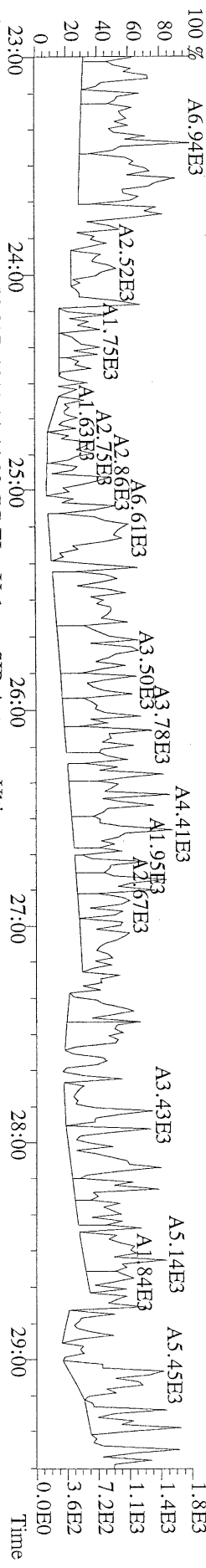
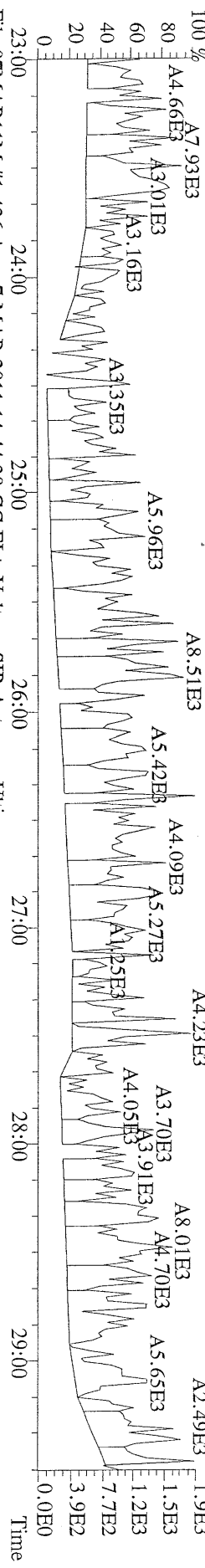


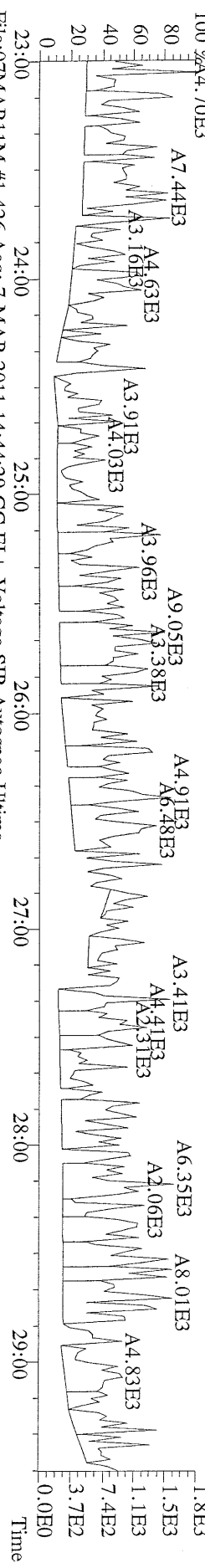
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 339.8597 S:4 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp:OCDD
 Sample Text:ST030711M4 File Text:Frontier Analytical Laboratory



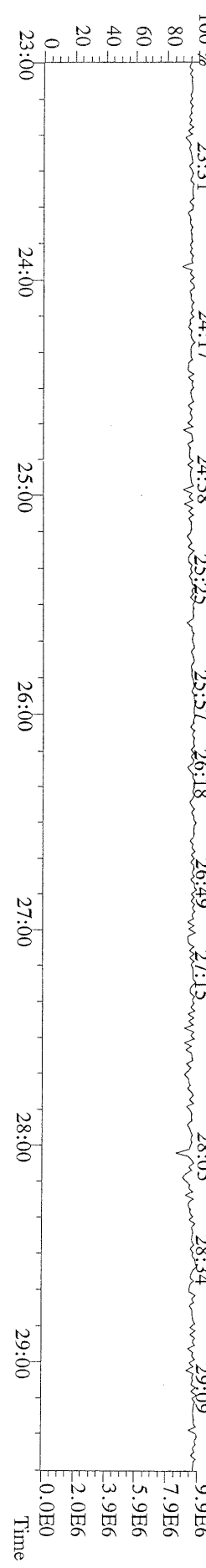
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 341.8568 S:4 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp:OCDD
 Sample Text:ST030711M4 File Text:Frontier Analytical Laboratory



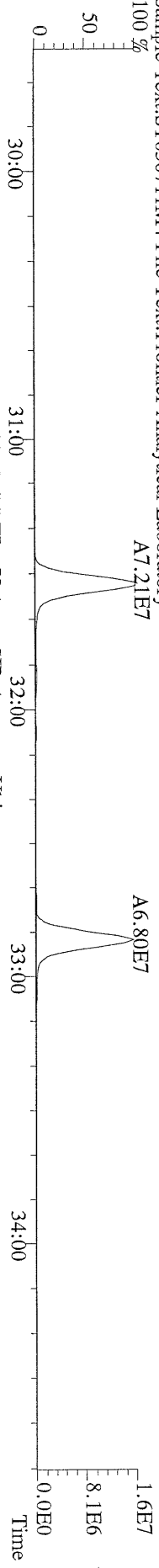
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 409.7974 S:4 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp:OCDD
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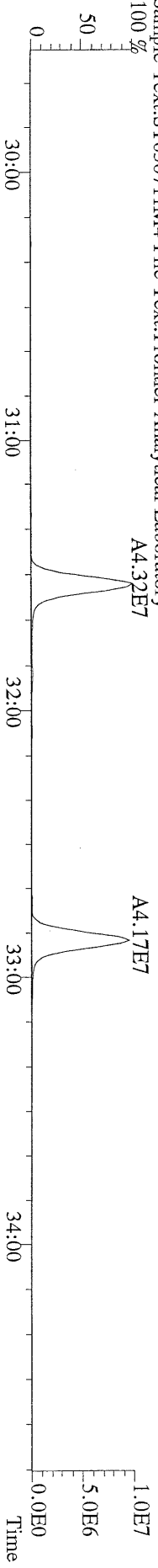
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 316.9824 S:4 Exp:OCDD
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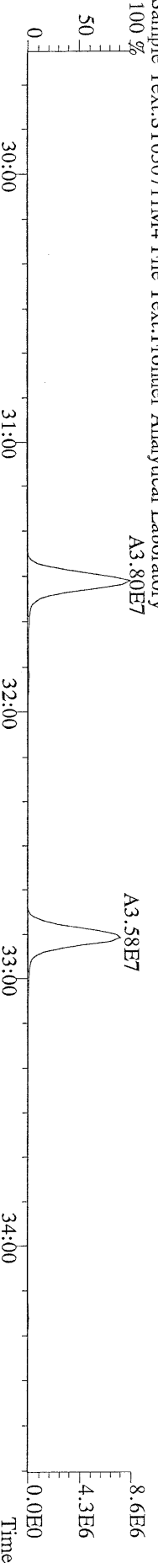
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 Sample Text:ST030711M4 File Text:Frontier Analytical Laboratory



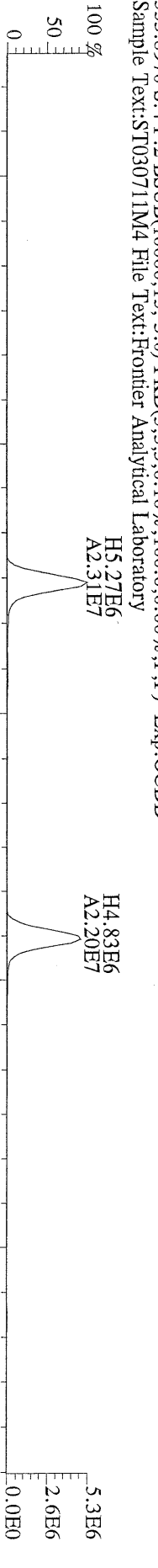
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 341.8568 S:4 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:OCDD
 Sample Text:ST030711M4 File Text:Frontier Analytical Laboratory



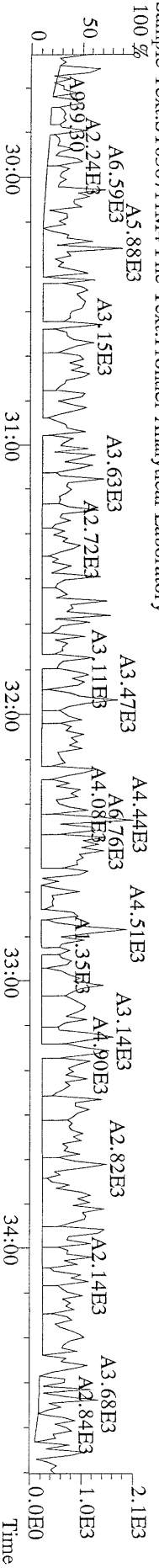
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 351.9000 S:4 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:OCDD
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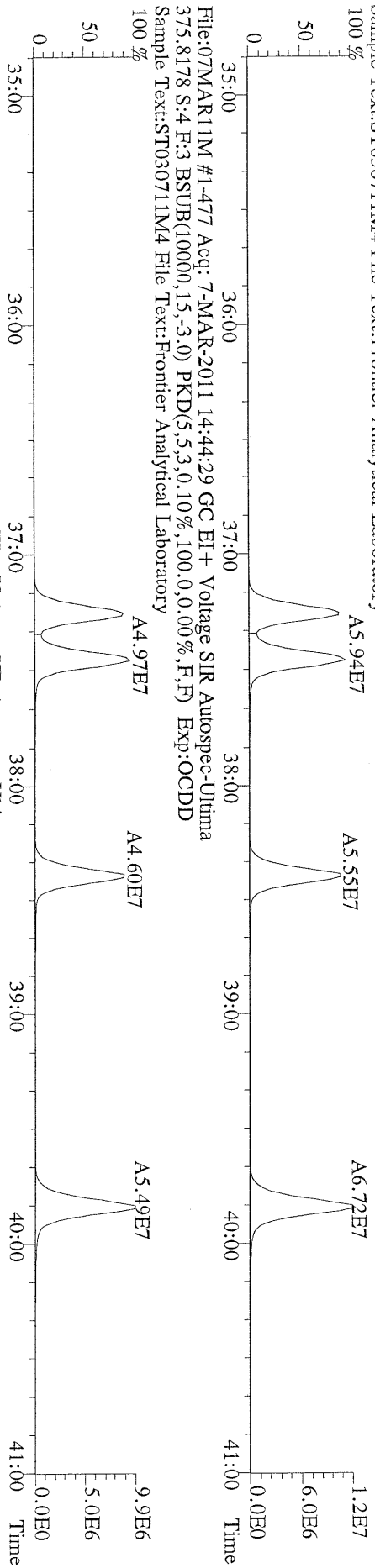
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 353.8970 S:4 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:OCDD
 Sample Text:ST030711M4 File Text:Frontier Analytical Laboratory



File:07MAR11M #1-411 Acq: 7-MAR-2011 14:44:29 GC EI+ Voltage SIR Autospec-Ultima
 409.7974 S:4 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:OCDD
 Sample Text:ST030711M4 File Text:Frontier Analytical Laboratory



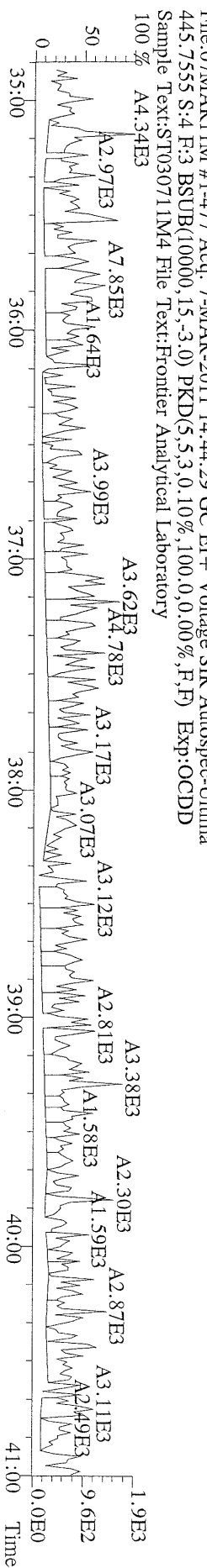
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373.8207 S:4 F:3 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100.0,0.00%,F,F) Exp:OCDD
Sample Text:ST030711M4 File Text:Frontier Analytical Laboratory



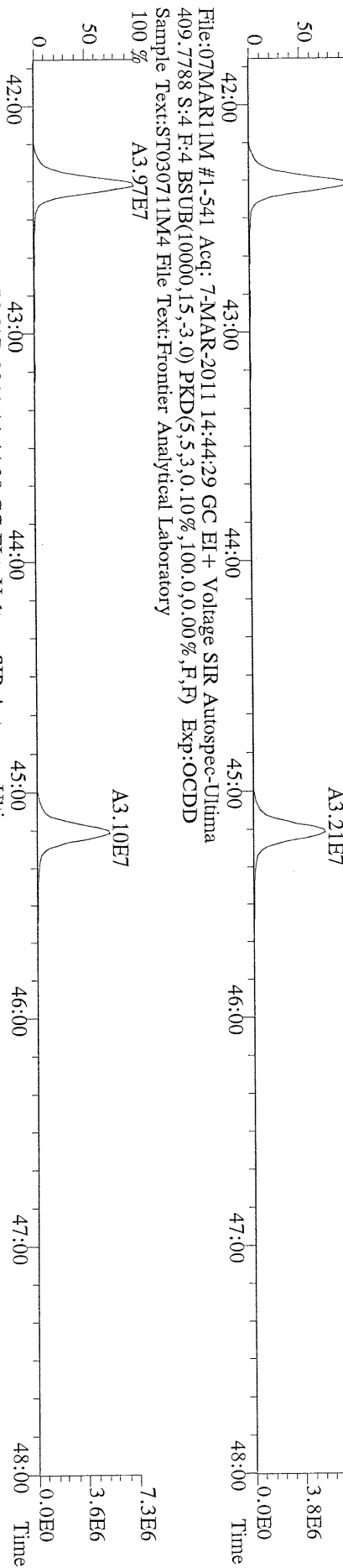
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383.8639 S:4 F:3 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100.0,0.00%,F,F) Exp:OCDD
Sample Text:ST030711M4 File Text:Frontier Analytical Laboratory



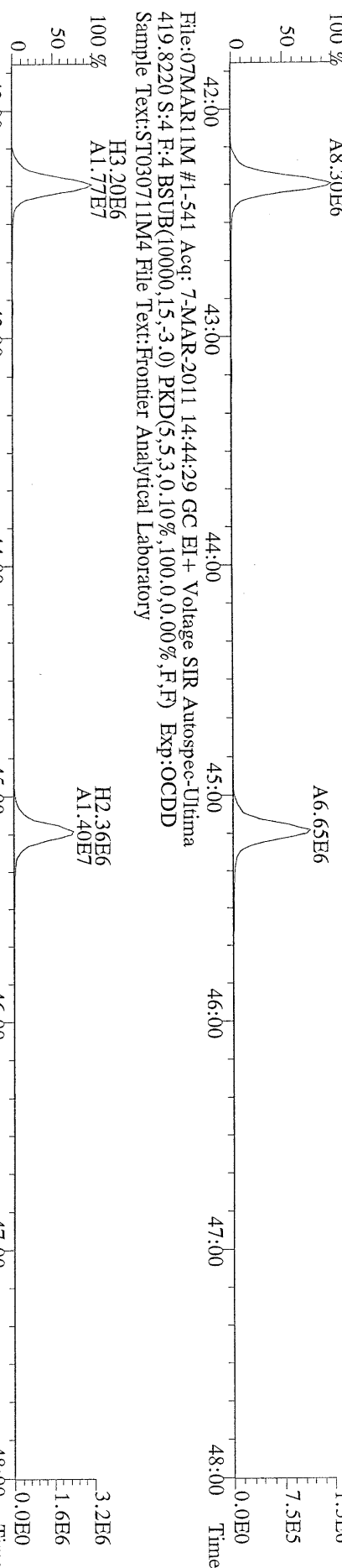
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445.7555 S:4 F:3 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100.0,0.00%,F,F) Exp:OCDD
Sample Text:ST030711M4 File Text:Frontier Analytical Laboratory



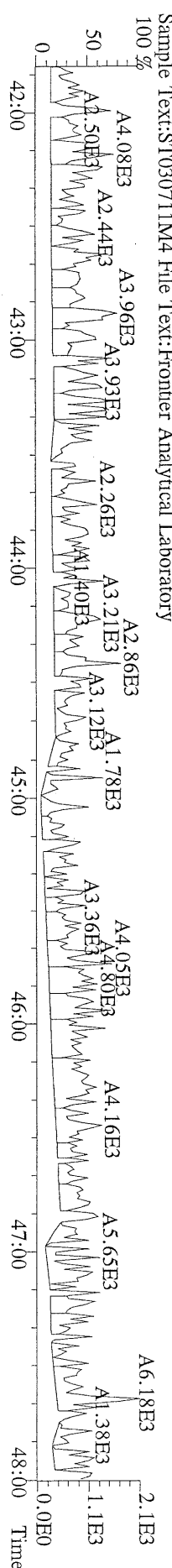
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Sample Text:ST030711M4 File Text:Frontier Analytical Laboratory
100 %



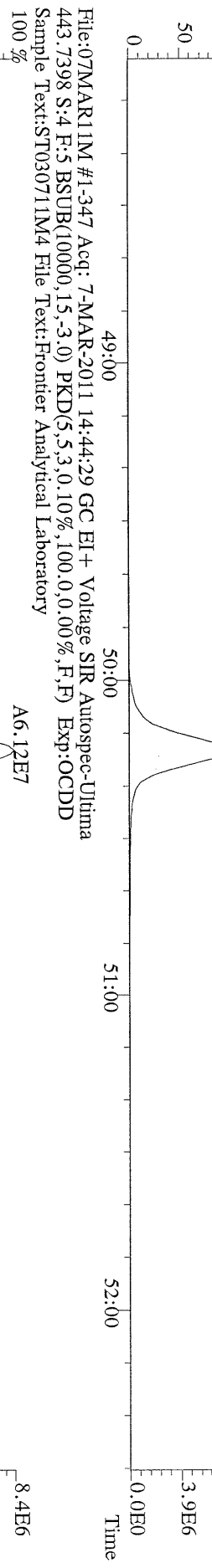
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417.8253 S:4 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:OCDD
Sample Text:ST030711M4 File Text:Frontier Analytical Laboratory
100 %



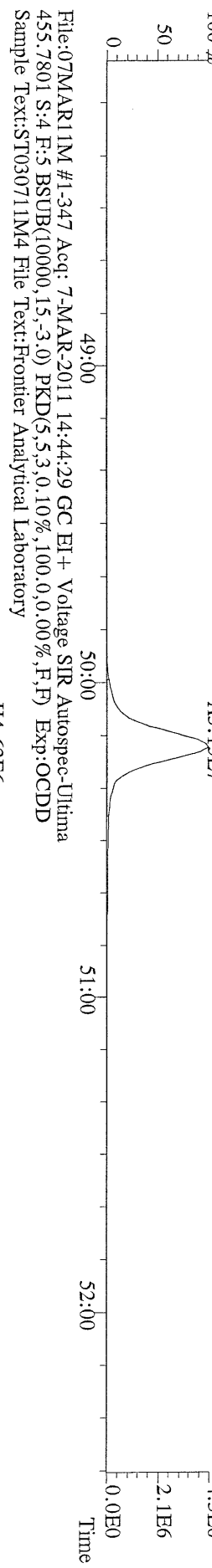
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419.8220 S:4 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:OCDD
Sample Text:ST030711M4 File Text:Frontier Analytical Laboratory
100 %



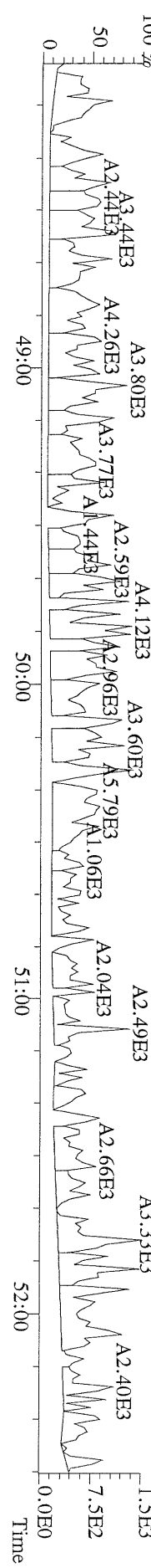
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441.7428 S:4 F:5 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp:OCDD
Sample Text:ST030711M4 File Text:Frontier Analytical Laboratory



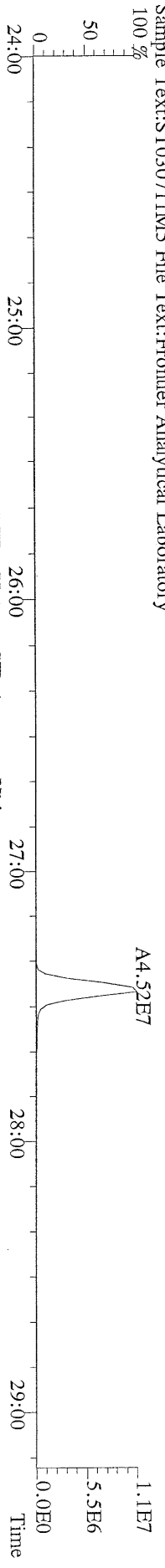
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453.7831 S:4 F:5 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp:OCDD
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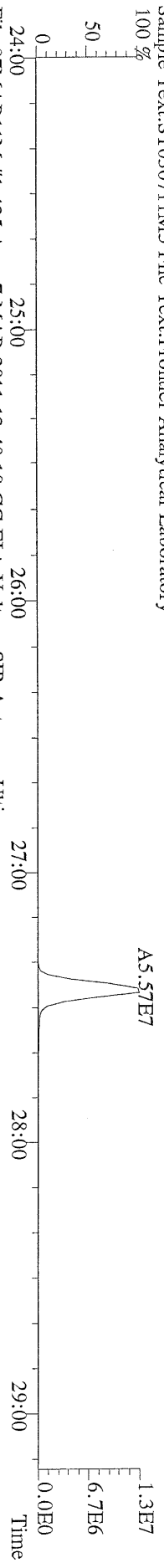
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513.6775 S:4 F:5 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp:OCDD
Sample Text:ST030711M4 File Text:Frontier Analytical Laboratory



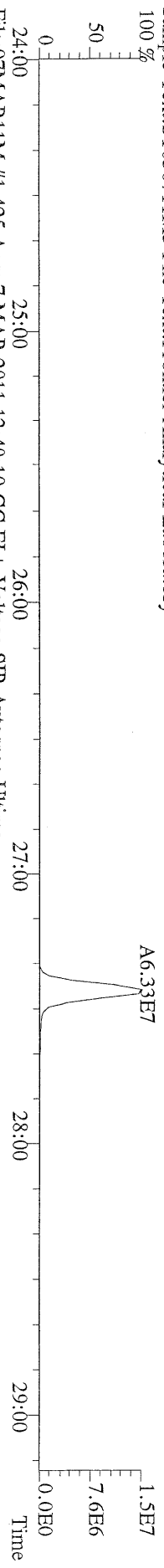
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319.8965 S:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100.0,0.00%,F,F) Exp:OCDD
Sample Text:ST030711M5 File Text:Frontier Analytical Laboratory
100 %



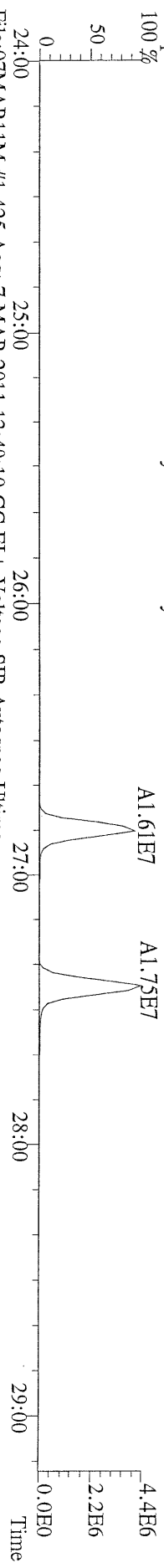
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321.8936 S:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100.0,0.00%,F,F) Exp:OCDD
Sample Text:ST030711M5 File Text:Frontier Analytical Laboratory
100 %



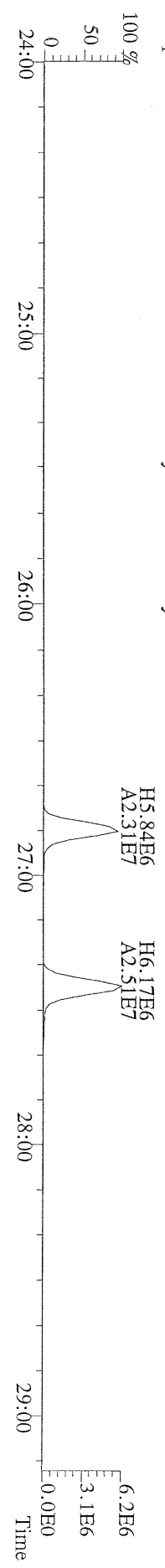
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327.8847 S:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100.0,0.00%,F,F) Exp:OCDD
Sample Text:ST030711M5 File Text:Frontier Analytical Laboratory
100 %



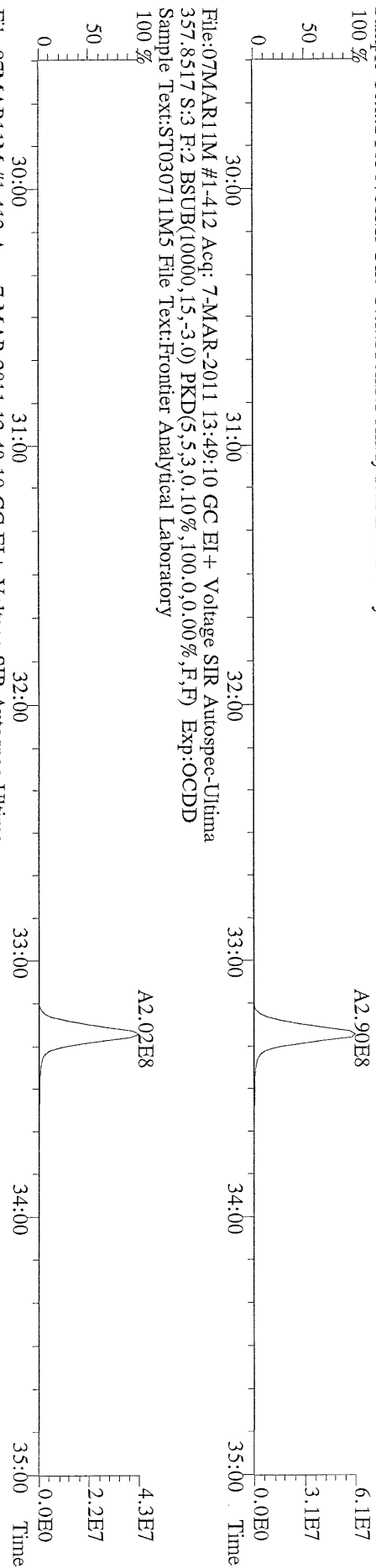
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331.9368 S:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100.0,0.00%,F,F) Exp:OCDD
Sample Text:ST030711M5 File Text:Frontier Analytical Laboratory
100 %



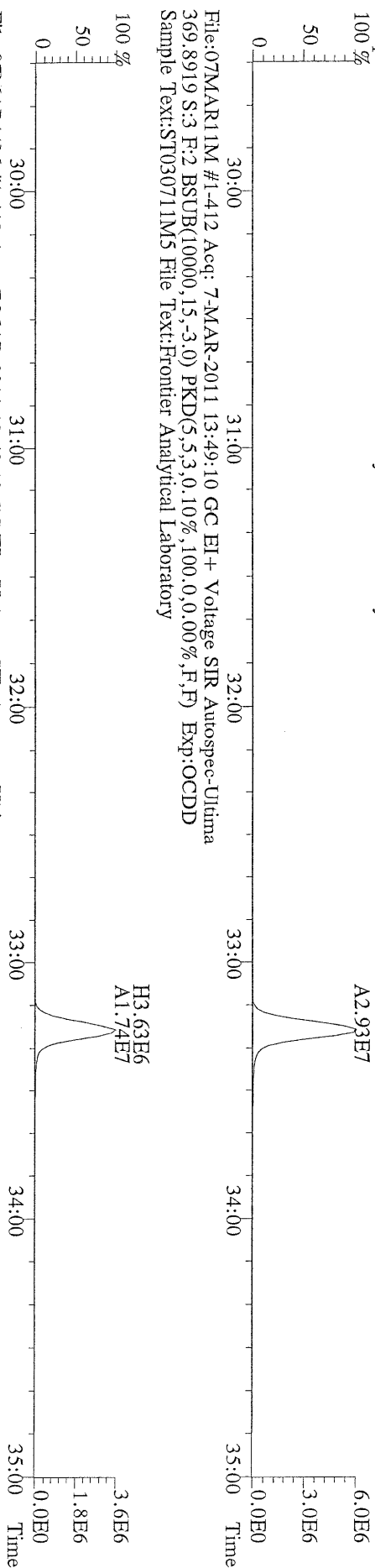
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333.9339 S:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100.0,0.00%,F,F) Exp:OCDD
Sample Text:ST030711M5 File Text:Frontier Analytical Laboratory



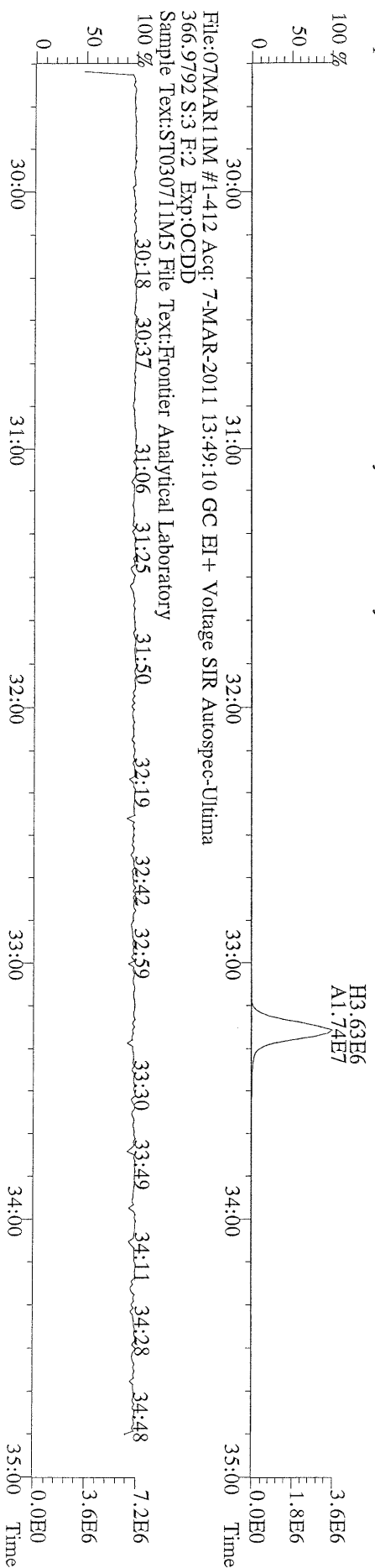
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355.8546 S:3 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100.0,0.00%,F,F) Exp:OCDD
Sample Text:ST030711M5 File Text:Frontier Analytical Laboratory



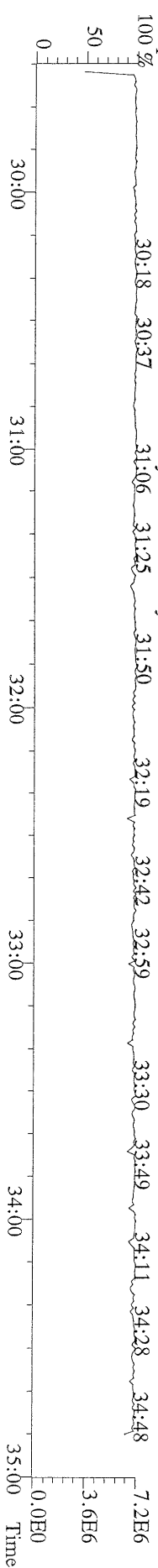
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367.8949 S:3 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100.0,0.00%,F,F) Exp:OCDD
Sample Text:ST030711M5 File Text:Frontier Analytical Laboratory



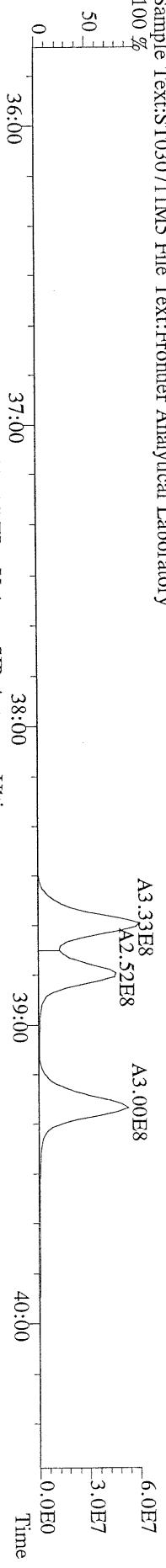
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369.8919 S:3 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100.0,0.00%,F,F) Exp:OCDD
Sample Text:ST030711M5 File Text:Frontier Analytical Laboratory



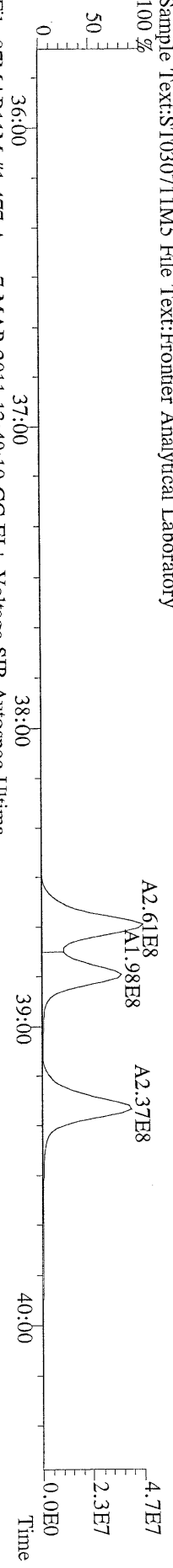
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366.9792 S:3 F:2 Exp:OCDD
Sample Text:ST030711M5 File Text:Frontier Analytical Laboratory



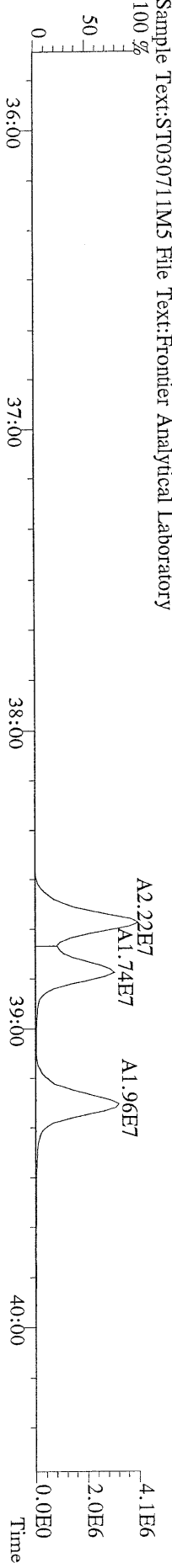
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 389.8156 S:3 F:3 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:OCDD
 Sample Text:ST03071IM5 File Text:Frontier Analytical Laboratory



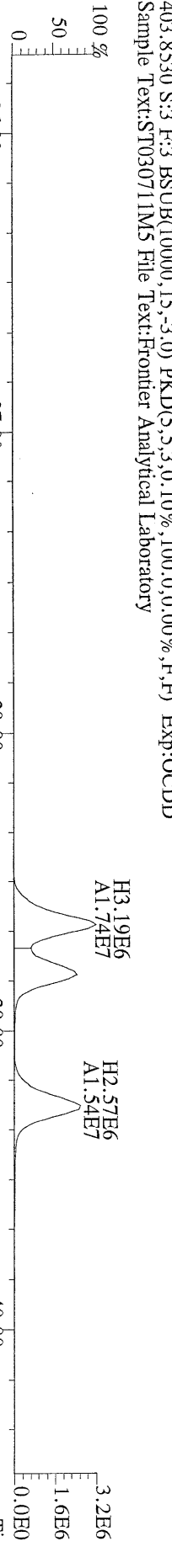
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 391.8127 S:3 F:3 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:OCDD
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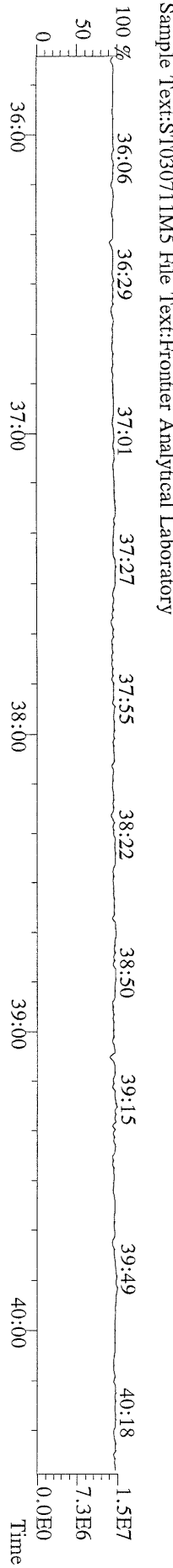
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 401.8559 S:3 F:3 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:OCDD
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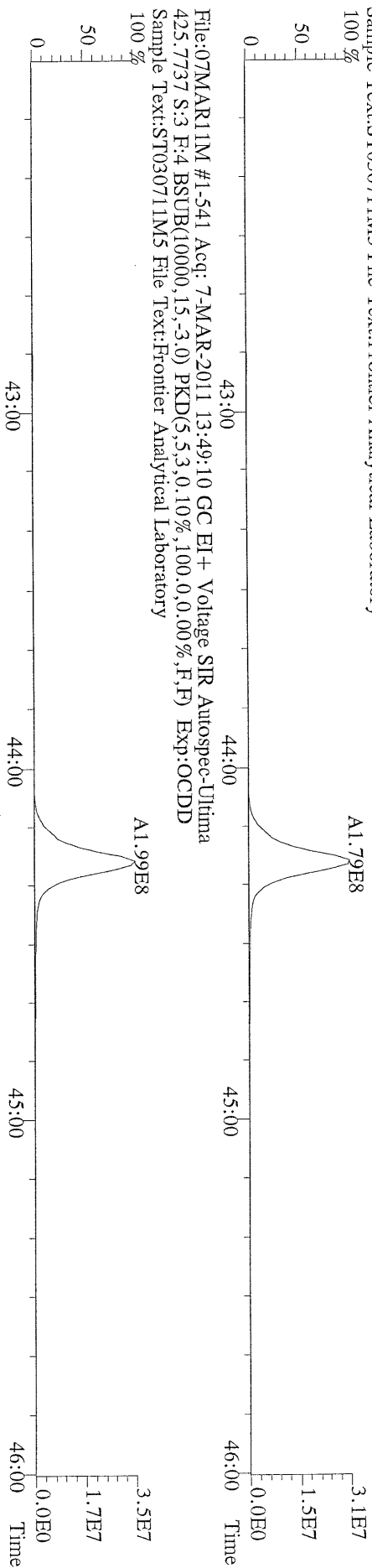
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 403.8530 S:3 F:3 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:OCDD
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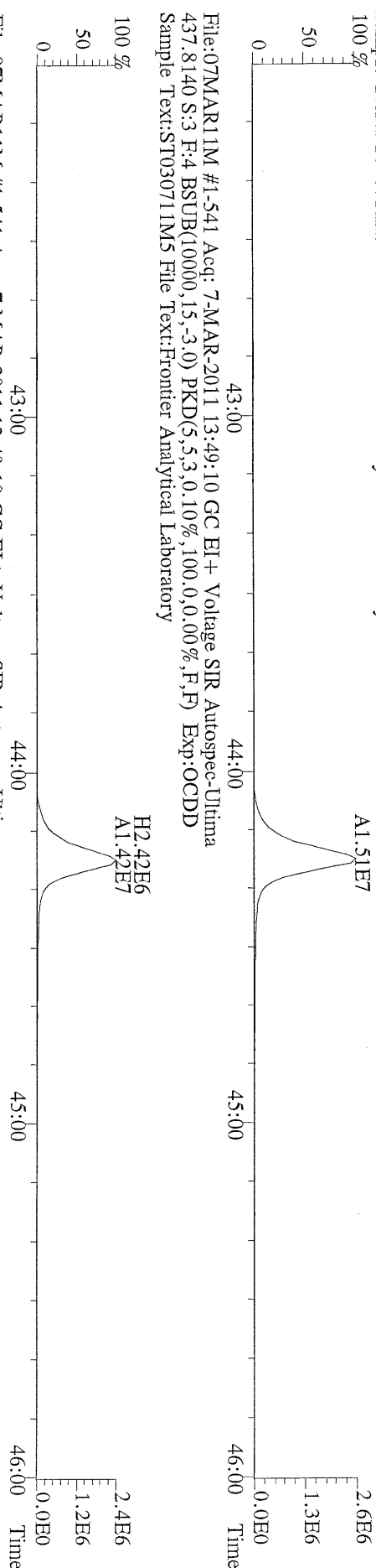
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 380.9760 S:3 F:3 Exp:OCDD
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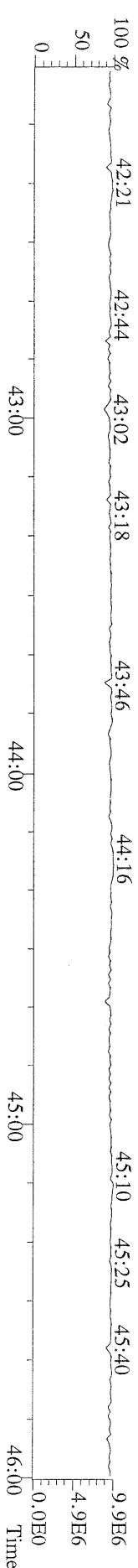
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423.7767 S:3 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:OCDD
Sample Text:ST030711M5 File Text:Frontier Analytical Laboratory



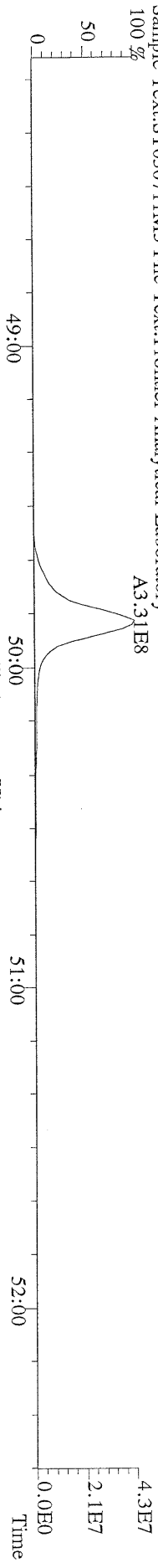
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Sample Text:ST030711M5 File Text:Frontier Analytical Laboratory



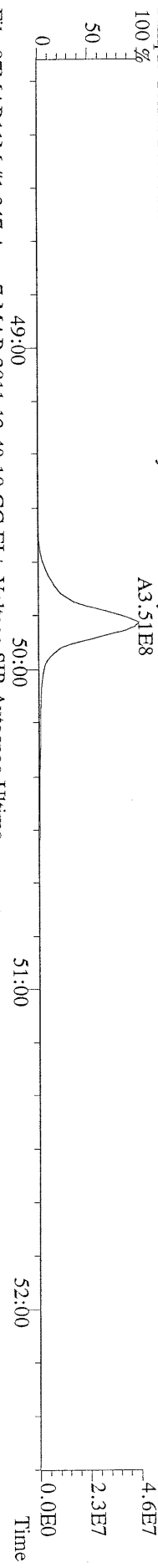
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430.9728 S:3 F:4 Exp:OCDD
Sample Text:ST030711M5 File Text:Frontier Analytical Laboratory



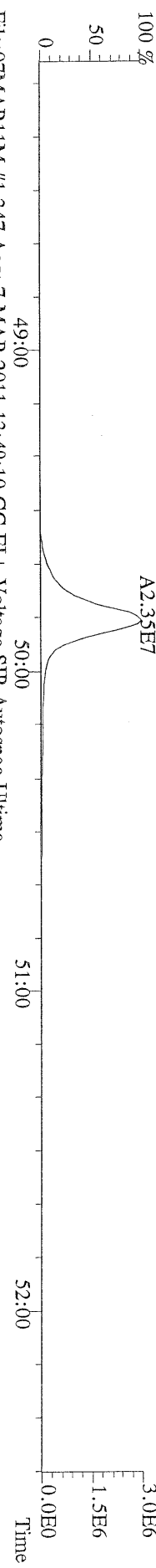
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457.7377 S:3 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:OCDD
Sample Text:ST030711M5 File Text:Frontier Analytical Laboratory



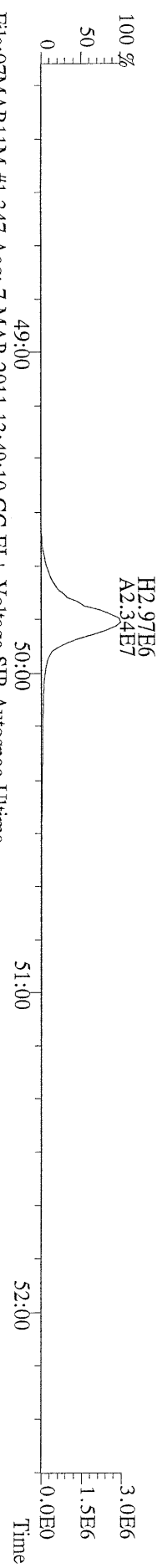
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459.7348 S:3 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:OCDD
Sample Text:ST030711M5 File Text:Frontier Analytical Laboratory



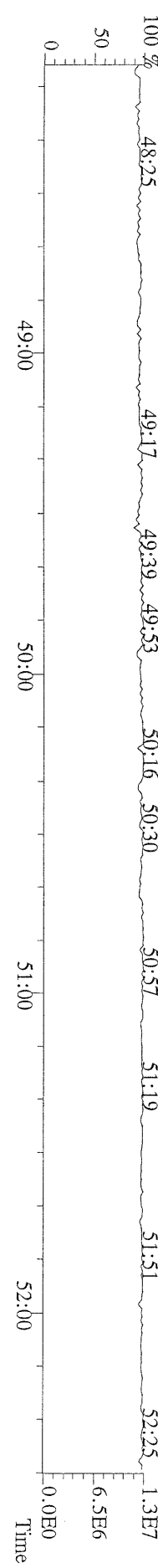
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469.7780 S:3 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:OCDD
Sample Text:ST030711M5 File Text:Frontier Analytical Laboratory



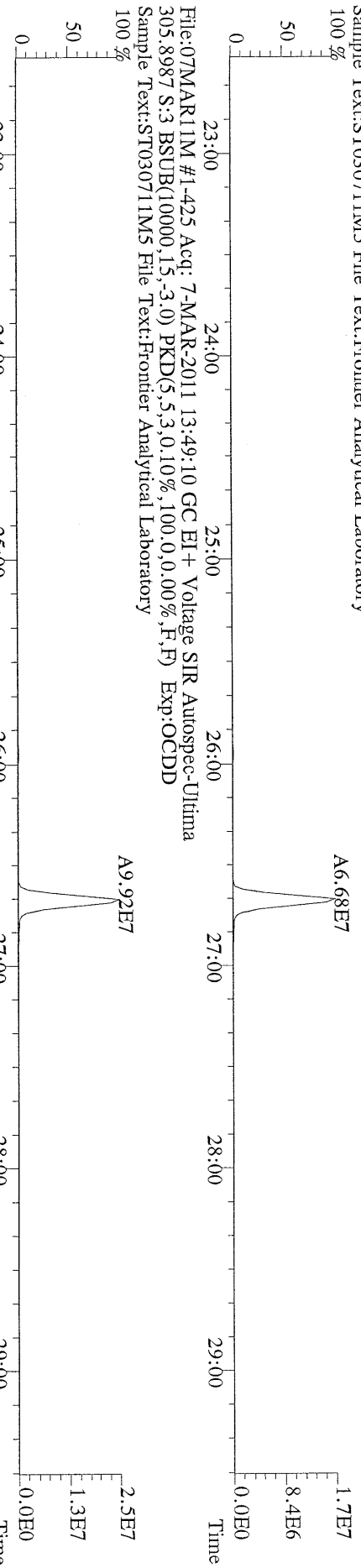
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Sample Text:ST030711M5 File Text:Frontier Analytical Laboratory



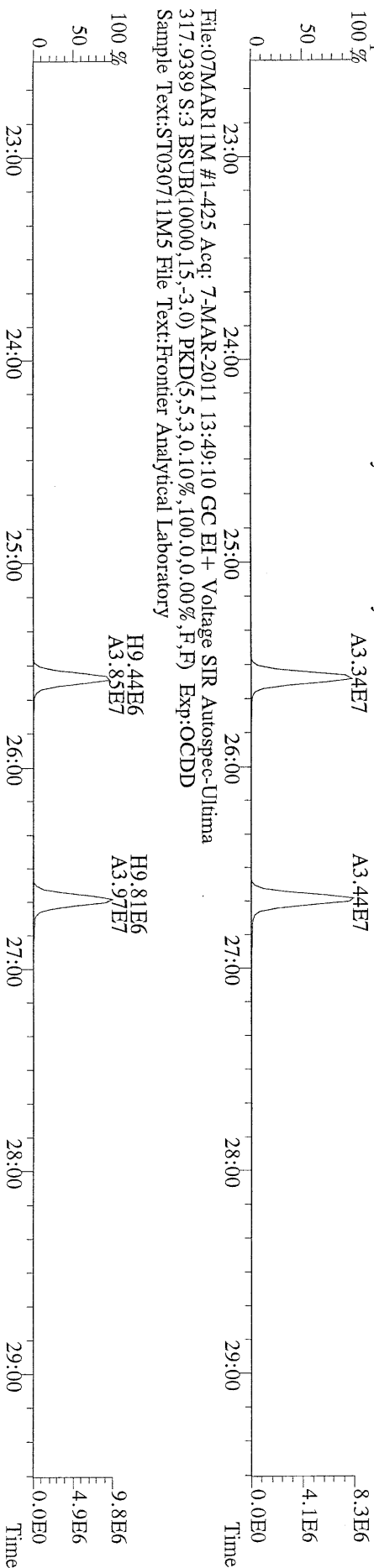
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454.9728 S:3 F:5 Exp:OCDD
Sample Text:ST030711M5 File Text:Frontier Analytical Laboratory



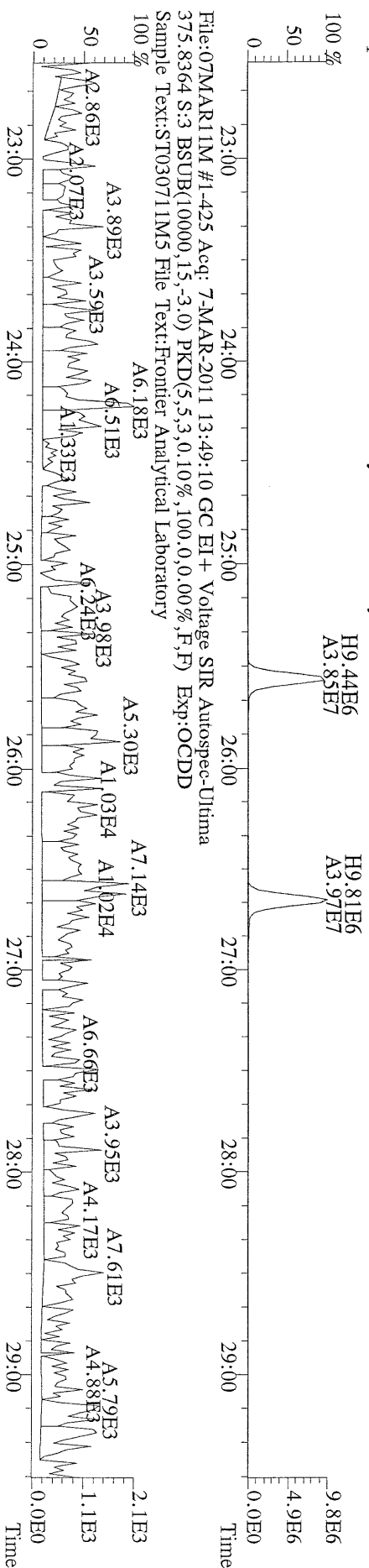
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303.9016 S:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0.00%,F,F) Exp:OCDD
Sample Text:ST030711M5 File Text:Frontier Analytical Laboratory



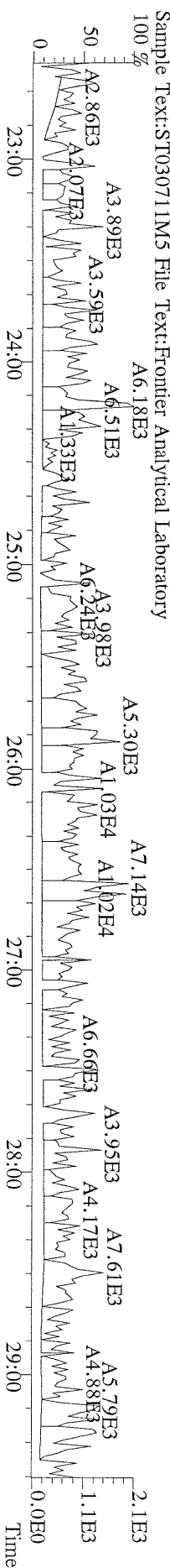
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315.9419 S:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0.00%,F,F) Exp:OCDD
Sample Text:ST030711M5 File Text:Frontier Analytical Laboratory



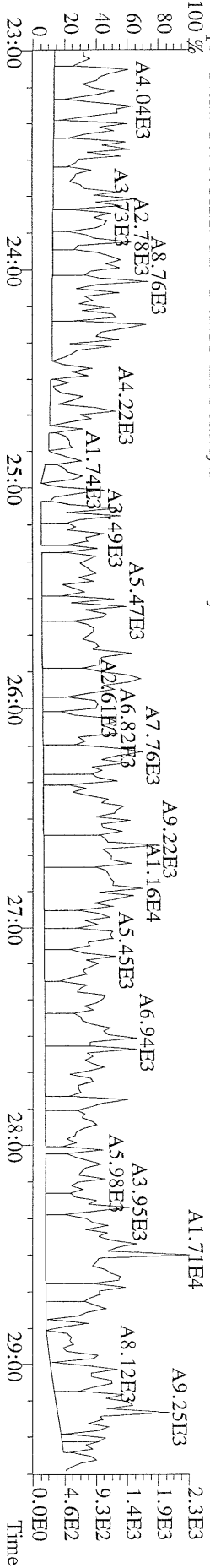
File:07MAR11M #1-425 Acq: 7-MAR-2011 13:49:10 GC EI+ Voltage SIR Autospec-Ultima
317.9389 S:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0.00%,F,F) Exp:OCDD
Sample Text:ST030711M5 File Text:Frontier Analytical Laboratory



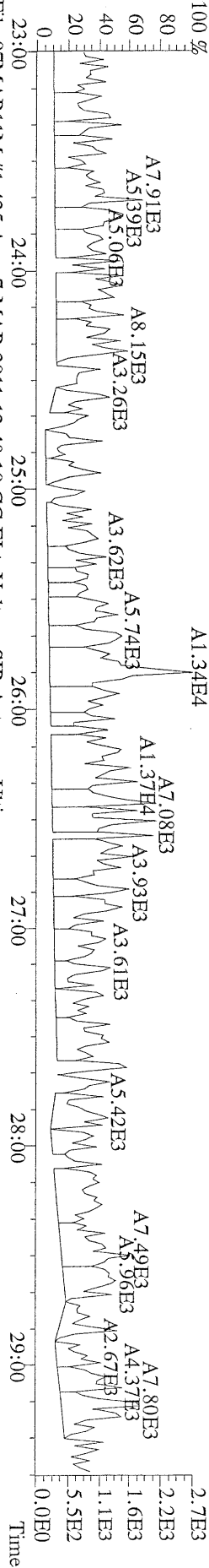
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375.8364 S:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0.00%,F,F) Exp:OCDD
Sample Text:ST030711M5 File Text:Frontier Analytical Laboratory



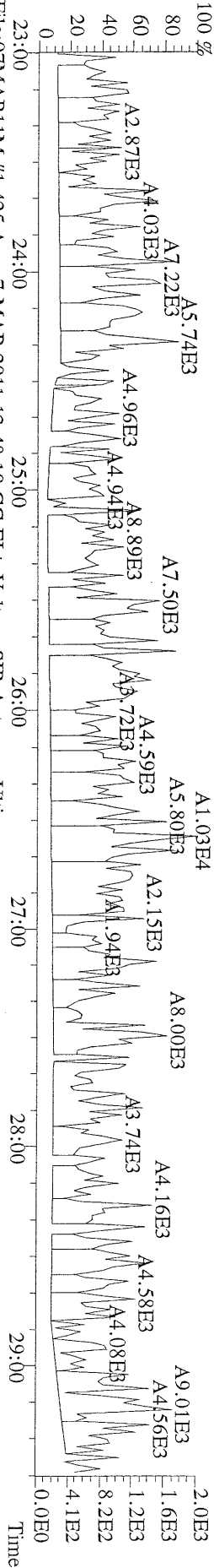
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 339.8597 S:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,100,0,0,00%,F,F) Exp:OCDD
 Sample Text:ST030711M5 File Text:Frontier Analytical Laboratory



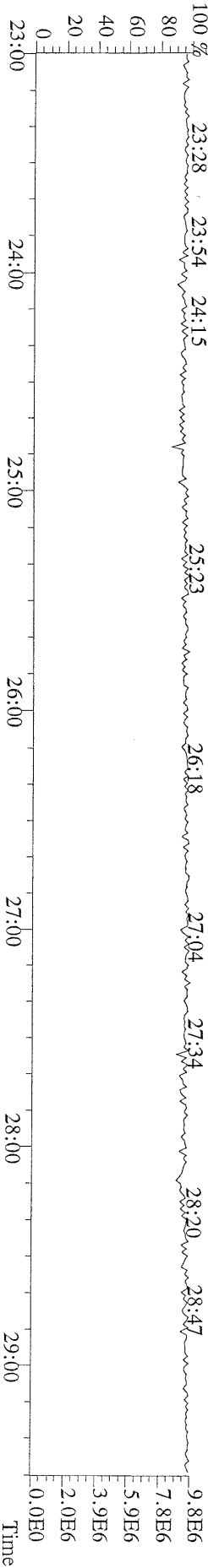
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 341.8568 S:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,100,0,0,00%,F,F) Exp:OCDD
 Sample Text:ST030711M5 File Text:Frontier Analytical Laboratory



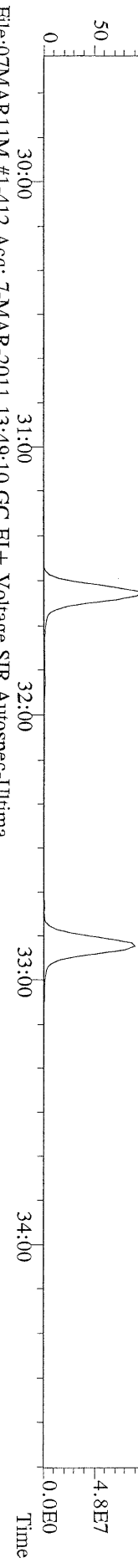
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 409.7974 S:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,100,0,0,00%,F,F) Exp:OCDD
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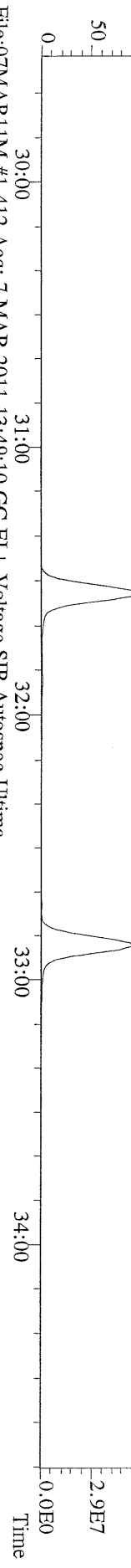
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 316.9824 S:3 Exp:OCDD
 Sample Text:ST030711M5 File Text:Frontier Analytical Laboratory



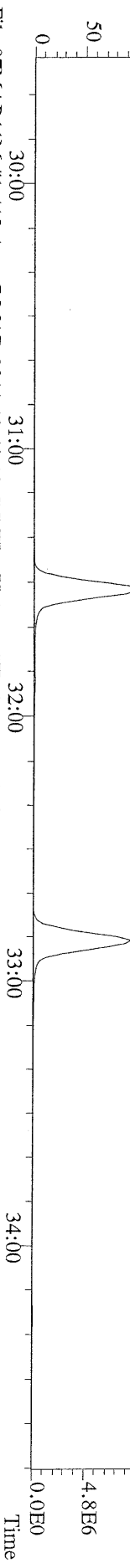
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 339.8597 S:3 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:OCDD
 Sample Text:ST030711M5 File Text:Frontier Analytical Laboratory
 100 %



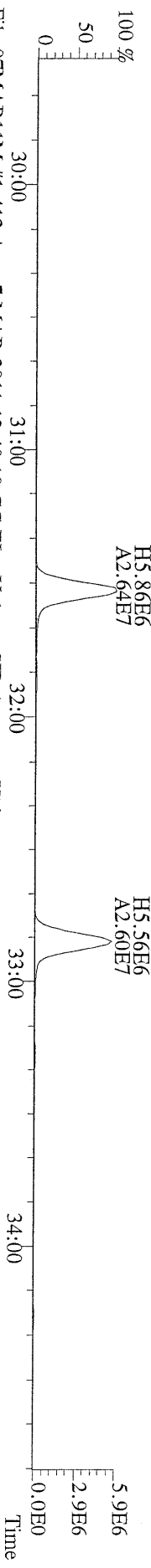
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 Sample Text:ST030711M5 File Text:Frontier Analytical Laboratory
 100 %



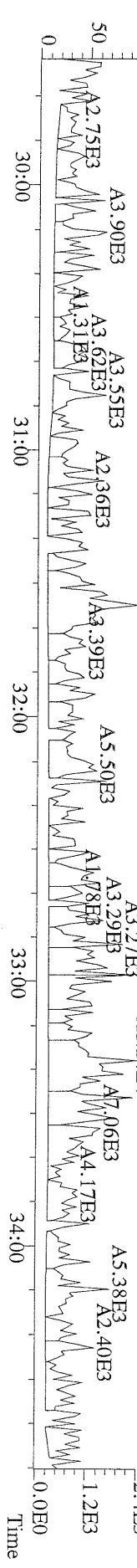
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 351.9000 S:3 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:OCDD
 Sample Text:ST030711M5 File Text:Frontier Analytical Laboratory
 100 %



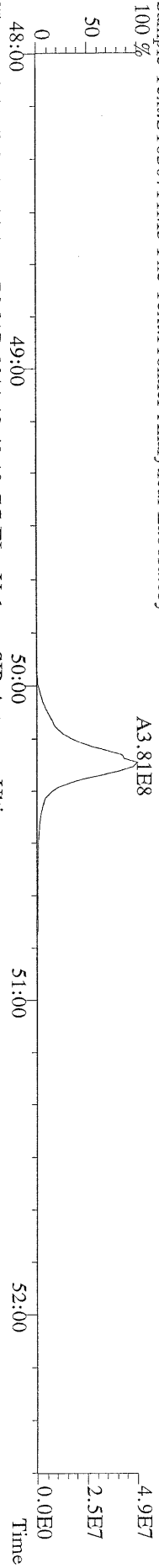
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 353.8970 S:3 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:OCDD
 Sample Text:ST030711M5 File Text:Frontier Analytical Laboratory



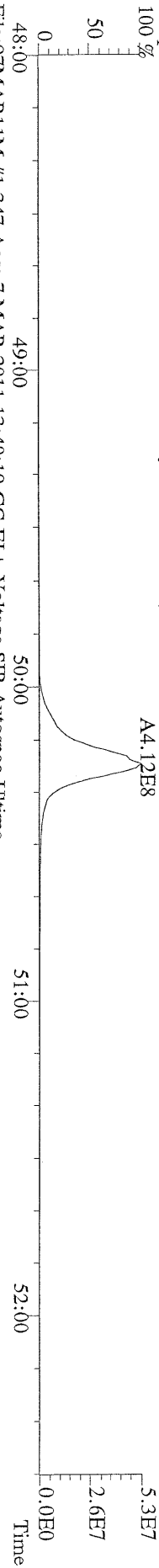
File:07MARI1M #1-412 Acq: 7-MAR-2011 13:49:10 GC EI+ Voltage SIR Autospec-Ultima
 409.7974 S:3 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:OCDD
 Sample Text:ST030711M5 File Text:Frontier Analytical Laboratory
 100 %



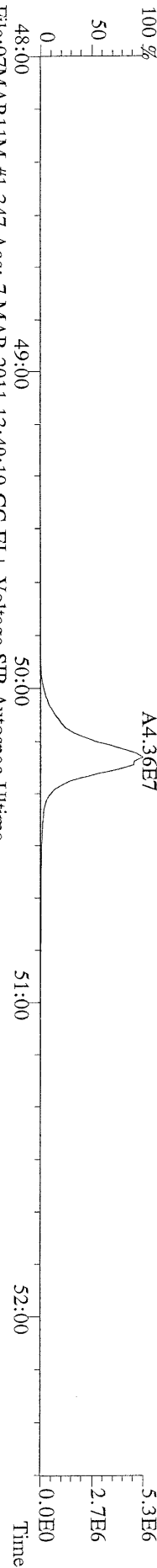
File:07MAR11M #1-347 Acq: 7-MAR-2011 13:49:10 GC EI+ Voltage SIR Autospec-Ultima
441.7428 S:3 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:OCDD
Sample Text:ST030711M5 File Text:Frontier Analytical Laboratory



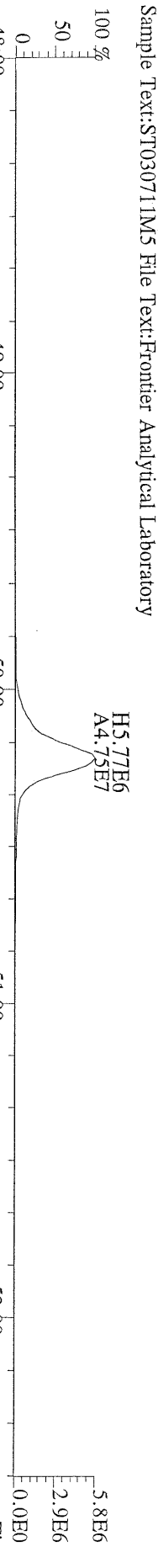
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443.7398 S:3 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:OCDD
Sample Text:ST030711M5 File Text:Frontier Analytical Laboratory



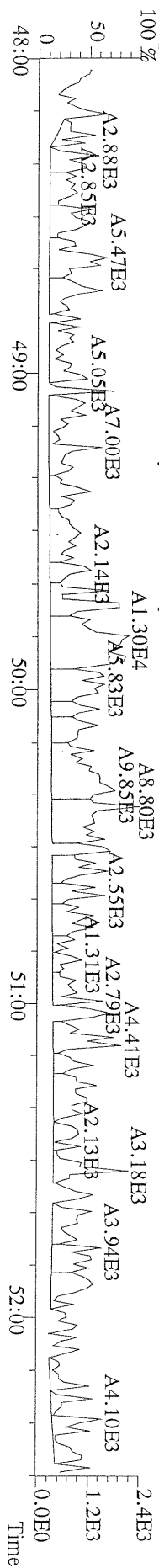
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453.7831 S:3 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:OCDD
Sample Text:ST030711M5 File Text:Frontier Analytical Laboratory



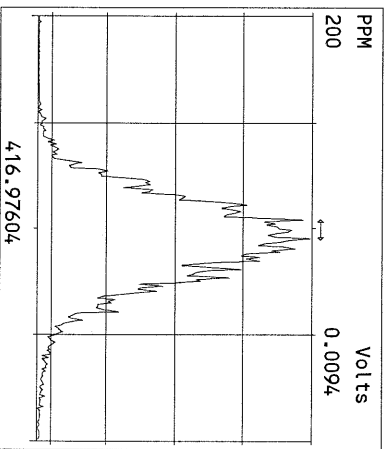
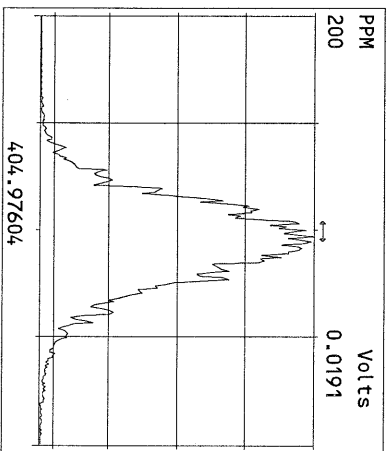
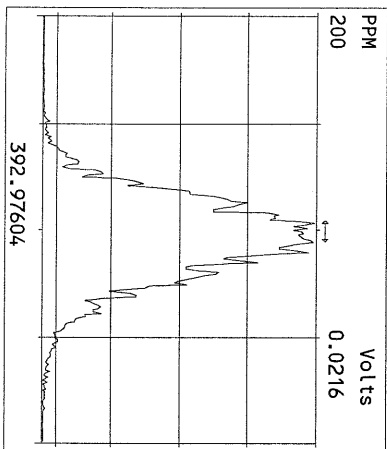
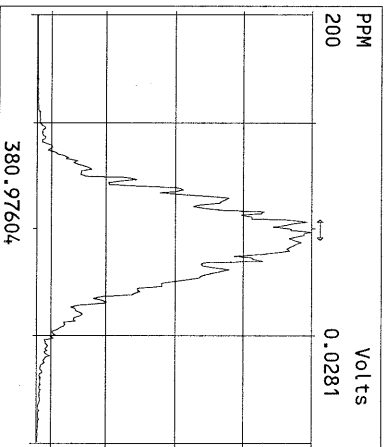
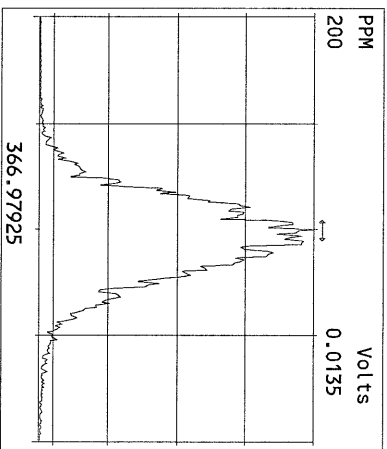
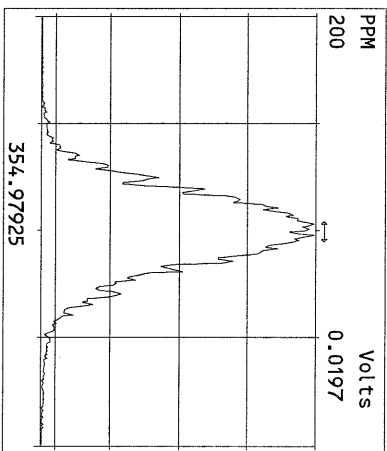
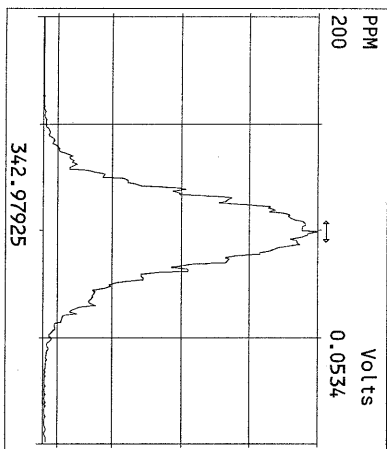
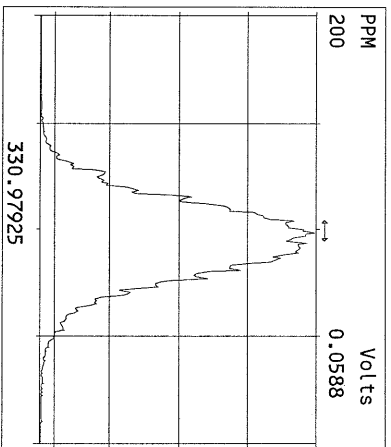
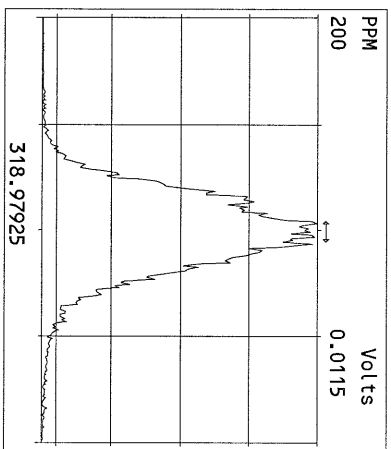
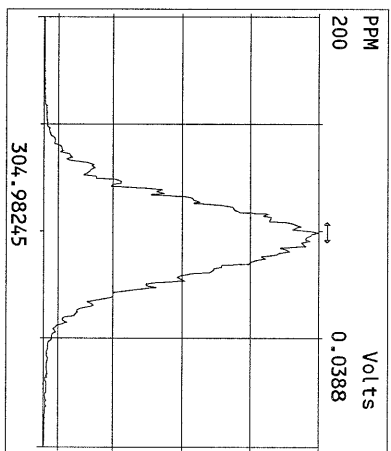
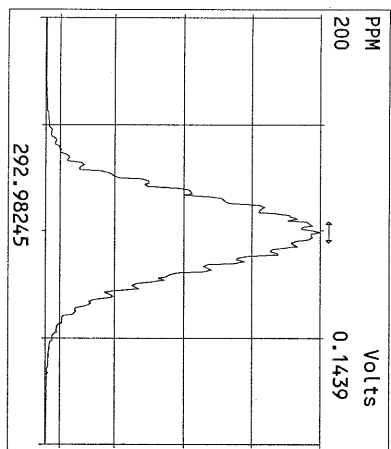
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455.7801 S:3 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:OCDD
Sample Text:ST030711M5 File Text:Frontier Analytical Laboratory

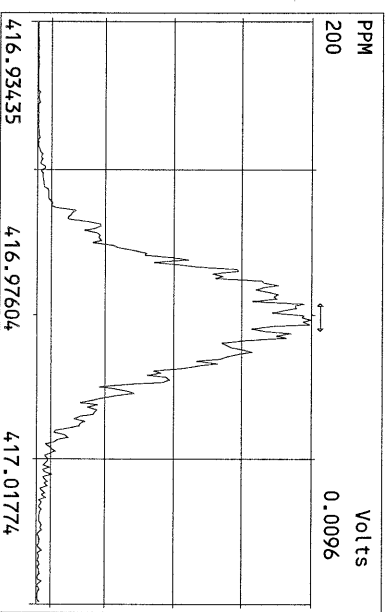
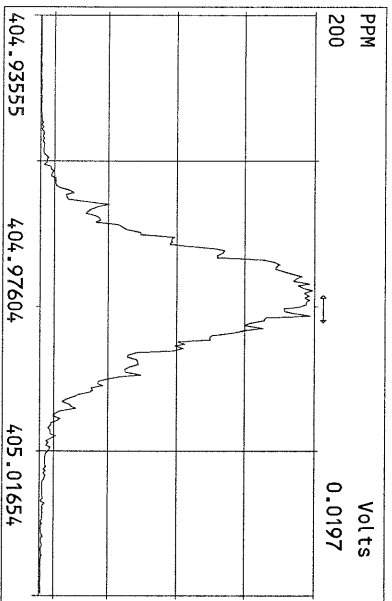
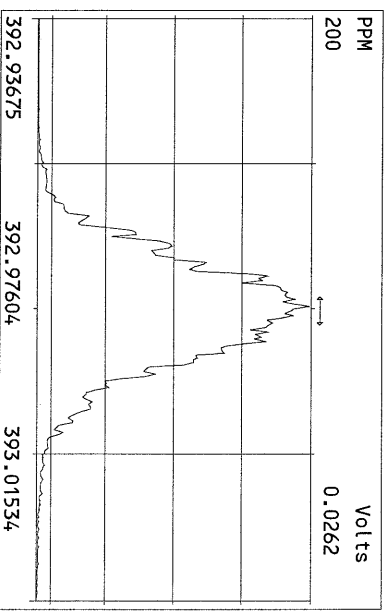
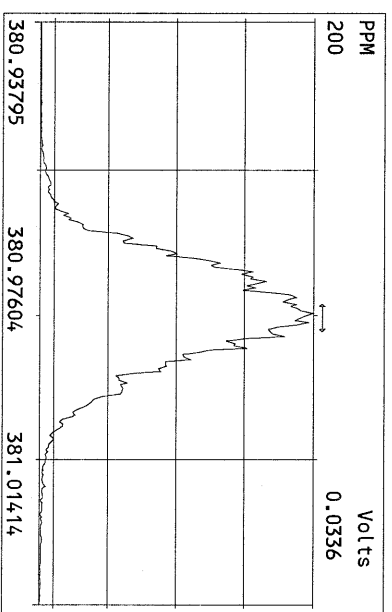
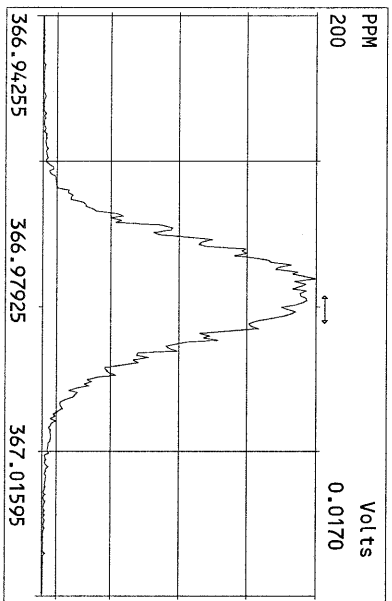
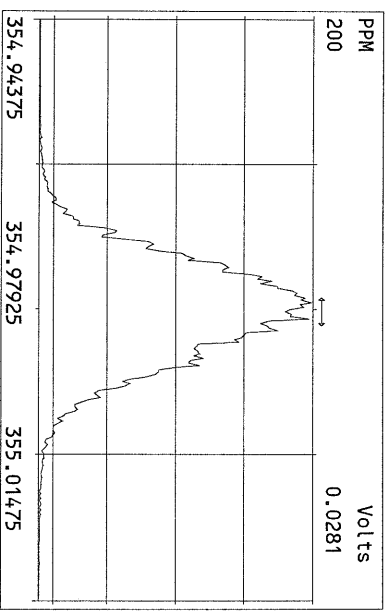
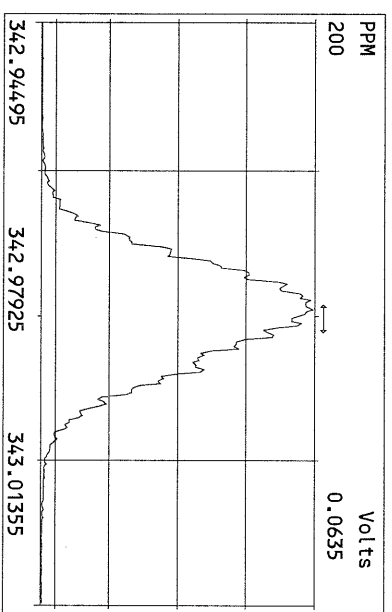
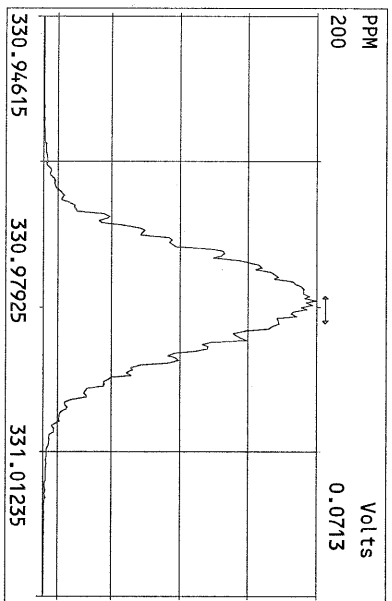


File:07MAR11M #1-347 Acq: 7-MAR-2011 13:49:10 GC EI+ Voltage SIR Autospec-Ultima
513.6775 S:3 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:OCDD
Sample Text:ST030711M5 File Text:Frontier Analytical Laboratory

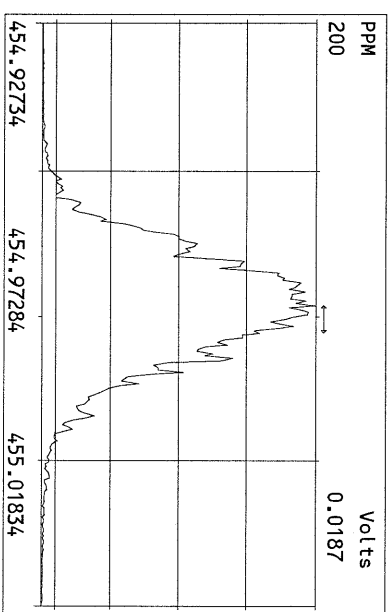
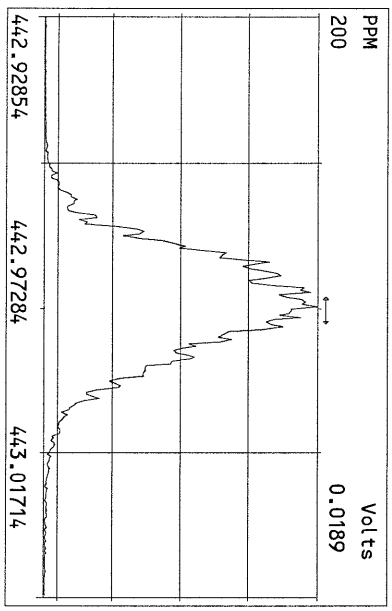
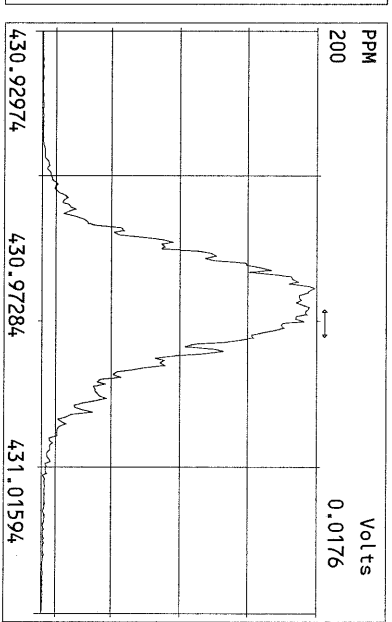
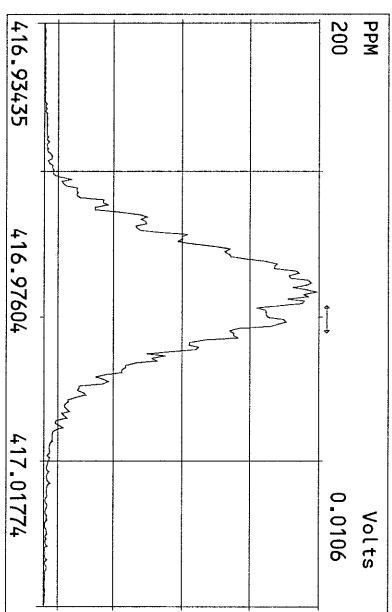
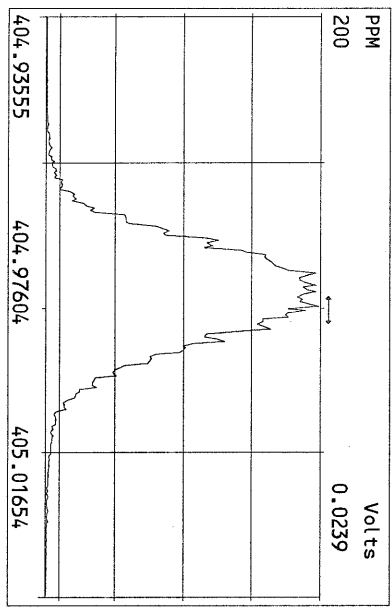
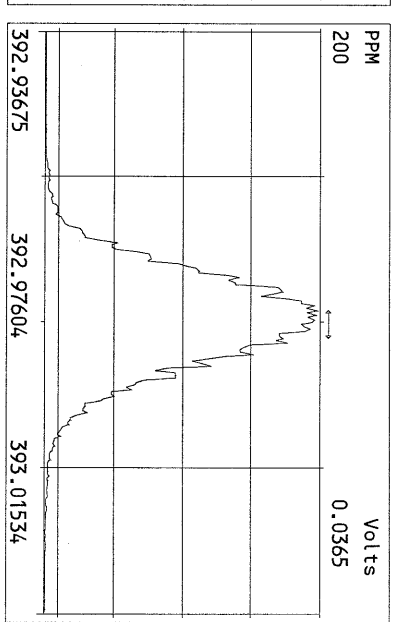
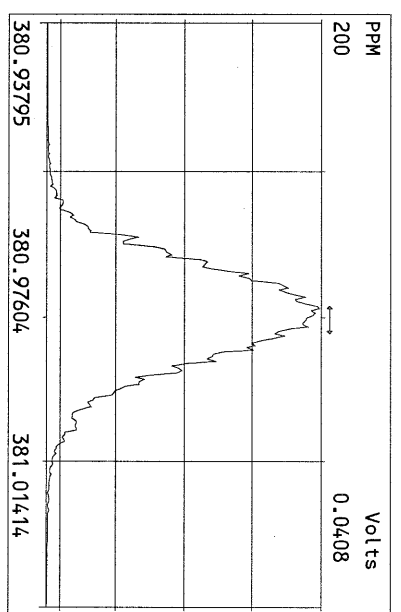
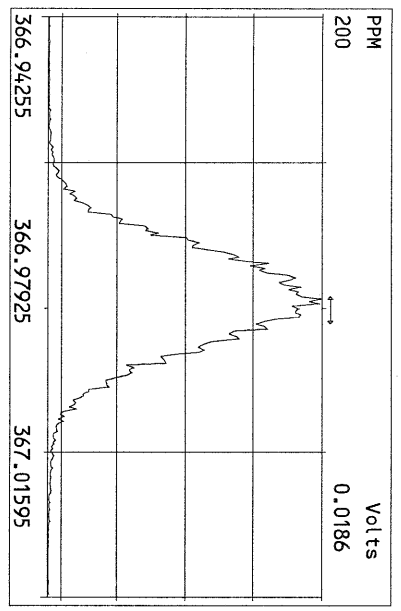


Peak Locate Examination: 8-MAR-2011:08:18 File:07MAR11M_RES_CHECK
Experiment:OCDD Function:1 Reference:PFK

