µg/kg	< 60
4-Chloro-3-methylphenol	µg/kg	< 300
4-Chloroaniline	µg/kg	< 300
4-Chlorophenyl-phenylether	µg/kg	< 60
4-Methylphenol	µg/kg	< 60
4-Nitroaniline	µg/kg	< 300
4-Nitrophenol	µg/kg	< 300
Acenaphthene	µg/kg	< 60
Acenaphthylene	µg/kg	< 60
Anthracene	µg/kg	< 60
Benzo(a)anthracene	µg/kg	70
Benzo(a)pyrene	µg/kg	65
Benzo(g,h,i)perylene	µg/kg	< 60
Benzoic Acid	µg/kg	< 600
Benzyl Alcohol	µg/kg	< 300

Table 5 Central Waterfront BTEX, SVOC, EPH and VPH Analytical Results

		Location Sample Sample Date Depth Range (feet bgs) Elevation Depth Range (MLLW)	CBA-SB-8 CBA-SB-8-1-3-0512 05/08/2012 1 - 3 1.53 - -0.47
Chemical Name	Unit		
bis(2-Chloroethoxy) Methane	µg/kg	< 60	
Bis-(2-Chloroethyl) Ether	µg/kg	< 60	
bis(2-Ethylhexyl)phthalate	µg/kg	< 60	
Butylbenzylphthalate	µg/kg	< 60	
Carbazole	µg/kg	< 60	
Chrysene	µg/kg	110	
Dibenz(a,h)anthracene	µg/kg	< 60	
Dibenzofuran	µg/kg	79	
Diethylphthalate	µg/kg	< 60	
Dimethylphthalate	µg/kg	< 60	
Di-n-Butylphthalate	µg/kg	< 60	
Di-n-Octyl phthalate	µg/kg	< 60	
Fluoranthene	µg/kg	660	
Fluorene	µg/kg	68	
Hexachlorobenzene	µg/kg	< 60	
Hexachlorobutadiene	µg/kg	< 60	
Hexachlorocyclopentadiene	µg/kg	< 300	
Hexachloroethane	µg/kg	< 60	
Indeno(1,2,3-cd)pyrene	µg/kg	< 60	
Isophorone	µg/kg	< 60	
Naphthalene	µg/kg	280	
Nitrobenzene	µg/kg	< 60	
N-Nitroso-Di-N-Propylamine	µg/kg	< 60	
N-Nitrosodiphenylamine	µg/kg	< 60	
Pentachlorophenol	µg/kg	< 300	
Phenanthrene	µg/kg	250	
Phenol	µg/kg	< 60	
Pyrene	µg/kg	380	
Total Benzofluoranthenes	µg/kg	110	
EPH			
C10-C12 Aliphatics	µg/kg	4600	
C10-C12 Aromatics	µg/kg	< 2400	
C12-C16 Aliphatics	µg/kg	28000	
C12-C16 Aromatics	µg/kg	5700	
C16-C21 Aliphatics	µg/kg	45000	
C16-C21 Aromatics	µg/kg	30000	
C21-C34 Aliphatics	µg/kg	130000	
C21-C34 Aromatics	µg/kg	71000	
C8-C10 Aliphatics	µg/kg	6000 U	
C8-C10 Aromatics	µg/kg	< 2400	
VPH			
Benzene	µg/kg	< 1600	
C10-C12 Aliphatics	µg/kg	< 16000	
C10-C12 Aromatics	µg/kg	< 16000	

Table 5 Central Waterfront BTEX, SVOC, EPH and VPH Analytical Results

Location Sample Sample Date Depth Range (feet bgs) Elevation Depth Range (MLLW)		CBA-SB-8 CBA-SB-8-1-3-0512 05/08/2012 1 - 3 1.53 - -0.47
Chemical Name	Unit	
C12-C13 Aromatics	µg/kg	< 16000
C5-C6 Aliphatics	µg/kg	< 16000
C6-C8 Aliphatics	µg/kg	< 16000
C8-C10 Aliphatics	µg/kg	< 16000
C8-C10 Aromatics	µg/kg	< 16000
Ethylbenzene	µg/kg	< 1600
m,p-Xylene	µg/kg	< 3100
Methyl tert-Butyl Ether	µg/kg	< 1600
n-Decane	µg/kg	< 1600
n-Dodecane	µg/kg	< 1600
n-Hexane	µg/kg	< 1600
n-Octane	µg/kg	< 1600
n-Pentane	µg/kg	< 1600
o-Xylene	µg/kg	< 1600
Toluene	µg/kg	< 1600

Notes:

Bold result indicates detected analyte.

bgs below ground surface

µg/kg micrograms per kilogram

MLLW Mean Lower Low Water

U The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

< Below the reporting limit

Attachment A



Boring Log

CLIENT Port of Bellingham **PROJECT NAME** Central Waterfront
PROJECT NUMBER 60139509 **PROJECT LOCATION** Chevron Substation
DATE STARTED 5/8/12 **COMPLETED** 5/8/12 **GROUND ELEVATION** 6.7 ft MLLW **BORE SIZE** 2"
DRILLING CONTRACTOR Cascade Drilling L.P. **NOTES:**
DRILLING METHOD Hand Hammer Macrocore **Analytical** NWTPH-Dx, NWTPH-G, TOC=unless noted below
LOGGED BY R. Knecht **CHECKED BY** J. Palmer **Groundwater** 0.5 feet
NOTES AC = archived. Datum NAD27 X= 1600883.8, Y= 642901.2 **Sampler** Macrocore

DEPTH (ft)	SAMPLE ID Depth Range	DRIVE RECOVERY %	PID (ppm)	GRAPHIC LOG	DEPTH BELOW GROUND SURFACE (FT)	MATERIAL DESCRIPTION	ELEVATION (NAVD88)
0		80				(0.0-1.75) SP: POORLY GRADED SAND, wet @ 0.5', very dark grayish brown (10YR 3/2) grading to very dark gray (10YR 3/1), fine, trace to 10% medium to coarse sand from 0-0.5'. Moderate hydrocarbon odor at 0.5', staining and product observed at 0.5'. ▽	
1.8	CBA-SB-1-1.5-2.5-0512		36.2		1.8	(1.75-3.0) SP: POORLY GRADED SAND, wet, very dark gray (10YR 3/1), fine, 25% medium to coarse sand, trace fine gravel, trace shells. Slight to moderate hydrocarbon odor, silver and rainbow sheen observed.	5.0
3.0					3.0	(3.0-5.0) SP: POORLY GRADED SAND, wet, very dark gray (10YR 3/1), fine. No to very slight hydrocarbon odor, no sheen or staining observed. @ 3.5' trace shell fragments	3.7
4.0	CBA-SB-1-3-5-0512		30.1		4.0	@ 4' - 1" silty sand layer	
5.0					5.0	@ 4.75' - 0.5" wood layer	1.7

Bottom of borehole at 5.0 feet.

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Boring Log

CLIENT Port of Bellingham **PROJECT NAME** Central Waterfront
PROJECT NUMBER 60139509 **PROJECT LOCATION** Chevron Substation
DATE STARTED 5/8/12 **COMPLETED** 5/8/12 **GROUND ELEVATION** 6.6 ft MLLW **BORE SIZE** 2"
DRILLING CONTRACTOR Cascade Drilling L.P. **NOTES:**
DRILLING METHOD Hand Hammer Macrocore **Analytical** NWTPH-Dx, NWTPH-G, TOC=unless noted below
LOGGED BY R. Knecht **CHECKED BY** J. Palmer **Groundwater** 0.5 feet
NOTES AC = archived. Datum NAD27 X= 1600866.6, Y= 642896.2 **Sampler** Macrocore

DEPTH (ft)	SAMPLE ID Depth Range	DRIVE RECOVERY %	PID (ppm)	GRAPHIC LOG	DEPTH BELOW GROUND SURFACE (FT)	MATERIAL DESCRIPTION	ELEVATION (NAVD88)
0		78				(0.0-5.0) SP: POORLY GRADED SAND, wet @ 0.5', very dark grayish brown (10YR 3/2) grading to very dark gray (10YR 3/1), fine, trace fine, rounded gravel at surface, trace silt. Moderate to slight hydrocarbon odor, staining and product @ 0.5-1.5'.	
1	CBA-SB-2-0.5-2.5-0512 (TOC-AC)		50.2				
2							
3	CBA-SB-2-3-5-0512 (TOC-AC)		29.6				
4							
5					5.0		1.6

Bottom of borehole at 5.0 feet.

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Boring Log

CLIENT Port of Bellingham **PROJECT NAME** Central Waterfront
PROJECT NUMBER 60139509 **PROJECT LOCATION** Chevron Substation
DATE STARTED 5/8/12 **COMPLETED** 5/8/12 **GROUND ELEVATION** 6.0 ft MLLW **BORE SIZE** 2"
DRILLING CONTRACTOR Cascade Drilling L.P. **NOTES:**
DRILLING METHOD Hand Hammer Macrocore **Analytical** NWTPH-Dx, NWTPH-G, TOC=unless noted below
LOGGED BY R. Knecht **CHECKED BY** J. Palmer **Groundwater** 0.5 feet
NOTES AC = archived. Datum NAD27 X= 1600899.7, Y= 642895.0 **Sampler** Macrocore

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DEPTH (ft)	SAMPLE ID Depth Range	DRIVE RECOVERY %	PID (ppm)	GRAPHIC LOG	DEPTH BELOW GROUND SURFACE (FT)	MATERIAL DESCRIPTION	ELEVATION (NAVD88)
0		83				(0.0-3.0) SP: POORLY GRADED SAND, wet @ 0.5', very dark gray (10YR 3/1), fine. Slight hydrocarbon odor, droplets of silver and rainbow sheen observed.	
1			7.5			▽ @ 0.5-0.8' - 10% silt	
2	CBA-SB-3-1-3-0512					@ 1-1.7' - 15% medium sand	
3			12.5			@ 2.8-3' wood pieces	
					3.0		3.0

Bottom of borehole at 3.0 feet.



Boring Log

CLIENT Port of Bellingham **PROJECT NAME** Central Waterfront
PROJECT NUMBER 60139509 **PROJECT LOCATION** Chevron Substation
DATE STARTED 5/8/12 **COMPLETED** 5/8/12 **GROUND ELEVATION** 5.0 ft MLLW **BORE SIZE** 2"
DRILLING CONTRACTOR Cascade Drilling L.P. **NOTES:**
DRILLING METHOD Hand Hammer Macrocore **Analytical** NWTPH-Dx, NWTPH-G, TOC=unless noted below
LOGGED BY R. Knecht **CHECKED BY** J. Palmer **Groundwater** 0 feet
NOTES AC = archived. Datum NAD27 X= 1600886.5, Y= 642889.5 **Sampler** Macrocore

DEPTH (ft)	SAMPLE ID Depth Range	DRIVE RECOVERY %	PID (ppm)	GRAPHIC LOG	DEPTH BELOW GROUND SURFACE (FT)	MATERIAL DESCRIPTION	ELEVATION (NAVD88)
0		60					
0.5 - 2.5	CBA-SB-4-0512					(0.0-5.0) SP: POORLY GRADED SAND, wet, very dark gray (10YR 3/1), fine, scattered wood throughout. Slight hydrocarbon odor to 4' and slight sliver and rainbow sheen observed @ 0-3.5'. @ 0-0.5' - 20% medium to coarse sand and trace fine gravel	
1.75 - 2.0			71.8			@ 1.75' - 2" layer of wood and silt, trace medium sand	
3.0 - 3.5							
3.5 - 5.0	CBA-SB-4-350512		15.1				
5.0					5.0		0.0

Bottom of borehole at 5.0 feet.

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Boring Log

CLIENT Port of Bellingham **PROJECT NAME** Central Waterfront
PROJECT NUMBER 60139509 **PROJECT LOCATION** Chevron Substation
DATE STARTED 5/8/12 **COMPLETED** 5/8/12 **GROUND ELEVATION** 5.0 ft MLLW **BORE SIZE** 2"
DRILLING CONTRACTOR Cascade Drilling L.P. **NOTES:**
DRILLING METHOD Hand Hammer Macrocore **Analytical** NWTPH-Dx, NWTPH-G, TOC=unless noted below
LOGGED BY R. Knecht **CHECKED BY** J. Palmer **Groundwater** 0 feet
NOTES AC = archived. Datum NAD27 X= 1600878.4, Y= 642889.1 **Sampler** Macrocore

DEPTH (ft)	SAMPLE ID Depth Range	DRIVE RECOVERY %	PID (ppm)	GRAPHIC LOG	DEPTH BELOW GROUND SURFACE (FT)	MATERIAL DESCRIPTION	ELEVATION (NAVD88)
0		76					
0.8	CBA-SB-5 -0-2-0512 (TOC-AC)	76	29.1		0.0	(0.0-0.75) SW: WELL GRADED SAND, wet, very dark grayish brown (10YR 3/2), fine to coarse, subrounded to rounded, equant, 20-30% medium to coarse sand, 10% fine gravel. No odor, sheen or staining observed.	4.3
0.8					(0.75-3.75) SP: POORLY GRADED SAND, wet, very dark gray (10YR 3/1), fine. Slight hydrocarbon odor and no sheen or staining observed.		
2			29.1			@ 2-3' - 10% medium to coarse sand	
3.8	CBA-SB-5 3-5-0512 (TOC-AC)	76	19.1		3.8	(3.75-4.5) SM: SILTY SAND, wet, very dark grayish brown (10YR 3/2), fine, 20% silt. Slight hydrocarbon odor and no sheen or staining observed.	1.3
4.5					(4.5-5.0) SP: POORLY GRADED SAND, wet, very dark gray (10YR 3/1) fine. Slight hydrocarbon odor and no sheen or staining observed.	0.5	
5.0						0.0	

Bottom of borehole at 5.0 feet.

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Boring Log

CLIENT Port of Bellingham **PROJECT NAME** Central Waterfront
PROJECT NUMBER 60139509 **PROJECT LOCATION** Chevron Substation
DATE STARTED 5/8/12 **COMPLETED** 5/8/12 **GROUND ELEVATION** 5.1 ft MLLW **BORE SIZE** 2"
DRILLING CONTRACTOR Cascade Drilling L.P. **NOTES:**
DRILLING METHOD Hand Hammer Macrocore **Analytical** NWTPH-Dx, NWTPH-G, TOC=unless noted below
LOGGED BY R. Knecht **CHECKED BY** J. Palmer **Groundwater** 0 feet
NOTES AC = archived. Datum NAD27 X= 1600864.0, Y= 642883.1 **Sampler** Macrocore

DEPTH (ft)	SAMPLE ID Depth Range	DRIVE RECOVERY %	PID (ppm)	GRAPHIC LOG	DEPTH BELOW GROUND SURFACE (FT)	MATERIAL DESCRIPTION	ELEVATION (NAVD88)
0		62					
1							
2			13.4				
3						@ 2.75' - 1" layer of 20% silt	
4	CBA-SB-6-3-5-0512		25.7				
4.5							0.6
5						(4.5-5.0) SM: SILTY SAND, wet, very dark gray (10YR 3/1), fine, 20% silt, little wood fibers. Very slight hydrocarbon odor and no sheen or staining observed.	
5.0							0.1

Bottom of borehole at 5.0 feet.

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Boring Log

CLIENT Port of Bellingham **PROJECT NAME** Central Waterfront
PROJECT NUMBER 60139509 **PROJECT LOCATION** Chevron Substation
DATE STARTED 5/8/12 **COMPLETED** 5/8/12 **GROUND ELEVATION** 2.8 ft MLLW **BORE SIZE** 2"
DRILLING CONTRACTOR Cascade Drilling L.P. **NOTES:**
DRILLING METHOD Hand Hammer Macrocore **Analytical** NWTPH-Dx, NWTPH-G, TOC=unless noted below
LOGGED BY R. Knecht **CHECKED BY** J. Palmer **Groundwater** 0 feet
NOTES AC = archived. Datum NAD27 X= 1600889.1, Y= 642872.7 **Sampler** Macrocore

DEPTH (ft)	SAMPLE ID Depth Range	DRIVE RECOVERY %	PID (ppm)	GRAPHIC LOG	DEPTH BELOW GROUND SURFACE (FT)	MATERIAL DESCRIPTION	ELEVATION (NAVD88)
0		50				(0.0-5.0) SP-SM: POORLY GRADED SAND WITH SILT, wet, very dark gray (10YR 3/1), fine, 10% silt, trace fine to coarse gravel. Slight hydrocarbon odor and trace droplets of rainbow sheen observed.	
1							
2	CBA-SB-7- 1-3-0512		5.3			@ 2.5' wood	
3							
4			50.3				
5					5.0		-2.2

Bottom of borehole at 5.0 feet.

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Boring Log

CLIENT Port of Bellingham **PROJECT NAME** Central Waterfront
PROJECT NUMBER 60139509 **PROJECT LOCATION** Chevron Substation
DATE STARTED 5/8/12 **COMPLETED** 5/8/12 **GROUND ELEVATION** 2.5 ft MLLW **BORE SIZE** 2"
DRILLING CONTRACTOR Cascade Drilling L.P. **NOTES:**
DRILLING METHOD Hand Hammer Macrocore **Analytical** NWTPH-Dx, NWTPH-G, TOC=unless noted below
LOGGED BY R. Knecht **CHECKED BY** J. Palmer **Groundwater** 0 feet
NOTES AC = archived. Datum NAD27 X= 1600875.1, Y= 642867.9 **Sampler** Macrocore

DEPTH (ft)	SAMPLE ID Depth Range	DRIVE RECOVERY %	PID (ppm)	GRAPHIC LOG	DEPTH BELOW GROUND SURFACE (FT)	MATERIAL DESCRIPTION	ELEVATION (NAVD88)
0		65					
1							
2	CBA-SB-8-1-3-0512 (plus EPH, VPH, BTEX, SVOCs analyzed)		130			(0.0-3.0) SP: POORLY GRADED SAND, wet, very dark gray (10YR 3/1), fine, trace silt, trace shells, scattered wood pieces. Slight to moderate hydrocarbon odor and 1/8" silver sheen blobs observed.	
3					3.0		-0.5
4	CBA-SB-8-3-5-0512		313			(3.0-4.5) ML: SILT WITH SAND, wet, very dark gray (10YR 3/1), soft, 30% fine sand, trace to little wood. Slight to moderate hydrocarbon odor and trace sheen blobs.	
					4.5		-2.0
						@ 4.5-4.75' wood chunk	
5					5.0	(4.5-5.0) SP: POORLY GRADED SAND, wet, very dark gray (10YR 3/1), fine, trace wood fibers. Slight hydrocarbon odor and no sheen or staining observed.	-2.5

Bottom of borehole at 5.0 feet.

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Boring Log

CLIENT Port of Bellingham **PROJECT NAME** Central Waterfront
PROJECT NUMBER 60139509 **PROJECT LOCATION** Chevron Substation
DATE STARTED 5/7/12 **COMPLETED** 5/7/12 **GROUND ELEVATION** 14.0 ft MLLW **BORE SIZE** 2"
DRILLING CONTRACTOR Cascade Drilling L.P. **NOTES:**
DRILLING METHOD GeoProbe Direct Push **Analytical** NWTPH-Dx, NWTPH-G, TOC=unless noted below
LOGGED BY R. Knecht **CHECKED BY** J. Palmer **Groundwater** 11.5 feet
NOTES AC = archived. Datum NAD27 X= 1600813.8, Y= 642924.5 **Sampler** Macrocore

DEPTH (ft)	SAMPLE ID Depth Range	DRIVE RECOVERY %	PID (ppm)	GRAPHIC LOG	DEPTH BELOW GROUND SURFACE (FT)	MATERIAL DESCRIPTION	ELEVATION (NAVD88)
0.0							
0.0 - 1.5		80	0		1.5	(0.0-1.5) SP-SM: POORLY GRADED SAND WITH SILT AND GRAVEL, damp, very dark gray (10YR 3/1), fine to medium, subangular to subrounded, equant, 20% fine subangular to subrounded, equant gravel, 10% silt. No odor, sheen or staining observed.	12.5
1.5 - 1.8					1.8	(1.5-1.75) SP-SM: POORLY GRADED SAND WITH SILT AND GRAVEL, damp, black (10YR 2/1), fine, 30% silt, 15% fine gravel. No odor, sheen or staining observed.	12.3
1.8 - 7.5			0			(1.75-7.5) SP: POORLY GRADED SAND, damp, brown (10YR 4/3), fine, 10-15% medium sand, trace fine gravel and coarse sand, trace gray mottles. Slight to moderate hydrocarbon odor and no sheen or staining observed.	
7.5 - 11.2		76	0.7		7.5	@ 7.5' reddish brown zone next to contact (7.5-15.0) SP: POORLY GRADED SAND, wet @ 11.5', dark gray (10YR 4/1), fine, 10% silt, trace roots and shells. Slight hydrocarbon odor at 14-14.5' and no sheen or staining observed.	6.5
11.2 - 11.6						@ 11.2-11.6' layers of silt	
11.6 - 11.7						@ 11.7' organic wood layer	
11.7 - 11.8						@ 11.8-12.2' layer of coarse sand and fine gravel	
11.8 - 12.2			4.3				
12.2 - 12.5	CWSB-13-14.0-14.5-0512	100	2.7			@ 12.5-13.2' layers of silt	
12.5 - 15.0			5.4				
15.0					15.0		-1.0

(Continued Next Page)



Boring Log

CLIENT Port of Bellingham

PROJECT NAME Central Waterfront

PROJECT NUMBER 60139509

PROJECT LOCATION Chevron Substation

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DEPTH (ft)	SAMPLE ID Depth Range	DRIVE RECOVERY %	PID (ppm)	GRAPHIC LOG	DEPTH BELOW GROUND SURFACE (FT)	MATERIAL DESCRIPTION	ELEVATION (NAVD88)
15.0		80					
			9.9			(15.0-17.5) SM: SILTY SAND, wet, very dark grayish brown (10YR 3/2), fine, no to low plasticity silt, trace shells. Slight H2S odor and no sheen or staining observed.	
17.5					17.5	@ 17.5' layer of shells	-3.5
			5.4			(17.5-24.75) SP: POORLY GRADED SAND, wet, very dark gray (10YR 3/1), fine, little shell fragments. Moderate H2S, slight hydrocarbon odor @ 22' and no sheen or staining observed.	
20.0		100	10.3			@ 20.5-20.8' 20% fine gravel	
	CWSB-13-21-22-0512 (TOC-AC)		8.3			@ 21-22.5' 15% silt	
22.5						@ 23-24' 15% medium to coarse sand	
			9.1				
25.0					24.8		-10.8
		90				(24.75-30.0) SM: SILTY SAND, wet, dark gray (10YR 4/1), fine, 20-25% no to low plasticity silt, trace shells, trace pockets of fine sand. Moderate H2S odor and no sheen or staining observed.	
			8.3				
27.5			9.1				
	CWSB-13-25-27-0512 (TOC-AC)		9				
30.0			10.3		30.0		-16.0

Bottom of borehole at 30.0 feet.



Boring Log

CLIENT Port of Bellingham **PROJECT NAME** Central Waterfront
PROJECT NUMBER 60139509 **PROJECT LOCATION** Chevron Substation
DATE STARTED 5/7/12 **COMPLETED** 5/7/12 **GROUND ELEVATION** 13.9 ft MLLW **BORE SIZE** 2"
DRILLING CONTRACTOR Cascade Drilling L.P. **NOTES:**
DRILLING METHOD GeoProbe Direct Push **Analytical** NWTPH-Dx, NWTPH-G, TOC=unless noted below
LOGGED BY R. Knecht **CHECKED BY** J. Palmer **Groundwater** 7.5 feet
NOTES AC = archived. Datum NAD27 X= 1600842.3, Y= 642948.6 **Sampler** Macrocore

DEPTH (ft)	SAMPLE ID Depth Range	DRIVE RECOVERY %	PID (ppm)	GRAPHIC LOG	DEPTH BELOW GROUND SURFACE (FT)	MATERIAL DESCRIPTION	ELEVATION (NAVD88)
0.0							
0.0 - 0.5		64	4.6		0.5	(0.0-0.5) SW-SM: WELL GRADED SAND WITH SILT AND GRAVEL, damp, very dark gray (10YR 3/1), fine to medium, 20% fine, subangular to subrounded gravel, 10-15% silt, gravel fill at surface. No odor, sheen, or staining observed.	13.4
0.5 - 8.5			7.1			(0.5-8.5) SP: POORLY GRADED SAND, wet @ 7.5', very dark brown (10YR 3/2), fine, loose, 10% fine to coarse gravel, trace silt. No odor, sheen or staining observed.	
8.5 - 9.1		70	7.2				
9.1 - 10.0			7.2		8.5	(8.5-10.0) GW: WELL GRADED GRAVEL WITH SAND, wet, dark gray (10YR 4/1), fine to coarse, angular, flat, 20% fine to coarse sand, trace silt. No odor, sheen or staining observed.	5.4
10.0 - 11.0		88	9.3		10.0	(10.0-11.0) SM: SILTY SAND, wet, very dark brown (10YR 2/2), fine, 10% fine to coarse gravel, trace medium to coarse sand, trace organics, 60% water. Hydrocarbon odor, silver sheen observed.	3.9
11.0 - 15.0			26.4		11.0	(11.0-15.0) SP: POORLY GRADED SAND, wet, black (10YR 2/1), fine, trace fine to coarse gravel, trace to little organics, trace shells. Strong hydrocarbon (diesel) odor, silver and rainbow sheen observed.	2.9
15.0	CWSB-14-12-14-0512		63.2		15.0	@ 14.75 - 1" layer of medium plasticity clay	-1.1
			10.1				

(Continued Next Page)



Boring Log

CLIENT Port of Bellingham

PROJECT NAME Central Waterfront

PROJECT NUMBER 60139509

PROJECT LOCATION Chevron Substation

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DEPTH (ft)	SAMPLE ID Depth Range	DRIVE RECOVERY %	PID (ppm)	GRAPHIC LOG	DEPTH BELOW GROUND SURFACE (FT)	MATERIAL DESCRIPTION	ELEVATION (NAVD88)
15.0		90					
			7.6			(15.0-19.0) SM: SILTY SAND, wet, dark grayish brown (10YR 4/2), fine, 20% silt, trace to 10% fine gravel, trace coarse gravel, trace shells. Moderate hydrocarbon (diesel) odor, no odor at 19', slight silver and rainbow sheen observed.	
17.5			14.6				
					19.0	(19.0-30.0) SM: SILTY SAND, wet, dark gray (10YR 4/1), fine, 20% silt, trace to little organics and shells. Slight H2S odor, no sheen or staining observed.	-5.1
20.0		90	20.5				
			17.8				
22.5			21.7				
		100	8.4				
25.0							
	CWSB-14- 25-27-0512 CWSB-14- 29-30-0512		11.4				
27.5							
			7.1				
30.0					30.0		-16.1

Bottom of borehole at 30.0 feet.



Boring Log

CLIENT Port of Bellingham **PROJECT NAME** Central Waterfront
PROJECT NUMBER 60139509 **PROJECT LOCATION** Chevron Substation
DATE STARTED 5/7/12 **COMPLETED** 5/7/12 **GROUND ELEVATION** 13.6 ft MLLW **BORE SIZE** 2"
DRILLING CONTRACTOR Cascade Drilling L.P. **NOTES:**
DRILLING METHOD GeoProbe Direct Push **Analytical** NWTPH-Dx, NWTPH-G, TOC=unless noted below
LOGGED BY R. Knecht **CHECKED BY** J. Palmer **Groundwater** 7.5 feet
NOTES AC = archived. Datum NAD27 X= 1600866.8, Y= 642961.0 **Sampler** Macrocore

DEPTH (ft)	SAMPLE ID Depth Range	DRIVE RECOVERY %	PID (ppm)	GRAPHIC LOG	DEPTH BELOW GROUND SURFACE (FT)	MATERIAL DESCRIPTION	ELEVATION (NAVD88)
0.0		72					
1.3			5.3		1.3	(0.0-1.25) SP-SM: POORLY GRADED SAND WITH SILT AND GRAVEL, damp, dark gray (10YR 4/1), fine to medium, 20-25% fine to coarse subangular to subrounded, equant, flat gravel, 10% silt, trace coarse sand. No odor, sheen, or staining observed, (fill).	12.4
2.5			16.6			(1.25-8.5) SP: POORLY GRADED SAND, wet @ 7.5', very dark grayish brown (10YR 3/2), fine, 10% fine to coarse gravel, trace medium to coarse sand and silt. No odor, sheen, or staining observed.	
5.0		56	29.9				
7.5			10		8.5	(8.5-10.25) GW-GM: WELL GRADED GRAVEL WITH SILT AND SAND, wet, very dark gray (10YR 3/1), fine to coarse, angular to subrounded, flat, 25% fine to coarse sand, 10% silt. Slight hydrocarbon odor, slight silver sheen observed.	5.1
10.0		100	50.4		10.3	(10.25-13.25) SP: POORLY GRADED SAND, wet, very dark gray (10YR 3/1), fine, 15% medium sand, trace coarse sand to fine gravel, trace to little shells. Slight hydrocarbon odor and slight silver sheen observed.	3.4
12.5	CWSB-15-11-13-0512 (TOC-AC)		42.1		13.3	(13.25-15.0) SP-SM: POORLY GRADED SAND WITH SILT, wet, dark gray (10YR 4/1), fine, 10-15% silt, trace roots and rootlets. Slight H2S odor and no sheen or staining observed.	0.4
15.0					15.0		-1.4

(Continued Next Page)



Boring Log

CLIENT Port of Bellingham

PROJECT NAME Central Waterfront

PROJECT NUMBER 60139509

PROJECT LOCATION Chevron Substation

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DEPTH (ft)	SAMPLE ID Depth Range	DRIVE RECOVERY %	PID (ppm)	GRAPHIC LOG	DEPTH BELOW GROUND SURFACE (FT)	MATERIAL DESCRIPTION	ELEVATION (NAVD88)
15.0		65					
			33.1			@ 14.9' lense of organics	
			24.6			(15.0-20.3) SM: SILTY SAND, wet, dark grayish brown (10YR 4/2), fine, 20% no to low plasticity silt, 10-15% medium to coarse sand, little roots, wood, and shells. No to slight H2S odor and no sheen or staining observed.	
17.5							
		100	11.8		20.3	(20.3-30.0) SM: SILTY SAND, wet, dark grayish brown (10YR 4/2), fine, 25-30% low plasticity silt, trace shells. Strong H2S odor and no sheen or staining observed.	-6.7
20.0							
	CWSB-15-18-20-0512		18.9				
			13.5				
22.5							
		70	10.7				
25.0							
	CWSB-15-23-25-0512 (TOC-AC)		13.6				
27.5							
			7.6		30.0		
30.0							

Bottom of borehole at 30.0 feet.



Boring Log

CLIENT Port of Bellingham **PROJECT NAME** Central Waterfront
PROJECT NUMBER 60139509 **PROJECT LOCATION** Chevron Substation
DATE STARTED 5/7/12 **COMPLETED** 5/7/12 **GROUND ELEVATION** 13.5 ft MLLW **BORE SIZE** 2"
DRILLING CONTRACTOR Cascade Drilling L.P. **NOTES:**
DRILLING METHOD GeoProbe Direct Push **Analytical** NWTPH-Dx, NWTPH-G, TOC=unless noted below
LOGGED BY R. Knecht **CHECKED BY** J. Palmer **Groundwater** 8 feet
NOTES AC = archived. Datum NAD27 X= 1600889.8, Y= 642950.3 **Sampler** Macrocore

DEPTH (ft)	SAMPLE ID Depth Range	DRIVE RECOVERY %	PID (ppm)	GRAPHIC LOG	DEPTH BELOW GROUND SURFACE (FT)	MATERIAL DESCRIPTION	ELEVATION (NAVD88)
0.0		44					
			4.9		1.5	(0.0-1.5) SP-SM: POORLY GRADED SAND WITH SILT AND GRAVEL, damp, dark gray (10YR 4/1), fine to medium, 20-25% fine to coarse, subangular to subrounded, flat, equant gravel, 10% silt. No odor, sheen or staining observed.	12.0
2.5			12.6		6.5	(1.5-6.5) SP: POORLY GRADED SAND, damp, very dark grayish brown (10YR 3/2), fine, 10-15% fine to coarse gravel, trace medium sand and silt. No odor, sheen or staining observed.	
5.0		90	6.3				7.0
7.5			143			(6.5-13.0) SP: POORLY GRADED SAND, wet @ 8', very dark gray (10YR 3/1), fine, 10% medium to coarse sand and fine gravel, trace to little shells. Moderate hydrocarbon odor and stain on gloves @ 8-9'.	
10.0		100	198				
12.5	CWSB-16-8-10-0512 CWSB-16-13-15-0512		25.4		13.0	@ 12.5-13' 30% coarse gravel	0.5
			7.4				
			6.9		14.5	(13.0-14.0) SP-SM: POORLY GRADED SAND WITH SILT, wet, dark gray (10YR 4/1), fine, 10% silt, trace brown mottles. Very slight hydrocarbon odor, no sheen or staining observed.	-1.0
15.0							

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Boring Log

CLIENT Port of Bellingham

PROJECT NAME Central Waterfront

PROJECT NUMBER 60139509

PROJECT LOCATION Chevron Substation

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DEPTH (ft)	SAMPLE ID Depth Range	DRIVE RECOVERY %	PID (ppm)	GRAPHIC LOG	DEPTH BELOW GROUND SURFACE (FT)	MATERIAL DESCRIPTION	ELEVATION (NAVD88)
15.0							
	CWSB-16-18-20-0512 (TOC-AC)	100	5.7		16.0	(14.5-16.0) SP: POORLY GRADED SAND, wet, very dark gray (10YR 3/1), fine, trace to 10% medium to coarse sand, trace silt and fine gravel, trace shells. Very slight hydrocarbon-like odor, no sheen or staining observed. (continued)	-2.5
17.5			5.8			(16.0-19.5) SM: SILTY SAND, wet, dark grayish brown (10YR 4/2) fine, 20% silt, 10% medium sand, trace fine gravel, little shells. Slight H2S odor, no sheen or staining observed.	
20.0			10.9		19.5	(19.5-25.0) SP-SM: POORLY GRADED SAND WITH SILT, wet, dark gray (10YR 4/1) fine, less than 10% silt, trace shells and organic roots. Slight H2S odor, no sheen or staining observed.	-6.0
22.5			96		5.8		
25.0			6.9				
			6.8				
25.0					25.0		-11.5

Bottom of borehole at 25.0 feet.



Boring Log

CLIENT Port of Bellingham **PROJECT NAME** Central Waterfront
PROJECT NUMBER 60139509 **PROJECT LOCATION** Chevron Substation
DATE STARTED 5/8/12 **COMPLETED** 5/8/12 **GROUND ELEVATION** 13.4 ft MLLW **BORE SIZE** 2"
DRILLING CONTRACTOR Cascade Drilling L.P. **NOTES:**
DRILLING METHOD GeoProbe Direct Push **Analytical** NWTPH-Dx, NWTPH-G, TOC=unless noted below
LOGGED BY R. Knecht **CHECKED BY** J. Palmer **Groundwater** 7.5 feet
NOTES AC = archived. Datum NAD27 X= 1600914.4, Y= 642944.4 **Sampler** Macrocore

DEPTH (ft)	SAMPLE ID Depth Range	DRIVE RECOVERY %	PID (ppm)	GRAPHIC LOG	DEPTH BELOW GROUND SURFACE (FT)	MATERIAL DESCRIPTION	ELEVATION (NAVD88)
0							
		80	14.2		1.8	(0.0-1.75) SP-SM: POORLY GRADED SAND WITH SILT AND GRAVEL, damp, very dark grayish brown (10YR 3/2), fine to medium, 15-20% fine, subangular to subrounded, equant gravel, 10% silt, trace coarse gravel. No odor, sheen or staining observed. @ 1.5-1.7' broken concrete	11.7
			45.4			(1.75-5.75) SP: POORLY GRADED SAND, damp, dark grayish brown (10YR 4/2), fine, trace fine, subrounded gravel and silt. No odor, sheen or staining observed.	
5		80	313		5.8	(5.75-12.75) SP: POORLY GRADED SAND, wet @ 7.5', black (10YR 2/1), fine, 10-20% medium to coarse sand, trace fine gravel. Strong hydrocarbon odor. @ 7.5' LNAPL covered grains @ 8.5' color grades to very dark gray (10 YR 3/1)	7.7
	CWSB-17-6-8-0512		148				
		84	262		12.8	@ 12.75-12.9' wood layer	0.7
			32			(12.75-15.5) SW: WELL GRADED SAND, wet, very dark gray (10YR 3/1), fine to coarse, angular to subrounded, equant, flat. Strong hydrocarbon odor and silver sheen observed. Trace LNAPL. @ 12.9-13.2' pea gravel layer	
10							
		90	107		15.5	(15.5-19.5) SM: SILTY SAND, wet, very dark grayish brown (10YR 3/2), fine, 25% silt, trace coarse sand, trace shell fragments. Slight hydrocarbon and H2S odor, no sheen or staining observed. @ 19.5' wood	-2.1
			112				
15							
					19.5		-6.1
20							

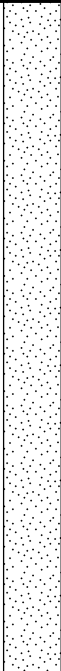

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Boring Log

CLIENT Port of Bellingham PROJECT NAME Central Waterfront
 PROJECT NUMBER 60139509 PROJECT LOCATION Chevron Substation

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DEPTH (ft)	SAMPLE ID Depth Range	DRIVE RECOVERY %	PID (ppm)	GRAPHIC LOG	DEPTH BELOW GROUND SURFACE (FT)	MATERIAL DESCRIPTION	ELEVATION (NAVD88)
20							
	CWSB-17- 23-25-0512	95	60.2			(19.5-30.5) SP: POORLY GRADED SAND, wet, very dark gray (10YR 3/1), fine, trace to 10% silt in layers, less silt down section. Slight to moderate H2S, no sheen or staining observed. (continued) @ 20' - 1" thick wood	
			106			@ 22' - 1" thick wood	
25		75	7.9				
	CWSB-17- 28-30-0512		9.1				
30		78			30.5		-17.1
			71.2			(30.5-35.0) CH: FAT CLAY, wet, dark gray (10YR 4/1), slow dilatancy, high plasticity, 20-30% silt, trace 2" pockets of fine sand. No odor, sheen or staining observed.	
			8.5				
35					35.0		-21.6

Bottom of borehole at 35.0 feet.

Boring Log

CLIENT Port of Bellingham **PROJECT NAME** Central Waterfront
PROJECT NUMBER 60139509 **PROJECT LOCATION** Chevron Substation
DATE STARTED 5/8/12 **COMPLETED** 5/8/12 **GROUND ELEVATION** 13.3 ft MLLW **BORE SIZE** 2"
DRILLING CONTRACTOR Cascade Drilling L.P. **NOTES:**
DRILLING METHOD GeoProbe Direct Push **Analytical** NWTPH-Dx, NWTPH-G, TOC=unless noted below
LOGGED BY R. Knecht **CHECKED BY** J. Palmer **Groundwater** 6.5 feet
NOTES DP=Direct push Datum NAD27 X= 1600971.3, Y= 642979.3 **Sampler** Macrocore

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N Value)	GRAPHIC LOG	MATERIAL DESCRIPTION	Environmental Data	WELL DIAGRAM
0.0							
1.3					(0.0-1.25) GW: WELL GRADED GRAVEL WITH SAND, damp, gray (10YR 5/1), fine to coarse, subangular to angular, 40% fine to coarse sand, trace silt (fill). No odor, sheen or staining observed.	PID = 118	Flush mount well box
2.5	DP	72	0		(1.25-4.25) SP: POORLY GRADED SAND, damp, very dark grayish brown (10YR 3/2) grading to dark grayish brown (10YR 4/2), fine, 10% fine gravel, trace silt. No odor, sheen or staining observed. @ 3.5-4' fine sand.	PID = 187	0-3' concrete seal
4.3					(4.25-5.0) CL: LEAN CLAY, damp, dark grayish brown (10YR 4/2), low plasticity, 15-20% silt. No odor, sheen or staining observed.	9.1	
5.0					(5.0-6.0) SP: POORLY GRADED SAND WITH GRAVEL, damp, dark grayish brown (10YR 4/2), fine, 20% fine to coarse gravel, trace clay. No odor, sheen or staining observed.	8.3	
6.0					(6.0-8.0) ML: SILT WITH SAND, wet @ 6.5', very dark grayish brown (10YR 3/2), no to low plasticity, 15% fine sand, trace clay, little wood chunks coated with product, trace roots. Strong hydrocarbon odor @ 6.5', moderate silver and rainbow sheen observed. Pockets of sand with product.	7.3	
7.5	DP	70	0		(8.0-15.0) SP-SM: POORLY GRADED SAND WITH SILT, wet, dark gray (10YR 4/1), fine, 10% silt, trace wood chunks. Moderate hydrocarbon odor, trace sheen observed to 9'.	PID = 110	3-4' Bentonite Seal
8.0						5.3	
10.0	DP	100	0		@ 10-11' - 10% medium sand and trace fine gravel	PID = 83	
12.5						PID = 36.2	3-16' 10/20 Silica sand
15.0	DP				@ 14-14.25' wood	PID = 10.2	6-16' schedule 40 PVC, 1" prepacked screen
15.0					@ 14.5-15' - 15% fine, rounded gravel		
15.0					(15.0-16.0) Lithology description ends at 15 feet. Well installation information total depth is 16 feet.		
16.0							

Bottom of borehole at 16.0 feet.

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Attachment B



Environment

Submitted to:
Port of Bellingham
Soil Samples

Submitted by:
AECOM
Pittsburgh PA
60139509-560
June 5, 2012

Organic and Inorganic Data Verification Report

Port of Bellingham Central Waterfront Soil and Aqueous QC Samples Analytical Resources, Inc. Data May 2012 Sampling Event

Prepared By Gregory A. Malzone
Project Chemist

Overview

The samples analyzed for the Port of Bellingham Central Waterfront sampling event from May 7-8, 2012 are listed in the Table of Samples Analyzed (page 4). Data verification was performed on a total of forty distinct soil samples, and one soil QC trip blank sample.

Samples were analyzed by Analytical Resources, Inc. (ARI) of Tukwila, WA. The verified analyses were Volatile Organic Compounds (VOCs) by SW-846 method 8260B; Semivolatile Organic Compounds (SVOCs) by SW-846 method 8270D; Benzene, Toluene, Ethylbenzene, m,p-Xylene, and o-Xylene (BTEX) by SW-846 method 8260B SIM (Selected Ion Monitoring); Gasoline Range Hydrocarbons (GRH) by WDOE method NWTPH-G; Diesel Range Hydrocarbons (DRH) as Diesel and Motor Oil by WDOE method NWTPH-Dx; Extractable Petroleum Hydrocarbons (EPH) by WDOE method EPH; Volatile Petroleum Hydrocarbons (VPH) by WDOE method VPH; Total Organic Carbon (TOC) by methods 415.1/Plumb 1981; and Total Solids for dry weight determination by method SM2540B.

The AECOM Analytical Data Verification Checklist is presented as pages 6-11. Data were evaluated based on validation criteria set forth in the *USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic/Inorganic Data Review*, document numbers EPA540/R-99/008 and EPA540/R-04/004 of October 1999 (Organic) and October 2004 (Inorganic), and the *USEPA CLP National Functional Guidelines for Superfund Organic Methods Data Review*, document number USEPA-540-R-07-003, July 2007, as they applied to the reported methodology. Washington State Department of Ecology (WDOE) methods were reviewed as per *WDOE Analytical Methods for Petroleum Hydrocarbons*, ECY 97-602 of June 1997. Field duplicate RPD control limits were taken from the USEPA Region I Laboratory Data Validation Functional Guidelines for Evaluating Organics Analyses, December 1996.

The following data components were reviewed during the data validation procedure:

Submitted Deliverables
Chain-of-Custody form(s) and sample integrity
Assigned laboratory flags and definitions
Sample results including reporting limits and dilution factors
Holding time
Method blank results
LCS, LCSD (blank spike) results
MS, MSD (matrix spike/matrix spike duplicate) results
Surrogate recoveries
Trip blank results
Organic sample chromatograms (for select project samples and select fuel methods only)

Data Validation Qualifiers Assigned During this Review

U: The analyte was analyzed for, but was not detected above the level of 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 its approximate concentration.

Other Qualifiers Assigned During this Review

DNR: Do not report, another acceptable result from a secondary dilution is reportable.

ECR: The reported concentration exceeded the instrument calibration range.

Assigned qualifiers are detailed in the Analytical Limited Data Validation Checklist and are summarized in the Table of Qualified Analytical Results (page 5).

Overall Data Assessment

All data received from the laboratory are suitable for their intended use with the qualifications and clarifications noted. Completeness of the total data set is calculated to be 100% and is acceptable.

**Table of Samples Analyzed
Port of Bellingham – Central Waterfront
Soil Samples and Aqueous QC Samples
Analytical Resources, Inc. (ARI) Laboratory Reports (as listed)
May 2012 Sampling Events**

Matrix	Sample Name	Parent Sample ID	Sample Date and Time		Lab SDG	Lab Sample ID
Soil	CWSB-13-14.0-14.5-0512		5/7/2012	10:10	UT77	UT77A
Soil	CWSB-13-21-22-0512		5/7/2012	10:55	UT77	UT77B
Soil	CWSB-13-25-27-0512		5/7/2012	11:10	UT77	UT77C
Soil	CWSB-13-28-30-0512		5/7/2012	11:30	UT77	UT77D
Soil	CWSB-14-12-14-0512		5/7/2012	12:10	UT77	UT77E
Soil	CWSB-14-25-27-0512		5/7/2012	13:30	UT77	UT77F
Soil	CWSB-14-29-30-0512		5/7/2012	13:35	UT77	UT77G
Soil	CWSB-15-11-13-0512		5/7/2012	14:30	UT77	UT77H
Soil	CWSB-15-23-25-0512		5/7/2012	15:30	UT77	UT77I
Soil	CWSB-15-18-20-0520		5/7/2012	14:45	UT77	UT77J
Soil	CWSB-15-29-30-0512		5/7/2012	15:40	UT77	UT77K
Soil	CWSB-16-8-10-0512		5/7/2012	16:20	UT77	UT77L
Soil	CWSB-16-13-15-0512		5/7/2012	17:00	UT77	UT77M
Soil	CWSB-16-18-20-0512		5/7/2012	17:20	UT77	UT77N
Soil	CWSB-16-23-25-0512		5/7/2012	17:41	UT77	UT77O
Soil	CWSB-17-6-8-0512		5/8/2012	8:30	UT77	UT77P
Soil	CWSB-17-23-25-0512		5/8/2012	9:45	UT77	UT77Q
Soil	CWSB-17-28-30-0512		5/8/2012	10:10	UT77	UT77R
Soil (QC)	CWSB-170-23-25-0512	CWSB-17-23-25-0512	5/8/2012	8:45	UT77	UT77S
Aqueous (QC)	TB-050712 (trip blank)		5/7/2012	0:00	UT77	UT77T
Soil	CBA-SB-1-1.5-2.5-0512		5/8/2012	11:15	UT78	UT78A
Soil	CBA-SB-1-3-5-0512		5/8/2012	11:30	UT78	UT78B
Soil	CBA-SB-2-0.5-2.5-0512		5/8/2012	11:45	UT78	UT78C
Soil	CBA-SB-3-1-3-0512		5/8/2012	12:30	UT78	UT78D
Soil	CBA-SB-4-0.5-2.5-0512		5/8/2012	13:40	UT78	UT78E
Soil	CBA-SB-4-3-5-0512		5/8/2012	13:48	UT78	UT78F
Soil	CBA-SB-5-3.5-0512		5/8/2012	14:15	UT78	UT78G
Soil	CBA-SB-5-0-2-0512		5/8/2012	14:25	UT78	UT78H
Soil	CBA-SB-20-0.5-2.5-0512	CBA-SB-2-0.5-2.5-0512	5/8/2012	10:45	UT78	UT78I
Soil	CBA-SB-50-3-5-0512	CBA-SB-5-3.5-0512	5/8/2012	13:15	UT78	UT78J
Soil	CBA-SB-6-3-5-0512		5/8/2012	14:55	UT78	UT78K
Soil	CBA-SB-7-1-3-0512		5/8/2012	15:25	UT78	UT78L
Soil	CBA-SB-8-3-5-0512		5/8/2012	16:00	UT78	UT78M
Soil	CBA-SB-8-1-3-0512		5/8/2012	16:00	UT78	UT78N
Soil	CWMW-18-7-9-0512		5/8/2012	17:00	UT78	UT78O
Soil	CWMW-18-13-15-0512		5/8/2012	17:30	UT78	UT78P
Soil	CBA-SB-80-3-5-0512	CBA-SB-8-3-5-0512	5/8/2012	15:00	UT78	UT78Q
Soil	CBA-TP-7-0-1-0512		5/8/2012	15:05	UT78	UT78R
Soil	CBA-SB-2-3-5-0512		5/8/2012	12:00	UT78	UT78S
Soil	CBA-SB-7-3-5-0512		5/8/2012	15:15	UT78	UT78T
Soil	CBA-SB-8-1-3-0512		5/8/2012	16:15	UT78	UT78U

**Table of Qualified Analytical Results
Port of Bellingham – Central Waterfront
Soil Samples and Aqueous QC Samples
Analytical Resources, Inc. (ARI) Laboratory Reports (as listed)
May 2012 Sampling Events**

Qualified Reportable Results

Lab ID	Sample ID	Analysis	DF	Method	Analyte	Concentration		Qualifier ¹	Reason Code ²
UT78A	CBA-SB-1-1.5-2.5-0512	Initial	50	NWTPHD	Motor Oil	1800	mg/kg	NJ	CHRO
UT78B	CBA-SB-1-3-5-0512	Initial	1	NWTPHD	Motor Oil	21	mg/kg	NJ	CHRO
UT78C	CBA-SB-2-0.5-2.5-0512	Initial	1	NWTPHG	Gasoline	670	mg/kg	J	SUR
UT78C	CBA-SB-2-0.5-2.5-0512	Initial	1	NWTPHD	Motor Oil	1800	mg/kg	NJ	CHRO
UT78I	CBA-SB-20-0.5-2.5-0512	Initial	1	NWTPHG	Gasoline	540	mg/kg	J	SUR
UT78I	CBA-SB-20-0.5-2.5-0512	Initial	50	NWTPHD	Motor Oil	1400	mg/kg	NJ	CHRO
UT78S	CBA-SB-2-3-5-0512	Initial	1	NWTPHD	Motor Oil	12	mg/kg	NJ	CHRO
UT78U	CBA-SB-8-1-3-0512	Initial	1	EPH	C8-C10 Aliphatics	6000 B	µg/kg	U	MB

(1): Data Validation Qualifiers:

U: The analyte was analyzed for, but was not detected above the level of 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 its approximate concentration.

(2): Reason Codes:

CHRO – Detected response of total peaks in range, but the chromatographic pattern does not match the calibration standard or additional hydrocarbons in the range are not identifiable.

MB – Contamination detected in the associated method blank.

SUR – Surrogate recovery was outside the quality control limits.

Non-Reportable Results

Field ID	Lab ID	Method	Analyte	Concentration	Reason Code ¹	Comment
CWSB-16-8-10-0512	UT77L	NWTPHG	Gasoline	2200 E mg/kg	DNR, ECR	Use DL result
CBA-SB-1-1.5-2.5-0512	UT78A	NWTPHG	Gasoline	630 E mg/kg	DNR, ECR	Use DL result

(1): Reason Codes:

DNR – Do not report. An acceptable result from a secondary dilution is available..

ECR – The concentration exceeded the calibration range.

Project Name: Port of Bellingham (POB) – Central Waterfront	Laboratory: Analytical Resources, Inc. (ARI) of Tukwila, WA.					
Project Reference: Central Waterfront	Sample Matrix: Soil and Aqueous QC Samples					
ENSR Project: 60139509-560	Sample Start Date: 05/07/2012					
Verified By/Date Verified: Greg Malzone 06/05/12 (completed)	Sample End Date: 05/08/2012					
Samples Analyzed: see Table of Samples Analyzed, Port of Bellingham – Central Waterfront, Soil and Aqueous QC Samples (page 4).						
Parameters Verified: Volatile Organic Compounds (VOCs) by SW-846 method 8260B; Semivolatile Organic Compounds (SVOCs) by SW-846 method 8270D; Benzene, Toluene, Ethylbenzene, m,p-Xylene, and o-Xylene (BTEX) by SW-846 method 8260B SIM (Selected Ion Monitoring); Gasoline Range Hydrocarbons (GRH) by WDOE method NWTPH-G; Diesel Range Hydrocarbons (DRH) as Diesel and Motor Oil by WDOE method NWTPH-Dx; Extractable Petroleum Hydrocarbons (EPH) by WDOE method EPH; Volatile Petroleum Hydrocarbons (VPH) by WDOE method VPH; Total Organic Carbon (TOC) by methods 415.1/Plumb 1981; and Total Solids for dry weight determination by method SM2540B.						
Not all samples were analyzed for every parameter/method. Refer to Chain of Custody records for the exact analyses requested.						
Laboratory Project IDs (SDGs): UT77 and UT78						
PRECISION, ACCURACY, METHOD COMPLIANCE, and COMPLETENESS ASSESSMENT						
Precision:	X	Acceptable		Unacceptable	GAM	Initials
Comments: Precision is the measure of variability of individual sample measurements. Laboratory precision was determined by examination of laboratory duplicate results. Evaluation laboratory duplicates for precision was done using the Relative Percent Difference (RPD). The RPD is defined as the difference between two duplicate samples divided by the mean and expressed as a percent. Laboratory RPD limits referenced EPA published QC limits. No data required qualification based on precision data; overall laboratory precision was acceptable. Precision measurements are reviewed in items 17, 20, and 21.						
Accuracy:	X	Acceptable		Unacceptable	GAM	Initials
Comments: Laboratory accuracy is a measure of the system bias, and was measured by evaluating laboratory control sample/laboratory control sample duplicate (LCS/LCSD), matrix spike/matrix spike duplicate (MS/MSD), and organic system monitoring compounds (surrogate) percent recoveries (%Rs). LCS/LCSD %Rs, which demonstrated the overall performance of the analysis, were compared to EPA published QC limits. MS/MSD %Rs, which provided information on sample matrix interferences, were compared to EPA published QC limits or laboratory control charted limits. System monitoring compound or surrogate recoveries, which measured system performance and efficiency during organic analysis, were compared to EPA published QC limits or laboratory control charted limits. Although several data points required qualification based on a nonconforming surrogate recovery (see item 14); overall laboratory accuracy was acceptable. Accuracy measurements are reviewed in items 12, 14, 15 and 16.						
Method Compliance:	X	Acceptable		Unacceptable	GAM	Initials
Comments: Method compliance was determined by evaluating sample integrity, holding time, and laboratory blanks, against method specified requirements, while applying EPA data validation guidelines. Additionally, laboratory notations regarding instrument calibration outliers were considered and utilized in qualifying the associated data in this report. Although some data required qualification based pattern match discrepancies (see item 22) and method blank contamination (see item 11), overall method compliance was acceptable based on the supplied data.						

Completeness:	X	Acceptable		Unacceptable	GAM	Initials
<p>Comments: Completeness is the overall ratio of the number of samples planned versus the number of samples with validated analyses. Completeness goals are set at 90-100%. Determination of completeness included a review of chain of custody records, laboratory analytical methods and detection limits, laboratory case narratives, and project requirements. Completeness also included 100% review of the laboratory sample data results, QC summary reports, and electronic data deliverables (EDDs). All data received from the laboratory are useable with some qualification. Completeness of the total data set is calculated to be 100% and is acceptable.</p>						
VALIDATION CRITERIA CHECK						
<p>Data validation qualifiers used in this review:</p> <p>U: The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.</p> <p>J: The analyte was positively identified. The associated numerical value is the approximate concentration of the analyte in the sample.</p> <p>NJ: The analysis indicates the presence of an analyte that has been tentatively identified and the associated numerical value represents its approximate concentration.</p> <p>DNR: Do not report, a second acceptable result from a secondary dilution is reportable.</p> <p>ECR: The reported concentration exceeded the instrument calibration range.</p> <p>The following comments requiring qualification are in bold type. The other comments are of interest, but qualification of the samples was not necessary.</p> <p>Refer to the Table of Qualified Analytical Results (page 5) for a listing of the samples, analytes, and concentrations qualified.</p>						
1. Did the laboratory identify any non-conformances related to the analytical results?	X	Yes		No	GAM	Initials
<p>Explanation by laboratory: General notes were provided in the laboratory case narratives. Notations regarding outliers observed in non-project samples prepared as QC batch MS/MSD, or laboratory duplicate samples were not evaluated because matrix similarity to project samples could not be guaranteed. In some cases, laboratory QC batches did not include MS/MSD samples because of insufficient sample volume. The following laboratory notes specially refer to project samples.</p> <p>Method NWTPHG (SDG UT77): The percent recoveries for the surrogate, bromobenzene, were high following the initial NWTPH-G analyses of samples CWSB-16-8-10-0512 and CWSB-17-6-8-0512. This was due to co-elution with interference. Both samples were diluted and re-analyzed. The percent recoveries for all surrogates were within established QC limits for the dilutions. The results for both analyses have been submitted for these samples.</p> <p>Method NWTPHG (SDG UT78): The percent recoveries for the surrogate, bromobenzene, were high following the initial NWTPHG analyses of samples CBA-SB-1 -1 .5-2.5-051 2, CBA-SB -2-0.5-2.5-051 2 and CBAS8-20-0.5-2.5-0512. This was due to co-elution with an interference. Sample CBA-SB-1-1.5-2.5-0512 was diluted and re-analyzed. The percent recoveries for all surrogates were within established QC limits for the dilution. The results for both analyses have been submitted for this sample.</p> <p>Method VPH (SDG UT78): The method blank was re-analyzed for VPH due to suspected carryover from a previous sample. The results for the re-analysis only have been submitted.</p> <p>Data qualification, if any, related to the laboratory observations are discussed in the following sections.</p>						
2. Were sample Chain-of-Custody forms complete?	X	Yes		No	GAM	Initials
<p>Comments: COC records from field to laboratory were complete and accurately reflect the sampling information with the exceptions noted below. Custody was maintained as evidenced by field and laboratory personnel signatures, dates, and times of receipt.</p>						
3. Were all the analyses requested for the samples on the COCs completed by the laboratory?	X	Yes		No	GAM	Initials
<p>Comments: All requested analyses as documented on original COC records were completed by the laboratory.</p>						

4. Were samples received in good condition and at the appropriate temperature?	X	Yes		No	GAM	Initials
Comments: All samples were received intact and in good condition as stated in the report cover letters submitted with each SDG. All samples were received intact and in good condition as stated in the Cooler Receipt Forms submitted with each SDG. All samples were received at acceptable cooler temperatures of 0.9° C to 3.8° C as noted on the Cooler Receipt Forms provided. Samples received at less than 2° C were determined to be in acceptable condition because sample containers were intact and samples themselves were not frozen. No action is required other than to note this observation.						
5. Were the requested analytical methods in compliance with WP/QAPP, permit, or COC?	X	Yes		No	GAM	Initials
Comments: Reported methods and target analyte lists were in compliance with COC records.						
6. Were detection limits in accordance with WP/QAPP, permit, or method?	X	Yes		No	GAM	Initials
Comments: Reported detection limits are achievable by the quoted methods. Detection limits for soil results reported on a dry weight basis were increased to reflect the percent moisture content.						
7. Do the laboratory reports include only those constituents requested to be reported for a specific analytical method?	X	Yes		No	GAM	Initials
Comments: Reported target analytes were consistent with COC requests.						
8. Were sample holding times met?	X	Yes		No	GAM	Initials
Comments: Extraction and analytical holding times were met for all samples and analyses.						
9. Were correct concentration units reported?	X	Yes		No	GAM	Initials
Comments: Correct concentration units were reported. The soil NWTPHG and NWTPHD results are reported in mg/kg (ppm) on a dry weight basis. The BTEX, VPH, and EPH results are reported in µg/kg on a dry weight basis. The TOC and total solids results were reported in percent (%). The TOC results were reported on a dry weight basis.						
10. Were the reporting requirements for flagged data met?	X	Yes		No	GAM	Initials
Comments: Data validation qualifiers override assigned laboratory flags.						
11. Were laboratory blank samples free of target analyte contamination?		Yes	X	No	GAM	Initials
Comments: All laboratory blanks were free of target compound contamination at the detection limits with the following exception. <u>Method GC-EPH (SDG UY78):</u> C8-C10 Aliphatics were detected in the method blank associated with sample CBA-SB-8-1-3-0512, extracted on 05/15/12, at a concentration greater than the reporting limit. The positive C8-C10 Aliphatics result for sample CBA-SB-8-1-3-0512 was less than five times the method blank level and was qualified "U," as undetected, because of laboratory contamination. Refer to the Table of Qualified Analytical Results (page 5) for a listing of the samples, analytes, and concentrations qualified.						
12. Were trip blank, field blank, and/or equipment rinse blank samples free of target analyte contamination?	X	Yes		No	GAM	Initials
Comments: The trip blank samples were free of target analyte contamination or were associated with undetected sample results. Field blank and equipment rinse blank samples were not submitted for analysis.						

13. Were instrument calibrations within method control limits?	NA	Yes	NA	No	GAM	Initials
<i>Comments: Not applicable for this level of data validation – Instrument calibration data were not supplied in analytical laboratory reports and were therefore not included in this data review.</i>						
14. Were surrogate recoveries within control limits?		Yes	X	No	GAM	Initials
<p>Comments: Surrogate %Rs for organic analyses were within data verification and/or laboratory control-charted QC limits all samples and associated QC samples, or met the following requirements, except as noted. High surrogate %Rs associated with undetected target analyte results did not initiate data qualification since the indicated high bias was not realized. Non-volatile surrogate recoveries affected by required sample dilution did not require qualification, because extraction/analytical efficiency was demonstrated in associated blank or LCS spike surrogate %Rs. Nonconforming surrogate %Rs in laboratory QC samples did not initiate qualification of project samples as long as surrogate %Rs in project samples were acceptable.</p> <p><u>Method MWTPHG (SDG UT78)</u>: The bromobenzene surrogate recoveries for samples CBA-SB-2-0.5-2.5-0512 and CBA-SB-20-0.5-2.5-0512 were greater than the upper quality control limit. The positive gasoline (GRO) results for samples CBA-SB-2-0.5-2.5-0512 and CBA-SB-20-0.5-2.5-0512 were qualified “J,” as estimated concentrations, because of high bias attributable to matrix effects.</p> <p>Refer to the Table of Qualified Analytical Results (page 5) for a listing of the samples, analytes, and concentrations qualified.</p>						
15. Were laboratory control sample recoveries within control limits?	X	Yes		No	GAM	Initials
Comments: LCS and LCSD (blank spike) recoveries were within data validation or laboratory control-charted QC limits for all target analytes.						
16. Were matrix spike recoveries within control limits?	X	Yes		No	GAM	Initials
<p>Comments: Project specific MS and MSD recoveries for target analytes were within data verification QC limits (75-125% for metals; 50-150% for general chemistry) or were within laboratory control charted QC limits (all other methods), or else spike %Rs were not applicable due to native sample concentrations that exceeded four times the spiked amount, except as noted. Note in that in some instances, MS/MSD data was not reported, however, LCS and/or LCSD data were reported instead to demonstrate analytical accuracy and/or precision. No action is required for this level of review other than to note this observation.</p>						
17. Were RPDs within control limits?	X	Yes		No	GAM	Initials
Comments: Laboratory RPDs for target analytes in LCS/LCSD and project-specific MS/MSD samples were within data validation control limits						
18. Were organic system performance criteria met?	NA	Yes	NA	No	GAM	Initials
<i>Comments: Not applicable for this level of data validation – Organic system performance data were not supplied in the analytical laboratory reports and were therefore not included in this data review.</i>						
19. Were internal standards within method criteria for GC/MS sample analyses?	NA	Yes	NA	No	GAM	Initials
<i>Comments: Not applicable for this level of data validation – GC/MS internal standard data were not supplied in the analytical laboratory reports and were therefore not included in this data review.</i>						
20. Were inorganic system performance criteria met?	NA	Yes	NA	No	GAM	Initials
<i>Comments: Not applicable for this level of data validation – Inorganic system performance data were not supplied in the analytical laboratory reports and were therefore not included in this data review.</i>						

21. Were blind field duplicates collected? If so, discuss the precision (RPD) of the results.		X	Yes		No	GAM	Initials
Duplicate Sample No.	CWSB-170-23-25-0512	Primary Sample No.		CWSB-17-23-25-0512			
Duplicate Sample No.	CBA-SB-20-0.5-2.5-0512	Primary Sample No.		CBA-SB-2-0.5-2.5-0512			
Duplicate Sample No.	CBA-SB-50-3-5-0512	Primary Sample No.		CBA-SB-5-3-5-0512			
Duplicate Sample No.	CBA-SB-80-3-5-0512	Primary Sample No.		CBA-SB-8-3-5-0512			

Comments: The RPDs for the duplicates were within the 0-50% data validation QC limits for soil samples, or RPDs were not applicable due to results that were \pm twice the reporting limit or were undetected in both samples. Details are provided in the tables below.

Laboratory/field sampling precision and sample homogeneity were acceptable. No data qualifications were required.

Method	Analyte	CWSB-17-23-25-0512	CWSB-170-23-25-0512	RPD	Qualifier	Samp RL	Dup RL	Units
Plumb	Total Organic Carbon	0.549	0.393	33		0.020	0.020	%
2540B	Total Solids	77.90	78.50	0.8		0.01	0.01	%

Method	Analyte	CBA-SB-2-0.5-2.5-0512	CBA-SB-20-0.5-2.5-0512	RPD	Qualifier	Samp RL	Dup RL	Units
NWTPHG	Gasoline	670	540	21		7.2	6.9	mg/kg
NWTPHD	Diesel Range	6600	5500	18		300	300	mg/kg
NWTPHD	Motor Oil Range	1800	1400	25		600	600	mg/kg
2540B	Total Solids	82.90	84.60	2		0.01	0.01	%

Method	Analyte	CBA-SB-5-3-5-0512	CBA-SB-50-3-5-0512	RPD	Qualifier	Samp RL	Dup RL	Units
NWTPHG	Gasoline	12	6.2 U	NC	$\pm 2RL$	7.3	6.2	mg/kg
NWTPHD	Diesel Range	10	9.8	2		6.2	5.8	mg/kg
2540B	Total Solids	80.50	84.00	4		0.01	0.01	%

Method	Analyte	CBA-SB-8-3-5-0512	CBA-SB-80-3-5-0512	RPD	Qualifier	Samp RL	Dup RL	Units
NWTPHG	Gasoline	63	43	38		11	11	mg/kg
NWTPHD	Diesel Range	650	560	15		35	36	mg/kg
NWTPHD	Motor Oil Range	1200	960	22		71	71	mg/kg
Plumb	Total Organic Carbon	2.55	2.44	4		0.020	0.020	%
2540B	Total Solids	68.40	72.30	6		0.01	0.01	%

22. Were qualitative criteria for organic target analyte identification met?	X	Yes		No	GAM	Initials
<p>Comments: GC/MS and GC quantitation reports and chromatograms were reviewed by trained laboratory personnel in accordance with the laboratory's internal QA/QC program. There were no identification flags assigned by the laboratory other than those noted below.</p> <p><u>Method NWTPHG (All SDGs):</u> The laboratory noted that several gasoline results reported in soil samples represented positive results that did not match the chromatographic gasoline pattern. Some sample chromatograms were provided by the laboratory, but no standard chromatograms were submitted so comparisons of sample to standard patterns could not be conducted. Although the analyte is listed as "gasoline" in the laboratory report pages, the submitted EDD query correctly lists the analyte name as "Gasoline Range Hydrocarbons" to correctly encompass not only gasoline, but other co-eluting/interfering compounds found within the target carbon range. No action is required other than to note this observation since the database contains the correct information.</p> <p><u>Method NWTPHD (All SDGs):</u> The laboratory noted that the diesel and/or motor oil results reported for some samples were affected by unidentifiable organics and/or hydrocarbons within the specified range. Although supporting documentation to fully evaluate the laboratory comments cannot be made with this level of report deliverable, professional judgment determines to uphold the laboratory assessment.</p> <p>Diesel is listed as "diesel" in the laboratory report pages, but the submitted EDD query correctly lists the analyte name as "Diesel Range Hydrocarbons" to correctly encompass not only diesel, but other co-eluting/interfering compounds found within the target range of C₁₀-C₂₅. No action is required for the diesel data other than to note this observation because the database contains the correct target analyte determination.</p> <p>The EDD however does list the motor oil result as "motor oil" in both the laboratory report and in the database. Positive motor oil results in samples CBA-SB-1-1.5-2.5-0512, CBA-1-3-5-0512, CBA-2-0.5-2.5-0512, CBA-SB-20-0.5-2.5-0512, and CBA-SB-2-3-5-0512 require "NJ" qualifiers to indicate tentative identification and estimated quantitation due to pattern match discrepancies and possible interference from non-target analytes within the designated range of C₂₄-C₃₈.</p> <p>Refer to the Table of Qualified Analytical Results (page 5) for a listing of the samples, analytes, and concentrations qualified.</p>						
23. Were 100% of the EDD concentrations and reporting limits compared to the hardcopy data reports?	X	Yes		No	GAM	Initials
<p>Comments: The EDD entries were resolved with the hardcopy data results and corrected as necessary. According to validation protocol, the hardcopy data report was accepted as the correct reference. Qualifiers and Reason Codes were added to the EDD files. The EDD files were formatted for EQUIS upload and uploaded to the database by the database administrator.</p>						
<p>24. General Comments: Data were evaluated based on validation criteria set forth in the <i>USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic/Inorganic Data Review</i>, document numbers EPA540/R-99/008 and EPA540/R-04/004 of October 1999 (Organic) and October 2004 (Inorganic), and the <i>USEPA CLP National Functional Guidelines for Superfund Organic Methods Data Review</i>, document number USEPA-540-R-07-003, July 2007, as they applied to the reported methodology. Washington State Department of Ecology (WDOE) methods were reviewed as per <i>WDOE Analytical Methods for Petroleum Hydrocarbons</i>, ECY 97-602 of June 1997. Field duplicate RPD control limits were taken from the USEPA Region I Laboratory Data Validation Functional Guidelines for Evaluating Organics Analyses, December 1996.</p> <p>Refer to the Table of Qualified Analytical Results (page 5) for a listing of the samples, analytes, and concentrations qualified.</p>						



Analytical Resources, Incorporated
Analytical Chemists and Consultants

18 May 2012

Jason Palmer
AECOM, Inc.
710 2nd Avenue
Suite 1000
Seattle, WA 98104

RE: Client Project: Central Waterfront
ARI Job No.: UT77

Dear Jason:

Please find enclosed the original chain of custody records and the final results for samples from the project referenced above. Analytical Resources, Inc accepted nineteen soil samples and one trip blank on May 9, 2011. The samples were analyzed for NWTPH-G, NWTPH-Dx and TOC as requested.

The percent recoveries for the surrogate, bromobenzene, were high following the initial NWTPH-G analyses of samples CWSB-16-8-10-0512 and CWSB-17-6-8-0512. This was due to co-elution with an interference. Both samples were diluted and re-analyzed. The percent recoveries for all surrogates were within established QC limits for the dilutions. The results for both analyses have been submitted for these samples.

The remaining analyses proceeded without incident of note.

A copy of these reports and all raw data will be kept on file at ARI. Should you have any questions regarding these results, please feel free to call me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.


Mark D. Harris
Project Manager
206/695-6210
<markh@arilabs.com>

Enclosures

cc: file UT77

MDH/mdh

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: **U177** Turn-around Requested: **Stand. ARI**

ARI Client Company: **AECOM** Phone: **206 624 9349**

Client Contact: **Jason Palmer**

Client Project Name: **Central Waterfront**

Client Project #: **Renekrecht/Arcobromosidin/Erlic**

Page: **1** of **4**

Date: **5/7/12** Ice Present? **Y**

No. of Coolers: **4** Cooler Temps: **3.8, 8.9, 16, 12**

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)



Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested				Notes/Comments	
					WTPH-A	WTPH-G	TOC	EPH		VPH
CWSB-13-140-145-0512	5/7/12	10:10	SO	5	X	X	X	X		
CWSB-13-21-22-0512	10:55	10:55	SO	5	X	X	X	X		Do Not analyze TOC - Archive
CWSB-13-25-27-0512	11:10	11:10	SO	5	X	X	X	X		Archive TOC
CWSB-13-28-30-0512	11:30	11:30	SO	5	X	X	X	X		Archive
CWSB-14-12-14-0512	12:10	12:10	SO	12	X	X	X	X		Do Not Run EPH/VPH/BTEX/SVCs
CWSB-14-25-27-0512	13:30	13:30	SO	5	X	X	X	X		
CWSB-14-29-30-0512	13:35	13:35	SO	5	X	X	X	X		
CWSB-15-11-13-0512	14:30	14:30	SO	5	X	X	X	X		Archive TOC
CWSB-15-23-25-0512	15:30	15:30	SO	5	X	X	X	X		Archive TOC
CWSB-15-18-20-0512	14:45	14:45	SO	5	X	X	X	X		

Comments/Special Instructions

Relinquished by: (Signature) <i>[Signature]</i>	Received by: (Signature) <i>[Signature]</i>
Printed Name: Renekrecht	Printed Name: Jennifer Millsap
Company: AECOM	Company: ARI
Date & Time: 5/9/12 10:15	Date & Time: 5/9/12 10:15

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

Chain of Custody Record & Laboratory Analysis Request

Analytical Resources, Incorporated
 Analytical Chemists and Consultants
 4611 South 134th Place, Suite 100
 Tukwila, WA 98168
 206-695-6200 206-695-6201 (fax)



Page: 2 of 4
 Date: 5/9/12 Ice Present? Y
 No. of Coolers: 4 Cooler Temps: 3.8, 0.9, 1.6, 1.2

ARI Assigned Number: UTT77 Turn-around Requested: Standard
 ARI Client Company: AECOM Phone: 206.624.9349
 Client Contact: Juwon Palmer
 Client Project Name: Central Water front
 Client Project #: Samplers:

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested						Notes/Comments	
					ADPH-D	ADPH-G	TOC	EPH	VP4	SIM-BTEX		SVCS
CWSB-15-24-30-0512	5/7/12	1540	SO	5	X	X	X				Archive	
CWSB-16-8-10-0512		1620	SO	5	X	X						
CWSB-16-13-15-0512		1700	SO	5	X	X						
CWSB-16-18-20-0512		1720	SO	5	X	X					Archive/TOC	
CWSB-16-23-25-0512		1741	SO	5	X	X					Archive	
CWSB-17-6-8-0512	5/8/12	0830	SO	12	X	X	X	X	X	X	DO NOT ANALYSIS EPH/VP4/BTEX/SVCS	
CWSB-17-23-25-0512		0945	SO	5	X	X						
CWSB-17-28-30-0512		1010	SO	5	X	X						
TB-050712	5/2/12	-	W	1								
CWSB-17-23-25-0512	5/9/12	0845	SO	5	X	X	X	X	X	X		
Comments/Special Instructions	Relinquished by: (Signature) [Signature] Printed Name: Renee Knecht Company: AECOM		Received by: (Signature) [Signature] Printed Name: Jennifer Milsap Company: ARI		Relinquished by: (Signature) [Signature] Printed Name: [Signature] Company: [Signature]		Received by: (Signature) [Signature] Printed Name: [Signature] Company: [Signature]		Date & Time: 5/9/12 1015		Date & Time: 5/9/12 1015	

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.



Cooler Receipt Form

ARI Client: AECOM

Project Name: Central Waterfront

COC No(s) _____ (NA)

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No UTTT

Tracking No _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES (NO)

Were custody papers included with the cooler? (YES) NO

Were custody papers properly filled out (ink, signed, etc) (YES) NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry). 3.8 0.9 1.6 1.2

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 90877952

Cooler Accepted by: JM Date 5/9/12 Time: 10:15

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES (NO)

What kind of packing material was used? Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____

Was sufficient ice used (if appropriate)? NA (YES) NO

Were all bottles sealed in individual plastic bags? YES (NO)

Did all bottles arrive in good condition (unbroken)? (YES) NO

Were all bottle labels complete and legible? (YES) NO

Did the number of containers listed on COC match with the number of containers received? YES (NO)

Did all bottle labels and tags agree with custody papers? (YES) NO

Were all bottles used correct for the requested analyses? (YES) NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) (NA) YES NO

Were all VOC vials free of air bubbles? NA YES (NO)

Was sufficient amount of sample sent in each bottle? (YES) NO

Date VOC Trip Blank was made at ARI... (NA)

Was Sample Split by ARI: (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: JM Date: 5/9/12 Time: _____

**** Notify Project Manager of discrepancies or concerns ****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

CWSB-17-6-8-0512 has 11 containers not 12.
TB-050712 = sm in 6 of 6

By JM Date 5/9/12

			Small → "sm"
			Peabubbles → "pb"
			Large → "lg"
			Headspace → "hs"

Sample ID Cross Reference Report



ARI Job No: UT77
Client: AECOM
Project Event: N/A
Project Name: Central Waterfront

Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1. CWSB-13-14.0-14.5-0512	UT77A	12-8459	Soil	05/07/12 10:10	05/09/12 10:15
2. CWSB-13-21-22-0512	UT77B	12-8460	Soil	05/07/12 10:55	05/09/12 10:15
3. CWSB-13-25-27-0512	UT77C	12-8461	Soil	05/07/12 11:10	05/09/12 10:15
4. CWSB-13-28-30-0512	UT77D	12-8462	Soil	05/07/12 11:30	05/09/12 10:15
5. CWSB-14-12-14-0512	UT77E	12-8463	Soil	05/07/12 12:10	05/09/12 10:15
6. CWSB-14-25-27-0512	UT77F	12-8464	Soil	05/07/12 13:30	05/09/12 10:15
7. CWSB-14-29-30-0512	UT77G	12-8465	Soil	05/07/12 13:35	05/09/12 10:15
8. CWSB-15-11-13-0512	UT77H	12-8466	Soil	05/07/12 14:30	05/09/12 10:15
9. CWSB-15-23-25-0512	UT77I	12-8467	Soil	05/07/12 15:30	05/09/12 10:15
10. CWSB-15-18-20-0512	UT77J	12-8468	Soil	05/07/12 14:45	05/09/12 10:15
11. CWSB-15-29-30-0512	UT77K	12-8469	Soil	05/07/12 15:40	05/09/12 10:15
12. CWSB-16-8-10-0512	UT77L	12-8470	Soil	05/07/12 16:20	05/09/12 10:15
13. CWSB-16-13-15-0512	UT77M	12-8471	Soil	05/07/12 17:00	05/09/12 10:15
14. CWSB-16-18-20-0512	UT77N	12-8472	Soil	05/07/12 17:20	05/09/12 10:15
15. CWSB-16-23-25-0512	UT77O	12-8473	Soil	05/07/12 17:41	05/09/12 10:15
16. CWSB-17-6-8-0512	UT77P	12-8474	Soil	05/08/12 08:30	05/09/12 10:15
17. CWSB-17-23-25-0512	UT77Q	12-8475	Soil	05/08/12 09:45	05/09/12 10:15
18. CWSB-17-28-30-0512	UT77R	12-8476	Soil	05/08/12 10:10	05/09/12 10:15
19. CWSB-170-23-25-0512	UT77S	12-8477	Soil	05/08/12 08:45	05/09/12 10:15
20. TB-050712	UT77T	12-8478	Water	05/07/12	05/09/12 10:15



Data Reporting Qualifiers

Effective 2/14/2011

Inorganic Data

- U Indicates that the target analyte was not detected at the reported concentration
- * Duplicate RPD is not within established control limits
- B Reported value is less than the CRDL but \geq the Reporting Limit
- N Matrix Spike recovery not within established control limits
- NA Not Applicable, analyte not spiked
- H The natural concentration of the spiked element is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible
- L Analyte concentration is ≤ 5 times the Reporting Limit and the replicate control limit defaults to ± 1 RL instead of the normal 20% RPD

Organic Data

- U Indicates that the target analyte was not detected at the reported concentration
- * Flagged value is not within established control limits
- B Analyte detected in an associated Method Blank at a concentration greater than one-half of ARI's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.
- J Estimated concentration when the value is less than ARI's established reporting limits
- D The spiked compound was not detected due to sample extract dilution
- E Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
- Q Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria ($< 20\%$ RSD, $< 20\%$ Drift or minimum RRF).



- S Indicates an analyte response that has saturated the detector. The calculated concentration is not valid; a dilution is required to obtain valid quantification of the analyte
- NA The flagged analyte was not analyzed for
- NR Spiked compound recovery is not reported due to chromatographic interference
- NS The flagged analyte was not spiked into the sample
- M Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters. This flag is used only for GC-MS analyses
- M2 The sample contains PCB congeners that do not match any standard Aroclor pattern. The PCBs are identified and quantified as the Aroclor whose pattern most closely matches that of the sample. The reported value is an estimate.
- N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification"
- Y The analyte is not detected at or above the reported concentration. The reporting limit is raised due to chromatographic interference. The Y flag is equivalent to the U flag with a raised reporting limit.
- EMPC Estimated Maximum Possible Concentration (EMPC) defined in EPA Statement of Work DLM02.2 as a value "calculated for 2,3,7,8-substituted isomers for which the quantitation and /or confirmation ion(s) has signal to noise in excess of 2.5, but does not meet identification criteria"
(Dioxin/Furan analysis only)
- C The analyte was positively identified on only one of two chromatographic columns. Chromatographic interference prevented a positive identification on the second column
- P The analyte was detected on both chromatographic columns but the quantified values differ by $\geq 40\%$ RPD with no obvious chromatographic interference
- X Analyte signal includes interference from polychlorinated diphenyl ethers.
(Dioxin/Furan analysis only)
- Z Analyte signal includes interference from the sample matrix or perfluorokerosene ions. **(Dioxin/Furan analysis only)**



Geotechnical Data

- A The total of all fines fractions. This flag is used to report total fines when only sieve analysis is requested and balances total grain size with sample weight.
- F Samples were frozen prior to particle size determination
- SM Sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that interferes with the sieving process and/or moisture content, porosity and saturation calculations
- SS Sample did not contain the proportion of "fines" required to perform the pipette portion of the grain size analysis
- W Weight of sample in some pipette aliquots was below the level required for accurate weighting

ORGANICS ANALYSIS DATA SHEET

TPHG by Method NWTPHG

Matrix: Soil

Data Release Authorized: 

Reported: 05/15/12

QC Report No: UT77-AECOM

Project: Central Waterfront

Event: NA

Date Sampled: 05/07/12

Date Received: 05/09/12



ARI ID	Client ID	Analysis Date	Basis	Range	Result
MB-051012 12-8459	Method Blank	05/10/12 PID2	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	< 5.0 U --- 99.9% 99.2%
UT77A 12-8459	CWSB-13-14.0-14.5-0512	05/10/12 PID2	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	< 6.2 U --- 94.3% 92.3%
UT77B 12-8460	CWSB-13-21-22-0512	05/10/12 PID2	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	< 6.5 U --- 101% 98.5%
UT77C 12-8461	CWSB-13-25-27-0512	05/10/12 PID2	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	< 6.8 U --- 102% 101%
UT77E 12-8463	CWSB-14-12-14-0512	05/10/12 PID2	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	370 GRO 100% 122%
UT77F 12-8464	CWSB-14-25-27-0512	05/10/12 PID2	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	< 9.2 U --- 95.3% 95.4%
UT77G 12-8465	CWSB-14-29-30-0512	05/10/12 PID2	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	< 8.1 U --- 94.8% 95.8%
UT77H 12-8466	CWSB-15-11-13-0512	05/10/12 PID2	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	17 GRO 98.6% 99.6%
UT77I 12-8467	CWSB-15-23-25-0512	05/10/12 PID2	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	< 7.1 U --- 101% 101%
UT77J 12-8468	CWSB-15-18-20-0512	05/10/12 PID2	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	< 6.4 U --- 94.8% 95.1%

ORGANICS ANALYSIS DATA SHEET

TPHG by Method NWTPHG

Matrix: Soil


QC Report No: UT77-AECOM

Project: Central Waterfront

Event: NA

Date Sampled: 05/07/12

Date Received: 05/09/12

Data Release Authorized: 

Reported: 05/15/12

ARI ID	Client ID	Analysis Date	Basis	Range	Result
MB-051112 12-8470	Method Blank	05/11/12 PID2	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	< 5.0 U --- 101% 102%
UT77L 12-8470	CWSB-16-8-10-0512	05/10/12 PID2	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	2200 E GAS/GRO 99.4% 146%
UT77L DL 12-8470	CWSB-16-8-10-0512	05/11/12 PID2	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	4200 GAS/GRO 103% 121%
UT77M 12-8471	CWSB-16-13-15-0512	05/10/12 PID2	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	< 7.6 U --- 94.5% 96.5%
UT77N 12-8472	CWSB-16-18-20-0512	05/10/12 PID2	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	< 7.0 U --- 98.8% 101%
UT77P 12-8474	CWSB-17-6-8-0512	05/11/12 PID2	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	2200 E GAS/GRO 102% 170%
UT77P DL 12-8474	CWSB-17-6-8-0512	05/11/12 PID2	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	3700 GAS/GRO 103% 123%
UT77Q 12-8475	CWSB-17-23-25-0512	05/10/12 PID2	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	< 7.6 U --- 91.2% 93.5%
UT77R 12-8476	CWSB-17-28-30-0512	05/10/12 PID2	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	< 6.9 U --- 97.4% 100%
UT77S 12-8477	CWSB-170-23-25-0512	05/10/12 PID2	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	< 7.1 U --- 98.2% 102%

ORGANICS ANALYSIS DATA SHEET

TPHG by Method NWTPHG

Matrix: Soil


QC Report No: UT77-AECOM

Project: Central Waterfront

Event: NA

Date Sampled: 05/08/12

Date Received: 05/09/12

Data Release Authorized: 
Reported: 05/15/12

ARI ID	Client ID	Analysis Date	Basis	Range	Result
--------	-----------	------------------	-------	-------	--------

Gasoline values reported in mg/kg (ppm)

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ORGANICS ANALYSIS DATA SHEET

TPHG by Method NWTPHG

Page 1 of 1

Sample ID: CWSB-13-14.0-14.5-0512

MATRIX SPIKE

Lab Sample ID: UT77A

QC Report No: UT77-AECOM

LIMS ID: 12-8459

Project: Central Waterfront

Matrix: Soil

Event: NA

Data Release Authorized: *B*

Date Sampled: 05/07/12

Reported: 05/15/12

Date Received: 05/09/12

Date Analyzed MS: 05/10/12 22:58

Purge Volume: 5.0 mL

MSD: 05/10/12 23:26

Instrument/Analyst MS: PID2/JLW

Sample Amount MS: 80.9 mg-dry-wt

MSD: PID2/JLW

MSD: 80.9 mg-dry-wt

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
Gasoline Range Hydrocarbons < 6.18 U		69.2	51.8	134%	67.0	51.8	129%	3.2%

Reported in mg/kg (ppm)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	MS	MSD
Trifluorotoluene	101%	100%
Bromobenzene	101%	99.2%

ORGANICS ANALYSIS DATA SHEET

TPHG by Method NWTPHG

Page 1 of 1


Sample ID: LCS-051012

LAB CONTROL SAMPLE

Lab Sample ID: LCS-051012

LIMS ID: 12-8459

Matrix: Soil

Data Release Authorized: 

Reported: 05/15/12

QC Report No: UT77-AECOM

Project: Central Waterfront

Event: NA

Date Sampled: NA

Date Received: NA

Date Analyzed LCS: 05/10/12 13:13

LCSD: 05/10/12 13:41

Instrument/Analyst LCS: PID2/JLW

LCSD: PID2/JLW

Purge Volume: 5.0 mL

Sample Amount LCS: 100 mg-dry-wt

LCSD: 100 mg-dry-wt

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Gasoline Range Hydrocarbons	47.3	50.0	94.6%	51.8	50.0	104%	9.1%

Reported in mg/kg (ppm)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	98.8%	91.6%
Bromobenzene	96.6%	93.9%

ORGANICS ANALYSIS DATA SHEET

TPHG by Method NWTPHG

Page 1 of 1

Sample ID: LCS-051112

LAB CONTROL SAMPLE

Lab Sample ID: LCS-051112

LIMS ID: 12-8470

Matrix: Soil

Data Release Authorized: *[Signature]*

Reported: 05/15/12

QC Report No: UT77-AECOM

Project: Central Waterfront

Event: NA

Date Sampled: NA

Date Received: NA

Date Analyzed LCS: 05/11/12 11:23

LCSD: 05/11/12 11:51

Instrument/Analyst LCS: PID2/JLW

LCSD: PID2/JLW

Purge Volume: 5.0 mL

Sample Amount LCS: 100 mg-dry-wt

LCSD: 100 mg-dry-wt

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Gasoline Range Hydrocarbons	57.2	50.0	114%	52.0	50.0	104%	9.5%

Reported in mg/kg (ppm)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	93.0%	104%
Bromobenzene	90.8%	102%

TPHG SOIL SURROGATE RECOVERY SUMMARY

ARI Job: UT77
Matrix: Soil

QC Report No: UT77-AECOM
Project: Central Waterfront
Event: NA

Client ID	BFB	TFT	BBZ	TOT	OUT
MB-051012	NA	99.9%	99.2%	0	0
LCS-051012	NA	98.8%	96.6%	0	0
LCSD-051012	NA	91.6%	93.9%	0	0
CWSB-13-14.0-14.5-0512	NA	94.3%	92.3%	0	0
CWSB-13-14.0-14.5-0512 MS	NA	101%	101%	0	0
CWSB-13-14.0-14.5-0512 MSDNA		100%	99.2%	0	0
CWSB-13-21-22-0512	NA	101%	98.5%	0	0
CWSB-13-25-27-0512	NA	102%	101%	0	0
CWSB-14-12-14-0512	NA	100%	122%	0	0
CWSB-14-25-27-0512	NA	95.3%	95.4%	0	0
CWSB-14-29-30-0512	NA	94.8%	95.8%	0	0
CWSB-15-11-13-0512	NA	98.6%	99.6%	0	0
CWSB-15-23-25-0512	NA	101%	101%	0	0
CWSB-15-18-20-0512	NA	94.8%	95.1%	0	0
MB-051112	NA	101%	102%	0	0
LCS-051112	NA	93.0%	90.8%	0	0
LCSD-051112	NA	104%	102%	0	0
CWSB-16-8-10-0512	NA	99.4%	146%*	1	0
CWSB-16-8-10-0512 DL	NA	103%	121%	0	0
CWSB-16-13-15-0512	NA	94.5%	96.5%	0	0
CWSB-16-18-20-0512	NA	98.8%	101%	0	0
CWSB-17-6-8-0512	NA	102%	170%*	1	0
CWSB-17-6-8-0512 DL	NA	103%	123%	0	0
CWSB-17-23-25-0512	NA	91.2%	93.5%	0	0
CWSB-17-28-30-0512	NA	97.4%	100%	0	0
CWSB-170-23-25-0512	NA	98.2%	102%	0	0

	LCS/MB LIMITS	QC LIMITS
(BFB) = Bromofluorobenzene	(70-130)	(70-130)
(TFT) = Trifluorotoluene	(80-120)	(66-123)
(BBZ) = Bromobenzene	(80-120)	(62-130)

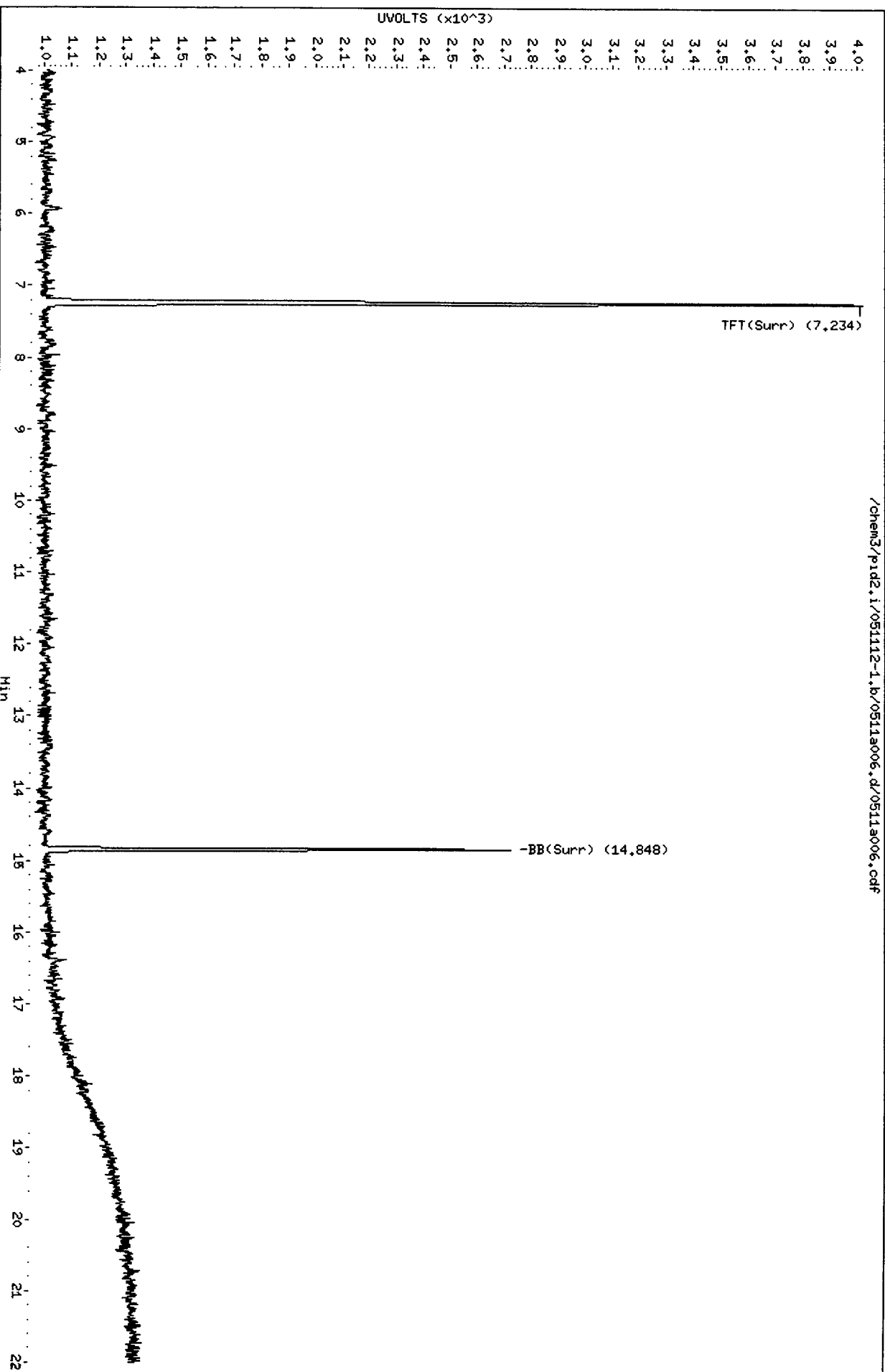
Log Number Range: 12-8459 to 12-8477

Data File: /chem3/pid2.1/051112-1.b/0511a006.d
Date: 11-MAY-2012 12:19
Client ID:
Sample Info: MB0511

Instrument: pid2.i

Column phase: RTX 502-2 FID

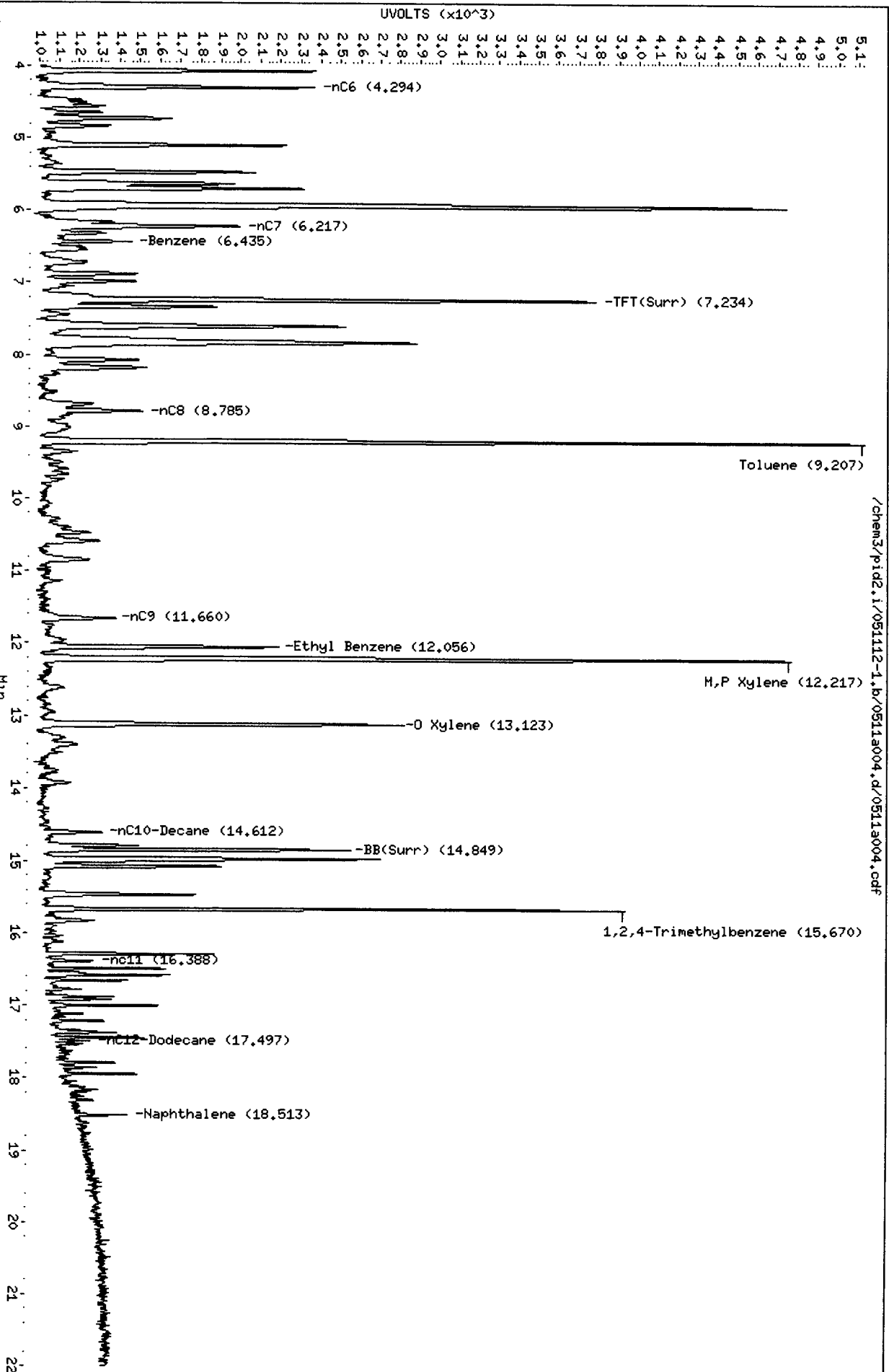
Operator: JM
Column diameter: 0.18



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Date: 11-MAY-2012 11:23
Client ID:
Sample Info: LCS0511

Column phase: RTX 502-2 FID

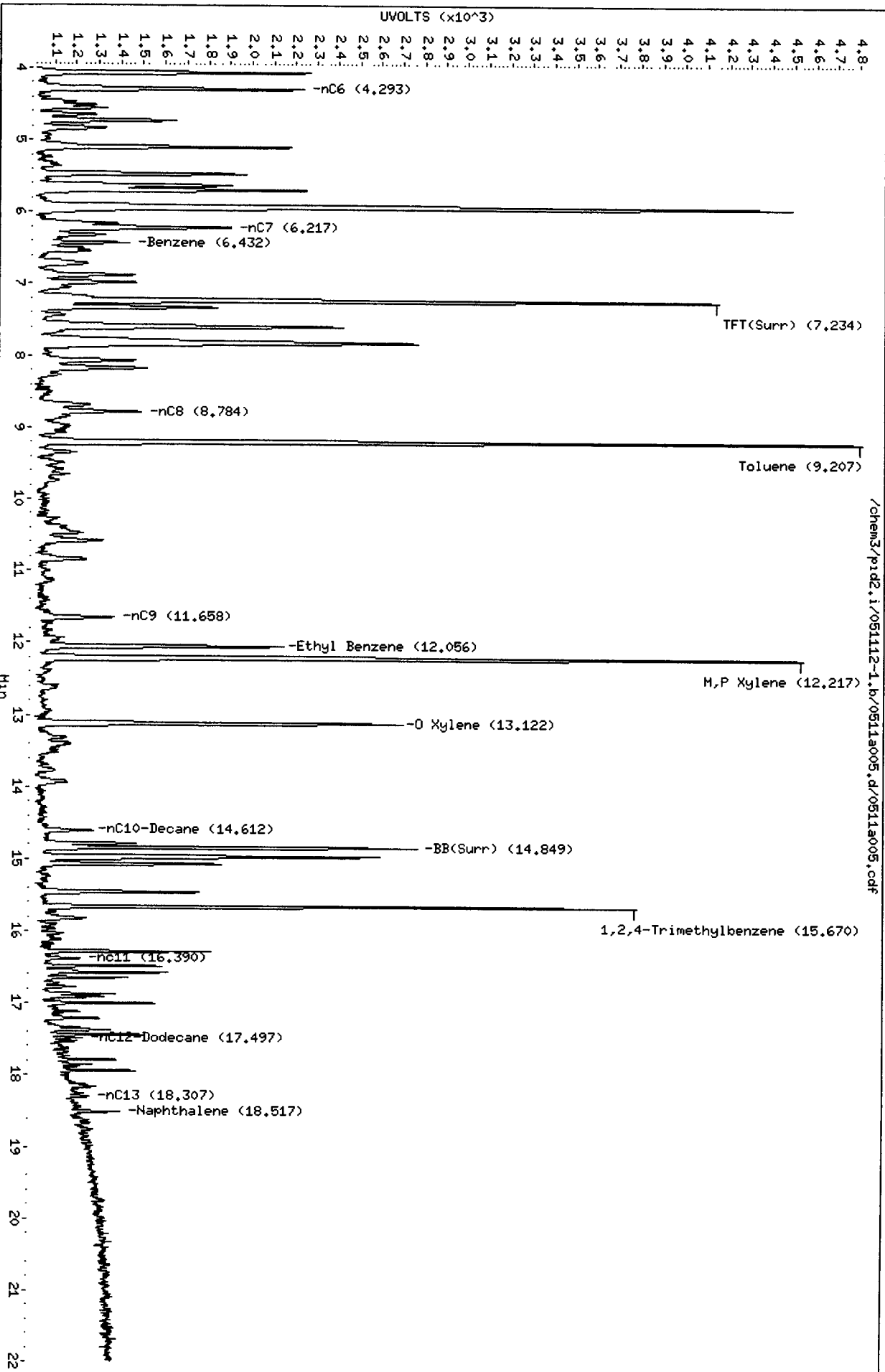
Instrument: pid2.i
Operator: JM
Column diameter: 0.18

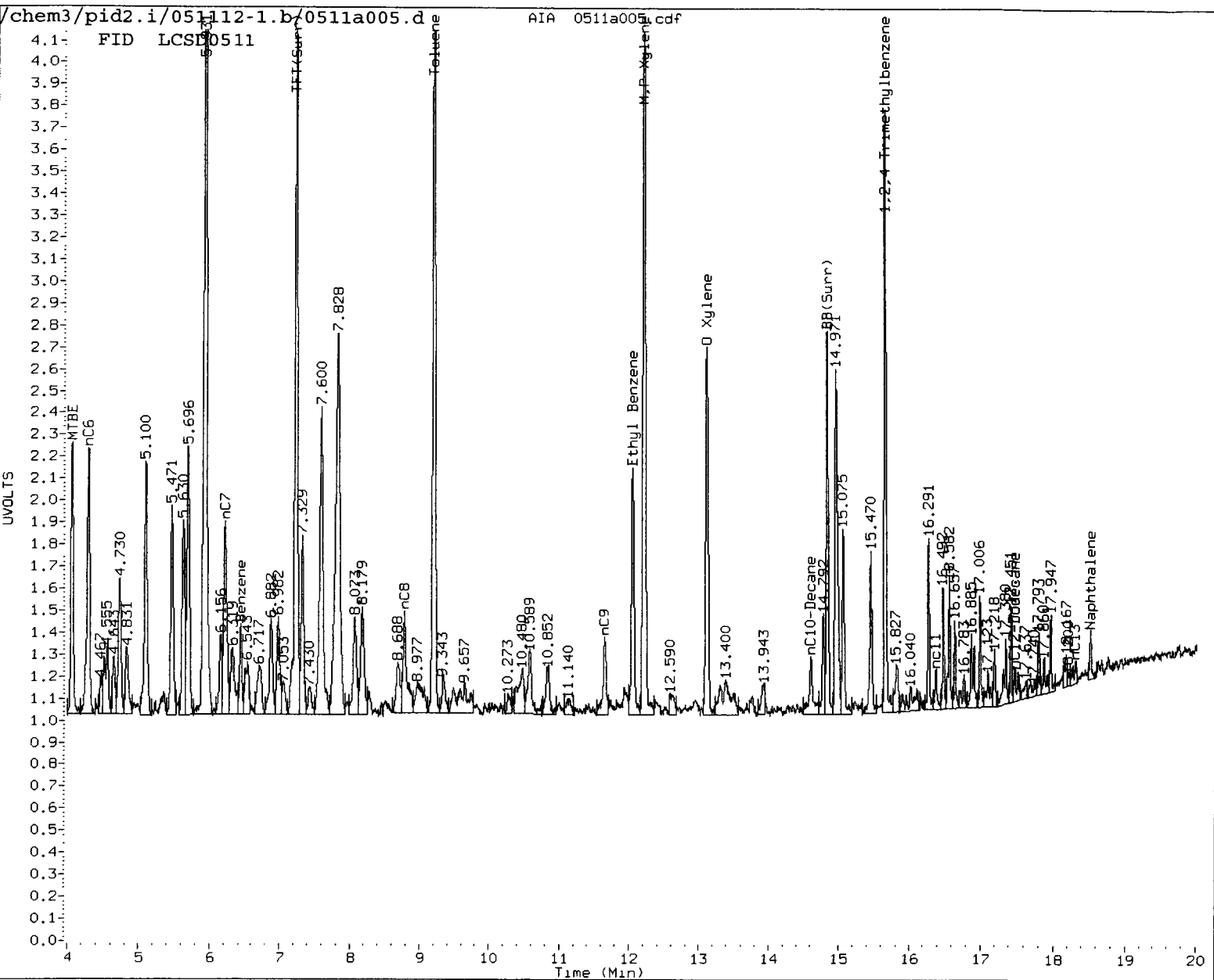


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Date: 11-MAY-2012 11:51
Client ID:
Sample Info: LCS00511

Column phase: RTX 502-2 FID

Instrument: pid2.i
Operator: JM
Column diameter: 0.18





MANUAL INTEGRATION

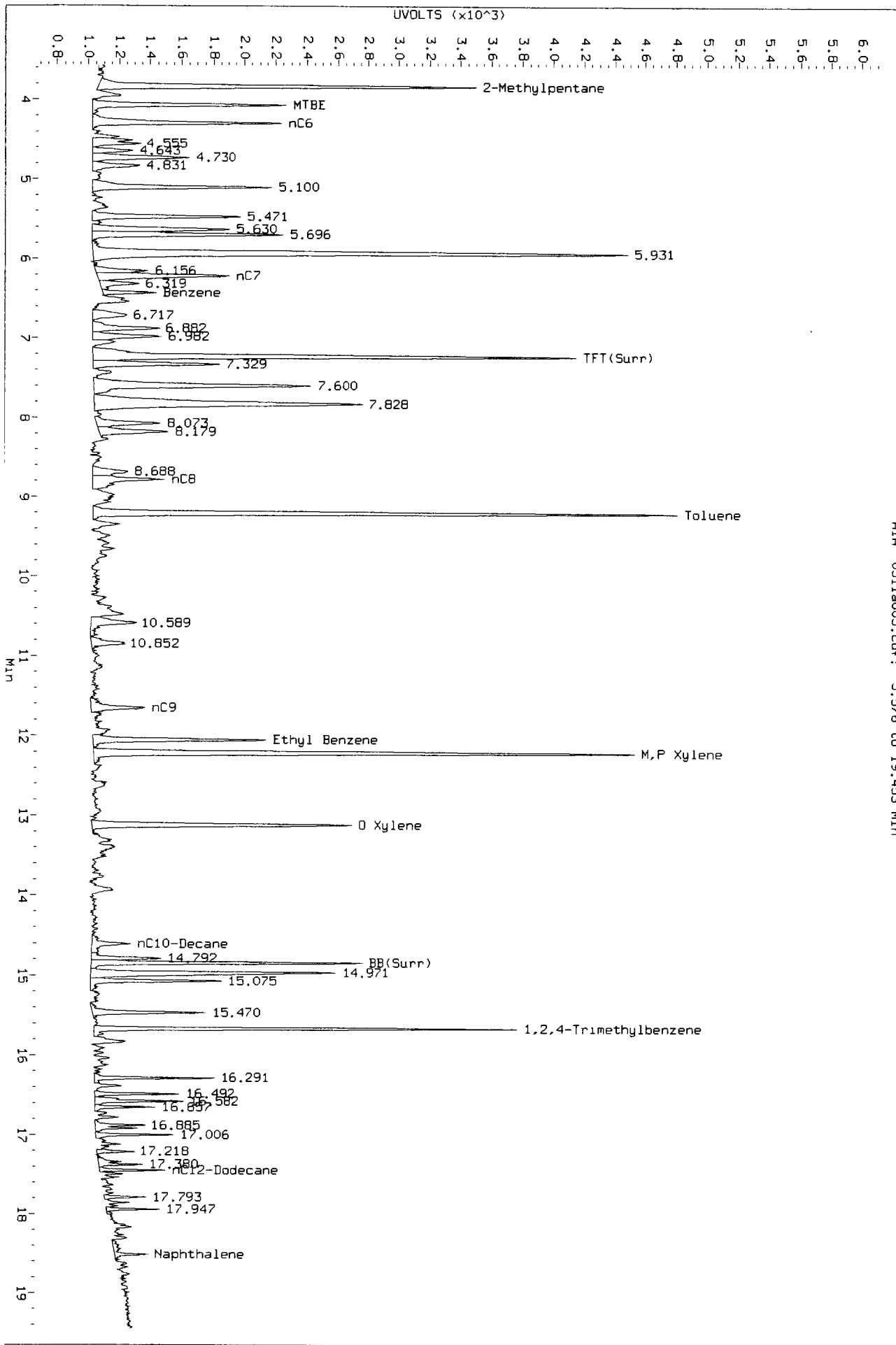
- ① Baseline correction
2. Poor chromatography
- ③ Peak not found
4. Totals calculation
5. Other _____

Analyst: JW Date: 5/14/12

Data File: /chem3/pid2.1/051112-1.b/0511a005.d/0511a005.cdf
Injection Date: 11-MAY-2012 11:51
Instrument: pid2.1
Client Sample ID:

AIR 0511a005.cdf: 3.576 to 19.453 MIN

Before for 5/14/12



051112-1

Data File: /chem3/pid2.i/051112-1.b/0511a007.d

Date: 11-MAY-2012 13:02

Client ID: CMSB-16-8-10-0512

Sample Info: UT77L

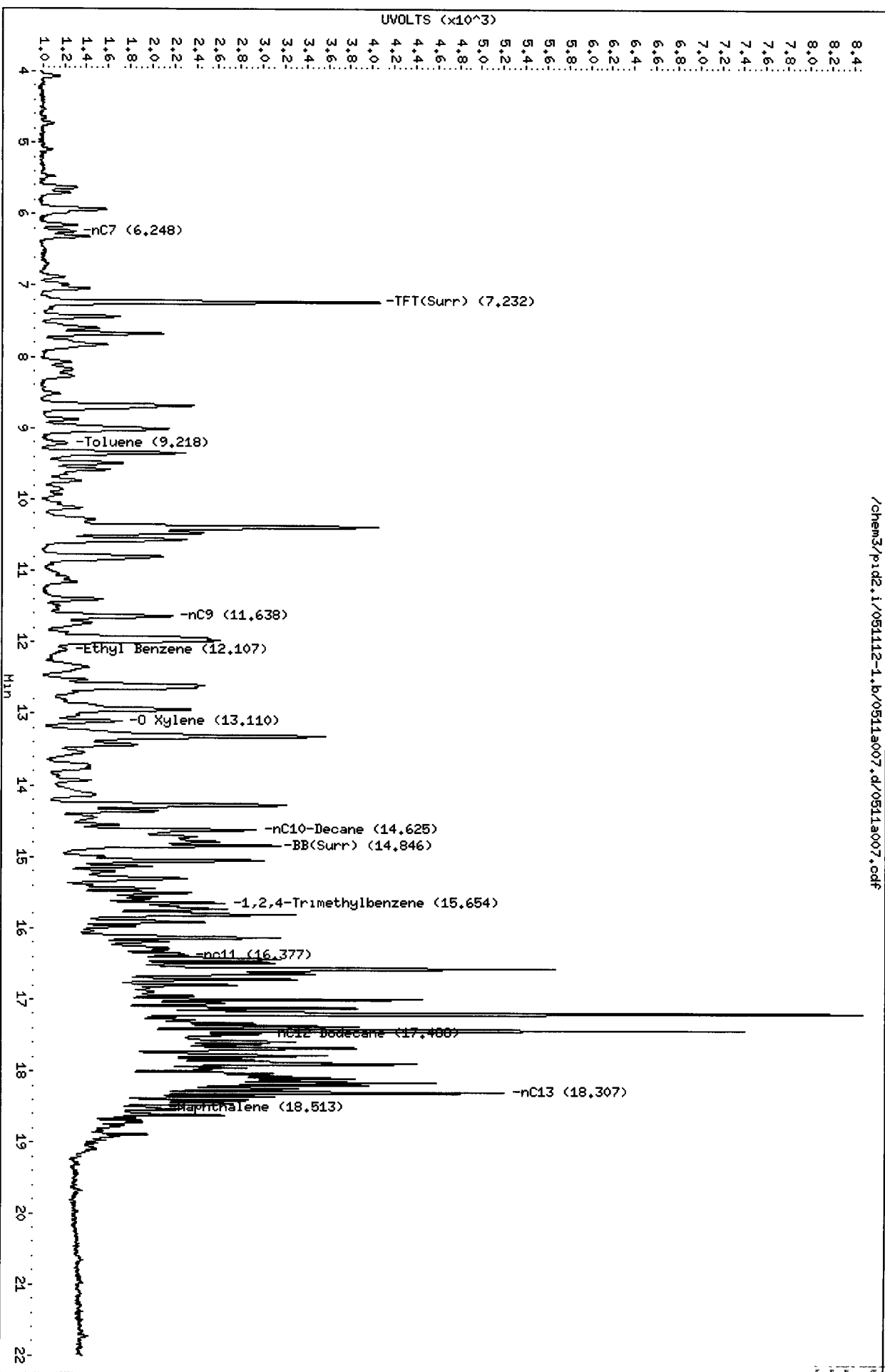
Column phase: RTX 502-2 FID

Instrument: pid2.i

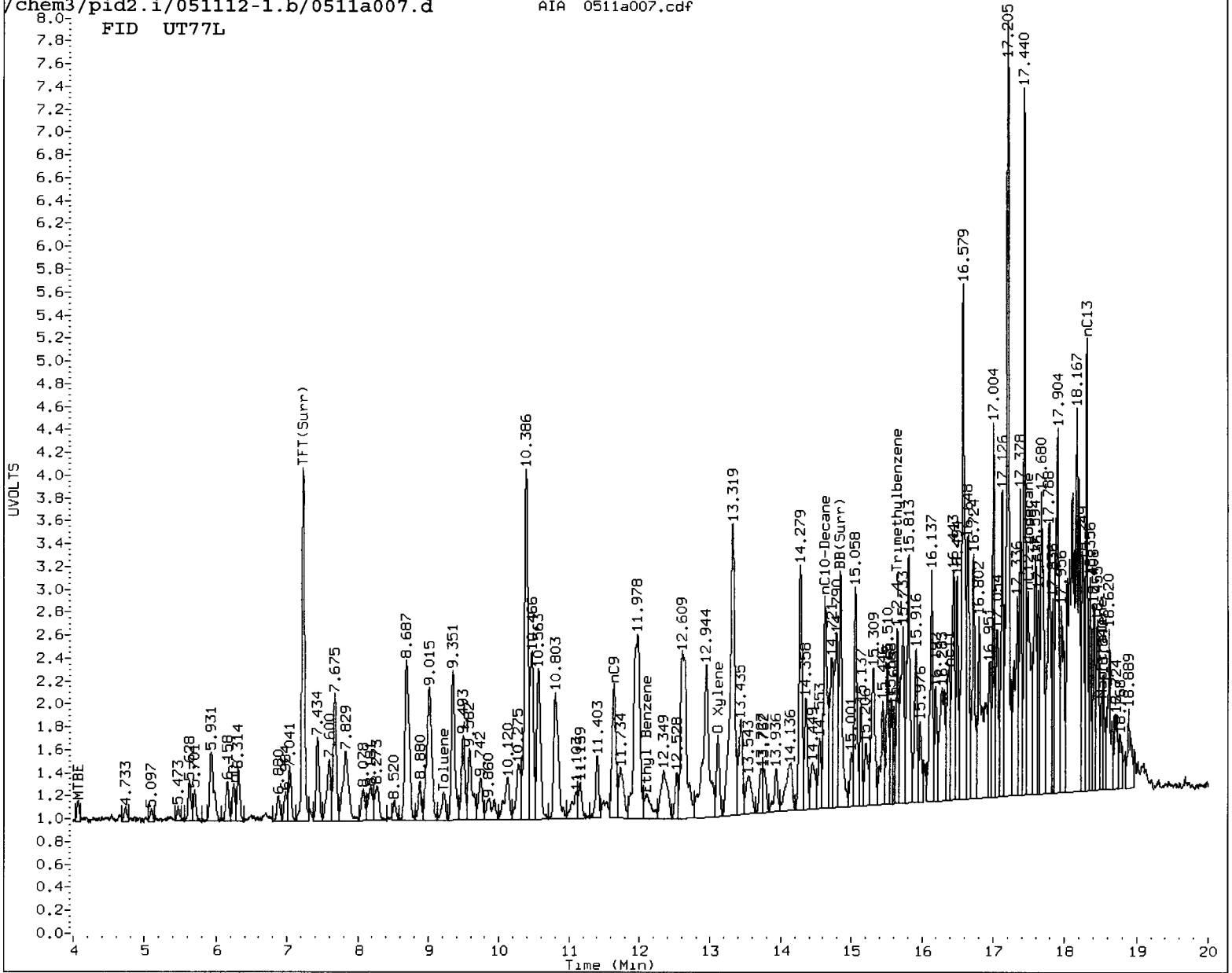
Operator: JM

Column diameter: 0.18

/chem3/pid2.i/051112-1.b/0511a007.d/0511a007.cdf



FID UT77L



MANUAL INTEGRATION

- ① Baseline correction
- ② Poor chromatography
- ③ Peak not found
- ④ Totals calculation

5. Other _____

Analyst: EW

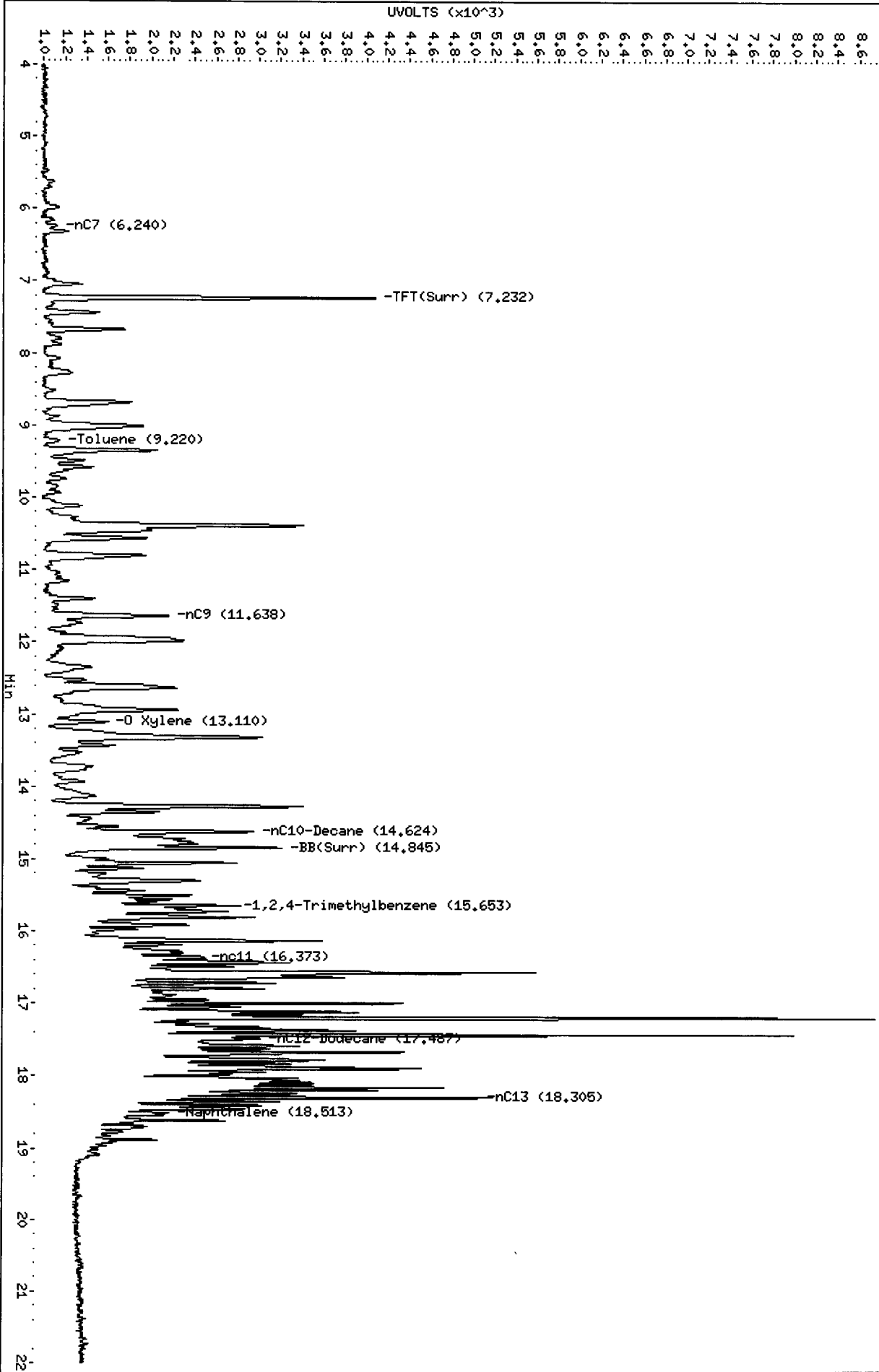
Date: 5/15/12

Data File: /chem3/pid2.i/051112-1.b/0511a008.d
Date: 11-MAY-2012 13:30
Client ID: CMSB-17-6-8-0512
Sample Info: UT77P

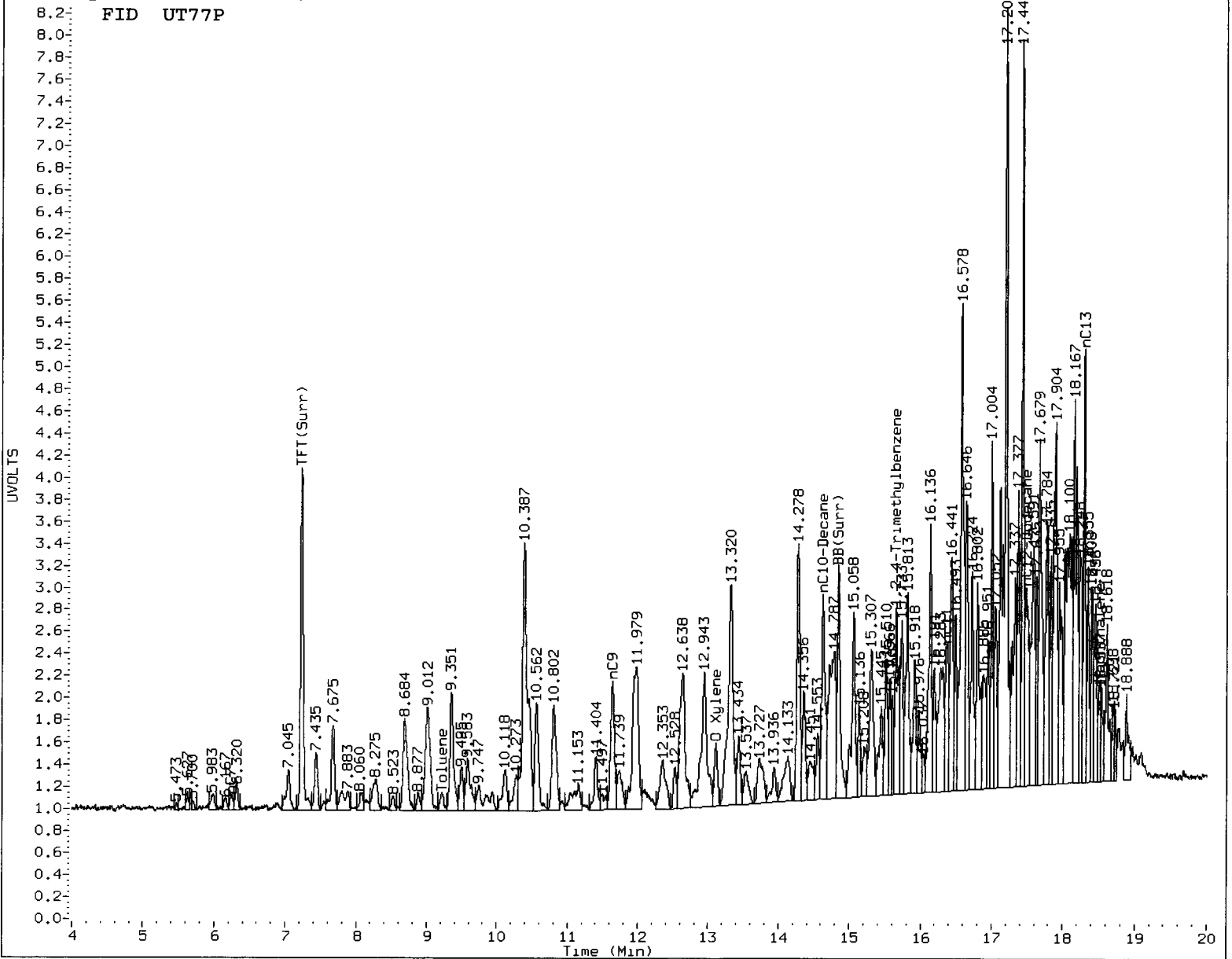
Column phase: RTX 502-2 FID

Instrument: pid2.i
Operator: JM
Column diameter: 0.18

/chem3/pid2.i/051112-1.b/0511a008.d/0511a008.cdf



070000 : 000000



MANUAL INTEGRATION

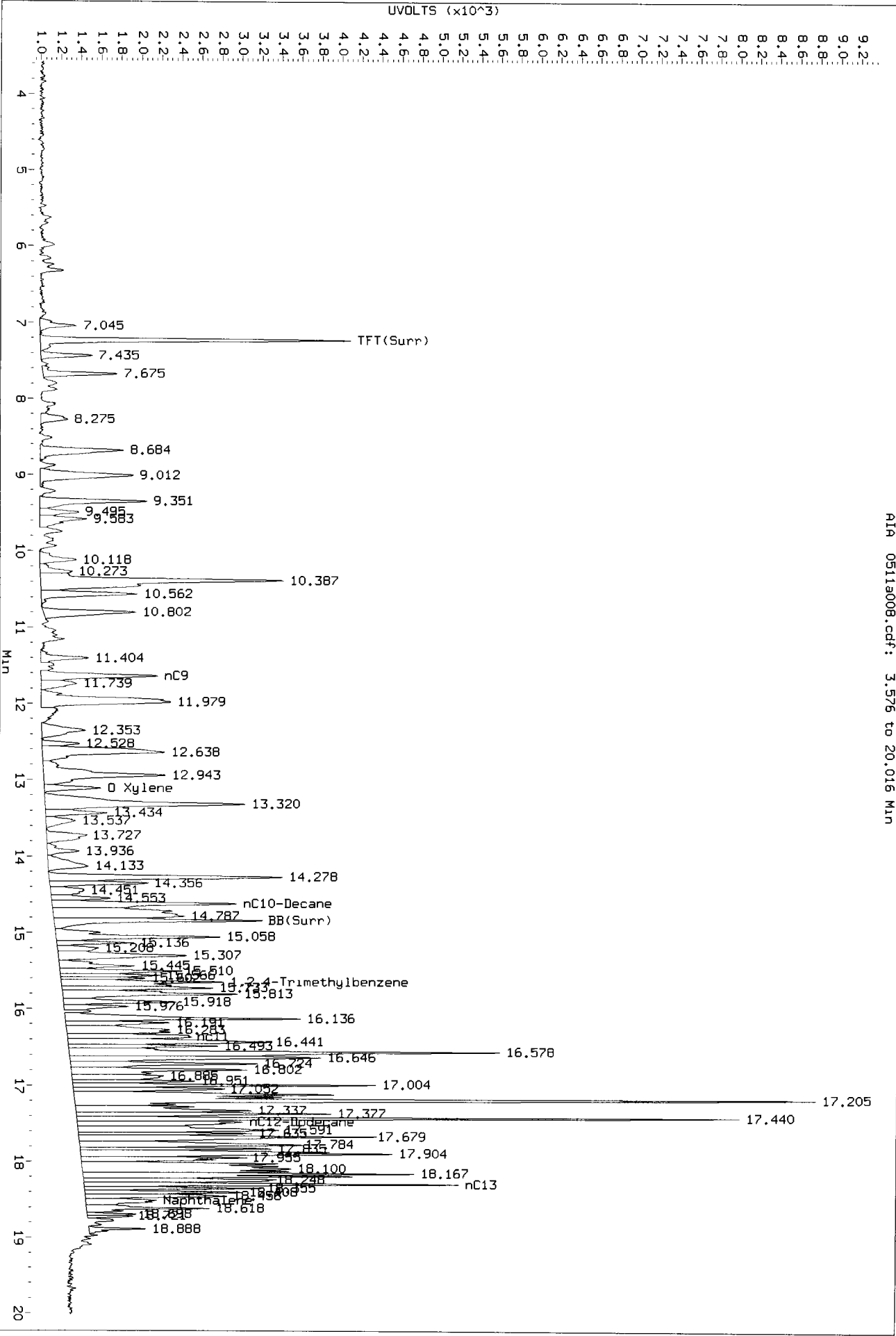
- ① Baseline correction
- 2. Poor chromatography
- ③ Peak not found
- 4. Totals calculation

5. Other _____

Analyst: JW Date: 5/15/12

Data File: /chem3/prd2.1/051112-1.b/0511a008.d/0511a008.cdf
 Injection Date: 11-MAY-2012 13:30
 Instrument: prd2.1
 Client Sample ID: CMSB-17-6-8-0512

AIA 0511a008.cdf : 3.576 to 20.016 Min



Reference 5/15/12

051112-1

Data File: /chem3/pid2.i/051012-1.b/0510a006.d

Date: 10-MAY-2012 14:09

Client ID:

Sample Info: HB0510

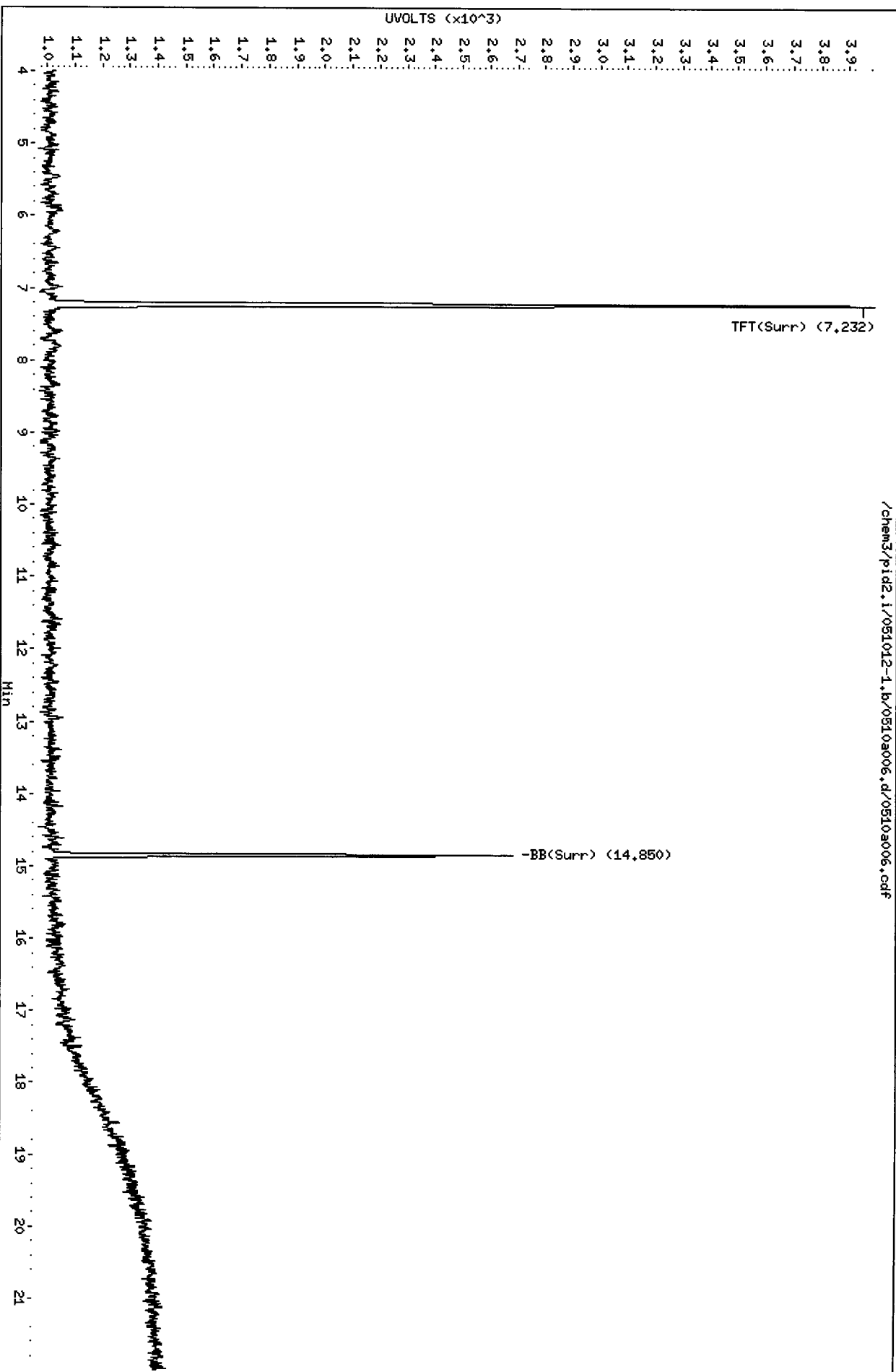
Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: JM

Column diameter: 0.18

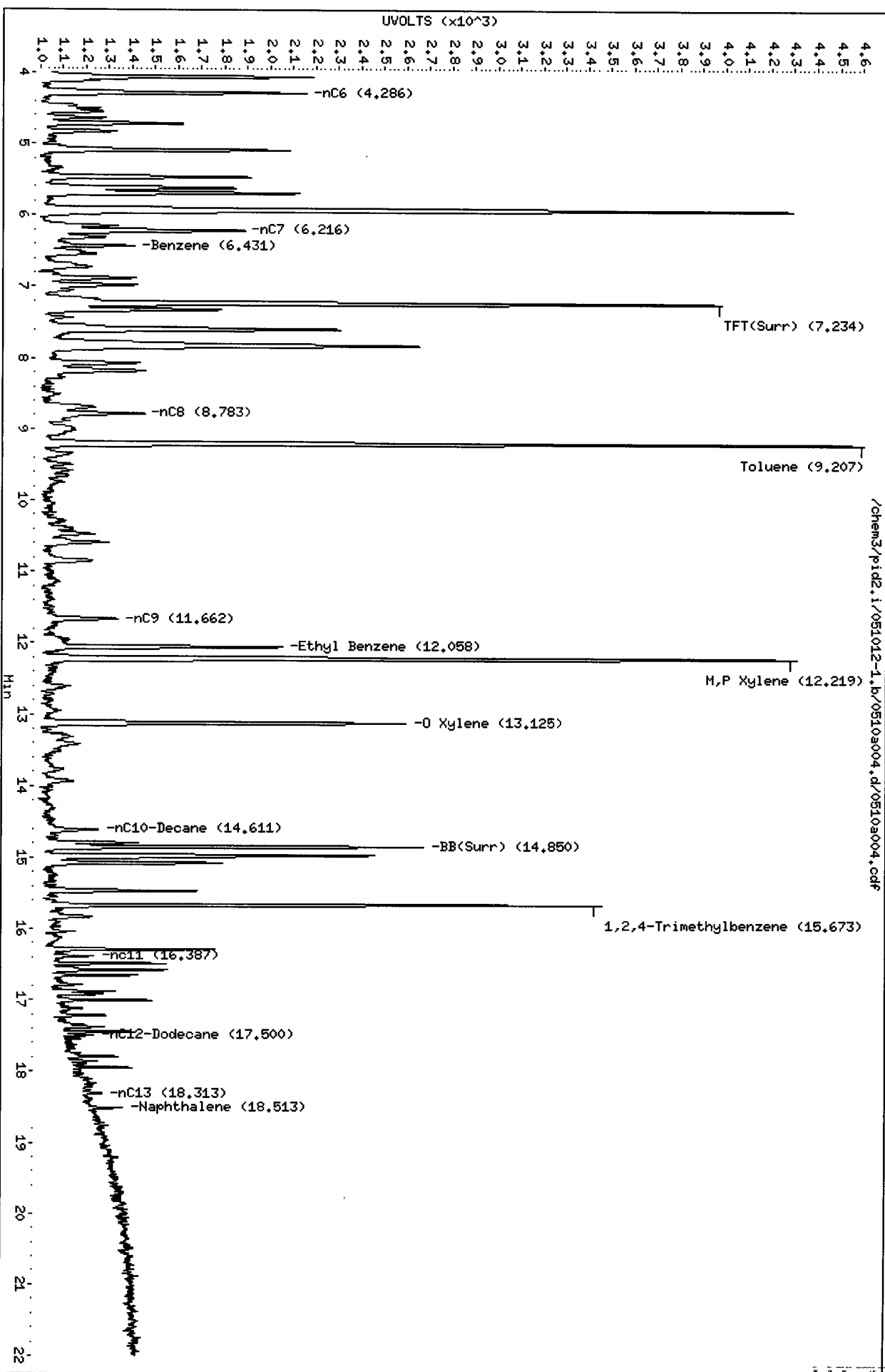
Page 1



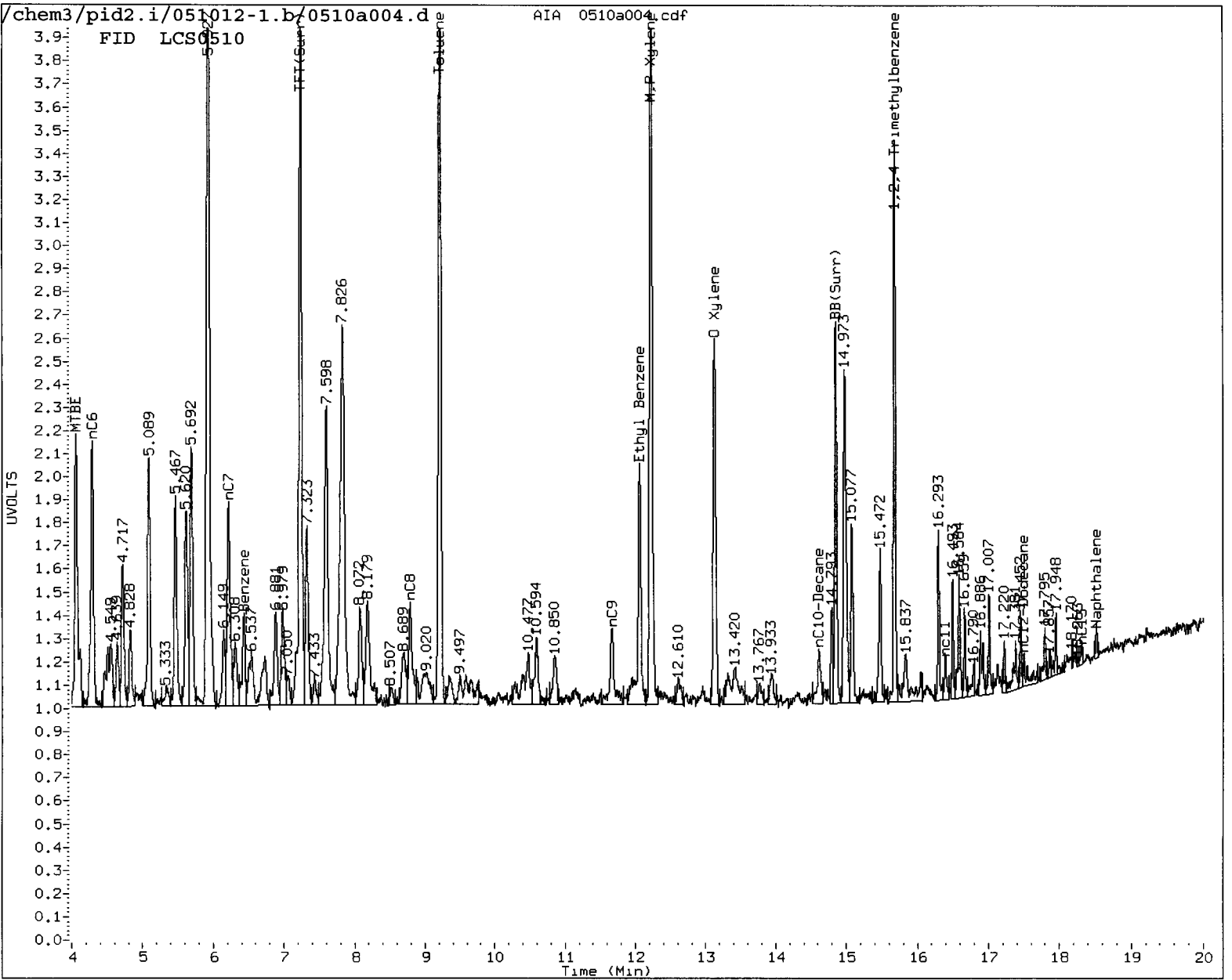
Data File: /chem3/pid2.i/051012-1.b/0510a004.d
Date: 10-May-2012 13:13
Client ID:
Sample Info: LCS0510

Column phase: RTX 502-2 FID

Instrument: pid2.i
Operator: JM
Column diameter: 0.18



/chem3/pid2.i/051012-1.b/0510a004.d/0510a004.cdf



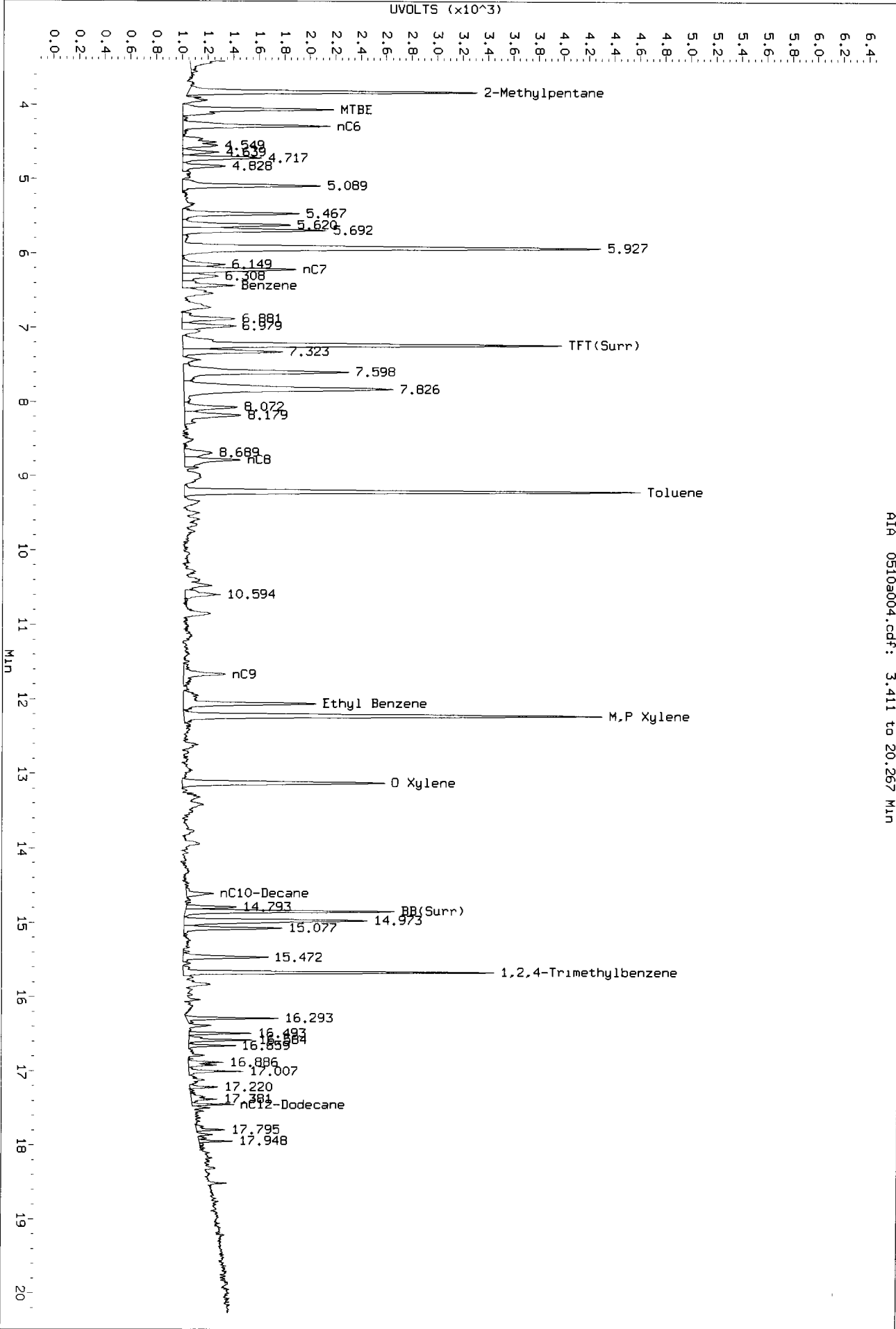
MANUAL INTEGRATION

- 1. Baseline correction
- 2. Poor chromatography
- 3. Peak not found
- 4. Totals calculation
- 5. Other _____

Analyst: JU Date: 5/15/12

Data File: /chem3/pid2.1/051012-1.b/0510a004.d/0510a004.cdf
 Injection Date: 10-MAR-2012 13:13
 Instrument: pid2.1
 Client Sample ID:

AIA 0510a004.cdf: 3.411 to 20.267 Min



Handwritten signature

051012-1

Data File: /chem3/pid2.i/051012-1.b/0510a005.d
Date: 10-MAY-2012 13:41

Client ID:

Sample Info: LCSD0510

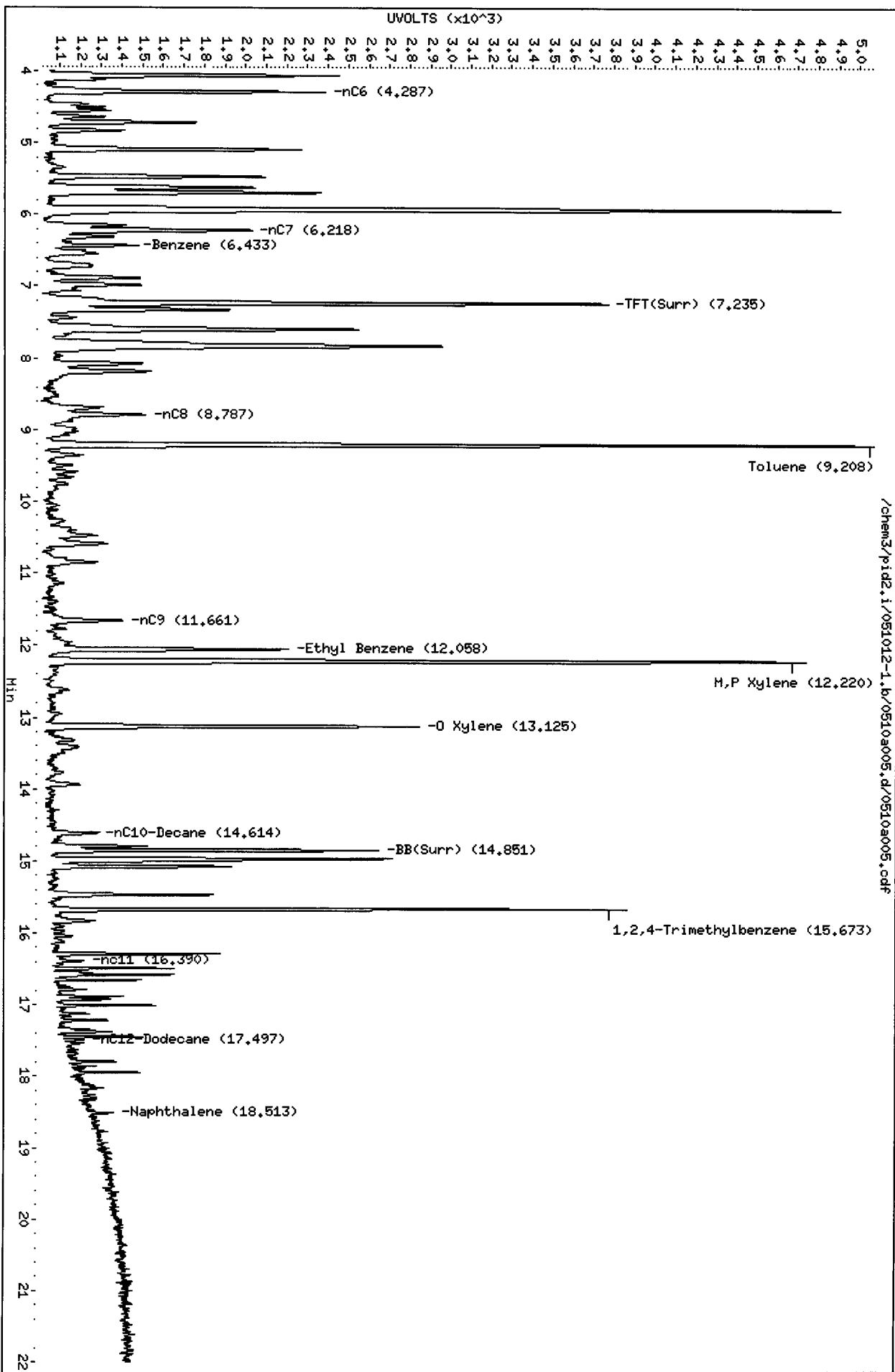
Column phase: RTX 502-2 FID

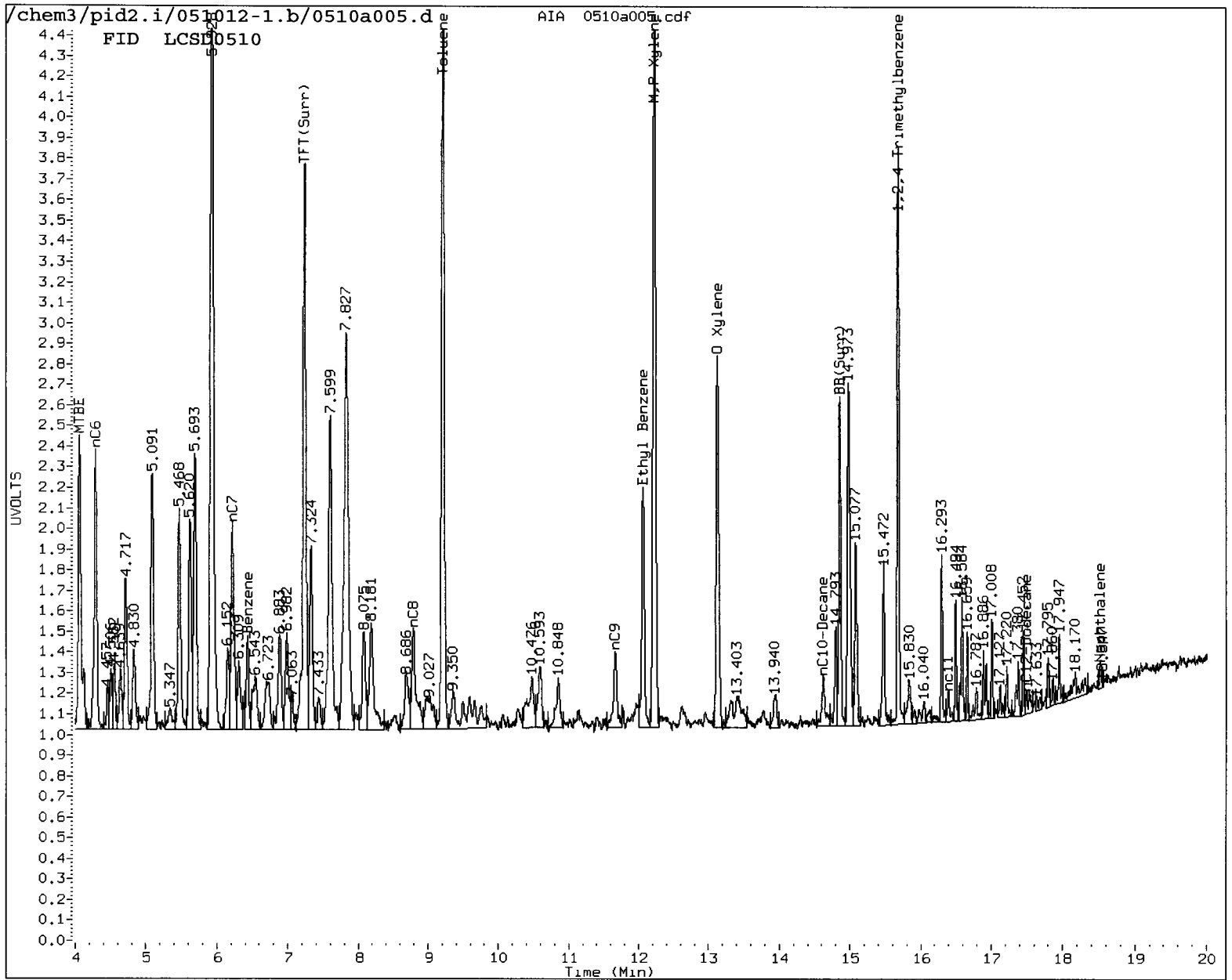
Instrument: pid2.i

Operator: JM

Column diameter: 0.18

Page 1





MANUAL INTEGRATION

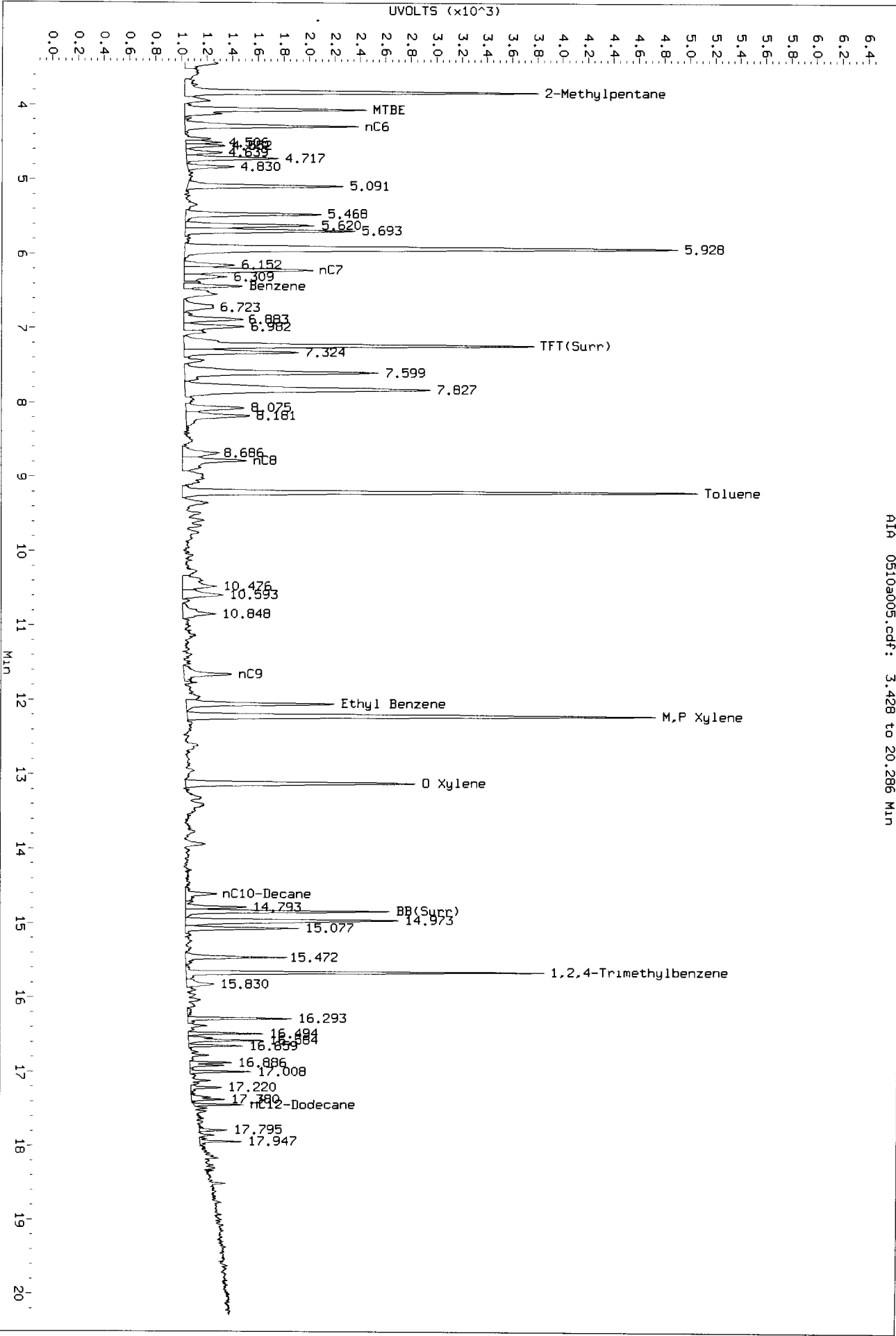
- ① Baseline correction
- 2. Poor chromatography
- ③ Peak not found
- 4. Totals calculation

5. Other _____

Analyst: SW

Date: 5/15/12

Data File: /chem3/pid2.1/051012-1.b/0510a005.d/0510a005.cdf
 Injection Date: 10-MAY-2012 13:41
 Instrument: pid2.1
 Client Sample ID:



AIA 0510a005.cdf: 3.428 to 20.286 Min

Reference
5/15/12

0177:00000

Data File: /chem3/pid2.i/051012-1.b/0510a008.d

Date: 10-MAY-2012 15:29

Client ID: CMSB-13-14.0-14.5-0

Sample Info: UT77A

Page 1

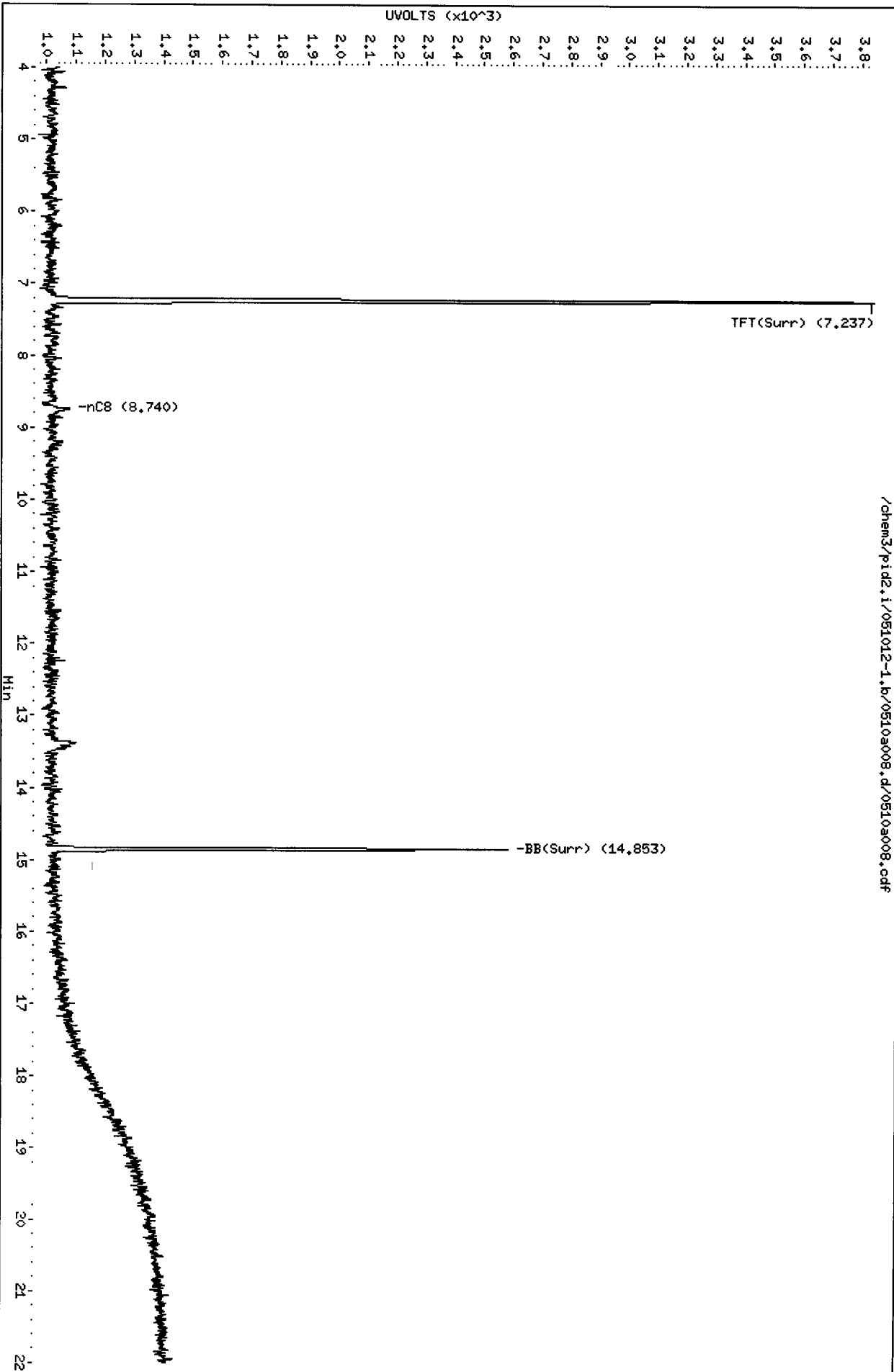
Instrument: pid2.i

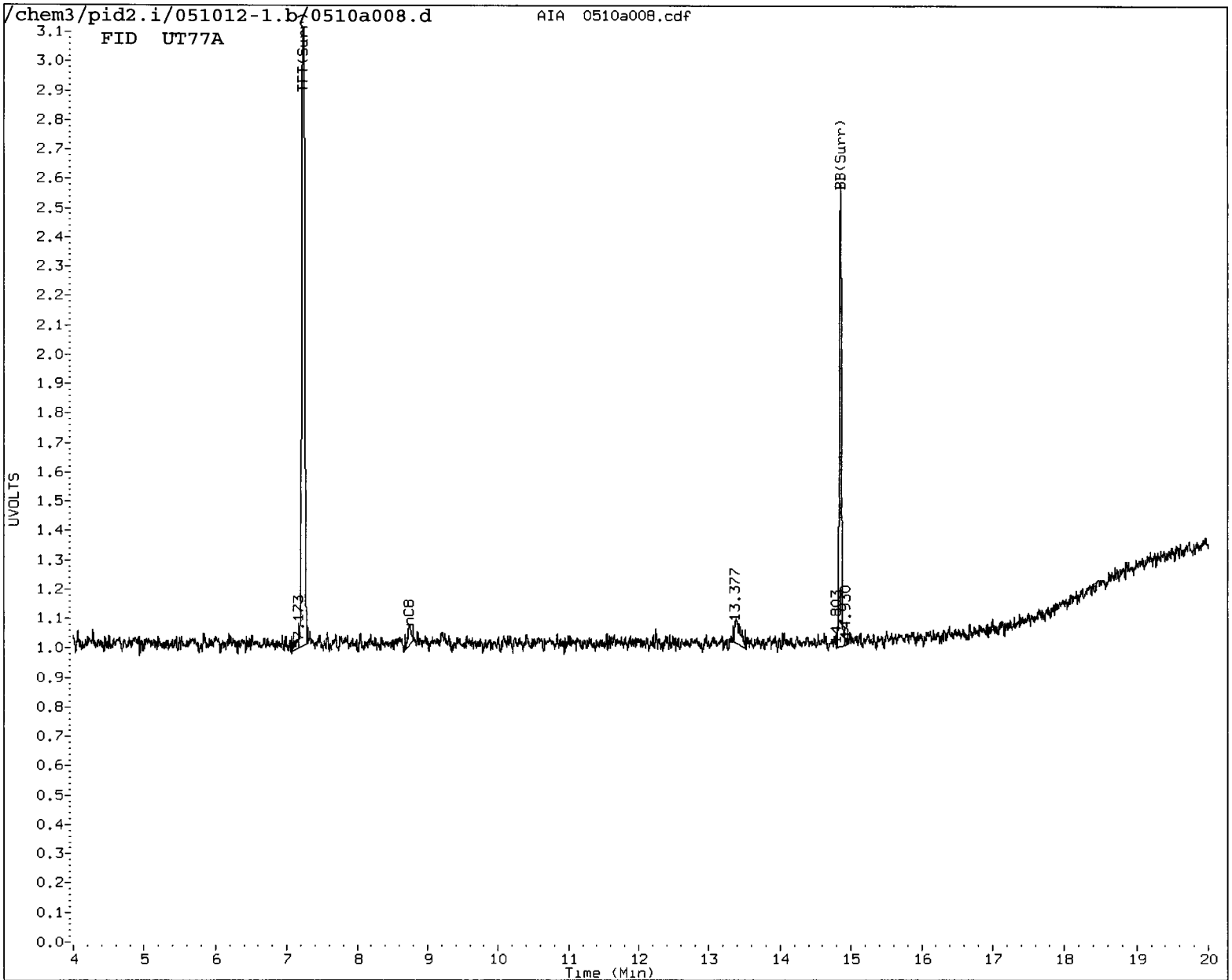
Operator: JM

Column diameter: 0.18

Column phase: RTX 502-2 FID

/chem3/pid2.i/051012-1.b/0510a008.d/0510a008.cdf





MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
- ③ Peak not found
4. Totals calculation

⑤. Other PS

Analyst: JW

Date: 5/15/12

Data File: /chem3/pid2.i/051012-1.b/0510a009.d

Date: 10-MAY-2012 15:57

Client ID: CMSB-13-21-22-0512

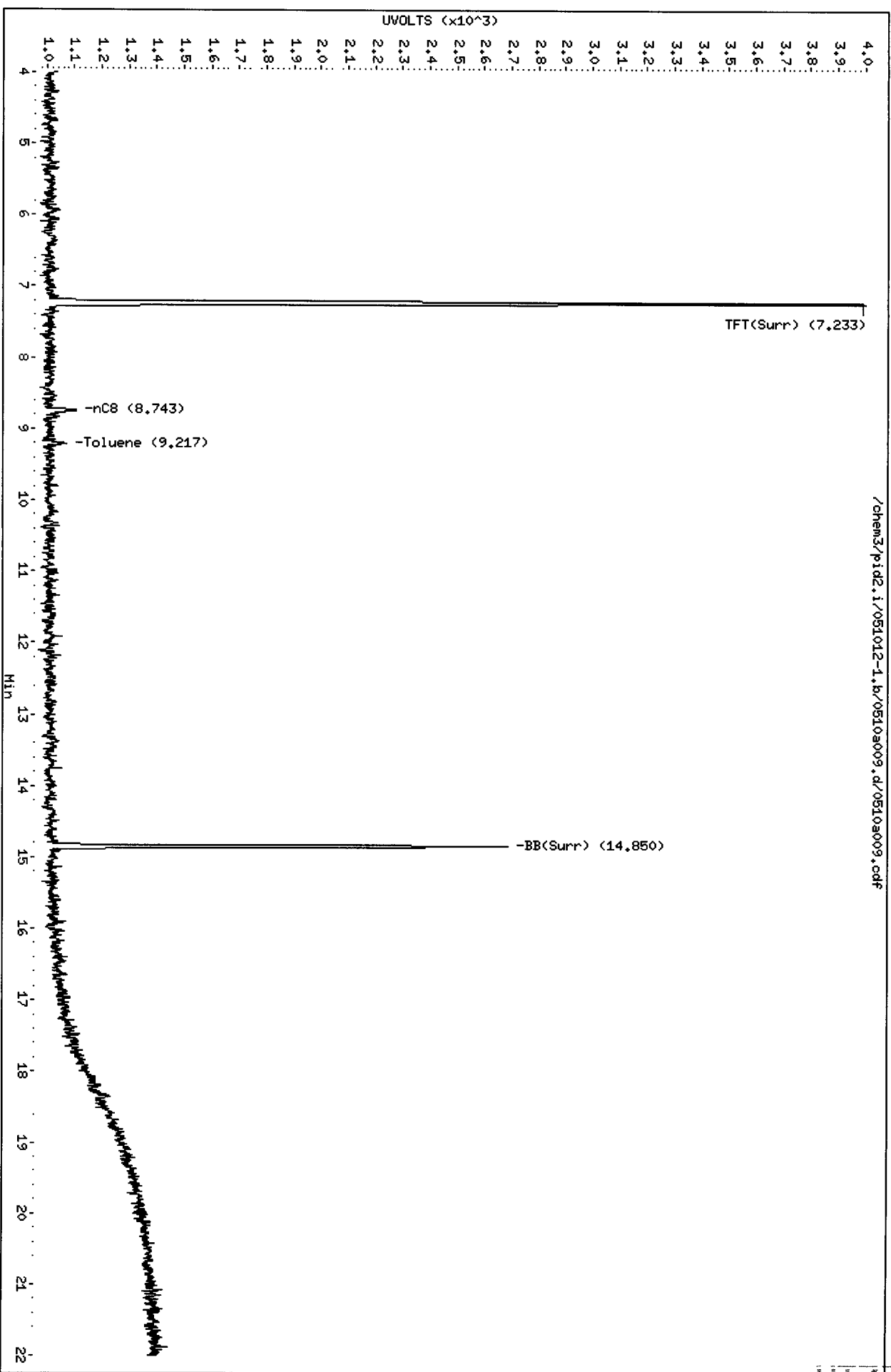
Sample Info: UT77B

Column phase: RTX 502-2 FTU

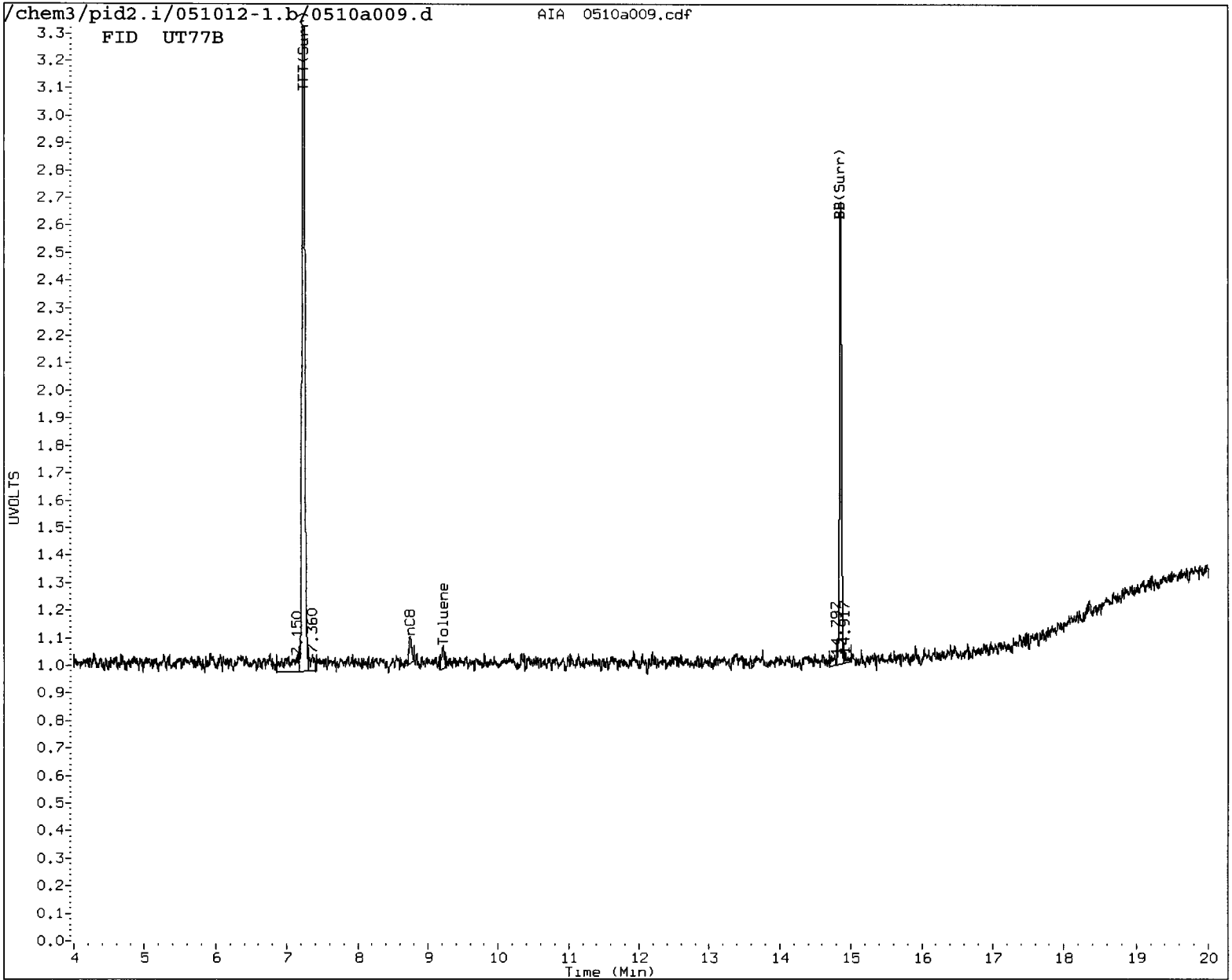
Instrument: pid2.i

Operator: JM

Column diameter: 0.18



/chem3/pid2.i/051012-1.b/0510a009.d/0510a009.cdf



MANUAL INTEGRATION

- ①. Baseline correction
- 2. Poor chromatography
- ③. Peak not found
- 4. Totals calculation

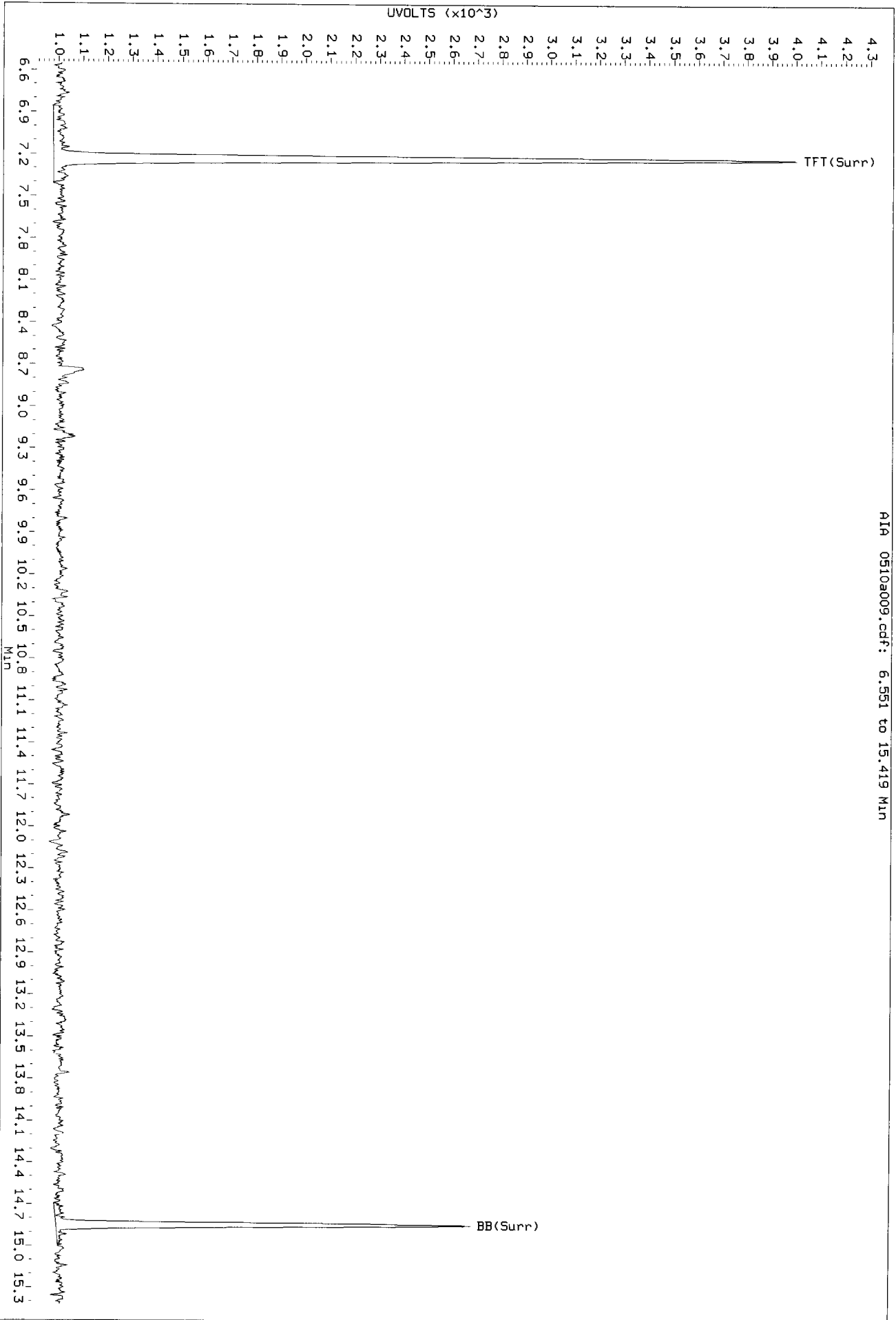
⑤ Other PS

Analyst: JW

Date: 5/15/12

Data File: /chem3/pid2_1/051012-1.b/0510a009.d/0510a009.cdf
Injection Date: 10-MAY-2012 15:57
Instrument: pid2.1
Client Sample ID: CWSB-13-21-22-0512

*Blank
5/15/12*



15.419 15.3 15.0 14.7 14.4 14.1 13.8 13.5 13.2 12.9 12.6 12.3 12.0 11.7 11.4 11.1 10.8 10.5 10.2 9.9 9.6 9.3 9.0 8.7 8.4 8.1 7.8 7.5 7.2 6.9 6.6

Data File: /chem3/pid2.i/051012-1.b/0510a010.d

Date: 10-MAY-2012 16:25

Client ID: CMSB-13-25-27-0512

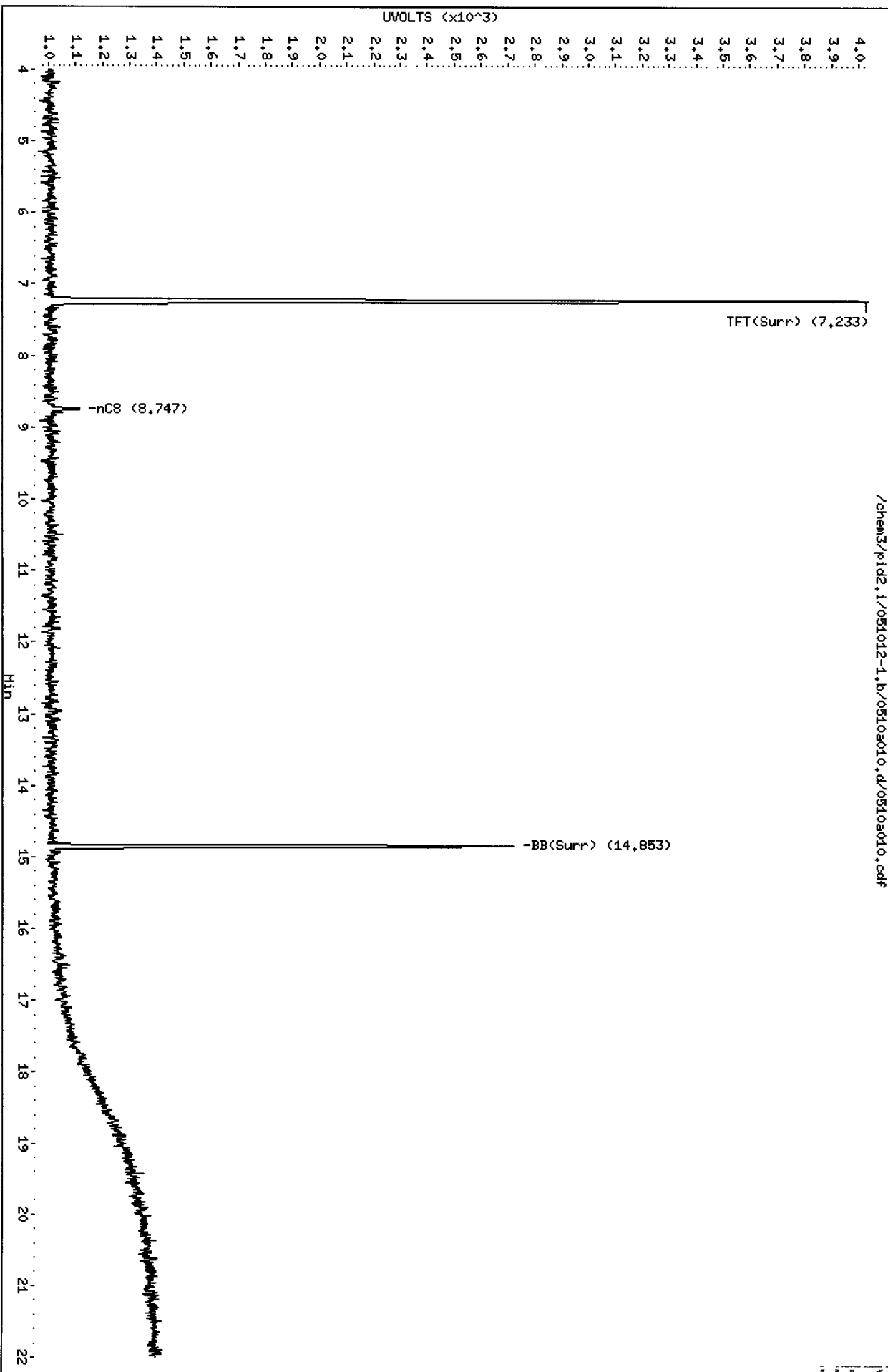
Sample Info: UT77C

Column phase: RTX 502-2 FID

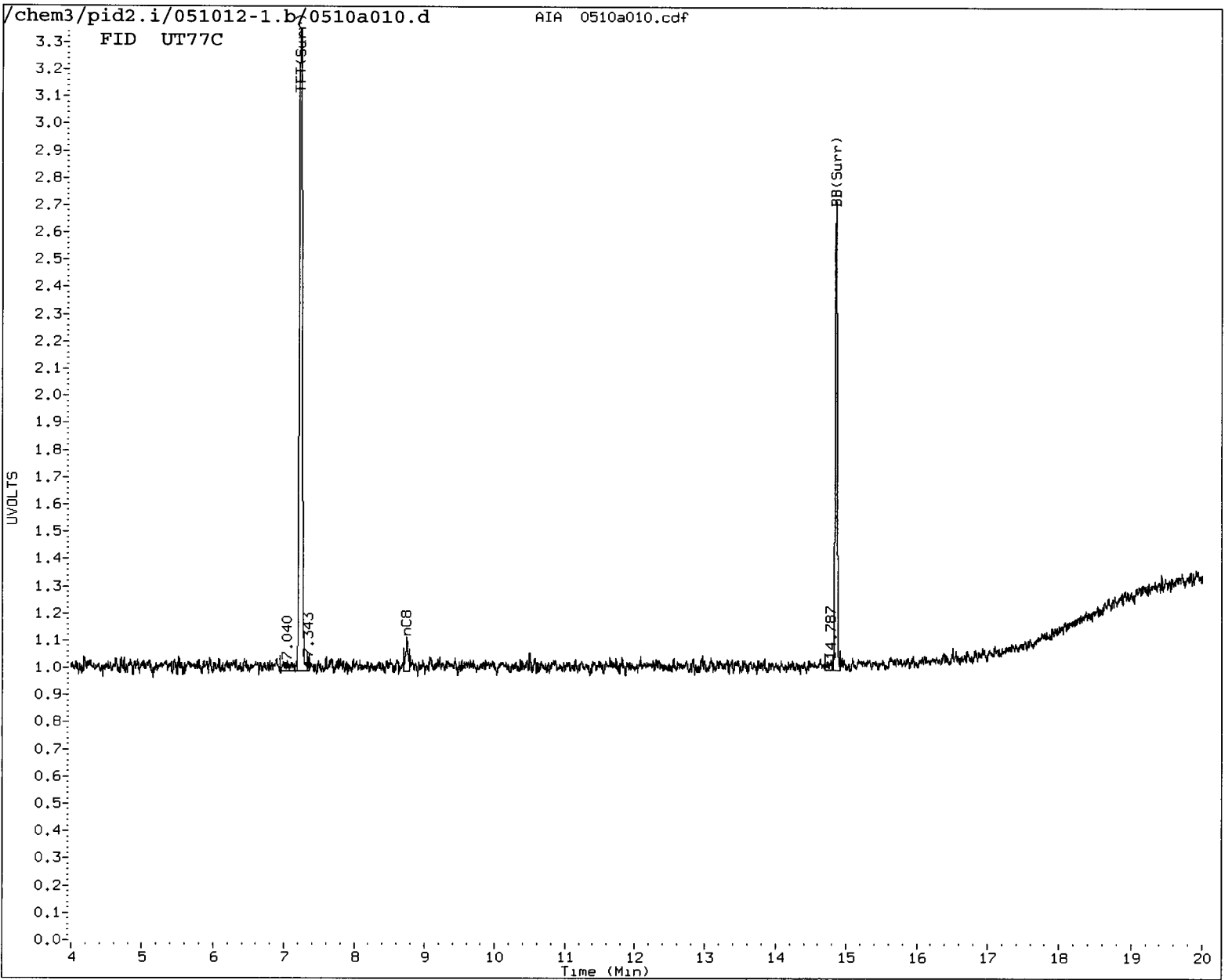
Instrument: pid2.i

Operator: JM

Column diameter: 0.18



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MANUAL INTEGRATION

- ① Baseline correction
- 2. Poor chromatography
- ③ Peak not found
- 4. Totals calculation

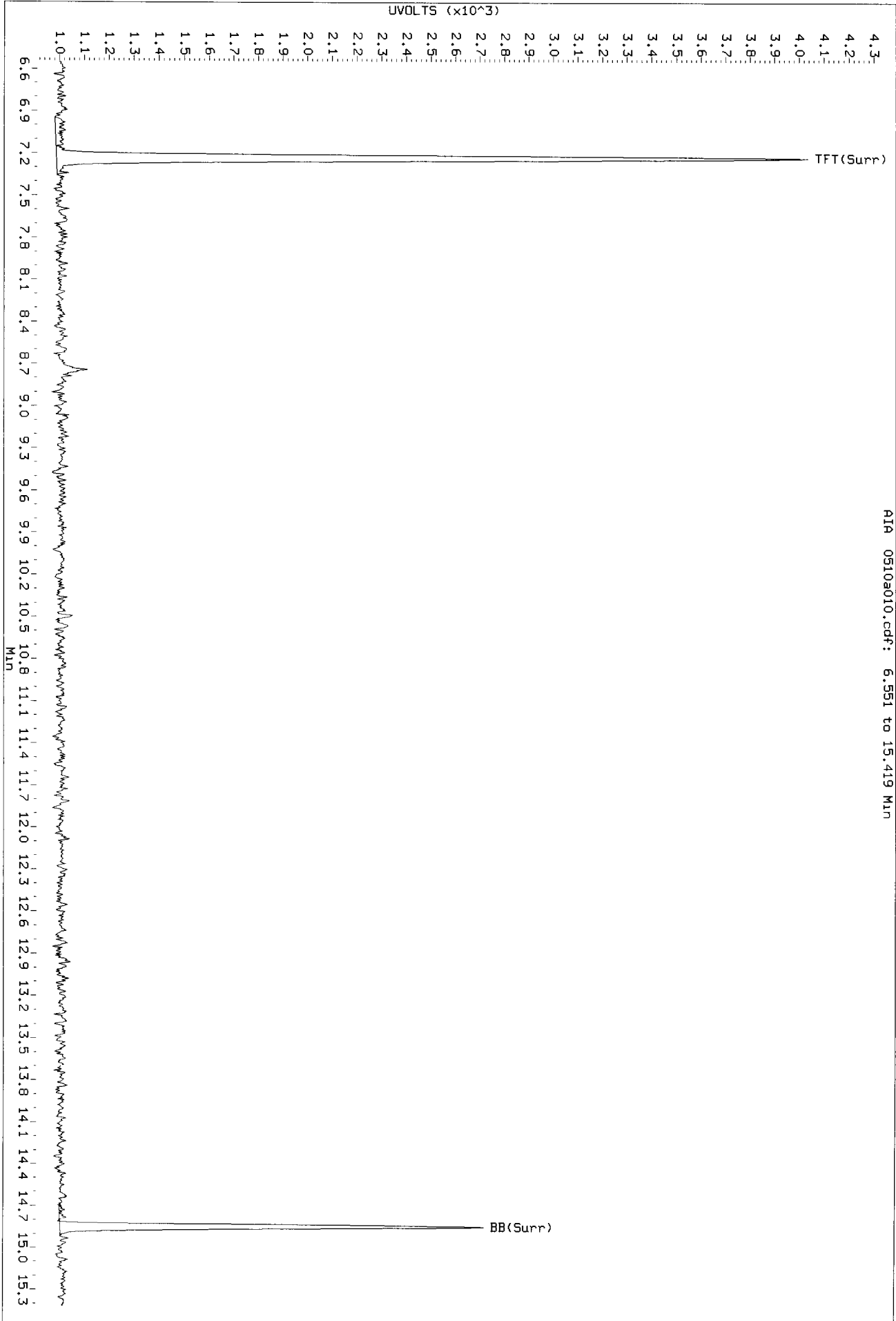
⑤ Other PS

Analyst: JL Date: 5/15/12

Data File: /chem3/pid2.1/051012-1.b/0510a010.d/0510a010.cdf
Injection Date: 10-MAY-2012 16:25
Instrument: pid2.1
Client Sample ID: CWSB-13-25-27-0512

AIR 0510a010.cdf: 6.551 to 15.419 Min

Release
5/15/12



11 10 09 08 07 06 05 04 03 02 01

Data File: /chem3/pid2.i/051012-1.b/0510a011.d

Date: 10-MAY-2012 16:53

Client ID: CMSB-14-12-14-0512

Sample Info: UT77E

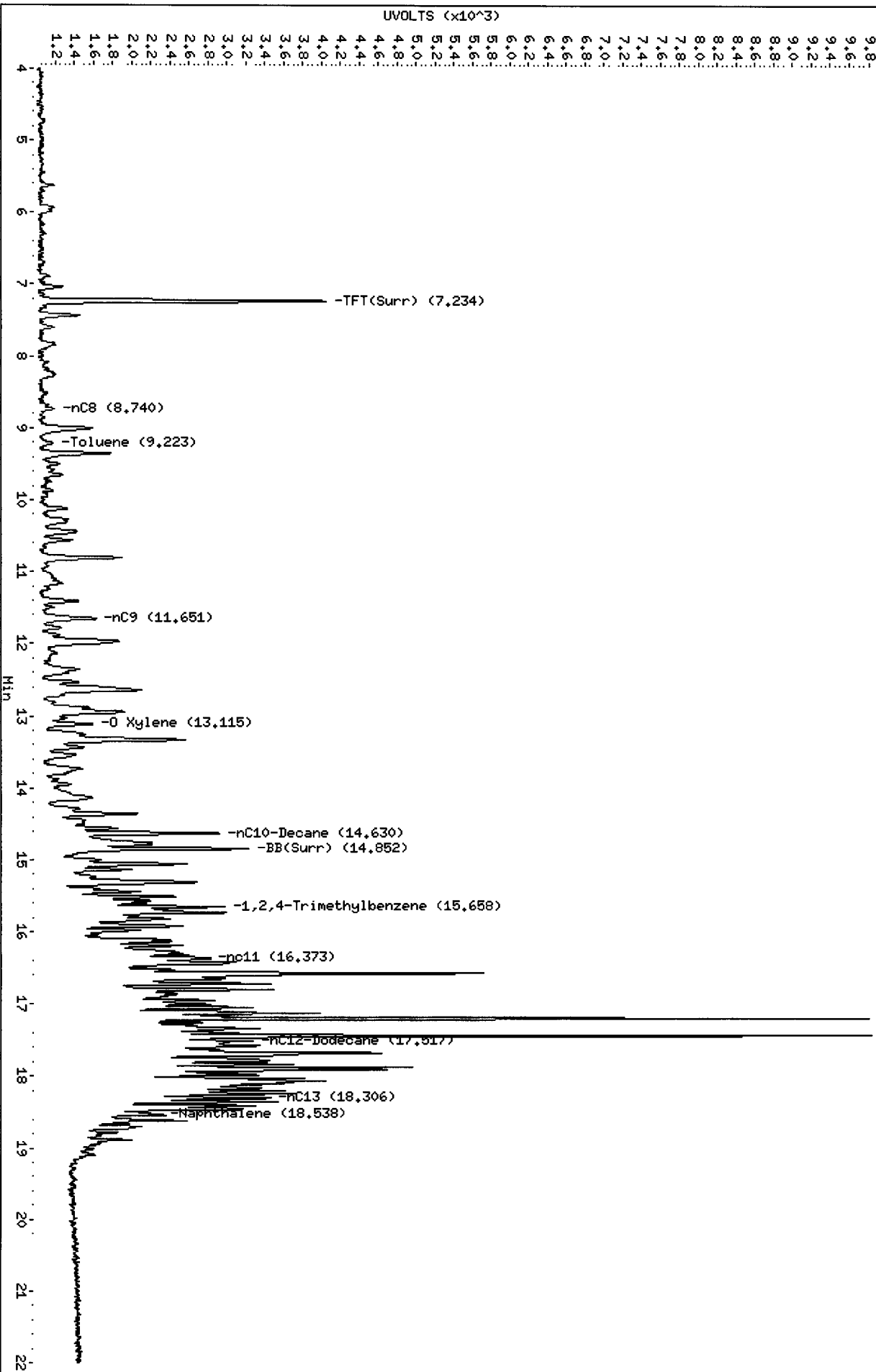
Column phase: RTX 502-2 FID

Instrument: pid2.i

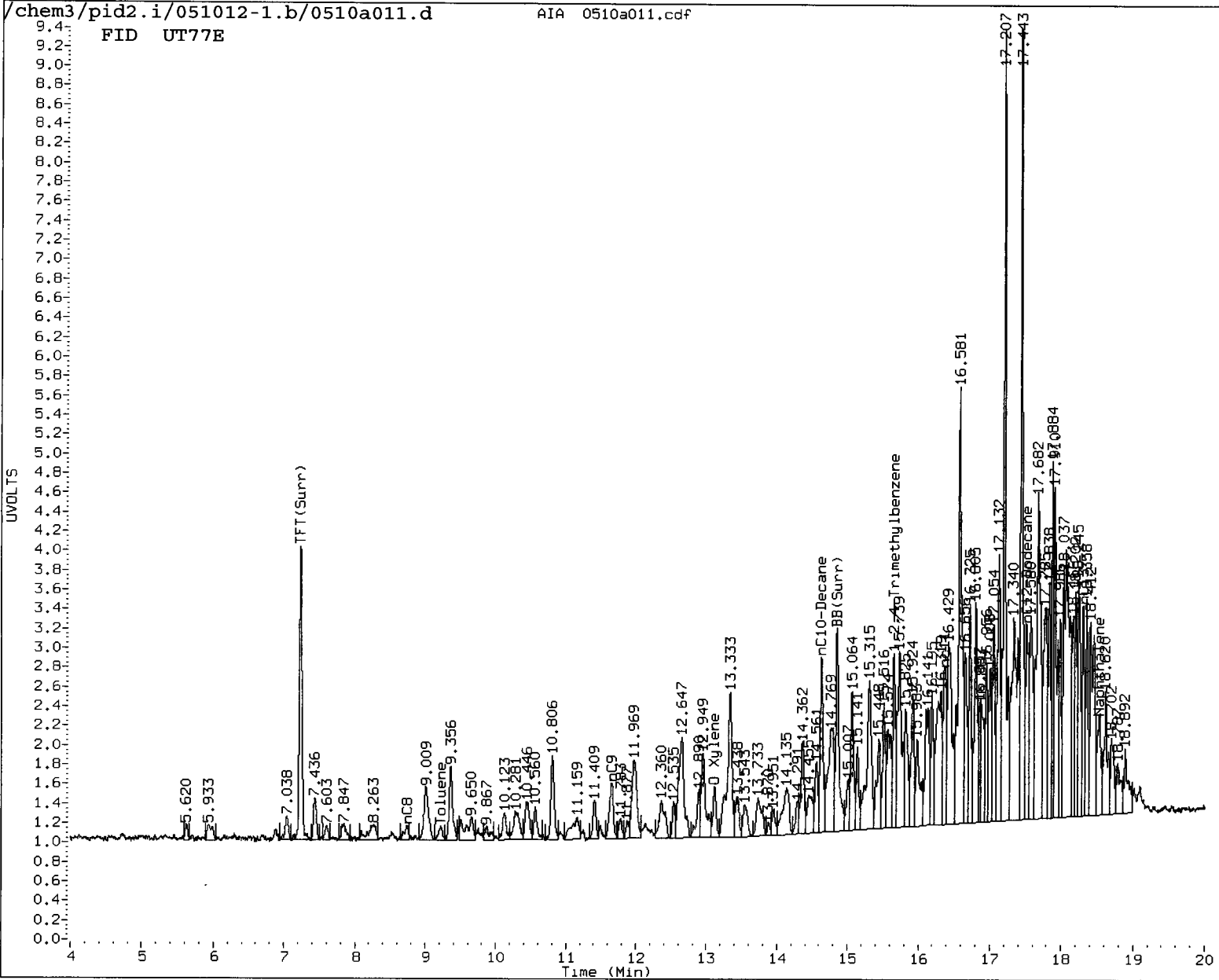
Operator: JM

Column diameter: 0.18

/chem3/pid2.i/051012-1.b/0510a011.d/0510a011.cdf



FID UT77E



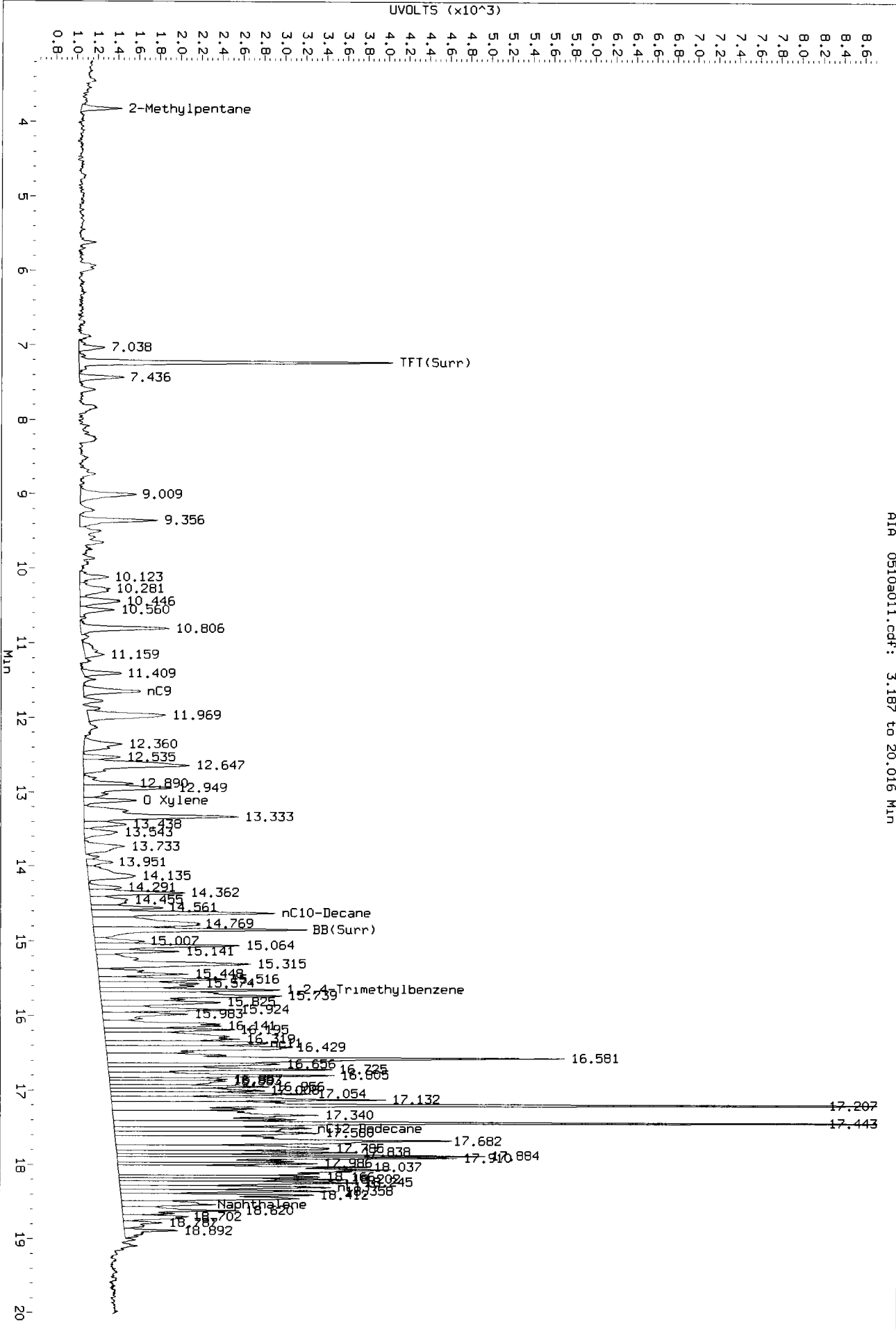
MANUAL INTEGRATION

- ①. Baseline correction
- 2. Poor chromatography
- ③. Peak not found
- 4. Totals calculation
- 5. Other _____

Analyst: JW Date: 5/15/12

Data File: /chem3/pid2.1/051012-1.b/0510a011.d/0510a011.cdf
 Injection Date: 10-MAR-2012 16:53
 Instrument: pid2.1
 Client Sample ID: CWSB-14-12-14-0512

AIA 0510a011.cdf: 3.187 to 20.016 Min



*Base
5/15/12*

17:00:00

Data File: /chem3/pid2.i/051012-1.b/0510a013.d

Date: 10-May-2012 17:49

Client ID: CMSB-14-25-27-0512

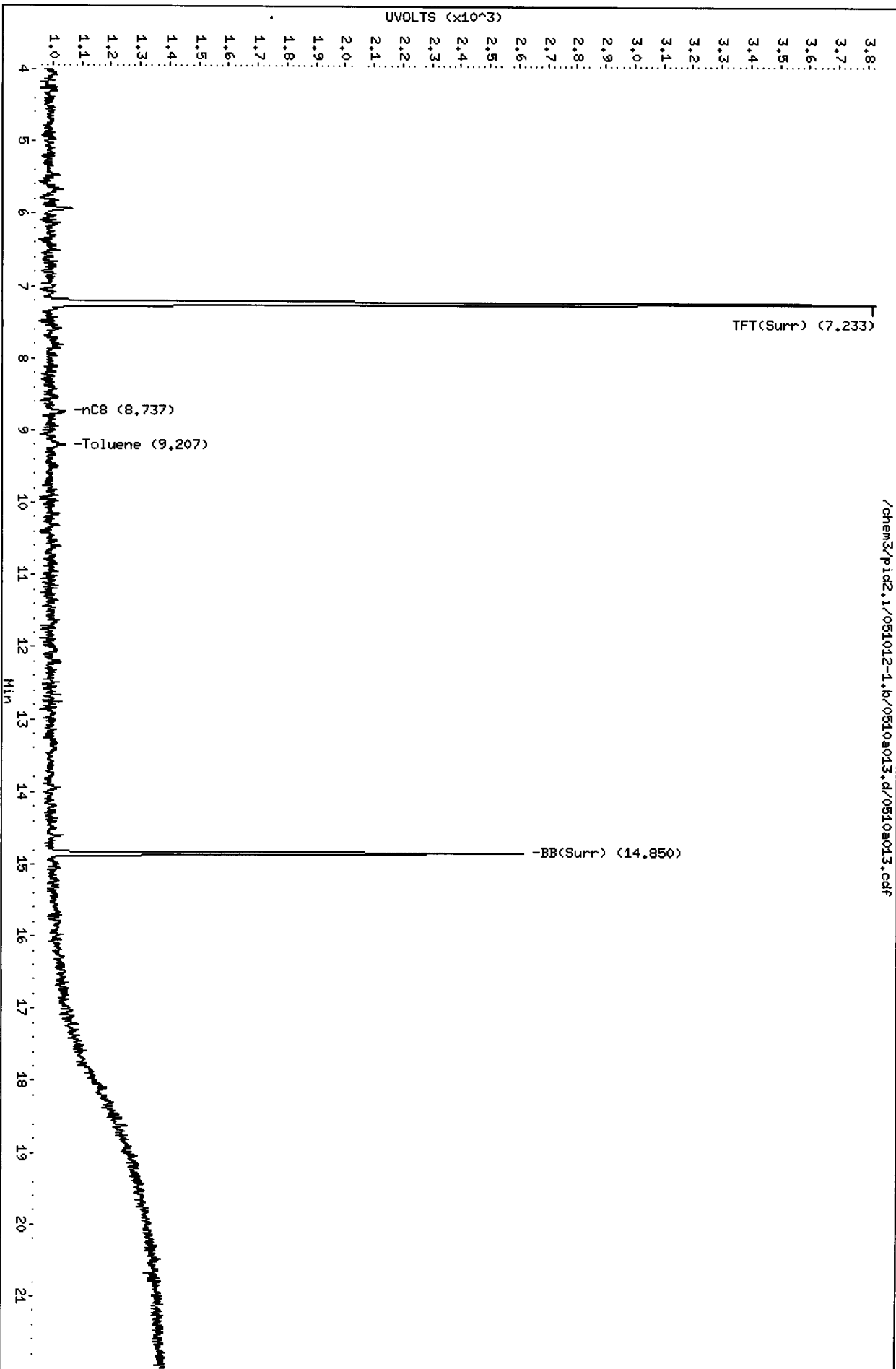
Sample Info: UT77F

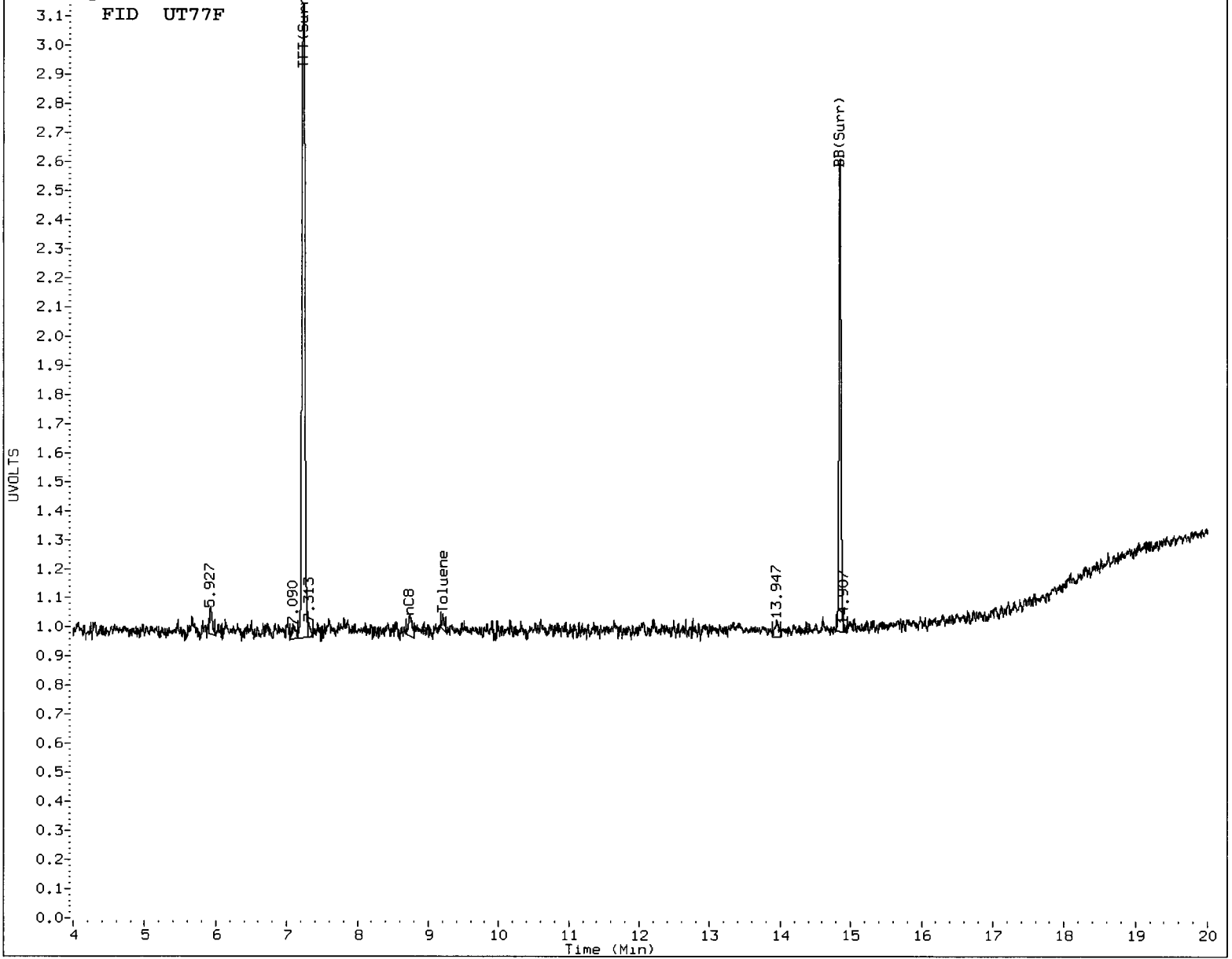
Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: JM

Column diameter: 0.18





MANUAL INTEGRATION

- ①. Baseline correction
- 2. Poor chromatography
- ③. Peak not found
- 4. Totals calculation

⑤ Other PS

Analyst: JW

Date: 5/5/12

Data File: /chem3/pid2.i/051012-1.b/0510a014.d

Date: 10-MAY-2012 18:17

Client ID: CMSB-14-29-30-0512

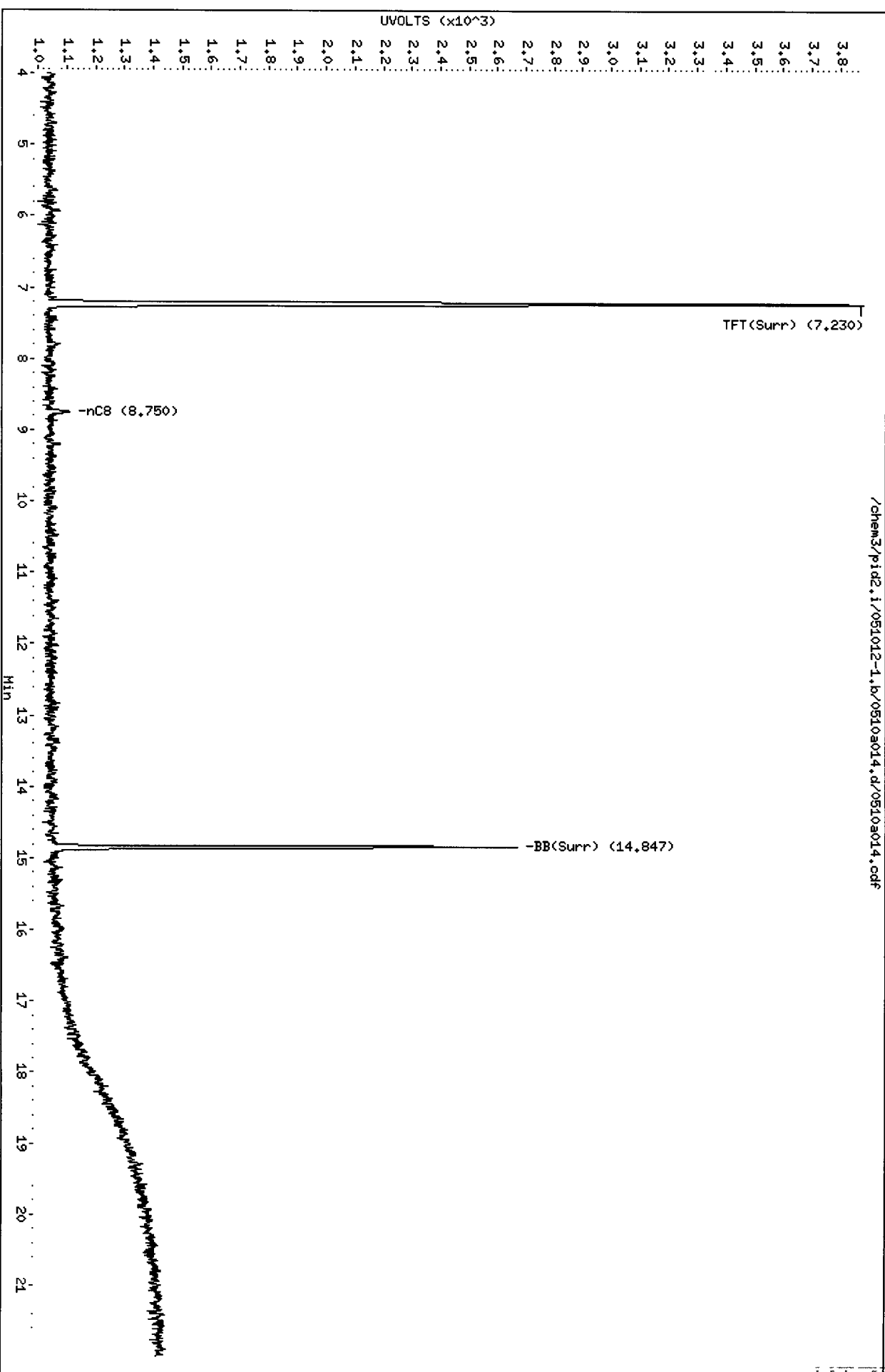
Sample Info: UT77G

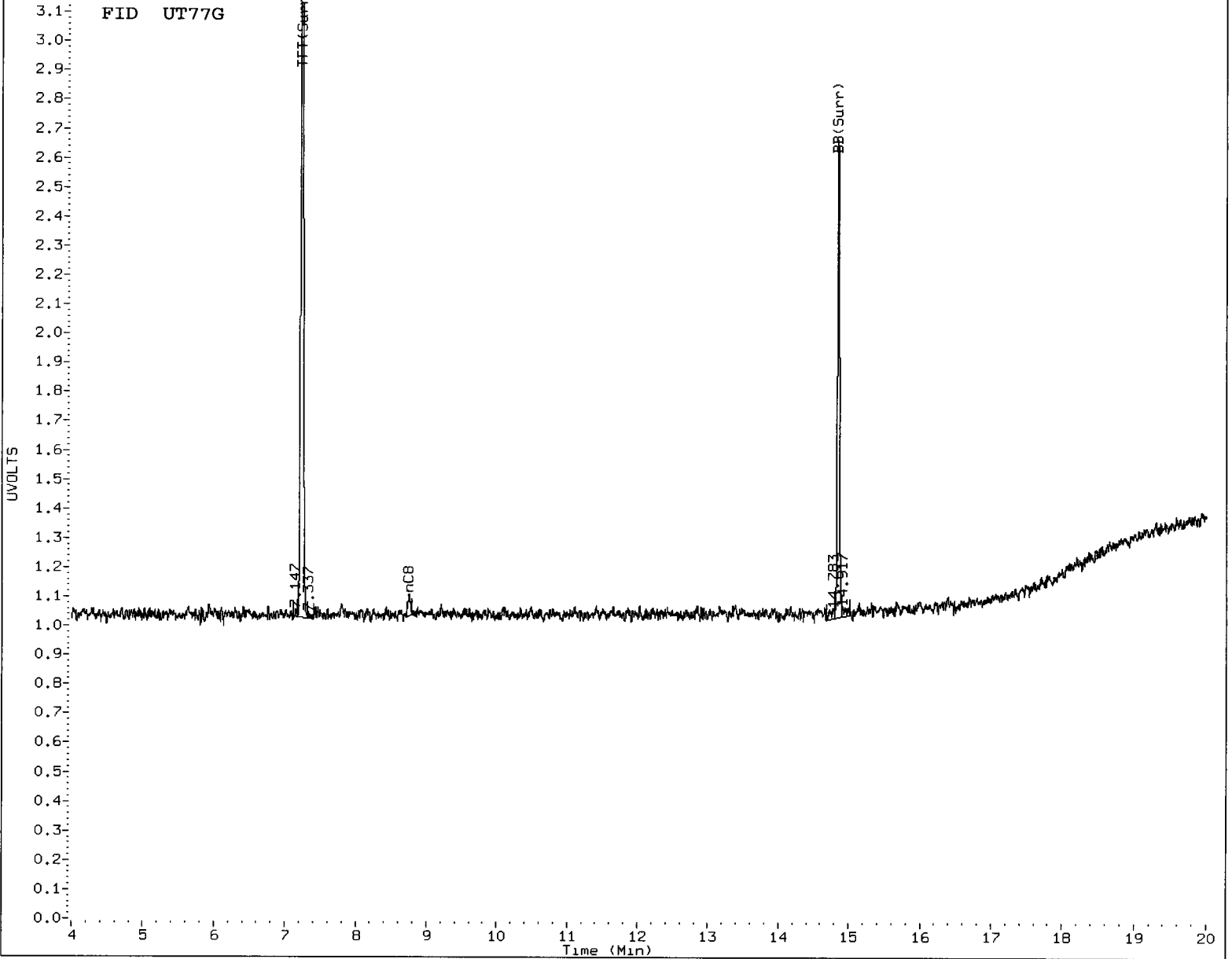
Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: JM

Column diameter: 0.18





MANUAL INTEGRATION

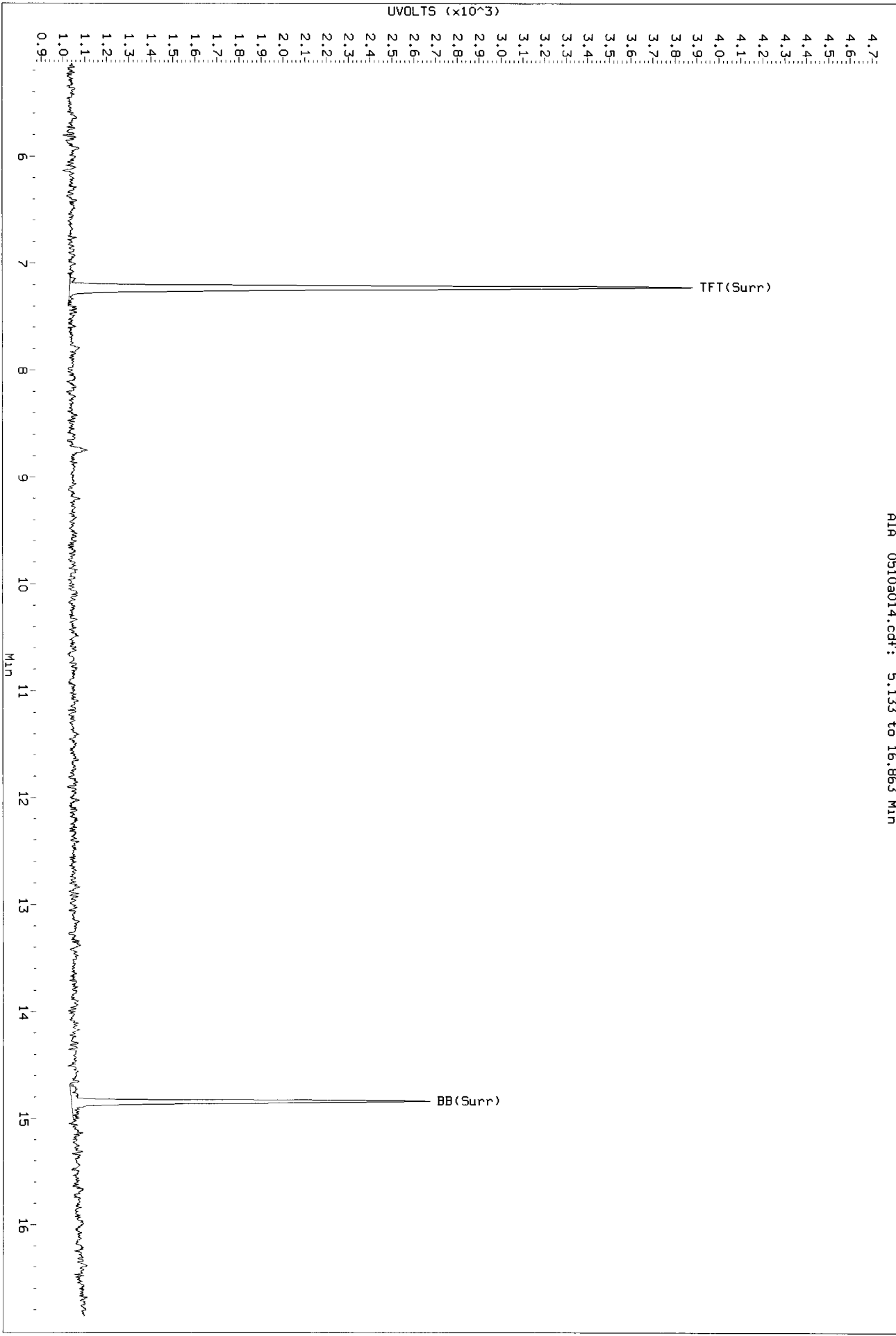
- 1. Baseline correction
- 2. Poor chromatography
- 3. Peak not found
- 4. Totals calculation

5. Other PS

Analyst: JW Date: 5/15/12

Data File: /chems3/pid2.1/051012-1.b/0510a014.d/0510a014.cdf
Injection Date: 10-MAR-2012 18:17
Instrument: pid2.1
Client Sample ID: CWSB-14-29-30-0512

AIA 0510a014.cdf: 5.133 to 16.863 Min



Before
7/5/12

028809 : 1/1/12

Data File: /chem3/pid2.i/051012-1.b/0510a015.d

Date: 10-MAY-2012 18:45

Client ID: CMSB-15-11-13-0512

Sample Info: UT77H

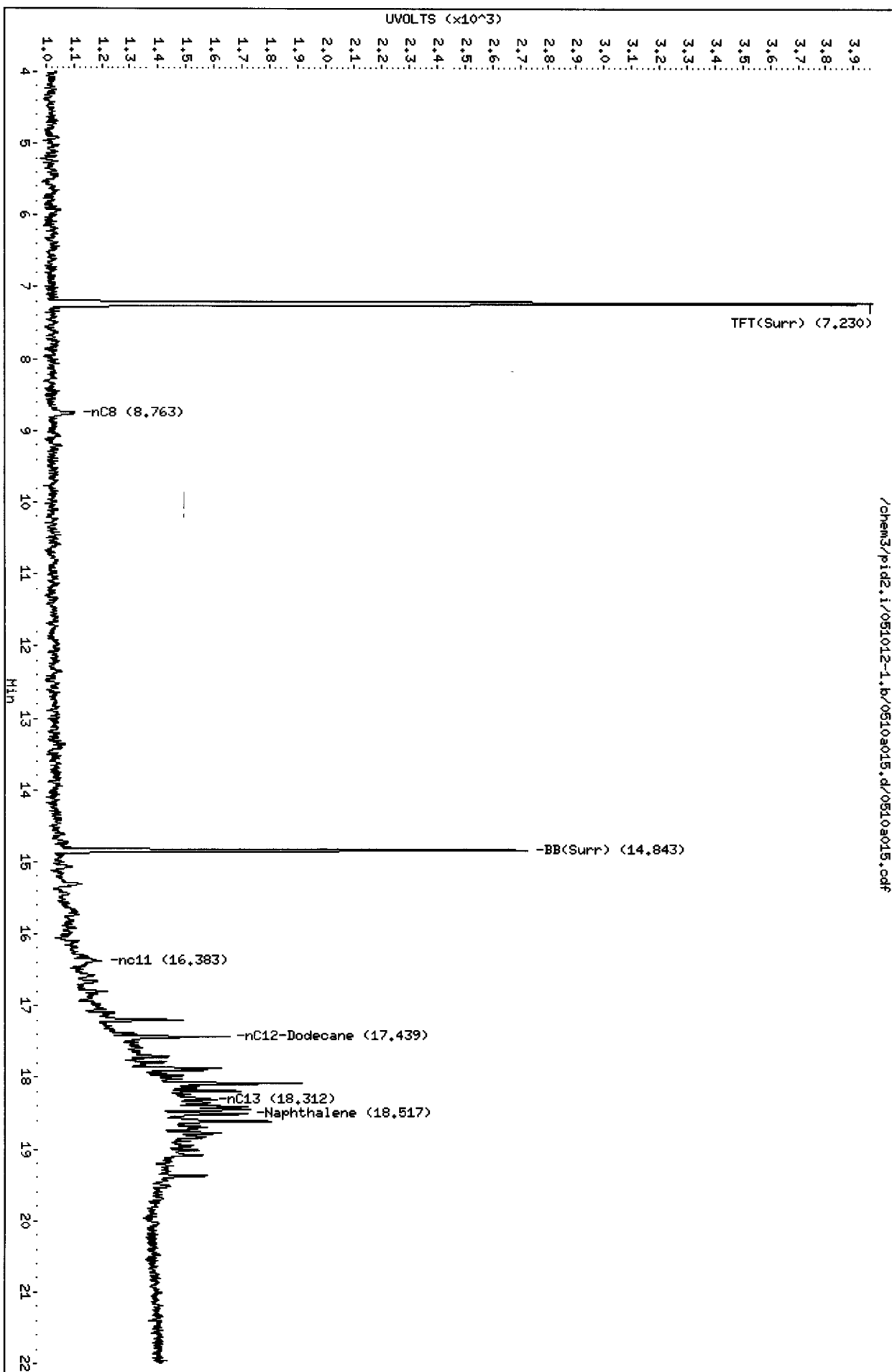
Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: JM

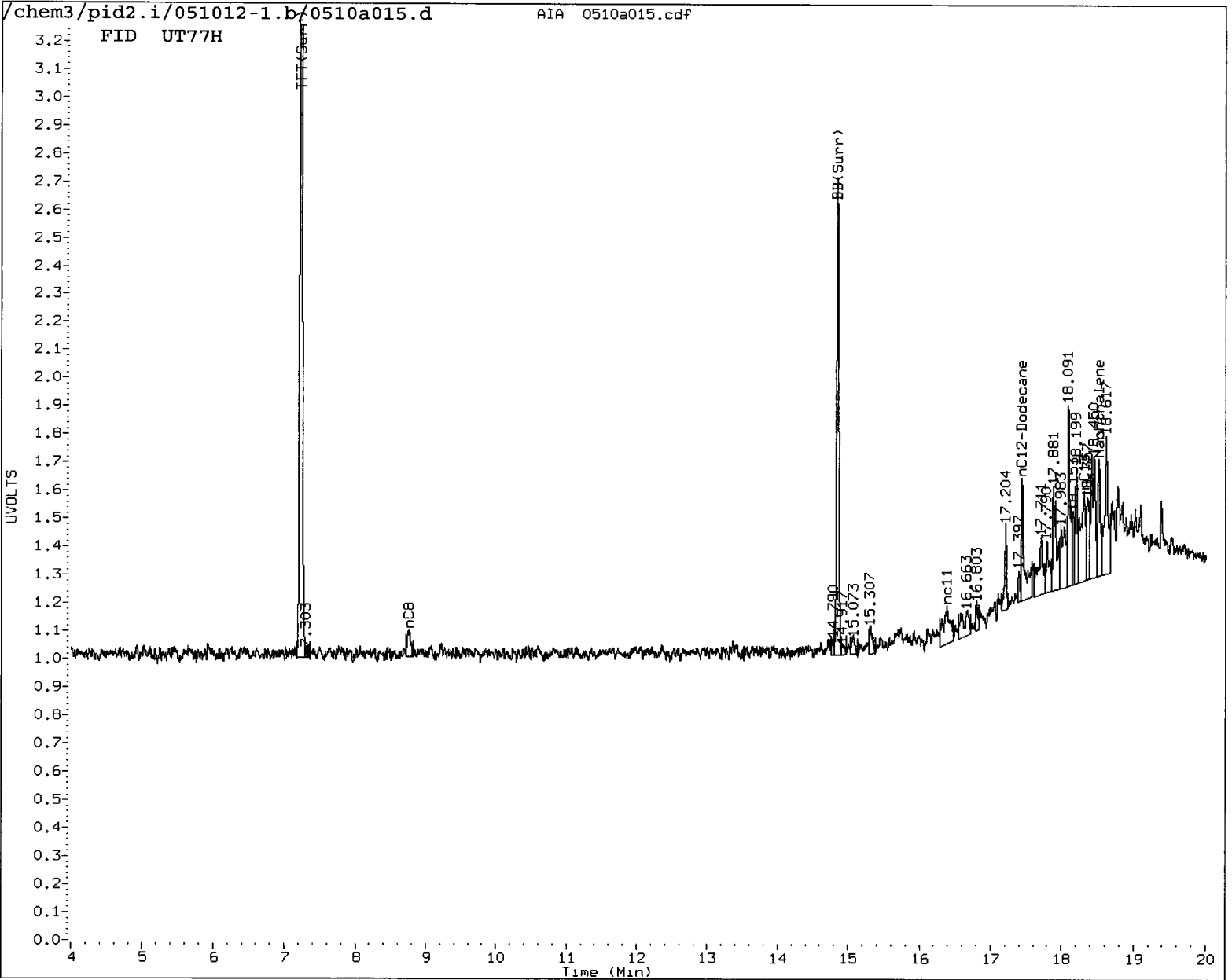
Column diameter: 0.18

Page 1



/chem3/pid2.i/051012-1.b/0510a015.d/0510a015.cdf

1777 : 00000000



MANUAL INTEGRATION

- ①. Baseline correction
- ②. Poor chromatography
- ③. Peak not found
- ④. Totals calculation

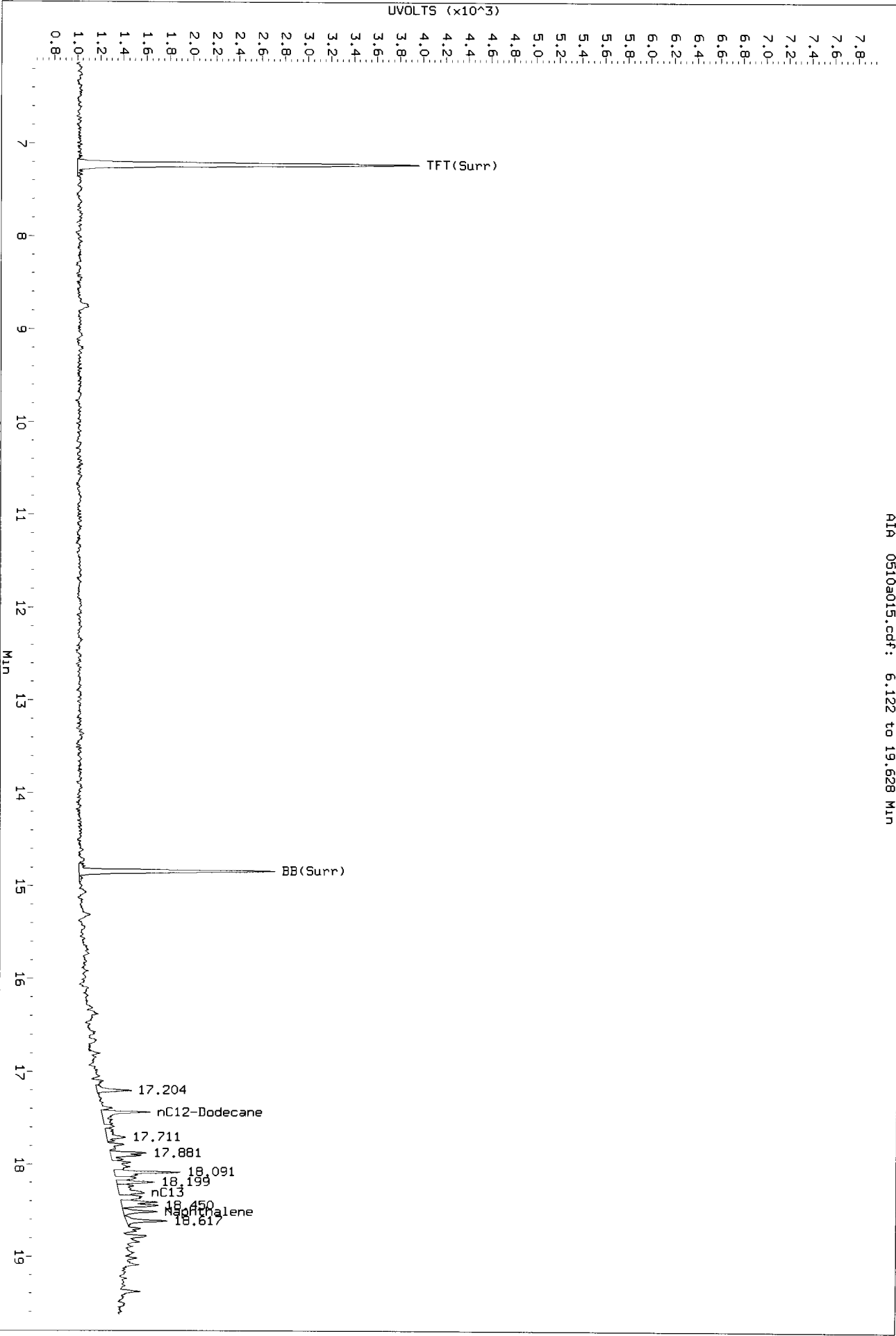
⑤. Other PS

Analyst: SW

Date: 5/15/12

Data File: /chem3/prd2.1/051012-1.b/0510a015.d/0510a015.cdf
Injection Date: 10-MAY-2012 18:45
Instrument: prd2.1
Client Sample ID: CWSB-15-11-13-0512

AIA 0510a015.cdf: 6.122 to 19.628 Min



Release
5/15/12

051012-1

Data File: /chem3/pid2.1/051012-1.b/0510a016.d

Date: 10-MAY-2012 19:13

Client ID: CMSB-15-23-25-0512

Sample Info: UT771

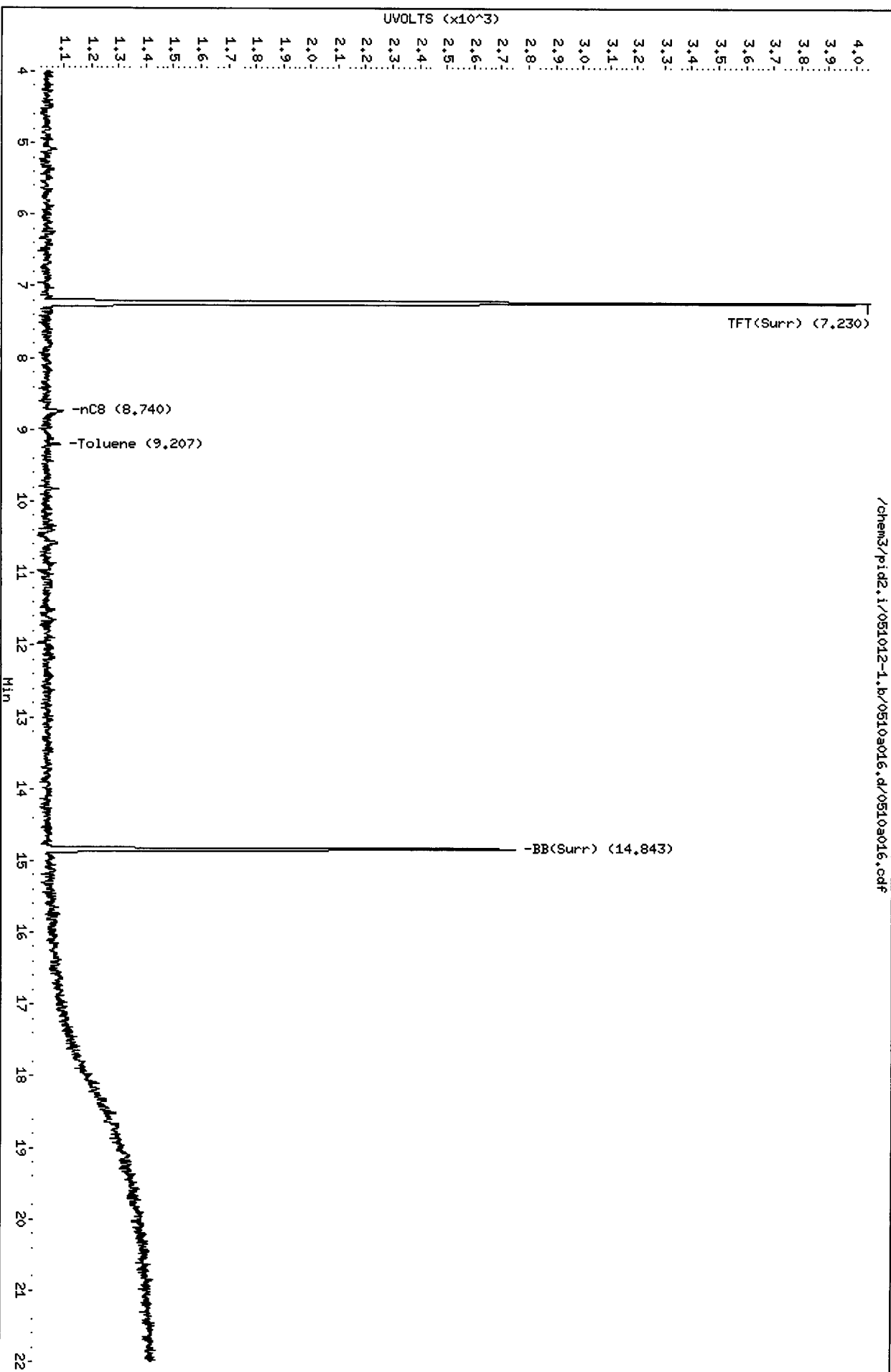
Column phase: RTX 502-2 FID

Instrument: pid2.i

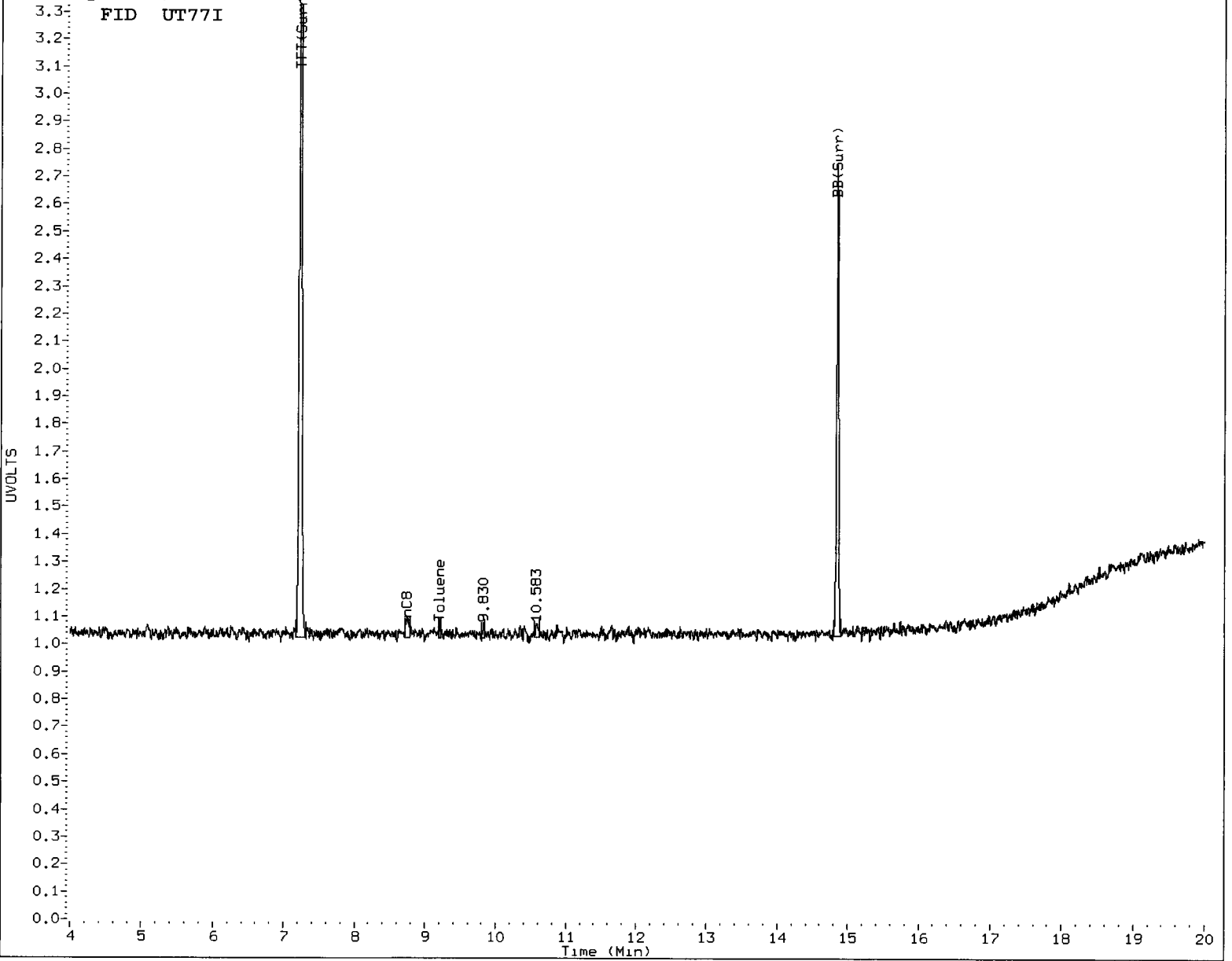
Operator: JM

Column diameter: 0.18

Page 1



FID UT77I



MANUAL INTEGRATION

- 1. Baseline correction
- 2. Poor chromatography
- ③ Peak not found
- 4. Totals calculation

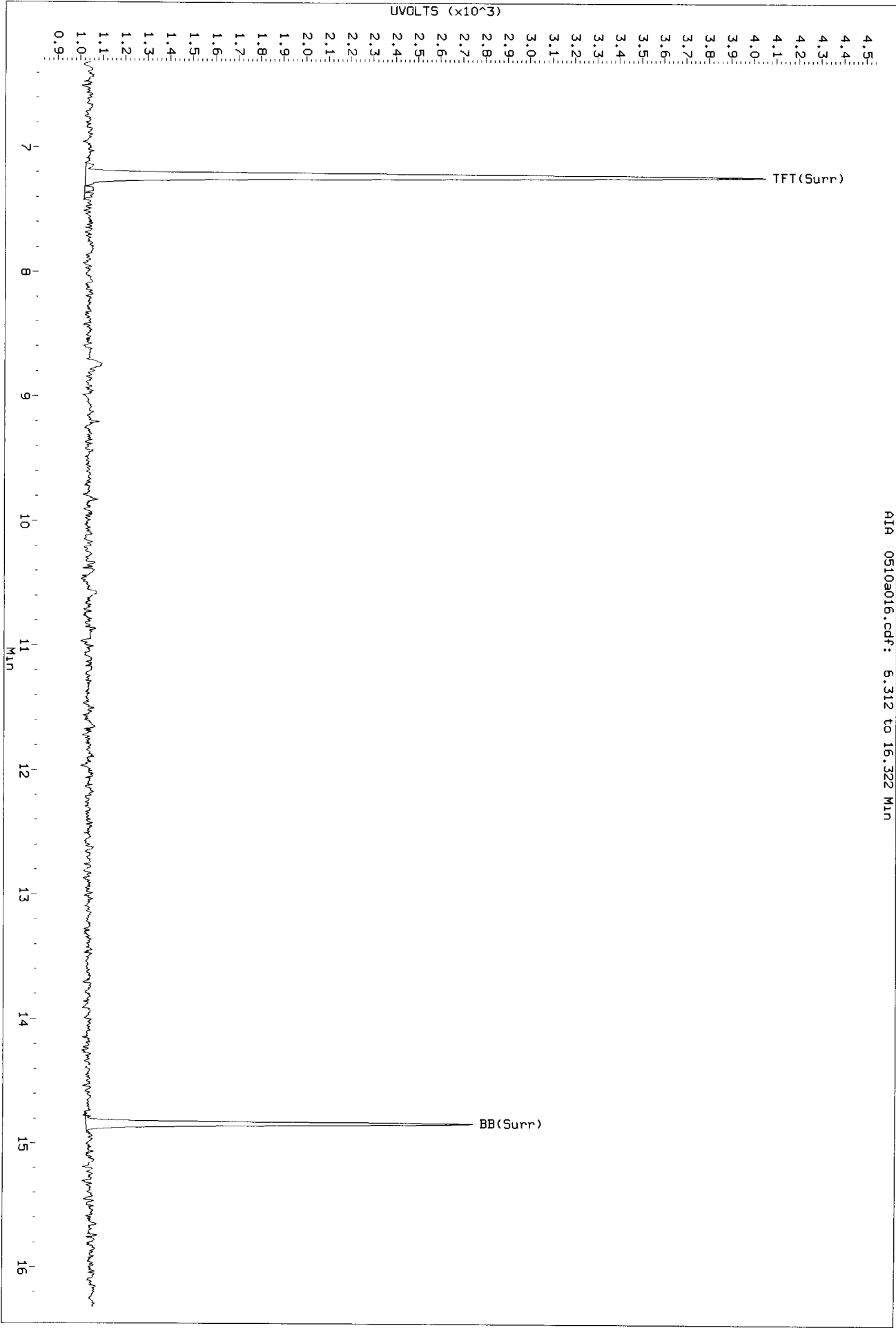
5. Other _____

Analyst: JW

Date: 5/15/12

Data File: /chem3/p1d2.1/051012-1.b/0510a016.d/0510a016.cdf
Injection Date: 10-MAY-2012 19:13
Instrument: p1d2.1
Client Sample ID: CWSB-15-23-25-0512

AIA 0510a016.cdf: 6.312 to 16.322 Min



Refer
5/17/12

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12

Data File: /chem3/pid2.i/051012-1.b/0510a017.d

Date: 10-MAY-2012 19:41

Client ID: CMSB-15-18-20-0512

Sample Info: UT77J

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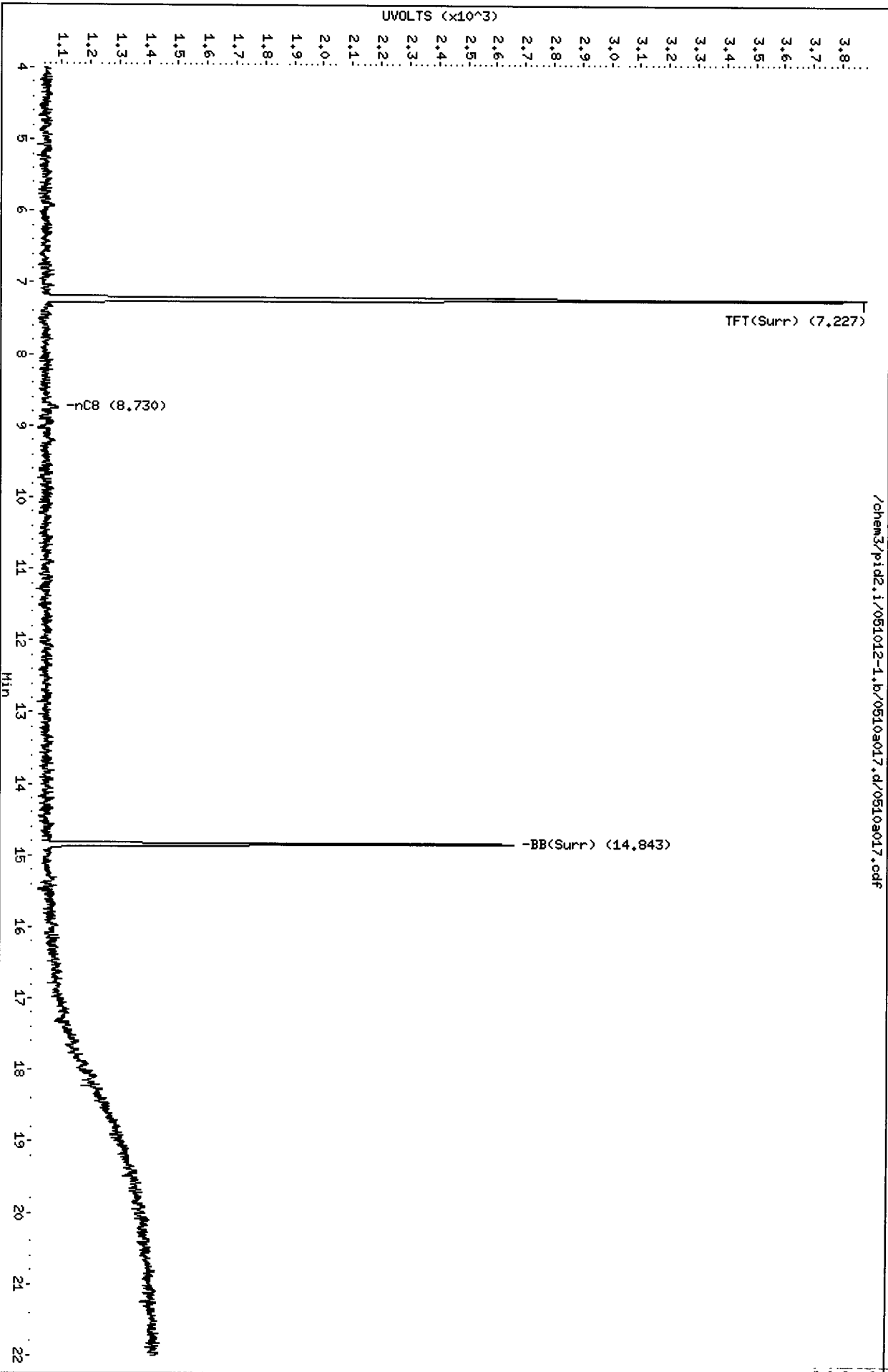
Instrument: pid2.i

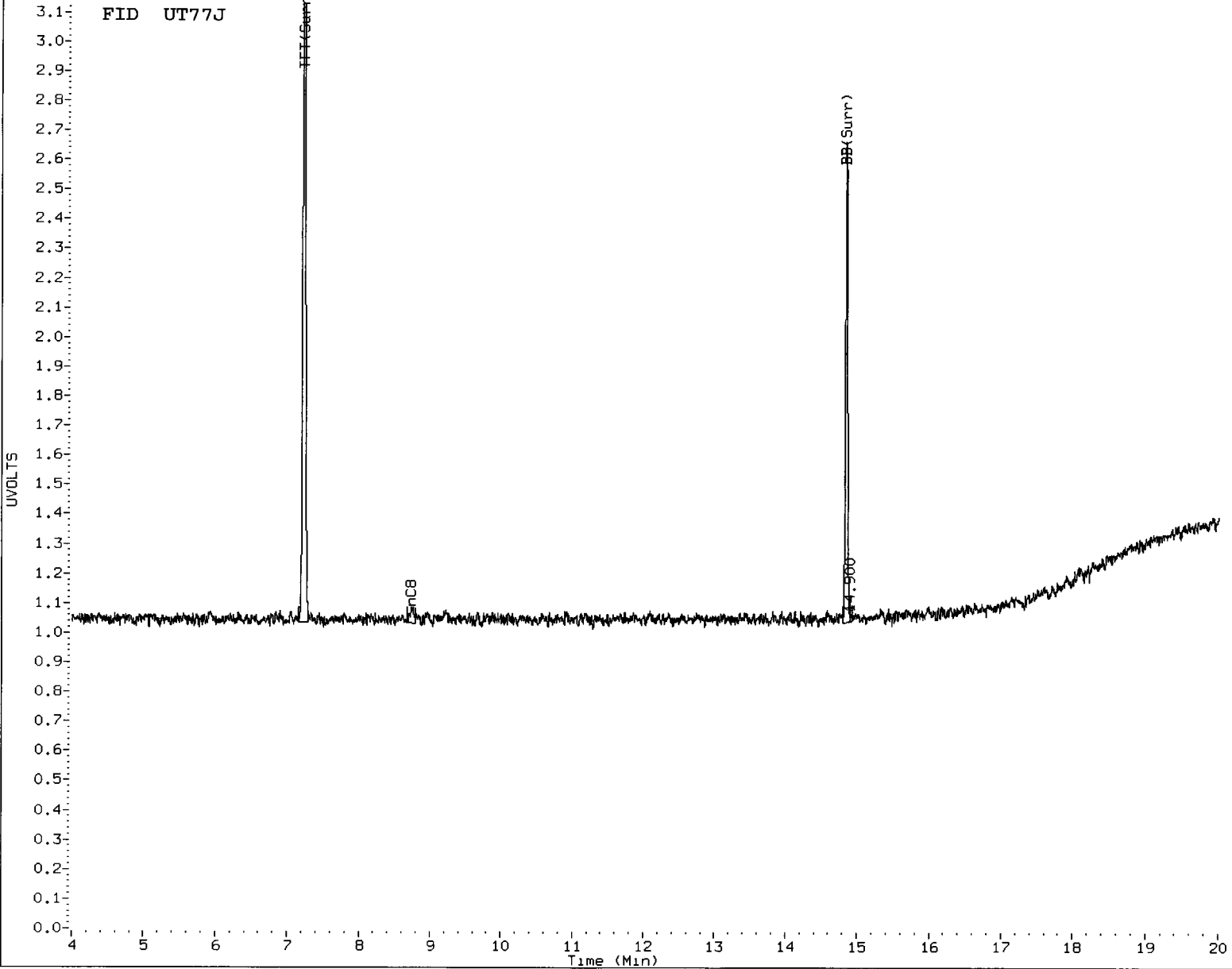
Operator: JM

Column diameter: 0.18

Column phase: RTX 502-2 FID

/chem3/pid2.i/051012-1.b/0510a017.d/0510a017.cdf





MANUAL INTEGRATION

- 1. Baseline correction
- 2. Poor chromatography
- ③. Peak not found
- 4. Totals calculation

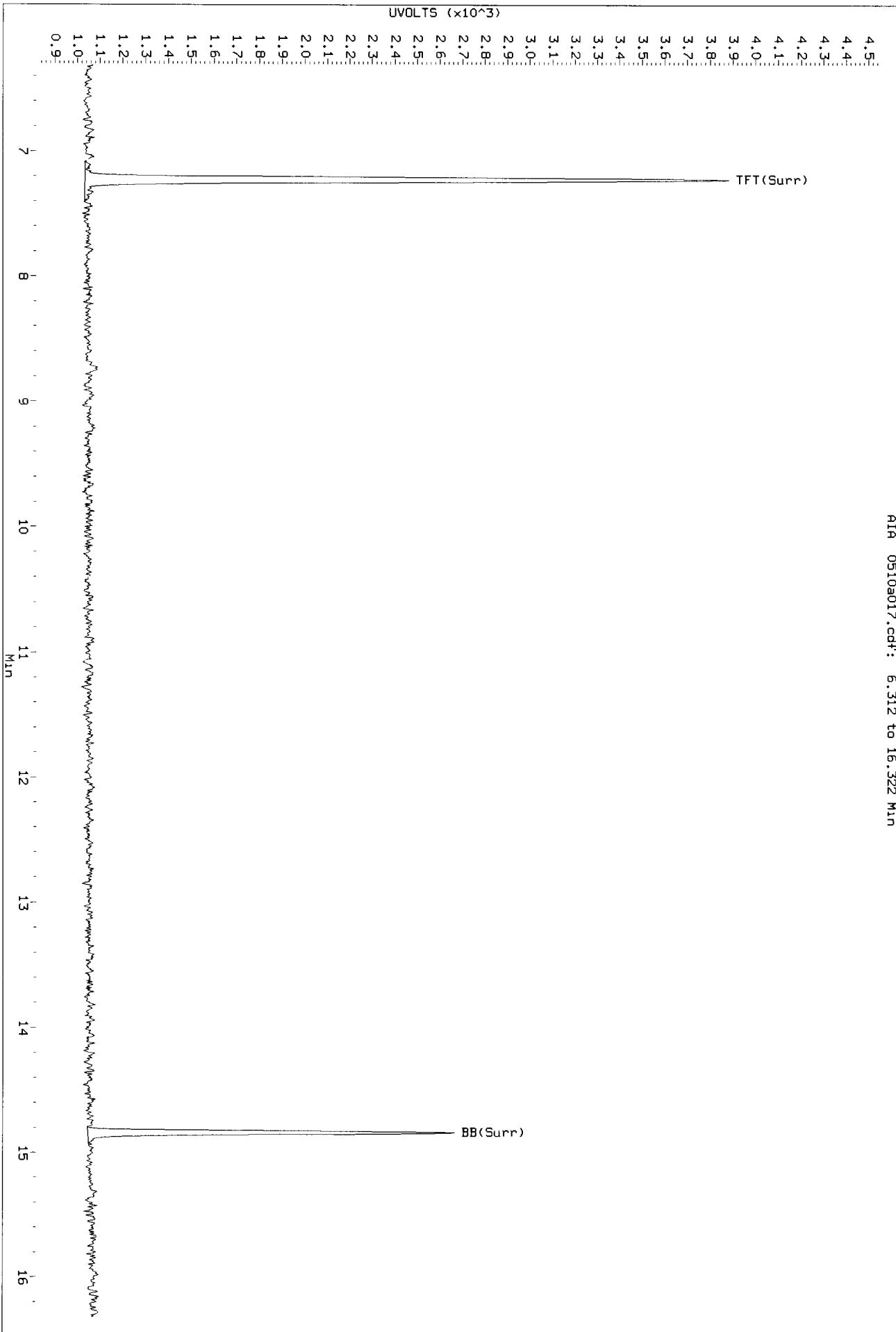
⑤ Other PS

Analyst: FW

Date: 5/15/12

Data File: /chem3/pid2.1/051012-1.b/0510a017.d/0510a017.cdf
Injection Date: 10-MAY-2012 19:41
Instrument: pid2.1
Client Sample ID: CWSB-15-18-20-0512

AIA 0510a017.cdf: 6.312 to 16.322 Min



*Reborn
05/15/12*

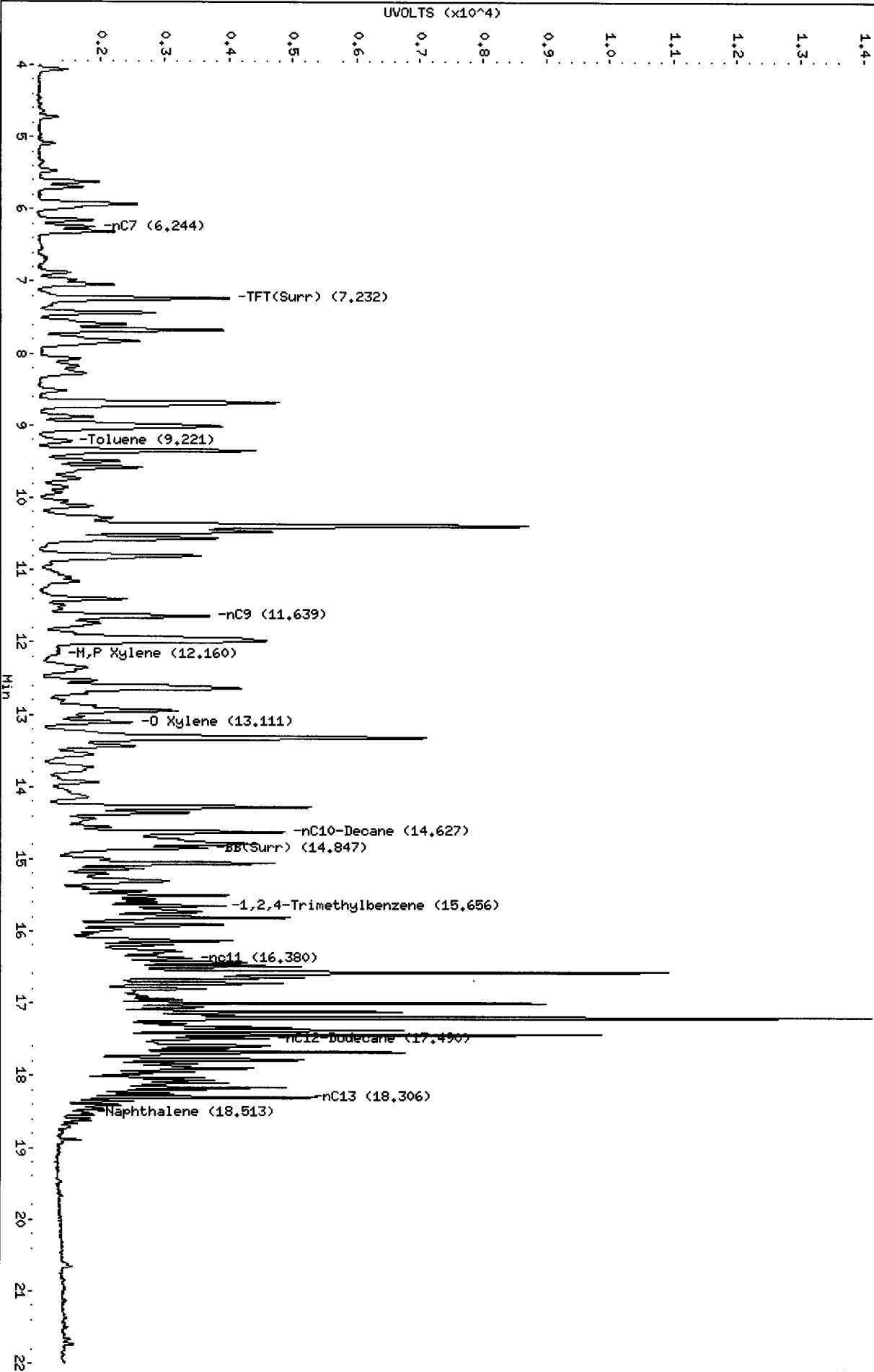
20090512

Data File: /chem3/pid2.i/051012-1.b/0510a026.d
Date: 10-MAY-2012 23:54
Client ID: CMSB-16-8-10-0512
Sample Info: UT77L

