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Environmental Protection  
Agency

Office Of Air Quality  
Planning And Standards  
Research Triangle Park, NC 27711

EPA-454/R-00-021b  
April, 2000

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Air

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# Hot Mix Asphalt Plants Kiln Dryer Stack Manual Methods Testing

## Asphalt Plant B Clayton, North Carolina Volume 2 of 2



**FINAL REPORT**

**EMISSIONS TEST AT AN ASPHALT CONCRETE PRODUCTION PLANT:  
ASPHALT PLANT "A" - CLAYTON, NORTH CAROLINA**

VOLUME II OF II  
APPENDICES C - F

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Work Assignment No. 2-09

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Submitted by

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**APPENDIX C**  
**ANALYTICAL DATA**



Appendix C.1

Analytical Data

Method 5 Particulate Matter







PACIFIC ENVIRONMENTAL SERVICES, INC.

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Fax: (919) 493-7779

BLANK ANALYTICAL DATA FORM

Plant ASPHALT PLANT "A"

Sample location -

Relative humidity -

Liquid level marked and container sealed \_\_\_\_\_

Density of acetone ( $\rho_a$ ) 0.7899 g/ml g/ml

Blank volume ( $V_a$ ) 348.2 ml

Date and time of wt	<u>9/23/97</u>	<u>0830</u>	Gross wt	<u>98.5469</u>	<u>µg</u>
Date and time of wt	<u>9/23/97</u>	<u>1515</u>	Gross wt	<u>98.5473</u>	<u>µg</u>
			Average gross wt	<u>98.5471</u>	<u>µg</u>
			Tare wt	<u>98.5472</u>	<u>µg</u>
			Weight of blank ( $m_{ab}$ )	<u>(0.0001)</u>	<u>µg</u>

$$C_a = \frac{m_{ab}}{V_a \rho_a} = \frac{(0)}{(348.2)(0.7899)} = 0.0000 \text{ µg/g}$$

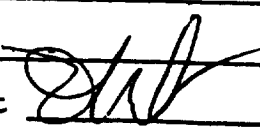
Note: In no case should a blank residue greater than 0.01 mg/g (or 0.001% of the blank weight) be subtracted from the sample weight.

Filters

	Filter number	_____
Date and time of wt	Gross wt	_____ mg
Date and time of wt	Gross wt	_____ mg
	Average gross wt	_____ mg
	Tare wt	_____ mg
	Difference wt	_____ mg

Note: Average difference must be less than ±5 mg or 2% of total sample weight whichever is greater.

Remarks \_\_\_\_\_

Signature of analyst 

Signature of reviewer \_\_\_\_\_



PACIFIC ENVIRONMENTAL SERVICES, INC.

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Fax: (919) 493-7779

SAMPLE ANALYTICAL DATA FORM

Plant ASPHALT PLANT "A" Run number S-29-0-1  
Sample location BAGHOUSE Duct  
Relative humidity       
Density of acetone ( $\rho_a$ ) 0.7899 g/ml

Sample type	Sample identifiable	Liquid level marked and/or container sealed
Acetone rinse filter(s)	M-2 MA7-003 M-1	

Acetone rinse container number Beaker No M-2

Acetone rinse volume ( $V_{aw}$ ) 139.5 + 50 ml

Acetone blank residue concentration ( $C_a$ ) 0.0000  $\mu\text{g/g}$

$W_a = C_a V_{aw} \rho_a = (0.0000) (139.5) (0.7899) =$  0.0000  $\mu\text{g}$

Date and time of wt 9/18/97 1420 Gross wt 96.9954  $\mu\text{g}$

Date and time of wt 9/19/97 1600 Gross wt 96.9958  $\mu\text{g}$

Average gross wt 96.9956  $\mu\text{g}$

Tare wt 96.9392  $\mu\text{g}$

Less acetone blank wt ( $W_a$ ) 0.0000  $\mu\text{g}$

Weight of particulate in acetone rinse ( $m_a$ ) 0.0564  $\mu\text{g}$

Filter(s) container number MA7-003 Beaker No M-1

Date and time of wt 9/22/97 1315 Gross wt 100.3147  $\mu\text{g}$

Date and time of wt 9/23/97 0830 Gross wt 100.3146  $\mu\text{g}$

Average gross wt 100.3147  $\mu\text{g}$

Filter MA7-003 & Beaker No M-1 Tare wt 99.9212  $\mu\text{g}$

Weight of particulate on filter(s) ( $m_f$ ) 0.3935  $\mu\text{g}$

Weight of particulate in acetone rinse 0.0564  $\mu\text{g}$

Total weight of particulate ( $m_n$ ) 0.4499  $\mu\text{g}$

Note: In no case should a blank residue >0.01 mg/g or 0.001% of the weight of acetone used be subtracted from the sample weight.