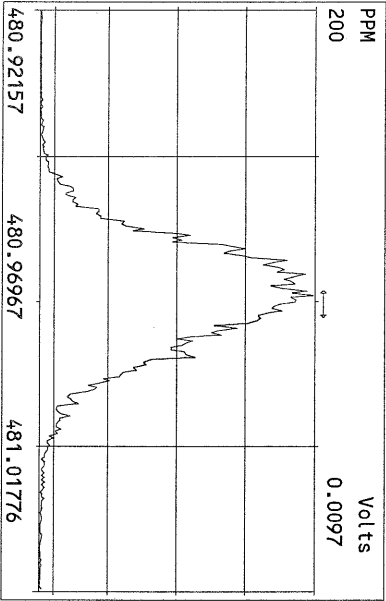
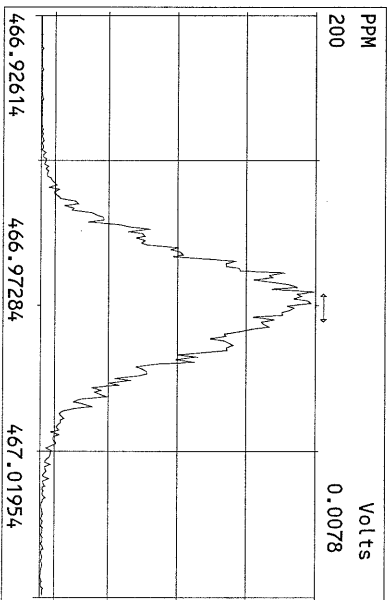
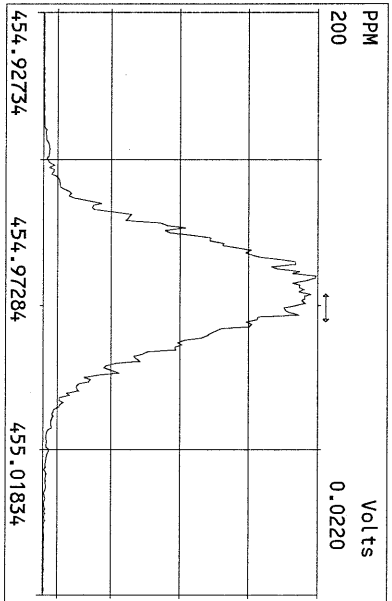
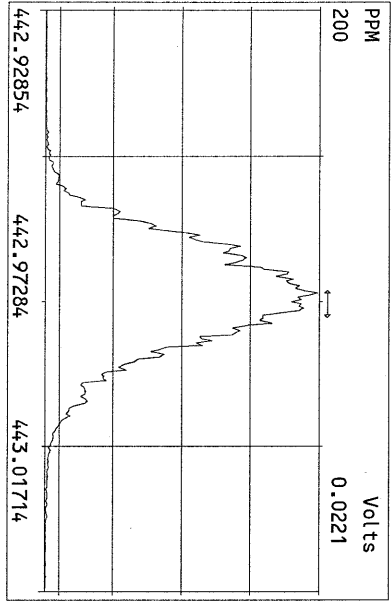
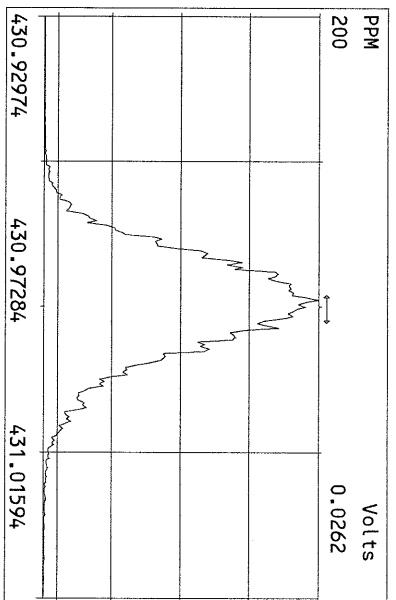
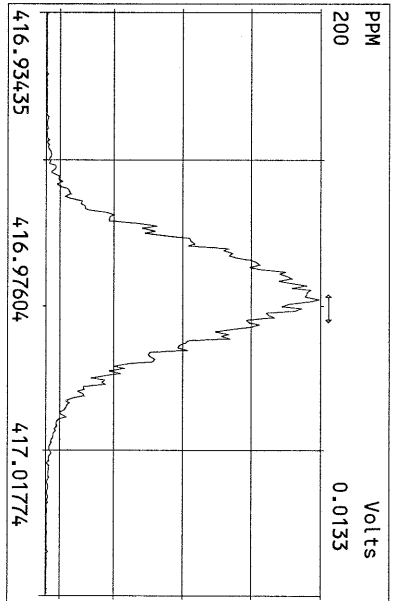
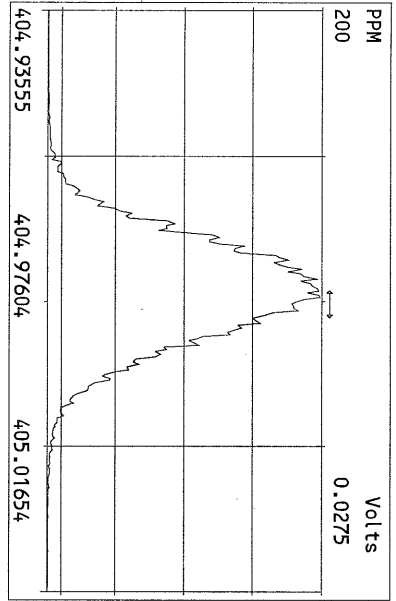


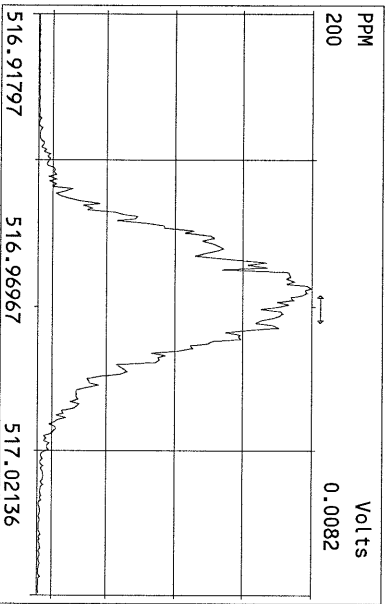
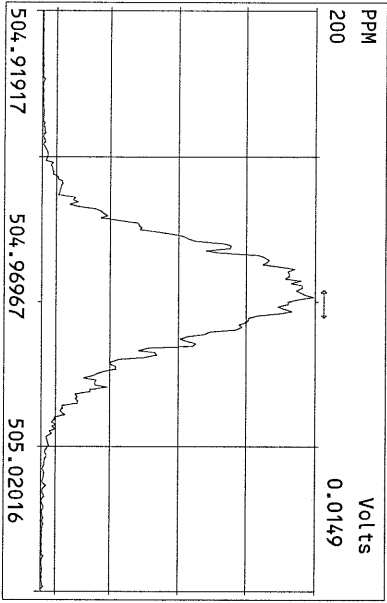
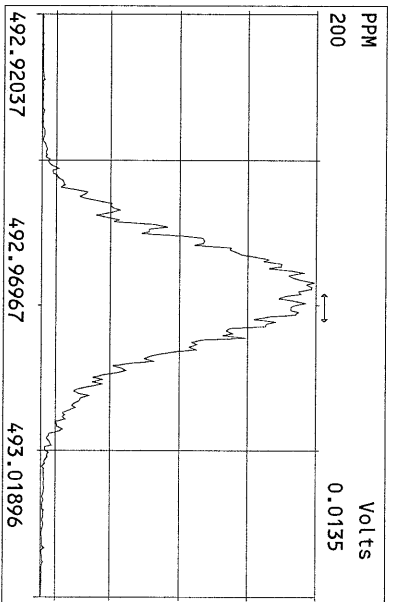
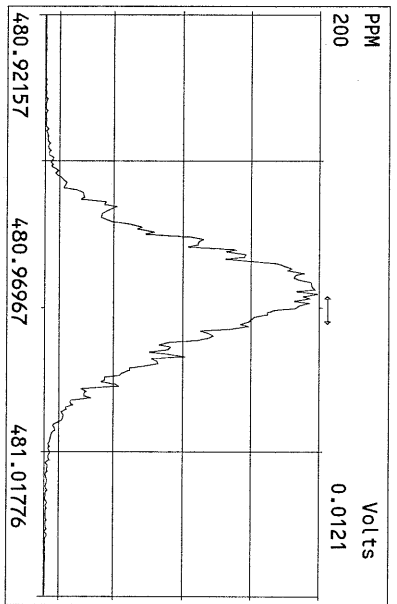
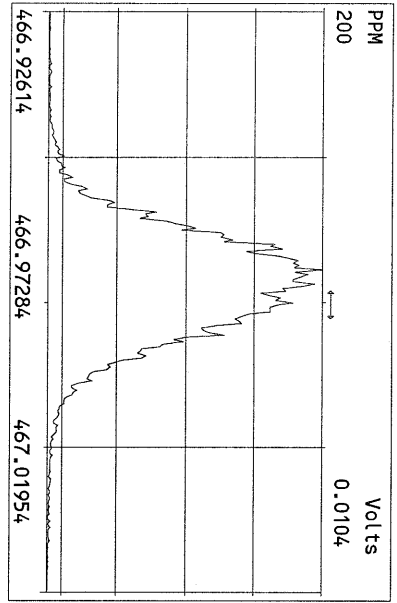
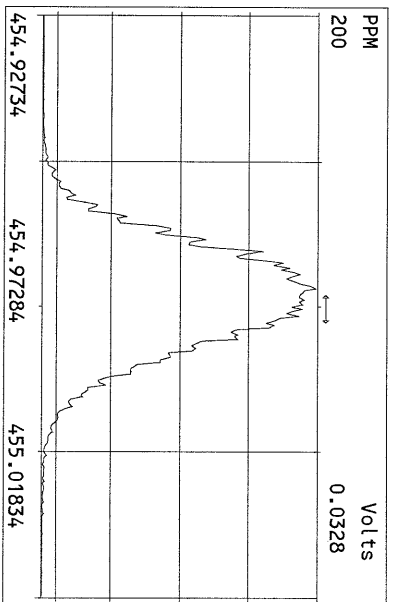
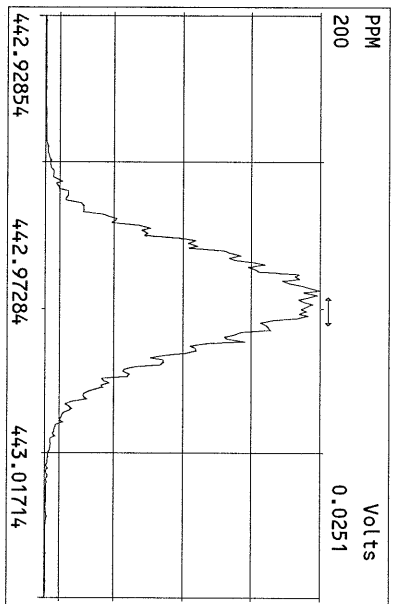
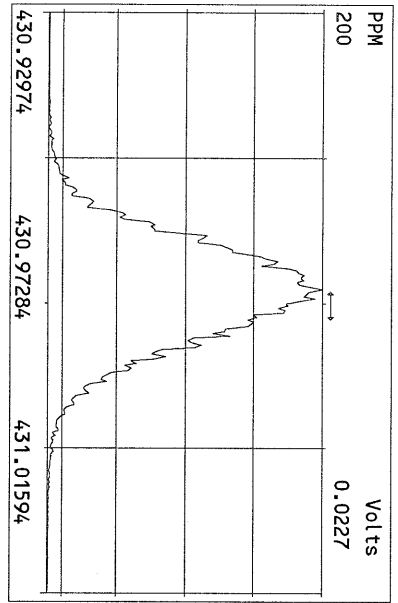


Peak Locate Examination: 8-MAR-2011:08:19 File:07MAR11M_RES_CHECK
 Experiment:OCDD Function:3 Reference:PFK



Peak Locate Examination: 8-MAR-2011:08:19 File:07MAR11M_RES_CHECK
Experiment:OCDD Function:4 Reference:PFK





USEPA - ITD

FORM 4A

PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: Frontier Analytical Laboratory Episode No.:

Contract No.: SAS No.:

Initial Calibration Date: 3/7/11

Instrument ID: FAL3

GC Column ID: DB5

VER Data Filename: 04MAY11M Sam:1


Analysis Date: 4-MAY-11 08:42:22

NATIVE ANALYTES	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	ACCEPT	CONC. FOUND	CONC. RANGE (ng/mL) (3)
2,3,7,8-TCDD	M/M+2	0.79	0.65-0.89	y	9.87	7.80 - 12.9
1,2,3,7,8-PeCDD	M+2/M+4	1.56	1.32-1.78	y	49.1	39.0 - 65.0
1,2,3,4,7,8-HxCDD	M+2/M+4	1.29	1.05-1.43	y	47.8	39.0 - 64.0
1,2,3,6,7,8-HxCDD	M+2/M+4	1.30	1.05-1.43	y	44.8	39.0 - 64.0
1,2,3,7,8,9-HxCDD	M+2/M+4	1.30	1.05-1.43	y	48.9	41.0 - 61.0
1,2,3,4,6,7,8-HpCDD	M+2/M+4	0.91	0.88-1.20	y	50.0	43.0 - 58.0
OCDD	M+2/M+4	0.94	0.76-1.02	y	97.1	79.0 - 126
2,3,7,8-TCDF	M/M+2	0.68	0.65-0.89	y	10.5	8.40 - 12.0
1,2,3,7,8-PeCDF	M+2/M+4	1.61	1.32-1.78	y	51.2	41.0 - 60.0
2,3,4,7,8-PeCDF	M+2/M+4	1.60	1.32-1.78	y	49.5	41.0 - 60.0
1,2,3,4,7,8-HxCDF	M+2/M+4	1.22	1.05-1.43	y	45.9	45.0 - 56.0
1,2,3,6,7,8-HxCDF	M+2/M+4	1.22	1.05-1.43	y	47.8	44.0 - 57.0
2,3,4,6,7,8-HxCDF	M+2/M+4	1.21	1.05-1.43	y	45.9	44.0 - 57.0
1,2,3,7,8,9-HxCDF	M+2/M+4	1.22	1.05-1.43	y	47.1	45.0 - 56.0
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.06	0.88-1.20	y	47.5	45.0 - 55.0
1,2,3,4,7,8,9-HpCDF	M+2/M+4	1.06	0.88-1.20	y	47.6	43.0 - 58.0
OCDF	M+2/M+4	0.92	0.76-1.02	y	92.1	63.0 - 159

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

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

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

Analyst: Date: 5/5/11

USEPA - ITD

FORM 4B

PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: Frontier Analytical Laboratory

Episode No.:

Contract No.:

SAS No.:

Initial Calibration Date: 3/7/11

Instrument ID: FAL3

GC Column ID: DB5

VER Data Filename: 04MAY11M Sam:1

Analysis Date: 4-MAY-11 08:42:22

LABELLED COMPOUNDS	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	ACCEPT	CONC. FOUND	CONC. RANGE (ng/mL) (3)
13C-2,3,7,8-TCDD	M/M+2	0.74	0.65-0.89	y	92.7	82.0 - 121
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.77	1.32-1.78	y	87.9	62.0 - 160
13C-1,2,3,4,7,8-HxCDD	M+2/M+4	1.31	1.05-1.43	y	94.9	85.0 - 117
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.20	1.05-1.43	y	101	85.0 - 118
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.04	0.88-1.20	y	103	72.0 - 138
13C-OCDD	M+2/M+4	0.98	0.76-1.02	y	190	96.0 - 415
13C-2,3,7,8-TCDF	M/M+2	0.87	0.65-0.89	y	96.9	71.0 - 140
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.68	1.32-1.78	y	97.8	76.0 - 130
13C-2,3,4,7,8-PeCDF	M+2/M+4	1.73	1.32-1.78	y	97.7	77.0 - 130
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.46	0.43-0.59	y	96.9	76.0 - 131
13C-1,2,3,6,7,8-HxCDF	M/M+2	0.46	0.43-0.59	y	102	70.0 - 143
13C-2,3,4,6,7,8-HxCDF	M/M+2	0.47	0.43-0.59	y	101	73.0 - 137
13C-1,2,3,7,8,9-HxCDF	M/M+2	0.47	0.43-0.59	y	98.0	74.0 - 135
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.45	0.37-0.51	y	97.9	78.0 - 129
13C-1,2,3,4,7,8,9-HpCDF	M/M+2	0.45	0.37-0.51	y	97.3	77.0 - 129
13C-OCDF	M+2/M+4	0.95	0.76-1.02	y	184	96.0 - 415
CLEANUP STANDARD (4)						
37Cl-2,3,7,8-TCDD					8.25	7.80 - 12.8

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

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

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

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

Analyst: 

Date: 5/5/11

FORM 5
PCDD/PCDF RT WINDOW AND ISOMER SPECIFICITY STANDARDS

Lab Name: Frontier Analytical Laboratory Episode No.:
Contract No.: SAS No.:
Instrument ID: FAL3 Initial Calibration Date: 3/7/11
RT Window Data Filename: 04MAY11M Sam:1 Analysis Date: 4-MAY-11 Time: 08:42:22
DB-5 IS Data Filename: 04MAY11M Sam:1 Analysis Date: 4-MAY-11 Time: 08:42:22
DB-225 IS Data Filename: Analysis Date: Time:

DB-5 RT WINDOW DEFINING STANDARDS RESULTS

ISOMERS	ABSOLUTE RT	ISOMERS	ABSOLUTE RT
1,3,6,8-TCDD (F)	24:21	1,3,6,8-TCDF (F)	23:01
1,2,8,9-TCDD (L)	28:17	1,2,8,9-TCDF (L)	28:30
1,2,4,7,9-PeCDD (F)	30:12	1,3,4,6,8-PeCDF (F)	28:23
1,2,3,8,9-PeCDD (L)	33:45	1,2,3,8,9-PeCDF (L)	34:09
1,2,4,6,7,9-HxCDD (F)	36:05	1,2,3,4,6,8-HxCDF (F)	35:12
1,2,3,7,8,9-HxCDD (L)	39:08	1,2,3,7,8,9-HxCDF (L)	39:42
1,2,3,4,6,7,9-HpCDD (F)	42:46	1,2,3,4,6,7,8-HpCDF (F)	42:14
1,2,3,4,6,7,8-HpCDD (L)	44:08	1,2,3,4,7,8,9-HpCDF (L)	45:03

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

=====

ISOMER SPECIFICITY (IS) TEST STANDARD RESULTS

% VALLEY HEIGHT
BETWEEN
COMPARED PEAKS (1)

<25%

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

Analyst:  Date: 5/5/11

USEPA - ITD

FORM 6B

PCDD/PCDF RELATIVE RETENTION TIMES

Lab Name: Frontier Analytical Laboratory

Episode No.:

Contract No.:

SAS No.:

Init. Cal. Date: 3/7/11

Instrument ID: FAL3

GC Column ID: DB5


Analysis Date: 4-MAY-11 08:42:22

CS3 or VER Data Filename: 04MAY11M


Sam:1

NATIVE ANALYTES	RETENTION TIME REFERENCE	RRT	RRT QC LIMITS (1)
1,2,3,4,7,8-HxCDD	13C-1,2,3,4,7,8-HxCDD	1.001	0.999-1.001
1,2,3,6,7,8-HxCDD	13C-1,2,3,6,7,8-HxCDD	1.000	0.998-1.004
1,2,3,7,8,9-HxCDD	13C-1,2,3,6,7,8-HxCDD	1.012	1.000-1.019
1,2,3,4,7,8-HxCDF	13C-1,2,3,4,7,8-HxCDF	1.001	0.999-1.001
1,2,3,6,7,8-HxCDF	13C-1,2,3,6,7,8-HxCDF	1.001	0.997-1.005
2,3,4,6,7,8-HxCDF	13C-2,3,4,6,7,8-HxCDF	1.001	0.999-1.001
1,2,3,7,8,9-HxCDF	13C-1,2,3,7,8,9-HxCDF	1.000	0.999-1.001
1,2,3,4,6,7,8-HpCDD	13C-1,2,3,4,6,7,8-HpCDD	1.001	0.999-1.001
1,2,3,4,6,7,8-HpCDF	13C-1,2,3,4,6,7,8-HpCDF	1.000	0.999-1.001
1,2,3,4,7,8,9-HpCDF	13C-1,2,3,4,7,8,9-HpCDF	1.001	0.999-1.001
OCDD	13C-OCDD	1.001	0.999-1.001
OCDF	13C-OCDF	1.001	0.999-1.001
LABELED COMPOUNDS			
13C-1,2,3,4,7,8-HxCDD	13C-1,2,3,7,8,9-HxCDD	0.984	0.977-1.000
13C-1,2,3,6,7,8-HxCDD		0.989	0.981-1.003
13C-1,2,3,4,7,8-HxCDF		0.949	0.944-0.970
13C-1,2,3,6,7,8-HxCDF		0.954	0.949-0.975
13C-2,3,4,6,7,8-HxCDF		0.978	0.959-1.021
13C-1,2,3,7,8,9-HxCDF		1.015	0.977-1.047
13C-1,2,3,4,6,7,8-HpCDD		1.127	1.086-1.130
13C-1,2,3,4,6,7,8-HpCDF		1.079	1.043-1.085
13C-1,2,3,4,7,8,9-HpCDF		1.151	1.057-1.154
13C-OCDD		1.269	1.032-1.311
13C-OCDF		1.279	1.000-1.311

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

Analyst: Date: 5/5/11

Name	Resp	RA	RT	RRF	Conc	Qual	Fac Noise-1	Noise-2	DL	Rec	#Hom
2,3,7,8-TCDD	3.93e+06	0.79 y	27:21	1.13	9.87		2.50	-	-	*	
1,2,3,7,8-PeCDD	1.63e+07	1.56 y	33:10	1.02	49.1		2.50	-	-	*	
1,2,3,4,7,8-HxCDD	1.68e+07	1.29 y	38:32	1.45	47.8		2.50	-	-	*	
1,2,3,6,7,8-HxCDD	1.33e+07	1.30 y	38:41	1.45	44.8		2.50	-	-	*	
1,2,3,7,8,9-HxCDD	1.61e+07	1.30 y	39:08	1.47	48.9		2.50	-	-	*	
1,2,3,4,6,7,8-HpCDD	1.19e+07	0.91 y	44:08	1.30	50.0		2.50	-	-	*	
OCDD	1.75e+07	0.94 y	49:40	1.45	97.1		2.50	-	-	*	
2,3,7,8-TCDF	7.08e+06	0.68 y	26:36	1.15	10.5		2.50	-	-	*	
1,2,3,7,8-PeCDF	2.28e+07	1.61 y	31:26	0.89	51.2		2.50	-	-	*	
2,3,4,7,8-PeCDF	2.15e+07	1.60 y	32:44	0.89	49.5		2.50	-	-	*	
1,2,3,4,7,8-HxCDF	1.78e+07	1.22 y	37:08	1.01	45.9		2.50	-	-	*	
1,2,3,6,7,8-HxCDF	2.14e+07	1.22 y	37:21	0.89	47.8		2.50	-	-	*	
2,3,4,6,7,8-HxCDF	1.89e+07	1.21 y	38:17	1.02	45.9		2.50	-	-	*	
1,2,3,7,8,9-HxCDF	2.17e+07	1.22 y	39:42	1.10	47.1		2.50	-	-	*	
1,2,3,4,6,7,8-HpCDF	1.46e+07	1.06 y	42:14	1.48	47.5		2.50	-	-	*	
1,2,3,4,7,8,9-HpCDF	1.09e+07	1.06 y	45:03	1.43	47.6		2.50	-	-	*	
OCDF	1.79e+07	0.92 y	50:02	0.84	92.1		2.50	-	-	*	
13C-2,3,7,8-TCDD	3.52e+07	0.74 y	27:19	1.03	92.7					92.7	
13C-1,2,3,7,8-PeCDD	3.28e+07	1.77 y	33:08	1.01	87.9					87.9	
13C-1,2,3,4,7,8-HxCDD	2.43e+07	1.31 y	38:31	1.19	94.9					94.9	
13C-1,2,3,6,7,8-HxCDD	2.03e+07	1.20 y	38:41	0.94	101					101	
13C-1,2,3,4,6,7,8-HpCDD	1.82e+07	1.04 y	44:06	0.83	103					103	
13C-OCDD	2.48e+07	0.98 y	49:38	0.61	190					95.1	
13C-2,3,7,8-TCDF	5.89e+07	0.87 y	26:34	0.98	96.9					96.9	
13C-1,2,3,7,8-PeCDF	5.03e+07	1.68 y	31:25	0.83	97.8					97.8	
13C-2,3,4,7,8-PeCDF	4.87e+07	1.73 y	32:43	0.80	97.7					97.7	
13C-1,2,3,4,7,8-HxCDF	3.83e+07	0.46 y	37:07	1.84	96.9					96.9	
13C-1,2,3,6,7,8-HxCDF	5.03e+07	0.46 y	37:19	2.29	102					102	
13C-2,3,4,6,7,8-HxCDF	4.05e+07	0.47 y	38:15	1.86	101					101	
13C-1,2,3,7,8,9-HxCDF	4.17e+07	0.47 y	39:41	1.98	98.0					98.0	
13C-1,2,3,4,6,7,8-HpCDF	2.08e+07	0.45 y	42:13	0.99	97.9					97.9	
13C-1,2,3,4,7,8,9-HpCDF	1.60e+07	0.45 y	45:01	0.77	97.3					97.3	
13C-OCDF	4.62e+07	0.95 y	50:01	1.17	184					92.2	
37Cl-2,3,7,8-TCDD	2.22e+06		27:20	0.73	8.25					82.5	
13C-1,2,3,4-TCDD	3.69e+07	0.76 y	26:46	-	97.0						
13C-1,2,3,4-TCDF	6.20e+07	0.88 y	25:30	-	86.2						
13C-1,2,3,7,8,9-HxCDD	2.15e+07	1.26 y	39:07	-	86.6						
Total Tetra-Dioxins	2.06e+07		24:21	1.13	51.6		2.50	-	-	*	19
Total Penta-Dioxins	3.52e+07		30:12	1.02	106		2.50	-	-	*	7
Total Hexa-Dioxins	5.24e+07		36:05	1.46	161		2.50	-	-	*	22
Total Hepta-Dioxins	2.37e+07		42:46	1.30	100		2.50	-	-	*	18
Total Tetra-Furans	3.39e+07		23:01	1.15	50.2		2.50	-	-	*	12
1st Fn. Tot Penta-Furans	2.69e+07		28:23	0.89	61.2		2.50	-	-	*	PeCDF 1
Total Penta-Furans	6.35e+07		30:08	0.89	144		2.50	-	-	*	205 13
Total Hexa-Furans	9.22e+07		35:12	1.00	216		2.50	-	-	*	14
Total Hepta-Furans	2.57e+07		42:14	1.46	95.8		2.50	-	-	*	7

Analyst: 

Date: 5/5/11

Frontier Analytical Laboratory - Acquisition Log

Run Name:04MAY11M

Instrument: FAL3

GC: DB5

Experiment:OCDD

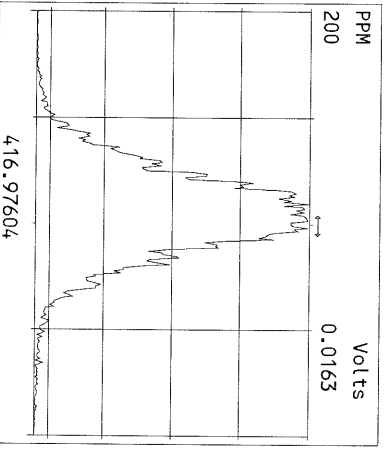
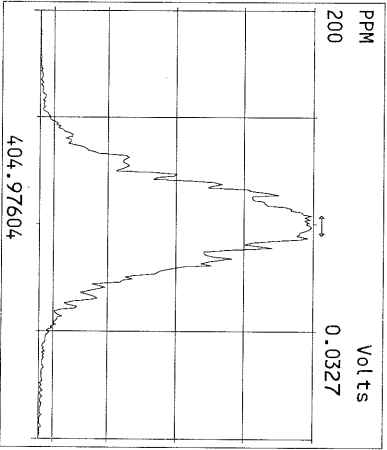
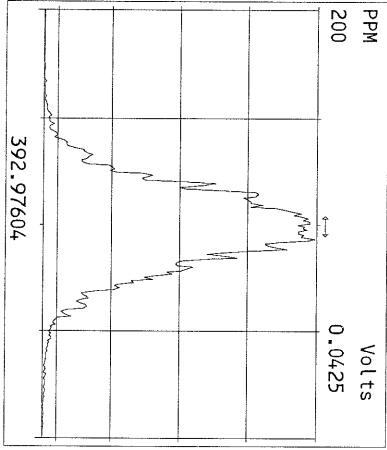
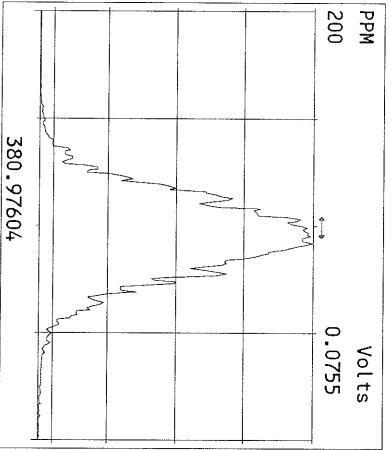
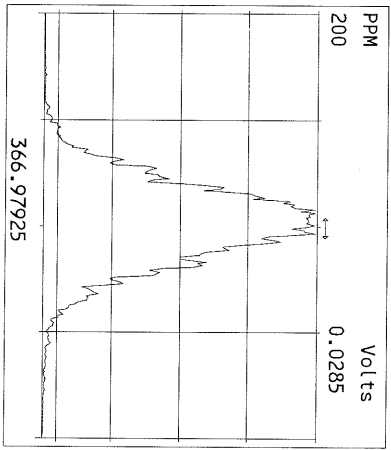
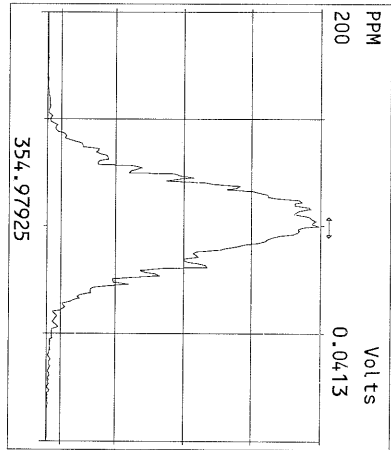
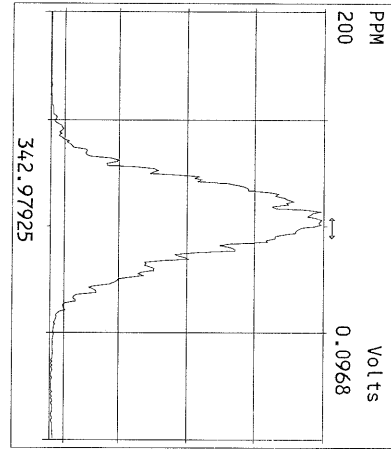
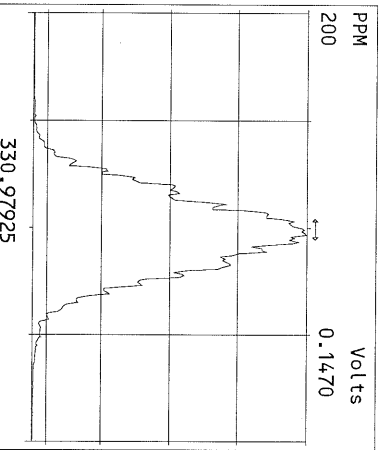
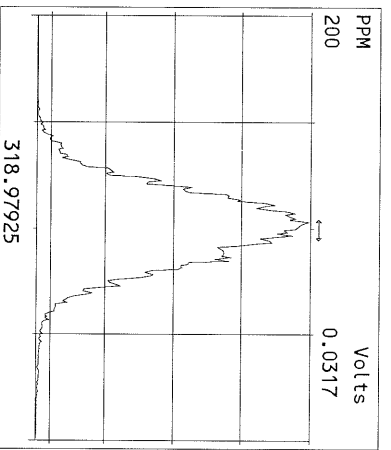
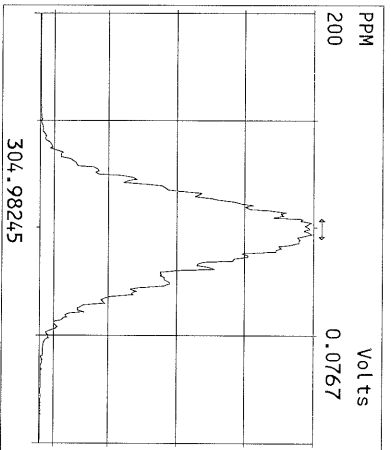
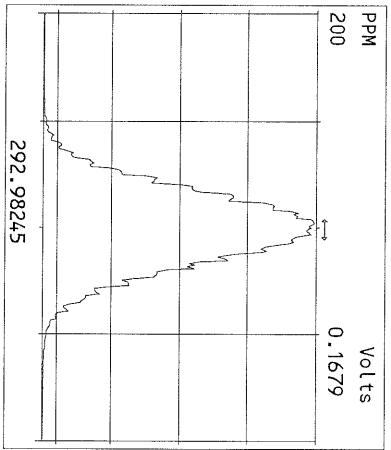
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04MAY11M	3	2282-001-0001-MB	Method Blank	4-MAY-11 10:32:58	ST050411M1	ST050411M2	TC
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5/5/11

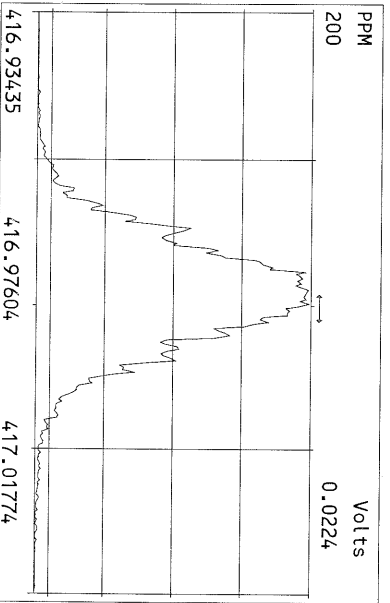
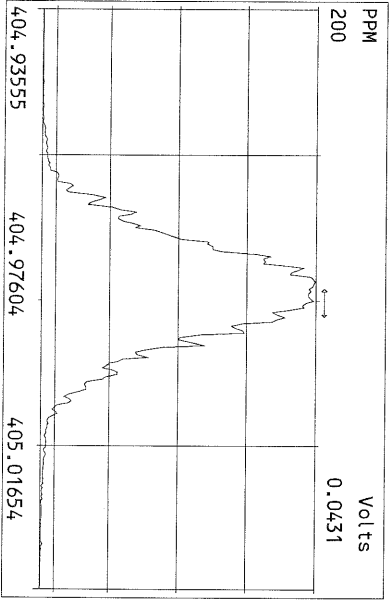
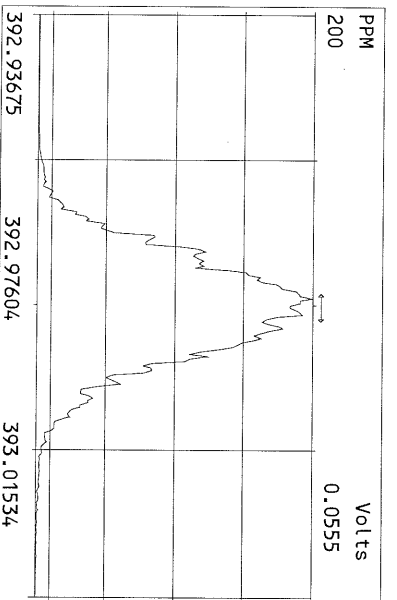
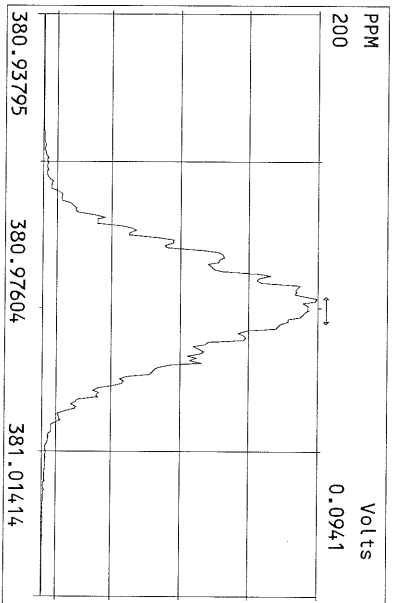
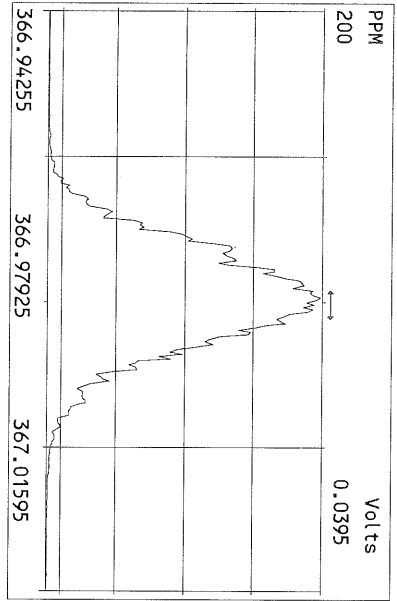
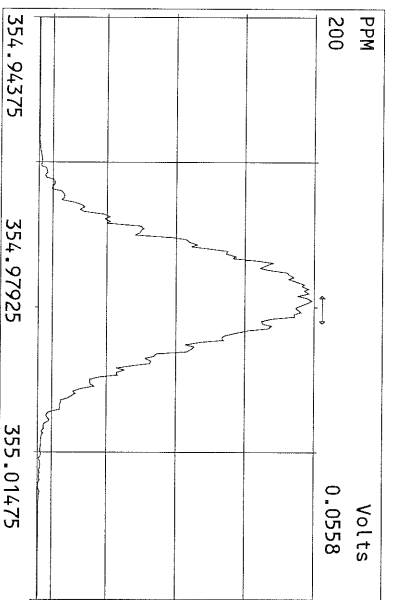
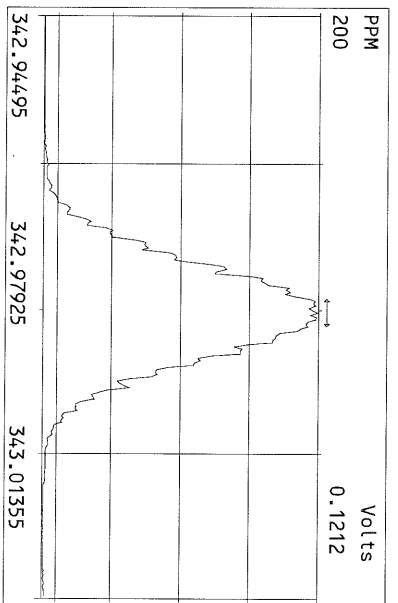
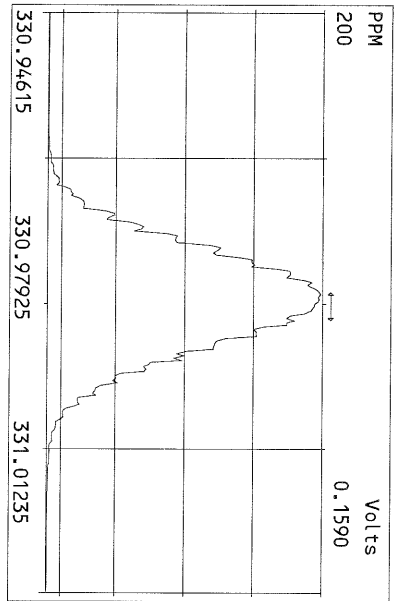
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Date: _____

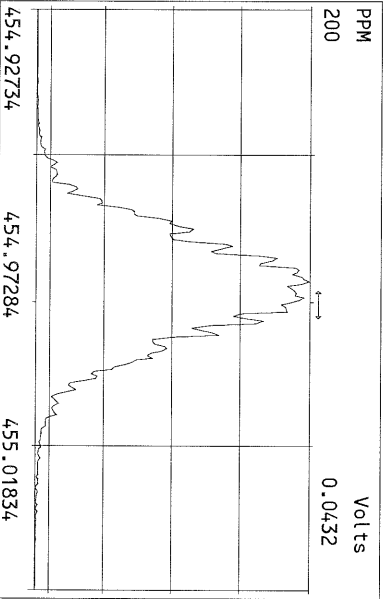
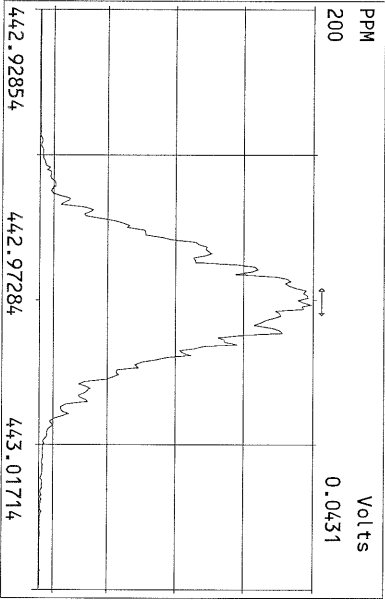
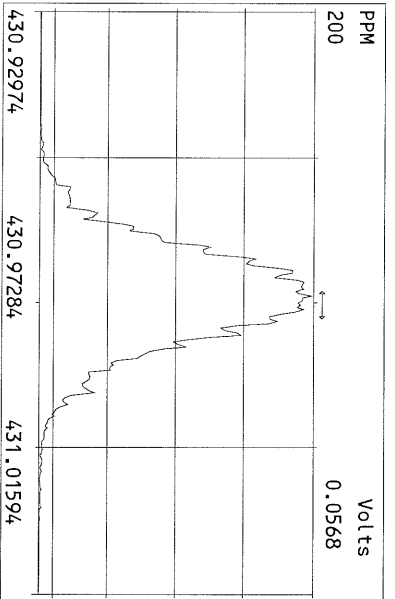
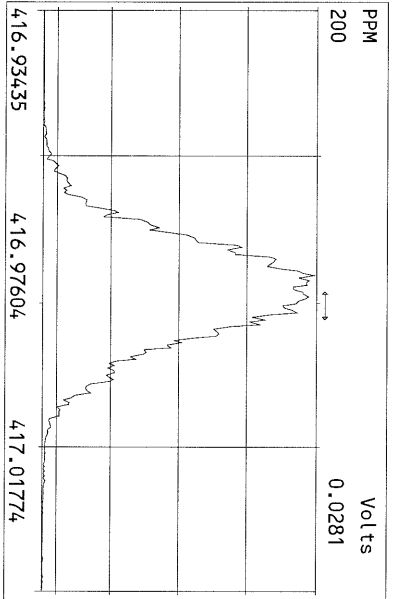
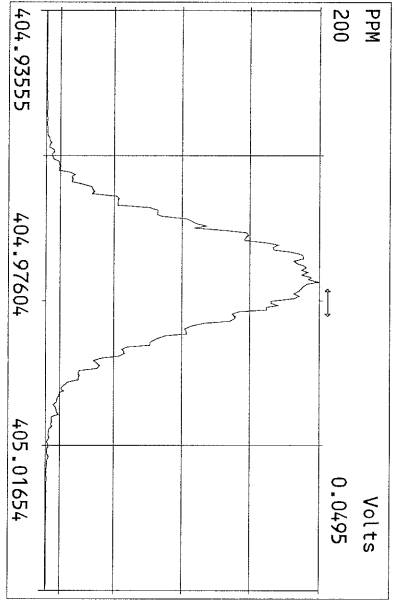
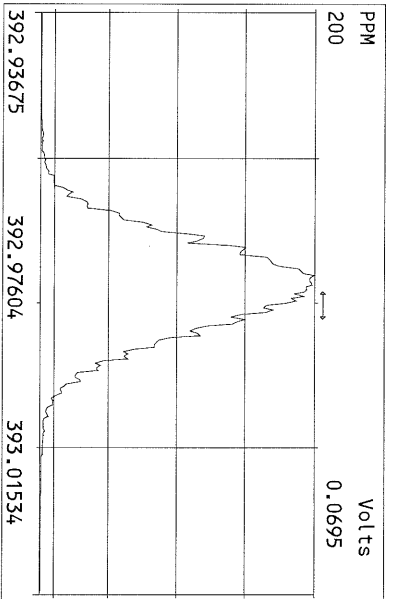
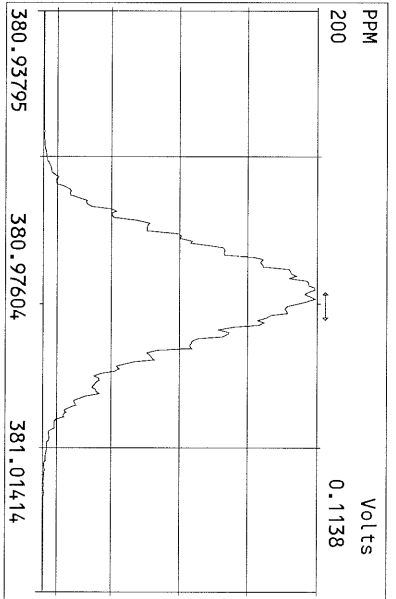
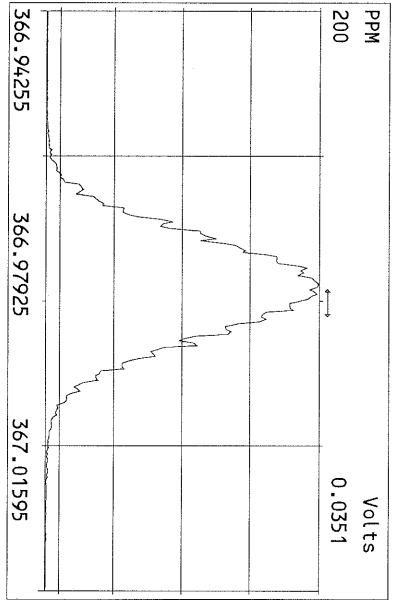
Peak Locate Examination: 4-MAY-2011:08:40 File:04MAY11M
Experiment:OCDD Function:1 Reference:PFK



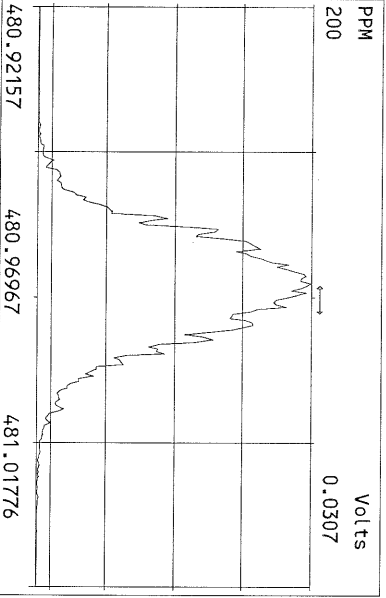
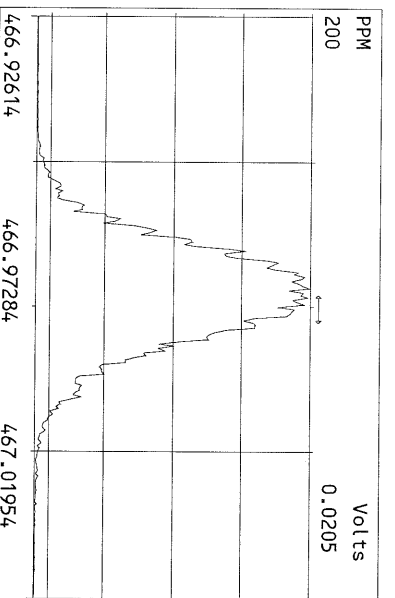
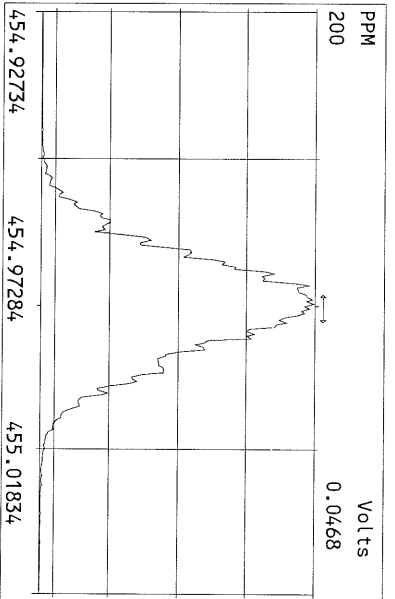
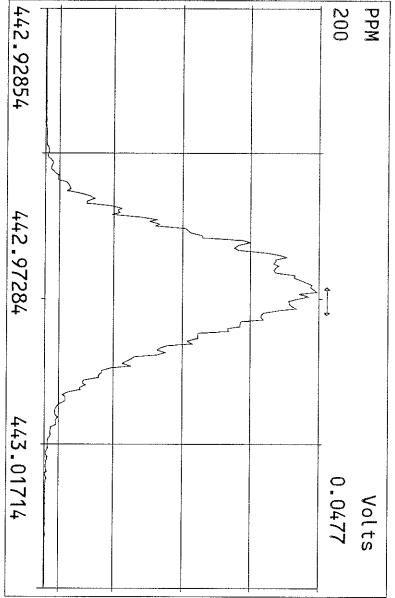
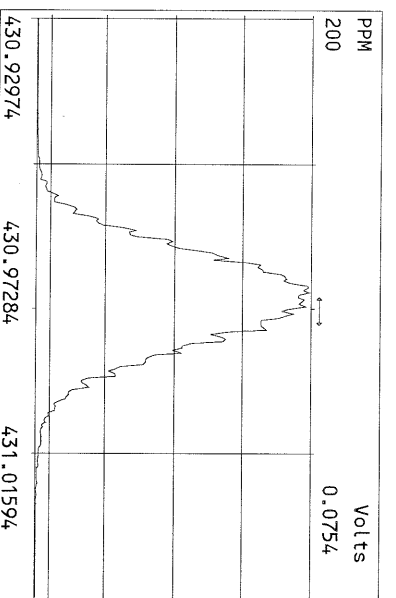
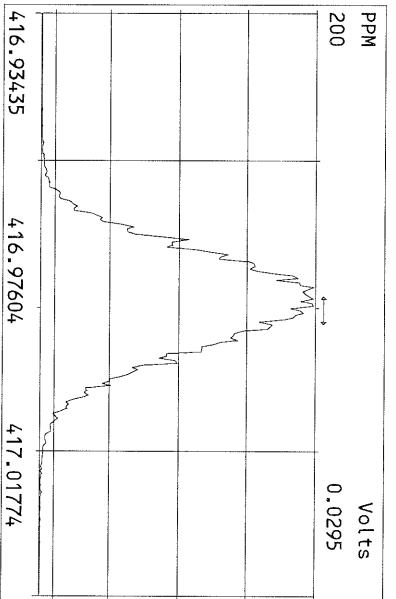
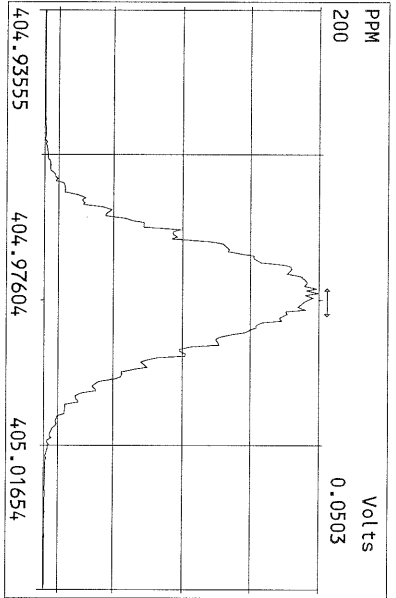
Peak Locate Examination: 4-MAY-2011:08:40 File:04MAY11M
Experiment:OCDD Function:2 Reference:PFK

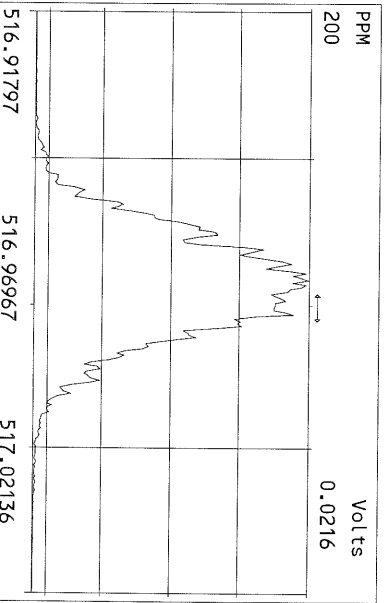
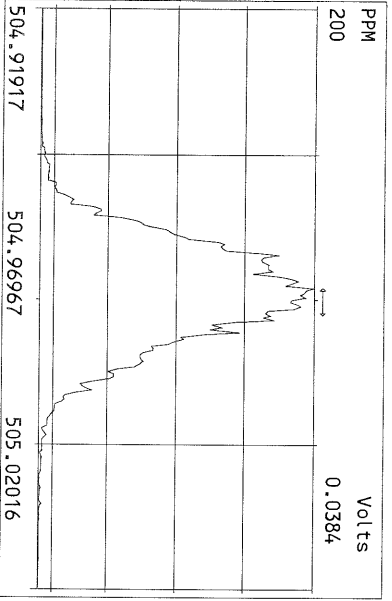
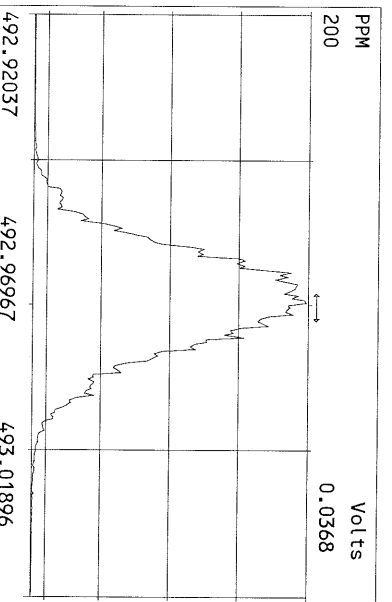
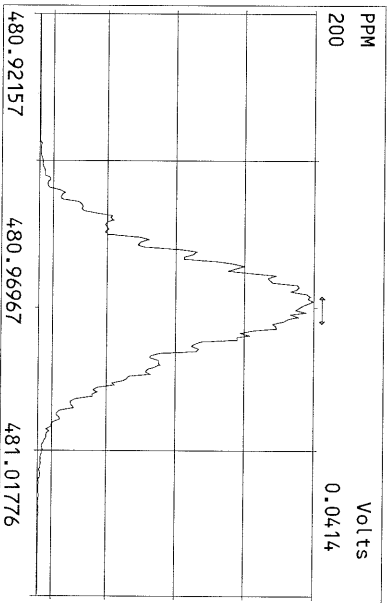
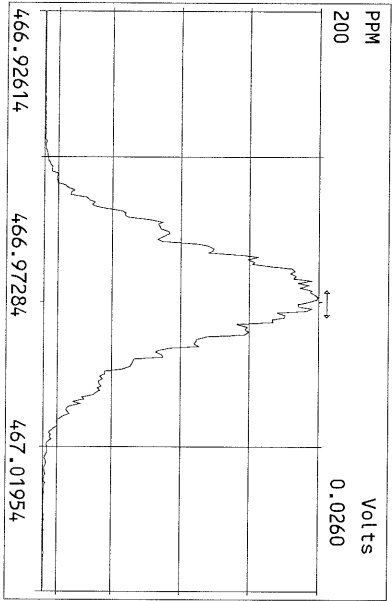
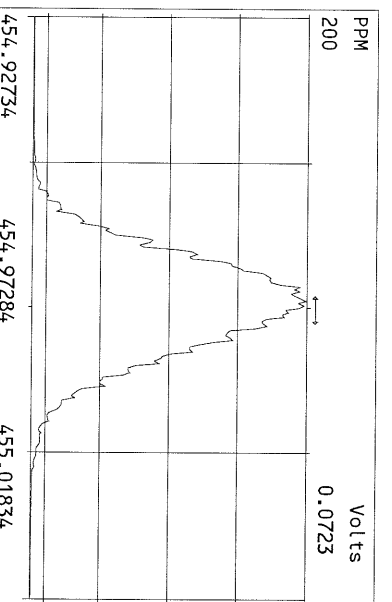
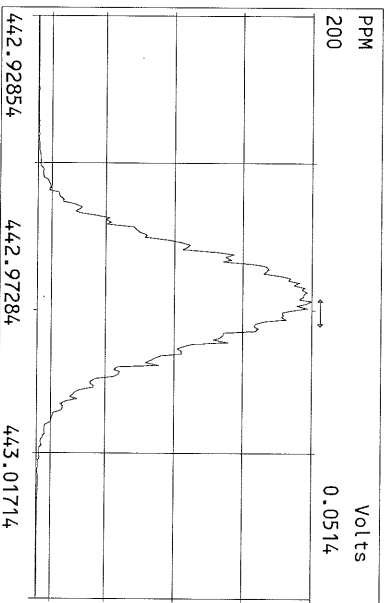
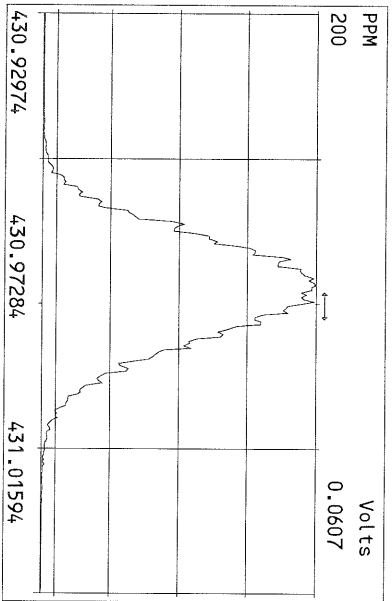


Peak Locate Examination: 4-MAY-2011:08:41 File:04MAY11M
Experiment:OCD Function:3 Reference:PK

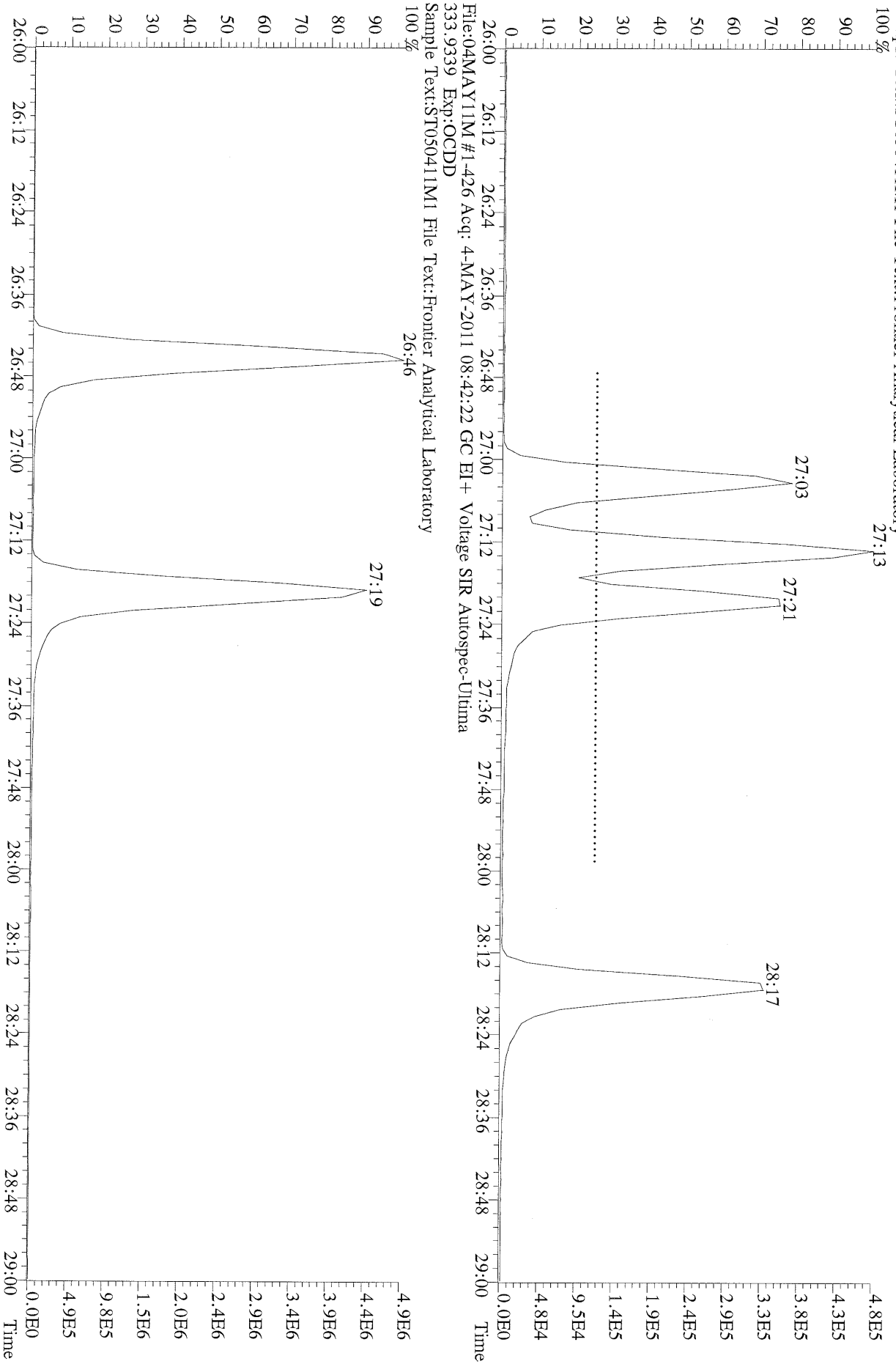


Peak Locate Examination: 4-MAY-2011:08:41 File:04MAY11M
Experiment:OCDD Function:4 Reference:PFK

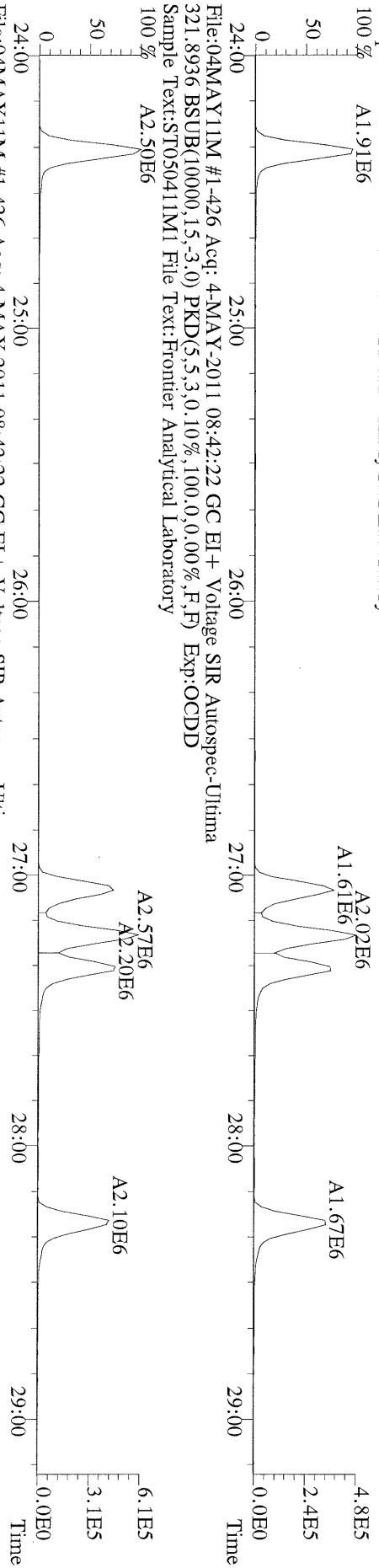




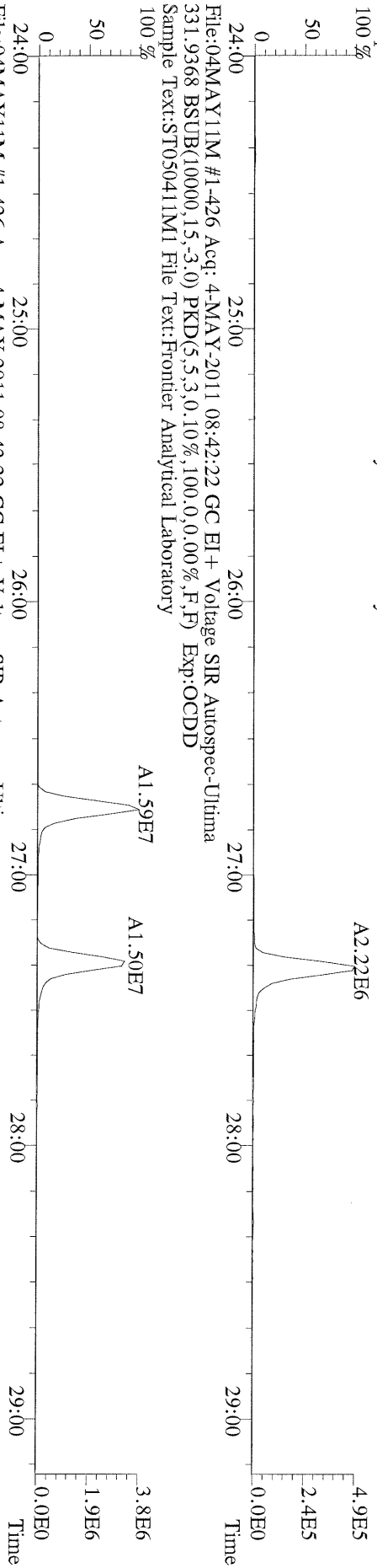
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319.8965 Exp:OCDD
Sample Text:ST05041IM1 File Text:Frontier Analytical Laboratory
100 %



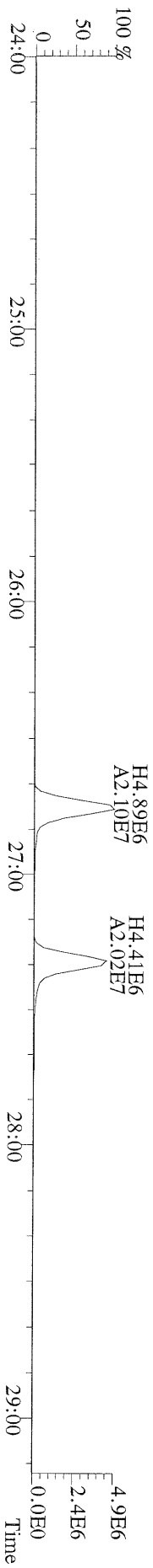
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319.8965 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100.0,0.00%,F,F) Exp:OCDD
Sample Text:ST050411M1 File Text:Frontier Analytical Laboratory



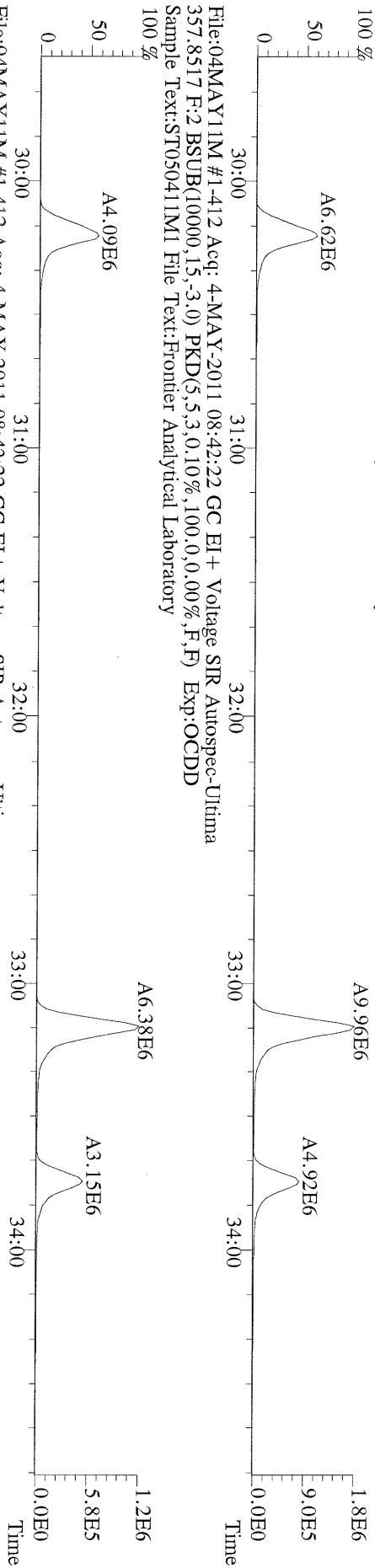
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327.8847 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100.0,0.00%,F,F) Exp:OCDD
Sample Text:ST050411M1 File Text:Frontier Analytical Laboratory



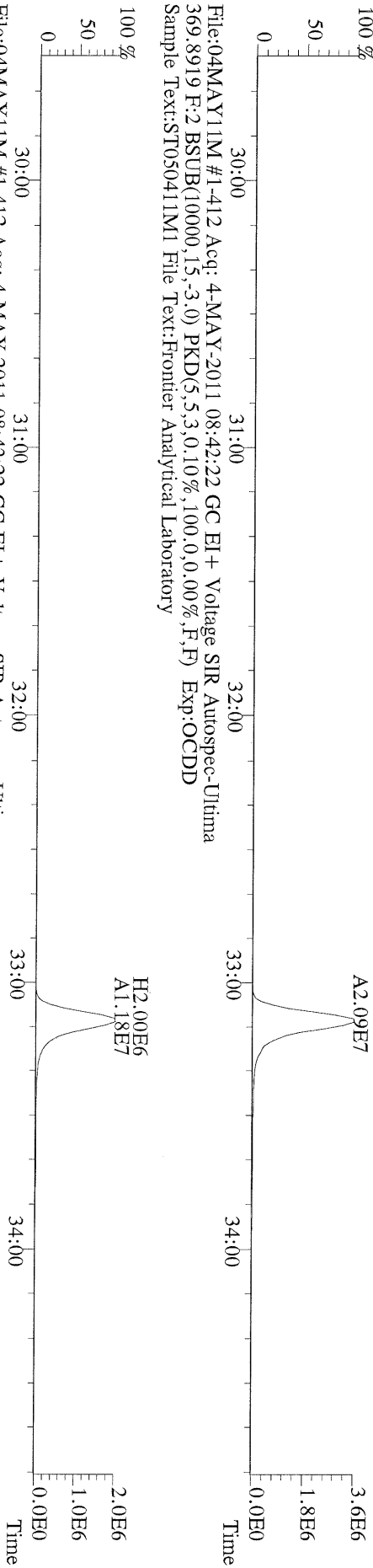
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333.9339 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100.0,0.00%,F,F) Exp:OCDD
Sample Text:ST050411M1 File Text:Frontier Analytical Laboratory



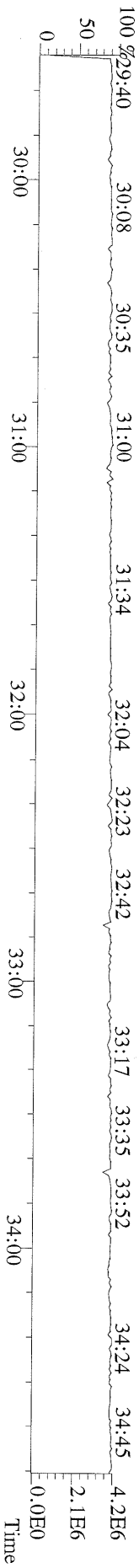
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355.8546 F:2 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:OCDD
Sample Text:ST050411M1 File Text:Frontier Analytical Laboratory



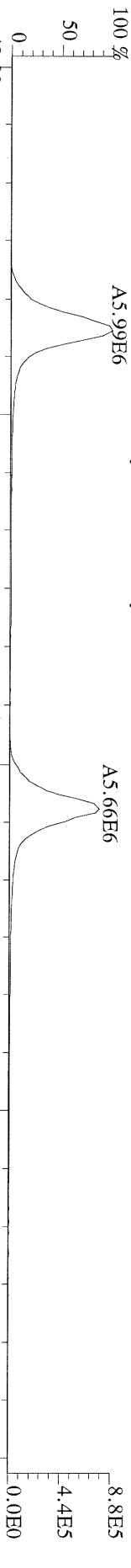
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367.8949 F:2 BSUB(10000,15,-3.0) PKD(5,5.3,0.10%,100.0,0.00%,F,F) Exp:OCDD
Sample Text:ST050411M1 File Text:Frontier Analytical Laboratory



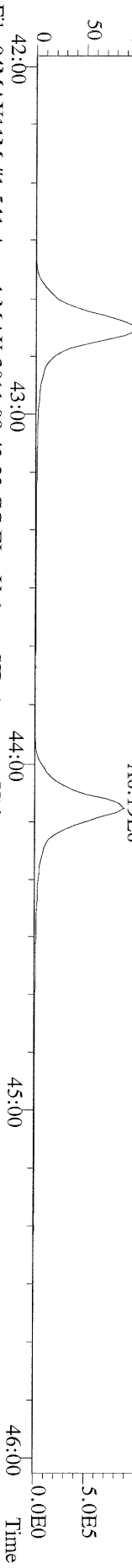
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366.9792 F:2 Exp:OCDD
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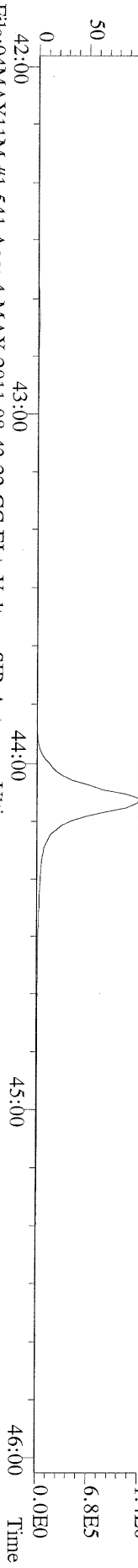
File:04MAY11M #1-541 Acq: 4-MAY-2011 08:42:22 GC EI+ Voltage SIR Autospec-Utima
423.7767 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:OCDD
Sample Text:ST050411M1 File Text:Frontier Analytical Laboratory



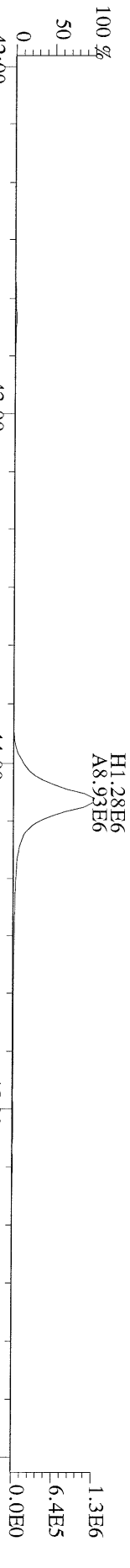
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425.7737 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:OCDD
Sample Text:ST050411M1 File Text:Frontier Analytical Laboratory



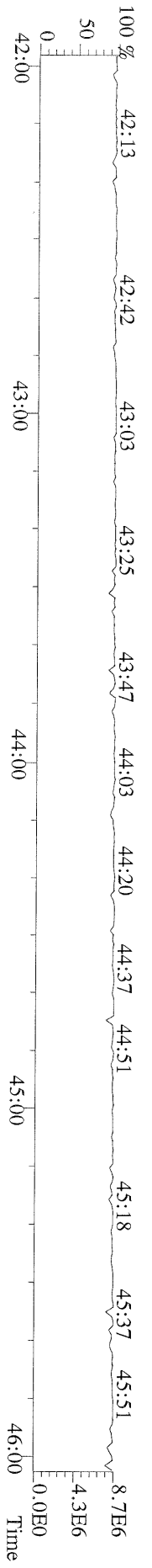
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435.8169 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:OCDD
Sample Text:ST050411M1 File Text:Frontier Analytical Laboratory



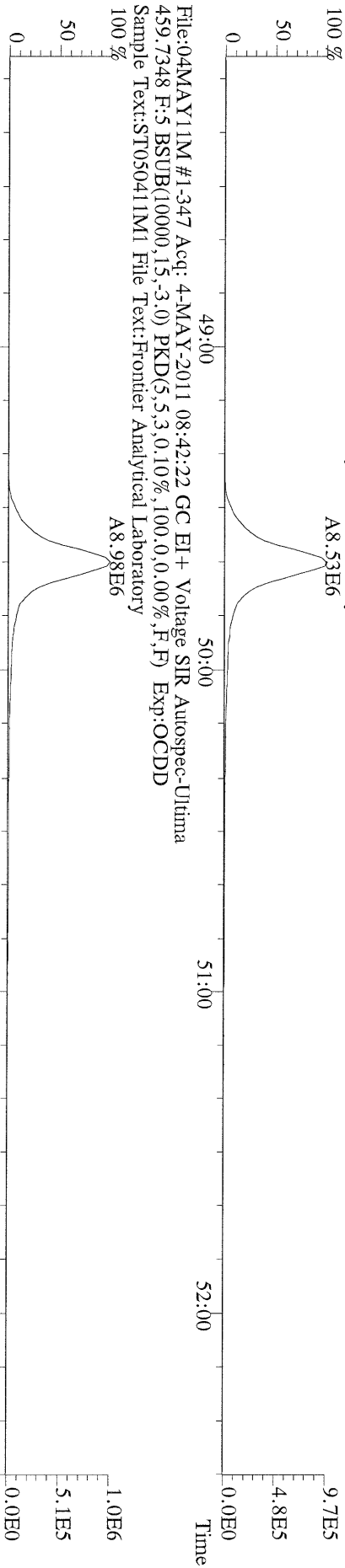
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437.8140 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:OCDD
Sample Text:ST050411M1 File Text:Frontier Analytical Laboratory



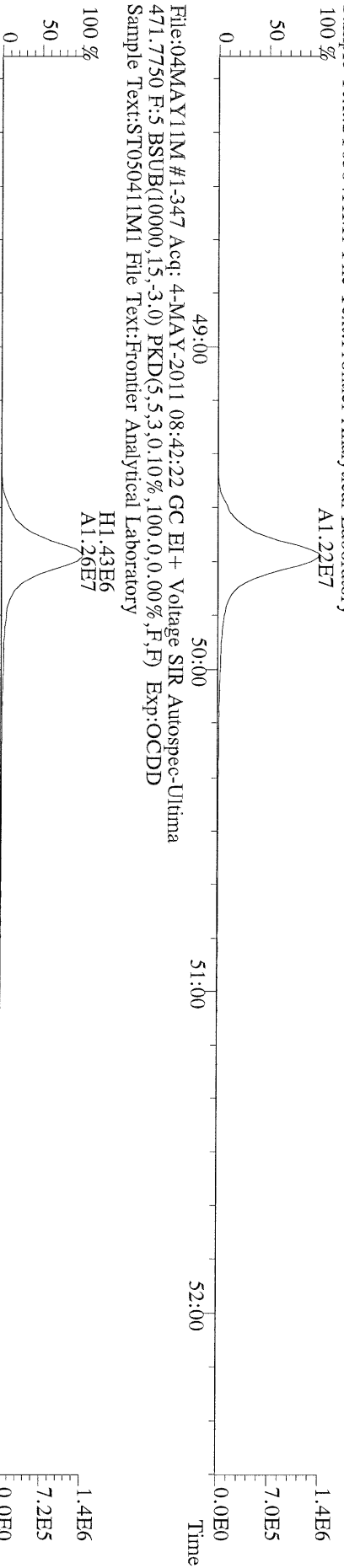
File:04MAY11M #1-541 Acq: 4-MAY-2011 08:42:22 GC EI+ Voltage SIR Autospec-Utima
430.9728 F:4 Exp:OCDD
Sample Text:ST050411M1 File Text:Frontier Analytical Laboratory



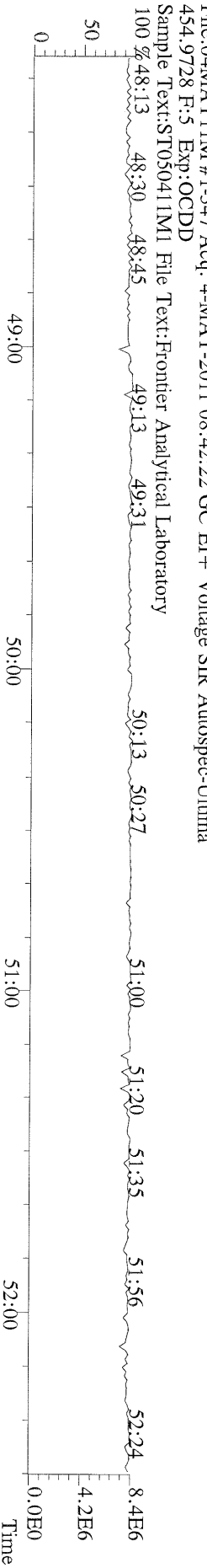
File:04MAY11M #1-347 Acq: 4-MAY-2011 08:42:22 GC EI+ Voltage SIR Autospec-Utima
457.7377 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:OCDD
Sample Text:ST05041IM1 File Text:Frontier Analytical Laboratory
100 %



File:04MAY11M #1-347 Acq: 4-MAY-2011 08:42:22 GC EI+ Voltage SIR Autospec-Utima
469.7780 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:OCDD
Sample Text:ST05041IM1 File Text:Frontier Analytical Laboratory
100 %



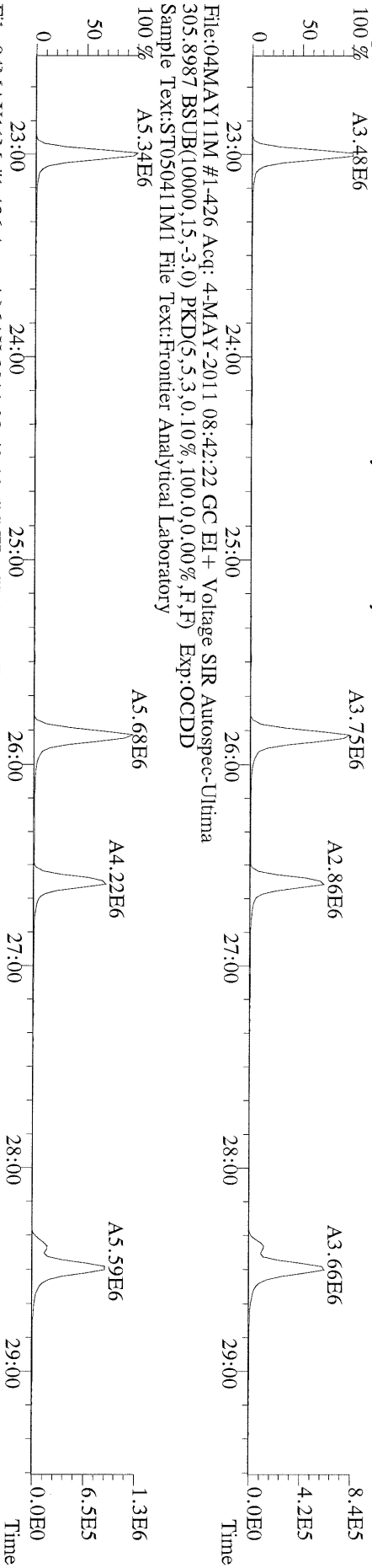
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471.7750 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:OCDD
Sample Text:ST05041IM1 File Text:Frontier Analytical Laboratory
100 %



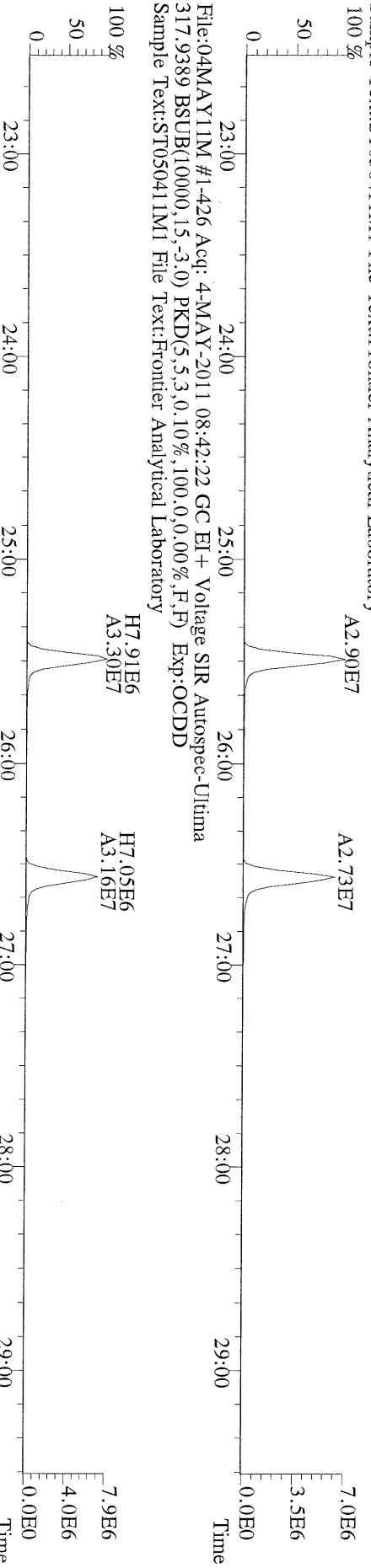
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484.9728 F:5 Exp:OCDD
Sample Text:ST05041IM1 File Text:Frontier Analytical Laboratory
100 %



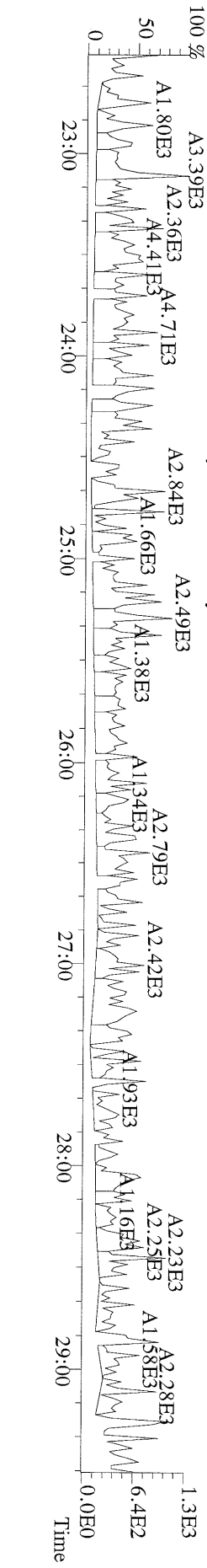
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303.9016 BSUB(10000,15,-3,0) PKD(5,5,3,0,100,0,0,00%,F,F) Exp:OCDD
Sample Text:ST050411M1 File Text:Frontier Analytical Laboratory
100 % A3.48E6



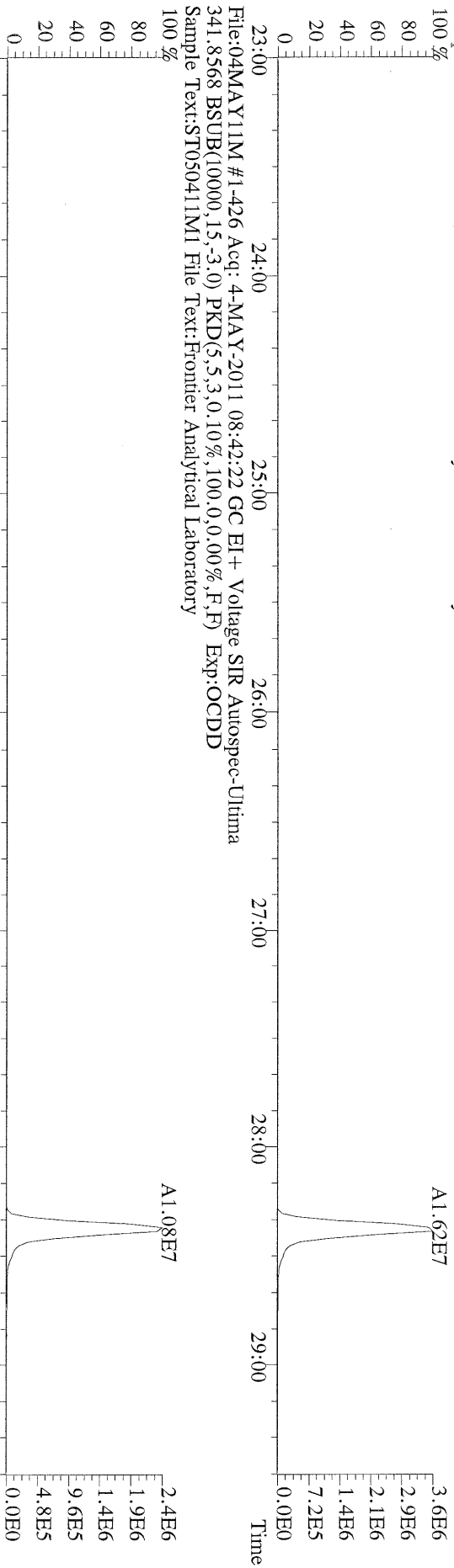
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315.9419 BSUB(10000,15,-3,0) PKD(5,5,3,0,100,0,0,00%,F,F) Exp:OCDD
Sample Text:ST050411M1 File Text:Frontier Analytical Laboratory
100 % A2.90E7



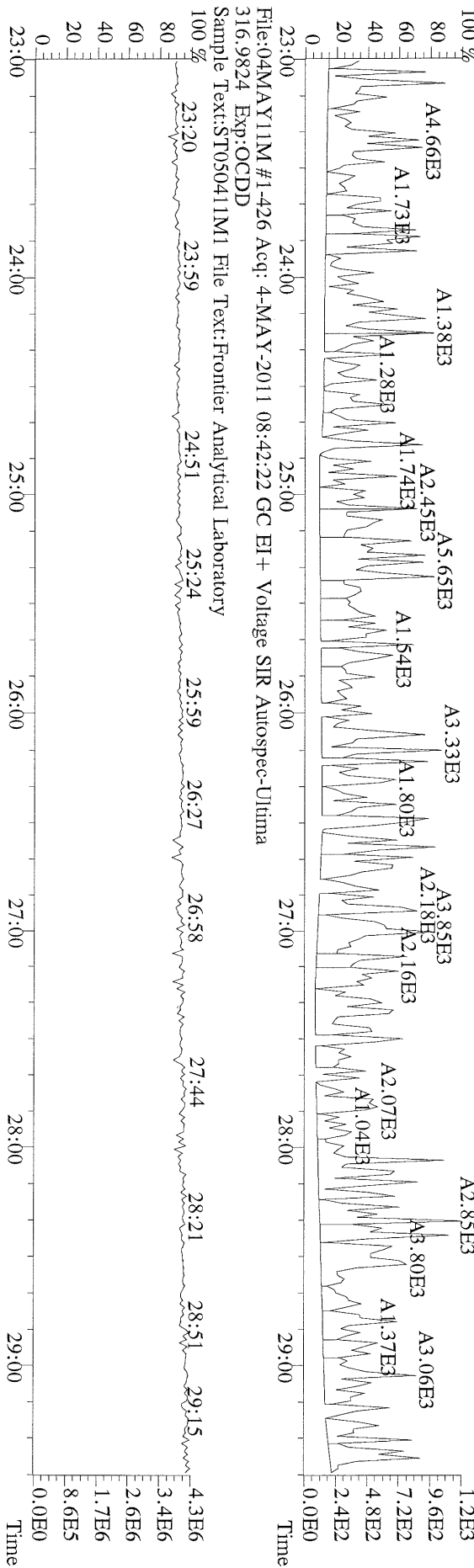
File:04MAY11M #1-426 Acq: 4-MAY-2011 08:42:22 GC EI+ Voltage SIR Autospec-Utima
375.8364 BSUB(10000,15,-3,0) PKD(5,5,3,0,100,0,0,00%,F,F) Exp:OCDD
Sample Text:ST050411M1 File Text:Frontier Analytical Laboratory
100 % A1.80E3