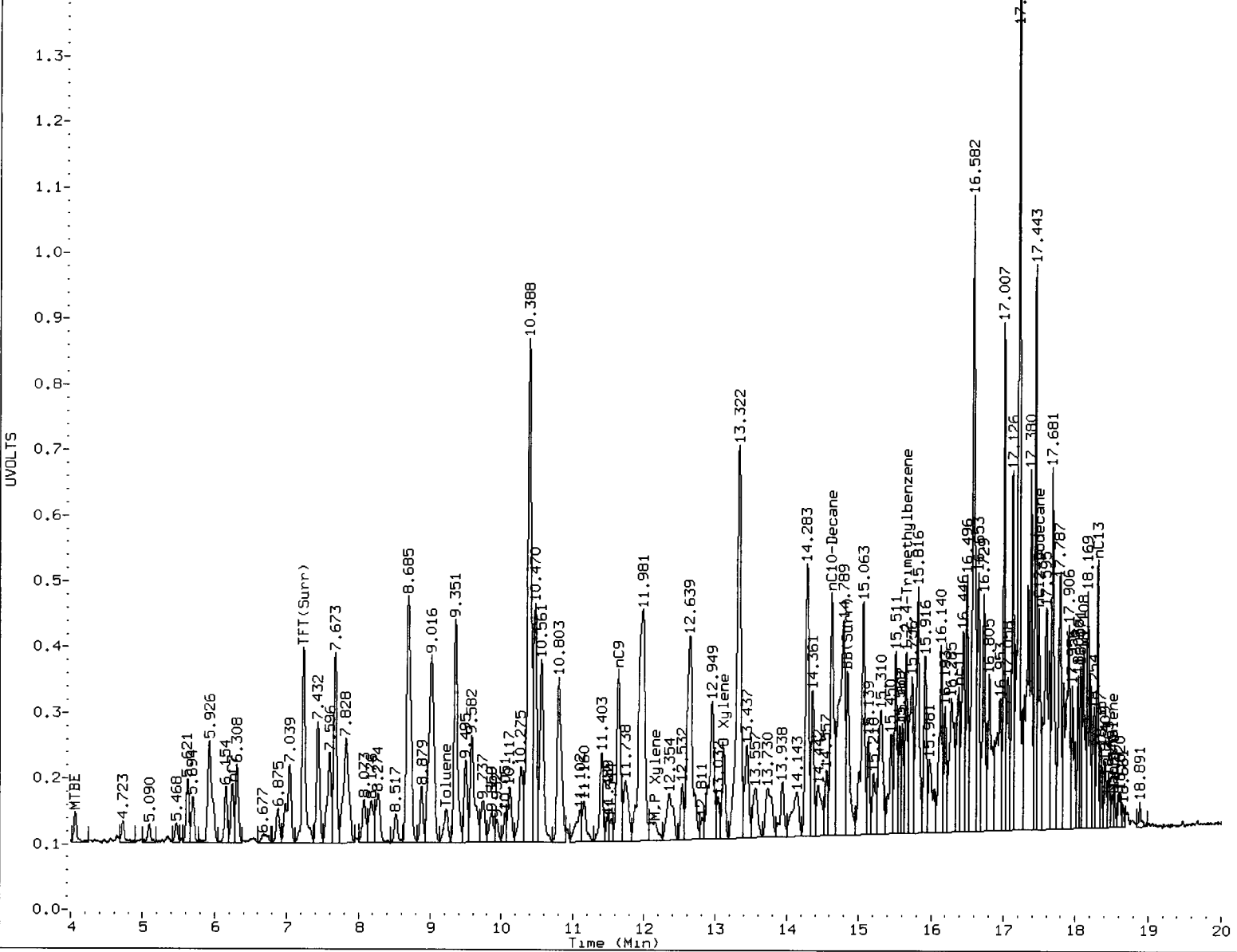
Column phase: RTX 502-2 FID

Instrument: pid2.i
Operator: JM
Column diameter: 0.18

/chem3/pid2.i/051012-1.b/0510a026.d/0510a026.cdf



1.4- FID UT77L



MANUAL INTEGRATION

- ①. Baseline correction
- 2. Poor chromatography
- ③. Peak not found
- 4. Totals calculation

5. Other _____

Analyst: JW Date: 5/15/12

Data File: /chem3/pid2.i/051012-1.b/0510a018.d

Date: 10-MAY-2012 20:09

Client ID: CMSB-16-13-15-0512

Sample Info: UT77M

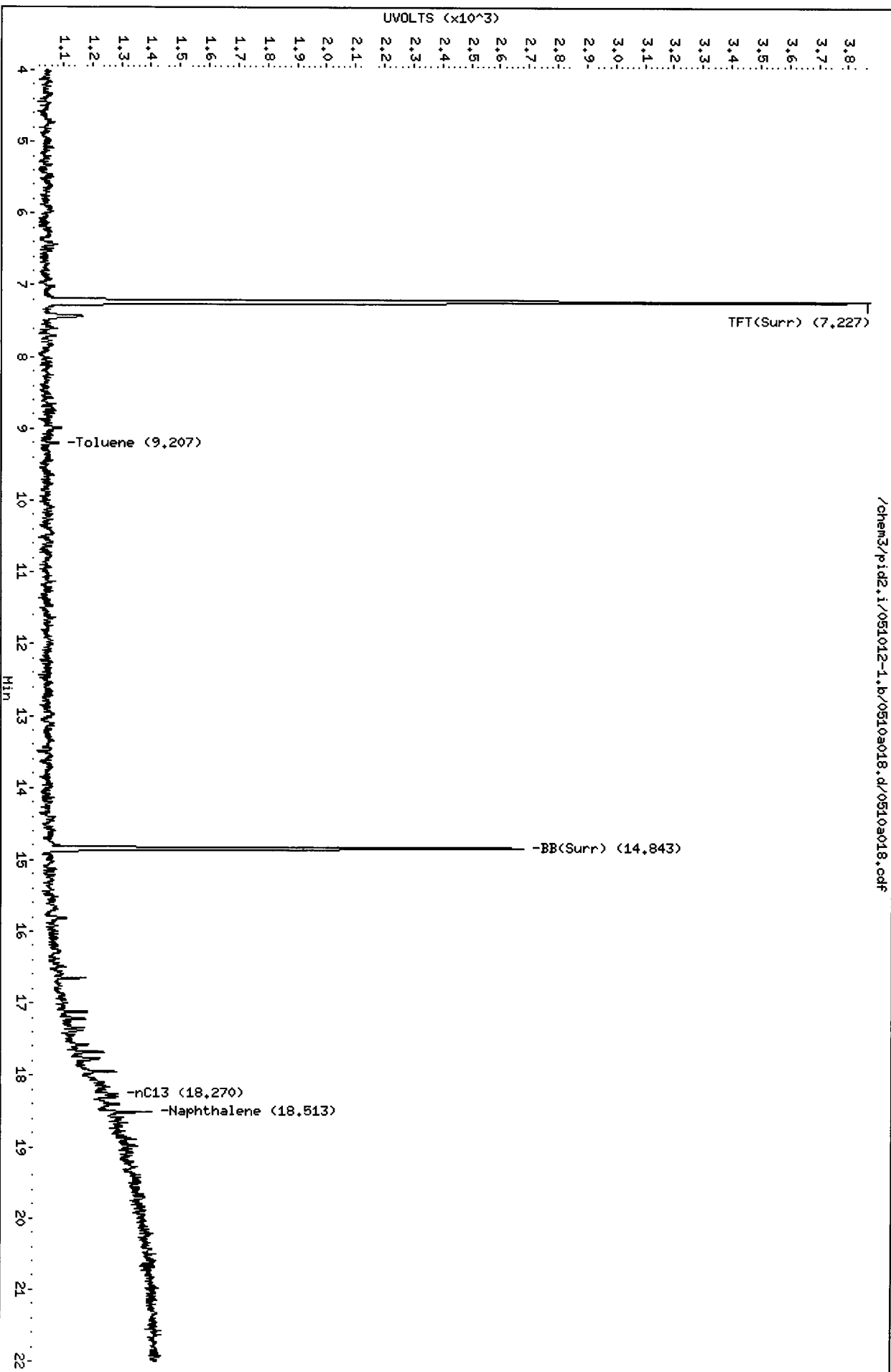
Column phase: RTX 502-2 FID

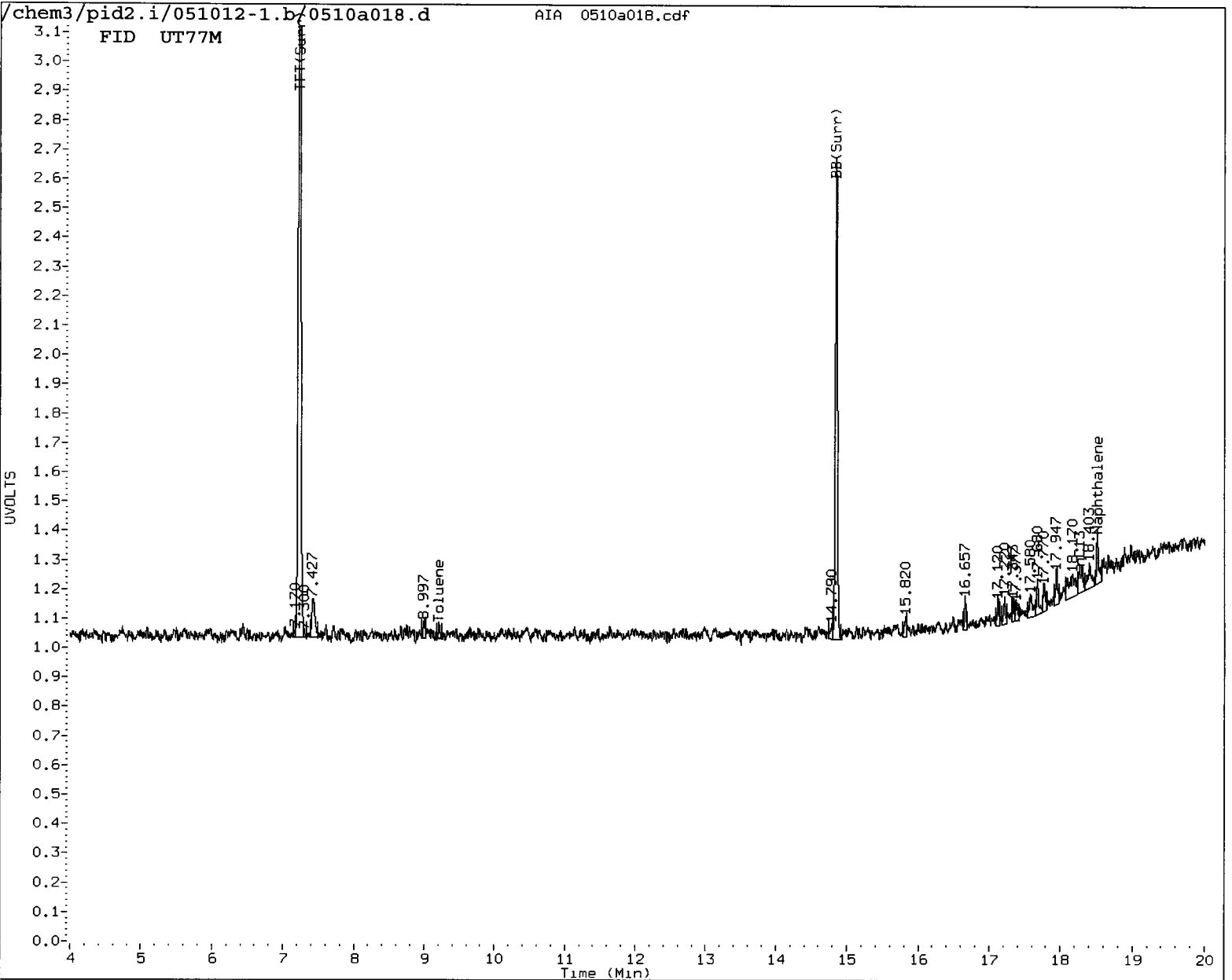
Instrument: pid2.1

Operator: JM

Column diameter: 0.18

Page 1





MANUAL INTEGRATION

- ① Baseline correction
- ② Poor chromatography
- ③ Peak not found
- ④ Totals calculation
- ⑤ Other PS

Analyst: SW Date: 5/15/12

Data File: /chem3/pid2.i/051012-1.b/0510a019.d

Date: 10-May-2012 20:38

Client ID: CMSB-16-18-20-0512

Sample Info: UT77N

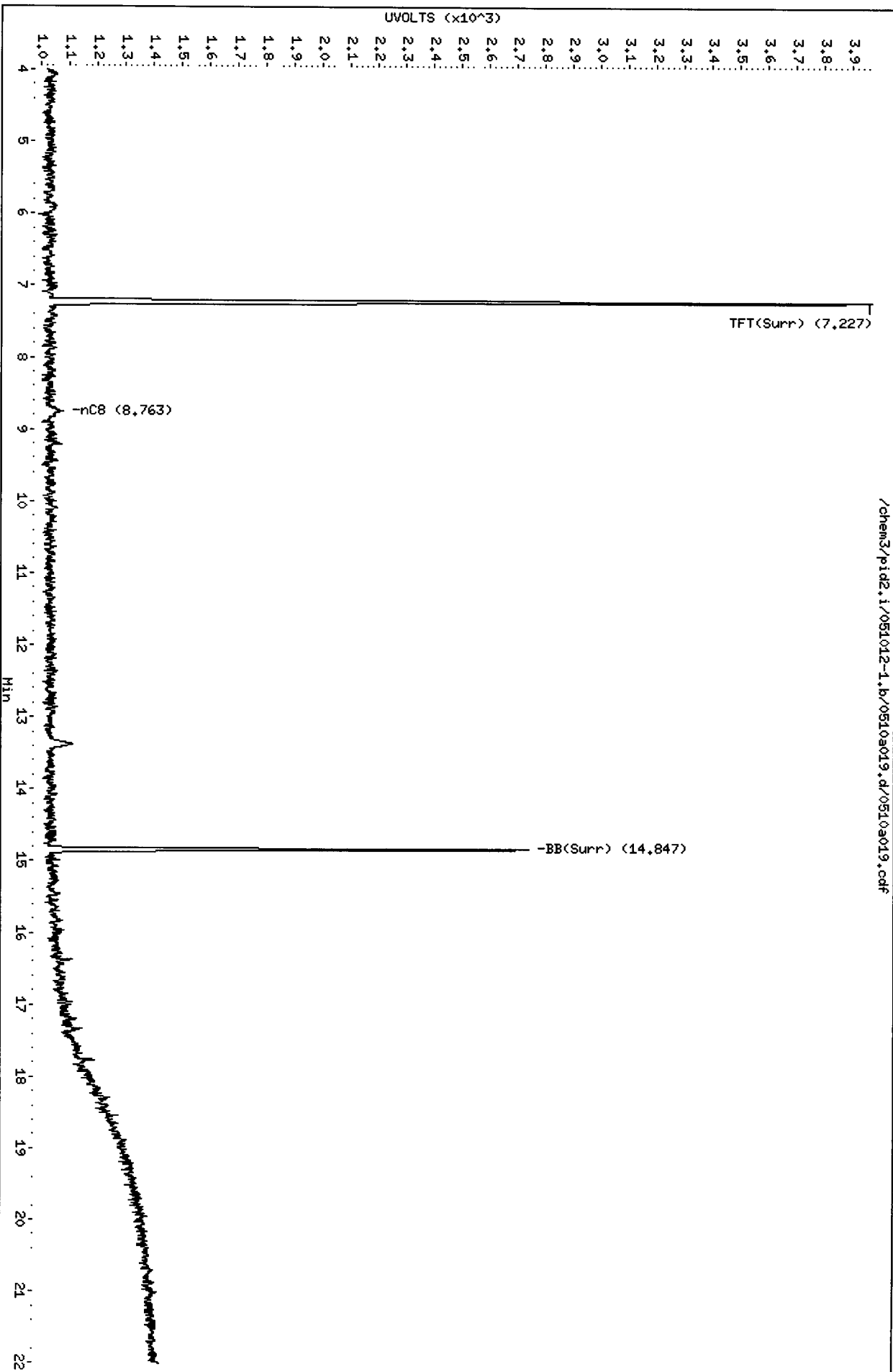
Column phase: RTX 502-2 FID

Instrument: pid2.1

Operator: JM

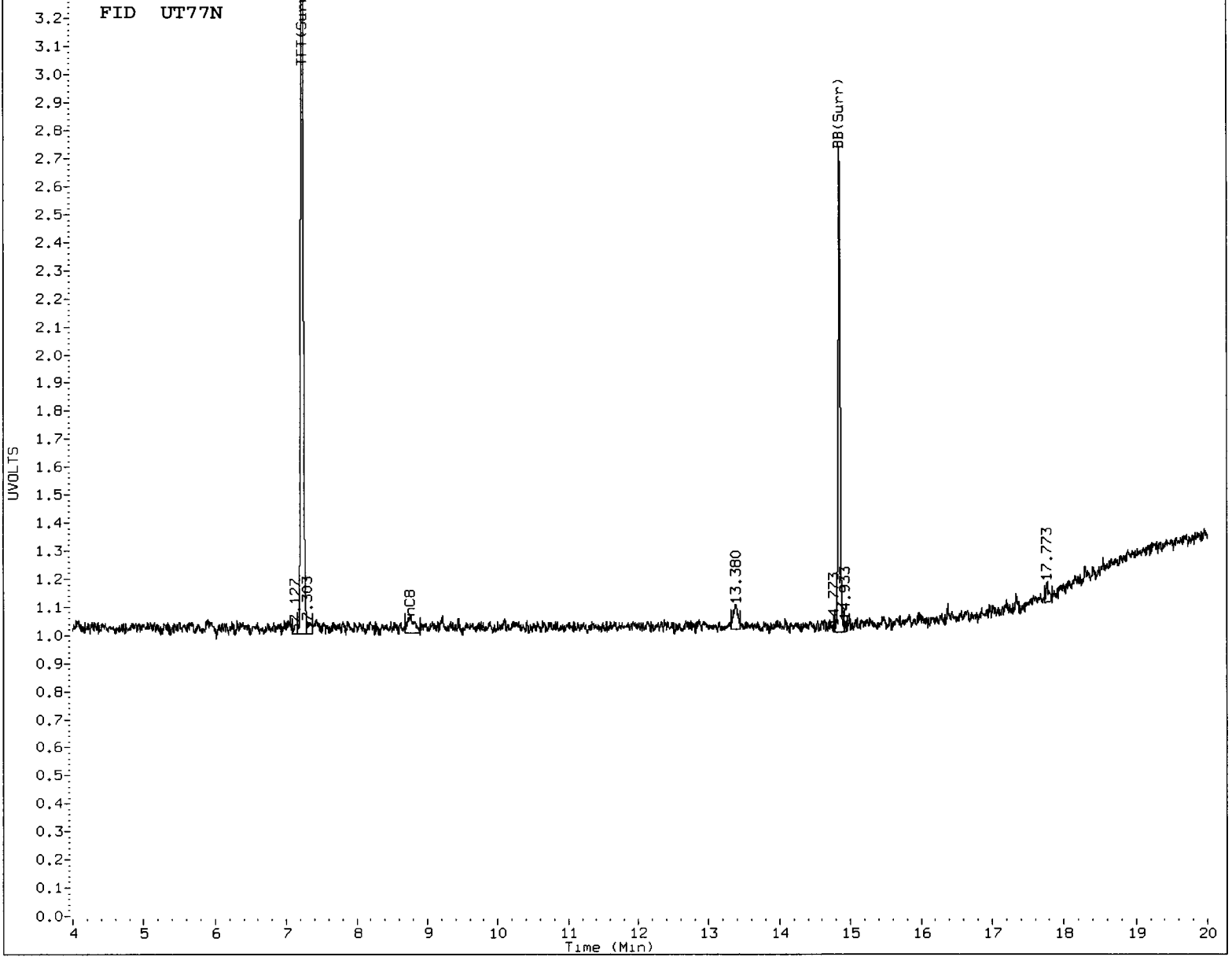
Column diameter: 0.18

Page 1



/chem3/pid2.i/051012-1.b/0510a019.d/0510a019.cdf

FID UT77N



MANUAL INTEGRATION

- ① Baseline correction
- 2. Poor chromatography
- ③ Peak not found
- 4. Totals calculation

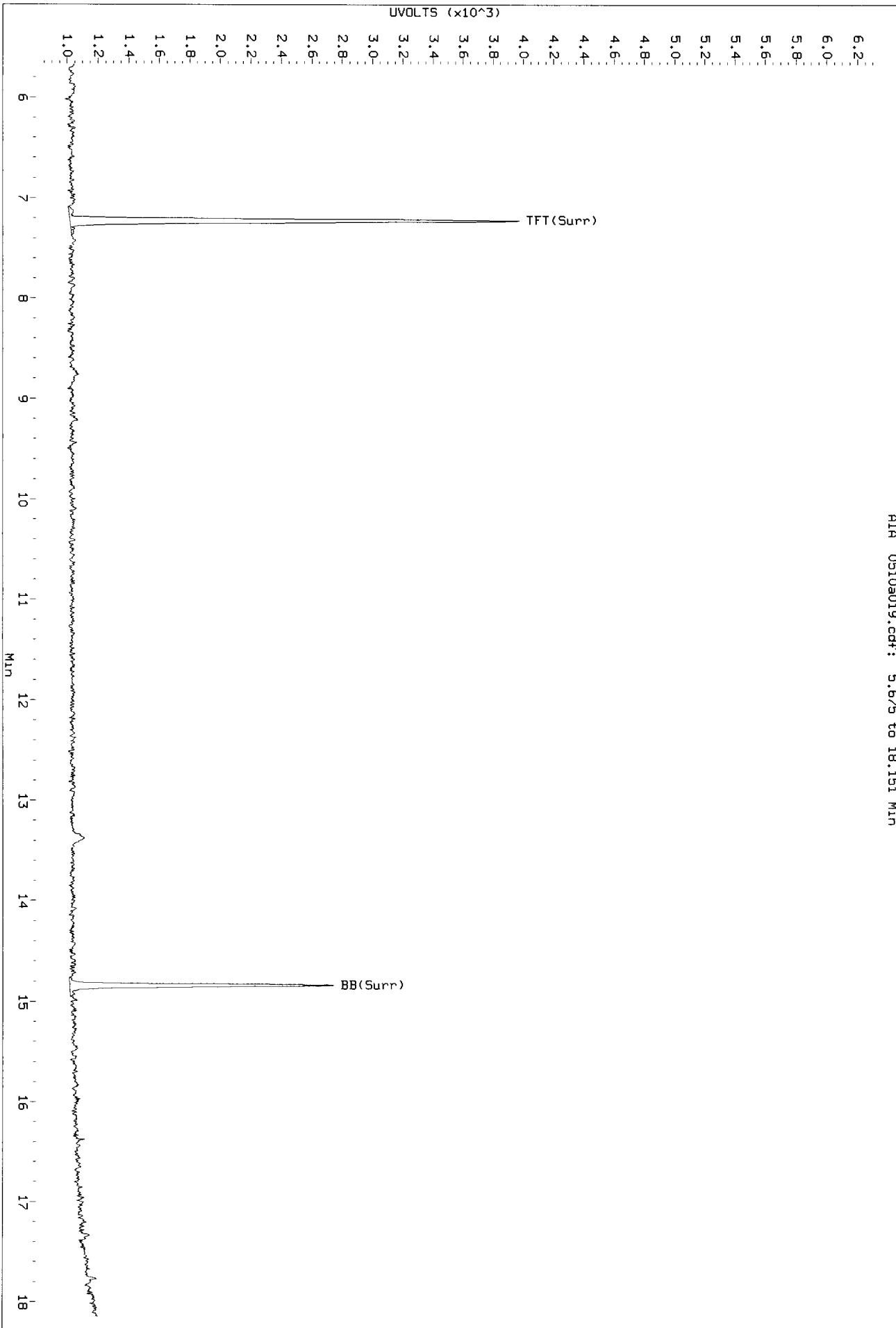
⑤ Other PS

Analyst: JW

Date: 5/15/12

Data File: /chem3/pid2.1/051012-1.b/0510a019.d/0510a019.cdf
Injection Date: 10-MAR-2012 20:38
Instrument: pid2.1
Client Sample ID: CWSB-16-18-20-0512

RII 0510a019.cdf: 5.675 to 18.151 Min



*Refene
10/15/12*

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Data File: /chem3/pid2.i/051012-1.b/0510a027.d

Date: 11-MAY-2012 00:22

Client ID: CMSB-17-6-8-0512

Sample Info: UT77P

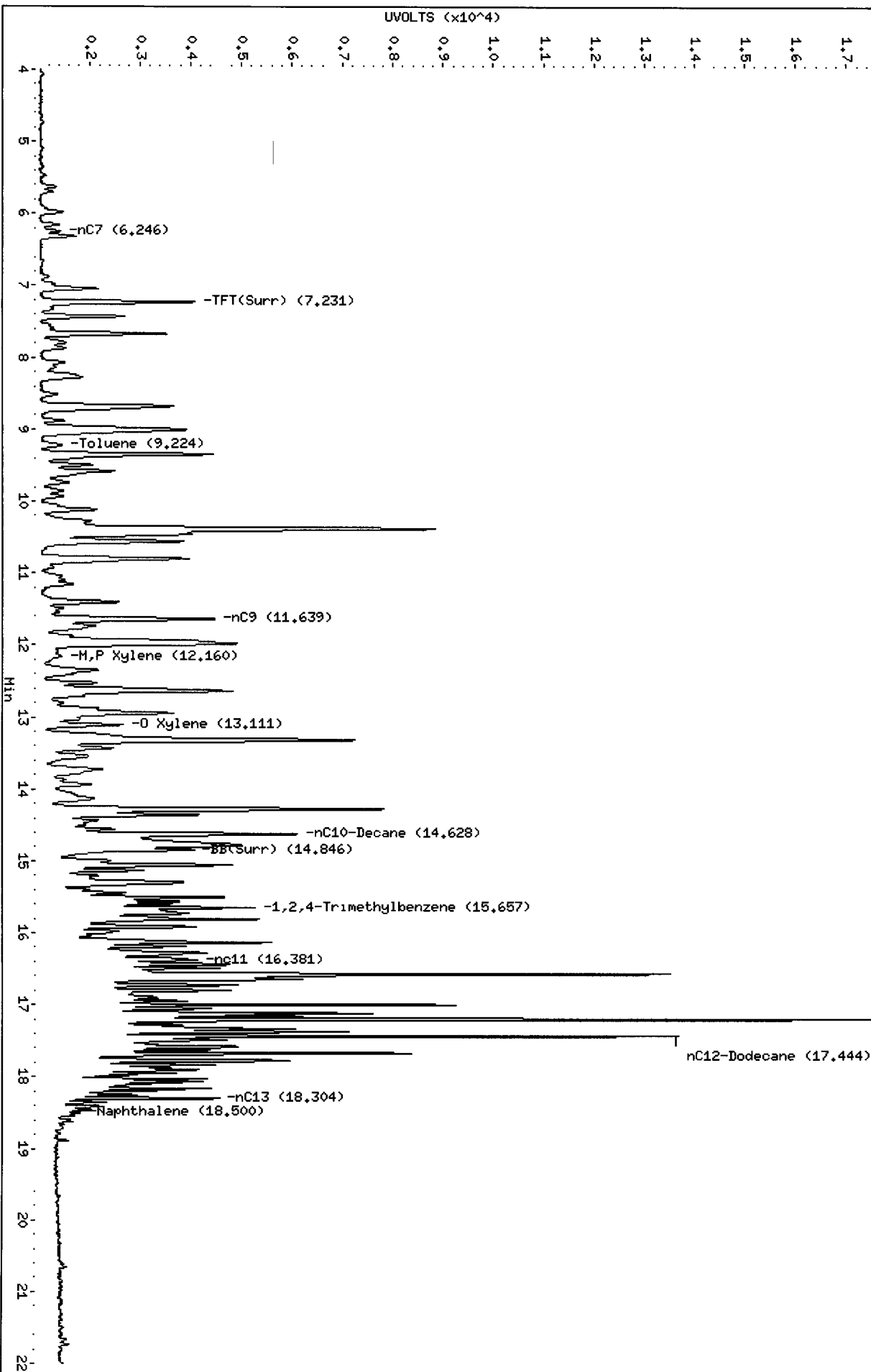
Column phase: RTX 502-2 FID

Instrument: pid2.i

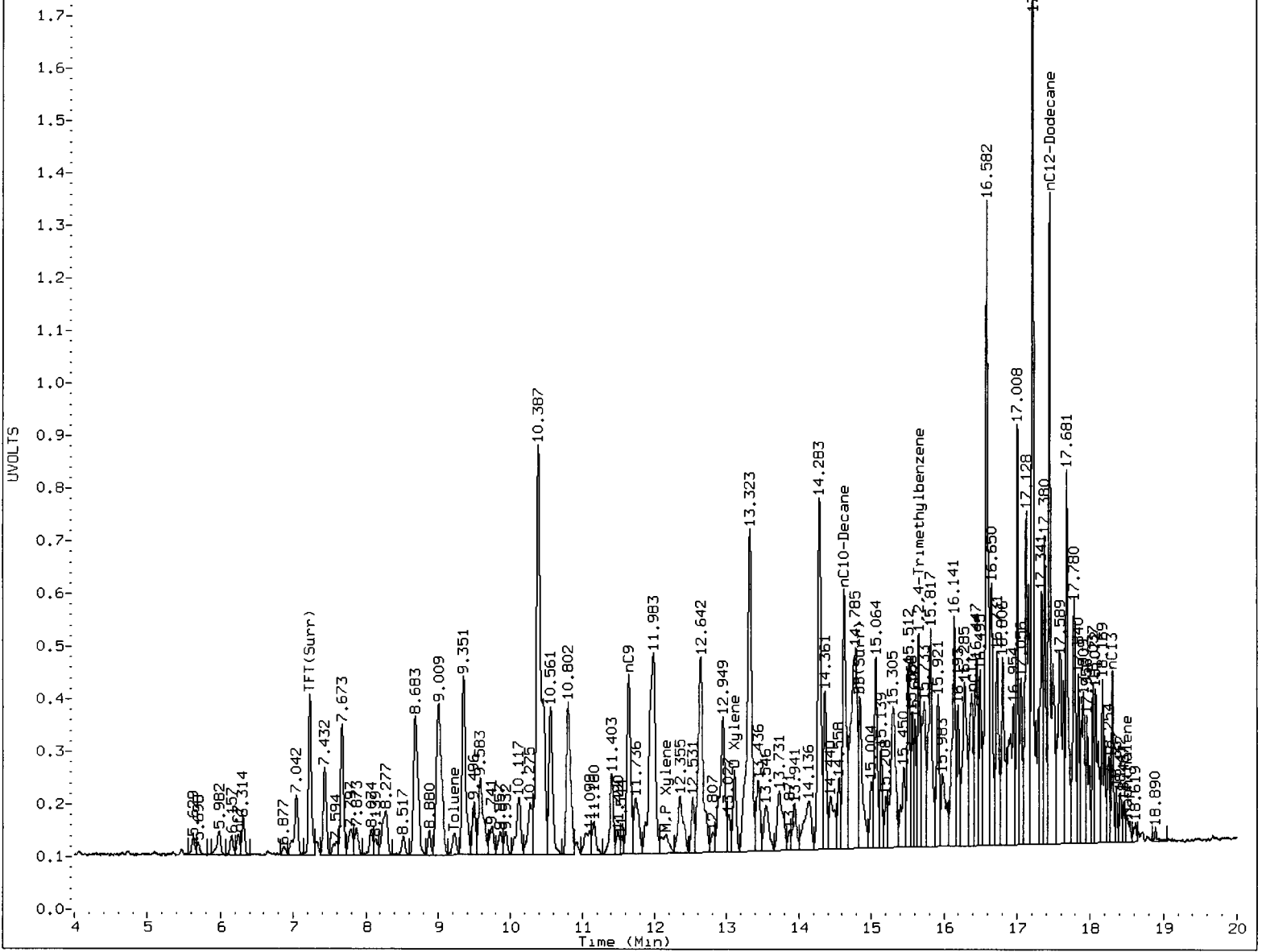
Operator: JM

Column diameter: 0.18

/chem3/pid2.i/051012-1.b/0510a027.d/0510a027.cdf



FID UT77P

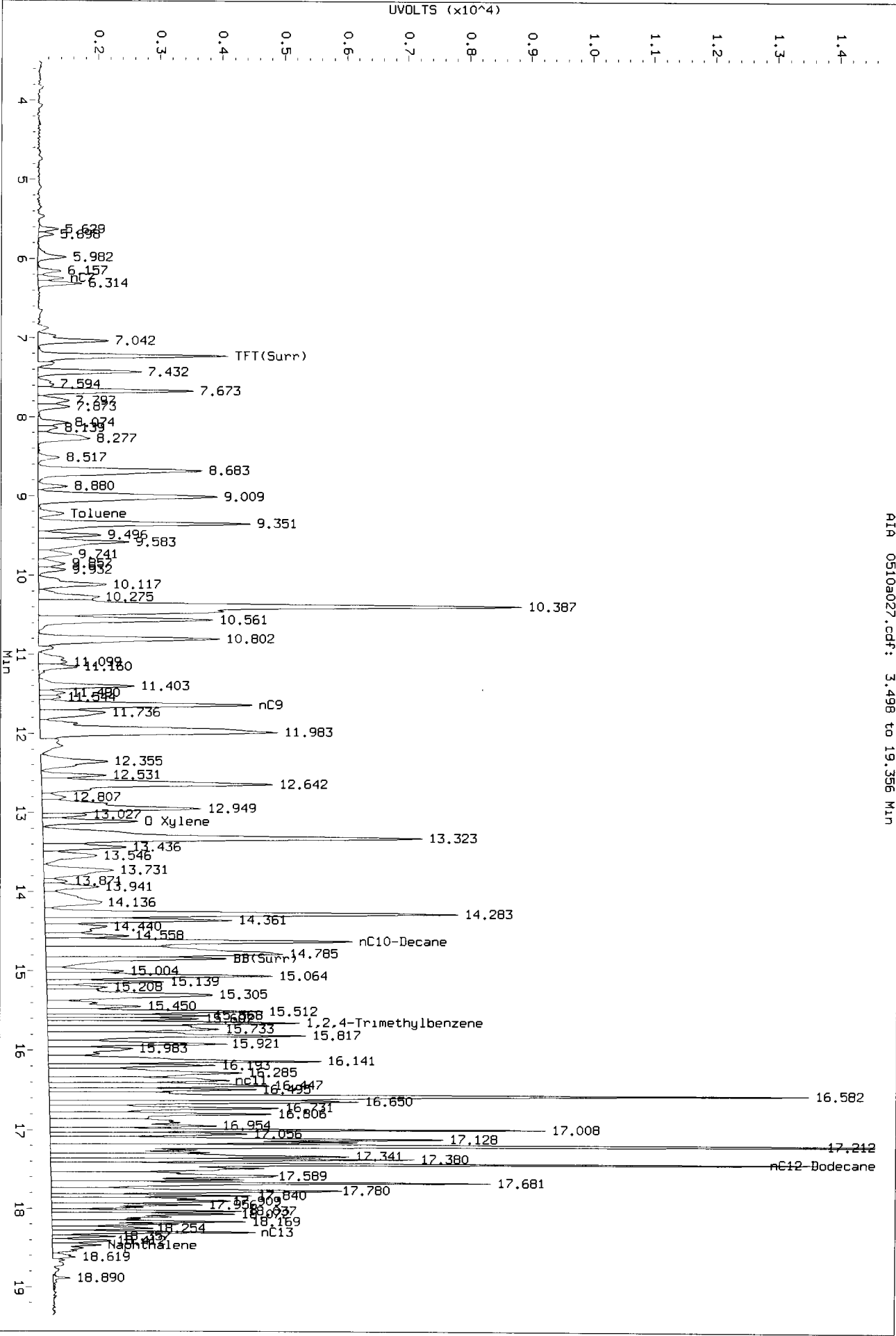


MANUAL INTEGRATION

- 1. Baseline correction
- 2. Poor chromatography
- 3. Peak not found
- 4. Totals calculation
- 5. Other _____

Analyst: _____ Date: _____

Data File: /chem3/pid2,1/051012-1.b/0510a027.d/0510a027.cdf
Injection Date: 11-MAY-2012 00:22
Instrument: pid2.1
Client Sample ID: CWSB-17-6-8-0512



AIA 0510a027.cdf: 3.498 to 19.356 Min

Before SW
5/15/12

051012-1

Data File: /chem3/pid2.i/051012-1.b/0510a020.d

Date: 10-MAY-2012 21:06

Client ID: CMSB-17-23-25-0512

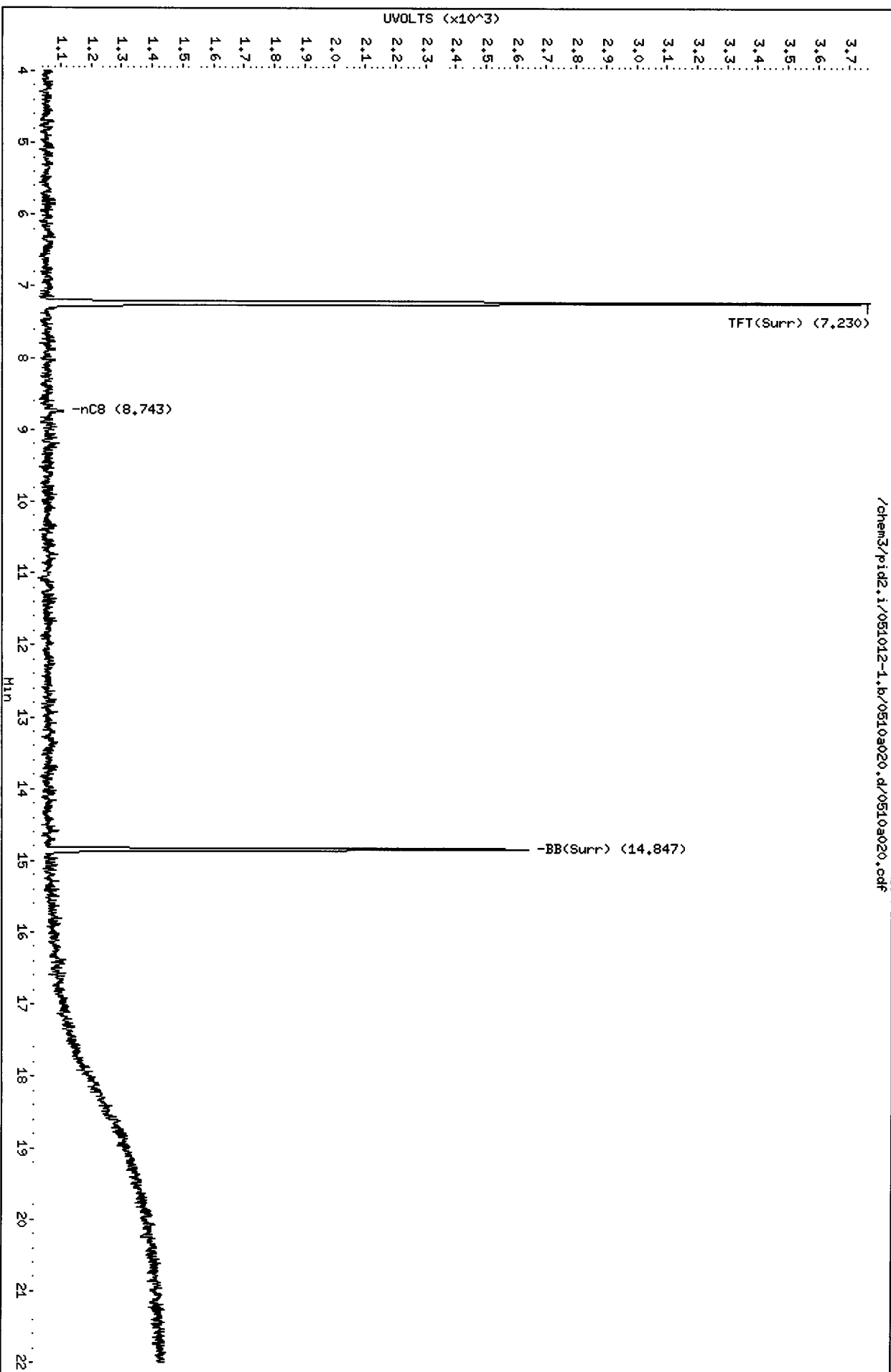
Sample Info: UT77Q

Column phase: RTX 502-2 FID

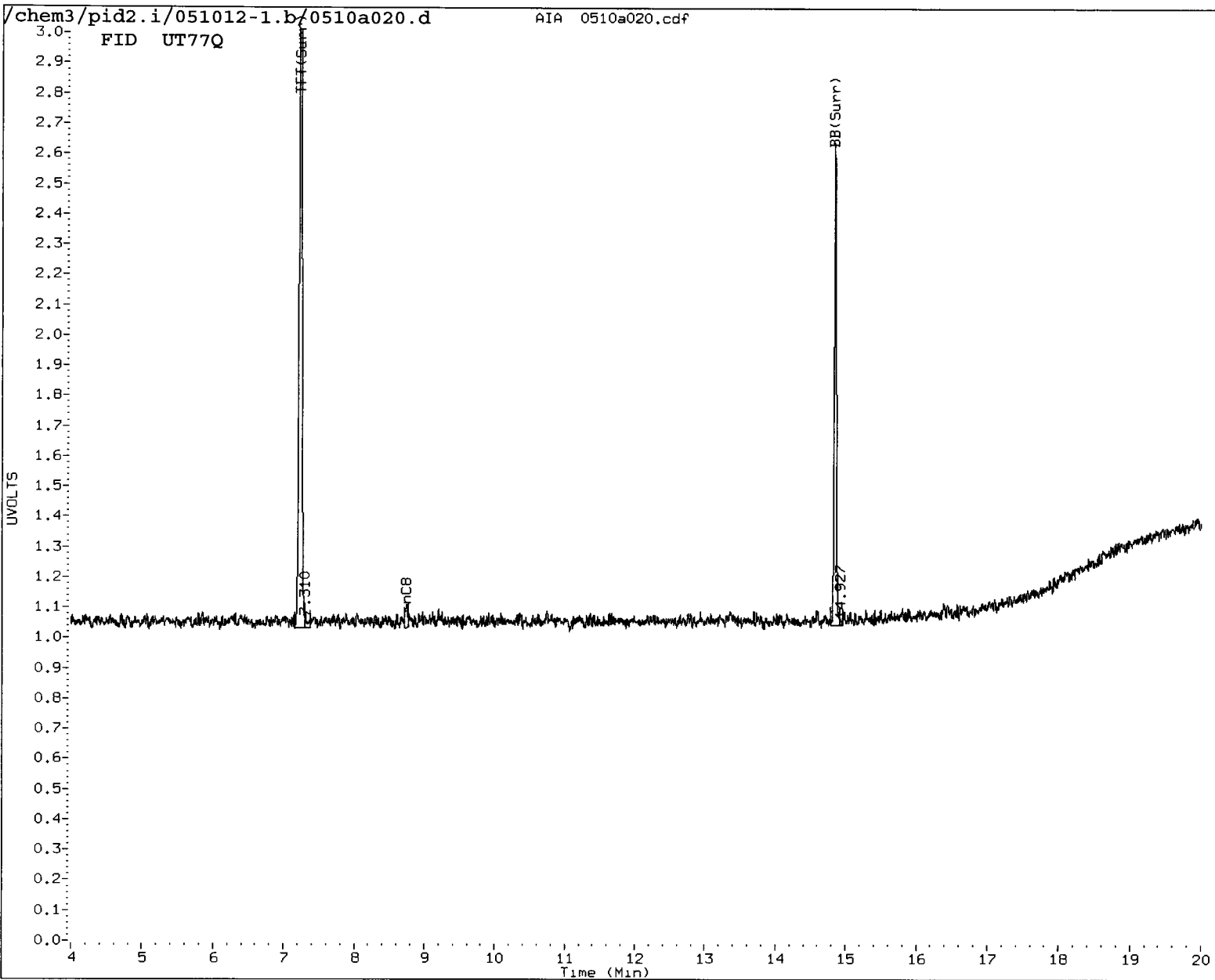
Instrument: pid2.i

Operator: JM

Column diameter: 0.18



/chem3/pid2.i/051012-1.b/0510a020.d/0510a020.cdf



MANUAL INTEGRATION

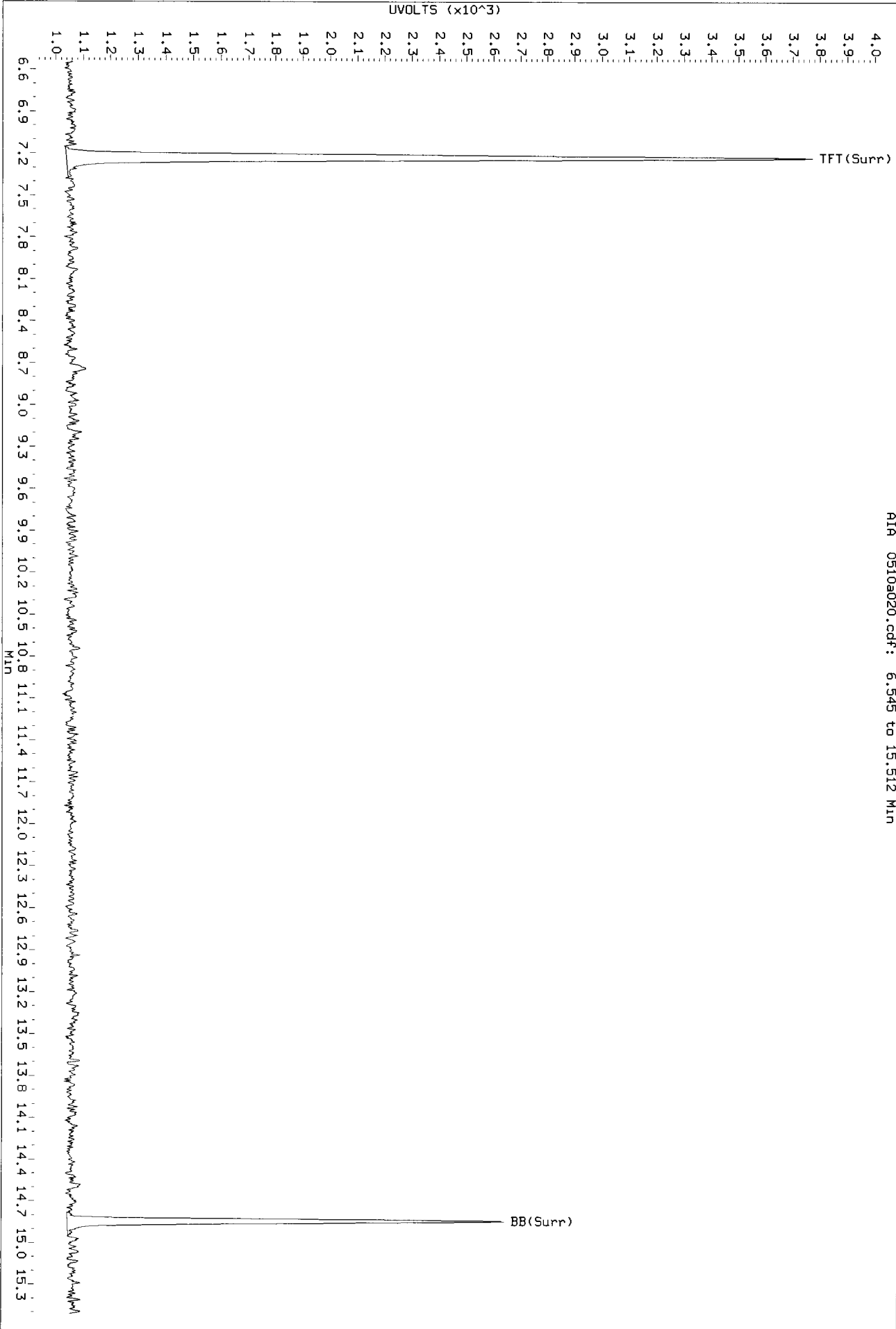
- ① Baseline correction
- 2. Poor chromatography
- ③ Peak not found
- 4. Totals calculation

5. Other PS

Analyst: JW Date: 5/15/12

Data File: /chem3/p1d2.1/051012-1.b/0510a020.d/0510a020.cdf
Injection Date: 10-MAR-2012 21:06
Instrument: p1d2.1
Client Sample ID: CWSB-17-23-25-0512

AIA 0510a020.cdf: 6.545 to 15.512 Min



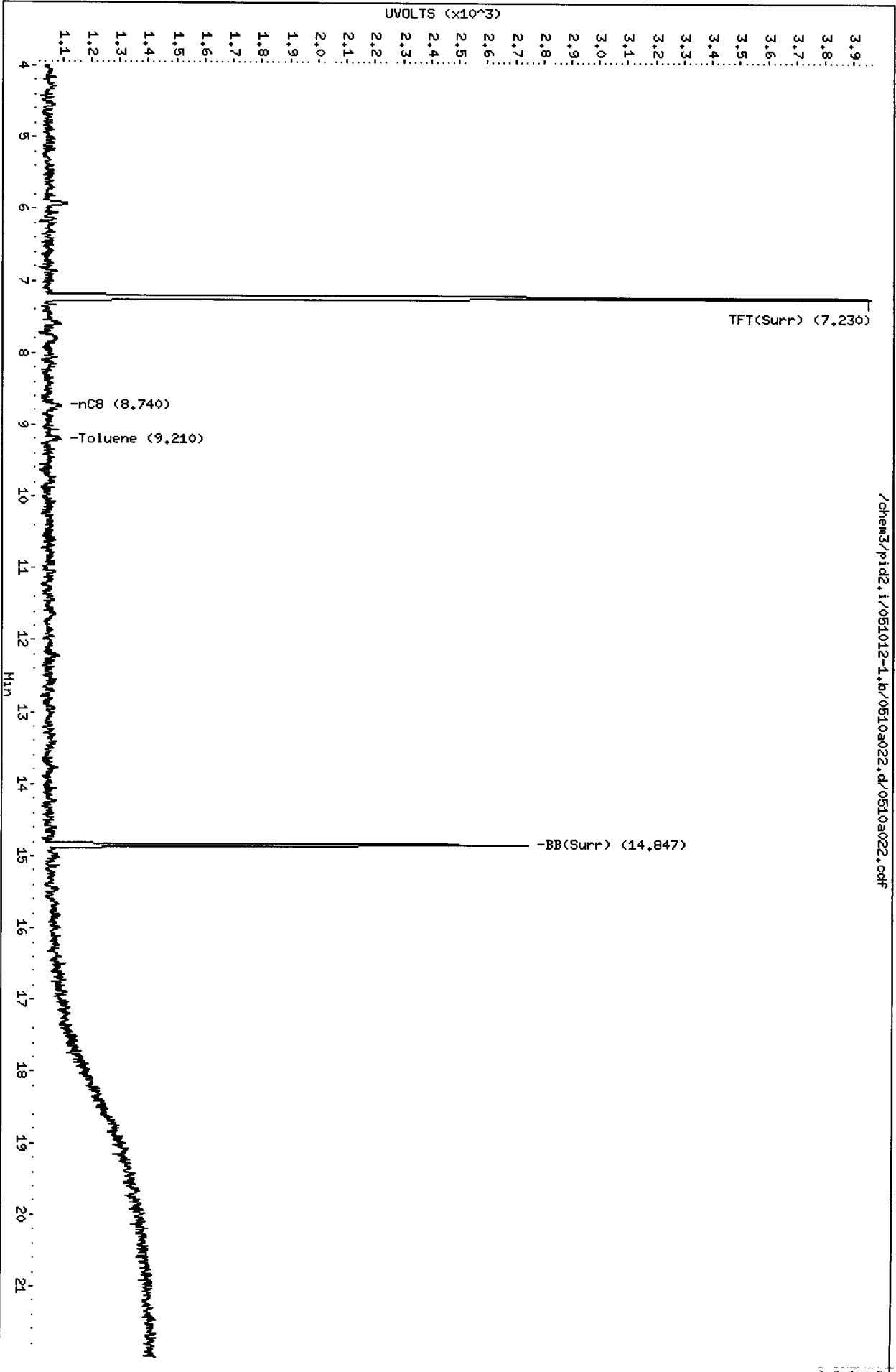
Ref 163/15/12

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

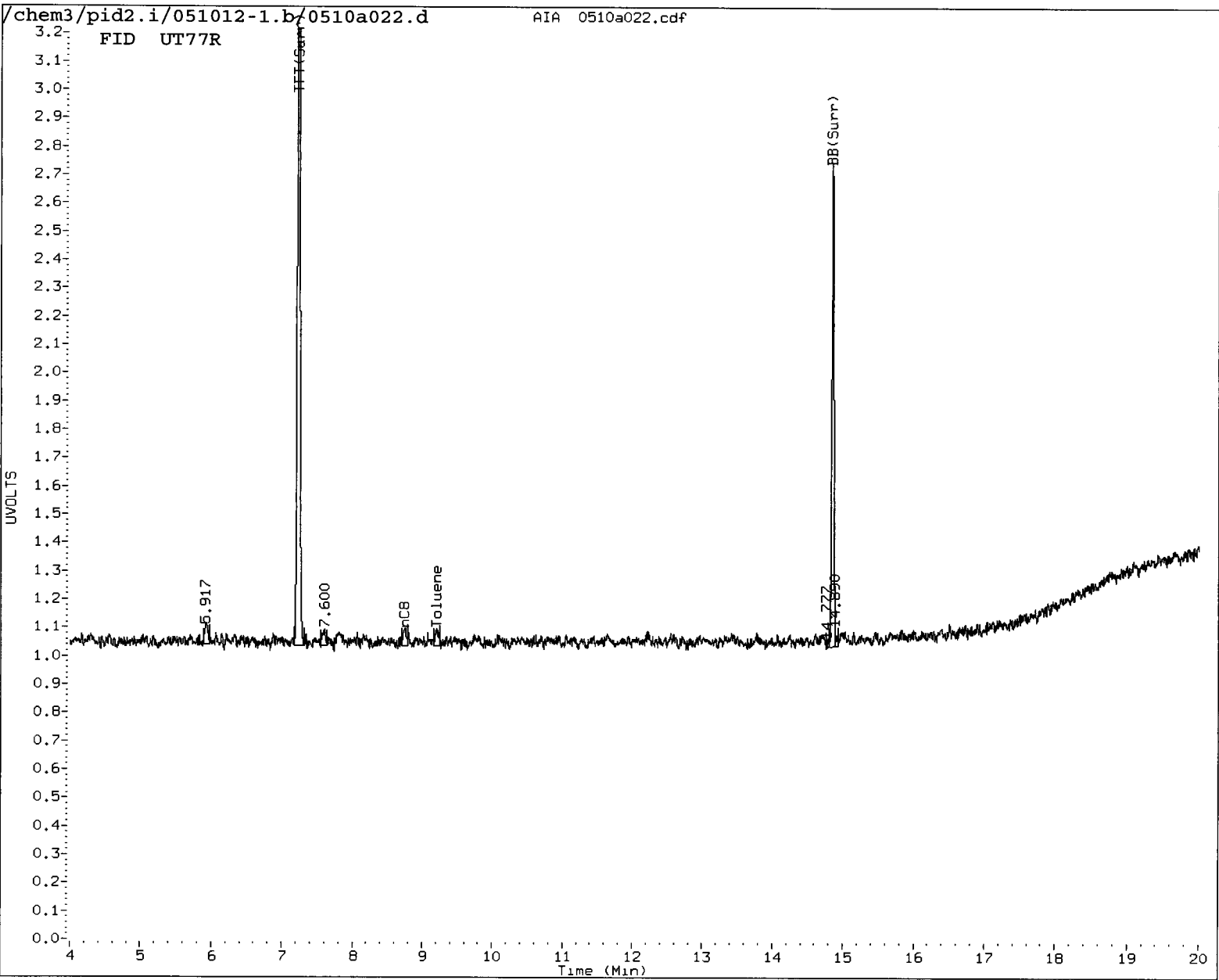
Data File: /chem3/pid2.i/051012-1.b/0510a022.d
Date: 10-MAY-2012 22:02
Client ID: CMSB-17-28-30-0512
Sample Info: UT77R

Column phase: RTX 502-2 FID

Instrument: pid2.i
Operator: JM
Column diameter: 0.18



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MANUAL INTEGRATION

- ①. Baseline correction
- 2. Poor chromatography
- ③. Peak not found
- 4. Totals calculation

⑤. Other PS

Analyst: su

Date: 5/15/12

Data File: /chem3/pid2.1/051012-1.b/0510a023.d

Date : 10-MAY-2012 22:30

Client ID: CMSB-170-23-25-0512

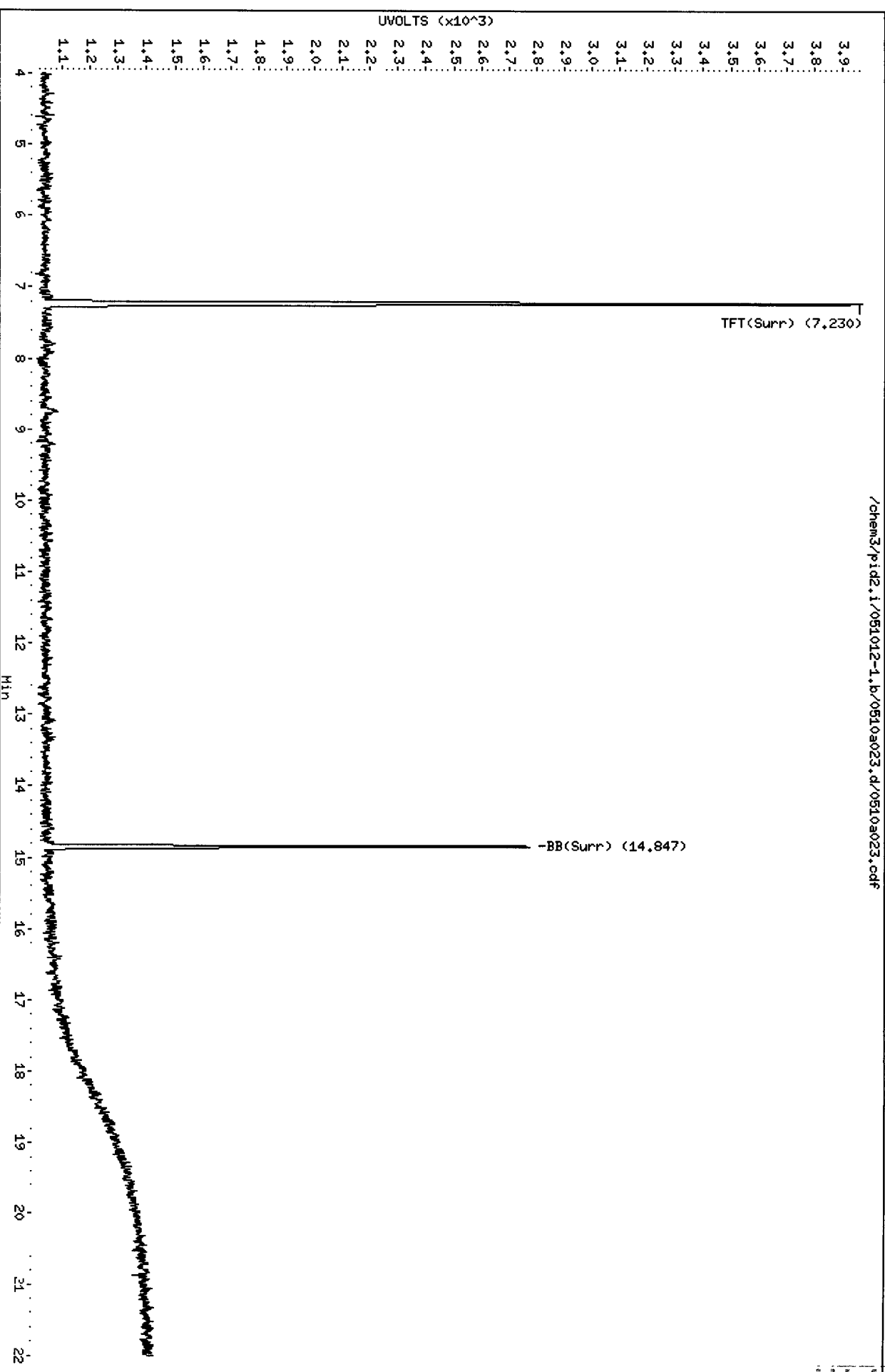
Sample Info: UT775

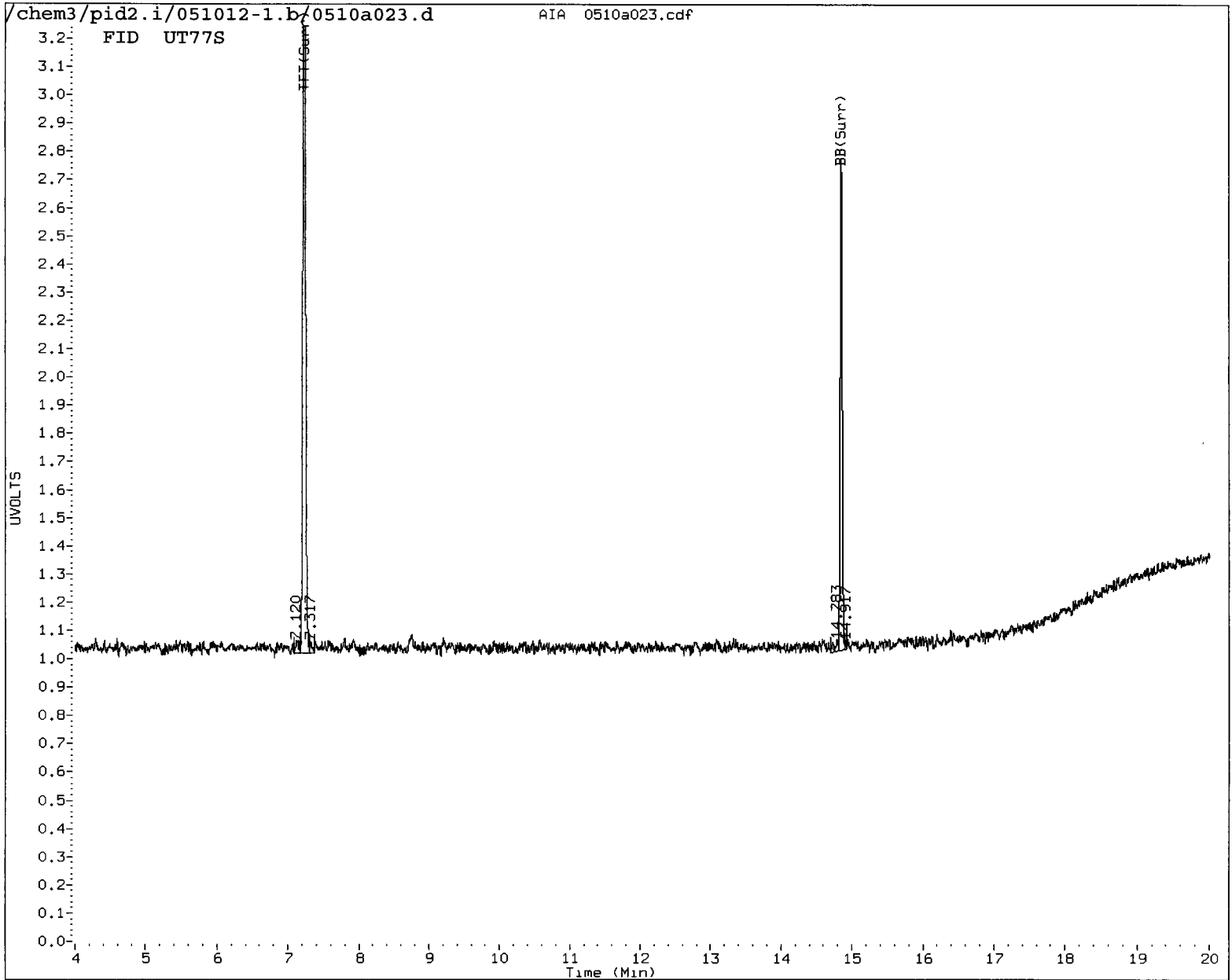
Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: JM

Column diameter: 0.18





MANUAL INTEGRATION

- 1. Baseline correction
- 2. Poor chromatography
- 3. Peak not found
- 4. Totals calculation

5. Other PS

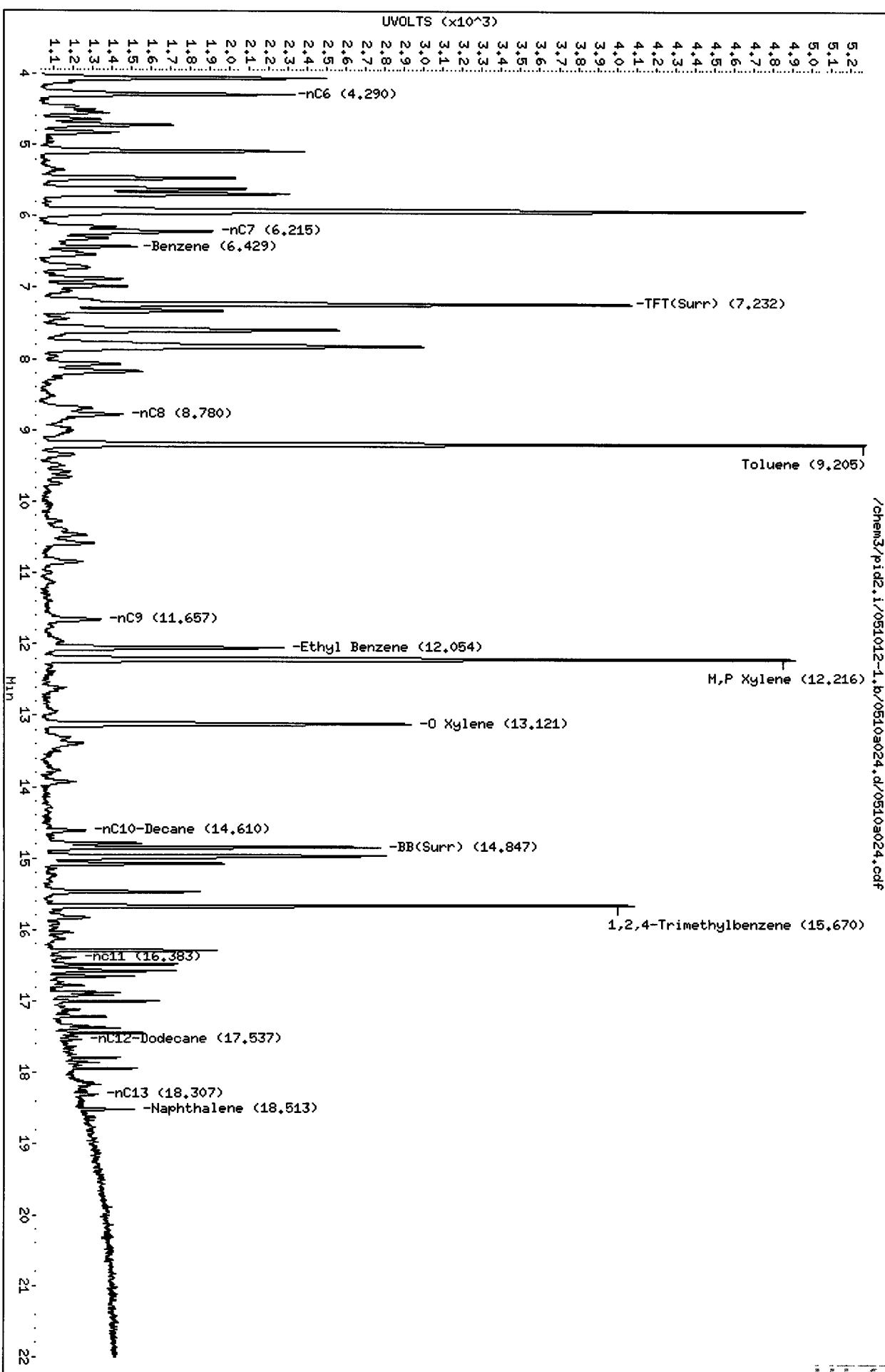
Analyst: SW

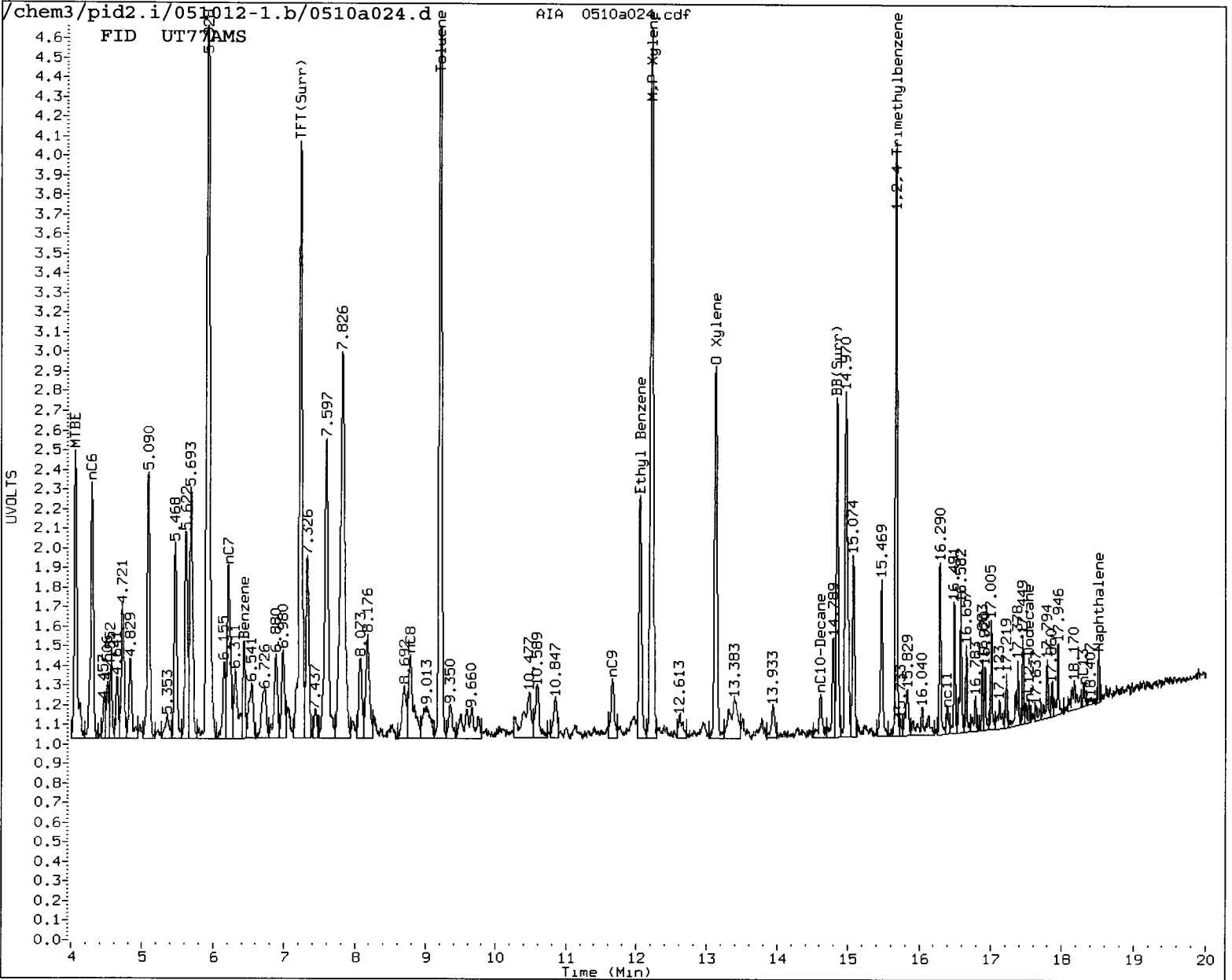
Date: 5/15/12

Data File: /chem3/pid2.i/051012-1.b/0510a024.d
Date: 10-MAY-2012 22:58
Client ID: CMSB-13-14.0-15.5-0
Sample Info: UT77AHS

Column phase: RTX 502-2 FID

Instrument: pid2.i
Operator: JM
Column diameter: 0.18





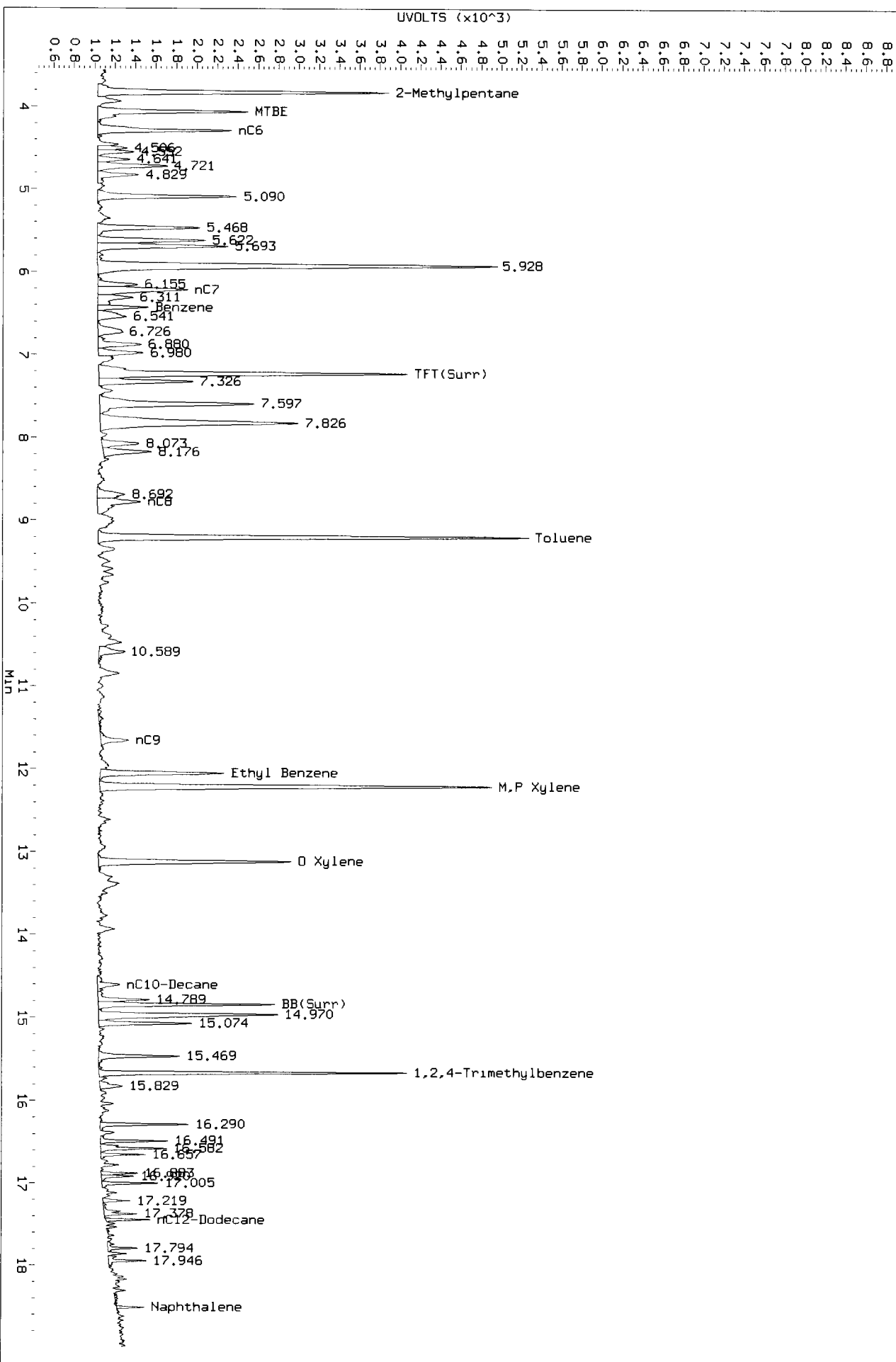
MANUAL INTEGRATION

- ① Baseline correction
- 2. Poor chromatography
- ③ Peak not found
- 4. Totals calculation
- 5. Other _____

Analyst: fw Date: 5/15/12

Data File: /chem3/pwd2.1/051012-1.b/0510a024.d/0510a024.cdf
 Injection Date: 10-MAY-2012 22:58
 Instrument: pid2.1
 Client Sample ID: CWSB-13-14.0-15.5-0

AIA 0510a024.cdf: 3.556 to 18.986 Min



*Before
5/15/12*

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Data File: /chem3/pid2.i/051012-1.b/0510a025.d

Date: 10-MAY-2012 23:26

Client ID: CMSB-13-14.0-15.5-0

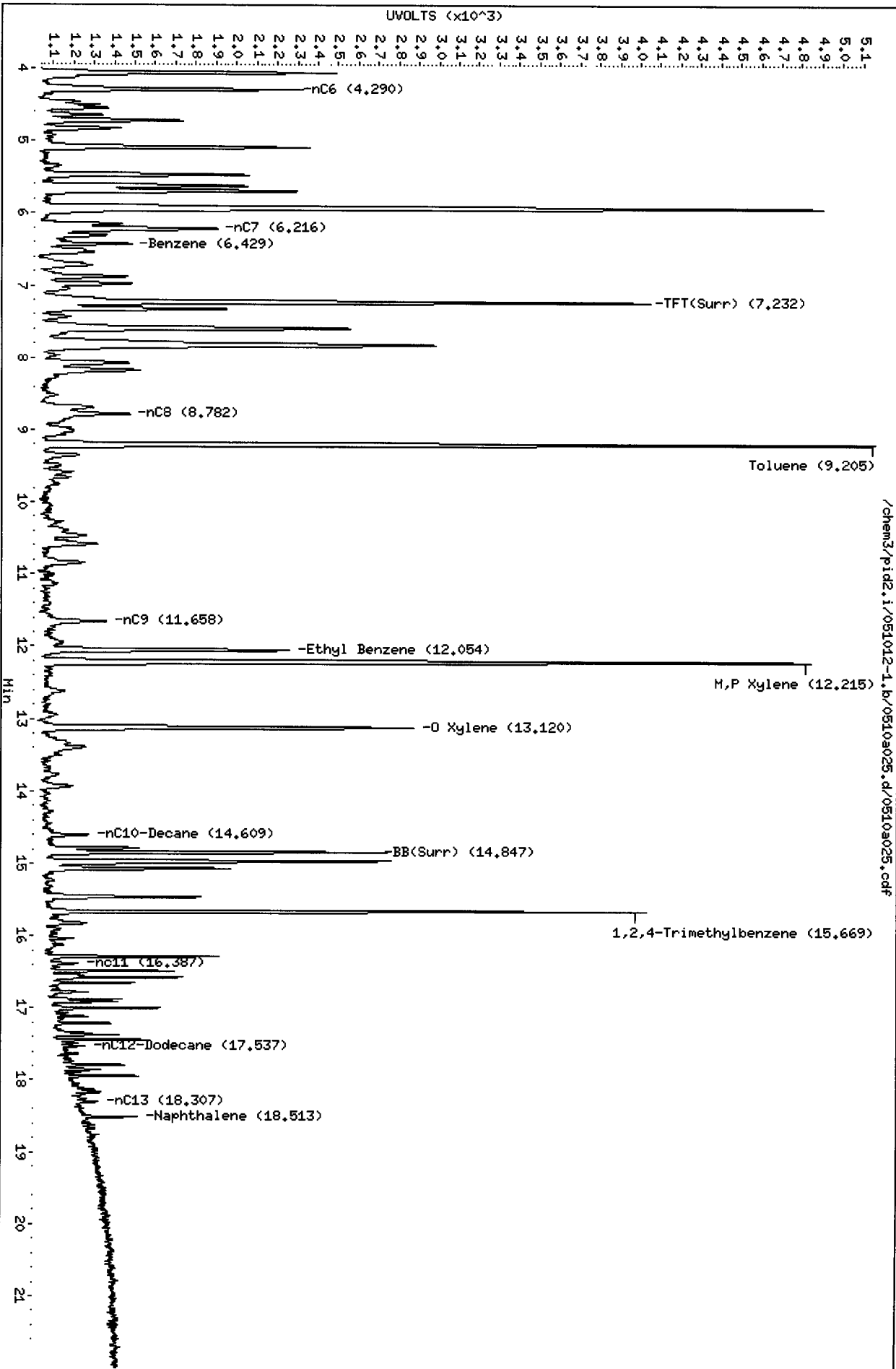
Sample Info: UT77AHMSD

Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: JM

Column diameter: 0.18



/chem3/pid2.i/051012-1.b/0510a025.d/0510a025.cdf

ORGANICS ANALYSIS DATA SHEET

TPHG by Method NWTPHG

Matrix: Water

QC Report No: UT77-AECOM

Project: Central Waterfront

Event: NA

Date Sampled: 05/07/12

Date Received: 05/09/12

Data Release Authorized: *[Signature]*

Reported: 05/15/12

ARI ID	Client ID	Analysis Date	DL	Range	Result
MB-051012 12-8478	Method Blank	05/10/12 PID2	1.0	Gasoline HC ID Trifluorotoluene Bromobenzene	< 0.25 U --- 99.9% 99.2%
UT77T 12-8478	TB-050712	05/10/12 PID2	1.0	Gasoline HC ID Trifluorotoluene Bromobenzene	< 0.25 U --- 103% 97.0%

Gasoline values reported in mg/L (ppm)

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

ORGANICS ANALYSIS DATA SHEET

TPHG by Method NWTPHG

Page 1 of 1

Sample ID: LCS-051012

LAB CONTROL SAMPLE

Lab Sample ID: LCS-051012

LIMS ID: 12-8478

Matrix: Water

Data Release Authorized: *B*

Reported: 05/15/12

QC Report No: UT77-AECOM

Project: Central Waterfront

Event: NA

Date Sampled: NA

Date Received: NA

Date Analyzed LCS: 05/10/12 13:13

LCSD: 05/10/12 13:41

Instrument/Analyst LCS: PID2/JLW

LCSD: PID2/JLW

Purge Volume: 5.0 mL

Dilution Factor LCS: 1.0

LCSD: 1.0

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Gasoline Range Hydrocarbons	0.95	1.00	95.0%	1.04	1.00	104%	9.0%

Reported in mg/L (ppm)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	98.8%	91.6%
Bromobenzene	96.6%	93.9%

TPHG WATER SURROGATE RECOVERY SUMMARY

ARI Job: UT77
Matrix: Water

QC Report No: UT77-AECOM
Project: Central Waterfront
Event: NA

Client ID	TFT	BBZ	TOT OUT
MB-051012	99.9%	99.2%	0
LCS-051012	98.8%	96.6%	0
LCSD-051012	91.6%	93.9%	0
TB-050712	103%	97.0%	0

	LCS/MB LIMITS	QC LIMITS
(TFT) = Trifluorotoluene	(80-120)	(80-120)
(BBZ) = Bromobenzene	(80-120)	(80-120)

Log Number Range: 12-8478 to 12-8478

Data File: /chem3/pid2.i/051012-1.b/0510a006.d
Date : 10-MAY-2012 14:09
Client ID:
Sample Info: MB0510

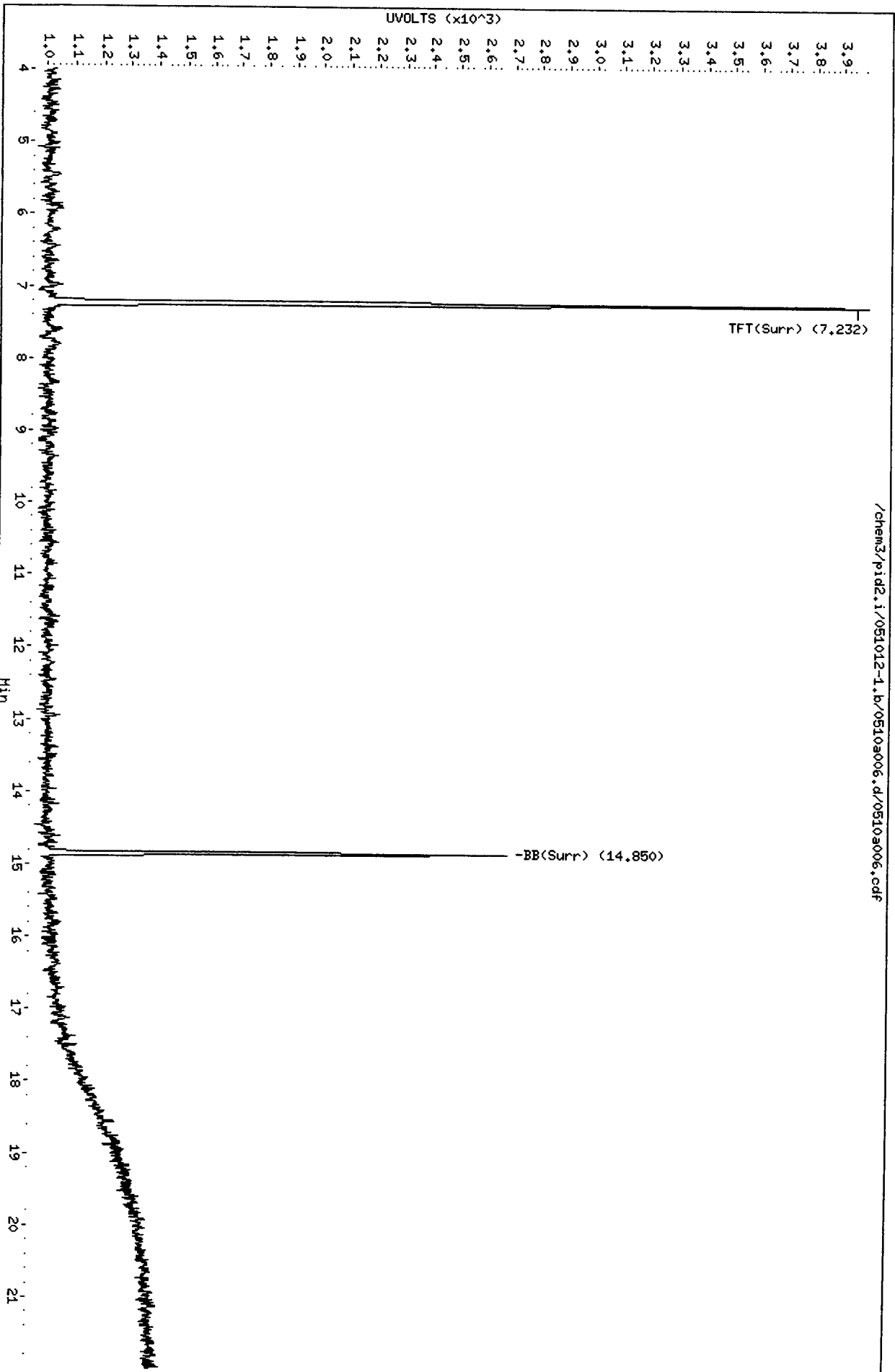
Instrument: pid2.i

Page 1

Column phase: RTX 502-2 FID

Operator: JM
Column diameter: 0.18

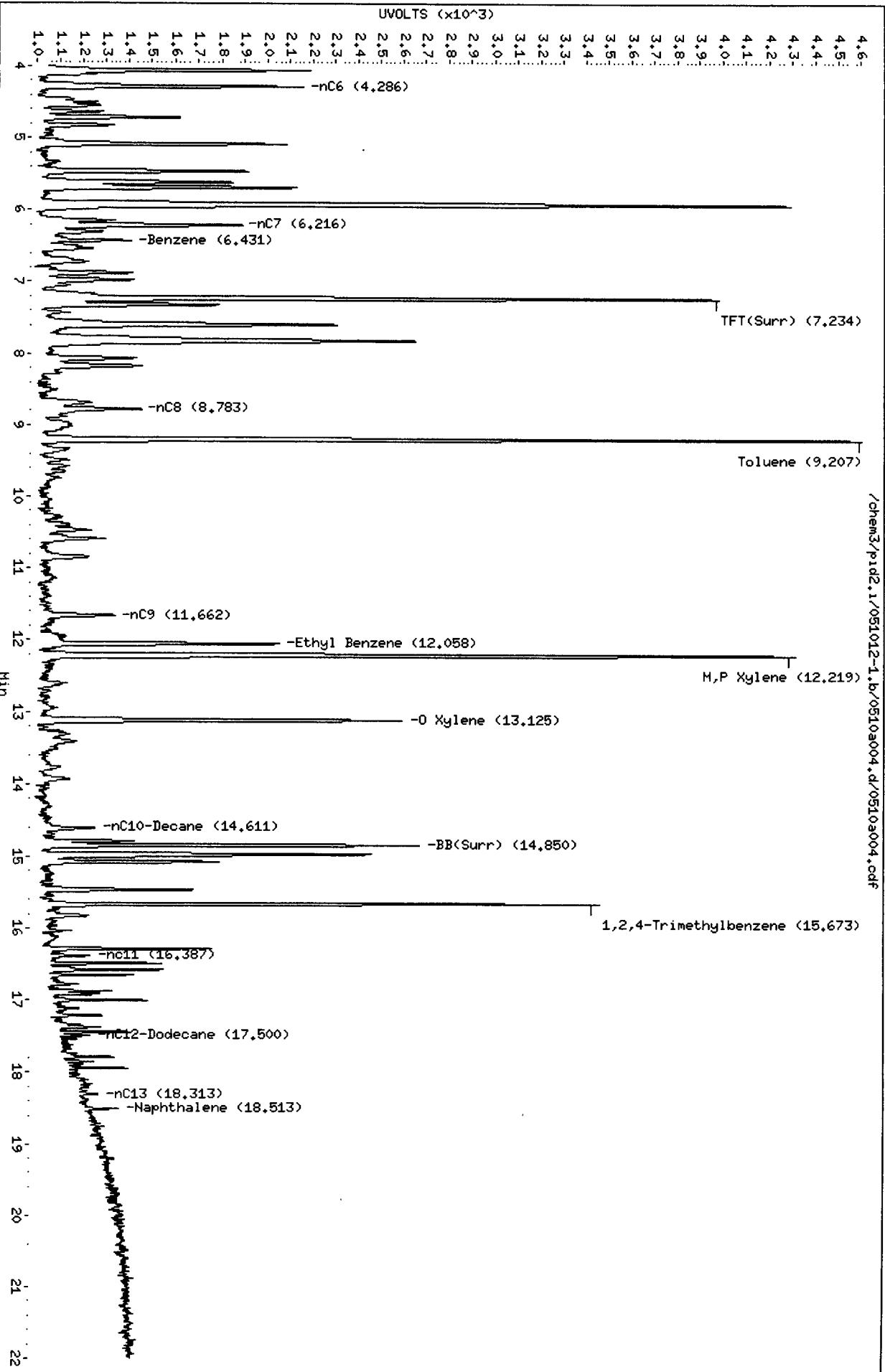
/chem3/pid2.i/051012-1.b/0510a006.d/0510a006.cdf



Data File: /chem3/pid2.i/051012-1.b/05103004.d
Date: 10-MAY-2012 13:13
Client ID:
Sample Info: LCS0510

Column phase: RTX 502-2 FID

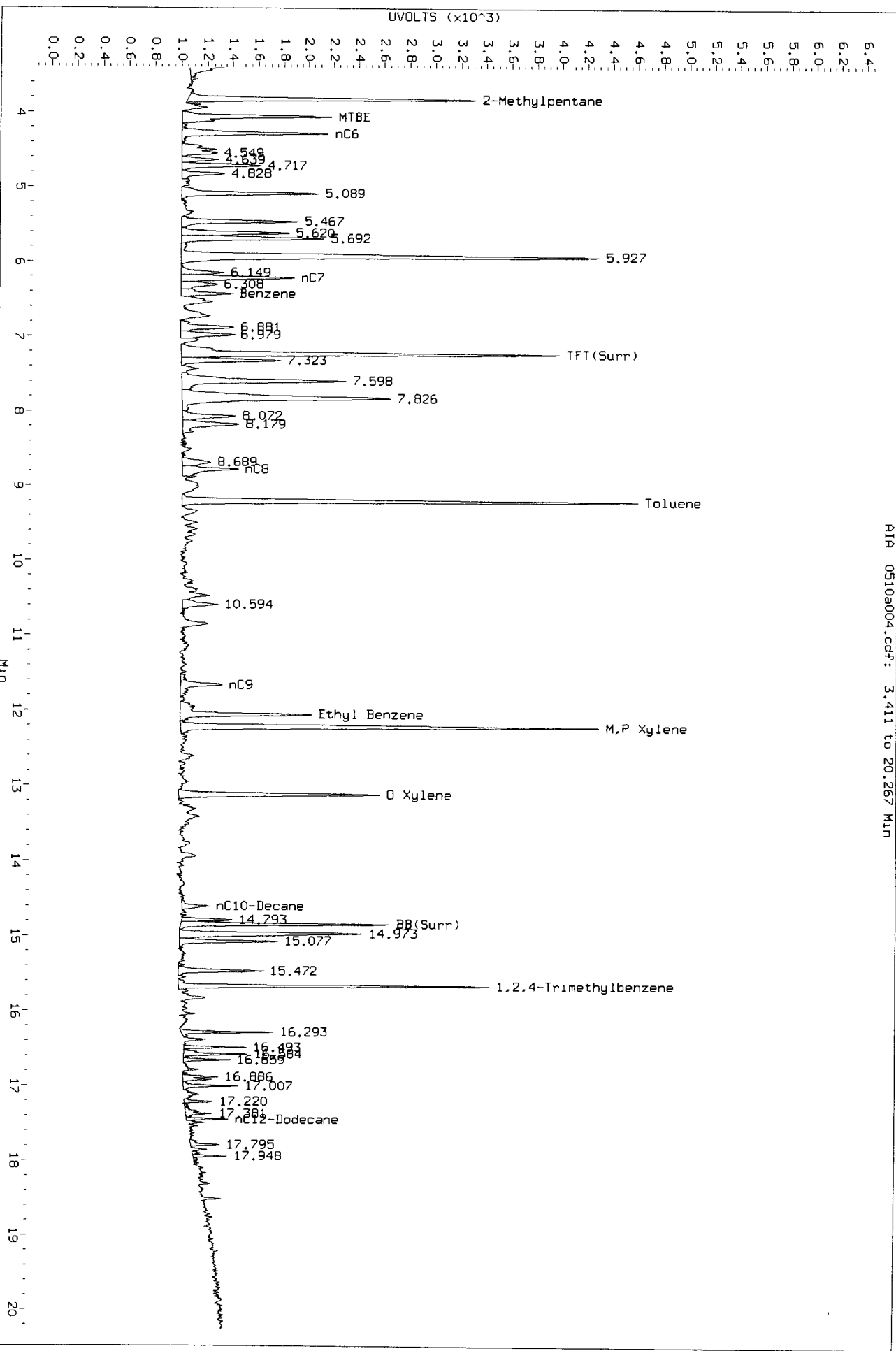
Instrument: pid2.i
Operator: JM
Column diameter: 0.18



Data File: /chem3/pid2.1/051012-1.b/0510a004.d/0510a004.cdf
Injection Date: 10-May-2012 13:13
Instrument: pid2.1
Client Sample ID:

AIA 0510a004.cdf: 3.411 to 20.267 Min

Handwritten signature
5/15/12



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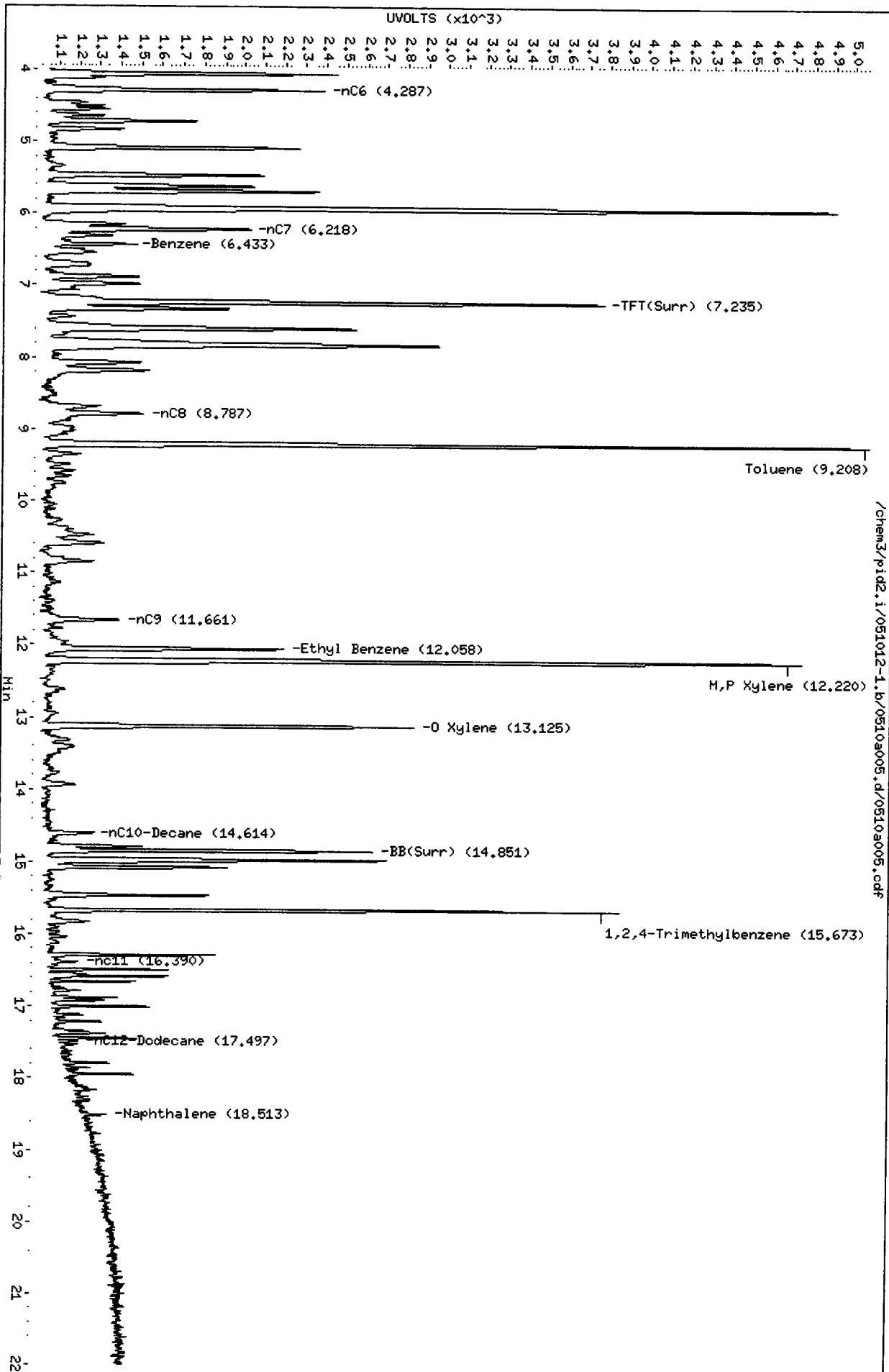
Data File: /chem3/pid2.i/051012-1.b/0510a005.d
Date: 10-May-2012 13:41
Client ID:
Sample Info: LCS00510

Column phase: RTX 502-2 FID

Instrument: pid2.1

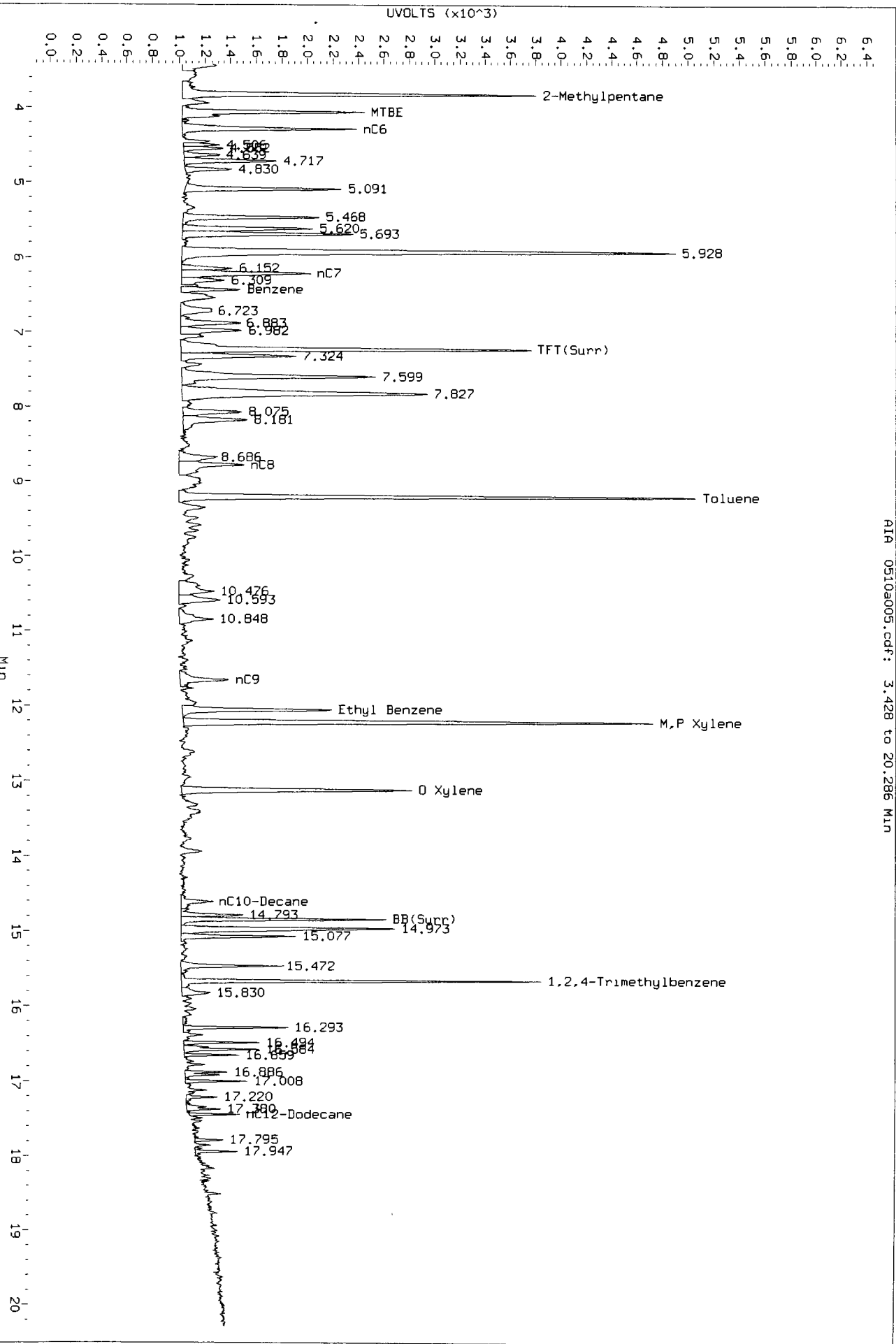
Operator: JM
Column diameter: 0.18

/chem3/pid2.i/051012-1.b/0510a005.d/0510a005.cdf



Data File: /chem3/pid2_1/051012-1.b/0510a005.d/0510a005.cdf
Injection Date: 10-MAY-2012 13:41
Instrument: pid2.1
Client Sample ID:

AIA 0510a005.cdf: 3.428 to 20.286 MIN



Refer to 5/15/12

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Data File: /chem3/pid2.i/051012-1.b/0510s007.d

Date: 10-MAY-2012 15:01

Client ID: TB-050712

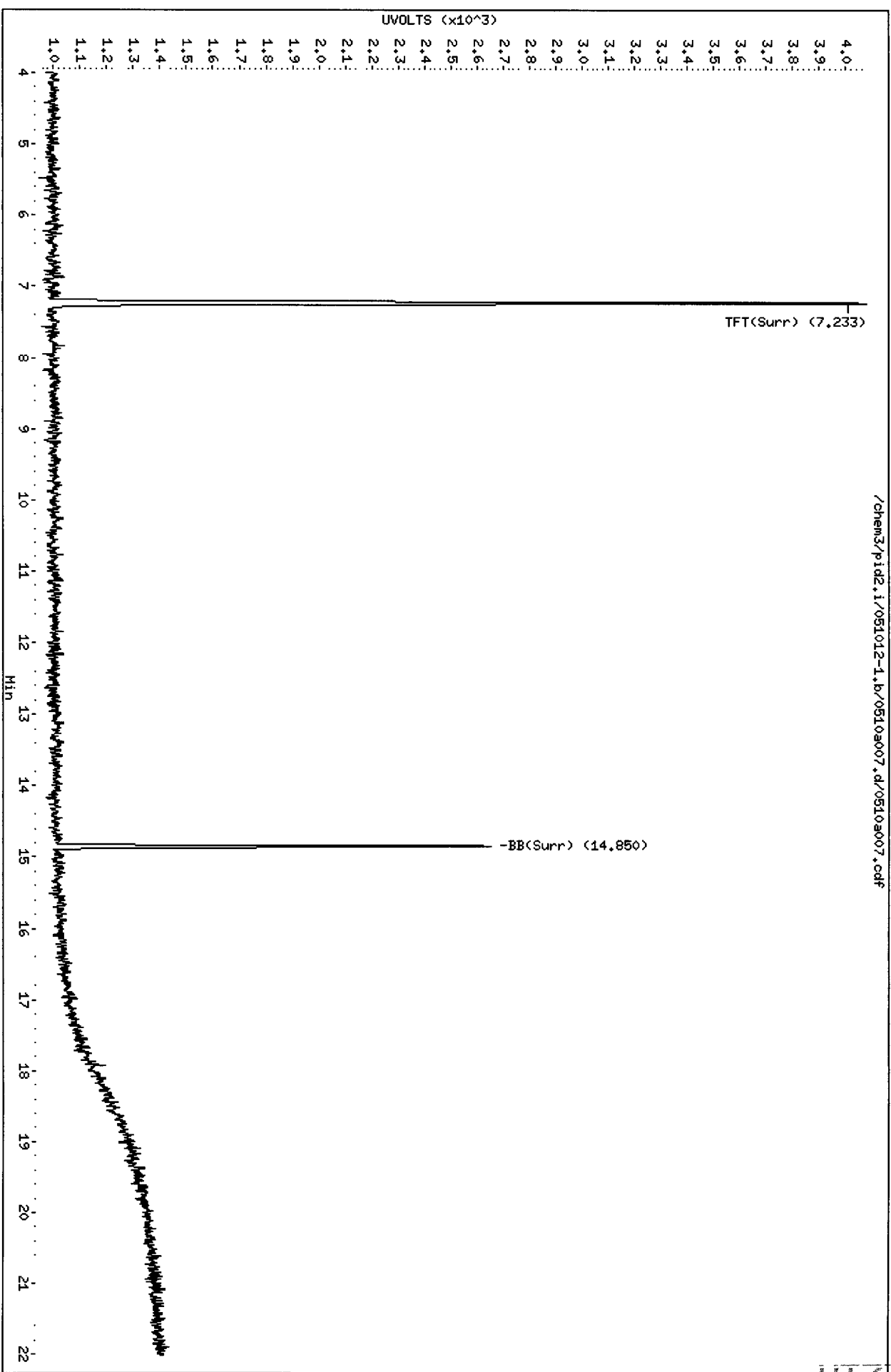
Sample Info: UT771

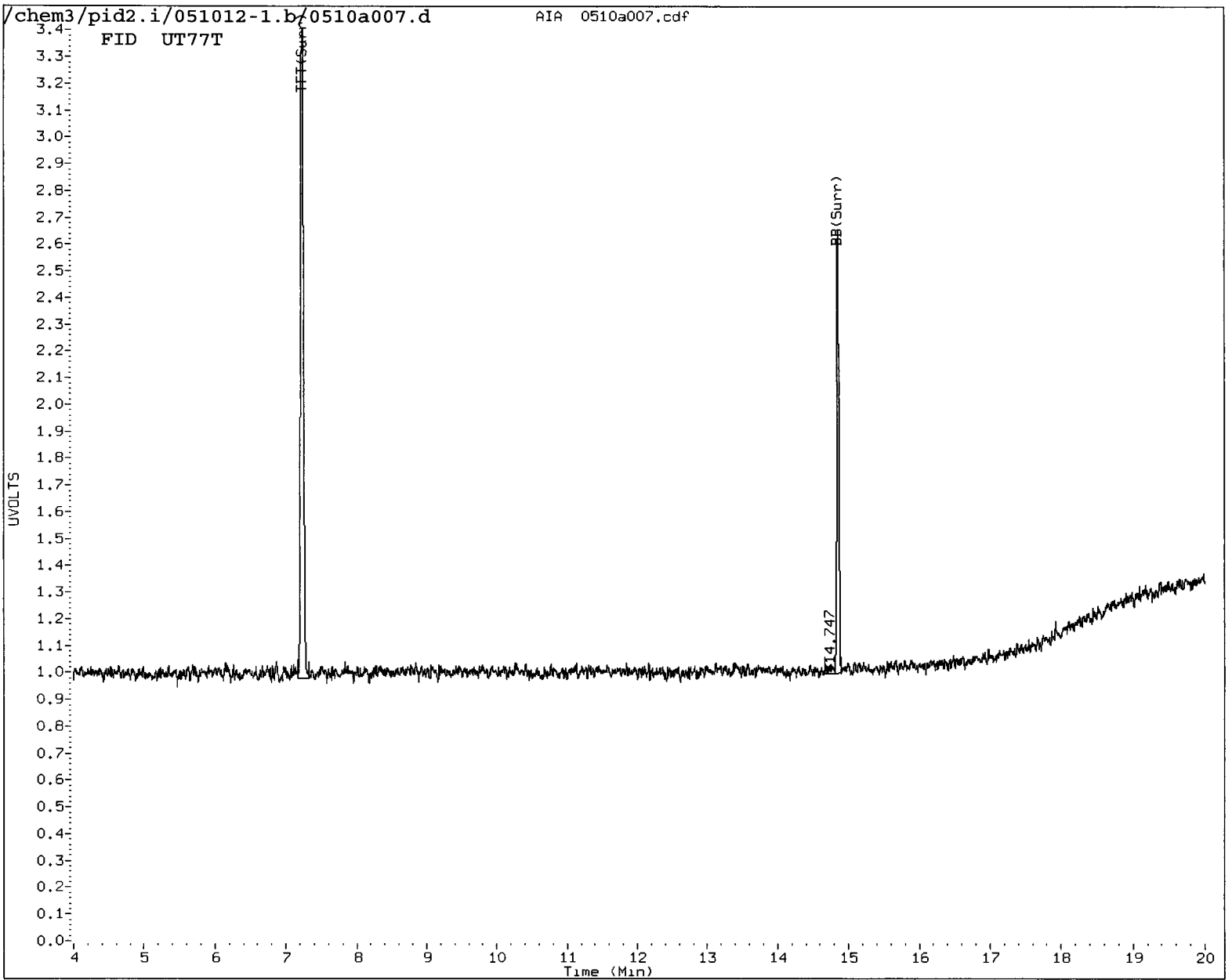
Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: JM

Column diameter: 0.18





MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5 Other PS

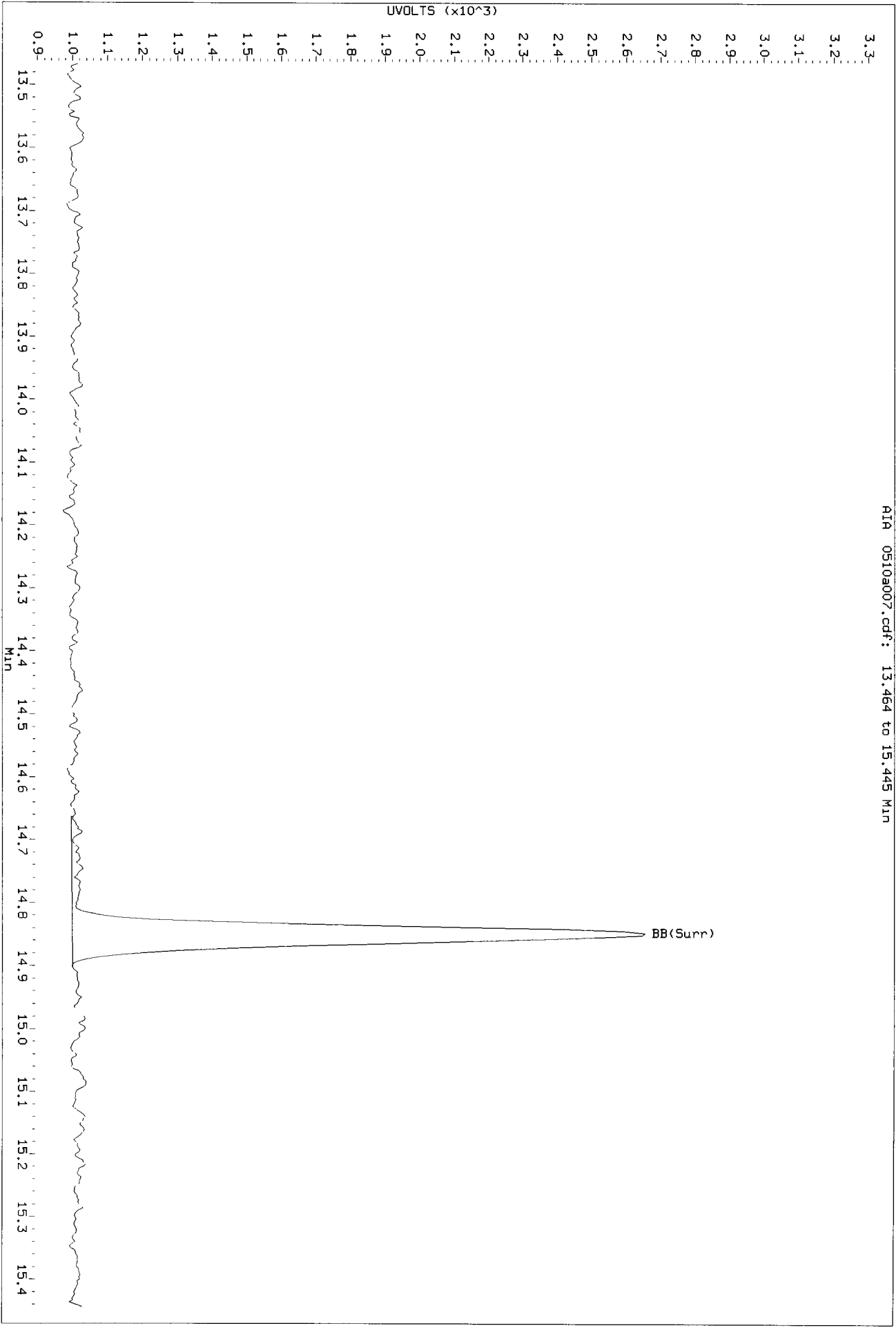
Analyst: JW

Date: 5/15/12

Data File: /chem3/pid2.1/051012-1.b/0510a007.d/0510a007.cdf
Injection Date: 10-MAR-2012 15:01
Instrument: pid2.1
Client Sample ID: TB-050712

*Before
spc
5/15/12*

RIH 0510a007.cdf: 13.464 to 15.445 MIN




20100312

**ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS**

NWTPHD by GC/FID
Page 1 of 2
Matrix: Soil

QC Report No: UT77-AECOM
Project: Central Waterfront

Date Received: 05/09/12

Data Release Authorized: 
Reported: 05/15/12

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DL	Range/Surrogate	RL	Result
UT77A 12-8459	CWSB-13-14.0-14.5-0512 HC ID: ---	05/11/12	05/13/12 FID4A	1.00 1.0	Diesel Range Motor Oil Range o-Terphenyl	5.9 12	< 5.9 U < 12 U 86.5%
UT77B 12-8460	CWSB-13-21-22-0512 HC ID: DRO	05/11/12	05/13/12 FID4A	1.00 1.0	Diesel Range Motor Oil Range o-Terphenyl	6.3 13	6.5 < 13 U 98.2%
UT77C 12-8461	CWSB-13-25-27-0512 HC ID: ---	05/11/12	05/13/12 FID4A	1.00 1.0	Diesel Range Motor Oil Range o-Terphenyl	6.3 13	< 6.3 U < 13 U 88.4%
MB-051112 12-8463	Method Blank HC ID: ---	05/11/12	05/13/12 FID4A	1.00 1.0	Diesel Range Motor Oil Range o-Terphenyl	5.0 10	< 5.0 U < 10 U 87.1%
UT77E 12-8463	CWSB-14-12-14-0512 HC ID: DIESEL/MOTOR OIL	05/11/12	05/14/12 FID4A	1.00 10	Diesel Range Motor Oil Range o-Terphenyl	59 120	850 320 73.6%
UT77F 12-8464	CWSB-14-25-27-0512 HC ID: ---	05/11/12	05/13/12 FID4A	1.00 1.0	Diesel Range Motor Oil Range o-Terphenyl	6.3 12	< 6.3 U < 12 U 91.3%
UT77G 12-8465	CWSB-14-29-30-0512 HC ID: ---	05/11/12	05/13/12 FID4A	1.00 1.0	Diesel Range Motor Oil Range o-Terphenyl	6.3 13	< 6.3 U < 13 U 89.8%
UT77H 12-8466	CWSB-15-11-13-0512 HC ID: DRO/MOTOR OIL	05/11/12	05/13/12 FID4A	1.00 1.0	Diesel Range Motor Oil Range o-Terphenyl	6.0 12	40 15 90.0%
UT77I 12-8467	CWSB-15-23-25-0512 HC ID: ---	05/11/12	05/13/12 FID4A	1.00 1.0	Diesel Range Motor Oil Range o-Terphenyl	6.4 13	< 6.4 U < 13 U 91.3%
UT77J 12-8468	CWSB-15-18-20-0512 HC ID: DRO	05/11/12	05/13/12 FID4A	1.00 1.0	Diesel Range Motor Oil Range o-Terphenyl	6.1 12	6.4 < 12 U 89.6%
UT77L 12-8470	CWSB-16-8-10-0512 HC ID: DIESEL/MOTOR OIL	05/11/12	05/14/12 FID4A	1.00 20	Diesel Range Motor Oil Range o-Terphenyl	110 230	3,800 650 D
UT77M 12-8471	CWSB-16-13-15-0512 HC ID: DRO	05/11/12	05/13/12 FID4A	1.00 1.0	Diesel Range Motor Oil Range o-Terphenyl	6.4 13	22 < 13 U 87.4%
UT77N 12-8472	CWSB-16-18-20-0512 HC ID: DRO	05/11/12	05/13/12 FID4A	1.00 1.0	Diesel Range Motor Oil Range o-Terphenyl	5.9 12	9.1 < 12 U 90.7%

**ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS**

NWTPHD by GC/FID
Page 2 of 2
Matrix: Soil

QC Report No: UT77-AECOM
Project: Central Waterfront

Date Received: 05/09/12

Data Release Authorized: *AB*
Reported: 05/15/12

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DL	Range/Surrogate	RL	Result
UT77P 12-8474	CWSB-17-6-8-0512 HC ID: DIESEL/MOTOR OIL	05/11/12	05/14/12 FID4A	1.00 100	Diesel Range Motor Oil Range o-Terphenyl	550 1,100	21,000 4,100 D
UT77Q 12-8475	CWSB-17-23-25-0512 HC ID: ---	05/11/12	05/13/12 FID4A	1.00 1.0	Diesel Range Motor Oil Range o-Terphenyl	6.2 12	< 6.2 U < 12 U 82.1%
UT77R 12-8476	CWSB-17-28-30-0512 HC ID: ---	05/11/12	05/13/12 FID4A	1.00 1.0	Diesel Range Motor Oil Range o-Terphenyl	6.2 12	< 6.2 U < 12 U 86.1%
UT77S 12-8477	CWSB-170-23-25-0512 HC ID: ---	05/11/12	05/13/12 FID4A	1.00 1.0	Diesel Range Motor Oil Range o-Terphenyl	6.3 12	< 6.3 U < 12 U 88.0%

Reported in mg/kg (ppm)

EFV-Effective Final Volume in mL.
DL-Dilution of extract prior to analysis.
RL-Reporting limit.

Diesel range quantitation on total peaks in the range from C12 to C24.
Motor Oil range quantitation on total peaks in the range from C24 to C38.
HC ID: DRO/RRO indicates results of organics or additional hydrocarbons in ranges are not identifiable.

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID
 Page 1 of 1

Sample ID: CWSB-14-12-14-0512
MS/MSD

Lab Sample ID: UT77E
 LIMS ID: 12-8463
 Matrix: Soil
 Data Release Authorized: *[Signature]*
 Reported: 05/15/12

QC Report No: UT77-AECOM
 Project: Central Waterfront
 Date Sampled: 05/07/12
 Date Received: 05/09/12

Date Extracted MS/MSD: 05/11/12
 Date Analyzed MS: 05/14/12 17:04
 MSD: 05/14/12 17:28
 Instrument/Analyst MS: FID4A/MH
 MSD: FID4A/MH

Sample Amount MS: 8.53 g-dry-wt
 MSD: 8.47 g-dry-wt
 Final Extract Volume MS: 1.0 mL
 MSD: 1.0 mL
 Dilution Factor MS: 10.0
 MSD: 10.0
 Percent Moisture: 16.5%

Range	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
Diesel	847	1,050	176	NA	1,010	177	NA	3.9%


TPHD Surrogate Recovery

	MS	MSD
o-Terphenyl	71.6%	74.7%

Results reported in mg/kg
 NA-No recovery due to high concentration of analyte in original sample and/or
 calculated negative recovery.
 RPD calculated using sample concentrations per SW846.