Remarks \_\_\_\_\_

Signature of analyst

Signature of reviewer \_\_\_\_\_



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SAMPLE ANALYTICAL DATA FORM

Plant ASPHALT PLANT "A" Run number S-79-0-2  
Sample location BAGHOUSE OUTLET  
Relative humidity -  
Density of acetone ( $\rho_a$ ) 0.7899 g/ml

Sample type	Sample identifiable	Liquid level marked and/or container sealed
Acetone rinse filter(s)	M-5 M97-002 M-4	

Acetone rinse container number Beaker No. M-5

Acetone rinse volume ( $V_{aw}$ ) 50 + 103.1 ml

Acetone blank residue concentration ( $C_a$ ) 0.0000  $\mu$ g/g

$W_a = C_a V_{aw} \rho_a = (0.0000) (103.1) (0.7899) =$  0.0000  $\mu$ g

Date and time of wt 9/22/97 1315 Gross wt 96.8543  $\mu$ g

Date and time of wt 9/23/97 0830 Gross wt 96.8546  $\mu$ g

Average gross wt 96.8542  $\mu$ g

Tare wt 96.8488  $\mu$ g

Less acetone blank wt ( $W_a$ ) 0.0000  $\mu$ g

Weight of particulate in acetone rinse ( $m_a$ ) 0.0054  $\mu$ g

Filter(s) container number M97-002 Beaker No. M-4

Date and time of wt 9/22/97 1315 Gross wt 102.8729  $\mu$ g

Date and time of wt 9/23/97 0830 Gross wt 102.8729  $\mu$ g

Average gross wt 102.8729  $\mu$ g

(M97-002 & M-4) Tare wt 102.8161  $\mu$ g

Weight of particulate on filter(s) ( $m_f$ ) 0.0568  $\mu$ g

Weight of particulate in acetone rinse 0.0054  $\mu$ g

Total weight of particulate ( $m_n$ ) 0.0622  $\mu$ g

Note: In no case should a blank residue >0.01 mg/g or 0.001% of the weight of acetone used be subtracted from the sample weight.

Remarks \_\_\_\_\_

Signature of analyst 

Signature of reviewer \_\_\_\_\_



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SAMPLE ANALYTICAL DATA FORM

Plant ASPHALT PLANT "A" Run number S-29-0-3  
Sample location BAGHOUSE OUTLET  
Relative humidity -  
Density of acetone ( $\rho_a$ ) 0.7899 g/ml

Sample type	Sample identifiable	Liquid level marked and/or container sealed
Acetone rinse filter(s)	M-7 M97-004 M-6	

Acetone rinse container number Beaker No. M-7

Acetone rinse volume ( $V_{aw}$ ) 66.5 + 50 ml

Acetone blank residue concentration ( $C_a$ ) 0.0000 mg/g

$W_a = C_a V_{aw} \rho_a = (0.0000) (116.5) (0.7899) = 0.0000$  mg

Date and time of wt 9/21/97 1315 Gross wt 99.5684 mg

Date and time of wt 9/23/97 0830 Gross wt 99.5686 mg

Average gross wt 99.5685 mg

Tare wt 99.5634 mg

Less acetone blank wt ( $W_a$ ) 0.0000 mg

Weight of particulate in acetone rinse ( $m_a$ ) 0.0051 mg

Filter(s) container number M97-004 Beaker No. M-6

Date and time of wt 9/21/97 1315 Gross wt 92.2885 mg

Date and time of wt 9/23/97 0830 Gross wt 92.2883 mg

Average gross wt 92.2884 mg

Filter M97-004 + Beaker M-6 Tare wt 92.2661 mg

Weight of particulate on filter(s) ( $m_f$ ) 0.0223 mg

Weight of particulate in acetone rinse 0.0051 mg

Total weight of particulate ( $m_n$ ) 0.0274 mg

Note: In no case should a blank residue >0.01 mg/g or 0.001% of the weight of acetone used be subtracted from the sample weight.

Remarks \_\_\_\_\_

Signature of analyst [Signature]

Signature of reviewer \_\_\_\_\_



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SAMPLE ANALYTICAL DATA FORM

Plant ASPHALT PLANT "A" Run number S-79-0-4  
Sample location BAGHOUSE OUTLET  
Relative humidity -  
Density of acetone ( $\rho_a$ ) 0.7899 g/ml

Sample type	Sample identifiable	Liquid level marked and/or container sealed
Acetone rinse filter(s)	M-9 M97-005 M-8	