File:04MAY11M #1-426 Acq: 4-MAY-2011 08:42:22 GC EI+ Voltage SIR Autospec-Utima
 339.8597 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:OCDD
 Sample Text:ST050411M1 File Text:Frontier Analytical Laboratory

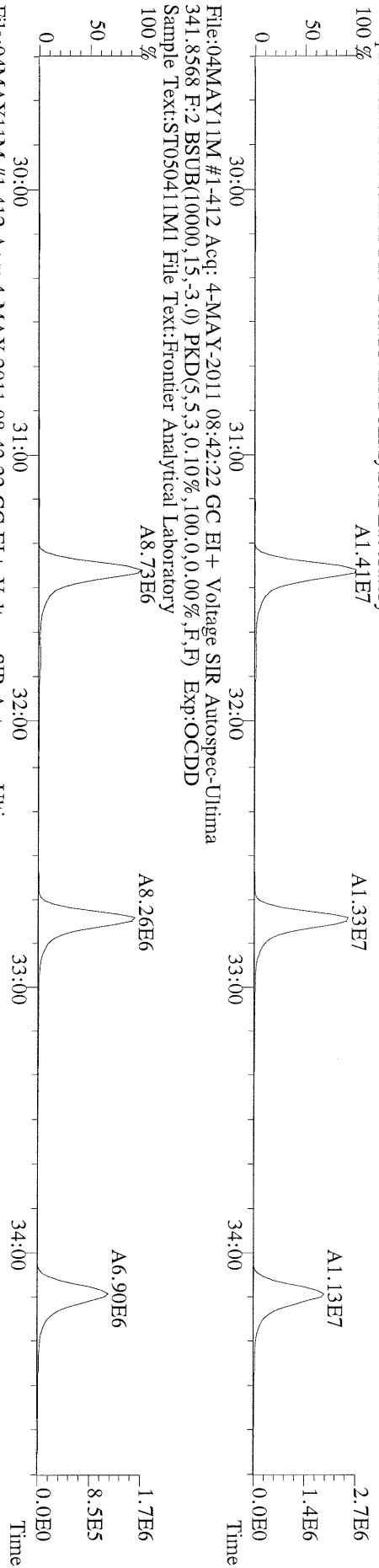


File:04MAY11M #1-426 Acq: 4-MAY-2011 08:42:22 GC EI+ Voltage SIR Autospec-Utima
 409.7974 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:OCDD
 Sample Text:ST050411M1 File Text:Frontier Analytical Laboratory

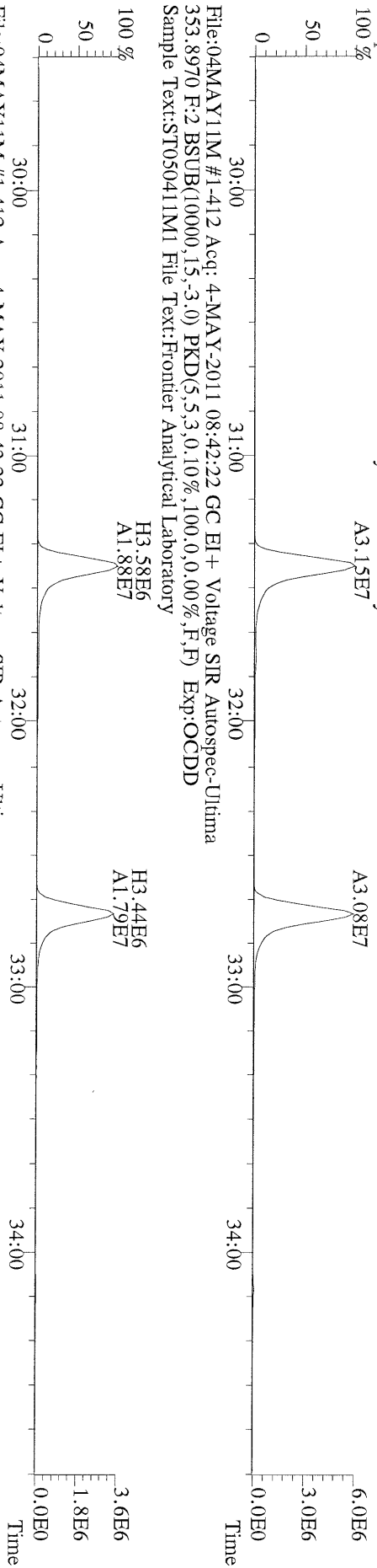


File:04MAY11M #1-426 Acq: 4-MAY-2011 08:42:22 GC EI+ Voltage SIR Autospec-Utima
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 Sample Text:ST050411M1 File Text:Frontier Analytical Laboratory

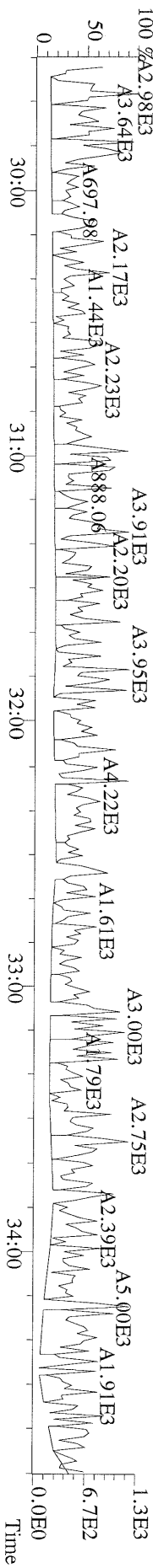
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339.8597 F.2: BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:OCDD
Sample Text:ST05041M1 File Text:Frontier Analytical Laboratory
100 %



File:04MAY11M #1-412 Acq: 4-MAY-2011 08:42:22 GC EI+ Voltage SIR Autospec-Utima
351.9000 F.2: BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:OCDD
Sample Text:ST05041M1 File Text:Frontier Analytical Laboratory
100 %

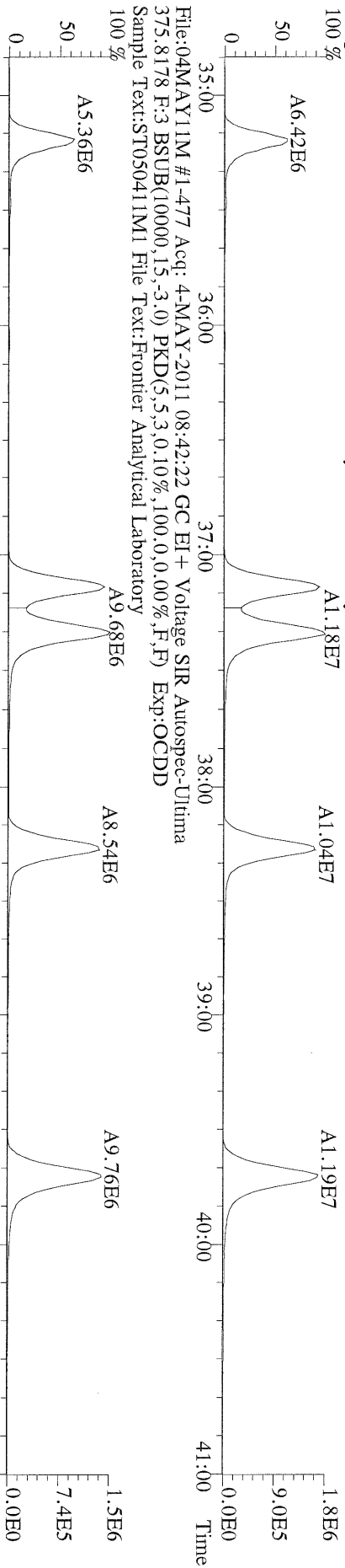


File:04MAY11M #1-412 Acq: 4-MAY-2011 08:42:22 GC EI+ Voltage SIR Autospec-Utima
409.7974 F.2: BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:OCDD
Sample Text:ST05041M1 File Text:Frontier Analytical Laboratory
100 %



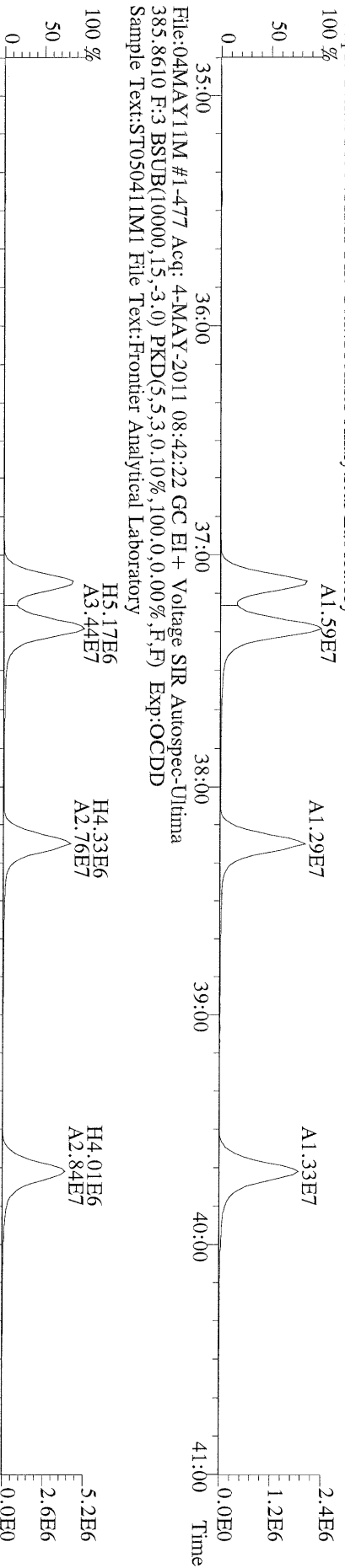
File:04MAY11M #1-477 Acq: 4-MAY-2011 08:42:22 GC EI+ Voltage SIR Autospec-Utima
373.8207 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:OCDD

Sample Text:ST05041IM1 File Text:Frontier Analytical Laboratory



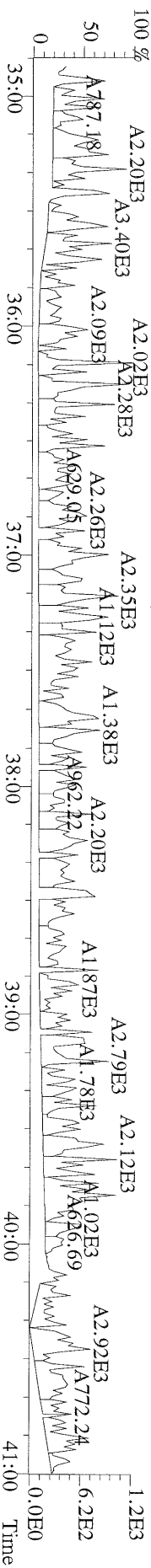
File:04MAY11M #1-477 Acq: 4-MAY-2011 08:42:22 GC EI+ Voltage SIR Autospec-Utima
383.8639 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:OCDD

Sample Text:ST05041IM1 File Text:Frontier Analytical Laboratory

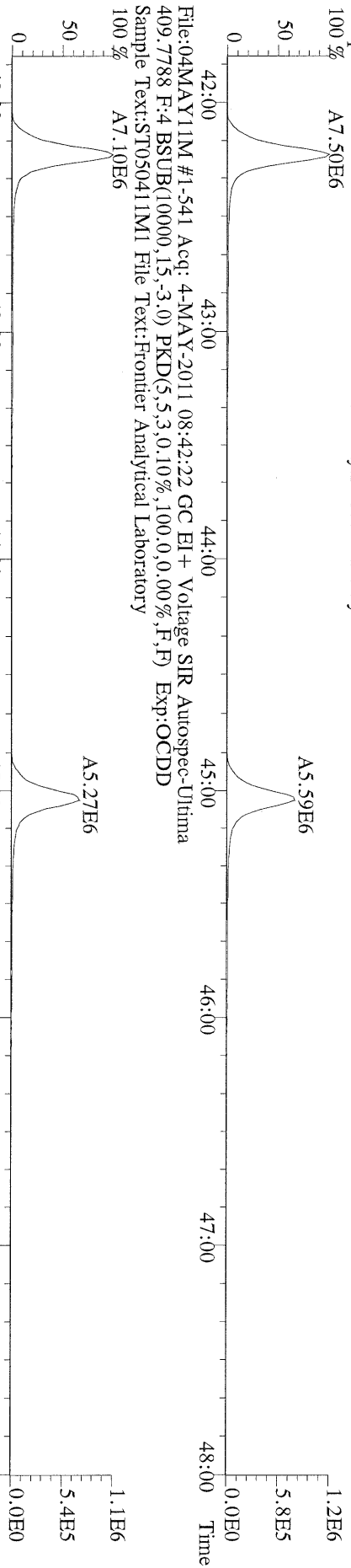


File:04MAY11M #1-477 Acq: 4-MAY-2011 08:42:22 GC EI+ Voltage SIR Autospec-Utima
445.7555 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:OCDD

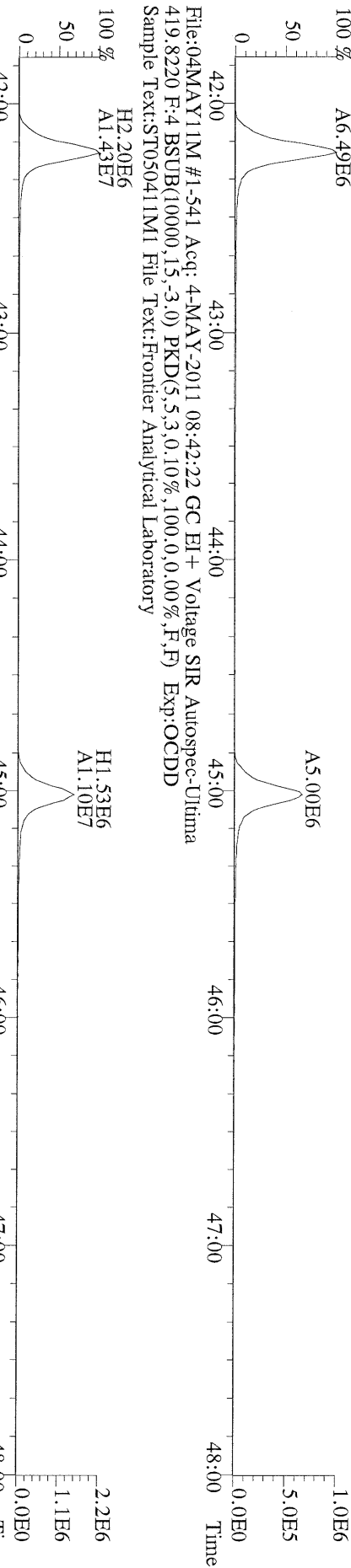
Sample Text:ST05041IM1 File Text:Frontier Analytical Laboratory



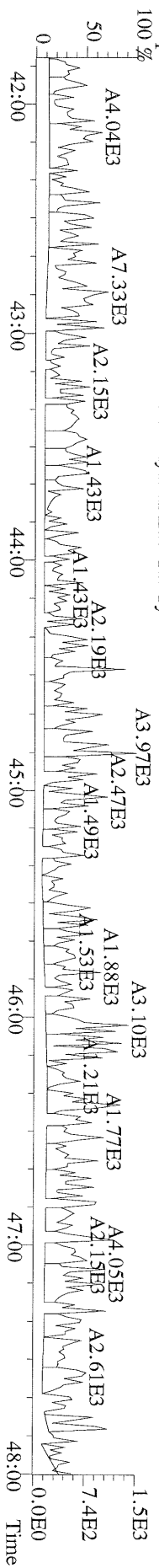
File:04MAY11M #1-541 Acq: 4-MAY-2011 08:42:22 GC EI+ Voltage SIR Autospec-Utima
407.7818 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:OCDD
Sample Text:ST05041IM1 File Text:Frontier Analytical Laboratory
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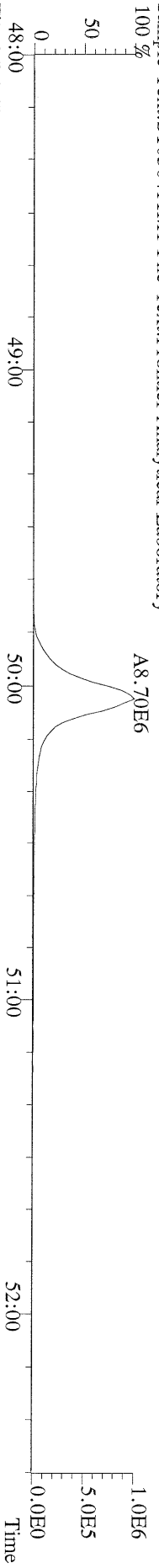
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417.8253 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:OCDD
Sample Text:ST05041IM1 File Text:Frontier Analytical Laboratory
100 % A6.49E6



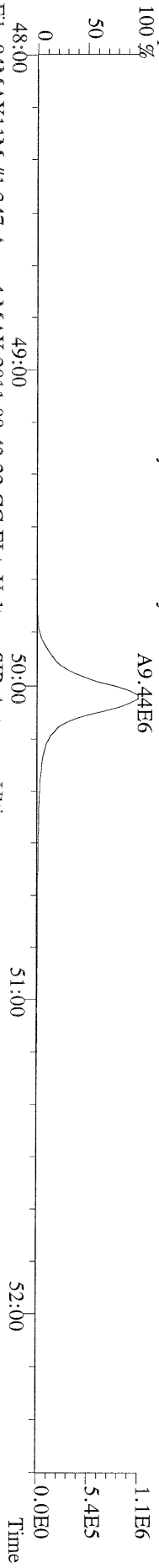
File:04MAY11M #1-541 Acq: 4-MAY-2011 08:42:22 GC EI+ Voltage SIR Autospec-Utima
479.7165 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:OCDD
Sample Text:ST05041IM1 File Text:Frontier Analytical Laboratory
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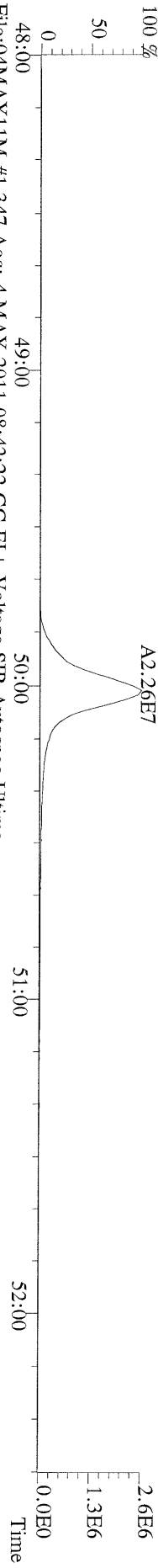
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441.7428 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:OCDD
Sample Text:ST05041IM1 File Text:Frontier Analytical Laboratory



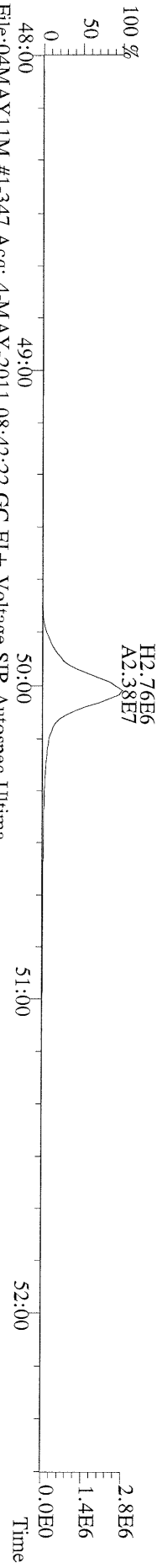
File:04MAY11M #1-347 Acq: 4-MAY-2011 08:42:22 GC EI+ Voltage SIR Autospec-Ultima
443.7398 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:OCDD
Sample Text:ST05041IM1 File Text:Frontier Analytical Laboratory



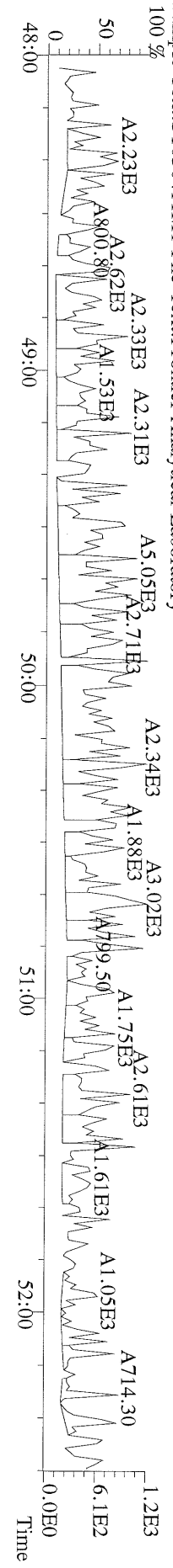
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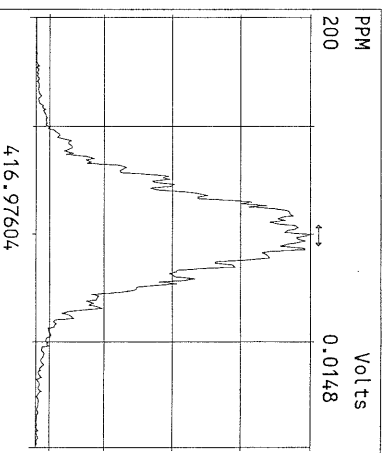
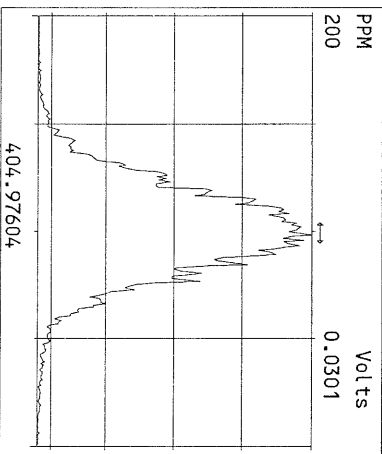
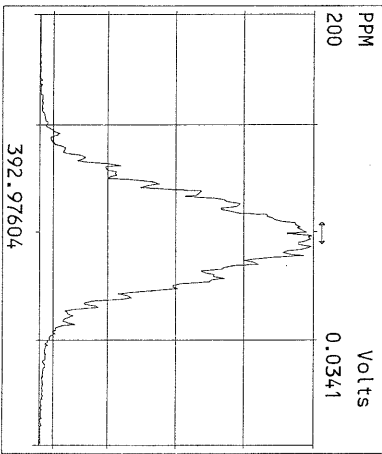
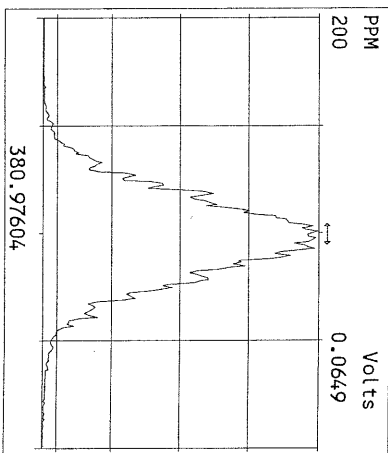
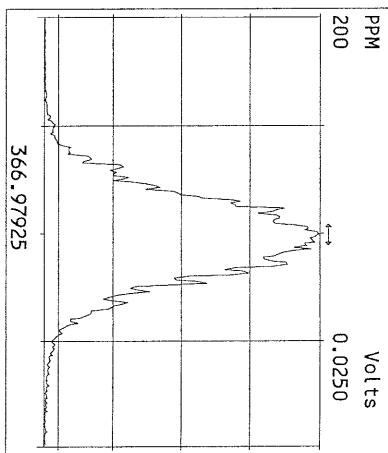
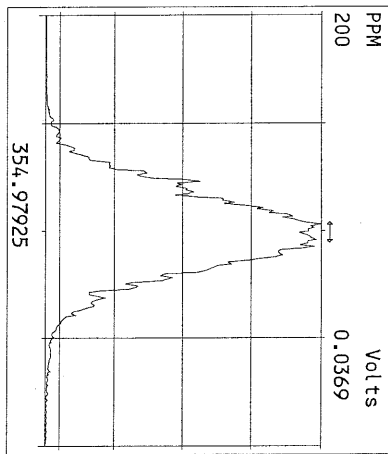
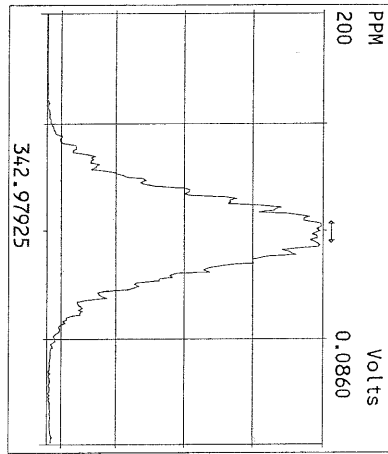
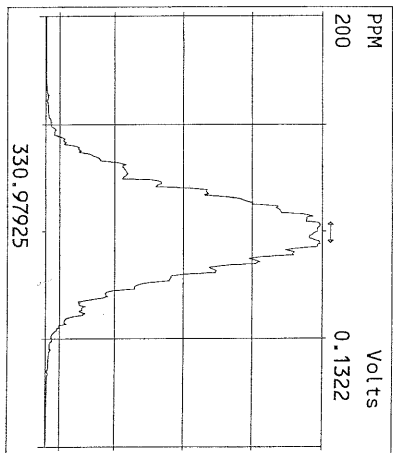
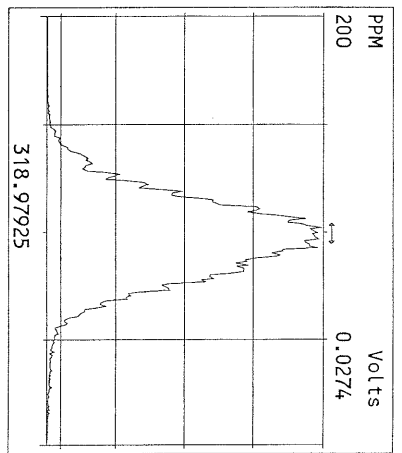
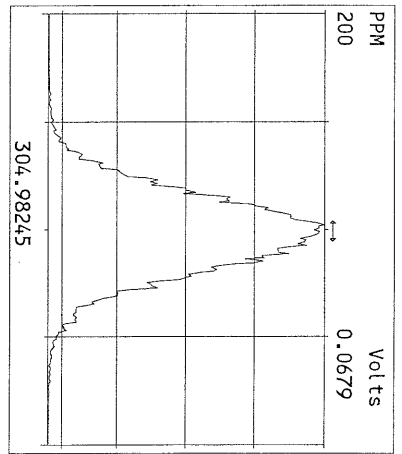
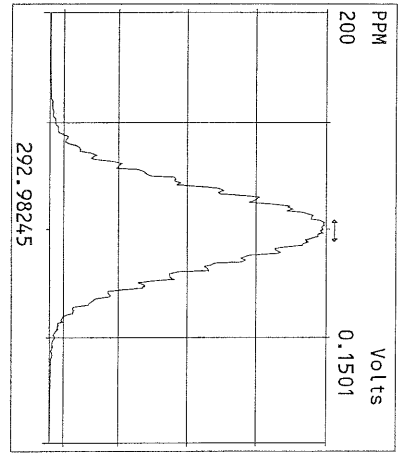


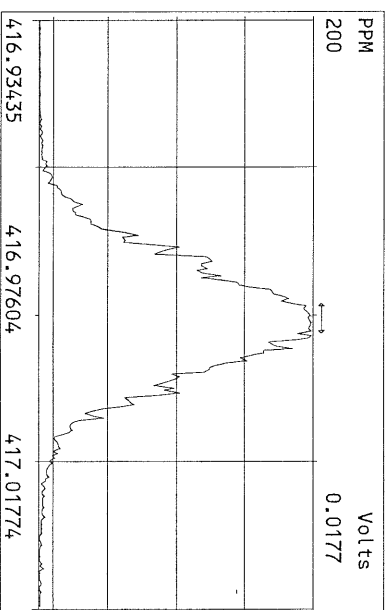
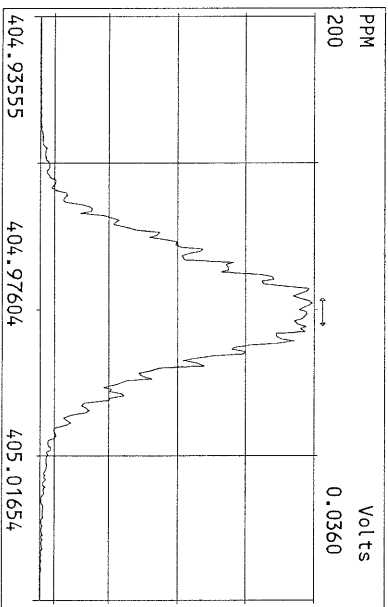
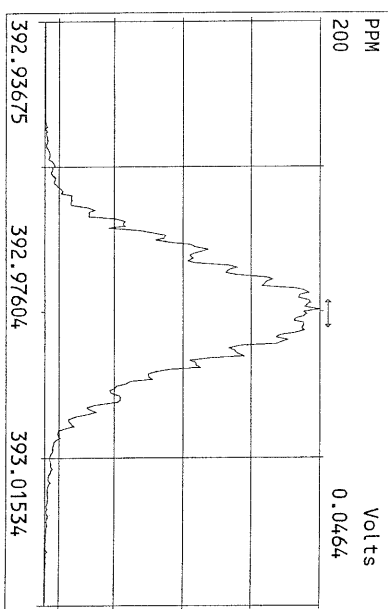
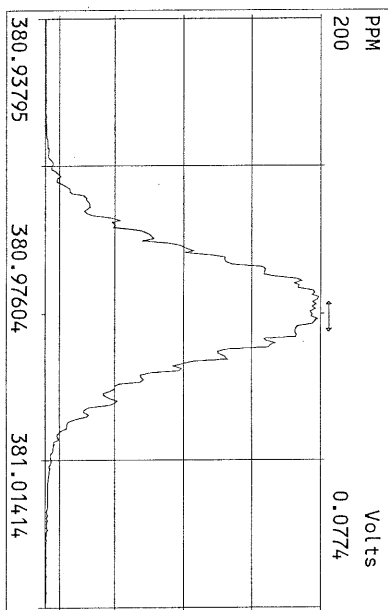
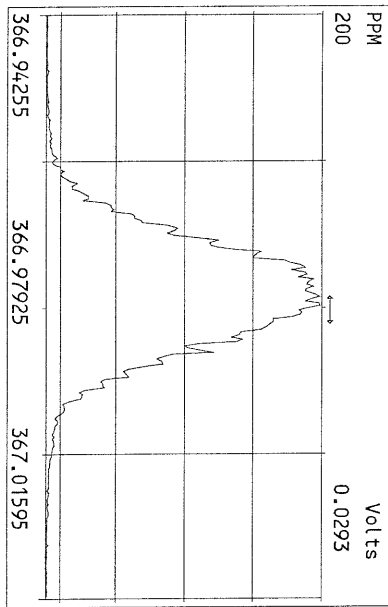
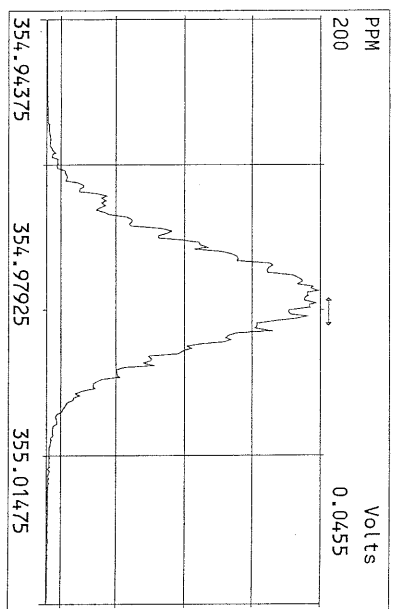
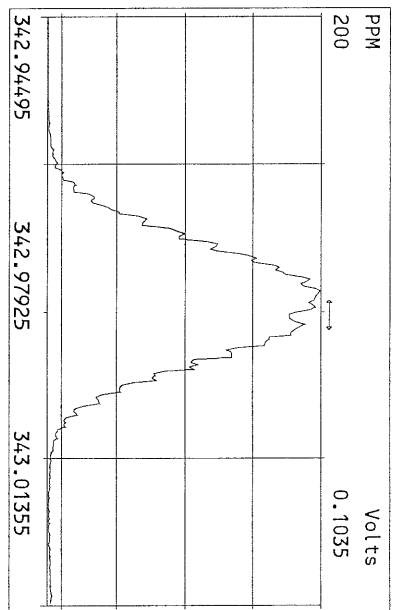
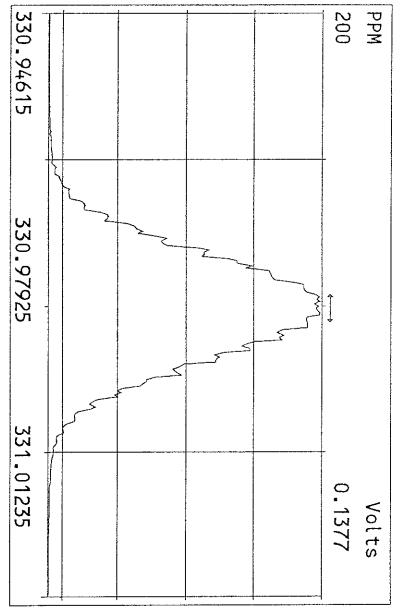
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Sample Text:ST05041IM1 File Text:Frontier Analytical Laboratory



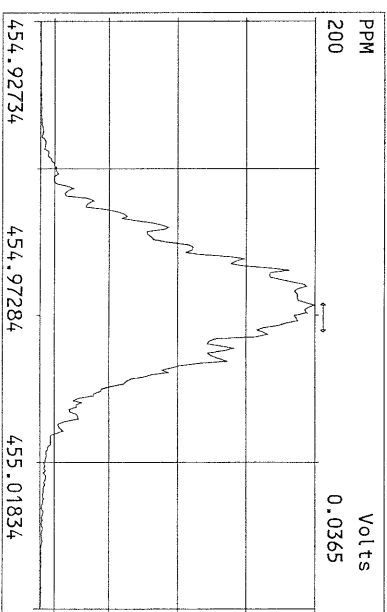
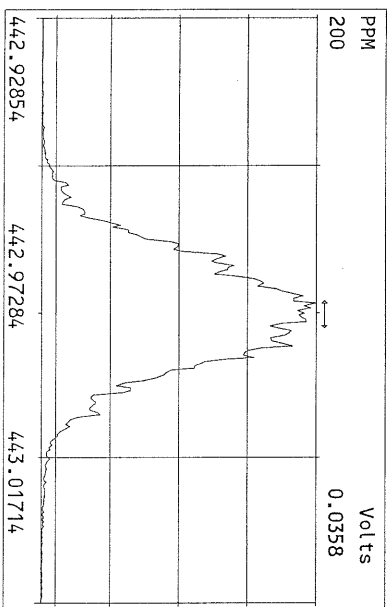
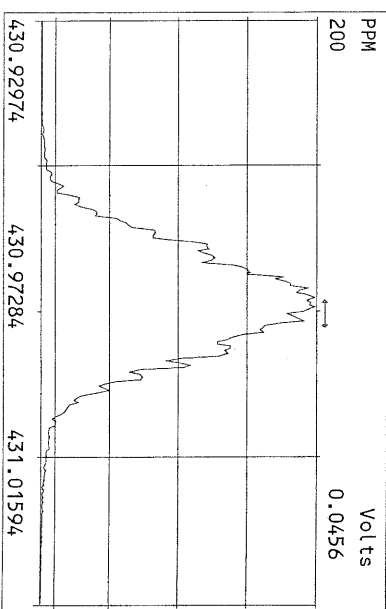
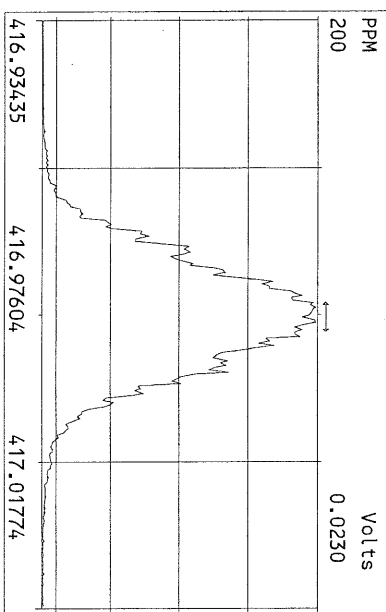
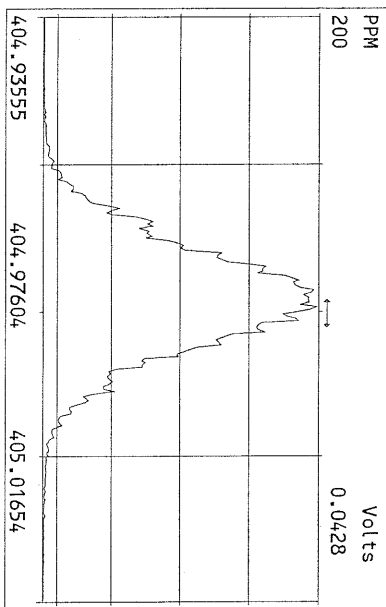
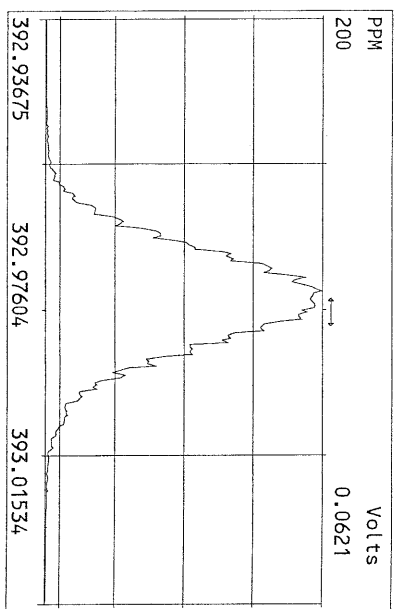
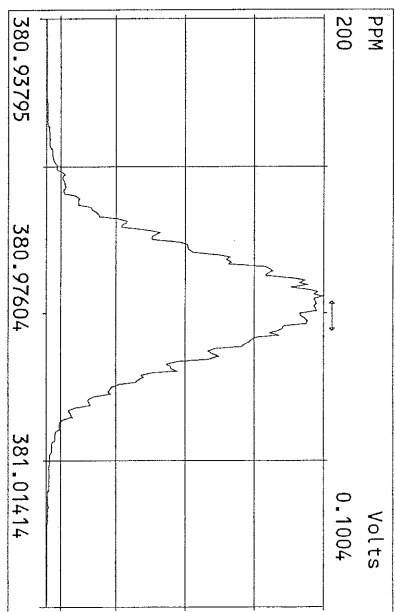
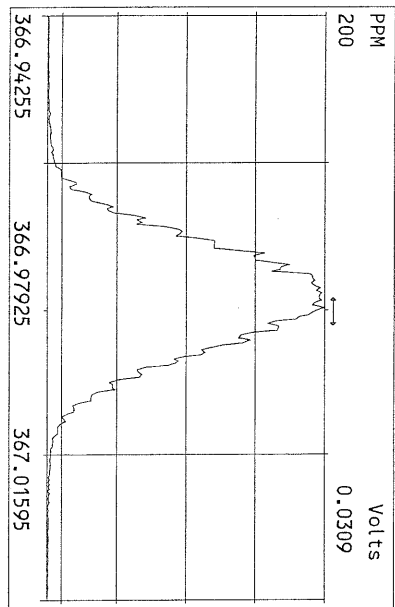
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Sample Text:ST05041IM1 File Text:Frontier Analytical Laboratory

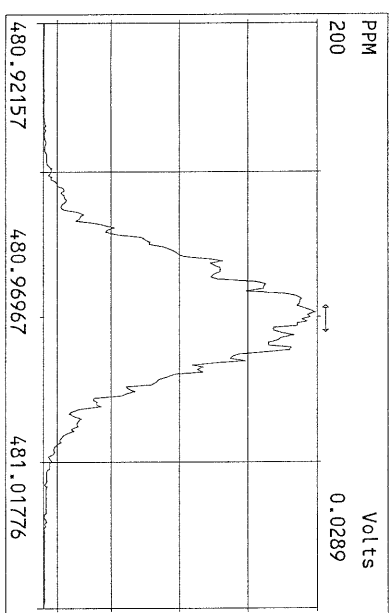
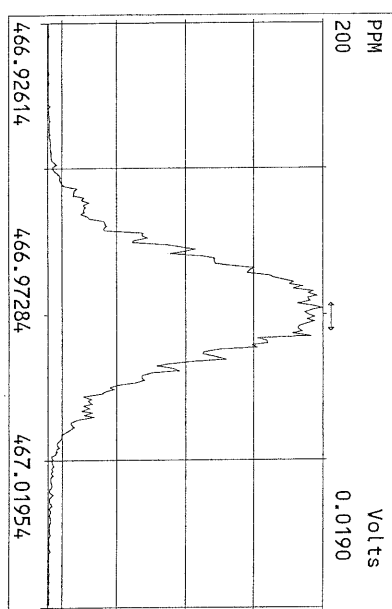
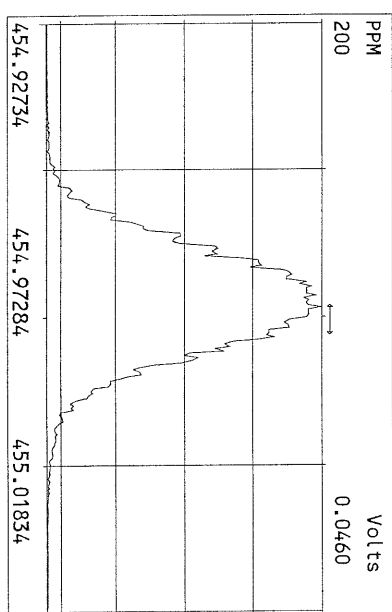
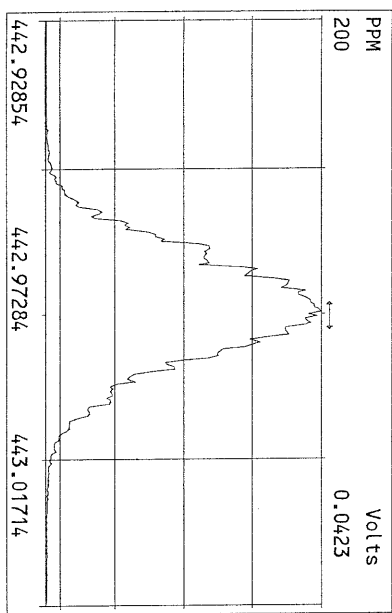
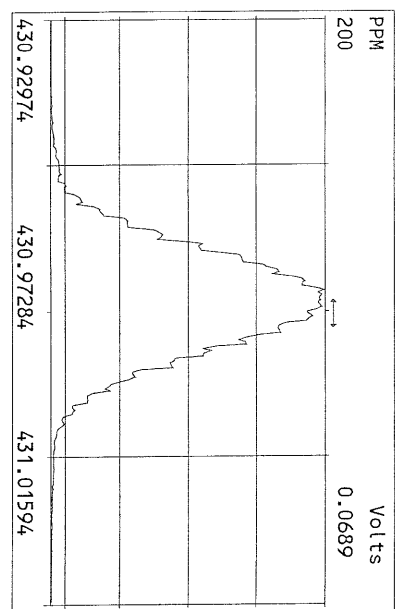
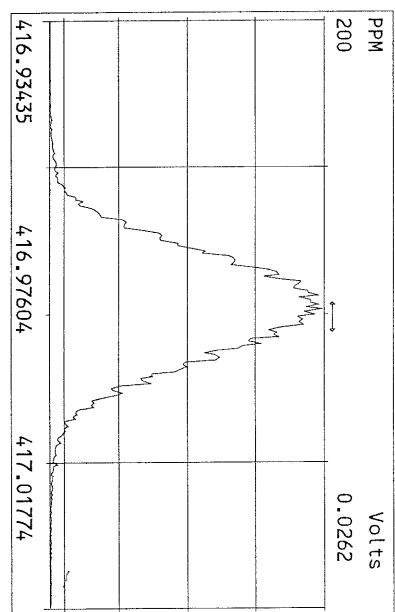
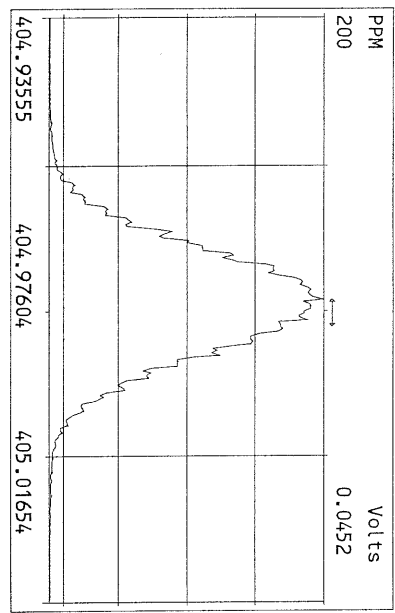


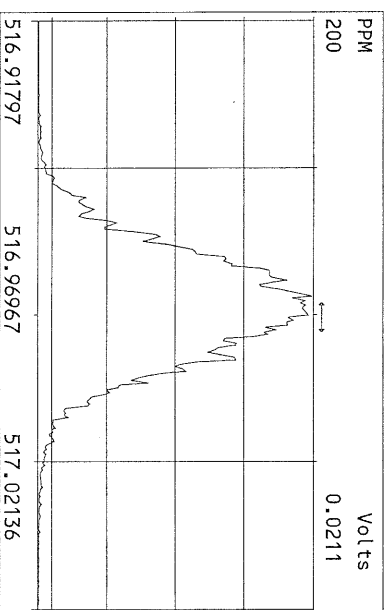
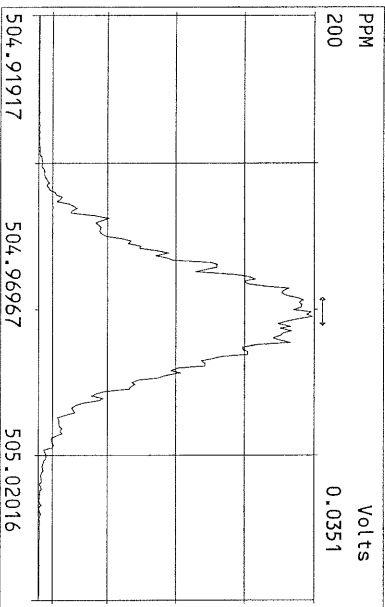
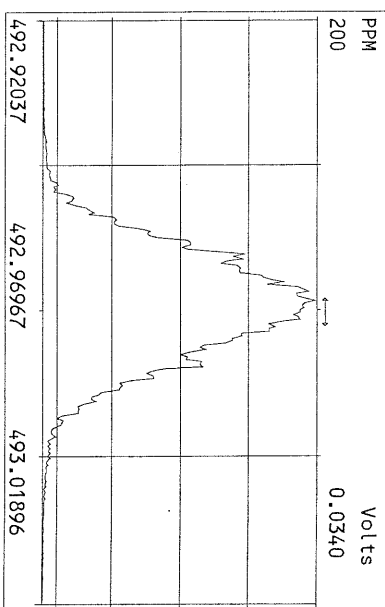
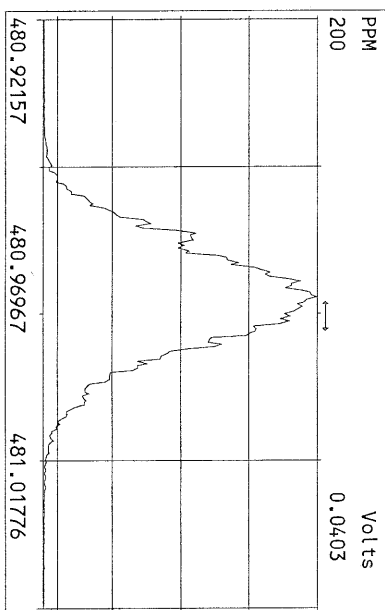
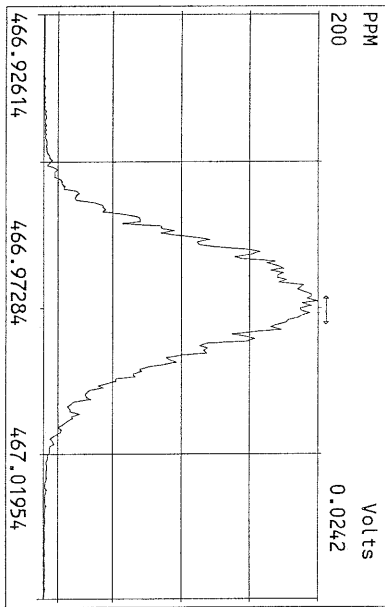
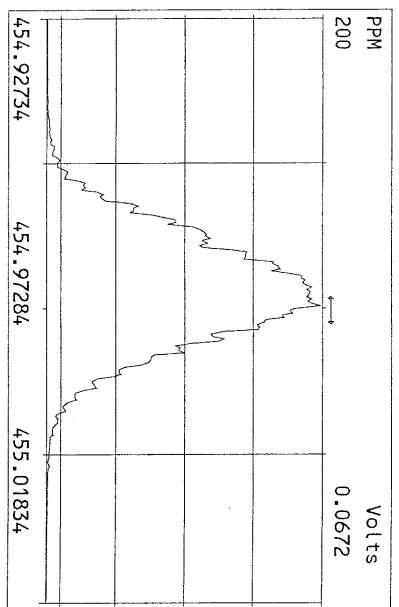
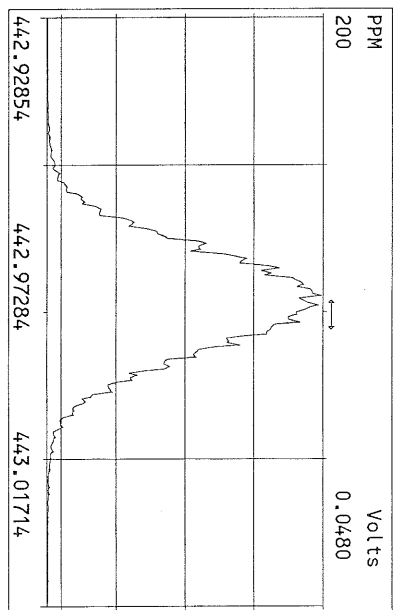
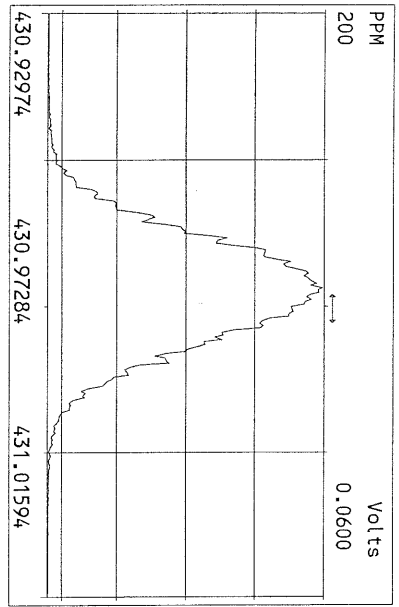




Peak Locate Examination: 5-MAY-2011:06:53 File:04MAY11M_RES_CHECK
Experiment:00DD Function:3 Reference:PFK







USEPA - ITD

FORM 4A
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: Frontier Analytical Laboratory Episode No.:

Contract No.: SAS No.:

Initial Calibration Date: 3/7/11

Instrument ID: FAL3 GC Column ID: DB5

VER Data Filename: 04MAY11M Sam:16 Analysis Date: 4-MAY-11 22:32:49

NATIVE ANALYTES	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	ACCEPT	CONC. FOUND	CONC. RANGE (ng/mL) (3)
2,3,7,8-TCDD	M/M+2	0.76	0.65-0.89	y	10.1	7.80 - 12.9
1,2,3,7,8-PeCDD	M+2/M+4	1.57	1.32-1.78	y	50.3	39.0 - 65.0
1,2,3,4,7,8-HxCDD	M+2/M+4	1.32	1.05-1.43	y	46.8	39.0 - 64.0
1,2,3,6,7,8-HxCDD	M+2/M+4	1.33	1.05-1.43	y	49.8	39.0 - 64.0
1,2,3,7,8,9-HxCDD	M+2/M+4	1.31	1.05-1.43	y	50.4	41.0 - 61.0
1,2,3,4,6,7,8-HpCDD	M+2/M+4	0.89	0.88-1.20	y	49.5	43.0 - 58.0
OCDD	M+2/M+4	0.94	0.76-1.02	y	96.6	79.0 - 126
2,3,7,8-TCDF	M/M+2	0.66	0.65-0.89	y	10.8	8.40 - 12.0
1,2,3,7,8-PeCDF	M+2/M+4	1.60	1.32-1.78	y	51.2	41.0 - 60.0
2,3,4,7,8-PeCDF	M+2/M+4	1.59	1.32-1.78	y	49.7	41.0 - 60.0
1,2,3,4,7,8-HxCDF	M+2/M+4	1.23	1.05-1.43	y	47.6	45.0 - 56.0
1,2,3,6,7,8-HxCDF	M+2/M+4	1.24	1.05-1.43	y	47.6	44.0 - 57.0
2,3,4,6,7,8-HxCDF	M+2/M+4	1.22	1.05-1.43	y	47.1	44.0 - 57.0
1,2,3,7,8,9-HxCDF	M+2/M+4	1.26	1.05-1.43	y	47.8	45.0 - 56.0
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.06	0.88-1.20	y	47.8	45.0 - 55.0
1,2,3,4,7,8,9-HpCDF	M+2/M+4	1.08	0.88-1.20	y	47.9	43.0 - 58.0
OCDF	M+2/M+4	0.93	0.76-1.02	y	92.6	63.0 - 159

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

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

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

Analyst: 

Date: 5/5/11

PCDD/PCDF RELATIVE RETENTION TIMES

Lab Name: Frontier Analytical Laboratory

Episode No.:

Contract No.:

SAS No.:

Init. Cal. Date: 3/7/11

Instrument ID: FAL3

GC Column ID: DB5

Analysis Date: 4-MAY-11 22:32:49

CS3 or VER Data Filename: 04MAY11M


Sam:16

NATIVE ANALYTES	RETENTION TIME REFERENCE	RRT	RRT QC LIMITS (1)
2,3,7,8-TCDD	13C-2,3,7,8-TCDD	1.001	0.999-1.002
2,3,7,8-TCDF	13C-2,3,7,8-TCDF	1.001	0.999-1.003
1,2,3,7,8-PeCDD	13C-1,2,3,7,8-PeCDD	1.001	0.999-1.002
1,2,3,7,8-PeCDF	13C-1,2,3,7,8-PeCDF	1.001	0.999-1.002
2,3,4,7,8-PeCDF	13C-2,3,4,7,8-PeCDF	1.000	0.999-1.002
LABELED COMPOUNDS			
37Cl-2,3,7,8-TCDD	13C-1,2,3,4-TCDD	1.022	0.989-1.052
13C-2,3,7,8-TCDD		1.021	0.976-1.043
13C-2,3,7,8-TCDF		0.993	0.923-1.103
13C-1,2,3,7,8-PeCDD		1.239	1.000-1.567
13C-1,2,3,7,8-PeCDF		1.174	0.923-1.203
13C-2,3,4,7,8-PeCDF		1.223	0.923-1.303

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

Analyst: Date: 5/5/11

Name	Resp	RA	RT	RRF	Conc	Qual	Fac Noise-1	Noise-2	DL	#Hom	
2,3,7,8-TCDD	4.19e+06	0.76 y	27:22	1.13	10.1		2.50	-	-	*	
1,2,3,7,8-PeCDD	1.74e+07	1.57 y	33:11	1.02	50.3		2.50	-	-	*	
1,2,3,4,7,8-HxCDD	1.86e+07	1.32 y	38:32	1.45	46.8		2.50	-	-	*	
1,2,3,6,7,8-HxCDD	1.59e+07	1.33 y	38:43	1.45	49.8		2.50	-	-	*	
1,2,3,7,8,9-HxCDD	1.83e+07	1.31 y	39:09	1.47	50.4		2.50	-	-	*	
1,2,3,4,6,7,8-HpCDD	1.39e+07	0.89 y	44:09	1.30	49.5		2.50	-	-	*	
OCDD	2.04e+07	0.94 y	49:41	1.45	96.6		2.50	-	-	*	
2,3,7,8-TCDF	7.58e+06	0.66 y	26:36	1.15	10.8		2.50	-	-	*	
1,2,3,7,8-PeCDF	2.40e+07	1.60 y	31:27	0.89	51.2		2.50	-	-	*	
2,3,4,7,8-PeCDF	2.27e+07	1.59 y	32:46	0.89	49.7		2.50	-	-	*	
1,2,3,4,7,8-HxCDF	2.03e+07	1.23 y	37:10	1.01	47.6		2.50	-	-	*	
1,2,3,6,7,8-HxCDF	2.30e+07	1.24 y	37:22	0.89	47.6		2.50	-	-	*	
2,3,4,6,7,8-HxCDF	2.09e+07	1.22 y	38:17	1.02	47.1		2.50	-	-	*	
1,2,3,7,8,9-HxCDF	2.48e+07	1.26 y	39:43	1.10	47.8		2.50	-	-	*	
1,2,3,4,6,7,8-HpCDF	1.70e+07	1.06 y	42:14	1.48	47.8		2.50	-	-	*	
1,2,3,4,7,8,9-HpCDF	1.31e+07	1.08 y	45:03	1.43	47.9		2.50	-	-	*	
OCDF	2.11e+07	0.93 y	50:04	0.84	92.6		2.50	-	-	*	
Rec											
13C-2,3,7,8-TCDD	3.65e+07	0.77 y	27:20	1.03	91.8					91.8	
13C-1,2,3,7,8-PeCDD	3.40e+07	1.77 y	33:10	1.01	86.9					86.9	
13C-1,2,3,4,7,8-HxCDD	2.75e+07	1.28 y	38:31	1.19	96.3					96.3	
13C-1,2,3,6,7,8-HxCDD	2.19e+07	1.28 y	38:41	0.94	97.9					97.9	
13C-1,2,3,4,6,7,8-HpCDD	2.16e+07	1.02 y	44:08	0.83	109					109	
13C-OCDD	2.92e+07	0.96 y	49:41	0.61	201					100	
13C-2,3,7,8-TCDF	6.11e+07	0.86 y	26:35	0.98	98.9					98.9	
13C-1,2,3,7,8-PeCDF	5.28e+07	1.67 y	31:26	0.83	101					101	
13C-2,3,4,7,8-PeCDF	5.12e+07	1.68 y	32:45	0.80	101					101	
13C-1,2,3,4,7,8-HxCDF	4.22e+07	0.47 y	37:08	1.84	95.8					95.8	
13C-1,2,3,6,7,8-HxCDF	5.42e+07	0.48 y	37:20	2.29	98.7					98.7	
13C-2,3,4,6,7,8-HxCDF	4.37e+07	0.48 y	38:16	1.86	98.1					98.1	
13C-1,2,3,7,8,9-HxCDF	4.70e+07	0.48 y	39:42	1.98	99.1					99.1	
13C-1,2,3,4,6,7,8-HpCDF	2.40e+07	0.46 y	42:14	0.99	102					102	
13C-1,2,3,4,7,8,9-HpCDF	1.92e+07	0.45 y	45:03	0.77	105					105	
13C-OCDF	5.41e+07	0.95 y	50:02	1.17	194					97.0	
37Cl-2,3,7,8-TCDD	2.35e+06		27:22	0.73	8.34					83.4	
13C-1,2,3,4-TCDD	3.87e+07	0.78 y	26:47	-	102						
13C-1,2,3,4-TCDF	6.31e+07	0.87 y	25:31	-	87.6						
13C-1,2,3,7,8,9-HxCDD	2.39e+07	1.30 y	39:08	-	96.5						
Total Tetra-Dioxins	2.14e+07		24:21	1.13	51.8		2.50	-	-	*	15
Total Penta-Dioxins	3.76e+07		30:14	1.02	109		2.50	-	-	*	5
Total Hexa-Dioxins	5.96e+07		36:06	1.46	166		2.50	-	-	*	11
Total Hepta-Dioxins	2.80e+07		42:46	1.30	99.9		2.50	-	-	*	28
Total Tetra-Furans	3.51e+07		23:01	1.15	50.1		2.50	-	-	*	14
1st Fn. Tot Penta-Furans	2.75e+07		28:23	0.89	59.6		2.50	-	-	*	PeCDF 1
Total Penta-Furans	6.74e+07		30:09	0.89	146		2.50	-	-	*	205 10
Total Hexa-Furans	1.03e+08		35:13	1.00	220		2.50	-	-	*	12
Total Hepta-Furans	3.04e+07		42:14	1.46	96.6		2.50	-	-	*	10

Analyst: 

Date: 5/5/11

Frontier Analytical Laboratory - Acquisition Log

Run Name:04MAY11M

Instrument: FAL3

GC: DB5

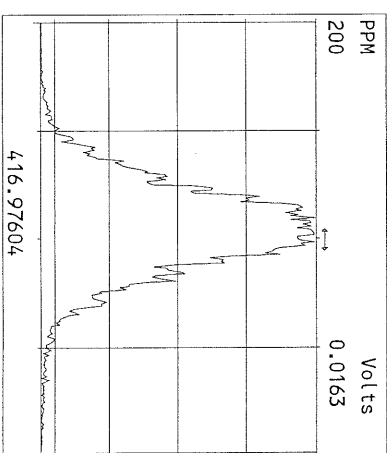
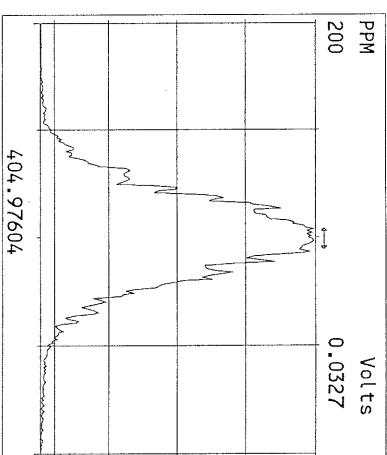
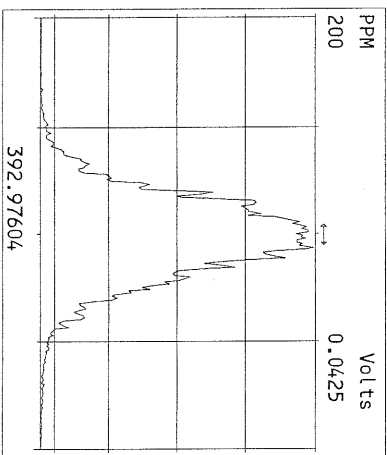
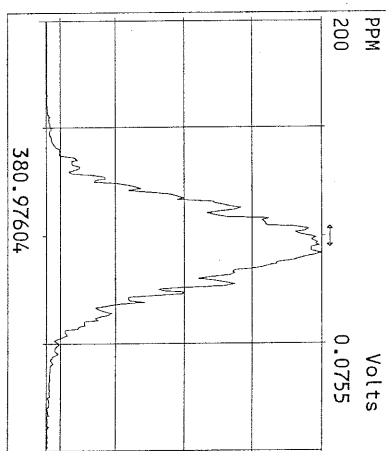
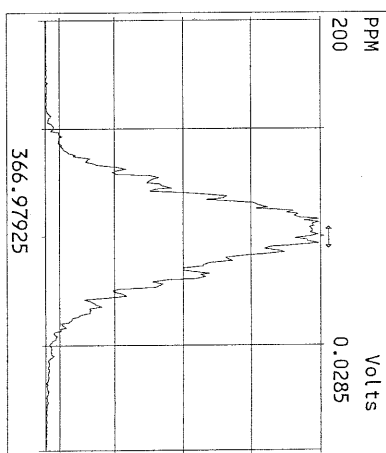
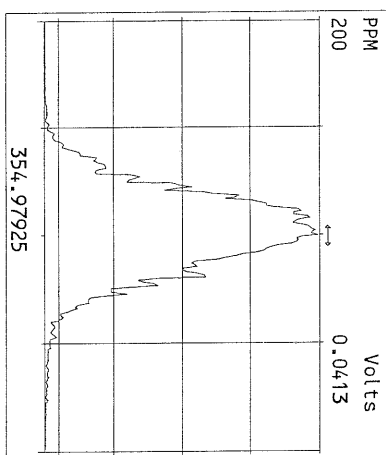
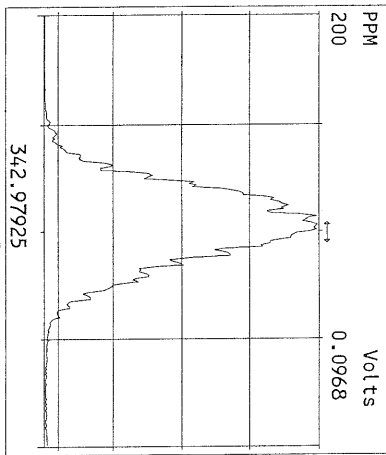
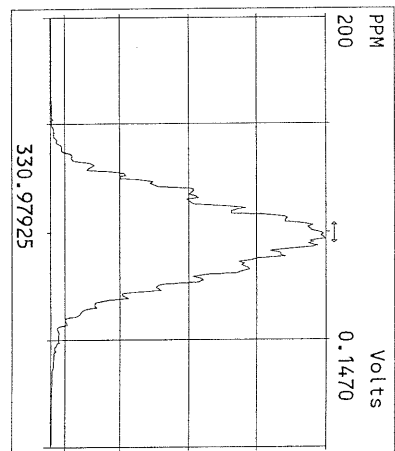
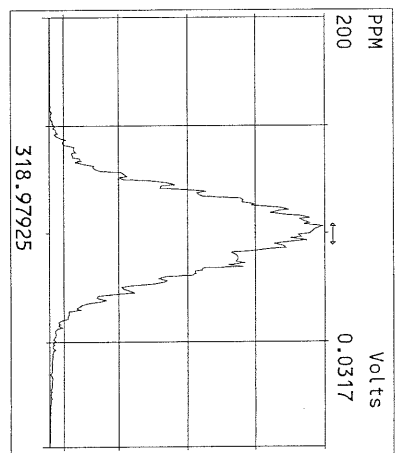
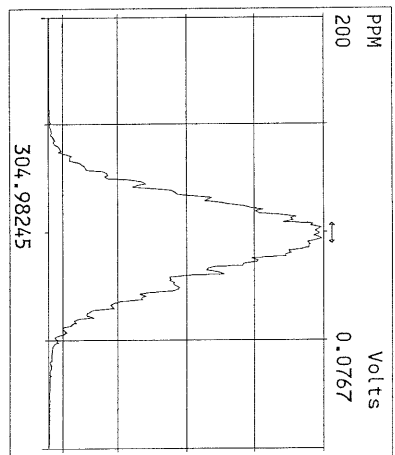
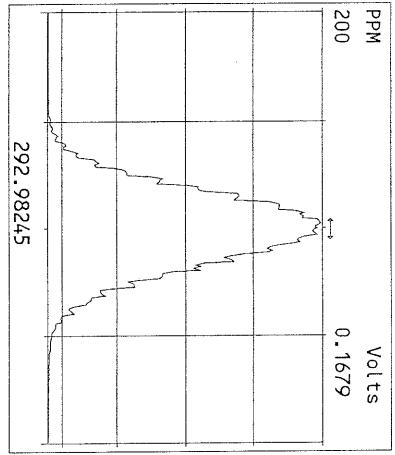
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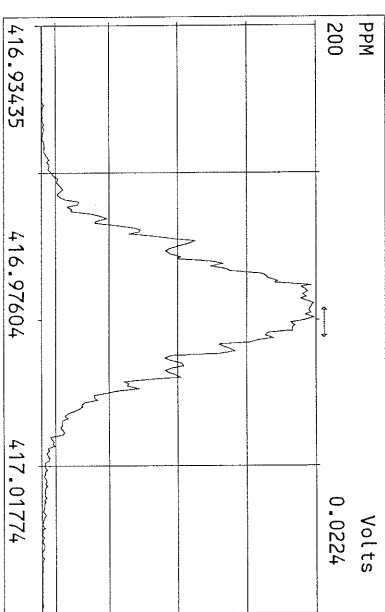
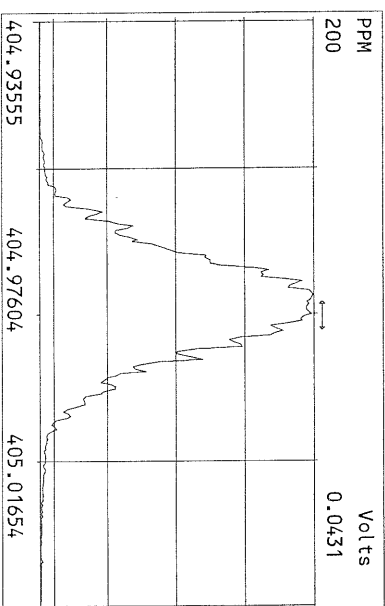
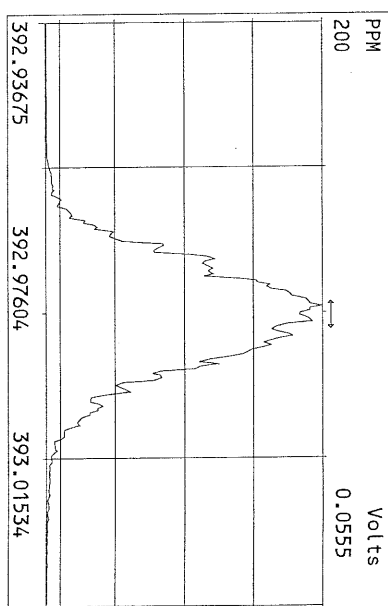
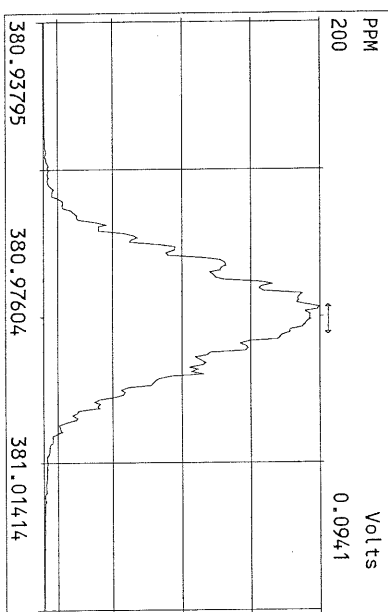
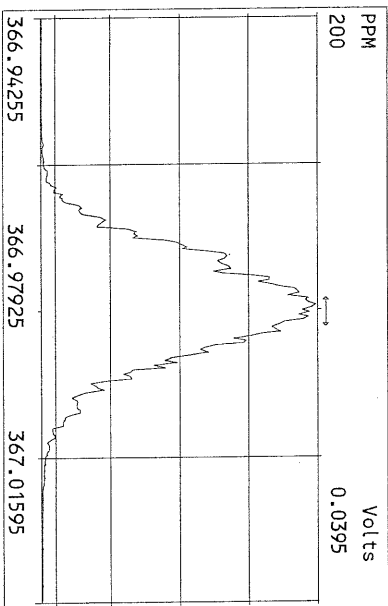
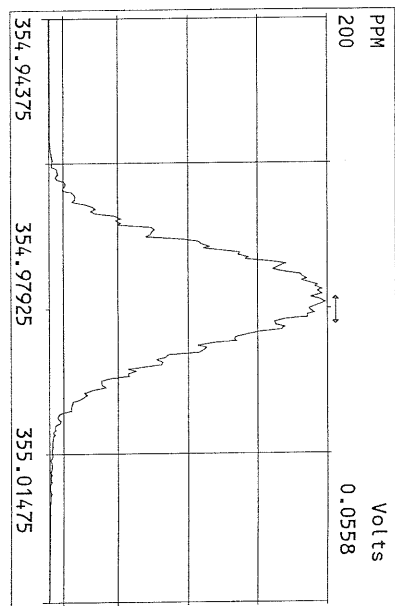
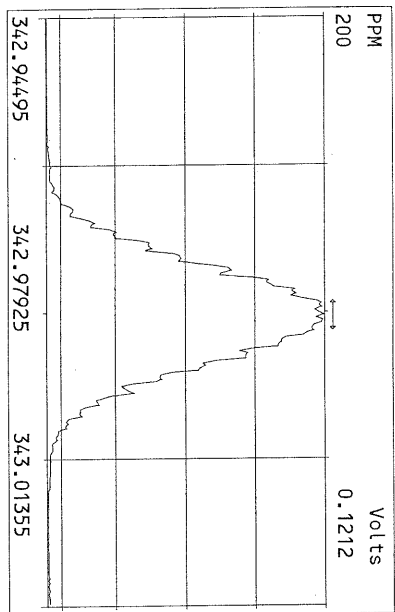
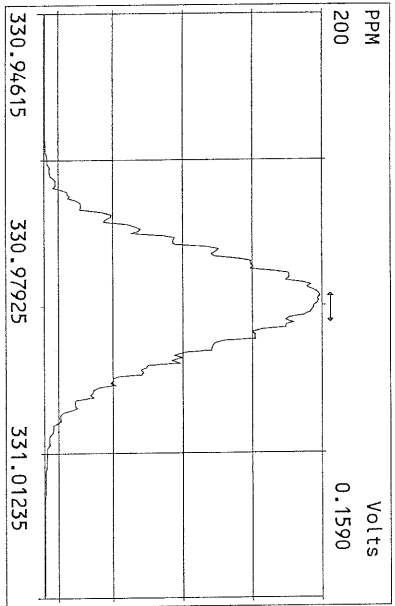
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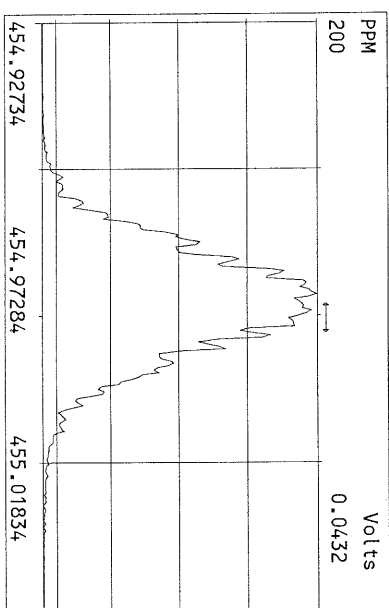
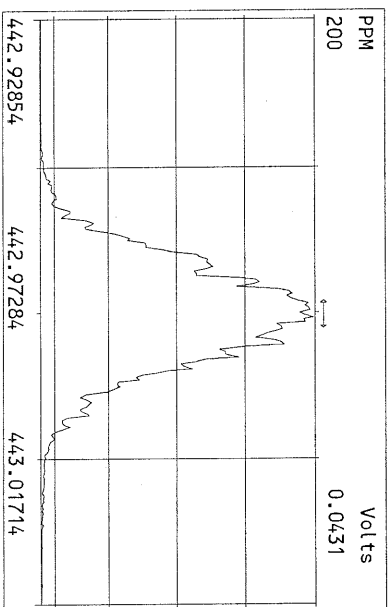
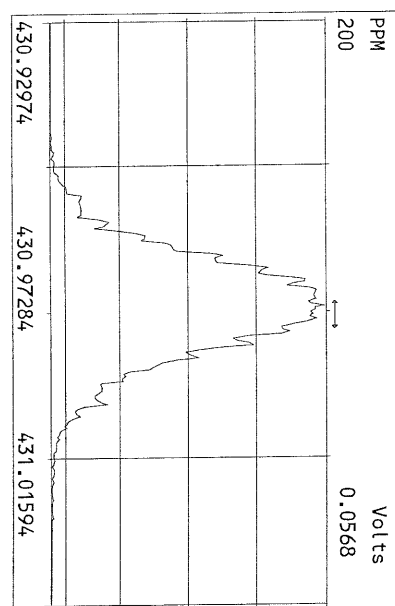
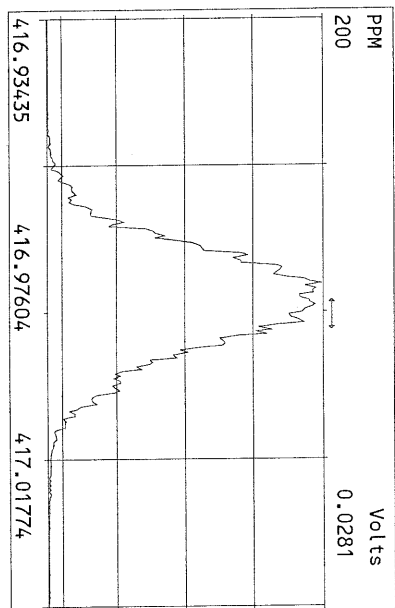
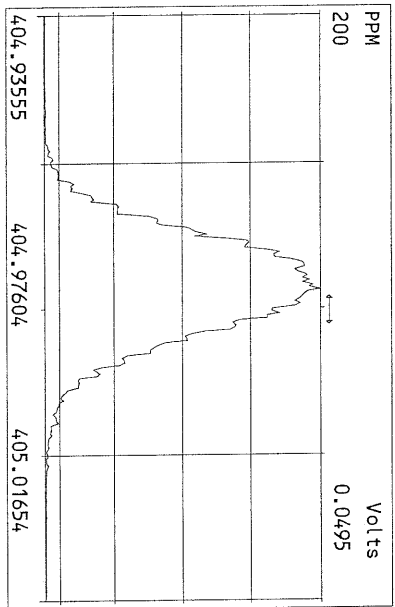
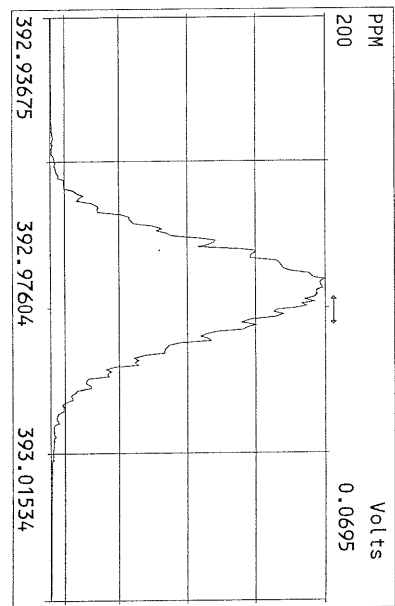
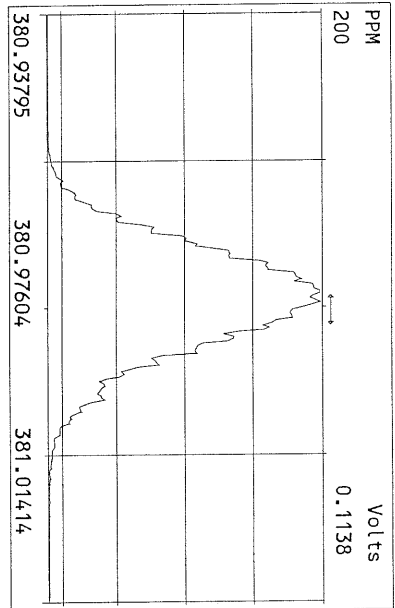
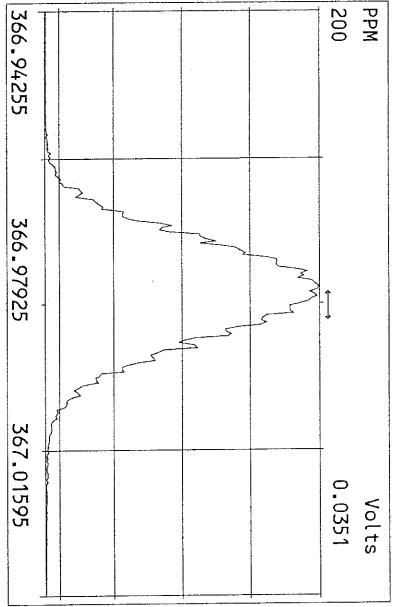
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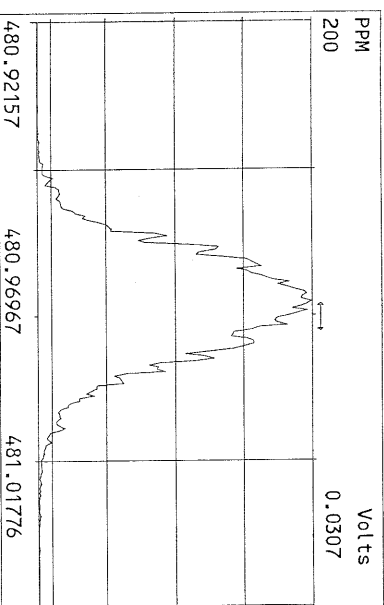
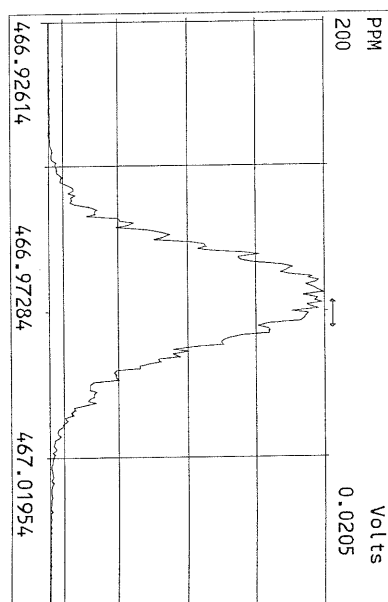
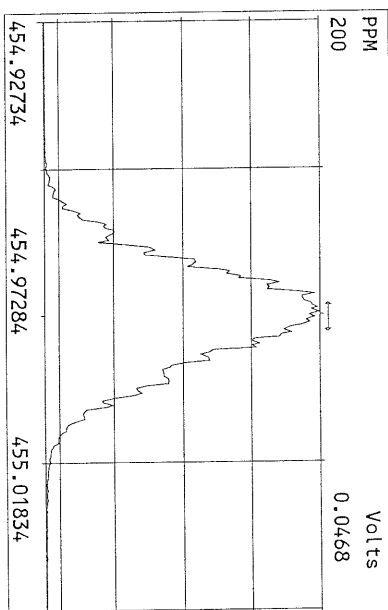
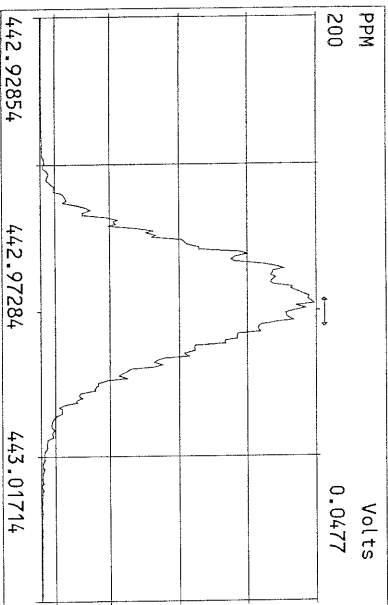
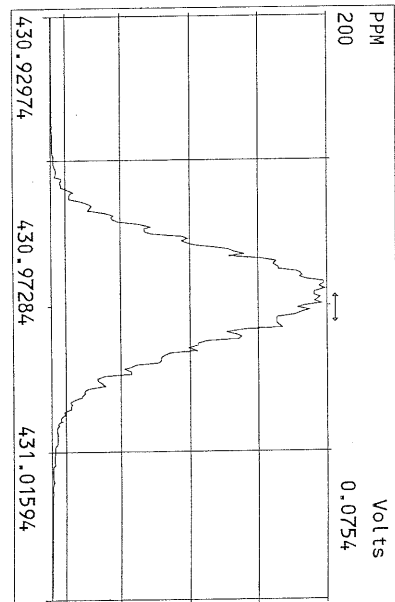
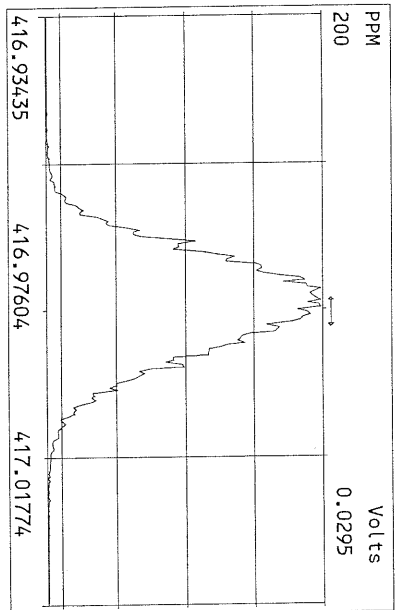
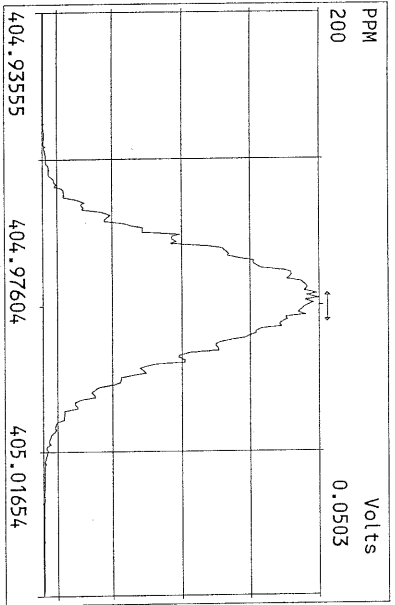
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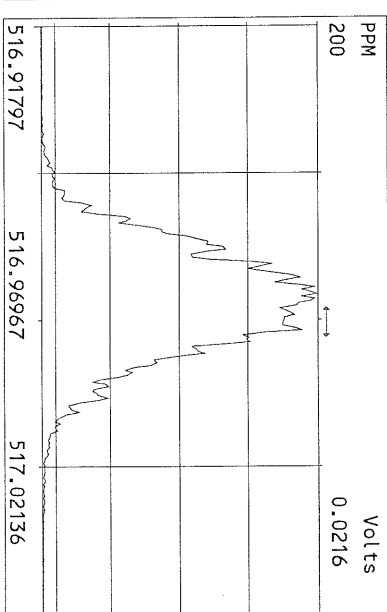
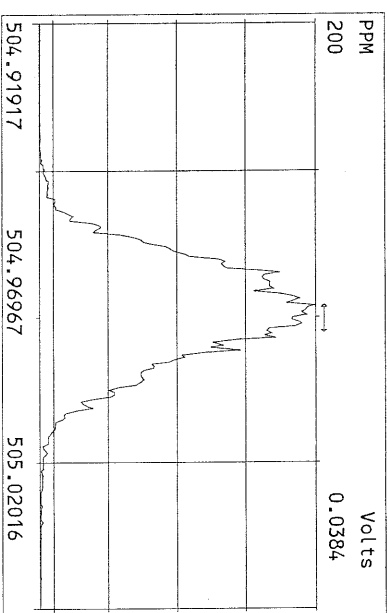
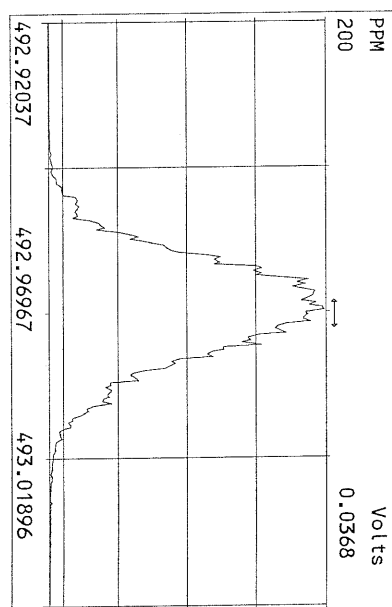
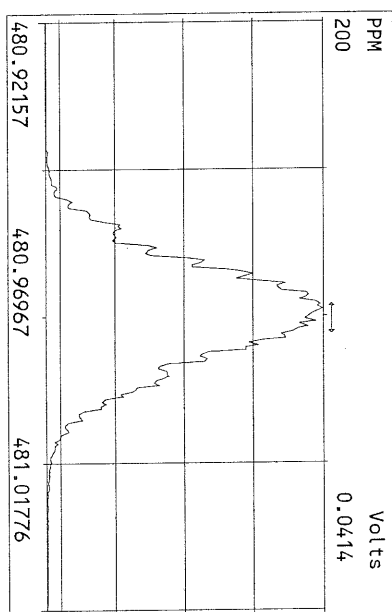
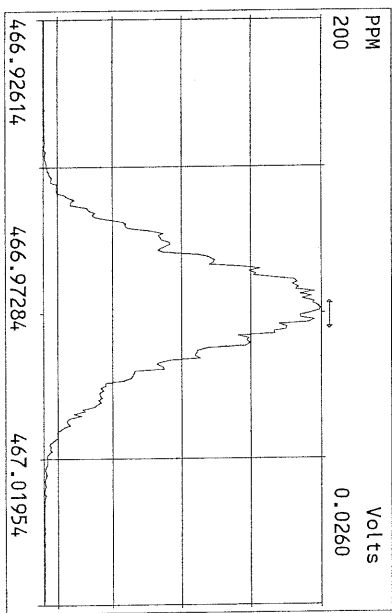
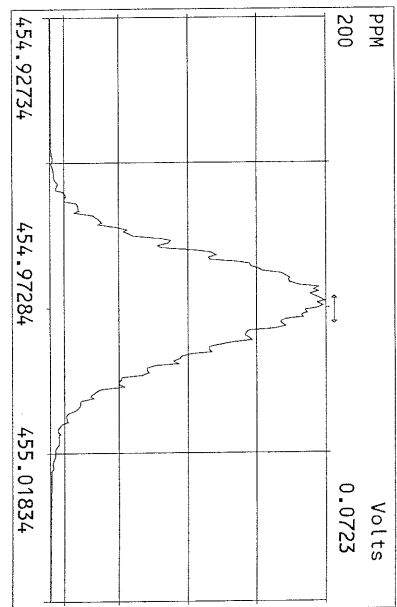
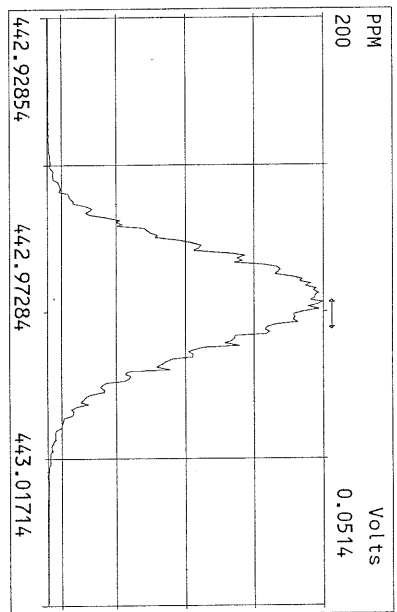
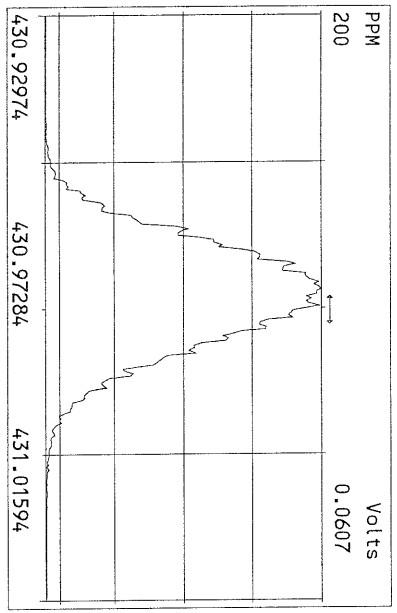