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID
 Page 1 of 1

Sample ID: LCS-051112
LAB CONTROL

Lab Sample ID: LCS-051112
 LIMS ID: 12-8463
 Matrix: Soil
 Data Release Authorized: 
 Reported: 05/15/12

QC Report No: UT77-AECOM
 Project: Central Waterfront
 Date Sampled: NA
 Date Received: NA

Date Extracted: 05/11/12
 Date Analyzed: 05/13/12 08:33
 Instrument/Analyst: FID4A/MH

Sample Amount: 10.0 g-dry-wt
 Final Extract Volume: 1.0 mL
 Dilution Factor: 1.00

Range	Lab Control	Spike Added	Recovery
Diesel	120	150	80.0%

TPHD Surrogate Recovery

o-Terphenyl	86.9%
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Results reported in mg/kg

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

Matrix: Soil
Date Received: 05/09/12

ARI Job: UT77
Project: Central Waterfront

ARI ID	Client ID	Client Amt	Final Vol	Basis	Prep Date
12-8459-UT77A	CWSB-13-14.0-14.5-08.42	g	1.00 mL	D	05/11/12
12-8460-UT77B	CWSB-13-21-22-0512	7.96 g	1.00 mL	D	05/11/12
12-8461-UT77C	CWSB-13-25-27-0512	7.94 g	1.00 mL	D	05/11/12
12-8463-051112MB1	Method Blank	10.0 g	1.00 mL	-	05/11/12
12-8463-051112LCS1	Lab Control	10.0 g	1.00 mL	-	05/11/12
12-8463-UT77E	CWSB-14-12-14-0512	8.50 g	1.00 mL	D	05/11/12
12-8463-UT77EMS	CWSB-14-12-14-0512	8.53 g	1.00 mL	D	05/11/12
12-8463-UT77EMSD	CWSB-14-12-14-0512	8.47 g	1.00 mL	D	05/11/12
12-8464-UT77F	CWSB-14-25-27-0512	7.98 g	1.00 mL	D	05/11/12
12-8465-UT77G	CWSB-14-29-30-0512	7.94 g	1.00 mL	D	05/11/12
12-8466-UT77H	CWSB-15-11-13-0512	8.28 g	1.00 mL	D	05/11/12
12-8467-UT77I	CWSB-15-23-25-0512	7.87 g	1.00 mL	D	05/11/12
12-8468-UT77J	CWSB-15-18-20-0512	8.24 g	1.00 mL	D	05/11/12
12-8470-UT77L	CWSB-16-8-10-0512	8.86 g	1.00 mL	D	05/11/12
12-8471-UT77M	CWSB-16-13-15-0512	7.79 g	1.00 mL	D	05/11/12
12-8472-UT77N	CWSB-16-18-20-0512	8.48 g	1.00 mL	D	05/11/12
12-8474-UT77P	CWSB-17-6-8-0512	9.06 g	1.00 mL	D	05/11/12
12-8475-UT77Q	CWSB-17-23-25-0512	8.06 g	1.00 mL	D	05/11/12
12-8476-UT77R	CWSB-17-28-30-0512	8.07 g	1.00 mL	D	05/11/12
12-8477-UT77S	CWSB-170-23-25-0512	7.99 g	1.00 mL	D	05/11/12

Basis: D=Dry Weight W=As Received
Diesel Extraction Report

UT77: 0512

TPHD SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: UT77-AECOM
Project: Central Waterfront

<u>Client ID</u>	<u>OTER</u>	<u>TOT OUT</u>
CWSB-13-14.0-14.5-0512	86.5%	0
CWSB-13-21-22-0512	98.2%	0
CWSB-13-25-27-0512	88.4%	0
051112MBS	87.1%	0
051112LCS	86.9%	0
CWSB-14-12-14-0512	73.6%	0
CWSB-14-12-14-0512 MS	71.6%	0
CWSB-14-12-14-0512 MSD	74.7%	0
CWSB-14-25-27-0512	91.3%	0
CWSB-14-29-30-0512	89.8%	0
CWSB-15-11-13-0512	90.0%	0
CWSB-15-23-25-0512	91.3%	0
CWSB-15-18-20-0512	89.6%	0
CWSB-16-8-10-0512	D	0
CWSB-16-13-15-0512	87.4%	0
CWSB-16-18-20-0512	90.7%	0
CWSB-17-6-8-0512	D	0
CWSB-17-23-25-0512	82.1%	0
CWSB-17-28-30-0512	86.1%	0
CWSB-170-23-25-0512	88.0%	0

LCS/MB LIMITS QC LIMITS

(OTER) = o-Terphenyl

(50-150)

(50-150)

Prep Method: SW3546
Log Number Range: 12-8459 to 12-8477

Data File: /chem3/fid4a.i/20120512a.b/0512a065.d

Date: 13-MAY-2012 08:33

Client ID: UT57LCSS1

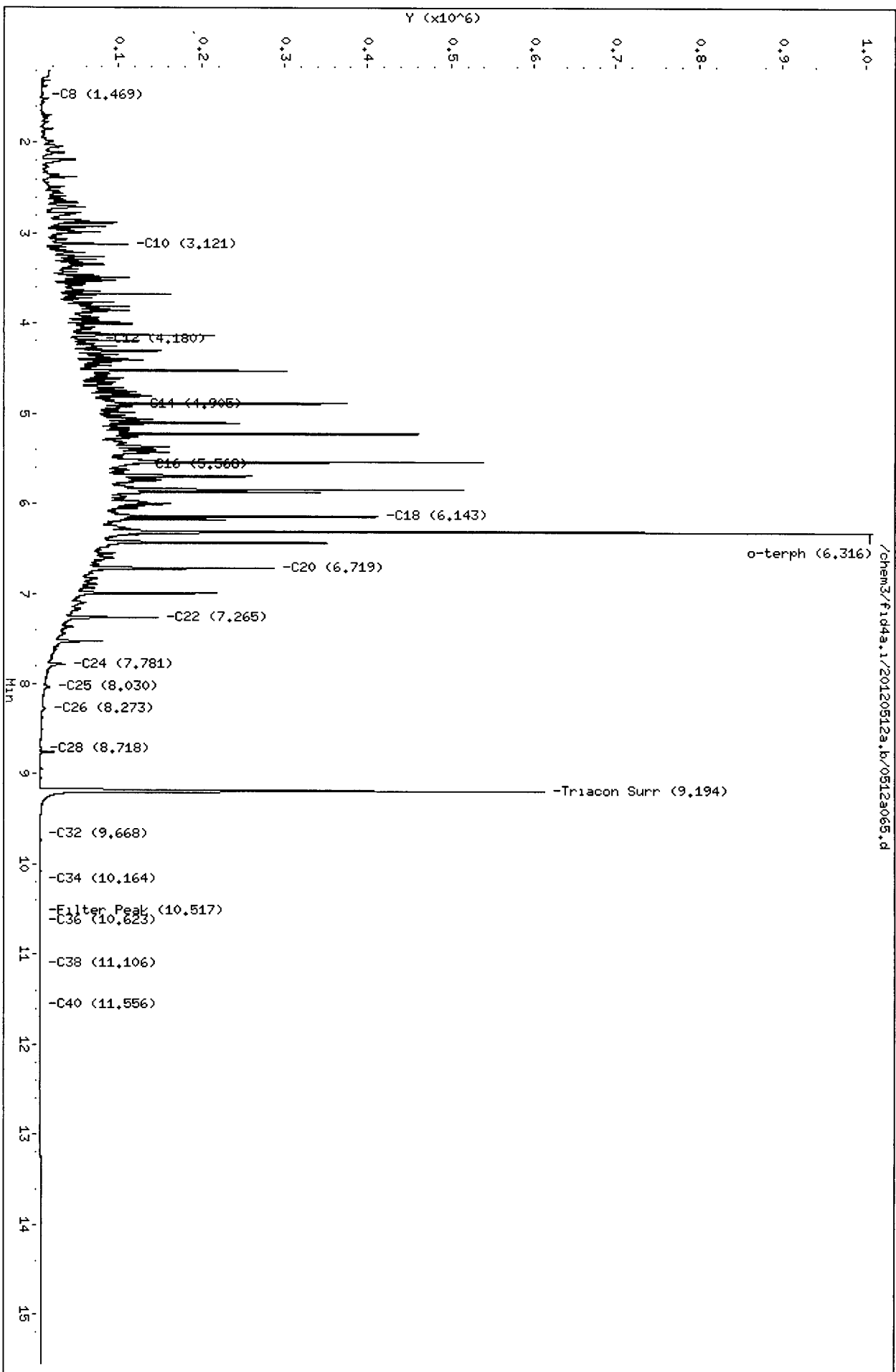
Sample Info: UT57LCSS1

Column phase: RTX-1

Instrument: fid4a.1

Operator: MH

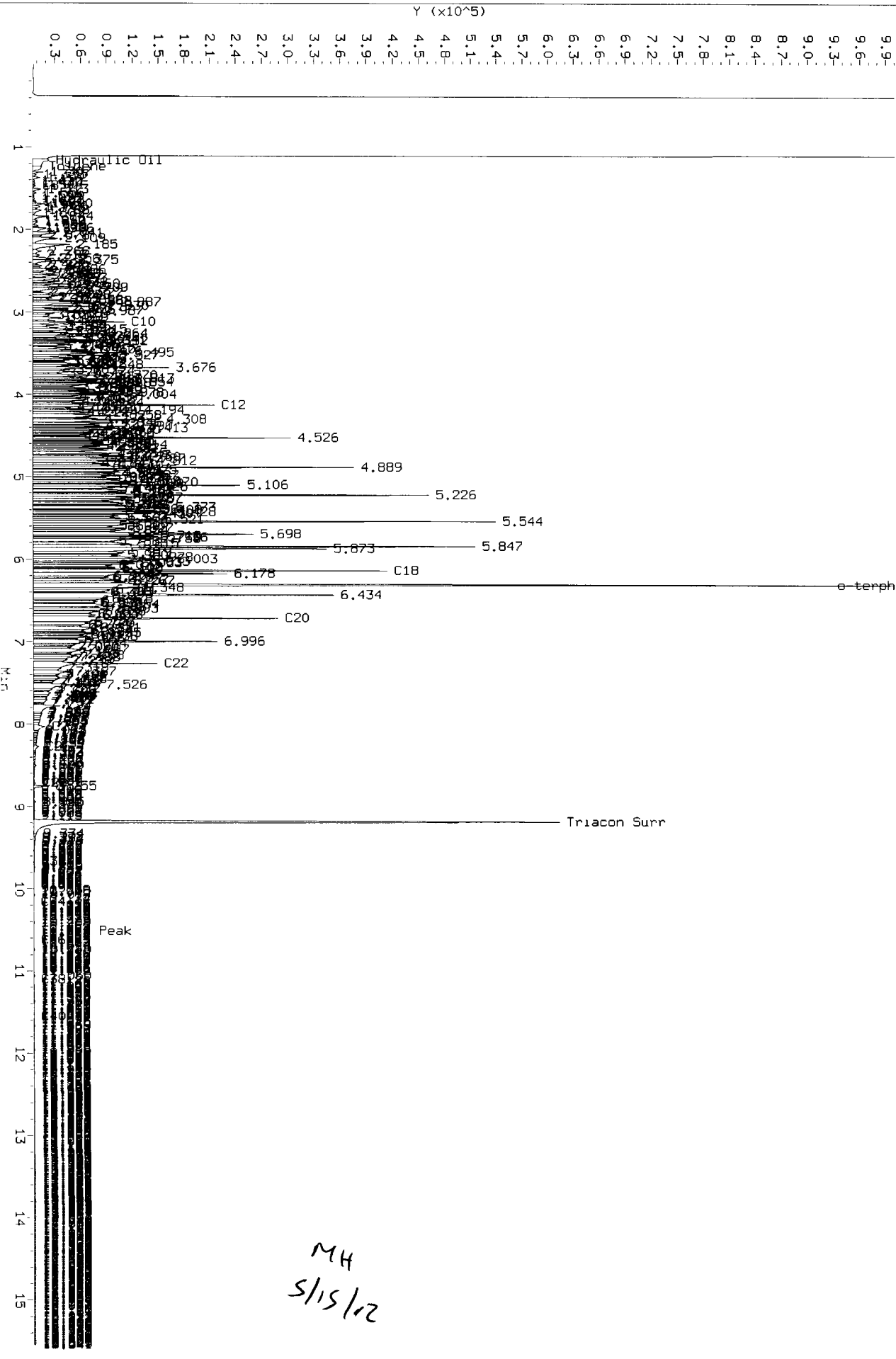
Column diameter: 0.25



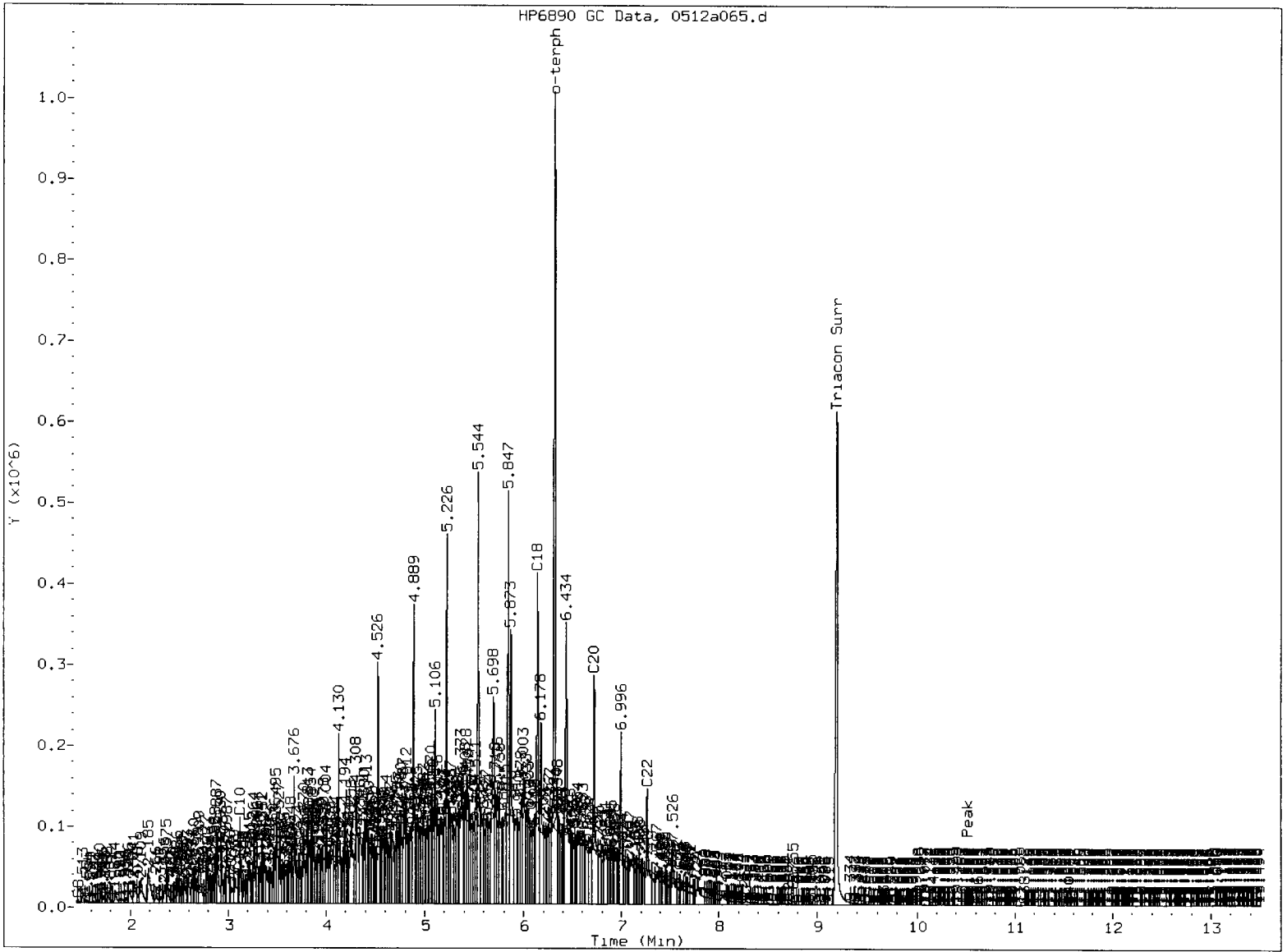
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Data File: /chem3/fid4a.1/20120512a.b/0512a065.d
Injection Date: 13-MAY-2012 08:33
Instrument: fid4a.1
Client Sample ID: U157LCS51

HP6890 GC Data, 0512a065.d: 0.000 to 15.548 Min



U157LCS51



MANUAL INTEGRATION

- 1. Baseline correction
- 2. Poor chromatography
- 3. Peak not found
- 4. Totals calculation
- 5. Other _____

Analyst: MH Date: 5/15/12

Data File: /chem3/fid4a.i/20120512a.b/0512a067.d

Date : 13-MAY-2012 09:21

Client ID: CMSB-13-14-0-14,5-0

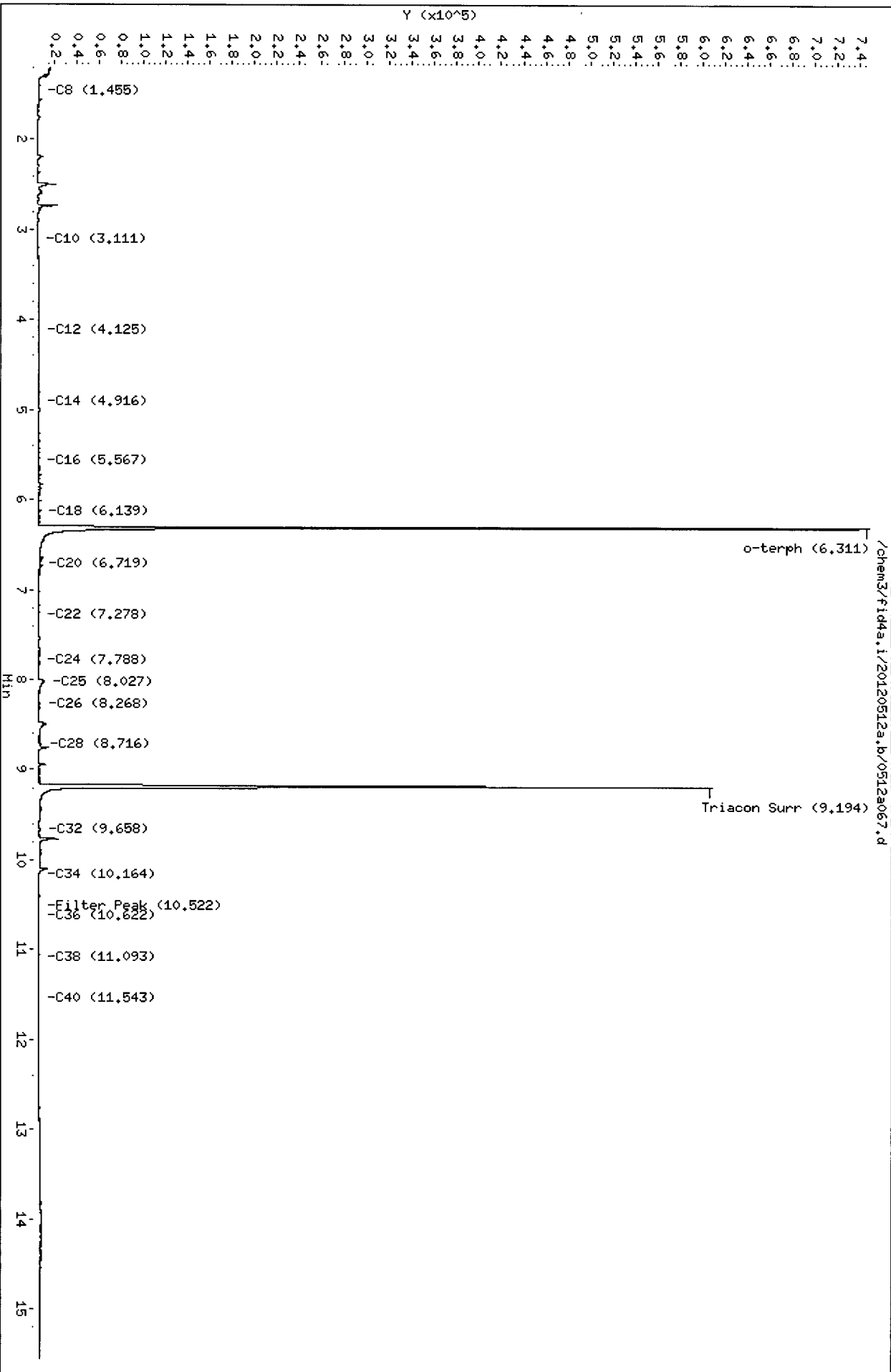
Sample Info: UT77A

Column phase: RTX-1

Instrument: fid4a.1

Operator: MH

Column diameter: 0.25



Data File: /chem3/fid4a.i/20120512a.b/0512a068.d

Date: 13-MAY-2012 09:46

Client ID: CMSB-13-21-22-0512

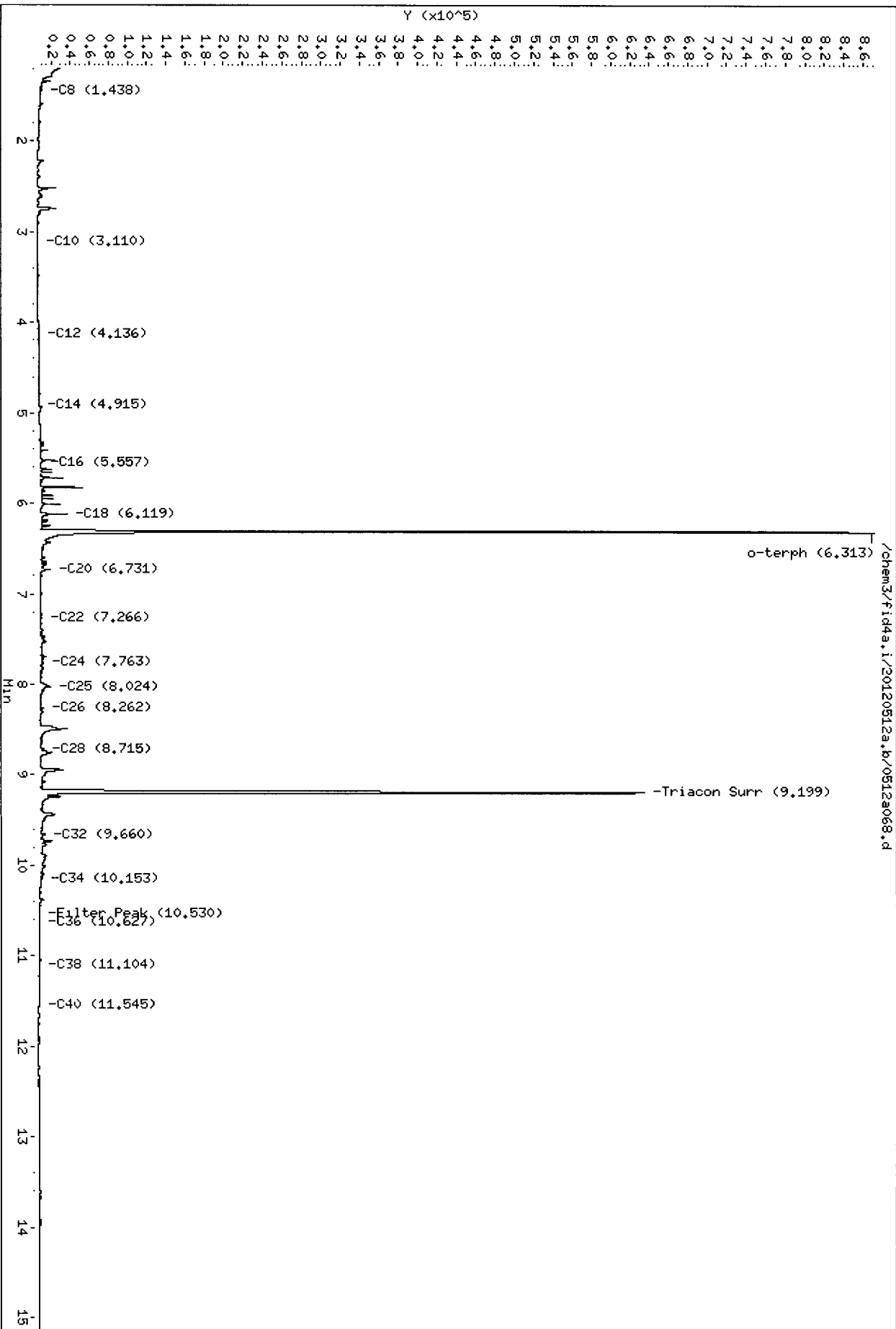
Sample Info: UT77B

Column phase: RTX-1

Instrument: fid4a.i

Operator: MH

Column diameter: 0.25



Data File: /chem3/fid4a.i/20120512a.b/0512a069.d

Date: 13-MAY-2012 10:10

Client ID: CMSB-13-25-27-0512

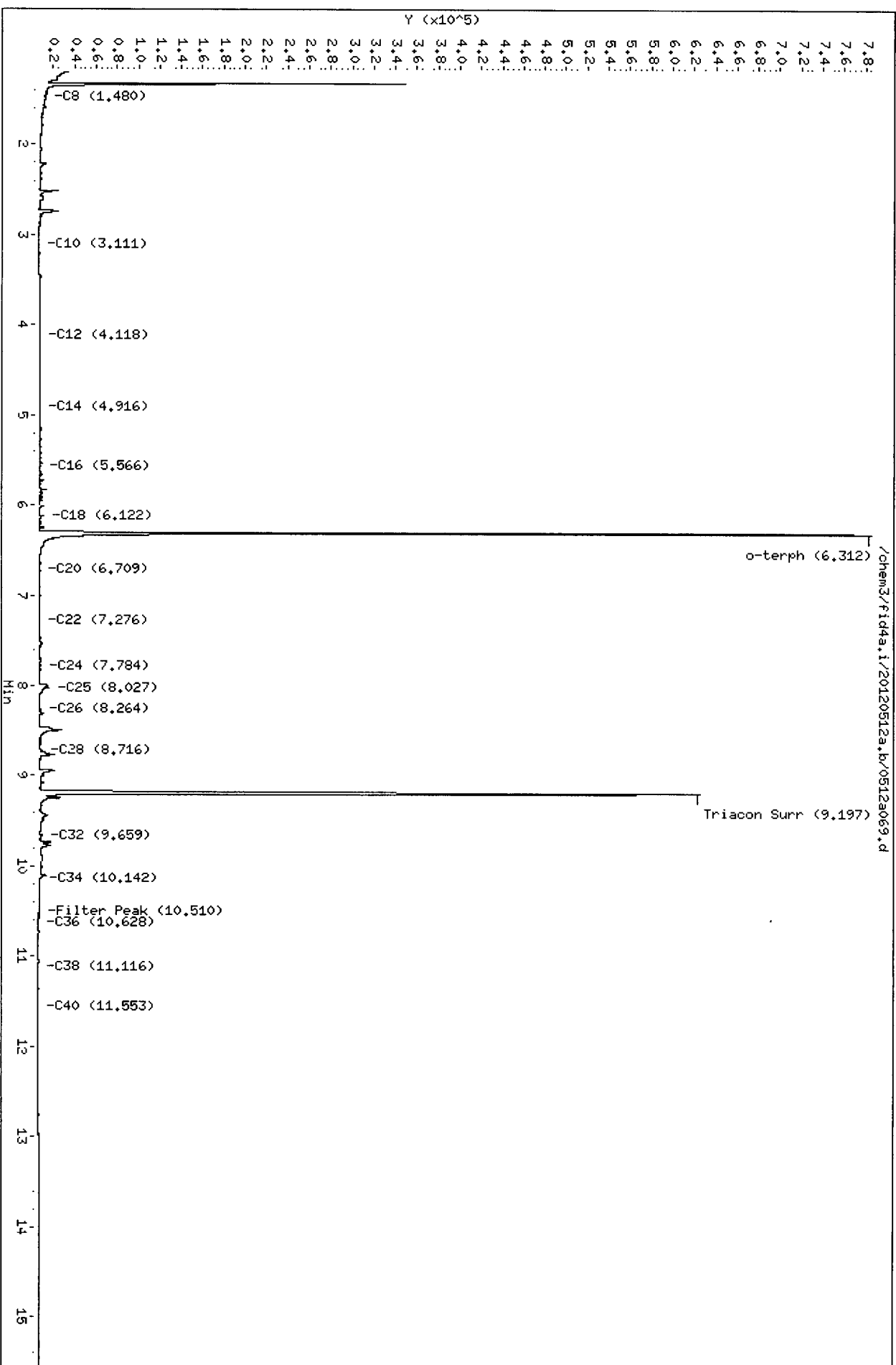
Sample Info: UT77C

Column phase: RTX-1

Instrument: fid4a.i

Operator: HH

Column diameter: 0.25



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Data File: /chem3/fid4a.1/20120512a.b/0512a073.d

Date: 13-MAY-2012 11:48

Client ID: CMSB-14-25-27-0512

Sample Info: UT77F

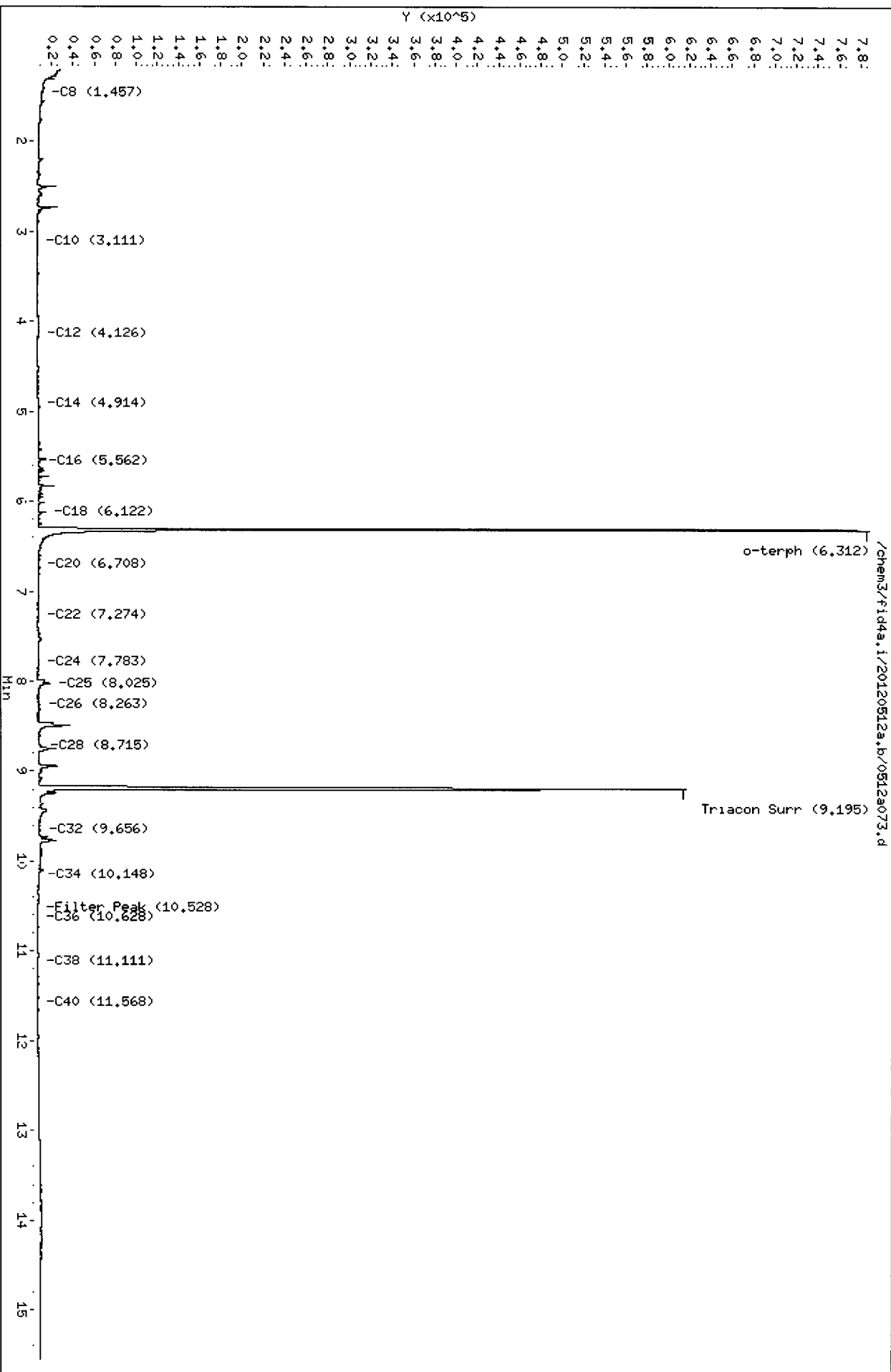
Column phase: RTX-1

Instrument: fid4a.1

Operator: HH

Column diameter: 0.25

Page 1



Data File: /chem3/fid4a.i/20120512a.b/0512a076.d

Date: 13-May-2012 13:01

Client ID: CMSB-14-29-30-0512

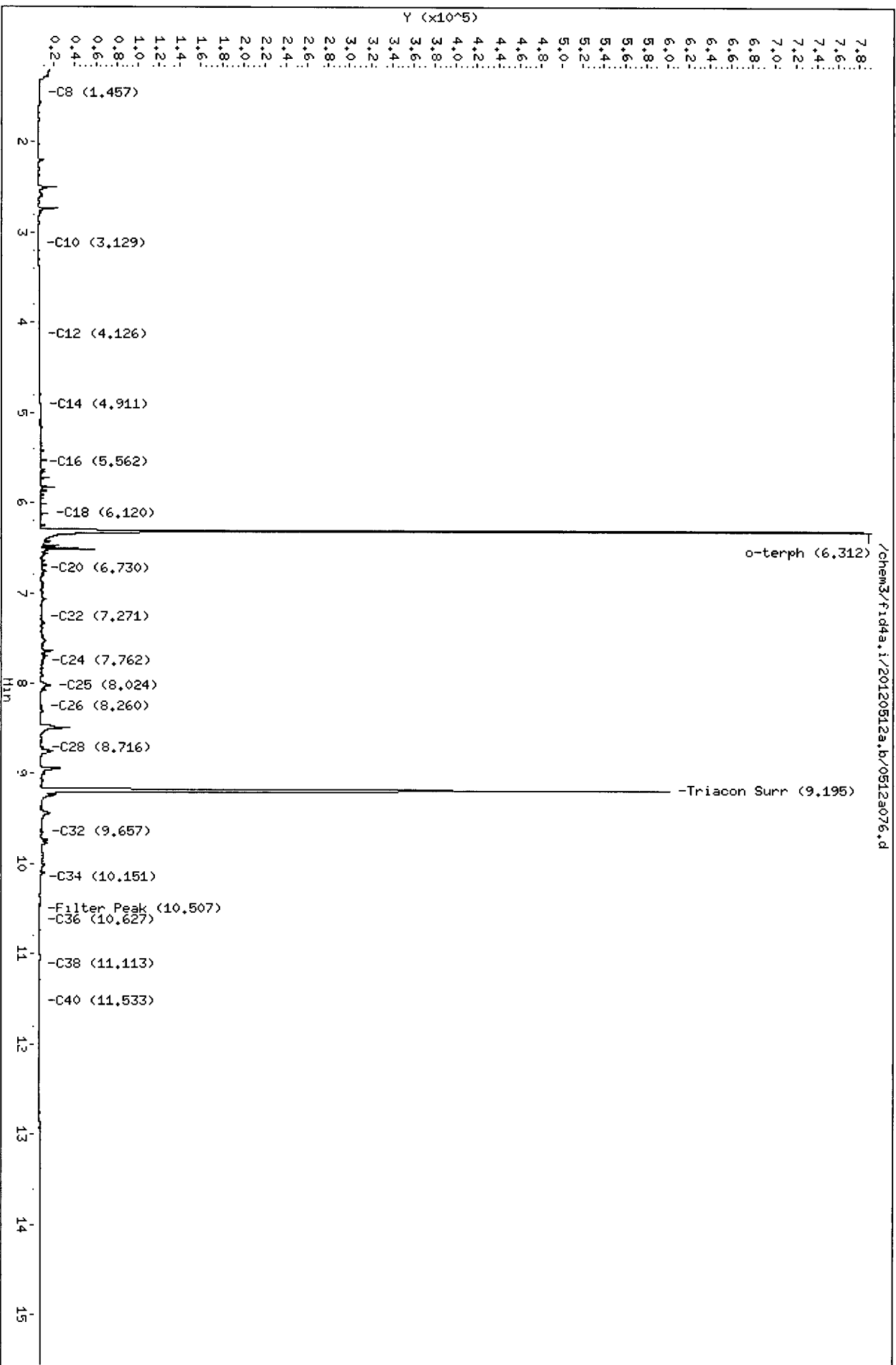
Sample Info: UT77G

Column phase: RTX-1

Instrument: fid4a.i

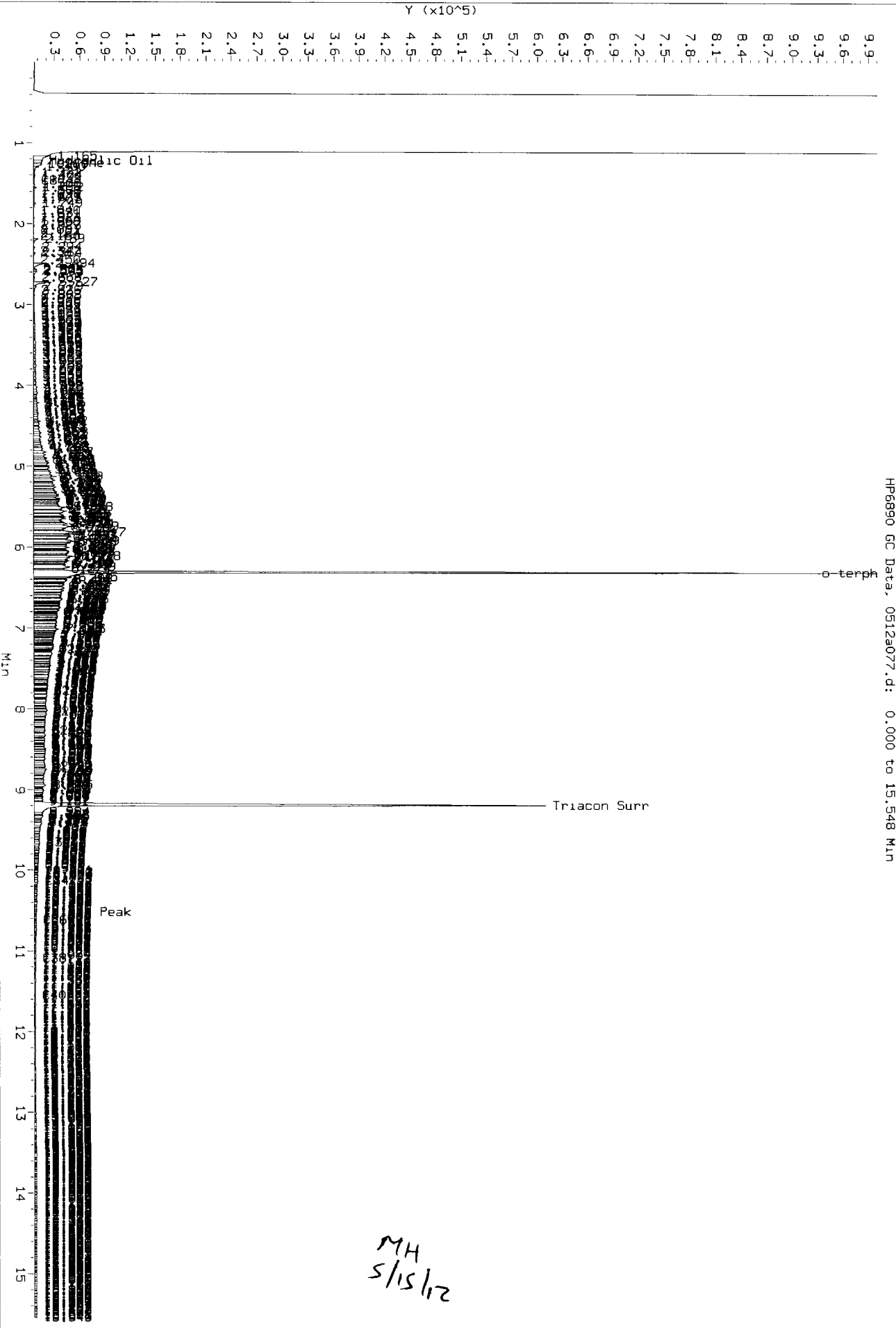
Operator: HH

Column diameter: 0.25



Data File: /chem3/f1d4a.1/20120512a.b/0512a077.d
Injection Date: 13-MAY-2012 13:25
Instrument: f1d4a.1
Client Sample ID: CUSB-15-11-13-0512

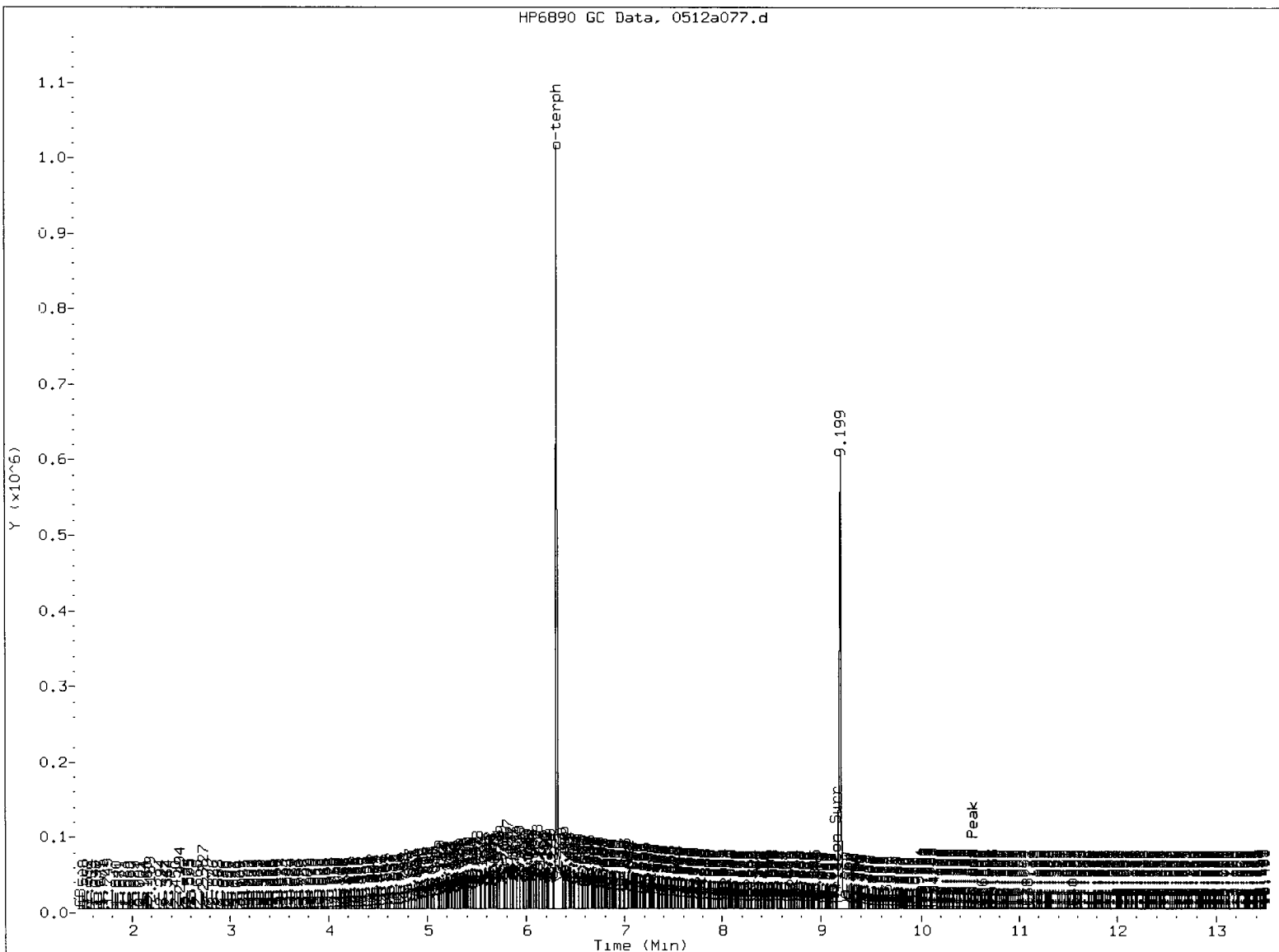
HP6890 GC Data, 0512a077.d: 0.000 to 15.548 Min



MH
5/15/12

0512a077.d

HP6890 GC Data, 0512a077.d



MANUAL INTEGRATION

- Baseline correction
- 2. Poor chromatography
- 3. Peak not found
- 4. Totals calculation
- 5. Other _____

Analyst: MH

Date: 5/15/12

Data File: /chem3/fid4a.i/20120512a.b/0512a078.d

Date: 13-May-2012 13:49

Client ID: DMSB-15-23-25-0512

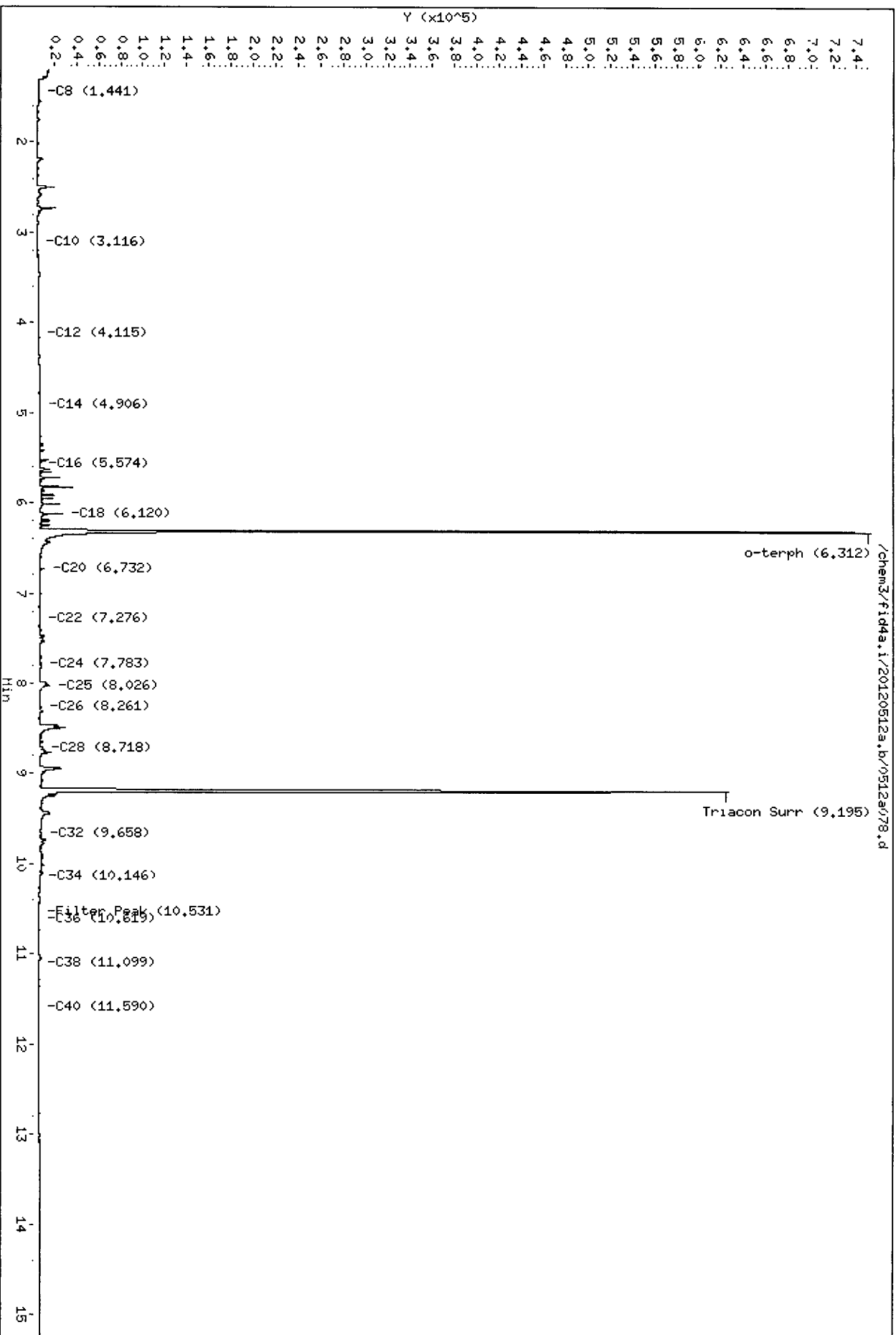
Sample Info: UT771

Column phase: RTX-1

Instrument: fid4a.i

Operator: HH

Column diameter: 0.25



Data File: /chem3/fid4a.i/20120512a.b/0512a079.d

Date: 13-May-2012 14:13

Client ID: CMSB-15-18-20-0512

Sample Info: UT77J

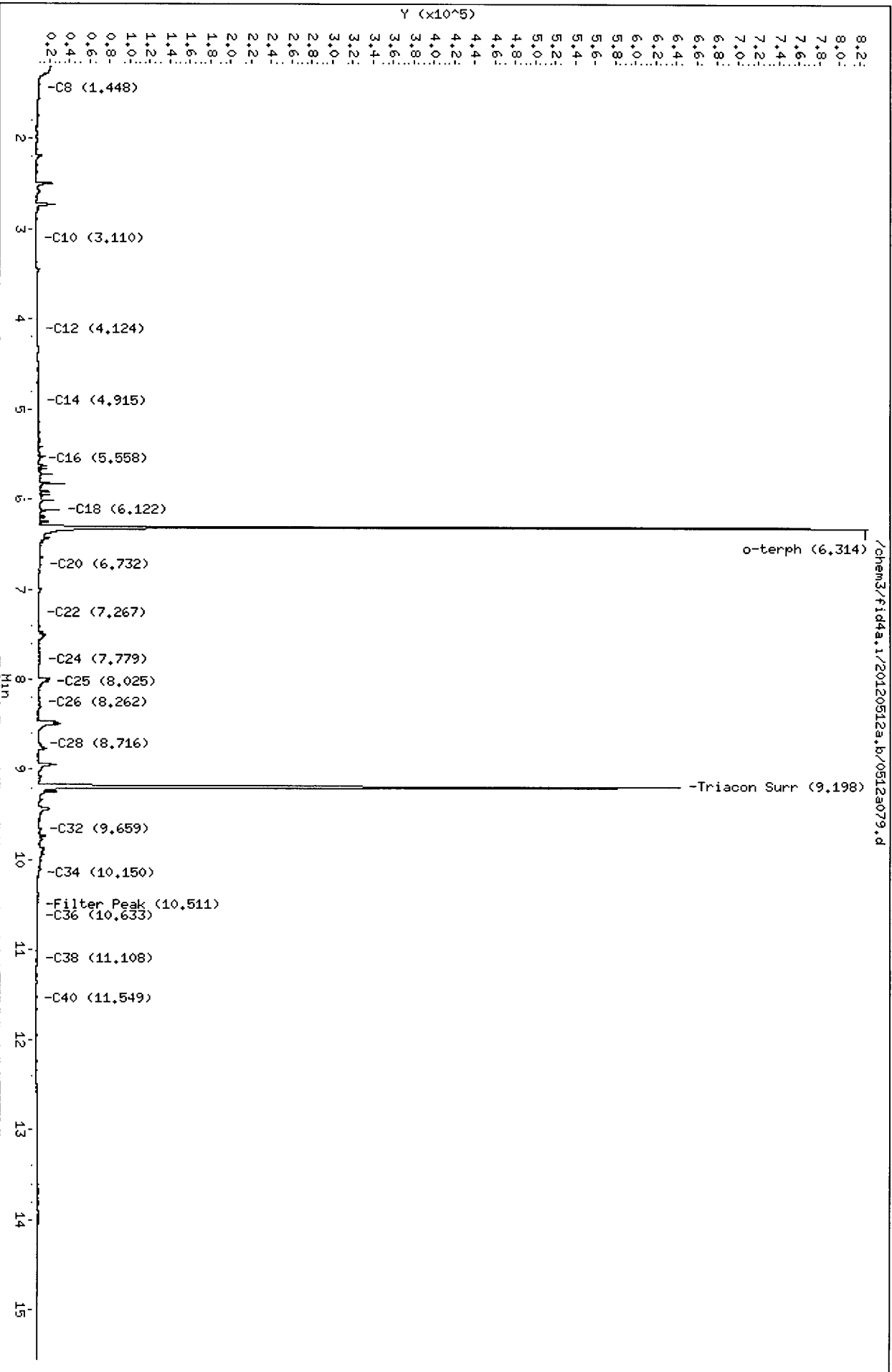
Column phase: RTX-1

Instrument: fid4a.1

Operator: HH

Column diameter: 0.25

Page 1



UT77J : 05120512a

Data File: /chem3/fid4a,1/20120512a,b/0512a081.d

Date: 13-MAY-2012 15:02

Client ID: CMSB-16-13-15-0512

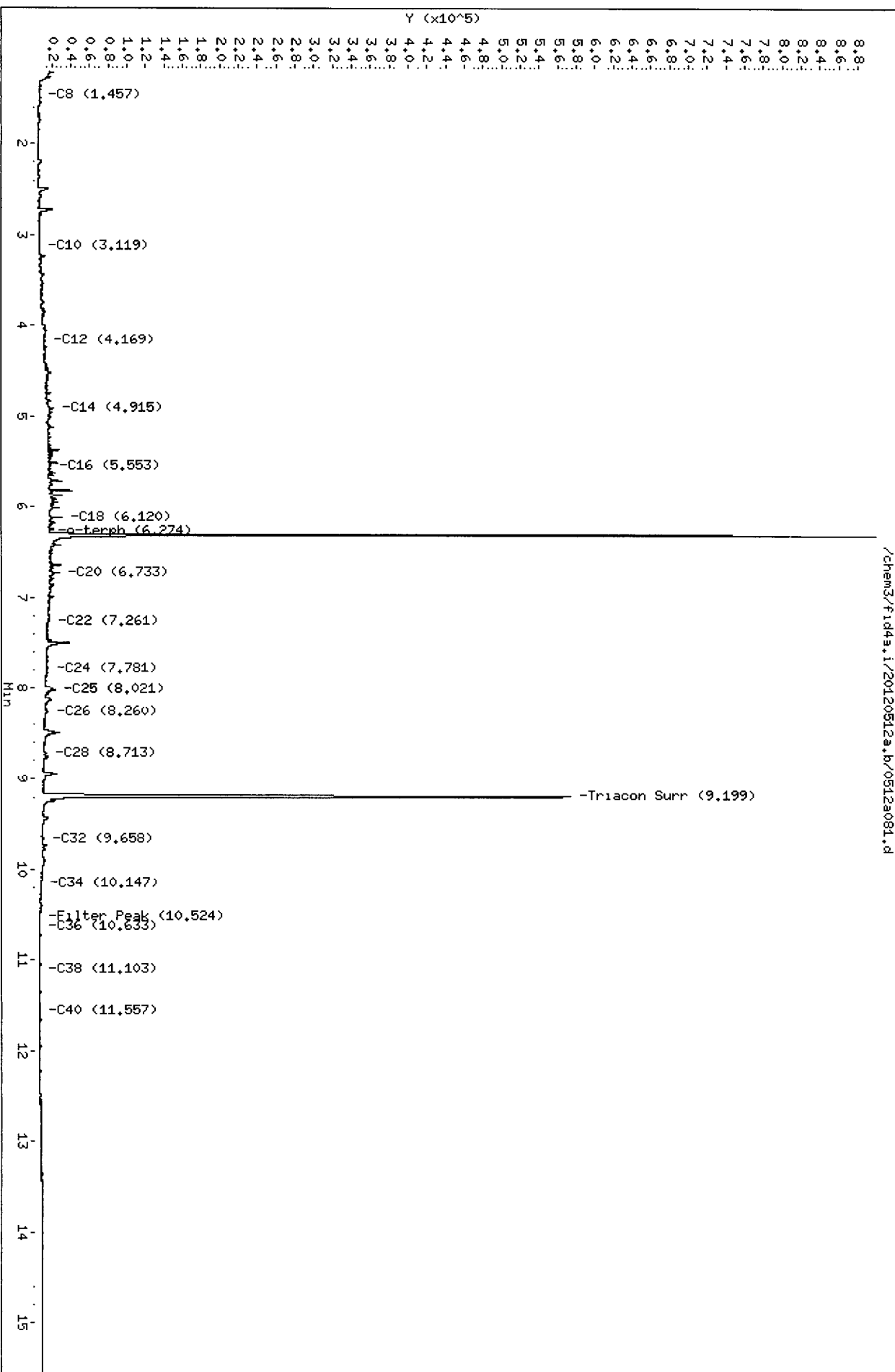
Sample Info: UT77H

Column phase: RTX-1

Instrument: fid4a.i

Operator: HH

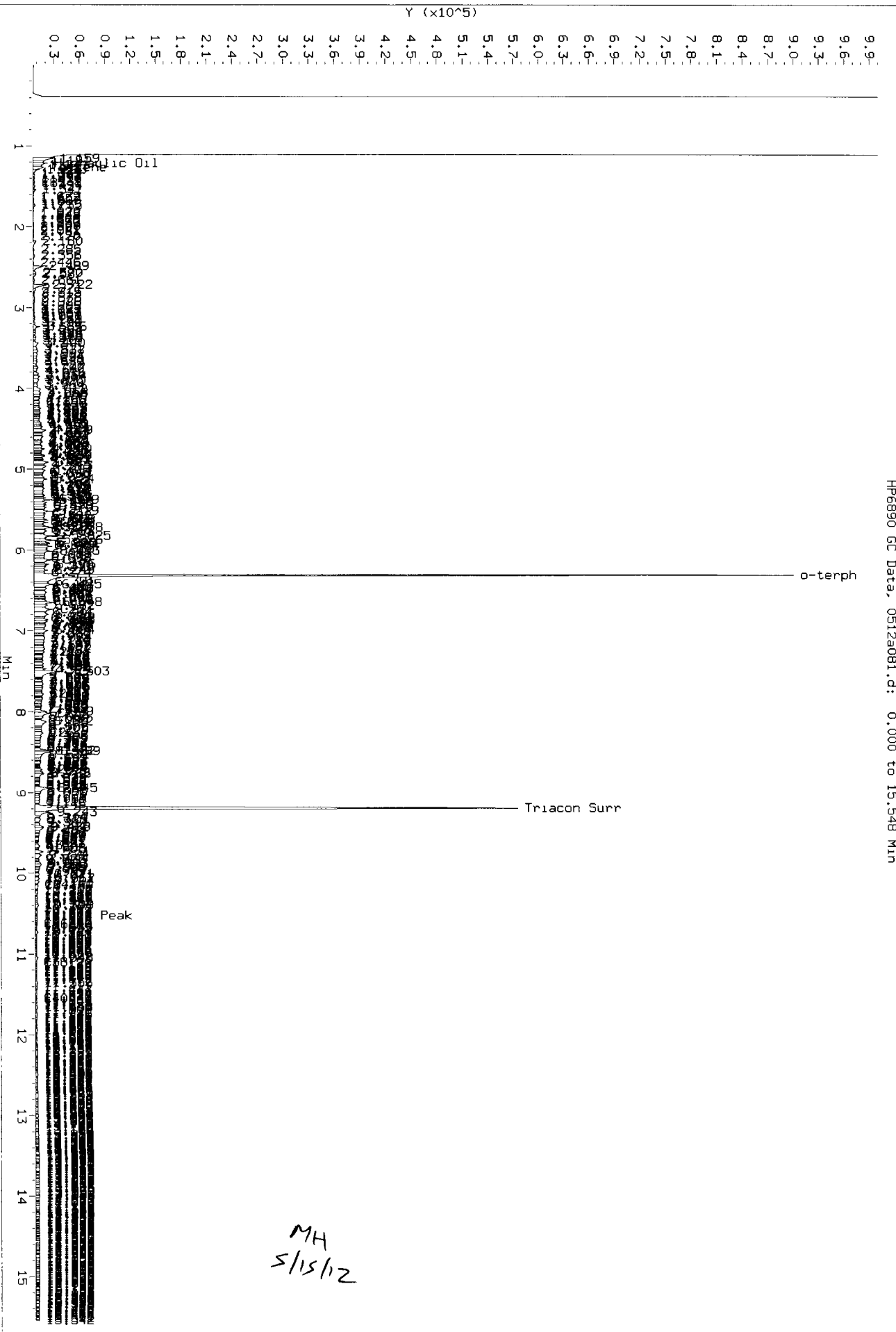
Column diameter: 0.25



/chem3/fid4a,1/20120512a,b/0512a081.d

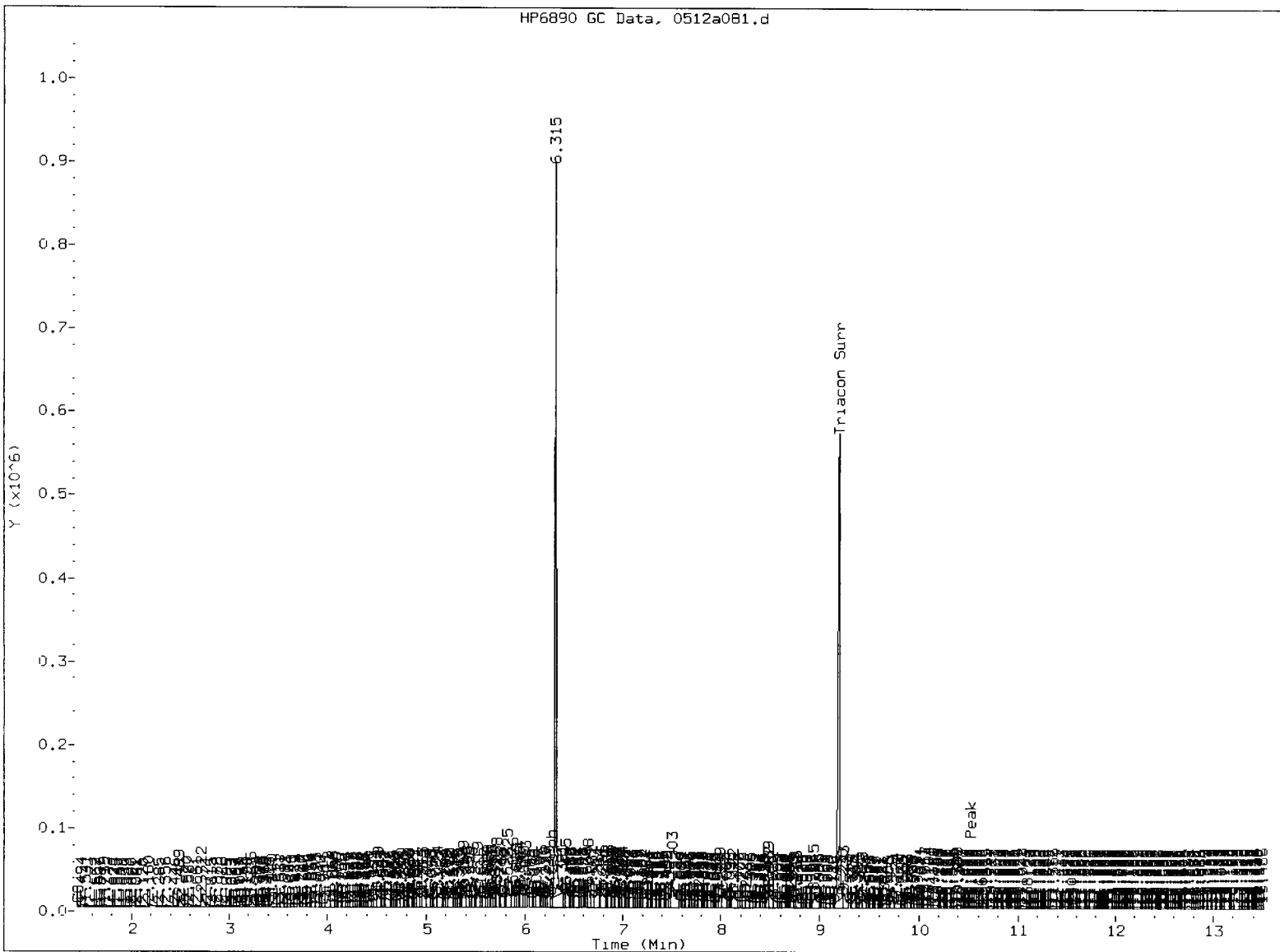
Data File: /chem3/fid4a.1/20120512a.b/0512a081.d
Injection Date: 13-MAY-2012 15:02
Instrument: fid4a.1
Client Sample ID: CWSB-16-13-15-0512

HP6890 GC Data: 0512a081.d: 0.000 to 15.548 Min



MH
5/15/12

HP6890 GC Data, 0512a081.d



MANUAL INTEGRATION

- 1. Baseline correction
- 2. Poor chromatography
- 3. Peak not found
- 4. Totals calculation
- 5. Other _____

Analyst: MH

Date: 5/15/12

Data File: /chem3/fid4a.i/20120512a.b/0512a082.d

Date: 13-HRY-2012 15:26

Client ID: CMSB-16-18-20-0512

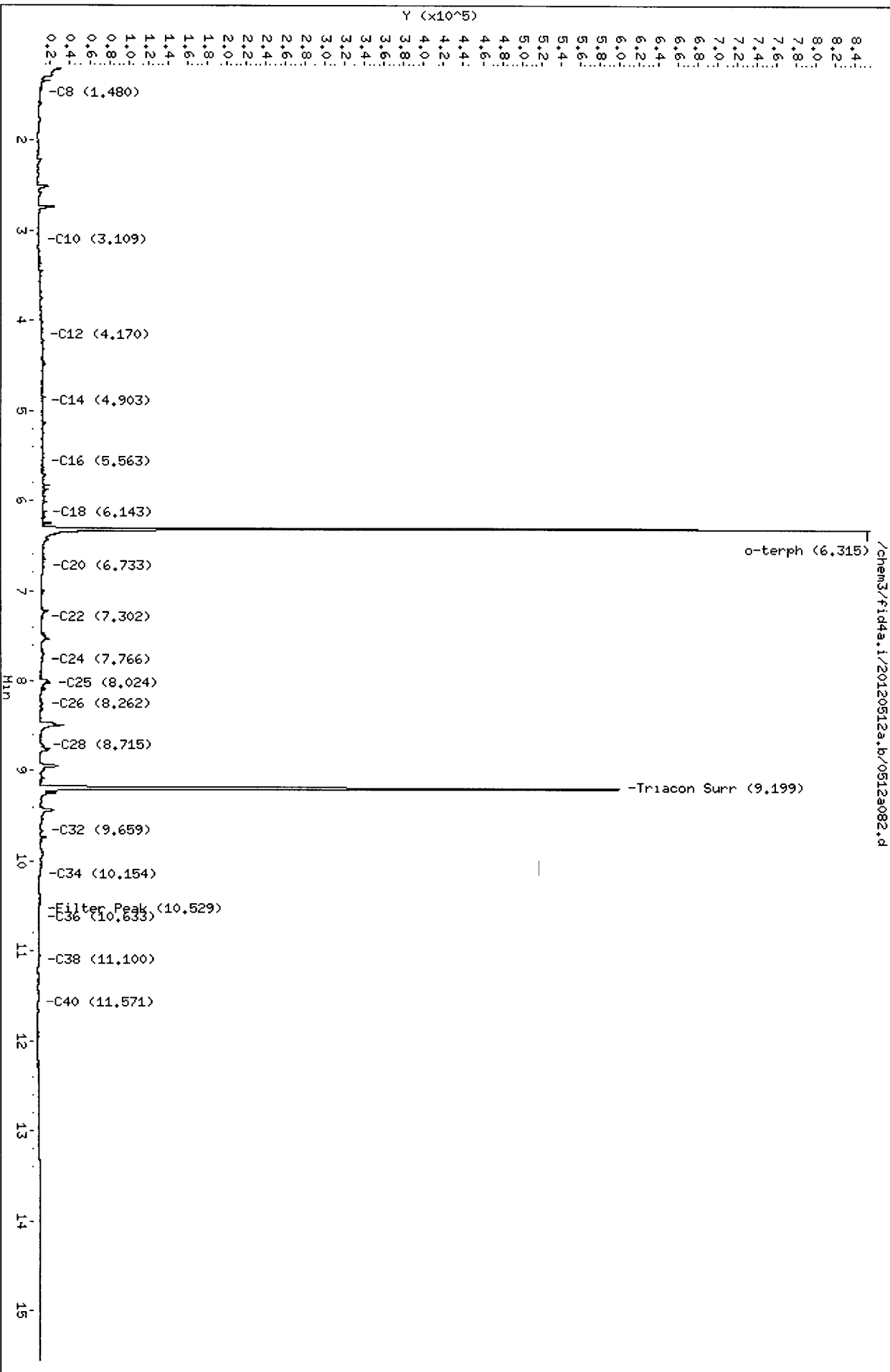
Sample Info: UT77N

Column phase: RTX-1

Instrument: fid4a.i

Operator: HH

Column diameter: 0.25



Data File: /chem3/fid4a.1/20120512a.b/0512a084.d

Date: 13-May-2012 16:15

Client ID: CMSB-17-23-25-0512

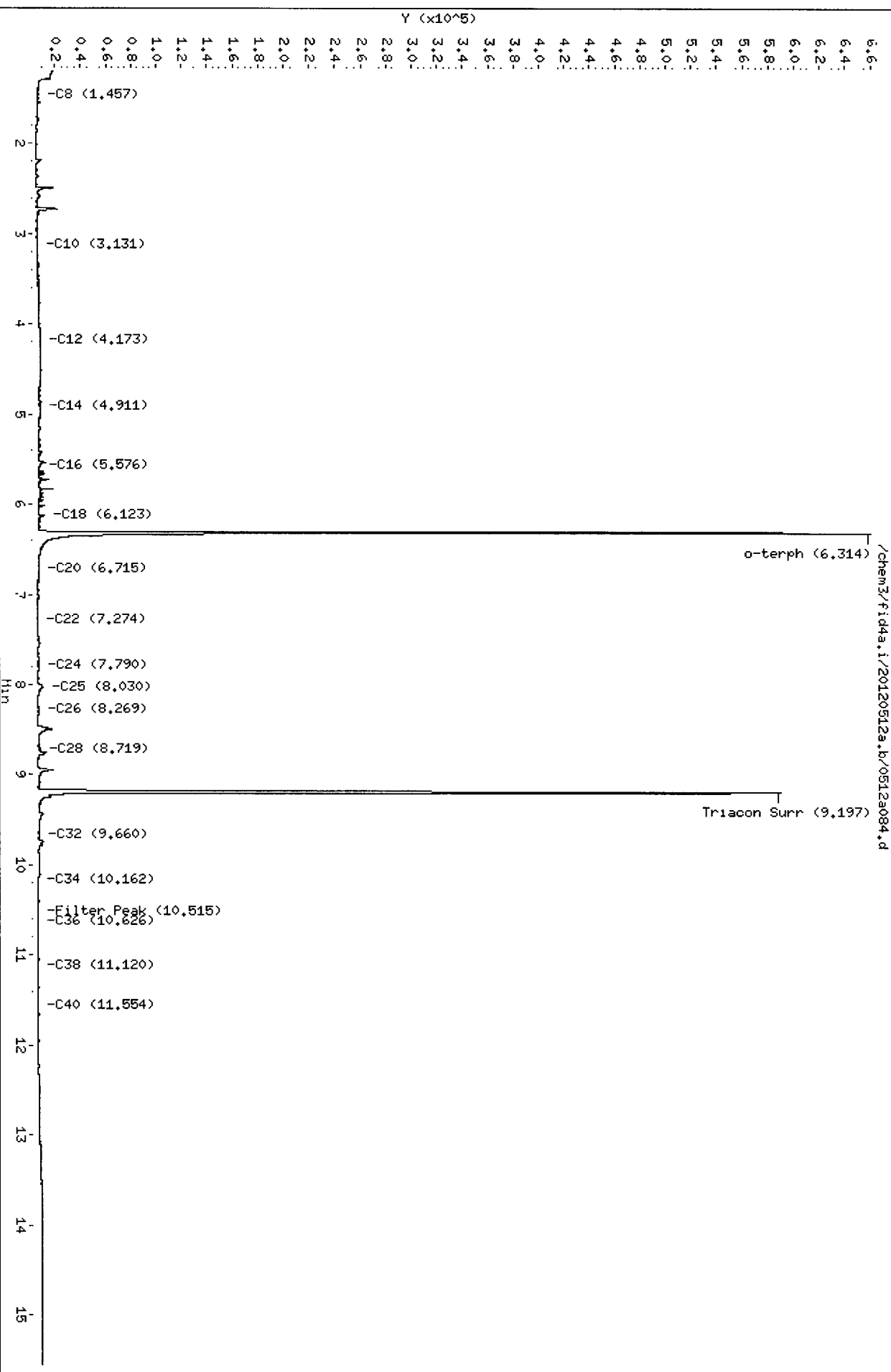
Sample Info: UT77Q

Column phase: RTX-1

Instrument: fid4a.1

Operator: MH

Column diameter: 0.25



Data File: /chem3/fid4a.1/20120512a.b/0512a085.d

Date: 13-MAY-2012 16:39

Client ID: CNSB-17-28-30-0512

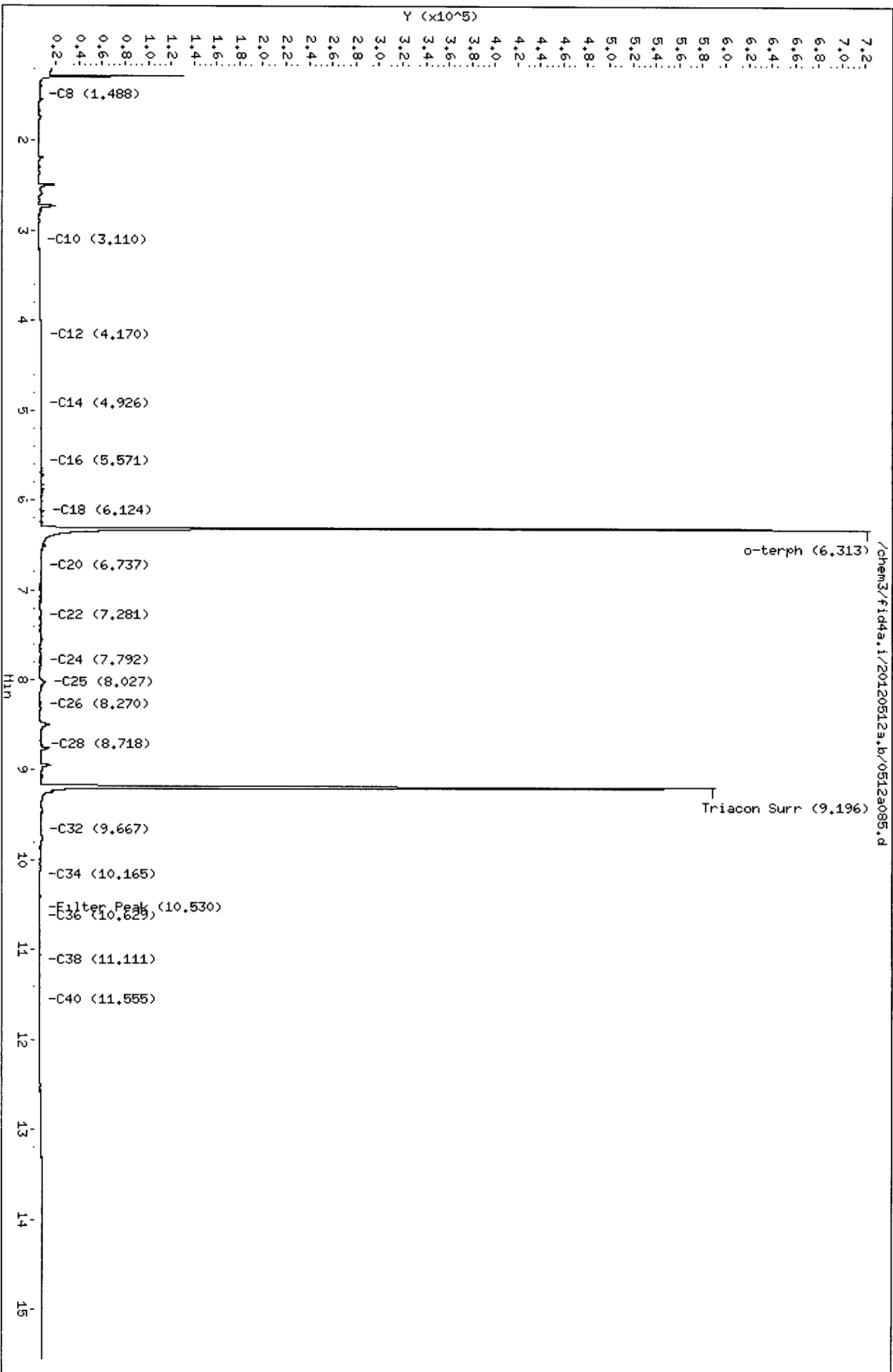
Sample Info: UT77R

Column phase: RTX-1

Instrument: fid4a.1

Operator: MH

Column diameter: 0.25



Data File: /chem3/fid4a.1/20120512a.b/0512a086.d

Date: 13-May-2012 17:03

Client ID: CMSB-170-23-25-0512

Sample Info: UT77S

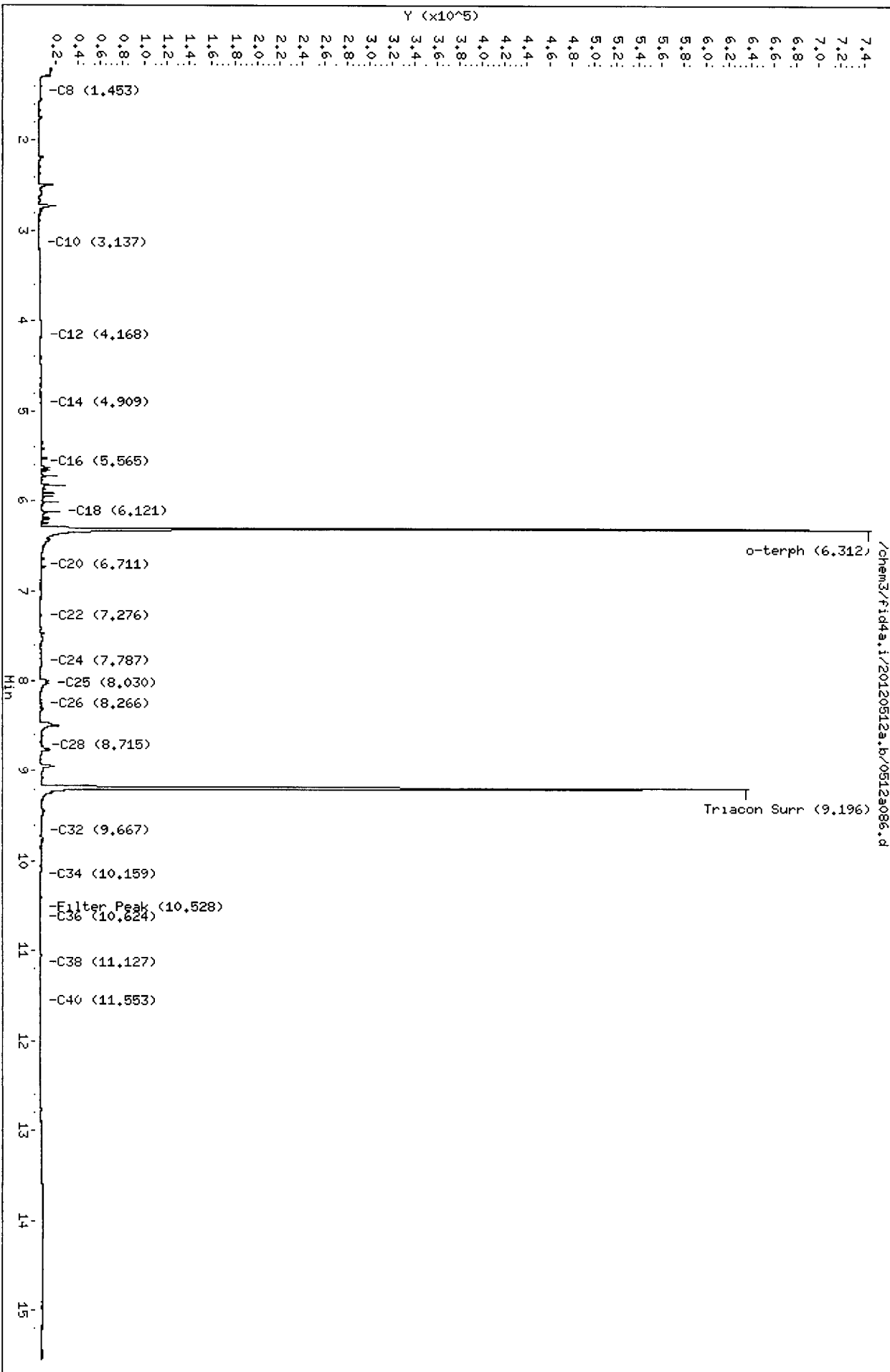
Column phase: PTX-1

Instrument: fid4a.1

Operator: MH

Column diameter: 0.25

Page 1



05120512a

Data File: /chem3/fid4a.1/20120514.b/0514a027.d

Date: 14-MAY-2012 16:39

Client ID: CMSB-14-12-14-0512

Sample Info: UT77E,10

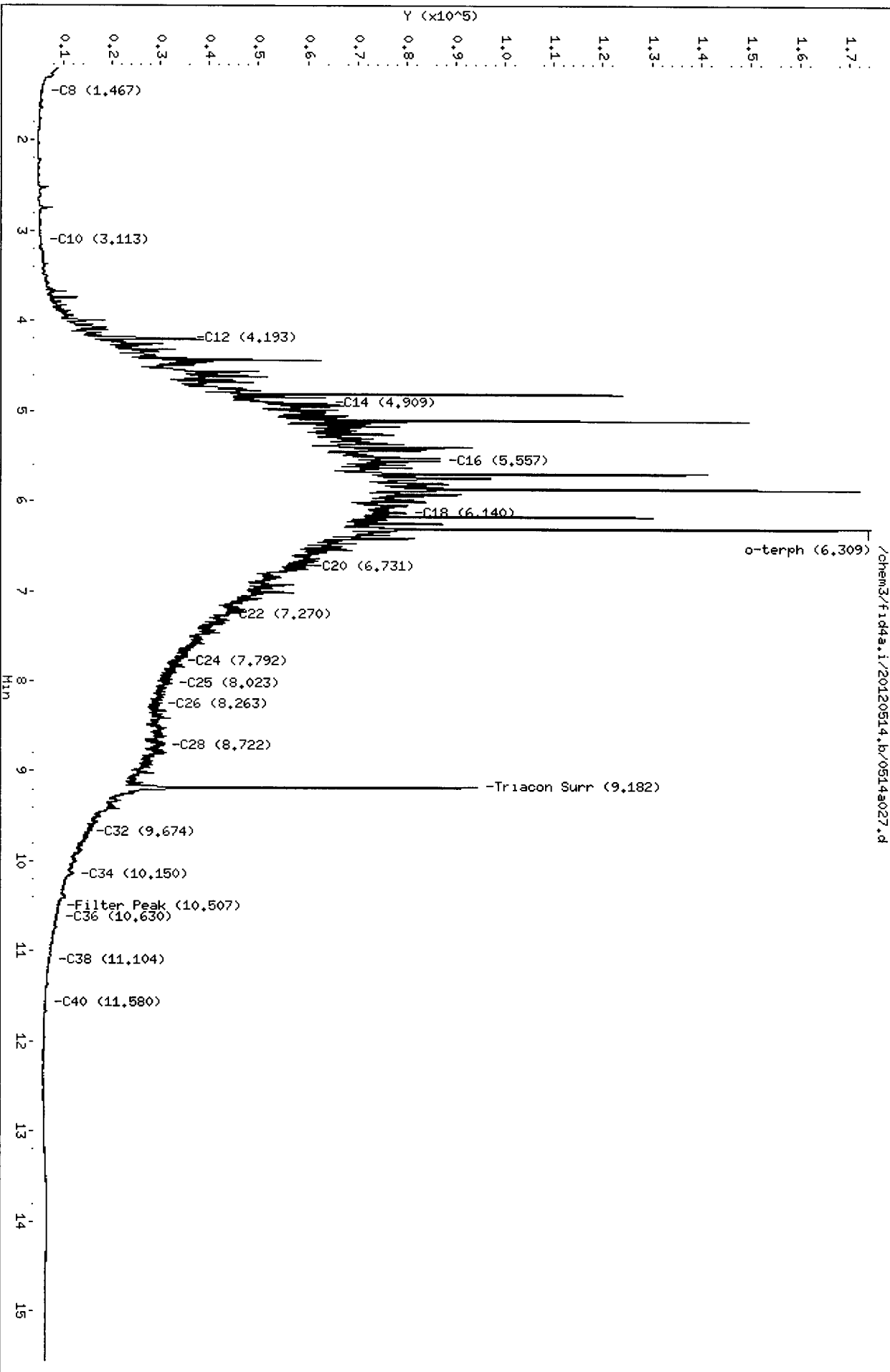
Column phase: RTX-1

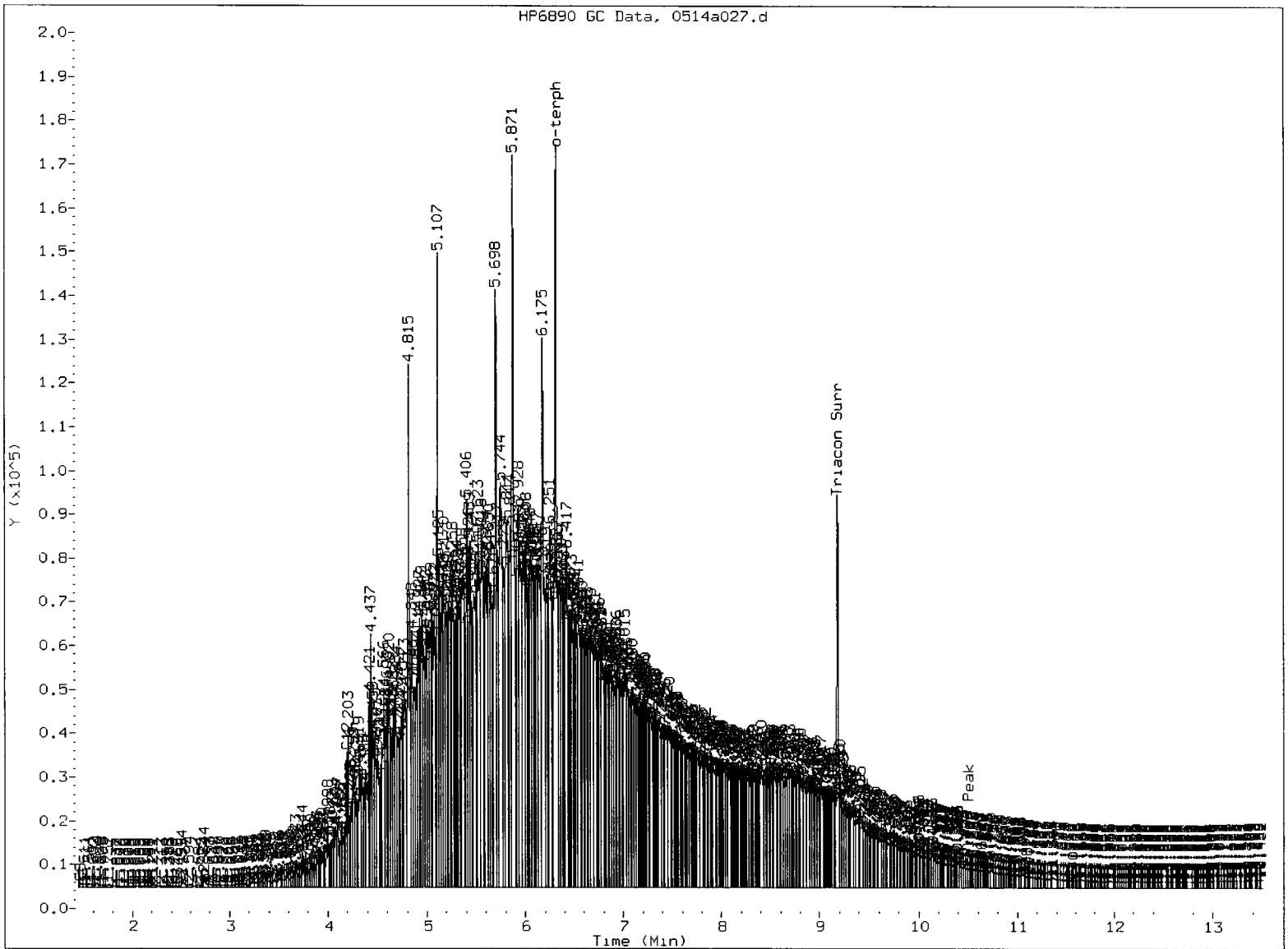
Instrument: fid4a.i

Operator: HH

Column diameter: 0.25

Page 1





MANUAL INTEGRATION

- Baseline correction
- 2. Poor chromatography
- 3. Peak not found
- 4. Totals calculation
- 5. Other _____

Analyst: MH Date: 5/15/12

Data File: /chem3/fid4a.i/20120514.b/0514a030.d

Date: 14-MAY-2012 17:52

Client ID: CMSB-16-8-10-0512

Sample Info: UT77L20

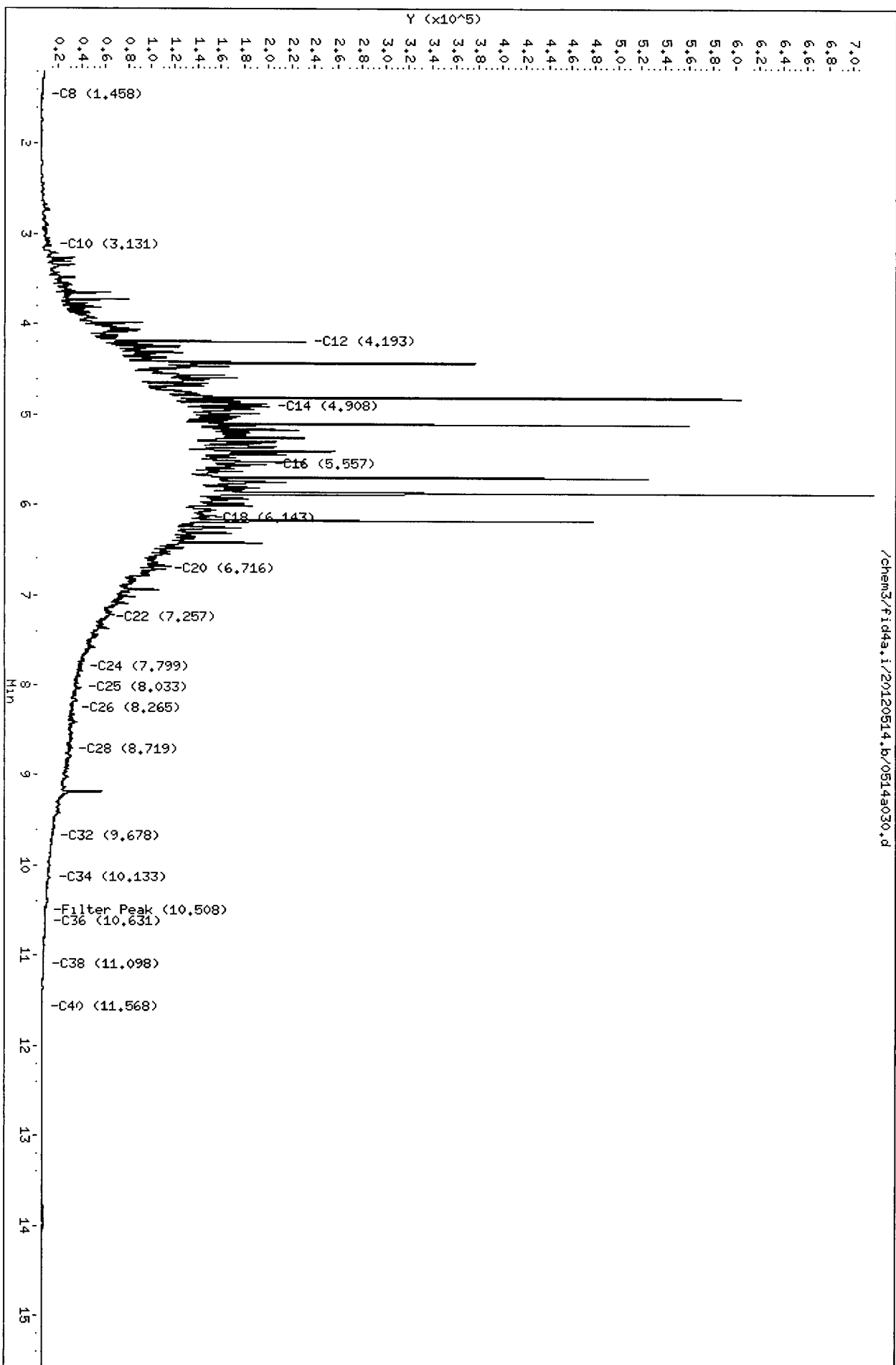
Column phase: RTX-1

Instrument: fid4a.i

Operator: HH

Column diameter: 0.25

/chem3/fid4a.i/20120514.b/0514a030.d



Data File: /chem3/fid4a.i/20120514.b/0514a031.d

Date: 14-MAY-2012 18:16

Client ID: CMSB-17-6-8-0512

Sample Info: UT77P,100

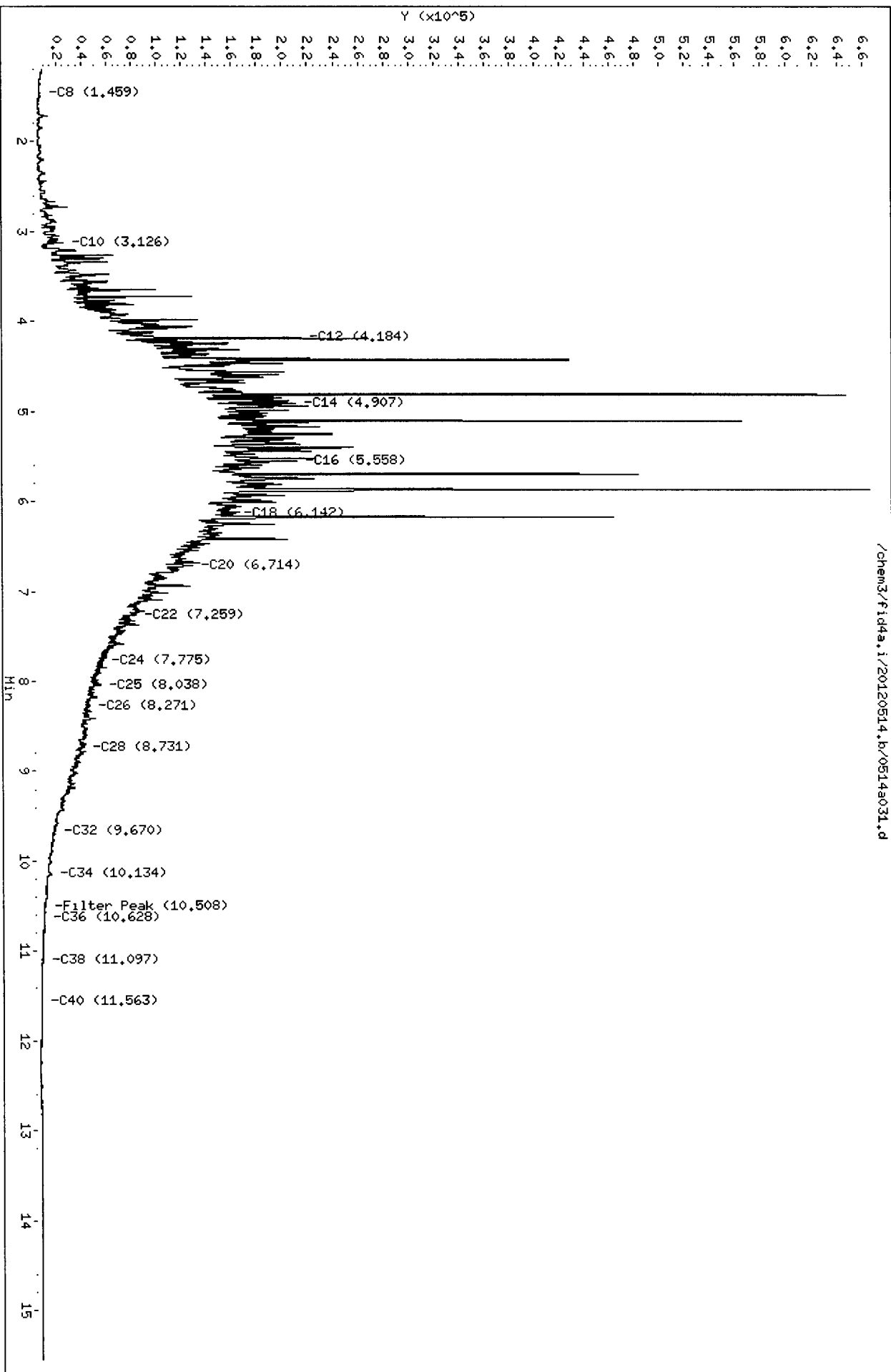
Column phase: RTX-1

Instrument: fid4a.i

Operator: NH

Column diameter: 0.25

/chem3/fid4a.i/20120514.b/0514a031.d



Data File: /chem3/fid4a.i/20120514.b/0514a028.d

Date: 14-HRY-2012 17:04

Client ID:

Sample Info: UT77EHD,10

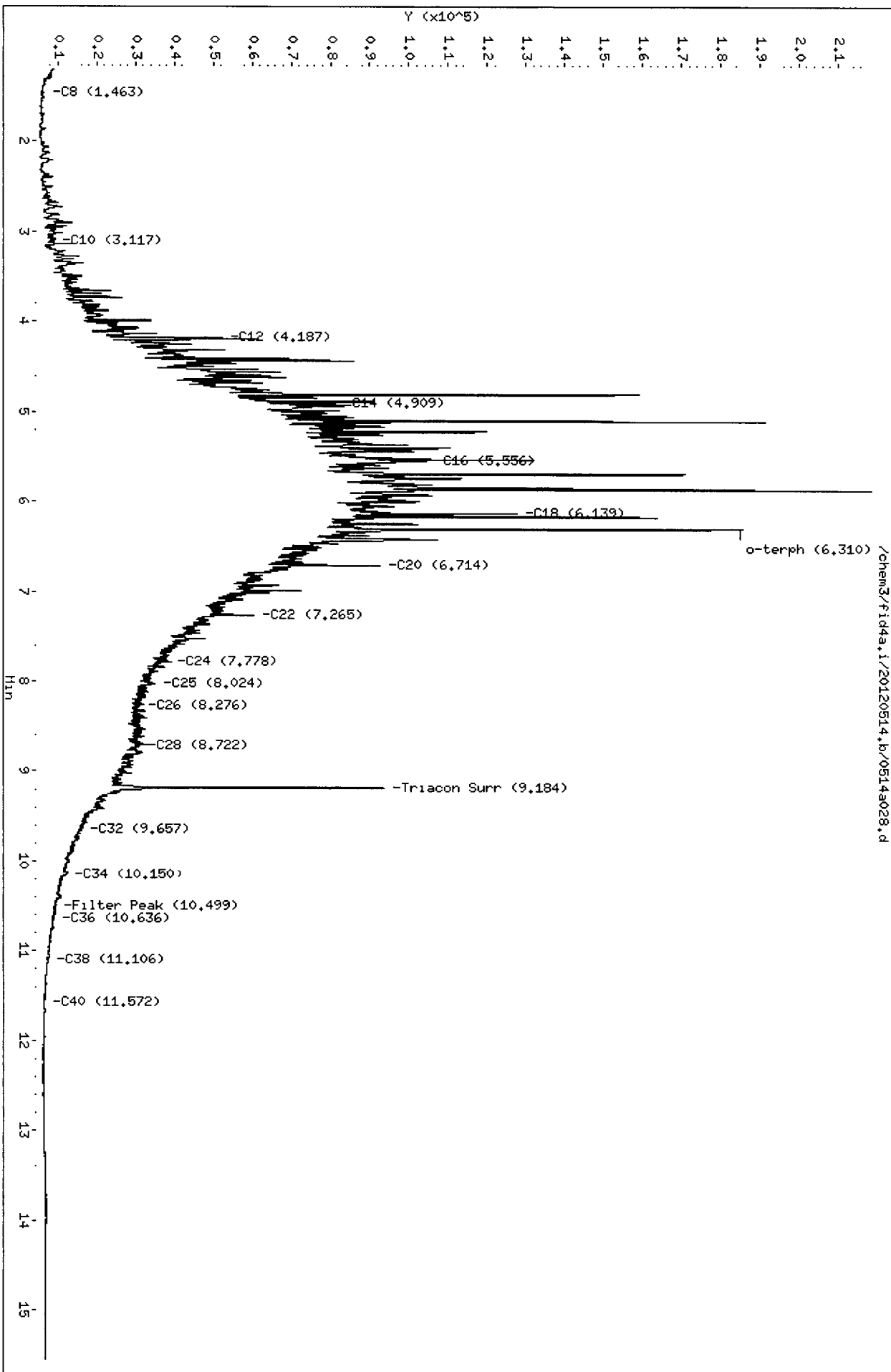
Column phase: RTX-1

Instrument: fid4a.1

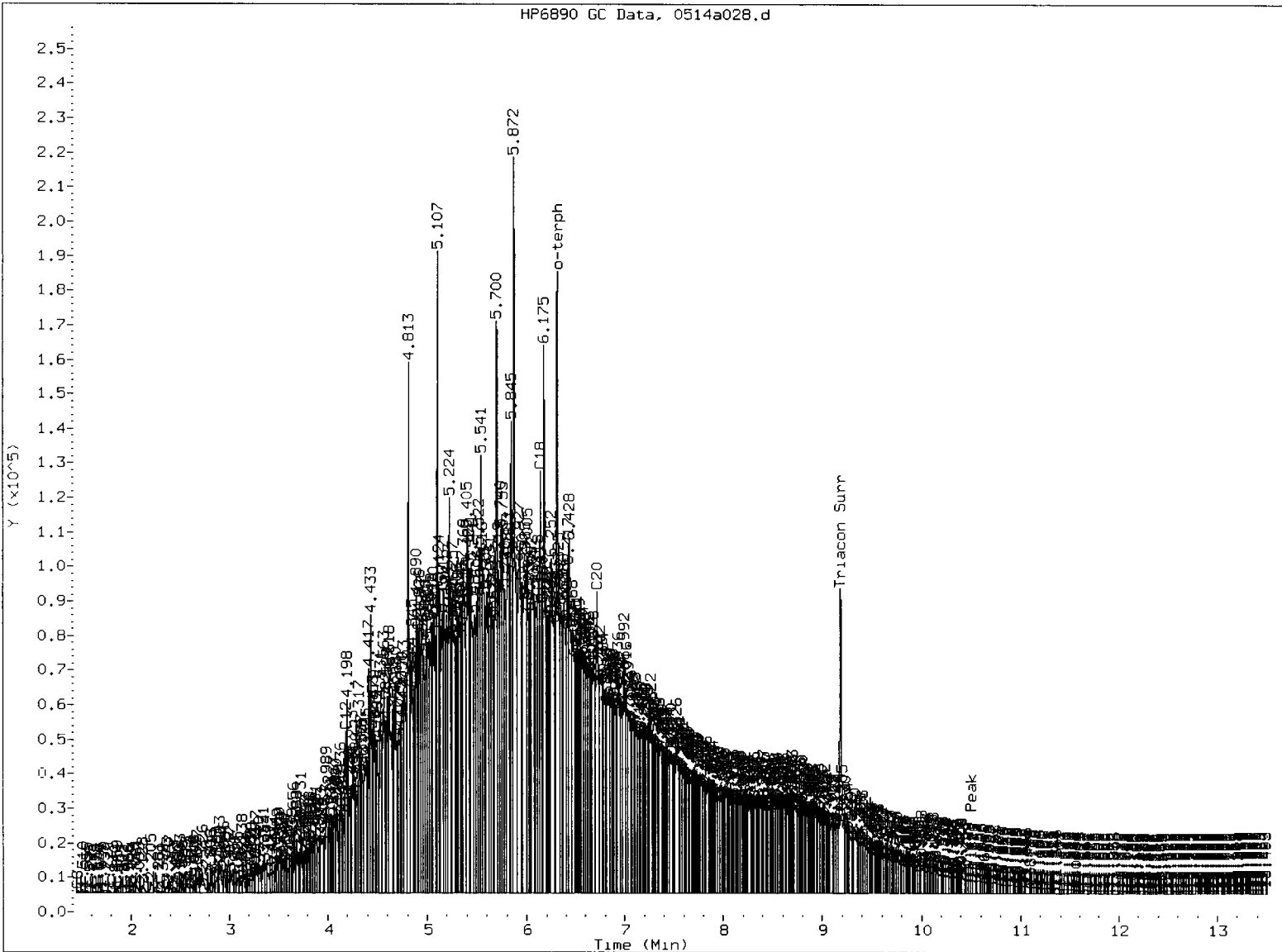
Operator: HH

Column diameter: 0.25

/chem3/fid4a.i/20120514.b/0514a028.d



HP6890 GC Data, 0514a028.d



MANUAL INTEGRATION

- Baseline correction
- 2. Poor chromatography
- 3. Peak not found
- 4. Totals calculation
- 5. Other _____

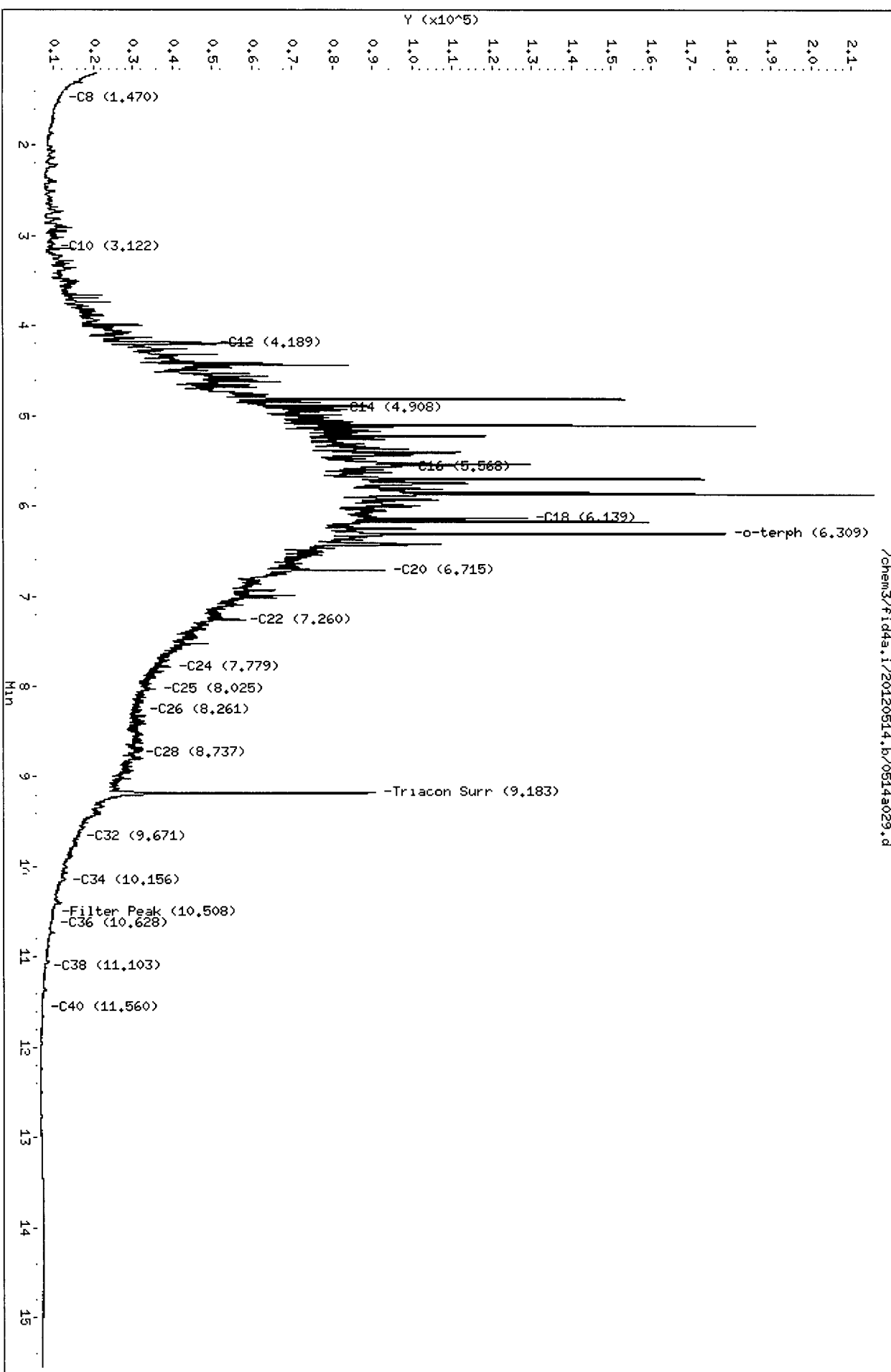
Analyst: MT Date: 5/15/12

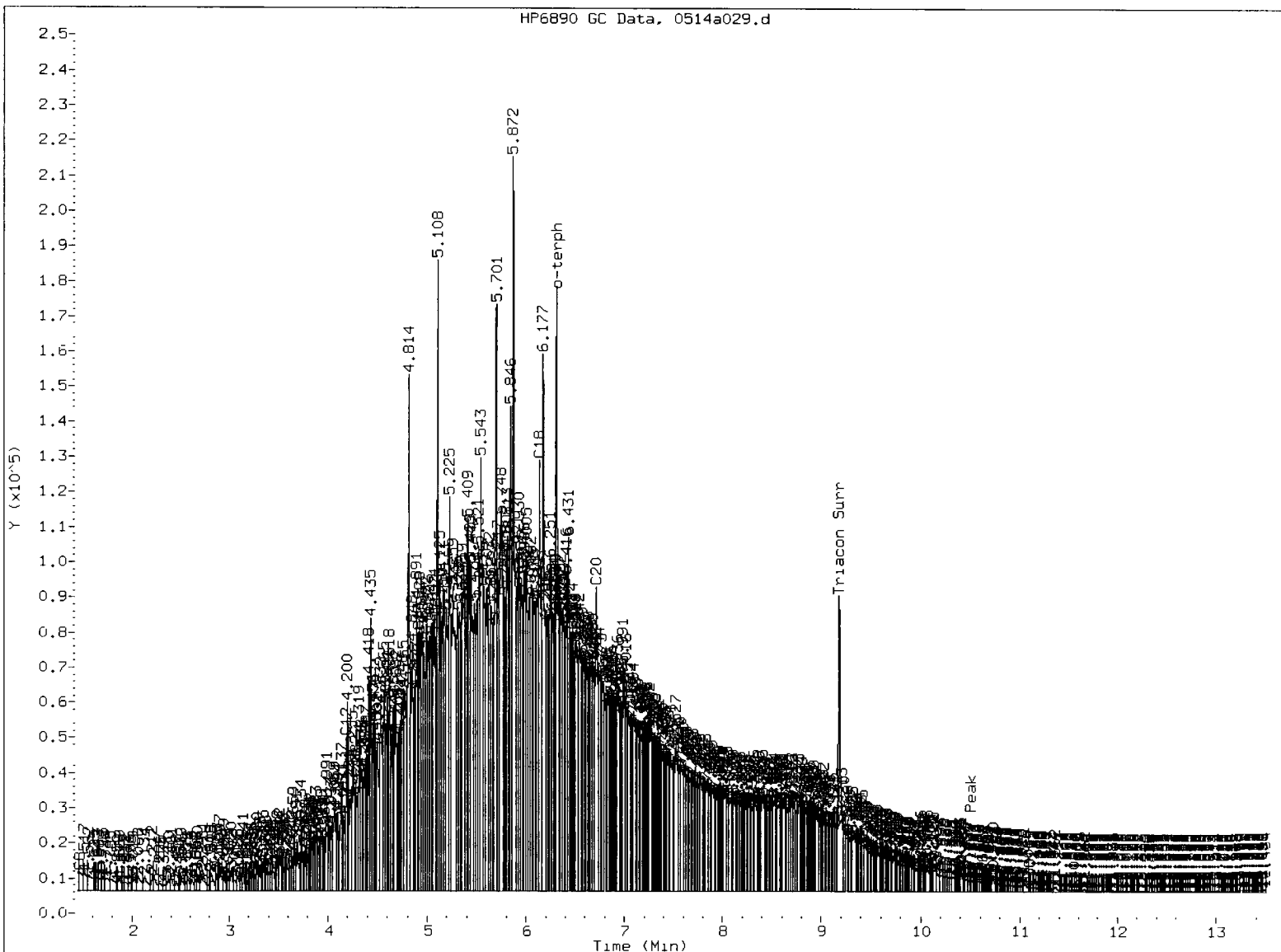
Data File: /chem3/fid4a.i/20120514.b/0514a029.d
Date: 14-May-2012 17:28
Client ID: CNSB-14-12-14-0 MSD
Sample Info: UT77EMSD,10

Column phase: RTX-1

Instrument: fid4a.1
Operator: KH
Column diameter: 0.25

/chem3/fid4a.i/20120514.b/0514a029.d





MANUAL INTEGRATION


- Baseline correction
- 2. Poor chromatography
- 3. Peak not found
- 4. Totals calculation
- 5. Other _____

Analyst: MH

Date: 5/15/12

SAMPLE RESULTS-CONVENTIONALS
UT77-AECOM



Matrix: Soil
Data Release Authorized: 
Reported: 05/17/12

Project: Central Waterfront
Event: NA
Date Sampled: 05/07/12
Date Received: 05/09/12


Client ID: CWSB-13-14.0-14.5-0512
ARI ID: 12-8459 UT77A

Analyte	Date	Method	Units	RL	Sample
Total Solids	05/09/12 050912#1	SM2540B	Percent	0.01	82.30
Total Organic Carbon	05/16/12 051612#1	Plumb,1981	Percent	0.020	0.500

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
UT77-AECOM



Matrix: Soil
Data Release Authorized: 
Reported: 05/17/12

Project: Central Waterfront
Event: NA
Date Sampled: 05/07/12
Date Received: 05/09/12


Client ID: CWSB-14-12-14-0512
ARI ID: 12-8463 UT77E

Analyte	Date	Method	Units	RL	Sample
Total Solids	05/09/12 050912#1	SM2540B	Percent	0.01	81.90
Total Organic Carbon	05/15/12 051512#1	Plumb,1981	Percent	0.020	0.532

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
UT77-AECOM



Matrix: Soil
Data Release Authorized: 
Reported: 05/17/12

Project: Central Waterfront
Event: NA
Date Sampled: 05/07/12
Date Received: 05/09/12


Client ID: CWSB-14-25-27-0512
ARI ID: 12-8464 UT77F

Analyte	Date	Method	Units	RL	Sample
Total Solids	05/09/12 050912#1	SM2540B	Percent	0.01	75.50
Total Organic Carbon	05/15/12 051512#1	Plumb,1981	Percent	0.020	0.489

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
UT77-AECOM



Matrix: Soil
Data Release Authorized: 
Reported: 05/17/12

Project: Central Waterfront
Event: NA
Date Sampled: 05/07/12
Date Received: 05/09/12

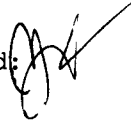
Client ID: CWSB-14-29-30-0512
ARI ID: 12-8465 UT77G

Analyte	Date	Method	Units	RL	Sample
Total Solids	05/09/12 050912#1	SM2540B	Percent	0.01	78.10
Total Organic Carbon	05/16/12 051612#1	Plumb,1981	Percent	0.020	0.383

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
UT77-AECOM



Matrix: Soil
Data Release Authorized: 
Reported: 05/17/12

Project: Central Waterfront
Event: NA
Date Sampled: 05/07/12
Date Received: 05/09/12


Client ID: CWSB-15-18-20-0512
ARI ID: 12-8468 UT77J

Analyte	Date	Method	Units	RL	Sample
Total Solids	05/09/12 050912#1	SM2540B	Percent	0.01	78.60
Total Organic Carbon	05/16/12 051612#1	Plumb,1981	Percent	0.020	0.801

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
UT77-AECOM



Matrix: Soil
Data Release Authorized: 
Reported: 05/17/12

Project: Central Waterfront
Event: NA
Date Sampled: 05/07/12
Date Received: 05/09/12


Client ID: CWSB-16-8-10-0512
ARI ID: 12-8470 UT77L

Analyte	Date	Method	Units	RL	Sample
Total Solids	05/09/12 050912#1	SM2540B	Percent	0.01	87.00
Total Organic Carbon	05/16/12 051612#1	Plumb,1981	Percent	0.020	0.794

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
UT77-AECOM



Matrix: Soil
Data Release Authorized: 
Reported: 05/17/12

Project: Central Waterfront
Event: NA
Date Sampled: 05/07/12
Date Received: 05/09/12

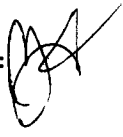
Client ID: CWSB-16-13-15-0512
ARI ID: 12-8471 UT77M

Analyte	Date	Method	Units	RL	Sample
Total Solids	05/09/12 050912#1	SM2540B	Percent	0.01	74.70
Total Organic Carbon	05/16/12 051612#1	Plumb,1981	Percent	0.020	0.405

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
UT77-AECOM



Matrix: Soil
Data Release Authorized: 
Reported: 05/17/12

Project: Central Waterfront
Event: NA
Date Sampled: 05/08/12
Date Received: 05/09/12


Client ID: CWSB-17-6-8-0512
ARI ID: 12-8474 UT77P

Analyte	Date	Method	Units	RL	Sample
Total Solids	05/09/12 050912#1	SM2540B	Percent	0.01	86.80
Total Organic Carbon	05/16/12 051612#1	Plumb,1981	Percent	0.020	3.49

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
UT77-AECOM



Matrix: Soil
Data Release Authorized: 
Reported: 05/17/12

Project: Central Waterfront
Event: NA
Date Sampled: 05/08/12
Date Received: 05/09/12


Client ID: CWSB-17-23-25-0512
ARI ID: 12-8475 UT77Q

Analyte	Date	Method	Units	RL	Sample
Total Solids	05/09/12 050912#1	SM2540B	Percent	0.01	77.90
Total Organic Carbon	05/16/12 051612#1	Plumb,1981	Percent	0.020	0.549

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
UT77-AECOM



Matrix: Soil
Data Release Authorized: 
Reported: 05/17/12

Project: Central Waterfront
Event: NA
Date Sampled: 05/08/12
Date Received: 05/09/12

Client ID: CWSB-17-28-30-0512
ARI ID: 12-8476 UT77R

Analyte	Date	Method	Units	RL	Sample
Total Solids	05/09/12 050912#1	SM2540B	Percent	0.01	79.00
Total Organic Carbon	05/16/12 051612#1	Plumb,1981	Percent	0.020	0.265

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
UT77-AECOM



Matrix: Soil
Data Release Authorized:
Reported: 05/17/12

A handwritten signature in black ink, appearing to be a stylized 'A' or similar character.

Project: Central Waterfront
Event: NA
Date Sampled: 05/08/12
Date Received: 05/09/12


Client ID: CWSB-170-23-25-0512
ARI ID: 12-8477 UT77S

Analyte	Date	Method	Units	RL	Sample
Total Solids	05/09/12 050912#1	SM2540B	Percent	0.01	78.50
Total Organic Carbon	05/16/12 051612#1	Plumb,1981	Percent	0.020	0.393

RL Analytical reporting limit
U Undetected at reported detection limit

METHOD BLANK RESULTS-CONVENTIONALS
UT77-AECOM




Matrix: Soil
Data Release Authorized: 
Reported: 05/17/12

Project: Central Waterfront
Event: NA
Date Sampled: NA
Date Received: NA

Analyte	Date	Units	Blank
Total Solids	05/09/12	Percent	< 0.01 U
Total Organic Carbon	05/15/12 05/16/12	Percent	< 0.020 U < 0.020 U

LAB CONTROL RESULTS-CONVENTIONALS
UT77-AECOM




Matrix: Soil
Data Release Authorized: 
Reported: 05/17/12

Project: Central Waterfront
Event: NA
Date Sampled: NA
Date Received: NA

Analyte/Method	QC ID	Date	Units	LCS	Spike Added	Recovery
Total Organic Carbon	ICVL	05/15/12	Percent	0.098	0.100	98.0%
Plumb, 1981	ICVL	05/16/12		0.099	0.100	99.0%

STANDARD REFERENCE RESULTS-CONVENTIONALS
UT77-AECOM




Matrix: Soil
Data Release Authorized: 
Reported: 05/17/12

Project: Central Waterfront
Event: NA
Date Sampled: NA
Date Received: NA

Analyte/SRM ID	Date	Units	SRM	True Value	Recovery
Total Organic Carbon	05/15/12	Percent	2.63	2.99	88.0%
NIST 1941B	05/16/12		2.80	2.99	93.6%

REPLICATE RESULTS-CONVENTIONALS
UT77-AECOM



Matrix: Soil
Data Release Authorized: 
Reported: 05/17/12

Project: Central Waterfront
Event: NA
Date Sampled: 05/07/12
Date Received: 05/09/12

Analyte	Date	Units	Sample	Replicate (s)	RPD/RSD
ARI ID: UT77A Client ID: CWSB-13-14.0-14.5-0512					
Total Solids	05/09/12	Percent	82.30	80.90 81.90	0.9%
Total Organic Carbon	05/16/12	Percent	0.500	0.468 0.423	8.3%

MS/MSD RESULTS-CONVENTIONALS
UT77-AECOM



Matrix: Soil
Data Release Authorized
Reported: 05/17/12

A handwritten signature in black ink, appearing to be a stylized name, located to the right of the matrix information.

Project: Central Waterfront
Event: NA
Date Sampled: 05/07/12
Date Received: 05/09/12

Analyte	Date	Units	Sample	Spike	Spike Added	Recovery
ARI ID: UT77A Client ID: CWSB-13-14.0-14.5-0512						
Total Organic Carbon	05/16/12	Percent	0.500	1.32	0.745	110.0%



Analytical Resources, Incorporated
Analytical Chemists and Consultants

22 May 2012

Jason Palmer
AECOM, Inc.
710 2nd Avenue
Suite 1000
Seattle, WA 98104

RE: Client Project: Central Waterfront
ARI Job No.: UT78

Dear Jason:

Please find enclosed the original chain of custody records and the final results for samples from the project referenced above. Analytical Resources, Inc accepted twenty soil samples on May 9, 2011. One sample was placed on hold as instructed. The remaining samples were analyzed for BETX, NWTPH-G, VPH, SVOAs, NWTPH-Dx, EPH and TOC as requested.

The percent recoveries for the surrogate, bromobenzene, were high following the initial NWTPH-G analyses of samples CBA-SB-1-1.5-2.5-0512, CBA-SB-2-0.5-2.5-0512 and CBA-SB-20-0.5-2.5-0512. This was due to co-elution with an interference. Sample CBA-SB-1-1.5-2.5-0512 was diluted and re-analyzed. The percent recoveries for all surrogates were within established QC limits for the dilution. The results for both analyses have been submitted for this sample.

Several samples were re-analyzed for NWTPH-G due to suspected carryover from previous samples. The results for the re-analyses only have been submitted.

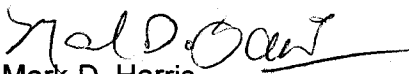
The method blank was re-analyzed for VPH due to suspected carryover from a previous sample. The results for the re-analysis only have been submitted.

The remaining analyses proceeded without incident of note.

A copy of these reports and all raw data will be kept on file at ARI. Should you have any questions regarding these results, please feel free to call me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.


Mark D. Harris
Project Manager
206/695-6210
<markh@arilabs.com>

Enclosures
cc: file UT78
MDH/mdh

Chain of Custody Record & Laboratory Analysis Request

Analytical Resources, Incorporated
 Analytical Chemists and Consultants
 4611 South 134th Place, Suite 100
 Tukwila, WA 98168
 206-695-6200 206-695-6201 (fax)



Page: 3 of 4
 Date: 5/8/12 Ice Present? Y
 No. of Coolers: 4 Cooler Temps: 3.6, 0.9, 1.6, 1.2

ARI Assigned Number: UT78 Turn-around Requested: Standard TAT
 ARI Client Company: ARECOM Phone: 206 424 8349
 Client Contact: Jason Palmer
 Client Project Name: Central Waterfront
 Client Project #: _____
 Samplers: _____

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested		Notes/Comments
					NMTPH-D	NMTPH-G	
CBA-SB-1-15-25-0512	5/8/12	1115	SO	5	X	X	
CBA-SB-1-3-5-0512		1130	SO	5	X	X	
CBA-SB-2-0-5-2.5		1145	SO	5	X	X	Archive TOC
CBA-SB-3-13-0512		1200	SO	5	X	X	
CBA-SB-4-0-5-25-0512		1340	SO	5	X	X	
CBA-SB-4-3-5-0512		1348	SO	5	X	X	
CBA-SB-5-3-5-0512		1415	SO	5	X	X	Archive TOC
CBA-SB-6-0-2-0512		1425	SO	5	X	X	Archive TOC
CBA-SB-20-0-5-2.5-0512		1045	SO	5	X	X	Archive TOC
CBA-SB-50-3-5-0512		1315	SO	5	X	X	Archive TOC

Relinquished by: _____ (Signature)
 Printed Name: Renee Knecht
 Company: ARECOM
 Date & Time: 5/9/12 1015

Received by: _____ (Signature)
 Printed Name: Jennifer Nilka
 Company: ARI
 Date & Time: 5/9/12 1015

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

UT78: 0000N

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: **UT78** Turn-around Requested: **Standard**

ARI Client Company: **AECOM** Phone: **206.624.9349**

Client Contact: **Juon Palmer**

Client Project Name: **Central Waterfront**

Client Project #: _____

Samplers: _____

Page: **4** of **4**

Date: **5/8/12** Ice Present? **Y**

No. of Coolers: **4** Cooler Temps: **58.09, 1.4, 1.2**

Analytical Resources, Incorporated
 Analytical Chemists and Consultants
 4611 South 134th Place, Suite 100
 Tukwila, WA 98168
 206-695-6200 206-695-6201 (fax)



Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested				Notes/Comments	
					NUTR-DX	NUTR-G	TOC	VPH		SIM BTEX
CBA-SB-0-3-5-0512	5/8/12	1455	SO	5	X	X	X	X		
CBA-SB-7-3-5-0512	1515		SO	2	X	X				Do NOT analyze
CBA-SB-7-1-3-0512	1525		SO	5	X	X				
CBA-SB-8-3-5-0512	1600		SO	5	X	X				
CBA-SB-8-1-3-0512	1615		SO	12	X	X	X	X		
CWMW-18-7-9-0512	1700		SO	5	X	X				Per this lab order (7-8) changed to 7-9
CWMW-18-13-15-0512	1730		SO	5	X	X				
CBA-SB-80-3-5-0512	1500		SO	5	X	X				

Comments/Special Instructions

Relinquished by: (Signature) *[Signature]* Received by: (Signature) *[Signature]*

Printed Name: **Renee Knecht** Printed Name: **Jennifer Millsap**

Company: **AECOM** Company: **ARI**

Date & Time: **5/4/12 1015** Date & Time: **5/9/12 1015**

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.



Cooler Receipt Form

ARI Client: AECOM

Project Name: Central Waterfront

COC No(s): _____ (NA)

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: UT78

Tracking No: _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES NO

Were custody papers included with the cooler? YES NO

Were custody papers properly filled out (ink, signed, etc.) YES NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry) 3.8 0.9 1.6 1.2

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 90877952

Cooler Accepted by: JM Date: 5/9/12 Time: 1015

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES NO

What kind of packing material was used? Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____

Was sufficient ice used (if appropriate)? NA YES NO

Were all bottles sealed in individual plastic bags? YES NO

Did all bottles arrive in good condition (unbroken)? YES NO

Were all bottle labels complete and legible? YES NO

Did the number of containers listed on COC match with the number of containers received? YES NO

Did all bottle labels and tags agree with custody papers? YES NO

Were all bottles used correct for the requested analyses? YES NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)... NA YES NO

Were all VOC vials free of air bubbles? NA YES NO

Was sufficient amount of sample sent in each bottle? YES NO

Date VOC Trip Blank was made at ARI: NA YES NO

Was Sample Split by ARI: NA YES NO Equipment: _____ Split by: _____

Samples Logged by: JM Date: 5/9/12 Time: 1330

**** Notify Project Manager of discrepancies or concerns ****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC
<u>CBASB-2-0.5-2.5-0512</u>	<u>CBASB-2-0.5-2.5</u>		

Additional Notes, Discrepancies, & Resolutions:

2 samples were received that were not on COC - CBASB-23-5-0512 5/8/12 @ 1200

Trip Blank logged with UT77

CBATP-7-0-1-0512 5/9/12 @ 1505

By: JM Date: 5/9/12

			Small → "sm"
			Peabubbles → "pb"
			Large → "lg"
			Headspace → "hs"

0016F
3/2/10

On all samples there was no dash between CBASB like on the COC, logged IDs from ~~the~~ COC

Revision 014

Sample Containers for CBASB-3-1-3-0512 have a collection time of 1230, COC say 1200.

UT78: 00004

Subject: RE: Central Waterfront
From: "Knecht, Renee" <Renee.Knecht@aecom.com>
Date: 5/9/2012 1:57 PM
To: Mark Harris <markh@arilabs.com>, "Palmer, Jason" <Jason.Palmer@aecom.com>

Apologies Mark-

CBA-SB-2-3-5-0512 - analyze for NWTPH-Dx, NWTPH-G and archive TOC
CBA-TP-7-0-1-0512 - date 5/7/12.- at 1505 - analyze for NWTPH-Dx, NW-TPH-G and TOC
CBA-SB-3-1-3-0512 use the time on the bottles.

Please let me know if you have any other questions or concerns.

-----Original Message-----

From: Mark Harris [<mailto:markh@arilabs.com>]
Sent: Wednesday, May 09, 2012 1:39 PM
To: Palmer, Jason; Knecht, Renee
Subject: Central Waterfront

Jason/Renee:

Just a couple of inconsistencies to clear up:

- 1) Please read the Cooler Receipt. Sets of jars were received for two samples not listed on any COC. Should they be logged or archived? If logged, for what tests?
- 2) For the fourth sample on page 3 of 4, there is a discrepancy in the time of collection. See the note on the bottom of the page.

Mark H.

--

Mark Harris
Project Manager
Analytical Resources, Inc.
206/695-6210
markh@arilabs.com

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If you have received this correspondence in error, please notify sender immediately. Thank you.

Sample ID Cross Reference Report



ARI Job No: UT78
Client: AECOM
Project Event: N/A
Project Name: Central Waterfront

Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1. CBA-SB-1-1.5-2.5-0512	UT78A	12-8487	Soil	05/08/12 11:15	05/09/12 10:15
2. CBA-SB-1-3-5-0512	UT78B	12-8488	Soil	05/08/12 11:30	05/09/12 10:15
3. CBA-SB-2-0.5-2.5-0512	UT78C	12-8489	Soil	05/08/12 11:45	05/09/12 10:15
4. CBA-SB-3-1-3-0512	UT78D	12-8490	Soil	05/08/12 12:30	05/09/12 10:15
5. CBA-SB-4-0.5-2.5-0512	UT78E	12-8491	Soil	05/08/12 13:40	05/09/12 10:15
6. CBA-SB-4-3-5-0512	UT78F	12-8492	Soil	05/08/12 13:48	05/09/12 10:15
7. CBA-SB-5-3.5-0512	UT78G	12-8493	Soil	05/08/12 14:15	05/09/12 10:15
8. CBA-SB-5-0-2-0512	UT78H	12-8494	Soil	05/08/12 14:25	05/09/12 10:15
9. CBA-SB-20-0.5-2.5-0512	UT78I	12-8495	Soil	05/08/12 10:45	05/09/12 10:15
10. CBA-SB-50-3-5-0512	UT78J	12-8496	Soil	05/08/12 13:15	05/09/12 10:15
11. CBA-SB-6-3-5-0512	UT78K	12-8501	Soil	05/08/12 14:55	05/09/12 10:15
12. CBA-SB-7-1-3-0512	UT78L	12-8502	Soil	05/08/12 15:25	05/09/12 10:15
13. CBA-SB-8-3-5-0512	UT78M	12-8503	Soil	05/08/12 16:00	05/09/12 10:15
14. CBA-SB-8-1-3-0512	UT78N	12-8504	Soil	05/08/12 16:00	05/09/12 10:15
15. CWMW-18-7-9-0512	UT78O	12-8505	Soil	05/08/12 17:00	05/09/12 10:15
16. CWMW-18-13-15-0512	UT78P	12-8506	Soil	05/08/12 17:30	05/09/12 10:15
17. CBA-SB-80-3-5-0512	UT78Q	12-8507	Soil	05/08/12 15:00	05/09/12 10:15
18. CBA-TP-7-0-1-0512	UT78R	12-8508	Soil	05/07/12 15:05	05/09/12 10:15
19. CBA-SB-2-3-5-0512	UT78S	12-8509	Soil	05/08/12 12:00	05/09/12 10:15
20. CBA-SB-7-3-5-0512	UT78T	12-8510	Soil	05/08/12 15:15	05/09/12 10:15
21. CBA-SB-8-1-3-0512	UT78U	12-8511	Soil	05/08/12 16:15	05/09/12 10:15



Data Reporting Qualifiers

Effective 2/14/2011

Inorganic Data

- U Indicates that the target analyte was not detected at the reported concentration
- * Duplicate RPD is not within established control limits
- B Reported value is less than the CRDL but \geq the Reporting Limit
- N Matrix Spike recovery not within established control limits
- NA Not Applicable, analyte not spiked
- H The natural concentration of the spiked element is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible
- L Analyte concentration is ≤ 5 times the Reporting Limit and the replicate control limit defaults to ± 1 RL instead of the normal 20% RPD

Organic Data

- U Indicates that the target analyte was not detected at the reported concentration
- * Flagged value is not within established control limits
- B Analyte detected in an associated Method Blank at a concentration greater than one-half of ARI's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.
- J Estimated concentration when the value is less than ARI's established reporting limits
- D The spiked compound was not detected due to sample extract dilution
- E Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
- Q Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria ($< 20\%$ RSD, $< 20\%$ Drift or minimum RRF).



- S Indicates an analyte response that has saturated the detector. The calculated concentration is not valid; a dilution is required to obtain valid quantification of the analyte
- NA The flagged analyte was not analyzed for
- NR Spiked compound recovery is not reported due to chromatographic interference
- NS The flagged analyte was not spiked into the sample
- M Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters. This flag is used only for GC-MS analyses
- M2 The sample contains PCB congeners that do not match any standard Aroclor pattern. The PCBs are identified and quantified as the Aroclor whose pattern most closely matches that of the sample. The reported value is an estimate.
- N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification"
- Y The analyte is not detected at or above the reported concentration. The reporting limit is raised due to chromatographic interference. The Y flag is equivalent to the U flag with a raised reporting limit.
- EMPC Estimated Maximum Possible Concentration (EMPC) defined in EPA Statement of Work DLM02.2 as a value "calculated for 2,3,7,8-substituted isomers for which the quantitation and /or confirmation ion(s) has signal to noise in excess of 2.5, but does not meet identification criteria"
(Dioxin/Furan analysis only)
- C The analyte was positively identified on only one of two chromatographic columns. Chromatographic interference prevented a positive identification on the second column
- P The analyte was detected on both chromatographic columns but the quantified values differ by $\geq 40\%$ RPD with no obvious chromatographic interference
- X Analyte signal includes interference from polychlorinated diphenyl ethers.
(Dioxin/Furan analysis only)
- Z Analyte signal includes interference from the sample matrix or perfluorokerosene ions. **(Dioxin/Furan analysis only)**



Geotechnical Data

- A The total of all fines fractions. This flag is used to report total fines when only sieve analysis is requested and balances total grain size with sample weight.
- F Samples were frozen prior to particle size determination
- SM Sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that interferes with the sieving process and/or moisture content, porosity and saturation calculations
- SS Sample did not contain the proportion of "fines" required to perform the pipette portion of the grain size analysis
- W Weight of sample in some pipette aliquots was below the level required for accurate weighting

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C-SIM Sample ID: CBA-SB-8-1-3-0512

Page 1 of 1

SAMPLE

Lab Sample ID: UT78N

QC Report No: UT78-AECOM

LIMS ID: 12-8504

Project: Central Waterfront

Matrix: Soil

Data Release Authorized: *AS*

Date Sampled: 05/08/12

Reported: 05/21/12

Date Received: 05/09/12

Instrument/Analyst: NT7/PKC

Sample Amount: 114 mg-dry-wt

Date Analyzed: 05/21/12 14:26

Purge Volume: 10.0 mL

Moisture: 20.5%

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	1.8	22	
108-88-3	Toluene	1.8	68	
100-41-4	Ethylbenzene	1.8	21	
179601-23-1	m,p-Xylene	3.5	60	
95-47-6	o-Xylene	1.8	25	

Reported in µg/kg (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	97.7%
d8-Toluene	103%
Bromofluorobenzene	102%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C-SIM Sample ID: MB-052112

Page 1 of 1

METHOD BLANK


Lab Sample ID: MB-052112

QC Report No: UT78-AECOM

LIMS ID: 12-8504

Project: Central Waterfront

Matrix: Soil

Data Release Authorized: 

Date Sampled: NA

Reported: 05/21/12

Date Received: NA

Instrument/Analyst: NT7/PKC

Sample Amount: 200 mg-dry-wt

Date Analyzed: 05/21/12 13:50

Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	1.0	< 1.0	U
108-88-3	Toluene	1.0	< 1.0	U
100-41-4	Ethylbenzene	1.0	< 1.0	U
179601-23-1	m,p-Xylene	2.0	< 2.0	U
95-47-6	o-Xylene	1.0	< 1.0	U

Reported in µg/kg (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	105%
d8-Toluene	99.6%
Bromofluorobenzene	92.0%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C-SIM Sample ID: LCS-052112

Page 1 of 1

LAB CONTROL SAMPLE

Lab Sample ID: LCS-052112

QC Report No: UT78-AECOM

LIMS ID: 12-8504

Project: Central Waterfront

Matrix: Soil

Data Release Authorized: *AS*

Date Sampled: NA

Reported: 05/21/12

Date Received: NA

Instrument/Analyst LCS: NT7/PKC

Sample Amount LCS: 200 mg-dry-wt

LCSD: NT7/PKC

LCSD: 200 mg-dry-wt

Date Analyzed LCS: 05/21/12 12:57

Purge Volume LCS: 10.0 mL

LCSD: 05/21/12 13:23

LCSD: 10.0 mL

Analyte	LCS	LCS		LCSD	LCSD		RPD
		Spike Added-LCS	Recovery		Spike Added-LCSD	Recovery	
Benzene	48.4	50.0	96.8%	48.6	50.0	97.2%	0.4%
Toluene	48.9	50.0	97.8%	49.3	50.0	98.6%	0.8%
Ethylbenzene	54.4	50.0	109%	54.3	50.0	109%	0.2%
m,p-Xylene	107	100	107%	108	100	108%	0.9%
o-Xylene	53.6	50.0	107%	53.8	50.0	108%	0.4%

Reported in µg/kg (ppb)

RPD calculated using sample concentrations per SW846.