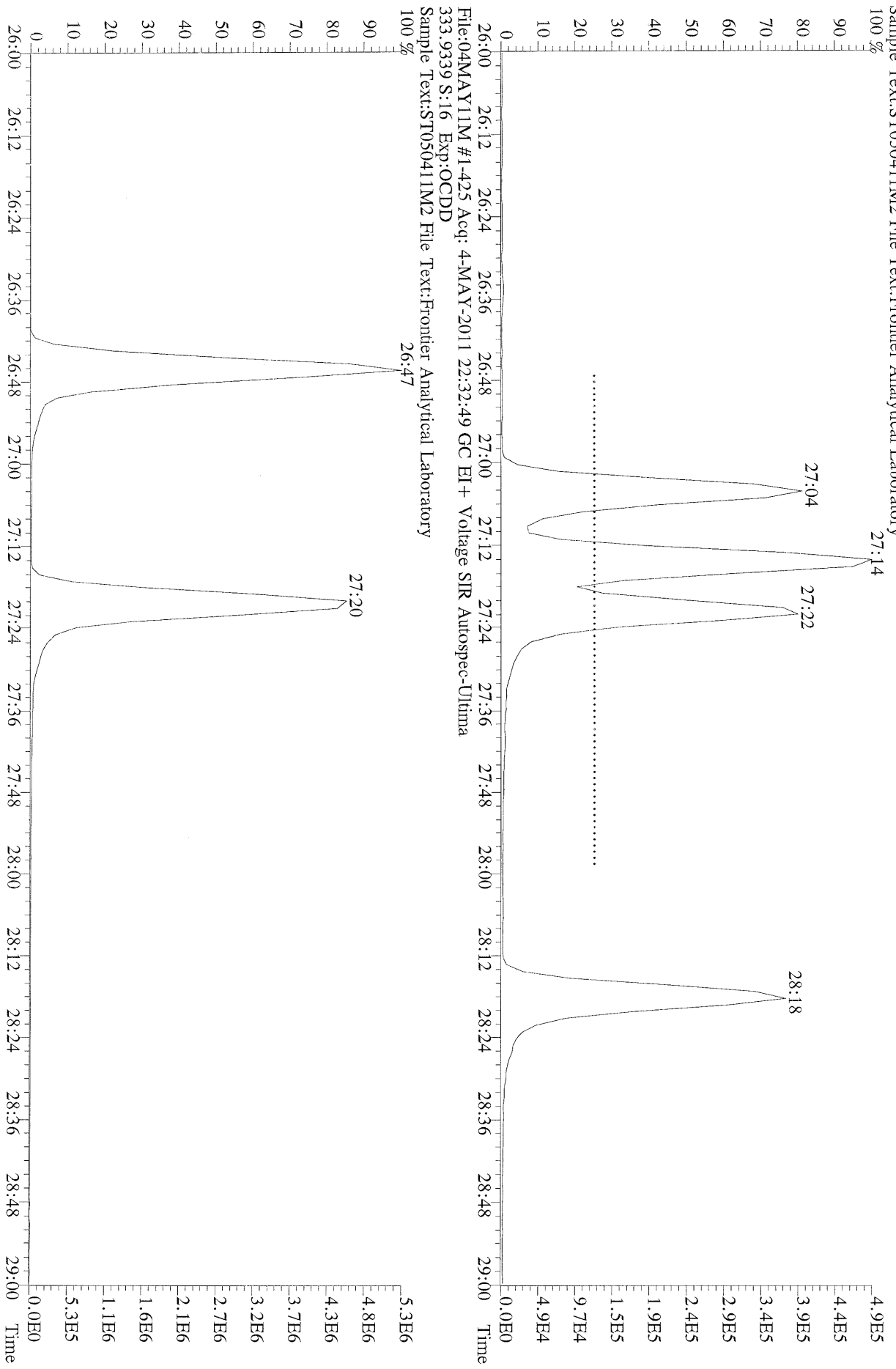




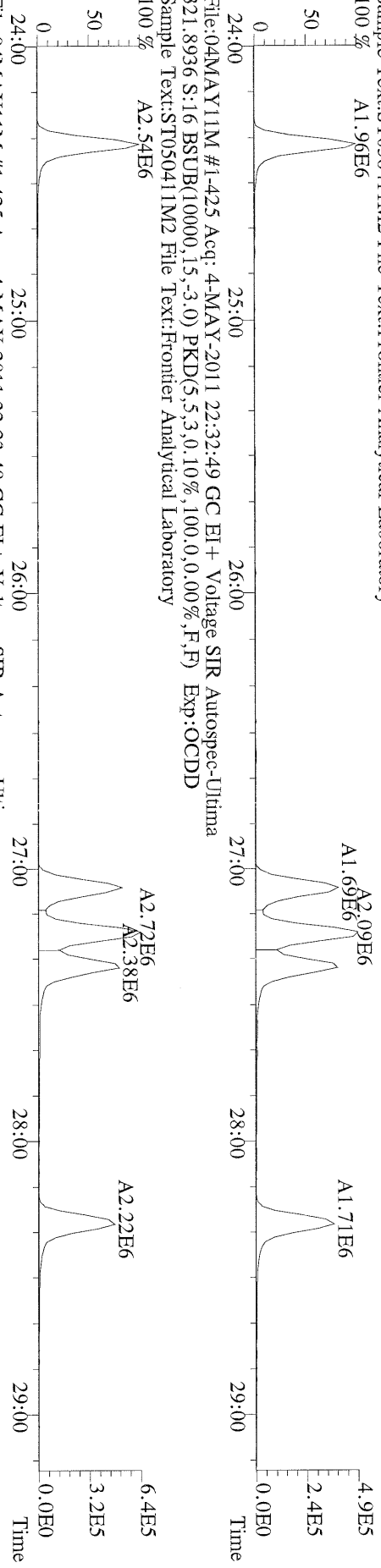
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Experiment:OCDD Function:5 Reference:PFK



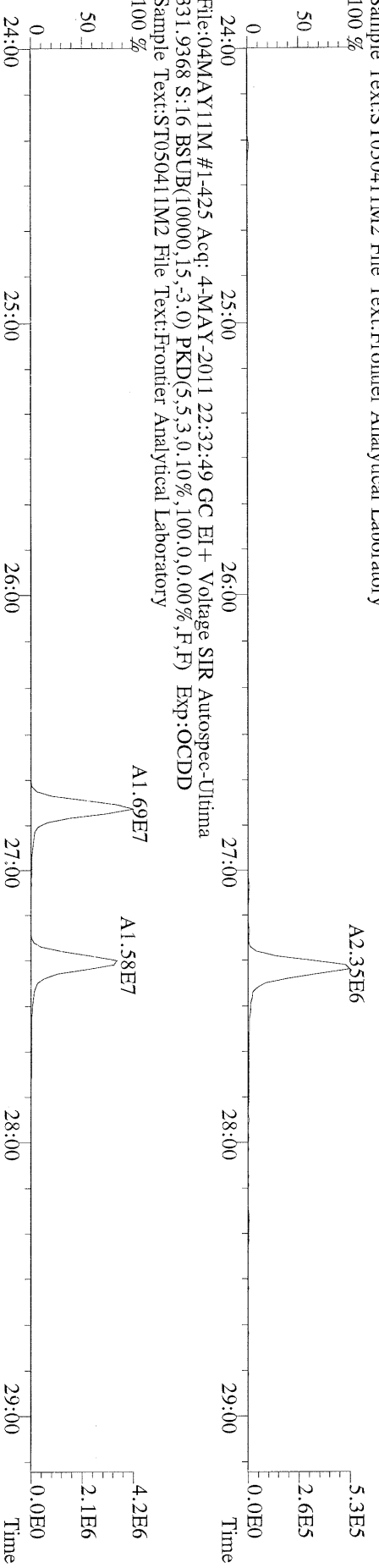
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319.8965 S:16 Exp:OCDD
Sample Text:ST050411M2 File Text:Frontier Analytical Laboratory



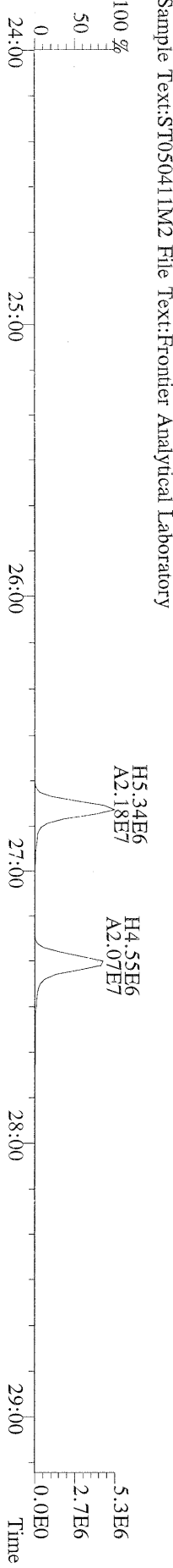
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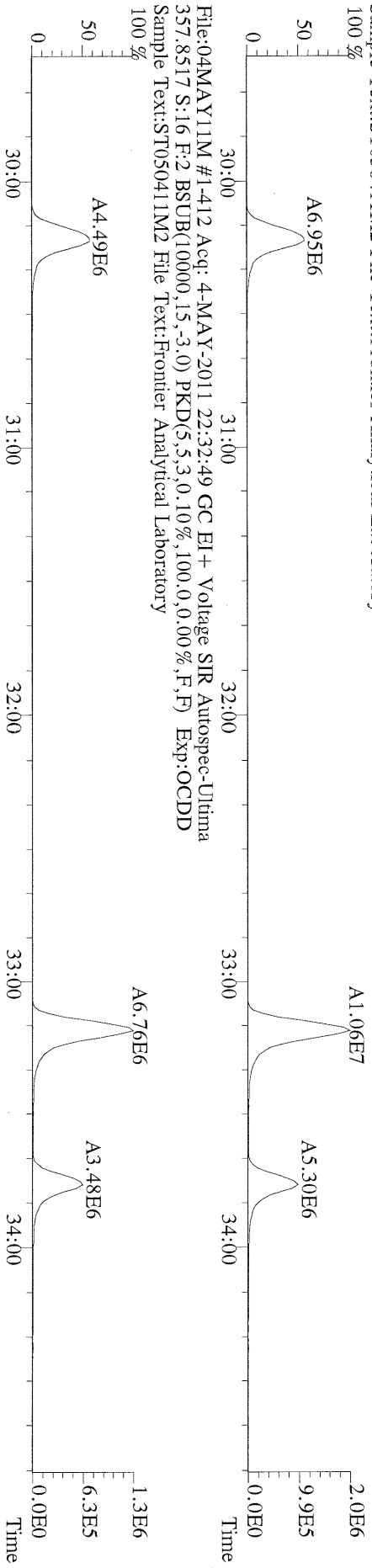
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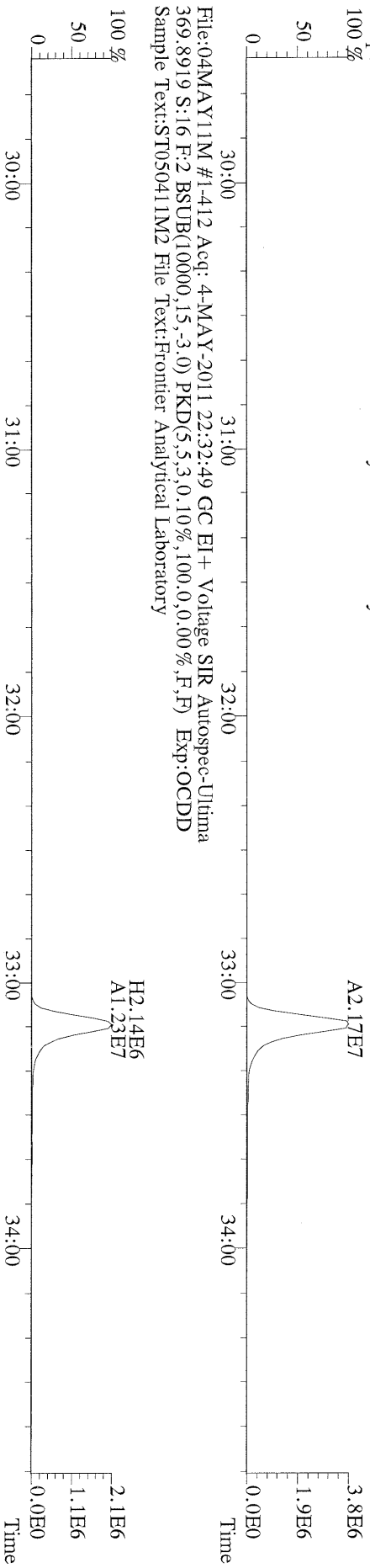
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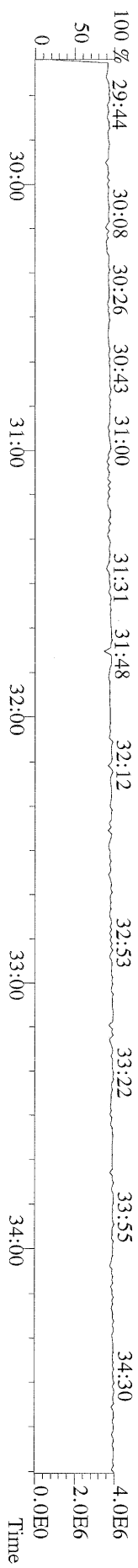
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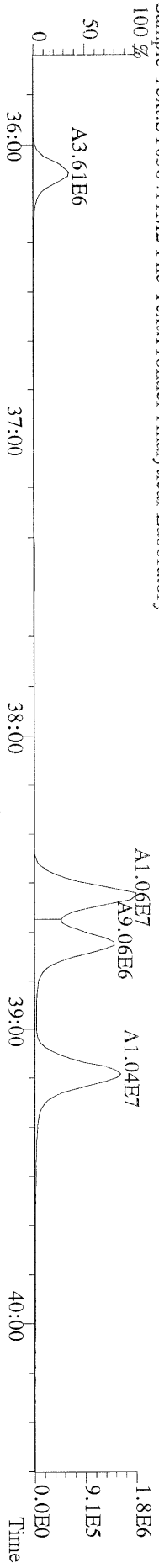
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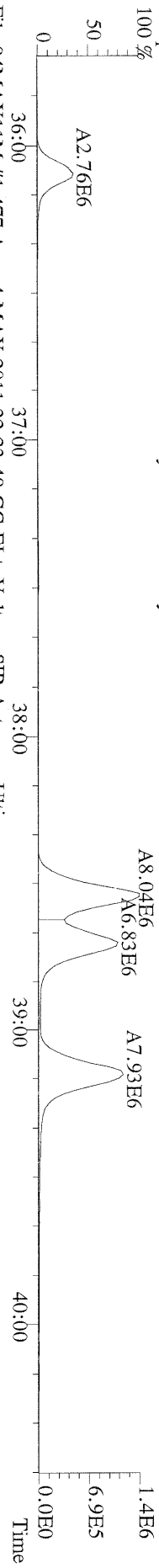
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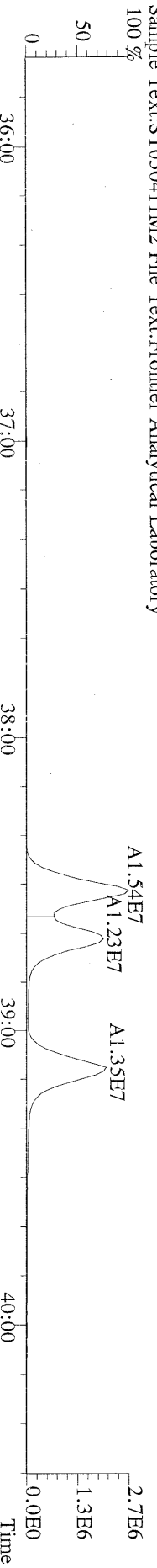
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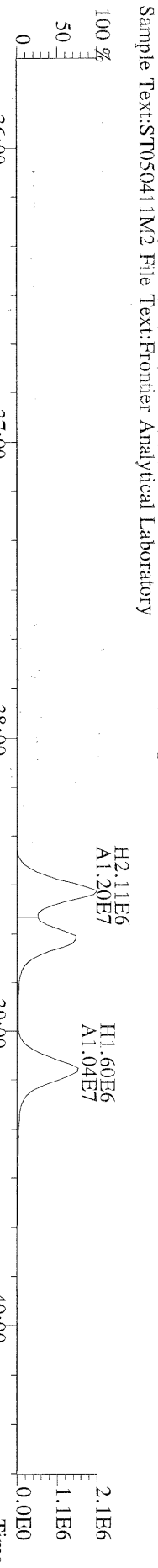
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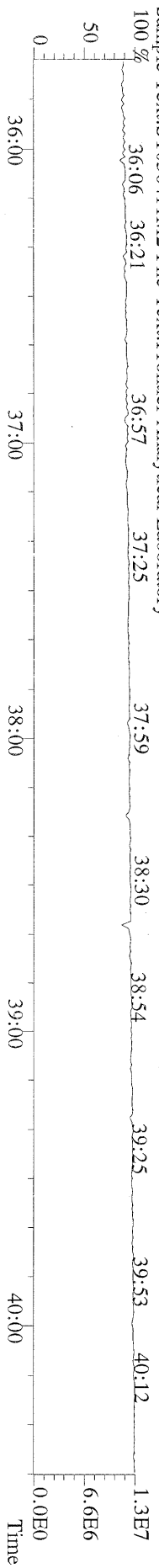
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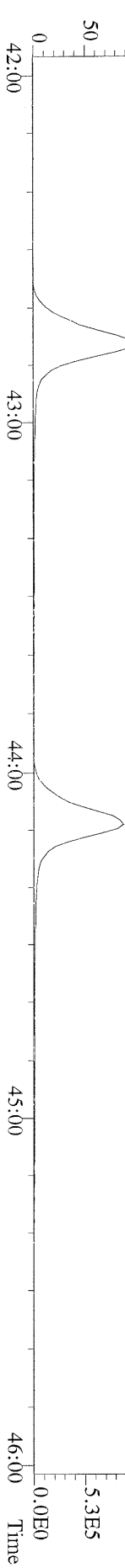
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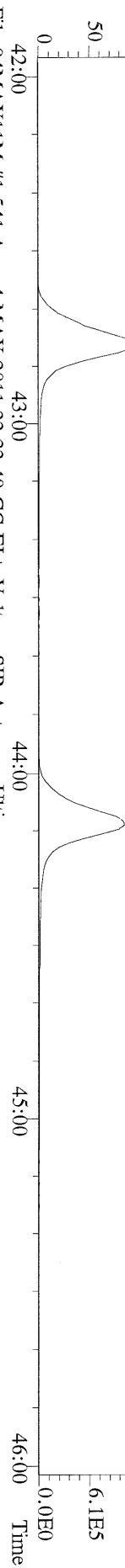
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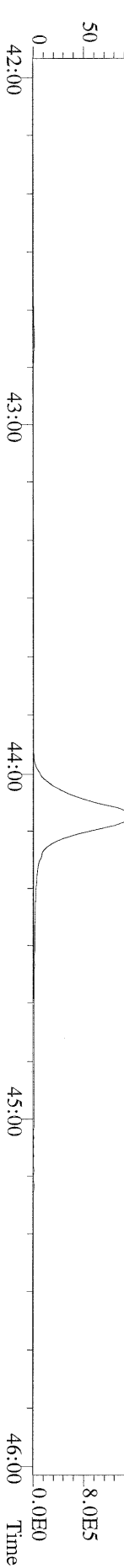
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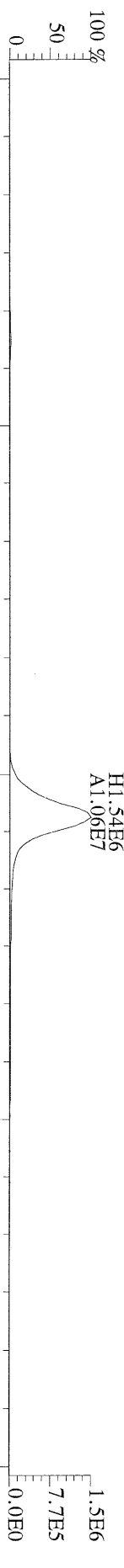
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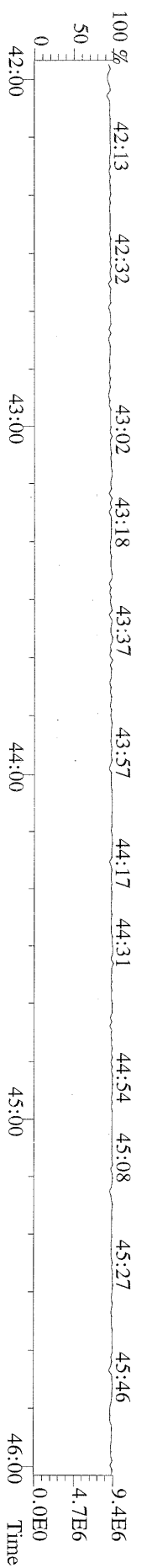
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Sample Text:ST05041IM2 File Text:Frontier Analytical Laboratory



File:04MAY11M #1-347 Acq: 4-MAY-2011 22:32:49 GC EI+ Voltage SIR Autospec-Ultima
 457.7377 S:16 F:5 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp:OCDD
 Sample Text:ST05041IM2 File Text:Frontier Analytical Laboratory



File:04MAY11M #1-347 Acq: 4-MAY-2011 22:32:49 GC EI+ Voltage SIR Autospec-Ultima
 459.7348 S:16 F:5 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp:OCDD
 Sample Text:ST05041IM2 File Text:Frontier Analytical Laboratory



File:04MAY11M #1-347 Acq: 4-MAY-2011 22:32:49 GC EI+ Voltage SIR Autospec-Ultima
 469.7780 S:16 F:5 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp:OCDD
 Sample Text:ST05041IM2 File Text:Frontier Analytical Laboratory



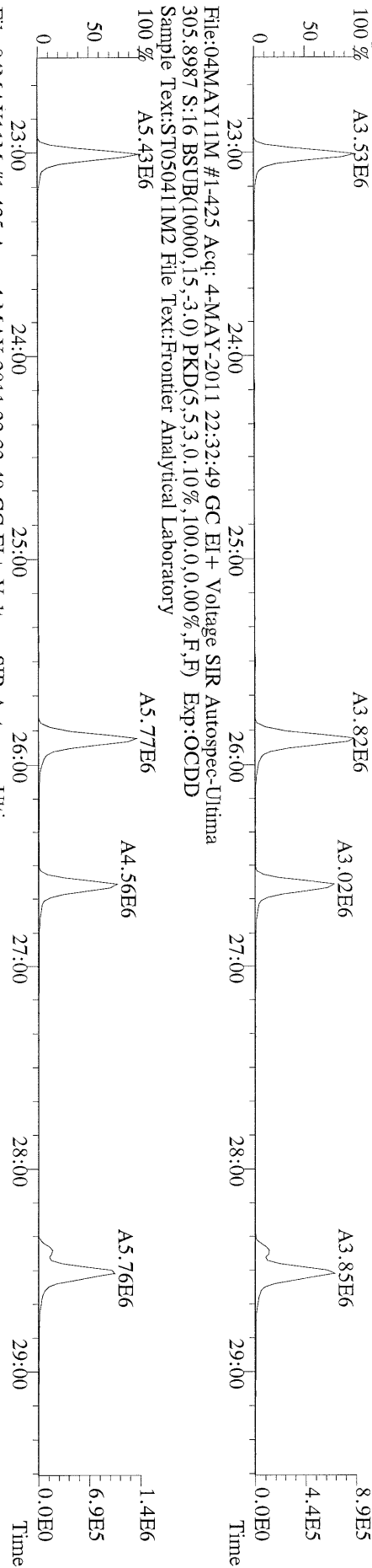
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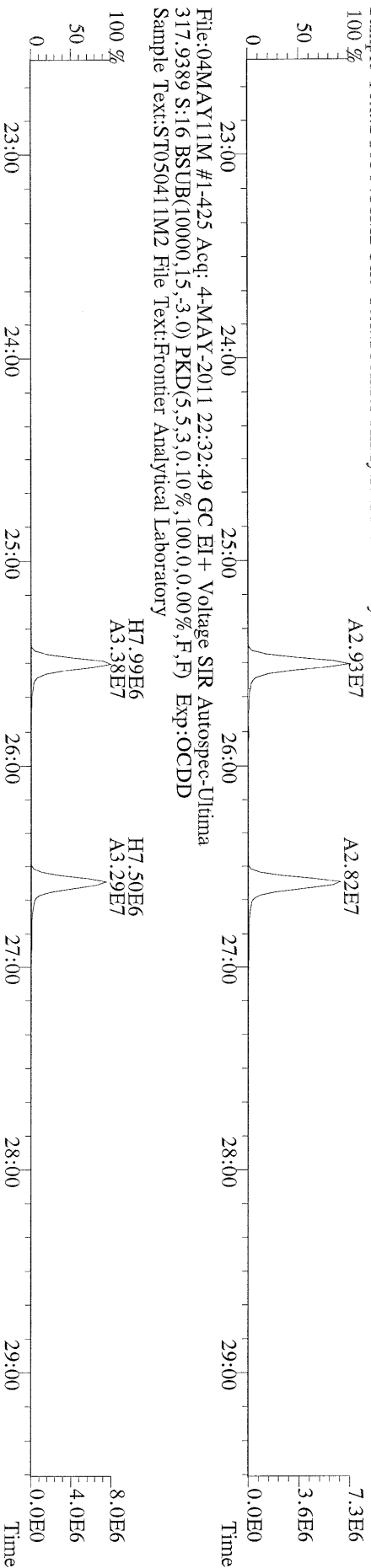
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 454.9728 S:16 F:5 Exp:OCDD
 Sample Text:ST05041IM2 File Text:Frontier Analytical Laboratory



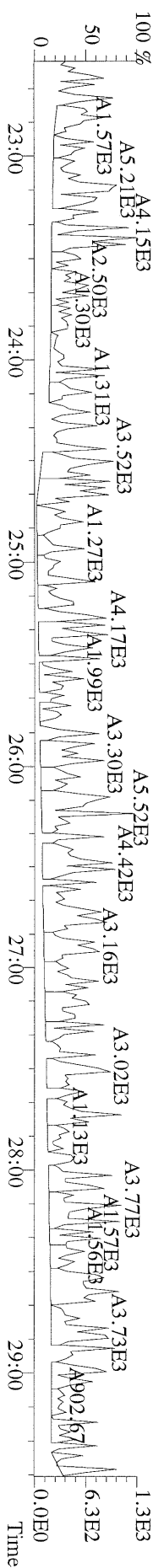
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 303.9016 S:16 BSUB(10000,15,-3.0) PKD(5,5,3.0,100,0.0,00%,F,F) Exp:OCDD
 Sample Text:ST05041IM2 File Text:Frontier Analytical Laboratory
 100 % A3.53E6



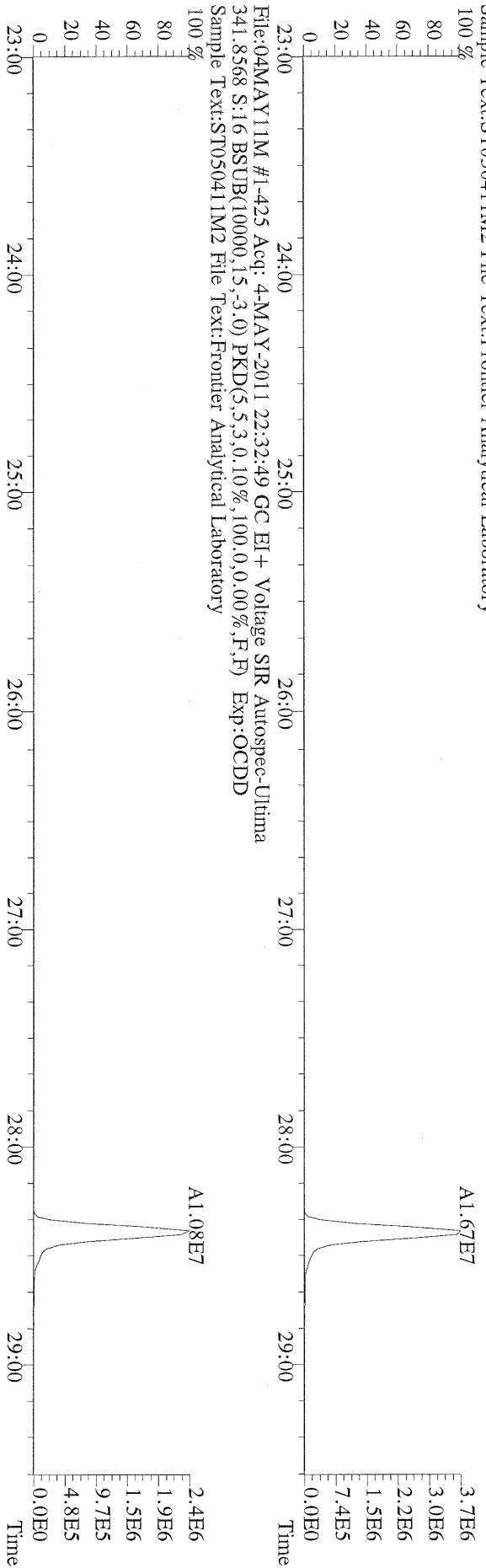
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 315.9419 S:16 BSUB(10000,15,-3.0) PKD(5,5,3.0,100,0.0,00%,F,F) Exp:OCDD
 Sample Text:ST05041IM2 File Text:Frontier Analytical Laboratory
 100 % A5.43E6



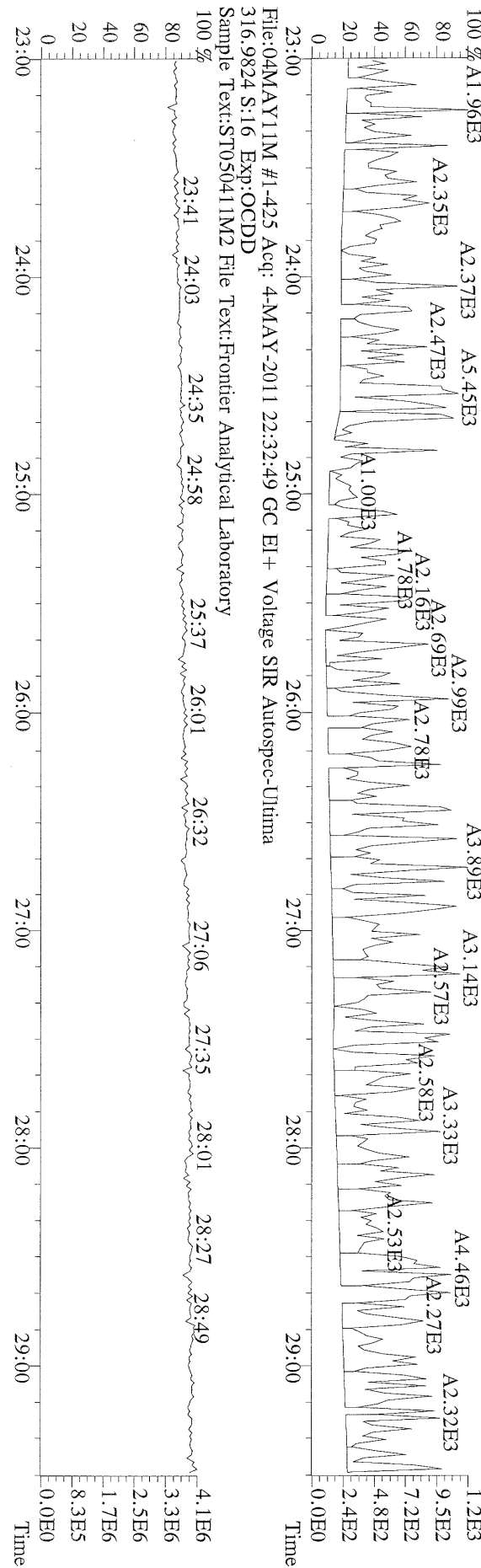
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 317.9389 S:16 BSUB(10000,15,-3.0) PKD(5,5,3.0,100,0.0,00%,F,F) Exp:OCDD
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 100 % A4.15E3



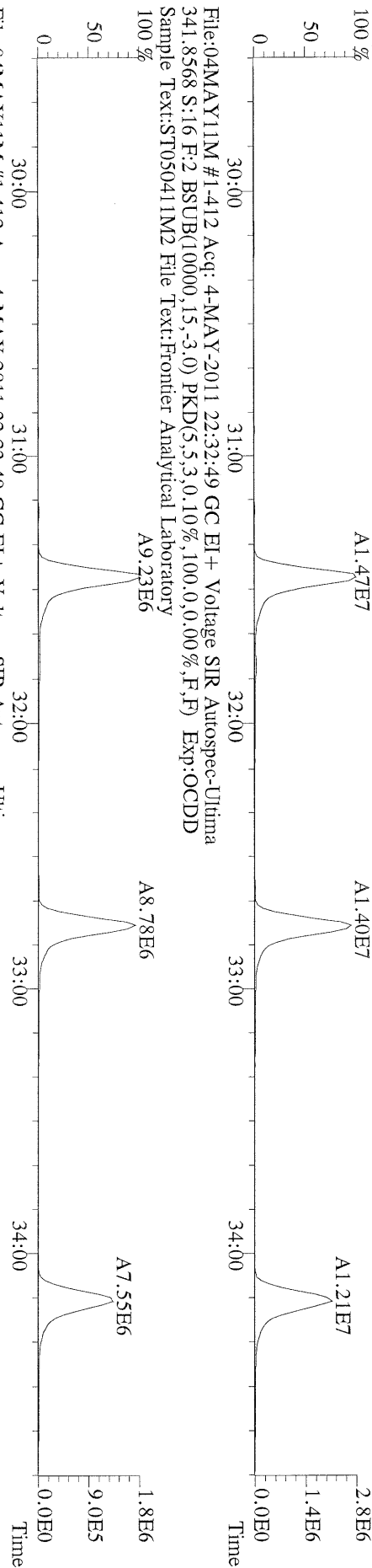
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 339.8597 S:16 BSUB(10000,15,-3.0) PKD(5,5,3.0,10%,100,0,0.00%,F,F) Exp:OCDD
 Sample Text:ST05041IM2 File Text:Frontier Analytical Laboratory



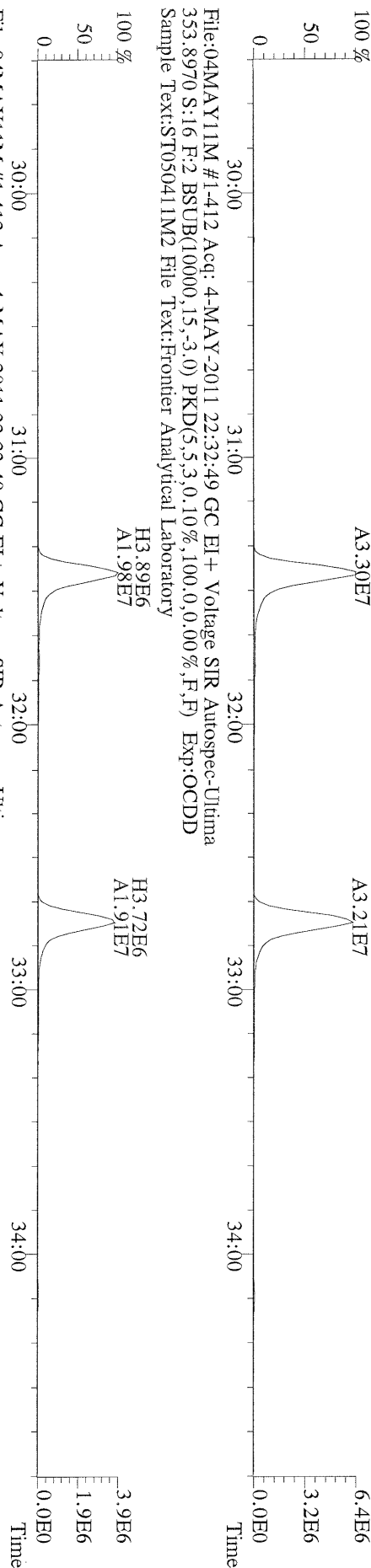
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 409.7974 S:16 BSUB(10000,15,-3.0) PKD(5,5,3.0,10%,100,0,0.00%,F,F) Exp:OCDD
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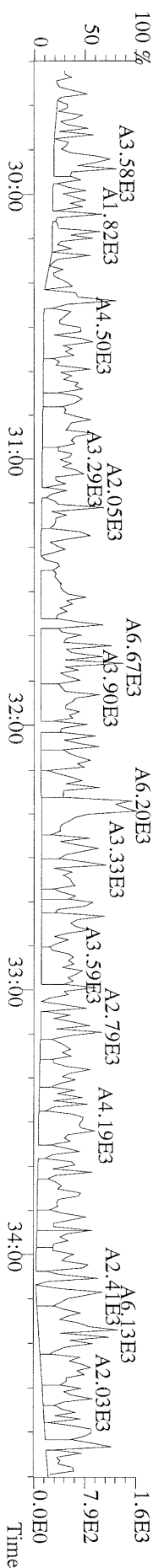
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 Sample Text:ST05041M2 File Text:Frontier Analytical Laboratory



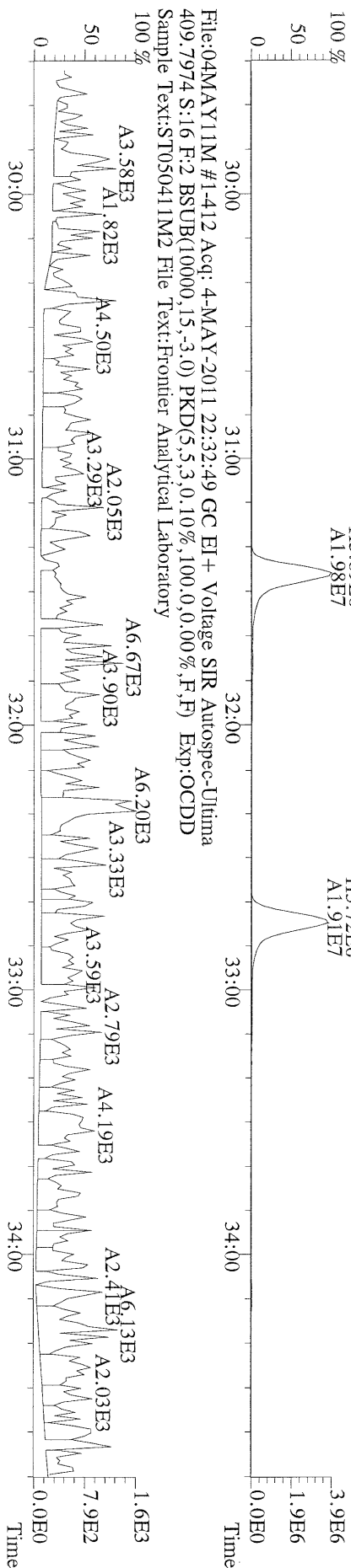
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 Sample Text:ST05041M2 File Text:Frontier Analytical Laboratory



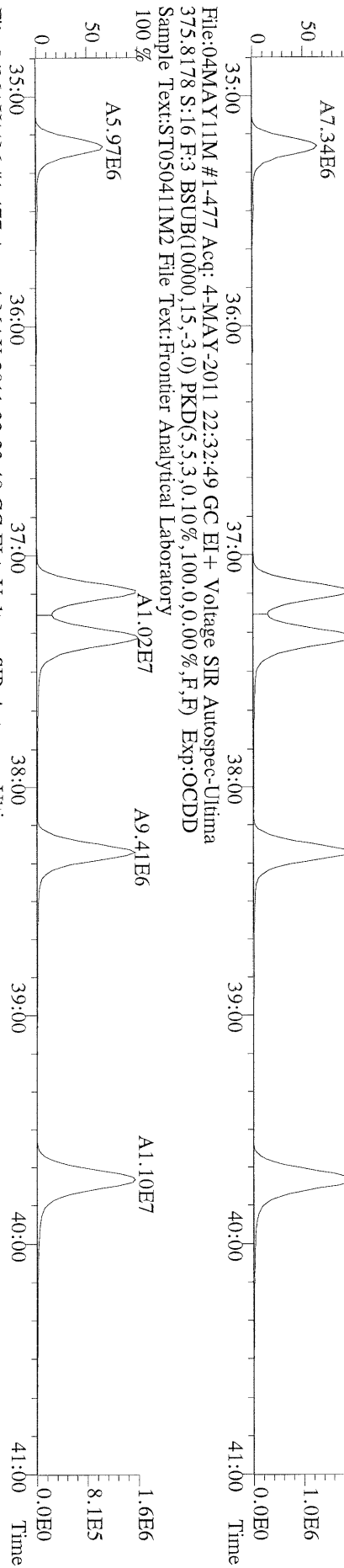
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 Sample Text:ST05041M2 File Text:Frontier Analytical Laboratory



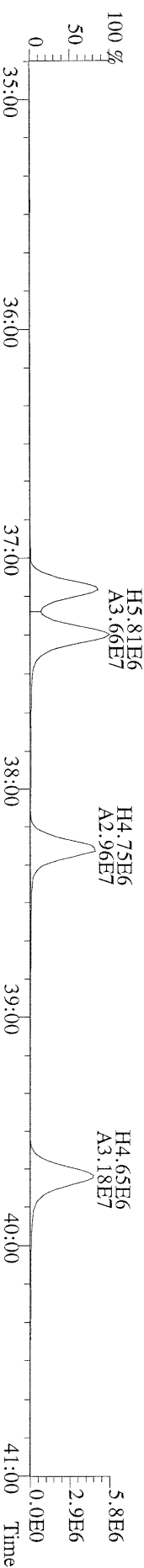
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 353.8970 S:16 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:OCDD
 Sample Text:ST05041M2 File Text:Frontier Analytical Laboratory



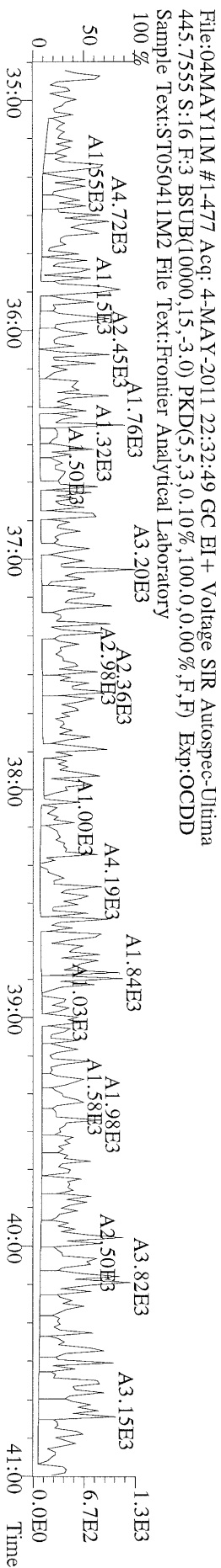
File:04MAY11M #1-477 Acq: 4-MAY-2011 22:32:49 GC EI+ Voltage SIR Autospec-Utima
 373.8207 S:16 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,100,0,0,00%,F,F) Exp:OCDD
 Sample Text:ST050411M2 File Text:Frontier Analytical Laboratory



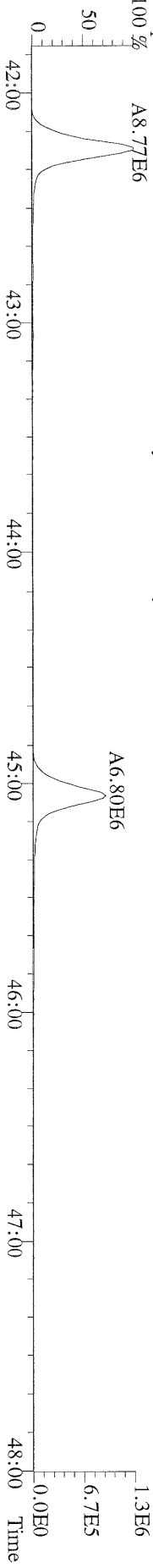
File:04MAY11M #1-477 Acq: 4-MAY-2011 22:32:49 GC EI+ Voltage SIR Autospec-Utima
 383.8630 S:16 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,100,0,0,00%,F,F) Exp:OCDD
 Sample Text:ST050411M2 File Text:Frontier Analytical Laboratory



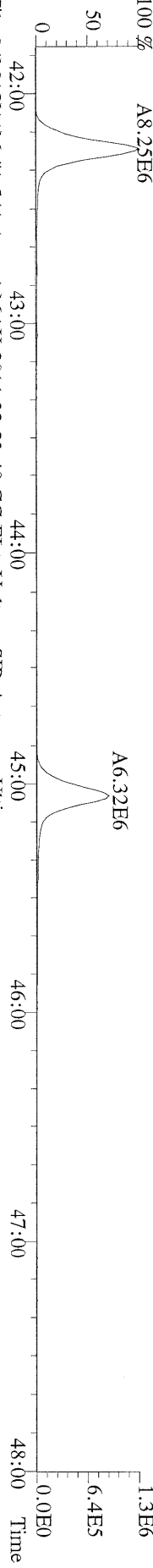
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 445.7555 S:16 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,100,0,0,00%,F,F) Exp:OCDD
 Sample Text:ST050411M2 File Text:Frontier Analytical Laboratory



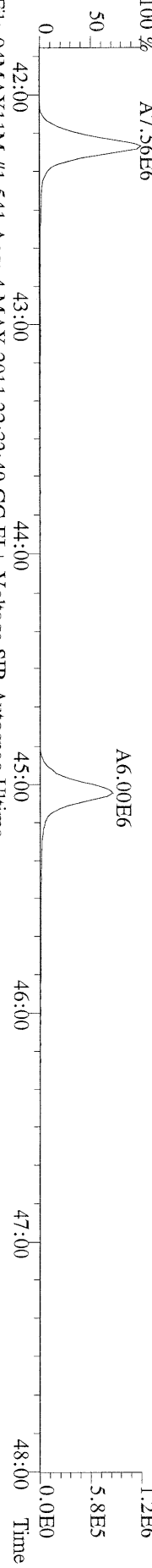
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407.7818 S:16 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,00%,F,F) Exp:OCDD
Sample Text:ST05041IM2 File Text:Frontier Analytical Laboratory
100 % A8.77E6



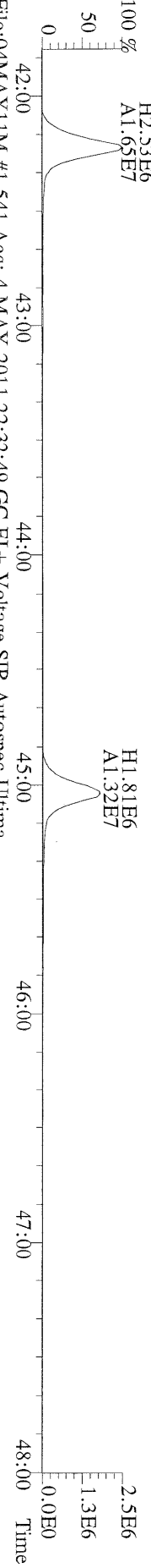
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Sample Text:ST05041IM2 File Text:Frontier Analytical Laboratory
100 % A8.25E6



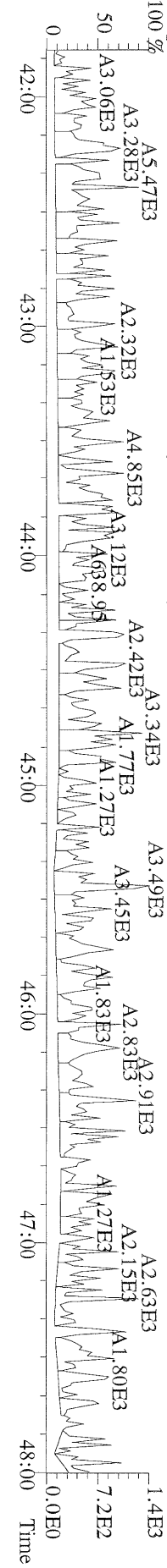
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417.8253 S:16 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,00%,F,F) Exp:OCDD
Sample Text:ST05041IM2 File Text:Frontier Analytical Laboratory
100 % A7.56E6



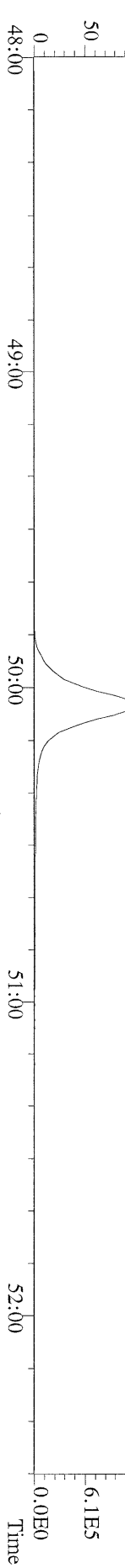
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419.8220 S:16 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,00%,F,F) Exp:OCDD
Sample Text:ST05041IM2 File Text:Frontier Analytical Laboratory
100 % H2.53E6
A1.65E7



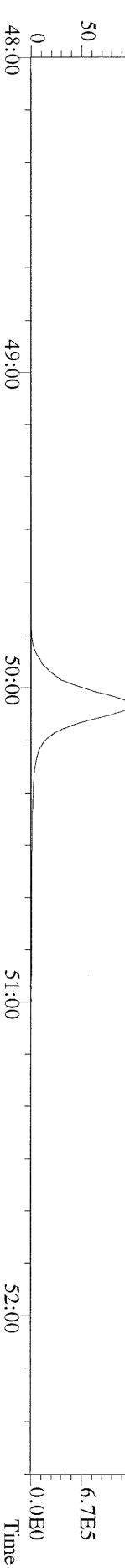
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479.7165 S:16 F:4 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,0,00%,F,F) Exp:OCDD
Sample Text:ST05041IM2 File Text:Frontier Analytical Laboratory
100 % A3.06E3
A3.28E3
A5.47E3



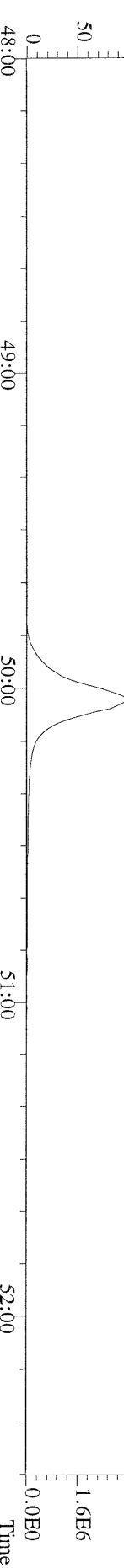
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Sample Text:ST05041IM2 File Text:Frontier Analytical Laboratory
100 %



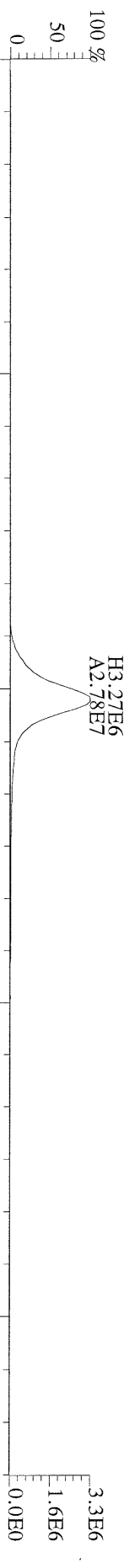
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443.7398 S:16 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:OCDD
Sample Text:ST05041IM2 File Text:Frontier Analytical Laboratory
100 %



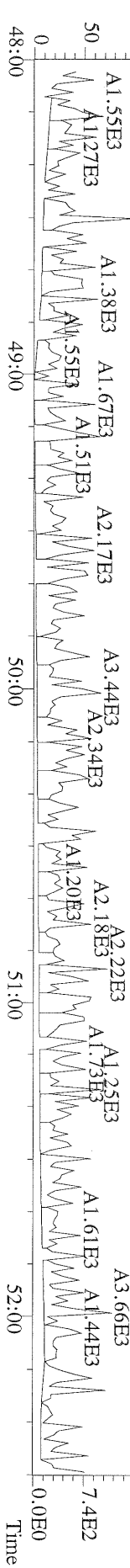
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453.7831 S:16 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:OCDD
Sample Text:ST05041IM2 File Text:Frontier Analytical Laboratory
100 %



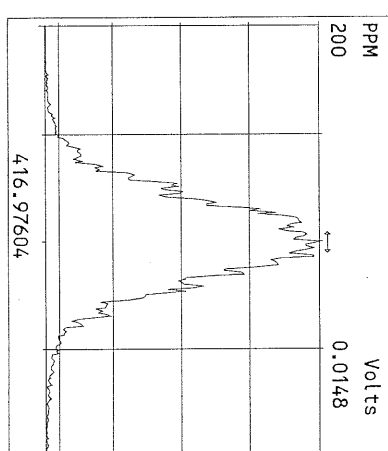
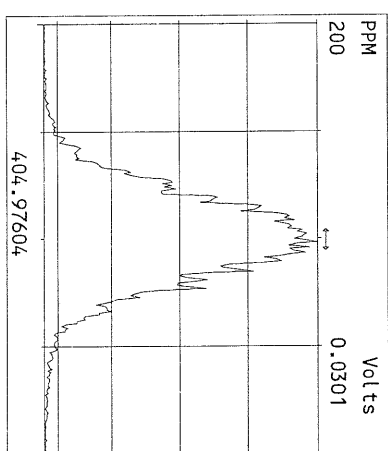
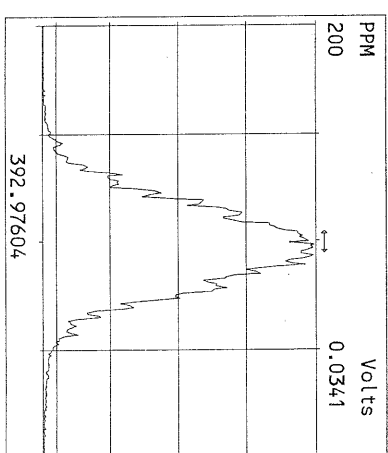
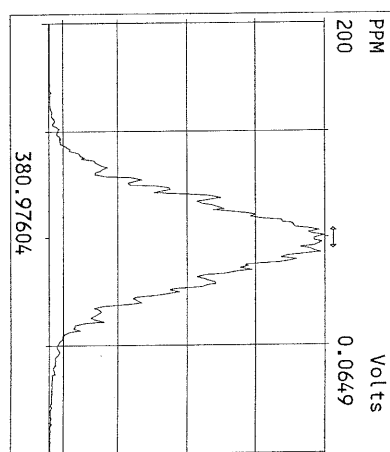
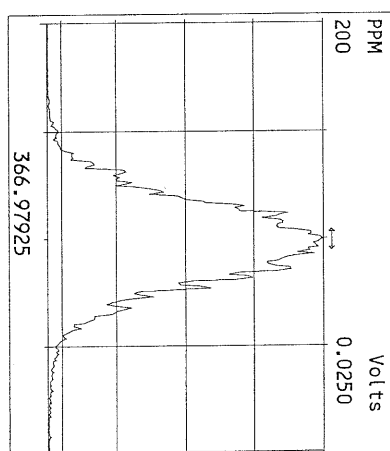
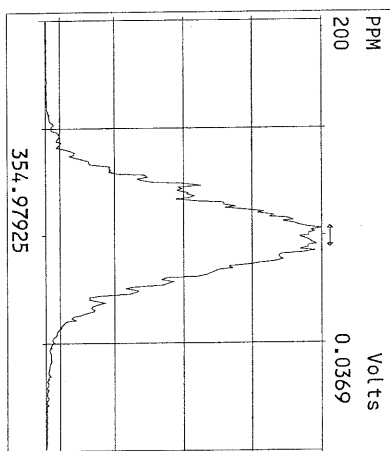
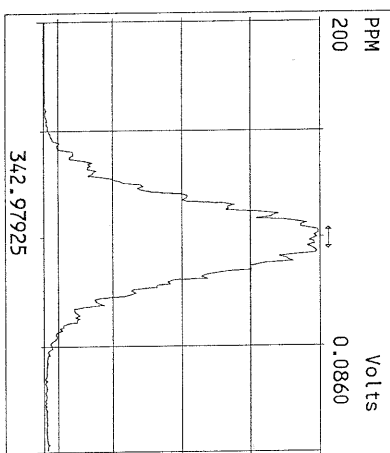
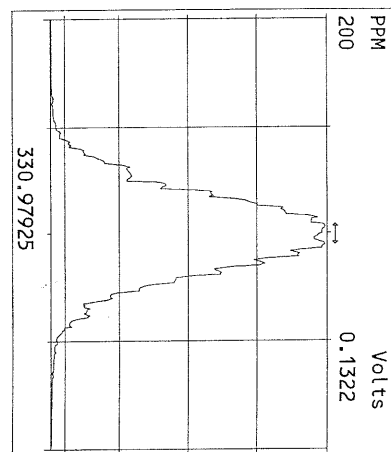
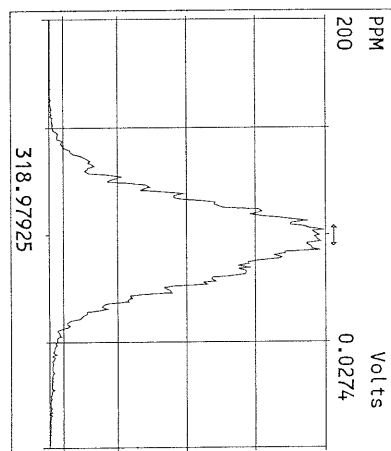
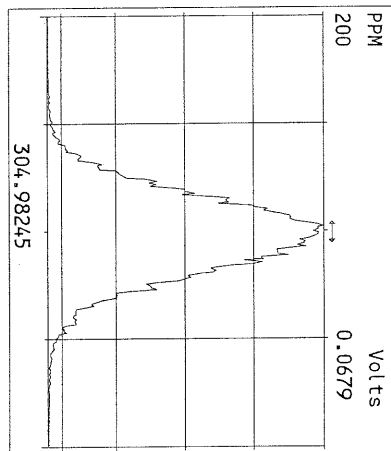
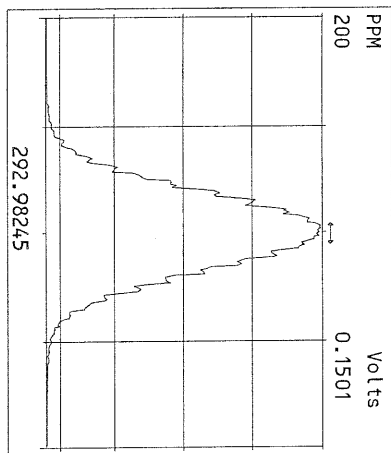
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455.7801 S:16 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:OCDD
Sample Text:ST05041IM2 File Text:Frontier Analytical Laboratory

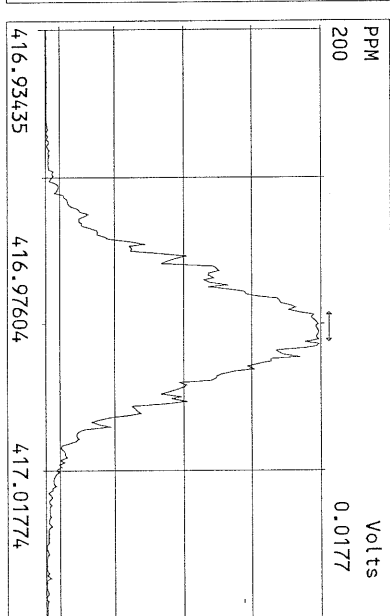
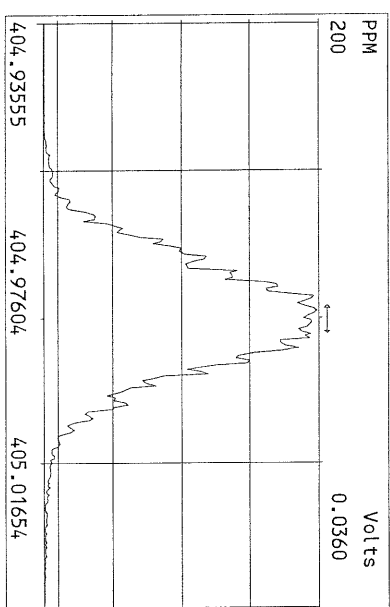
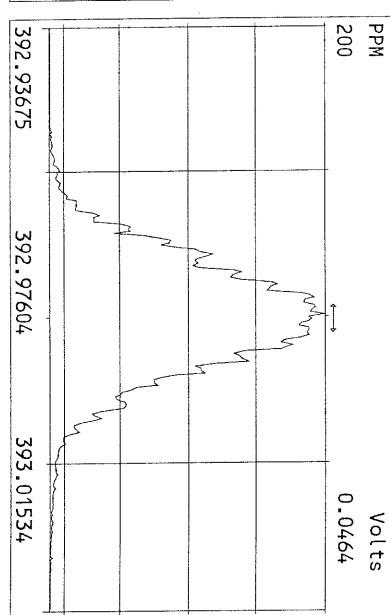
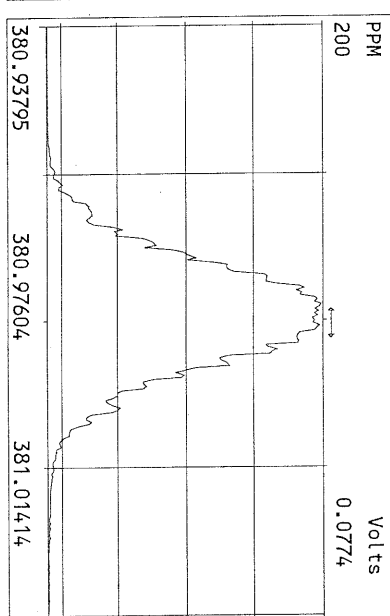
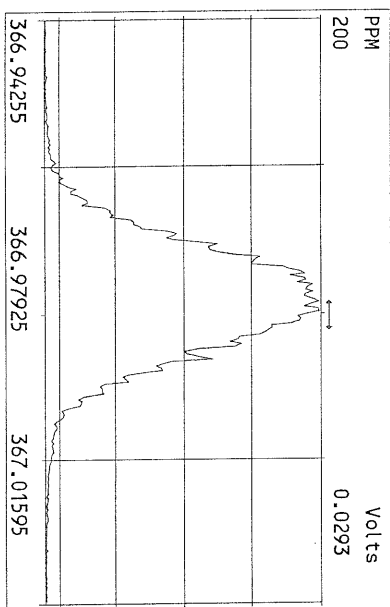
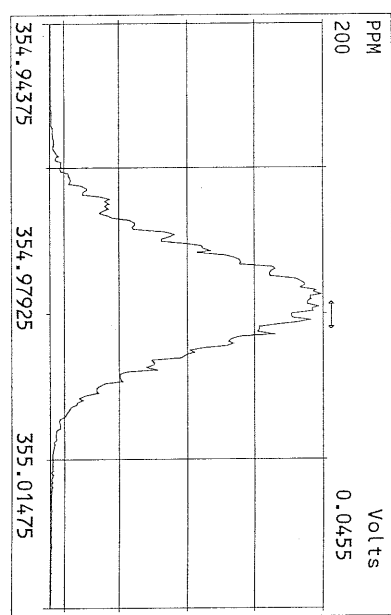
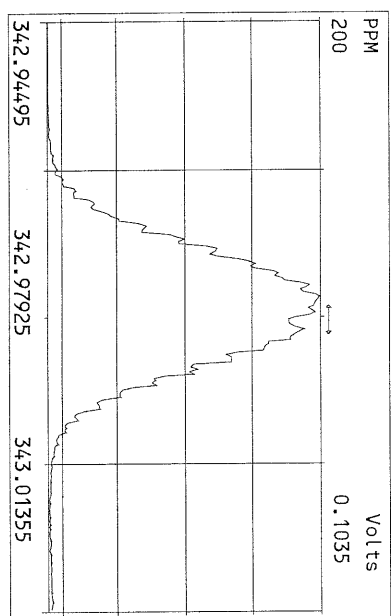
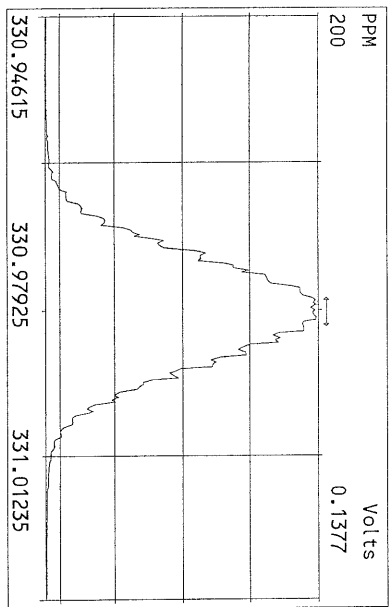


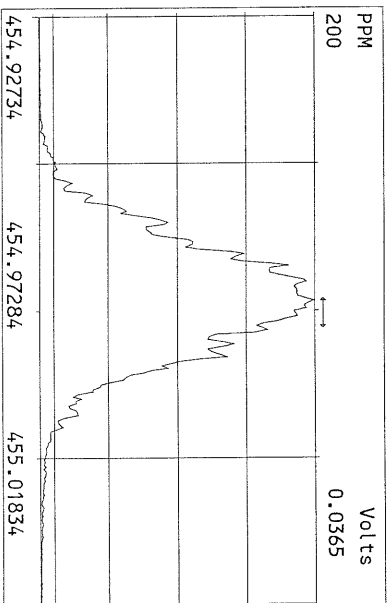
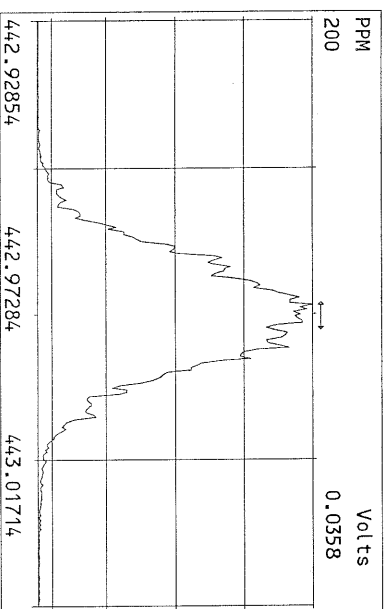
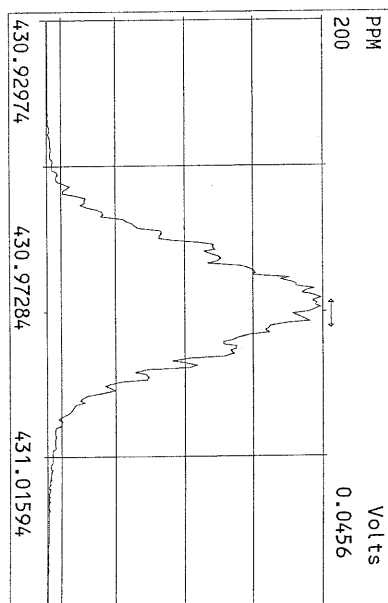
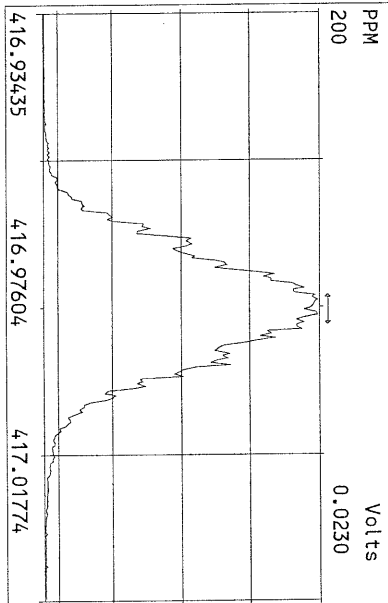
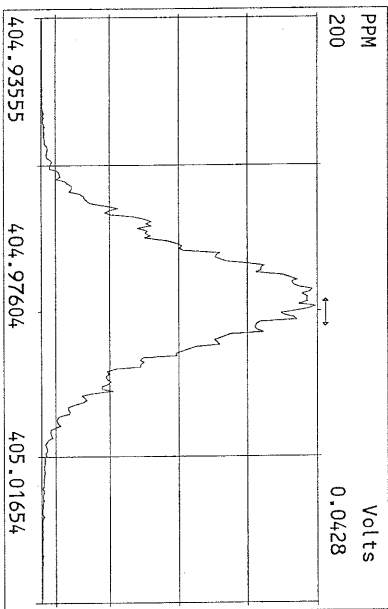
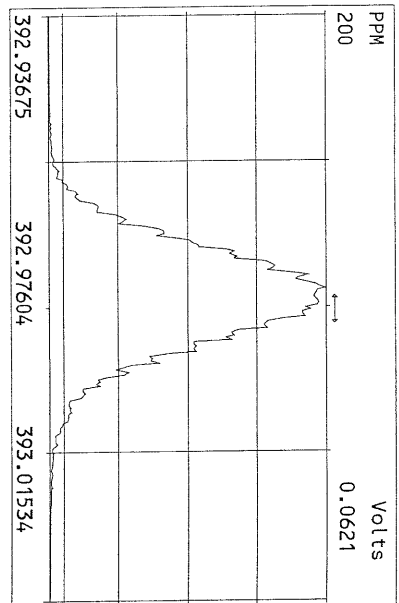
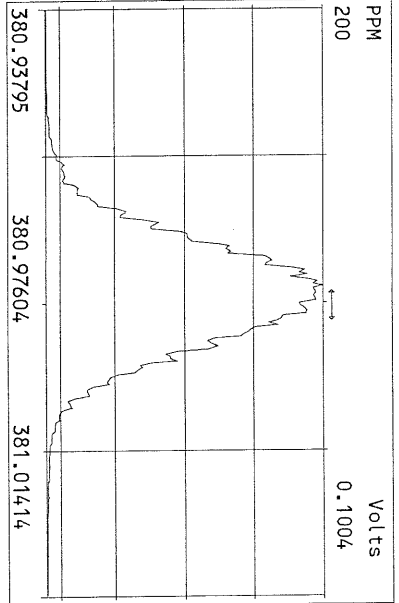
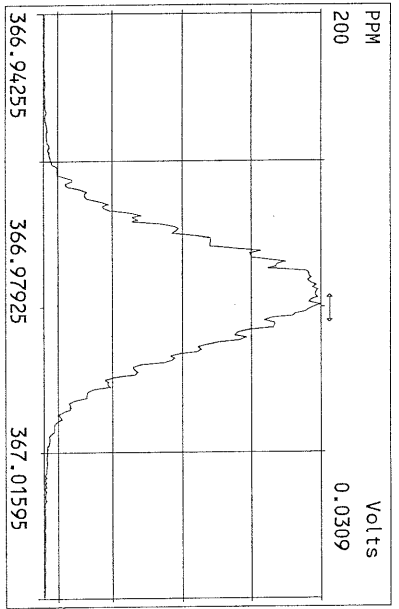
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513.6775 S:16 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:OCDD
Sample Text:ST05041IM2 File Text:Frontier Analytical Laboratory
100 %

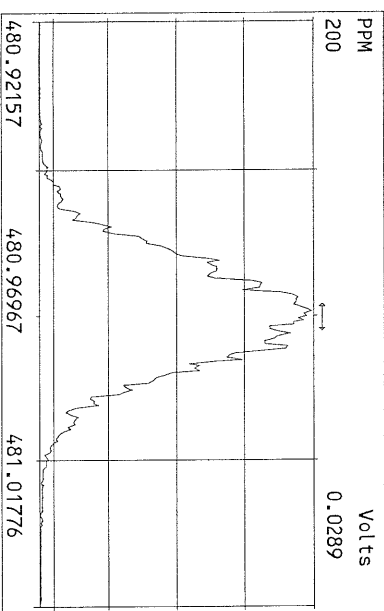
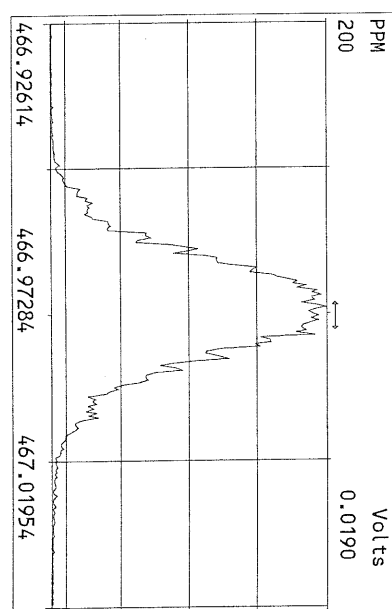
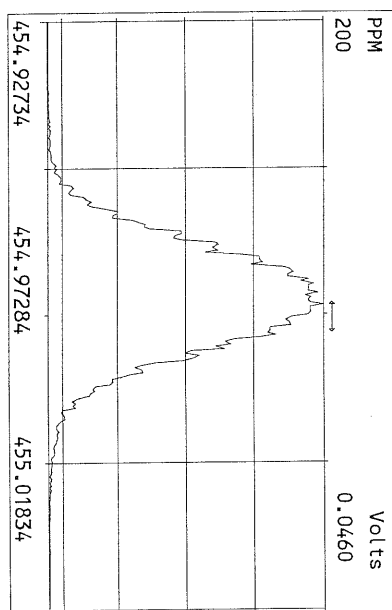
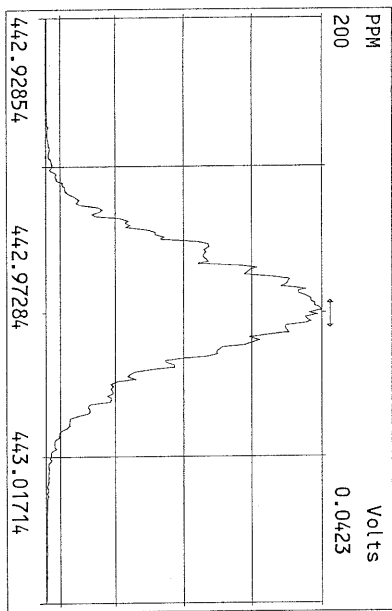
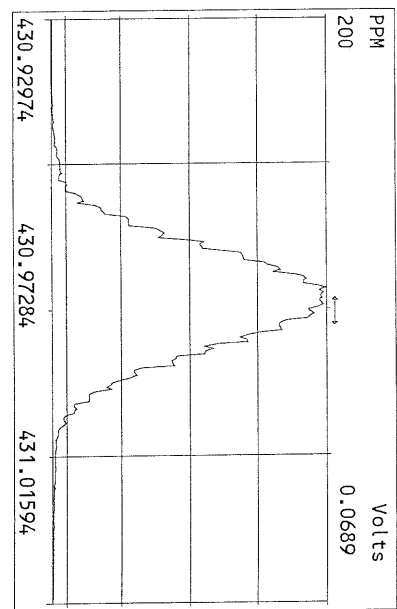
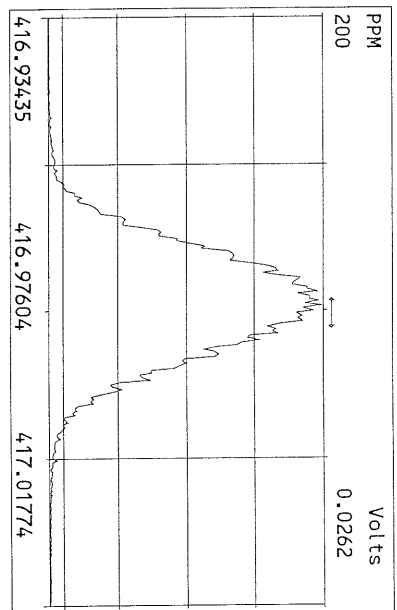
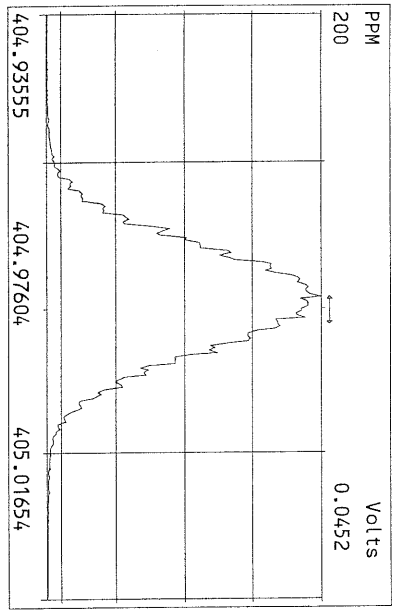


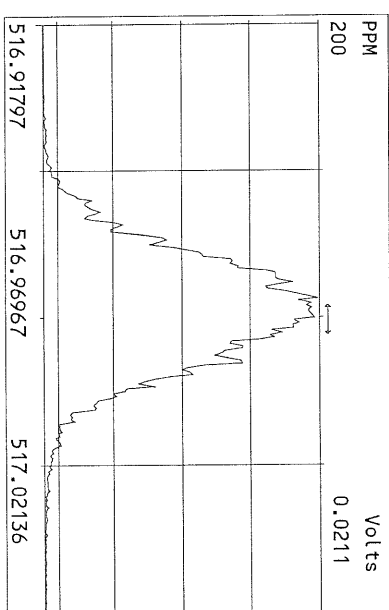
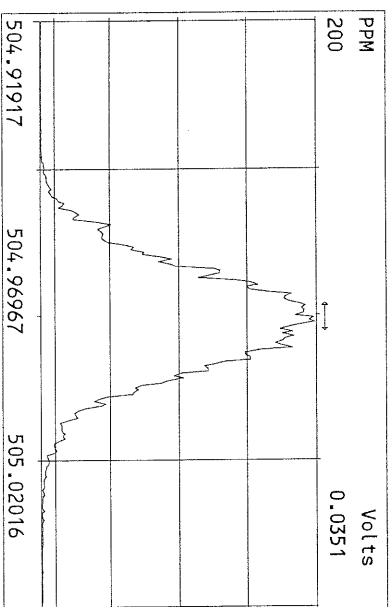
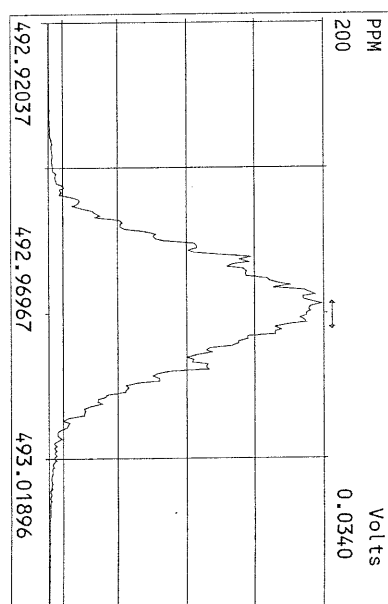
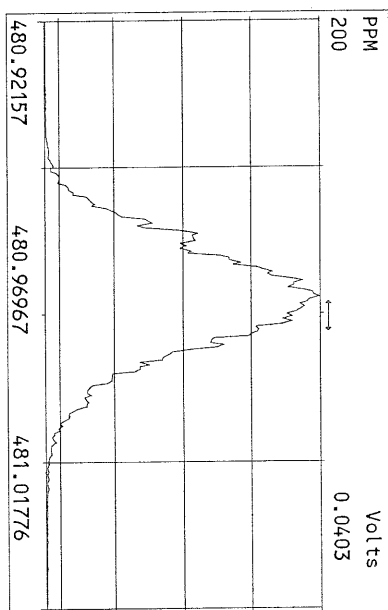
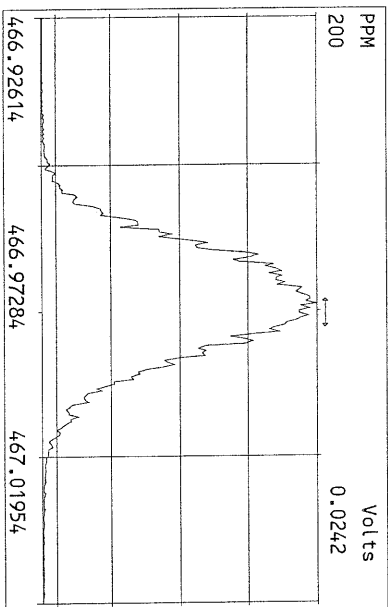
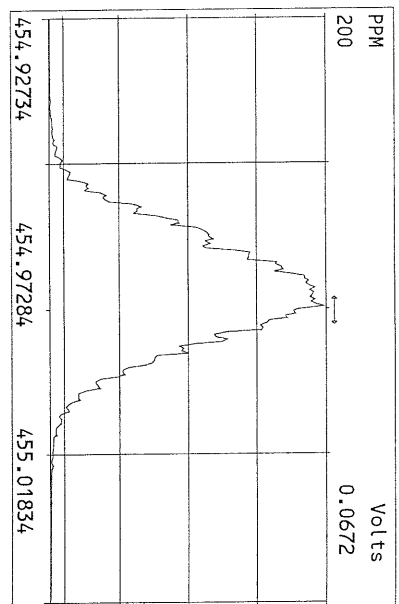
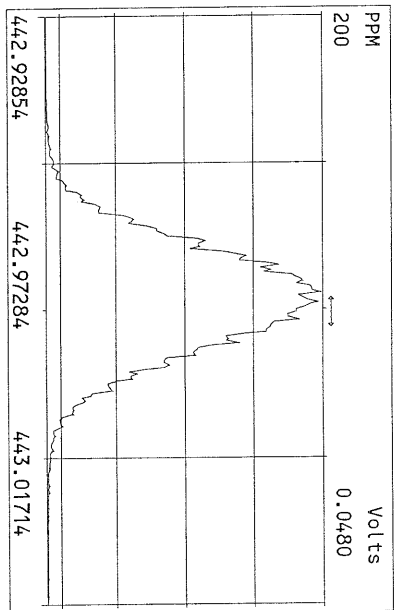
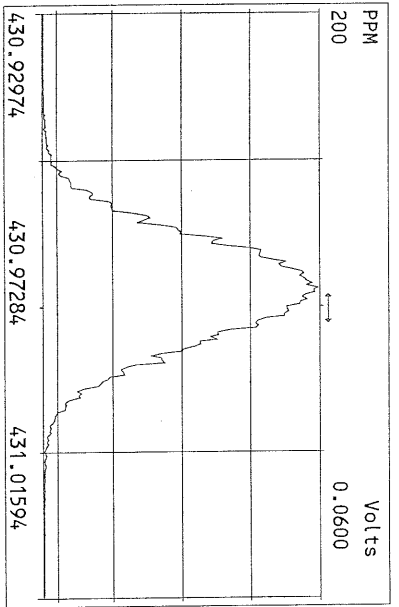
Peak Locate Examination: 5-MAY-2011:06:52 File:04MAY11M_RES_CHECK
Experiment:OCDJ Function:1 Reference:PFK











USEPA - ITD

FORM 4A
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: Frontier Analytical Laboratory Episode No.:

Contract No.: SAS No.:

Initial Calibration Date: 3/7/11

Instrument ID: FAL3 GC Column ID: DB5


VER Data Filename: 04MAY11M Sam:24 Analysis Date: 5-MAY-11 05:55:41

NATIVE ANALYTES	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	ACCEPT	CONC. FOUND	CONC. RANGE (ng/mL) (3)
2,3,7,8-TCDD	M/M+2	0.79	0.65-0.89	y	9.78	7.80 - 12.9
1,2,3,7,8-PeCDD	M+2/M+4	1.55	1.32-1.78	y	51.7	39.0 - 65.0
1,2,3,4,7,8-HxCDD	M+2/M+4	1.29	1.05-1.43	y	47.2	39.0 - 64.0
1,2,3,6,7,8-HxCDD	M+2/M+4	1.32	1.05-1.43	y	48.1	39.0 - 64.0
1,2,3,7,8,9-HxCDD	M+2/M+4	1.31	1.05-1.43	y	49.3	41.0 - 61.0
1,2,3,4,6,7,8-HpCDD	M+2/M+4	0.91	0.88-1.20	y	49.3	43.0 - 58.0
OCDD	M+2/M+4	0.94	0.76-1.02	y	97.9	79.0 - 126
2,3,7,8-TCDF	M/M+2	0.67	0.65-0.89	y	10.6	8.40 - 12.0
1,2,3,7,8-PeCDF	M+2/M+4	1.61	1.32-1.78	y	51.5	41.0 - 60.0
2,3,4,7,8-PeCDF	M+2/M+4	1.59	1.32-1.78	y	50.1	41.0 - 60.0
1,2,3,4,7,8-HxCDF	M+2/M+4	1.24	1.05-1.43	y	46.3	45.0 - 56.0
1,2,3,6,7,8-HxCDF	M+2/M+4	1.25	1.05-1.43	y	48.6	44.0 - 57.0
2,3,4,6,7,8-HxCDF	M+2/M+4	1.22	1.05-1.43	y	46.9	44.0 - 57.0
1,2,3,7,8,9-HxCDF	M+2/M+4	1.23	1.05-1.43	y	47.2	45.0 - 56.0
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.07	0.88-1.20	y	47.9	45.0 - 55.0
1,2,3,4,7,8,9-HpCDF	M+2/M+4	1.05	0.88-1.20	y	48.1	43.0 - 58.0
OCDF	M+2/M+4	0.93	0.76-1.02	y	90.7	63.0 - 159

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

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

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

Analyst: Date: 5/5/11

USEPA - ITD

FORM 4B
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: Frontier Analytical Laboratory

Episode No.:

Contract No.:

SAS No.:

Initial Calibration Date: 3/7/11

Instrument ID: FAL3

GC Column ID: DB5

VER Data Filename: 04MAY11M Sam:24

Analysis Date: 5-MAY-11 05:55:41

LABELLED COMPOUNDS	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	ACCEPT	CONC. FOUND	CONC. RANGE (ng/mL) (3)
13C-2,3,7,8-TCDD	M/M+2	0.77	0.65-0.89	y	92.9	82.0 - 121
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.78	1.32-1.78	y	90.9	62.0 - 160
13C-1,2,3,4,7,8-HxCDD	M+2/M+4	1.22	1.05-1.43	y	96.3	85.0 - 117
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.33	1.05-1.43	y	100	85.0 - 118
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.04	0.88-1.20	y	106	72.0 - 138
13C-OCDD	M+2/M+4	0.96	0.76-1.02	y	193	96.0 - 415
13C-2,3,7,8-TCDF	M/M+2	0.86	0.65-0.89	y	96.4	71.0 - 140
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.68	1.32-1.78	y	102	76.0 - 130
13C-2,3,4,7,8-PeCDF	M+2/M+4	1.64	1.32-1.78	y	101	77.0 - 130
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.47	0.43-0.59	y	100	76.0 - 131
13C-1,2,3,6,7,8-HxCDF	M/M+2	0.47	0.43-0.59	y	101	70.0 - 143
13C-2,3,4,6,7,8-HxCDF	M/M+2	0.47	0.43-0.59	y	99.9	73.0 - 137
13C-1,2,3,7,8,9-HxCDF	M/M+2	0.47	0.43-0.59	y	99.2	74.0 - 135
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.45	0.37-0.51	y	101	78.0 - 129
13C-1,2,3,4,7,8,9-HpCDF	M/M+2	0.46	0.37-0.51	y	104	77.0 - 129
13C-OCDF	M+2/M+4	0.96	0.76-1.02	y	190	96.0 - 415
CLEANUP STANDARD (4)						
37Cl-2,3,7,8-TCDD					8.45	7.80 - 12.8

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

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

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

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

Analyst: Date: 5/5/11

FORM 5
PCDD/PCDF RT WINDOW AND ISOMER SPECIFICITY STANDARDS

Lab Name: Frontier Analytical Laboratory Episode No.:
Contract No.: SAS No.:
Instrument ID: FAL3 Initial Calibration Date: 3/7/11
RT Window Data Filename: 04MAY11M Sam:24 Analysis Date: 5-MAY-11 Time: 05:55:41
DB-5 IS Data Filename: 04MAY11M Sam:24 Analysis Date: 5-MAY-11 Time: 05:55:41
DB-225 IS Data Filename: Analysis Date: Time:

DB-5 RT WINDOW DEFINING STANDARDS RESULTS

ISOMERS	ABSOLUTE RT	ISOMERS	ABSOLUTE RT
1,3,6,8-TCDD (F)	24:22	1,3,6,8-TCDF (F)	23:01
1,2,8,9-TCDD (L)	28:18	1,2,8,9-TCDF (L)	28:31
1,2,4,7,9-PeCDD (F)	30:14	1,3,4,6,8-PeCDF (F)	28:24
1,2,3,8,9-PeCDD (L)	33:46	1,2,3,8,9-PeCDF (L)	34:11
1,2,4,6,7,9-HxCDD (F)	36:06	1,2,3,4,6,8-HxCDF (F)	35:13
1,2,3,7,8,9-HxCDD (L)	39:10	1,2,3,7,8,9-HxCDF (L)	39:44
1,2,3,4,6,7,9-HpCDD (F)	42:47	1,2,3,4,6,7,8-HpCDF (F)	42:15
1,2,3,4,6,7,8-HpCDD (L)	44:09	1,2,3,4,7,8,9-HpCDF (L)	45:03

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


=====

ISOMER SPECIFICITY (IS) TEST STANDARD RESULTS

% VALLEY HEIGHT
BETWEEN
COMPARED PEAKS (1)

<25%

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

Analyst: 

Date: 5/5/11

PCDD/PCDF RELATIVE RETENTION TIMES

Lab Name: Frontier Analytical Laboratory

Episode No.:

Contract No.:

SAS No.:

Init. Cal. Date: 3/7/11

Instrument ID: FAL3

GC Column ID: DB5

Analysis Date: 5-MAY-11 05:55:41

CS3 or VER Data Filename: 04MAY11M

Sam:24

NATIVE ANALYTES	RETENTION TIME		RRT	RRT
	REFERENCE			QC LIMITS (1)
2,3,7,8-TCDD	13C-2,3,7,8-TCDD		1.001	0.999-1.002
2,3,7,8-TCDF	13C-2,3,7,8-TCDF		1.001	0.999-1.003
1,2,3,7,8-PeCDD	13C-1,2,3,7,8-PeCDD		1.001	0.999-1.002
1,2,3,7,8-PeCDF	13C-1,2,3,7,8-PeCDF		1.001	0.999-1.002
2,3,4,7,8-PeCDF	13C-2,3,4,7,8-PeCDF		1.001	0.999-1.002
LABELED COMPOUNDS				
37Cl-2,3,7,8-TCDD	13C-1,2,3,4-TCDD		1.022	0.989-1.052
13C-2,3,7,8-TCDD			1.022	0.976-1.043
13C-2,3,7,8-TCDF			0.993	0.923-1.103
13C-1,2,3,7,8-PeCDD			1.239	1.000-1.567
13C-1,2,3,7,8-PeCDF			1.174	0.923-1.203
13C-2,3,4,7,8-PeCDF			1.223	0.923-1.303

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

Analyst: _____



Date: _____



FORM 6B
PCDD/PCDF RELATIVE RETENTION TIMES

Lab Name: Frontier Analytical Laboratory

Episode No.:

Contract No.:

SAS No.:

Init. Cal. Date: 3/7/11

Instrument ID: FAL3

GC Column ID: DB5

Analysis Date: 5-MAY-11 05:55:41

CS3 or VER Data Filename: 04MAY11M

Sam:24

NATIVE ANALYTES	RETENTION TIME		RRT	RRT
	REFERENCE			QC LIMITS (1)
1,2,3,4,7,8-HxCDD	13C-1,2,3,4,7,8-HxCDD		1.001	0.999-1.001
1,2,3,6,7,8-HxCDD	13C-1,2,3,6,7,8-HxCDD		1.001	0.998-1.004
1,2,3,7,8,9-HxCDD	13C-1,2,3,6,7,8-HxCDD		1.012	1.000-1.019
1,2,3,4,7,8-HxCDF	13C-1,2,3,4,7,8-HxCDF		1.000	0.999-1.001
1,2,3,6,7,8-HxCDF	13C-1,2,3,6,7,8-HxCDF		1.000	0.997-1.005
2,3,4,6,7,8-HxCDF	13C-2,3,4,6,7,8-HxCDF		1.001	0.999-1.001
1,2,3,7,8,9-HxCDF	13C-1,2,3,7,8,9-HxCDF		1.001	0.999-1.001
1,2,3,4,6,7,8-HpCDD	13C-1,2,3,4,6,7,8-HpCDD		1.000	0.999-1.001
1,2,3,4,6,7,8-HpCDF	13C-1,2,3,4,6,7,8-HpCDF		1.000	0.999-1.001
1,2,3,4,7,8,9-HpCDF	13C-1,2,3,4,7,8,9-HpCDF		1.000	0.999-1.001
OCDD	13C-OCDD		1.001	0.999-1.001
OCDF	13C-OCDF		1.001	0.999-1.001
LABELED COMPOUNDS				
13C-1,2,3,4,7,8-HxCDD	13C-1,2,3,7,8,9-HxCDD		0.985	0.977-1.000
13C-1,2,3,6,7,8-HxCDD			0.989	0.981-1.003
13C-1,2,3,4,7,8-HxCDF			0.949	0.944-0.970
13C-1,2,3,6,7,8-HxCDF			0.954	0.949-0.975
13C-2,3,4,6,7,8-HxCDF			0.978	0.959-1.021
13C-1,2,3,7,8,9-HxCDF			1.015	0.977-1.047
13C-1,2,3,4,6,7,8-HpCDD			1.128	1.086-1.130
13C-1,2,3,4,6,7,8-HpCDF			1.079	1.043-1.085
13C-1,2,3,4,7,8,9-HpCDF			1.151	1.057-1.154
13C-OCDD			1.269	1.032-1.311
13C-OCDF			1.279	1.000-1.311

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

Analyst: _____

Date: _____

Name	Resp	RA	RT	RRF	WHO 1998 Tox:		WHO 2005 Tox:		114
					Conc	Qual	Fac Noise-1	Noise-2	
2,3,7,8-TCDD	4.01e+06	0.79 y	27:22	1.13	9.78	2.50	-	-	*
1,2,3,7,8-PeCDD	1.82e+07	1.55 y	33:12	1.02	51.7	2.50	-	-	*
1,2,3,4,7,8-HxCDD	1.88e+07	1.29 y	38:33	1.45	47.2	2.50	-	-	*
1,2,3,6,7,8-HxCDD	1.58e+07	1.32 y	38:43	1.45	48.1	2.50	-	-	*
1,2,3,7,8,9-HxCDD	1.82e+07	1.31 y	39:10	1.47	49.3	2.50	-	-	*
1,2,3,4,6,7,8-HpCDD	1.36e+07	0.91 y	44:09	1.30	49.3	2.50	-	-	*
OCDD	2.00e+07	0.94 y	49:42	1.45	97.9	2.50	-	-	*


2,3,7,8-TCDF	7.37e+06	0.67 y	26:36	1.15	10.6	2.50	-	-	*
1,2,3,7,8-PeCDF	2.49e+07	1.61 y	31:28	0.89	51.5	2.50	-	-	*
2,3,4,7,8-PeCDF	2.33e+07	1.59 y	32:46	0.89	50.1	2.50	-	-	*
1,2,3,4,7,8-HxCDF	2.08e+07	1.24 y	37:10	1.01	46.3	2.50	-	-	*
1,2,3,6,7,8-HxCDF	2.42e+07	1.25 y	37:21	0.89	48.6	2.50	-	-	*
2,3,4,6,7,8-HxCDF	2.13e+07	1.22 y	38:18	1.02	46.9	2.50	-	-	*
1,2,3,7,8,9-HxCDF	2.46e+07	1.23 y	39:44	1.10	47.2	2.50	-	-	*
1,2,3,4,6,7,8-HpCDF	1.70e+07	1.07 y	42:15	1.48	47.9	2.50	-	-	*
1,2,3,4,7,8,9-HpCDF	1.31e+07	1.05 y	45:03	1.43	48.1	2.50	-	-	*
OCDF	2.04e+07	0.93 y	50:04	0.84	90.7	2.50	-	-	*

Rec									
13C-2,3,7,8-TCDD	3.61e+07	0.77 y	27:21	1.03	92.9				92.9
13C-1,2,3,7,8-PeCDD	3.47e+07	1.78 y	33:10	1.01	90.9				90.9
13C-1,2,3,4,7,8-HxCDD	2.76e+07	1.22 y	38:32	1.19	96.3				96.3
13C-1,2,3,6,7,8-HxCDD	2.26e+07	1.33 y	38:42	0.94	100				100
13C-1,2,3,4,6,7,8-HpCDD	2.11e+07	1.04 y	44:08	0.83	106				106
13C-OCDD	2.82e+07	0.96 y	49:40	0.61	193				96.5

13C-2,3,7,8-TCDF	6.07e+07	0.86 y	26:35	0.98	96.4				96.4
13C-1,2,3,7,8-PeCDF	5.46e+07	1.68 y	31:26	0.83	102				102
13C-2,3,4,7,8-PeCDF	5.22e+07	1.64 y	32:45	0.80	101				101
13C-1,2,3,4,7,8-HxCDF	4.45e+07	0.47 y	37:09	1.84	100				100
13C-1,2,3,6,7,8-HxCDF	5.58e+07	0.47 y	37:20	2.29	101				101
13C-2,3,4,6,7,8-HxCDF	4.47e+07	0.47 y	38:16	1.86	99.9				99.9
13C-1,2,3,7,8,9-HxCDF	4.73e+07	0.47 y	39:42	1.98	99.2				99.2
13C-1,2,3,4,6,7,8-HpCDF	2.39e+07	0.45 y	42:14	0.99	101				101
13C-1,2,3,4,7,8,9-HpCDF	1.91e+07	0.46 y	45:02	0.77	104				104
13C-OCDF	5.33e+07	0.96 y	50:02	1.17	190				95.1

37Cl-2,3,7,8-TCDD	2.33e+06		27:22	0.73	8.45				84.5
13C-1,2,3,4-TCDD	3.78e+07	0.77 y	26:46	-	99.5				
13C-1,2,3,4-TCDF	6.43e+07	0.87 y	25:31	-	89.3				
13C-1,2,3,7,8,9-HxCDD	2.41e+07	1.22 y	39:08	-	96.9				

	Fac Noise-1	Noise-2	DL	#Hom					
Total Tetra-Dioxins	2.12e+07	23:40	1.13	51.8	2.50	-	-	*	13
Total Penta-Dioxins	3.93e+07	30:14	1.02	111	2.50	-	-	*	8
Total Hexa-Dioxins	5.96e+07	36:06	1.46	163	2.50	-	-	*	6
Total Hepta-Dioxins	2.73e+07	42:47	1.30	99.5	2.50	-	-	*	5
Total Tetra-Furans	3.50e+07	23:01	1.15	50.2	2.50	-	-	*	15
1st Fn. Tot Penta-Furans	2.82e+07	28:24	0.89	59.3	2.50	-	-	*	PeCDF 1
Total Penta-Furans	6.95e+07	30:09	0.89	146	2.50	-	-	*	206
Total Hexa-Furans	1.05e+08	35:13	1.00	218	2.50	-	-	*	8
Total Hepta-Furans	3.03e+07	42:15	1.46	96.6	2.50	-	-	*	8

Analyst:  Date: 5/5/11

Frontier Analytical Laboratory - Acquisition Log

Run Name:04MAY11M

Instrument: FAL3

GC: DB5

Experiment:OCDD

Data File S	FAL ID	Client ID	Acquired	ConCal	EndCal	Analyst
04MAY11M 1	ST050411M1	1613 CS3 100511J	4-MAY-11 08:42:22	ST050411M1	ST050411M2	TC
04MAY11M 2	2282-001-0001-OPR	OPR	4-MAY-11 09:37:40	ST050411M1	ST050411M2	TC
04MAY11M 3	2282-001-0001-MB	Method Blank	4-MAY-11 10:32:58	ST050411M1	ST050411M2	TC
04MAY11M 4	6733-009-0001-SA	LL-SB4-2-4-041911	4-MAY-11 11:28:17	ST050411M1	ST050411M2	TC
04MAY11M 5	6733-008-0001-SA	LL-SB4-1.5-2-041911	4-MAY-11 12:23:36	ST050411M1	ST050411M2	TC
04MAY11M 6	6733-003-0001-SA	LL-SB6-2-4-041811	4-MAY-11 13:19:03	ST050411M1	ST050411M2	TC
04MAY11M 7	6733-007-0001-SA	LL-SB4-0-0.5-041911	4-MAY-11 14:14:26	ST050411M1	ST050411M2	TC
04MAY11M 8	6733-002-0001-SA	LL-SB6-1.5-2-041811	4-MAY-11 15:09:48	ST050411M1	ST050411M2	TC
04MAY11M 9	6733-004-0001-SA	LL-SB5-0-0.5-041811	4-MAY-11 16:05:12	ST050411M1	ST050411M2	TC
04MAY11M 10	6733-005-0001-SA	LL-SB5-1.5-2-041811	4-MAY-11 17:00:36	ST050411M1	ST050411M2	TC
04MAY11M 11	6733-006-0001-SA	LL-SB5-2-4-041811	4-MAY-11 17:55:58	ST050411M1	ST050411M2	TC
04MAY11M 12	6733-001-0001-SA	LL-SB6-0-0.5-041811	4-MAY-11 18:51:22	ST050411M1	ST050411M2	TC
04MAY11M 13	6733-009-0002-MS	LL-SB4-2-4-041911	4-MAY-11 19:46:44	ST050411M1	ST050411M2	TC
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04MAY11M 16	ST050411M2	1613 CS3 100511J	4-MAY-11 22:32:49	ST050411M2	ST050411M3	TC
04MAY11M 17	2283-001-0001-OPR	OPR	4-MAY-11 23:28:13	ST050411M2	ST050411M3	TC
04MAY11M 18	2283-001-0001-MB	Method Blank	5-MAY-11 00:23:36	ST050411M2	ST050411M3	TC
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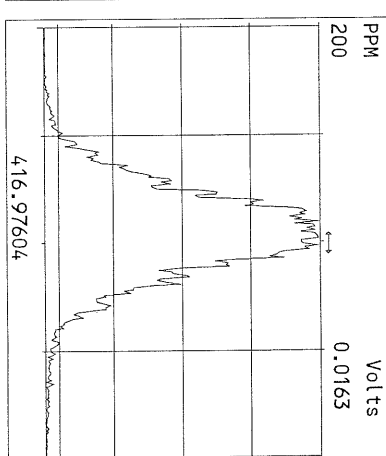
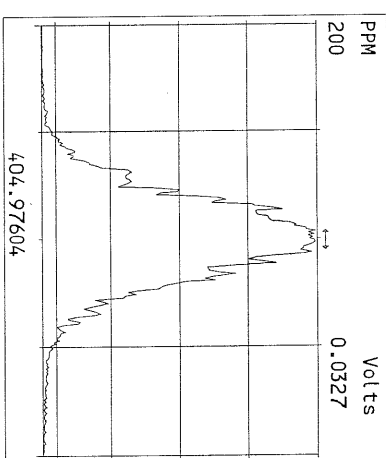
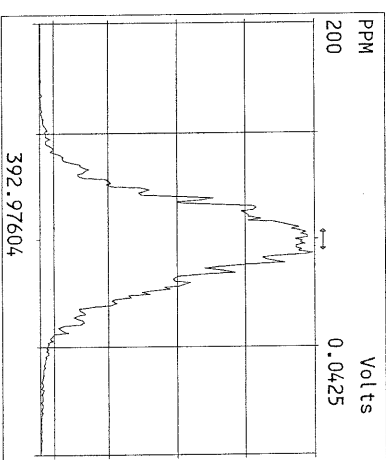
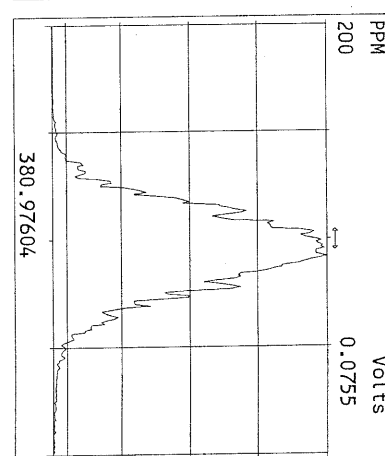
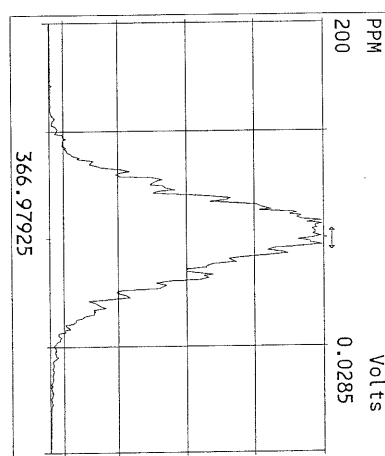
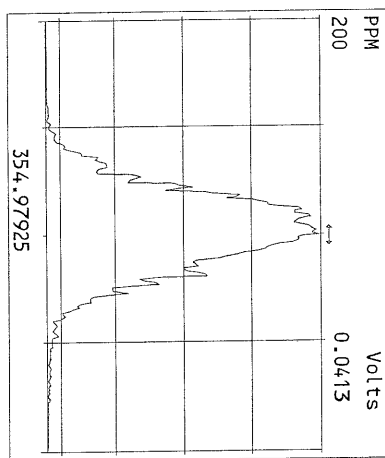
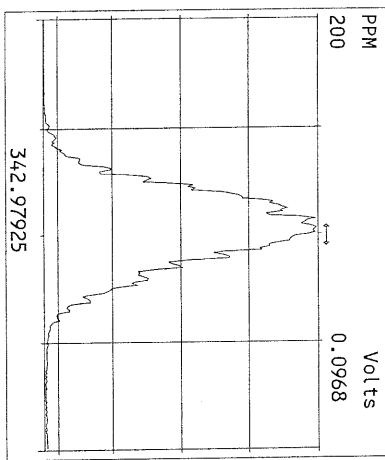
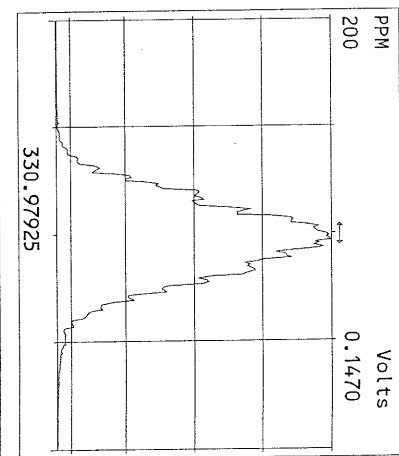
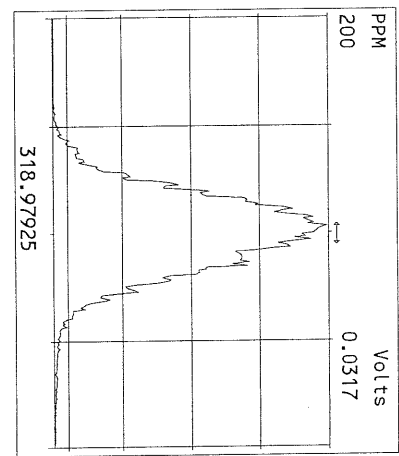
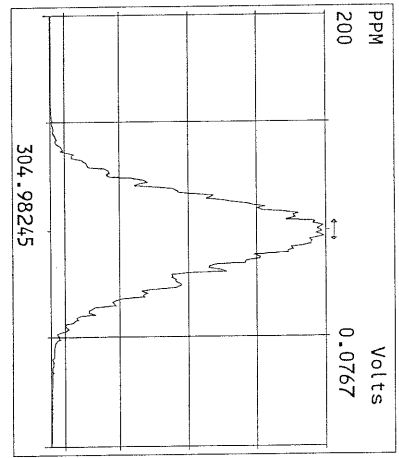
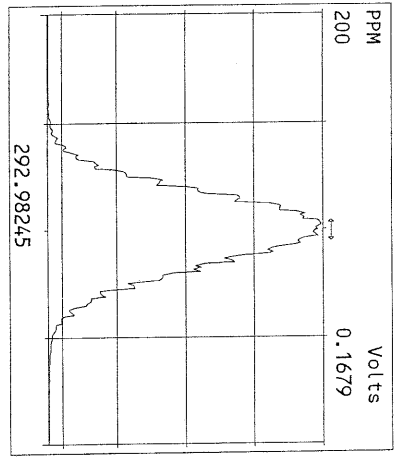


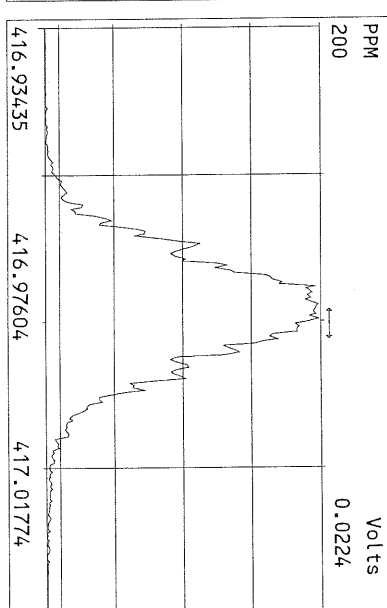
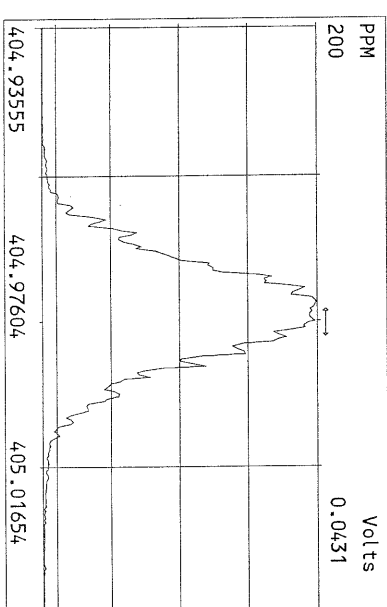
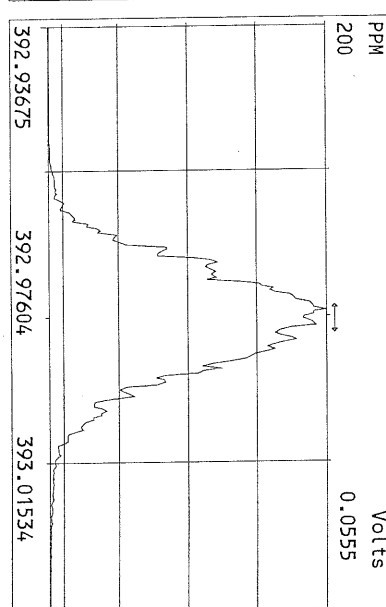
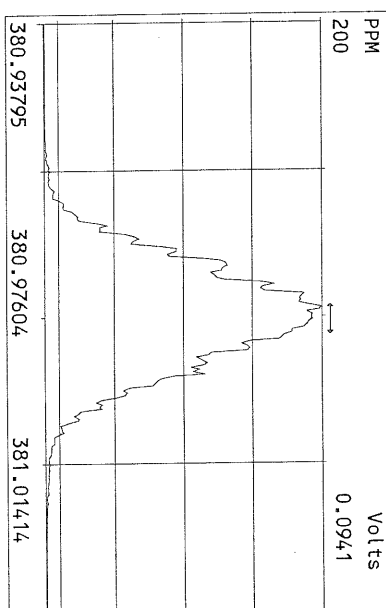
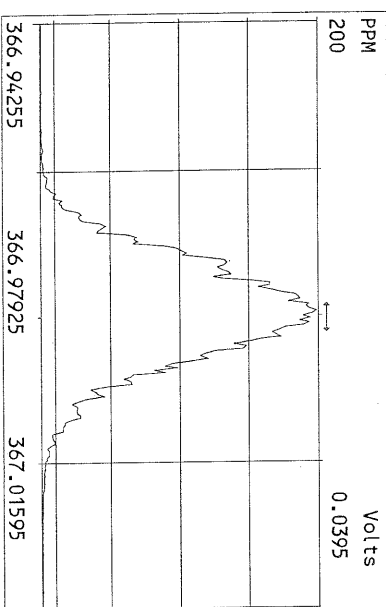
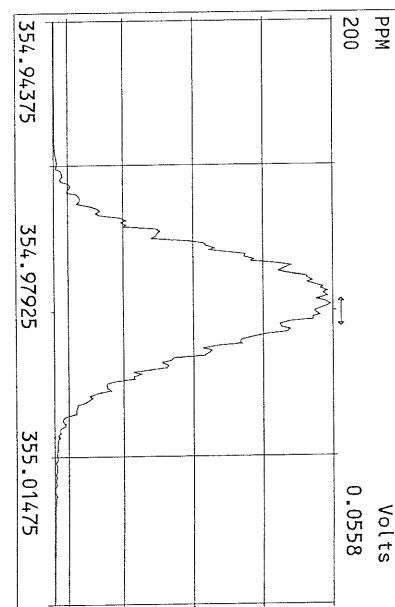
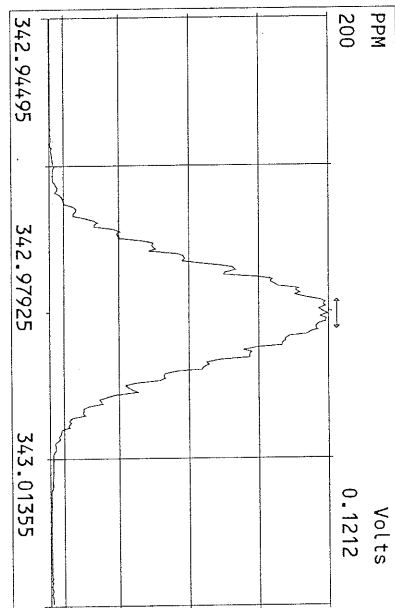
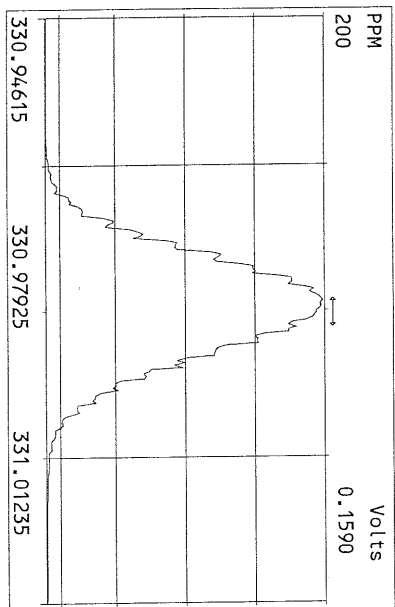
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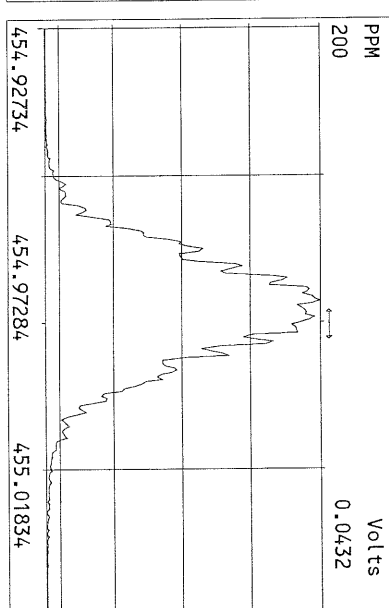
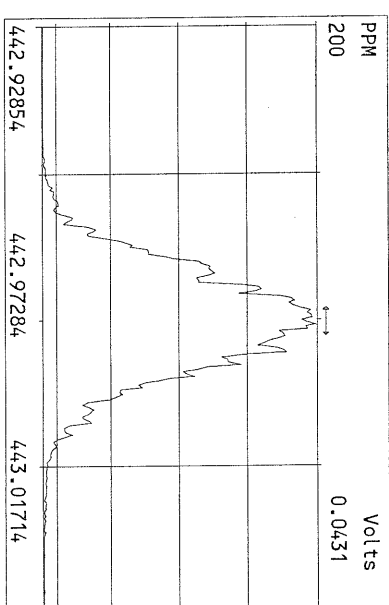
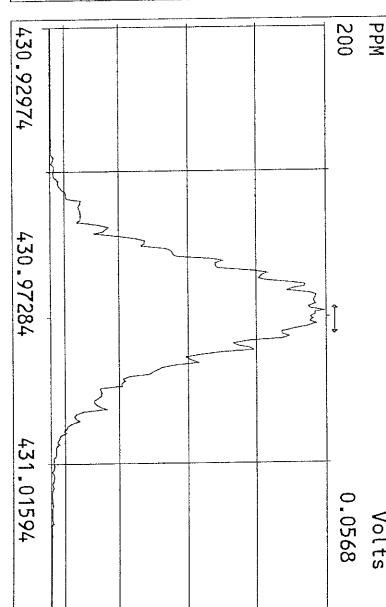
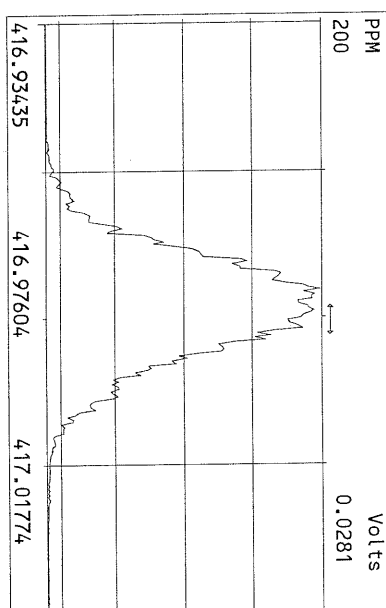
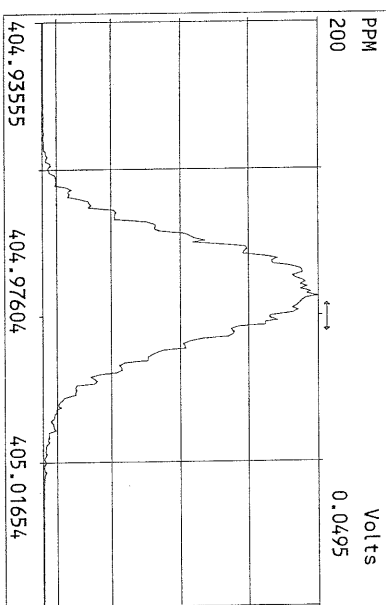
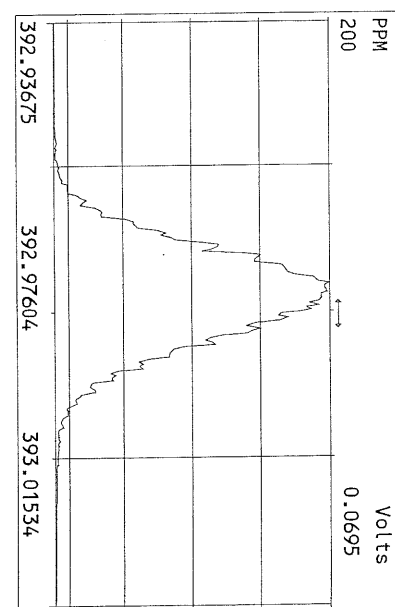
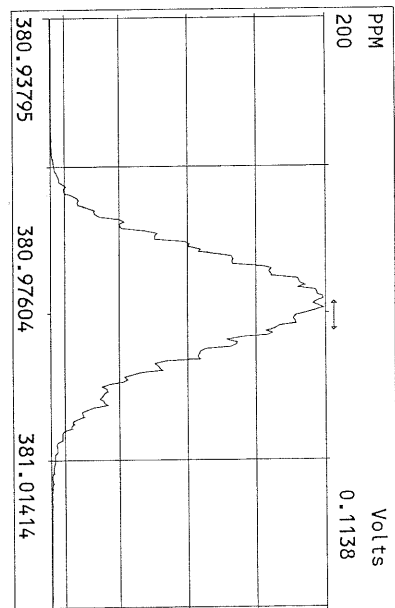
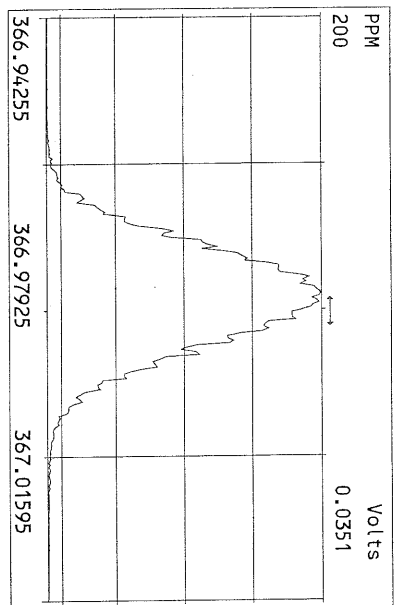
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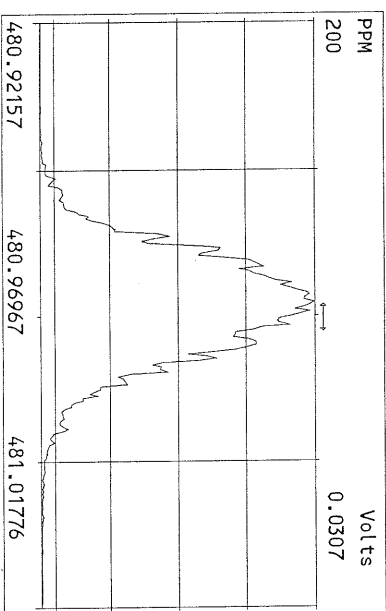
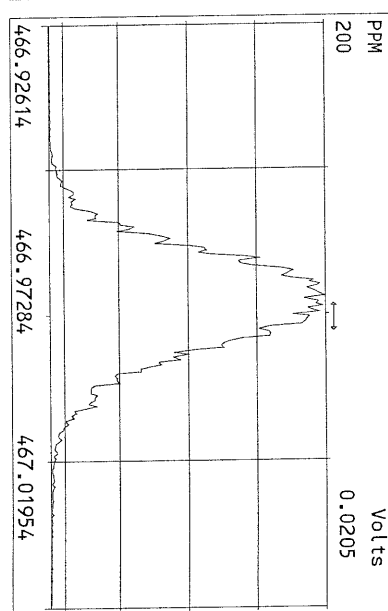
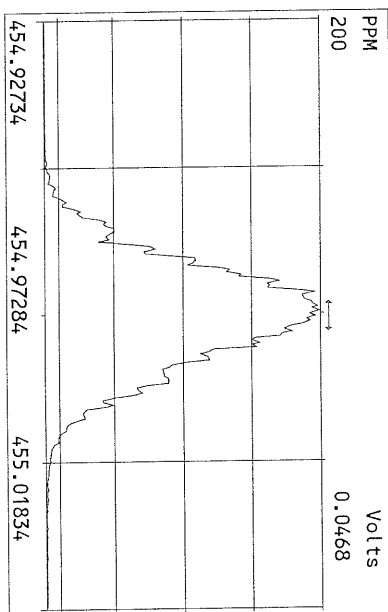
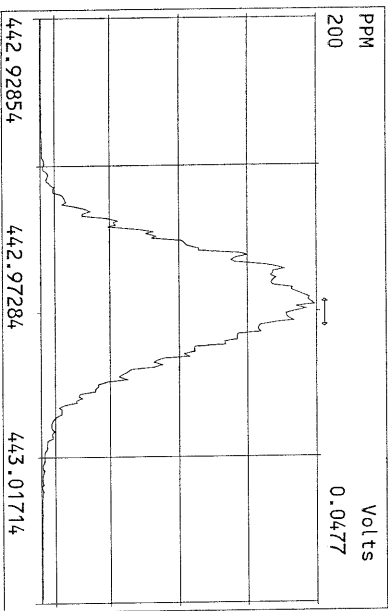
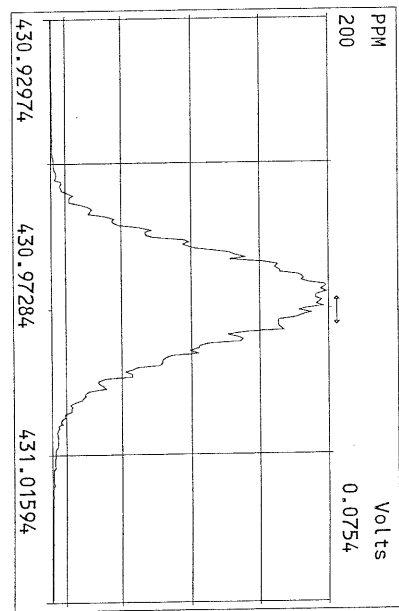
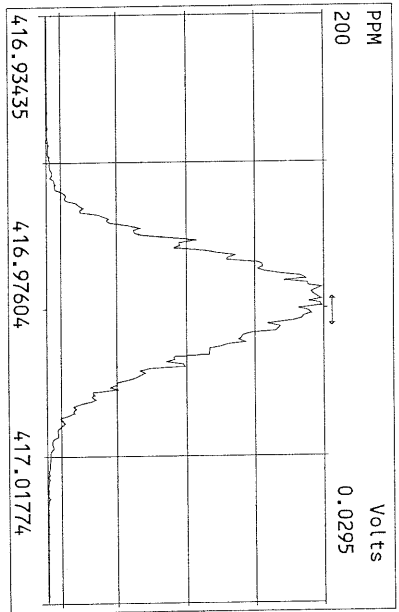
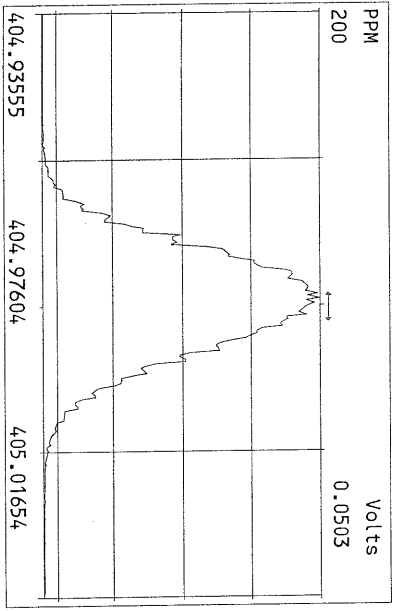
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Experiment:OCDD Function:1 Reference:PFK



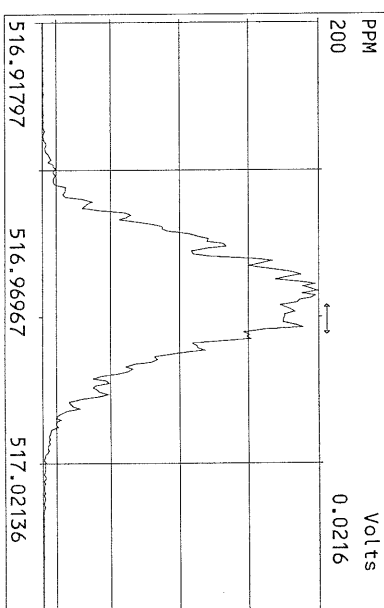
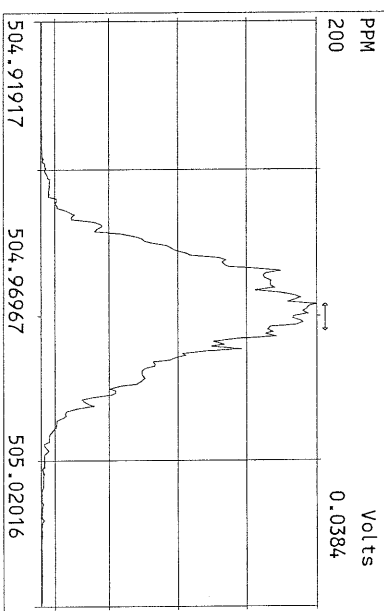
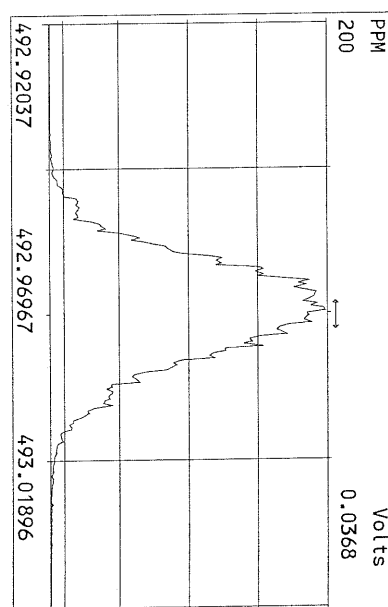
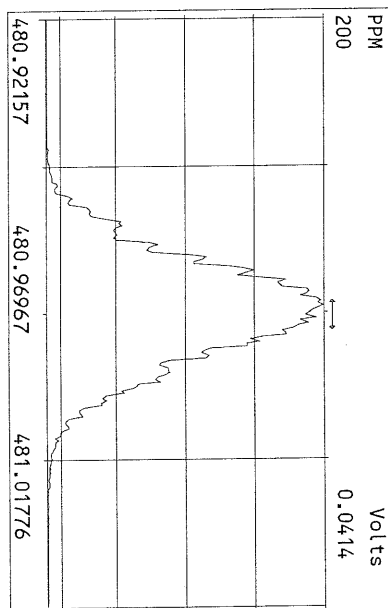
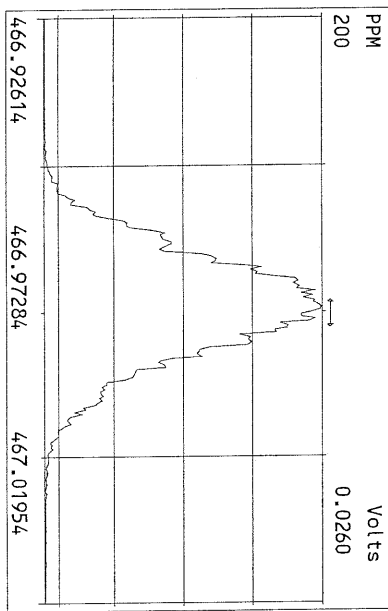
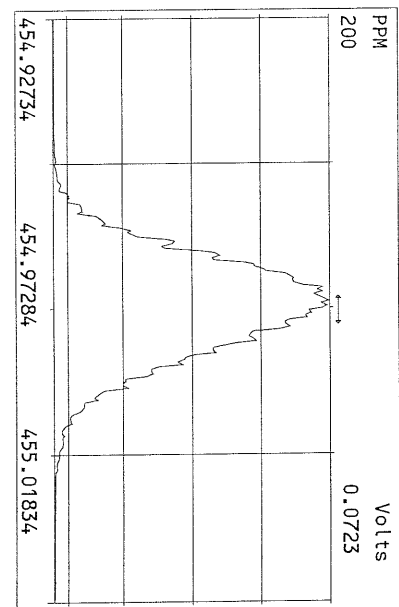
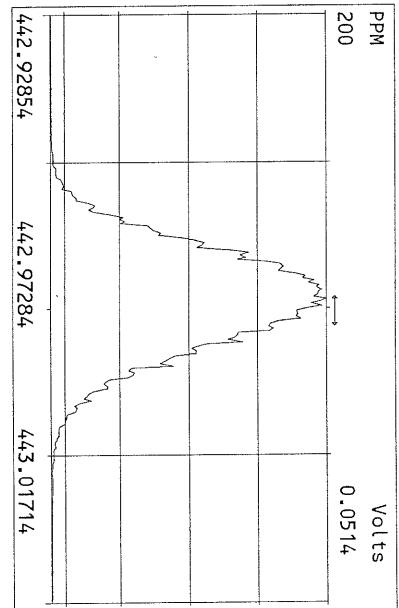
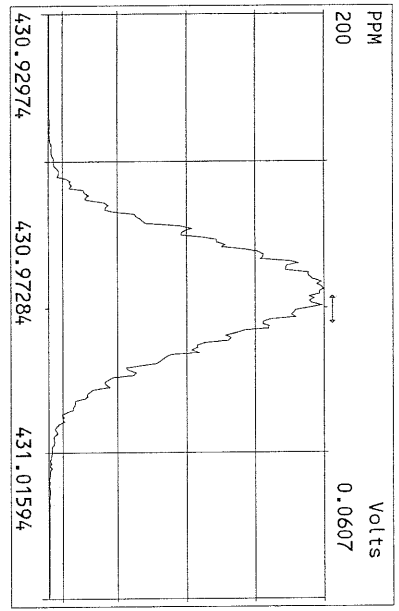




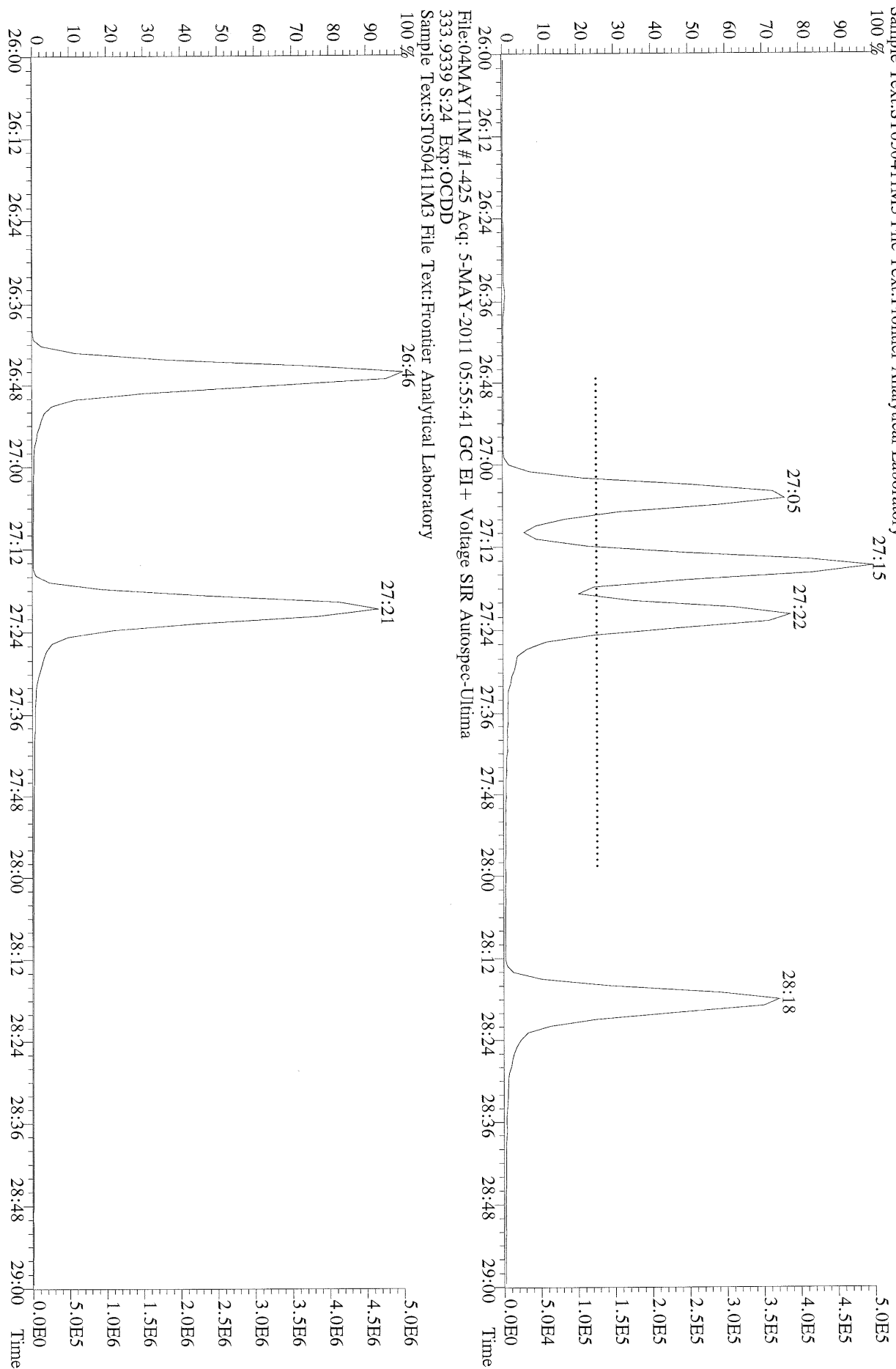
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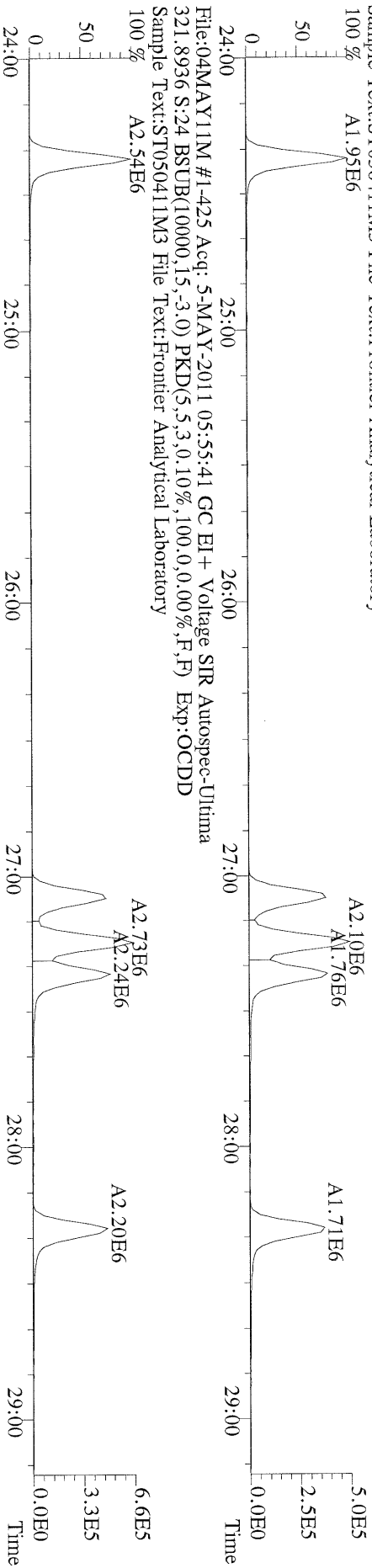
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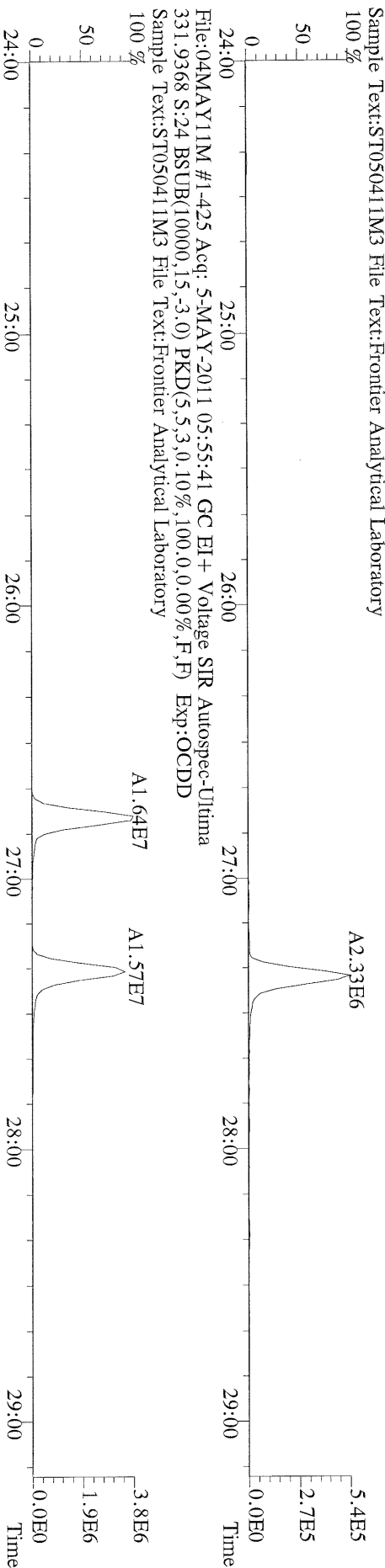
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319.8965 S:24 Exp:OCDD
Sample Text:ST05041IM3 File Text:Frontier Analytical Laboratory



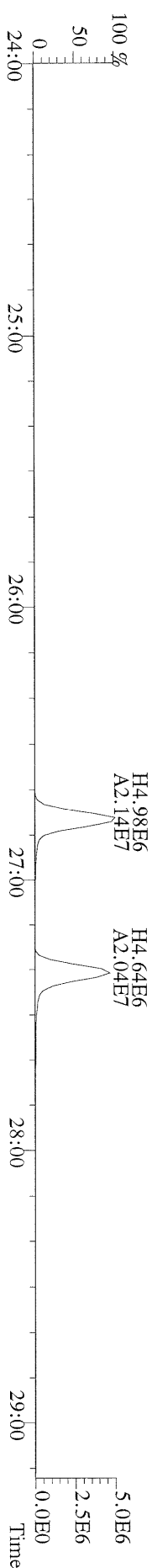
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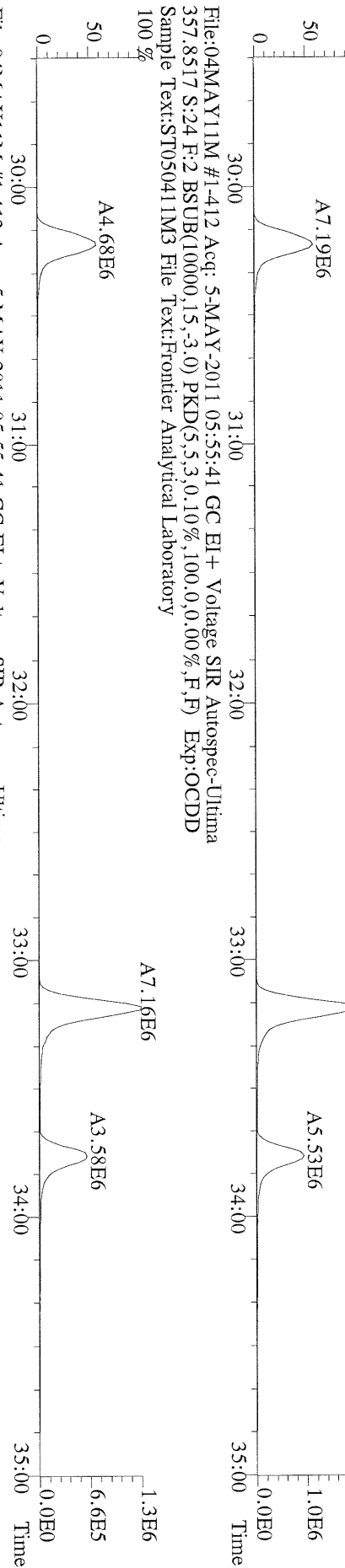
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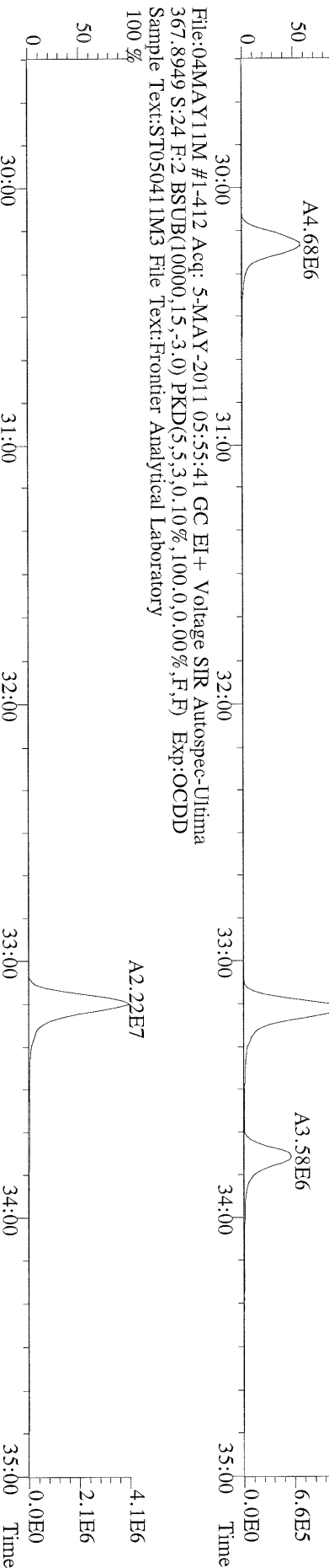
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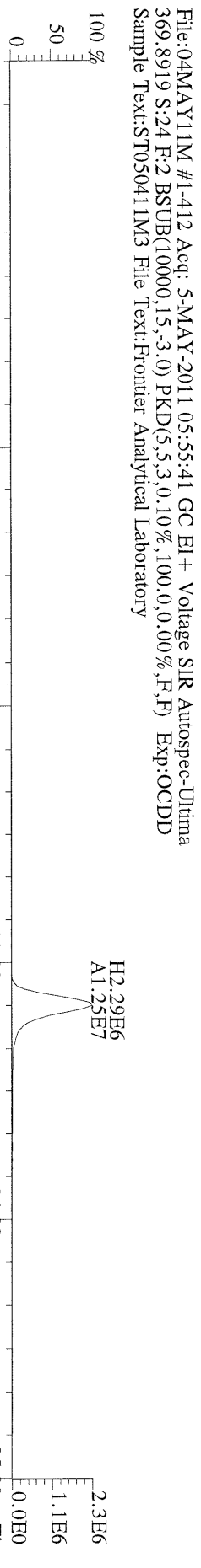
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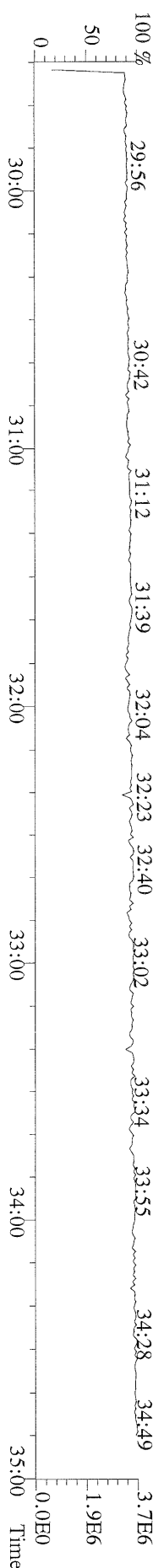
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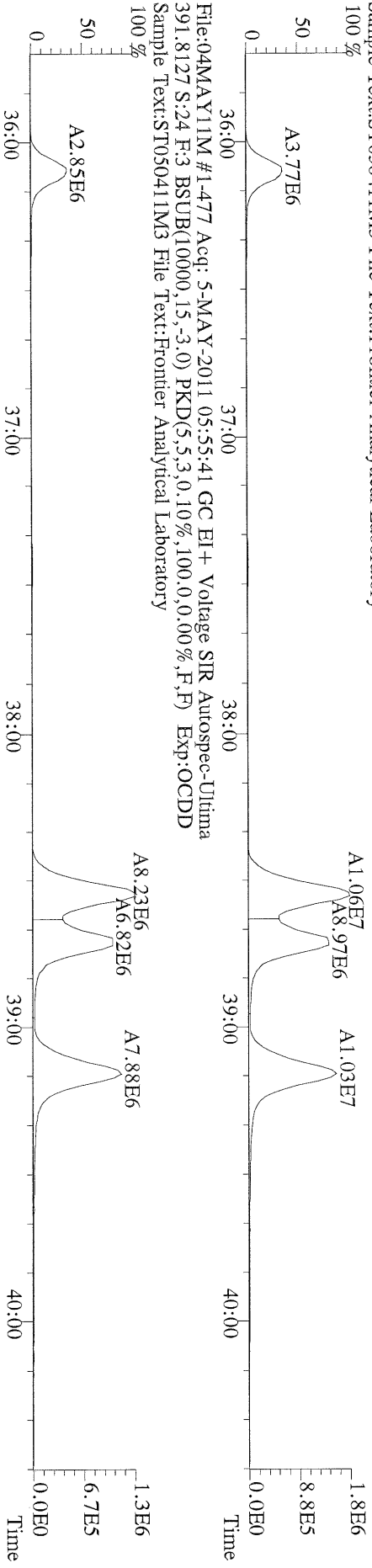
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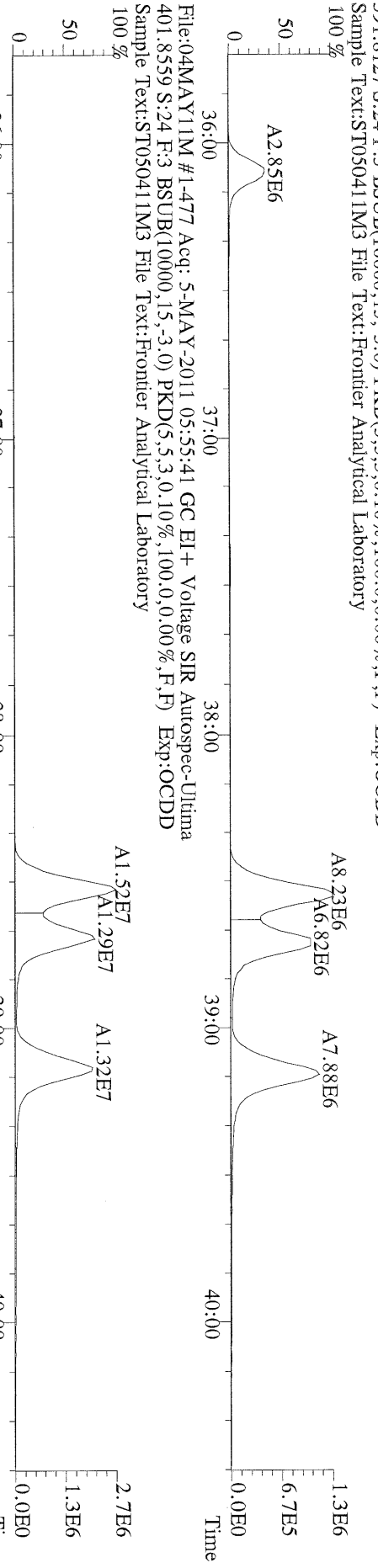
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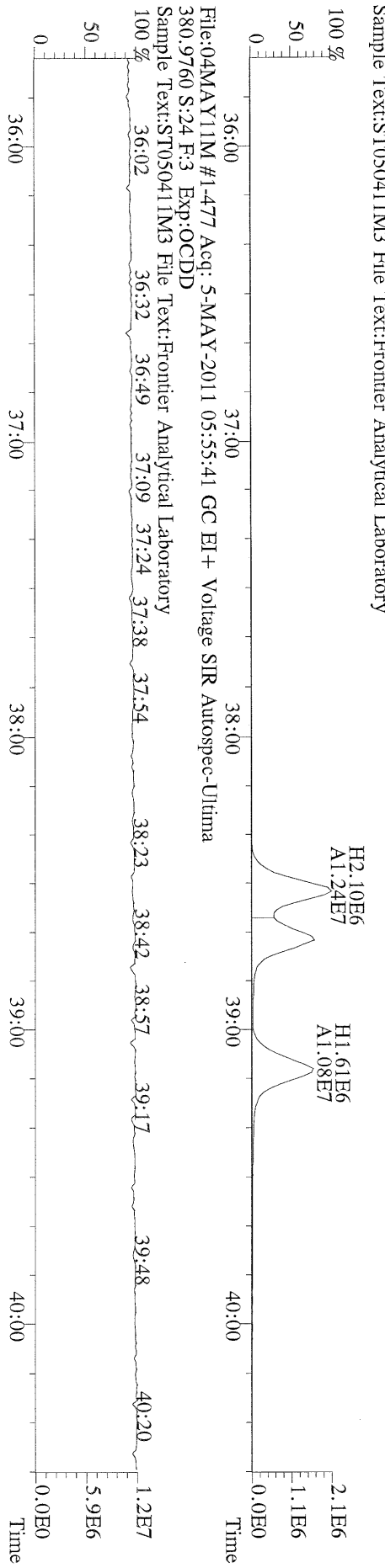
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Sample Text:ST050411M3 File Text:Frontier Analytical Laboratory
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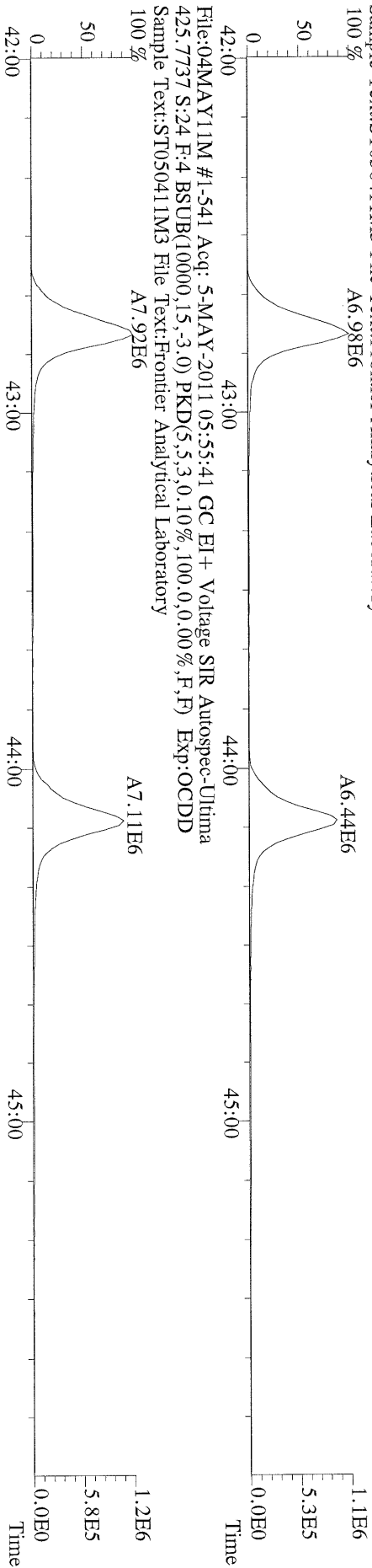
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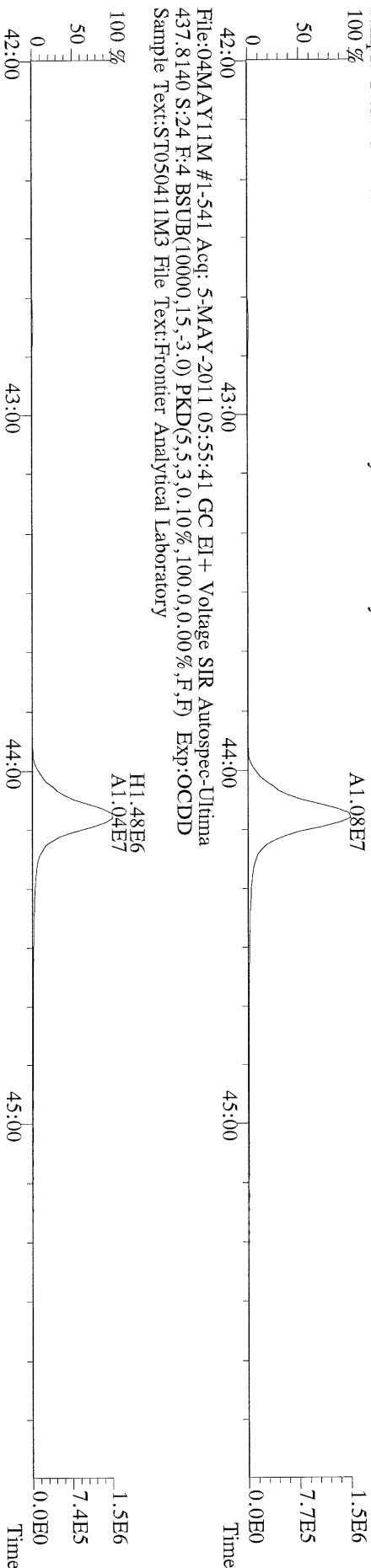
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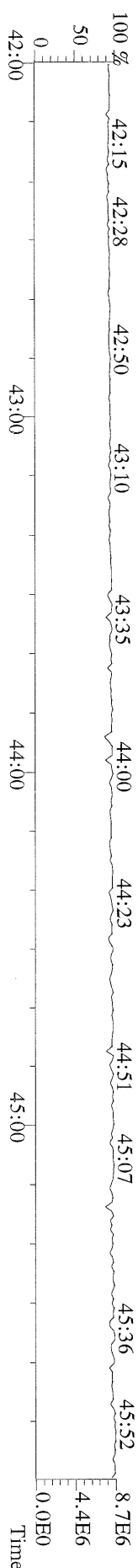
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Sample Text:ST05041IM3 File Text:Frontier Analytical Laboratory



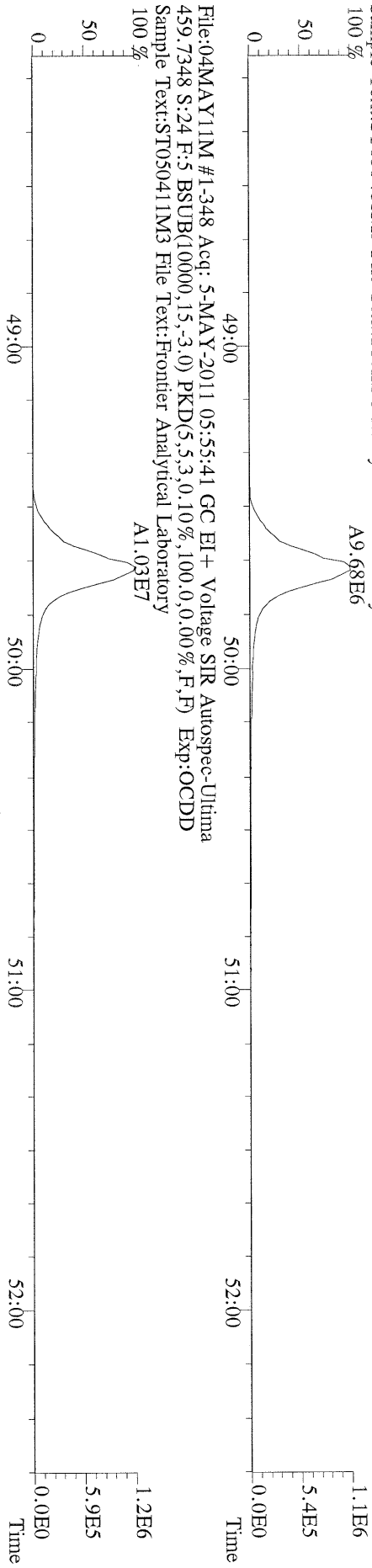
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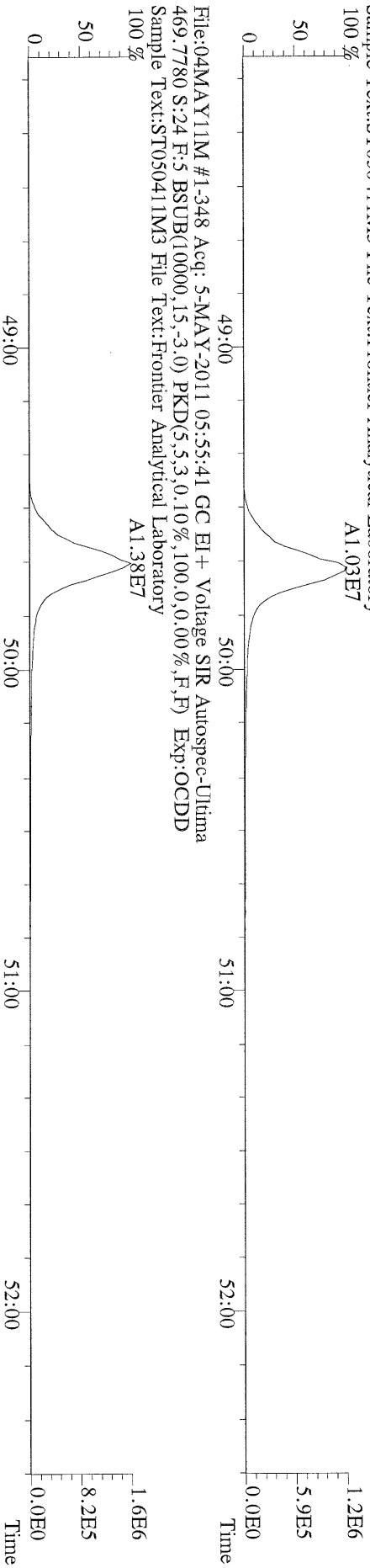
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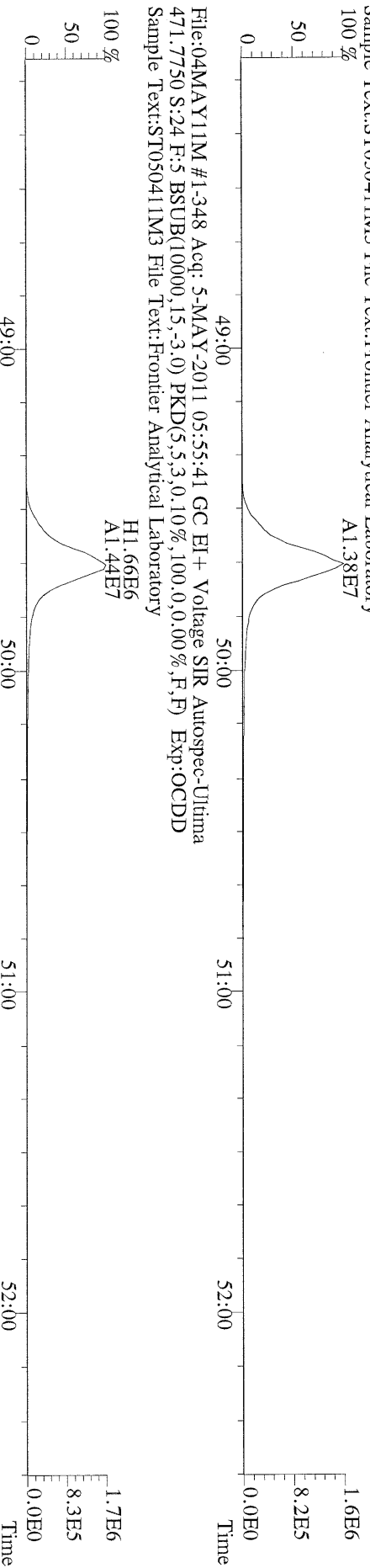
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Sample Text:ST05041IM3 File Text:Frontier Analytical Laboratory



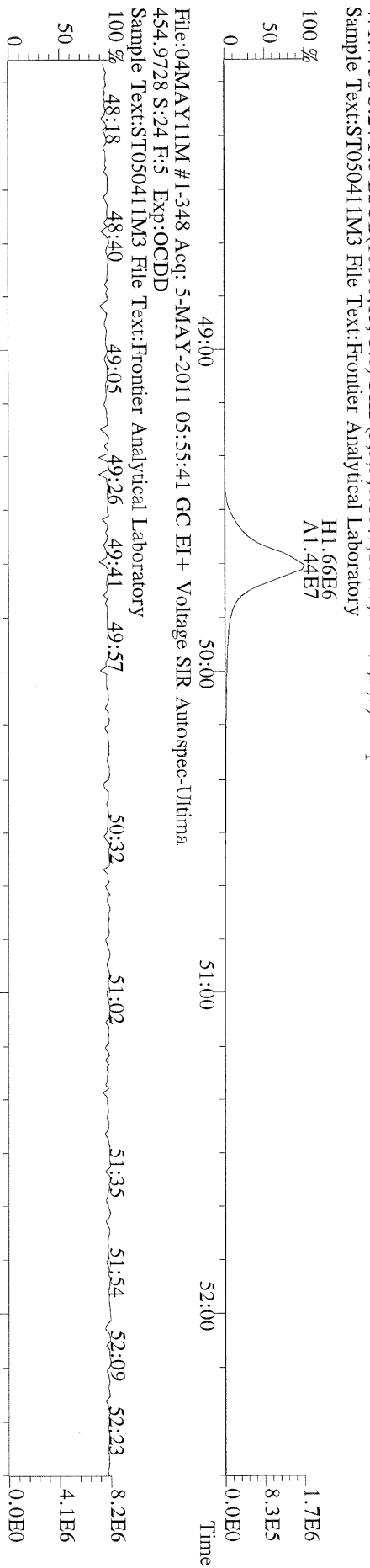
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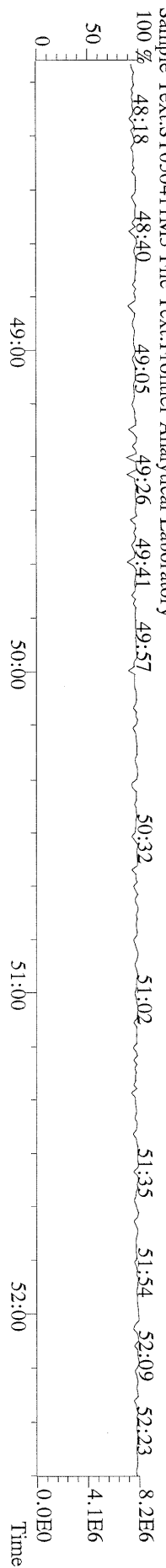
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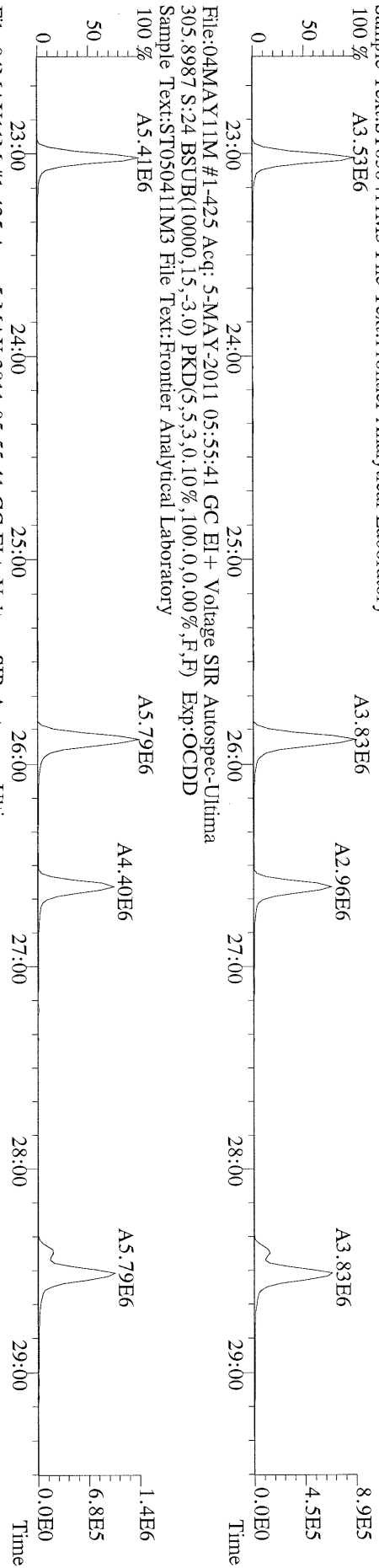
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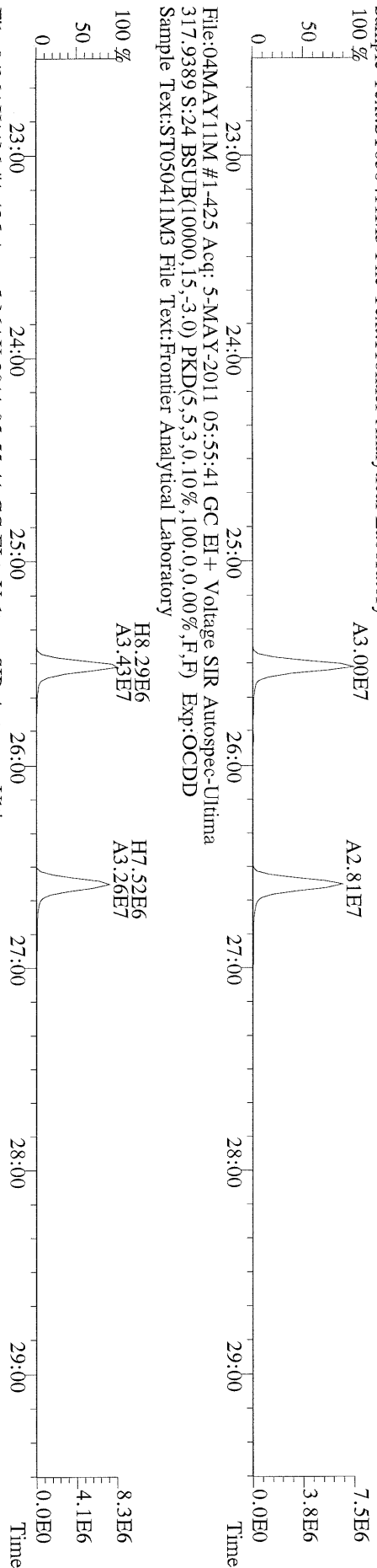
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454.9728 S:24 F:5 Exp:OCDD
Sample Text:ST05041IM3 File Text:Frontier Analytical Laboratory



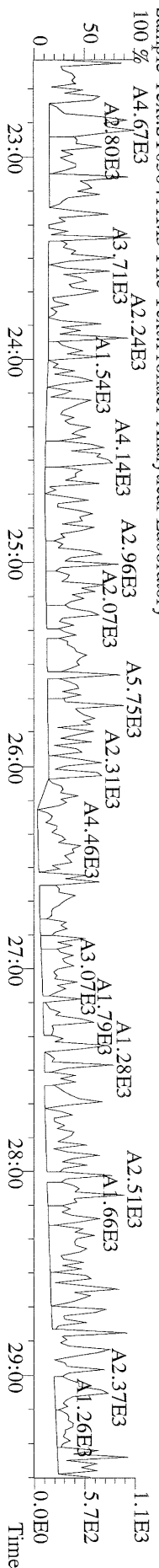
File:04MAY11M #1-425 Acq: 5-MAY-2011 05:55:41 GC EI+ Voltage SIR Autospec-Ultima
 303.9016 S:24 BSUB(10000,15,-3.0) PKD(5,5,3,0,100%,100,0,0.00%,F,F) Exp:OCDD
 Sample Text:ST050411M3 File Text:Frontier Analytical Laboratory



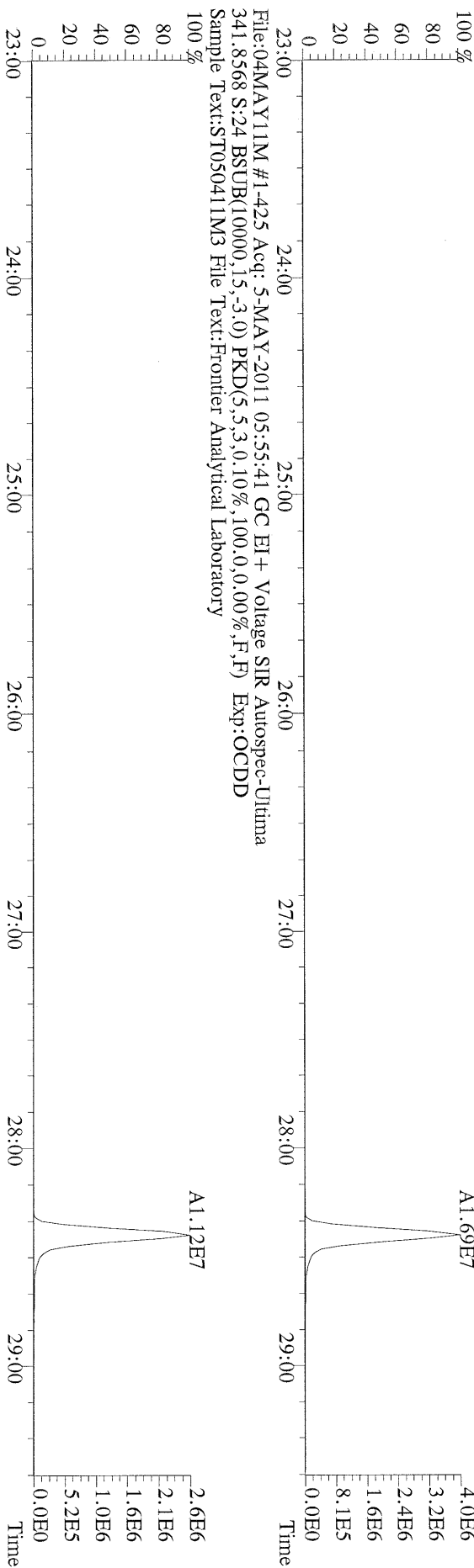
File:04MAY11M #1-425 Acq: 5-MAY-2011 05:55:41 GC EI+ Voltage SIR Autospec-Ultima
 315.9419 S:24 BSUB(10000,15,-3.0) PKD(5,5,3,0,100%,100,0,0.00%,F,F) Exp:OCDD
 Sample Text:ST050411M3 File Text:Frontier Analytical Laboratory



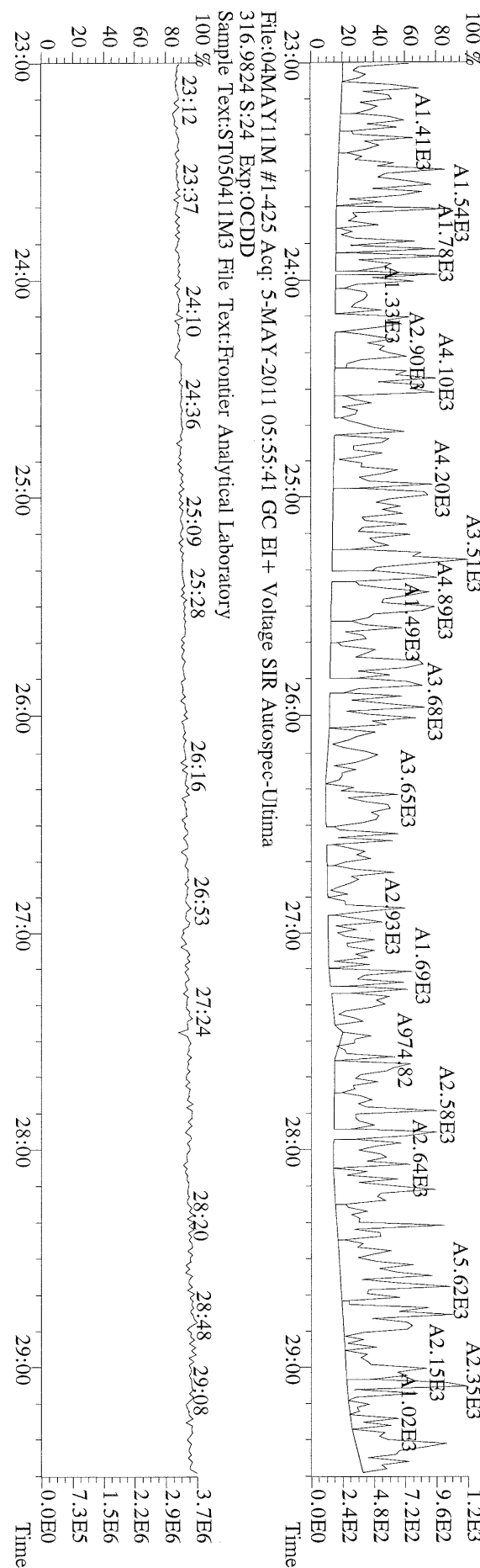
File:04MAY11M #1-425 Acq: 5-MAY-2011 05:55:41 GC EI+ Voltage SIR Autospec-Ultima
 375.8364 S:24 BSUB(10000,15,-3.0) PKD(5,5,3,0,100%,100,0,0.00%,F,F) Exp:OCDD
 Sample Text:ST050411M3 File Text:Frontier Analytical Laboratory