SW8260-SIM SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: UT78-AECOM
Project: Central Waterfront

<u>Client ID</u>	<u>DCE</u>	<u>TOL</u>	<u>BFB</u>	<u>TOT OUT</u>
MB-052112	105%	99.6%	92.0%	0
LCS-052112	99.4%	104%	108%	0
LCSD-052112	101%	104%	106%	0
CBA-SB-8-1-3-0512	97.7%	103%	102%	0

	<u>LCS/MB LIMITS</u>	<u>QC LIMITS</u>
(DCE) = d4-1,2-Dichloroethane	(75-125)	(75-125)
(TOL) = d8-Toluene	(75-125)	(75-125)
(BFB) = Bromofluorobenzene	(30-160)	(30-160)

Prep Method: SW5030
Log Number Range: 12-8504 to 12-8504

ORGANICS ANALYSIS DATA SHEET

TPHG by Method NWTPHG

Matrix: Soil

QC Report No: UT78-AECOM

Project: Central Waterfront

Event: NA

Data Release Authorized: *mw*

Date Sampled: 05/08/12

Reported: 05/21/12

Date Received: 05/09/12

ARI ID	Client ID	Analysis Date	Basis	Range	Result
MB-051512 12-8487	Method Blank	05/15/12 PID2	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	< 5.0 U --- 95.7% 91.4%
UT78A 12-8487	CBA-SB-1-1.5-2.5-0512	05/15/12 PID2	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	630 E GRO 94.8% 163%
UT78A DL 12-8487	CBA-SB-1-1.5-2.5-0512	05/16/12 PID2	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	1200 GRO 102% 114%
MB-051612 12-8488	Method Blank	05/16/12 PID2	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	< 5.0 U --- 88.7% 97.4%
UT78B 12-8488	CBA-SB-1-3-5-0512	05/16/12 PID2	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	< 7.4 U --- 101% 95.9%
UT78C 12-8489	CBA-SB-2-0.5-2.5-0512	05/15/12 PID2	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	670 GRO 95.2% 141%
UT78D 12-8490	CBA-SB-3-1-3-0512	05/16/12 PID2	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	18 GRO 103% 99.9%
UT78E 12-8491	CBA-SB-4-0.5-2.5-0512	05/16/12 PID2	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	22 GRO 105% 103%
UT78F 12-8492	CBA-SB-4-3-5-0512	05/15/12 PID2	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	< 6.9 U --- 99.0% 94.5%
UT78G 12-8493	CBA-SB-5-3.5-0512	05/15/12 PID2	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	12 GRO 93.0% 96.5%

ORGANICS ANALYSIS DATA SHEET

TPHG by Method NWTPHG

Matrix: Soil

QC Report No: UT78-AECOM

Project: Central Waterfront

Event: NA

Data Release Authorized: *MW*

Date Sampled: 05/08/12

Reported: 05/21/12

Date Received: 05/09/12

ARI ID	Client ID	Analysis Date	Basis	Range	Result
UT78H 12-8494	CBA-SB-5-0-2-0512	05/15/12 PID2	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	< 6.4 U --- 89.7% 92.1%
UT78I 12-8495	CBA-SB-20-0.5-2.5-0512	05/15/12 PID2	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	540 GRO 95.1% 134%
UT78J 12-8496	CBA-SB-50-3-5-0512	05/16/12 PID2	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	< 6.2 U --- 104% 103%
UT78K 12-8501	CBA-SB-6-3-5-0512	05/15/12 PID2	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	< 6.8 U --- 88.5% 91.2%
UT78L 12-8502	CBA-SB-7-1-3-0512	05/15/12 PID2	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	11 GRO 92.1% 94.2%
UT78M 12-8503	CBA-SB-8-3-5-0512	05/15/12 PID2	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	63 GRO 88.1% 92.6%
UT78N 12-8504	CBA-SB-8-1-3-0512	05/16/12 PID2	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	28 GRO 89.6% 94.4%
UT78O 12-8505	CMMW-18-7-9-0512	05/16/12 PID2	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	630 GRO 92.1% 109%
UT78P 12-8506	CMMW-18-13-15-0512	05/16/12 PID2	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	< 7.1 U --- 103% 102%
UT78Q 12-8507	CBA-SB-80-3-5-0512	05/16/12 PID2	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	43 GRO 92.7% 99.3%

ORGANICS ANALYSIS DATA SHEET

TPHG by Method NWTPHG

Matrix: Soil

QC Report No: UT78-AECOM

Project: Central Waterfront

Event: NA

Data Release Authorized: *MM*

Date Sampled: 05/07/12

Reported: 05/21/12

Date Received: 05/09/12

ARI ID	Client ID	Analysis Date	Basis	Range	Result
UT78R 12-8508	CBA-TP-7-0-1-0512	05/16/12 PID2	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	< 6.3 U --- 89.6% 95.9%
UT78S 12-8509	CBA-SB-2-3-5-0512	05/16/12 PID2	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	19 GRO 89.5% 98.0%

Gasoline values reported in mg/kg (ppm)

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ORGANICS ANALYSIS DATA SHEET

TPHG by Method NWTPHG

Page 1 of 1

Sample ID: LCS-051512

LAB CONTROL SAMPLE

Lab Sample ID: LCS-051512

LIMS ID: 12-8487

Matrix: Soil

Data Release Authorized: *mw*

Reported: 05/21/12

QC Report No: UT78-AECOM

Project: Central Waterfront

Event: NA

Date Sampled: NA

Date Received: NA

Date Analyzed LCS: 05/15/12 16:10

LCSD: 05/15/12 16:38

Instrument/Analyst LCS: PID2/JLW

LCSD: PID2/JLW

Purge Volume: 5.0 mL

Sample Amount LCS: 100 mg-dry-wt

LCSD: 100 mg-dry-wt

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Gasoline Range Hydrocarbons	49.8	50.0	99.6%	56.7	50.0	113%	13.0%

Reported in mg/kg (ppm)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	83.0%	87.8%
Bromobenzene	81.3%	88.3%

ORGANICS ANALYSIS DATA SHEET

TPHG by Method NWTPHG

Page 1 of 1

Sample ID: LCS-051612

LAB CONTROL SAMPLE

Lab Sample ID: LCS-051612

LIMS ID: 12-8488

Matrix: Soil

Data Release Authorized: *mmw*

Reported: 05/21/12

QC Report No: UT78-AECOM

Project: Central Waterfront

Event: NA

Date Sampled: NA

Date Received: NA

Date Analyzed LCS: 05/16/12 11:17

LCSD: 05/16/12 11:45

Instrument/Analyst LCS: PID2/JLW

LCSD: PID2/JLW

Purge Volume: 5.0 mL

Sample Amount LCS: 100 mg-dry-wt

LCSD: 100 mg-dry-wt

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Gasoline Range Hydrocarbons	49.1	50.0	98.2%	54.7	50.0	109%	10.8%

Reported in mg/kg (ppm)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	87.2%	90.5%
Bromobenzene	89.4%	94.9%

ORGANICS ANALYSIS DATA SHEET

TPHG by Method NWTPHG

Page 1 of 1

Sample ID: CBA-SB-2-3-5-0512

MATRIX SPIKE

Lab Sample ID: UT78S

LIMS ID: 12-8509

Matrix: Soil

Data Release Authorized: *mmw*

Reported: 05/21/12

QC Report No: UT78-AECOM

Project: Central Waterfront

Event: NA

Date Sampled: 05/08/12

Date Received: 05/09/12

Date Analyzed MS: 05/16/12 03:26

MSD: 05/16/12 03:55

Instrument/Analyst MS: PID2/JLW

MSD: PID2/JLW

Purge Volume: 5.0 mL

Sample Amount MS: 78.8 mg-dry-wt

MSD: 78.8 mg-dry-wt

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
Gasoline Range Hydrocarbons	19.3	88.8	54.6	127%	87.6	54.6	125%	1.4%

Reported in mg/kg (ppm)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	MS	MSD
Trifluorotoluene	88.3%	94.8%
Bromobenzene	93.6%	93.6%

TPHG SOIL SURROGATE RECOVERY SUMMARY

ARI Job: UT78
Matrix: Soil

QC Report No: UT78-AECOM
Project: Central Waterfront
Event: NA

Client ID	BFB	TFT	BBZ	TOT	OUT
MB-051512	NA	95.7%	91.4%	0	0
LCS-051512	NA	83.0%	81.3%	0	0
LCSD-051512	NA	87.8%	88.3%	0	0
CBA-SB-1-1.5-2.5-0512	NA	94.8%	163%*	1	1
CBA-SB-1-1.5-2.5-0512 DL	NA	102%	114%	0	0
MB-051612	NA	88.7%	97.4%	0	0
LCS-051612	NA	87.2%	89.4%	0	0
LCSD-051612	NA	90.5%	94.9%	0	0
CBA-SB-1-3-5-0512	NA	101%	95.9%	0	0
CBA-SB-2-0.5-2.5-0512	NA	95.2%	141%*	1	1
CBA-SB-3-1-3-0512	NA	103%	99.9%	0	0
CBA-SB-4-0.5-2.5-0512	NA	105%	103%	0	0
CBA-SB-4-3-5-0512	NA	99.0%	94.5%	0	0
CBA-SB-5-3.5-0512	NA	93.0%	96.5%	0	0
CBA-SB-5-0-2-0512	NA	89.7%	92.1%	0	0
CBA-SB-20-0.5-2.5-0512	NA	95.1%	134%*	1	1
CBA-SB-50-3-5-0512	NA	104%	103%	0	0
CBA-SB-6-3-5-0512	NA	88.5%	91.2%	0	0
CBA-SB-7-1-3-0512	NA	92.1%	94.2%	0	0
CBA-SB-8-3-5-0512	NA	88.1%	92.6%	0	0
CBA-SB-8-1-3-0512	NA	89.6%	94.4%	0	0
CMMW-18-7-9-0512	NA	92.1%	109%	0	0
CMMW-18-13-15-0512	NA	103%	102%	0	0
CBA-SB-80-3-5-0512	NA	92.7%	99.3%	0	0
CBA-TP-7-0-1-0512	NA	89.6%	95.9%	0	0
CBA-SB-2-3-5-0512	NA	89.5%	98.0%	0	0
CBA-SB-2-3-5-0512 MS	NA	88.3%	93.6%	0	0
CBA-SB-2-3-5-0512 MSD	NA	94.8%	93.6%	0	0

	LCS/MB LIMITS	QC LIMITS
(BFB) = Bromofluorobenzene	(70-130)	(70-130)
(TFT) = Trifluorotoluene	(80-120)	(66-123)
(BBZ) = Bromobenzene	(80-120)	(62-130)

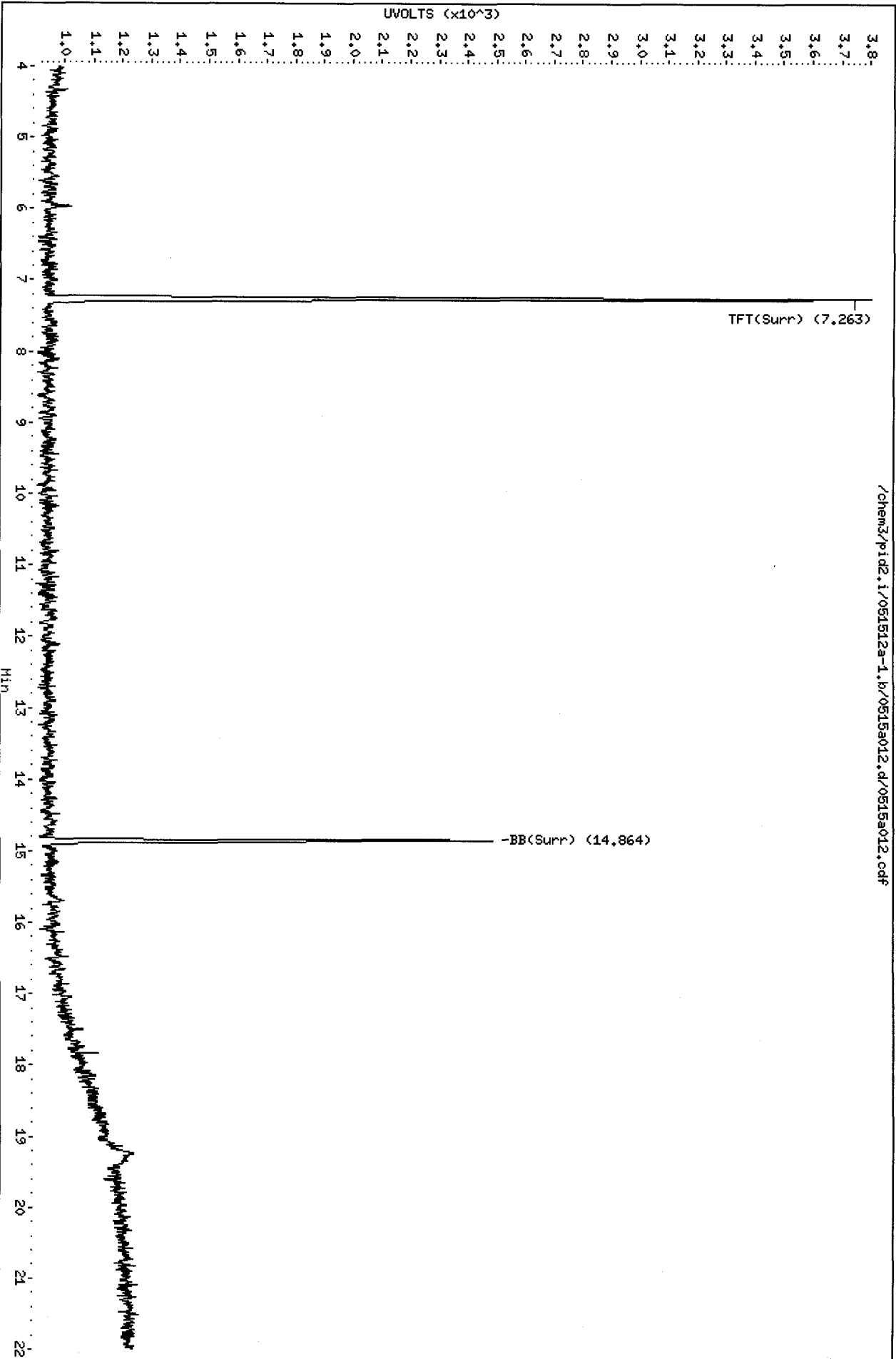
Log Number Range: 12-8487 to 12-8509

Data File: /chem3/pid2.i/051512a-1.b/0515a012.d
Date: 15-MAY-2012 17:06
Client ID:
Sample Info: HB0515

Instrument: pid2.i
Operator: JM
Column diameter: 0.18

Column phase: RTX 502-2 FID

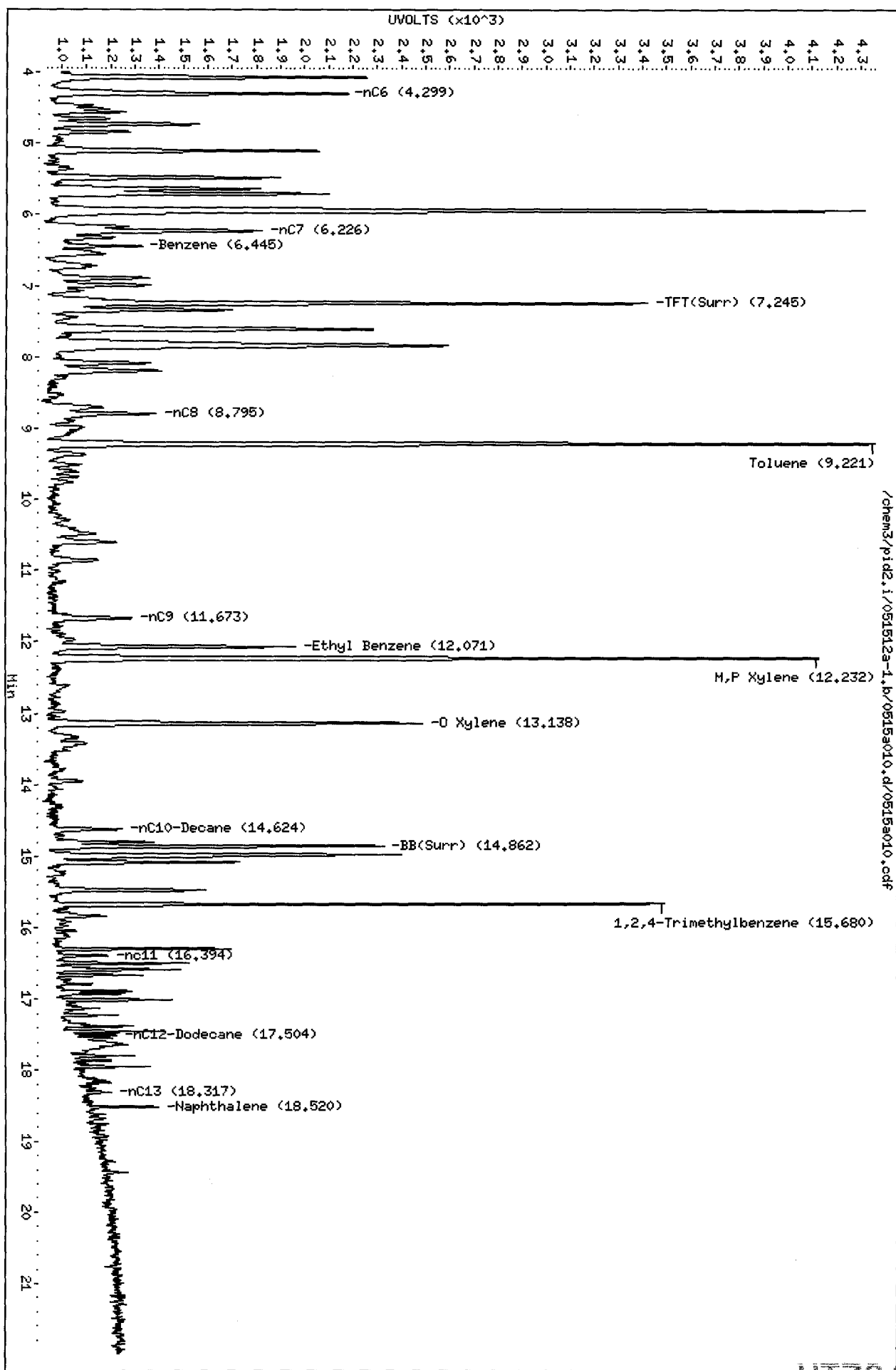
Page 1

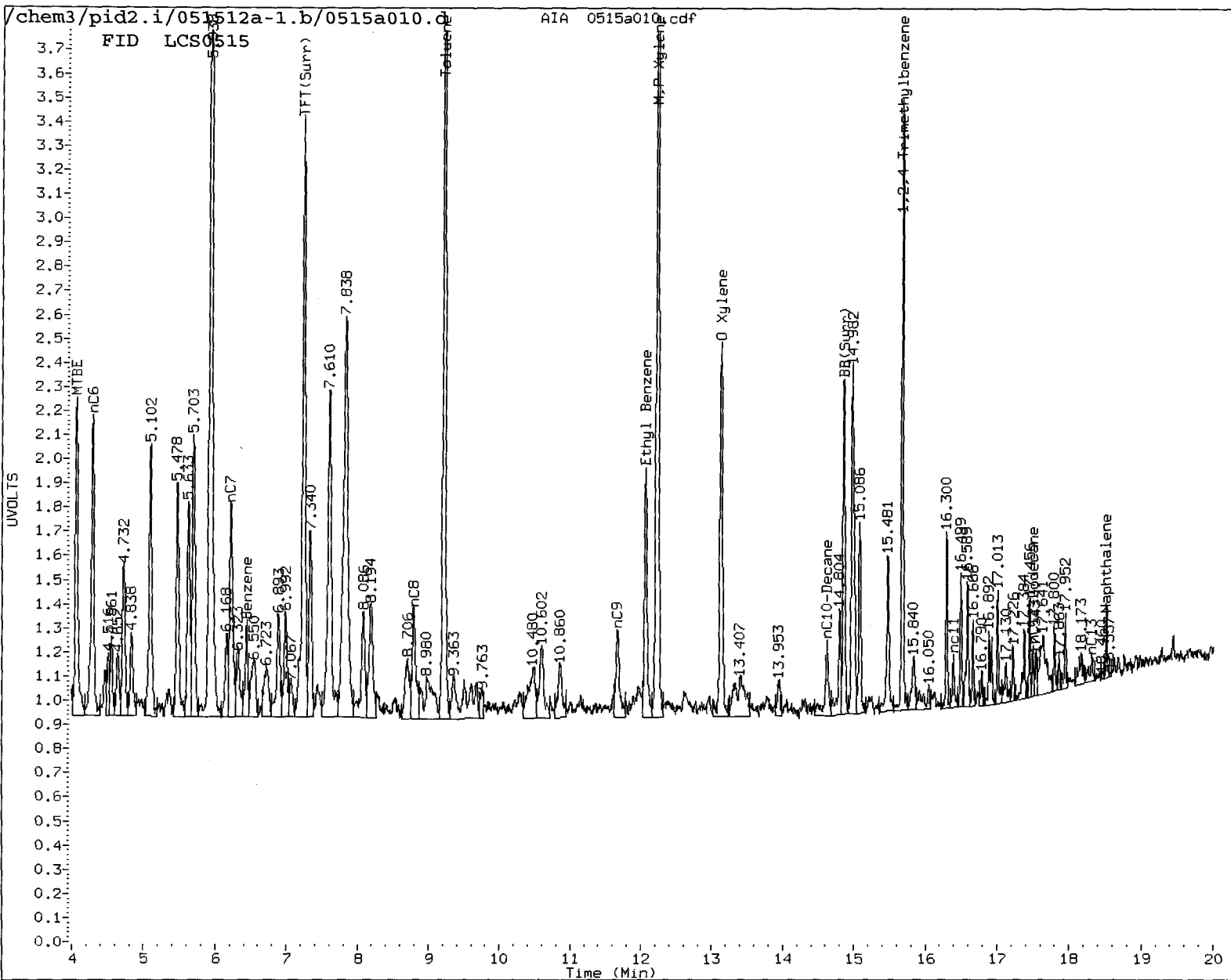


UT78 00021

Data File: /chem3/pid2.i/051512a-1.b/0515a010.d
Date: 15-May-2012 16:10
Client ID:
Sample Info: LCS0515
Column phase: RTX 502-2 FID

Instrument: pid2.i
Operator: JM
Column diameter: 0.18





MANUAL INTEGRATION

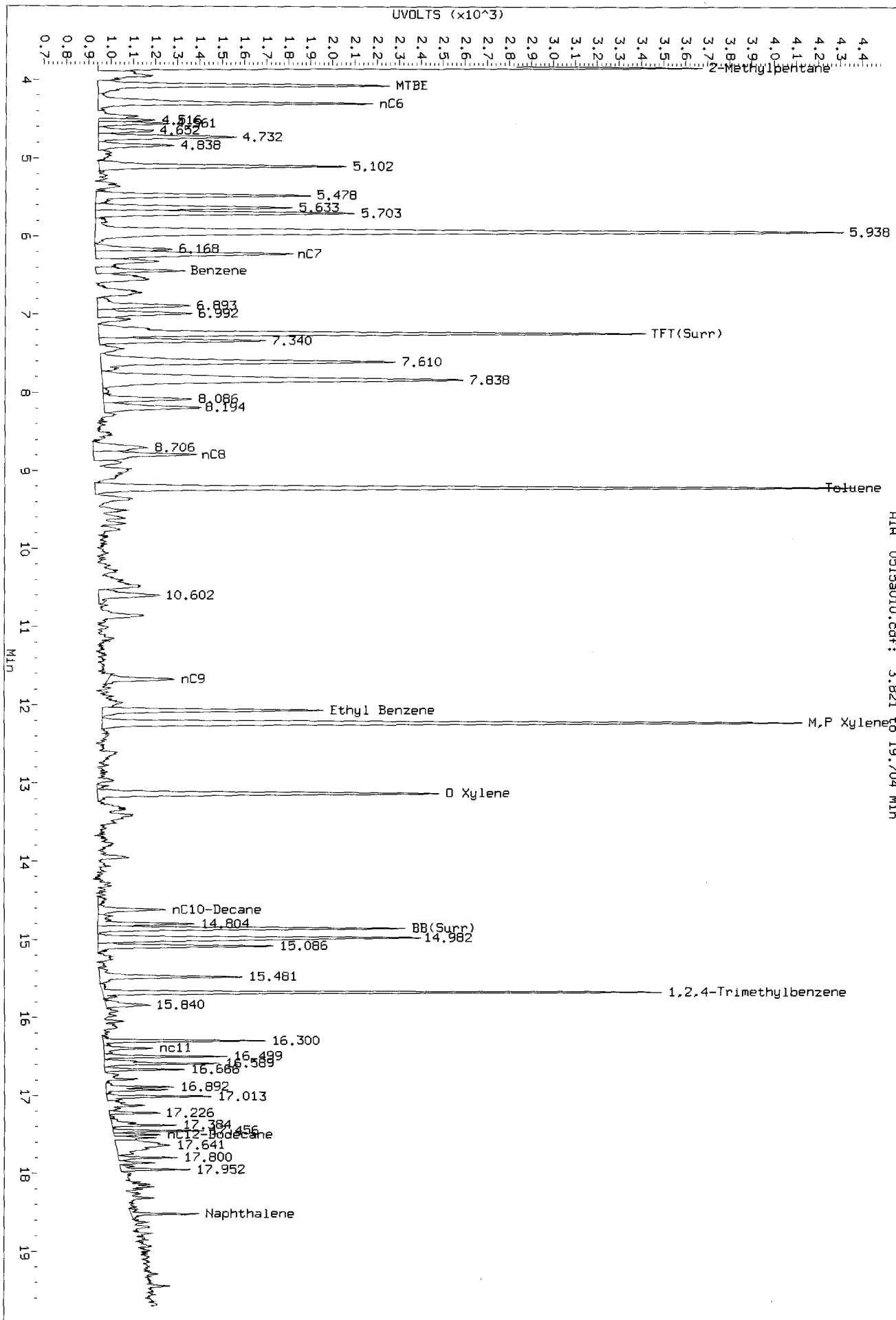
- ① Baseline correction
- ② Poor chromatography
- ③ Peak not found
- ④ Totals calculation

5. Other _____

Analyst: JW

Date: 5/18/12

Data File: /chem3/pid2.1/051512a-1.b/0515a010.d/0515a010.cdf
Injection Date: 15-MAY-2012 16:10
Instrument: pid2.1
Client Sample ID:



AIR 0515a010.cdf: 3.821 to 19.704 Min

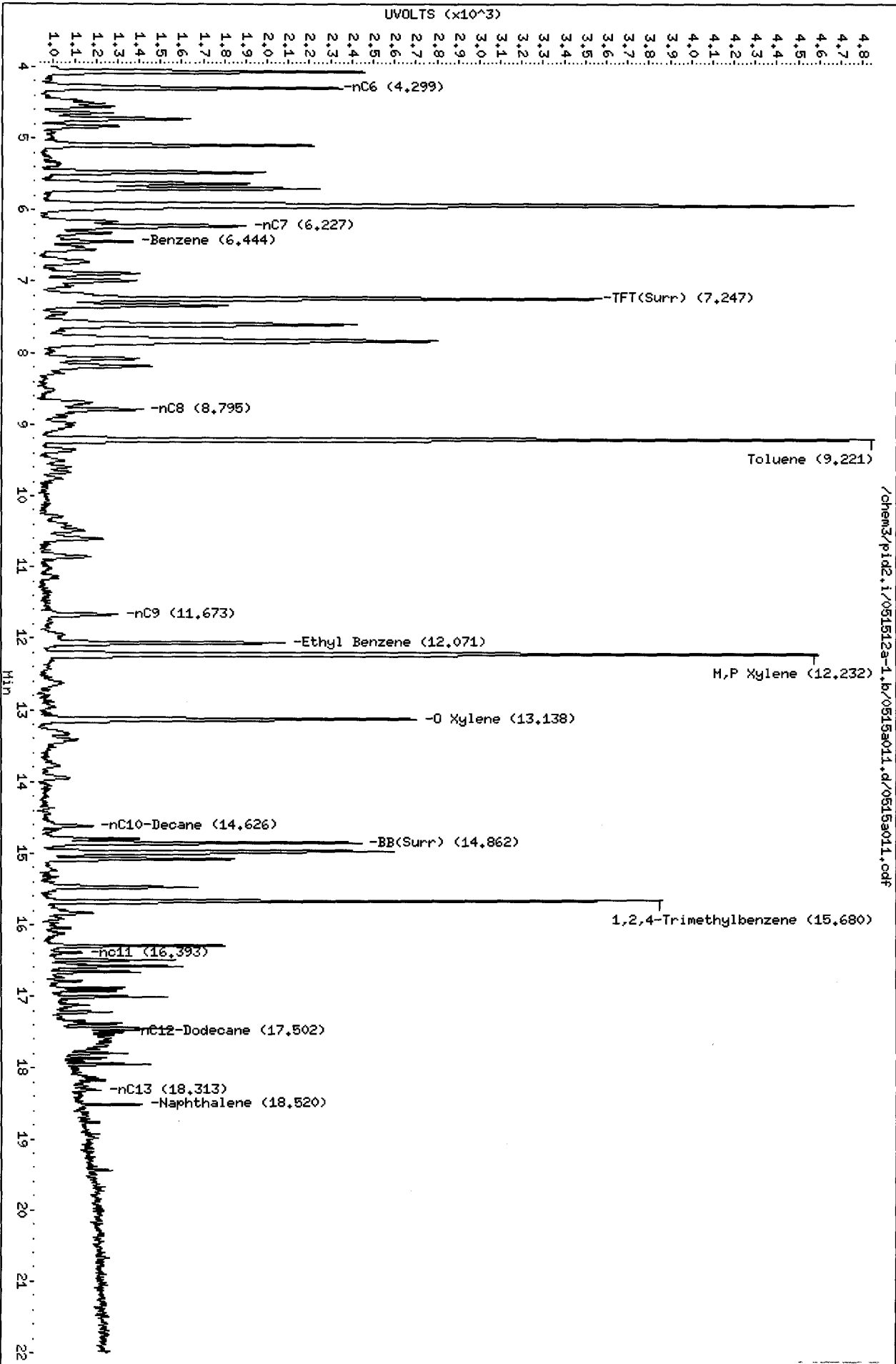
Before this shift

Data File: /chem3/pid2.i/051512a-1.b/0515a011.d
Date: 15-MAY-2012 16:38

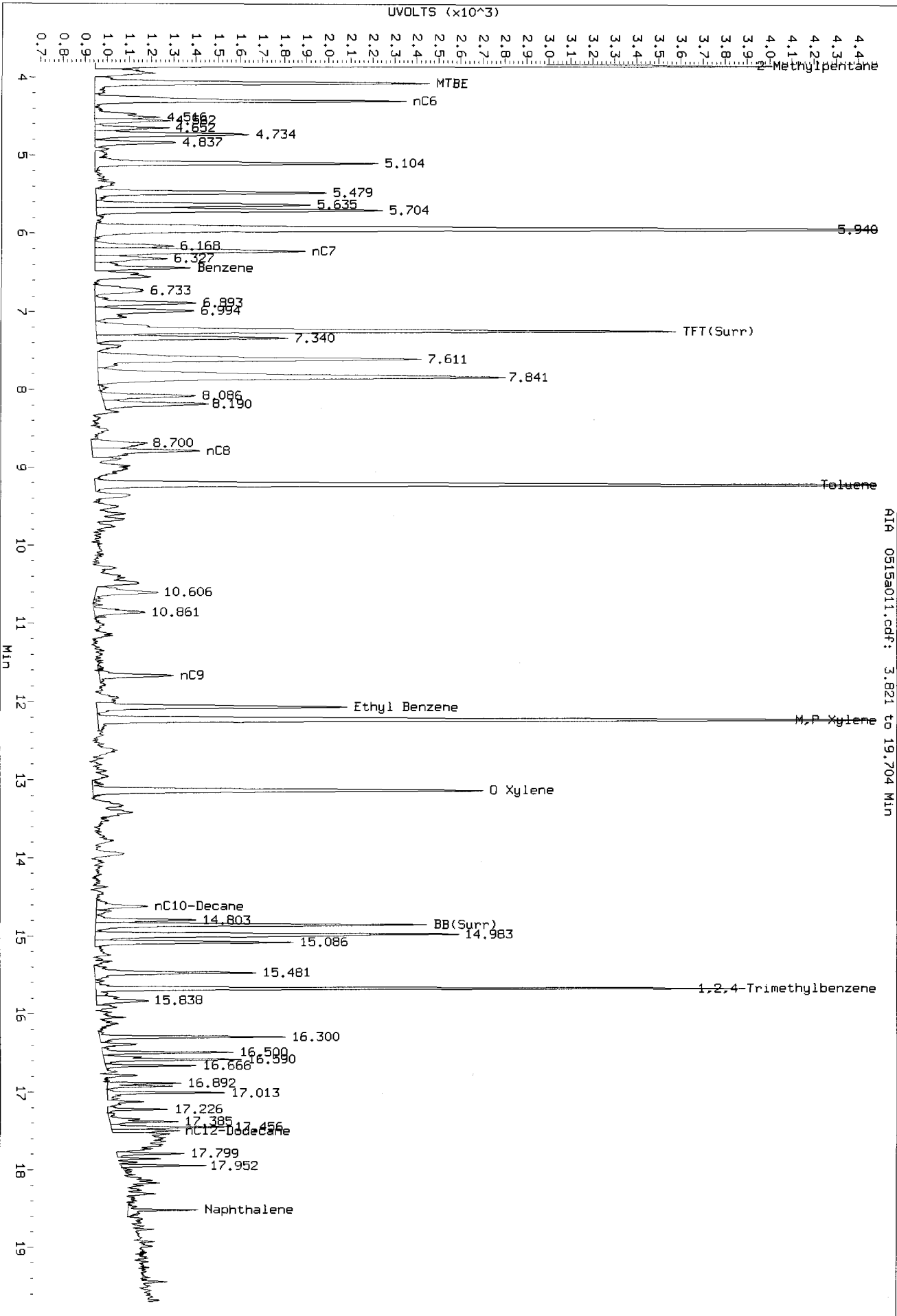
Client ID:
Sample Info: LCS0515

Column phase: RTX 502-2 FID

Instrument: pid2.i
Operator: JM
Column diameter: 0.18



Data File: /chem3/pid2.1/051512a-1.b/0515a011.d/0515a011.cdf
 Injection Date: 15-May-2012 16:38
 Instrument: pid2.1
 Client Sample ID:



R1A 0515a011.cdf: 3.821 to 19.704 Min

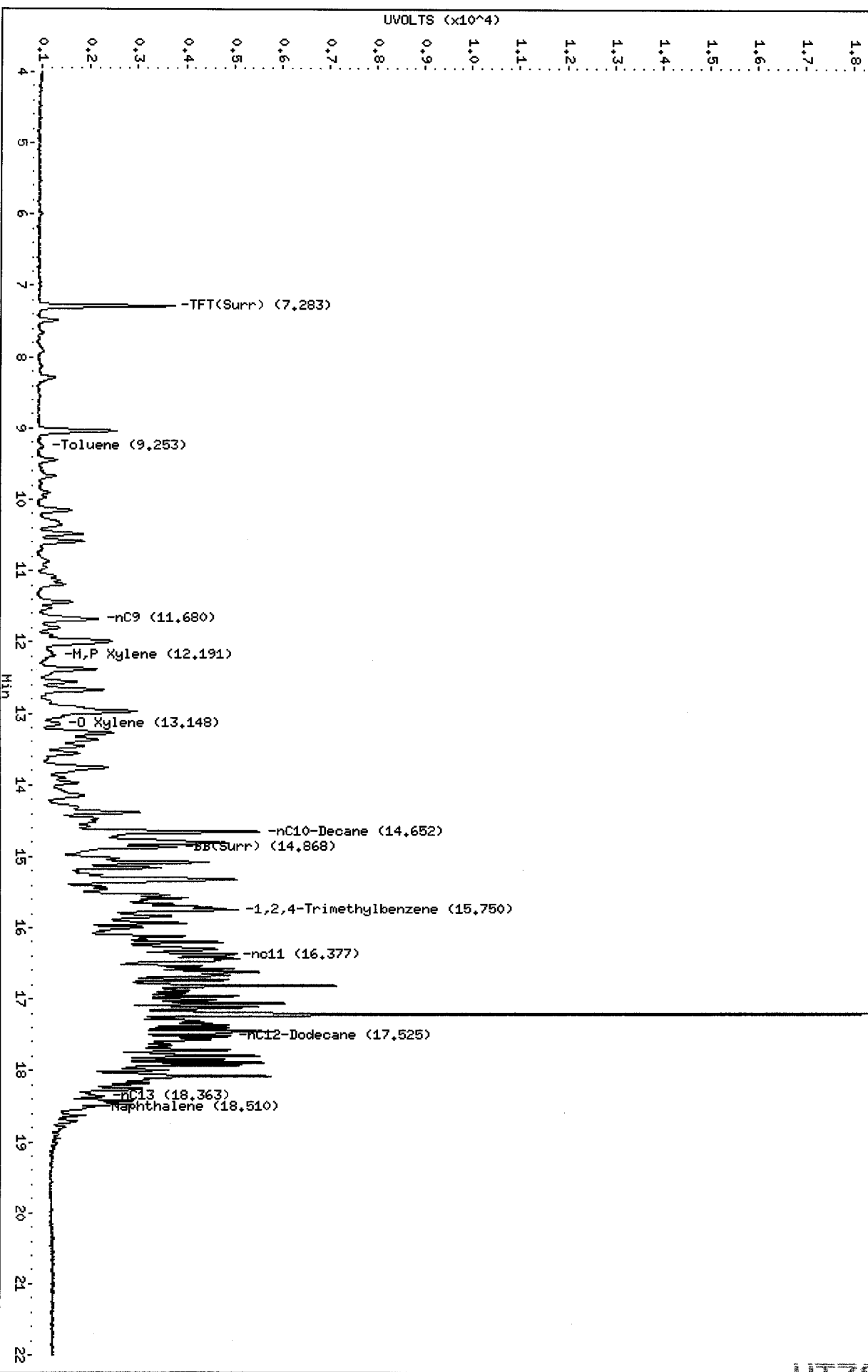
Refer to 5/16/12

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Date: 15-MAY-2012 17:35
Client ID: CBA-SB-1-1.5-2.5-05
Sample Info: UT78A

Column phase: RTX 502-2 FID

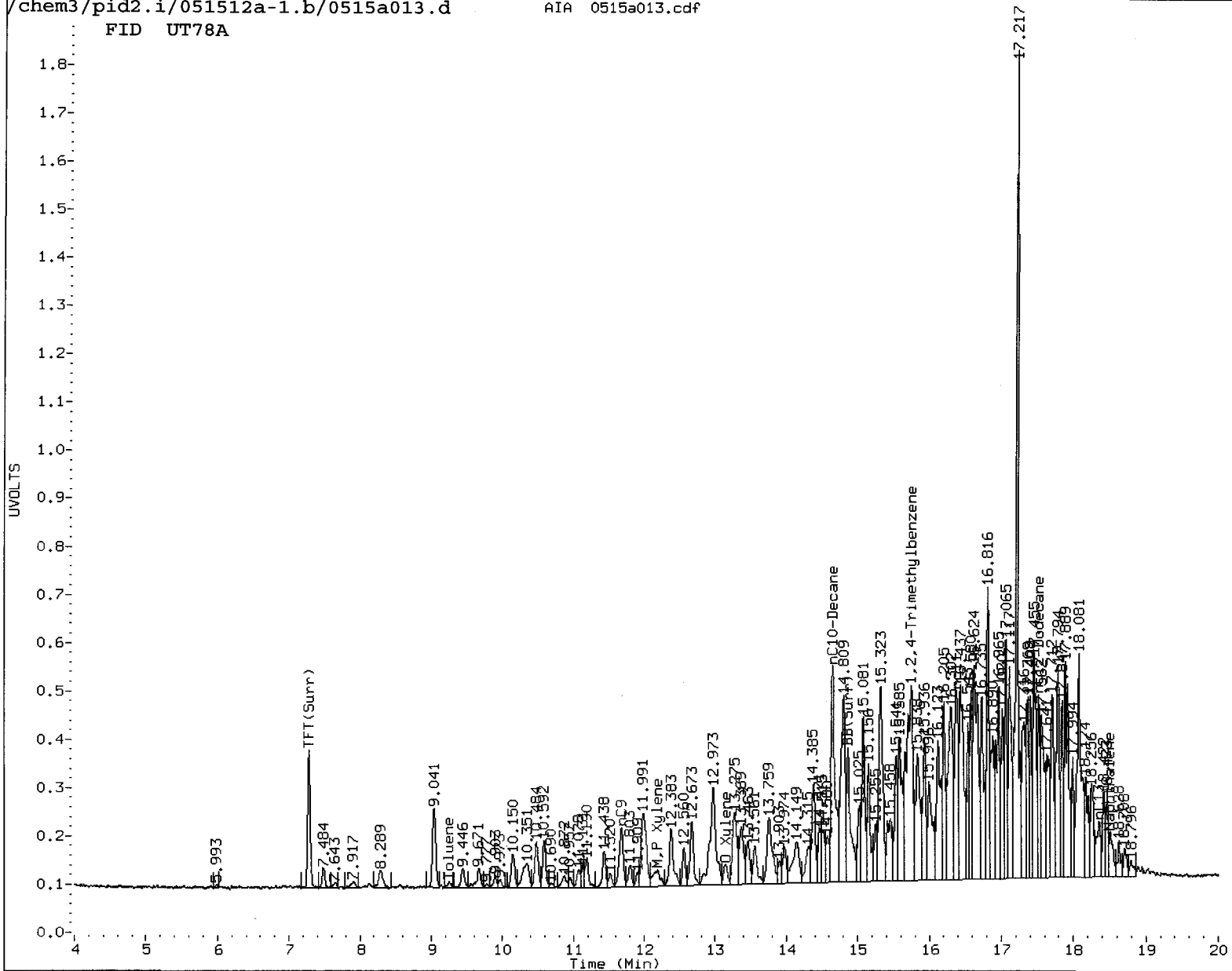
Instrument: pid2.i
Operator: JM
Column diameter: 0.18

/chem3/pid2.i/051512a-1.b/0515a013.d/0515a013.cdf



UT78 00020

FID UT78A



MANUAL INTEGRATION

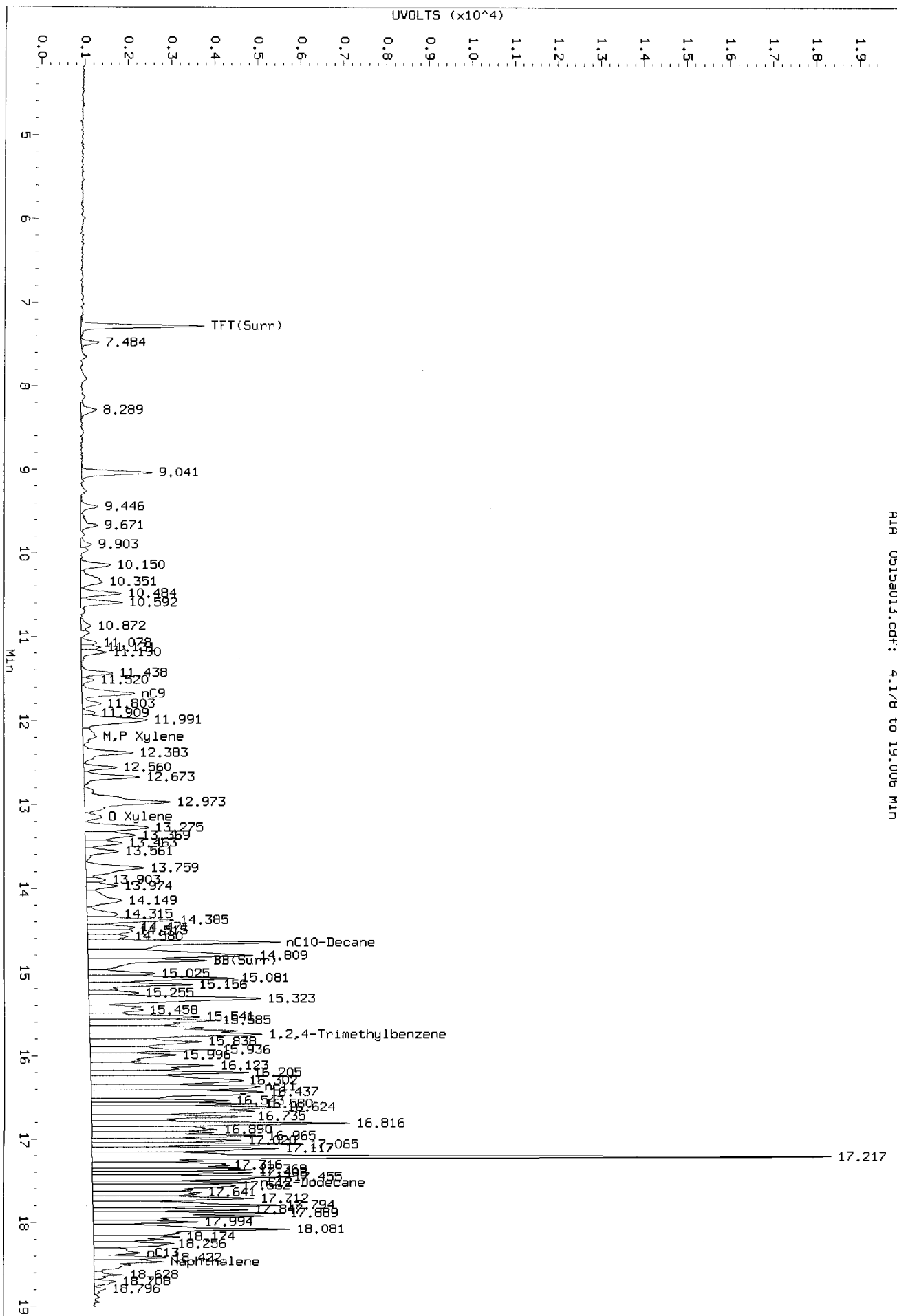
- ①. Baseline correction
- 2. Poor chromatography
- ③. Peak not found
- 4. Totals calculation
- 5. Other _____

Analyst: fw

Date: 5/18/12

Data File: /chem3/pld2.1/051512a-1.b/0515a013.d/0515a013.cdf
Injection Date: 15-May-2012 17:35
Instrument: pld2.1
Client Sample ID: CBA-SB-1-1.5-2.5-05

AIA 0515a013.cdf: 4.178 to 19.006 Min



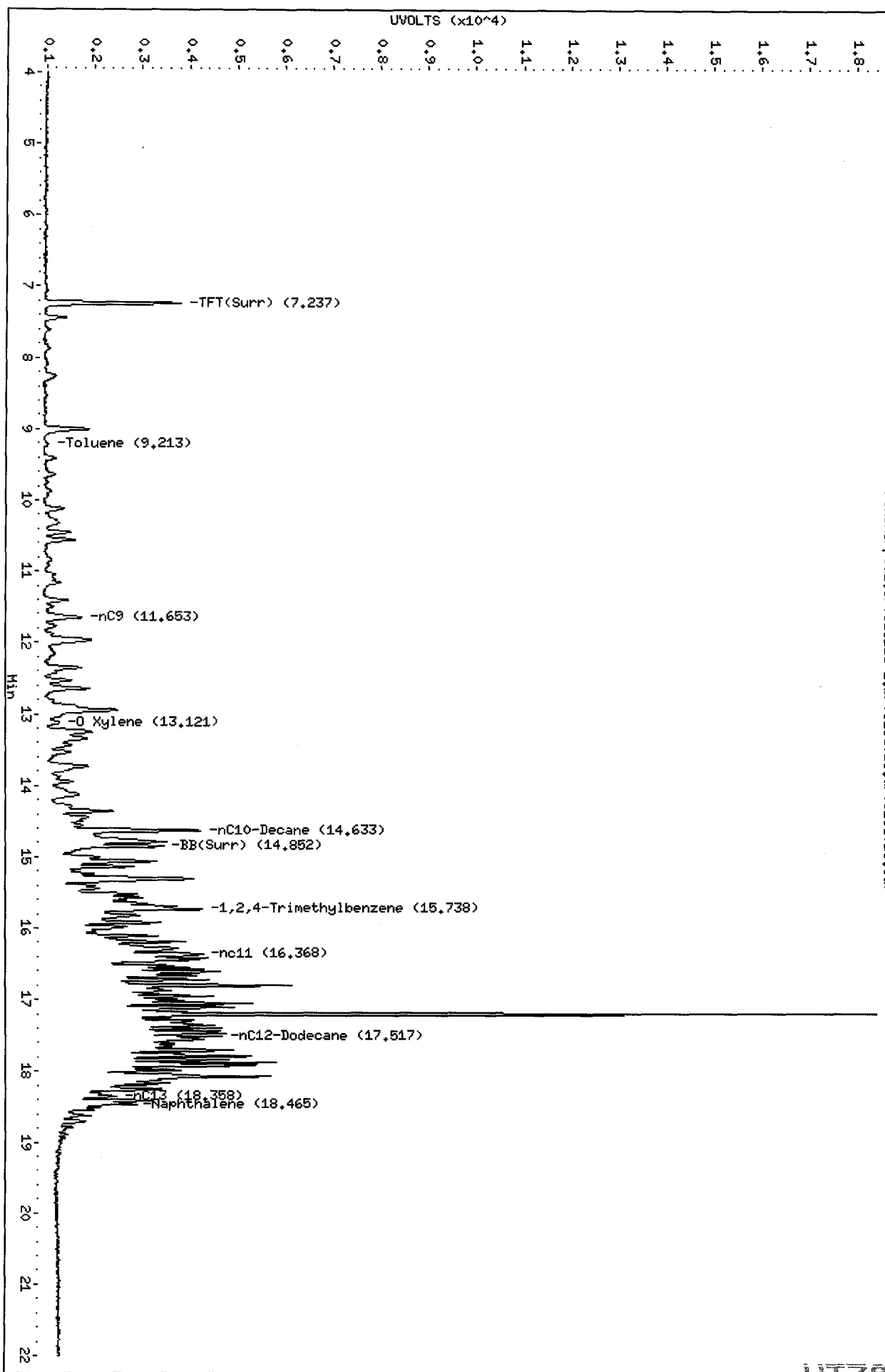
Before
JW
5/16/12

Data File: /chem3/pid2.i/051512a-1.b/0515a015.d
Date: 15-MAY-2012 18:31
Client ID: CBA-SB-2-0.5-2.5-05
Sample Info: UT78C

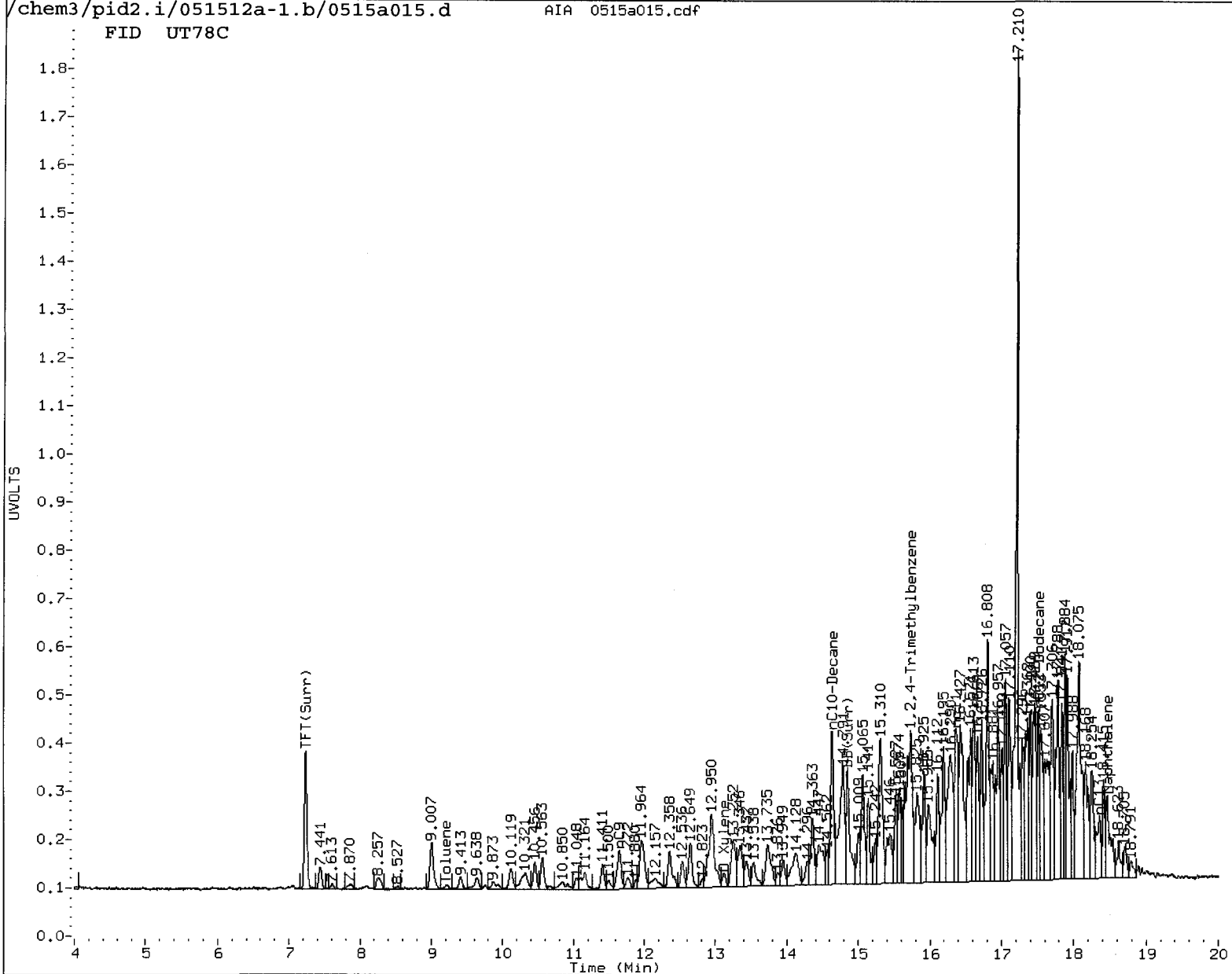
Column phase: RTX 502-2 FID

Instrument: pid2.i
Operator: JM
Column diameter: 0.18

/chem3/pid2.i/051512a-1.b/0515a015.d/0515a015.cdf



FID UT78C



MANUAL INTEGRATION

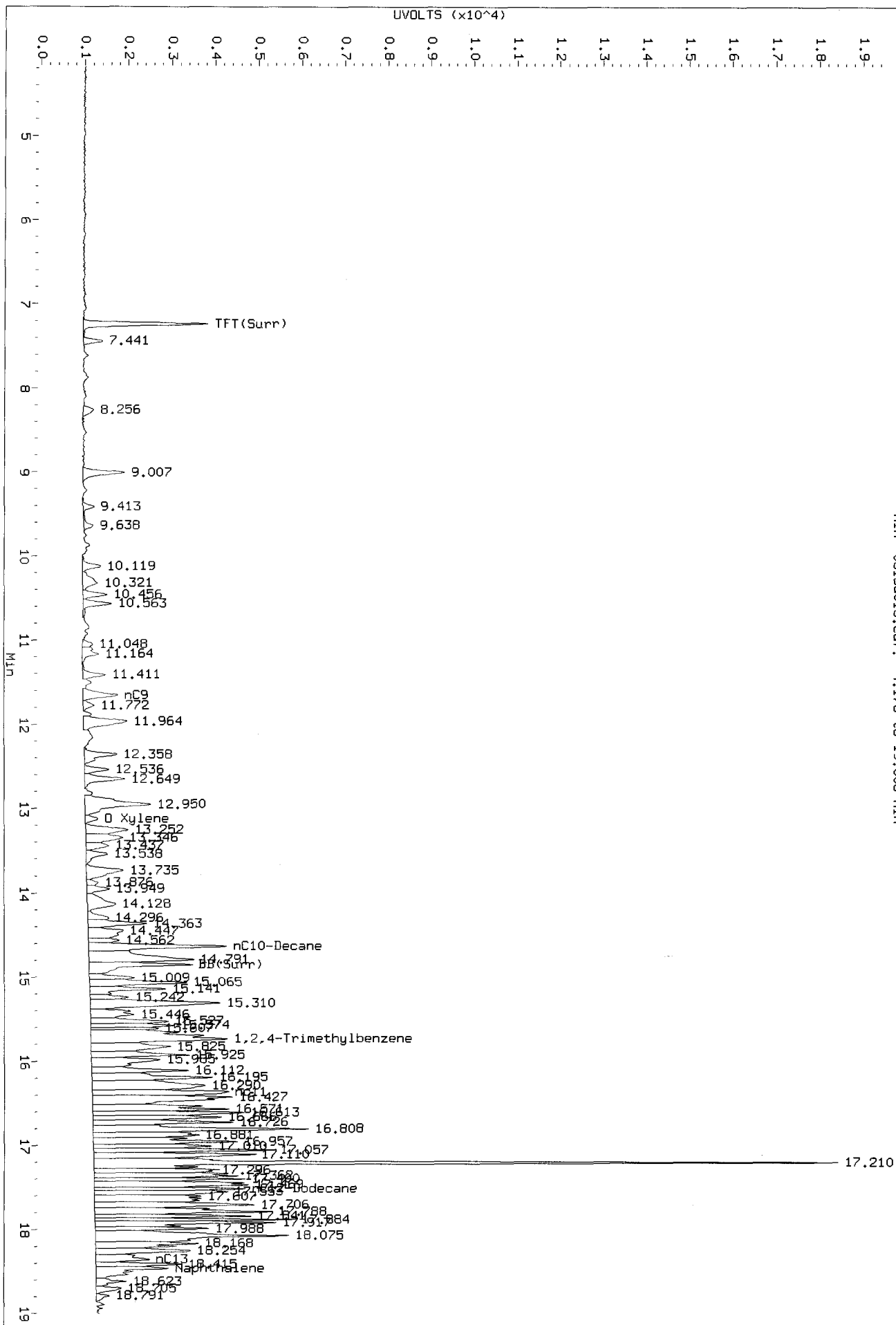
- ①. Baseline correction
- ②. Poor chromatography
- ③. Peak not found
- ④. Totals calculation

5. Other _____

Analyst: JW Date: 5/18/12

Data File: /chem3/pld2.1/051512a-1.b/0515a015.d/0515a015.cdf
Injection Date: 15-MAY-2012 18:31
Instrument: pld2.1
Client Sample ID: CBA-SB-2-0.5-2.5-05

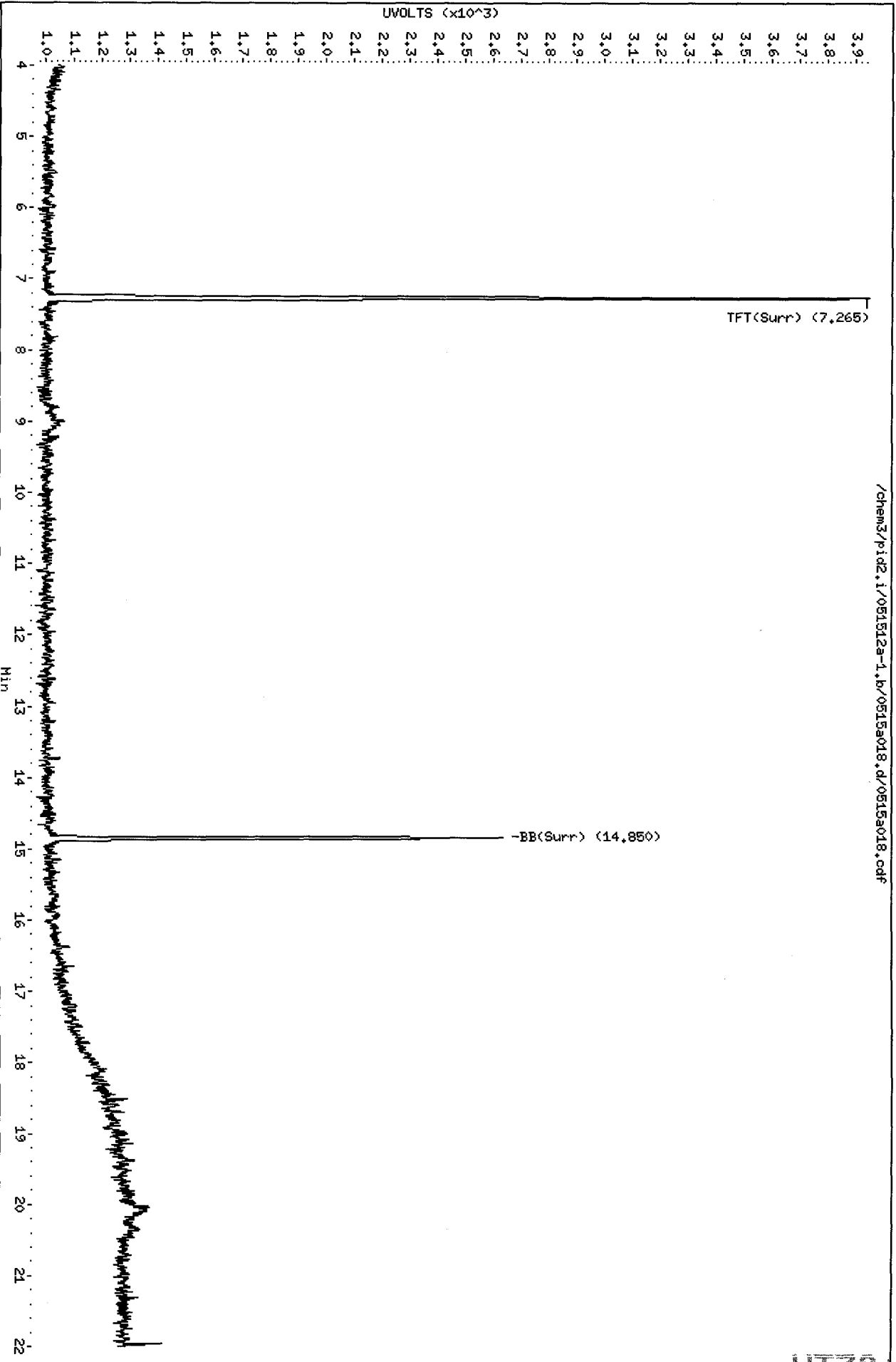
RI# 0515a015.cdf: 4.178 to 19.006 Min



Before
7/5/12

Data File: /chem3/pid2.i/051512a-1.b/0515a018.d
Date: 15-MAY-2012 19:55
Client ID: CBA-SB-4-3-5-0512
Sample Info: UT78F
Column phase: RTX 502-2 FID

Instrument: pid2.i
Operator: JM
Column diameter: 0.18



/chem3/pid2.i/051512a-1.b/0515a018.d/0515a018.cdf

UT78 00004

Data File: /chem3/pid2.i/051512a-1.b/0515a020.d

Date : 15-MAY-2012 20:52

Client ID: CBA-SB-5-3.5-0512

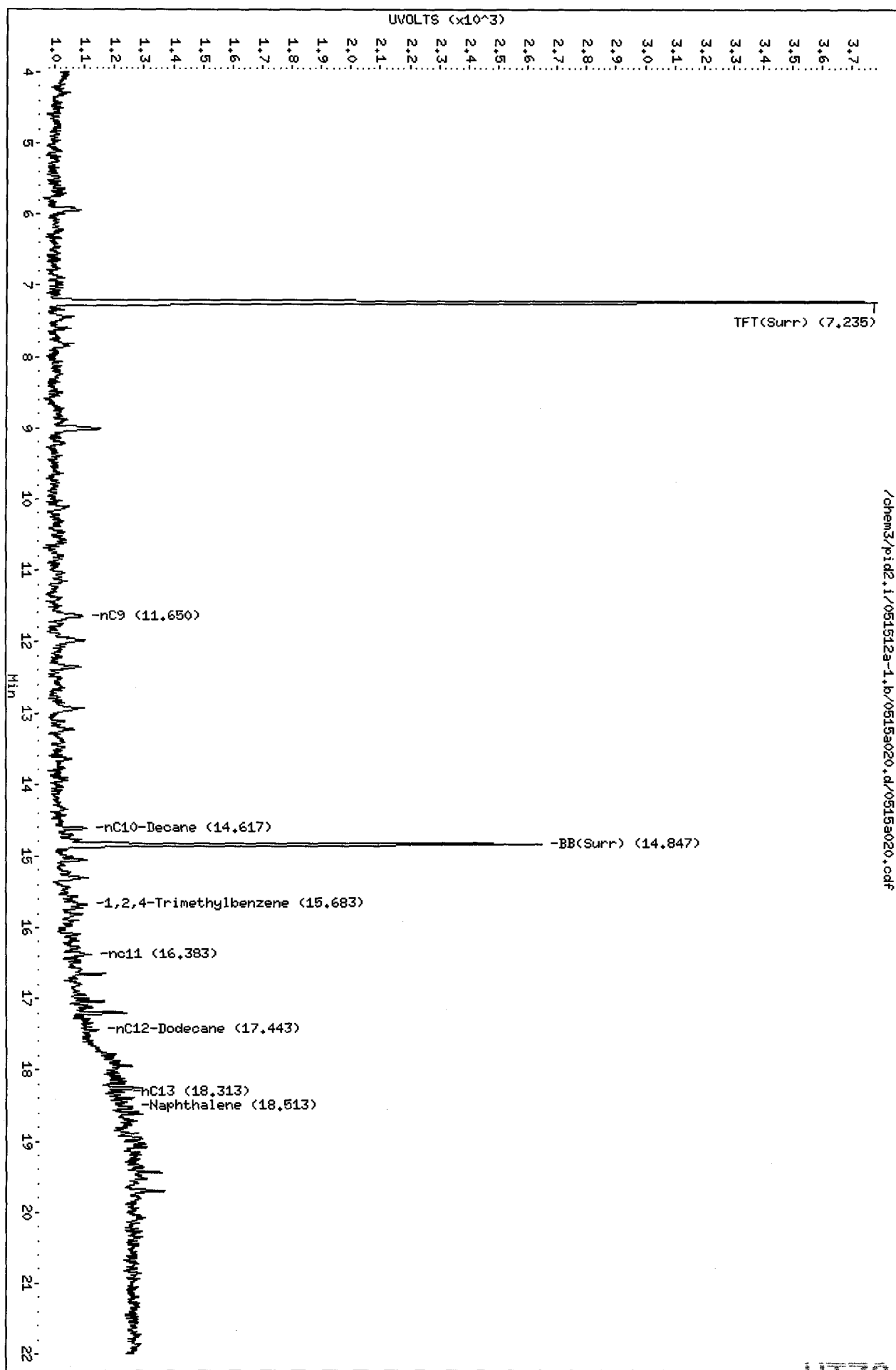
Sample Info: UT78C

Column phase: RTX 502-2 FID

Instrument: pid2.i

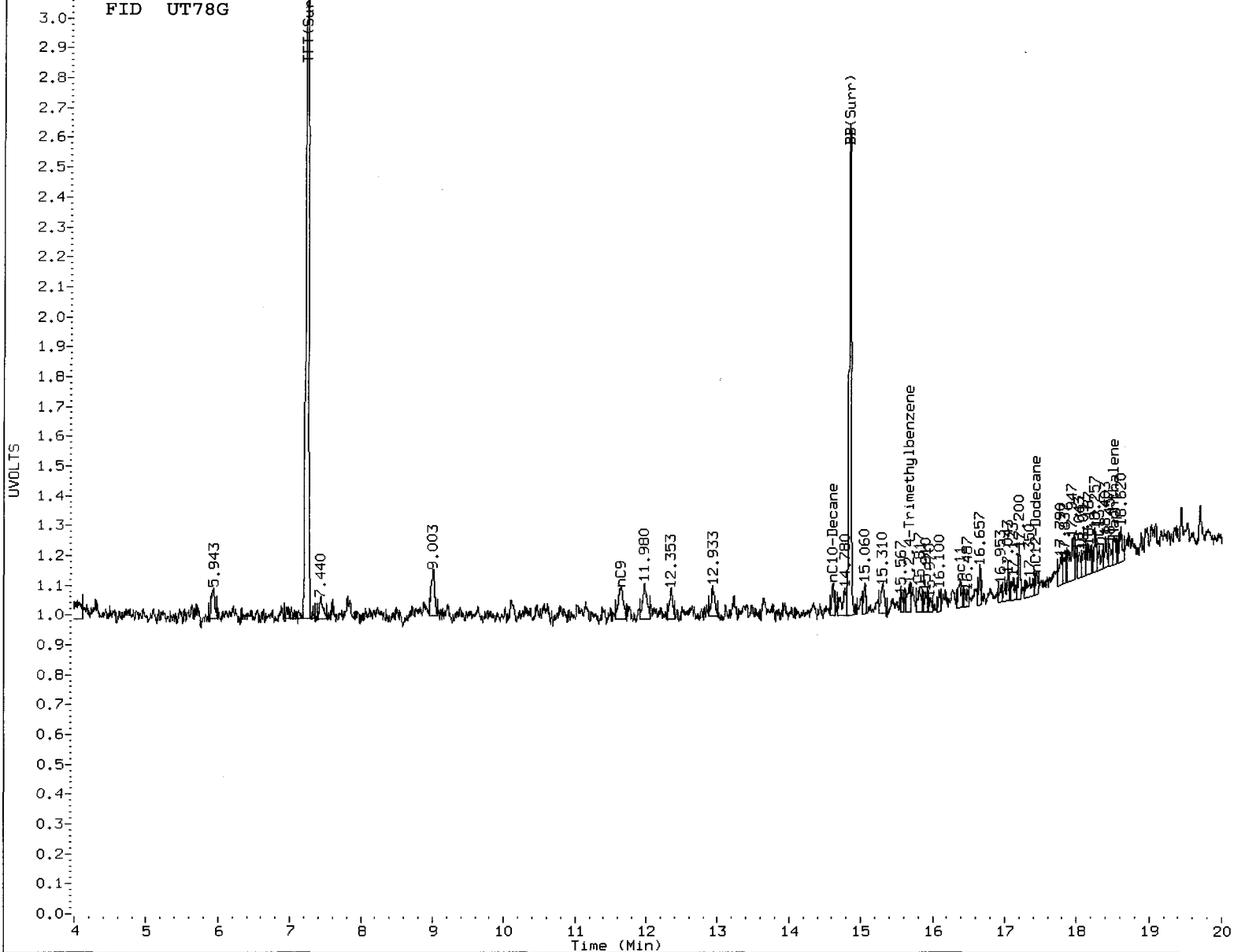
Operator: JM

Column diameter: 0.18



/chem3/pid2.i/051512a-1.b/0515a020.d/0515a020.cdf

FID UT78G



MANUAL INTEGRATION

- ① Baseline correction
- 2. Poor chromatography
- ③ Peak not found
- 4. Totals calculation

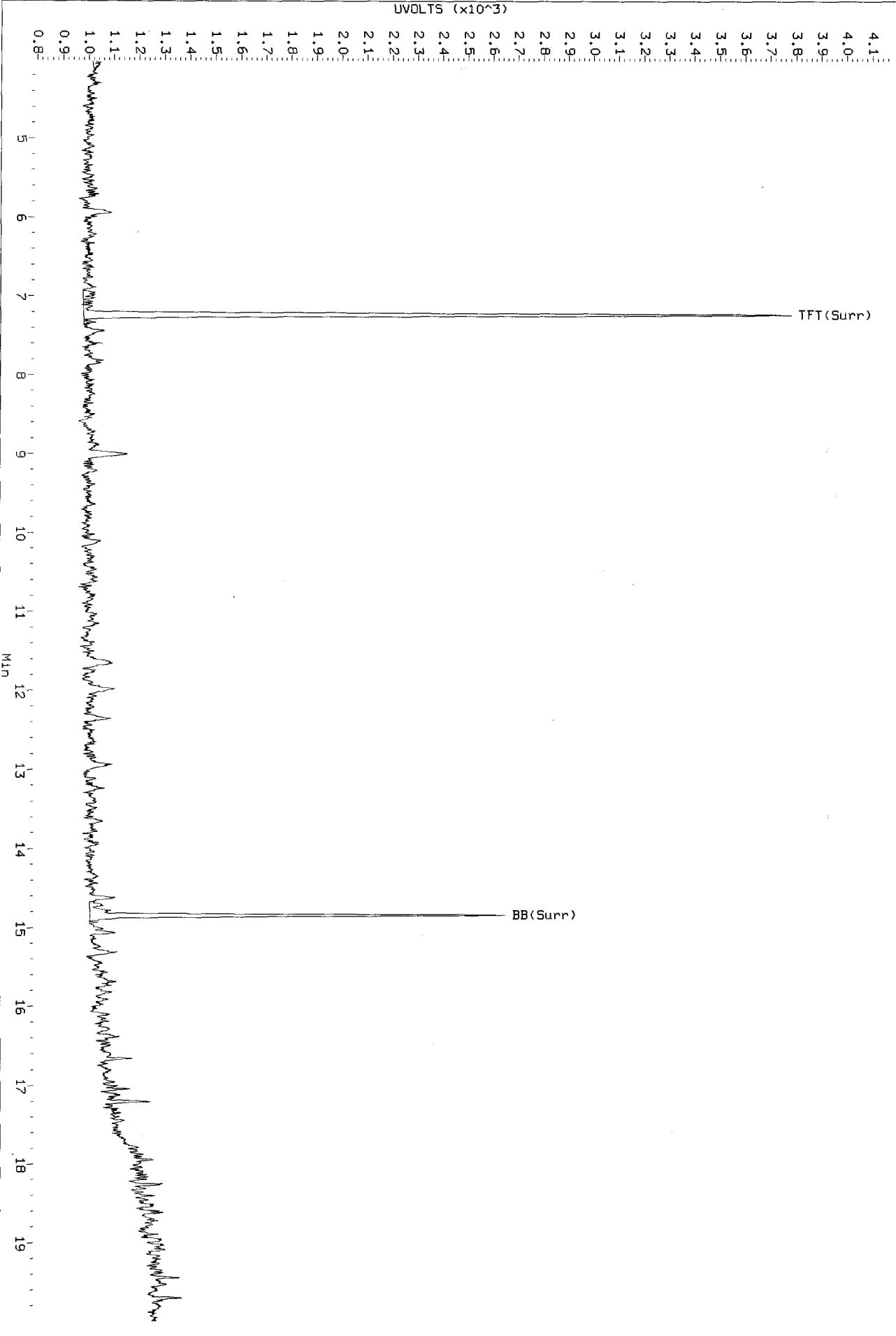
5. Other _____

Analyst: JW

Date: 5/15/12

Data File: /chem3/pid2.1/051512a-1.b/0515a020.d/0515a020.cdf
Injection Date: 15-MAY-2012 20:52
Instrument: pid2.1
Client Sample ID: CBA-SB-5-3.5-0512

AIR 0515a020.cdf: 4.023 to 19.997 MIN



Before 5/18/12

Data File: /chem3/pid2.i/051512a-1.b/0515a021.d

Date: 15-MAY-2012 21:20

Client ID: CBA-SB-5-0-2-0512

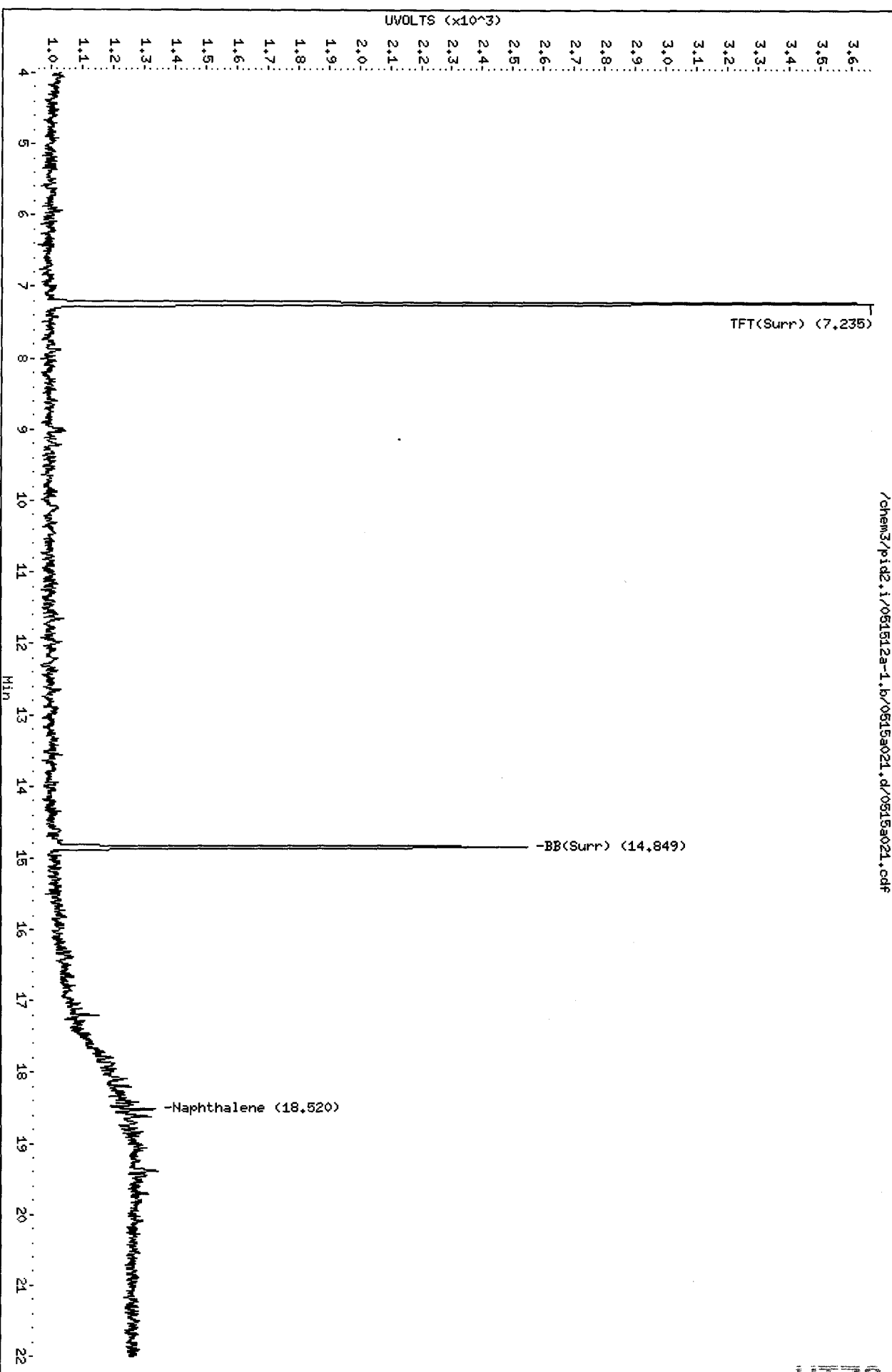
Sample Info: UT78H

Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: JM

Column diameter: 0.18



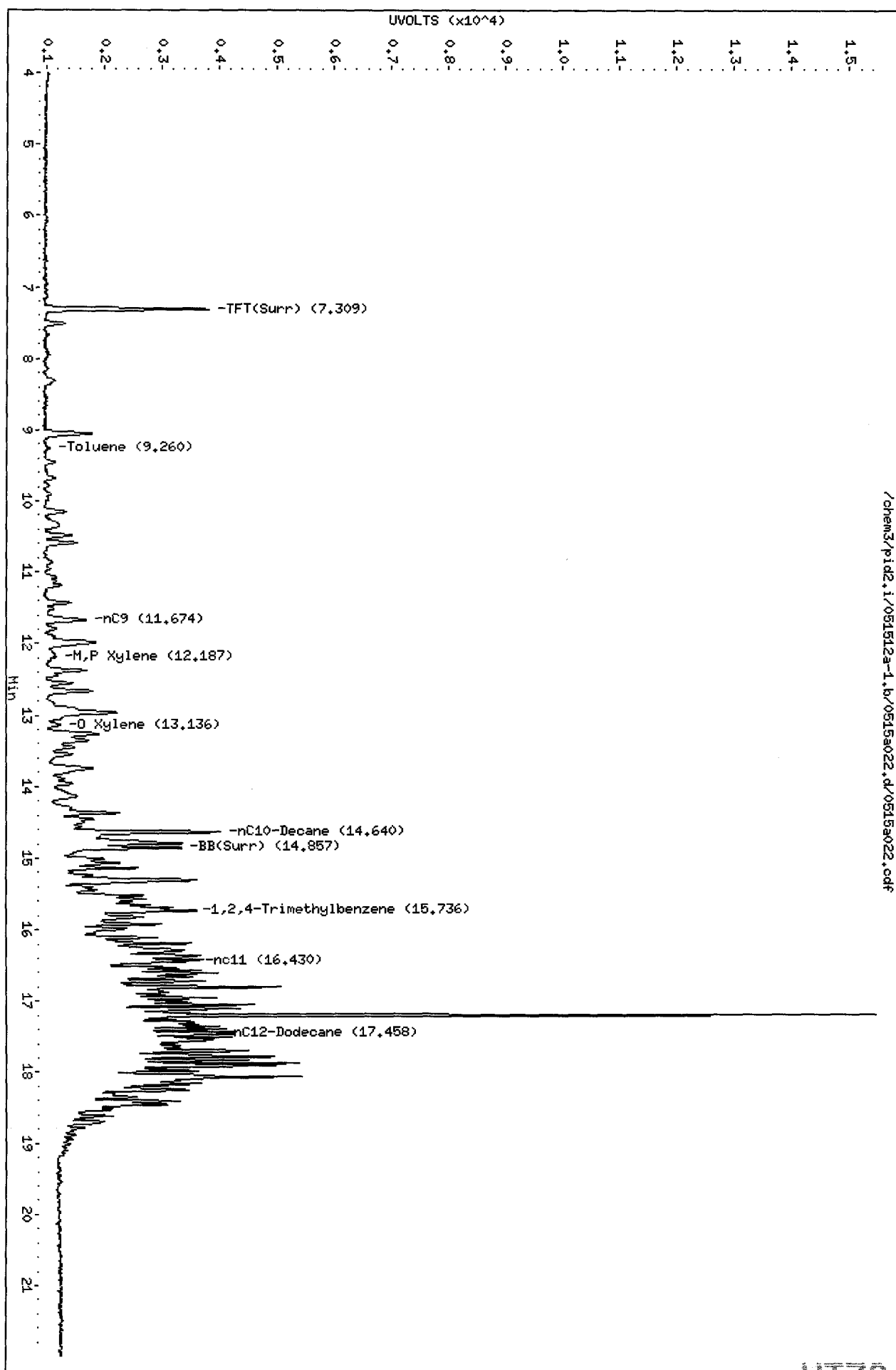
UT78 00000

Data File: /chem3/pid2.i/051512a-1.b/0515a022.d
Date: 15-MAY-2012 21:48
Client ID: CBA-SB-20-0.5-2.5-0
Sample Info: UT781

Column phase: RTX 502-2 FID

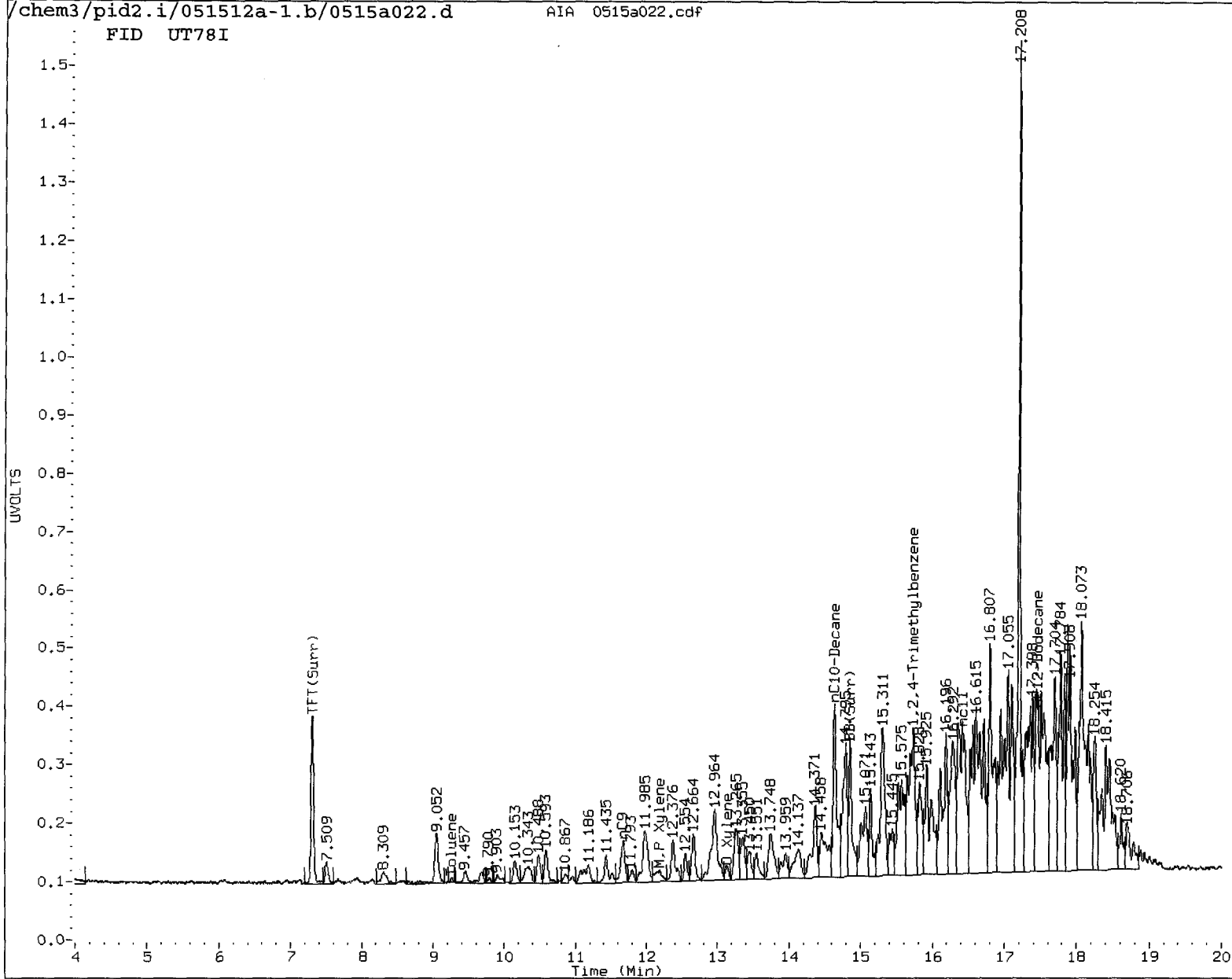
Instrument: pid2.i
Operator: JM
Column diameter: 0.18

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UT78 0000

FID UT78I



MANUAL INTEGRATION

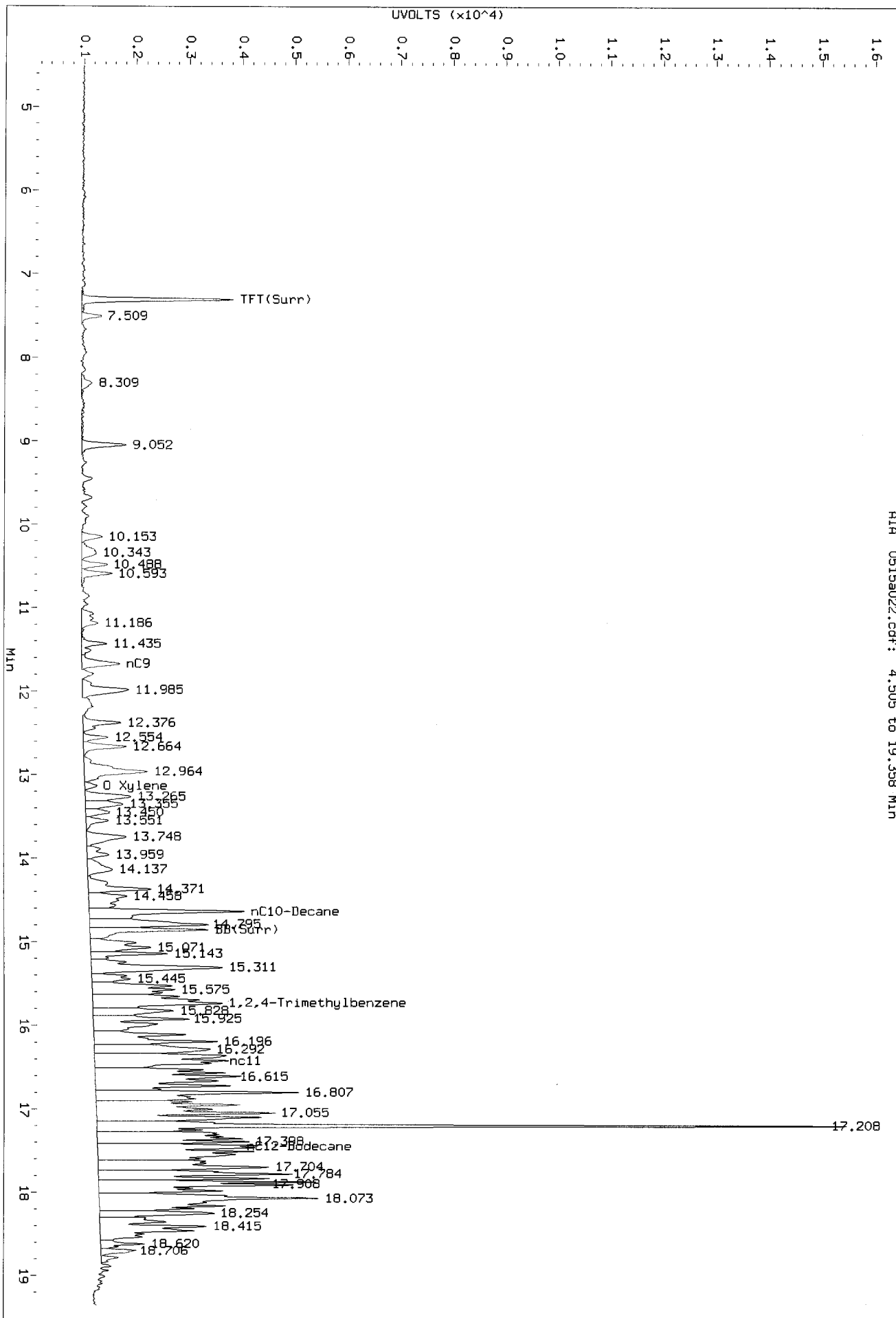
- ① Baseline correction
2. Poor chromatography
- ③ Peak not found
4. Totals calculation

5. Other _____

Analyst: JWDate: 5/18/12

Data File: /chem3/pid2.1/051512a-1.b/0515a022.d/0515a022.cdf
Injection Date: 15-May-2012 21:48
Instrument: pid2.1
Client Sample ID: CBA-SB-20-0.5-2.5-0

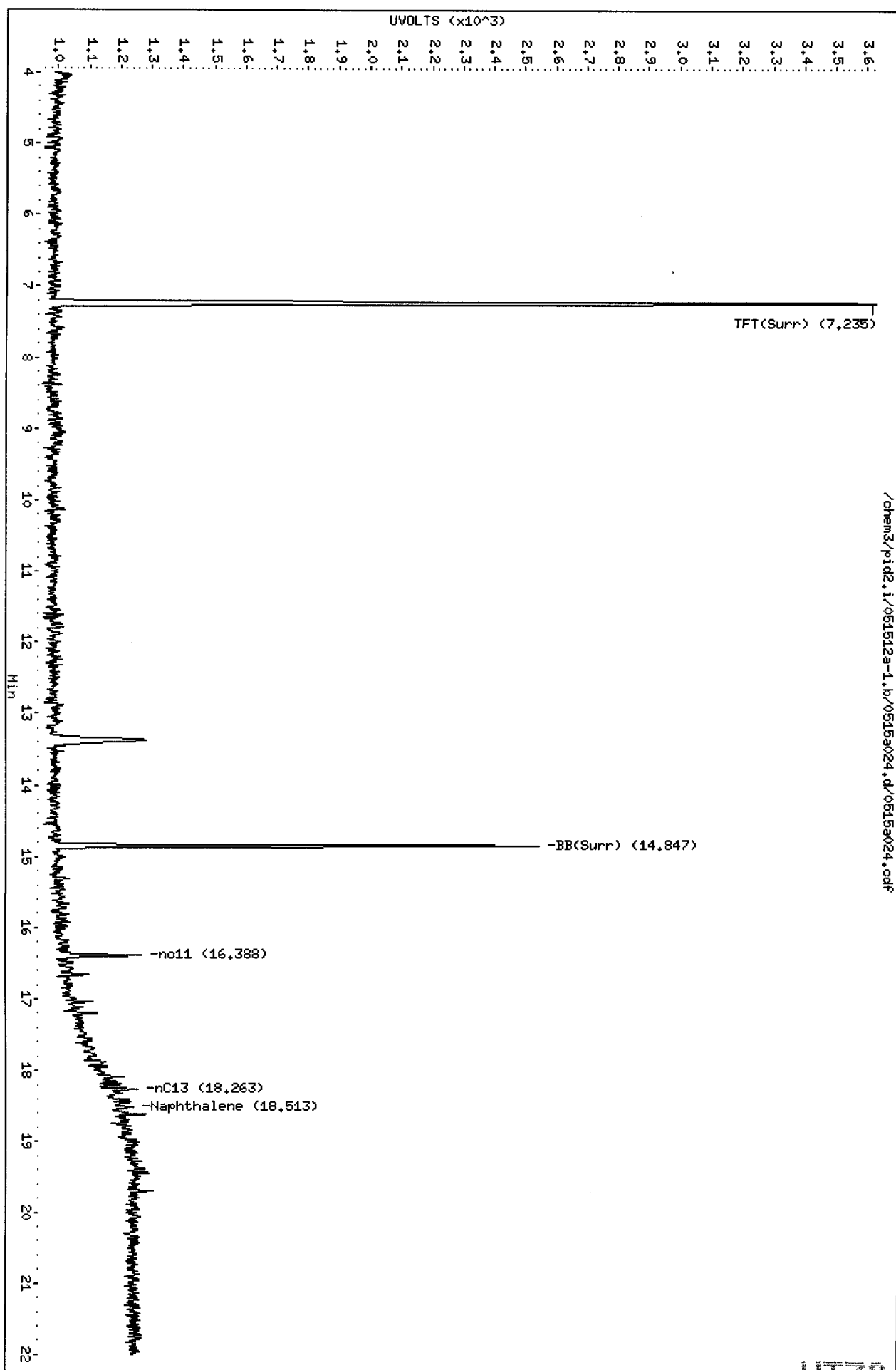
RI# 0515a022.cdf: 4.505 to 19.358 Min



Before
tw
5/18/12

Data File: /chem3/pid2.i/051512a-1.b/0515a024.d
Date: 15-MAY-2012 22:45
Client ID: CBA-SB-6-3-5-0512
Sample Info: UT78K
Column phase: RTX 502-2 FID

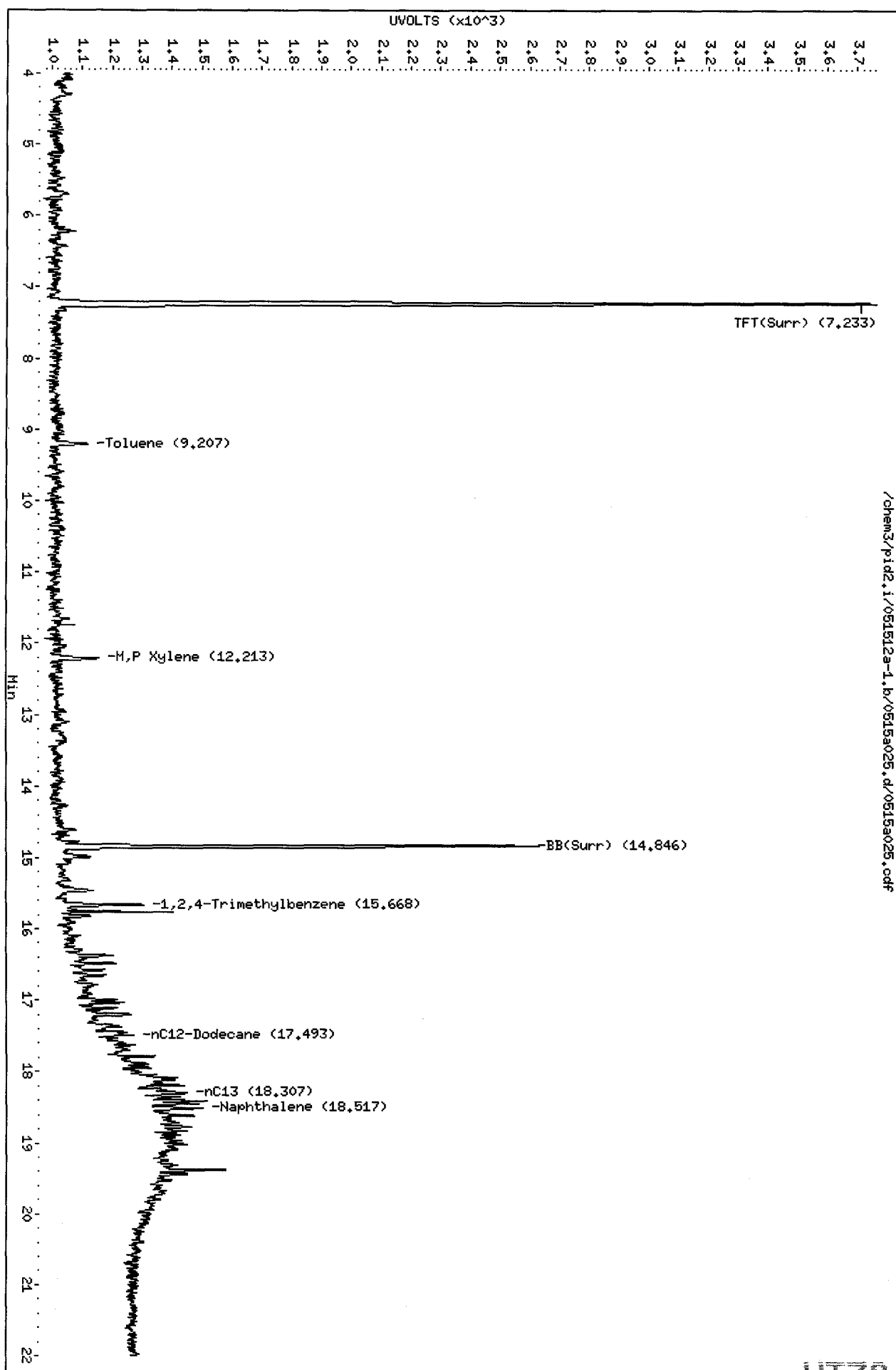
Instrument: pid2.i
Operator: JM
Column diameter: 0.18



/chem3/pid2.i/051512a-1.b/0515a024.d/0515a024.cdf

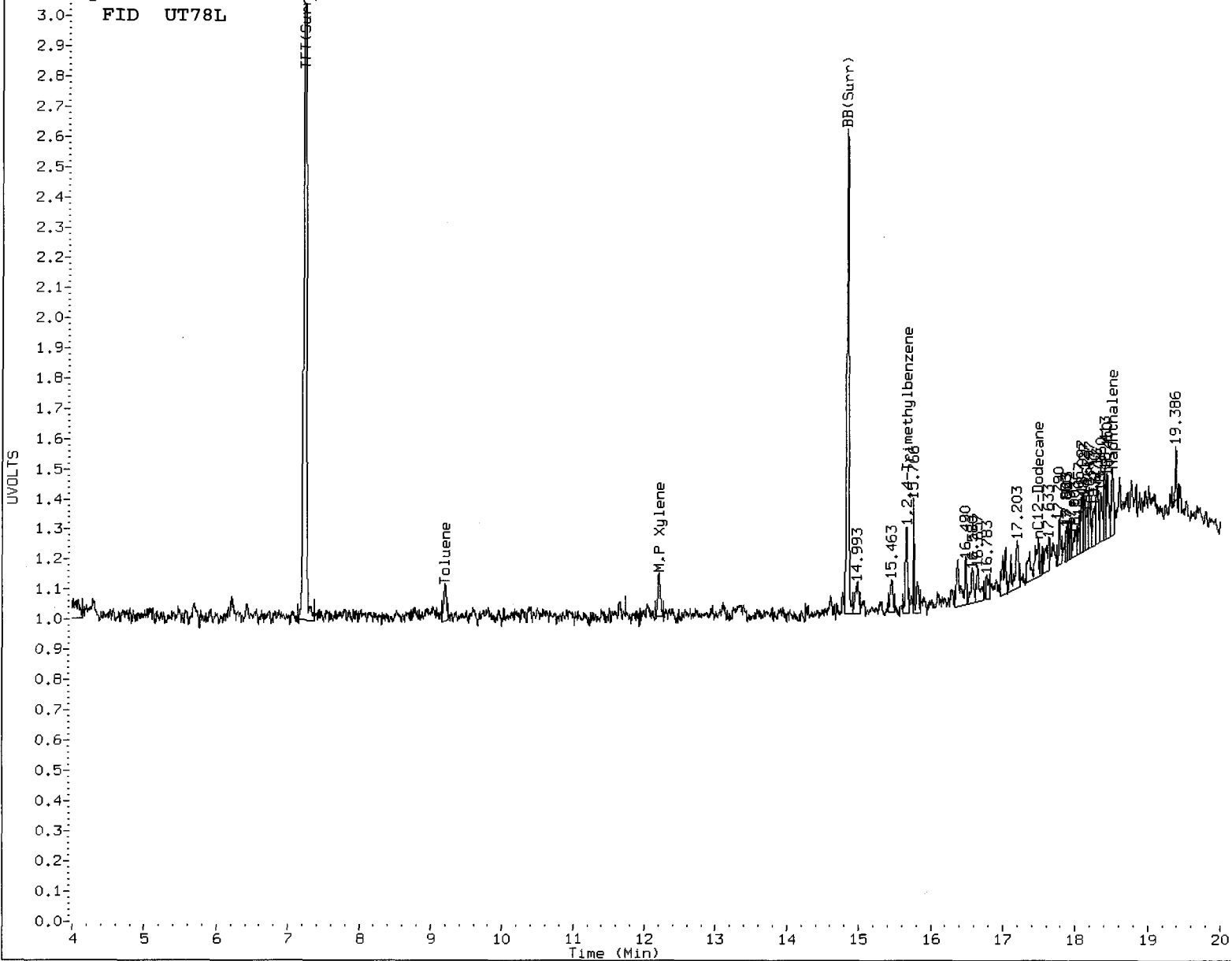
Data File: /chem3/pid2.i/051512a-1.b/0515a025.d
Date: 15-MAY-2012 23:13
Client ID: CBA-SB-7-1-3-0512
Sample Info: UT78L
Column phase: RTX 502-2 FID

Instrument: pid2.i
Operator: JM
Column diameter: 0.18



/chem3/pid2.i/051512a-1.b/0515a025.d/0515a025.cdf

UT78 00043



MANUAL INTEGRATION

- ① Baseline correction
- 2. Poor chromatography
- ③ Peak not found
- 4. Totals calculation

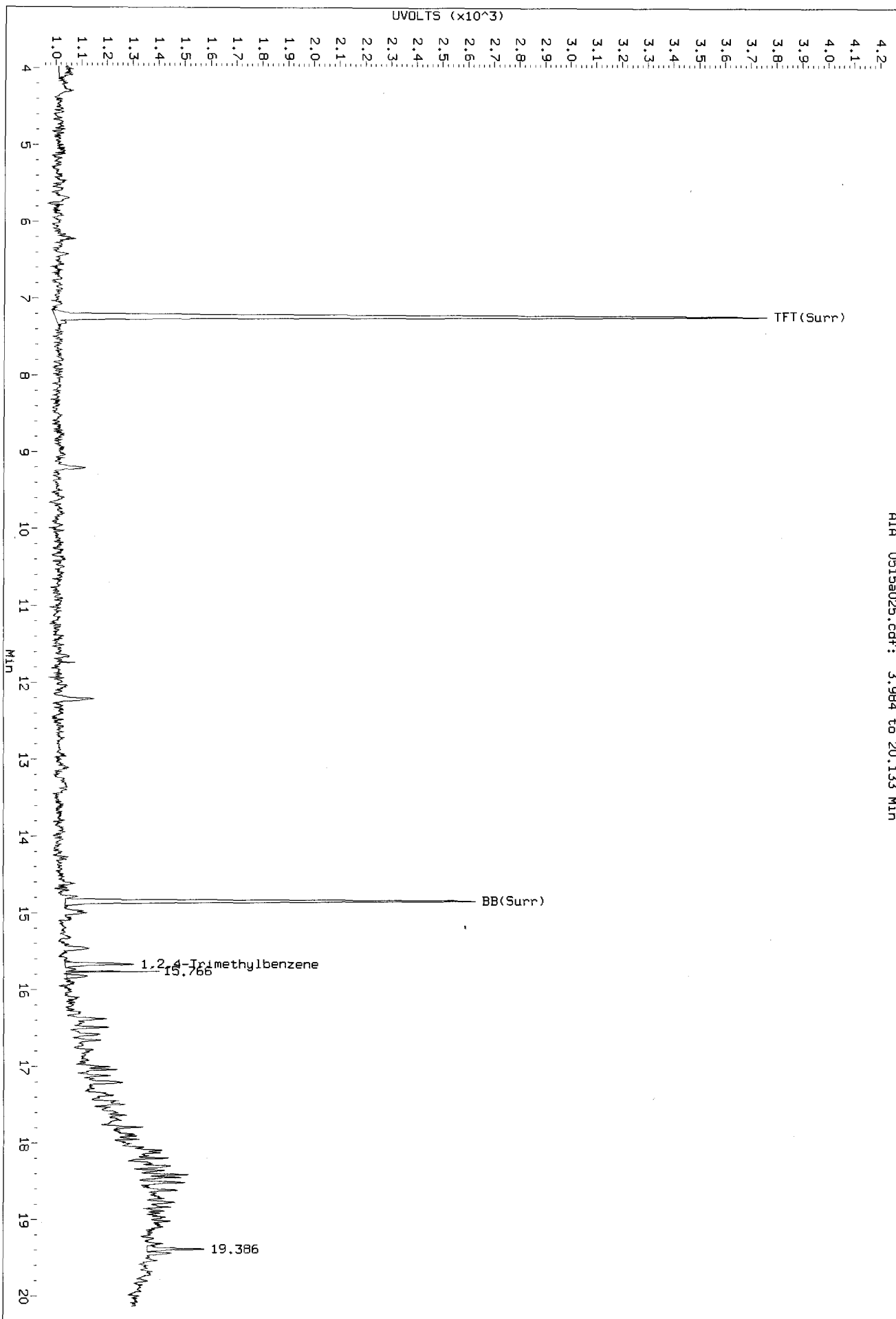
5. Other _____

Analyst: JW

Date: 5/18/12

Data File: /chem3/pid2.1/051512a-1.b/0515a025.d/0515a025.cdf
Injection Date: 15-MAY-2012 23:13
Instrument: pid2.1
Client Sample ID: CBA-SB-7-1-3-0512

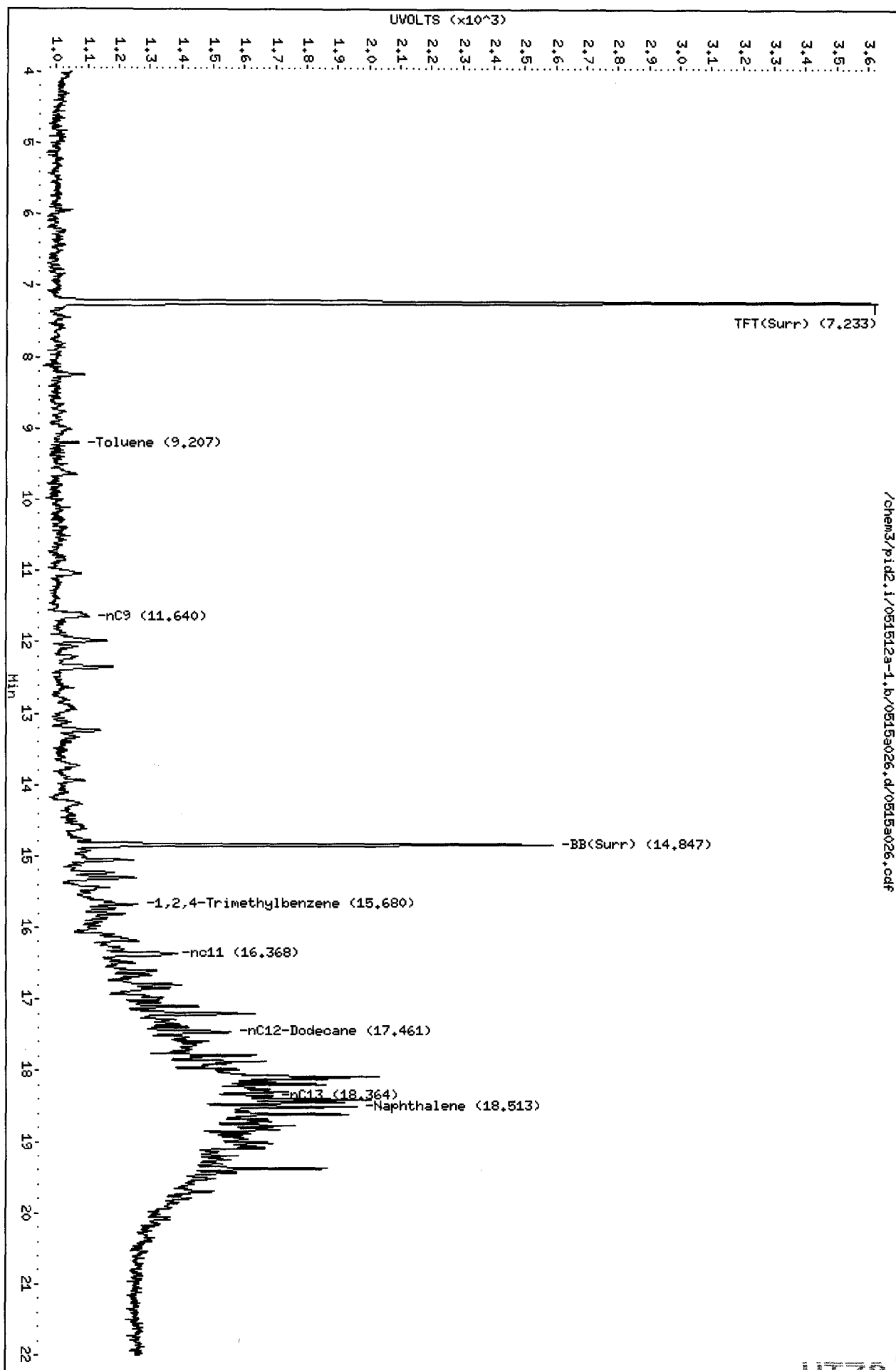
AIR 0515a025.cdf: 3.984 to 20.133 Min



Before
to
5/15/12

Data File: /chem3/pid2.i/051512a-1.b/0515a026.d
Date: 15-MAY-2012 23:41
Client ID: CBA-SB-8-3-5-0512
Sample Info: UT78M
Column phase: RTX 502-2 FID

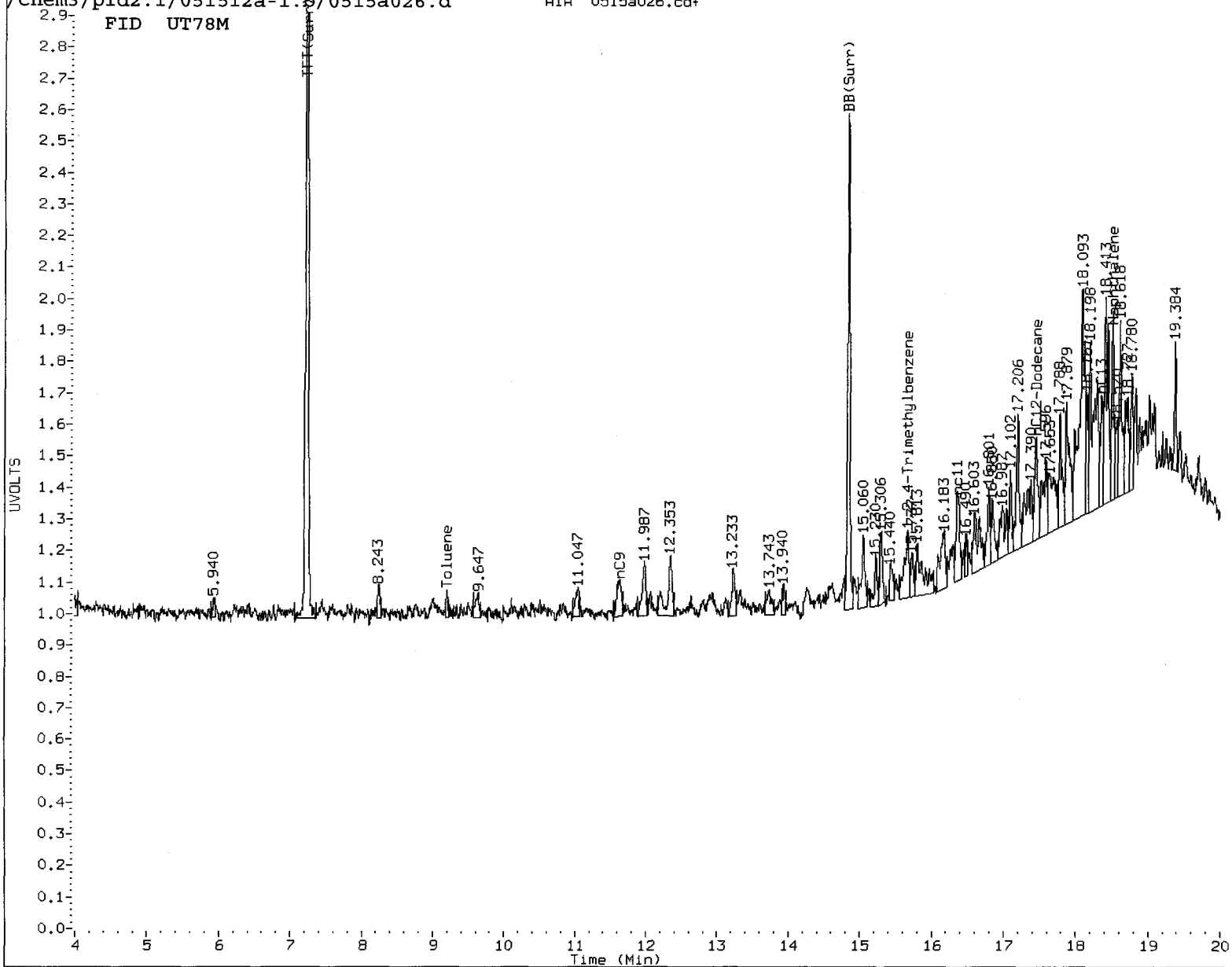
Instrument: pid2.i
Operator: JM
Column diameter: 0.18



/chem3/pid2.i/051512a-1.b/0515a026.d/0515a026.cdf

UT78 00046

FID UT78M



MANUAL INTEGRATION

- ①. Baseline correction
- 2. Poor chromatography
- ③. Peak not found
- 4. Totals calculation

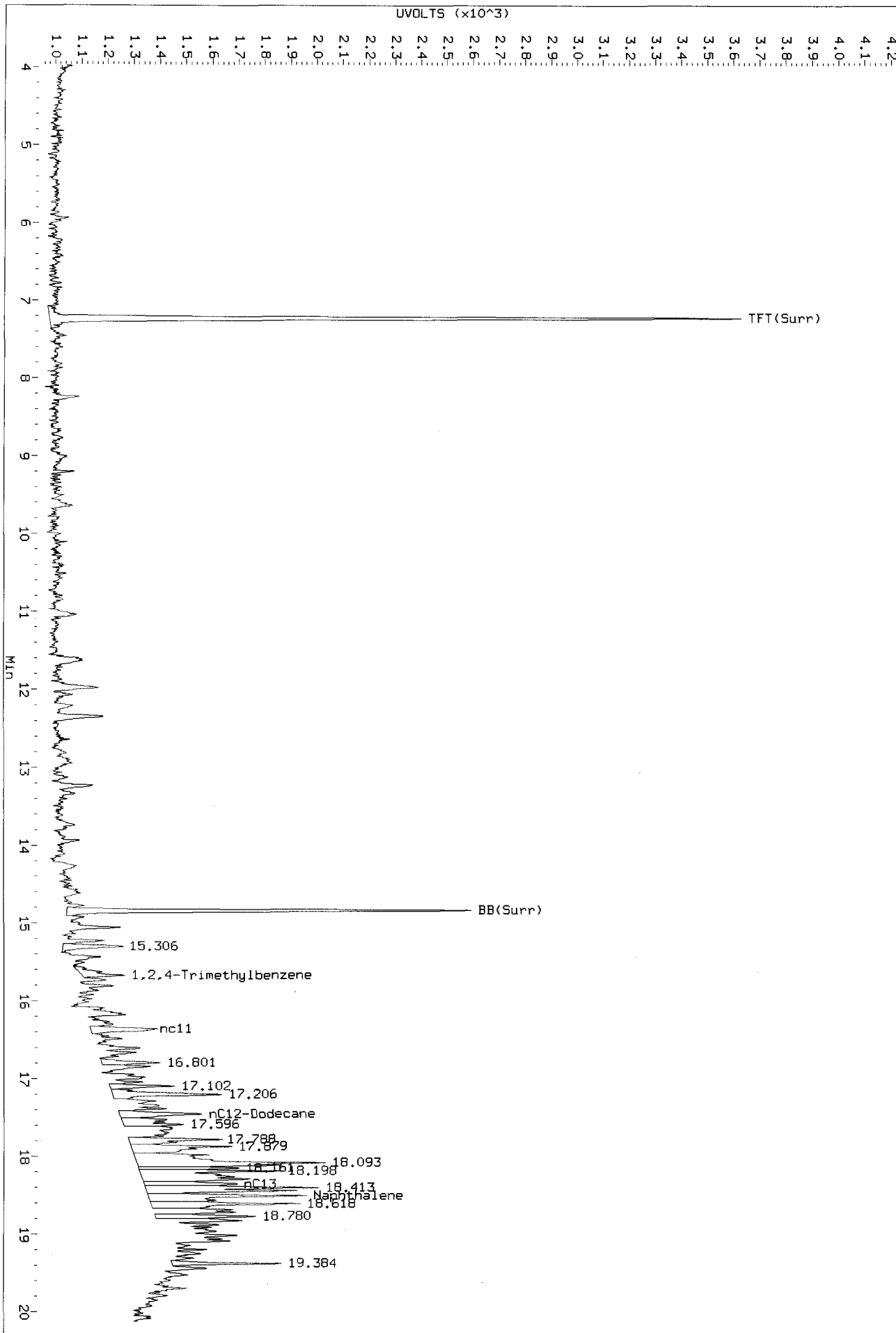
5. Other _____

Analyst: JW

Date: 5/18/12

Data File: /chem3/pl02.1/051512a-1.b/0515a026.d/0515a026.cdf
Injection Date: 15-May-2012 23:41
Instrument: pl02.1
Client Sample ID: CBA-SB-8-3-5-0512

AIR 0515a026.cdf: 3.984 to 20.133 Min



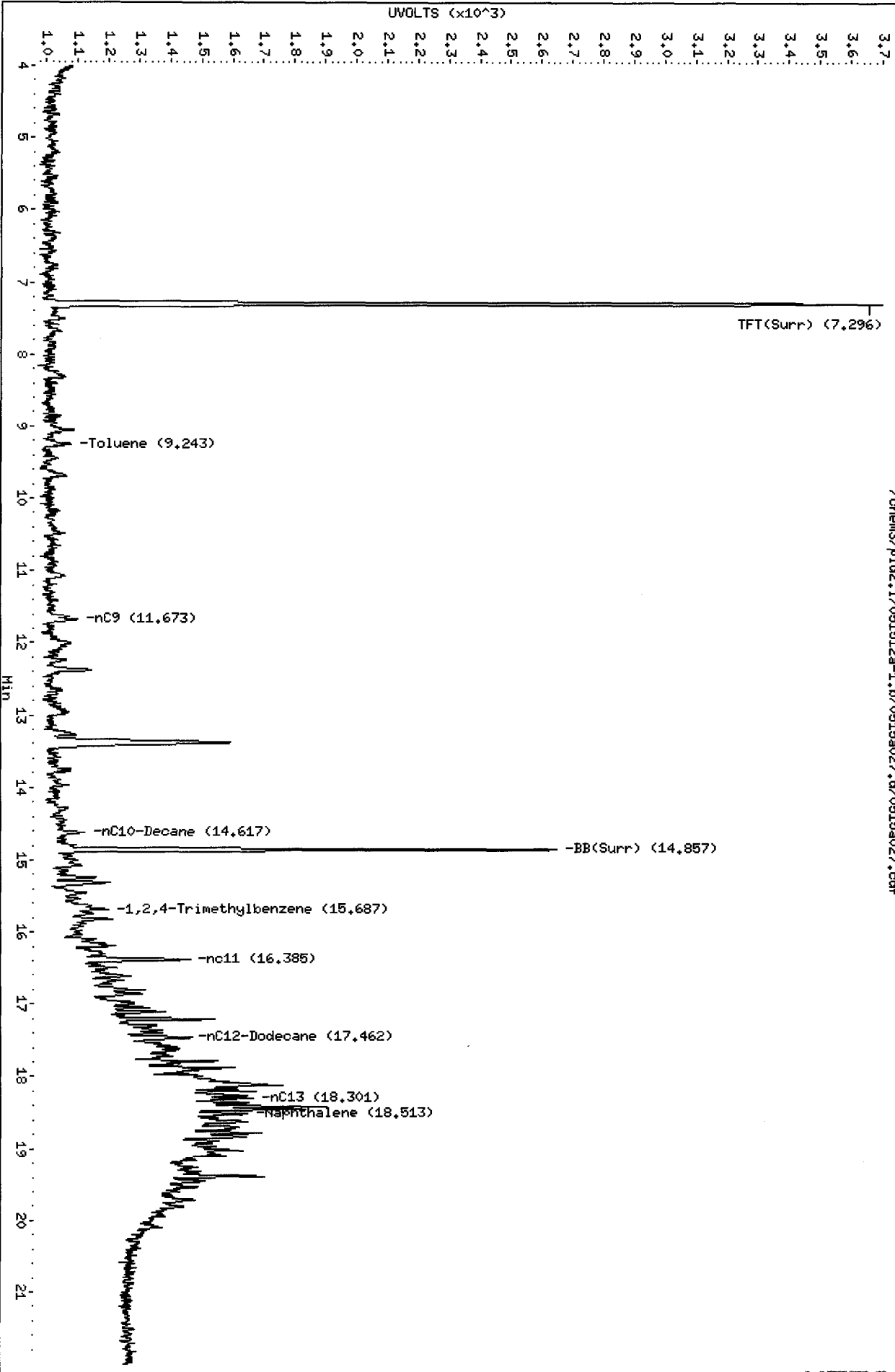
Before
3/2
5/10/12

UT78: 00048

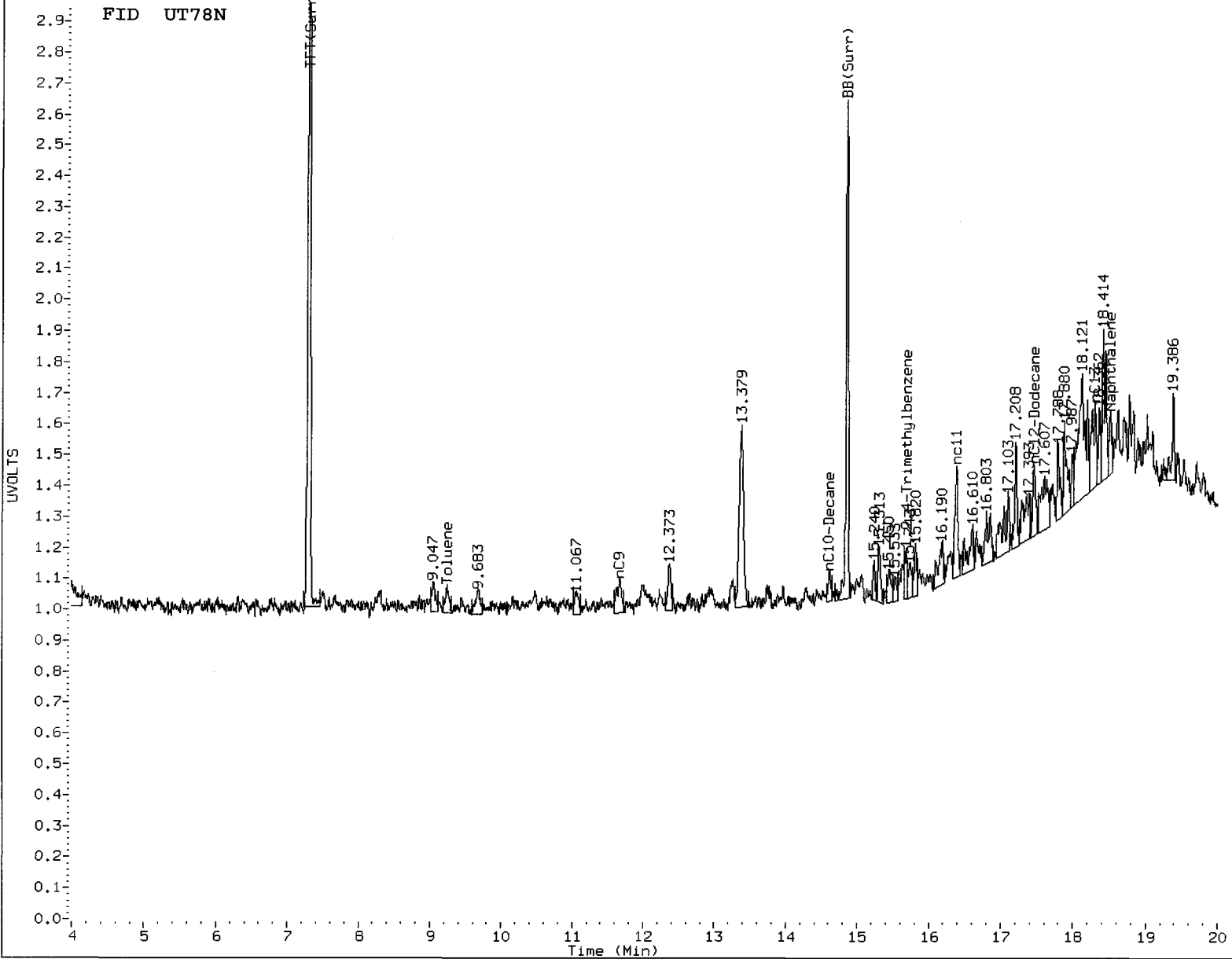
Data File: /chem3/pid2.i/051512a-1.b/0515a027.d
Date: 16-MAY-2012 00:09
Client ID: CBA-SB-8-1-3-0512
Sample Info: UT78N

Instrument: pid2.i
Operator: JM
Column diameter: 0.18
Column phase: RTX 502-2 FID

/chem3/pid2.i/051512a-1.b/0515a027.d/0515a027.cdf



UT78 00040



MANUAL INTEGRATION

- 1. Baseline correction
- 2. Poor chromatography
- 3. Peak not found
- 4. Totals calculation

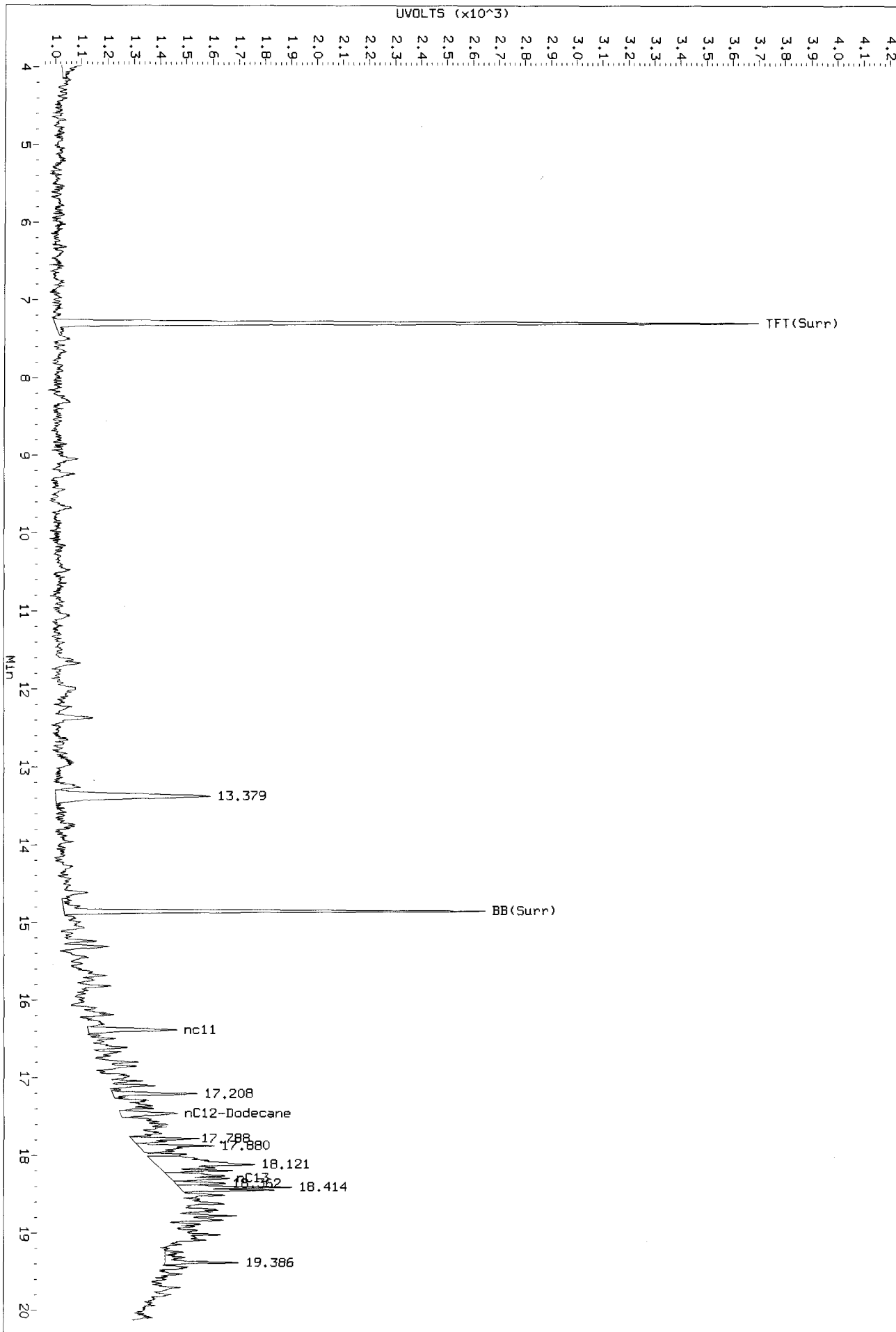
5. Other _____

Analyst: JW

Date: 5/16/12

Data File: /chem3/p102.1/051512a-1.b/0515a027.d/0515a027.cdf
Injection Date: 16-MAY-2012 00:09
Instrument: p102.1
Client Sample ID: CBA-SB-8-1-3-0512

AIR 0515a027.cdf: 3.984 to 20.133 MIN

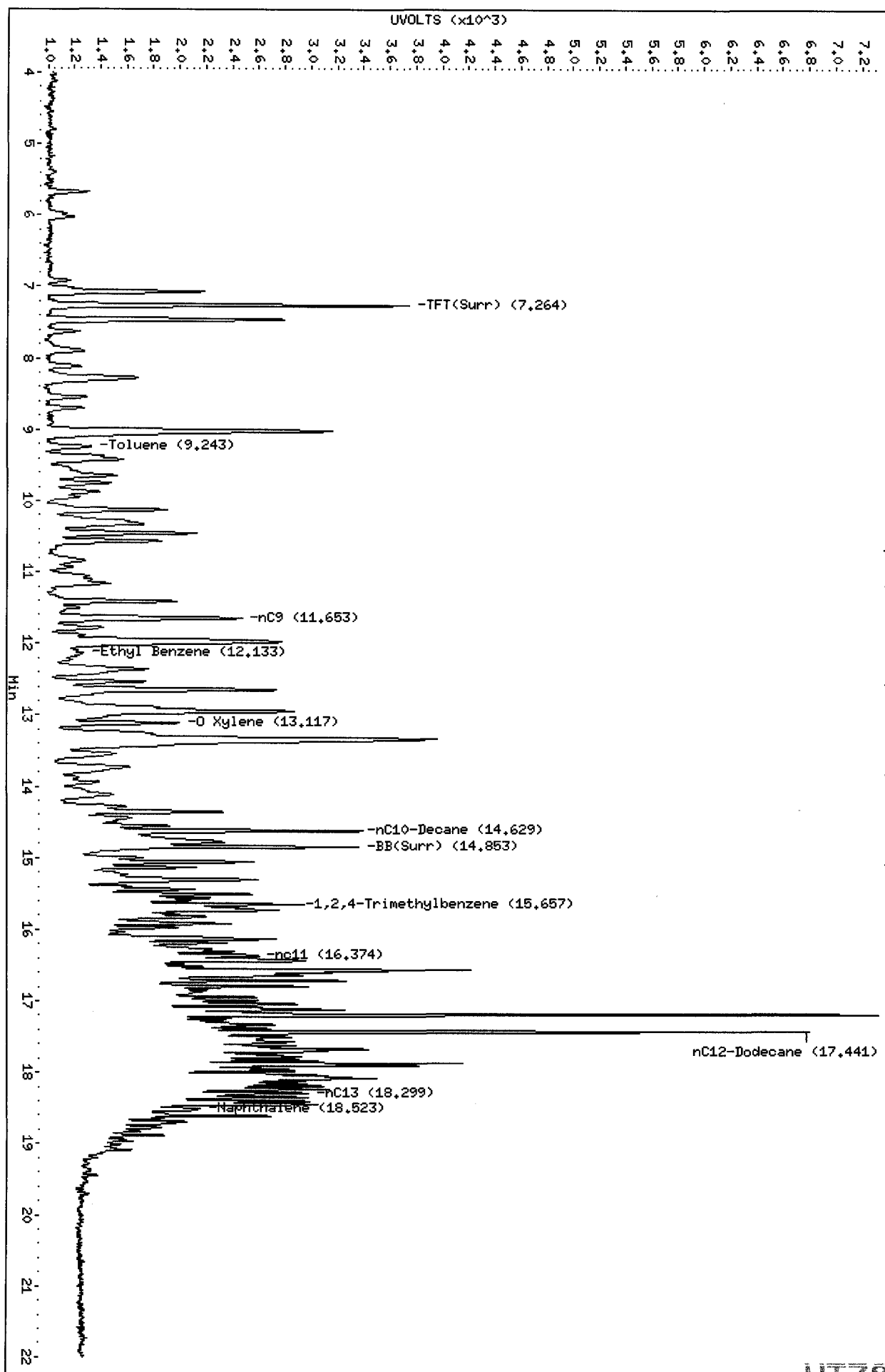


Be here
JW
5/18/12

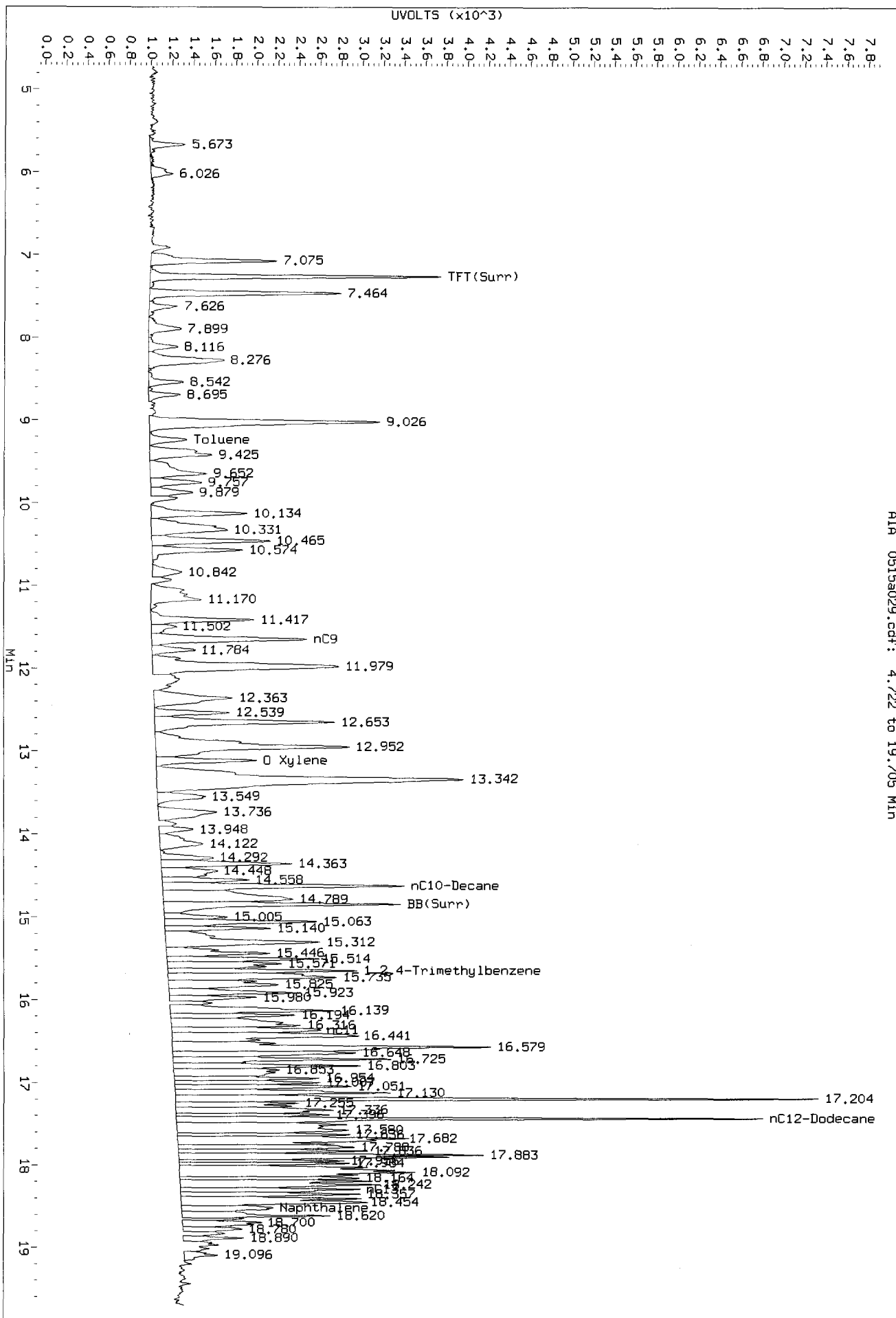
Data File: /chem3/pid2.i/051512a-1.b/0515a029.d
Date: 16-MAY-2012 01:06
Client ID: CMM-18-7-9-0512
Sample Info: UT780
Column phase: RTX 502-2 FID

Instrument: pid2.i
Operator: JM
Column diameter: 0.18

/chem3/pid2.i/051512a-1.b/0515a029.d/0515a029.cdf



Data File: /chem3/pld2.1/051512a-1.b/0515a029.d/0515a029.cdf
 Injection Date: 16-May-2012 01:06
 Instrument: pld2.1
 Client Sample ID: CMMW-18-7-9-0512



AIA 0515a029.cdf: 4.722 to 19.705 MIN

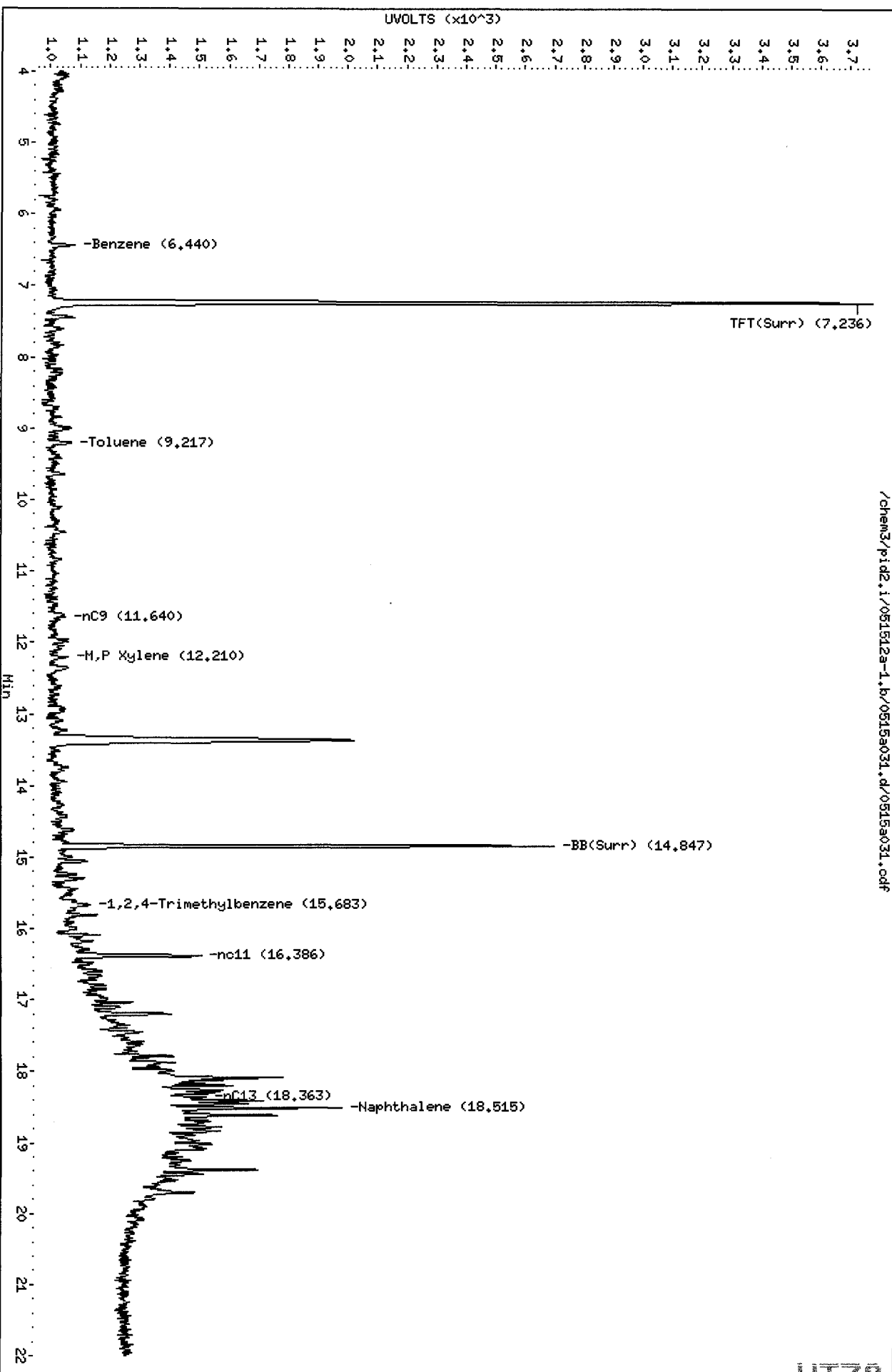
*Before
 5/18/12*

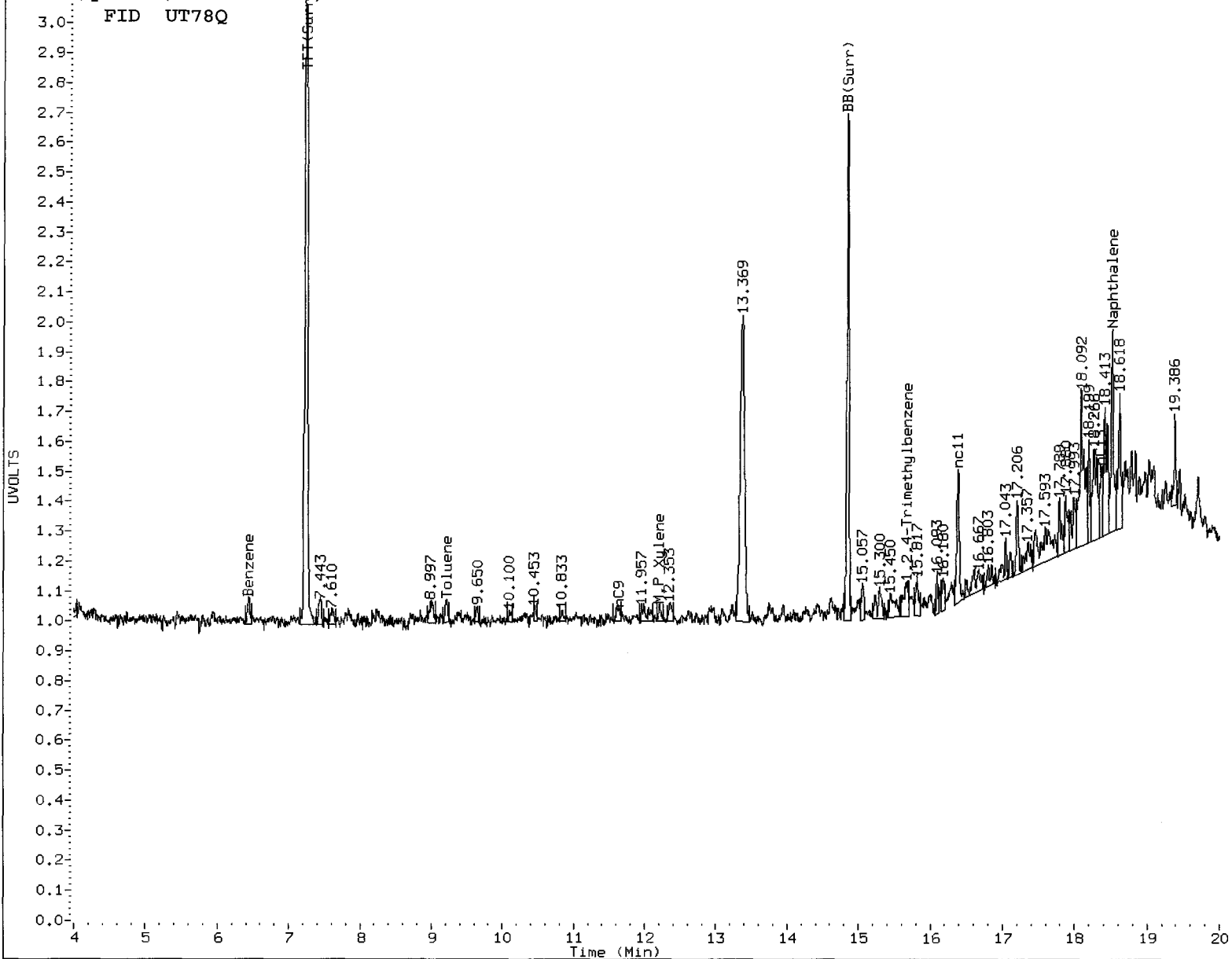
Data File: /chem3/pid2.i/051512a-1.b/0515a031.d
Date: 16-MAY-2012 02:02
Client ID: CBA-SB-80-3-5-0512
Sample Info: UT78Q

Instrument: pid2.i
Operator: JM
Column diameter: 0.18

Column phase: RTX 502-2 FID

/chem3/pid2.i/051512a-1.b/0515a031.d/0515a031.cdf





MANUAL INTEGRATION

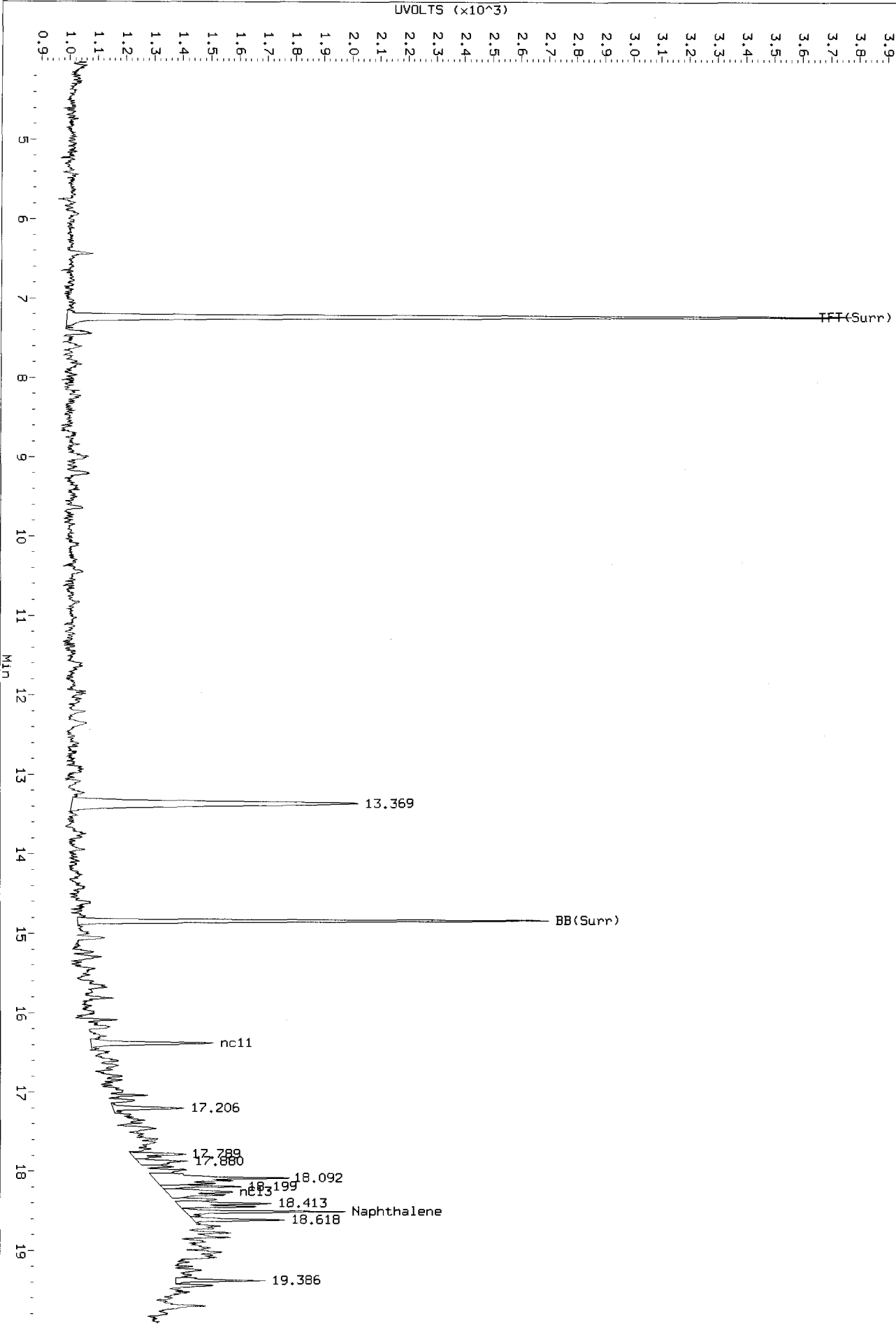
- ①. Baseline correction
- 2. Poor chromatography
- ③. Peak not found
- 4. Totals calculation

5. Other _____

Analyst: ju Date: 5/18/12

Data File: /chem3/pid2.1/051512a-1.b/0515a031.d/0515a031.cdf
Injection Date: 16-May-2012 02:02
Instrument: pid2.1
Client Sample ID: CBA-SB-80-3-5-0512

R1A 0515a031.cdf: 4.023 to 19.919 Min

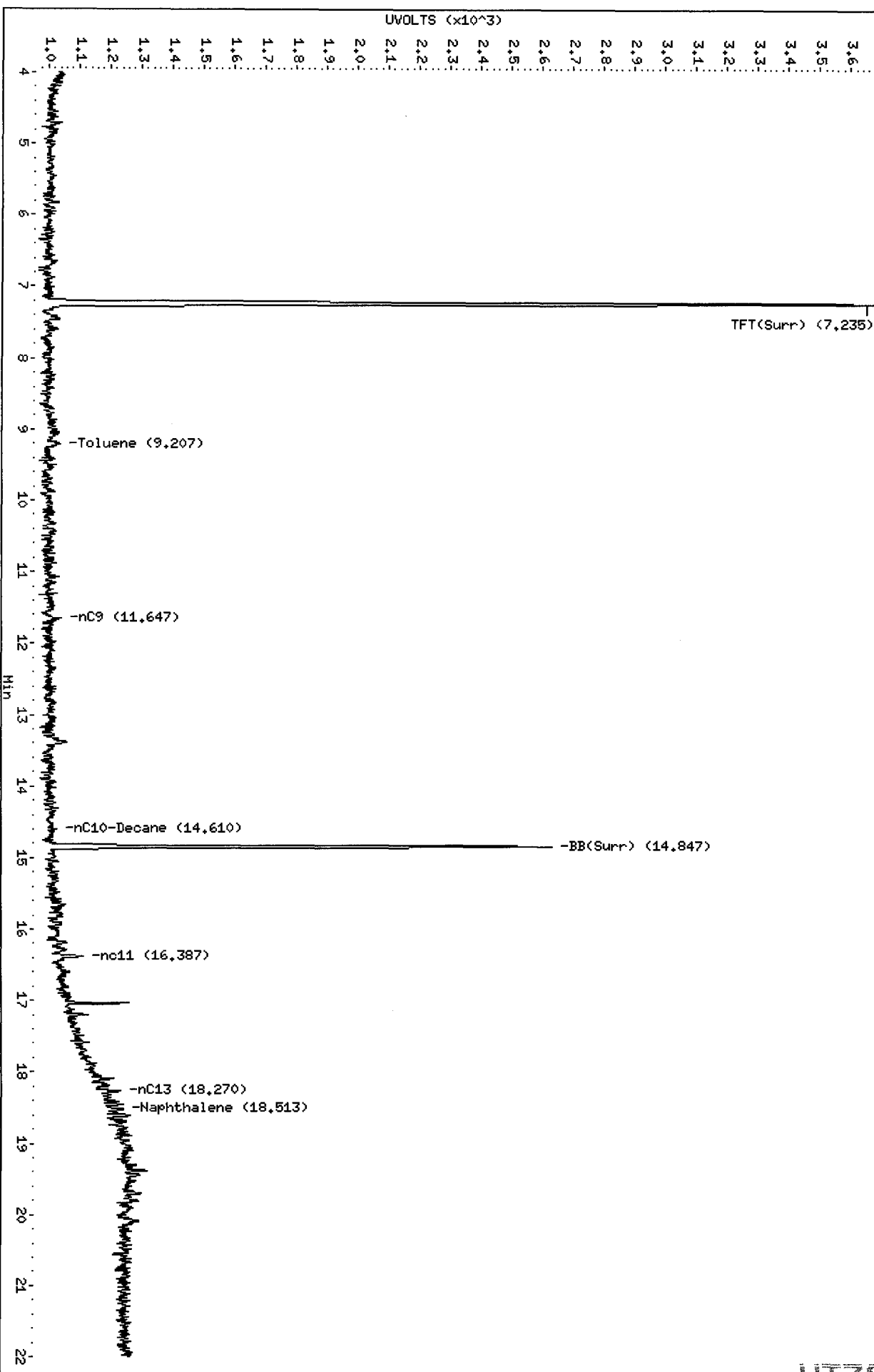


*Before
Two
shots*

Data File: /chem3/pid2.i/051512a-1.b/0515a032.d
Date: 16-MAY-2012 02:30
Client ID: CBA-TP-7-0-1-0512
Sample Info: UT78R
Column phase: RTX 502-2 FID

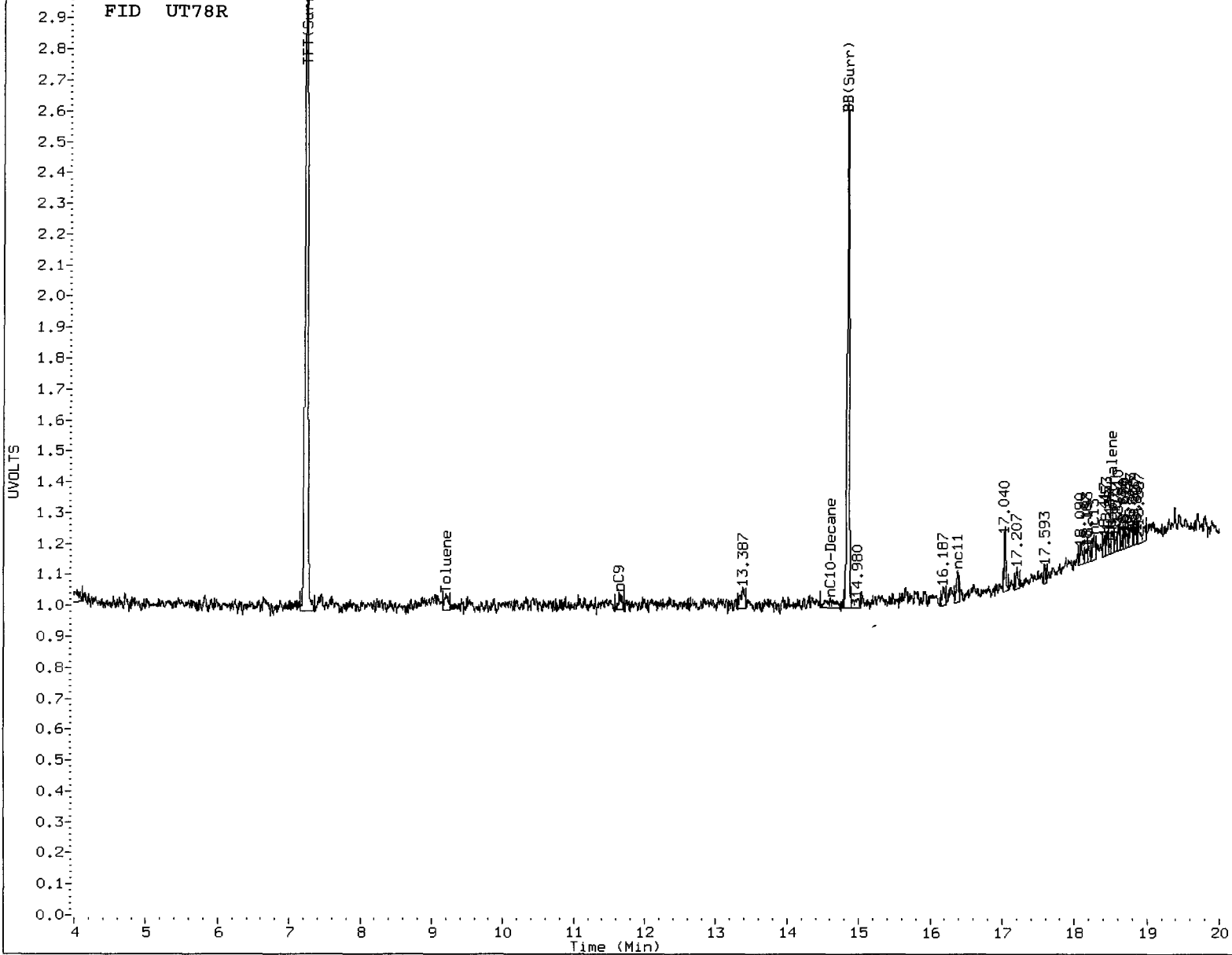
Instrument: pid2.i
Operator: JM
Column diameter: 0.18

/chem3/pid2.i/051512a-1.b/0515a032.d/0515a032.cdf



UT78 00058

FID UT78R



MANUAL INTEGRATION

- ①. Baseline correction
- 2. Poor chromatography
- ③. Peak not found
- 4. Totals calculation

5. Other _____

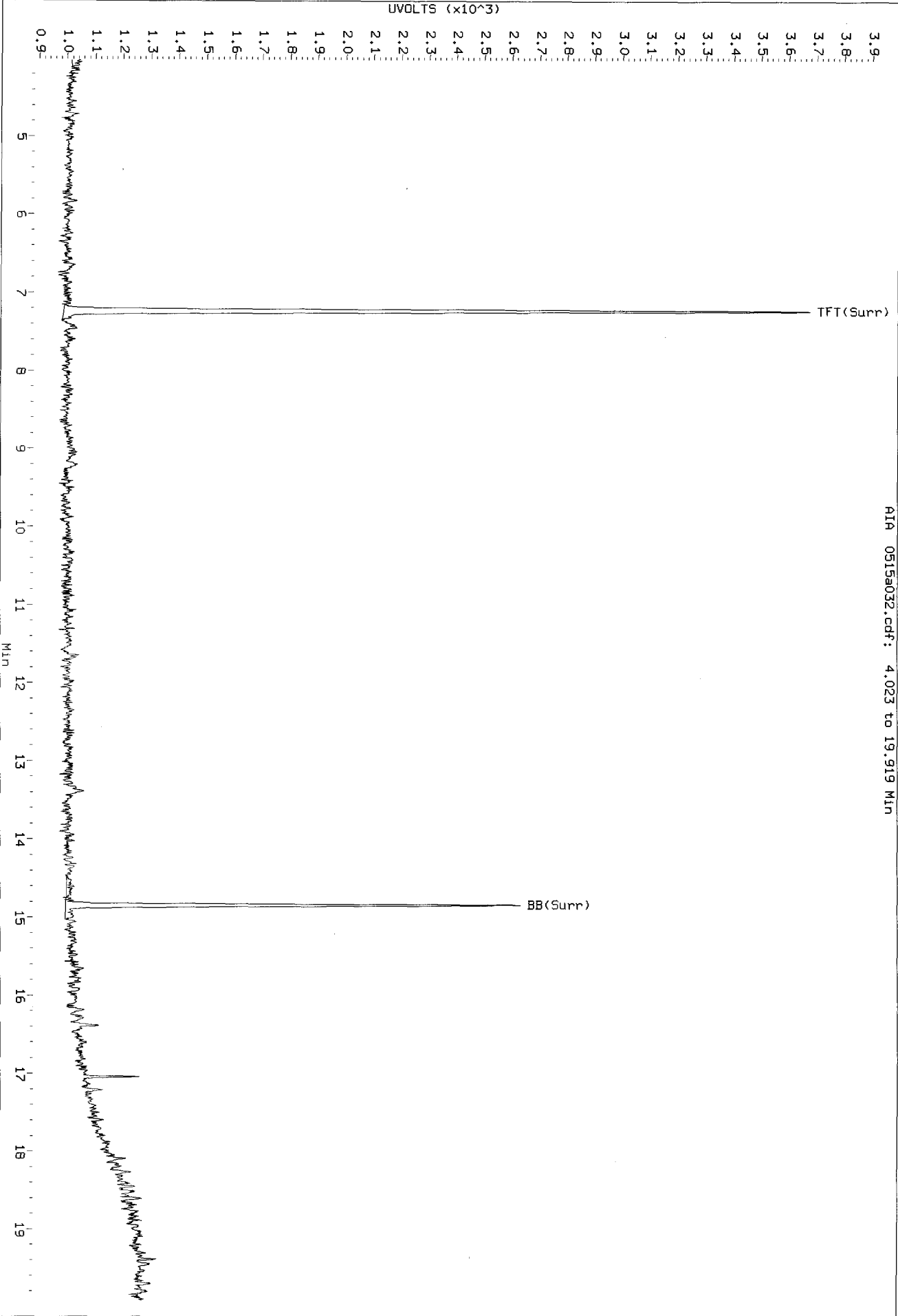
Analyst: JW

Date: 5/16/12

Data File: /chem3/pid2.1/051512a-1.b/0515a032.d/0515a032.cdf
Injection Date: 16-MAY-2012 02:30
Instrument: pid2.1
Client Sample ID: CBA-TP-7-0-1-0512

AIR 0515a032.cdf: 4.023 to 19.919 Min

Before
3/18/12



Data File: /chem3/pid2.i/051512a-1.b/0515a033.d

Date: 16-MAY-2012 02:58

Client ID: CBA-SB-2-3-5-0512

Sample Info: UT78S

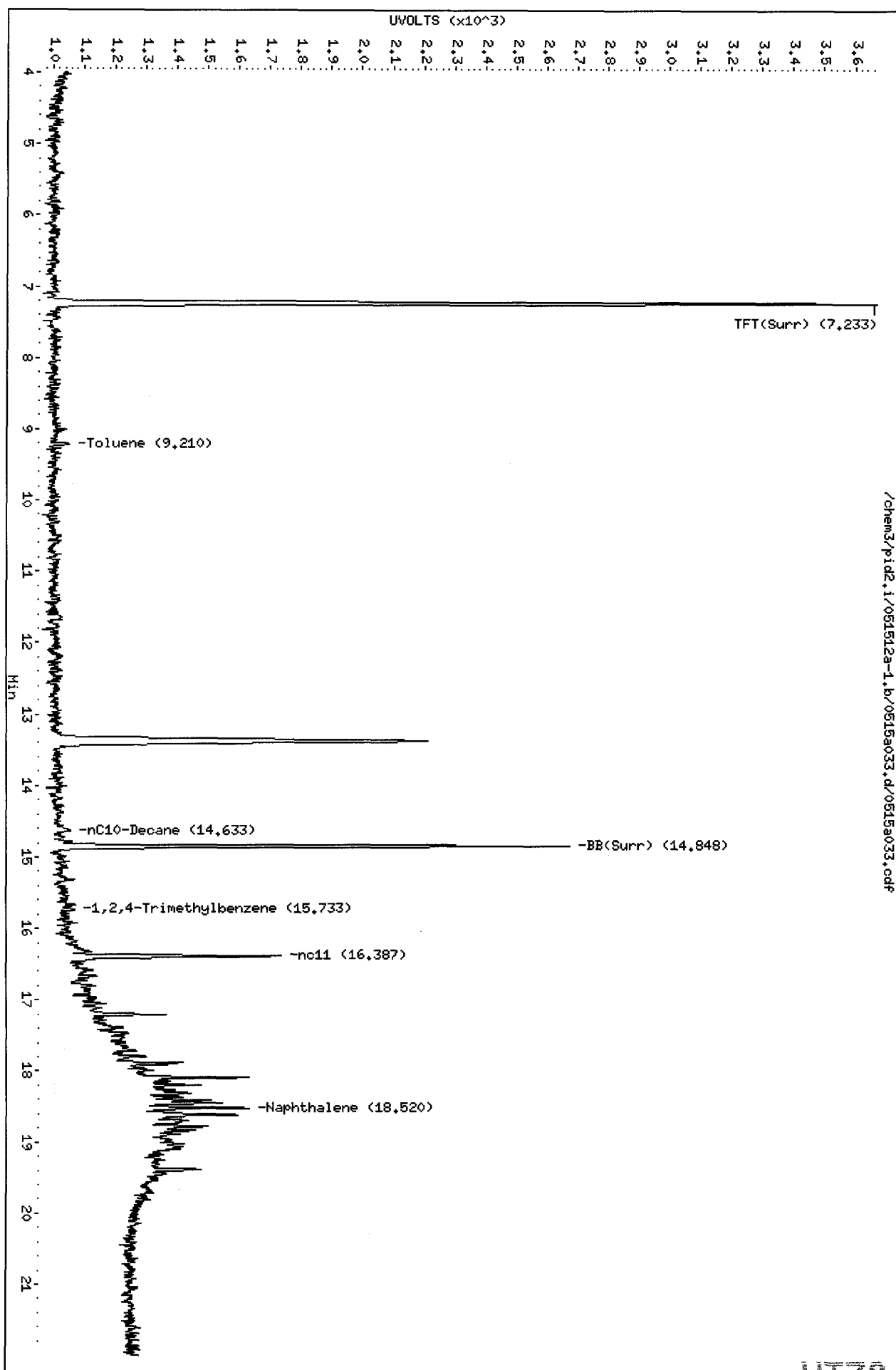
Column Phase: RTX 502-2 FID

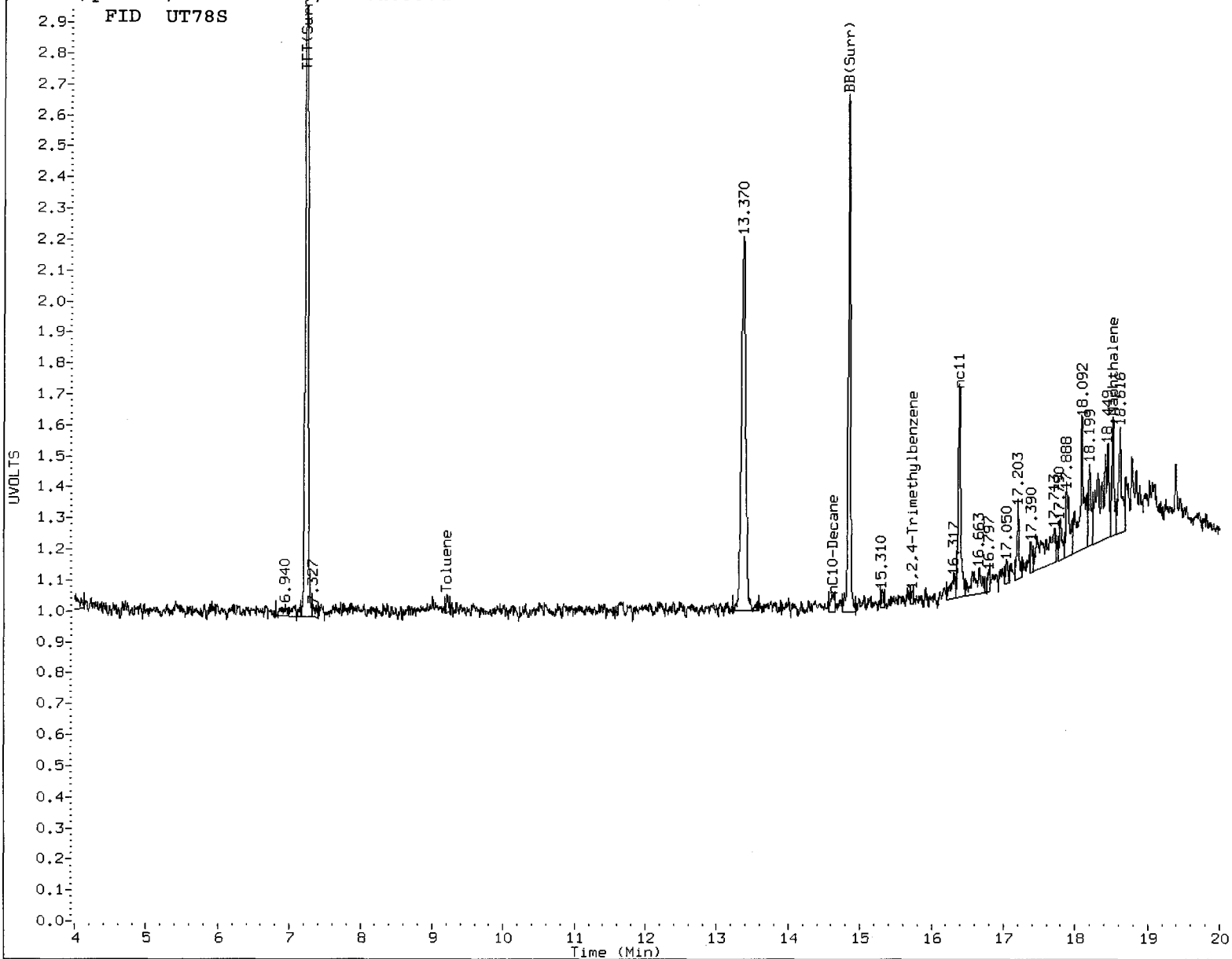
Instrument: pid2.i

Operator: JM

Column diameter: 0.18

/chem3/pid2.i/051512a-1.b/0515a033.d/0515a033.cdf





MANUAL INTEGRATION

- ①. Baseline correction
- 2. Poor chromatography
- ③. Peak not found
- 4. Totals calculation

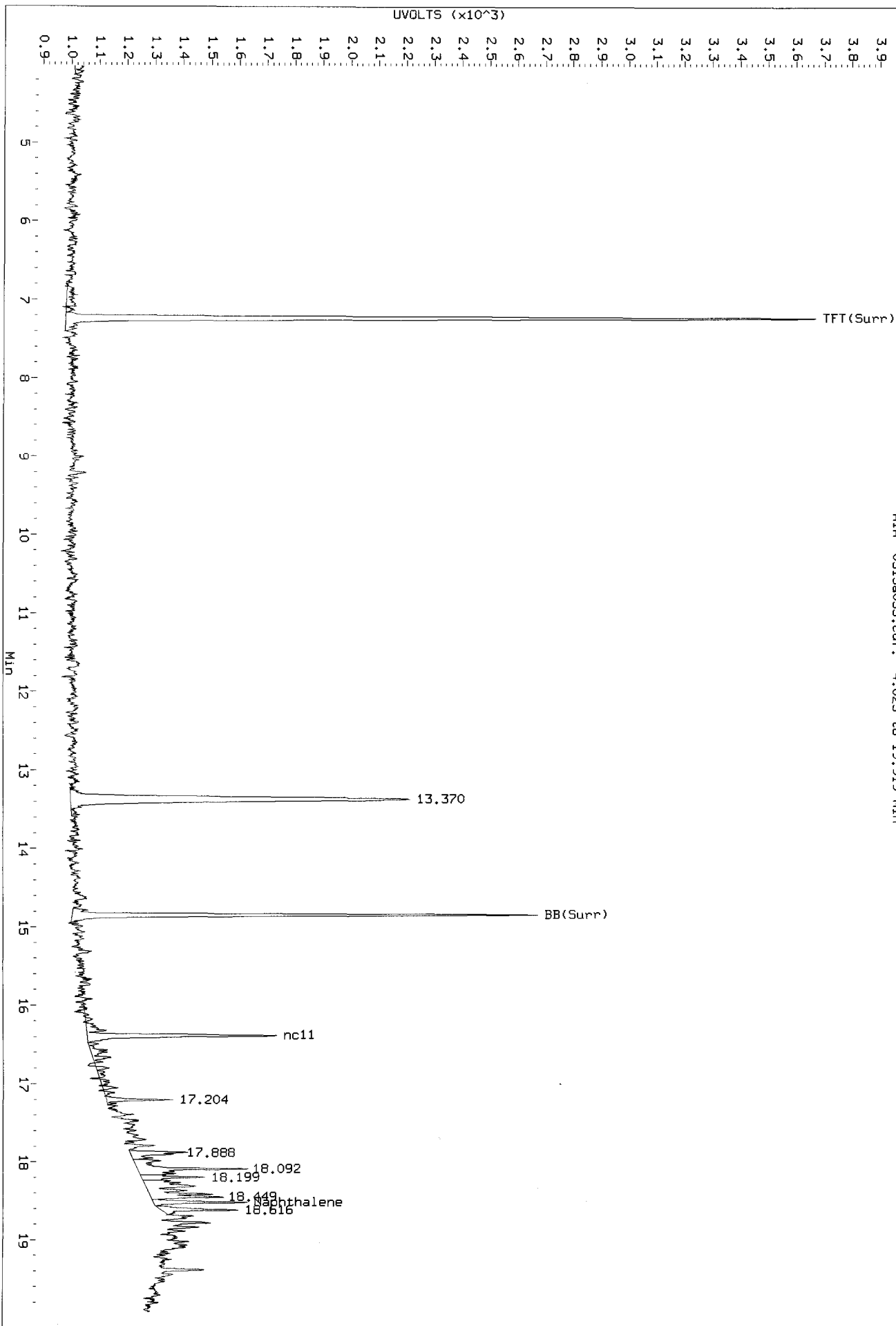
5. Other _____

Analyst: JW

Date: 5/16/12

Data File: /chem3/pid2.1/051512a-1.b/0515a033.d/0515a033.cdf
Injection Date: 16-MAY-2012 02:58
Instrument: pid2.1
Client Sample ID: CBA-SB-2-3-5-0512

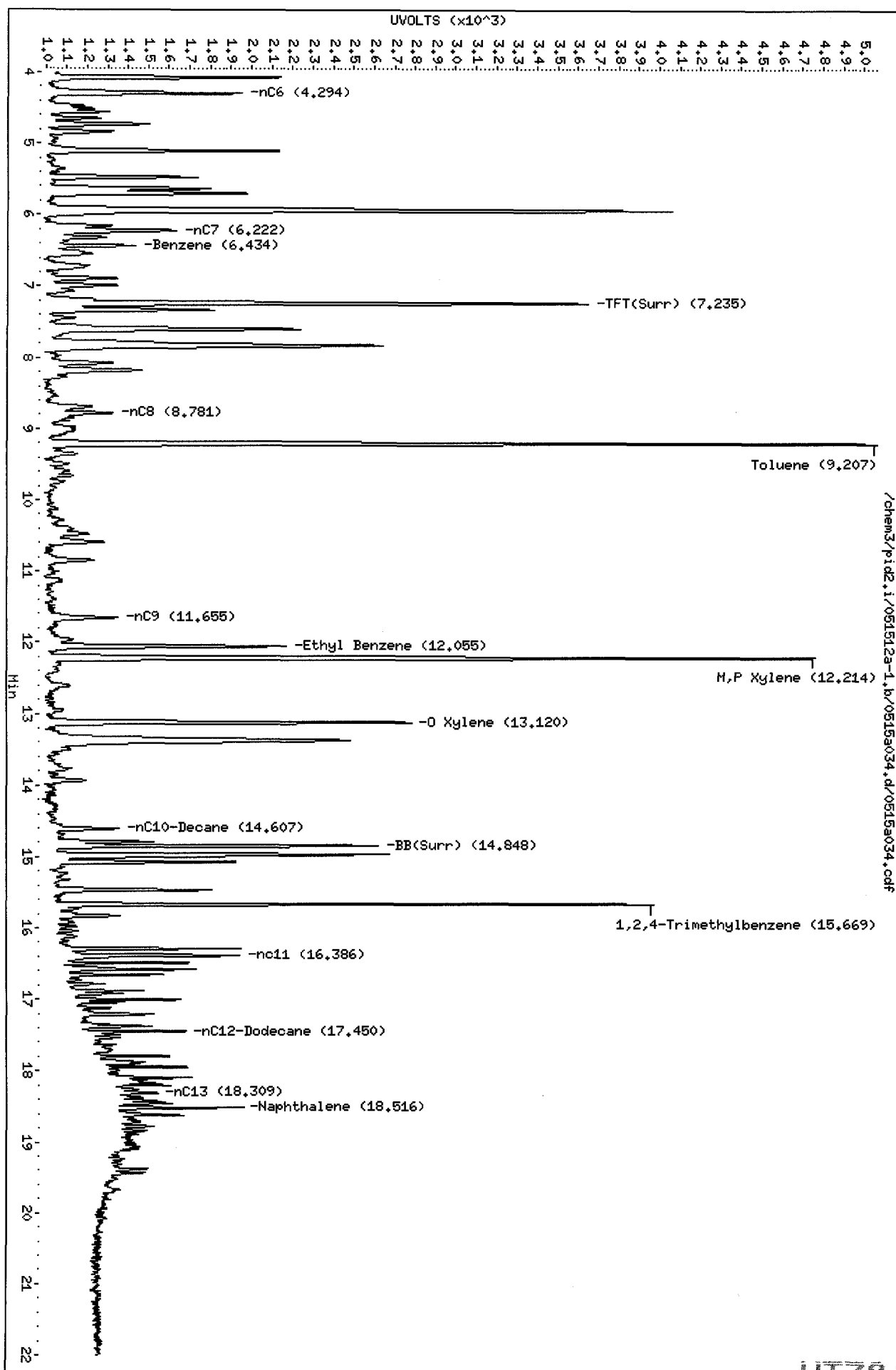
AIR 0515a033.cdf: 4.023 to 19.919 Min



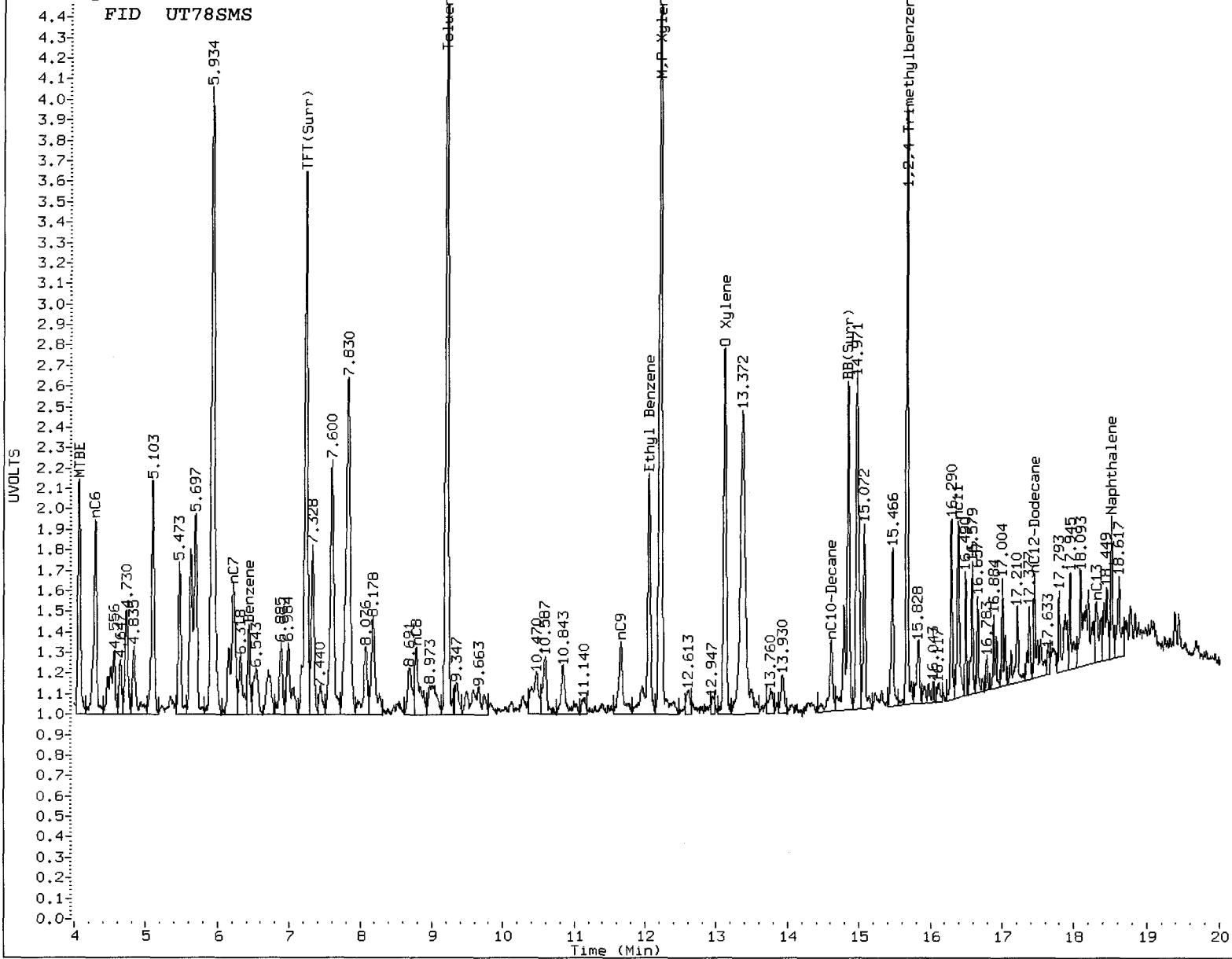
Before SW 5/18/12

Data File: /chem3/pid2.i/051512a-1.b/0515a034.d
Date: 16-MAY-2012 03:26
Client ID: CBA-SB-2-3-5-0512
Sample Info: UT78SHS
Column phase: RTX 502-2 FID

Instrument: pid2.i
Operator: JM
Column diameter: 0.18



/chem3/pid2.i/051512a-1.b/0515a034.d/0515a034.cdf



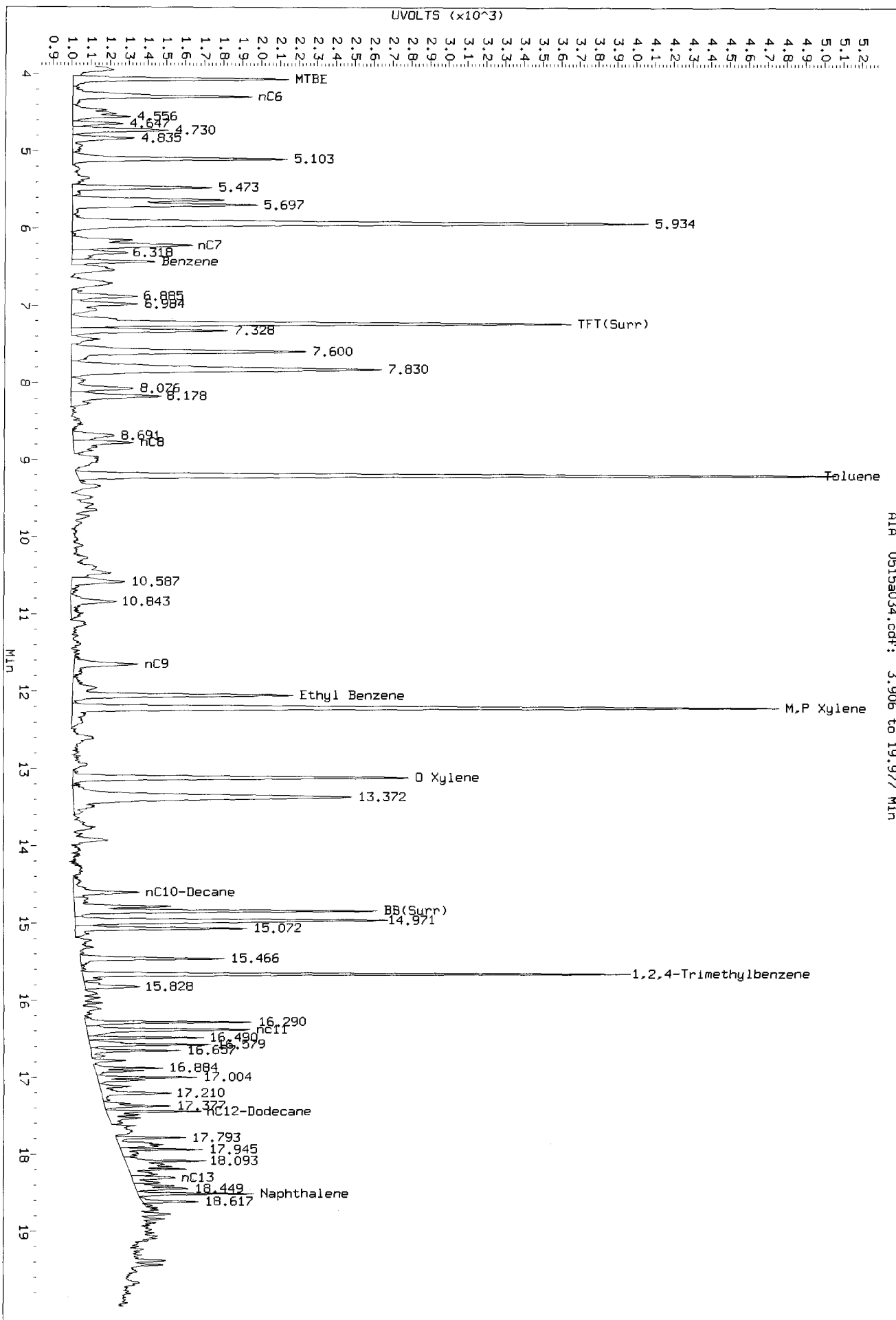
MANUAL INTEGRATION

- ① Baseline correction
2. Poor chromatography
- ③ Peak not found
4. Totals calculation

5. Other _____

Analyst: JW Date: 5/18/12

Data File: /chem3/pid2_1/051512a-1.b/0515a034.d/0515a034.cdf
Injection Date: 16-MAY-2012 03:26
Instrument: pid2.1
Client Sample ID: CBA-SB-2-3-5-0512

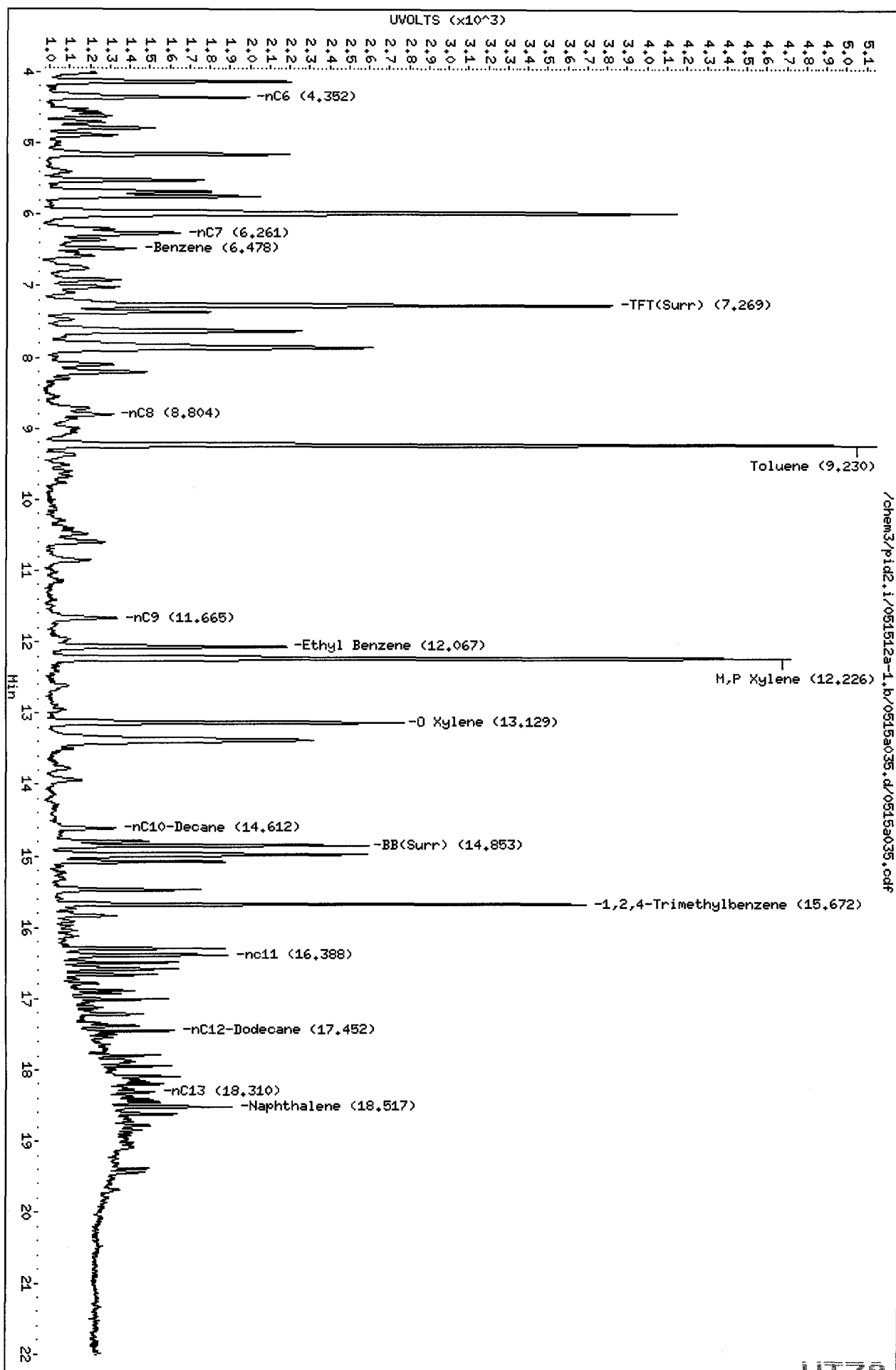


AIA 0515a034.cdf: 3.906 to 19.977 Min

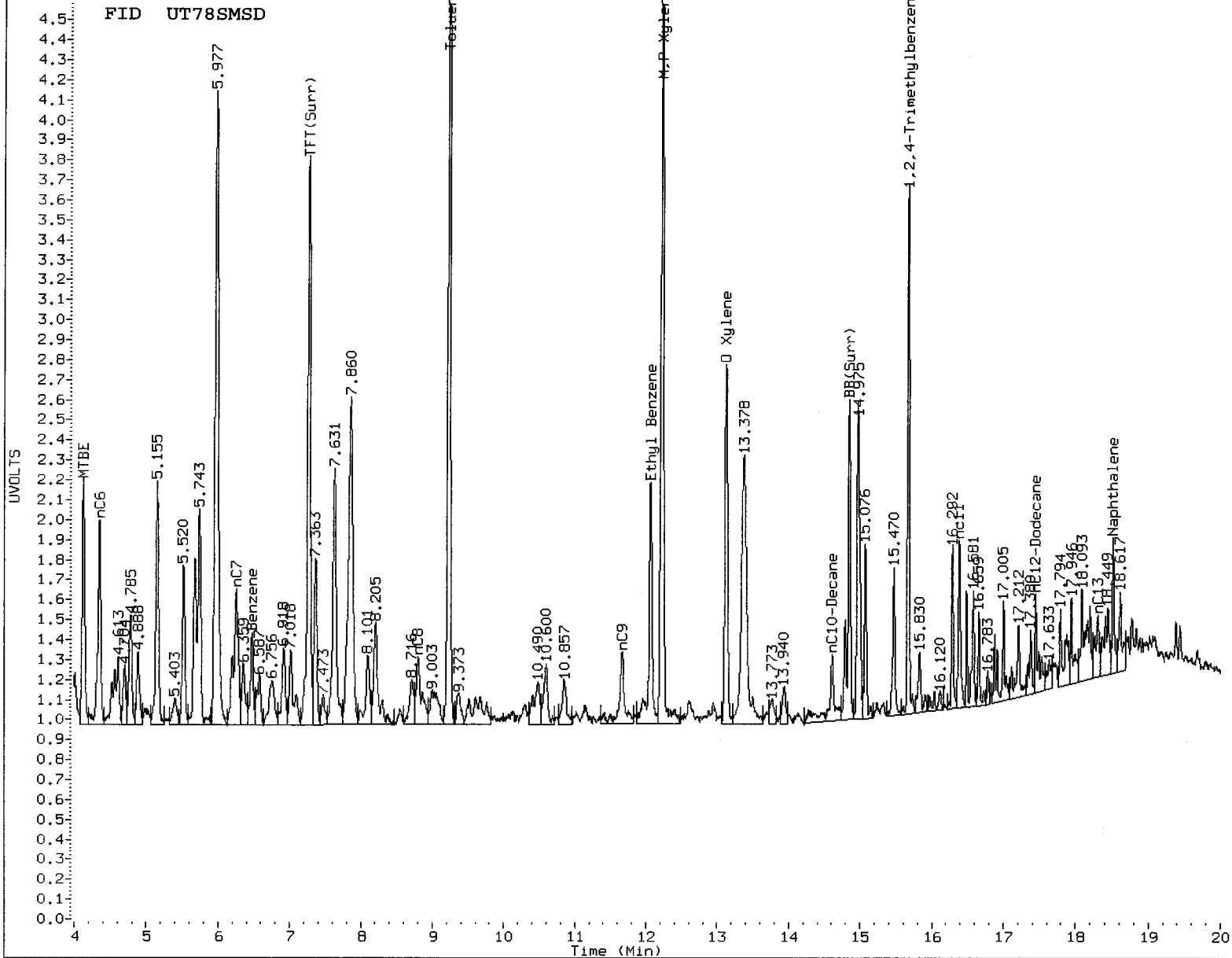
Before JW Skelton

Data File: /chem3/pid2.i/051512a-1.b/0515a035.d
Date: 16-MAY-2012 03:55
Client ID: CBA-SB-2-3-5-0512
Sample Info: UT78SHSD
Column phase: RTX 502-2 FID

Instrument: pid2.i
Operator: JM
Column diameter: 0.18



/chem3/pid2.i/051512a-1.b/0515a035.d/0515a035.cdf



MANUAL INTEGRATION

- ① Baseline correction
- ② Poor chromatography
- ③ Peak not found
- ④ Totals calculation
- ⑤ Other _____

Analyst: JW Date: 5/16/12

Data File: /chem3/pid2.i/051612-1.b/0516a006.d

Page 1

Date: 16-MAY-2012 12:13

Client ID:

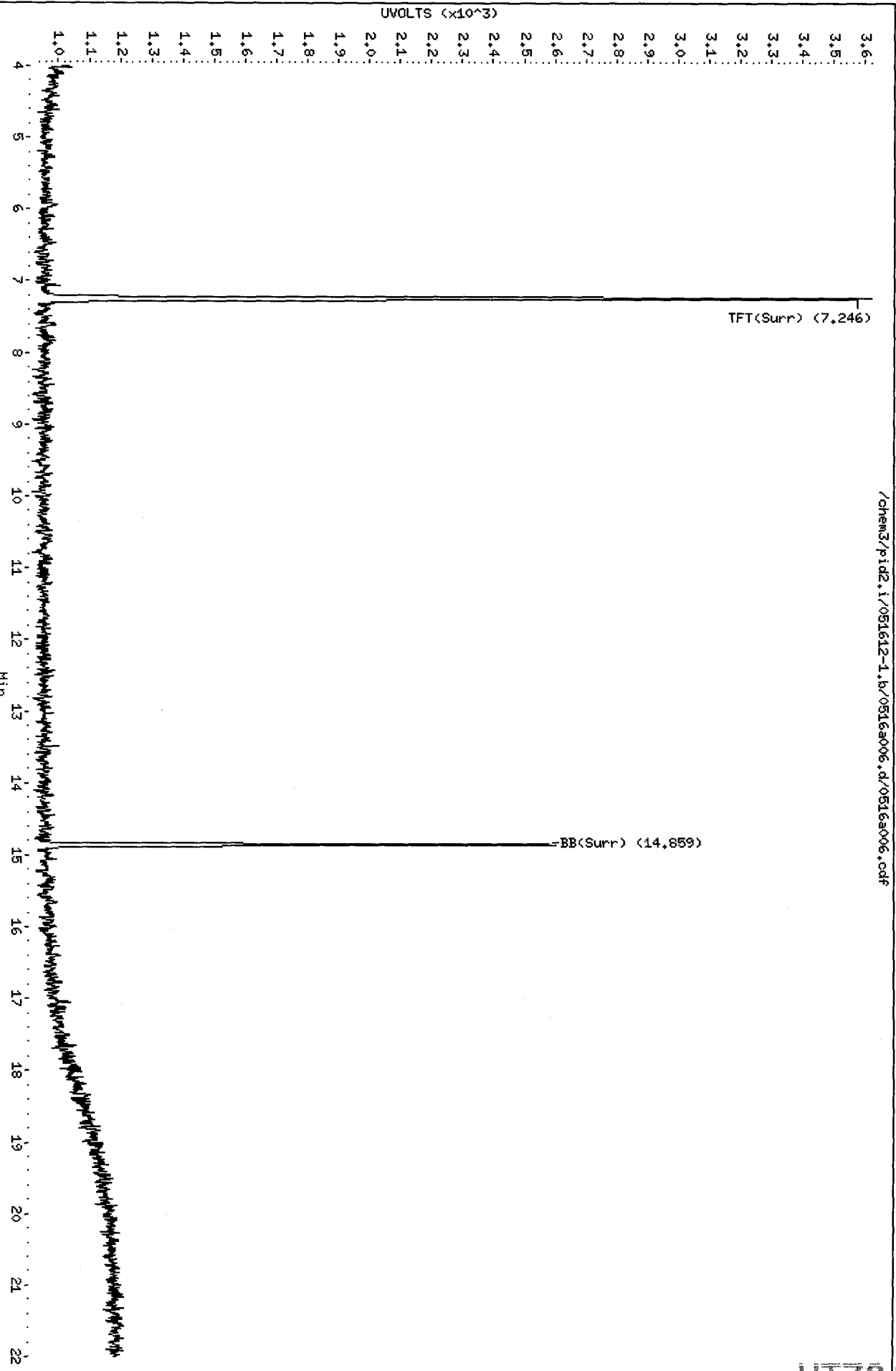
Instrument: pid2.1

Sample Info: MB0516

Operator: JM

Column phase: RTX 502-2 FID

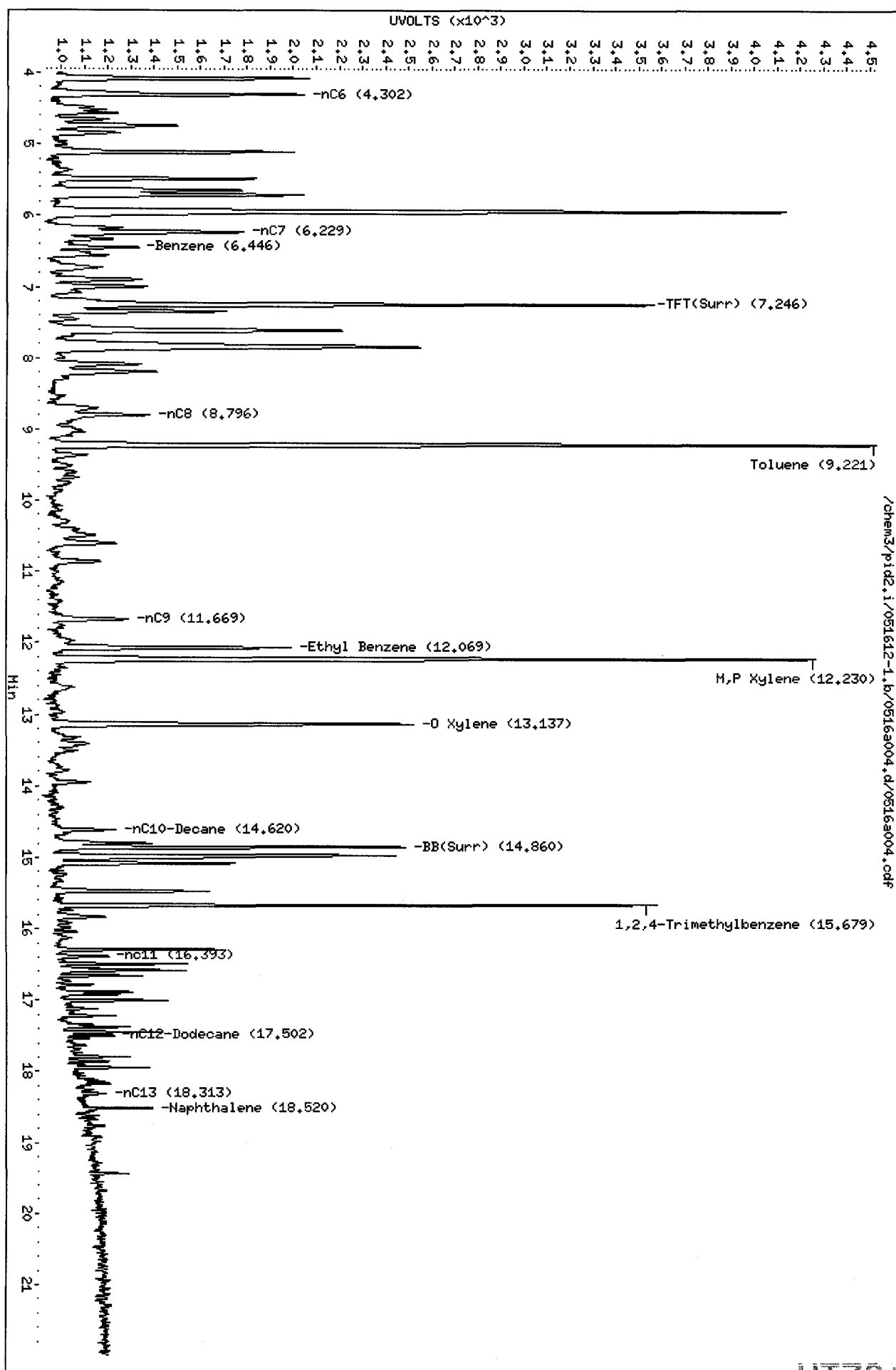
Column diameter: 0.18



00070 0070

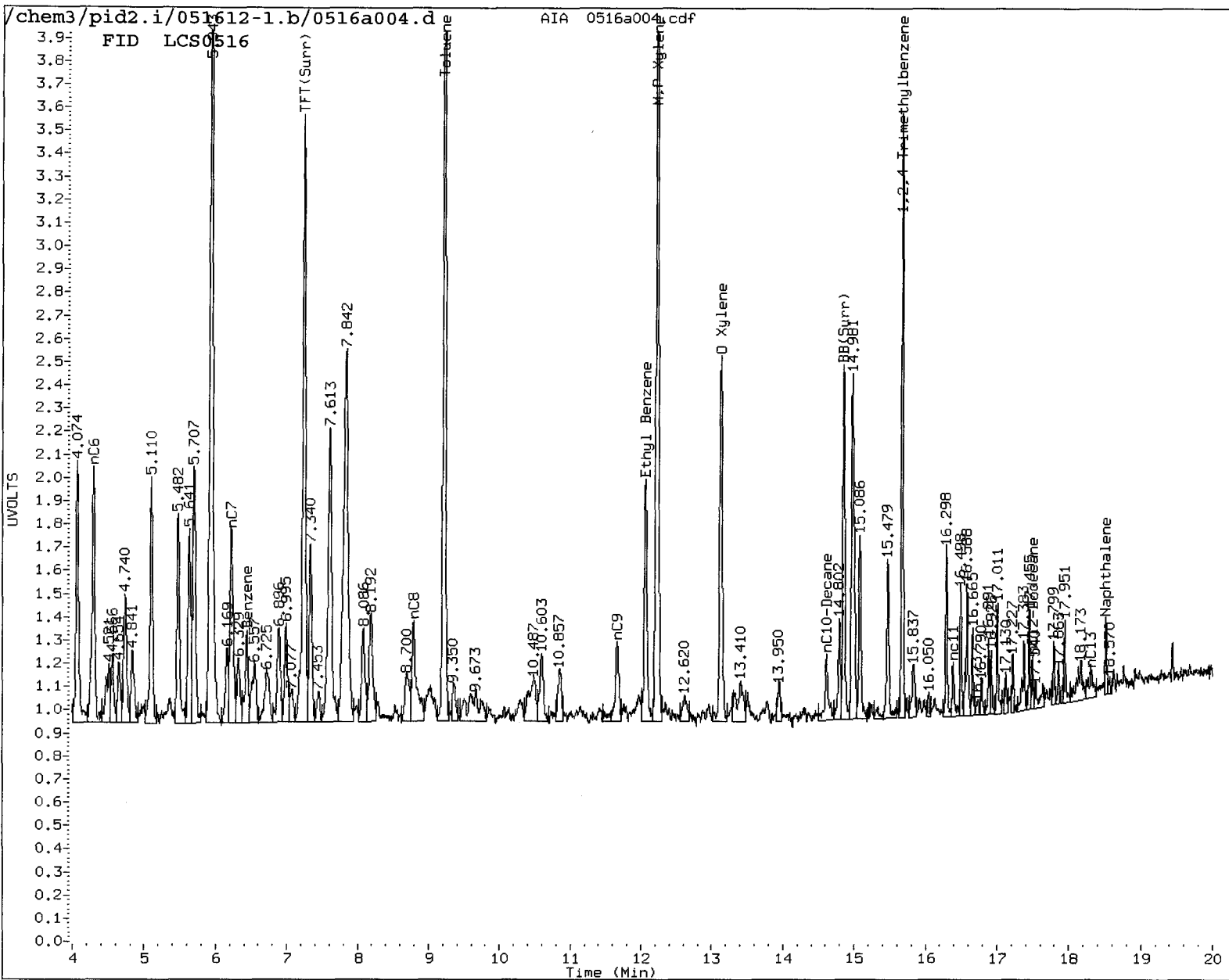
Data File: /chem3/pid2.i/051612-1.b/0516a004.d
Date: 16-MAY-2012 11:17
Client ID:
Sample Info: LCS0516
Column phase: RTX 502-2 FID

Instrument: pid2.i
Operator: JM
Column diameter: 0.18



/chem3/pid2.i/051612-1.b/0516a004.d/0516a004.cdf

UT78 00071



MANUAL INTEGRATION

- ① Baseline correction
2. Poor chromatography
- ③ Peak not found
4. Totals calculation

5. Other _____

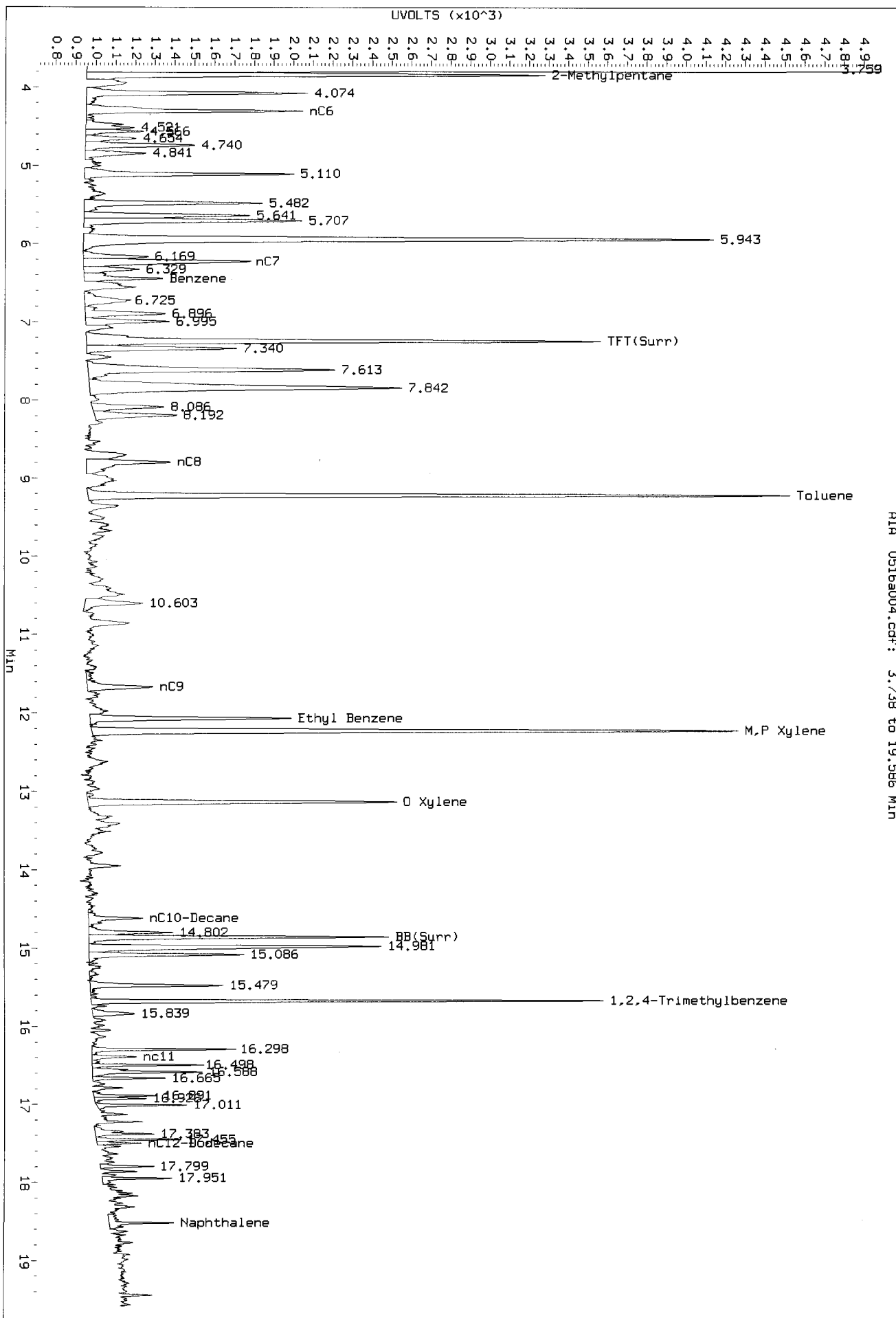
Analyst: rw

Date: 5/8/12

Data File: /chem3/p102.1/051612-1.b/0516a004.d/0516a004.cdf
Injection Date: 16-May-2012 11:17
Instrument: p102.1
Client Sample ID:

RI# 0516a004.cdf: 3.738 to 19.586 Min

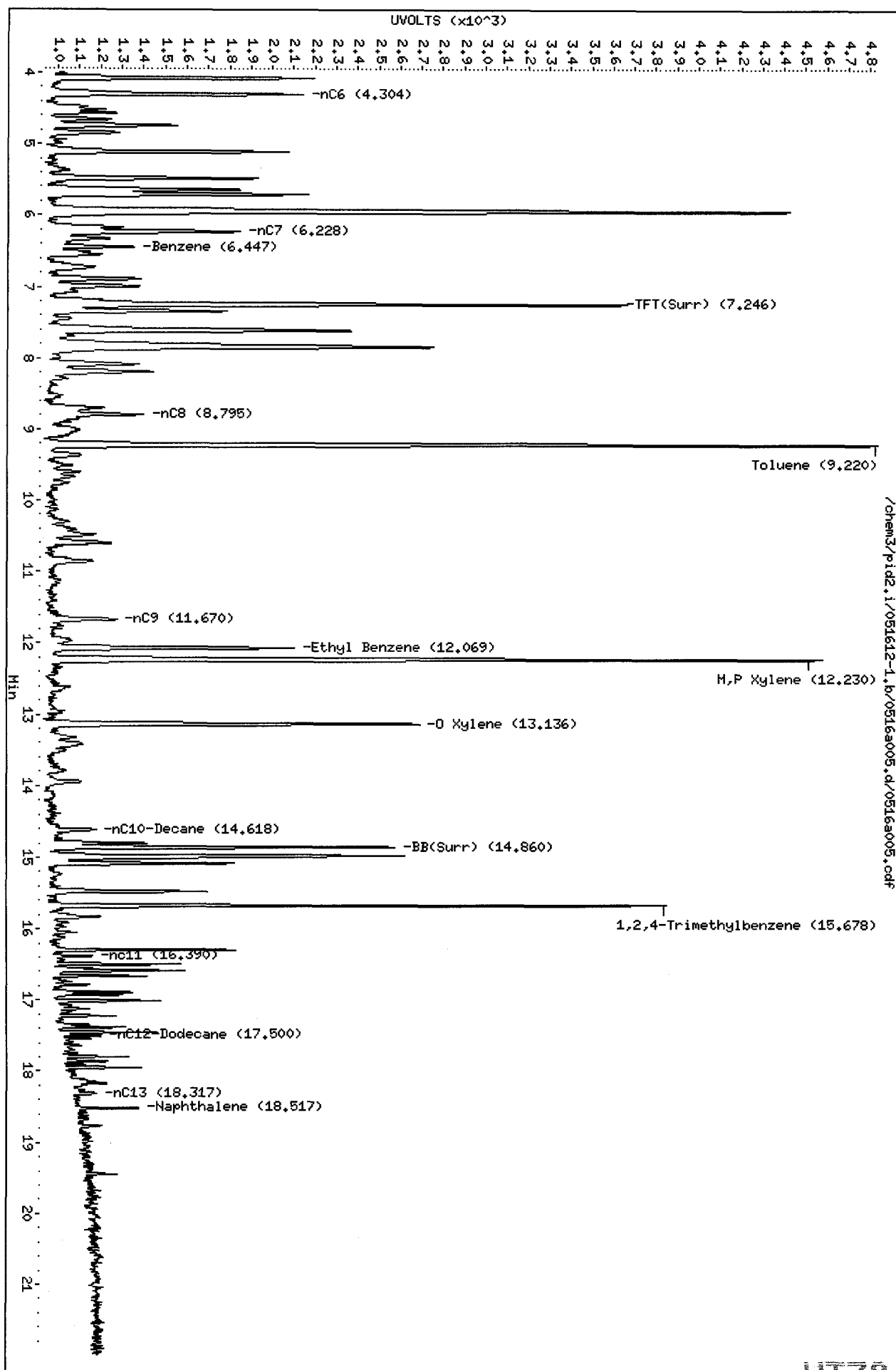
*Labore
to
Stell*



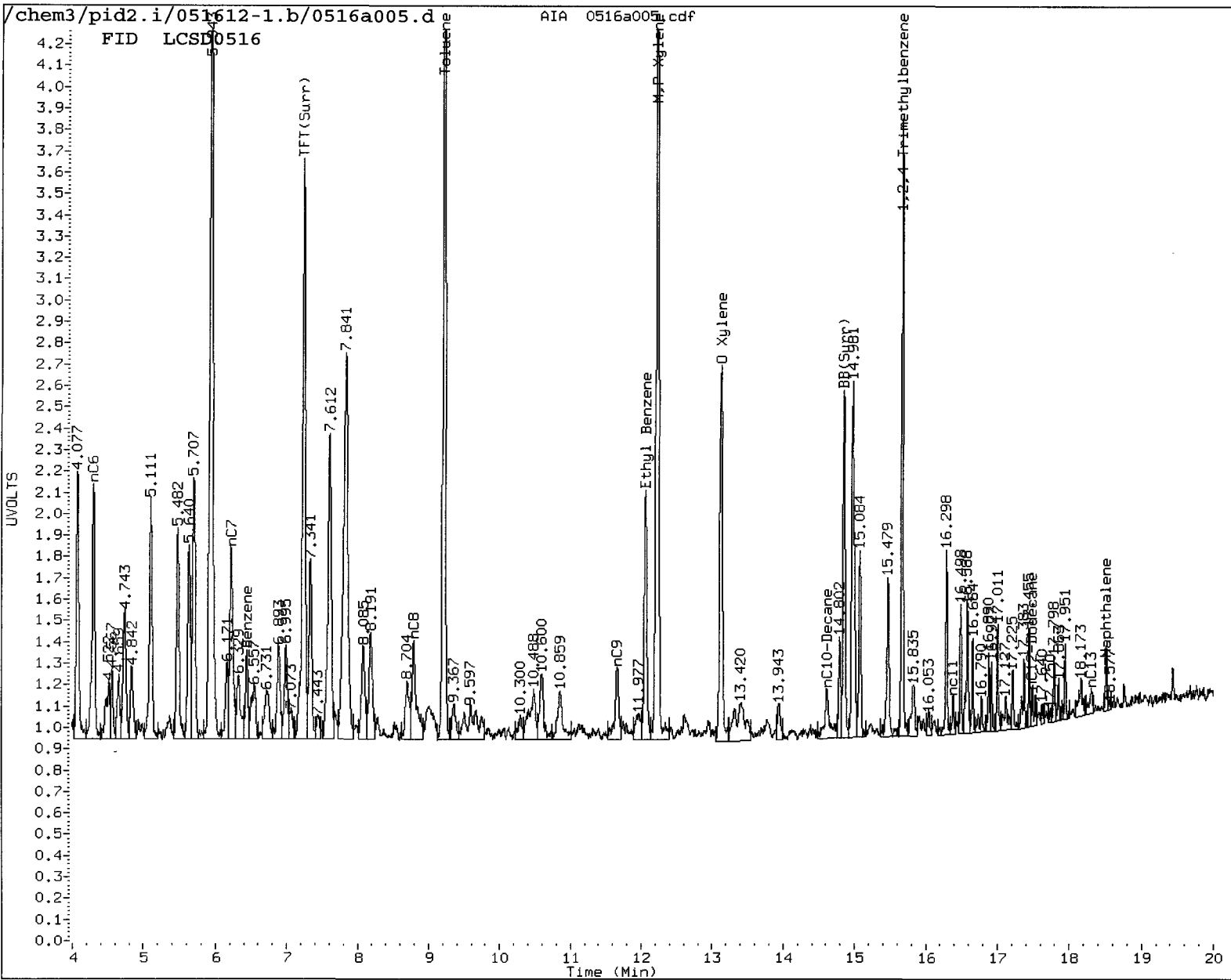
UT78: 00073

Data File: /chem3/pid2.i/051612-1.b/0516a005.d
Date: 16-MAY-2012 11:45
Client ID:
Sample Info: LCSD0516
Column Phase: RTX 502-2 FID

Instrument: pid2.1
Operator: JM
Column diameter: 0.18



/chem3/pid2.i/051612-1.b/0516a005.d/0516a005.cdf



MANUAL INTEGRATION

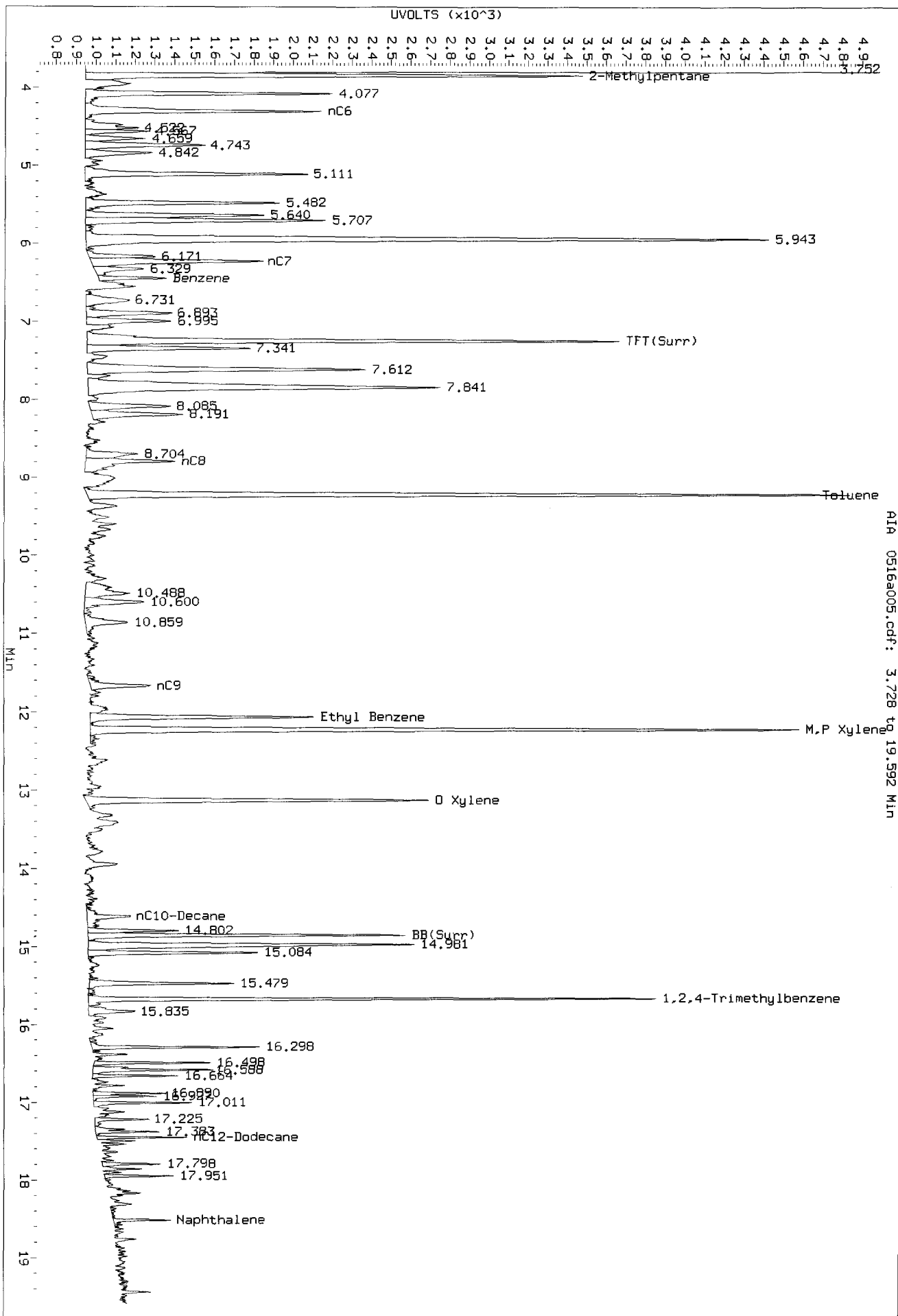
- ①. Baseline correction
2. Poor chromatography
- ③. Peak not found
4. Totals calculation

5. Other _____

Analyst: JW

Date: 5/18/12

Data File: /chem3/p102.1/051612-1.b/0516a005.d/0516a005.cdf
Injection Date: 16-MAY-2012 11:45
Instrument: p102.1
Client Sample ID:



AIA 0516a005.cdf: 3.728 to 19.592 Min

*Before
05/16/12*

Data File: /chem3/pid2.1/051612-1.b/0516a007.d

Date: 16-MAY-2012 13:05

Client ID: CBA-SB-1-3-5-0512

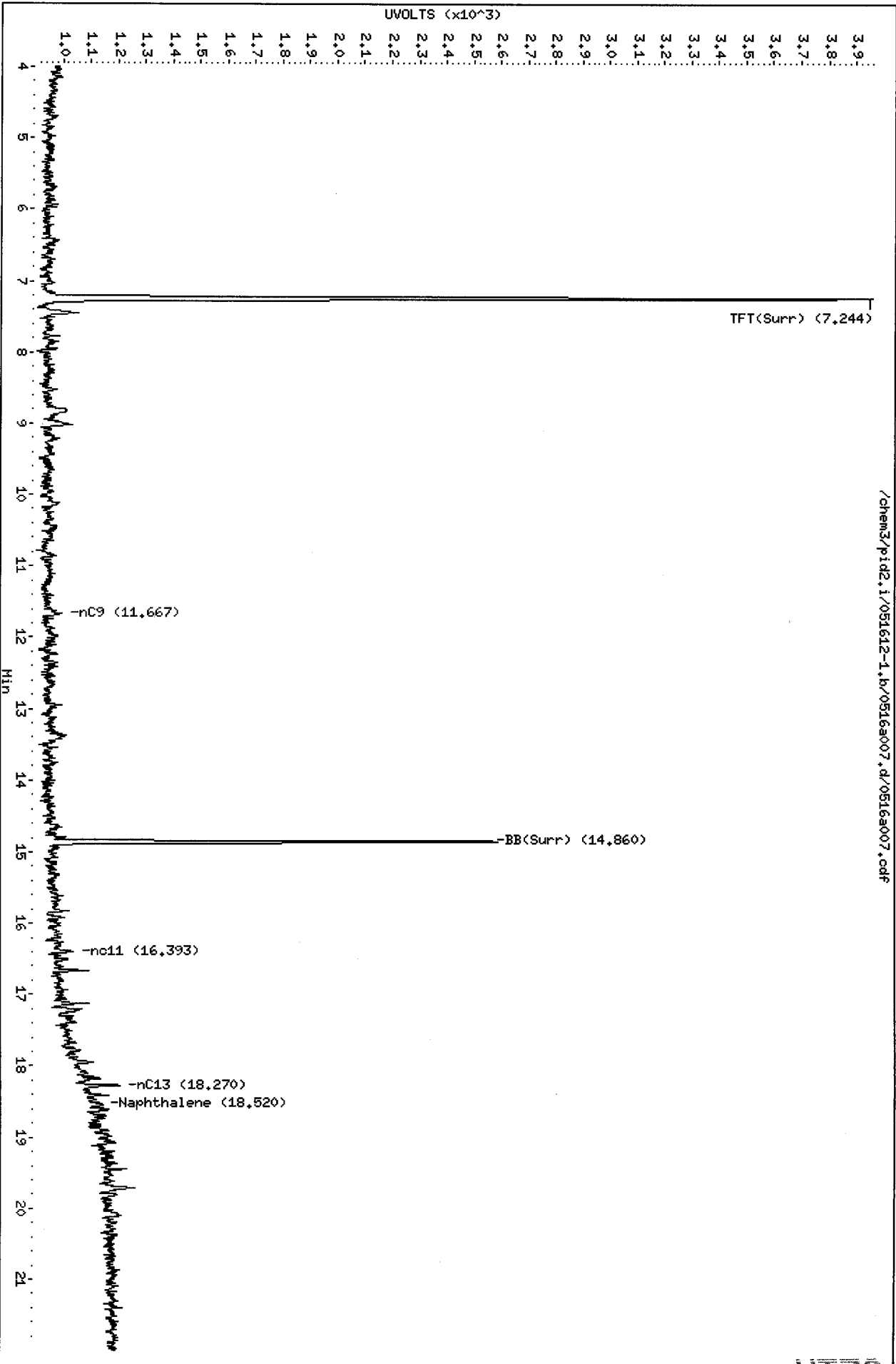
Sample Info: UT788

Column phase: RTX 502-2 FID

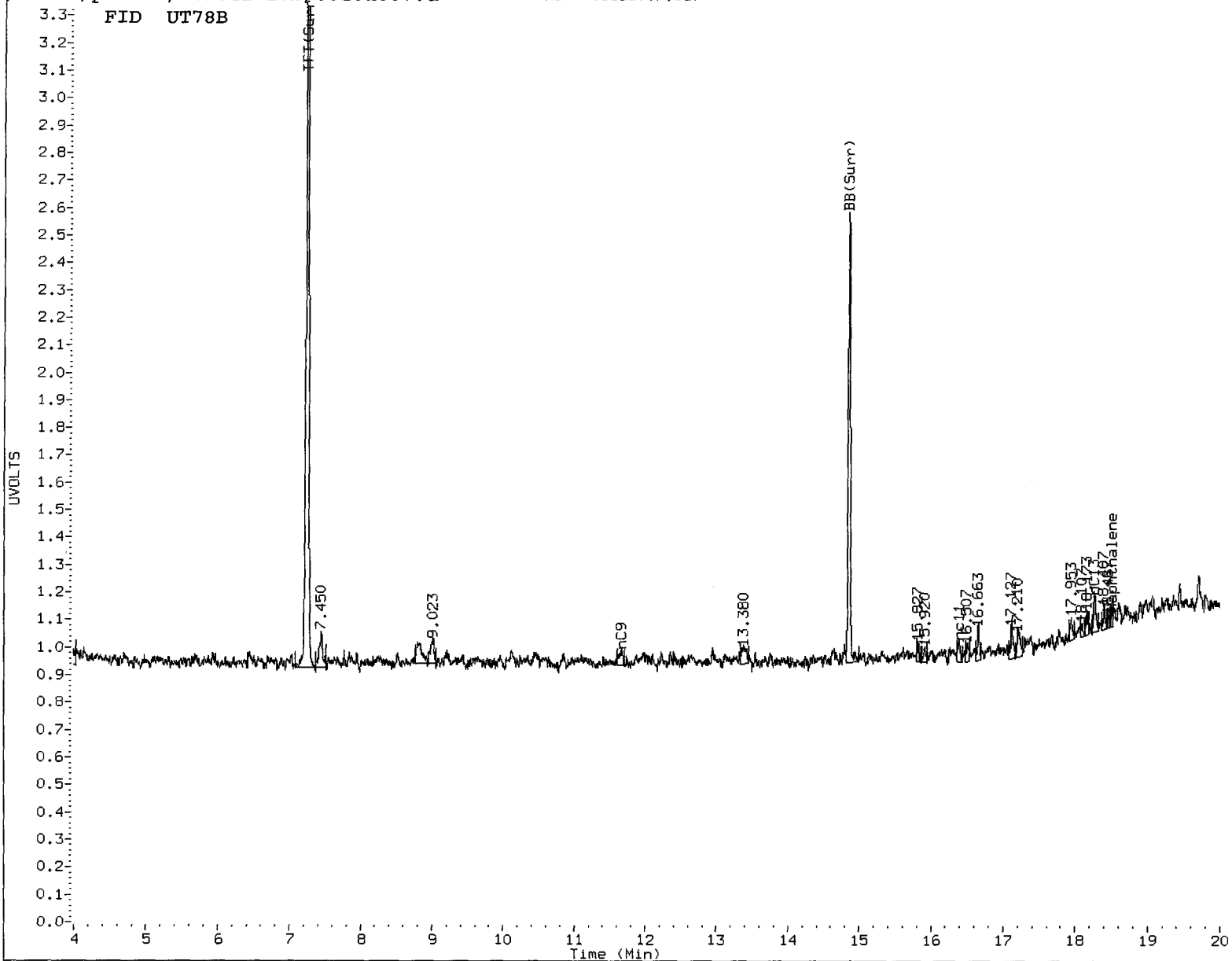
Instrument: pid2.1

Operator: JM

Column diameter: 0.18



UT78 00077



MANUAL INTEGRATION

- ①. Baseline correction
- 2. Poor chromatography
- ③. Peak not found
- 4. Totals calculation

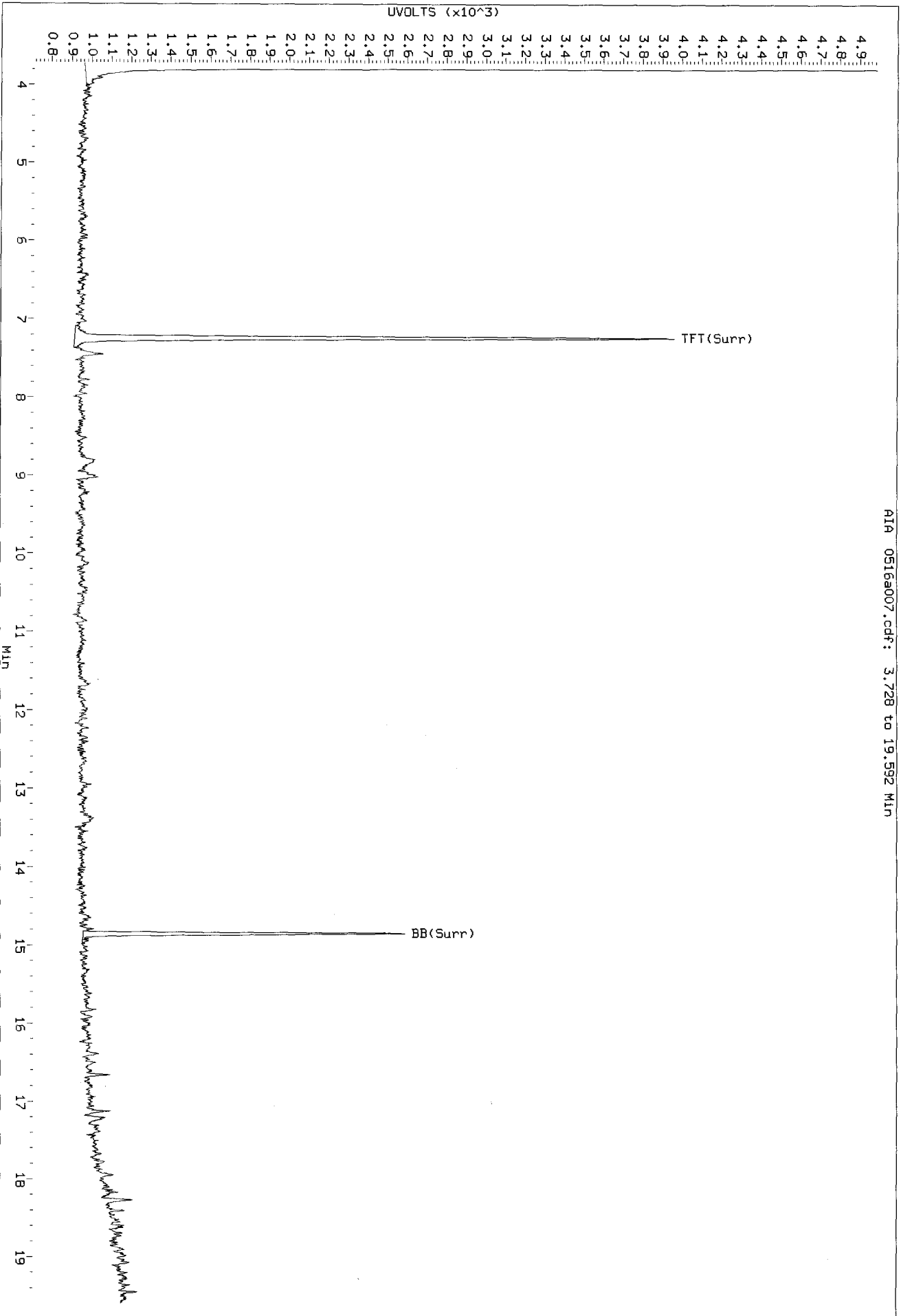
- 5. Other _____

Analyst: JW Date: 5/16/12

Data File: /chem3/pid2-1/051612-1.b/0516a007.d/0516a007.cdf
Injection Date: 16-MAY-2012 13:05
Instrument: pid2.1
Client Sample ID: CBA-SB-1-3-5-0512

AIA 0516a007.cdf: 3.728 to 19.592 Min

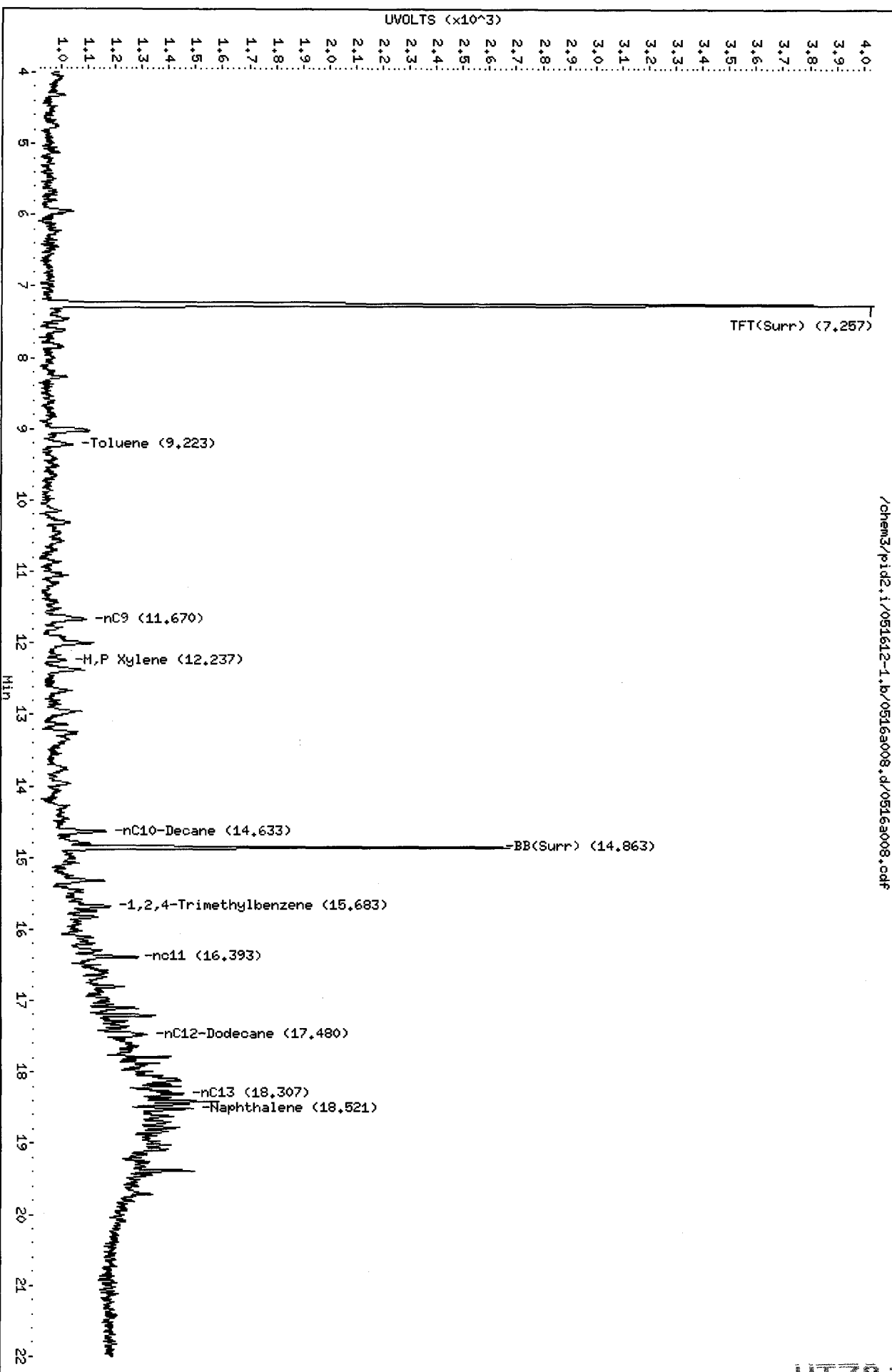
*Before
JCS
5/16/12*



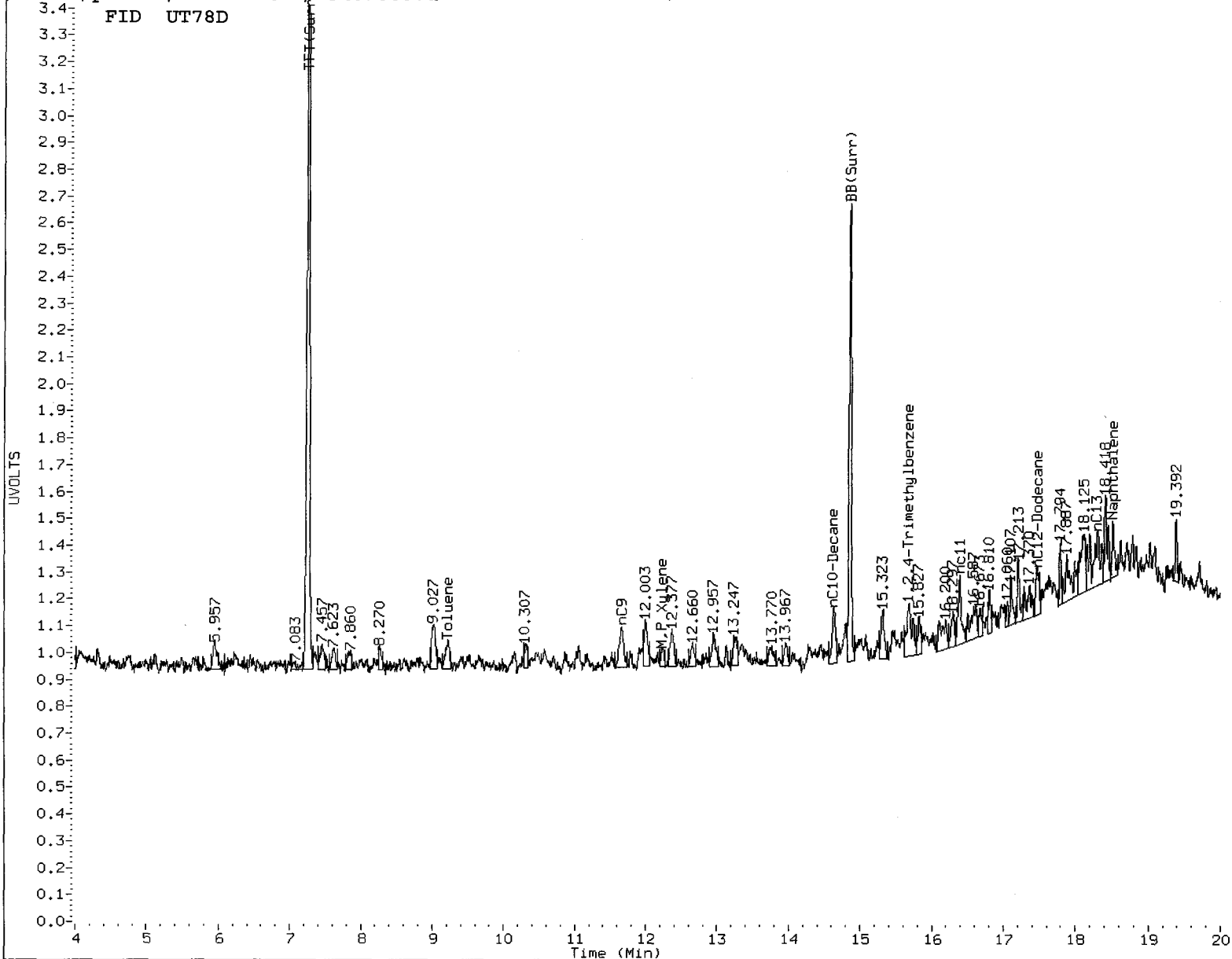
Data File: /chem3/pid2.i/051612-1.b/0516a008.d
Date: 16-MAY-2012 13:33
Client ID: CBA-SB-3-1-3-0512
Sample Info: UT780

Instrument: pid2.i
Operator: JM
Column diameter: 0.18

Column phase: RTX 502-2 FID



/chem3/pid2.i/051612-1.b/0516a008.d/0516a008.cdf



MANUAL INTEGRATION

- ①. Baseline correction
- 2. Poor chromatography
- ③. Peak not found
- 4. Totals calculation

5. Other _____

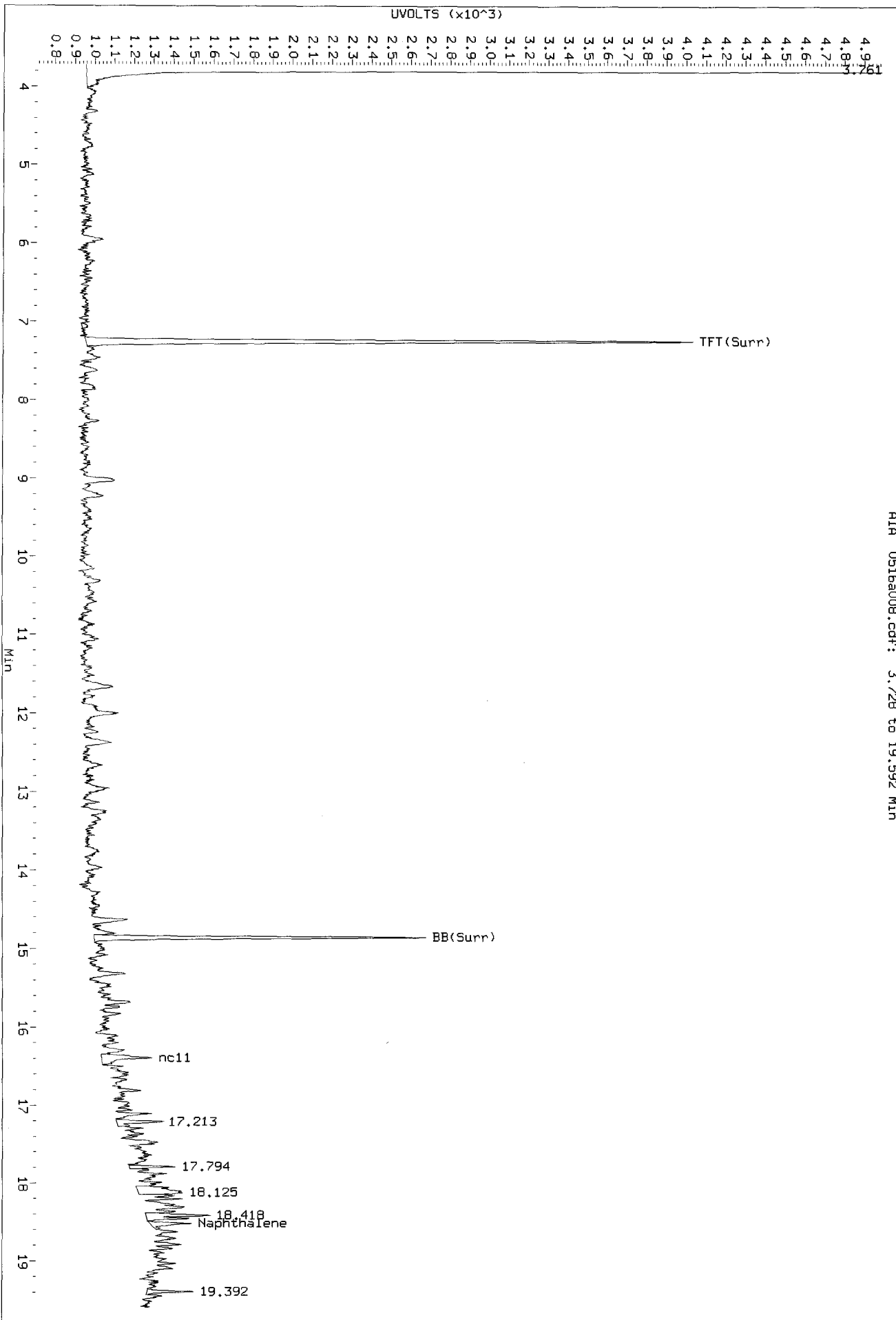
Analyst: JW

Date: 5/18/12

Data File: /chem3/pid2.1/051612-1.b/0516a008.d/0516a008.cdf
Injection Date: 16-MAY-2012 13:33
Instrument: pid2.1
Client Sample ID: CBA-SB-3-1-3-0512

AIA 0516a008.cdf: 3.728 to 19.592 Min

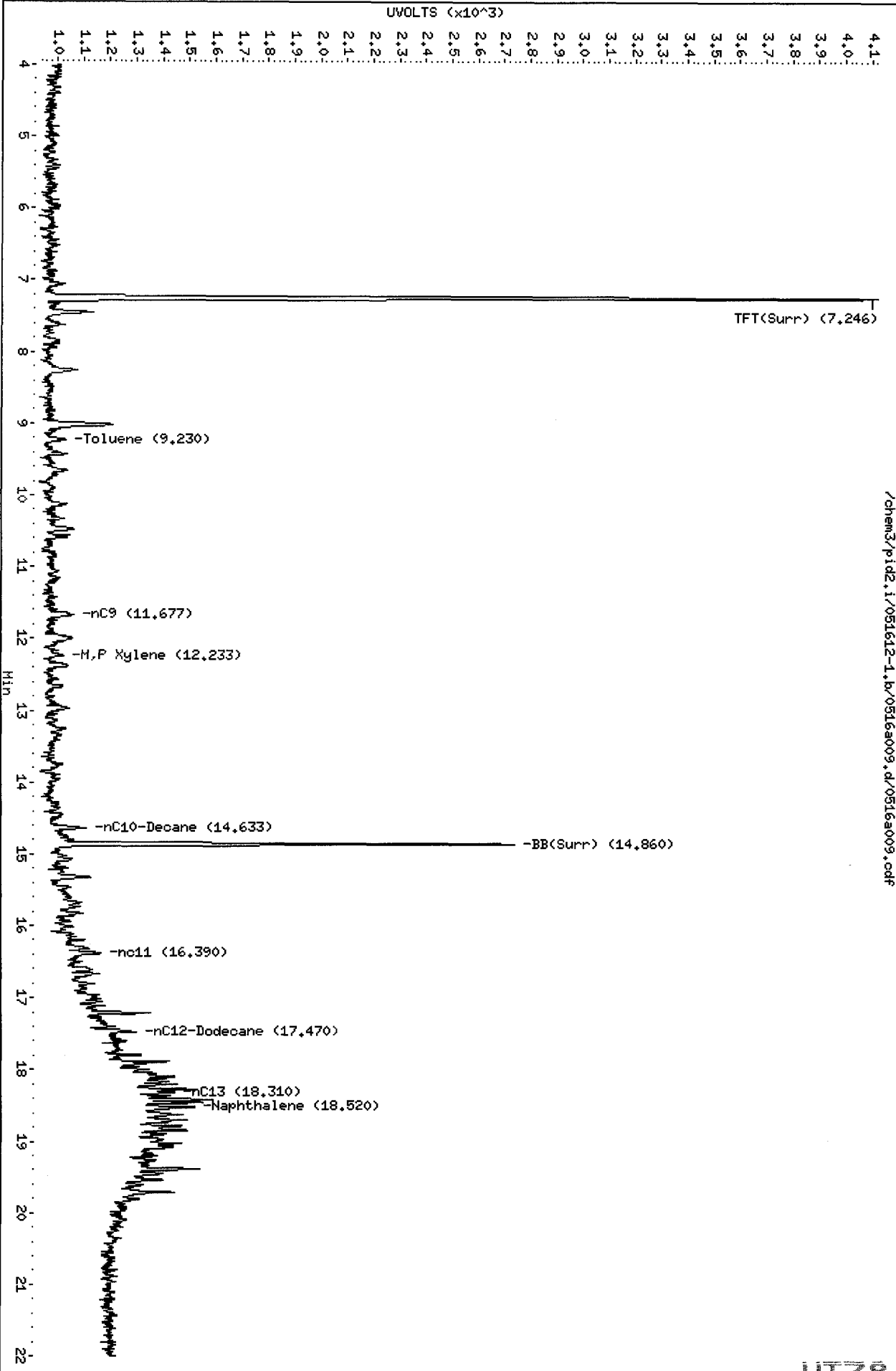
*Bob
5/16/12*



Data File: /chem3/pid2.i/051612-1.b/0516a009.d
Date: 16-MAY-2012 14:01
Client ID: CBA-SB-4-0.5-2.5-05
Sample Info: UT78E

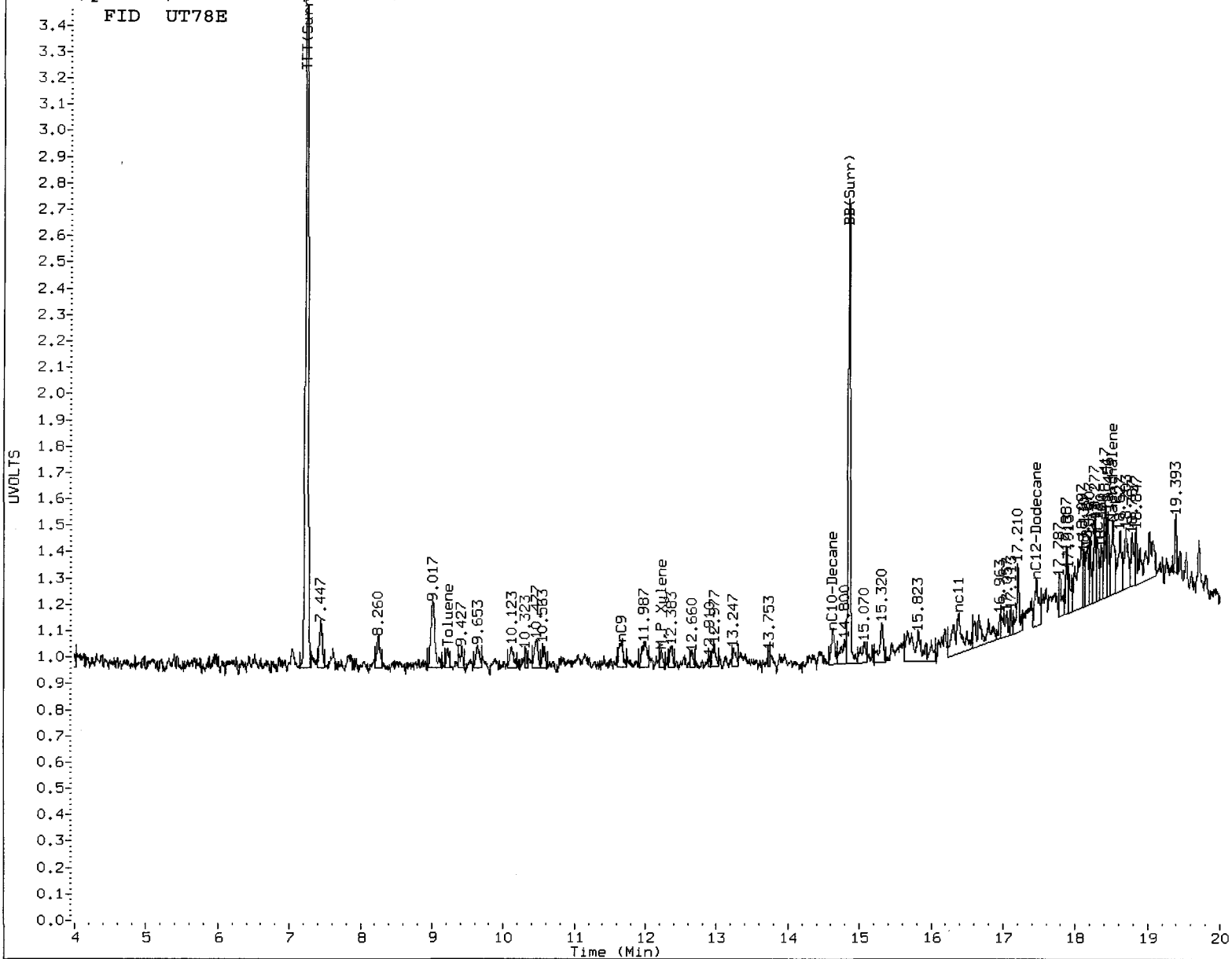
Instrument: pid2.i
Operator: JM
Column diameter: 0.18

Column phase: RTX 502-2 FID



/chem3/pid2.i/051612-1.b/0516a009.d/0516a009.cdf

FID UT78E



MANUAL INTEGRATION

- ①. Baseline correction
- 2. Poor chromatography
- ③. Peak not found
- 4. Totals calculation

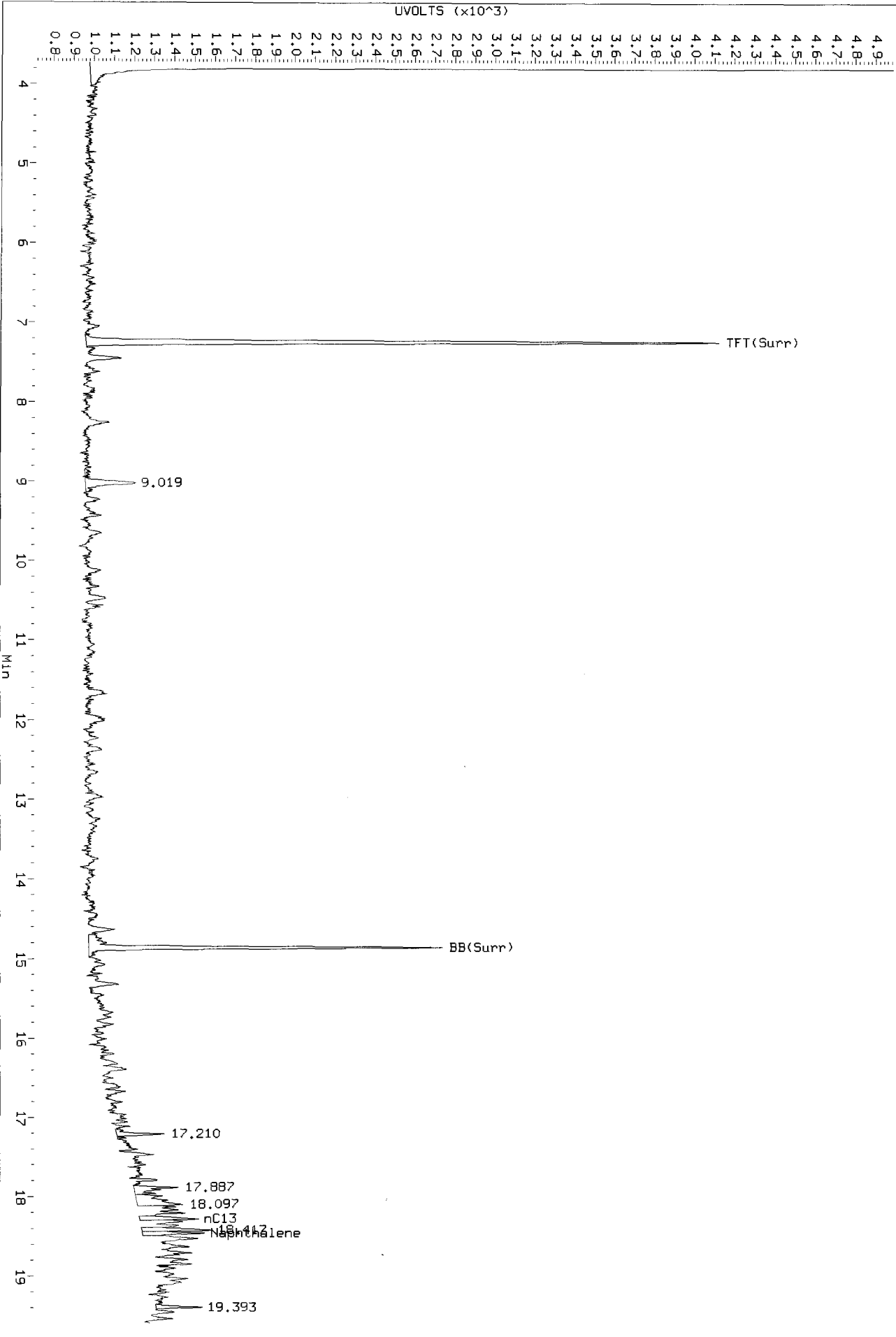
5. Other _____

Analyst: FW

Date: 5/18/12

Data File: /chem3/pid2.1/051612-1.b/0516a009.d/0516a009.cdf
Injection Date: 16-MAY-2012 14:01
Instrument: pid2.1
Client Sample ID: CBA-SB-4-0.5-2.5-05

AIA 0516a009.cdf: 3.728 to 19.592 Min

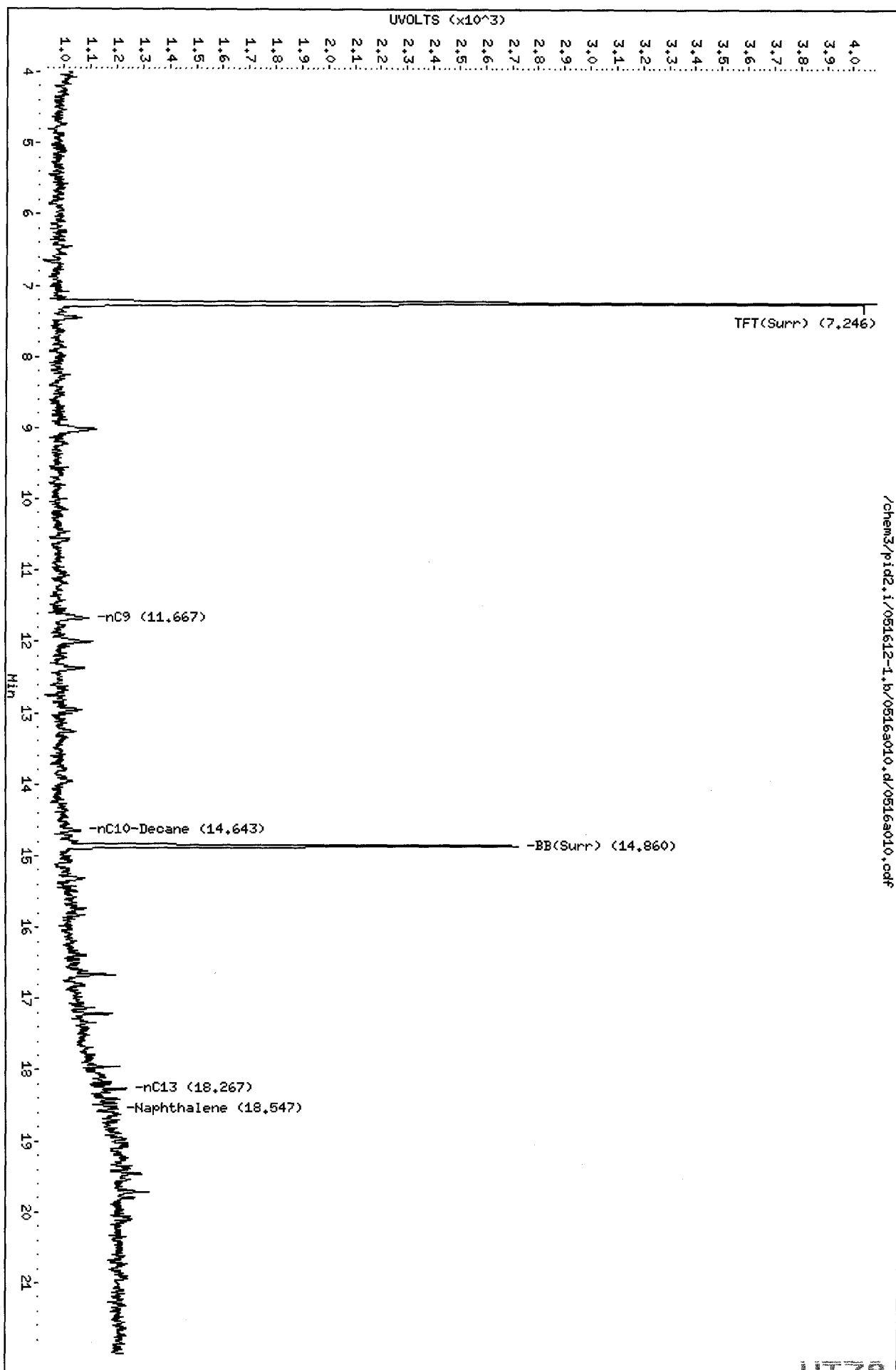


Before
JCS
5/16/12

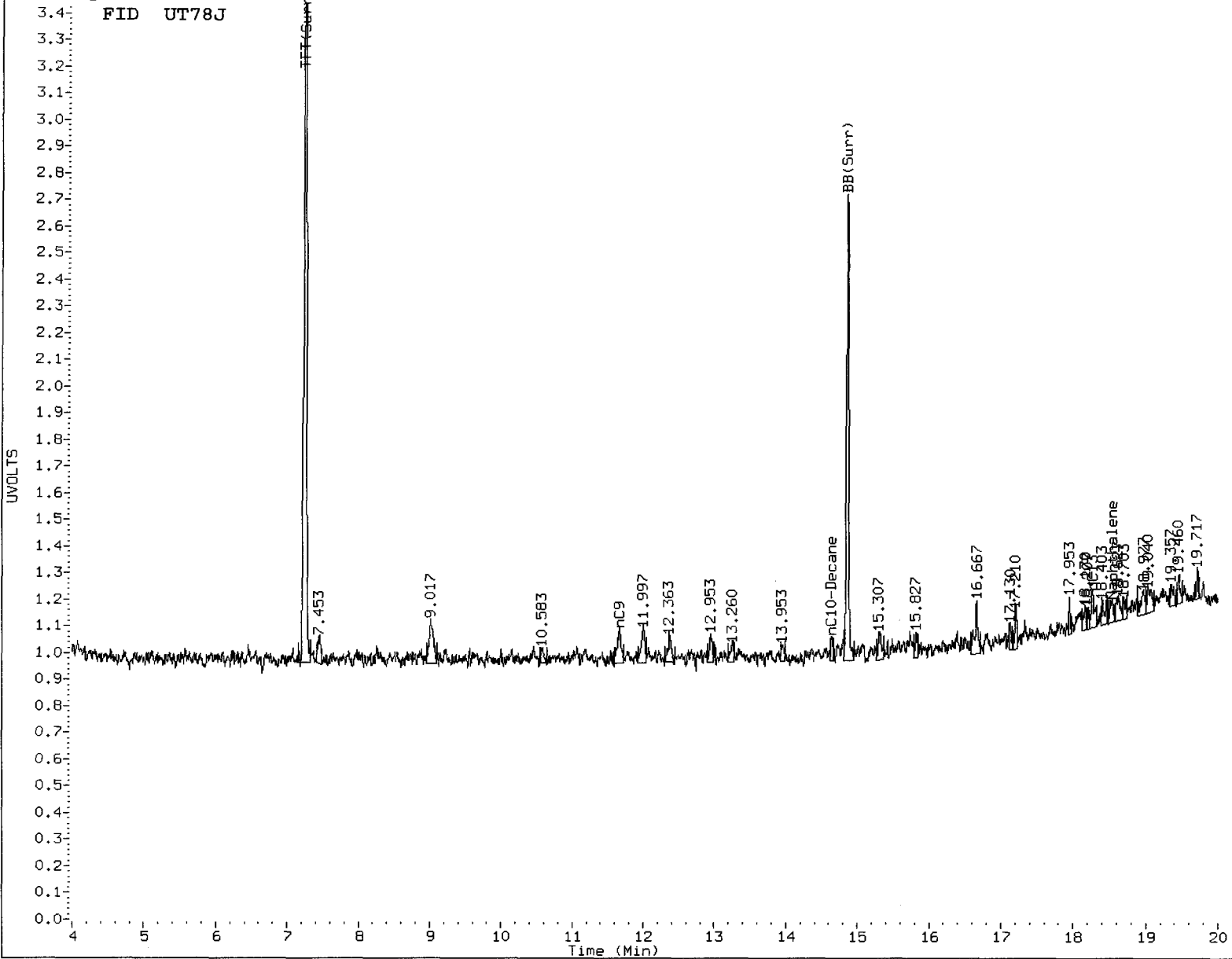
Data File: /chem3/pid2.i/051612-1.b/0516a010.d
Date: 16-MAY-2012 14:28
Client ID: CBA-SB-50-3-5-0512
Sample Info: UT78J
Column phase: RTX 502-2 FID