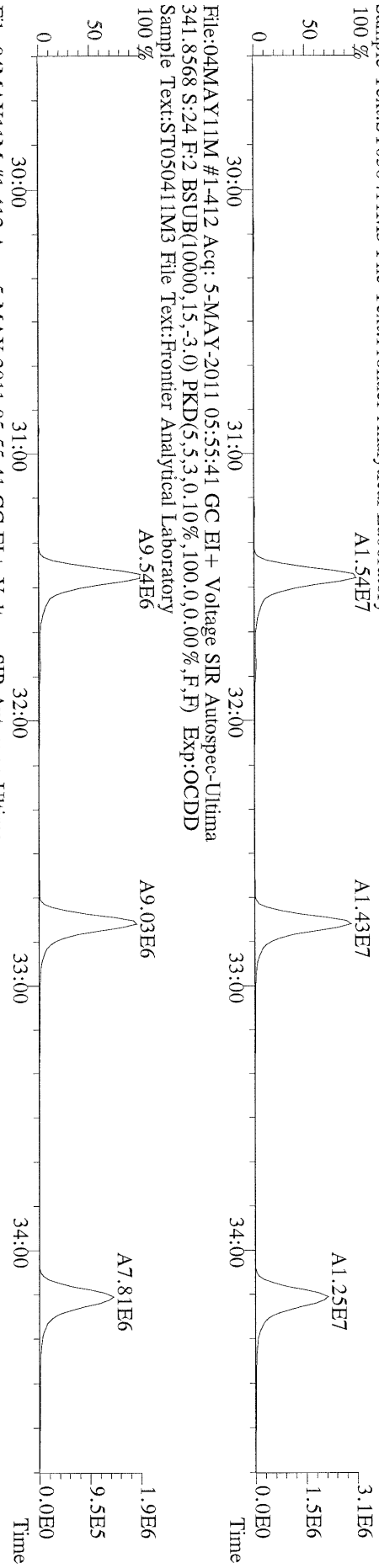
File:04MAY11M #1-425 Acq: 5-MAY-2011 05:55:41 GC EI + Voltage SIR Autospec-Ultima
 339.8597 S:24 BSUB(10000,15,-3.0) PKD(5,5,3.0,100,0.0,0.00%,F,F) Exp:OCDD
 Sample Text:ST05041IM3 File Text:Frontier Analytical Laboratory



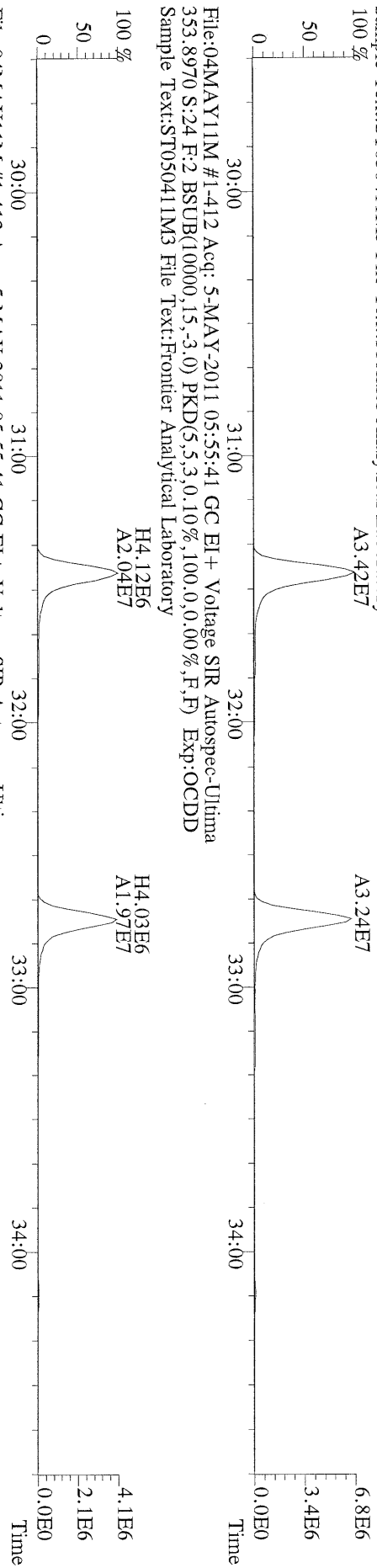
File:04MAY11M #1-425 Acq: 5-MAY-2011 05:55:41 GC EI + Voltage SIR Autospec-Ultima
 409.7974 S:24 BSUB(10000,15,-3.0) PKD(5,5,3.0,100,0.0,0.00%,F,F) Exp:OCDD
 Sample Text:ST05041IM3 File Text:Frontier Analytical Laboratory



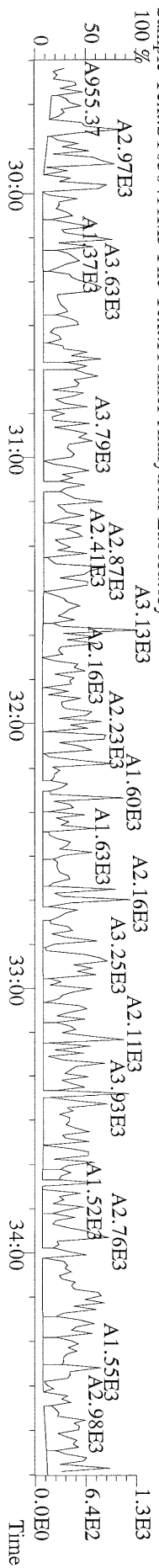
File:04MAY11M #1-412 Acq: 5-MAY-2011 05:55:41 GC EI+ Voltage SIR Autospec-Ultima
 339.8597 S:24 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:OCDD
 Sample Text:ST050411M3 File Text:Frontier Analytical Laboratory



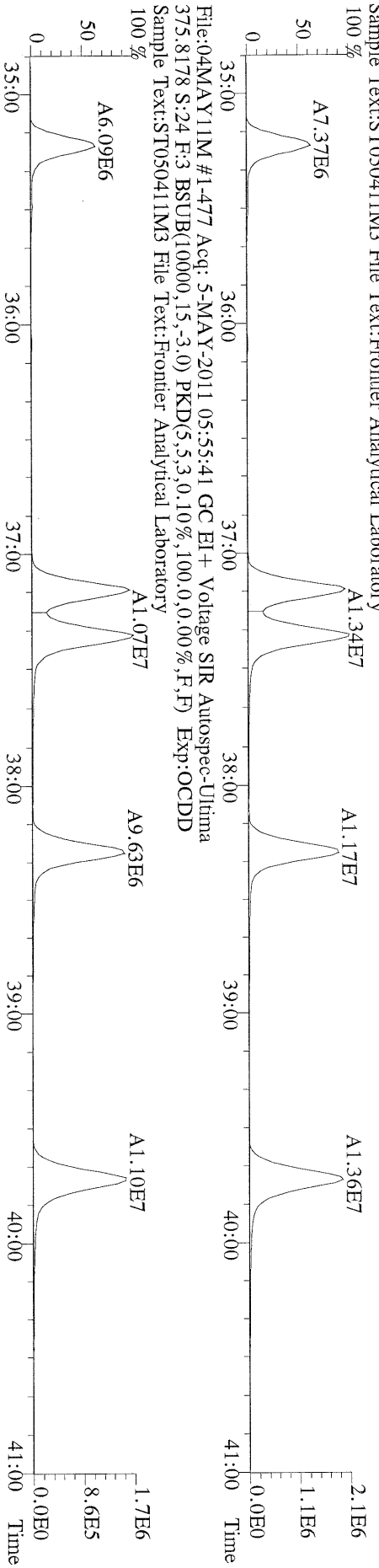
File:04MAY11M #1-412 Acq: 5-MAY-2011 05:55:41 GC EI+ Voltage SIR Autospec-Ultima
 351.9000 S:24 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:OCDD
 Sample Text:ST050411M3 File Text:Frontier Analytical Laboratory



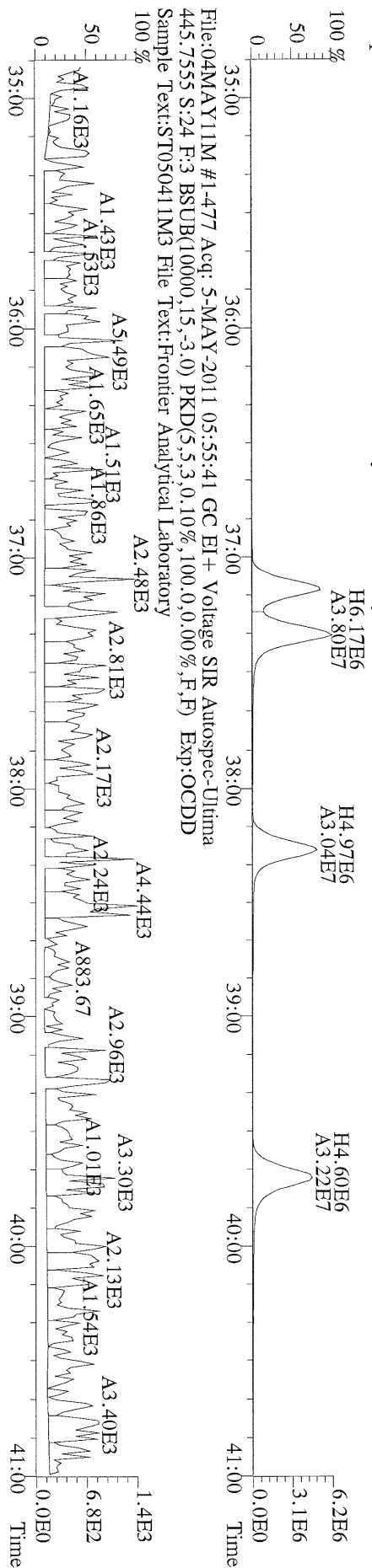
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 409.7974 S:24 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:OCDD
 Sample Text:ST050411M3 File Text:Frontier Analytical Laboratory



File:04MAY11M #1-477 Acq: 5-MAY-2011 05:55:41 GC EI+ Voltage SIR Autospec-Utima
373.8207 S:24 F:3 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp:OCDD
Sample Text:ST05041IM3 File Text:Frontier Analytical Laboratory



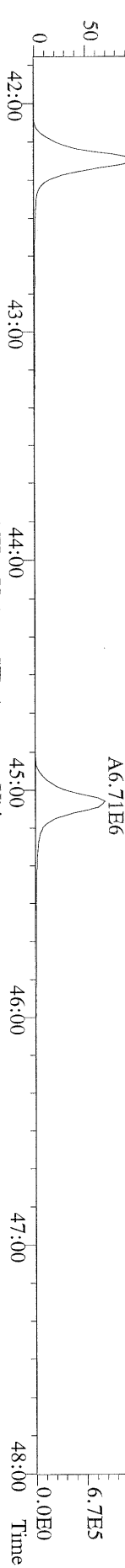
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383.8639 S:24 F:3 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp:OCDD
Sample Text:ST05041IM3 File Text:Frontier Analytical Laboratory



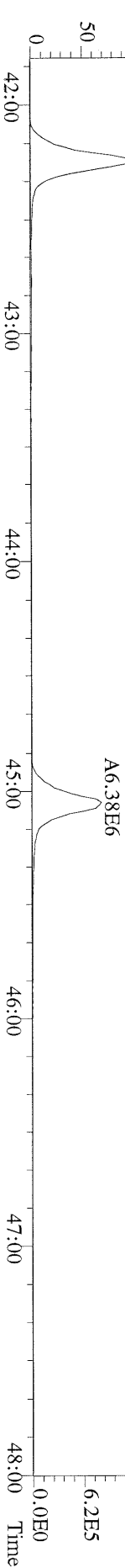
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445.7555 S:24 F:3 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp:OCDD
Sample Text:ST05041IM3 File Text:Frontier Analytical Laboratory



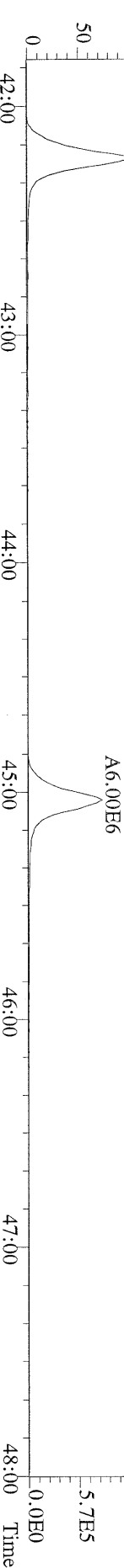
File:04MAY11M #1-541 Acq: 5-MAY-2011 05:55:41 GC EI+ Voltage SIR Autospec-Utima
407.7818 S:24 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%) Exp:OCDD
Sample Text:ST05041IM3 File Text:Frontier Analytical Laboratory
100 % A8.77E6



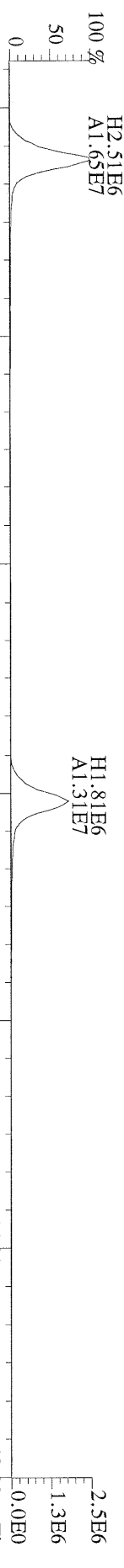
File:04MAY11M #1-541 Acq: 5-MAY-2011 05:55:41 GC EI+ Voltage SIR Autospec-Utima
409.7788 S:24 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%) Exp:OCDD
Sample Text:ST05041IM3 File Text:Frontier Analytical Laboratory
100 % A8.19E6



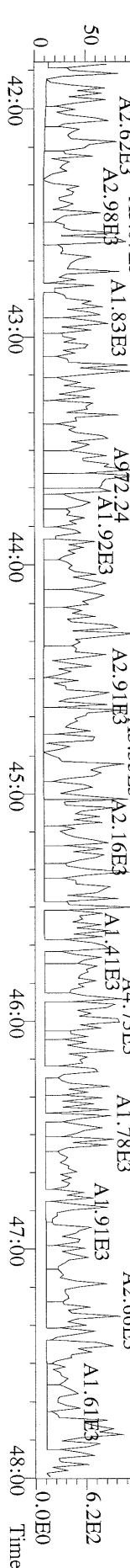
File:04MAY11M #1-541 Acq: 5-MAY-2011 05:55:41 GC EI+ Voltage SIR Autospec-Utima
417.8253 S:24 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%) Exp:OCDD
Sample Text:ST05041IM3 File Text:Frontier Analytical Laboratory
100 % A7.47E6



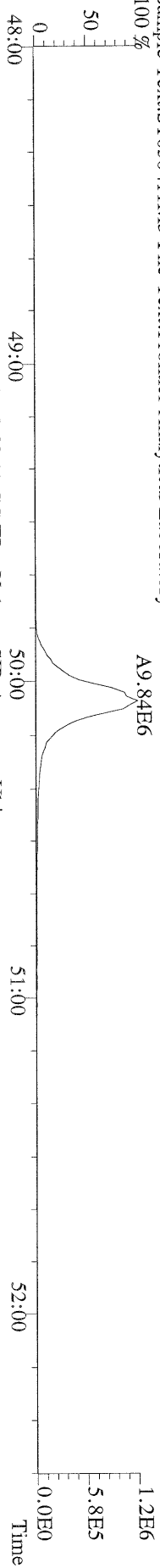
File:04MAY11M #1-541 Acq: 5-MAY-2011 05:55:41 GC EI+ Voltage SIR Autospec-Utima
419.8220 S:24 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%) Exp:OCDD
Sample Text:ST05041IM3 File Text:Frontier Analytical Laboratory



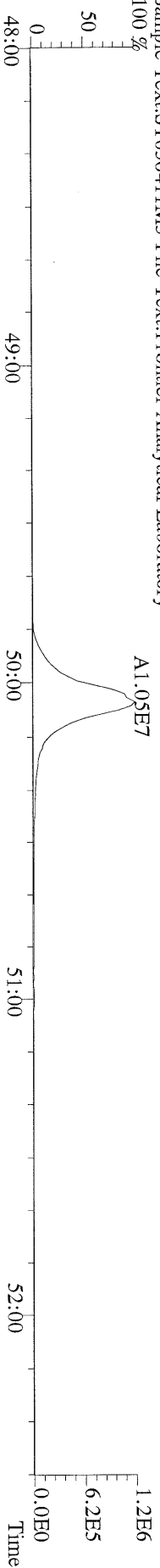
File:04MAY11M #1-541 Acq: 5-MAY-2011 05:55:41 GC EI+ Voltage SIR Autospec-Utima
479.7165 S:24 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%) Exp:OCDD
Sample Text:ST05041IM3 File Text:Frontier Analytical Laboratory



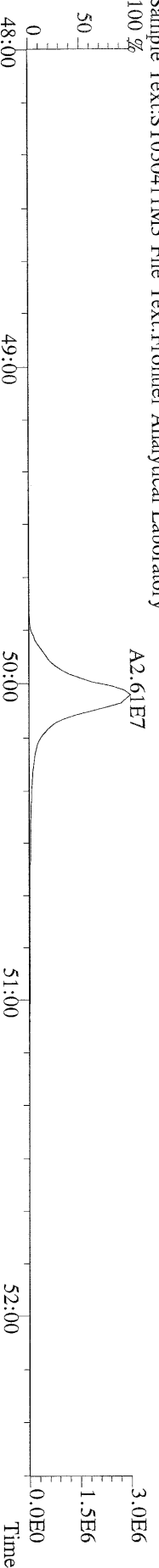
File:04MAY11M #1-348 Acq: 5-MAY-2011 05:55:41 GC EI+ Voltage SIR Autospec-Ultima
441.7428 S:24 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:OCDD
Sample Text:ST050411M3 File Text:Frontier Analytical Laboratory



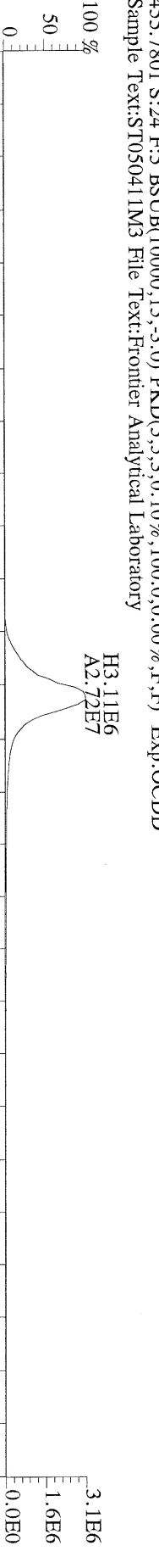
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443.7398 S:24 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:OCDD
Sample Text:ST050411M3 File Text:Frontier Analytical Laboratory



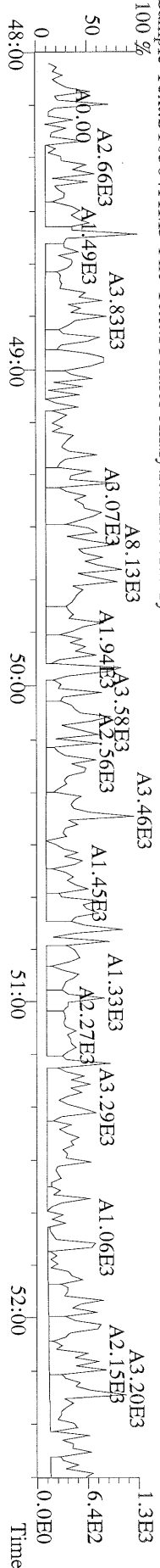
File:04MAY11M #1-348 Acq: 5-MAY-2011 05:55:41 GC EI+ Voltage SIR Autospec-Ultima
453.7831 S:24 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:OCDD
Sample Text:ST050411M3 File Text:Frontier Analytical Laboratory

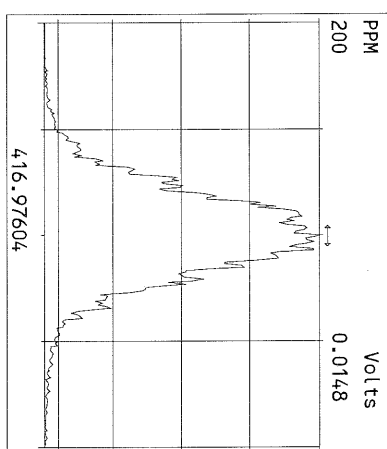
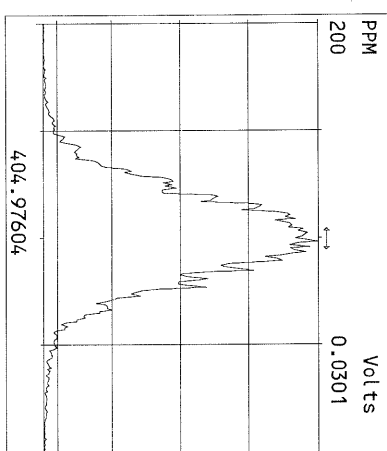
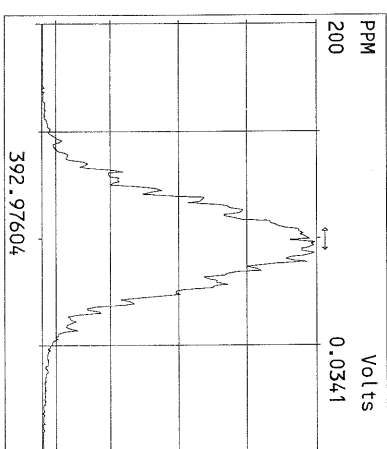
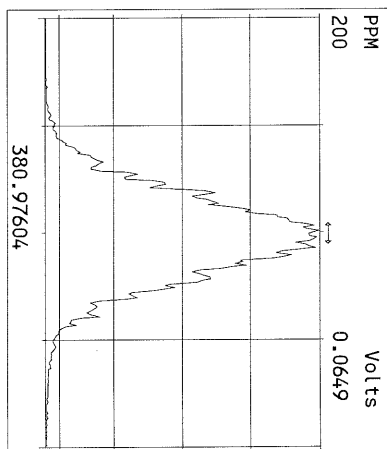
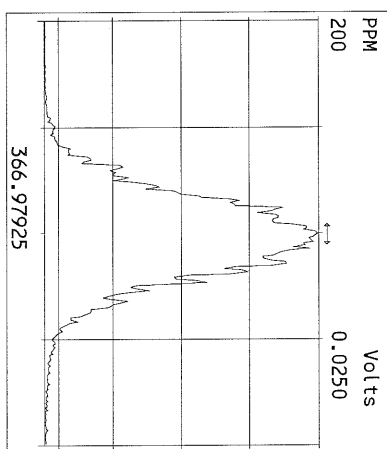
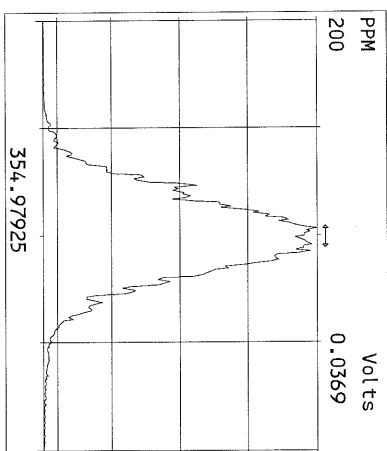
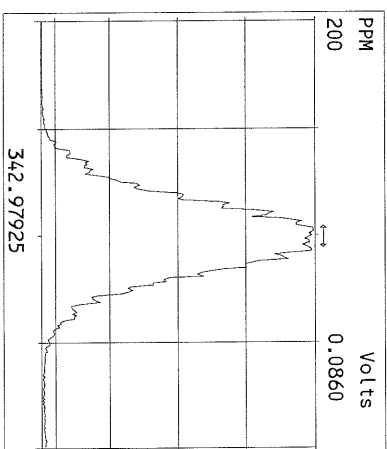
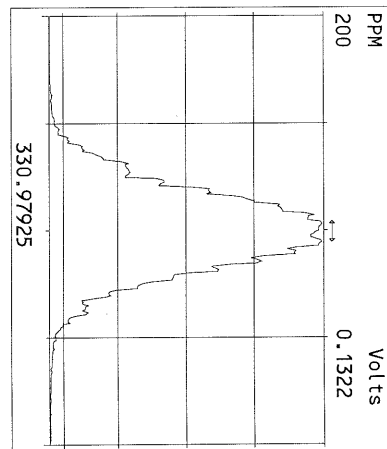
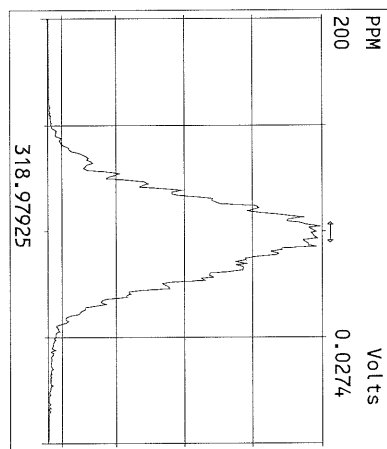
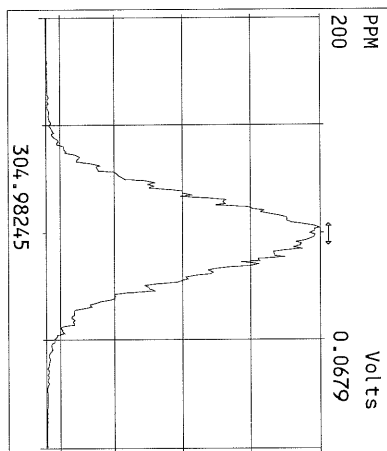
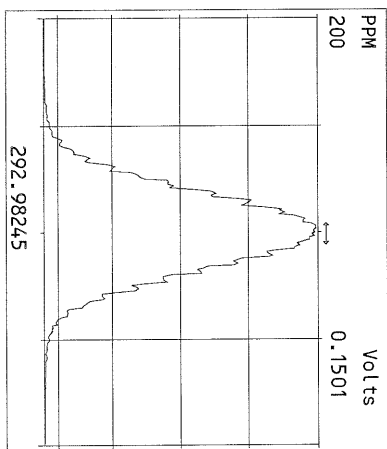


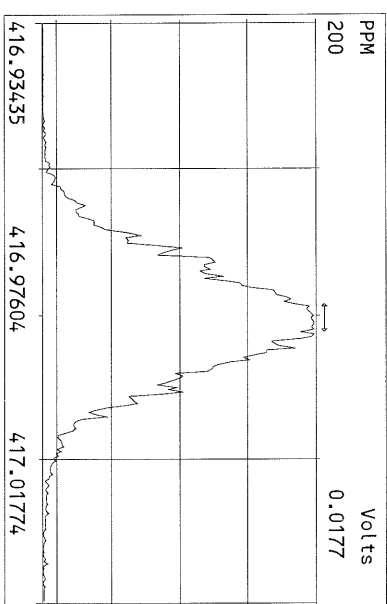
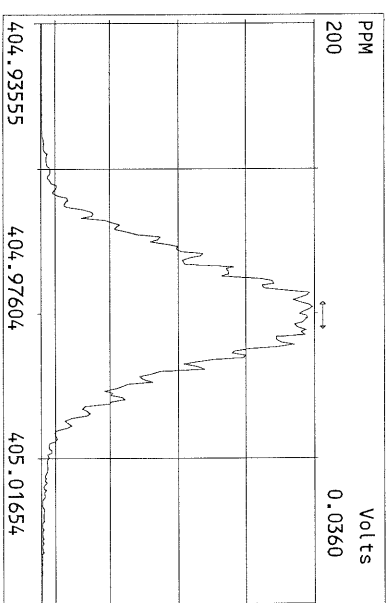
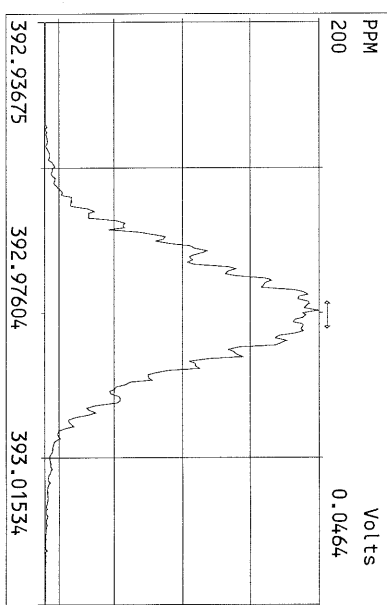
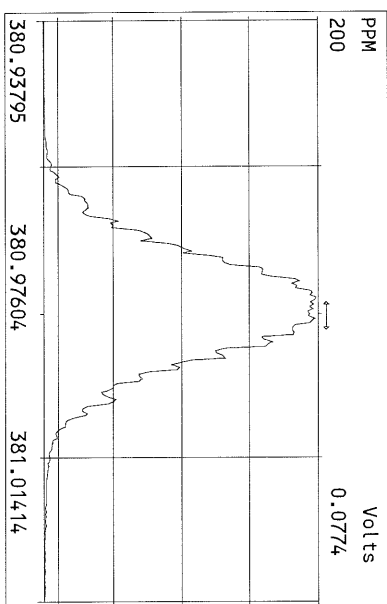
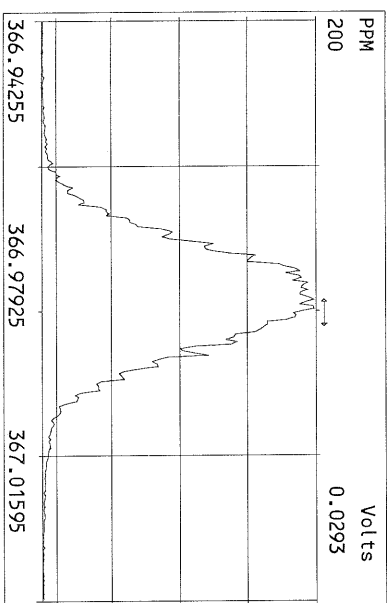
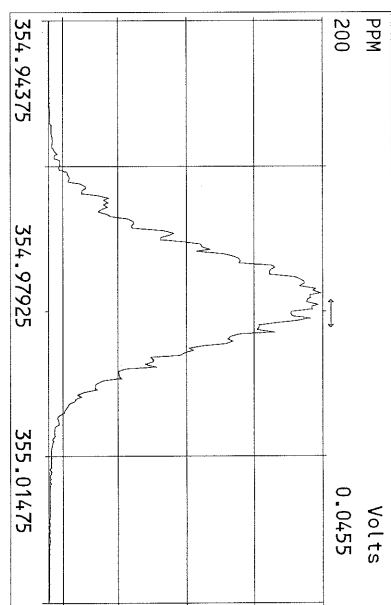
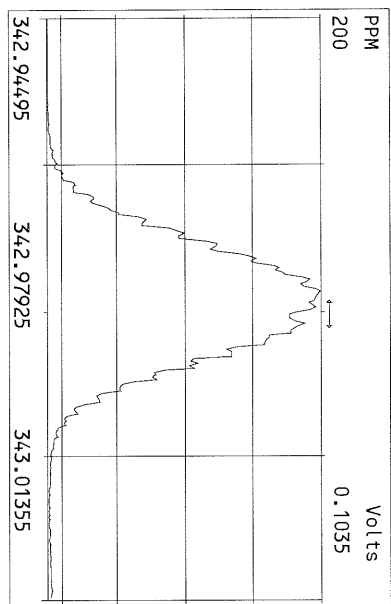
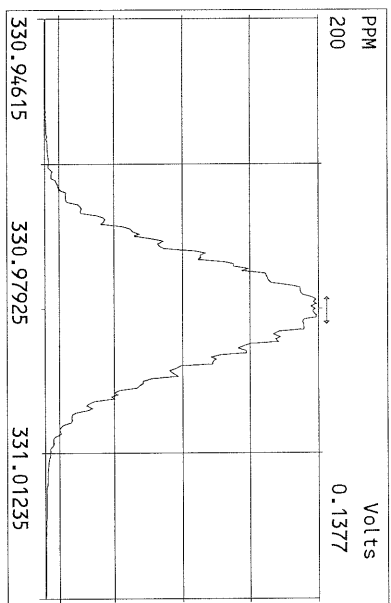
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455.7801 S:24 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:OCDD
Sample Text:ST050411M3 File Text:Frontier Analytical Laboratory

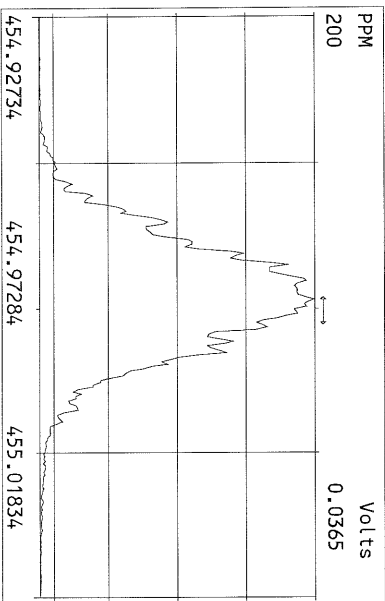
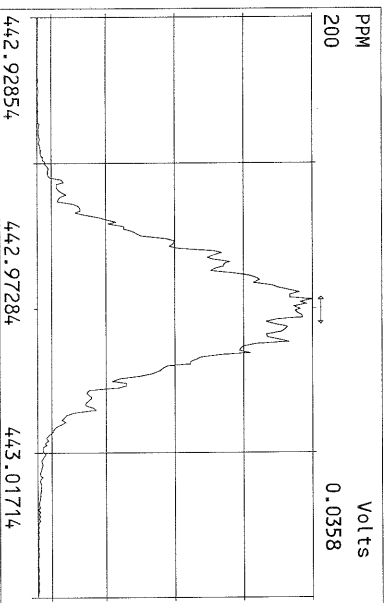
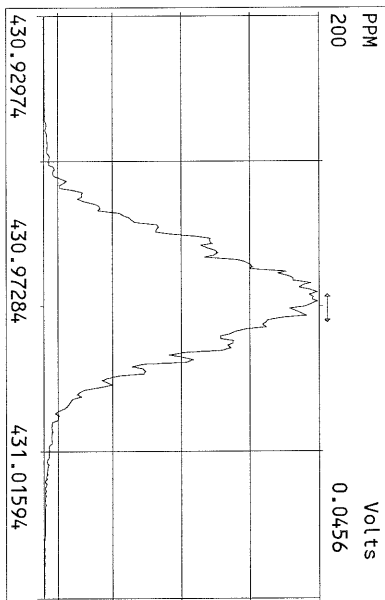
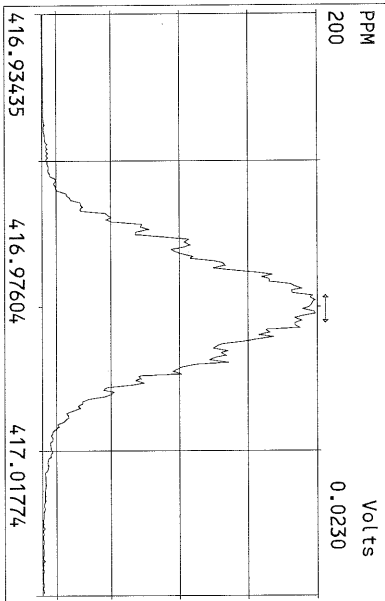
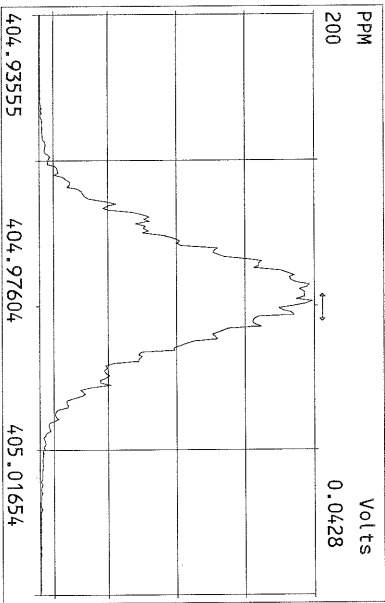
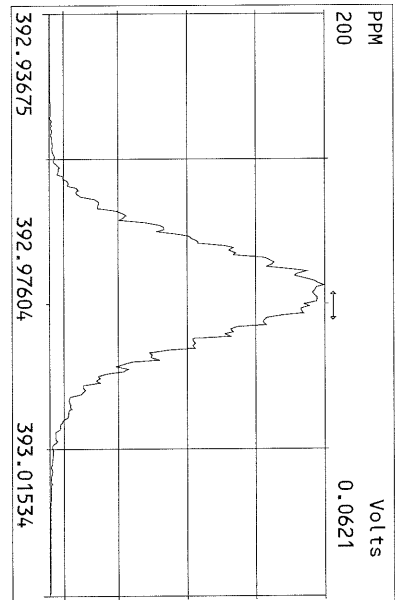
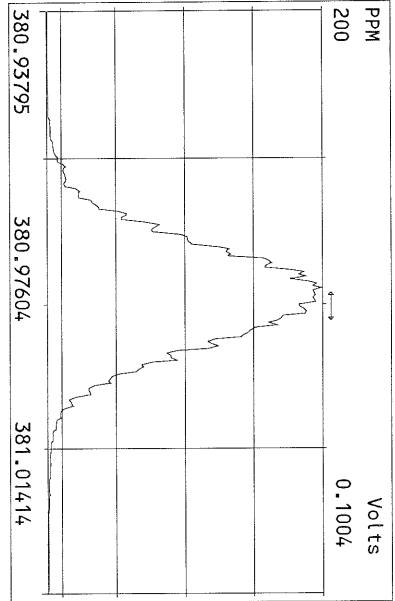
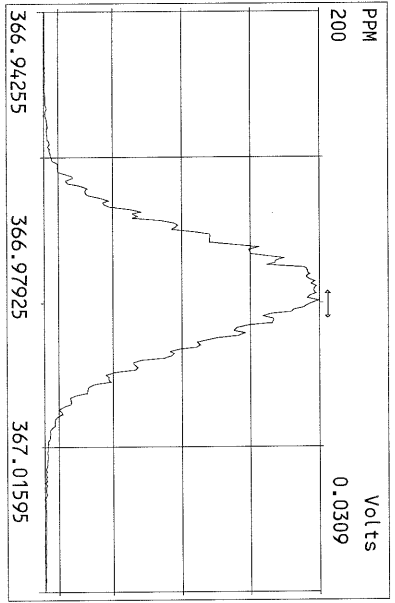


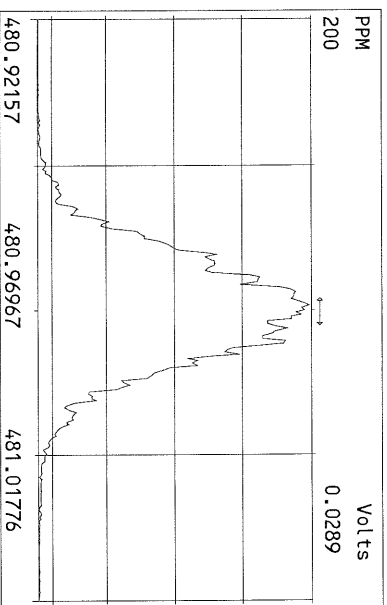
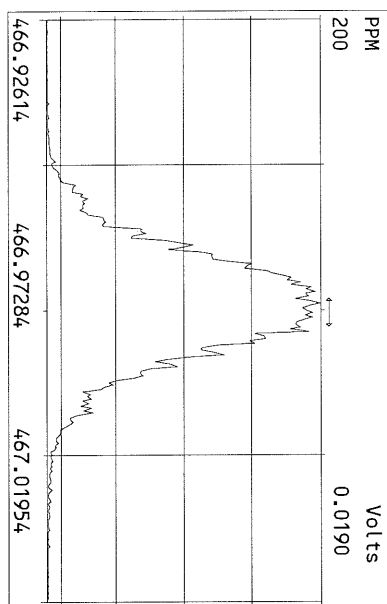
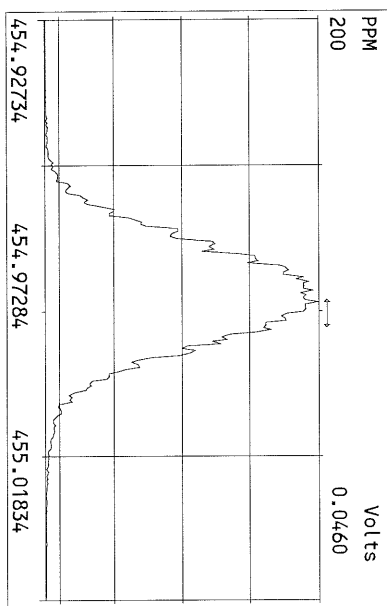
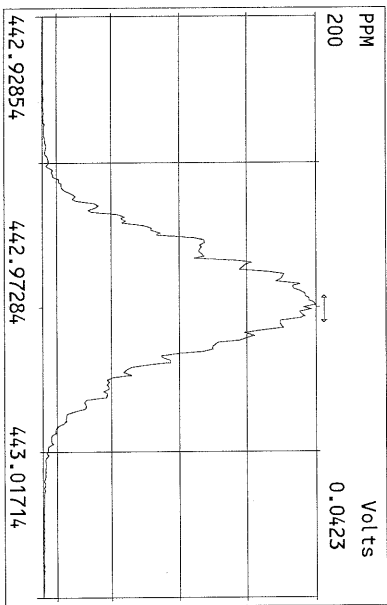
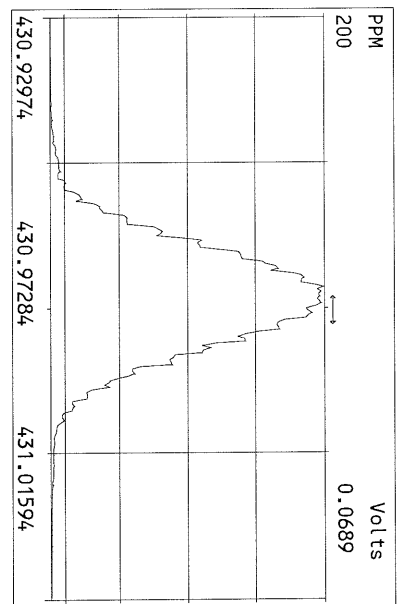
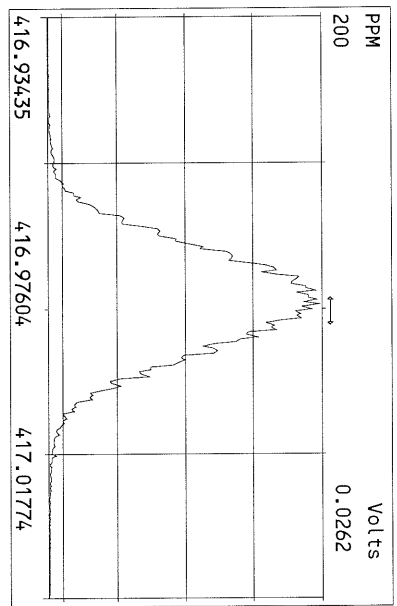
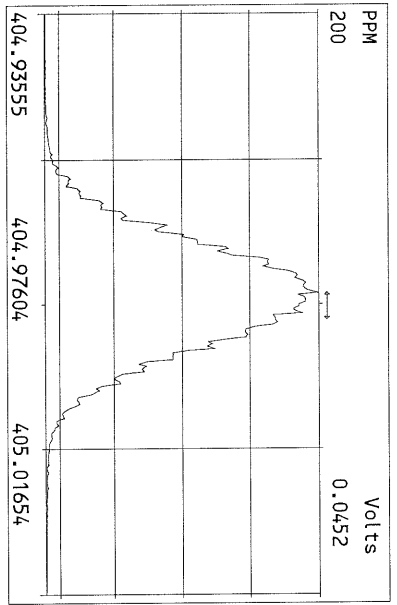
File:04MAY11M #1-348 Acq: 5-MAY-2011 05:55:41 GC EI+ Voltage SIR Autospec-Ultima
513.6775 S:24 F:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:OCDD
Sample Text:ST050411M3 File Text:Frontier Analytical Laboratory

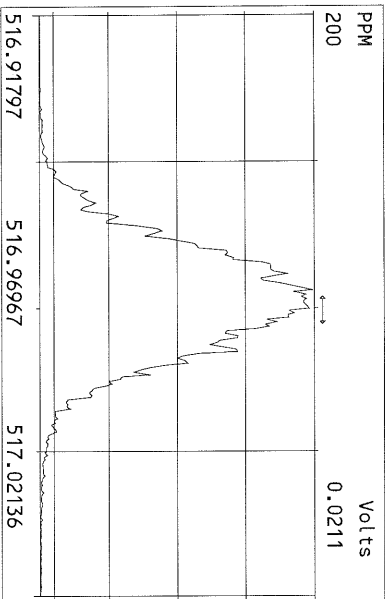
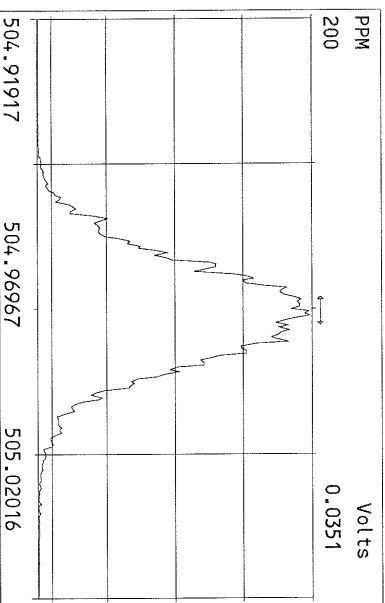
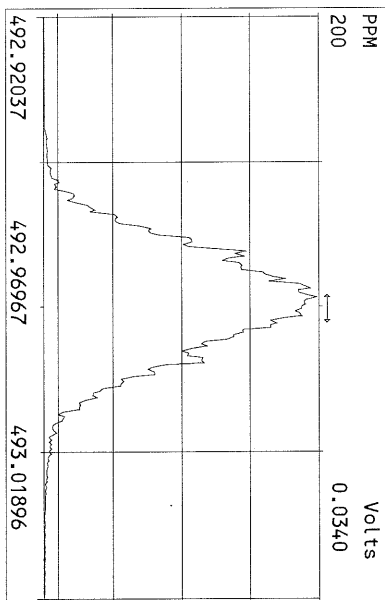
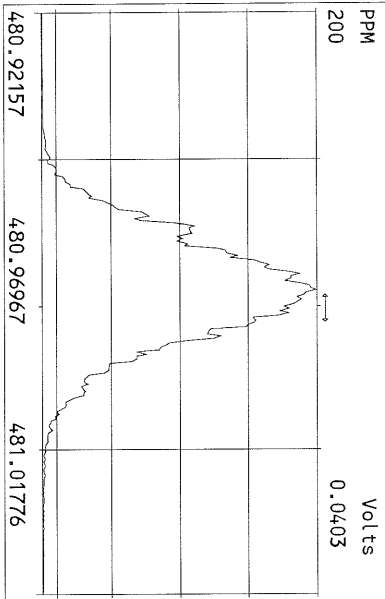
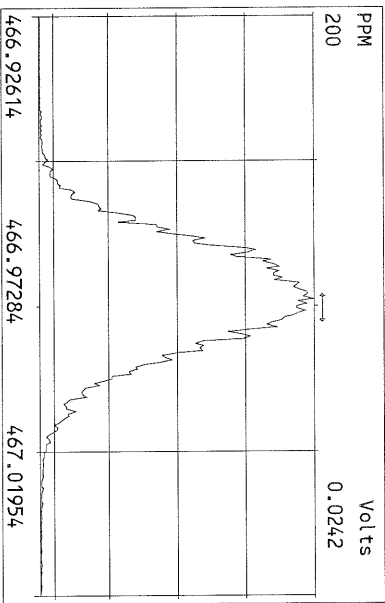
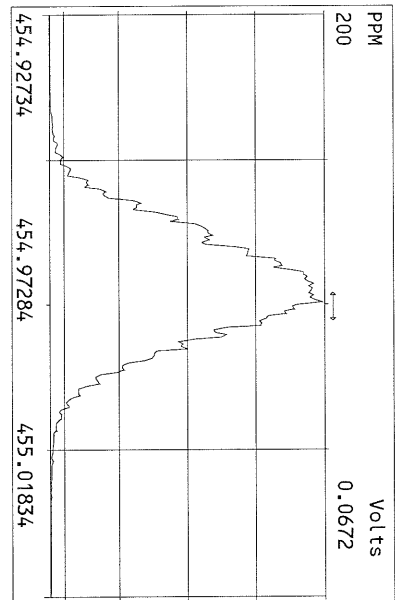
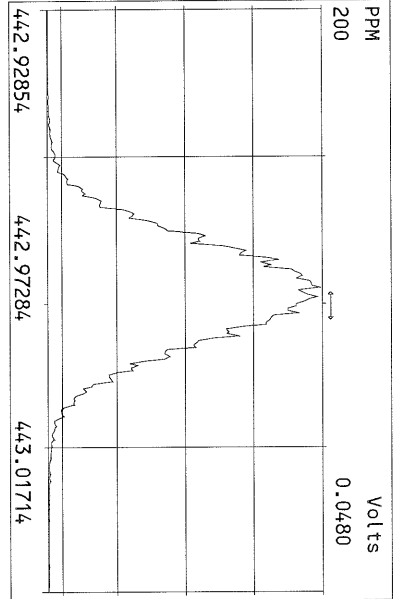
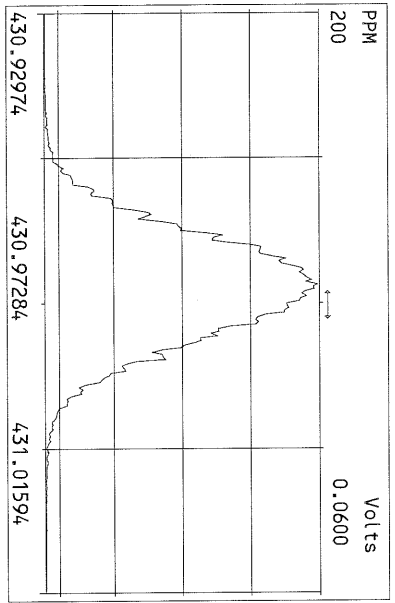












USEPA - ITD

FORM 4A
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: Frontier Analytical Laboratory Episode No.:

Contract No.: SAS No.:

Initial Calibration Date: 3/7/11

Instrument ID: FAL3 GC Column ID: DB5


VER Data Filename: 07MAY11M Sam:1 Analysis Date: 7-MAY-11 08:17:31

NATIVE ANALYTES	M/Z'S	ION	QC	ACCEPT	CONC. FOUND	CONC. RANGE (ng/mL) (3)
	FORMING RATIO (1)	ABUND. RATIO	LIMITS (2)			
2,3,7,8-TCDD	M/M+2	0.77	0.65-0.89	y	10.2	7.80 - 12.9
1,2,3,7,8-PeCDD	M+2/M+4	1.62	1.32-1.78	y	49.9	39.0 - 65.0
1,2,3,4,7,8-HxCDD	M+2/M+4	1.32	1.05-1.43	y	48.2	39.0 - 64.0
1,2,3,6,7,8-HxCDD	M+2/M+4	1.32	1.05-1.43	y	49.4	39.0 - 64.0
1,2,3,7,8,9-HxCDD	M+2/M+4	1.30	1.05-1.43	y	50.7	41.0 - 61.0
1,2,3,4,6,7,8-HpCDD	M+2/M+4	0.91	0.88-1.20	y	48.7	43.0 - 58.0
OCDD	M+2/M+4	0.97	0.76-1.02	y	98.3	79.0 - 126
2,3,7,8-TCDF	M/M+2	0.67	0.65-0.89	y	11.2	8.40 - 12.0
1,2,3,7,8-PeCDF	M+2/M+4	1.63	1.32-1.78	y	50.7	41.0 - 60.0
2,3,4,7,8-PeCDF	M+2/M+4	1.61	1.32-1.78	y	49.4	41.0 - 60.0
1,2,3,4,7,8-HxCDF	M+2/M+4	1.24	1.05-1.43	y	48.1	45.0 - 56.0
1,2,3,6,7,8-HxCDF	M+2/M+4	1.22	1.05-1.43	y	48.0	44.0 - 57.0
2,3,4,6,7,8-HxCDF	M+2/M+4	1.27	1.05-1.43	y	47.8	44.0 - 57.0
1,2,3,7,8,9-HxCDF	M+2/M+4	1.25	1.05-1.43	y	48.5	45.0 - 56.0
1,2,3,4,6,7,8-HpCDF	M+2/M+4	0.99	0.88-1.20	y	46.8	45.0 - 55.0
1,2,3,4,7,8,9-HpCDF	M+2/M+4	0.99	0.88-1.20	y	47.3	43.0 - 58.0
OCDF	M+2/M+4	0.92	0.76-1.02	y	95.7	63.0 - 159

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

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

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

Analyst: Date: 5/9/11

USEPA - ITD

FORM 4B
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: Frontier Analytical Laboratory

Episode No.:

Contract No.:

SAS No.:

Initial Calibration Date: 3/7/11

Instrument ID: FAL3

GC Column ID: DB5

VER Data Filename: 07MAY11M Sam:1

Analysis Date: 7-MAY-11 08:17:31

LABELLED COMPOUNDS	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	ACCEPT	CONC. FOUND	CONC. RANGE (ng/mL) (3)
13C-2,3,7,8-TCDD	M/M+2	0.75	0.65-0.89	y	96.1	82.0 - 121
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.76	1.32-1.78	y	91.6	62.0 - 160
13C-1,2,3,4,7,8-HxCDD	M+2/M+4	1.32	1.05-1.43	y	91.7	85.0 - 117
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.21	1.05-1.43	y	100	85.0 - 118
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.07	0.88-1.20	y	96.5	72.0 - 138
13C-OCDD	M+2/M+4	1.01	0.76-1.02	y	148	96.0 - 415
13C-2,3,7,8-TCDF	M/M+2	0.88	0.65-0.89	y	98.4	71.0 - 140
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.71	1.32-1.78	y	101	76.0 - 130
13C-2,3,4,7,8-PeCDF	M+2/M+4	1.69	1.32-1.78	y	100	77.0 - 130
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.48	0.43-0.59	y	95.2	76.0 - 131
13C-1,2,3,6,7,8-HxCDF	M/M+2	0.47	0.43-0.59	y	99.9	70.0 - 143
13C-2,3,4,6,7,8-HxCDF	M/M+2	0.46	0.43-0.59	y	97.2	73.0 - 137
13C-1,2,3,7,8,9-HxCDF	M/M+2	0.47	0.43-0.59	y	93.4	74.0 - 135
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.43	0.37-0.51	y	99.7	78.0 - 129
13C-1,2,3,4,7,8,9-HpCDF	M/M+2	0.44	0.37-0.51	y	94.7	77.0 - 129
13C-OCDF	M+2/M+4	0.96	0.76-1.02	y	148	96.0 - 415
CLEANUP STANDARD (4)						
37Cl-2,3,7,8-TCDD					8.85	7.80 - 12.8

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

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

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

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

Analyst: _____

Date: _____

USEPA - ITD

FORM 6A

PCDD/PCDF RELATIVE RETENTION TIMES

Lab Name: Frontier Analytical Laboratory

Episode No.:

Contract No.:

SAS No.:

Init. Cal. Date: 3/7/11

Instrument ID: FAL3

GC Column ID: DB5


Analysis Date: 7-MAY-11 08:17:31

CS3 or VER Data Filename: 07MAY11M

Sam:1

NATIVE ANALYTES	RETENTION TIME		RRT	RRT
	REFERENCE			QC LIMITS (1)
2,3,7,8-TCDD	13C-2,3,7,8-TCDD		1.001	0.999-1.002
2,3,7,8-TCDF	13C-2,3,7,8-TCDF		1.001	0.999-1.003
1,2,3,7,8-PeCDD	13C-1,2,3,7,8-PeCDD		1.001	0.999-1.002
1,2,3,7,8-PeCDF	13C-1,2,3,7,8-PeCDF		1.000	0.999-1.002
2,3,4,7,8-PeCDF	13C-2,3,4,7,8-PeCDF		1.000	0.999-1.002
LABELED COMPOUNDS				
37Cl-2,3,7,8-TCDD	13C-1,2,3,4-TCDD		1.022	0.989-1.052
13C-2,3,7,8-TCDD			1.022	0.976-1.043
13C-2,3,7,8-TCDF			0.993	0.923-1.103
13C-1,2,3,7,8-PeCDD			1.241	1.000-1.567
13C-1,2,3,7,8-PeCDF			1.175	0.923-1.203
13C-2,3,4,7,8-PeCDF			1.225	0.923-1.303

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

Analyst: Date: 5/9/11

USEPA - ITD

FORM 6B

PCDD/PCDF RELATIVE RETENTION TIMES

Lab Name: Frontier Analytical Laboratory

Episode No.:

Contract No.:

SAS No.:

Init. Cal. Date: 3/7/11

Instrument ID: FAL3

GC Column ID: DB5

Analysis Date: 7-MAY-11 08:17:31 CS3 or VER Data Filename: 07MAY11M Sam:1

NATIVE ANALYTES	RETENTION TIME		RRT	RRT
	REFERENCE			QC LIMITS (1)
1,2,3,4,7,8-HxCDD	13C-1,2,3,4,7,8-HxCDD		1.000	0.999-1.001
1,2,3,6,7,8-HxCDD	13C-1,2,3,6,7,8-HxCDD		1.001	0.998-1.004
1,2,3,7,8,9-HxCDD	13C-1,2,3,6,7,8-HxCDD		1.012	1.000-1.019
1,2,3,4,7,8-HxCDF	13C-1,2,3,4,7,8-HxCDF		1.001	0.999-1.001
1,2,3,6,7,8-HxCDF	13C-1,2,3,6,7,8-HxCDF		1.000	0.997-1.005
2,3,4,6,7,8-HxCDF	13C-2,3,4,6,7,8-HxCDF		1.001	0.999-1.001
1,2,3,7,8,9-HxCDF	13C-1,2,3,7,8,9-HxCDF		1.000	0.999-1.001
1,2,3,4,6,7,8-HpCDD	13C-1,2,3,4,6,7,8-HpCDD		1.000	0.999-1.001
1,2,3,4,6,7,8-HpCDF	13C-1,2,3,4,6,7,8-HpCDF		1.000	0.999-1.001
1,2,3,4,7,8,9-HpCDF	13C-1,2,3,4,7,8,9-HpCDF		1.001	0.999-1.001
OCDD	13C-OCDD		1.001	0.999-1.001
OCDF	13C-OCDF		1.000	0.999-1.001
LABELED COMPOUNDS				
13C-1,2,3,4,7,8-HxCDD	13C-1,2,3,7,8,9-HxCDD		0.984	0.977-1.000
13C-1,2,3,6,7,8-HxCDD			0.988	0.981-1.003
13C-1,2,3,4,7,8-HxCDF			0.948	0.944-0.970
13C-1,2,3,6,7,8-HxCDF			0.954	0.949-0.975
13C-2,3,4,6,7,8-HxCDF			0.978	0.959-1.021
13C-1,2,3,7,8,9-HxCDF			1.015	0.977-1.047
13C-1,2,3,4,6,7,8-HpCDD			1.128	1.086-1.130
13C-1,2,3,4,6,7,8-HpCDF			1.079	1.043-1.085
13C-1,2,3,4,7,8,9-HpCDF			1.151	1.057-1.154
13C-OCDD			1.270	1.032-1.311
13C-OCDF			1.280	1.000-1.311

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

Analyst: JKDate: 5/9/11

Name	Resp	RA	RT	RRF	Conc	Qual	Fac Noise-1	Noise-2	DL	DL	
2,3,7,8-TCDD	2.74e+06	0.77 y	27:15	1.13	10.2		2.50	-	-	*	
1,2,3,7,8-PeCDD	1.13e+07	1.62 y	33:05	1.02	49.9		2.50	-	-	*	
1,2,3,4,7,8-HxCDD	1.18e+07	1.32 y	38:28	1.45	48.2		2.50	-	-	*	
1,2,3,6,7,8-HxCDD	1.04e+07	1.32 y	38:38	1.45	49.4		2.50	-	-	*	
1,2,3,7,8,9-HxCDD	1.17e+07	1.30 y	39:05	1.47	50.7		2.50	-	-	*	
1,2,3,4,6,7,8-HpCDD	7.80e+06	0.91 y	44:05	1.30	48.7		2.50	-	-	*	
OCDD	9.87e+06	0.97 y	49:39	1.45	98.3		2.50	-	-	*	
2,3,7,8-TCDF	5.09e+06	0.67 y	26:29	1.15	11.2		2.50	-	-	*	
1,2,3,7,8-PeCDF	1.55e+07	1.63 y	31:20	0.89	50.7		2.50	-	-	*	
2,3,4,7,8-PeCDF	1.47e+07	1.61 y	32:39	0.89	49.4		2.50	-	-	*	
1,2,3,4,7,8-HxCDF	1.31e+07	1.24 y	37:04	1.01	48.1		2.50	-	-	*	
1,2,3,6,7,8-HxCDF	1.51e+07	1.22 y	37:16	0.89	48.0		2.50	-	-	*	
2,3,4,6,7,8-HxCDF	1.36e+07	1.27 y	38:12	1.02	47.8		2.50	-	-	*	
1,2,3,7,8,9-HxCDF	1.53e+07	1.25 y	39:38	1.10	48.5		2.50	-	-	*	
1,2,3,4,6,7,8-HpCDF	1.05e+07	0.99 y	42:10	1.48	46.8		2.50	-	-	*	
1,2,3,4,7,8,9-HpCDF	7.56e+06	0.99 y	44:60	1.43	47.3		2.50	-	-	*	
OCDF	1.07e+07	0.92 y	49:60	0.84	95.7		2.50	-	-	*	
Rec											
13C-2,3,7,8-TCDD	2.38e+07	0.75 y	27:14	1.03	96.1					96.1	
13C-1,2,3,7,8-PeCDD	2.23e+07	1.76 y	33:04	1.01	91.6					91.6	
13C-1,2,3,4,7,8-HxCDD	1.69e+07	1.32 y	38:27	1.19	91.7					91.7	
13C-1,2,3,6,7,8-HxCDD	1.45e+07	1.21 y	38:36	0.94	100					100	
13C-1,2,3,4,6,7,8-HpCDD	1.23e+07	1.07 y	44:04	0.83	96.5					96.5	
13C-OCDD	1.39e+07	1.01 y	49:37	0.61	148					73.9	
13C-2,3,7,8-TCDF	3.98e+07	0.88 y	26:28	0.98	98.4					98.4	
13C-1,2,3,7,8-PeCDF	3.46e+07	1.71 y	31:20	0.83	101					101	
13C-2,3,4,7,8-PeCDF	3.33e+07	1.69 y	32:38	0.80	100					100	
13C-1,2,3,4,7,8-HxCDF	2.71e+07	0.48 y	37:03	1.84	95.2					95.2	
13C-1,2,3,6,7,8-HxCDF	3.54e+07	0.47 y	37:15	2.29	99.9					99.9	
13C-2,3,4,6,7,8-HxCDF	2.79e+07	0.46 y	38:11	1.86	97.2					97.2	
13C-1,2,3,7,8,9-HxCDF	2.86e+07	0.47 y	39:38	1.98	93.4					93.4	
13C-1,2,3,4,6,7,8-HpCDF	1.52e+07	0.43 y	42:10	0.99	99.7					99.7	
13C-1,2,3,4,7,8,9-HpCDF	1.12e+07	0.44 y	44:58	0.77	94.7					94.7	
13C-OCDF	2.66e+07	0.96 y	49:59	1.17	148					73.9	
37Cl-2,3,7,8-TCDD	1.55e+06		27:15	0.73	8.85					88.5	
13C-1,2,3,4-TCDD	2.41e+07	0.75 y	26:39	-	63.3						
13C-1,2,3,4-TCDF	4.13e+07	0.88 y	25:23	-	57.4						
13C-1,2,3,7,8,9-HxCDD	1.55e+07	1.27 y	39:04	-	62.3						
Total Tetra-Dioxins	1.43e+07		24:15	1.13	53.0		2.50	-	-	*	26
Total Penta-Dioxins	2.49e+07		30:06	1.02	110		2.50	-	-	*	10
Total Hexa-Dioxins	3.86e+07		36:00	1.46	169		2.50	-	-	*	15
Total Hepta-Dioxins	1.71e+07		42:42	1.30	107		2.50	-	-	*	18
Total Tetra-Furans	2.35e+07		22:54	1.15	51.5		2.50	-	-	*	20
1st Fn. Tot Penta-Furans	1.81e+07		28:16	0.89	59.9		2.50	-	-	*	PeCDF 1
Total Penta-Furans	4.41e+07		30:02	0.89	146		2.50	-	-	*	206 12
Total Hexa-Furans	6.62e+07		35:07	1.00	223		2.50	-	-	*	13
Total Hepta-Furans	1.88e+07		42:10	1.46	97.9		2.50	-	-	*	28

Analyst: 

Date: 5/9/11

Frontier Analytical Laboratory - Acquisition Log

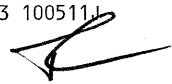
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Instrument: FAL3

GC: DB5

Experiment:OCDD

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07MAY11M 11	6733-013-0001-SA	LL-SB2-0-0.5-041911	7-MAY-11 17:31:19	ST050711M1	ST050711M2	DV
07MAY11M 12	6733-016-0001-SA	LL-SB1-0-0.5-041911	7-MAY-11 18:26:38	ST050711M1	ST050711M2	DV
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07MAY11M 14	SB050711M1	Solvent Blank	7-MAY-11 20:17:16	ST050711M1	ST050711M2	DV
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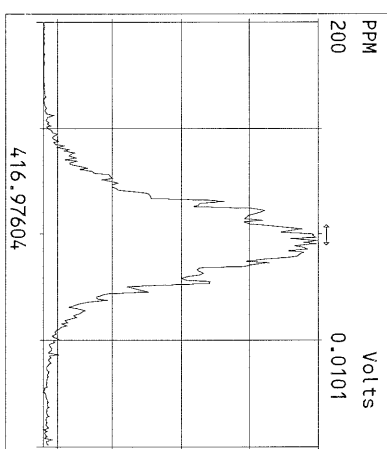
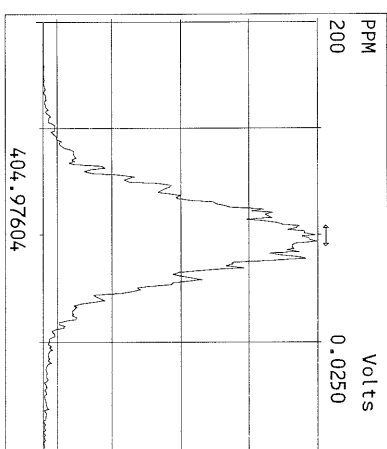
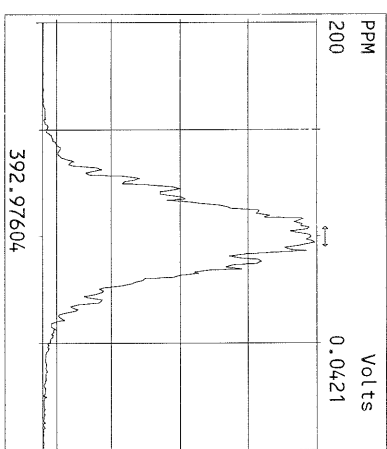
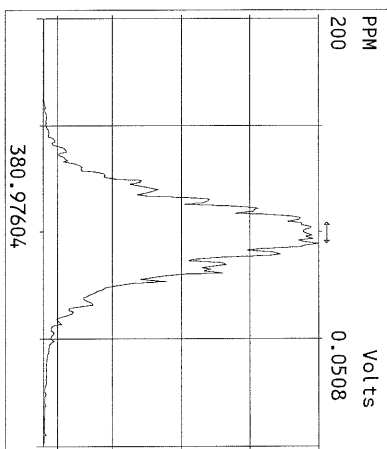
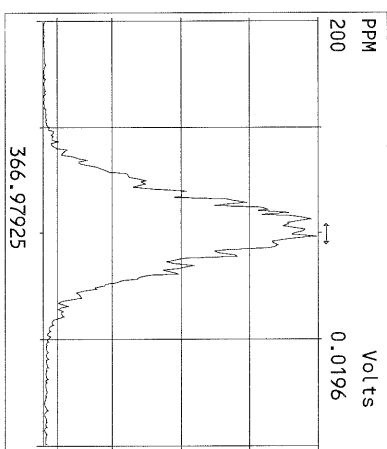
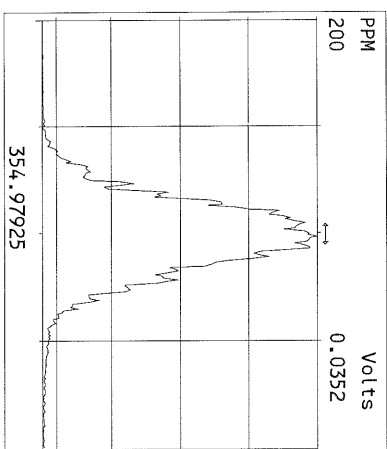
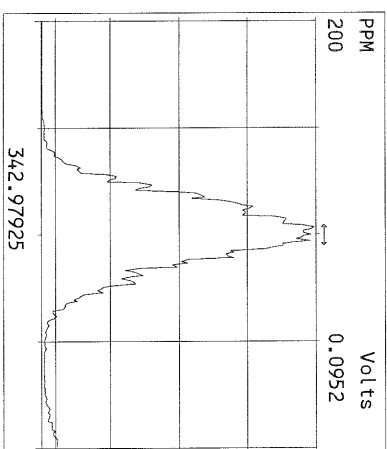
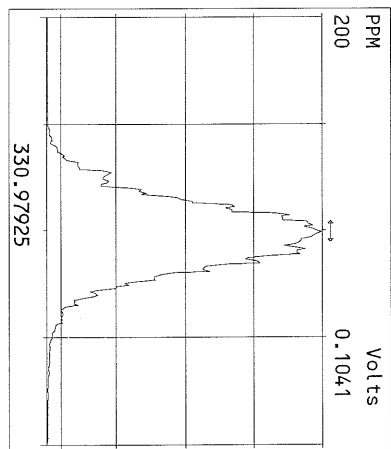
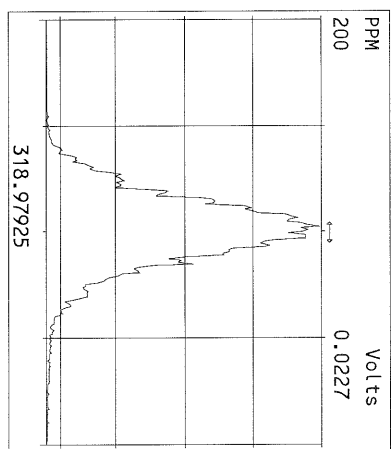
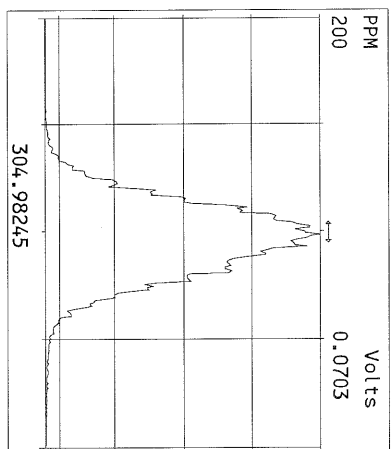
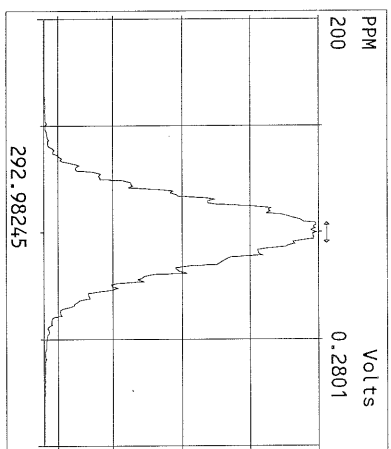


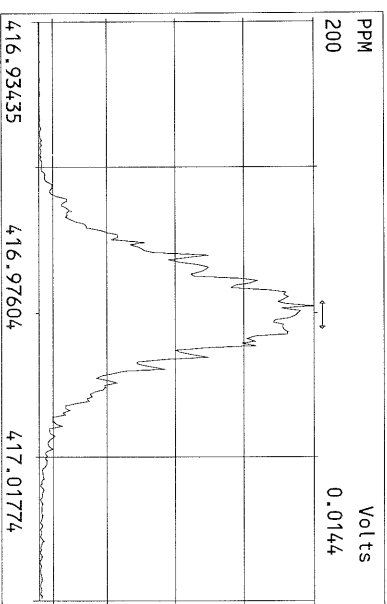
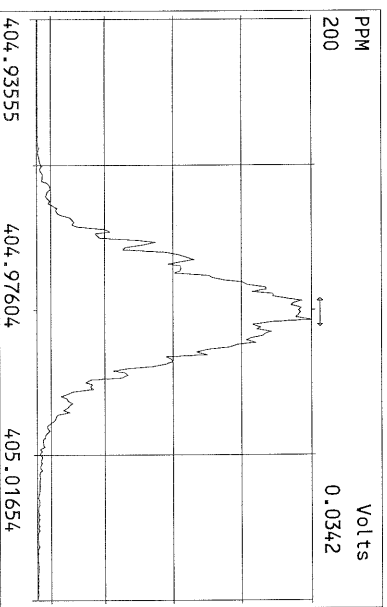
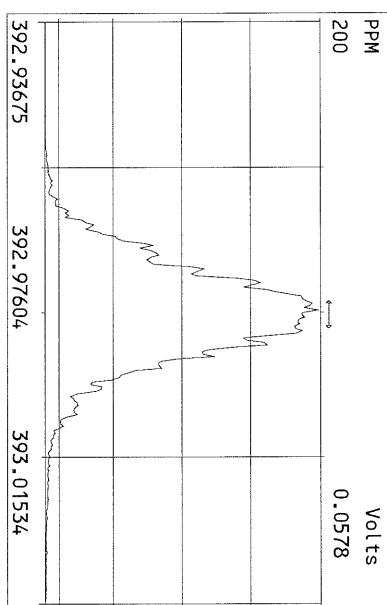
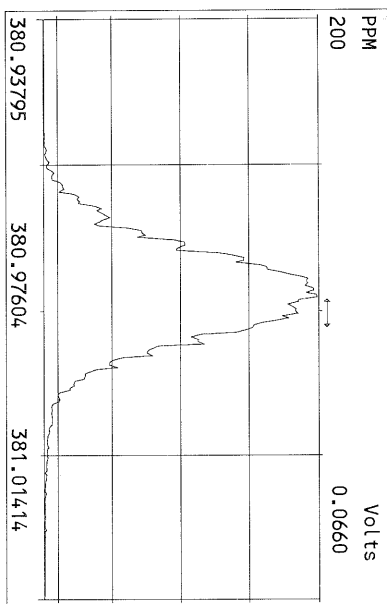
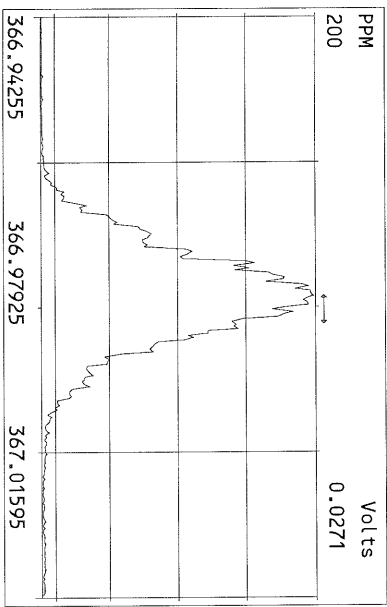
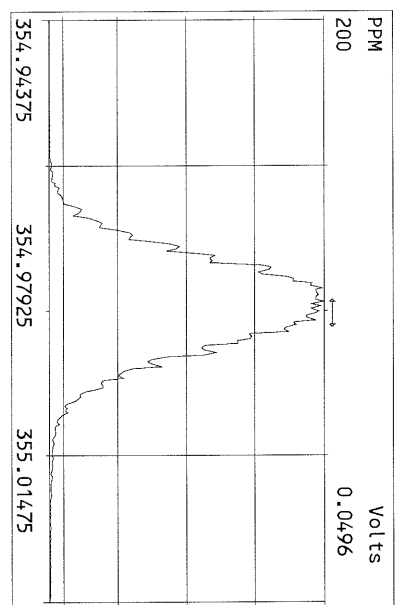
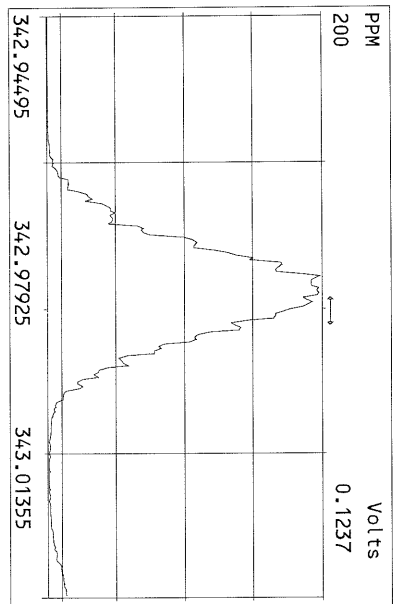
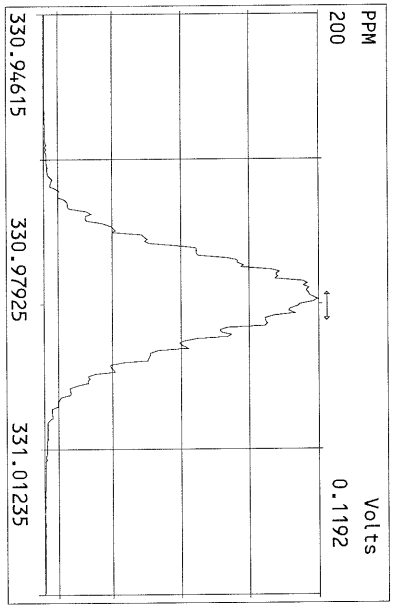
5/9/11

Data Backed Up: _____

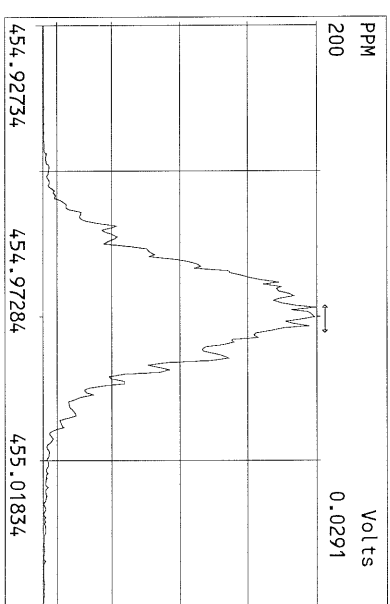
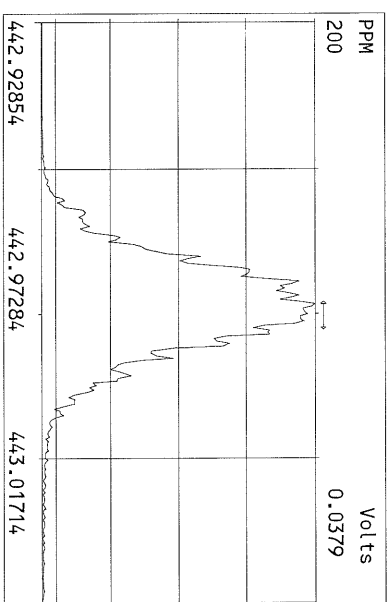
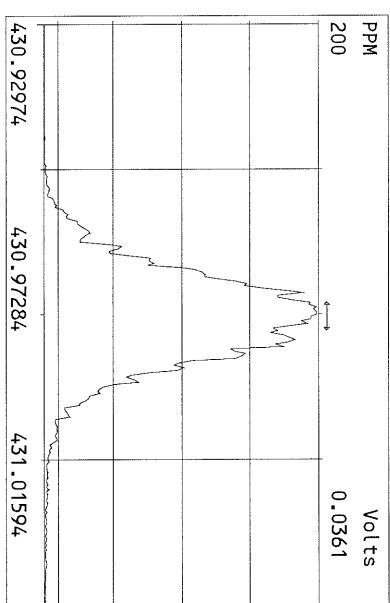
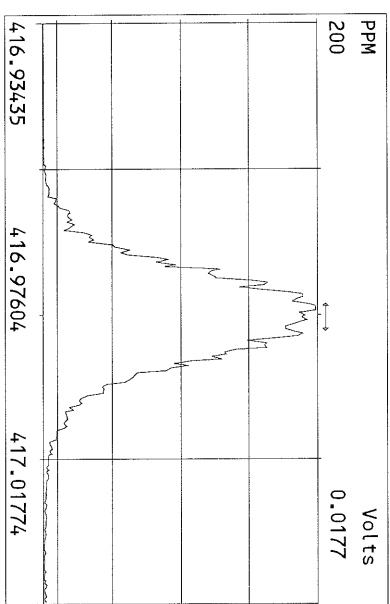
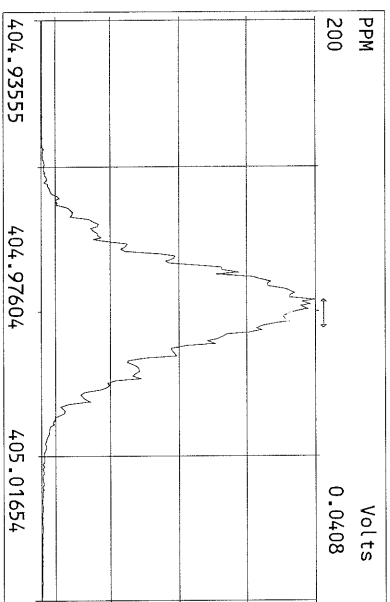
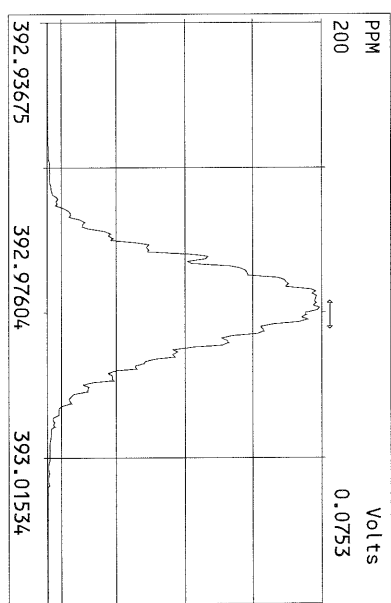
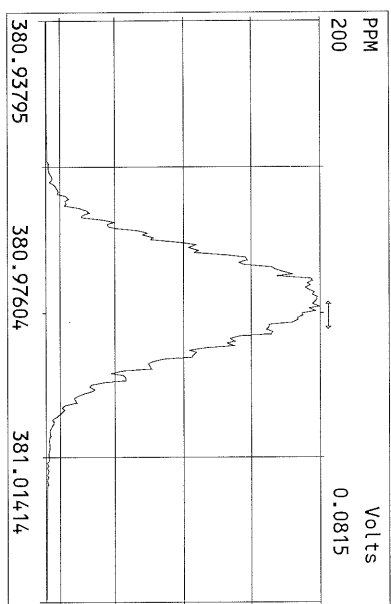
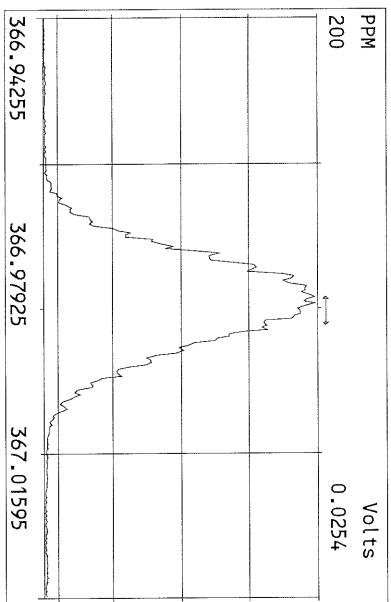
Date: _____

Peak Locate Examination: 7-MAY-2011:08:15 File:07MAY11M
Experiment:OCDD Function:1 Reference:PFK

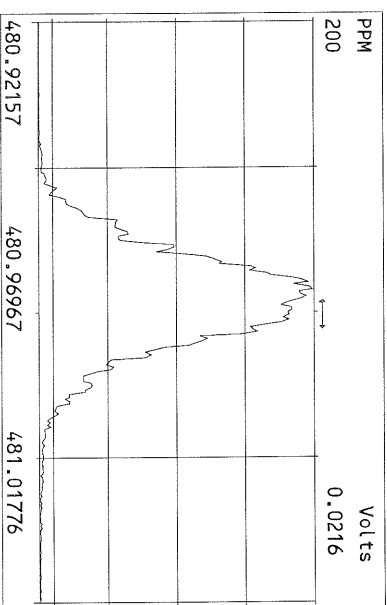
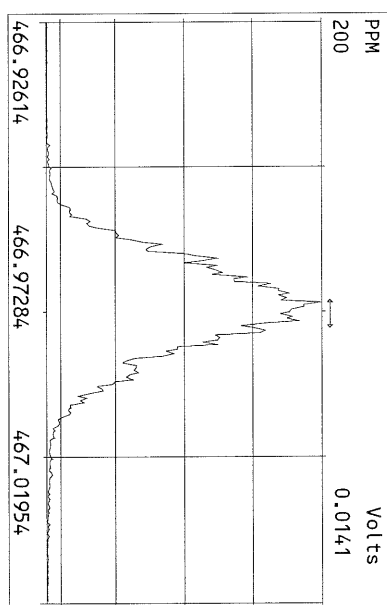
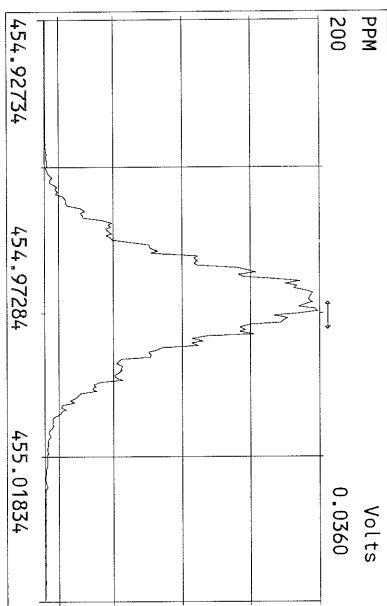
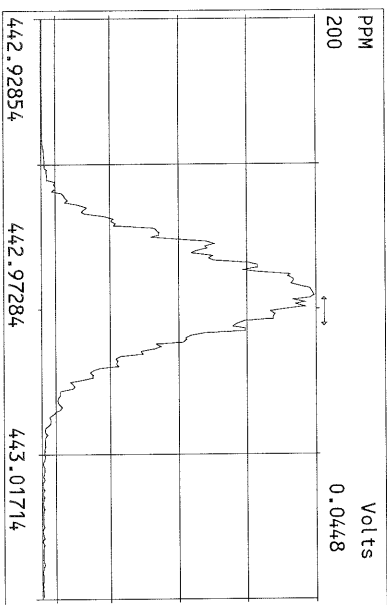
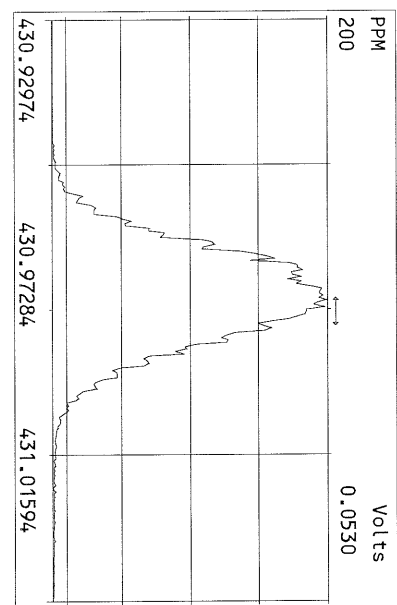
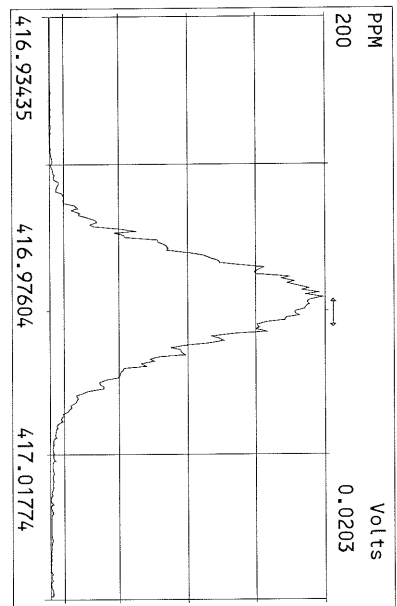
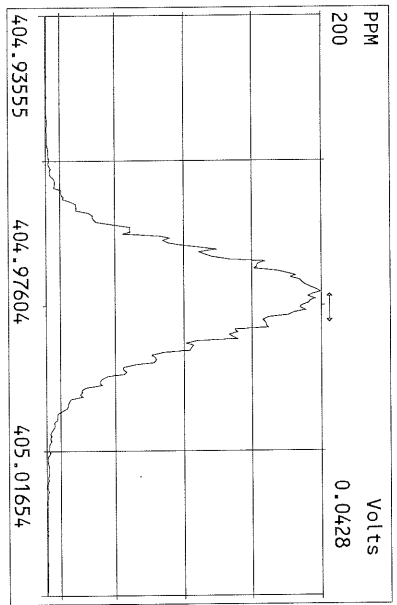