Instrument: pid2.i
Operator: JM
Column diameter: 0.18

/chem3/pid2.i/051612-1.b/0516a010.d/0516a010.pdf



UT78 00086



MANUAL INTEGRATION

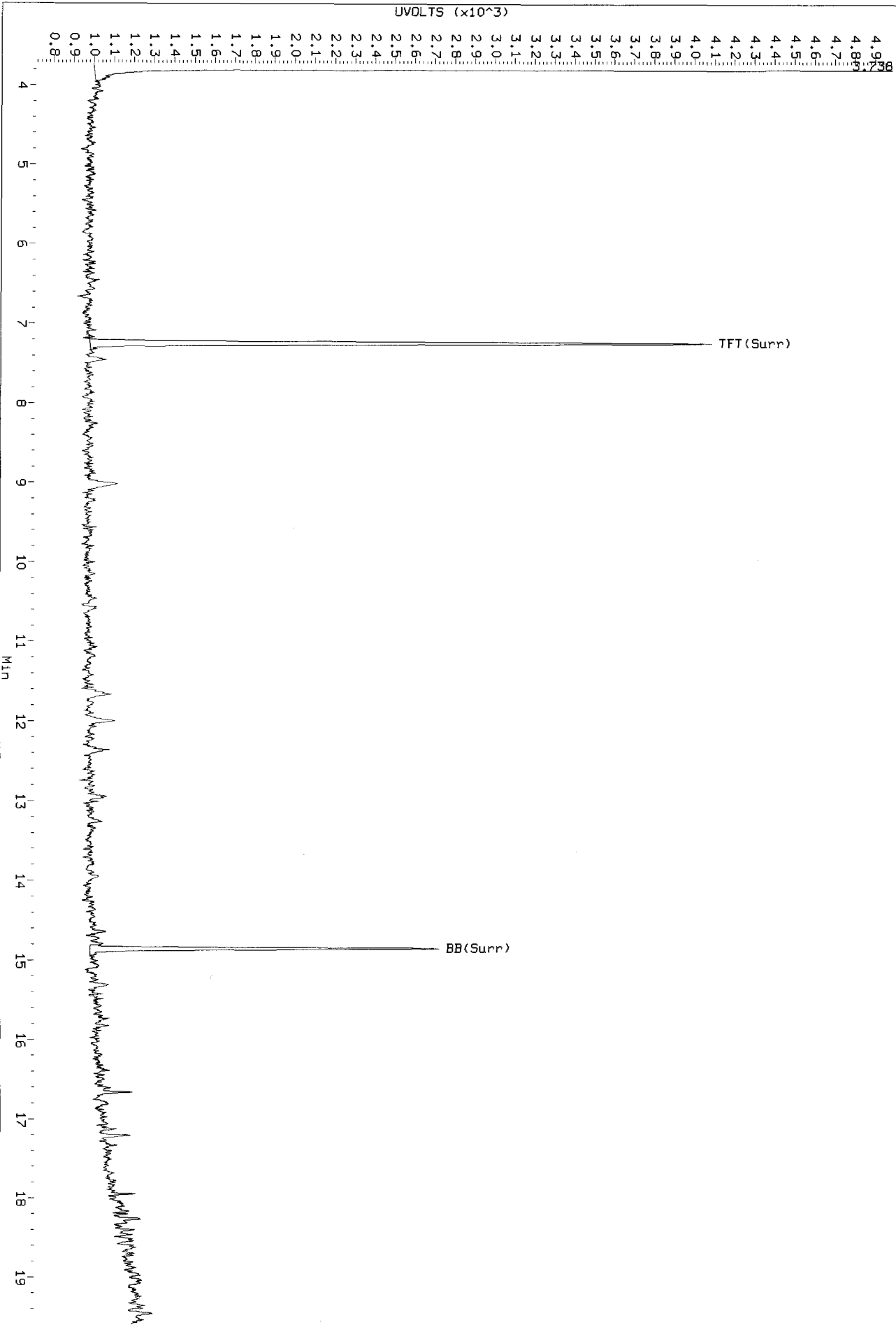
- ①. Baseline correction
- 2. Poor chromatography
- ③. Peak not found
- 4. Totals calculation

- 5. Other _____

Analyst: DW Date: 5/18/12

Data File: /chem3/pid2.1/051612-1.bv/0516a010.d/0516a010.cdf
Injection Date: 16-MAY-2012 14:28
Instrument: pid2.1
Client Sample ID: CBA-SB-50-3-5-0512

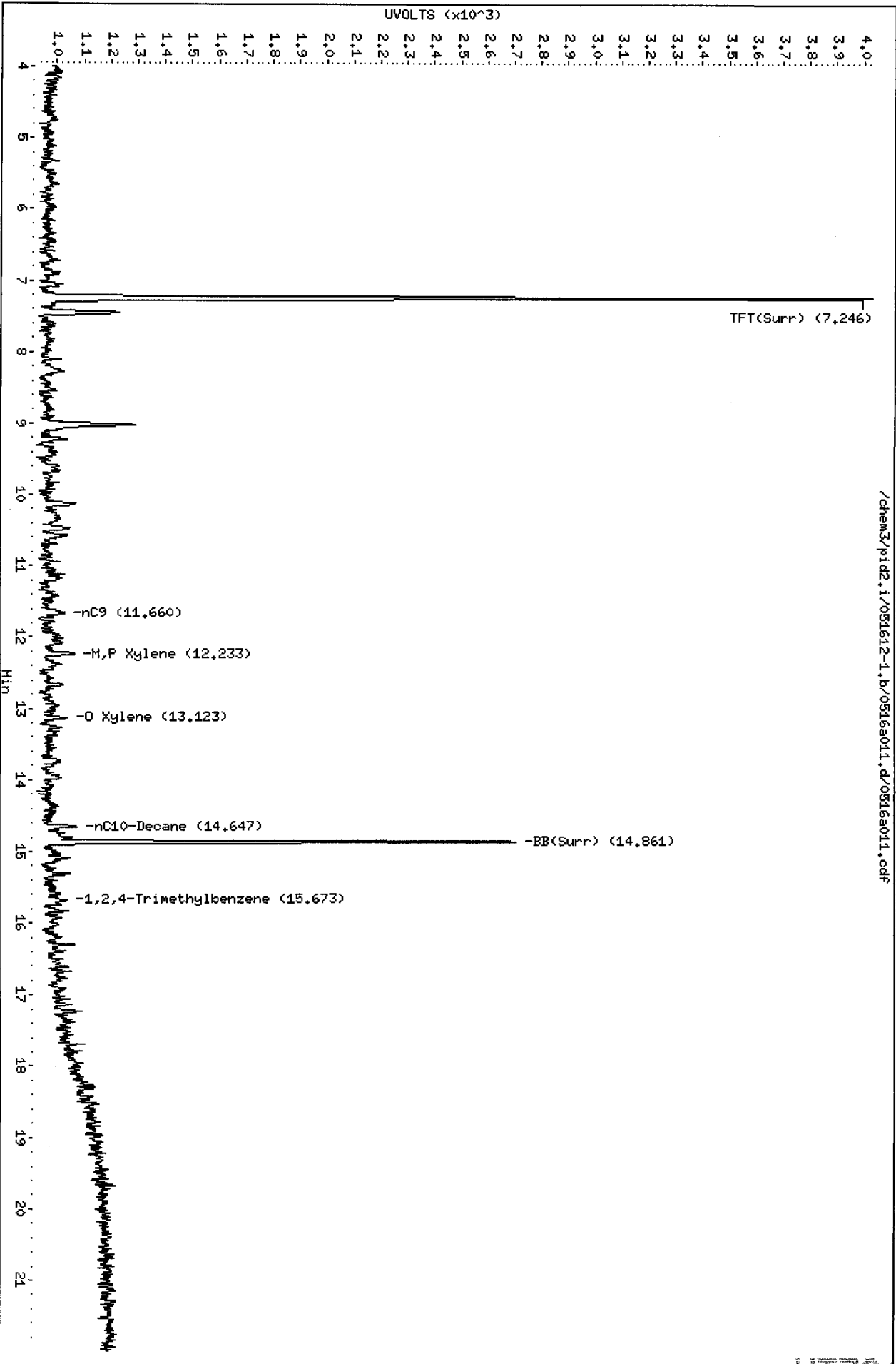
AIR 0516a010.cdf: 3.728 to 19.592 Min



Before
3/5/12

Data File: /chem3/pid2.i/051612-1.b/0516a011.d
Date: 16-MAY-2012 14:56
Client ID: CMM-18-13-15-0512
Sample Info: UT78P
Column phase: RTX 502-2 FID

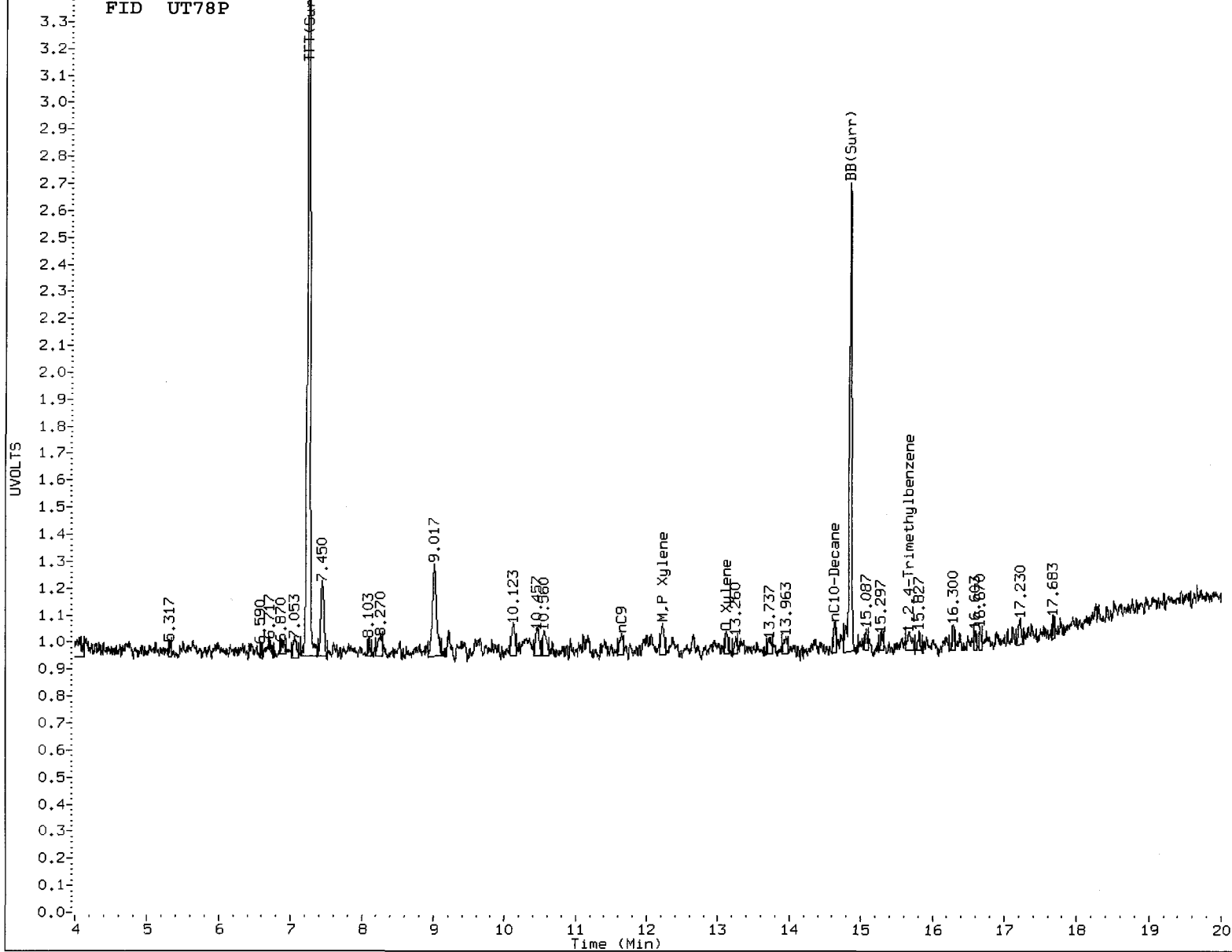
Instrument: pid2.i
Operator: JM
Column diameter: 0.18



/chem3/pid2.i/051612-1.b/0516a011.d/0516a011.cdf

00000 UT78

FID UT78P



MANUAL INTEGRATION

- ①. Baseline correction
- 2. Poor chromatography
- ③. Peak not found
- 4. Totals calculation

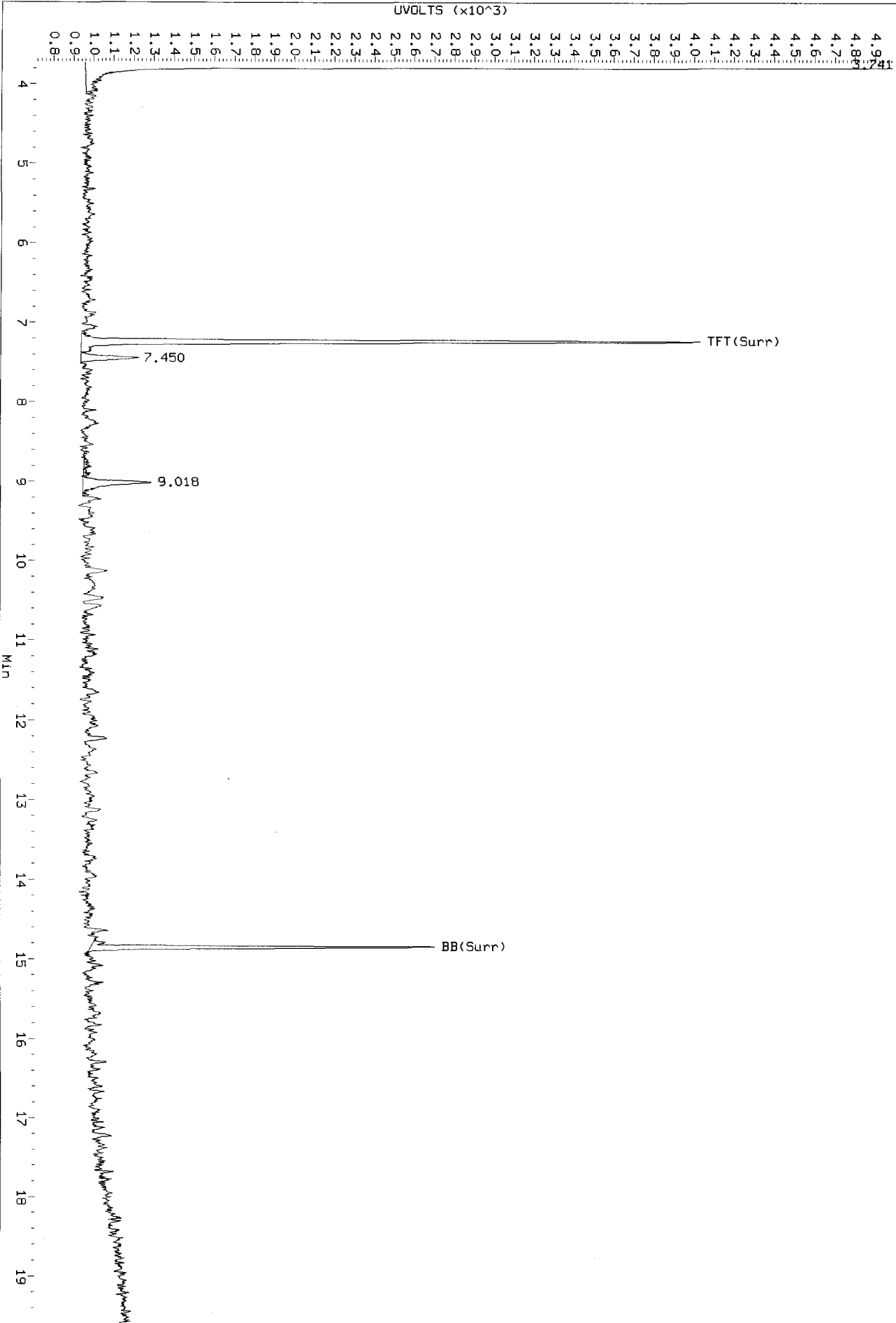
5. Other _____

Analyst: SW

Date: 5/18/12

Data File: /chem3/pid2.1/051612-1.b/0516a011.d/0516a011.cdf
Injection Date: 16-May-2012 14:56
Instrument: pid2.1
Client Sample ID: CMMW-18-13-15-0512

RI 0516a011.cdf: 3.728 to 19.592 Min



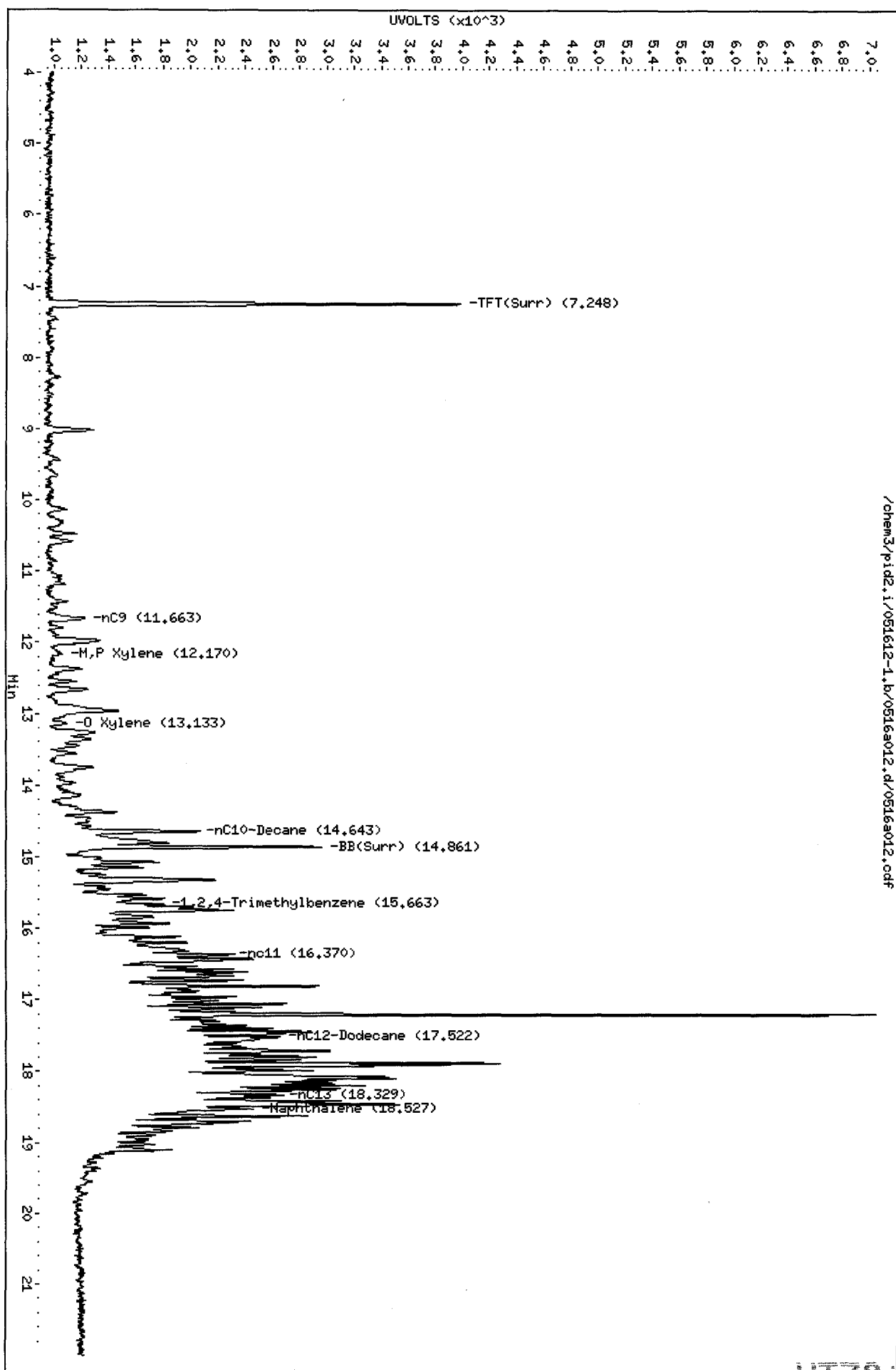
*Before
5/18/12*

Data File: /chem3/pid2.i/051612-1.b/0516a012.d
Date: 16-MAY-2012 15:24
Client ID: CBA-SB-1-1.5-2.5-05
Sample Info: UT78A

Instrument: pid2.i
Operator: JM
Column diameter: 0.18

Column phase: RTX 502-2 FID

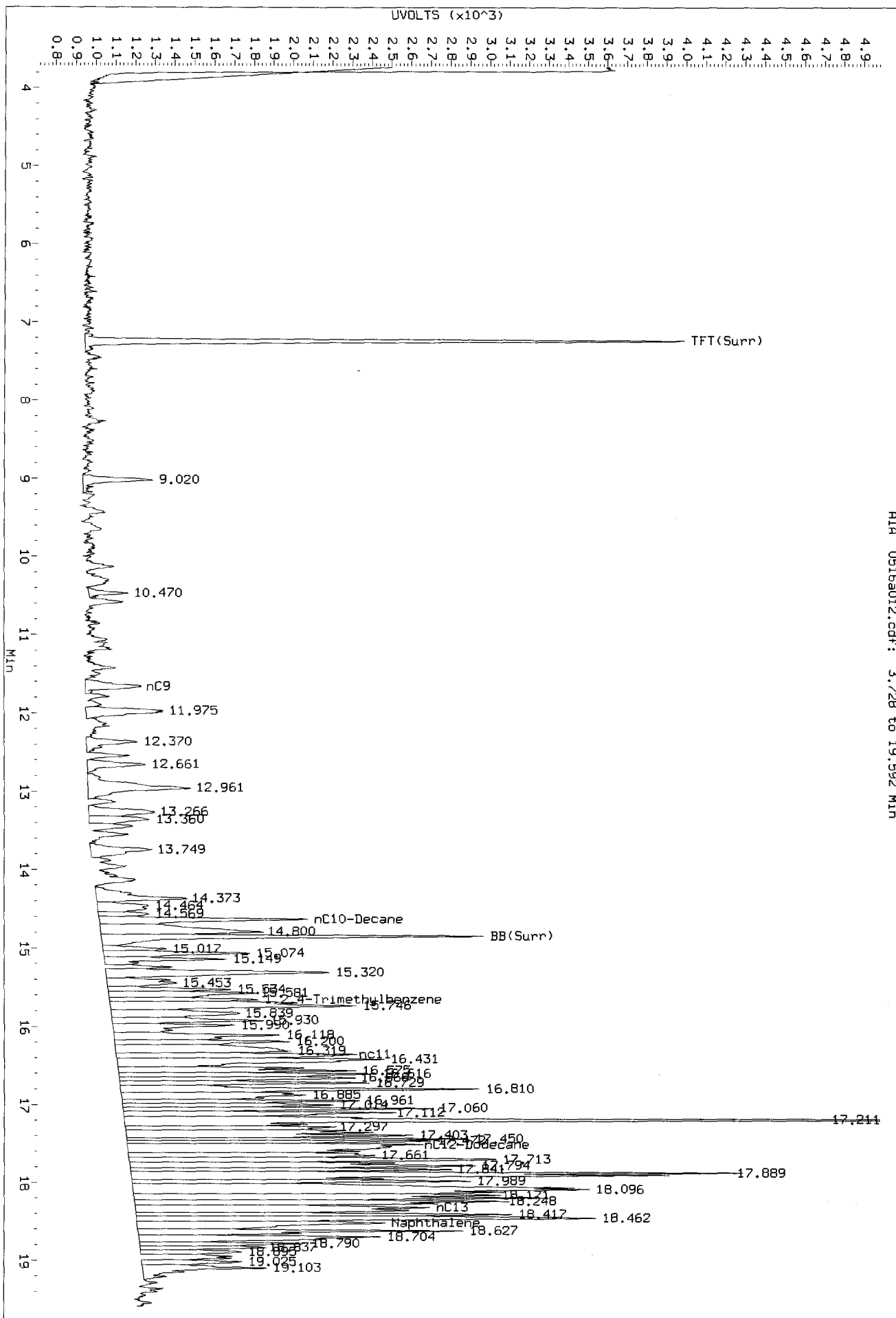
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UT78 00002

Data File: /chem3/pl02.1/051612-1.b/0516a012.d/0516a012.cdf
Injection Date: 16-May-2012 15:24
Instrument: pl02.1
Client Sample ID: CBA-SB-1-1.5-2.5-05

R1A 0516a012.cdf: 3.728 to 19.592 Min



Before
7/15/12

ORGANICS ANALYSIS DATA SHEET

VPH by Method WA VPH

Page 1 of 1

Sample ID: MB-051212

METHOD BLANK

Lab Sample ID: MB-051212

LIMS ID: 12-8511

Matrix: Soil

Data Release Authorized: *MW*

Reported: 05/21/12

QC Report No: UT78-AECOM

Project: Central Waterfront

Date Sampled: NA

Date Received: NA

Date Analyzed: 05/12/12 12:18

Instrument/Analyst: PID1/JLW

Purge Volume: 10 mL

Sample Amount: 111 mg-dry-wt

CAS Number	Analyte	RL	Result
71-43-2	Benzene	450	< 450 U
108-88-3	Toluene	450	< 450 U
100-41-4	Ethylbenzene	450	< 450 U
179601-23-1	m,p-Xylene	900	< 900 U
95-47-6	o-Xylene	450	< 450 U
1634-04-4	Methyl tert-Butyl Ether	450	< 450 U
109-66-0	n-Pentane	450	< 450 U
110-54-3	n-Hexane	450	< 450 U
111-65-9	n-Octane	450	< 450 U
124-18-5	n-Decane	450	< 450 U
112-40-3	n-Dodecane	450	< 450 U

Range	RL	Result
C8-C10 Aromatics	4,500	< 4,500 U
C10-C12 Aromatics	4,500	< 4,500 U
C12-C13 Aromatics	4,500	< 4,500 U
C5-C6 Aliphatics	4,500	< 4,500 U
C6-C8 Aliphatics	4,500	< 4,500 U
C8-C10 Aliphatics	4,500	< 4,500 U
C10-C12 Aliphatics	4,500	< 4,500 U

Values reported in µg/kg (ppb)

VPH Surrogate Recovery

PID: 2,5-Dibromotoluene	110%
FID: 2,5-Dibromotoluene	101%

ORGANICS ANALYSIS DATA SHEET

VPH by Method WA VPH

Page 1 of 1

Sample ID: CBA-SB-8-1-3-0512

SAMPLE

Lab Sample ID: UT78U

QC Report No: UT78-AECOM

LIMS ID: 12-8511

Project: Central Waterfront

Matrix: Soil

Data Release Authorized: *MW*

Date Sampled: 05/08/12

Reported: 05/21/12

Date Received: 05/09/12

Date Analyzed: 05/12/12 18:49

Purge Volume: 10 mL

Instrument/Analyst: PID1/JLW

Sample Amount: 31.9 mg-dry-wt

CAS Number	Analyte	RL	Result
71-43-2	Benzene	1600	< 1,600 U
108-88-3	Toluene	1600	< 1,600 U
100-41-4	Ethylbenzene	1600	< 1,600 U
179601-23-1	m,p-Xylene	3100	< 3,100 U
95-47-6	o-Xylene	1600	< 1,600 U
1634-04-4	Methyl tert-Butyl Ether	1600	< 1,600 U
109-66-0	n-Pentane	1600	< 1,600 U
110-54-3	n-Hexane	1600	< 1,600 U
111-65-9	n-Octane	1600	< 1,600 U
124-18-5	n-Decane	1600	< 1,600 U
112-40-3	n-Dodecane	1600	< 1,600 U

Range	RL	Result
C8-C10 Aromatics	16,000	< 16,000 U
C10-C12 Aromatics	16,000	< 16,000 U
C12-C13 Aromatics	16,000	< 16,000 U
C5-C6 Aliphatics	16,000	< 16,000 U
C6-C8 Aliphatics	16,000	< 16,000 U
C8-C10 Aliphatics	16,000	< 16,000 U
C10-C12 Aliphatics	16,000	< 16,000 U

Values reported in µg/kg (ppb)

VPH Surrogate Recovery

PID: 2,5-Dibromotoluene	117%
FID: 2,5-Dibromotoluene	115%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

VPH SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: UT78-AECOM
Project: Central Waterfront

<u>Client ID</u>	<u>PDBT</u>	<u>FDBT</u>	<u>TOT</u>	<u>OUT</u>
MB-051212	110%	101%		0
LCS-051212	102%	101%		0
LCSD-051212	103%	101%		0
CBA-SB-8-1-3-0512	117%	115%		0

	LCS/MB LIMITS	QC LIMITS
(PDBT) = 2,5-Dibromotoluene	(60-140)	(60-140)
(FDBT) = 2,5-Dibromotoluene	(60-140)	(60-140)

Prep Method: METHOD
Log Number Range: 12-8511 to 12-8511

ORGANICS ANALYSIS DATA SHEET

VPH by Method WA VPH

Page 1 of 1

Sample ID: LCS-051212

LCS/LCSD

Lab Sample ID: LCS-051212

LIMS ID: 12-8511

Matrix: Soil

Data Release Authorized: *MW*

Reported: 05/21/12

QC Report No: UT78-AECOM

Project: Central Waterfront

Date Sampled: NA

Date Received: NA

Date Analyzed LCS: 05/12/12 10:28

Date Analyzed LCSD: 05/12/12 11:14

Instrument/Analyst: PID1/JLW

Purge Volume: 10 mL

Sample Amount: 111 mg-dry-wt

Analyte/Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzene	4760	4500	106%	4690	4500	104%	1.5%
Toluene	4720	4500	105%	4670	4500	104%	1.1%
Ethylbenzene	4800	4500	107%	4740	4500	105%	1.3%
m,p-Xylene	9450	9010	105%	9360	9010	104%	1.0%
o-Xylene	4700	4500	104%	4670	4500	104%	0.6%
Methyl tert-Butyl Ether	4490	4500	99.8%	4540	4500	101%	1.1%
Naphthalene	4600	4500	102%	4650	4500	103%	1.1%
1,2,3-Trimethylbenzene	4720	4500	105%	4700	4500	104%	0.4%
1-Methylnaphthalene	5160	4500	115%	5350	4500	119%	3.6%
n-Pentane	5760	4500	128%	5730	4500	127%	0.5%
n-Hexane	4990	4500	111%	5000	4500	111%	0.2%
n-Octane	4700	4500	104%	4720	4500	105%	0.4%
n-Decane	5170	4500	115%	4820	4500	107%	7.0%
n-Dodecane	5250	4500	117%	5510	4500	122%	4.8%

Values reported in µg/kg (ppb)
RPD calculated using sample concentrations per SW846.

VPH Surrogate Recovery

	LCS	LCSD
PID: 2,5-Dibromotoluene	102%	103%
FID: 2,5-Dibromotoluene	101%	101%

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Page 1 of 2

Sample ID: CBA-SB-8-1-3-0512
SAMPLE

Lab Sample ID: UT78N
LIMS ID: 12-8504
Matrix: Soil
Data Release Authorized: *AB*
Reported: 05/17/12

QC Report No: UT78-AECOM
Project: Central Waterfront
NA
Date Sampled: 05/08/12
Date Received: 05/09/12

Date Extracted: 05/10/12
Date Analyzed: 05/16/12 22:38
Instrument/Analyst: NT6/JZ
GPC Cleanup: Yes

Sample Amount: 8.38 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 20.5%

CAS Number	Analyte	RL	Result
108-95-2	Phenol	60	< 60 U
111-44-4	Bis-(2-Chloroethyl) Ether	60	< 60 U
95-57-8	2-Chlorophenol	60	< 60 U
541-73-1	1,3-Dichlorobenzene	60	< 60 U
106-46-7	1,4-Dichlorobenzene	60	< 60 U
100-51-6	Benzyl Alcohol	300	< 300 U
95-50-1	1,2-Dichlorobenzene	60	< 60 U
95-48-7	2-Methylphenol	60	< 60 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	60	< 60 U
106-44-5	4-Methylphenol	60	< 60 U
621-64-7	N-Nitroso-Di-N-Propylamine	60	< 60 U
67-72-1	Hexachloroethane	60	< 60 U
98-95-3	Nitrobenzene	60	< 60 U
78-59-1	Isophorone	60	< 60 U
88-75-5	2-Nitrophenol	60	< 60 U
105-67-9	2,4-Dimethylphenol	60	< 60 U
65-85-0	Benzoic Acid	600	< 600 U
111-91-1	bis(2-Chloroethoxy) Methane	60	< 60 U
120-83-2	2,4-Dichlorophenol	300	< 300 U
120-82-1	1,2,4-Trichlorobenzene	60	< 60 U
91-20-3	Naphthalene	60	280
106-47-8	4-Chloroaniline	300	< 300 U
87-68-3	Hexachlorobutadiene	60	< 60 U
59-50-7	4-Chloro-3-methylphenol	300	< 300 U
91-57-6	2-Methylnaphthalene	60	250
77-47-4	Hexachlorocyclopentadiene	300	< 300 U
88-06-2	2,4,6-Trichlorophenol	300	< 300 U
95-95-4	2,4,5-Trichlorophenol	300	< 300 U
91-58-7	2-Chloronaphthalene	60	< 60 U
88-74-4	2-Nitroaniline	300	< 300 U
131-11-3	Dimethylphthalate	60	< 60 U
208-96-8	Acenaphthylene	60	< 60 U
99-09-2	3-Nitroaniline	300	< 300 U
83-32-9	Acenaphthene	60	< 60 U
51-28-5	2,4-Dinitrophenol	600	< 600 U
100-02-7	4-Nitrophenol	300	< 300 U
132-64-9	Dibenzofuran	60	79
606-20-2	2,6-Dinitrotoluene	300	< 300 U
121-14-2	2,4-Dinitrotoluene	300	< 300 U
84-66-2	Diethylphthalate	60	< 60 U
7005-72-3	4-Chlorophenyl-phenylether	60	< 60 U
86-73-7	Fluorene	60	68
100-01-6	4-Nitroaniline	300	< 300 U
534-52-1	4,6-Dinitro-2-Methylphenol	600	< 600 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Page 2 of 2

Sample ID: CBA-SB-8-1-3-0512
SAMPLE

Lab Sample ID: UT78N
LIMS ID: 12-8504
Matrix: Soil
Date Analyzed: 05/16/12 22:38

QC Report No: UT78-AECOM
Project: Central Waterfront
NA

CAS Number	Analyte	RL	Result
86-30-6	N-Nitrosodiphenylamine	60	< 60 U
101-55-3	4-Bromophenyl-phenylether	60	< 60 U
118-74-1	Hexachlorobenzene	60	< 60 U
87-86-5	Pentachlorophenol	300	< 300 U
85-01-8	Phenanthrene	60	250
86-74-8	Carbazole	60	< 60 U
120-12-7	Anthracene	60	< 60 U
84-74-2	Di-n-Butylphthalate	60	< 60 U
206-44-0	Fluoranthene	60	660
129-00-0	Pyrene	60	380
85-68-7	Butylbenzylphthalate	60	< 60 U
91-94-1	3,3'-Dichlorobenzidine	300	< 300 U
56-55-3	Benzo (a) anthracene	60	70
117-81-7	bis(2-Ethylhexyl)phthalate	60	< 60 U
218-01-9	Chrysene	60	110
117-84-0	Di-n-Octyl phthalate	60	< 60 U
50-32-8	Benzo (a) pyrene	60	65
193-39-5	Indeno(1,2,3-cd)pyrene	60	< 60 U
53-70-3	Dibenz(a,h)anthracene	60	< 60 U
191-24-2	Benzo(g,h,i)perylene	60	< 60 U
90-12-0	1-Methylnaphthalene	60	160
TOTBFA	Total Benzofluoranthenes	60	110


Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	54.0%	2-Fluorobiphenyl	59.6%
d14-p-Terphenyl	57.6%	d4-1,2-Dichlorobenzene	52.0%
d5-Phenol	57.6%	2-Fluorophenol	56.5%
2,4,6-Tribromophenol	73.1%	d4-2-Chlorophenol	57.9%

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Page 1 of 2

Sample ID: MB-051012
METHOD BLANK

Lab Sample ID: MB-051012
LIMS ID: 12-8504
Matrix: Soil
Data Release Authorized: 
Reported: 05/17/12

QC Report No: UT78-AECOM
Project: Central Waterfront
NA
Date Sampled: NA
Date Received: NA

Date Extracted: 05/10/12
Date Analyzed: 05/16/12 18:14
Instrument/Analyst: NT6/JZ
GPC Cleanup: Yes

Sample Amount: 7.50 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: NA

CAS Number	Analyte	RL	Result
108-95-2	Phenol	67	< 67 U
111-44-4	Bis-(2-Chloroethyl) Ether	67	< 67 U
95-57-8	2-Chlorophenol	67	< 67 U
541-73-1	1,3-Dichlorobenzene	67	< 67 U
106-46-7	1,4-Dichlorobenzene	67	< 67 U
100-51-6	Benzyl Alcohol	330	< 330 U
95-50-1	1,2-Dichlorobenzene	67	< 67 U
95-48-7	2-Methylphenol	67	< 67 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	67	< 67 U
106-44-5	4-Methylphenol	67	< 67 U
621-64-7	N-Nitroso-Di-N-Propylamine	67	< 67 U
67-72-1	Hexachloroethane	67	< 67 U
98-95-3	Nitrobenzene	67	< 67 U
78-59-1	Isophorone	67	< 67 U
88-75-5	2-Nitrophenol	67	< 67 U
105-67-9	2,4-Dimethylphenol	67	< 67 U
65-85-0	Benzoic Acid	670	< 670 U
111-91-1	bis(2-Chloroethoxy) Methane	67	< 67 U
120-83-2	2,4-Dichlorophenol	330	< 330 U
120-82-1	1,2,4-Trichlorobenzene	67	< 67 U
91-20-3	Naphthalene	67	< 67 U
106-47-8	4-Chloroaniline	330	< 330 U
87-68-3	Hexachlorobutadiene	67	< 67 U
59-50-7	4-Chloro-3-methylphenol	330	< 330 U
91-57-6	2-Methylnaphthalene	67	< 67 U
77-47-4	Hexachlorocyclopentadiene	330	< 330 U
88-06-2	2,4,6-Trichlorophenol	330	< 330 U
95-95-4	2,4,5-Trichlorophenol	330	< 330 U
91-58-7	2-Chloronaphthalene	67	< 67 U
88-74-4	2-Nitroaniline	330	< 330 U
131-11-3	Dimethylphthalate	67	< 67 U
208-96-8	Acenaphthylene	67	< 67 U
99-09-2	3-Nitroaniline	330	< 330 U
83-32-9	Acenaphthene	67	< 67 U
51-28-5	2,4-Dinitrophenol	670	< 670 U
100-02-7	4-Nitrophenol	330	< 330 U
132-64-9	Dibenzofuran	67	< 67 U
606-20-2	2,6-Dinitrotoluene	330	< 330 U
121-14-2	2,4-Dinitrotoluene	330	< 330 U
84-66-2	Diethylphthalate	67	< 67 U
7005-72-3	4-Chlorophenyl-phenylether	67	< 67 U
86-73-7	Fluorene	67	< 67 U
100-01-6	4-Nitroaniline	330	< 330 U
534-52-1	4,6-Dinitro-2-Methylphenol	670	< 670 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Page 2 of 2

Sample ID: MB-051012
METHOD BLANK

Lab Sample ID: MB-051012
LIMS ID: 12-8504
Matrix: Soil
Date Analyzed: 05/16/12 18:14

QC Report No: UT78-AECOM
Project: Central Waterfront
NA

CAS Number	Analyte	RL	Result
86-30-6	N-Nitrosodiphenylamine	67	< 67 U
101-55-3	4-Bromophenyl-phenylether	67	< 67 U
118-74-1	Hexachlorobenzene	67	< 67 U
87-86-5	Pentachlorophenol	330	< 330 U
85-01-8	Phenanthrene	67	< 67 U
86-74-8	Carbazole	67	< 67 U
120-12-7	Anthracene	67	< 67 U
84-74-2	Di-n-Butylphthalate	67	< 67 U
206-44-0	Fluoranthene	67	< 67 U
129-00-0	Pyrene	67	< 67 U
85-68-7	Butylbenzylphthalate	67	< 67 U
91-94-1	3,3'-Dichlorobenzidine	330	< 330 U
56-55-3	Benzo(a)anthracene	67	< 67 U
117-81-7	bis(2-Ethylhexyl)phthalate	67	< 67 U
218-01-9	Chrysene	67	< 67 U
117-84-0	Di-n-Octyl phthalate	67	< 67 U
50-32-8	Benzo(a)pyrene	67	< 67 U
193-39-5	Indeno(1,2,3-cd)pyrene	67	< 67 U
53-70-3	Dibenz(a,h)anthracene	67	< 67 U
191-24-2	Benzo(g,h,i)perylene	67	< 67 U
90-12-0	1-Methylnaphthalene	67	< 67 U
TOTBEA	Total Benzofluoranthenes	67	< 67 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	58.0%	2-Fluorobiphenyl	59.2%
d14-p-Terphenyl	72.8%	d4-1,2-Dichlorobenzene	56.4%
d5-Phenol	58.9%	2-Fluorophenol	60.3%
2,4,6-Tribromophenol	66.9%	d4-2-Chlorophenol	58.4%

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
 Page 1 of 2

Sample ID: LCS-051012
LAB CONTROL

Lab Sample ID: LCS-051012
 LIMS ID: 12-8504
 Matrix: Soil
 Data Release Authorized: *CB*
 Reported: 05/17/12

QC Report No: UT78-AECOM
 Project: Central Waterfront

Date Sampled: 05/08/12
 Date Received: 05/09/12

Date Extracted: 05/10/12
 Date Analyzed: 05/16/12 18:47
 Instrument/Analyst: NT6/JZ
 GPC Cleanup: Yes

Sample Amount: 7.50 g
 Final Extract Volume: 0.5 mL
 Dilution Factor: 1.00
 Percent Moisture: NA

Analyte	Lab Control	Spike Added	Recovery
Phenol	1050	1670	62.9%
Bis-(2-Chloroethyl) Ether	1080	1670	64.7%
2-Chlorophenol	990	1670	59.3%
1,3-Dichlorobenzene	955	1670	57.2%
1,4-Dichlorobenzene	978	1670	58.6%
Benzyl Alcohol	917	1670	54.9%
1,2-Dichlorobenzene	993	1670	59.5%
2-Methylphenol	945	1670	56.6%
2,2'-Oxybis(1-Chloropropane)	1060	1670	63.5%
4-Methylphenol	2000	3330	60.1%
N-Nitroso-Di-N-Propylamine	1060	1670	63.5%
Hexachloroethane	981	1670	58.7%
Nitrobenzene	986	1670	59.0%
Isophorone	1190	1670	71.3%
2-Nitrophenol	1000	1670	59.9%
2,4-Dimethylphenol	2080	5000	41.6%
Benzoic Acid	6230	9170	67.9%
bis(2-Chloroethoxy) Methane	1040	1670	62.3%
2,4-Dichlorophenol	3000	5000	60.0%
1,2,4-Trichlorobenzene	996	1670	59.6%
Naphthalene	959	1670	57.4%
4-Chloroaniline	2310	5000	46.2%
Hexachlorobutadiene	980	1670	58.7%
4-Chloro-3-methylphenol	3420	5000	68.4%
2-Methylnaphthalene	943	1670	56.5%
Hexachlorocyclopentadiene	2620	5000	52.4%
2,4,6-Trichlorophenol	3260	5000	65.2%
2,4,5-Trichlorophenol	3250	5000	65.0%
2-Chloronaphthalene	1050	1670	62.9%
2-Nitroaniline	3330	5000	66.6%
Dimethylphthalate	1350	1670	80.8%
Acenaphthylene	1070	1670	64.1%
3-Nitroaniline	3120	5000	62.4%
Acenaphthene	1030	1670	61.7%
2,4-Dinitrophenol	6170	9170	67.3%
4-Nitrophenol	3840	5000	76.8%
Dibenzofuran	1030	1670	61.7%

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
 Page 2 of 2

Sample ID: LCS-051012
LAB CONTROL

Lab Sample ID: LCS-051012
 LIMS ID: 12-8504
 Matrix: Soil
 Date Analyzed: 05/16/12 18:47

QC Report No: UT78-AECOM
 Project: Central Waterfront

Analyte	Lab Control	Spike Added	Recovery
2,6-Dinitrotoluene	3890	5000	77.8%
2,4-Dinitrotoluene	4200	5000	84.0%
Diethylphthalate	1410	1670	84.4%
4-Chlorophenyl-phenylether	1180	1670	70.7%
Fluorene	1110	1670	66.5%
4-Nitroaniline	3380	5000	67.6%
4,6-Dinitro-2-Methylphenol	7180	9170	78.3%
N-Nitrosodiphenylamine	1170	1670	70.1%
4-Bromophenyl-phenylether	1150	1670	68.9%
Hexachlorobenzene	1190	1670	71.3%
Pentachlorophenol	3550	5000	71.0%
Phenanthrene	1180	1670	70.7%
Carbazole	1310	1670	78.4%
Anthracene	1070	1670	64.1%
Di-n-Butylphthalate	1470	1670	88.0%
Fluoranthene	1330	1670	79.6%
Pyrene	1090	1670	65.3%
Butylbenzylphthalate	1340	1670	80.2%
3,3'-Dichlorobenzidine	2730	5000	54.6%
Benzo(a)anthracene	1190	1670	71.3%
bis(2-Ethylhexyl)phthalate	1330	1670	79.6%
Chrysene	1190	1670	71.3%
Di-n-Octyl phthalate	1320	1670	79.0%
Benzo(a)pyrene	1130	1670	67.7%
Indeno(1,2,3-cd)pyrene	1120	1670	67.1%
Dibenz(a,h)anthracene	1220	1670	73.1%
Benzo(g,h,i)perylene	1100	1670	65.9%
1-Methylnaphthalene	1280	1670	76.6%
Total Benzofluoranthenes	2490	3330	74.8%

Semivolatile Surrogate Recovery

d5-Nitrobenzene	58.0%
2-Fluorobiphenyl	60.4%
d14-p-Terphenyl	70.8%
d4-1,2-Dichlorobenzene	55.2%
d5-Phenol	62.7%
2-Fluorophenol	62.9%
2,4,6-Tribromophenol	77.6%
d4-2-Chlorophenol	60.5%

Reported in µg/kg (ppb)

SW8270 SEMIVOLATILES SOIL/SEDIMENT SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: UT78-AECOM

Project: Central Waterfront

<u>Client ID</u>	<u>NBZ</u>	<u>FBP</u>	<u>TPH</u>	<u>DCB</u>	<u>PHL</u>	<u>2FP</u>	<u>TBP</u>	<u>2CP</u>	<u>TOT</u>	<u>OUT</u>
MB-051012	58.0%	59.2%	72.8%	56.4%	58.9%	60.3%	66.9%	58.4%		0
LCS-051012	58.0%	60.4%	70.8%	55.2%	62.7%	62.9%	77.6%	60.5%		0
CBA-SB-8-1-3-0512	54.0%	59.6%	57.6%	52.0%	57.6%	56.5%	73.1%	57.9%		0

	LCS/MB LIMITS	QC LIMITS
(NBZ) = d5-Nitrobenzene	(46-102)	(32-106)
(FBP) = 2-Fluorobiphenyl	(51-105)	(39-107)
(TPH) = d14-p-Terphenyl	(55-124)	(31-130)
(DCB) = d4-1,2-Dichlorobenzene	(48-104)	(38-102)
(PHL) = d5-Phenol	(44-110)	(27-112)
(2FP) = 2-Fluorophenol	(38-112)	(22-108)
(TBP) = 2,4,6-Tribromophenol	(54-120)	(31-131)
(2CP) = d4-2-Chlorophenol	(50-103)	(36-104)

Prep Method: SW3546
Log Number Range: 12-8504 to 12-8504

**ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS**

NWTPHD by GC/FID
Page 1 of 2
Matrix: Soil

QC Report No: UT78-AECOM
Project: Central Waterfront

Date Received: 05/09/12

Data Release Authorized: *AB*
Reported: 05/17/12

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DL	Range/Surrogate	RL	Result
UT78A 12-8487	CBA-SB-1-1.5-2.5-051 HC ID: DIESEL/RRO	205/15/12	05/16/12 FID3B	1.00 50	Diesel Range Motor Oil Range o-Terphenyl	280 570	7,400 1,800 D
UT78B 12-8488	CBA-SB-1-3-5-0512 HC ID: DIESEL/RRO	05/15/12	05/16/12 FID3B	1.00 1.0	Diesel Range Motor Oil Range o-Terphenyl	6.1 12	48 21 86.8%
UT78C 12-8489	CBA-SB-2-0.5-2.5-051 HC ID: DIESEL/RRO	205/15/12	05/16/12 FID3B	1.00 50	Diesel Range Motor Oil Range o-Terphenyl	300 600	6,600 1,800 D
UT78D 12-8490	CBA-SB-3-1-3-0512 HC ID: DIESEL/MOTOR OIL	05/15/12	05/16/12 FID3B	1.00 5.0	Diesel Range Motor Oil Range o-Terphenyl	30 59	200 420 84.4%
UT78E 12-8491	CBA-SB-4-0.5-2.5-051 HC ID: DIESEL/MOTOR OIL	205/15/12	05/16/12 FID3B	1.00 5.0	Diesel Range Motor Oil Range o-Terphenyl	30 60	220 520 83.3%
UT78F 12-8492	CBA-SB-4-3-5-0512 HC ID: DIESEL/MOTOR OIL	05/15/12	05/16/12 FID3B	1.00 1.0	Diesel Range Motor Oil Range o-Terphenyl	6.2 12	82 130 91.8%
UT78G 12-8493	CBA-SB-5-3.5-0512 HC ID: DRO	05/15/12	05/16/12 FID3B	1.00 1.0	Diesel Range Motor Oil Range o-Terphenyl	6.2 12	10 < 12 U 96.8%
UT78H 12-8494	CBA-SB-5-0-2-0512 HC ID: DIESEL/MOTOR OIL	05/15/12	05/16/12 FID3B	1.00 1.0	Diesel Range Motor Oil Range o-Terphenyl	5.7 12	16 16 97.8%
UT78I 12-8495	CBA-SB-20-0.5-2.5-051 HC ID: DIESEL/RRO	105/15/12	05/16/12 FID3B	1.00 50	Diesel Range Motor Oil Range o-Terphenyl	290 580	5,500 1,400 D
UT78J 12-8496	CBA-SB-50-3-5-0512 HC ID: DRO	05/15/12	05/16/12 FID3B	1.00 1.0	Diesel Range Motor Oil Range o-Terphenyl	5.8 12	9.8 < 12 U 97.4%
UT78K 12-8501	CBA-SB-6-3-5-0512 HC ID: DRO	05/15/12	05/16/12 FID3B	1.00 1.0	Diesel Range Motor Oil Range o-Terphenyl	6.1 12	7.4 < 12 U 95.8%
UT78L 12-8502	CBA-SB-7-1-3-0512 HC ID: DIESEL/MOTOR OIL	05/15/12	05/16/12 FID3B	1.00 5.0	Diesel Range Motor Oil Range o-Terphenyl	30 59	260 500 91.7%
UT78M 12-8503	CBA-SB-8-3-5-0512 HC ID: DIESEL/MOTOR OIL	05/15/12	05/16/12 FID3B	1.00 5.0	Diesel Range Motor Oil Range o-Terphenyl	35 71	650 1,200 100%

**ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS**

NWTPHD by GC/FID
Page 2 of 2
Matrix: Soil

QC Report No: UT78-AECOM
Project: Central Waterfront

Date Received: 05/09/12

Data Release Authorized: *AB*
Reported: 05/17/12

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DL	Range/Surrogate	RL	Result
UT78N 12-8504	CBA-SB-8-1-3-0512 HC ID: DIESEL/MOTOR OIL	05/15/12	05/16/12 FID3B	1.00 5.0	Diesel Range Motor Oil Range o-Terphenyl	31 62	570 1,100 95.4%
UT78O 12-8505	CWMW-18-7-9-0512 HC ID: DIESEL/MOTOR OIL	05/15/12	05/16/12 FID3B	1.00 5.0	Diesel Range Motor Oil Range o-Terphenyl	33 66	1,300 660 96.6%
UT78P 12-8506	CWMW-18-13-15-0512 HC ID: DRO	05/15/12	05/16/12 FID3B	1.00 1.0	Diesel Range Motor Oil Range o-Terphenyl	6.2 12	7.4 < 12 U 97.4%
UT78Q 12-8507	CBA-SB-80-3-5-0512 HC ID: DIESEL/MOTOR OIL	05/15/12	05/16/12 FID3B	1.00 5.0	Diesel Range Motor Oil Range o-Terphenyl	36 71	560 960 92.9%
UT78R 12-8508	CBA-TP-7-0-1-0512 HC ID: DRO/MOTOR OIL	05/15/12	05/16/12 FID3B	1.00 1.0	Diesel Range Motor Oil Range o-Terphenyl	5.9 12	18 27 98.4%
MB-051512 12-8509	Method Blank HC ID: ---	05/15/12	05/16/12 FID3B	1.00 1.0	Diesel Range Motor Oil Range o-Terphenyl	5.0 10	< 5.0 U < 10 U 90.8%
UT78S 12-8509	CBA-SB-2-3-5-0512 HC ID: DIESEL/RRO	05/15/12	05/16/12 FID3B	1.00 1.0	Diesel Range Motor Oil Range o-Terphenyl	5.7 11	26 12 94.6%

Reported in mg/kg (ppm)

EFV-Effective Final Volume in mL.
DL-Dilution of extract prior to analysis.
RL-Reporting limit.

Diesel range quantitation on total peaks in the range from C12 to C24.
Motor Oil range quantitation on total peaks in the range from C24 to C38.
HC ID: DRO/RRO indicates results of organics or additional hydrocarbons in ranges are not identifiable.

ORGANICS ANALYSIS DATA SHEET

NWTPHD by GC/FID

Page 1 of 1

Sample ID: CBA-SB-2-3-5-0512

MS/MSD

Lab Sample ID: UT78S

LIMS ID: 12-8509

Matrix: Soil

Data Release Authorized: *BB*

Reported: 05/17/12

QC Report No: UT78-AECOM

Project: Central Waterfront

Date Sampled: 05/08/12

Date Received: 05/09/12

Date Extracted MS/MSD: 05/15/12

Sample Amount MS: 8.73 g-dry-wt

MSD: 8.71 g-dry-wt

Date Analyzed MS: 05/16/12 16:44

Final Extract Volume MS: 1.0 mL

MSD: 05/16/12 17:03

MSD: 1.0 mL

Instrument/Analyst MS: FID3B/MH

Dilution Factor MS: 1.00

MSD: FID3B/MH

MSD: 1.00

Percent Moisture: 15.1%

Range	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
Diesel	25.6	174	172	86.3%	181	172	90.3%	3.9%

TPHD Surrogate Recovery

	MS	MSD
o-Terphenyl	95.0%	99.6%

Results reported in mg/kg

RPD calculated using sample concentrations per SW846.

ORGANICS ANALYSIS DATA SHEET

NWTPHD by GC/FID

Page 1 of 1

Sample ID: LCS-051512

LAB CONTROL

Lab Sample ID: LCS-051512

LIMS ID: 12-8509

Matrix: Soil

Data Release Authorized: *AB*

Reported: 05/17/12

QC Report No: UT78-AECOM

Project: Central Waterfront

Date Sampled: NA

Date Received: NA

Date Extracted: 05/15/12

Date Analyzed: 05/16/12 09:09

Instrument/Analyst: FID3B/MH

Sample Amount: 10.0 g-dry-wt

Final Extract Volume: 1.0 mL

Dilution Factor: 1.00

Range	Lab Control	Spike Added	Recovery
Diesel	133	150	88.7%

TPHD Surrogate Recovery

o-Terphenyl	92.9%
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Results reported in mg/kg

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

Matrix: Soil
Date Received: 05/09/12

ARI Job: UT78
Project: Central Waterfront

ARI ID	Client ID	Client Amt	Final Vol	Basis	Prep Date
12-8487-UT78A	CBA-SB-1-1.5-2.5-058.81	g	1.00 mL	D	05/15/12
12-8488-UT78B	CBA-SB-1-3-5-0512	8.18 g	1.00 mL	D	05/15/12
12-8489-UT78C	CBA-SB-2-0.5-2.5-058.37	g	1.00 mL	D	05/15/12
12-8490-UT78D	CBA-SB-3-1-3-0512	8.42 g	1.00 mL	D	05/15/12
12-8491-UT78E	CBA-SB-4-0.5-2.5-058.29	g	1.00 mL	D	05/15/12
12-8492-UT78F	CBA-SB-4-3-5-0512	8.10 g	1.00 mL	D	05/15/12
12-8493-UT78G	CBA-SB-5-3.5-0512	8.10 g	1.00 mL	D	05/15/12
12-8494-UT78H	CBA-SB-5-0-2-0512	8.73 g	1.00 mL	D	05/15/12
12-8495-UT78I	CBA-SB-20-0.5-2.5-08.60	g	1.00 mL	D	05/15/12
12-8496-UT78J	CBA-SB-50-3-5-0512	8.54 g	1.00 mL	D	05/15/12
12-8501-UT78K	CBA-SB-6-3-5-0512	8.21 g	1.00 mL	D	05/15/12
12-8502-UT78L	CBA-SB-7-1-3-0512	8.46 g	1.00 mL	D	05/15/12
12-8503-UT78M	CBA-SB-8-3-5-0512	7.07 g	1.00 mL	D	05/15/12
12-8504-UT78N	CBA-SB-8-1-3-0512	8.03 g	1.00 mL	D	05/15/12
12-8505-UT78O	CWMW-18-7-9-0512	7.62 g	1.00 mL	D	05/15/12
12-8506-UT78P	CWMW-18-13-15-0512	8.00 g	1.00 mL	D	05/15/12
12-8507-UT78Q	CBA-SB-80-3-5-0512	7.04 g	1.00 mL	D	05/15/12
12-8508-UT78R	CBA-TP-7-0-1-0512	8.51 g	1.00 mL	D	05/15/12
12-8509-051512MB1	Method Blank	10.0 g	1.00 mL	-	05/15/12
12-8509-051512LCS1	Lab Control	10.0 g	1.00 mL	-	05/15/12
12-8509-UT78S	CBA-SB-2-3-5-0512	8.74 g	1.00 mL	D	05/15/12
12-8509-UT78SMS	CBA-SB-2-3-5-0512	8.73 g	1.00 mL	D	05/15/12
12-8509-UT78SMSD	CBA-SB-2-3-5-0512	8.71 g	1.00 mL	D	05/15/12

TPHD SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: UT78-AECOM
Project: Central Waterfront

<u>Client ID</u>	<u>OTER</u>	<u>TOT OUT</u>
CBA-SB-1-1.5-2.5-0512	D	0
CBA-SB-1-3-5-0512	86.8%	0
CBA-SB-2-0.5-2.5-0512	D	0
CBA-SB-3-1-3-0512	84.4%	0
CBA-SB-4-0.5-2.5-0512	83.3%	0
CBA-SB-4-3-5-0512	91.8%	0
CBA-SB-5-3.5-0512	96.8%	0
CBA-SB-5-0-2-0512	97.8%	0
CBA-SB-20-0.5-2.5-0512	D	0
CBA-SB-50-3-5-0512	97.4%	0
CBA-SB-6-3-5-0512	95.8%	0
CBA-SB-7-1-3-0512	91.7%	0
CBA-SB-8-3-5-0512	100%	0
CBA-SB-8-1-3-0512	95.4%	0
CWMW-18-7-9-0512	96.6%	0
CWMW-18-13-15-0512	97.4%	0
CBA-SB-80-3-5-0512	92.9%	0
CBA-TP-7-0-1-0512	98.4%	0
051512MBS	90.8%	0
051512LCS	92.9%	0
CBA-SB-2-3-5-0512	94.6%	0
CBA-SB-2-3-5-0512 MS	95.0%	0
CBA-SB-2-3-5-0512 MSD	99.6%	0

LCS/MB LIMITS QC LIMITS

(OTER) = o-Terphenyl

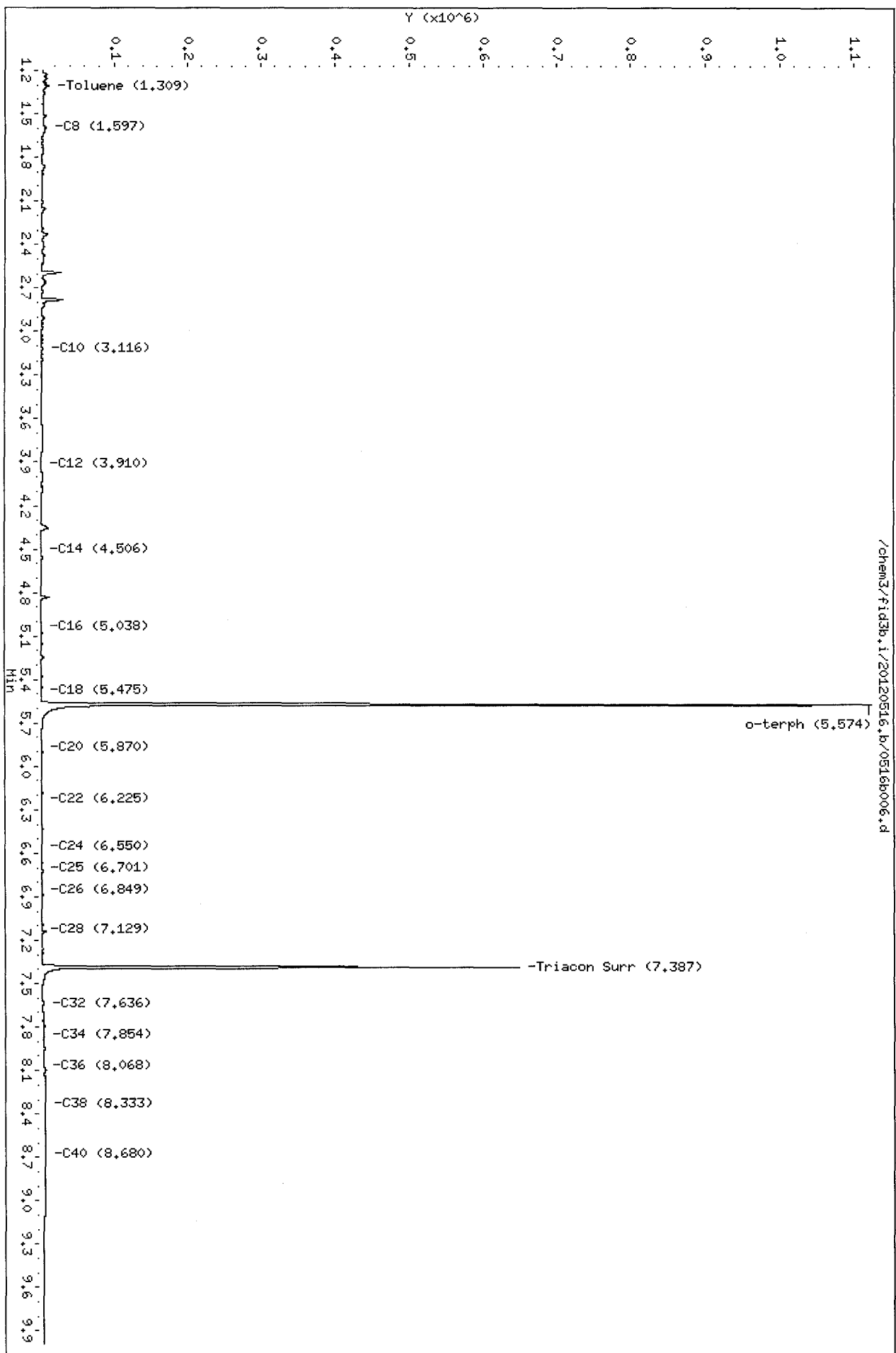
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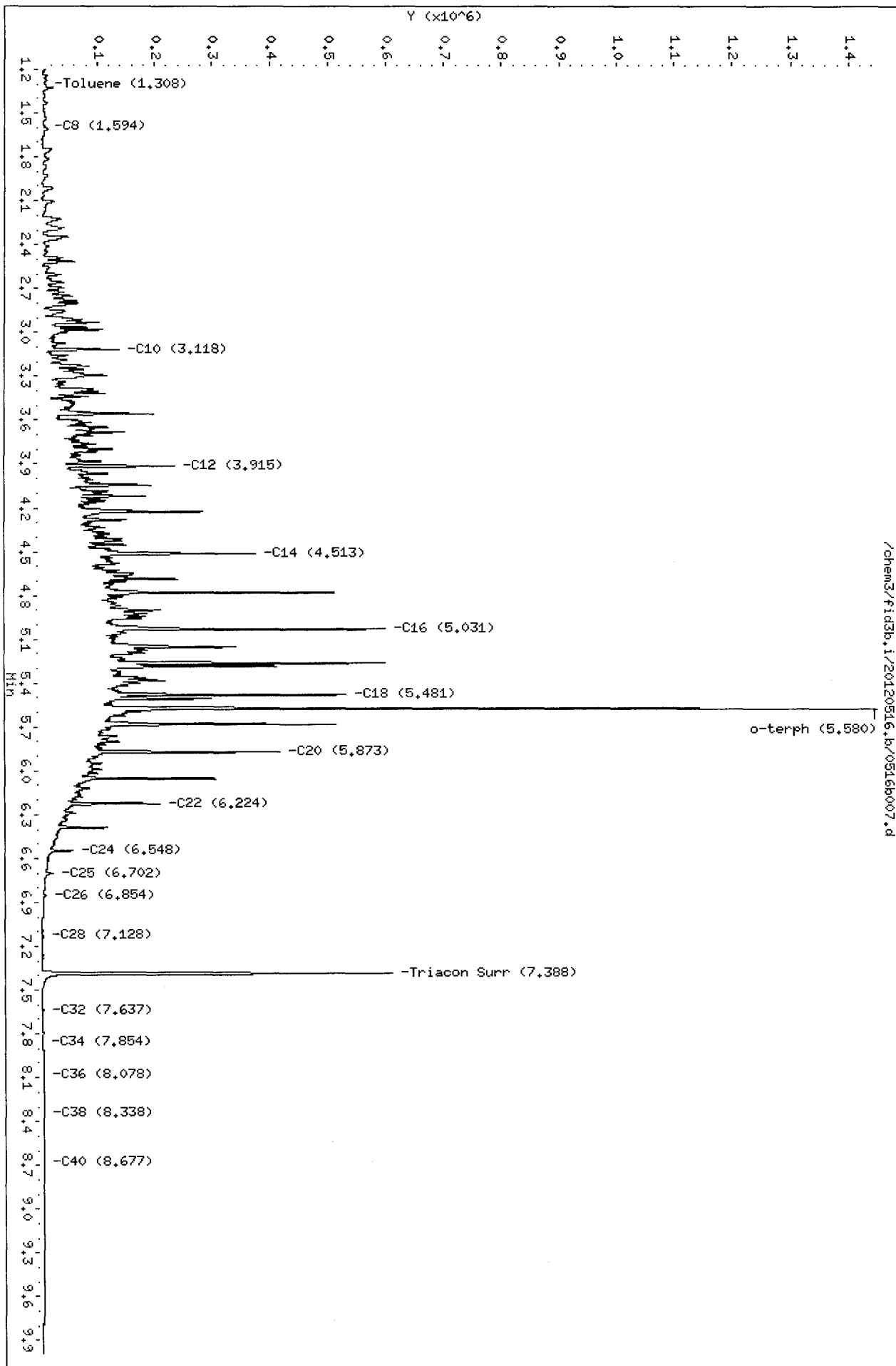
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Prep Method: SW3546
Log Number Range: 12-8487 to 12-8509

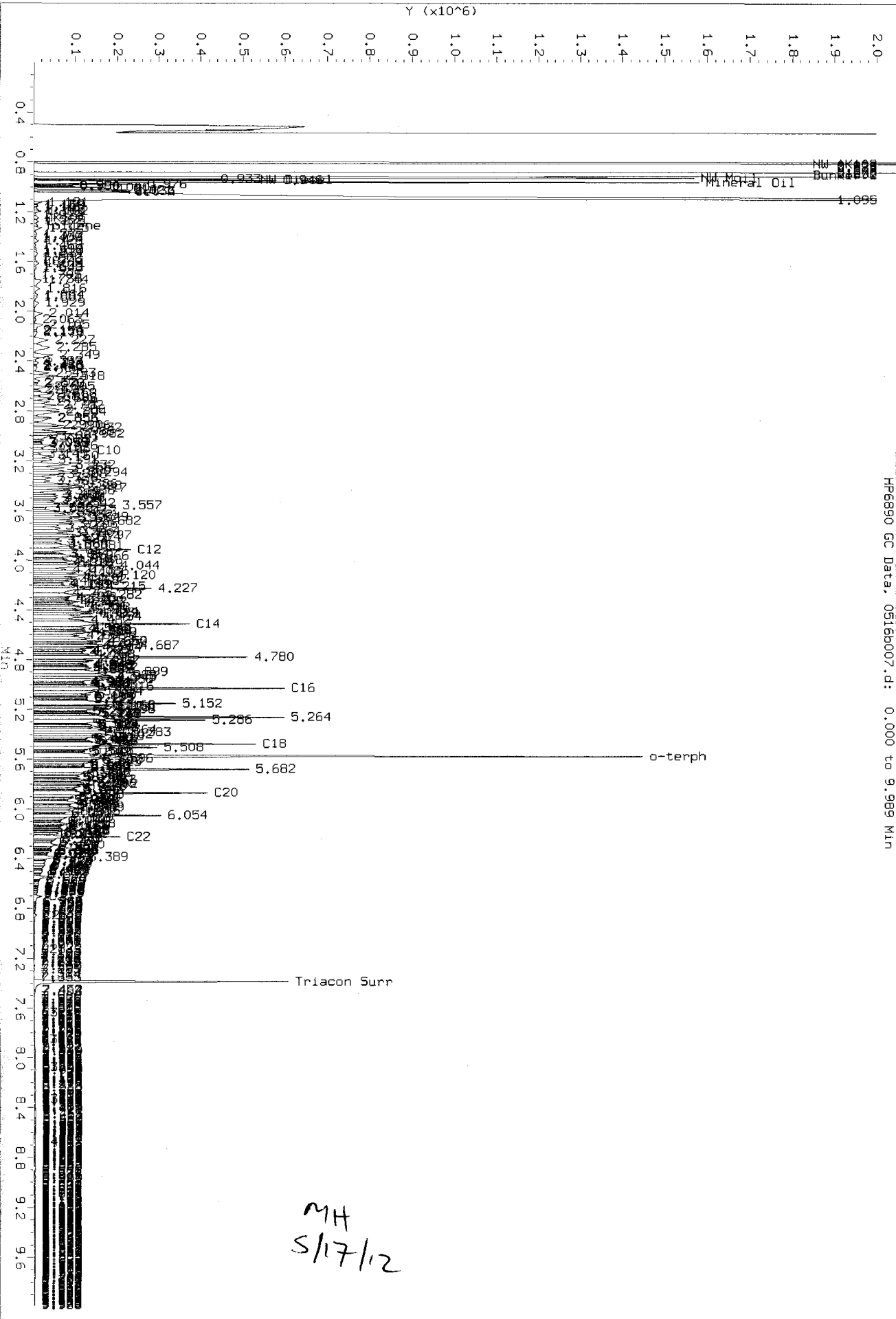
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Date: 16-MAY-2012 08:50
Client ID: UT78MBS1
Sample Info: UT78MBS1
Column phase: RTX-1

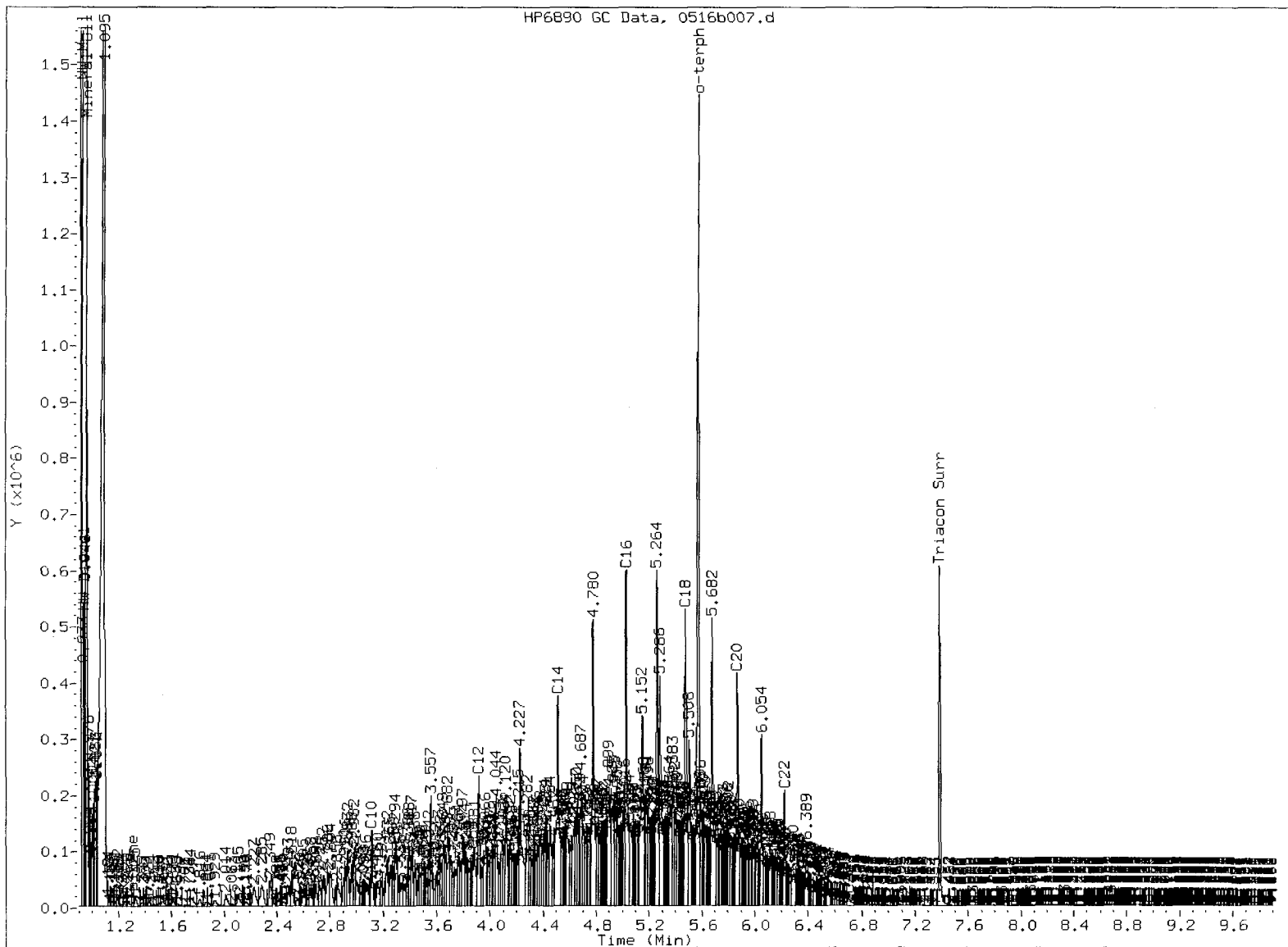
Instrument: fid3b.i
Operator: HH
Column diameter: 0.25





Data File: /chem3/fid3b.1/20120516.b/0516b007.d
Injection Date: 16-MAY-2012 09:09
Instrument: fid3b.1
Client Sample ID: UT78LCS51





MANUAL INTEGRATION

- 1. Baseline correction
- 2. Poor chromatography
- 3. Peak not found
- 4. Totals calculation
- 5. Other _____

Analyst: MH

Date: 5/17/12

Data File: /chem3/fid3b.1/20120516.b/0516b008.d

Date: 16-MAY-2012 09:28

Client ID: CBA-SB-1-1.5-2.5-05

Sample Info: UT78A.50

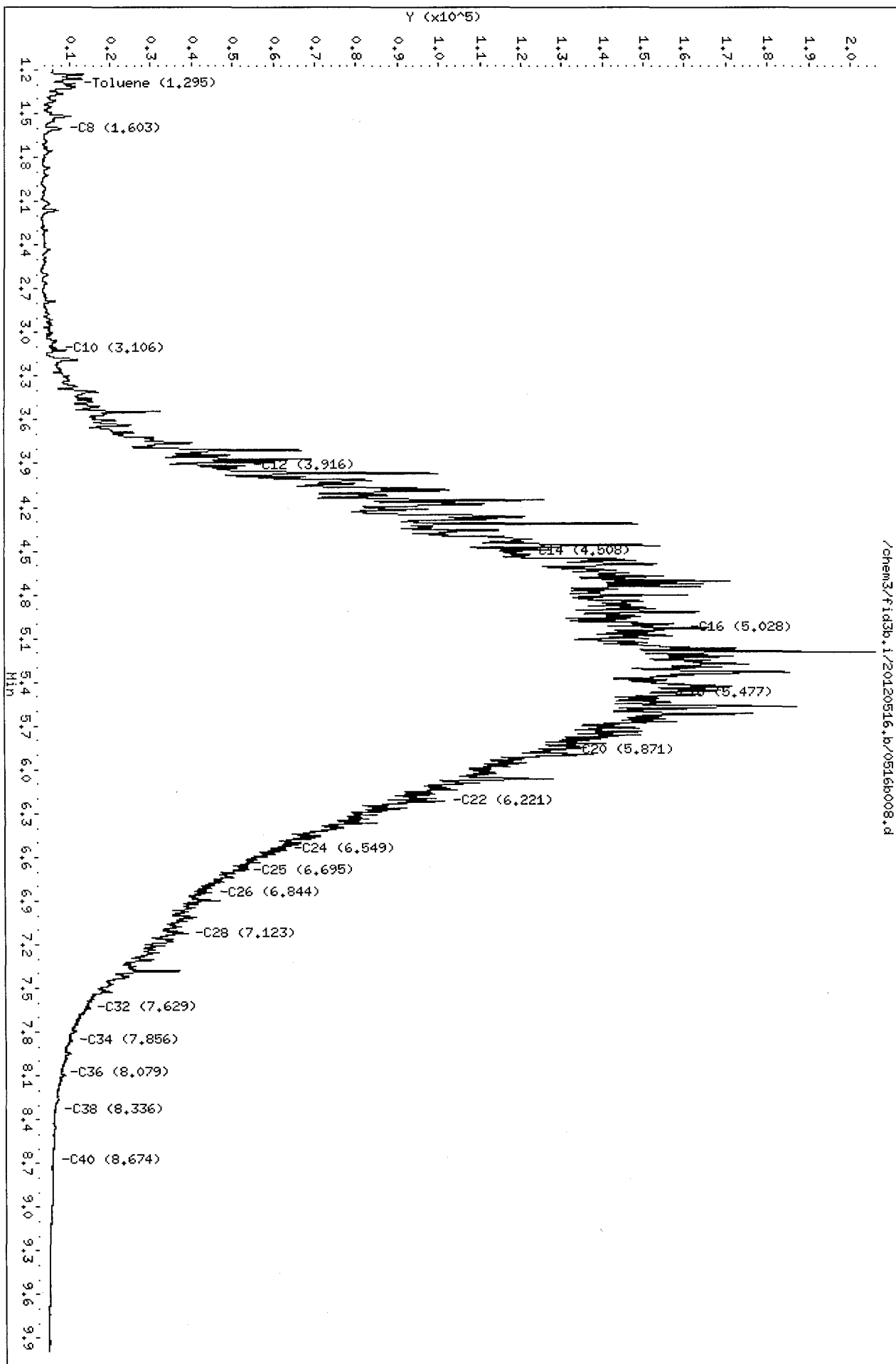
Column phase: RTX-1

Instrument: fid3b.1

Operator: HH

Column diameter: 0.25

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Data File: /chem3/fid3b.1/20120516.b/0516b009.d

Date: 16-MAY-2012 09:47

Client ID: CBA-SB-1-3-5-0512

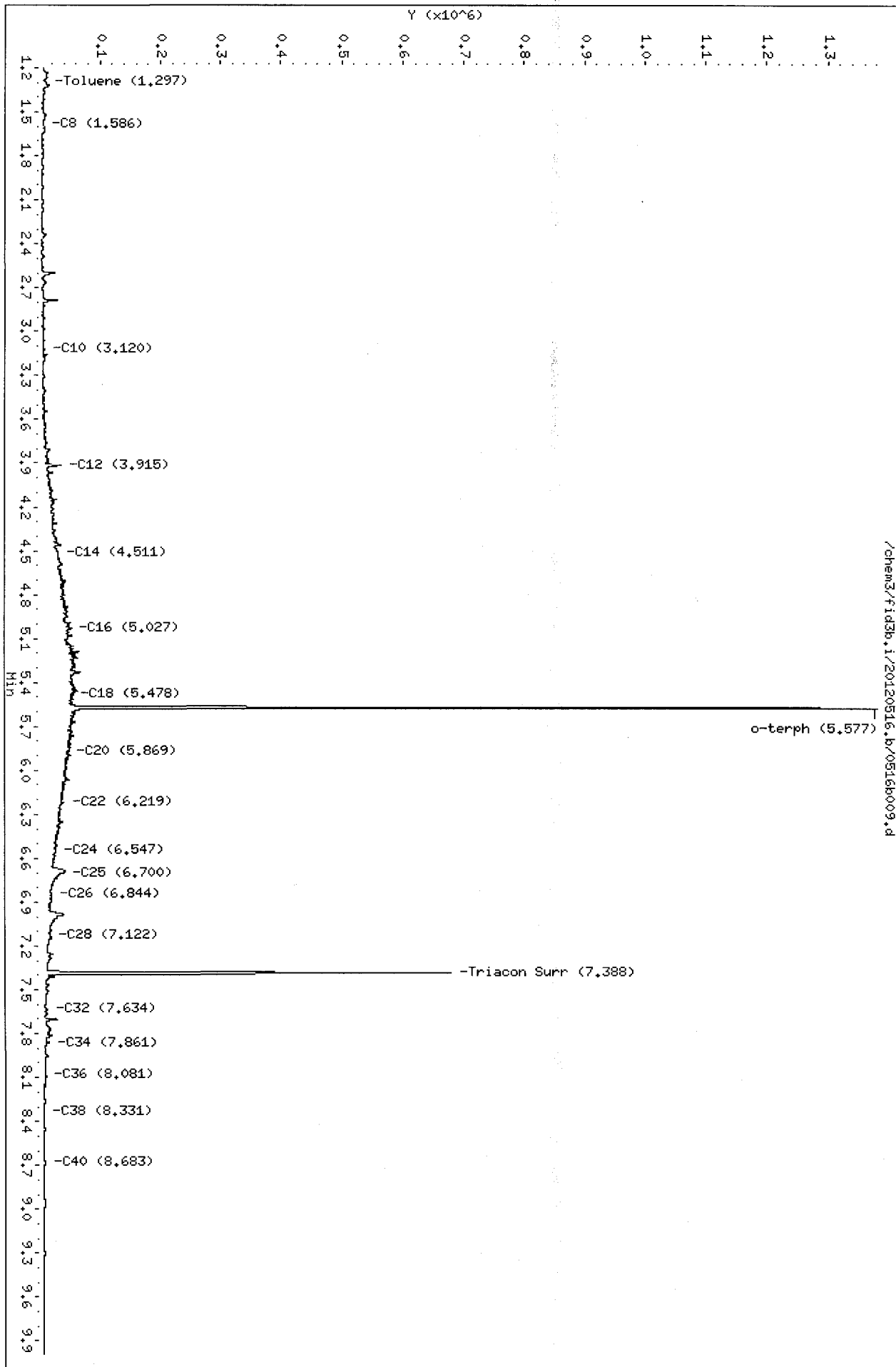
Sample Info: UT78B

Column phase: RTX-1

Instrument: fid3b.1

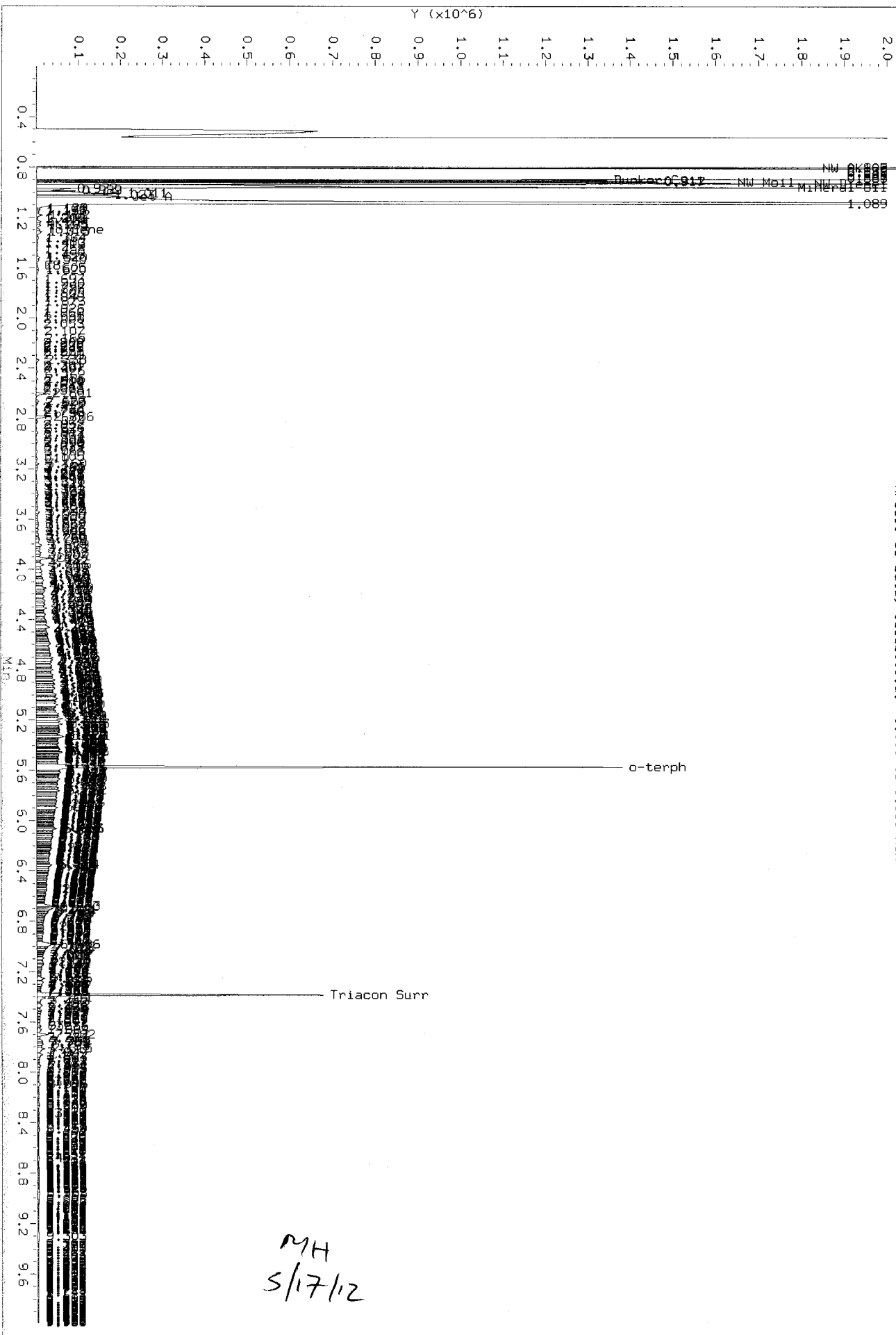
Operator: MH

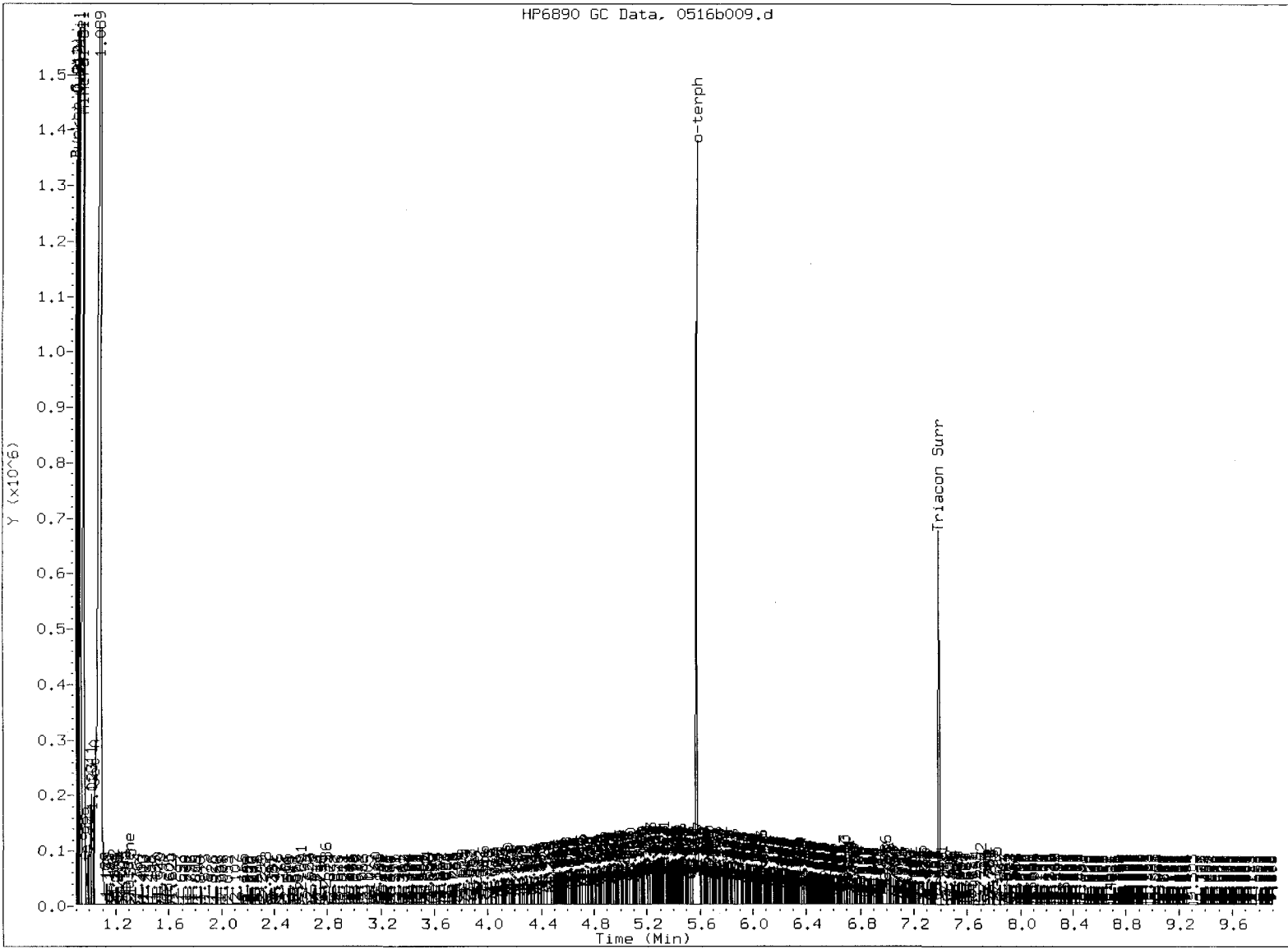
Column diameter: 0.25



Data File: /chem3/fid35-1/20120516_b/0516b009.d
Injection Date: 16-May-2012 09:47
Instrument: fid35b.1
Client Sample ID: CBA-SB-1-3-5-0512

HP6890 GC Data, 0516b009.d: 0.000 to 9.989 Min





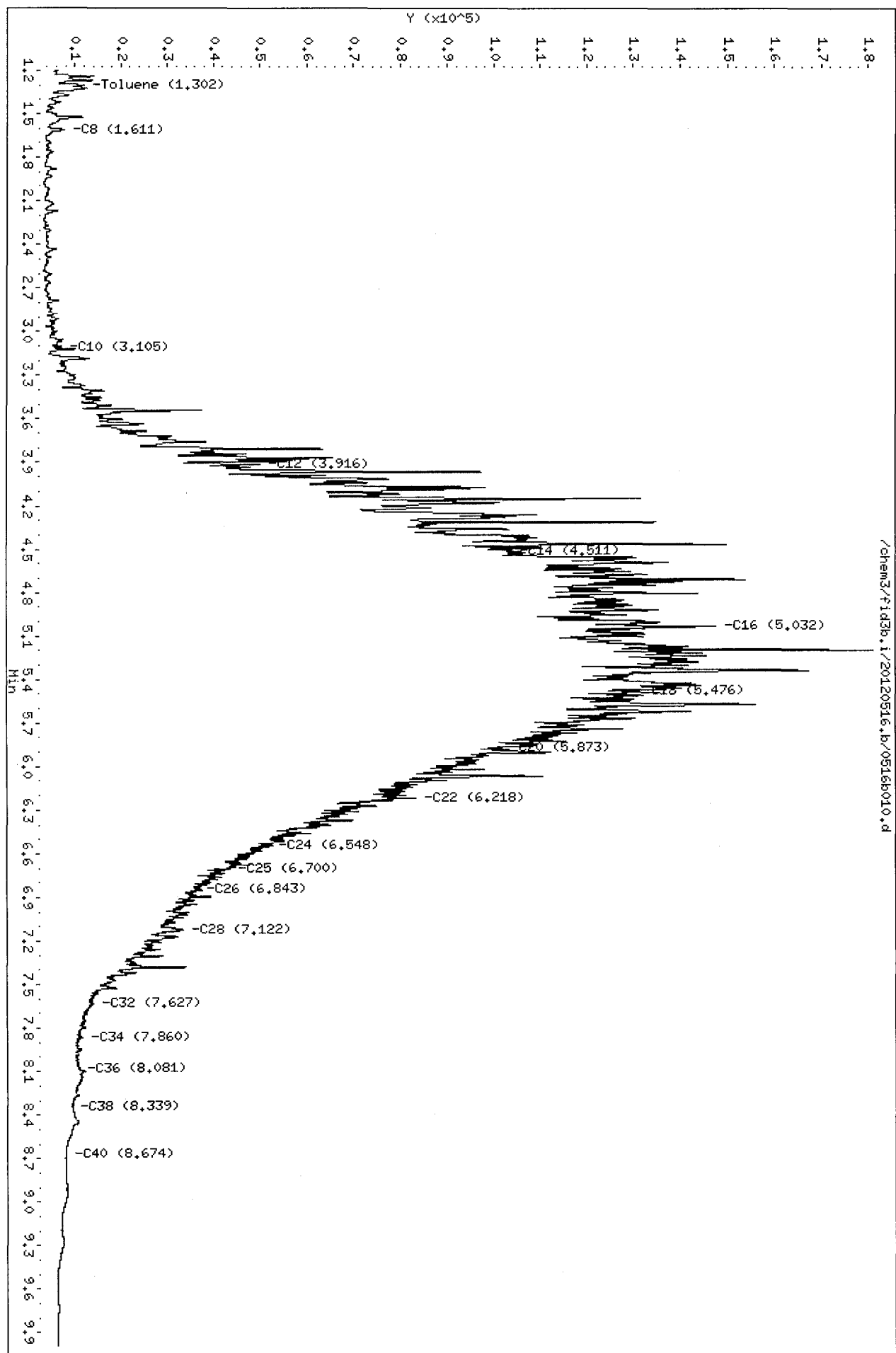
MANUAL INTEGRATION

- 1. Baseline correction
- 2. Poor chromatography
- 3. Peak not found
- 4. Totals calculation
- 5. Other _____

Analyst: MH Date: 5/17/12

Data File: /chem3/fid3b,1/20120516.b/0516b010.d
Date: 16-MAY-2012 10:06
Client ID: CBA-SB-2-0.5-2.5-05
Sample Info: UT78C,50
Column phase: RTX-1

Instrument: fid3b,1
Operator: MH
Column diameter: 0.25



Data File: /chem3/fid3b.1/20120516.b/0516b011.d

Date: 16-MAY-2012 10:25

Client ID: CBA-SB-3-1-3-0512

Sample Info: UT78D/5

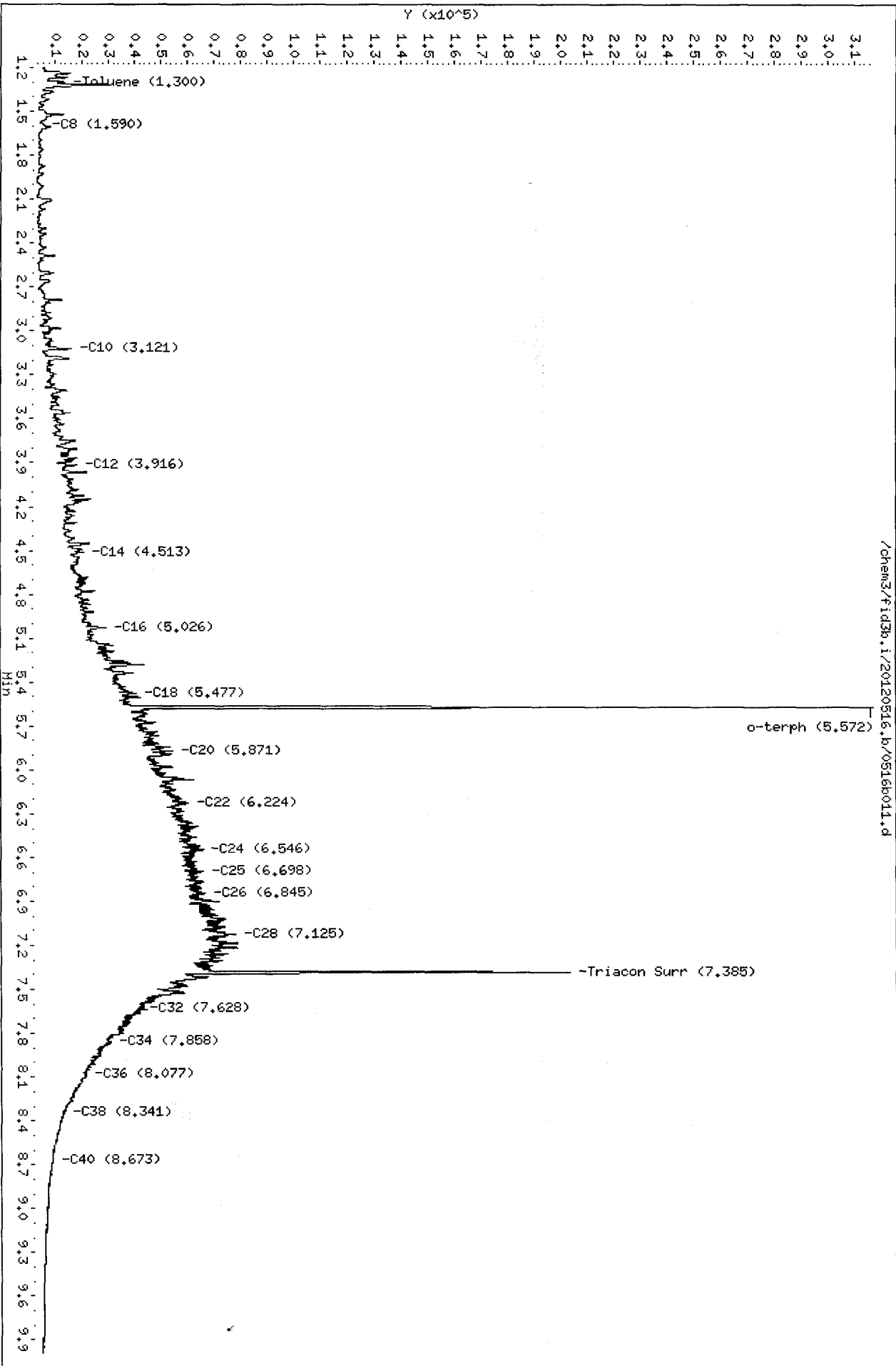
Column phase: RTX-1

Instrument: fid3b.1

Operator: HH

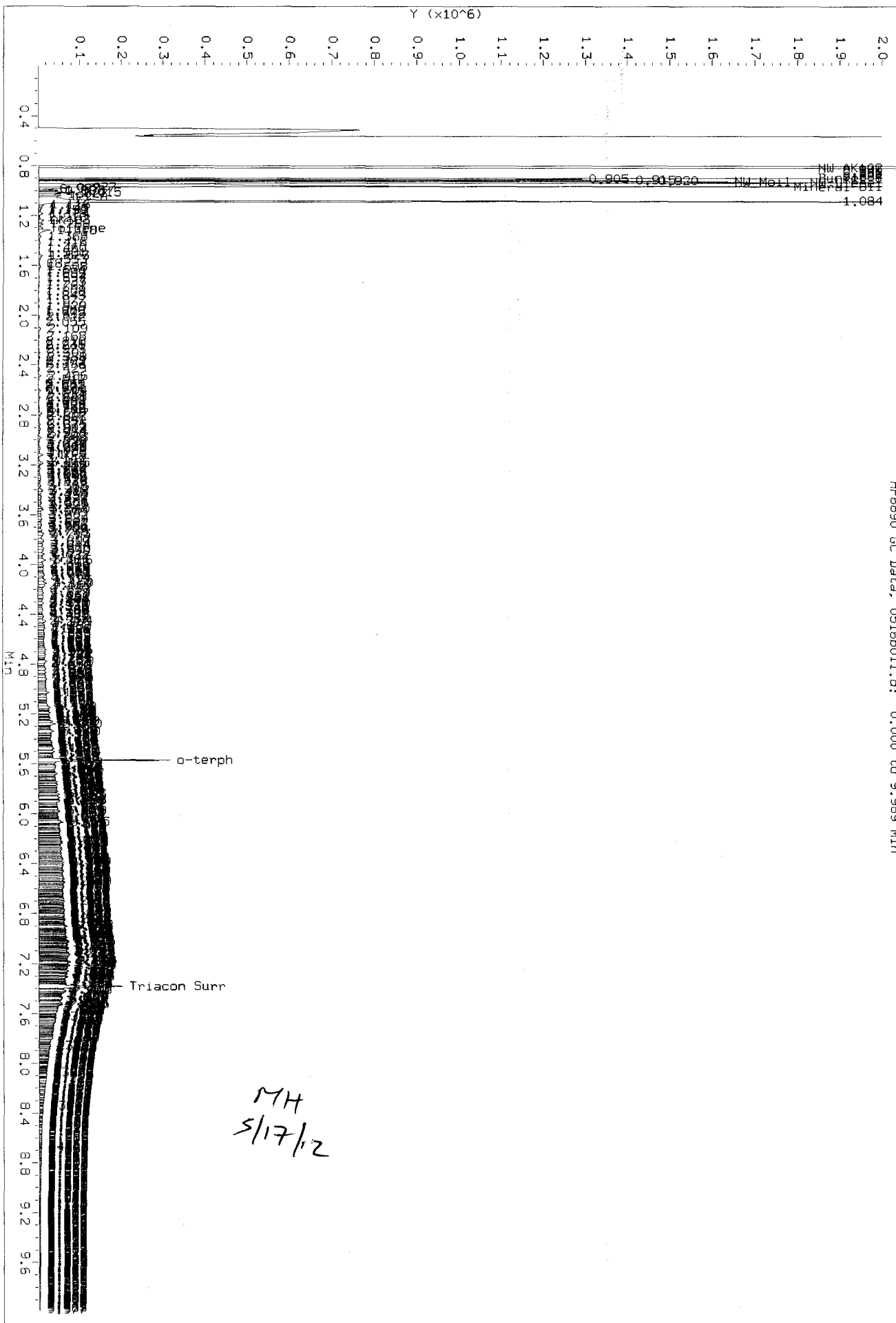
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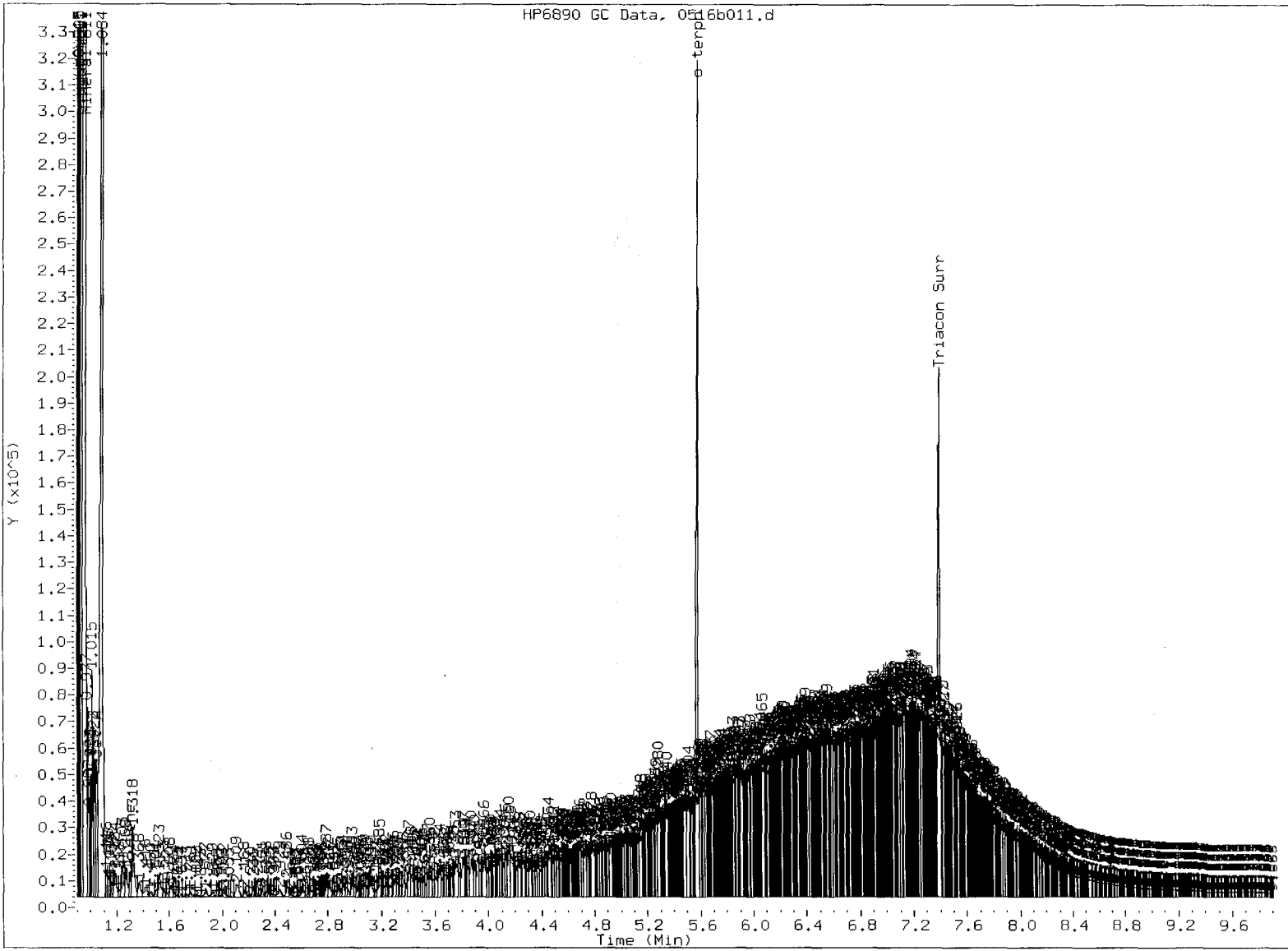
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Injection Date: 16-MAY-2012 10:25
Instrument: fid3b.1
Client Sample ID: CBA-SB-3-1-3-0512

HP6890 GC Data, 0516b011.d: 0.000 to 9.989 Min



FID:3B-2C/RTX-1 UT78D

FID:3B SIGNAL



MANUAL INTEGRATION

- 1. Baseline correction
- 2. Poor chromatography
- 3. Peak not found
- 4. Totals calculation
- 5. Other _____

Analyst: MH

Date: 5/17/12

Data File: /chem3/fid3b.i/20120516.b/0516b012.d

Date: 16-May-2012 10:44

Client ID: CBA-SB-4-0.5-2.5-05

Sample Info: UT78E,5

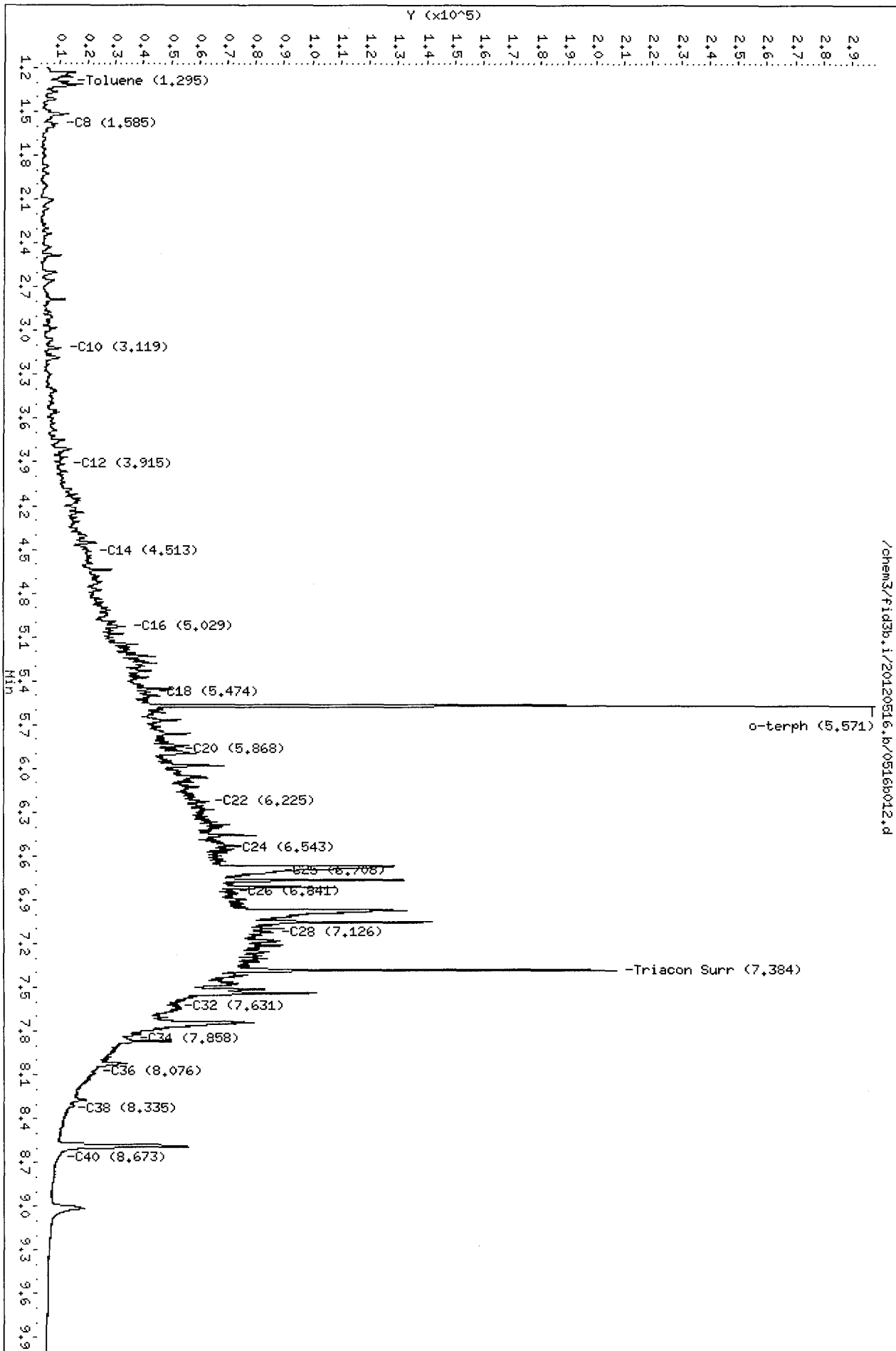
Column phase: RTX-1

Instrument: fid3b.i

Operator: HH

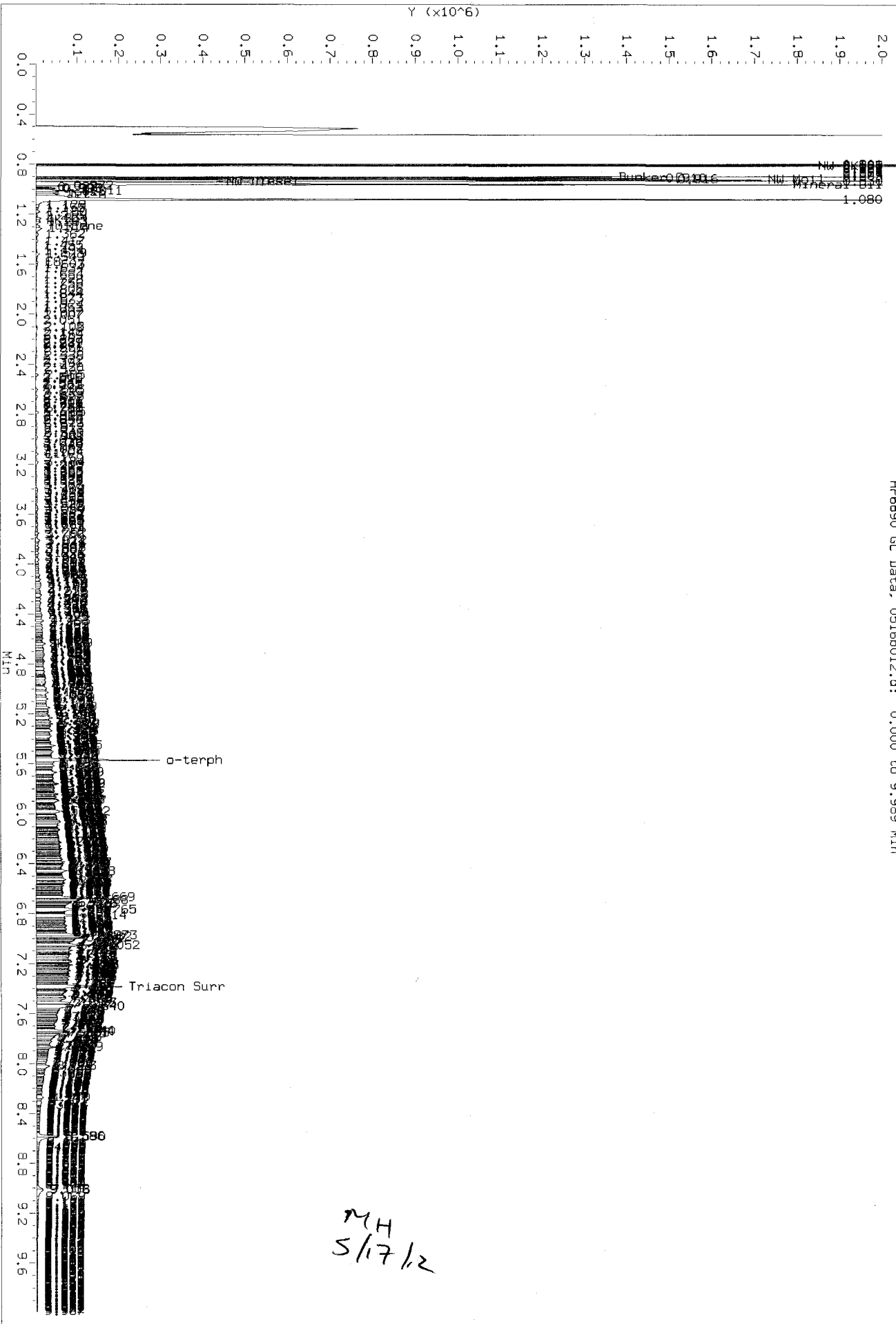
Column diameter: 0.25

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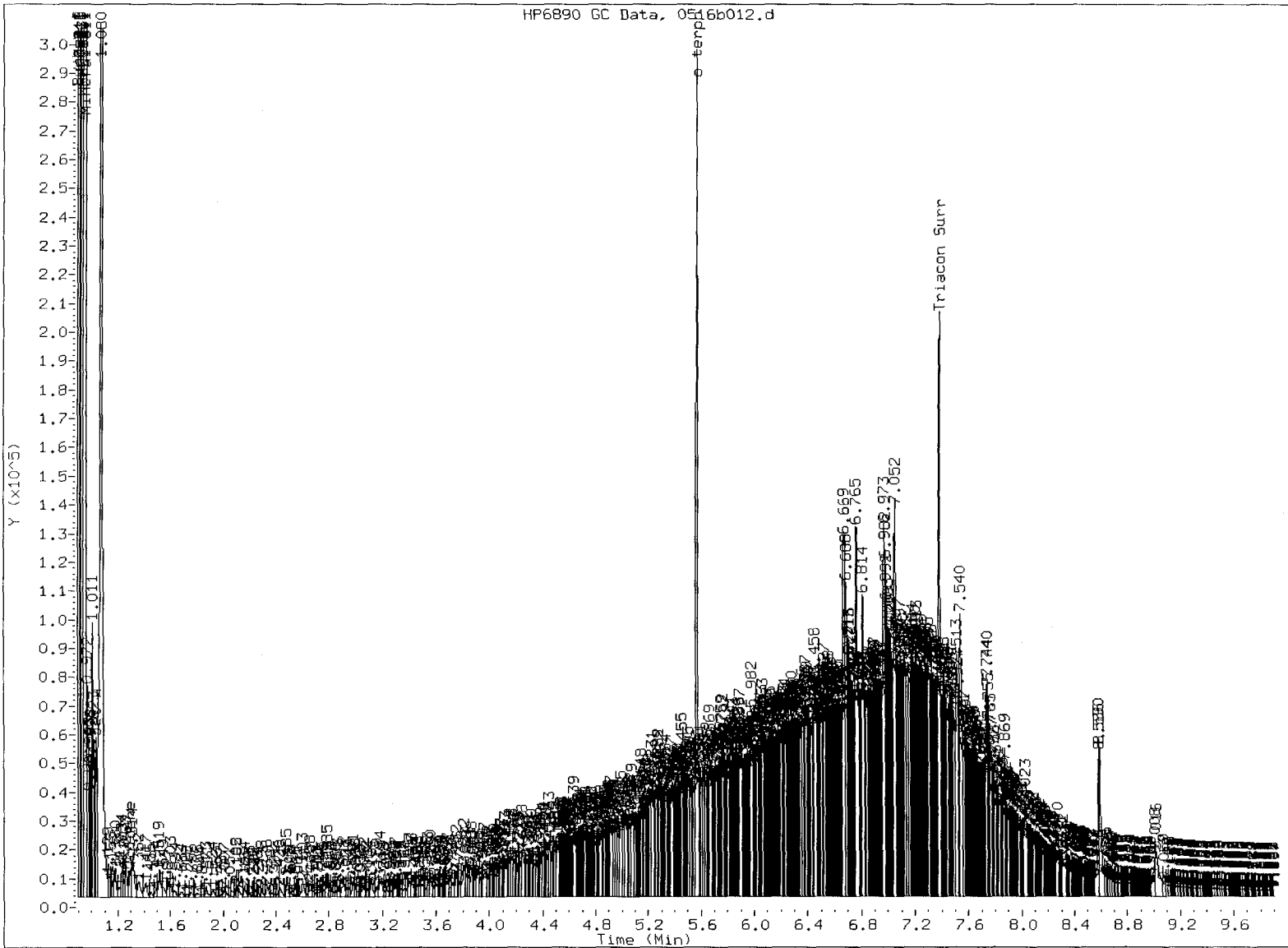


Data File: /chem3/fid35.1/20120516.b/0516b012.d
Injection Date: 16-MAY-2012 10:44
Instrument: f1930.1
Client Sample ID: CBA-SB-4-0.5-2.5-05

HP6890 GC Data, 0516b012.d: 0.000 to 9.989 Min



HP6890 GC Data, 0516b012.d



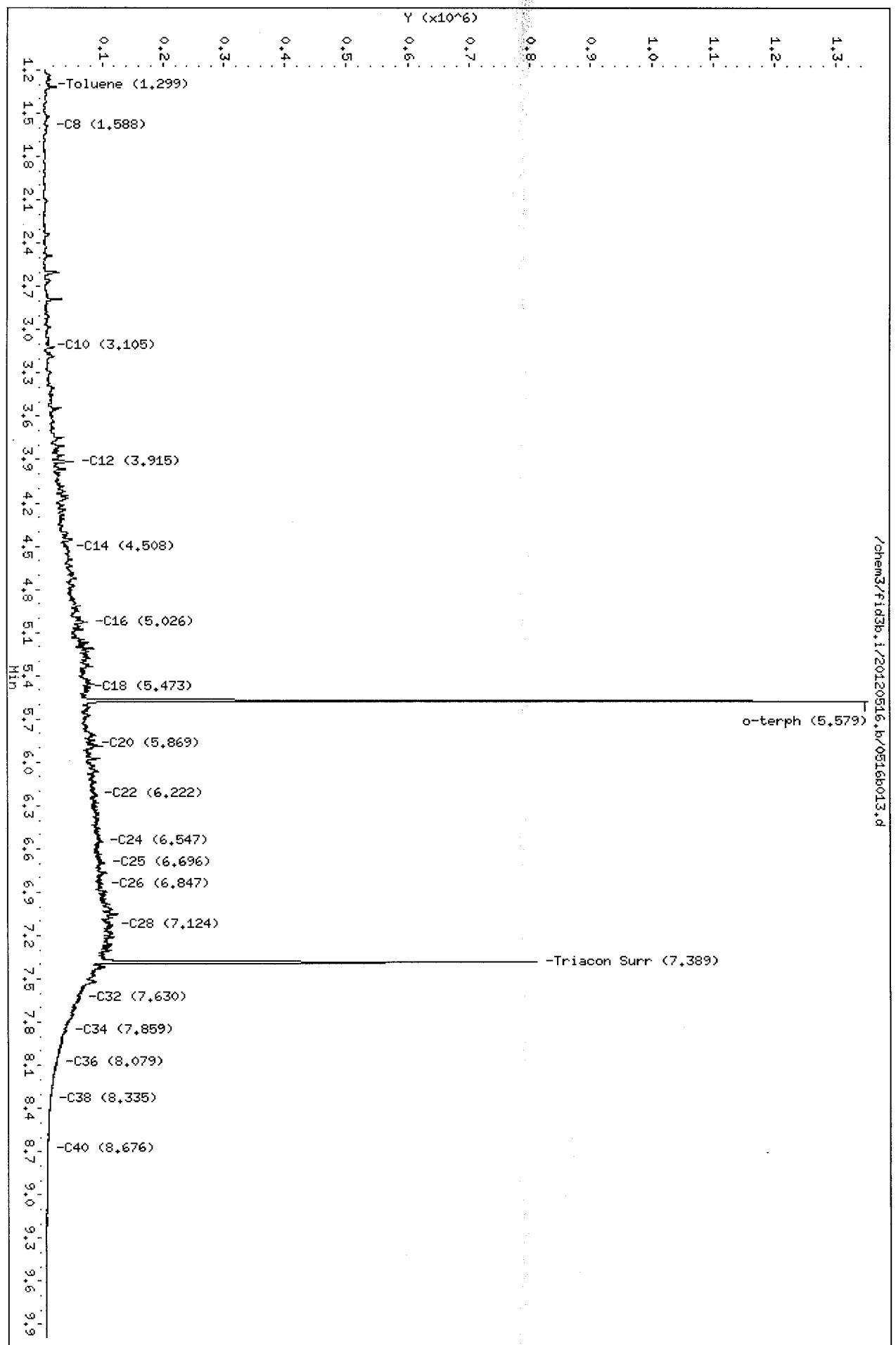
MANUAL INTEGRATION

- 1. Baseline correction
- 2. Poor chromatography
- 3. Peak not found
- 4. Totals calculation
- 5. Other _____

Analyst: MH Date: 5/17/12

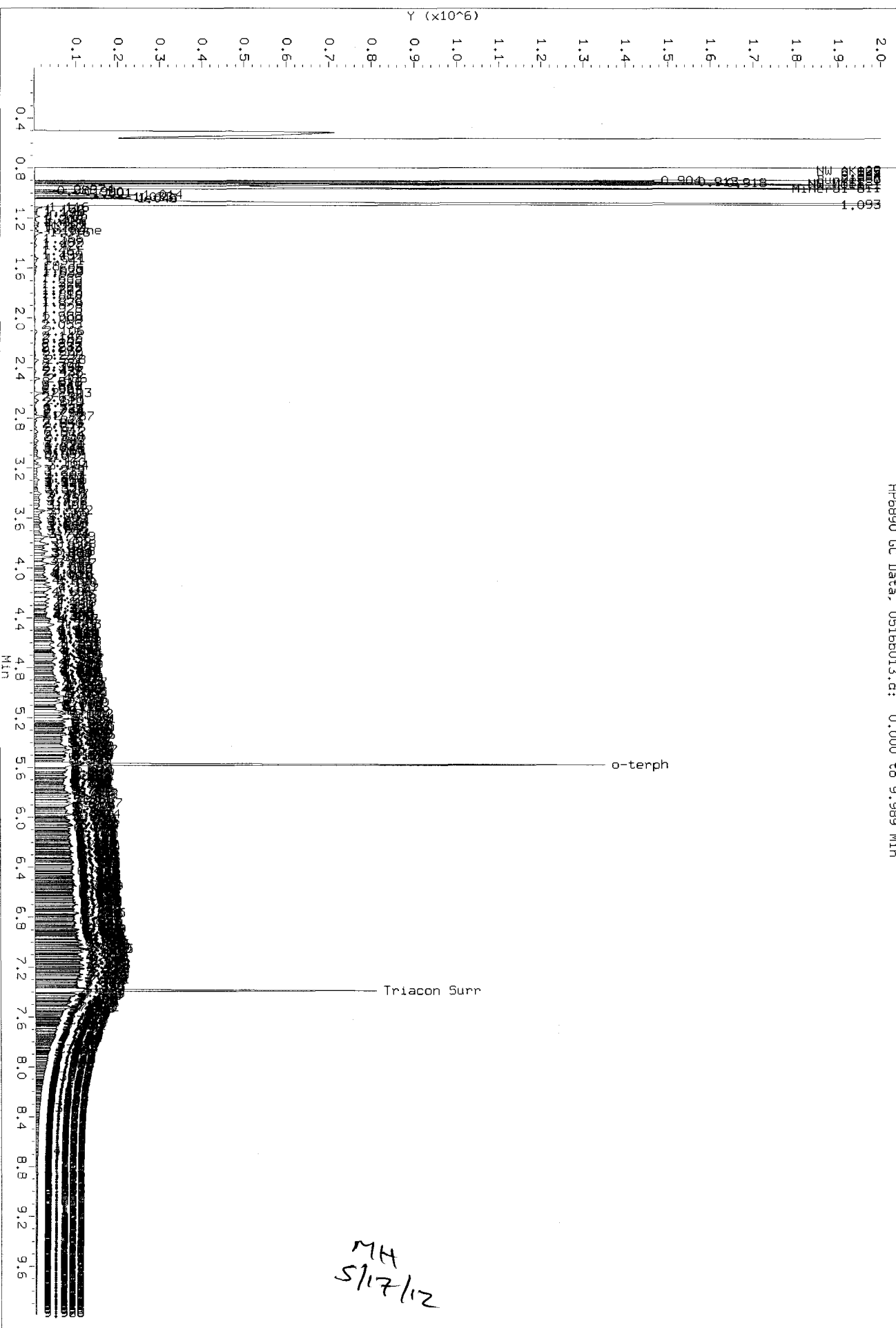
Data File: /chem3/fid3b.i/20120516.b/0516013.d
Date: 16-MAY-2012 11:03
Client ID: CBA-SB-4-3-5-0512
Sample Info: UT78F
Column phase: RTX-1

Instrument: fid3b.i
Operator: MH
Column diameter: 0.25

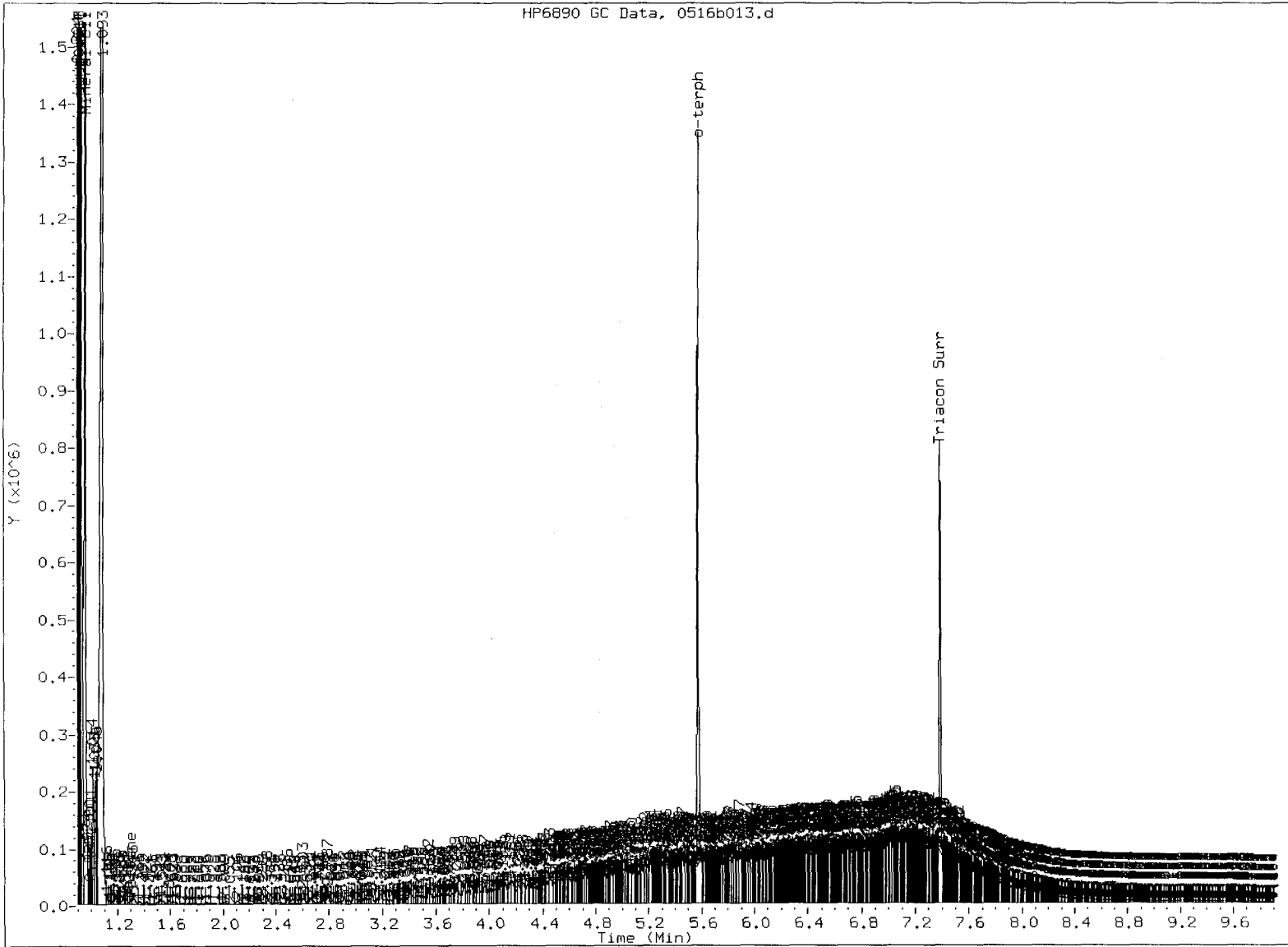


Data File: /chem3/fid3b_1/20120516_b/0516b013.d
Injection Date: 16-MAY-2012 11:03
Instrument: fid3b.1
Client Sample ID: CBA-SB-4-3-5-0512