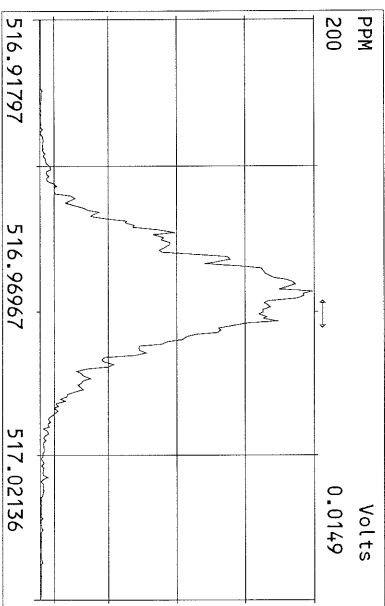
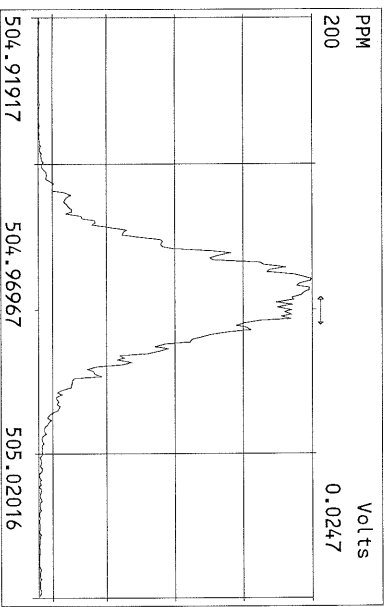
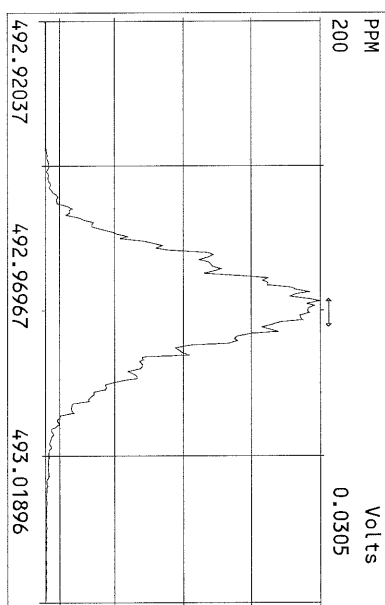
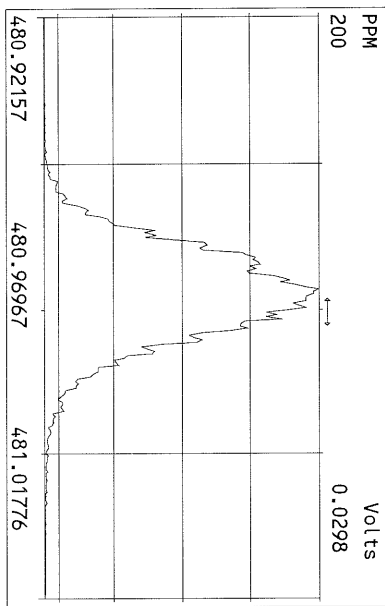
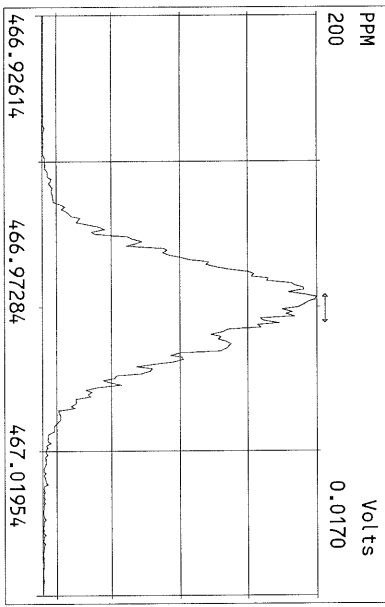
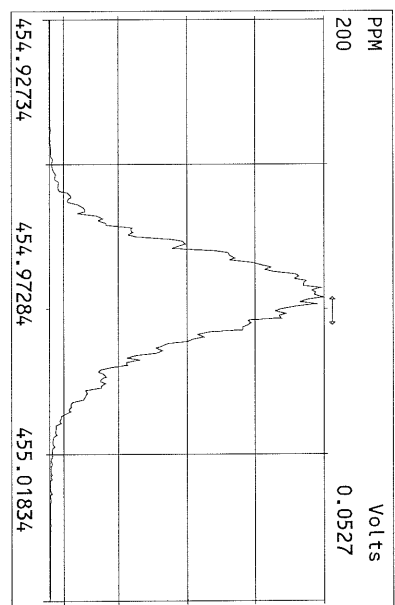
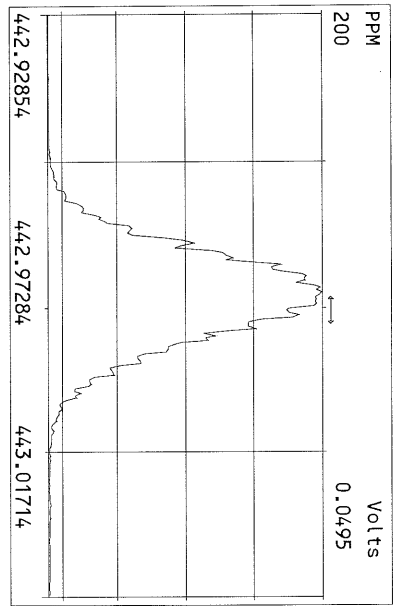
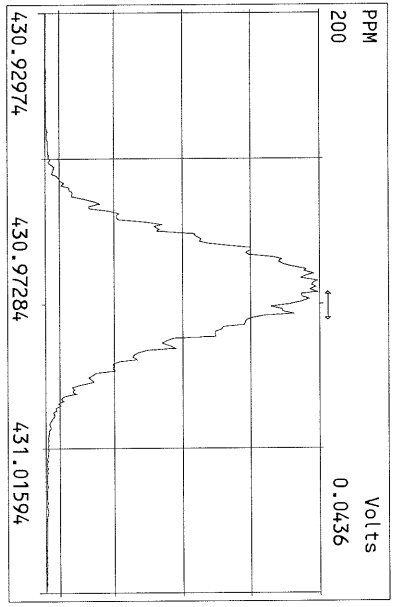


Peak Locate Examination: 7-MAY-2011:08:16 File:07MAY11M
Experiment:OCDD Function:3 Reference:PFK

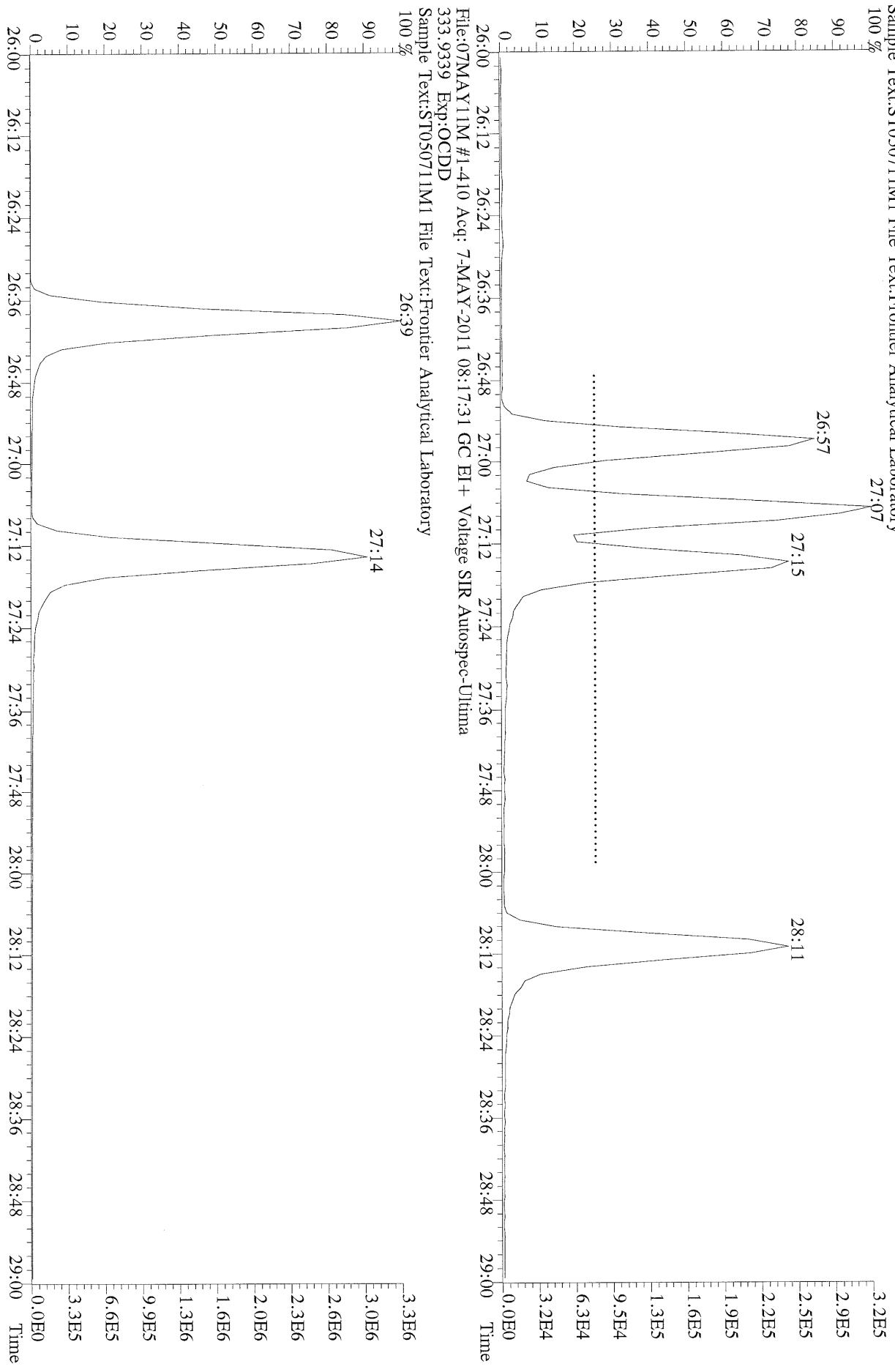


Peak Locate Examination: 7-MAY-2011:08:16 File:07MAY11M
Experiment:OCD Function:4 Reference:PFK

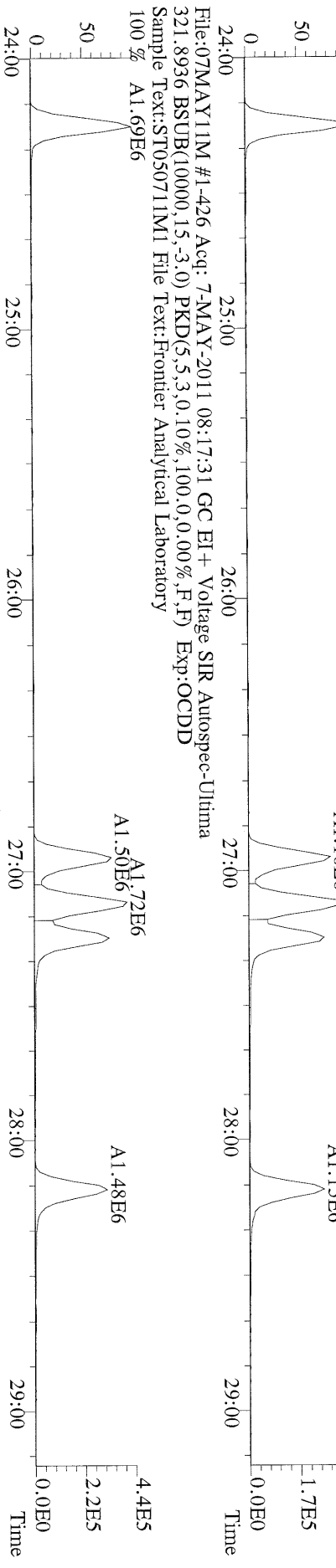




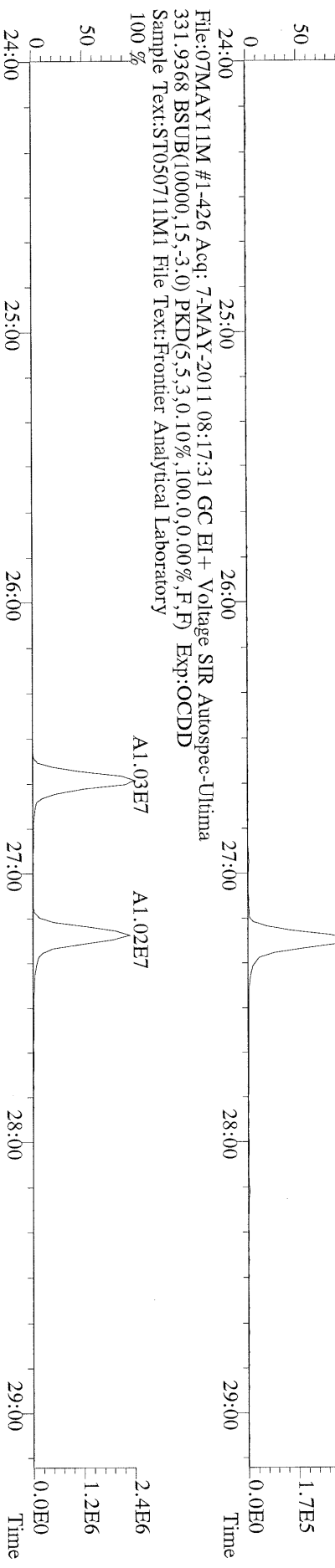
File:07MAY11M1 #1-410 Acq: 7-MAY-2011 08:17:31 GC EI+ Voltage SIR Autospec-Ultima
319.8965 Exp:OCDD
Sample Text:ST050711M1 File Text:Frontier Analytical Laboratory



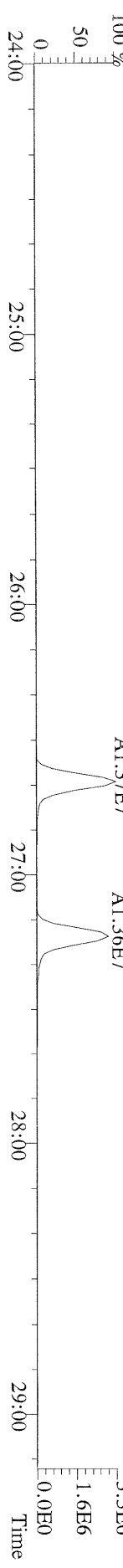
File:07MAY11M #1-426 Acq: 7-MAY-2011 08:17:31 GC EI+ Voltage SIR Autospec-Ultima
319.8965 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100.0,0.00%,F,F) Exp:OCDD
Sample Text:ST050711M1 File Text:Frontier Analytical Laboratory
100 % A1.32E6



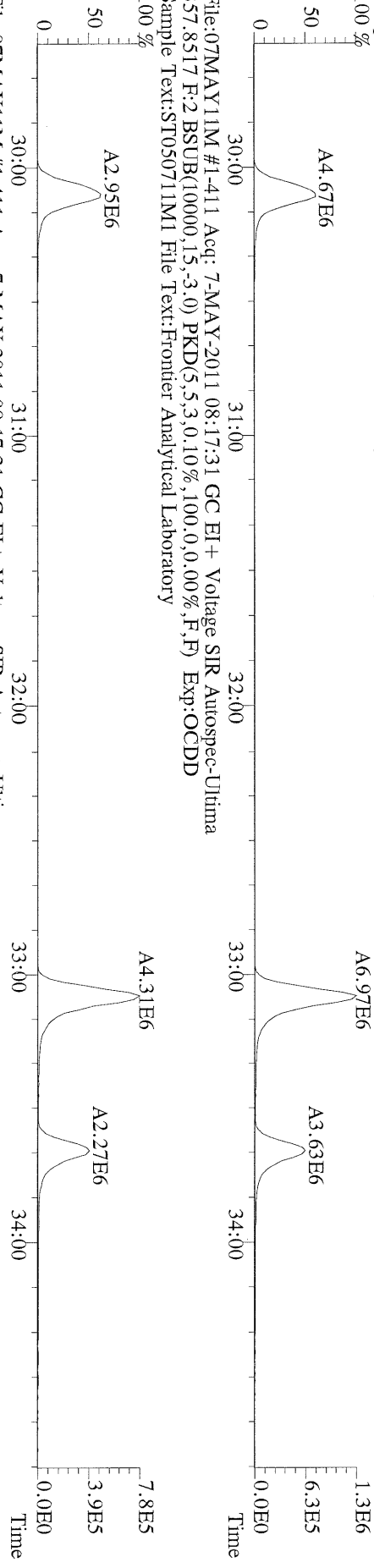
File:07MAY11M #1-426 Acq: 7-MAY-2011 08:17:31 GC EI+ Voltage SIR Autospec-Ultima
327.8847 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100.0,0.00%,F,F) Exp:OCDD
Sample Text:ST050711M1 File Text:Frontier Analytical Laboratory
100 % A1.69E6



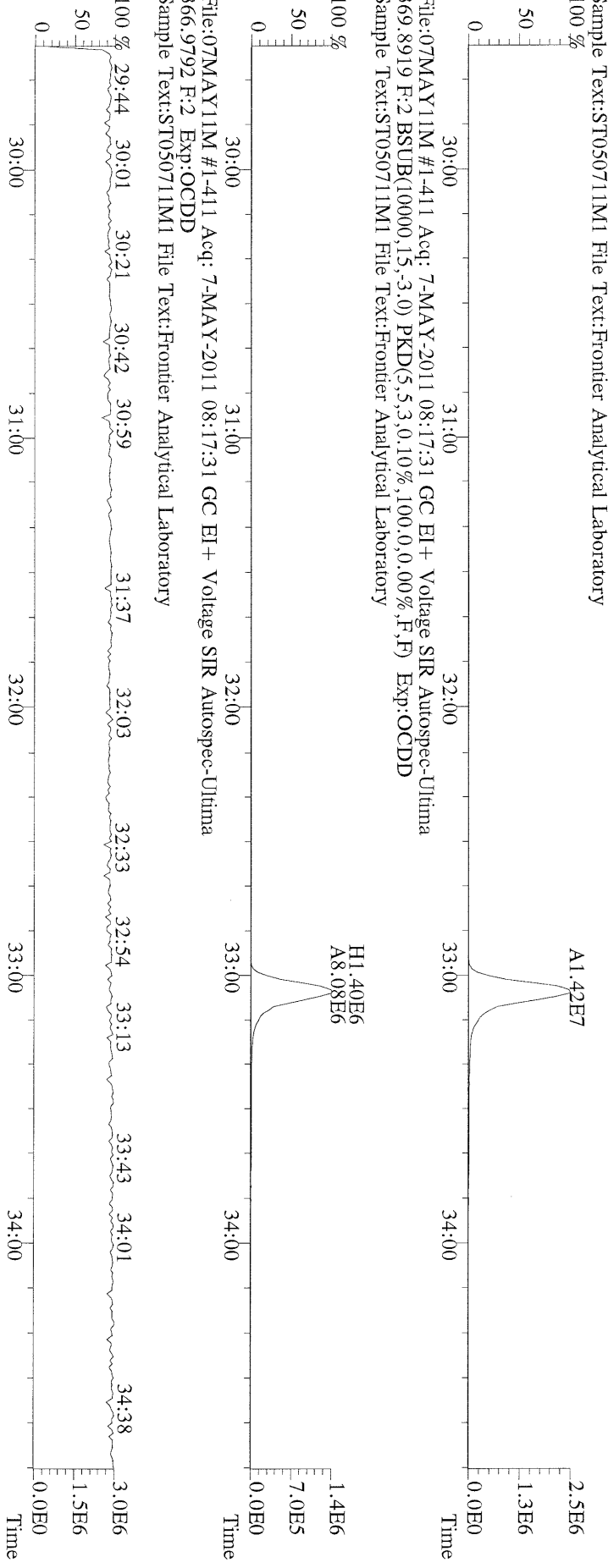
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331.9368 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100.0,0.00%,F,F) Exp:OCDD
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100 % A1.03E7



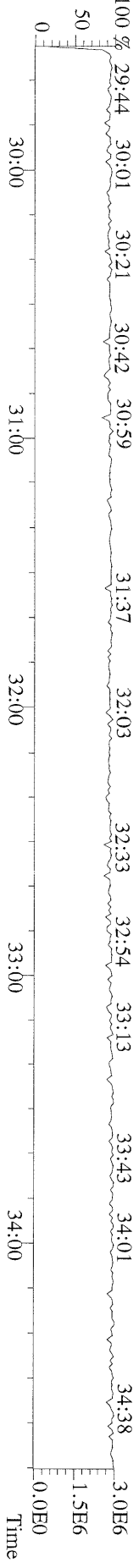
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355.8546 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%) Exp:OCDD
Sample Text:ST050711M1 File Text:Frontier Analytical Laboratory
100 %



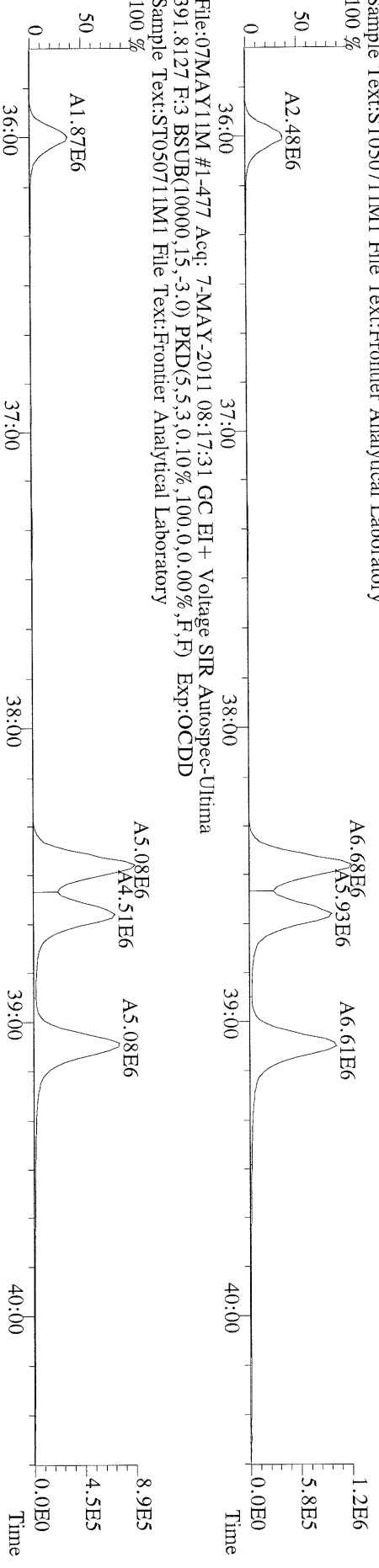
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367.8949 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%) Exp:OCDD
Sample Text:ST050711M1 File Text:Frontier Analytical Laboratory
100 %



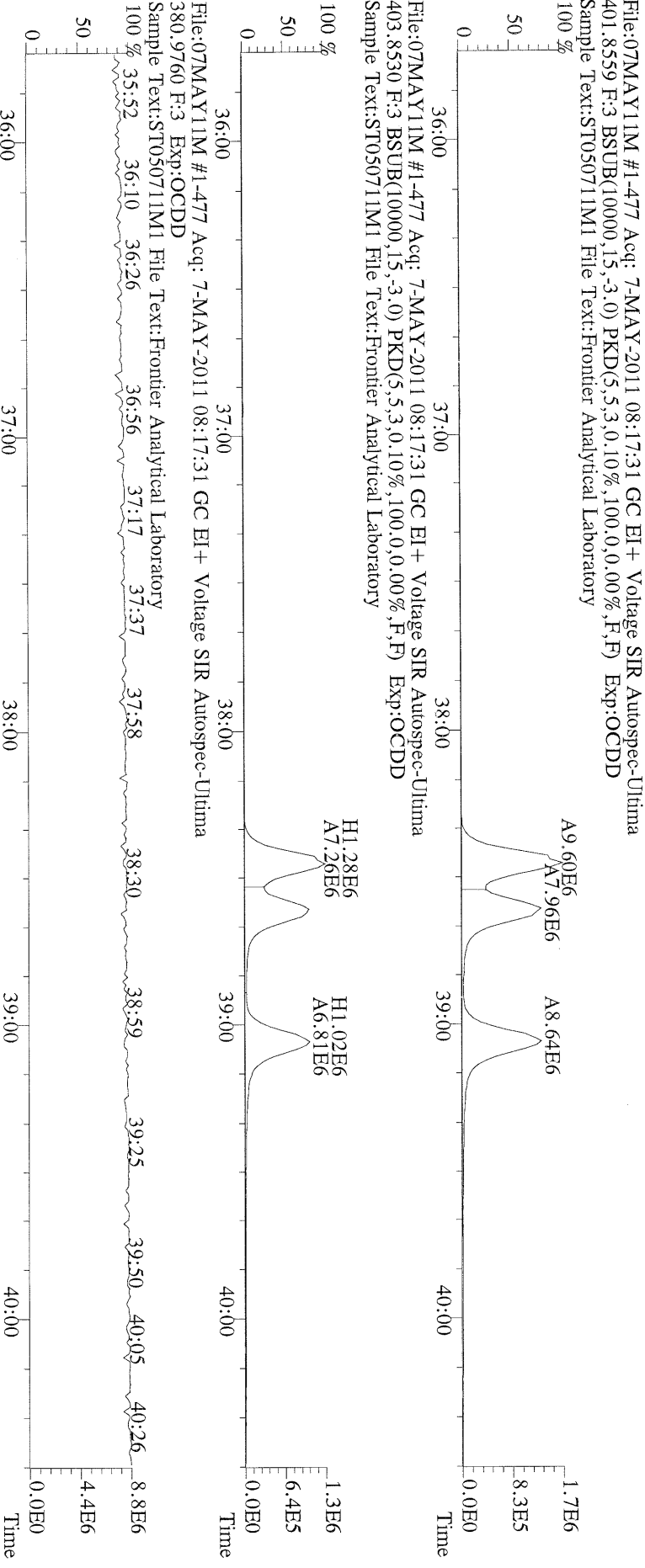
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366.9792 F:2 Exp:OCDD
Sample Text:ST050711M1 File Text:Frontier Analytical Laboratory



File:07MAY11M #1-477 Acq: 7-MAY-2011 08:17:31 GC EI+ Voltage SIR Autospec-Utima
389.8156 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:OCDD
Sample Text:ST050711M1 File Text:Frontier Analytical Laboratory



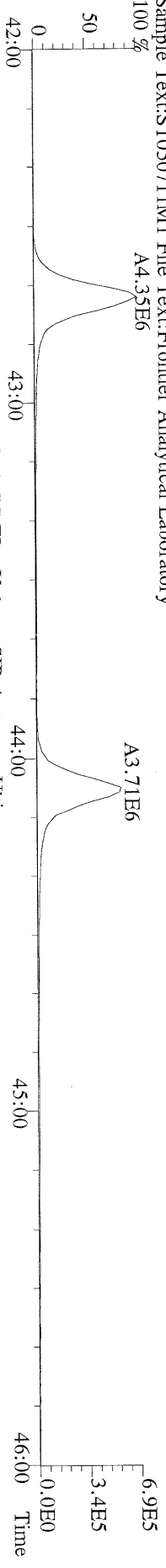
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401.8559 F:3 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:OCDD
Sample Text:ST050711M1 File Text:Frontier Analytical Laboratory



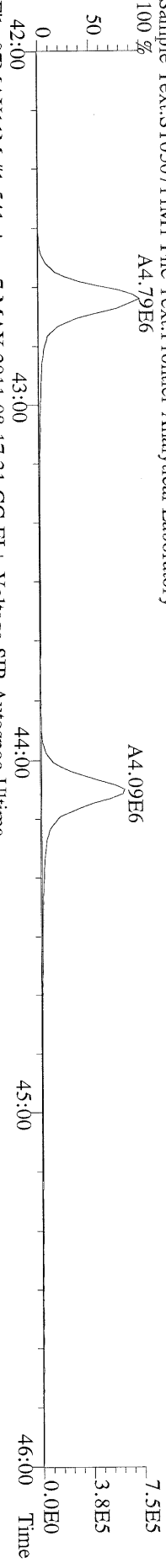
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380.9760 F:3 Exp:OCDD
Sample Text:ST050711M1 File Text:Frontier Analytical Laboratory



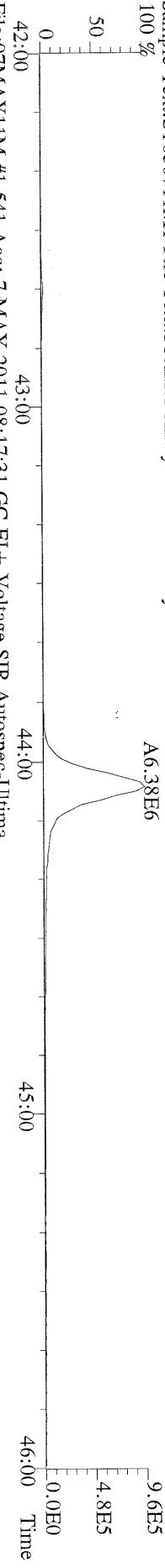
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423.7767 F:4 BSUB(10000,15,-3.0) PKD(5.5,3,0,10%,100.0,0.00%,F,F) Exp:OCDD
Sample Text:ST050711M1 File Text:Frontier Analytical Laboratory
100 %



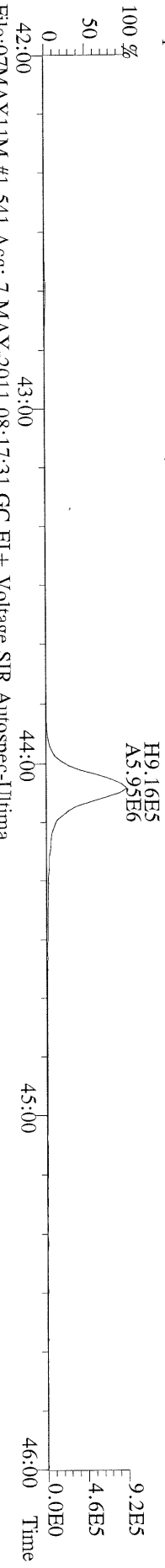
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425.7737 F:4 BSUB(10000,15,-3.0) PKD(5.5,3,0,10%,100.0,0.00%,F,F) Exp:OCDD
Sample Text:ST050711M1 File Text:Frontier Analytical Laboratory
100 %



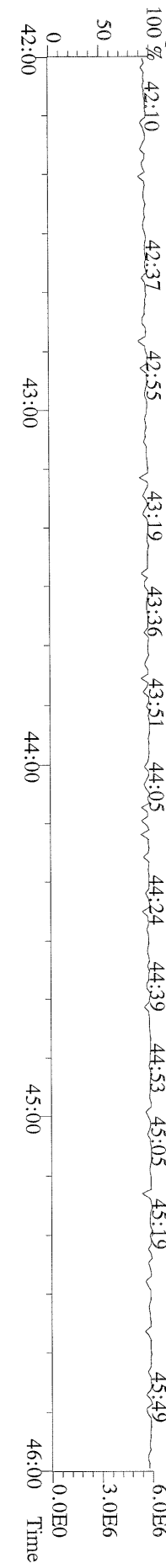
File:07MAY11M1 #1-541 Acq: 7-MAY-2011 08:17:31 GC EI+ Voltage SIR Autospec-Ultima
435.8169 F:4 BSUB(10000,15,-3.0) PKD(5.5,3,0,10%,100.0,0.00%,F,F) Exp:OCDD
Sample Text:ST050711M1 File Text:Frontier Analytical Laboratory
100 %



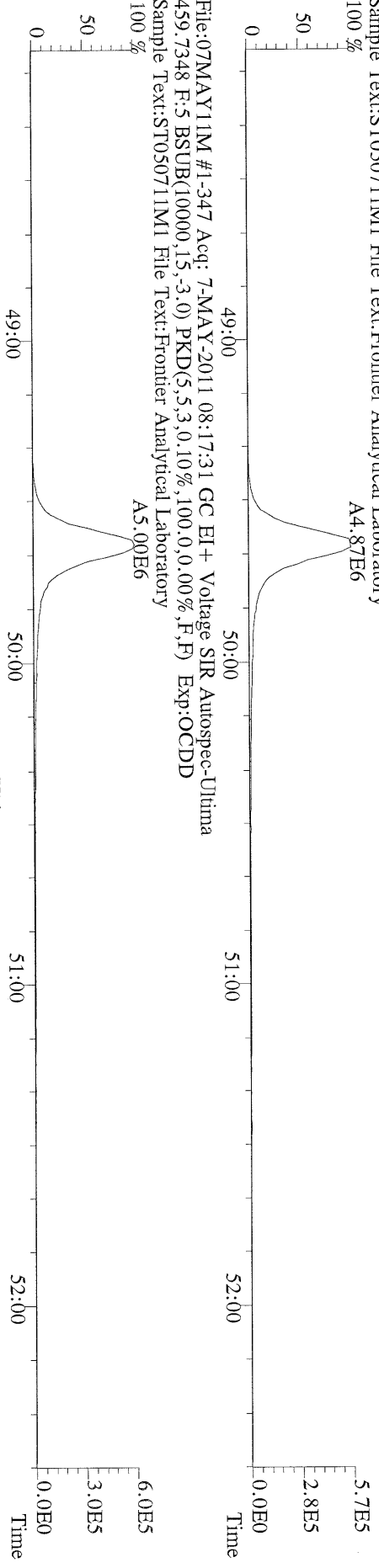
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437.8140 F:4 BSUB(10000,15,-3.0) PKD(5.5,3,0,10%,100.0,0.00%,F,F) Exp:OCDD
Sample Text:ST050711M1 File Text:Frontier Analytical Laboratory
100 %



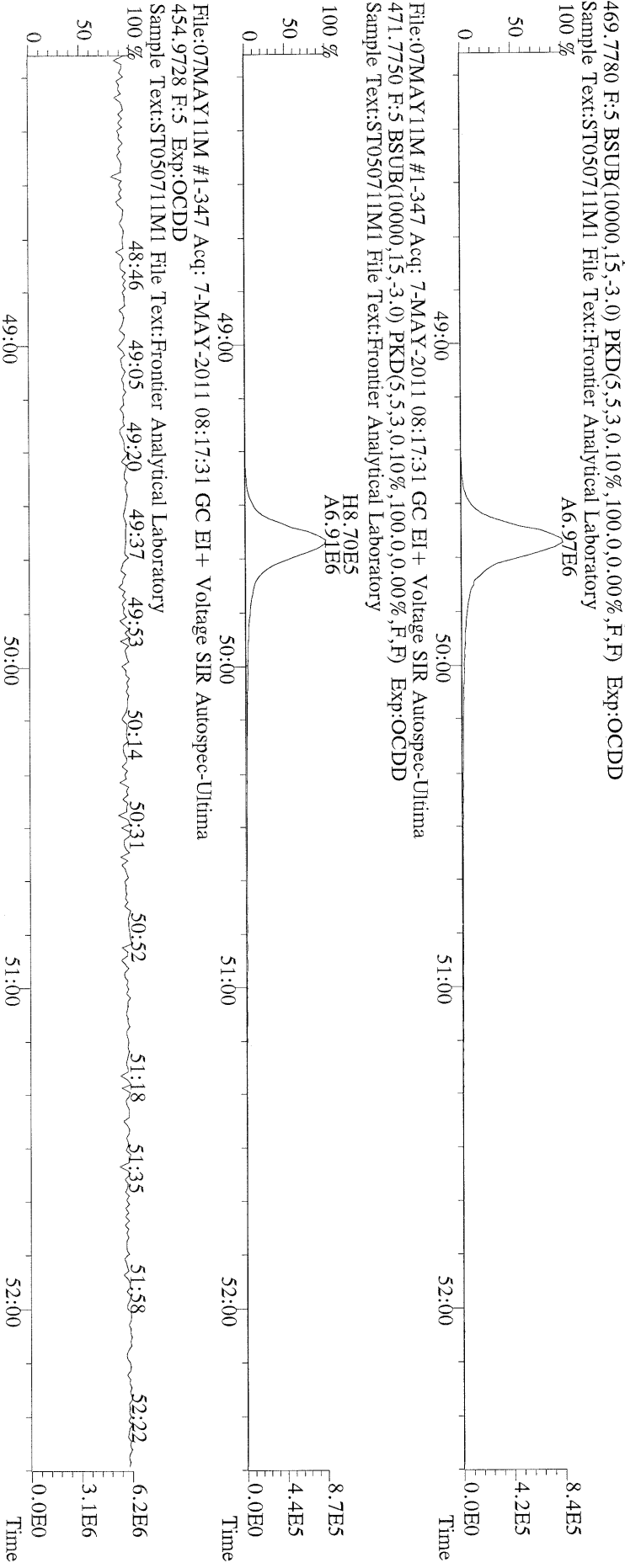
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430.9728 F:4 Exp:OCDD
Sample Text:ST050711M1 File Text:Frontier Analytical Laboratory
100 %



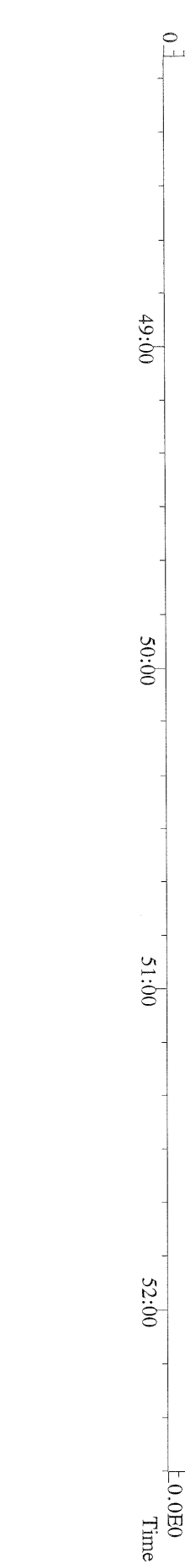
File:07MAY11M1 #1-347 Acq: 7-MAY-2011 08:17:31 GC EI + Voltage SIR Autospec-Ultima
457.7377 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0.00%,F,F) Exp:OCDD
Sample Text:ST050711M1 File Text:Frontier Analytical Laboratory
100 %



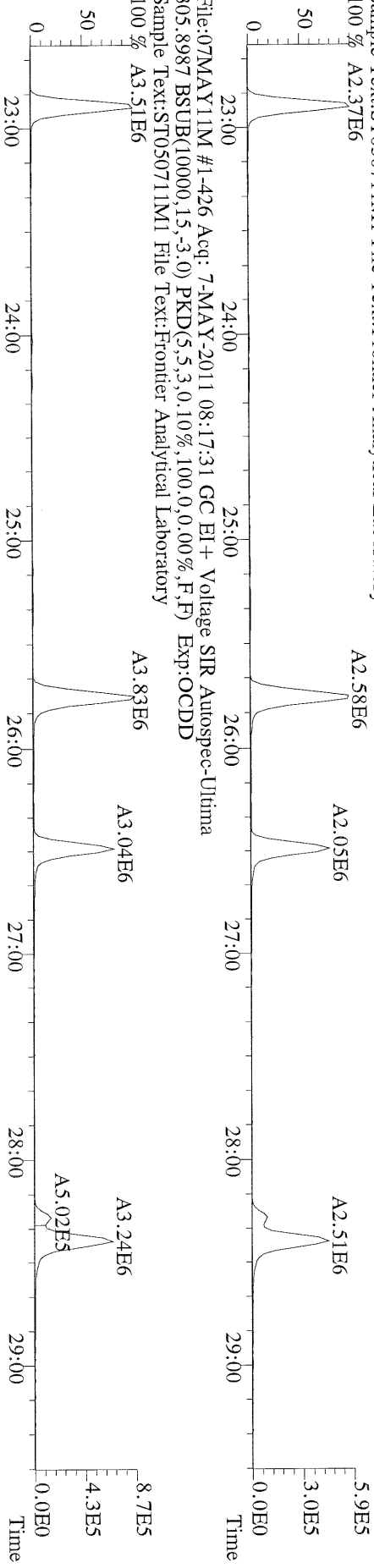
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469.7780 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0.00%,F,F) Exp:OCDD
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100 %



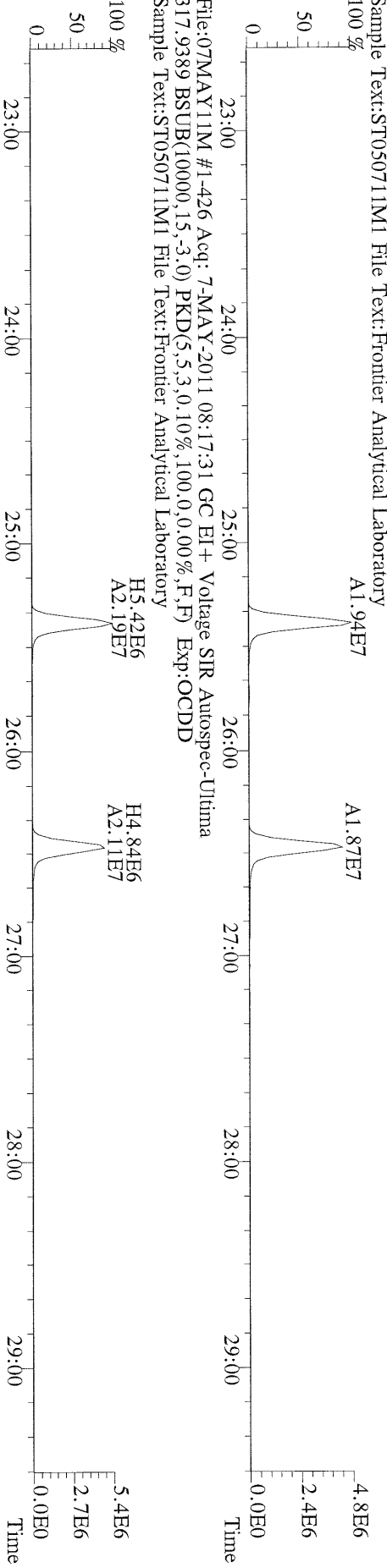
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454.9728 F:5 Exp:OCDD
Sample Text:ST050711M1 File Text:Frontier Analytical Laboratory
100 %



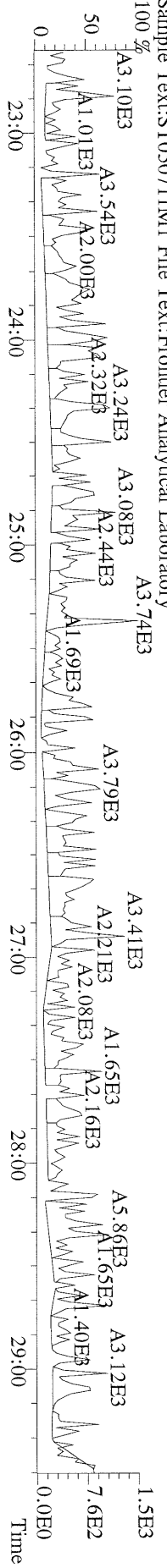
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303.9016 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:OCDD
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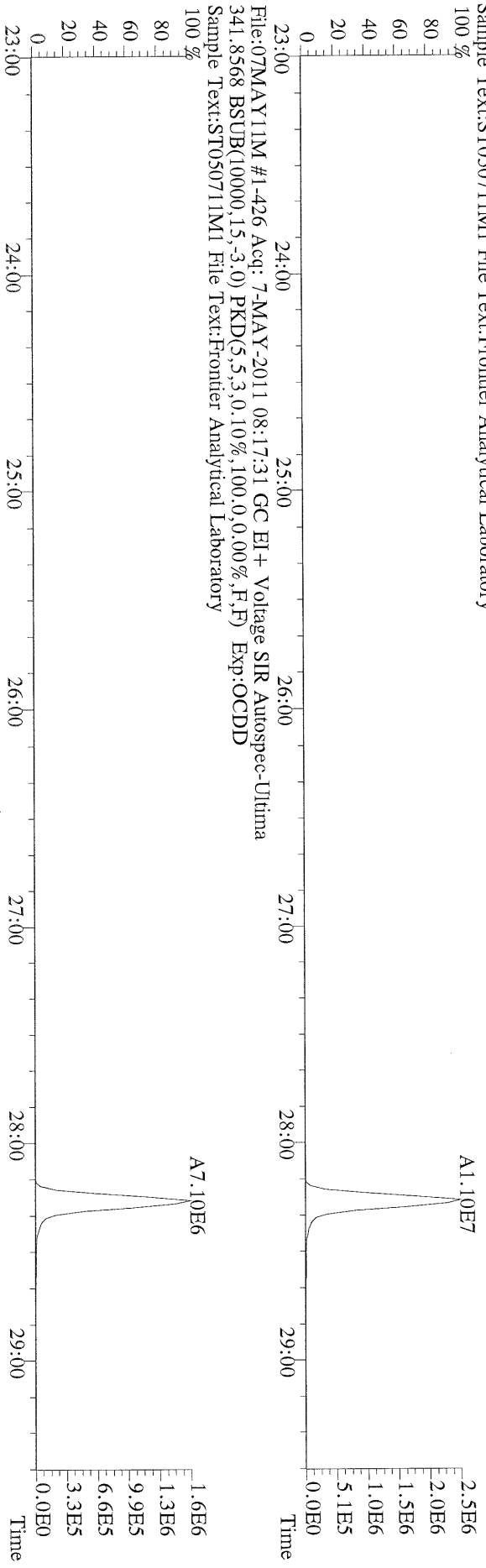
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315.9419 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:OCDD
Sample Text:ST050711M1 File Text:Frontier Analytical Laboratory
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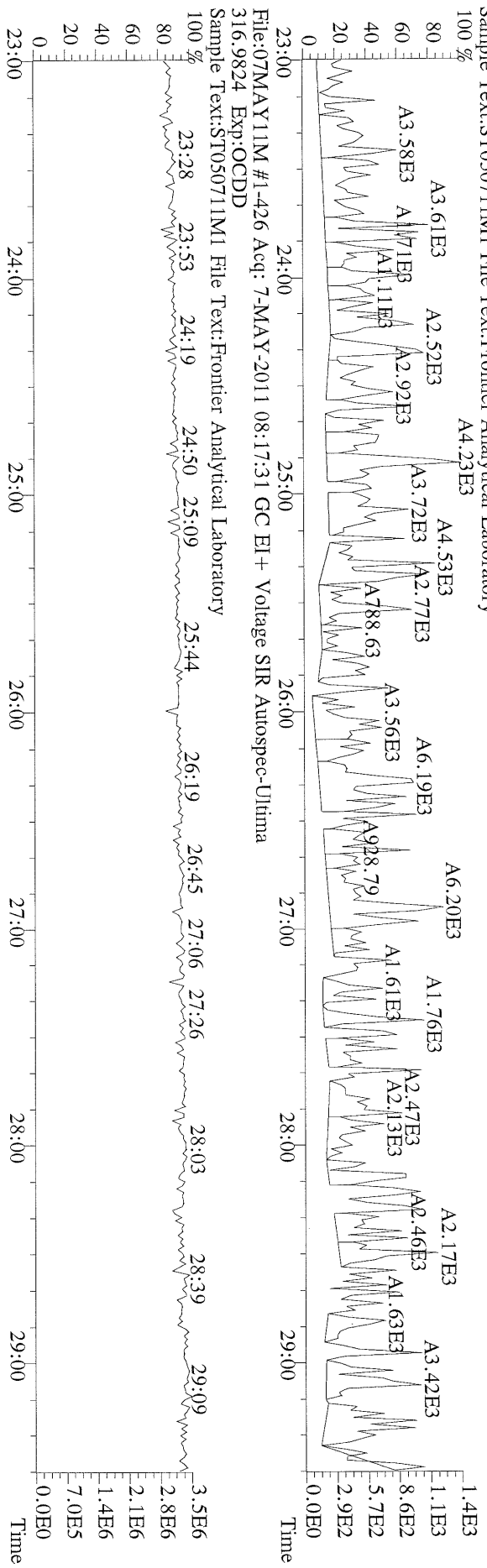
File:07MAY11M #1-426 Acq: 7-MAY-2011 08:17:31 GC EI+ Voltage SIR Autospec-Ultima
375.8364 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:OCDD
Sample Text:ST050711M1 File Text:Frontier Analytical Laboratory
100 % A3.10E3



File:07MAY11M #1-426 Acq: 7-MAY-2011 08:17:31 GC EI + Voltage SIR Autospec-Ultima
 339.8568 BSUB(10000,15,-3.0) PKD(5,5,3.0,10%,100,0,0.00%,F,F) Exp:OCDD
 Sample Text:ST050711M1 File Text:Frontier Analytical Laboratory



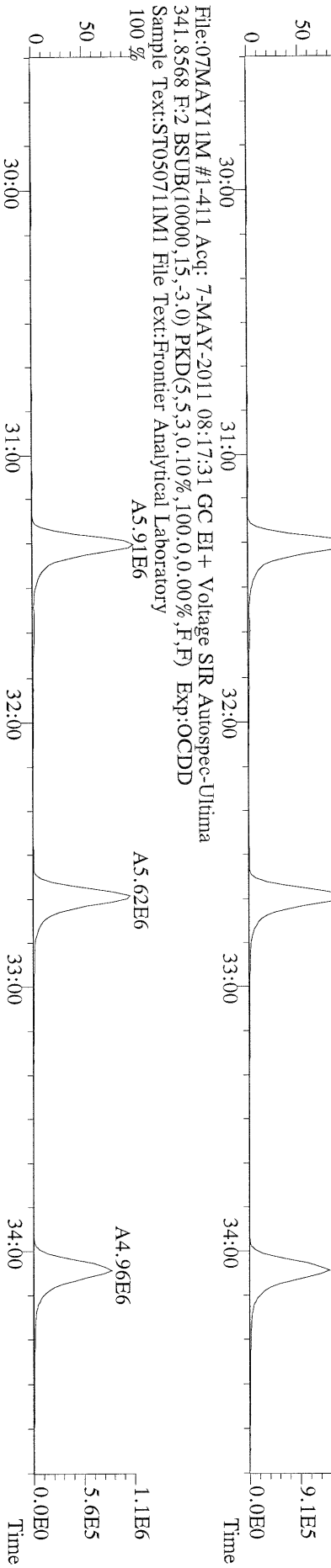
File:07MAY11M #1-426 Acq: 7-MAY-2011 08:17:31 GC EI + Voltage SIR Autospec-Ultima
 409.7974 BSUB(10000,15,-3.0) PKD(5,5,3.0,10%,100,0,0.00%,F,F) Exp:OCDD
 Sample Text:ST050711M1 File Text:Frontier Analytical Laboratory



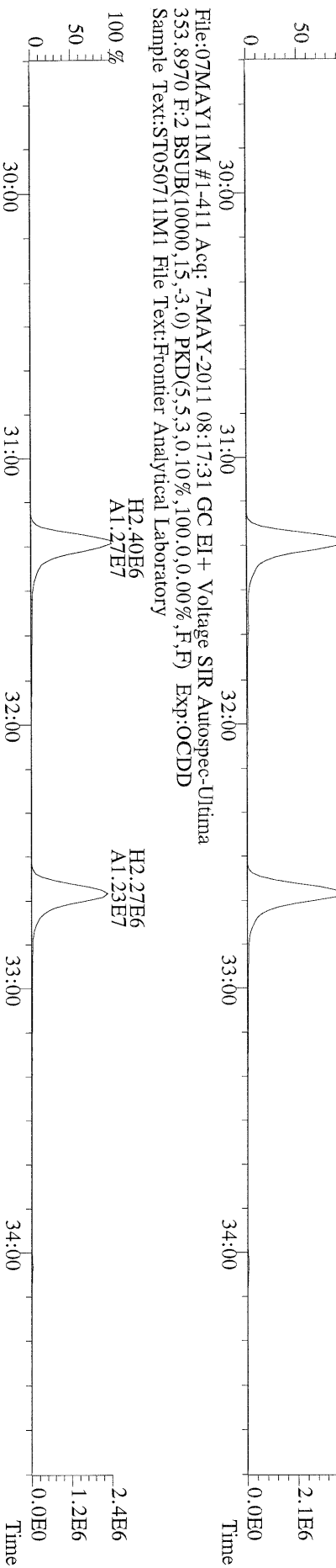
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 Sample Text:ST050711M1 File Text:Frontier Analytical Laboratory



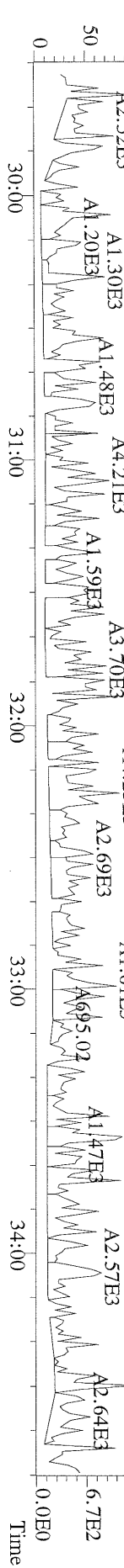
File:07MAY11M #1-411 Acq: 7-MAY-2011 08:17:31 GC EI+ Voltage SIR Autospec-Ultima
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 Sample Text:ST050711M1 File Text:Frontier Analytical Laboratory



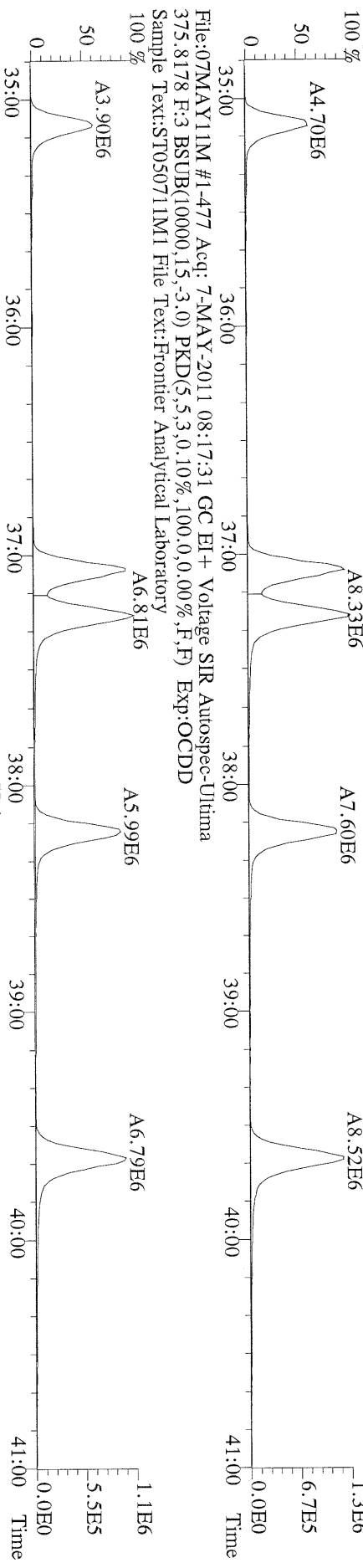
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 351.9000 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:OCDD
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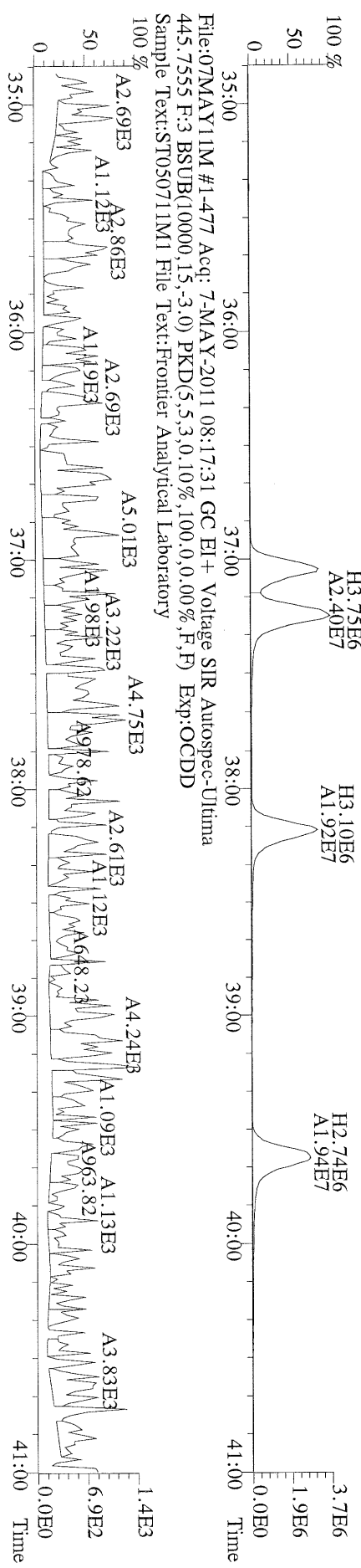
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 409.7974 F:2 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:OCDD
 Sample Text:ST050711M1 File Text:Frontier Analytical Laboratory



File:07MAY11M #1-477 Acq: 7-MAY-2011 08:17:31 GC EI+ Voltage SIR Autospec-Ultima
 373.8207 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0.00%,F,F) Exp:OCDD
 Sample Text:ST050711M1 File Text:Frontier Analytical Laboratory



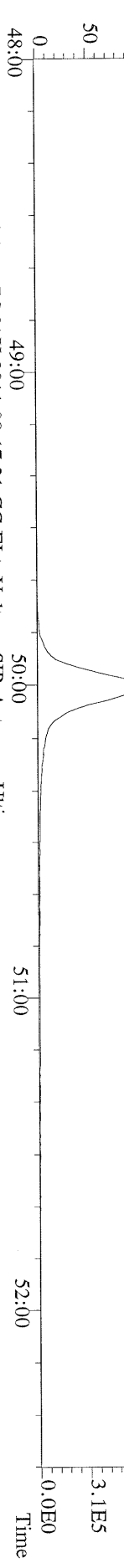
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 383.8639 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0.00%,F,F) Exp:OCDD
 Sample Text:ST050711M1 File Text:Frontier Analytical Laboratory



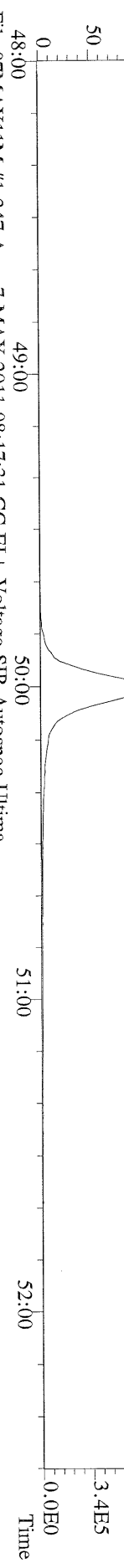
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 445.7555 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0.00%,F,F) Exp:OCDD
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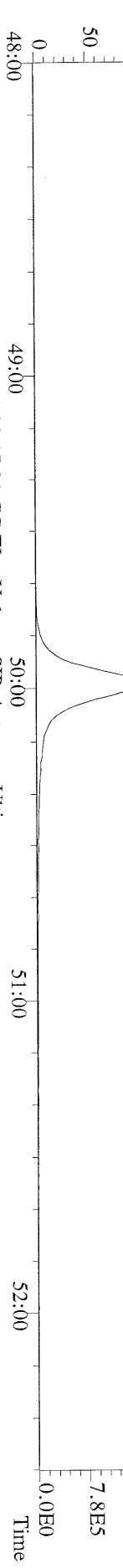
File:07MAY11M #1-347 Acq: 7-MAY-2011 08:17:31 GC EI + Voltage SIR Autospec-Ultima
 441.7428 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:OCDD
 Sample Text:ST050711M1 File Text:Frontier Analytical Laboratory



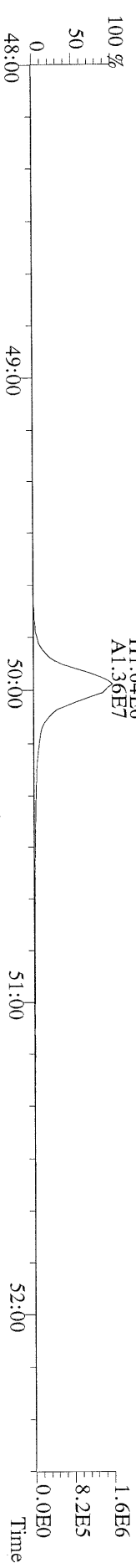
File:07MAY11M #1-347 Acq: 7-MAY-2011 08:17:31 GC EI + Voltage SIR Autospec-Ultima
 443.7398 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:OCDD
 Sample Text:ST050711M1 File Text:Frontier Analytical Laboratory



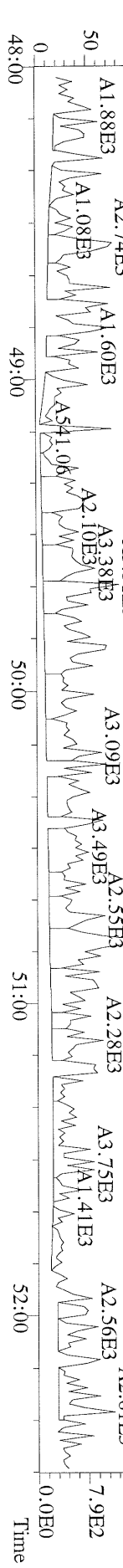
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 Sample Text:ST050711M1 File Text:Frontier Analytical Laboratory

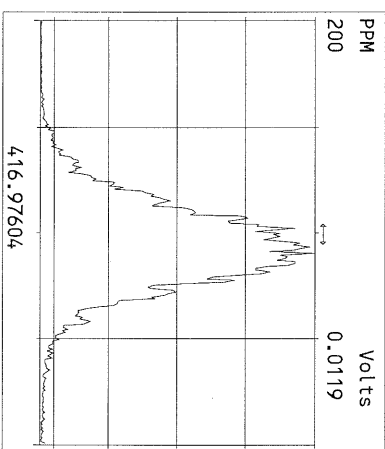
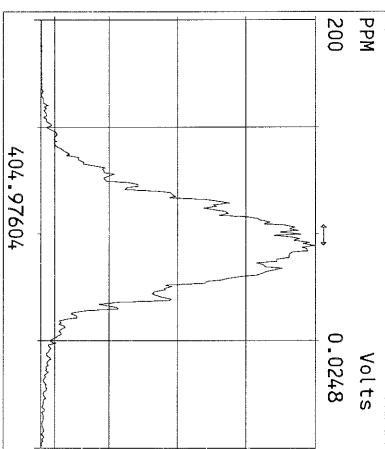
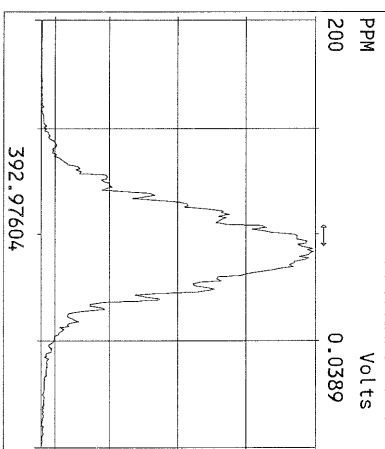
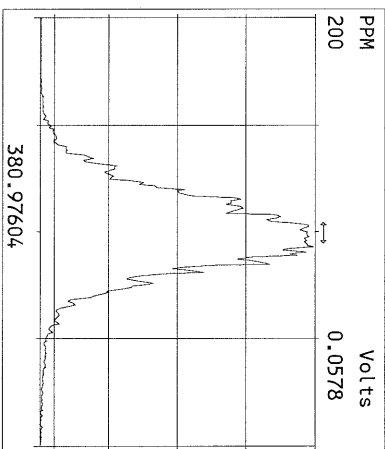
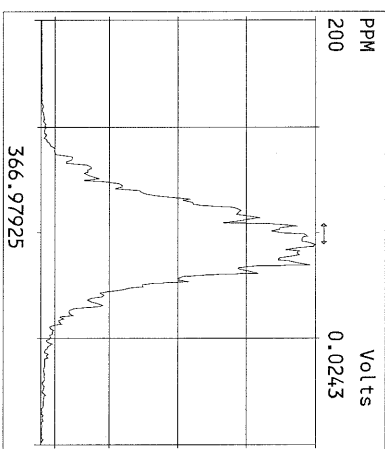
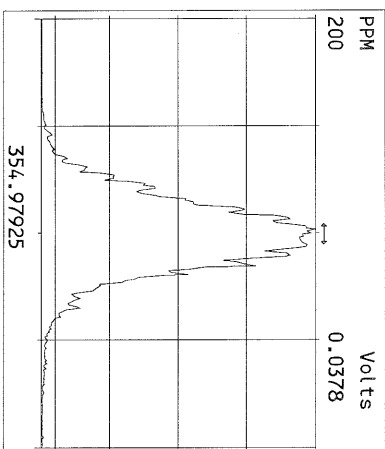
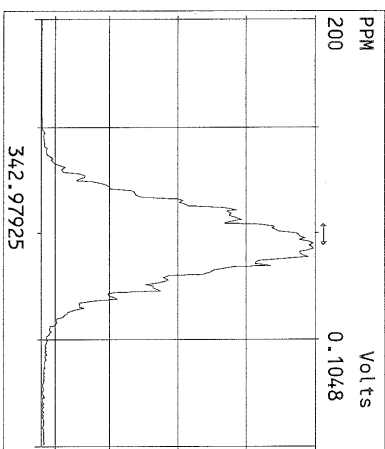
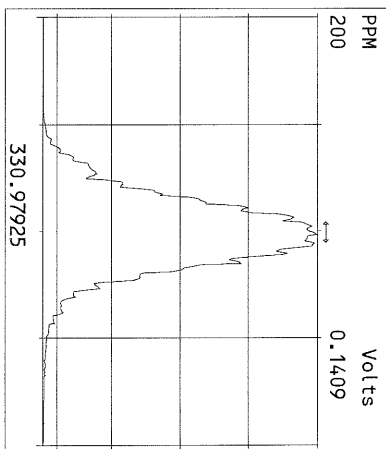
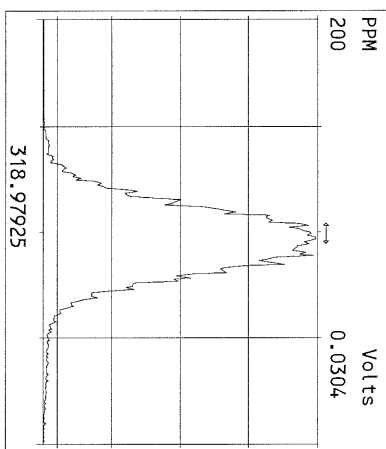
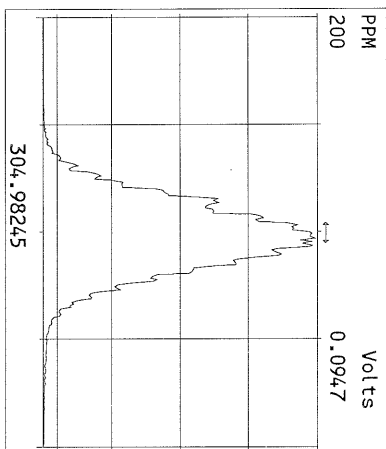
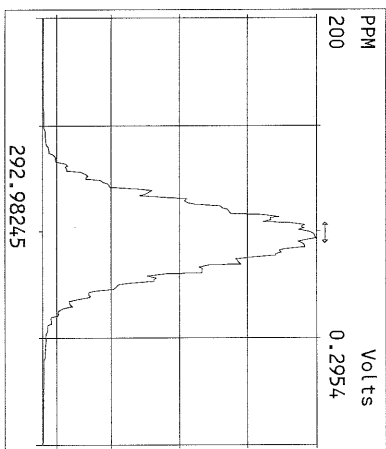


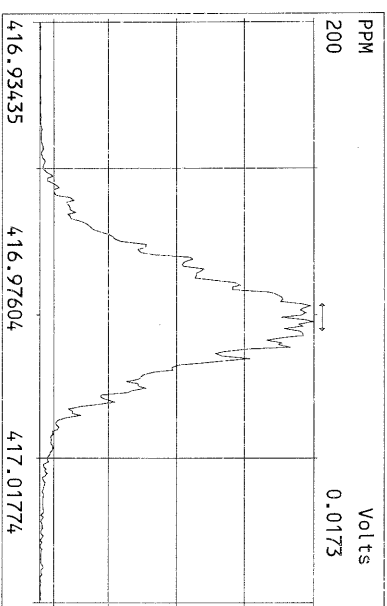
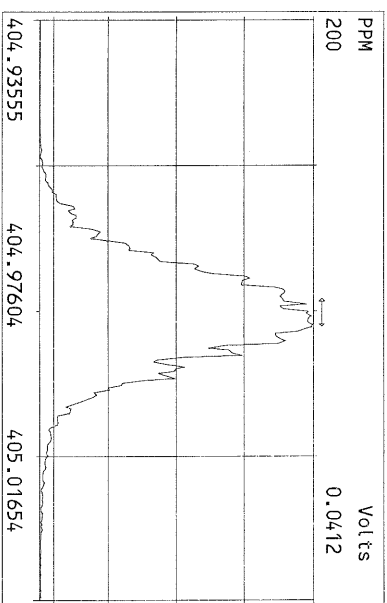
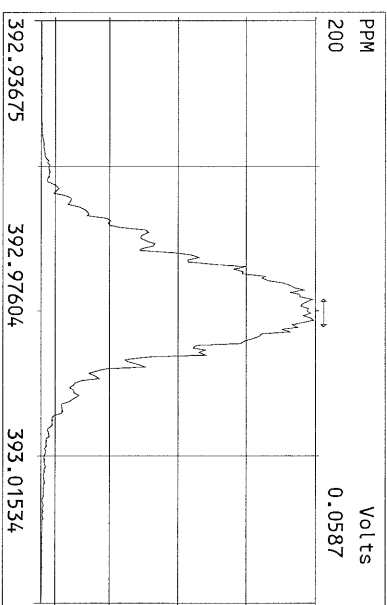
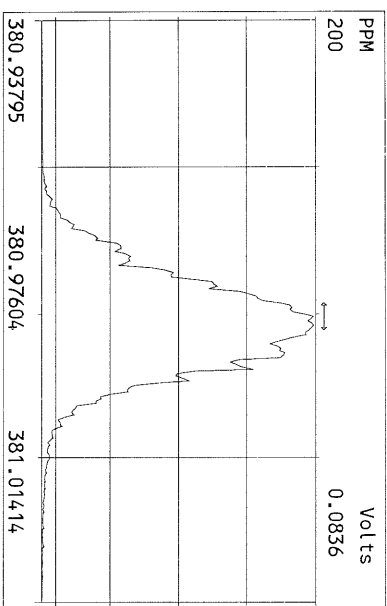
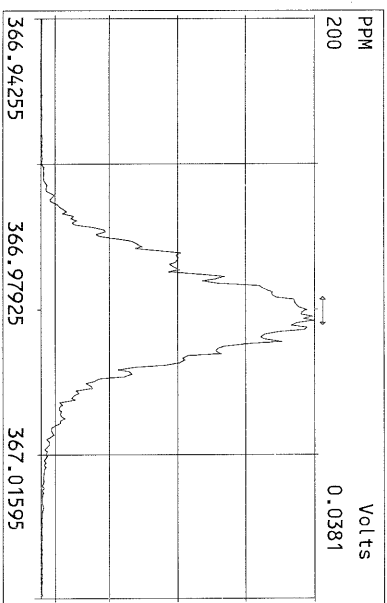
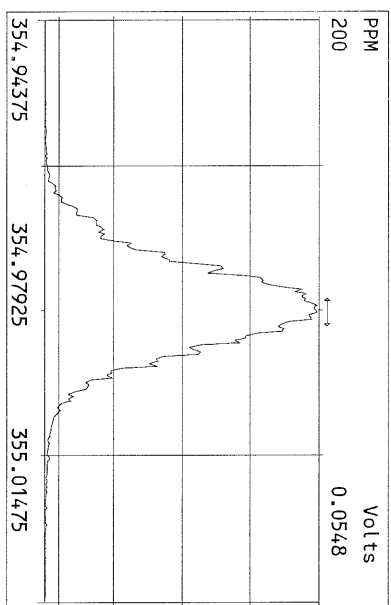
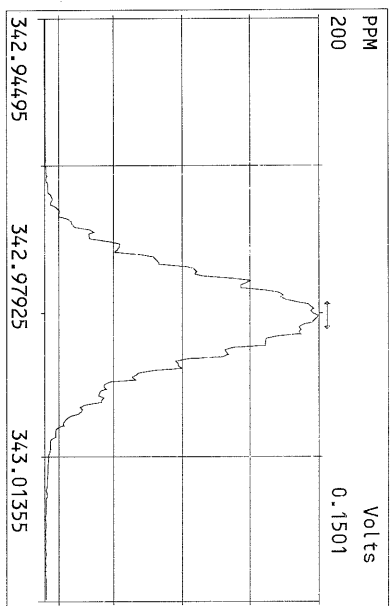
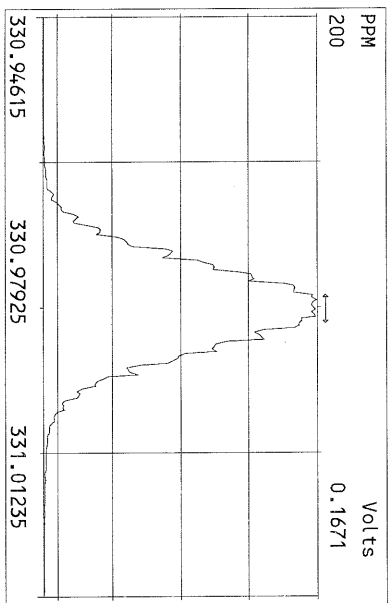
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 Sample Text:ST050711M1 File Text:Frontier Analytical Laboratory

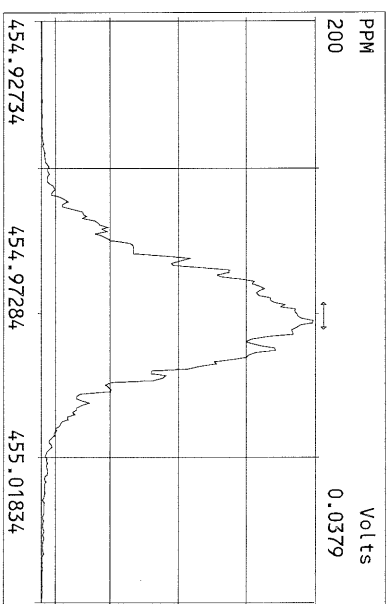
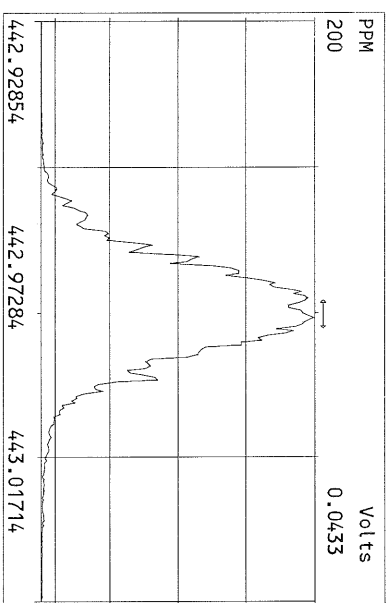
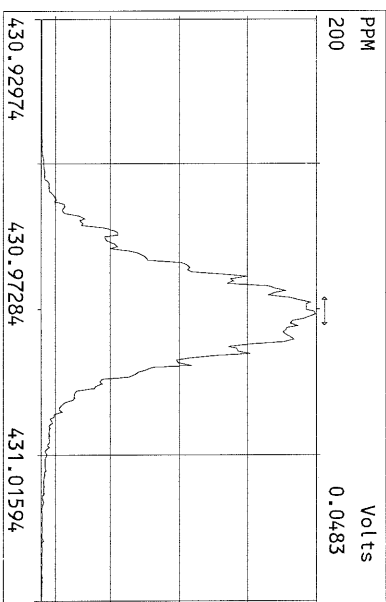
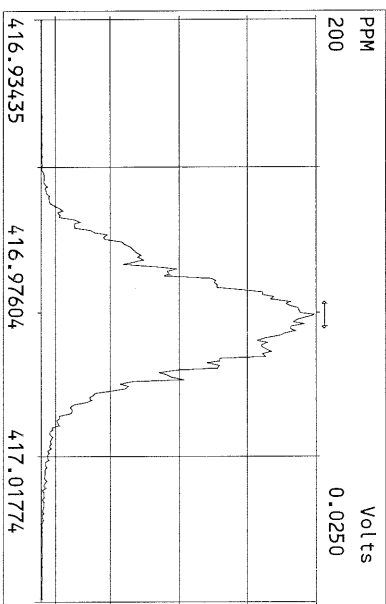
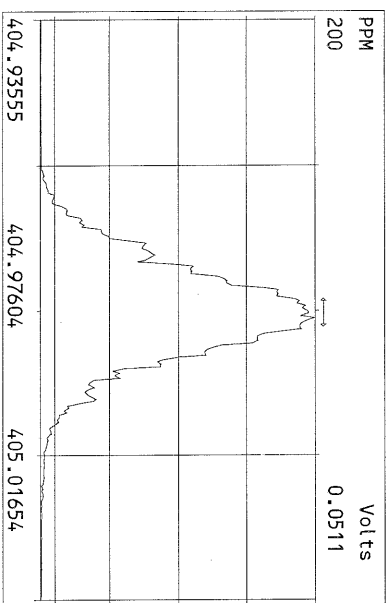
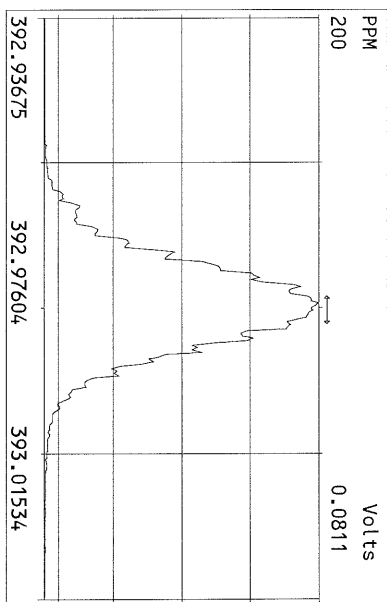
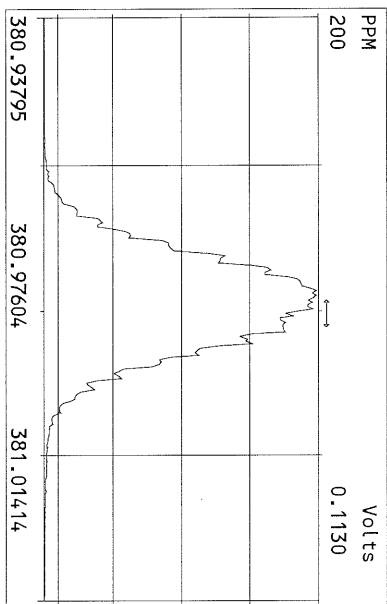
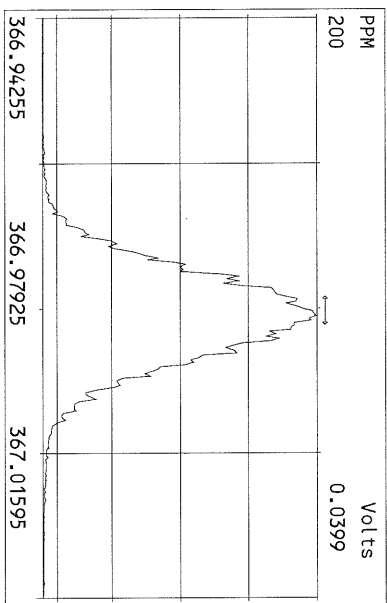


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 Sample Text:ST050711M1 File Text:Frontier Analytical Laboratory

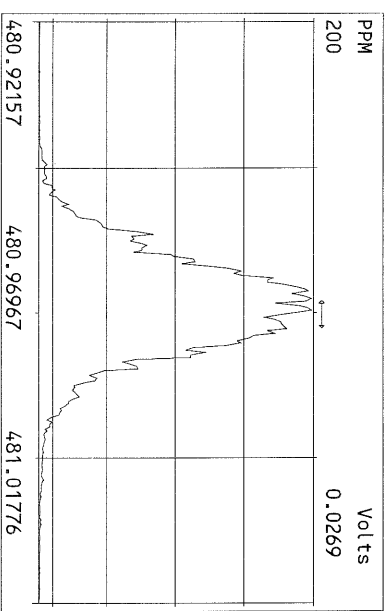
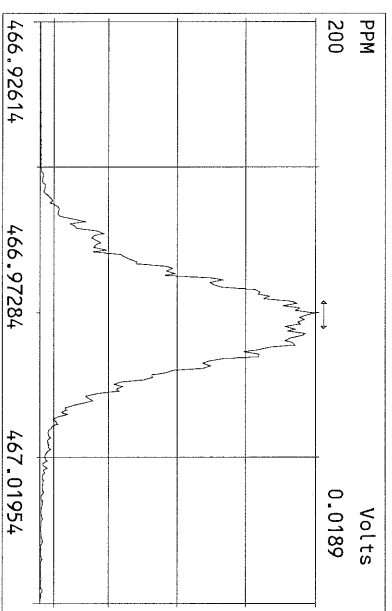
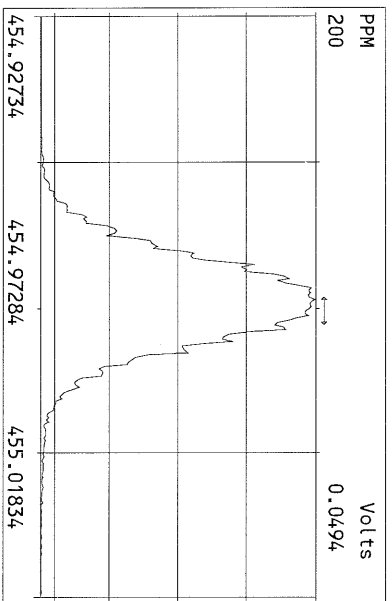
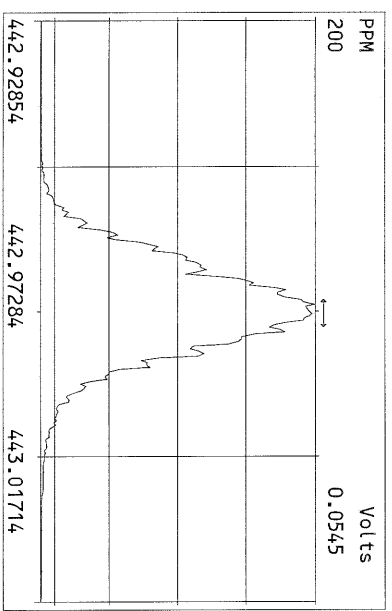
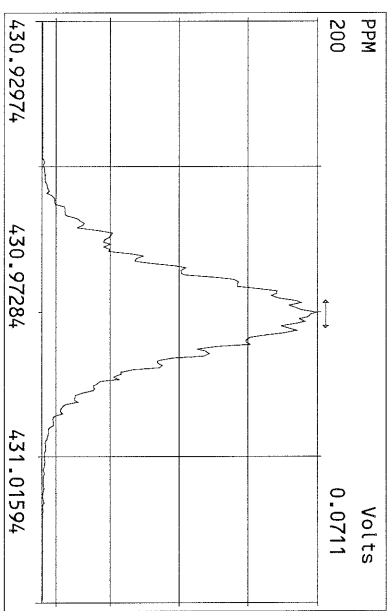
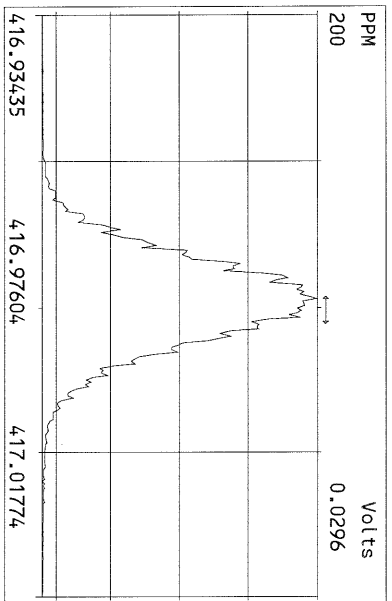
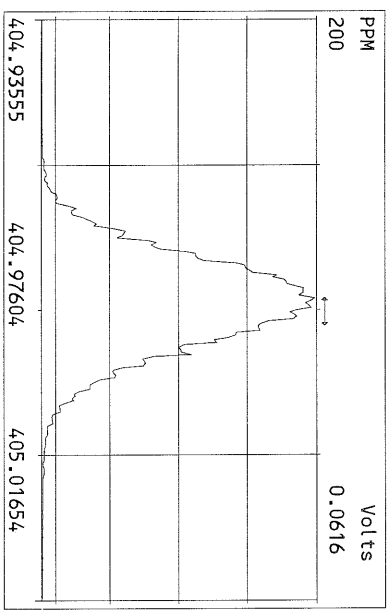


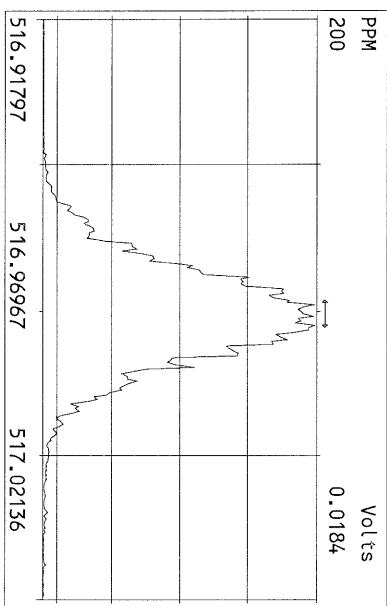
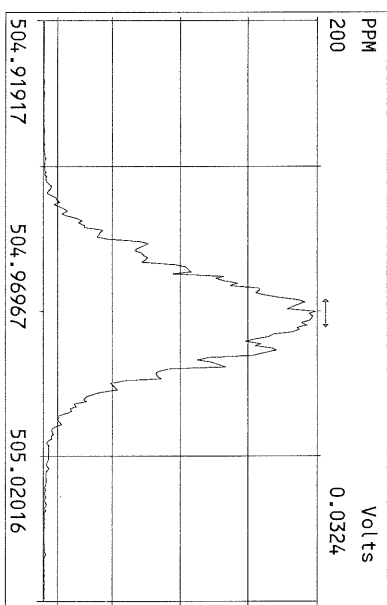
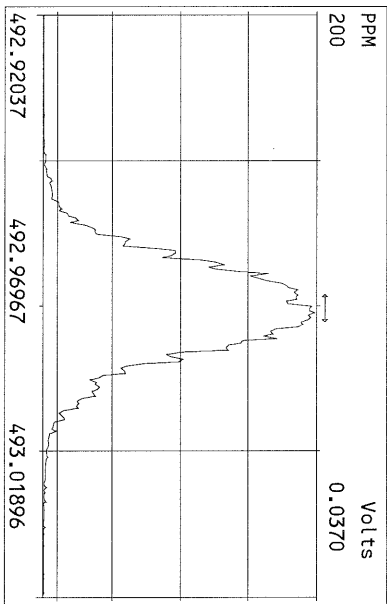
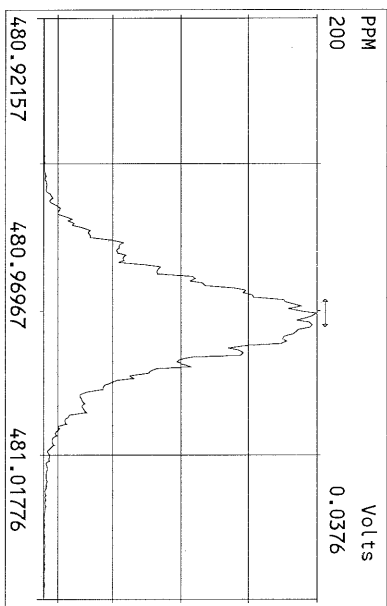
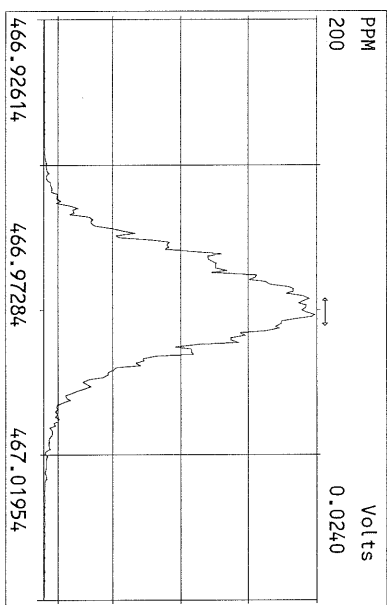
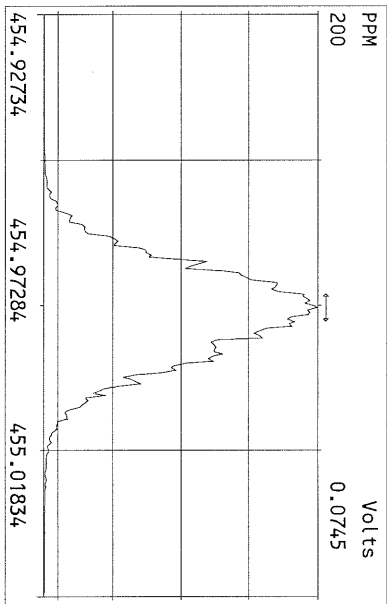
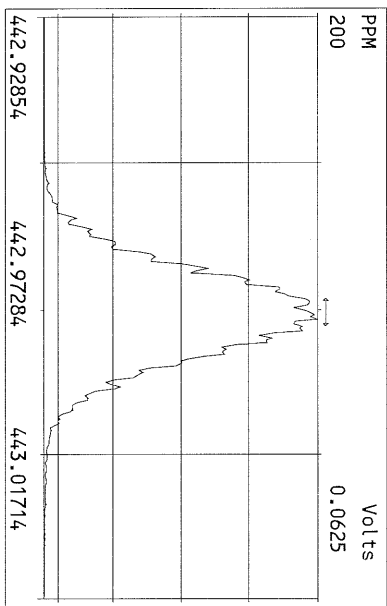
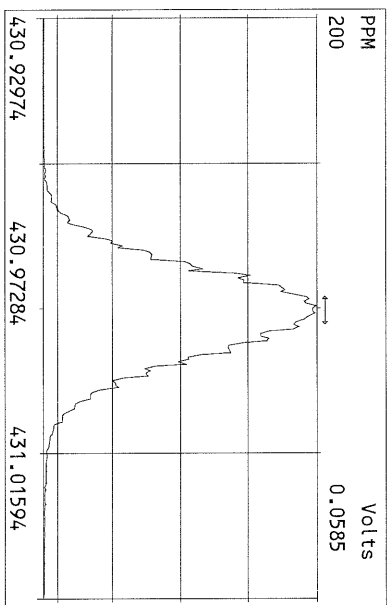