HP6890 GC Data, 0516b013.d: 0.000 to 9.989 Min



MH
5/17/12



MANUAL INTEGRATION

- 1. Baseline correction
- 2. Poor chromatography
- 3. Peak not found
- 4. Totals calculation
- 5. Other _____

Analyst: MLH Date: 5/17/12

Data File: /chem3/fid3b.i/20120516.b/0516b014.d

Date: 16-MAY-2012 11:22

Client ID: CBA-SB-5-3.5-0512

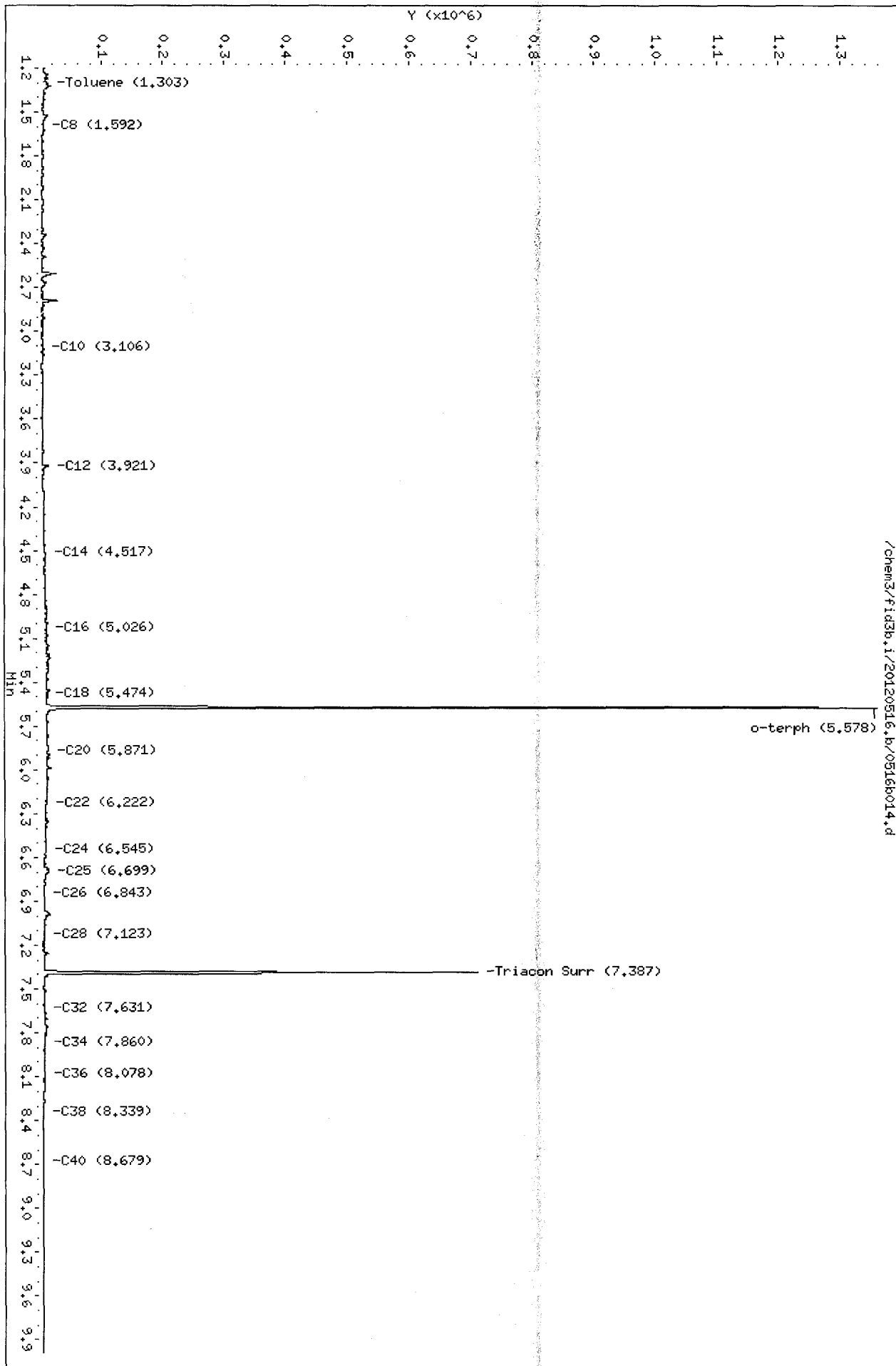
Sample Info: UT78C

Column Phase: RTX-1

Instrument: fid3b.i

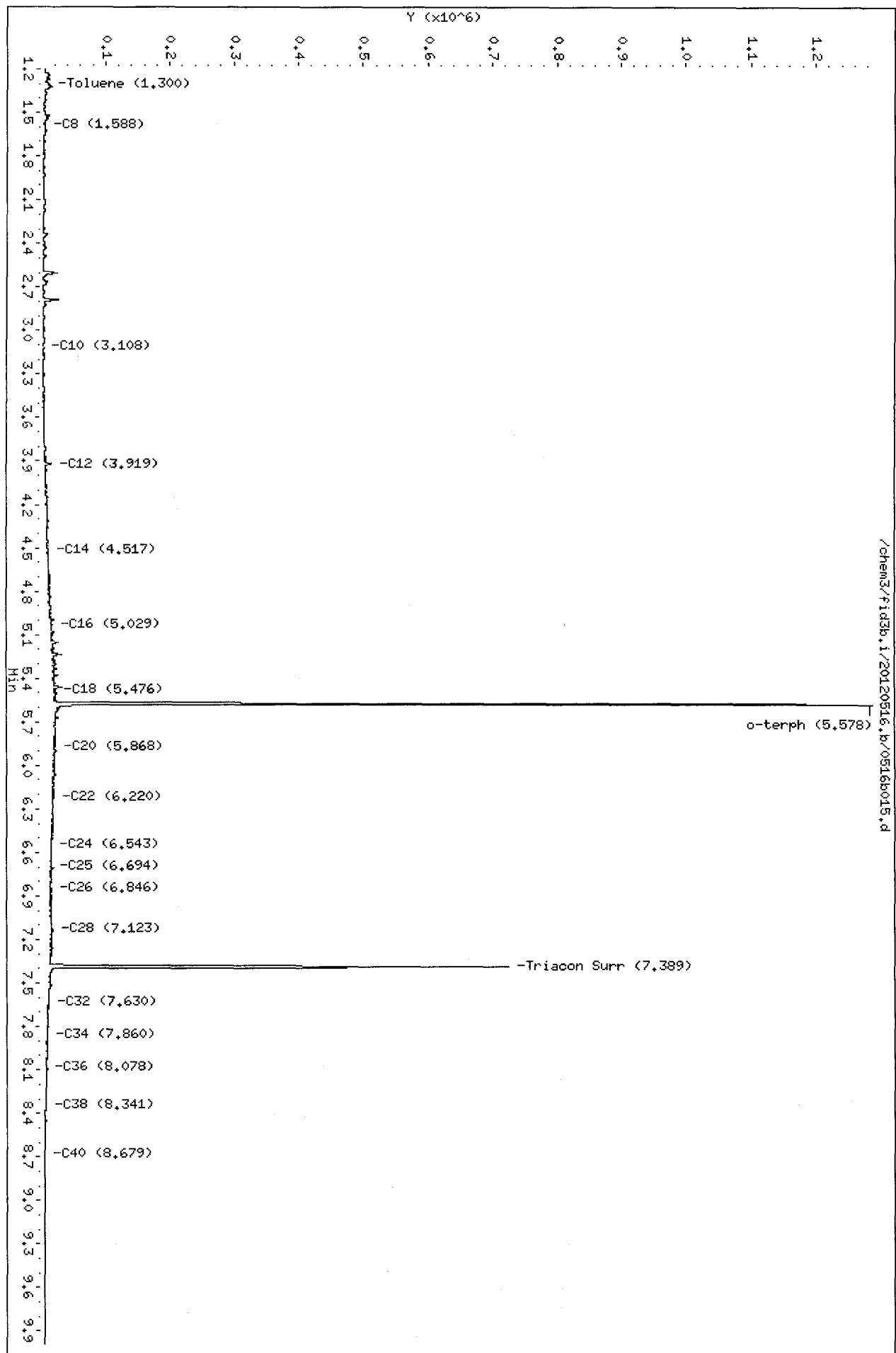
Operator: NH

Column diameter: 0.25



Data File: /chem3/fid3b,1/20120516,b/0516b015.d
Date: 16-MAY-2012 11:41
Client ID: CBA-SB-5-0-2-0512
Sample Info: UT78H
Column Phase: RTX-1

Instrument: fid3b,1
Operator: NH
Column diameter: 0.25



UT78: 00101

Data File: /chem3/fid3b.1/20120516.b/0516b018.d

Date: 16-MAY-2012 12:38

Client ID: CBA-SB-20-0.5-2.5-0

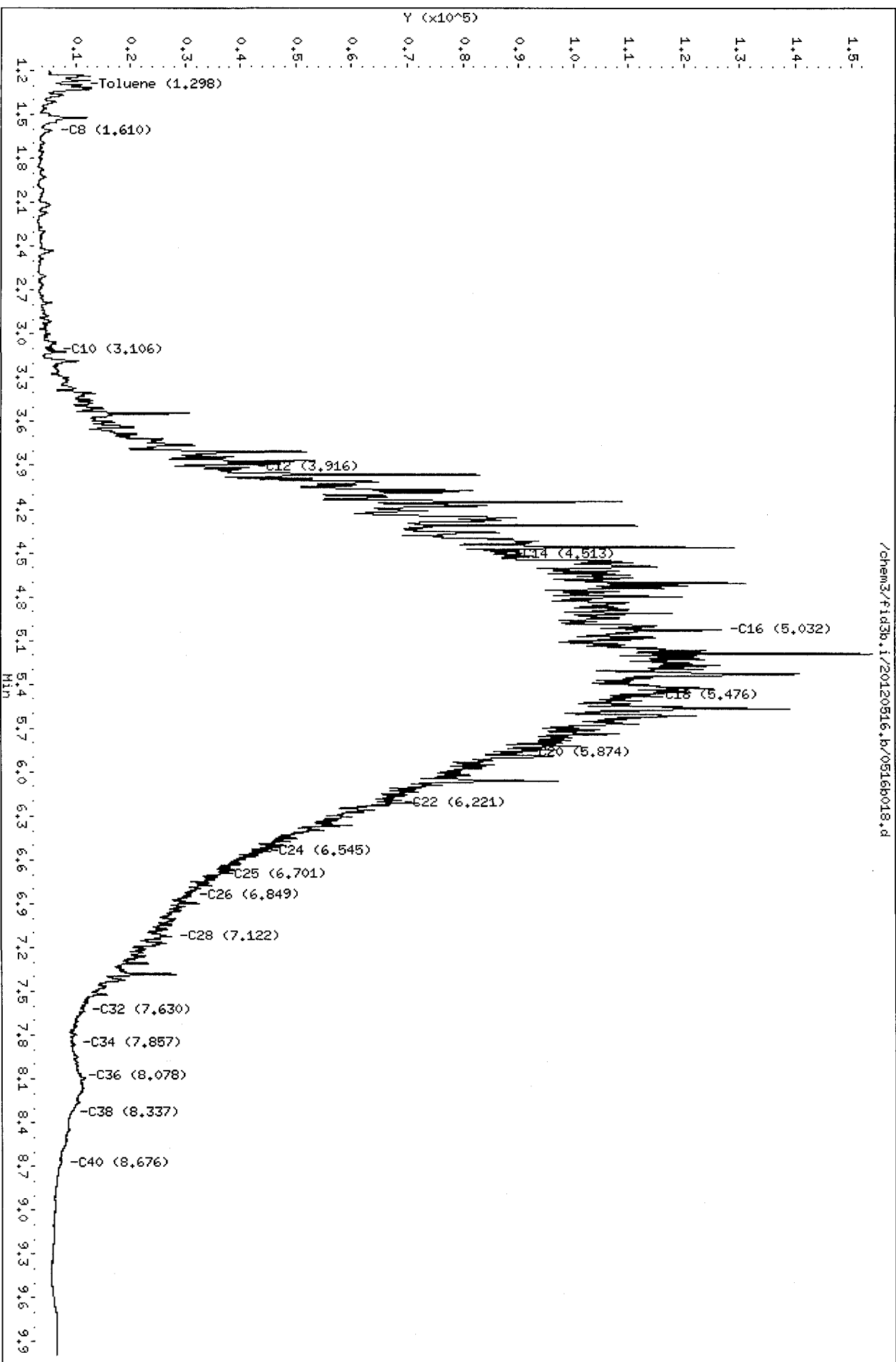
Sample Info: UT781.50

Column phase: RTX-1

Instrument: fid3b.1

Operator: NH

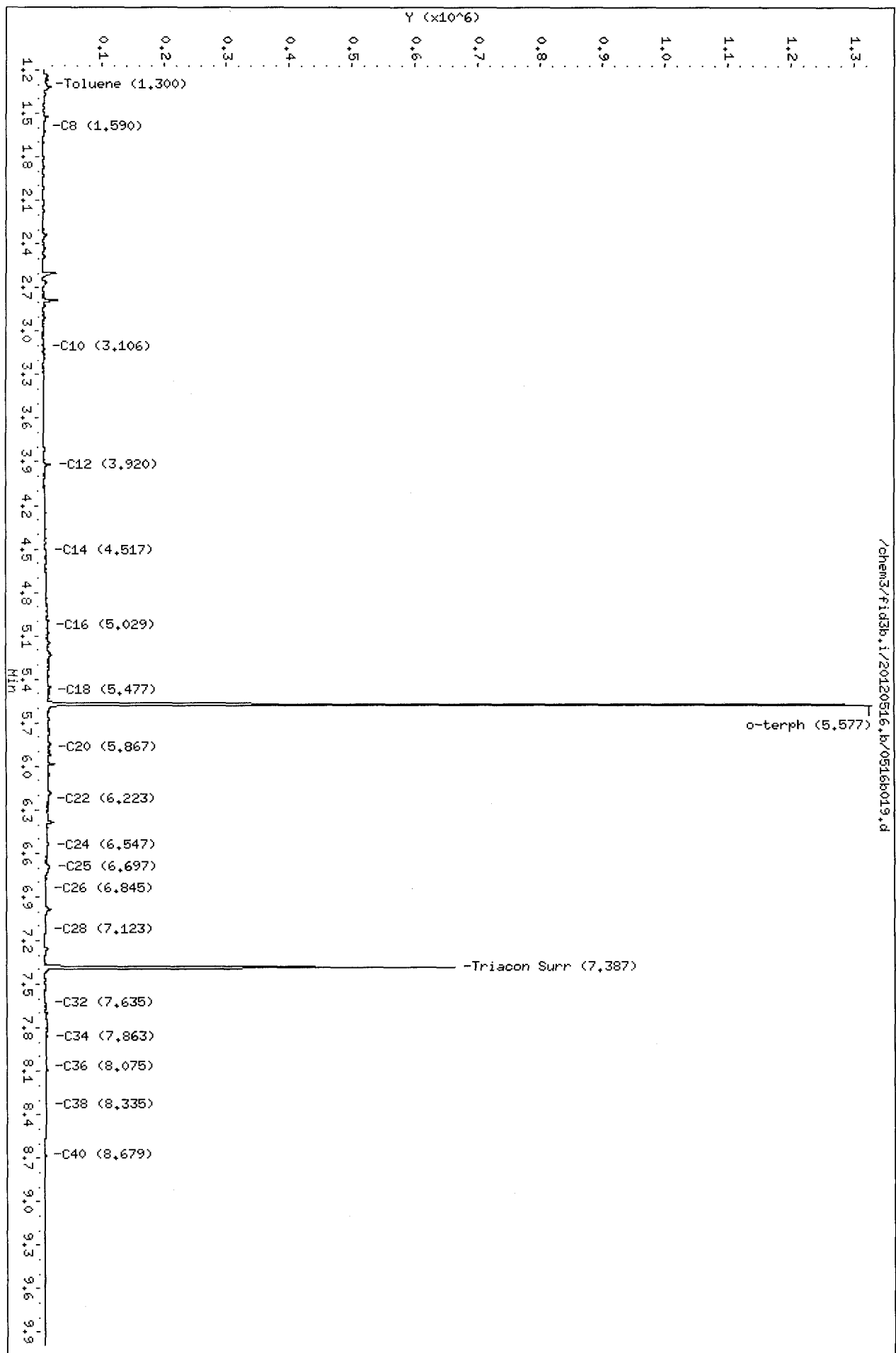
Column diameter: 0.25



/chem3/fid3b.1/20120516.b/0516b018.d

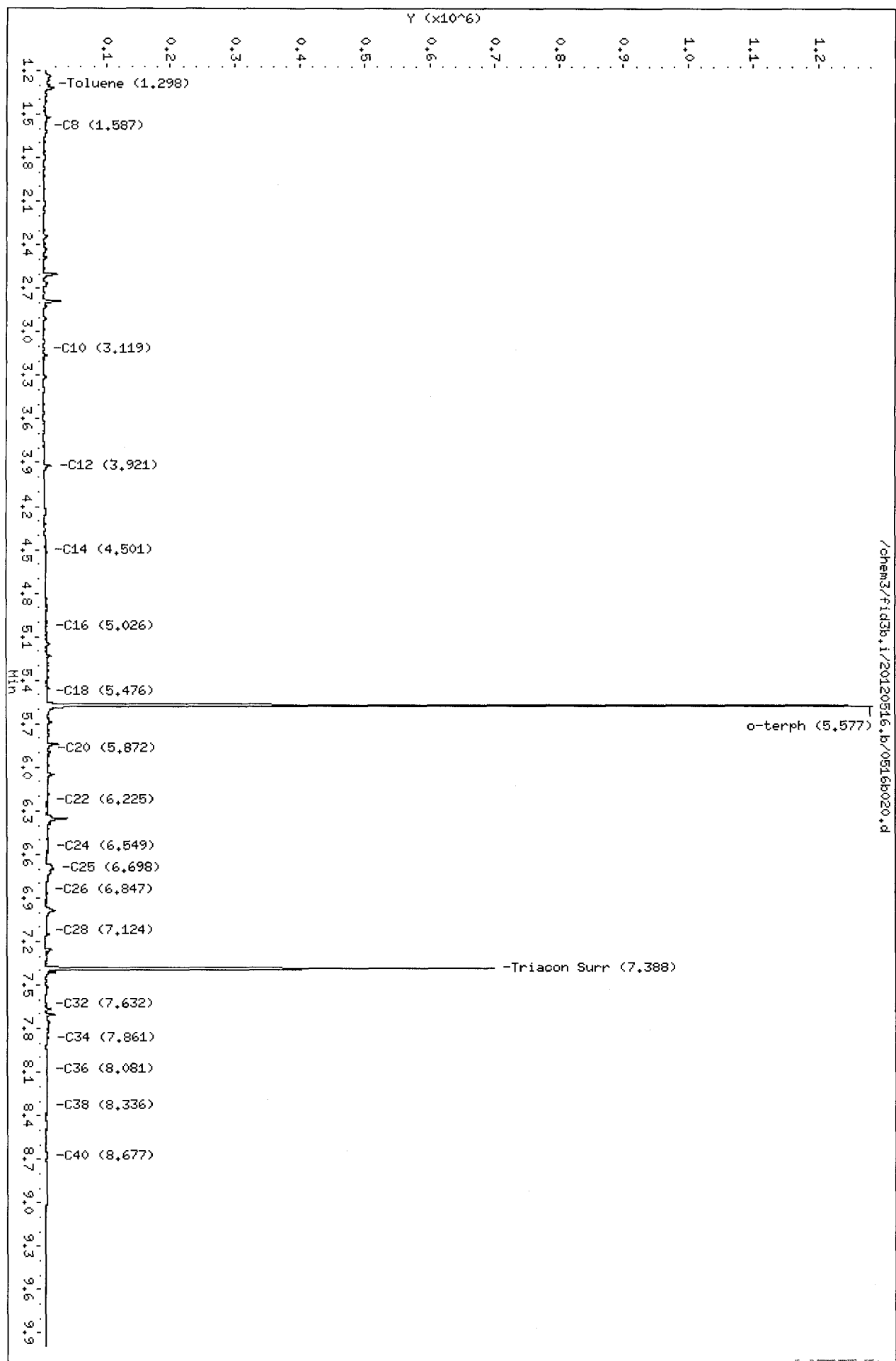
Data File: /chem3/fid3b,1/20120516,b/0516b019,d
Date: 16-MAY-2012 12:57
Client ID: CBA-SB-50-3-5-0512
Sample Info: UT78J
Column phase: RTX-1

Instrument: fid3b,1
Operator: HH
Column diameter: 0.25



Data File: /chem3/fid3b.i/20120516.b/0516b020.d
Date: 16-May-2012 13:16
Client ID: CBA-SB-6-3-5-0512
Sample Info: UT78K
Column phase: RTX-1

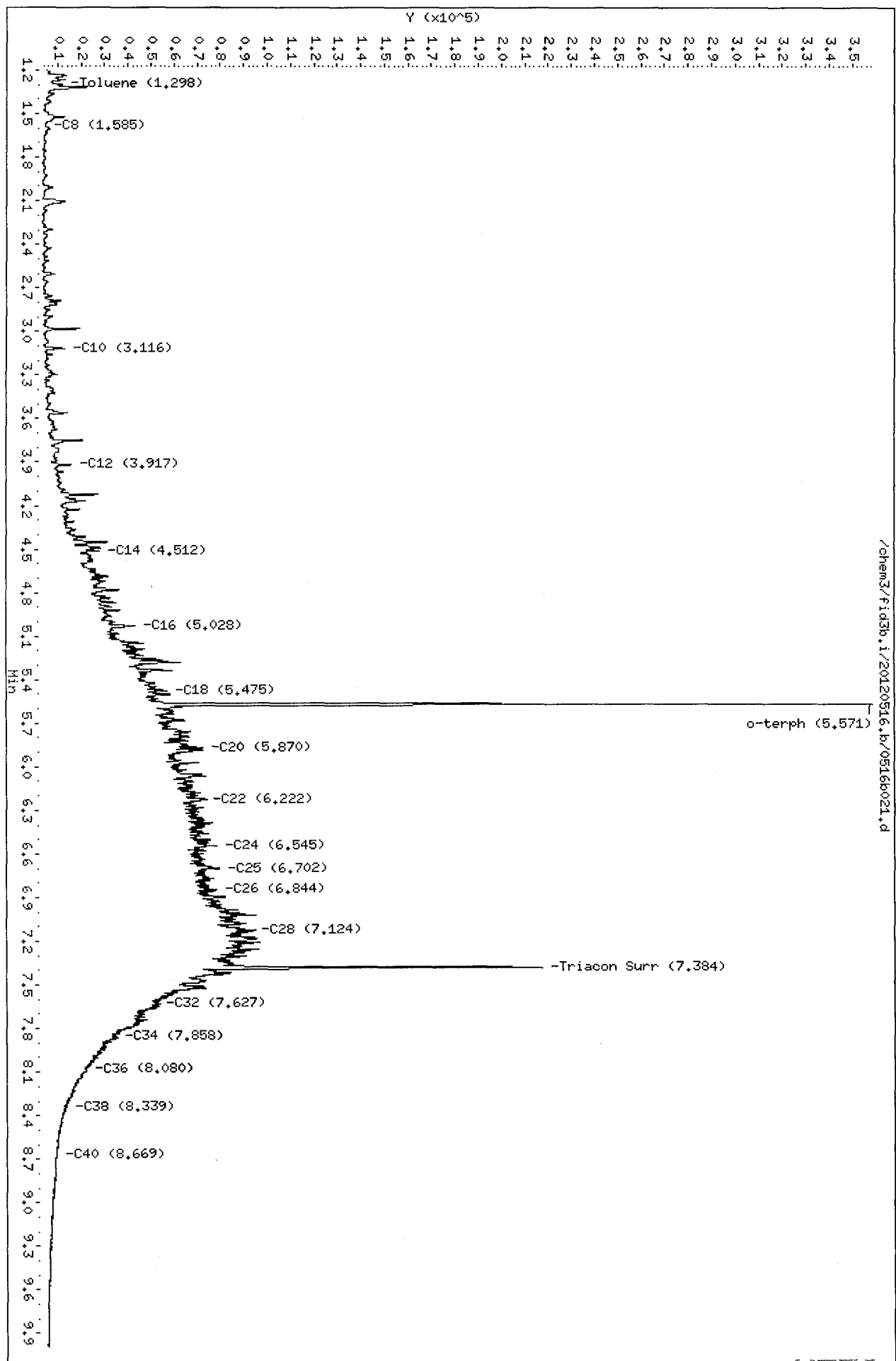
Instrument: fid3b.i
Operator: HH
Column diameter: 0.25



/chem3/fid3b.i/20120516.b/0516b020.d

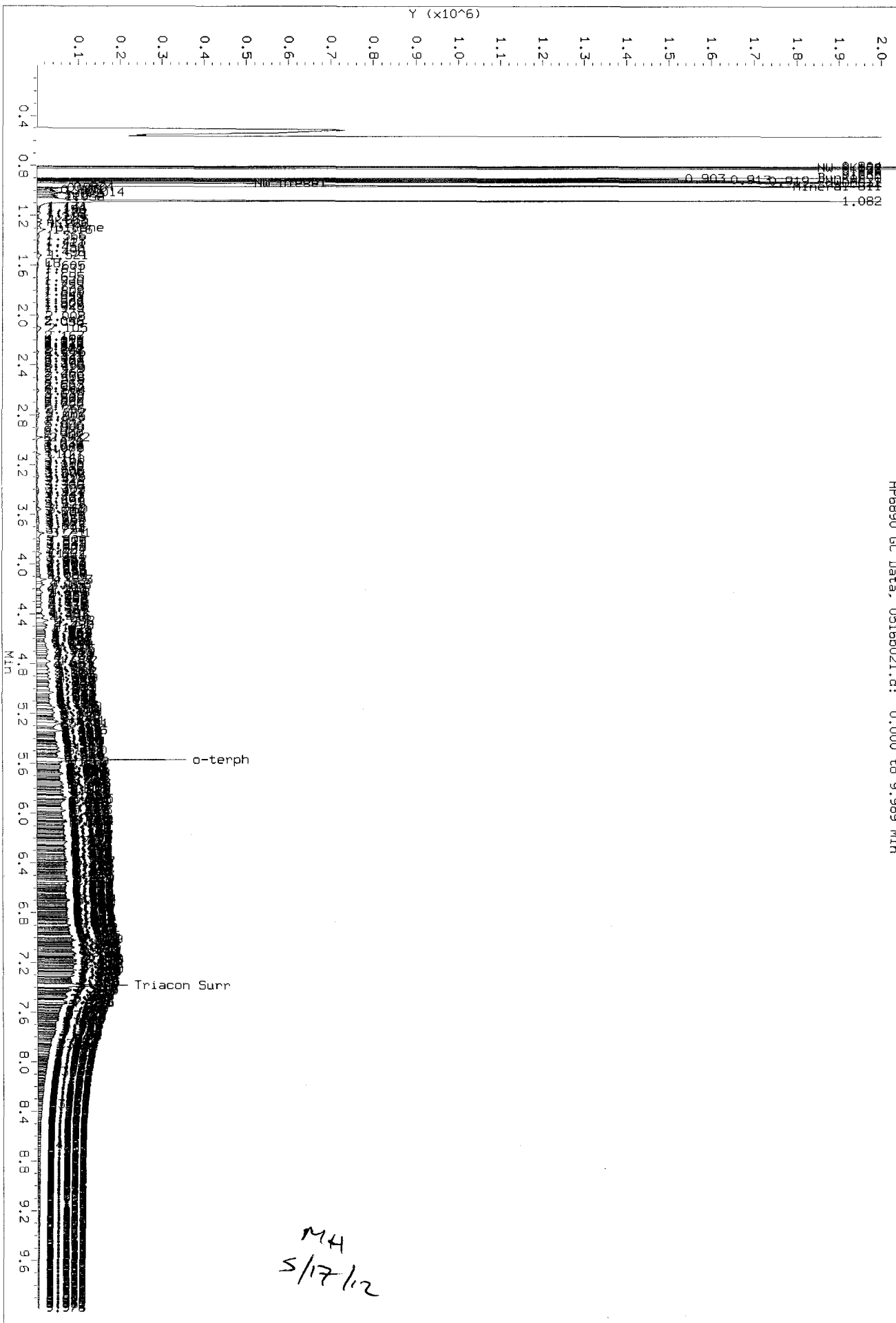
Data File: /chem3/fid3b.1/20120516.b/0516b021.d
 Date: 16-MAY-2012 13:35
 Client ID: CBA-SB-7-1-3-0512
 Sample Info: UT78L5
 Column phase: RTX-1

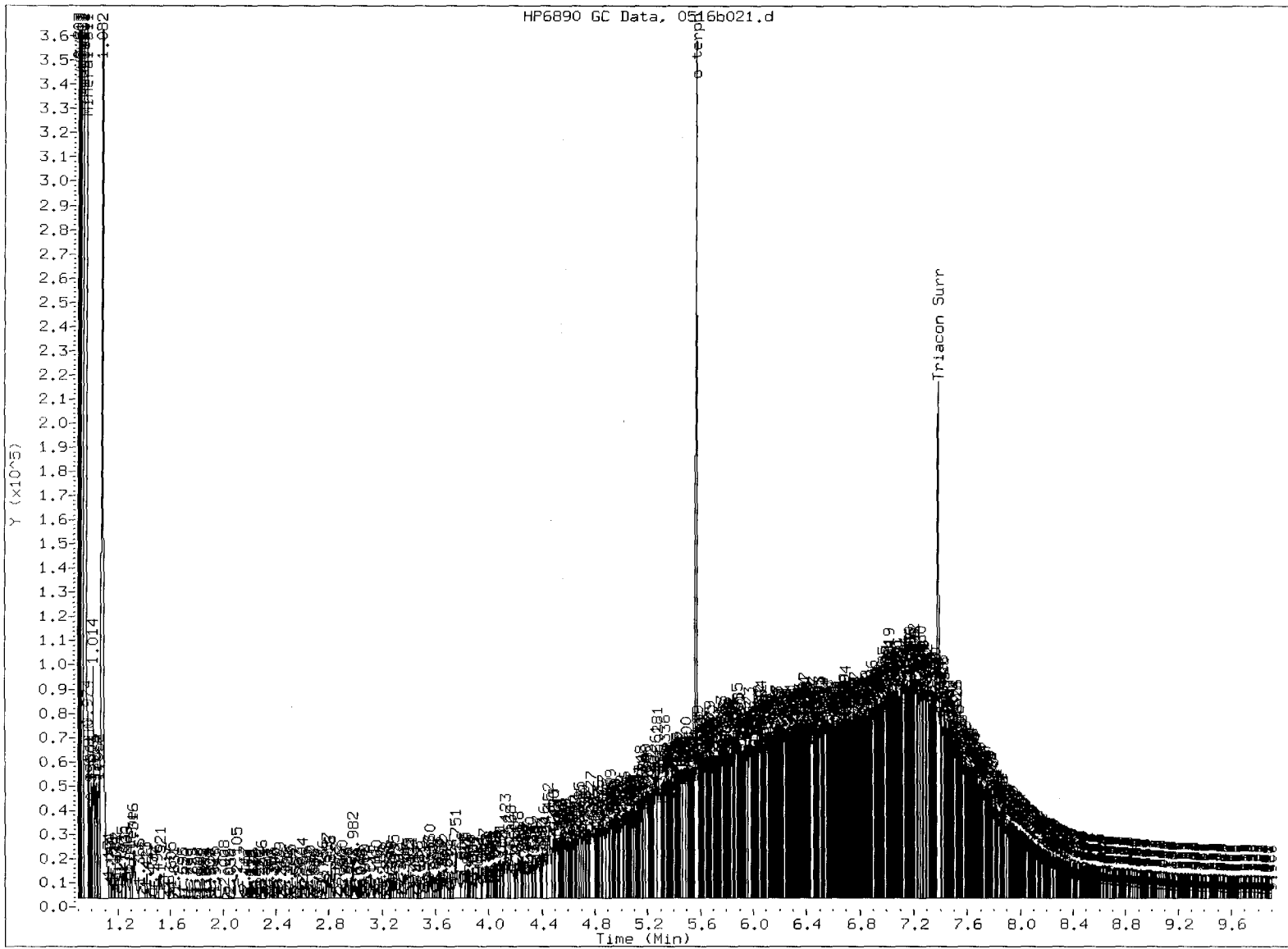
Instrument: fid3b.1
 Operator: HH
 Column diameter: 0.25



Data File: /chem3/fid3p_1/20120516_b/0516b021.d
Injection Date: 16-MAY-2012 13:35
Instrument: fid3p.1
Client Sample ID: CBA-SB-7-1-3-0512

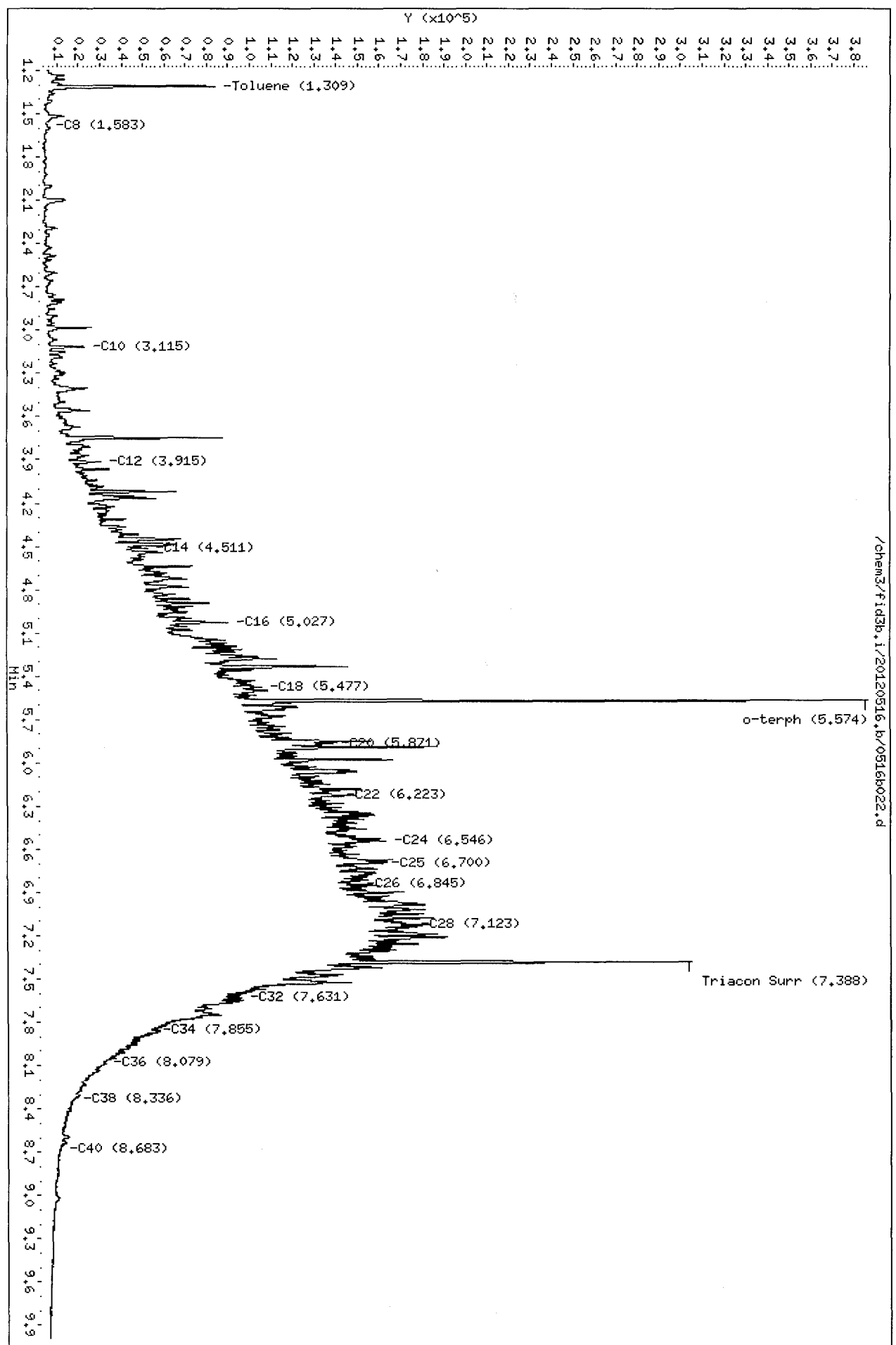
HP6890 GC Data, 0516b021.d: 0.000 to 9.989 Min





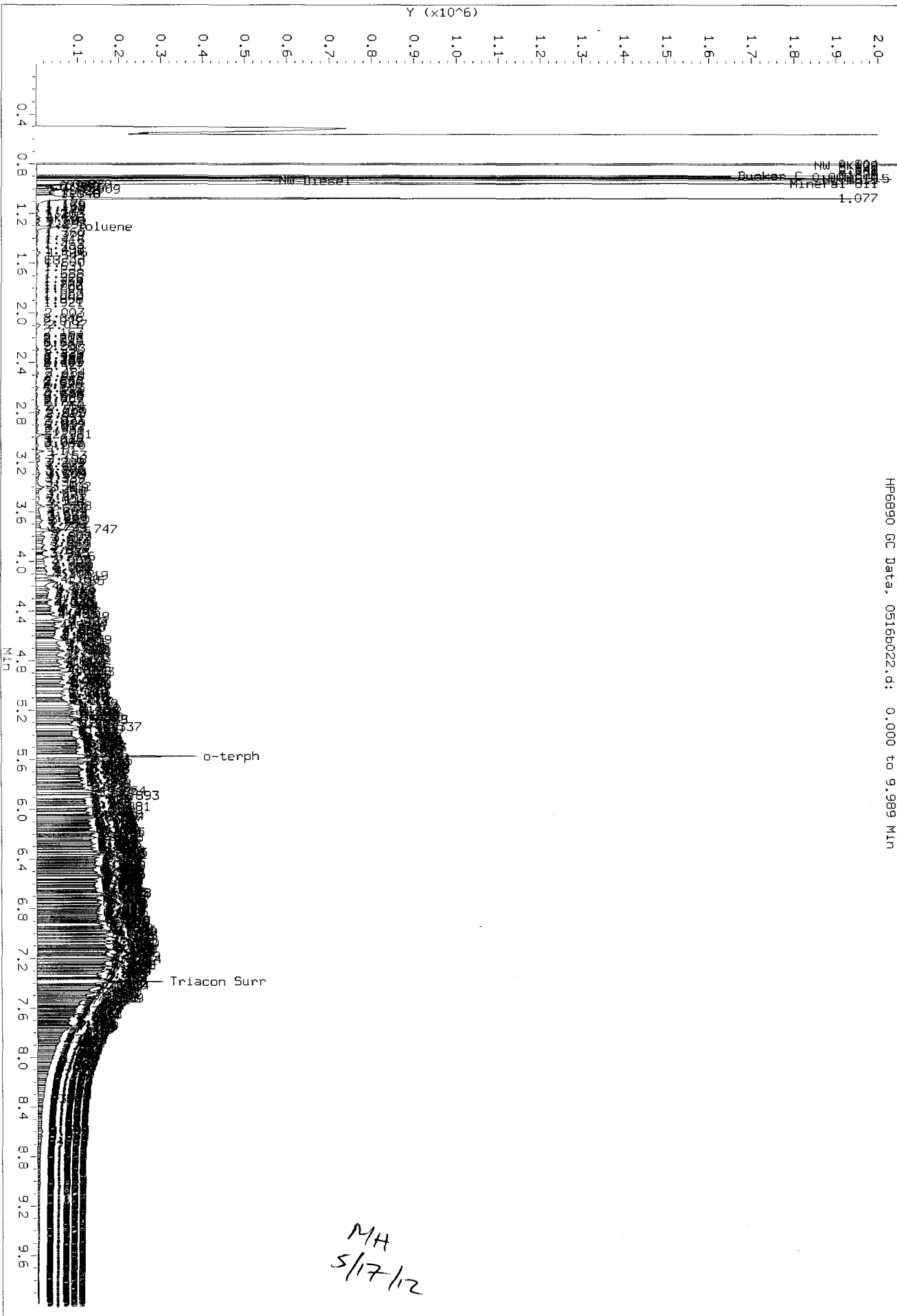
Data File: /chem3/fid3b,1/20120516,b/0516b022.d
Date: 16-MAY-2012 13:54
Client ID: CBA-SB-8-3-5-0512
Sample Info: UT78H,5
Column phase: RTX-1

Instrument: fid3b,1
Operator: MH
Column diameter: 0.25

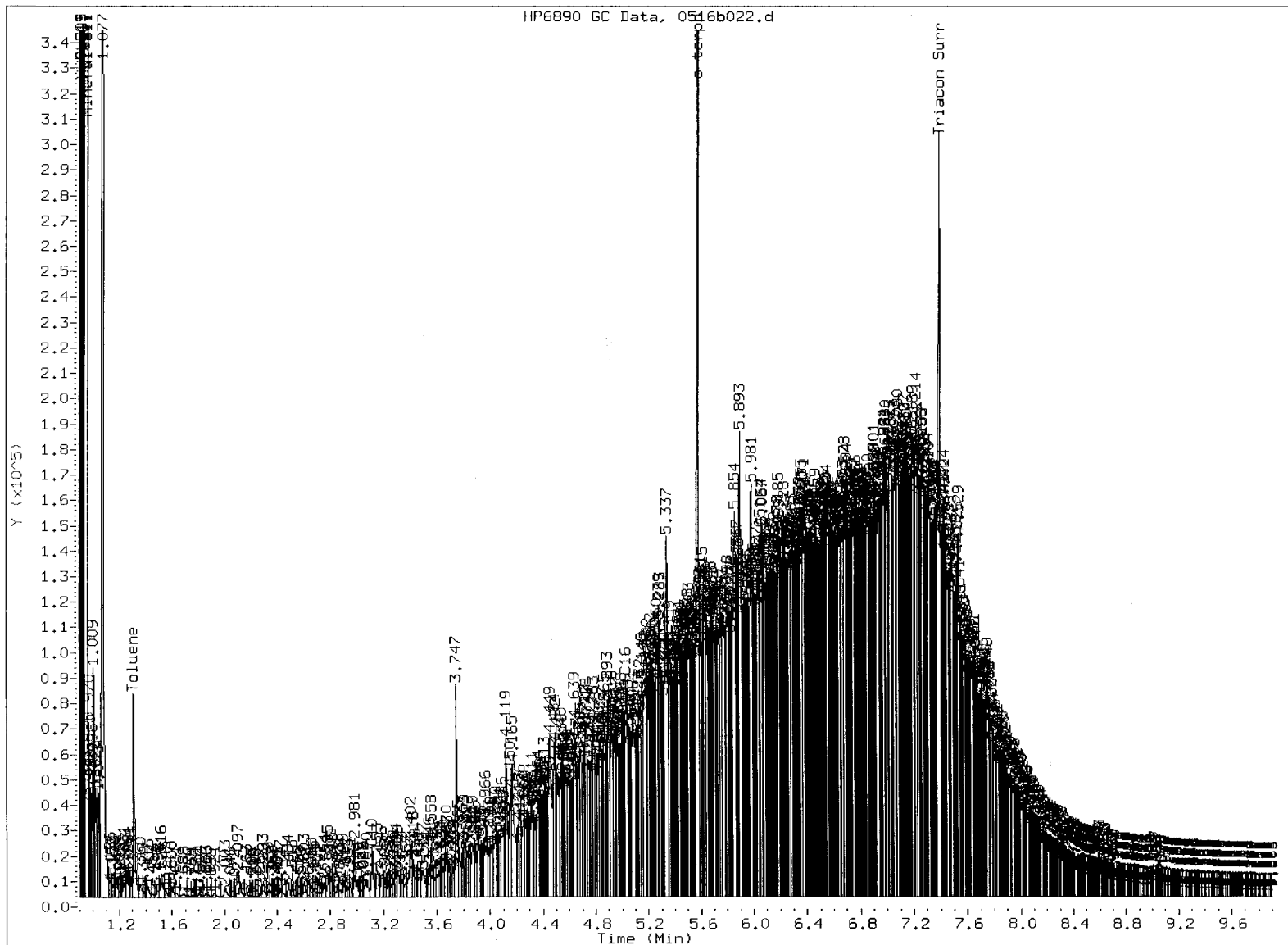


/chem3/fid3b,1/20120516,b/0516b022.d

Data File: /chem3/fid3b.1/20120516.b/0516b022.d
Injection Date: 16-MAY-2012 13:54
Instrument: fid3b.1
Client Sample ID: CBA-SB-8-3-5-0512



HP6890 GC Data, 0516b022.d: 0.000 to 9.989 Min



MANUAL INTEGRATION

- Baseline correction
- 2. Poor chromatography
- 3. Peak not found
- 4. Totals calculation
- 5. Other _____

Analyst: MH Date: 5/17/12

Data File: /chem3/fid3b.i/20120516.b/0516b023.d

Date: 16-MAY-2012 14:13

Client ID: CBA-SB-8-1-3-0512

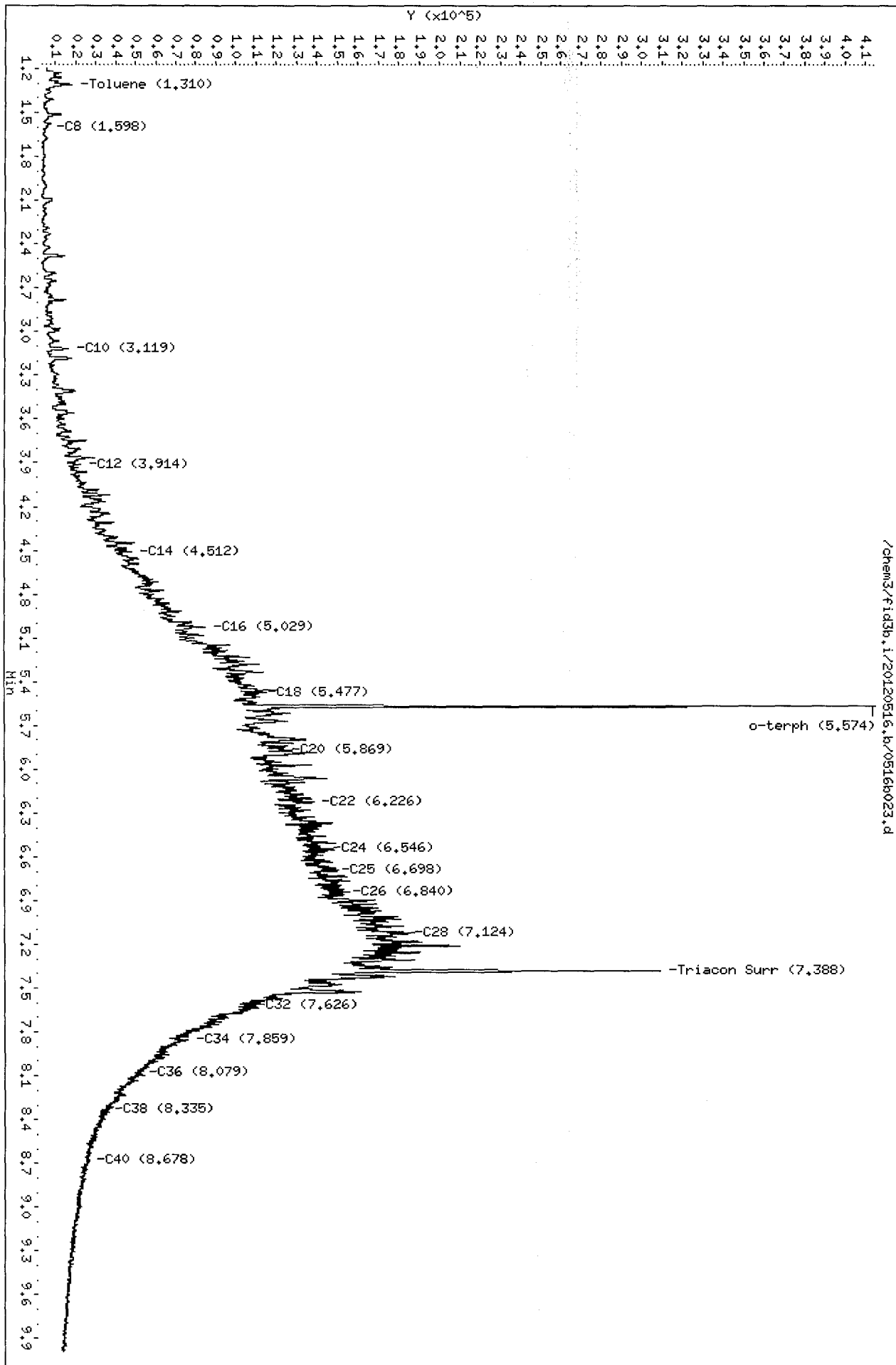
Sample Info: UT78N.5

Column phase: RTX-1

Instrument: fid3b.i

Operator: NH

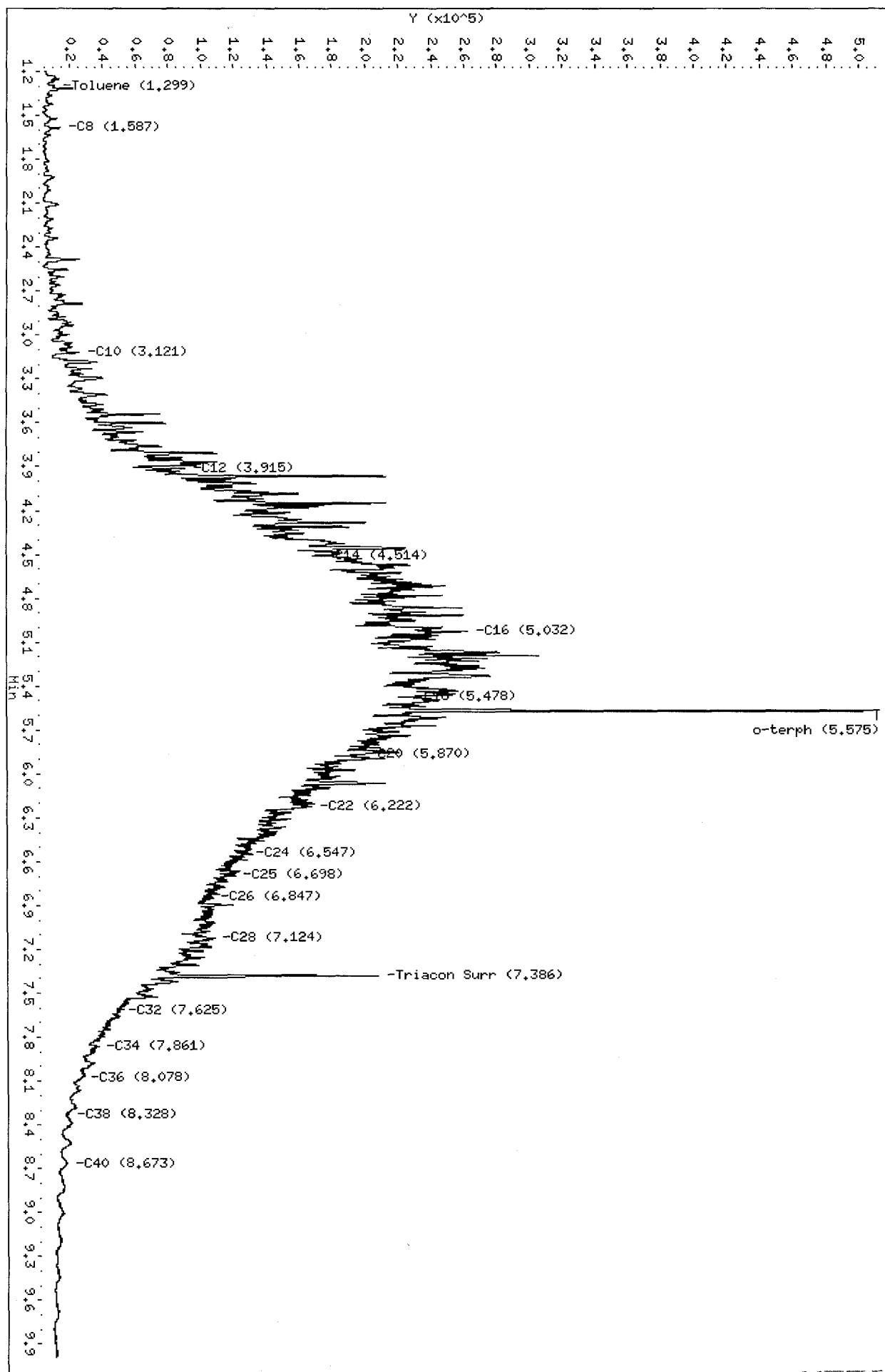
Column diameter: 0.25



Data File: /chem3/fid3b.i/20120516.b/0516b024.d
Date: 16-MAY-2012 14:32
Client ID: CMM-18-7-9-0512
Sample Info: UT780,5
Column phase: RTX-1

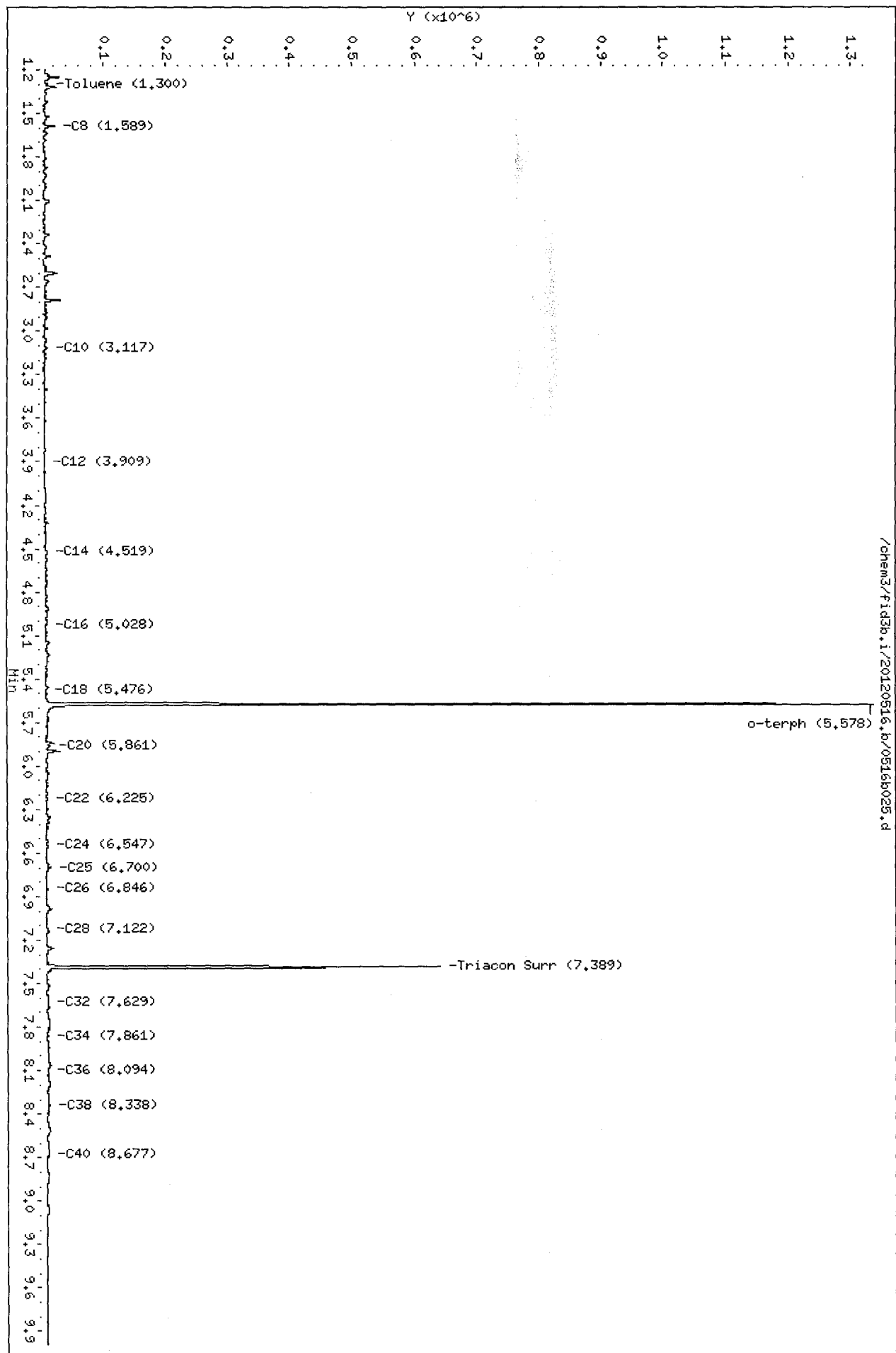
Instrument: fid3b.i
Operator: NH
Column diameter: 0.25

/chem3/fid3b.i/20120516.b/0516b024.d



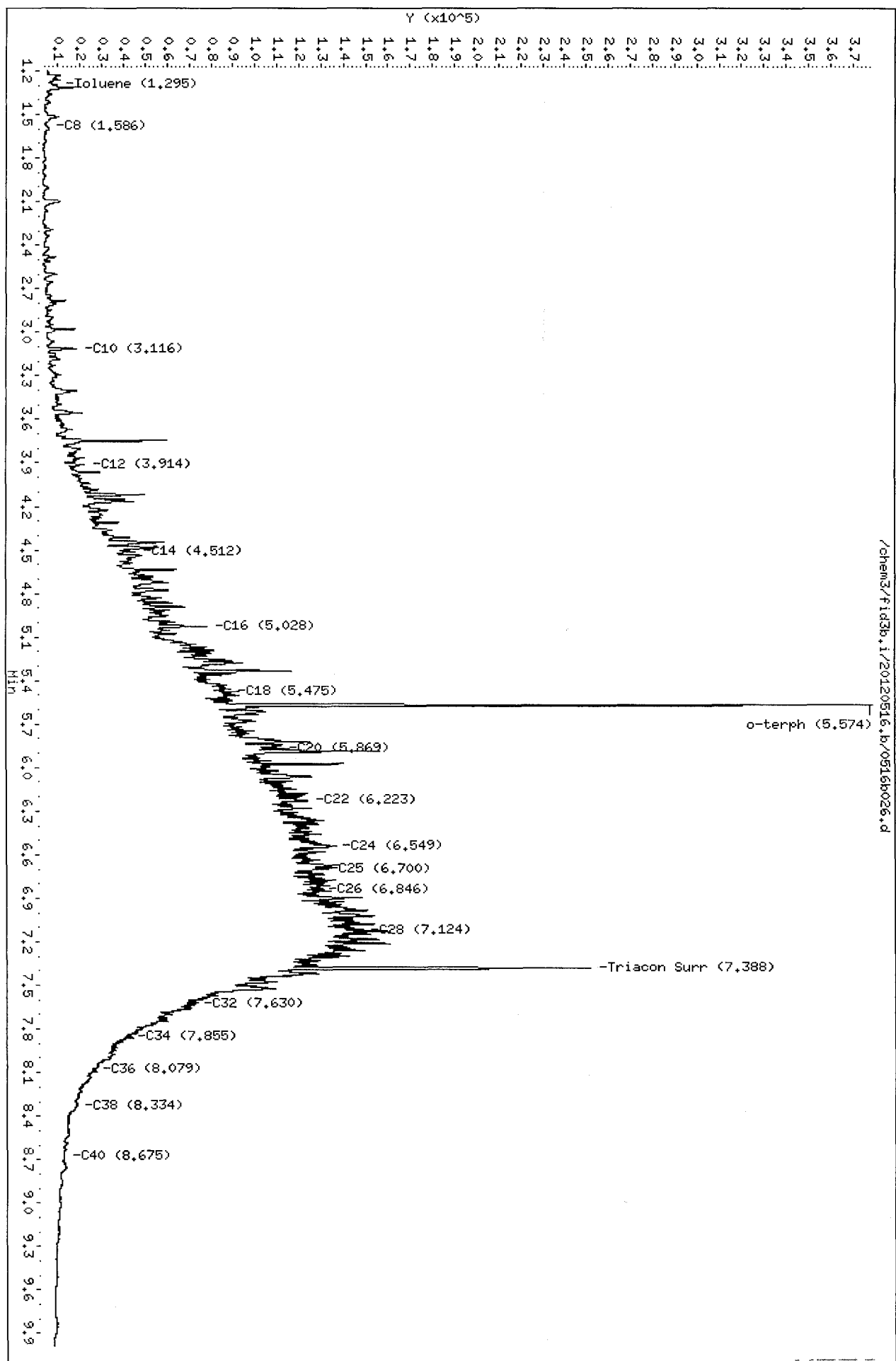
Data File: /chem3/fid3b.i/20120516.b/0516b025.d
Date: 16-MAY-2012 14:51
Client ID: CMM-18-13-15-0512
Sample Info: UT78P
Column phase: RTX-1

Instrument: fid3b.i
Operator: MH
Column diameter: 0.25



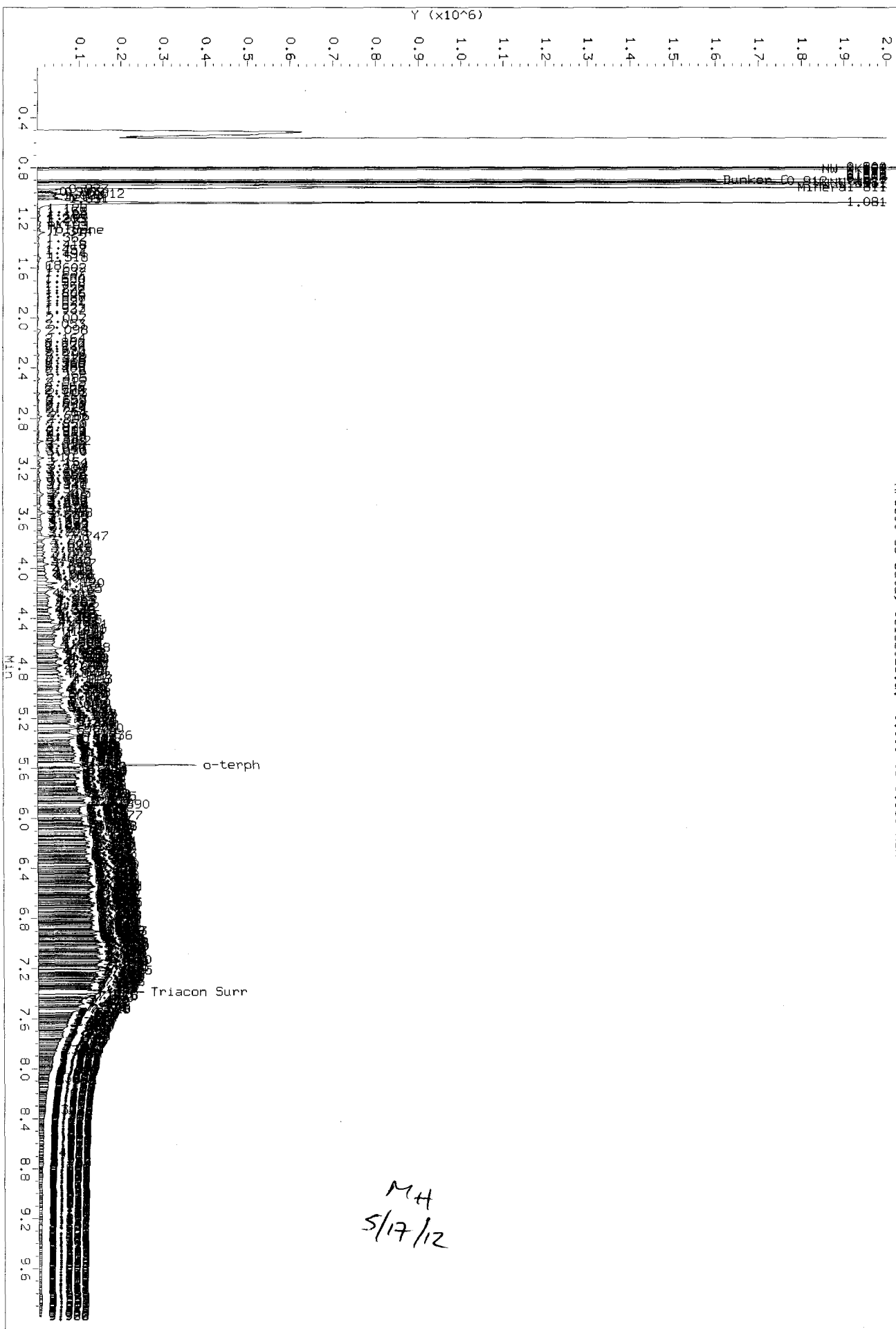
Data File: /chem3/fid3b.i/20120516.b/0516b026.d
Date: 16-MAY-2012 15:10
Client ID: CBA-SB-80-3-5-0512
Sample Info: UT780.5
Column phase: RTX-1

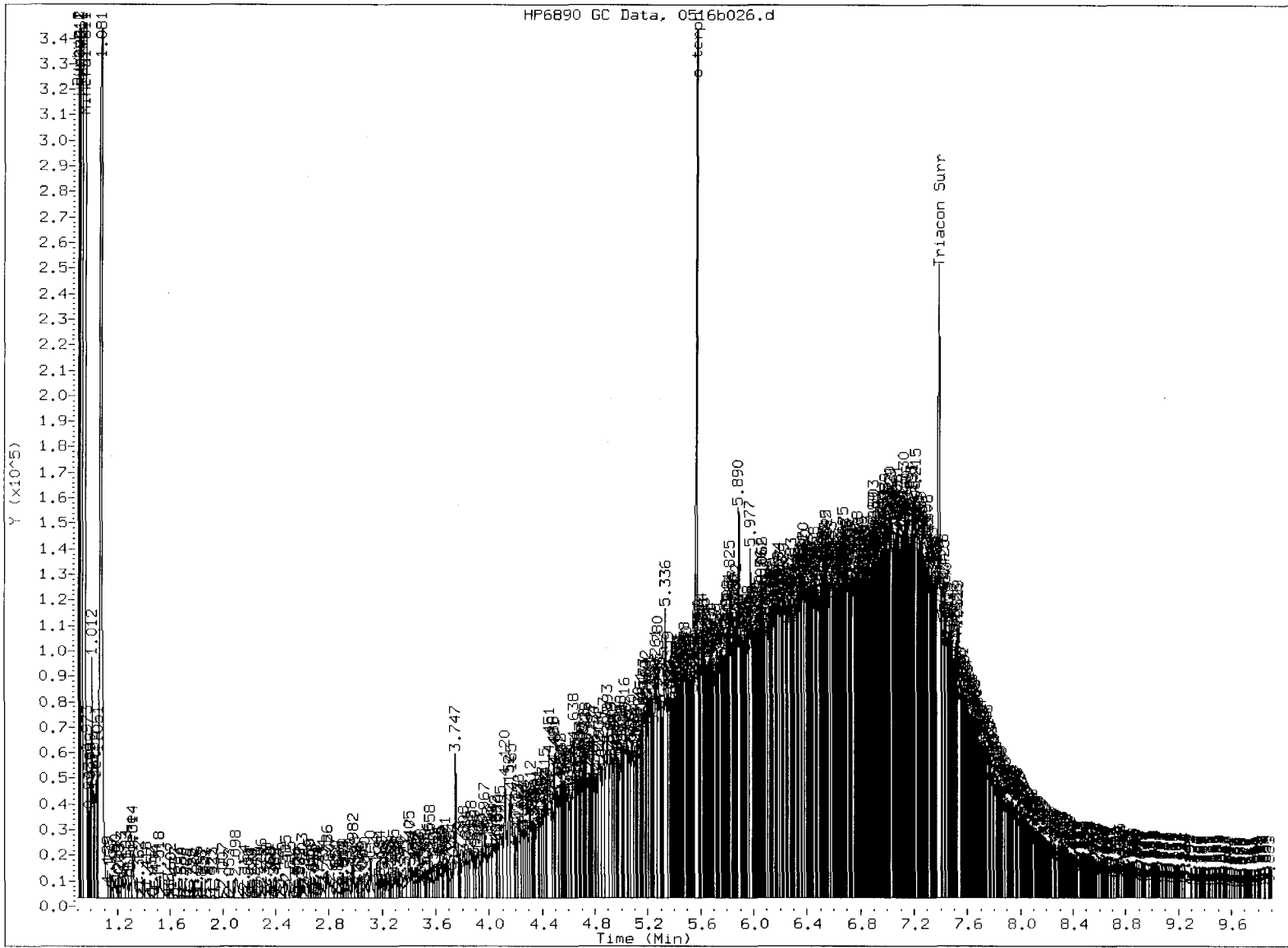
Instrument: fid3b.i
Operator: NH
Column diameter: 0.25



Data File: /chem3/fid3b_1/20120516_b/0516b026.d
Injection Date: 16-MAY-2012 15:10
Instrument: fid3b.1
Client Sample ID: CBA-SB-80-3-5-0512

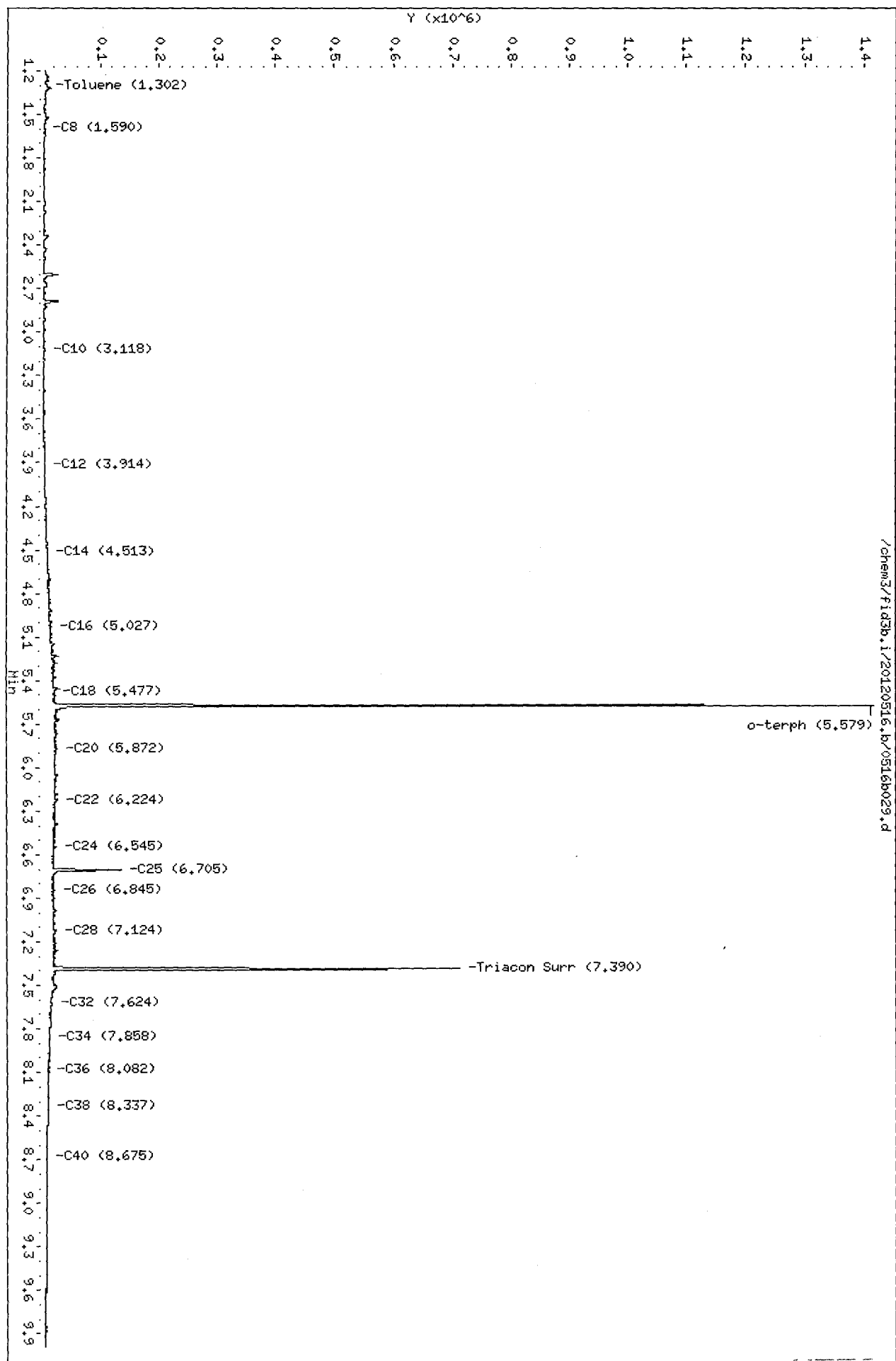
HP6890 GC Data, 0516b026.d: 0.000 to 9.999 Min





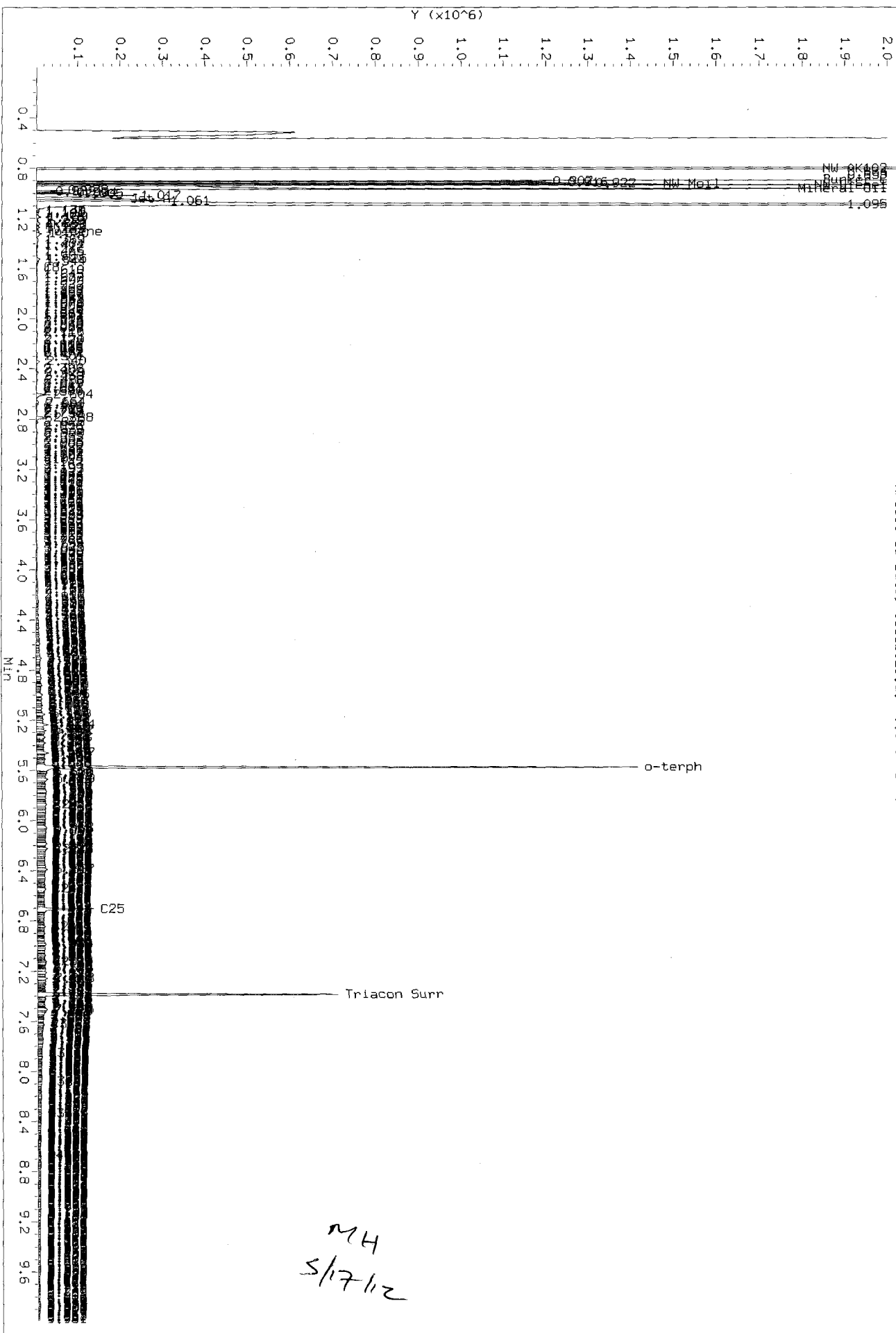
Data File: /chem3/fid3b.1/20120516.b/0516b029.d
Date: 16-MAY-2012 16:07
Client ID: CBA-TP-7-0-1-0512
Sample Info: UT78R
Column phase: RTX-1

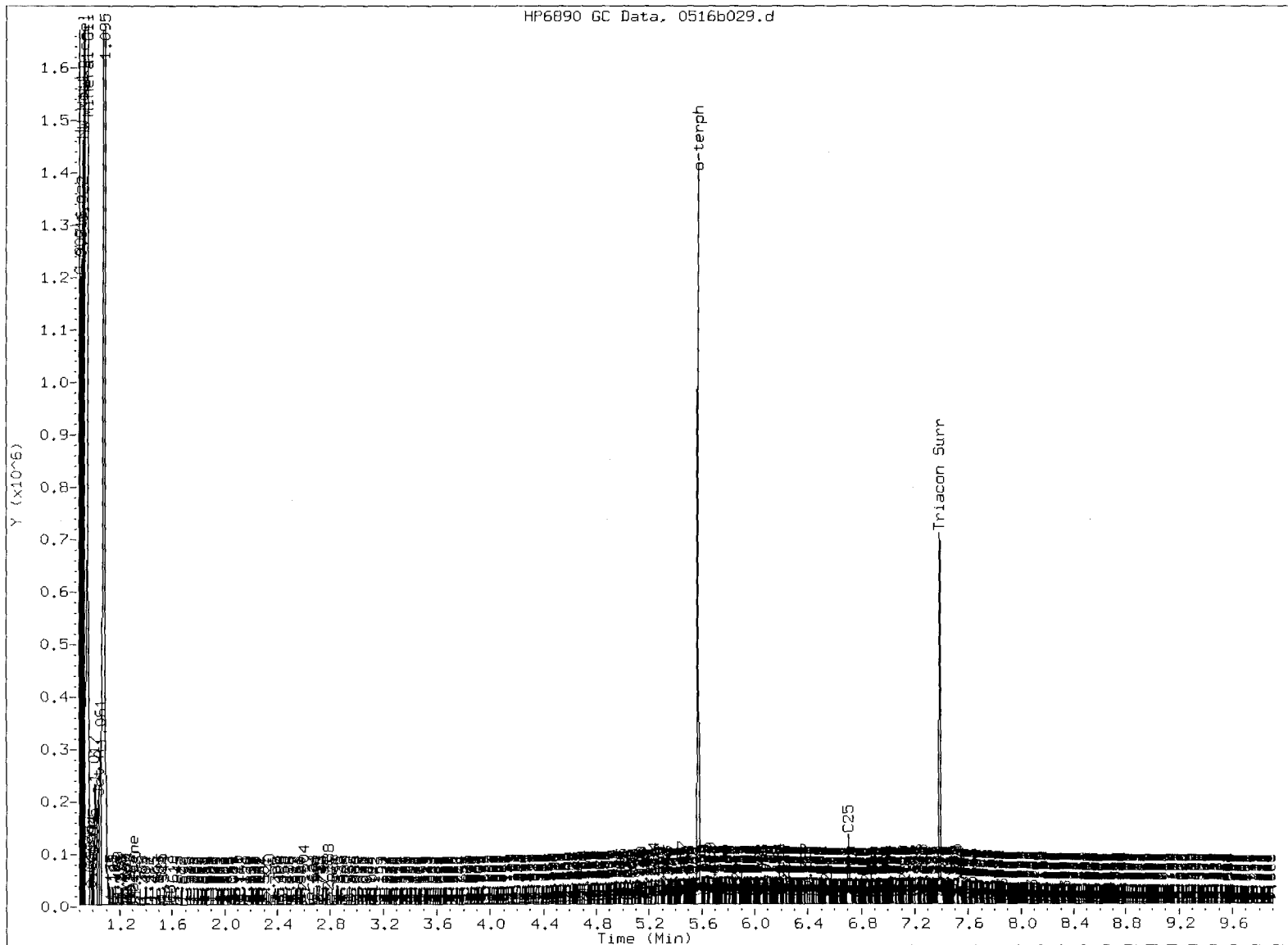
Instrument: fid3b.1
Operator: MH
Column diameter: 0.25



Data File: /chem3/fid3b_1/20120516_b/0516b029.d
Injection Date: 16-MAY-2012 16:07
Instrument: fid3b.1
Client Sample ID: CBA-TP-2-0-1-0512

HP6890 GC Data, 0516b029.d: 0.000 to 9.989 Min





MANUAL INTEGRATION

- 1. Baseline correction
- 2. Poor chromatography
- 3. Peak not found
- 4. Totals calculation
- 5. Other _____

Analyst: MH Date: 5/17/12

Data File: /chem3/fid3b.i/20120516.b/0516b030.d

Date: 16-MAY-2012 16:25

Client ID: CBA-SB-2-3-5-0512

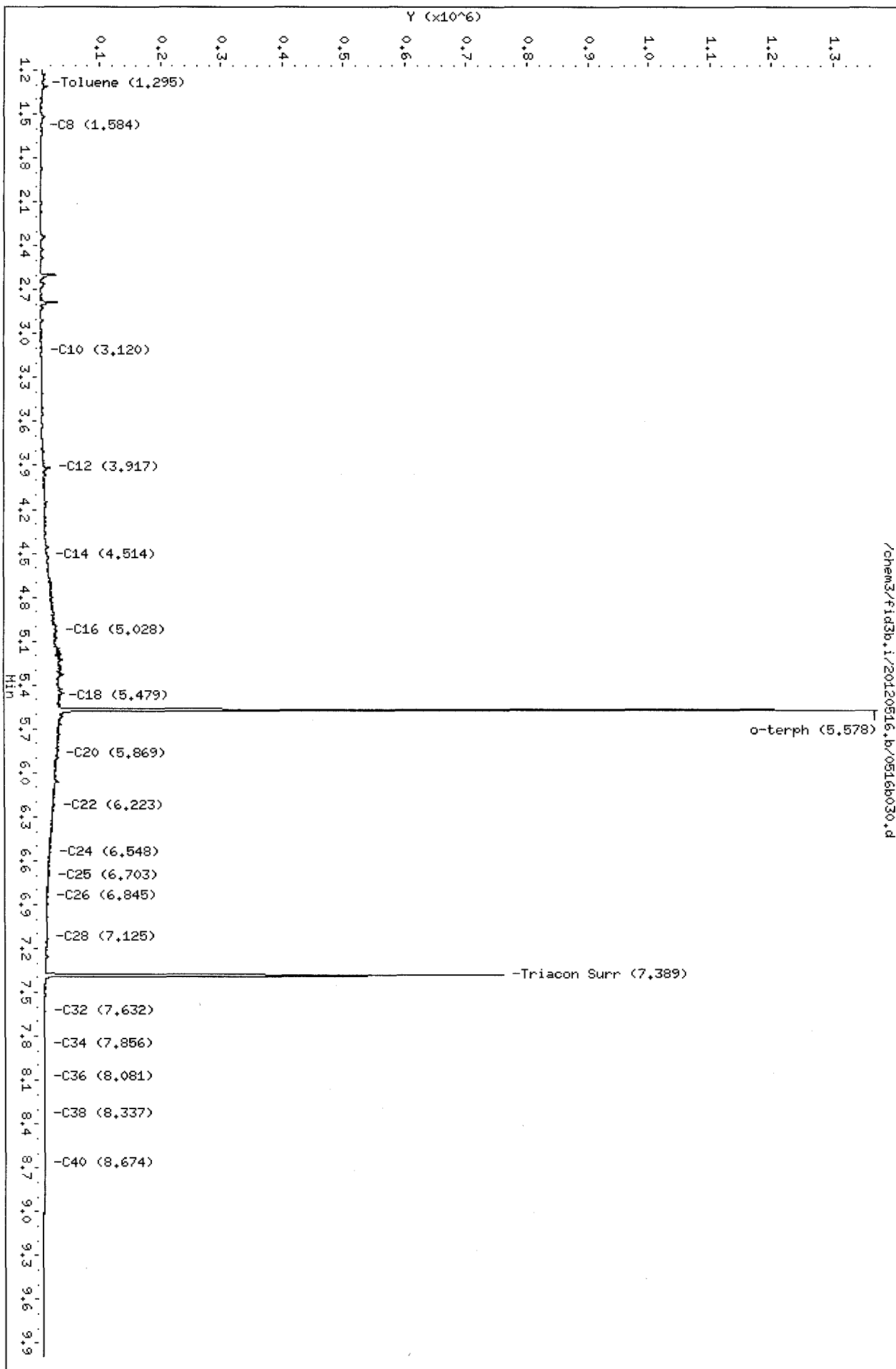
Sample Info: UT78S

Column phase: RTX-1

Instrument: fid3b.i

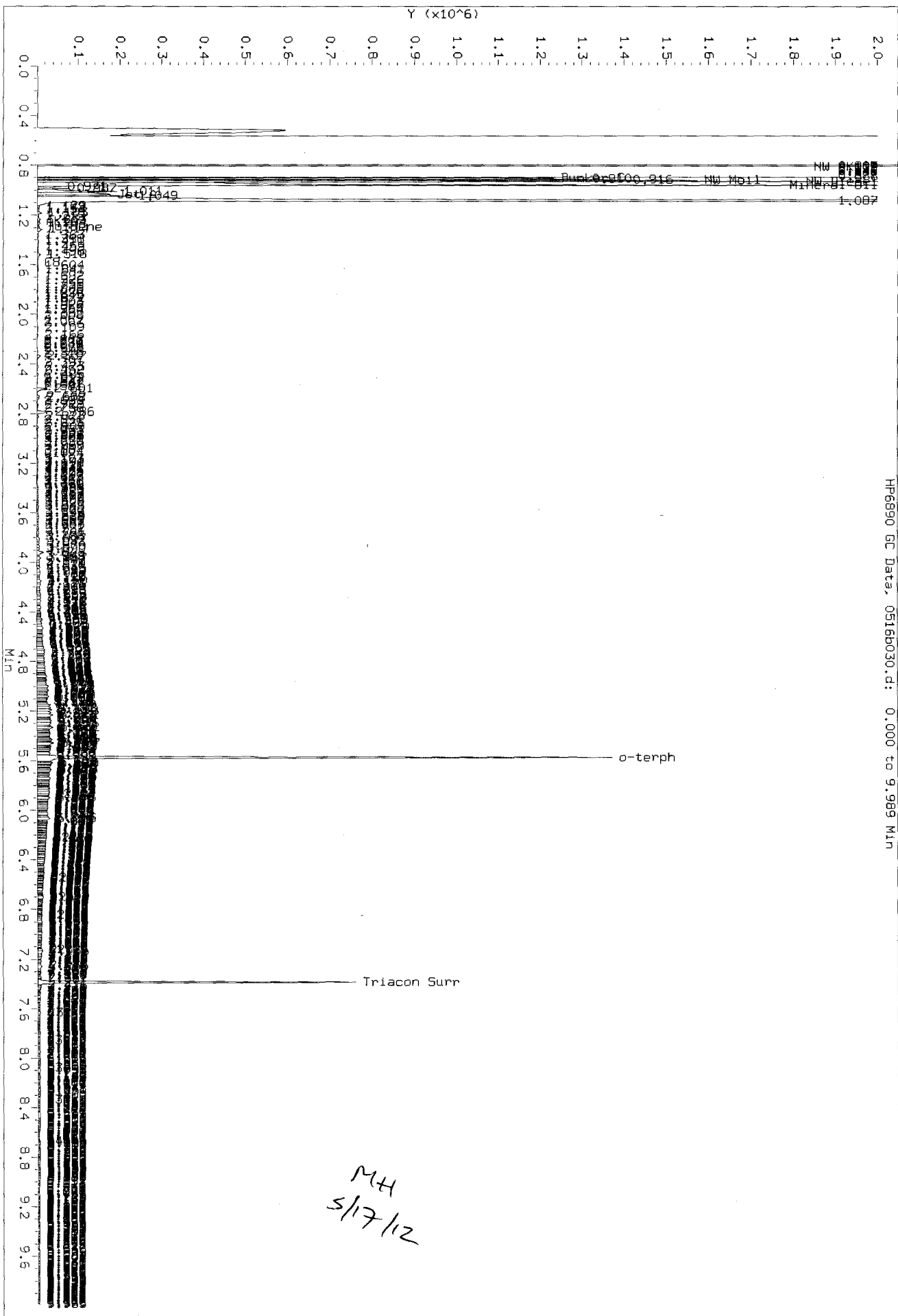
Operator: HH

Column diameter: 0.25

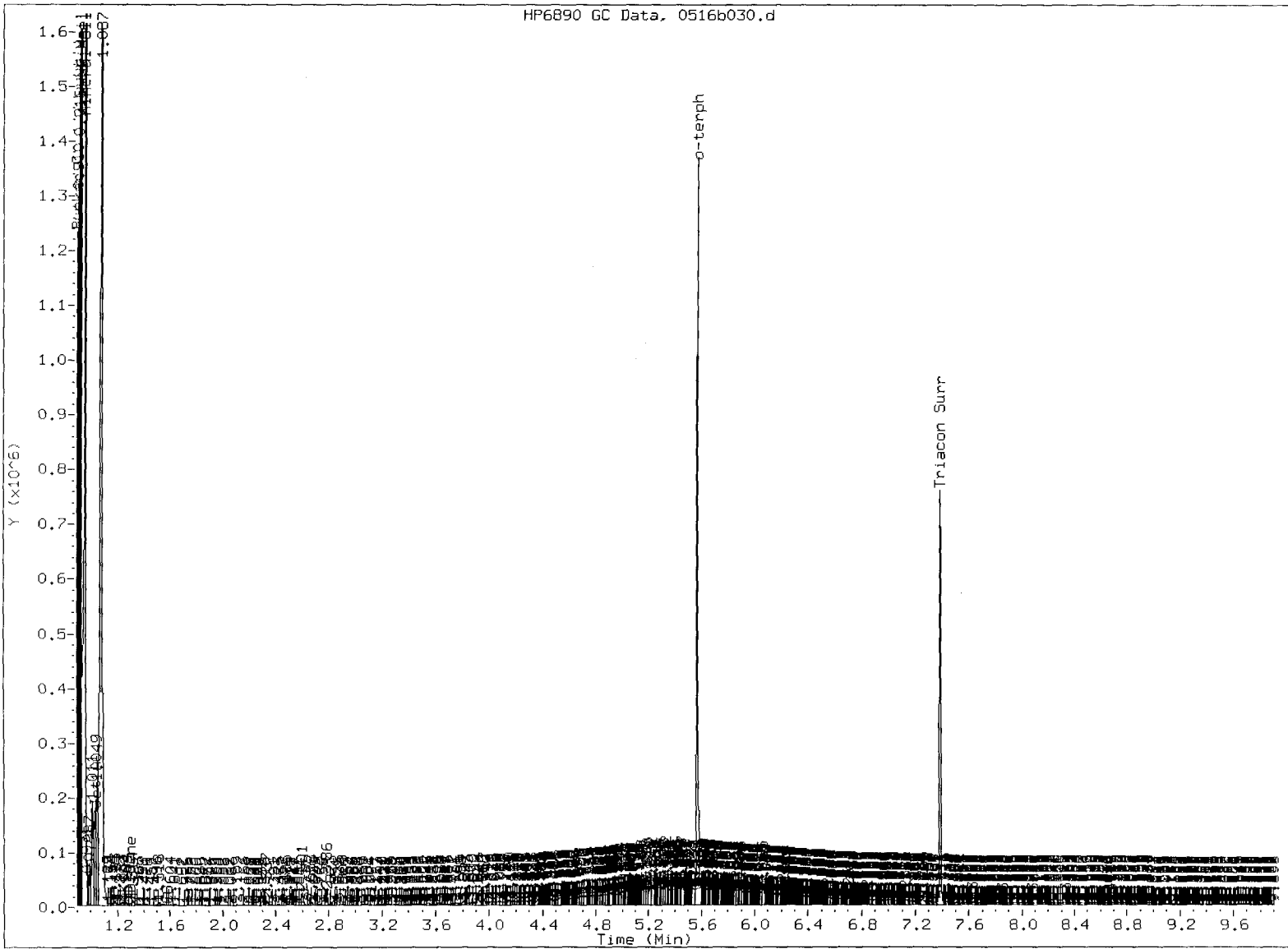


Data File: /chem3/fid3b_1/20120516_b/0516b030.d
Injection Date: 16-MAY-2012 16:25
Instrument: fid3b.1
Client Sample ID: CBA-SB-2-3-5-0512

HP6890 GC Data, 0516b030.d: 0.000 to 9.989 MIN



MH
5/17/12

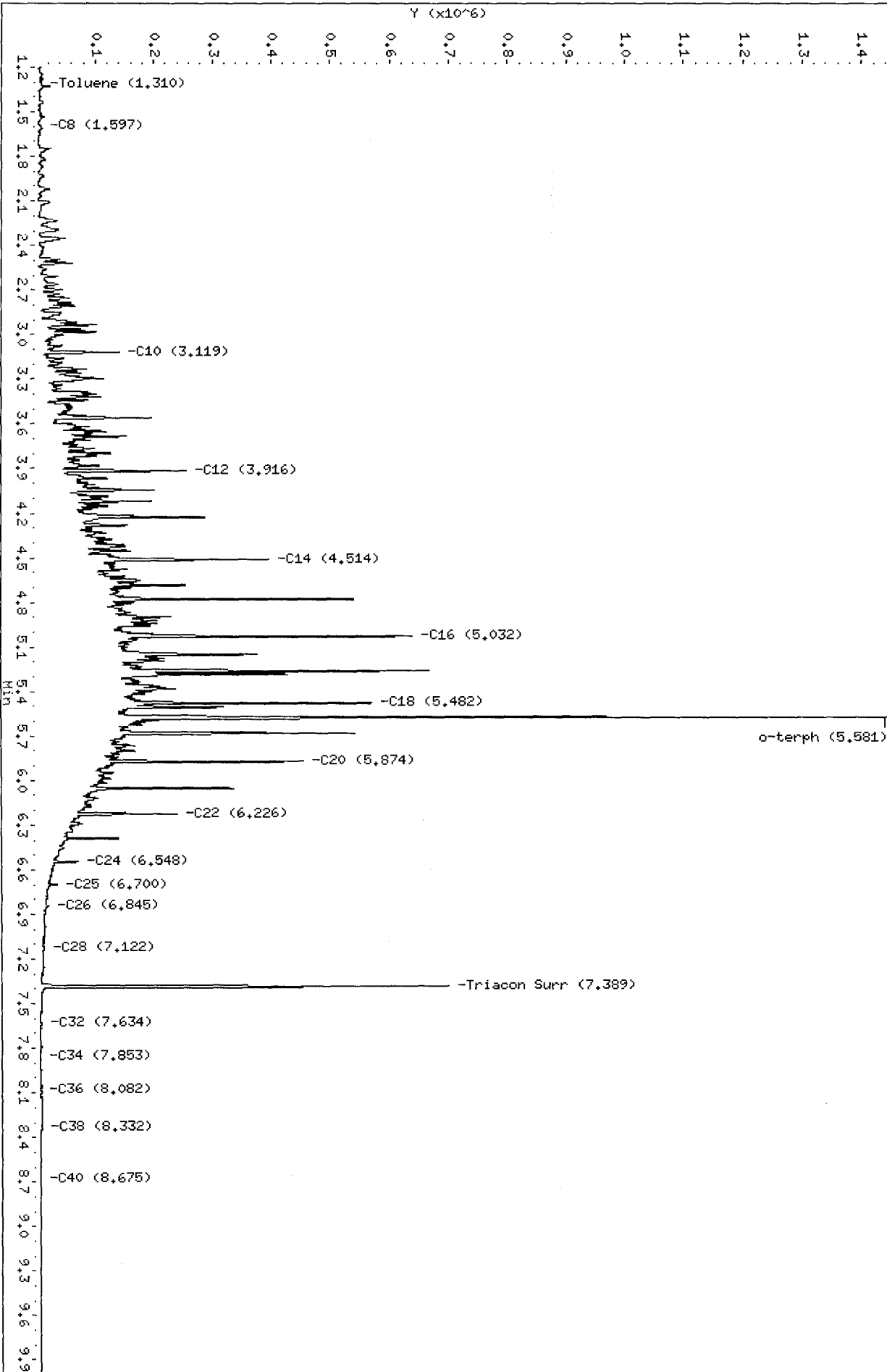


MANUAL INTEGRATION

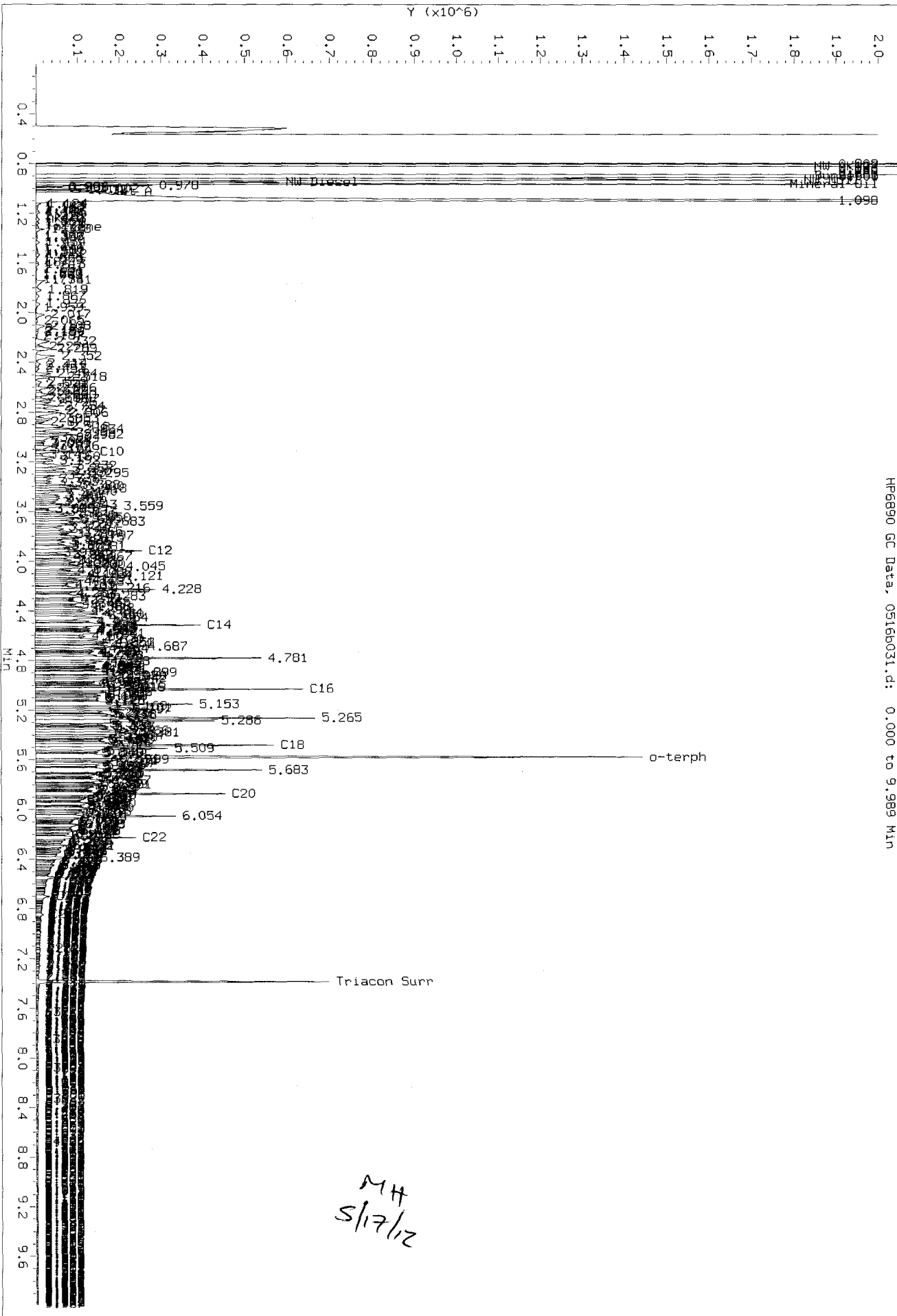
- Baseline correction
- 2. Poor chromatography
- 3. Peak not found
- 4. Totals calculation
- 5. Other _____

Analyst: MH Date: 5/17/12

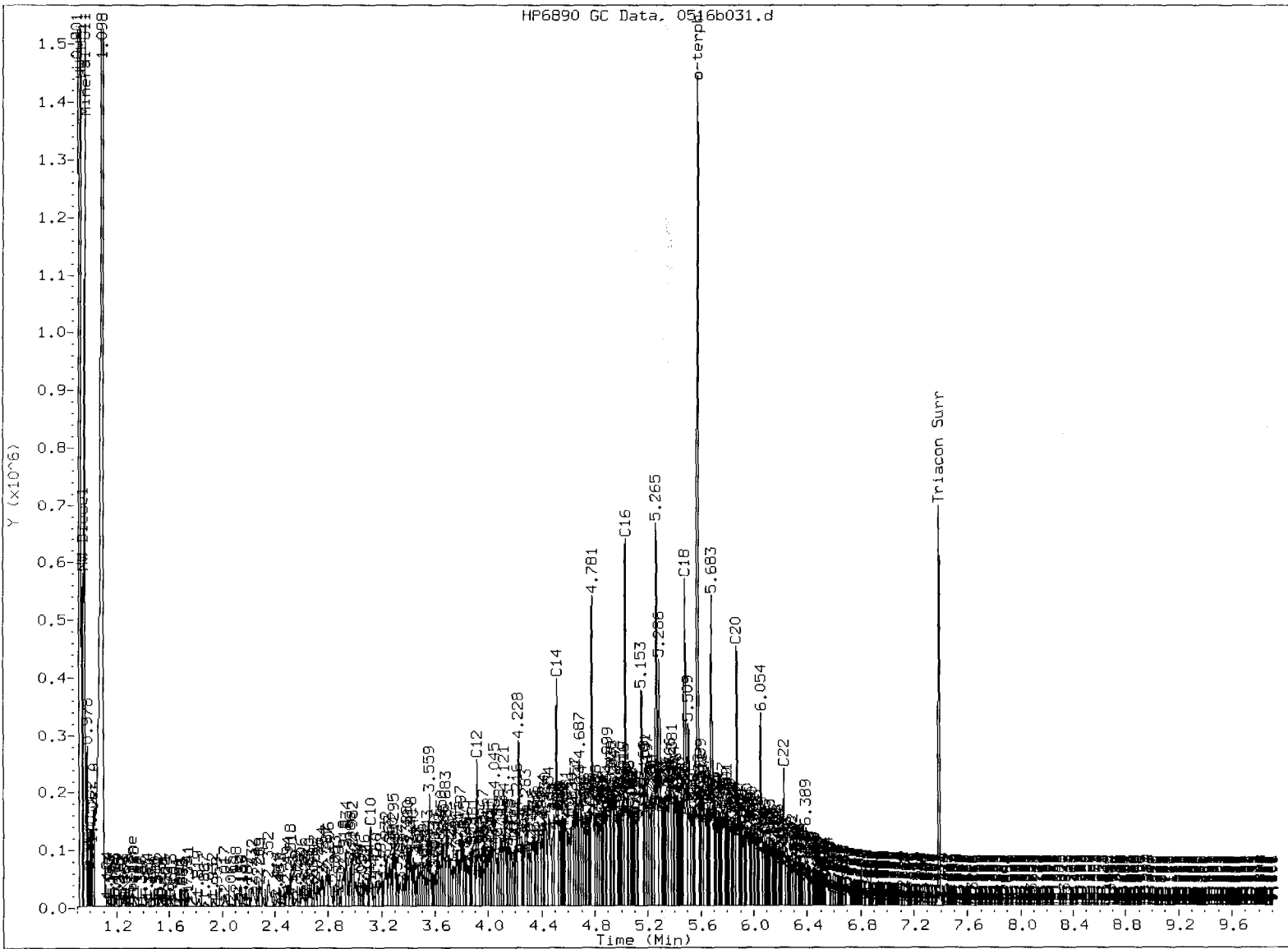
/chem3/fid3b.1/20120516.b/0516b031.d



Data File: /chem3/fid3b.1/20120516.b/0516b031.d
Injection Date: 16-May-2012 16:44
Instrument: fid3b.1
Client Sample ID: CBA-SB-2-3-5-05 MS



HP6890 GC Data, 0516b031.d: 0.000 to 9.989 Min



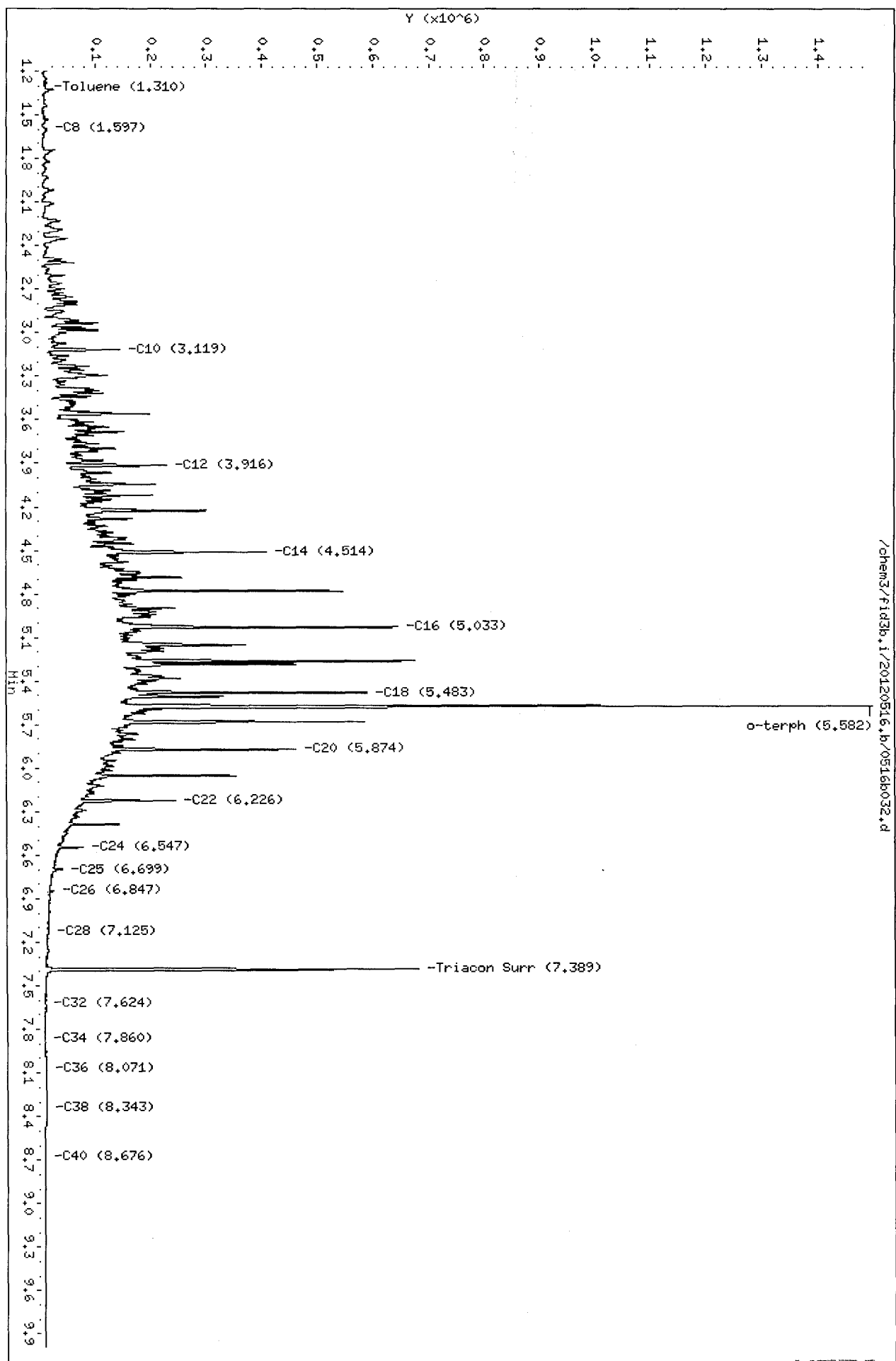
MANUAL INTEGRATION

- 1. Baseline correction
- 2. Poor chromatography
- 3. Peak not found
- 4. Totals calculation
- 5. Other _____

Analyst: MA Date: 5/17/12

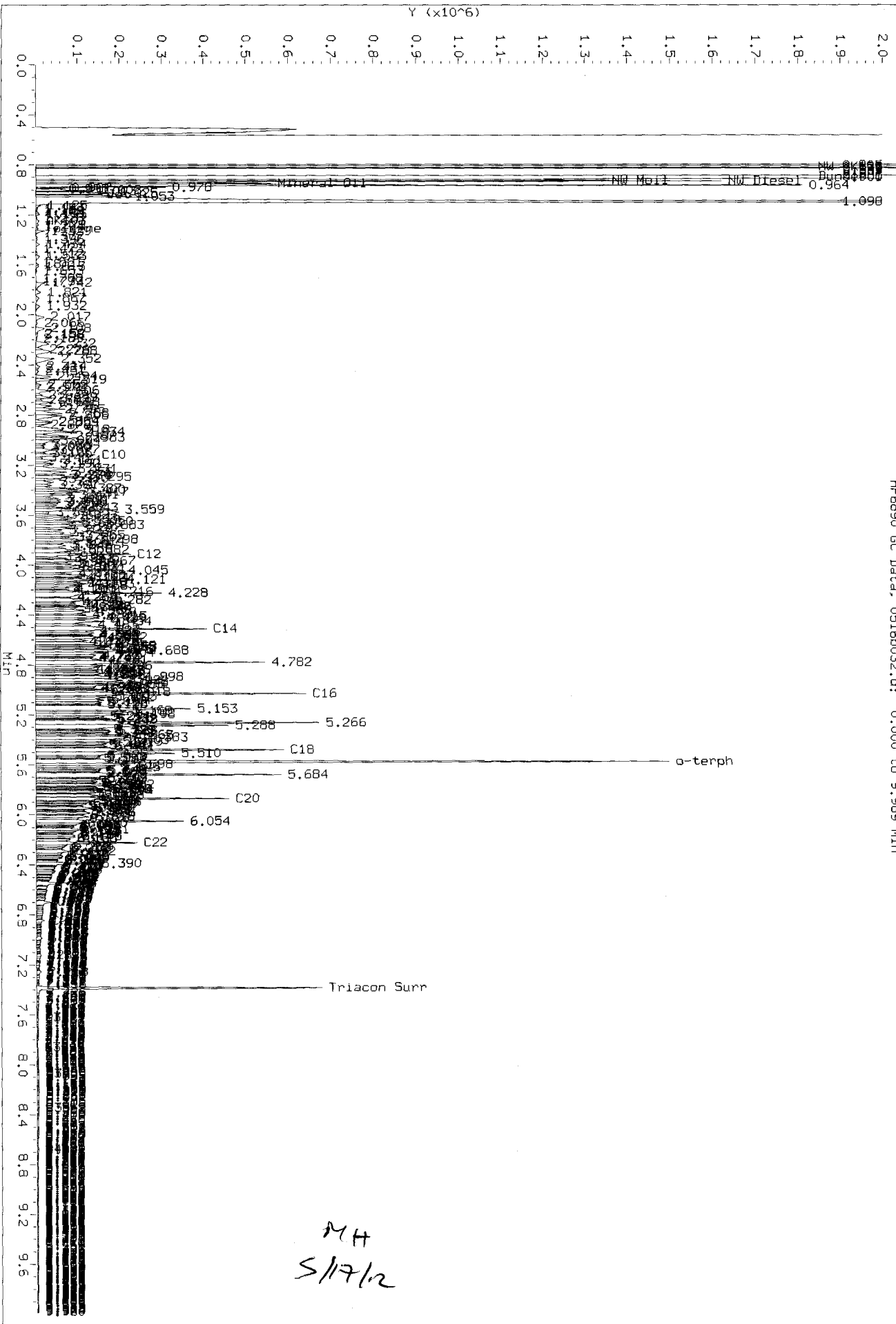
Data File: /chem3/fid3b.1/20120516.b/0516b032.d
Date: 16-MAY-2012 17:03
Client ID:
Sample Info: UT78HSD
Column phase: RTX-1

Instrument: fid3b.1
Operator: NH
Column diameter: 0.25

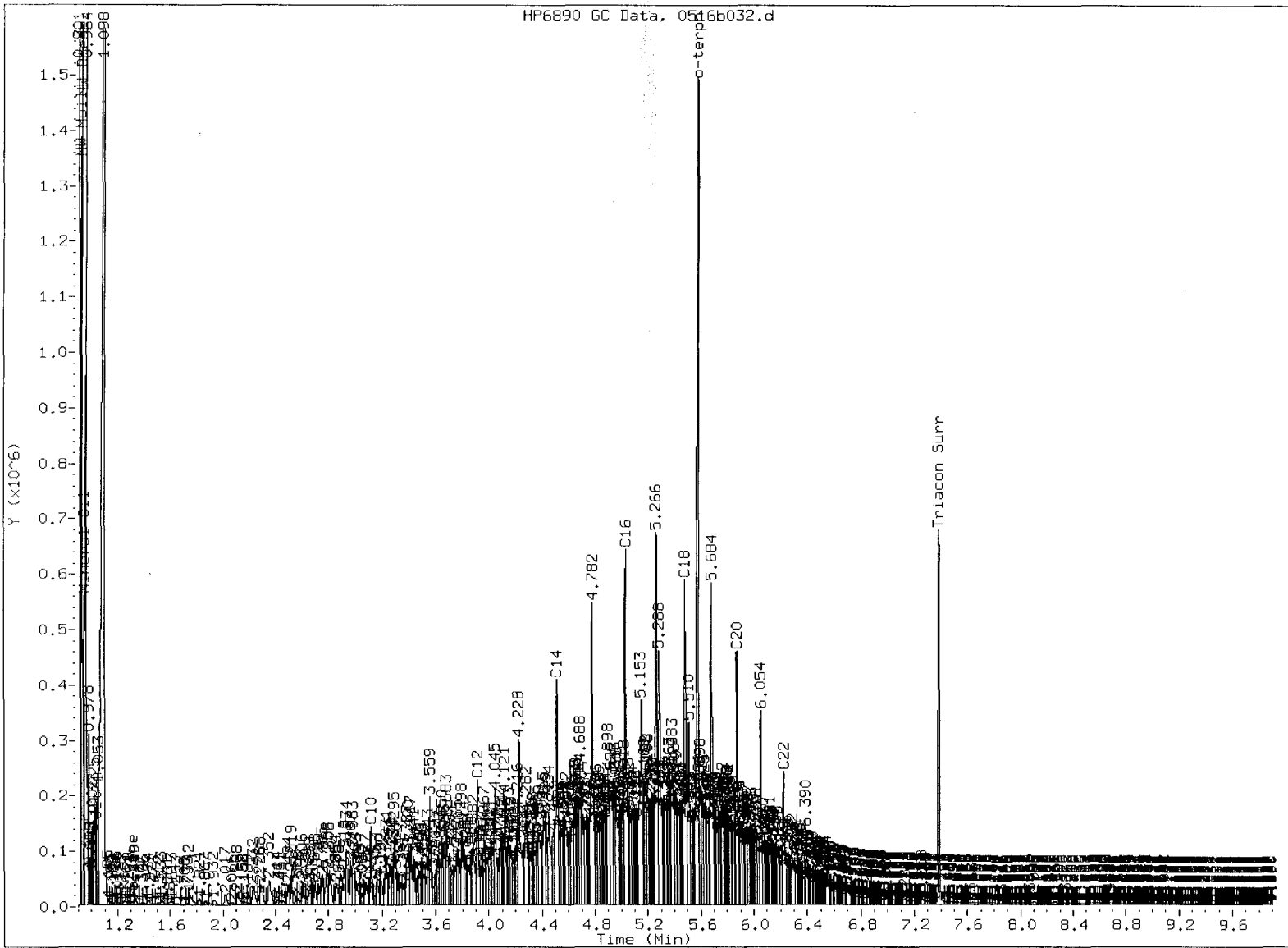


Data File: /chem3/fid35.i/20120516.b/0516b032.d
Injection Date: 16-MAY-2012 17:03
Instrument: fid35.1
Client Sample ID:

HP6890 GC Data, 0516b032.d: 0.000 to 9.989 Min



UT78: 00151



MANUAL INTEGRATION

- Baseline correction
- 2. Poor chromatography
- 3. Peak not found
- 4. Totals calculation
- 5. Other _____

Analyst: M4 Date: 5/17/12

ORGANICS ANALYSIS DATA SHEET

Aliphatic/Aromatic GC-EPH

Page 1 of 1

Sample ID: CBA-SB-8-1-3-0512

SAMPLE

Lab Sample ID: UT78U

LIMS ID: 12-8511

Matrix: Soil

Data Release Authorized: *B*

Reported: 05/21/12

QC Report No: UT78-AECOM

Project: Central Waterfront

Date Sampled: 05/08/12

Date Received: 05/09/12

Date Extracted: 05/15/12

Percent Moisture: 19.4%

Sample Amount: 8.22 g-dry-wt

Final Extract Volume: 1.0 mL

Aliphatic

Date Analyzed: 05/18/12 16:15

Instrument/Analyst: FID8/MH

Dilution Factor: 1.00

Aromatic

Date Analyzed: 05/19/12 01:20

Instrument/Analyst: FID8/MH

Dilution Factor: 1.00

Range	RL	Result
C8-C10 Aliphatics	2,400	6,000 B
C10-C12 Aliphatics	2,400	4,600
C12-C16 Aliphatics	2,400	28,000
C16-C21 Aliphatics	2,400	45,000
C21-C34 Aliphatics	2,400	130,000
C8-C10 Aromatics	2,400	< 2,400 U
C10-C12 Aromatics	2,400	< 2,400 U
C12-C16 Aromatics	2,400	5,700
C16-C21 Aromatics	2,400	30,000
C21-C34 Aromatics	2,400	71,000

Reported in µg/kg (ppb)

EPH Surrogate Recovery

Aliphatic	1-Chlorooctadecane	77.4%
Aromatic	o-Terphenyl	110%

ORGANICS ANALYSIS DATA SHEET

Aliphatic/Aromatic GC-EPH

Page 1 of 1

Sample ID: MB-051512

METHOD BLANK

Lab Sample ID: MB-051512

LIMS ID: 12-8511

Matrix: Soil

Data Release Authorized: *RB*

Reported: 05/21/12

QC Report No: UT78-AECOM

Project: Central Waterfront

Date Sampled: NA

Date Received: NA

Date Extracted: 05/15/12

Percent Moisture: NA

Sample Amount: 10.0 g-as-rec

Final Extract Volume: 1.0 mL

Aliphatic

Date Analyzed: 05/18/12 14:36

Instrument/Analyst: FID8/MH

Dilution Factor: 1.00

Aromatic

Date Analyzed: 05/18/12 23:42

Instrument/Analyst: FID8/MH

Dilution Factor: 1.00

Range	RL	Result
C8-C10 Aliphatics	2,000	2,000
C10-C12 Aliphatics	2,000	< 2,000 U
C12-C16 Aliphatics	2,000	< 2,000 U
C16-C21 Aliphatics	2,000	< 2,000 U
C21-C34 Aliphatics	2,000	< 2,000 U
C8-C10 Aromatics	2,000	< 2,000 U
C10-C12 Aromatics	2,000	< 2,000 U
C12-C16 Aromatics	2,000	< 2,000 U
C16-C21 Aromatics	2,000	< 2,000 U
C21-C34 Aromatics	2,000	< 2,000 U

Reported in µg/kg (ppb)

EPH Surrogate Recovery

Aliphatic	1-Chlorooctadecane	90.9%
Aromatic	o-Terphenyl	90.3%

ORGANICS ANALYSIS DATA SHEET

Aliphatic/Aromatic GC-EPH

Page 1 of 1

Sample ID: LCS-051512

LAB CONTROL

Lab Sample ID: LCS-051512

LIMS ID: 12-8511

Matrix: Soil

Data Release Authorized: *AB*

Reported: 05/21/12

QC Report No: UT78-AECOM

Project: Central Waterfront

Date Sampled: NA

Date Received: NA

Date Extracted: 05/15/12

Sample Amount: 10.0 g-as-rec

Final Extract Volume: 1.0 mL

Aliphatic

Date Analyzed: 05/18/12 15:01

Instrument/Analyst: FID8/MH

Dilution Factor: 1.00

Aromatic

Date Analyzed: 05/19/12 00:07

Instrument/Analyst: FID8/MH

Dilution Factor: 1.00

Range	Lab Control	Spike Added	Recovery
C8-C10 Aliphatics	12000 B	15000	80.0%
C10-C12 Aliphatics	12000	15000	80.0%
C12-C16 Aliphatics	16000	15000	107%
C16-C21 Aliphatics	15000	15000	100%
C10-C12 Aromatics	12200	15000	81.3%
C12-C16 Aromatics	12900	15000	86.0%
C16-C21 Aromatics	27300	30000	91.0%
C21-C34 Aromatics	29700	30000	99.0%

Results reported in µg/kg

EPH Surrogate Recovery

Aliphatic	1-Chlorooctadecane	92.6%
Aromatic	o-Terphenyl	95.3%

ALEPH SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: UT78-AECOM
Project: Central Waterfront

<u>Client ID</u>	<u>COD</u>	<u>TOT OUT</u>
MB-051512	90.9% 0	
LCS-051512	92.6% 0	
CBA-SB-8-1-3-0512	77.4% 0	

	LCS/MB LIMITS	QC LIMITS
(COD) = 1-Chlorooctadecane	(27-128)	(39-131)

Prep Method: SW3580A
Log Number Range: 12-8511 to 12-8511

AREPH SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: UT78-AECOM
Project: Central Waterfront


<u>Client ID</u>	<u>OTER</u>	<u>TOT OUT</u>
MB-051512	90.3%	0
LCS-051512	95.3%	0
CBA-SB-8-1-3-0512	110%	0

	<u>LCS/MB LIMITS</u>	<u>QC LIMITS</u>
(OTER) = o-Terphenyl	(34-133)	(10-143)

Prep Method: SW3580A
Log Number Range: 12-8511 to 12-8511

SAMPLE RESULTS-CONVENTIONALS
UT78-AECOM



Matrix: Soil
Data Release Authorized: 
Reported: 05/21/12

Project: Central Waterfront
Event: NA
Date Sampled: 05/08/12
Date Received: 05/09/12

Client ID: CBA-SB-1-1.5-2.5-0512
ARI ID: 12-8487 UT78A

Analyte	Date	Method	Units	RL	Sample
Total Solids	05/09/12 050912#1	SM2540B	Percent	0.01	85.40
Total Organic Carbon	05/17/12 051712#1	Plumb,1981	Percent	0.020	1.29

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
UT78-AECOM



Matrix: Soil
Data Release Authorized: *[Signature]*
Reported: 05/21/12

Project: Central Waterfront
Event: NA
Date Sampled: 05/08/12
Date Received: 05/09/12

Client ID: CBA-SB-1-3-5-0512
ARI ID: 12-8488 UT78B

Analyte	Date	Method	Units	RL	Sample
Total Solids	05/09/12 050912#1	SM2540B	Percent	0.01	76.50
Total Organic Carbon	05/17/12 051712#1	Plumb,1981	Percent	0.020	1.06

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
UT78-AECOM



Matrix: Soil
Data Release Authorized:
Reported: 05/21/12

A handwritten signature in black ink, appearing to be a stylized name, located to the right of the matrix information.

Project: Central Waterfront
Event: NA
Date Sampled: 05/08/12
Date Received: 05/09/12

Client ID: CBA-SB-3-1-3-0512
ARI ID: 12-8490 UT78D

Analyte	Date	Method	Units	RL	Sample
Total Solids	05/09/12 050912#1	SM2540B	Percent	0.01	82.80
Total Organic Carbon	05/17/12 051712#1	Plumb,1981	Percent	0.020	2.05

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
UT78-AECOM



Matrix: Soil
Data Release Authorized
Reported: 05/21/12

A handwritten signature in black ink, appearing to be a stylized 'A' or similar character.

Project: Central Waterfront
Event: NA
Date Sampled: 05/08/12
Date Received: 05/09/12


Client ID: CBA-SB-4-0.5-2.5-0512
ARI ID: 12-8491 UT78E

Analyte	Date	Method	Units	RL	Sample
Total Solids	05/09/12 050912#1	SM2540B	Percent	0.01	81.70
Total Organic Carbon	05/17/12 051712#1	Plumb,1981	Percent	0.020	1.35

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
UT78-AECOM



Matrix: Soil
Data Release Authorized: 
Reported: 05/21/12

Project: Central Waterfront
Event: NA
Date Sampled: 05/08/12
Date Received: 05/09/12

Client ID: CBA-SB-4-3-5-0512
ARI ID: 12-8492 UT78F

Analyte	Date	Method	Units	RL	Sample
Total Solids	05/09/12 050912#1	SM2540B	Percent	0.01	85.50
Total Organic Carbon	05/17/12 051712#1	Plumb,1981	Percent	0.020	0.523

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
UT78-AECOM



Matrix: Soil
Data Release Authorized:
Reported: 05/21/12

A handwritten signature in black ink, appearing to be 'J. J.', written over the 'Data Release Authorized' line.

Project: Central Waterfront
Event: NA
Date Sampled: 05/08/12
Date Received: 05/09/12


Client ID: CBA-SB-6-3-5-0512
ARI ID: 12-8501 UT78K

Analyte	Date	Method	Units	RL	Sample
Total Solids	05/09/12 050912#1	SM2540B	Percent	0.01	79.60
Total Organic Carbon	05/17/12 051712#1	Plumb,1981	Percent	0.020	0.449

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
UT78-AECOM



Matrix: Soil
Data Release Authorized: 
Reported: 05/21/12

Project: Central Waterfront
Event: NA
Date Sampled: 05/08/12
Date Received: 05/09/12

Client ID: CBA-SB-7-1-3-0512
ARI ID: 12-8502 UT78L

Analyte	Date	Method	Units	RL	Sample
Total Solids	05/09/12 050912#1	SM2540B	Percent	0.01	83.60
Total Organic Carbon	05/17/12 051712#1	Plumb,1981	Percent	0.020	2.21

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
UT78-AECOM



Matrix: Soil
Data Release Authorized
Reported: 05/21/12

A handwritten signature in black ink, appearing to be 'J. [unclear]', located to the right of the matrix information.

Project: Central Waterfront
Event: NA
Date Sampled: 05/08/12
Date Received: 05/09/12

Client ID: CBA-SB-8-3-5-0512
ARI ID: 12-8503 UT78M

Analyte	Date	Method	Units	RL	Sample
Total Solids	05/09/12 050912#1	SM2540B	Percent	0.01	68.40
Total Organic Carbon	05/17/12 051712#1	Plumb,1981	Percent	0.020	2.55

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
UT78-AECOM



Matrix: Soil
Data Release Authorized
Reported: 05/21/12

A handwritten signature in black ink, appearing to be 'J. J.', written over the 'Data Release Authorized' text.

Project: Central Waterfront
Event: NA
Date Sampled: 05/08/12
Date Received: 05/09/12


Client ID: CBA-SB-8-1-3-0512
ARI ID: 12-8504 UT78N

Analyte	Date	Method	Units	RL	Sample
Total Solids	05/09/12 050912#1	SM2540B	Percent	0.01	77.50
Total Organic Carbon	05/17/12 051712#1	Plumb,1981	Percent	0.020	1.28

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
UT78-AECOM



Matrix: Soil
Data Release Authorized: 
Reported: 05/21/12

Project: Central Waterfront
Event: NA
Date Sampled: 05/08/12
Date Received: 05/09/12


Client ID: CMMW-18-7-9-0512
ARI ID: 12-8505 UT780

Analyte	Date	Method	Units	RL	Sample
Total Solids	05/09/12 050912#1	SM2540B	Percent	0.01	75.10
Total Organic Carbon	05/17/12 051712#1	Plumb,1981	Percent	0.020	1.71

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
UT78-AECOM



Matrix: Soil
Data Release Authorized: 
Reported: 05/21/12

Project: Central Waterfront
Event: NA
Date Sampled: 05/08/12
Date Received: 05/09/12

Client ID: CMMW-18-13-15-0512
ARI ID: 12-8506 UT78P

Analyte	Date	Method	Units	RL	Sample
Total Solids	05/09/12 050912#1	SM2540B	Percent	0.01	79.90
Total Organic Carbon	05/17/12 051712#1	Plumb,1981	Percent	0.020	0.584

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
UT78-AECOM



Matrix: Soil
Data Release Authorized:
Reported: 05/21/12

A handwritten signature in black ink, appearing to be 'JH' or similar, written over the 'Data Release Authorized' line.

Project: Central Waterfront
Event: NA
Date Sampled: 05/08/12
Date Received: 05/09/12


Client ID: CBA-SB-80-3-5-0512
ARI ID: 12-8507 UT78Q

Analyte	Date	Method	Units	RL	Sample
Total Solids	05/09/12 050912#1	SM2540B	Percent	0.01	72.30
Total Organic Carbon	05/17/12 051712#1	Plumb,1981	Percent	0.020	2.44

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
UT78-AECOM



Matrix: Soil
Data Release Authorized: 
Reported: 05/21/12

Project: Central Waterfront
Event: NA
Date Sampled: 05/07/12
Date Received: 05/09/12


Client ID: CBA-TP-7-0-1-0512
ARI ID: 12-8508 UT78R

Analyte	Date	Method	Units	RL	Sample
Total Solids	05/09/12 050912#1	SM2540B	Percent	0.01	82.50
Total Organic Carbon	05/17/12 051712#1	Plumb,1981	Percent	0.020	0.283

RL Analytical reporting limit
U Undetected at reported detection limit

METHOD BLANK RESULTS-CONVENTIONALS
UT78-AECOM




Matrix: Soil
Data Release Authorized: 
Reported: 05/21/12

Project: Central Waterfront
Event: NA
Date Sampled: NA
Date Received: NA

Analyte	Date	Units	Blank
Total Solids	05/09/12	Percent	< 0.01 U
Total Organic Carbon	05/17/12	Percent	< 0.020 U

LAB CONTROL RESULTS-CONVENTIONALS
UT78-AECOM




Matrix: Soil
Data Release Authorized: 
Reported: 05/21/12

Project: Central Waterfront
Event: NA
Date Sampled: NA
Date Received: NA

Analyte/Method	QC ID	Date	Units	LCS	Spike Added	Recovery
Total Organic Carbon Plumb, 1981	ICVL	05/17/12	Percent	0.101	0.100	101.0%

STANDARD REFERENCE RESULTS-CONVENTIONALS
UT78-AECOM




Matrix: Soil
Data Release Authorized: 
Reported: 05/21/12

Project: Central Waterfront
Event: NA
Date Sampled: NA
Date Received: NA

Analyte/SRM ID	Date	Units	SRM	True Value	Recovery
Total Organic Carbon NIST 1941B	05/17/12	Percent	2.95	2.99	98.7%

REPLICATE RESULTS-CONVENTIONALS
UT78-AECOM



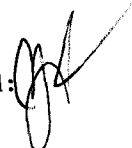
Matrix: Soil
Data Release Authorized: 
Reported: 05/21/12

Project: Central Waterfront
Event: NA
Date Sampled: 05/08/12
Date Received: 05/09/12

Analyte	Date	Units	Sample	Replicate (s)	RPD/RSD
ARI ID: UT78A Client ID: CBA-SB-1-1.5-2.5-0512					
Total Solids	05/09/12	Percent	85.40	85.60 84.80	0.5%
Total Organic Carbon	05/17/12	Percent	1.29	1.30 1.19	4.8%

MS/MSD RESULTS-CONVENTIONALS
UT78-AECOM



Matrix: Soil
Data Release Authorized: 
Reported: 05/21/12

Project: Central Waterfront
Event: NA
Date Sampled: 05/08/12
Date Received: 05/09/12

Analyte	Date	Units	Sample	Spike	Spike Added	Recovery
ARI ID: UT78A Client ID: CBA-SB-1-1.5-2.5-0512						
Total Organic Carbon	05/17/12	Percent	1.29	2.83	1.46	105.8%