Peak Locate Examination: 7-MAY-2011:22:16 File:07MAY11M_RES_CHECK
Experiment:0CDD Function:4 Reference:PFK





USEPA - ITD

FORM 4A
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: Frontier Analytical Laboratory Episode No.:

Contract No.: SAS No.:

Initial Calibration Date: 3/7/11

Instrument ID: FAL3

GC Column ID: DB5

VER Data Filename: 07MAY11M Sam:15

Analysis Date: 7-MAY-11 21:12:36

NATIVE ANALYTES	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	ACCEPT	CONC. FOUND	CONC. RANGE (ng/mL) (3)
2,3,7,8-TCDD	M/M+2	0.81	0.65-0.89	y	10.5	7.80 - 12.9
1,2,3,7,8-PeCDD	M+2/M+4	1.60	1.32-1.78	y	52.0	39.0 - 65.0
1,2,3,4,7,8-HxCDD	M+2/M+4	1.35	1.05-1.43	y	49.8	39.0 - 64.0
1,2,3,6,7,8-HxCDD	M+2/M+4	1.34	1.05-1.43	y	48.5	39.0 - 64.0
1,2,3,7,8,9-HxCDD	M+2/M+4	1.30	1.05-1.43	y	50.7	41.0 - 61.0
1,2,3,4,6,7,8-HpCDD	M+2/M+4	0.90	0.88-1.20	y	49.8	43.0 - 58.0
OCDD	M+2/M+4	0.92	0.76-1.02	y	99.0	79.0 - 126
2,3,7,8-TCDF	M/M+2	0.70	0.65-0.89	y	11.1	8.40 - 12.0
1,2,3,7,8-PeCDF	M+2/M+4	1.61	1.32-1.78	y	52.7	41.0 - 60.0
2,3,4,7,8-PeCDF	M+2/M+4	1.61	1.32-1.78	y	51.1	41.0 - 60.0
1,2,3,4,7,8-HxCDF	M+2/M+4	1.25	1.05-1.43	y	49.6	45.0 - 56.0
1,2,3,6,7,8-HxCDF	M+2/M+4	1.24	1.05-1.43	y	49.2	44.0 - 57.0
2,3,4,6,7,8-HxCDF	M+2/M+4	1.24	1.05-1.43	y	48.1	44.0 - 57.0
1,2,3,7,8,9-HxCDF	M+2/M+4	1.27	1.05-1.43	y	49.6	45.0 - 56.0
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.02	0.88-1.20	y	47.2	45.0 - 55.0
1,2,3,4,7,8,9-HpCDF	M+2/M+4	1.04	0.88-1.20	y	49.2	43.0 - 58.0
OCDF	M+2/M+4	0.94	0.76-1.02	y	96.8	63.0 - 159

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

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

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

Analyst: Date: 5/9/11

USEPA - ITD

FORM 4B
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: Frontier Analytical Laboratory

Episode No.:

Contract No.:

SAS No.:

Initial Calibration Date: 3/7/11

Instrument ID: FAL3

GC Column ID: DB5

VER Data Filename: 07MAY11M Sam:15

Analysis Date: 7-MAY-11 21:12:36


LABELED COMPOUNDS	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	ACCEPT	CONC. FOUND	CONC. RANGE (ng/mL) (3)
13C-2,3,7,8-TCDD	M/M+2	0.72	0.65-0.89	y	95.8	82.0 - 121
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.74	1.32-1.78	y	105	62.0 - 160
13C-1,2,3,4,7,8-HxCDD	M+2/M+4	1.29	1.05-1.43	y	92.7	85.0 - 117
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.29	1.05-1.43	y	103	85.0 - 118
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.07	0.88-1.20	y	99.2	72.0 - 138
13C-OCDD	M+2/M+4	0.96	0.76-1.02	y	157	96.0 - 415
13C-2,3,7,8-TCDF	M/M+2	0.88	0.65-0.89	y	93.5	71.0 - 140
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.69	1.32-1.78	y	107	76.0 - 130
13C-2,3,4,7,8-PeCDF	M+2/M+4	1.70	1.32-1.78	y	108	77.0 - 130
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.49	0.43-0.59	y	102	76.0 - 131
13C-1,2,3,6,7,8-HxCDF	M/M+2	0.48	0.43-0.59	y	104	70.0 - 143
13C-2,3,4,6,7,8-HxCDF	M/M+2	0.47	0.43-0.59	y	101	73.0 - 137
13C-1,2,3,7,8,9-HxCDF	M/M+2	0.48	0.43-0.59	y	94.5	74.0 - 135
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.46	0.37-0.51	y	103	78.0 - 129
13C-1,2,3,4,7,8,9-HpCDF	M/M+2	0.46	0.37-0.51	y	95.6	77.0 - 129
13C-OCDF	M+2/M+4	0.95	0.76-1.02	y	155	96.0 - 415
CLEANUP STANDARD (4)						
37Cl-2,3,7,8-TCDD					8.95	7.80 - 12.8

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

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

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

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

Analyst: Date: 5/9/11

FORM 5
PCDD/PCDF RT WINDOW AND ISOMER SPECIFICITY STANDARDS

Lab Name: Frontier Analytical Laboratory Episode No.:
Contract No.: SAS No.:
Instrument ID: FAL3 Initial Calibration Date: 3/7/11
RT Window Data Filename: 07MAY11M Sam:15 Analysis Date: 7-MAY-11 Time: 21:12:36
DB-5 IS Data Filename: 07MAY11M Sam:15 Analysis Date: 7-MAY-11 Time: 21:12:36
DB-225 IS Data Filename: Analysis Date: Time:

DB-5 RT WINDOW DEFINING STANDARDS RESULTS

ISOMERS	ABSOLUTE RT	ISOMERS	ABSOLUTE RT
1,3,6,8-TCDD (F)	24:17	1,3,6,8-TCDF (F)	22:56
1,2,8,9-TCDD (L)	28:13	1,2,8,9-TCDF (L)	28:26
1,2,4,7,9-PeCDD (F)	30:08	1,3,4,6,8-PeCDF (F)	28:18
1,2,3,8,9-PeCDD (L)	33:41	1,2,3,8,9-PeCDF (L)	34:06
1,2,4,6,7,9-HxCDD (F)	36:02	1,2,3,4,6,8-HxCDF (F)	35:08
1,2,3,7,8,9-HxCDD (L)	39:07	1,2,3,7,8,9-HxCDF (L)	39:40
1,2,3,4,6,7,9-HpCDD (F)	42:44	1,2,3,4,6,7,8-HpCDF (F)	42:13
1,2,3,4,6,7,8-HpCDD (L)	44:07	1,2,3,4,7,8,9-HpCDF (L)	45:02

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

=====

ISOMER SPECIFICITY (IS) TEST STANDARD RESULTS

% VALLEY HEIGHT
BETWEEN
COMPARED PEAKS (1)

<25%

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

Analyst: 

Date: 5/9/11

USEPA - ITD

FORM 6A

PCDD/PCDF RELATIVE RETENTION TIMES

Lab Name: Frontier Analytical Laboratory

Episode No.:

Contract No.:

SAS No.:

Init. Cal. Date: 3/7/11

Instrument ID: FAL3

GC Column ID: DB5


Analysis Date: 7-MAY-11 21:12:36

CS3 or VER Data Filename: 07MAY11M

Sam:15

NATIVE ANALYTES	RETENTION TIME REFERENCE	RRT	RRT QC LIMITS (1)
2,3,7,8-TCDD	13C-2,3,7,8-TCDD	1.001	0.999-1.002
2,3,7,8-TCDF	13C-2,3,7,8-TCDF	1.001	0.999-1.003
1,2,3,7,8-PeCDD	13C-1,2,3,7,8-PeCDD	1.000	0.999-1.002
1,2,3,7,8-PeCDF	13C-1,2,3,7,8-PeCDF	1.001	0.999-1.002
2,3,4,7,8-PeCDF	13C-2,3,4,7,8-PeCDF	1.001	0.999-1.002
LABELED COMPOUNDS			
37Cl-2,3,7,8-TCDD	13C-1,2,3,4-TCDD	1.022	0.989-1.052
13C-2,3,7,8-TCDD		1.022	0.976-1.043
13C-2,3,7,8-TCDF		0.993	0.923-1.103
13C-1,2,3,7,8-PeCDD		1.240	1.000-1.567
13C-1,2,3,7,8-PeCDF		1.175	0.923-1.203
13C-2,3,4,7,8-PeCDF		1.224	0.923-1.303

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

Analyst: Date: 5/9/11

USEPA - ITD

FORM 6B

PCDD/PCDF RELATIVE RETENTION TIMES

Lab Name: Frontier Analytical Laboratory

Episode No.:

Contract No.:

SAS No.:

Init. Cal. Date: 3/7/11

Instrument ID: FAL3

GC Column ID: DB5

Analysis Date: 7-MAY-11 21:12:36 CS3 or VER Data Filename: 07MAY11M Sam:15

NATIVE ANALYTES	RETENTION TIME	RRT	RRT
	REFERENCE		QC LIMITS (1)
1,2,3,4,7,8-HxCDD	13C-1,2,3,4,7,8-HxCDD	1.000	0.999-1.001
1,2,3,6,7,8-HxCDD	13C-1,2,3,6,7,8-HxCDD	1.000	0.998-1.004
1,2,3,7,8,9-HxCDD	13C-1,2,3,6,7,8-HxCDD	1.012	1.000-1.019
1,2,3,4,7,8-HxCDF	13C-1,2,3,4,7,8-HxCDF	1.001	0.999-1.001
1,2,3,6,7,8-HxCDF	13C-1,2,3,6,7,8-HxCDF	1.000	0.997-1.005
2,3,4,6,7,8-HxCDF	13C-2,3,4,6,7,8-HxCDF	1.001	0.999-1.001
1,2,3,7,8,9-HxCDF	13C-1,2,3,7,8,9-HxCDF	1.000	0.999-1.001
1,2,3,4,6,7,8-HpCDD	13C-1,2,3,4,6,7,8-HpCDD	1.000	0.999-1.001
1,2,3,4,6,7,8-HpCDF	13C-1,2,3,4,6,7,8-HpCDF	1.001	0.999-1.001
1,2,3,4,7,8,9-HpCDF	13C-1,2,3,4,7,8,9-HpCDF	1.000	0.999-1.001
OCDD	13C-OCDD	1.001	0.999-1.001
OCDF	13C-OCDF	1.001	0.999-1.001
LABELED COMPOUNDS			
13C-1,2,3,4,7,8-HxCDD	13C-1,2,3,7,8,9-HxCDD	0.984	0.977-1.000
13C-1,2,3,6,7,8-HxCDD		0.989	0.981-1.003
13C-1,2,3,4,7,8-HxCDF		0.948	0.944-0.970
13C-1,2,3,6,7,8-HxCDF		0.954	0.949-0.975
13C-2,3,4,6,7,8-HxCDF		0.978	0.959-1.021
13C-1,2,3,7,8,9-HxCDF		1.015	0.977-1.047
13C-1,2,3,4,6,7,8-HpCDD		1.128	1.086-1.130
13C-1,2,3,4,6,7,8-HpCDF		1.079	1.043-1.085
13C-1,2,3,4,7,8,9-HpCDF		1.152	1.057-1.154
13C-OCDD		1.270	1.032-1.311
13C-OCDF		1.280	1.000-1.311

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

Analyst: Date: 5/9/11

Results: GC Column: DB5 Amount: 1.000 NATO 1989 Tox: 102 WHO 1998 Tox: 128 WHO 2005 Tox: 117

Name	Resp	RA	RT	RRF	Conc	Qual	Fac Noise-1	Noise-2	DL		
2,3,7,8-TCDD	2.78e+06	0.81 y	27:17	1.13	10.5		2.50	-	-	*	
1,2,3,7,8-PeCDD	1.34e+07	1.60 y	33:06	1.02	52.0		2.50	-	-	*	
1,2,3,4,7,8-HxCDD	1.43e+07	1.35 y	38:30	1.45	49.8		2.50	-	-	*	
1,2,3,6,7,8-HxCDD	1.22e+07	1.34 y	38:40	1.45	48.5		2.50	-	-	*	
1,2,3,7,8,9-HxCDD	1.38e+07	1.30 y	39:07	1.47	50.7		2.50	-	-	*	
1,2,3,4,6,7,8-HpCDD	9.52e+06	0.90 y	44:07	1.30	49.8		2.50	-	-	*	
OCDD	1.22e+07	0.92 y	49:41	1.45	99.0		2.50	-	-	*	
2,3,7,8-TCDF	5.35e+06	0.70 y	26:31	1.15	11.1		2.50	-	-	*	
1,2,3,7,8-PeCDF	1.90e+07	1.61 y	31:23	0.89	52.7		2.50	-	-	*	
2,3,4,7,8-PeCDF	1.81e+07	1.61 y	32:42	0.89	51.1		2.50	-	-	*	
1,2,3,4,7,8-HxCDF	1.68e+07	1.25 y	37:06	1.01	49.6		2.50	-	-	*	
1,2,3,6,7,8-HxCDF	1.87e+07	1.24 y	37:18	0.89	49.2		2.50	-	-	*	
2,3,4,6,7,8-HxCDF	1.65e+07	1.24 y	38:14	1.02	48.1		2.50	-	-	*	
1,2,3,7,8,9-HxCDF	1.84e+07	1.27 y	39:40	1.10	49.6		2.50	-	-	*	
1,2,3,4,6,7,8-HpCDF	1.27e+07	1.02 y	42:13	1.48	47.2		2.50	-	-	*	
1,2,3,4,7,8,9-HpCDF	9.20e+06	1.04 y	45:02	1.43	49.2		2.50	-	-	*	
OCDF	1.32e+07	0.94 y	50:03	0.84	96.8		2.50	-	-	*	
										Rec	
13C-2,3,7,8-TCDD	2.35e+07	0.72 y	27:16	1.03	95.8					95.8	
13C-1,2,3,7,8-PeCDD	2.54e+07	1.74 y	33:06	1.01	105					106	
13C-1,2,3,4,7,8-HxCDD	1.98e+07	1.29 y	38:29	1.19	92.7					92.7	
13C-1,2,3,6,7,8-HxCDD	1.73e+07	1.29 y	38:39	0.94	103					103	
13C-1,2,3,4,6,7,8-HpCDD	1.47e+07	1.07 y	44:06	0.83	99.2					99.2	
13C-OCDD	1.70e+07	0.96 y	49:39	0.61	157					78.3	
13C-2,3,7,8-TCDF	4.20e+07	0.88 y	26:30	0.98	93.5					93.5	
13C-1,2,3,7,8-PeCDF	4.07e+07	1.69 y	31:21	0.83	107					107	
13C-2,3,4,7,8-PeCDF	3.96e+07	1.70 y	32:40	0.80	108					108	
13C-1,2,3,4,7,8-HxCDF	3.37e+07	0.49 y	37:04	1.84	102					102	
13C-1,2,3,6,7,8-HxCDF	4.27e+07	0.48 y	37:17	2.29	104					104	
13C-2,3,4,6,7,8-HxCDF	3.38e+07	0.47 y	38:12	1.86	101					101	
13C-1,2,3,7,8,9-HxCDF	3.36e+07	0.48 y	39:39	1.98	94.5					94.5	
13C-1,2,3,4,6,7,8-HpCDF	1.82e+07	0.46 y	42:11	0.99	103					103	
13C-1,2,3,4,7,8,9-HpCDF	1.31e+07	0.46 y	45:01	0.77	95.6					95.6	
13C-OCDF	3.24e+07	0.95 y	50:01	1.17	155					77.5	
37Cl-2,3,7,8-TCDD	1.55e+06		27:17	0.73	8.95					89.5	
13C-1,2,3,4-TCDD	2.38e+07	0.71 y	26:41	-	62.6						
13C-1,2,3,4-TCDF	4.59e+07	0.87 y	25:25	-	63.8						
13C-1,2,3,7,8,9-HxCDD	1.79e+07	1.29 y	39:05	-	72.2						
Total Tetra-Dioxins	1.53e+07		22:57	1.13	57.6		2.50	-	-	*	23
Total Penta-Dioxins	2.99e+07		30:08	1.02	116		2.50	-	-	*	17
Total Hexa-Dioxins	4.60e+07		36:02	1.46	170		2.50	-	-	*	7
Total Hepta-Dioxins	2.09e+07		42:44	1.30	109		2.50	-	-	*	27
Total Tetra-Furans	2.62e+07		22:56	1.15	54.3		2.50	-	-	*	22
1st Fn. Tot Penta-Furans	1.90e+07		28:18	0.89	53.1		2.50	-	-	*	PeCDF 1
Total Penta-Furans	5.42e+07		30:05	0.89	152		2.50	-	-	*	205 13
Total Hexa-Furans	8.22e+07		35:08	1.00	229		2.50	-	-	*	11
Total Hepta-Furans	2.21e+07		42:13	1.46	97.2		2.50	-	-	*	9

Analyst:  Date: 5/9/11

Frontier Analytical Laboratory - Acquisition Log

Run Name:07MAY11M

Instrument: FAL3

GC: DB5

Experiment:OCDD

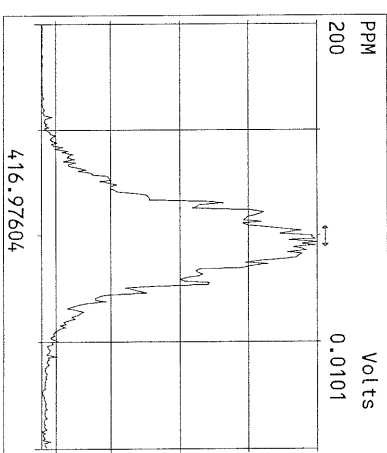
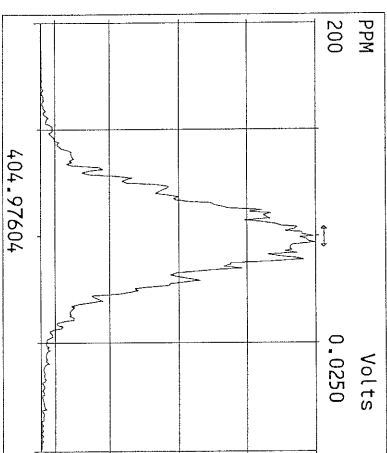
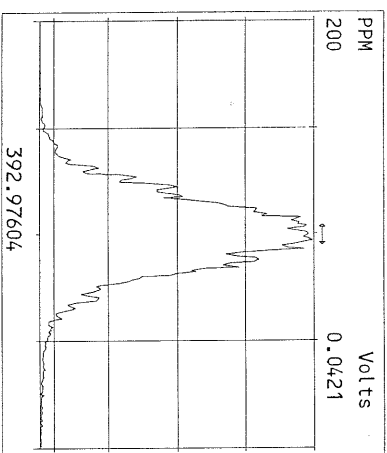
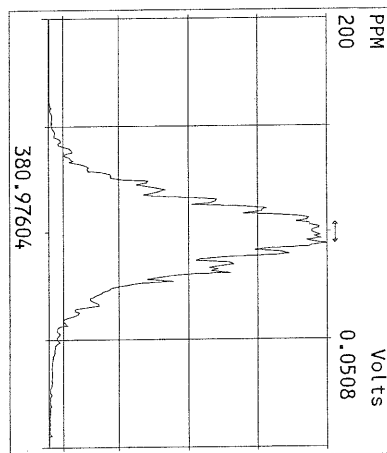
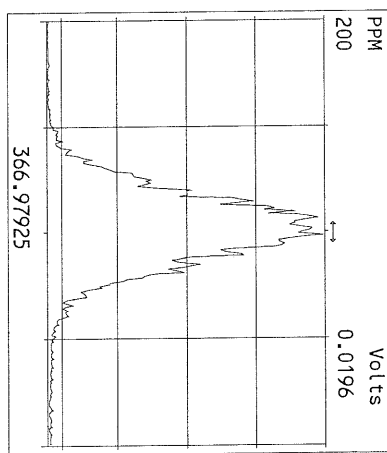
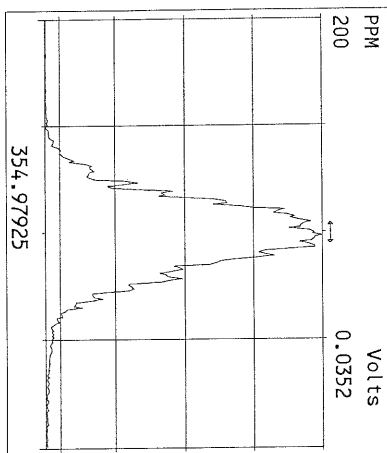
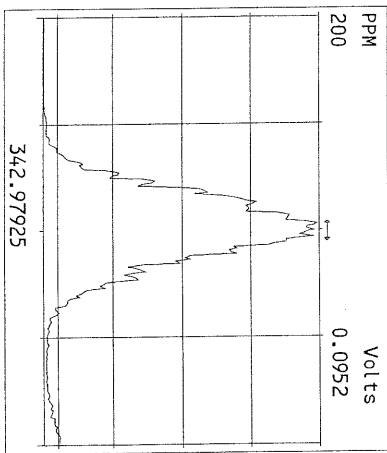
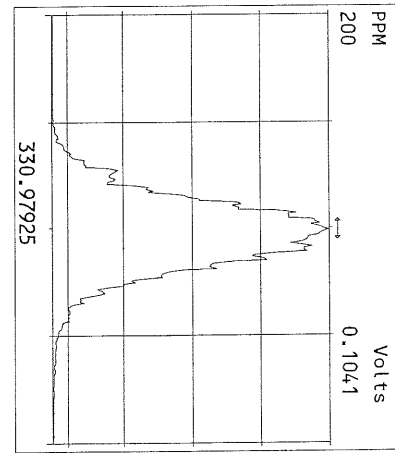
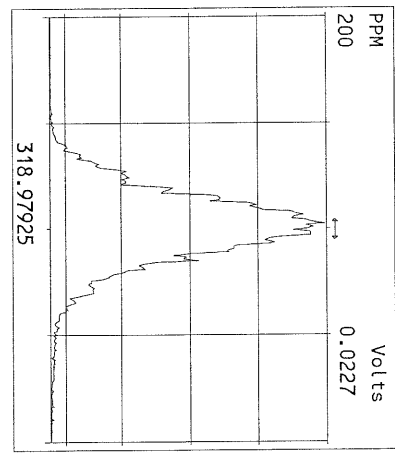
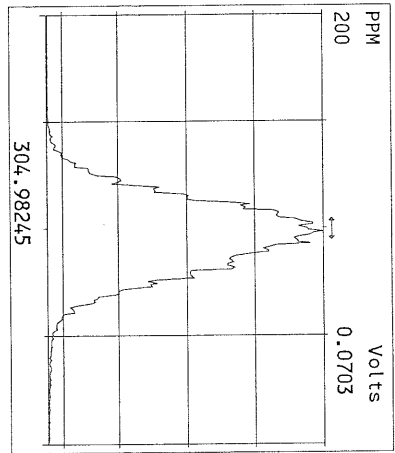
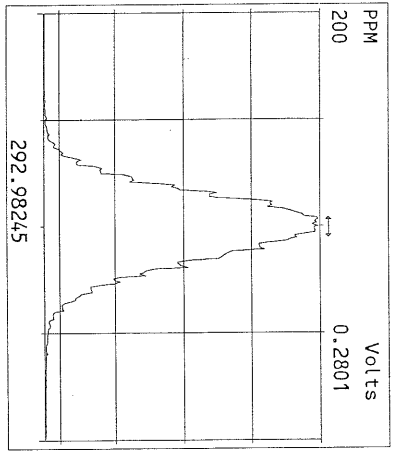
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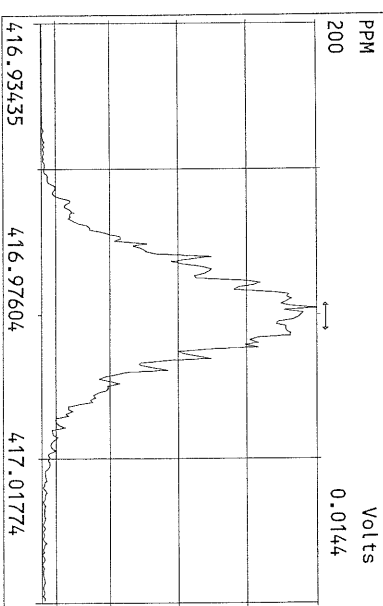
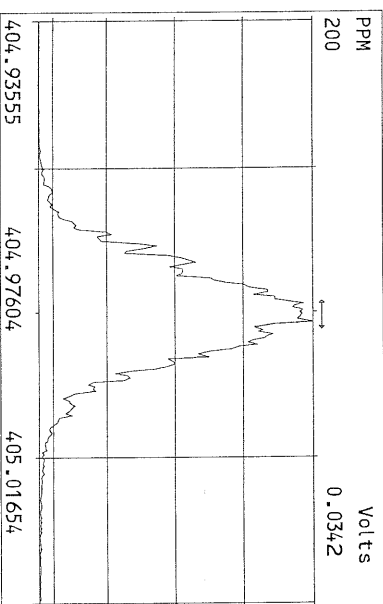
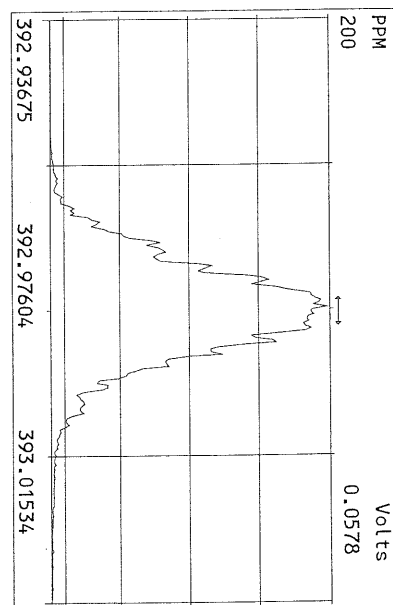
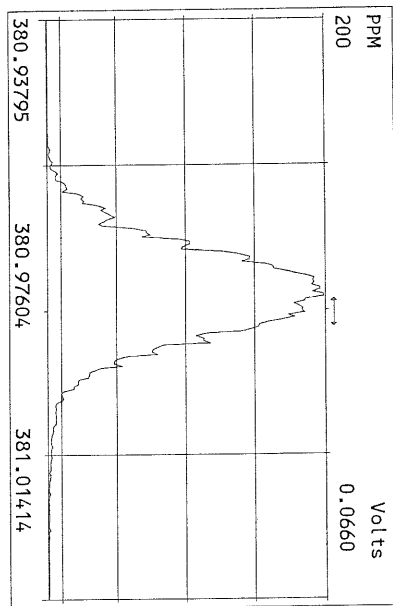
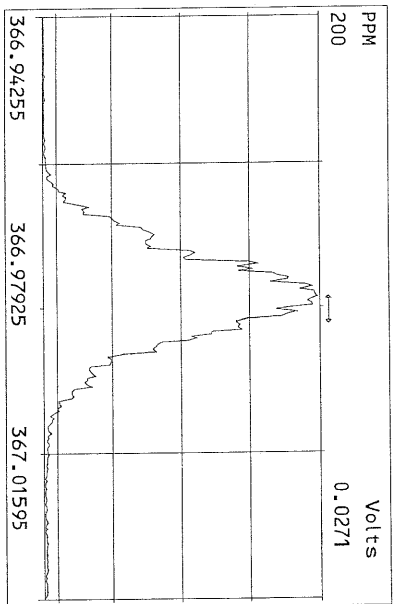
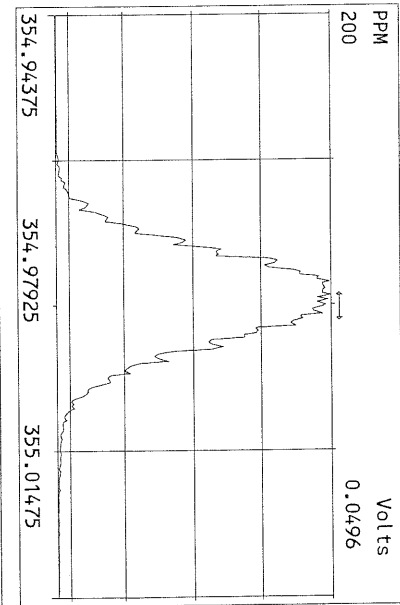
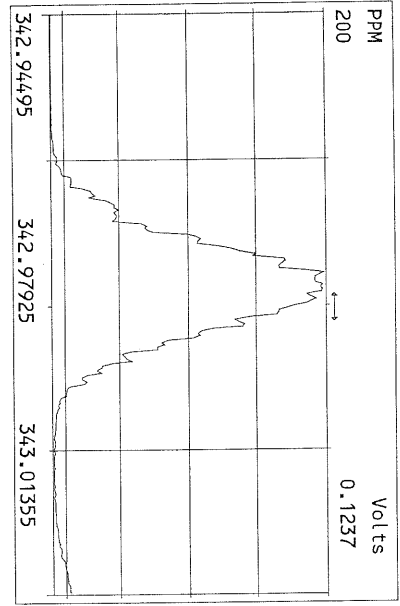
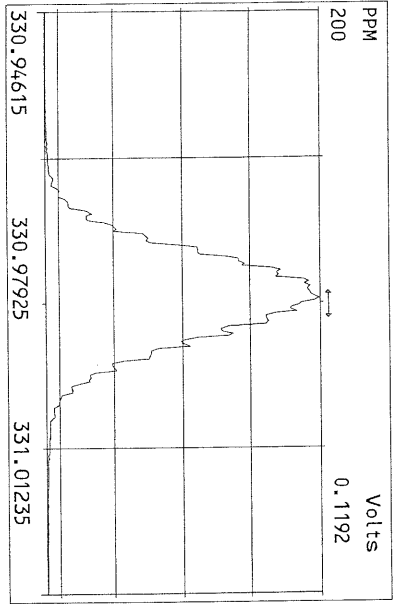


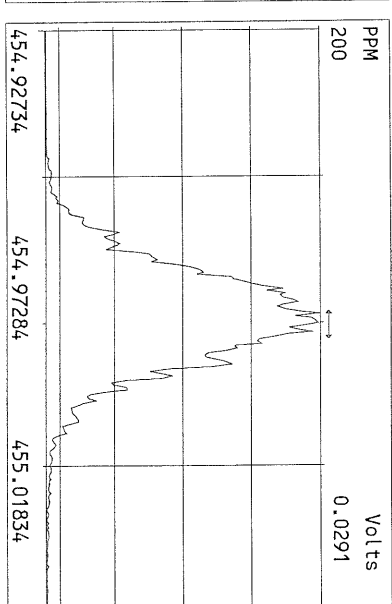
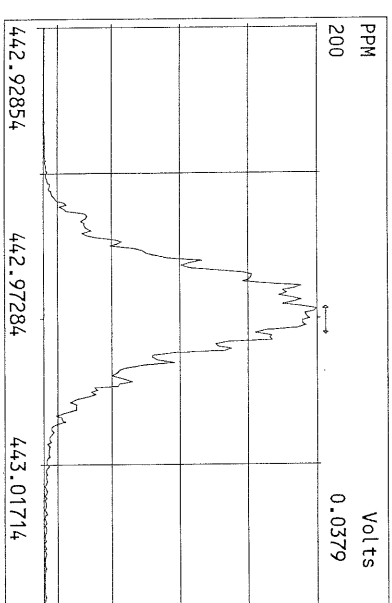
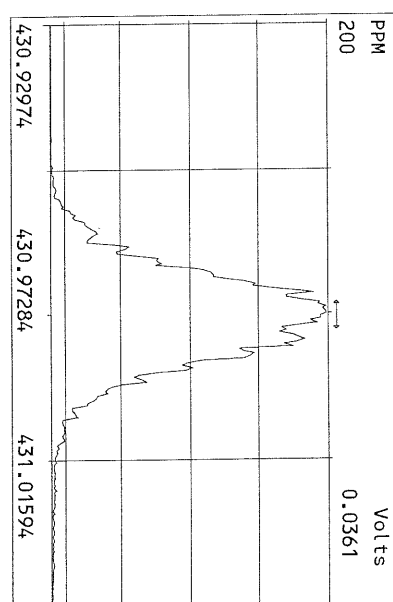
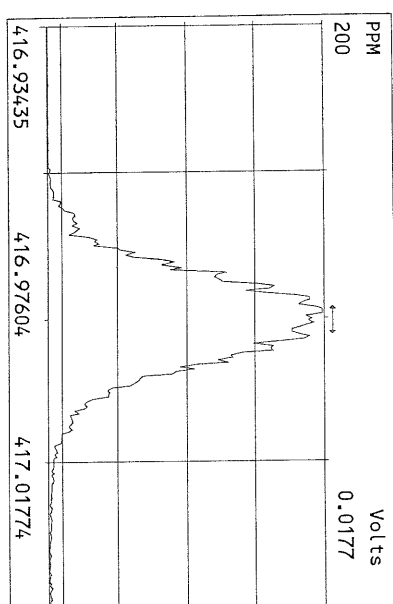
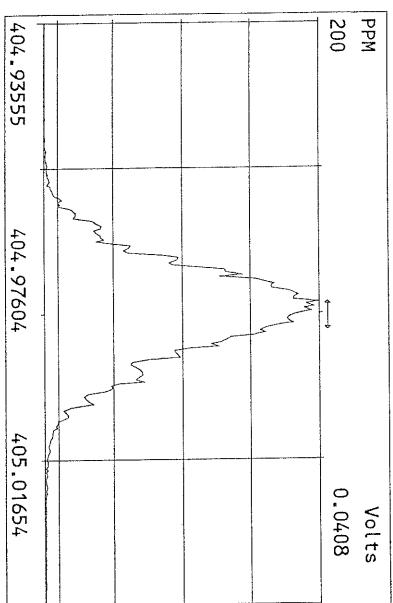
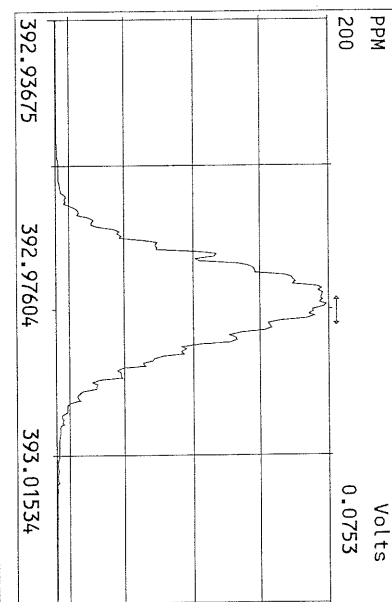
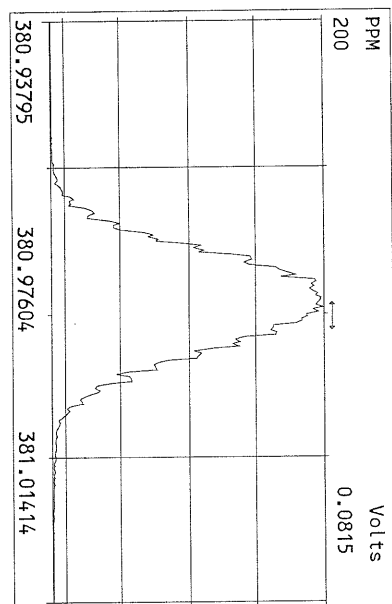
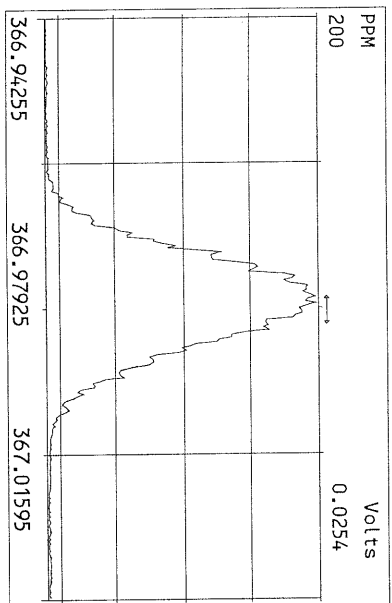
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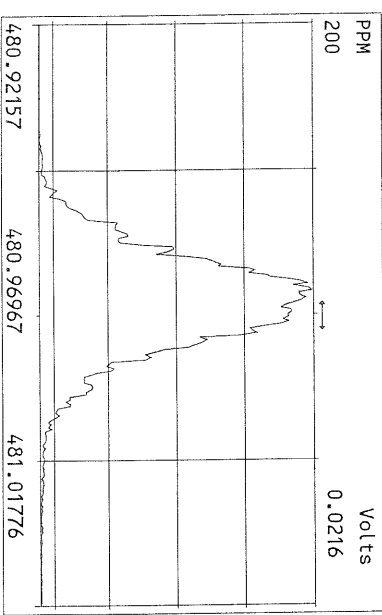
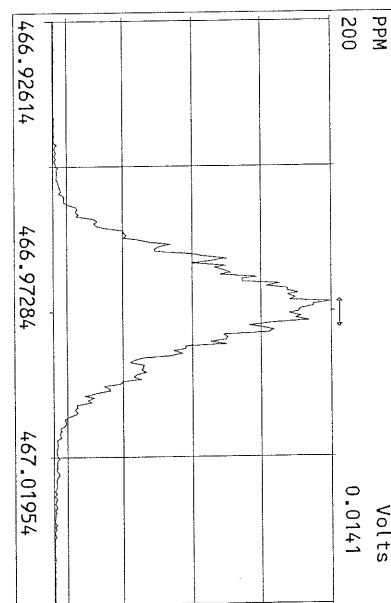
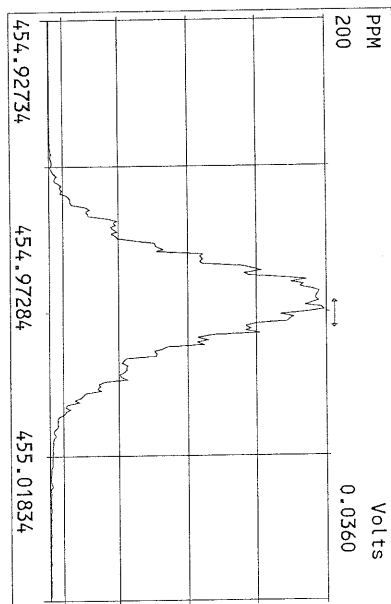
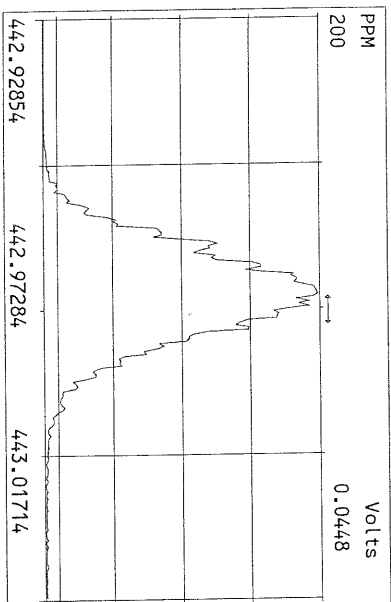
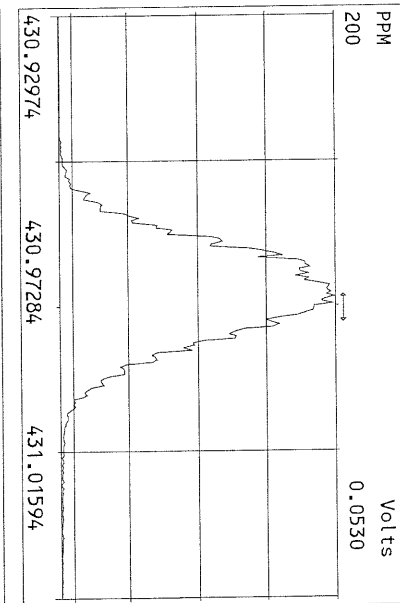
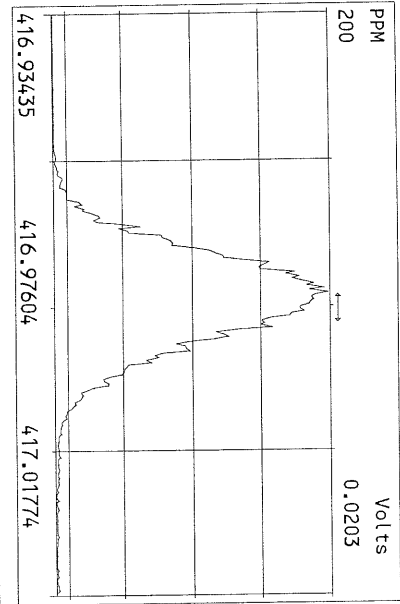
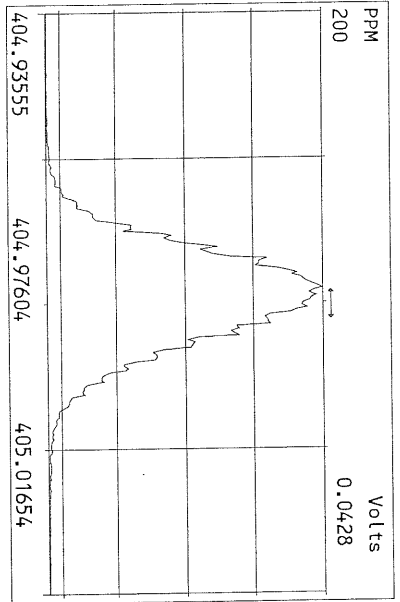
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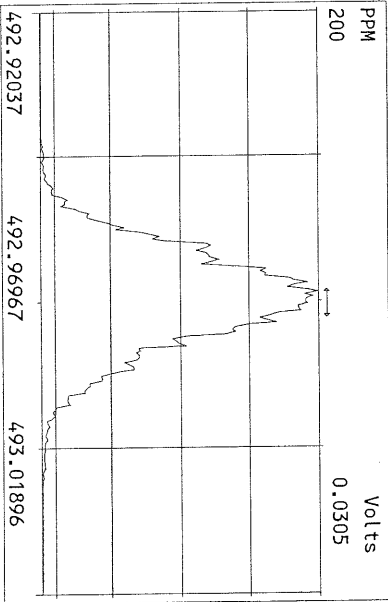
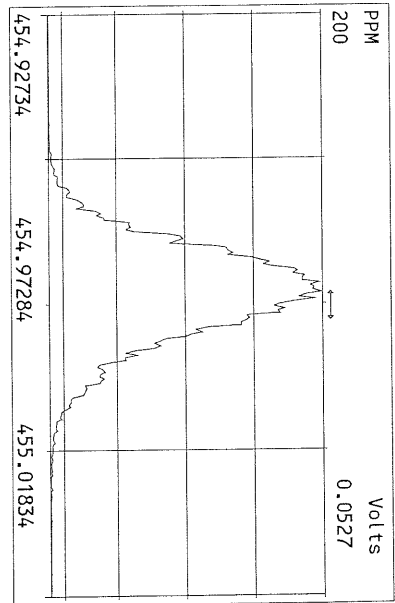
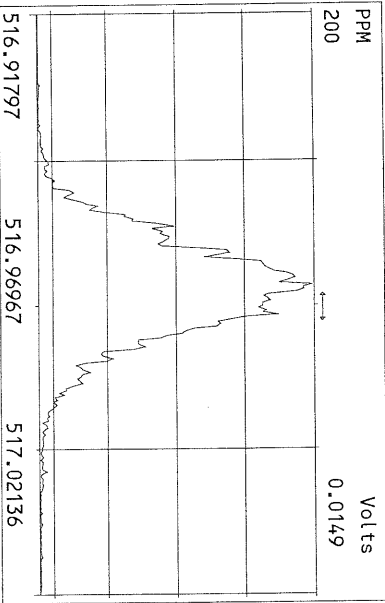
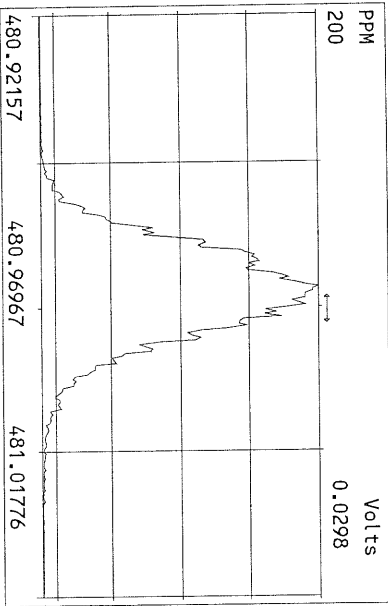
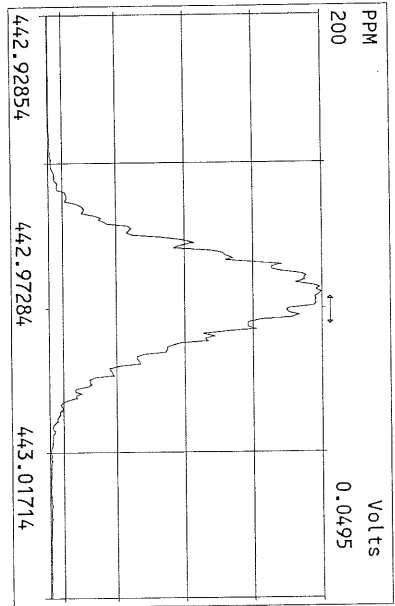
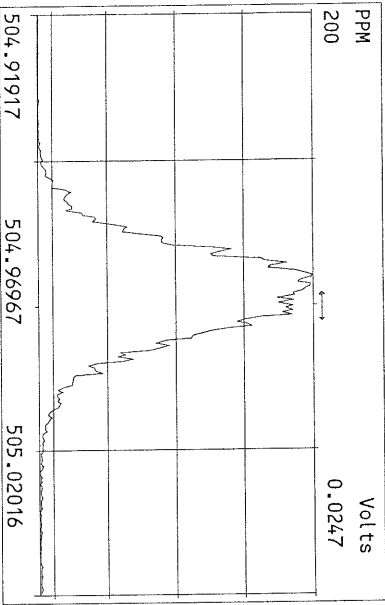
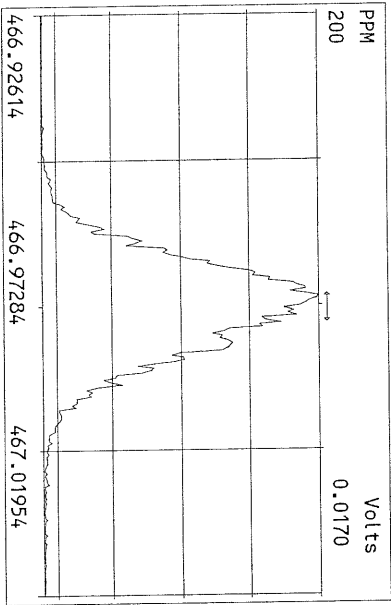
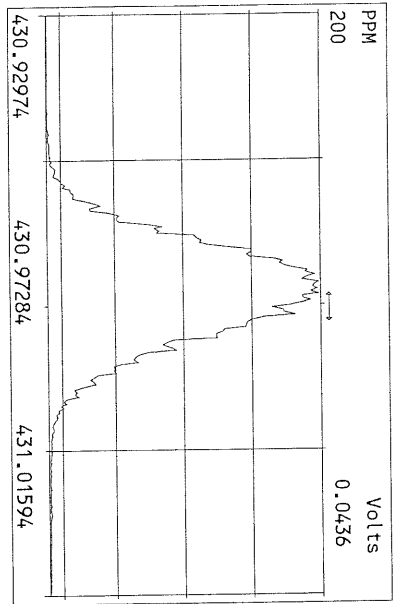
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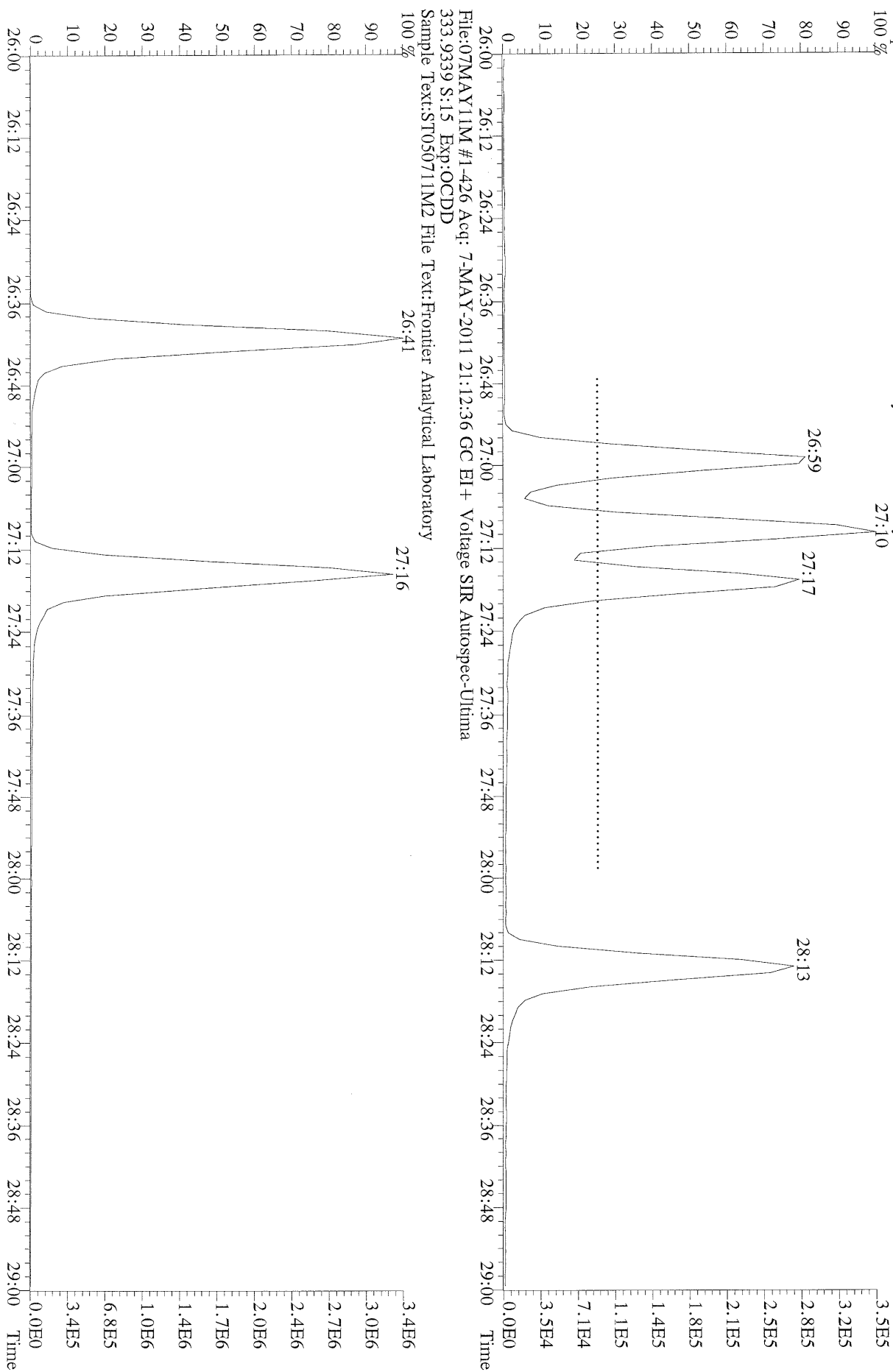




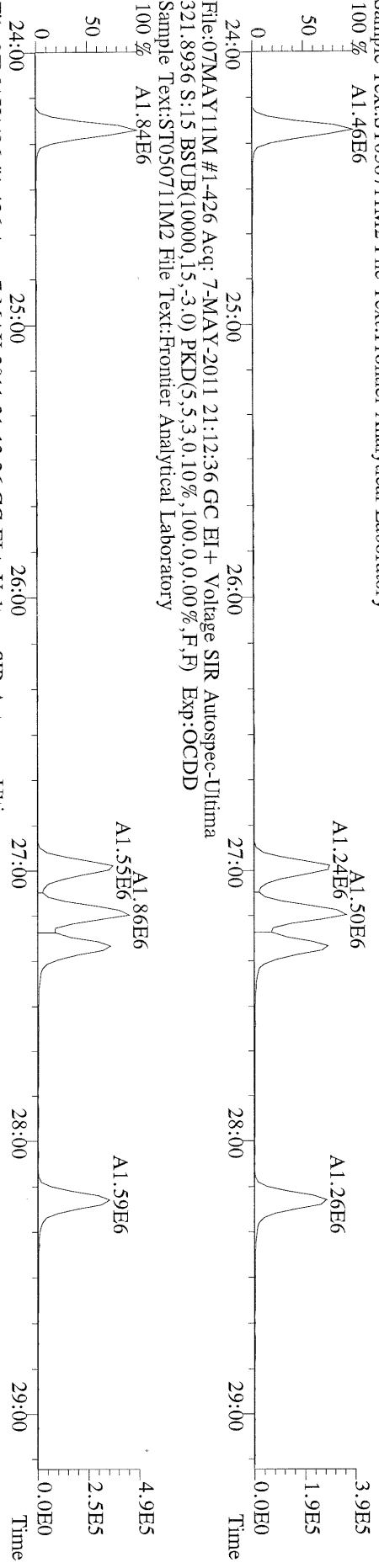




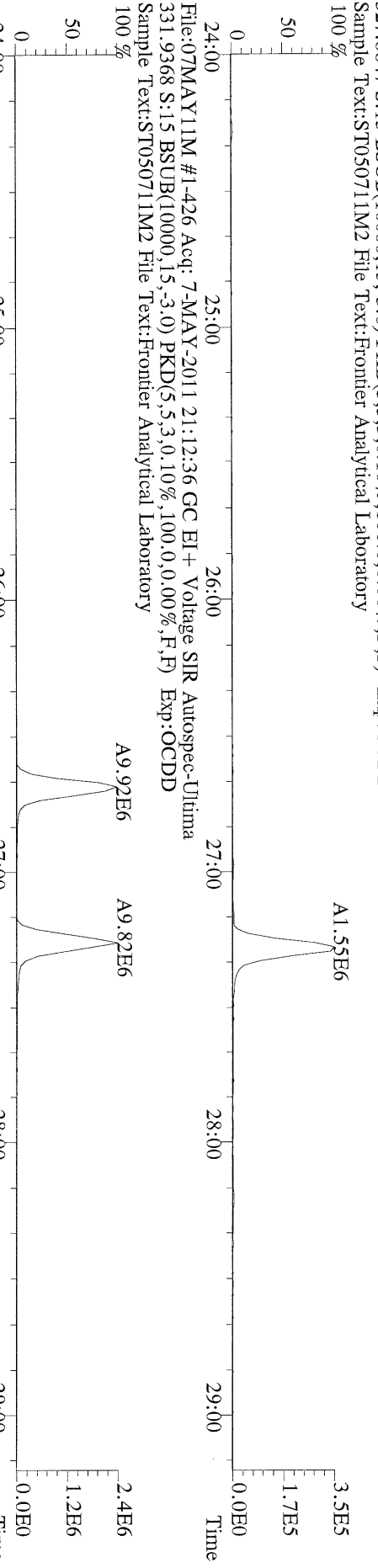
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100 %



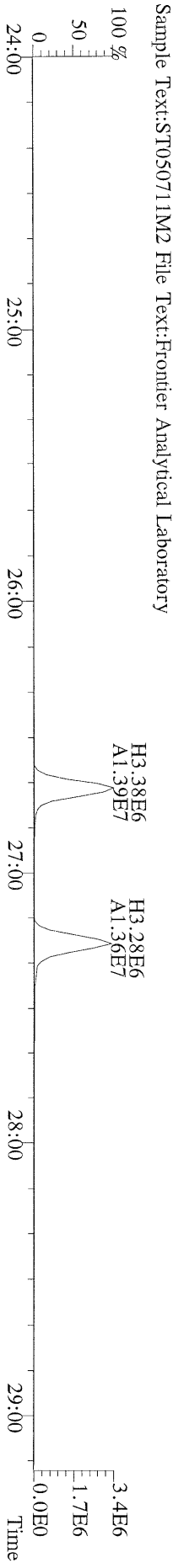
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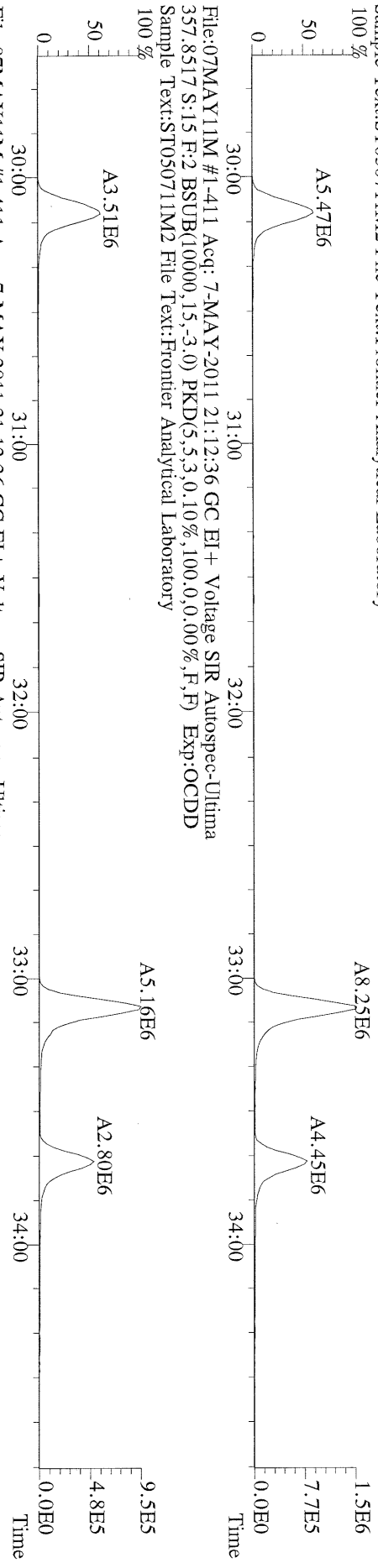
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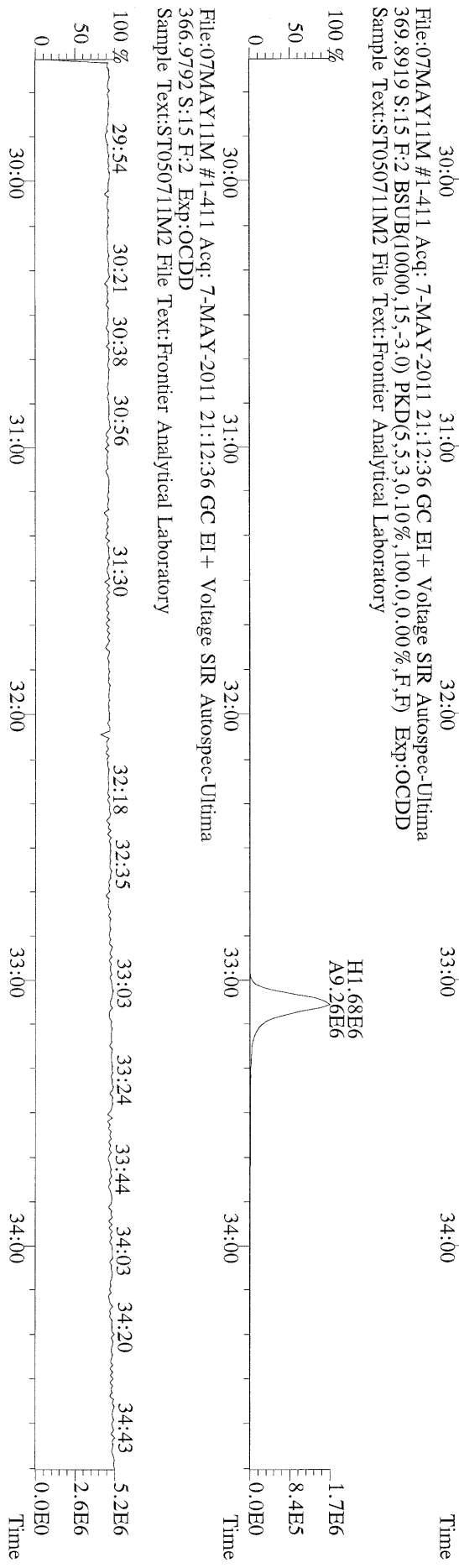
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Sample Text:ST050711M2 File Text:Frontier Analytical Laboratory



File:07MAY11M #1-411 Acq: 7-MAY-2011 21:12:36 GC EI + Voltage SIR Autospec-Ultima
355.8546 S:15 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:OCDD
Sample Text:ST050711M2 File Text:Frontier Analytical Laboratory

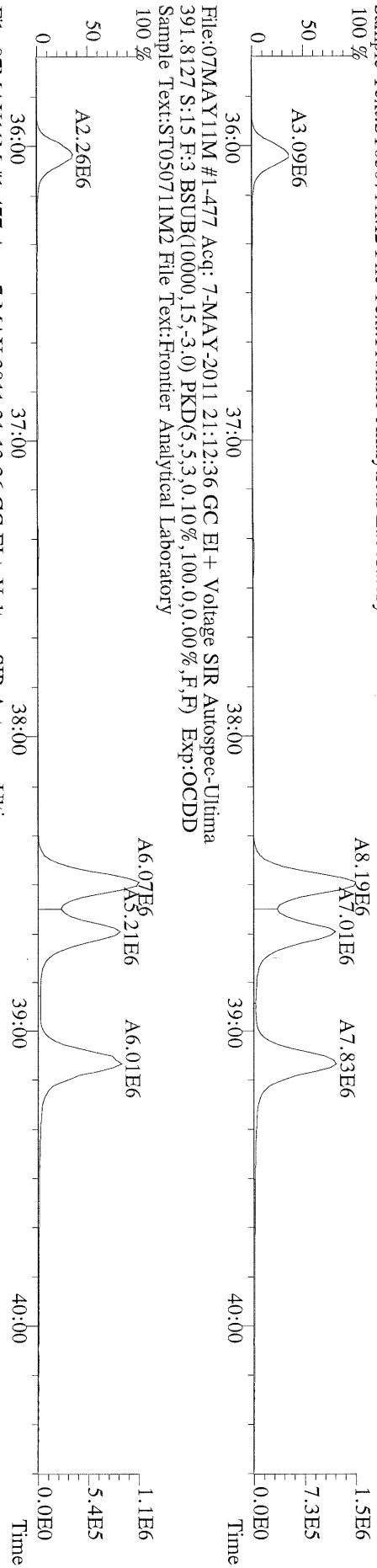


File:07MAY11M #1-411 Acq: 7-MAY-2011 21:12:36 GC EI + Voltage SIR Autospec-Ultima
367.8949 S:15 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:OCDD
Sample Text:ST050711M2 File Text:Frontier Analytical Laboratory

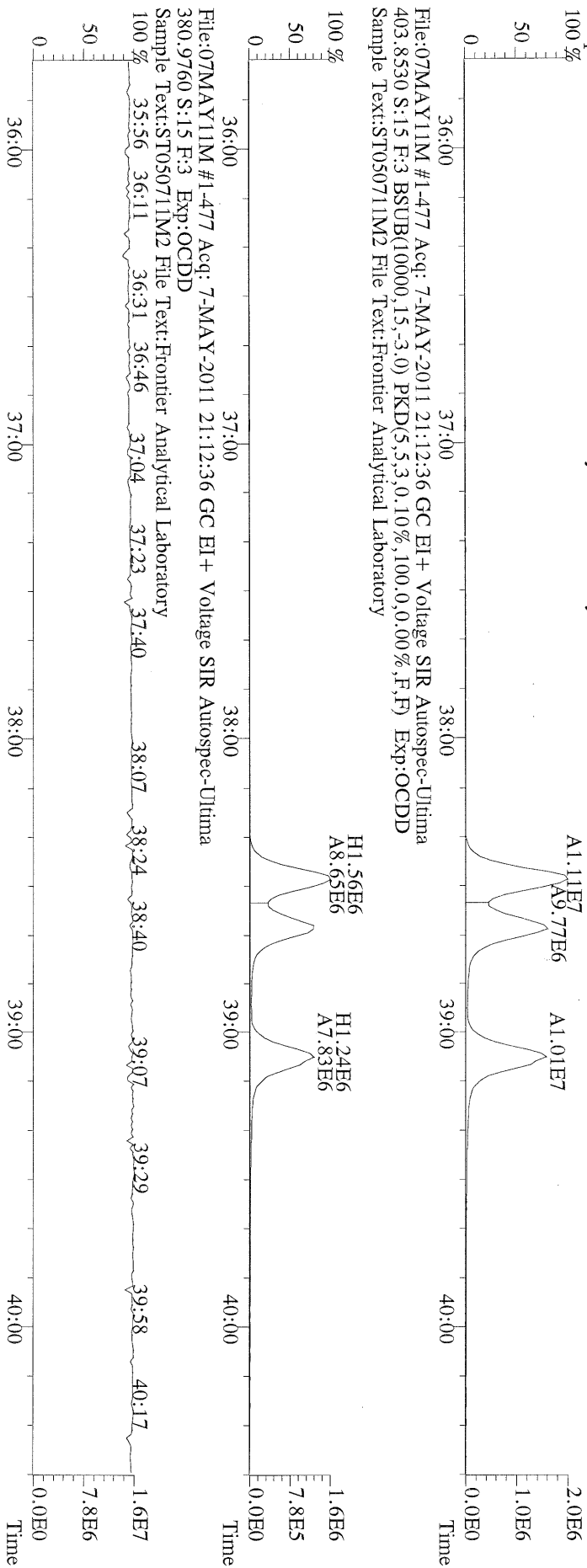


File:07MAY11M #1-411 Acq: 7-MAY-2011 21:12:36 GC EI + Voltage SIR Autospec-Ultima
366.9792 S:15 F:2 Exp:OCDD
Sample Text:ST050711M2 File Text:Frontier Analytical Laboratory

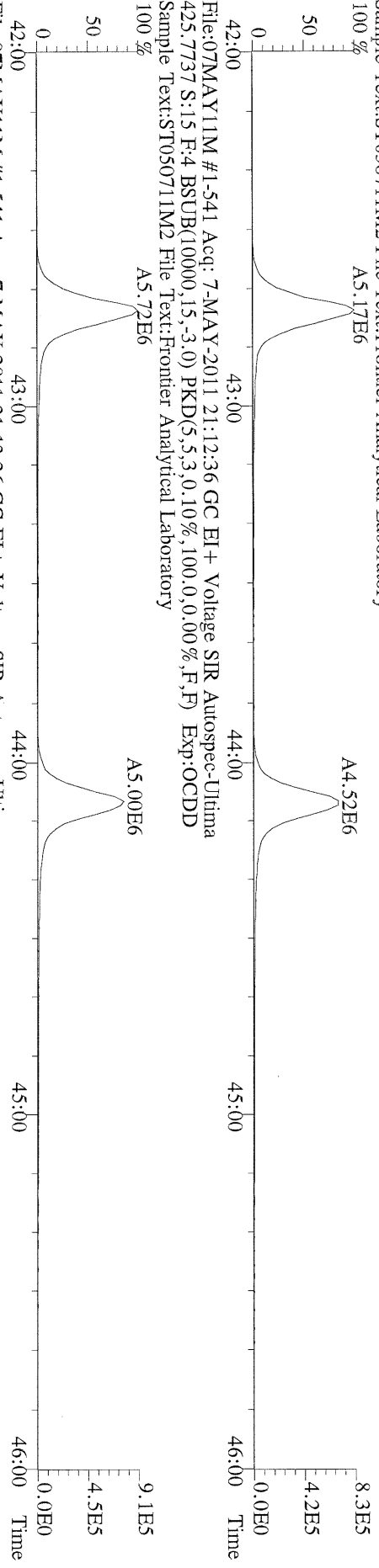
File:07MAY11M #1-477 Acq: 7-MAY-2011 21:12:36 GC EI + Voltage SIR Autospec-Ultima
389.8156 S:15 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:OCDD
Sample Text:ST050711M2 File Text:Frontier Analytical Laboratory



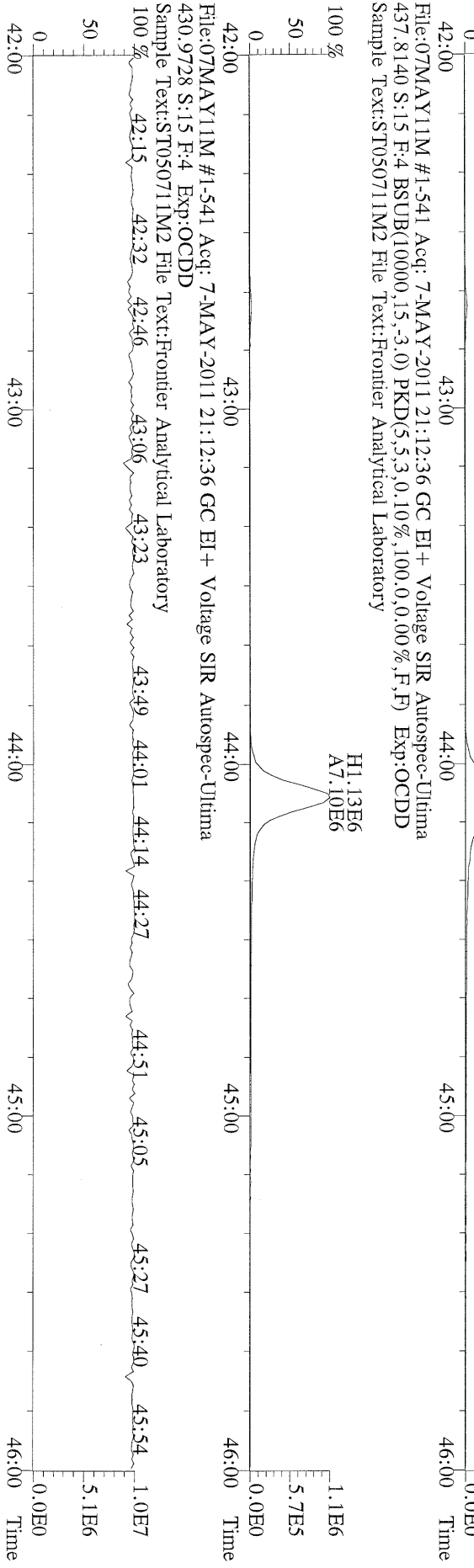
File:07MAY11M #1-477 Acq: 7-MAY-2011 21:12:36 GC EI + Voltage SIR Autospec-Ultima
401.8559 S:15 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:OCDD
Sample Text:ST050711M2 File Text:Frontier Analytical Laboratory



File:07MAY11M #1-541 Acq: 7-MAY-2011 21:12:36 GC EI + Voltage SIR Autospec-Ultima
423.7767 S:15 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:OCDD
Sample Text:ST050711M2 File Text:Frontier Analytical Laboratory

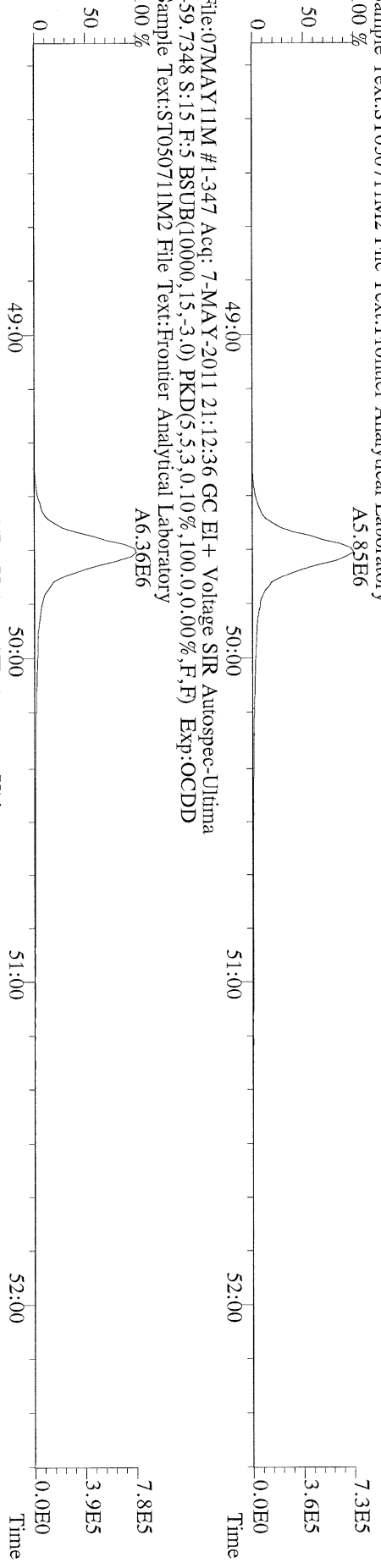


File:07MAY11M #1-541 Acq: 7-MAY-2011 21:12:36 GC EI + Voltage SIR Autospec-Ultima
435.8169 S:15 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:OCDD
Sample Text:ST050711M2 File Text:Frontier Analytical Laboratory

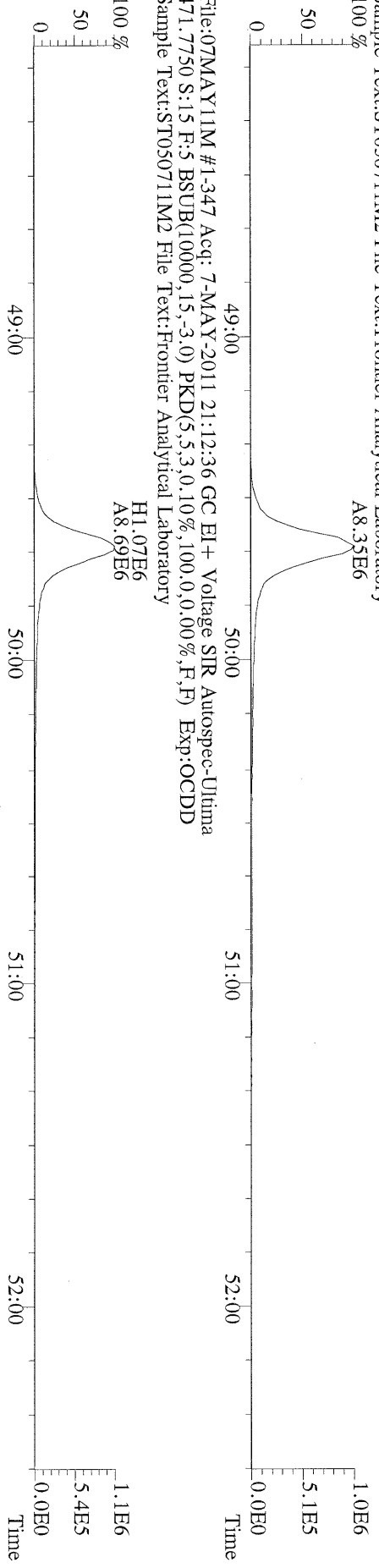


File:07MAY11M #1-541 Acq: 7-MAY-2011 21:12:36 GC EI + Voltage SIR Autospec-Ultima
430.9728 S:15 F:4 Exp:OCDD
Sample Text:ST050711M2 File Text:Frontier Analytical Laboratory

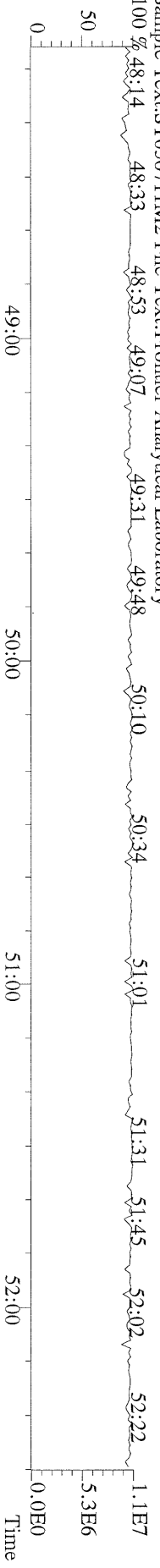
File:07MAYY11M #1-347 Acq: 7-MAY-2011 21:12:36 GC EI + Voltage SIR Autospec-Ultima
457.7377 S:15 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:OCDD
Sample Text:ST050711M2 File Text:Frontier Analytical Laboratory



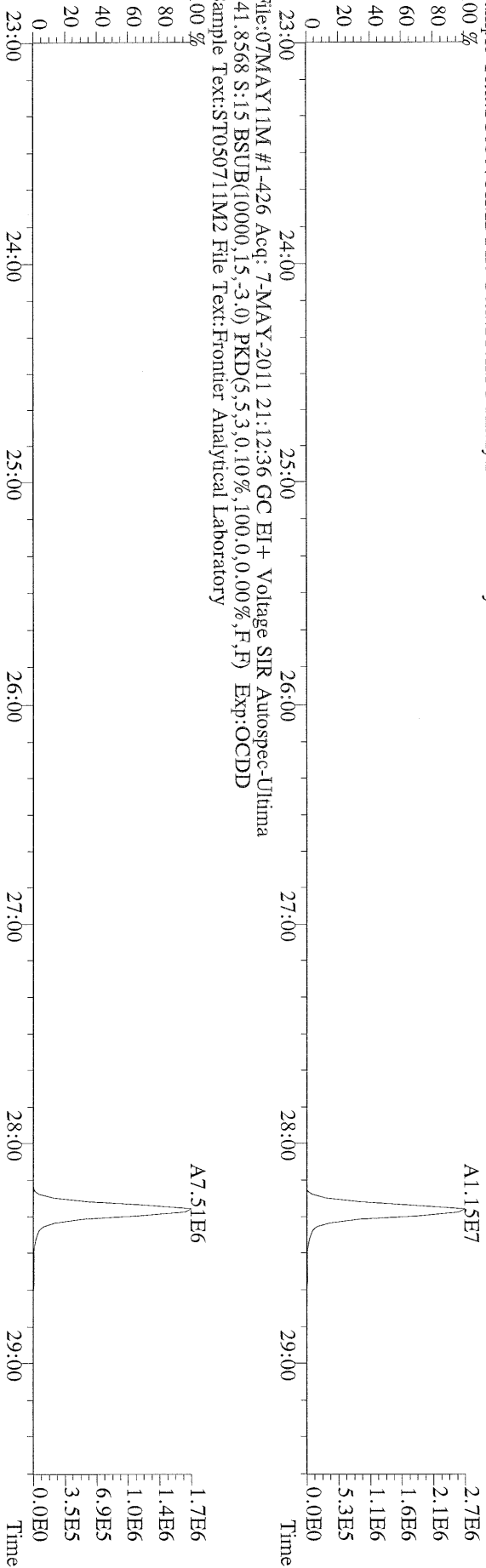
File:07MAYY11M #1-347 Acq: 7-MAY-2011 21:12:36 GC EI + Voltage SIR Autospec-Ultima
469.7780 S:15 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:OCDD
Sample Text:ST050711M2 File Text:Frontier Analytical Laboratory



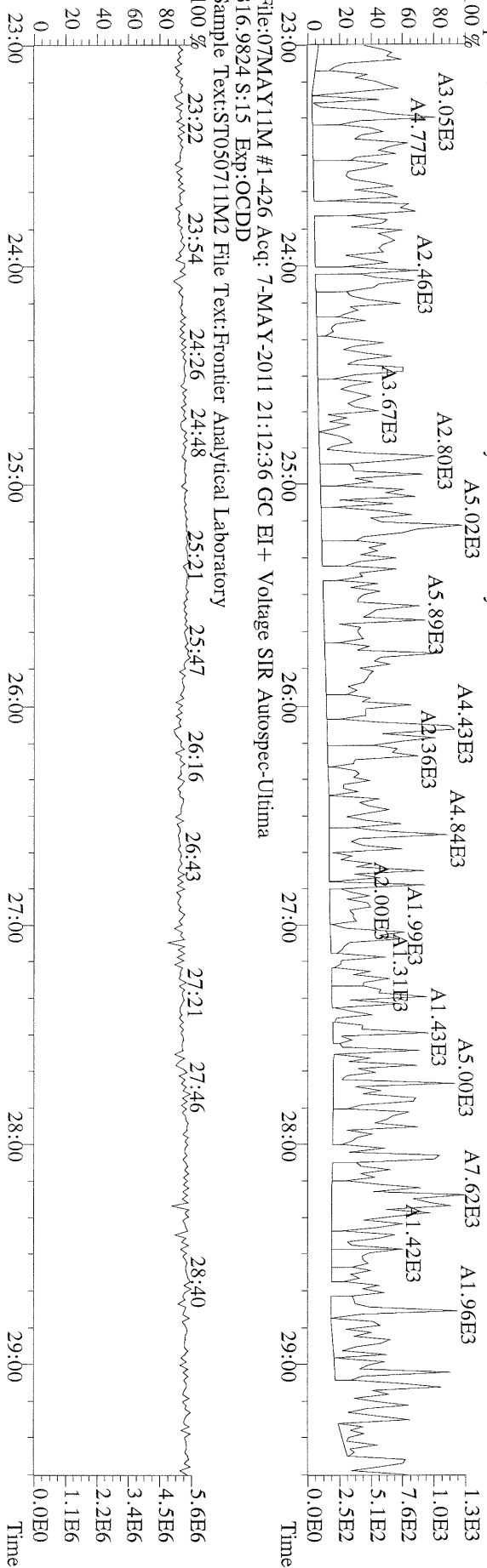
File:07MAYY11M #1-347 Acq: 7-MAY-2011 21:12:36 GC EI + Voltage SIR Autospec-Ultima
454.9728 S:15 F:5 Exp:OCDD
Sample Text:ST050711M2 File Text:Frontier Analytical Laboratory



File:07MAY11M #1-426 Acq: 7-MAY-2011 21:12:36 GC EI+ Voltage SIR Autospec-Ultima
 339.8597 S:15 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:OCDD
 Sample Text:ST05071M2 File Text:Frontier Analytical Laboratory

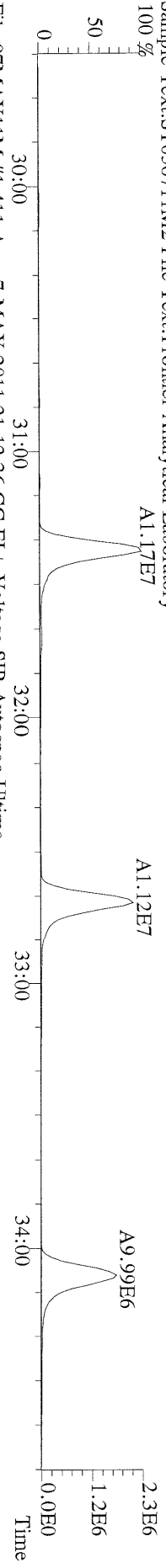


File:07MAY11M #1-426 Acq: 7-MAY-2011 21:12:36 GC EI+ Voltage SIR Autospec-Ultima
 409.7974 S:15 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:OCDD
 Sample Text:ST05071M2 File Text:Frontier Analytical Laboratory

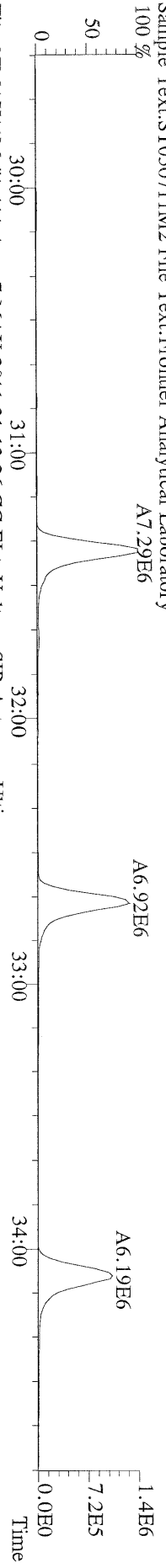


File:07MAY11M #1-426 Acq: 7-MAY-2011 21:12:36 GC EI+ Voltage SIR Autospec-Ultima
 316.9824 S:15 Exp:OCDD
 Sample Text:ST05071M2 File Text:Frontier Analytical Laboratory

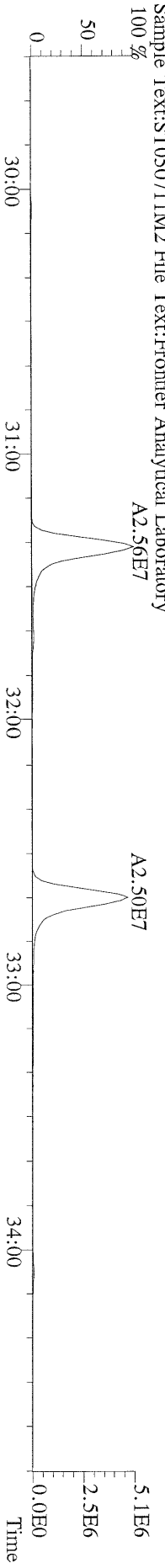
File:07MAY11M #1-411 Acq: 7-MAY-2011 21:12:36 GC EI + Voltage SIR Autospec-Ultima
 339.8597 S:15 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:OCDD
 Sample Text:ST050711M2 File Text:Frontier Analytical Laboratory



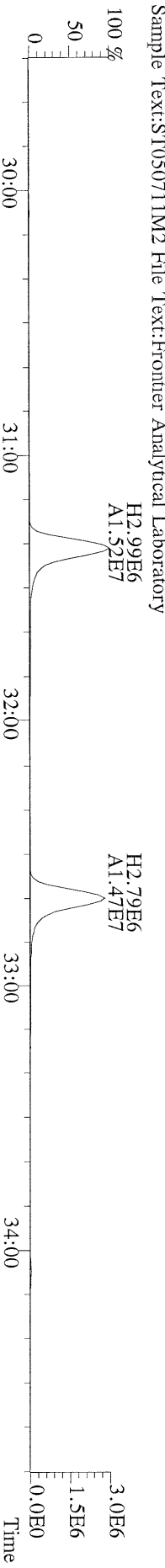
File:07MAY11M #1-411 Acq: 7-MAY-2011 21:12:36 GC EI + Voltage SIR Autospec-Ultima
 341.8568 S:15 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:OCDD
 Sample Text:ST050711M2 File Text:Frontier Analytical Laboratory



File:07MAY11M #1-411 Acq: 7-MAY-2011 21:12:36 GC EI + Voltage SIR Autospec-Ultima
 351.9000 S:15 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:OCDD
 Sample Text:ST050711M2 File Text:Frontier Analytical Laboratory



File:07MAY11M #1-411 Acq: 7-MAY-2011 21:12:36 GC EI + Voltage SIR Autospec-Ultima
 353.8970 S:15 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:OCDD
 Sample Text:ST050711M2 File Text:Frontier Analytical Laboratory



File:07MAY11M #1-411 Acq: 7-MAY-2011 21:12:36 GC EI + Voltage SIR Autospec-Ultima
 409.7974 S:15 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:OCDD
 Sample Text:ST050711M2 File Text:Frontier Analytical Laboratory