Acetone rinse container number Beaker No. M-9

Acetone rinse volume ( $V_{aw}$ ) 73.7 + 50 ml

Acetone blank residue concentration ( $C_a$ ) 0.0000  $\mu\text{g/g}$

$W_a = C_a V_{aw} \rho_a = (0.0000) (123.7) (0.7899) =$  0.0000  $\mu\text{g}$

Date and time of wt 9/23/97 1515 Gross wt 96.6792  $\mu\text{g}$

Date and time of wt 9/23/97 0830 Gross wt 96.6794  $\mu\text{g}$

Average gross wt 96.6793  $\mu\text{g}$

Tare wt 96.6740  $\mu\text{g}$

Less acetone blank wt ( $W_a$ ) 0.0000  $\mu\text{g}$

Weight of particulate in acetone rinse ( $m_a$ ) 0.0053  $\mu\text{g}$

Filter(s) container number Beaker No M-8

Date and time of wt 9/23/97 1515 Gross wt 101.5388  $\mu\text{g}$

Date and time of wt 9/24/97 0900 Gross wt 101.5392  $\mu\text{g}$

Average gross wt 101.5390  $\mu\text{g}$

M97-005 & Beaker M-8 Tare wt 101.5310  $\mu\text{g}$

Weight of particulate on filter(s) ( $m_f$ ) 0.0080  $\mu\text{g}$

Weight of particulate in acetone rinse 0.0053  $\mu\text{g}$

Total weight of particulate ( $m_n$ ) 0.0133  $\mu\text{g}$

Note: In no case should a blank residue >0.01 mg/g or 0.001% of the weight of acetone used be subtracted from the sample weight.

Remarks \_\_\_\_\_

Signature of analyst [Signature]

Signature of reviewer \_\_\_\_\_



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SAMPLE ANALYTICAL DATA FORM

Plant ASPHALT PLANT "A" Run number S-29-I-1  
Sample location BAGHOUSE INLET  
Relative humidity -  
Density of acetone ( $\rho_a$ ) 0.7899 g/ml

Sample type	Sample identifiable	Liquid level marked and/or container sealed
Acetone rinse filter(s)	M-14 M97-001 M-10	

Acetone rinse container number Beaker No M-11

Acetone rinse volume ( $V_{aw}$ ) 307.8 + 100 ml

Acetone blank residue concentration ( $C_a$ ) 0.0000  $\mu\text{g/g}$

$W_a = C_a V_{aw} \rho_a = (0.0000) (407.8) (0.7899) =$  0.0000  $\mu\text{g}$

Date and time of wt 9/22/97 1315 Gross wt 133.2250  $\mu\text{g}$

Date and time of wt 9/23/97 0830 Gross wt 133.2250  $\mu\text{g}$

Average gross wt 133.2250  $\mu\text{g}$

Tare wt 100.9631  $\mu\text{g}$

Less acetone blank wt ( $W_a$ ) 0.0000  $\mu\text{g}$

Weight of particulate in acetone rinse ( $m_a$ ) 32.2619  $\mu\text{g}$

Filter(s) container number M97-001 Beaker No M-10

Date and time of wt 9/22/97 1315 Gross wt 112.0534  $\mu\text{g}$

Date and time of wt 9/23/97 0830 Gross wt 112.0536  $\mu\text{g}$

Average gross wt 112.0535  $\mu\text{g}$

Filter No M97-001 & Beaker M-10 Tare wt 100.9770  $\mu\text{g}$

Weight of particulate on filter(s) ( $m_f$ ) 11.0765  $\mu\text{g}$

Weight of particulate in acetone rinse 32.2619  $\mu\text{g}$

Total weight of particulate ( $m_n$ ) 43.3384  $\mu\text{g}$

Note: In no case should a blank residue  $>0.01$  mg/g or 0.001% of the weight of acetone used be subtracted from the sample weight.

Remarks \_\_\_\_\_

Signature of analyst

Signature of reviewer \_\_\_\_\_



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SAMPLE ANALYTICAL DATA FORM

Plant ASPHALT PLANT "A" Run number S-79-FB  
Sample location -  
Relative humidity -  
Density of acetone ( $\rho_a$ ) 0.7899 g/ml

Sample type	Sample identifiable	Liquid level marked and/or container sealed
Acetone rinse filter(s)	M-15 M97-006 M-14	

Acetone rinse container number Beaker No M-15  
Acetone rinse volume ( $V_{aw}$ ) 43.7 ± 50 ml  
Acetone blank residue concentration ( $C_a$ ) 0.0000  $\mu$ g/g  
 $W_a = C_a V_{aw} \rho_a = (0.0000) (43.7) (0.7899) = 0.0000$   $\mu$ g

Date and time of wt	<u>9/22/97 1315</u>	Gross wt	<u>102.5881</u>	$\mu$ g
Date and time of wt	<u>9/23/97 0830</u>	Gross wt	<u>102.5877</u>	$\mu$ g
		Average gross wt	<u>102.5879</u>	$\mu$ g
		Tare wt	<u>102.5880</u>	$\mu$ g
		Less acetone blank wt ( $W_a$ )	<u>(0.0000)</u>	$\mu$ g
		Weight of particulate in acetone rinse ( $m_a$ )	<u>(0.0000)</u>	$\mu$ g

Filter(s) container number	<u>Filter No M97-006</u>	<u>Beaker No M-14</u>		
Date and time of wt	<u>9/18/97 1420</u>	Gross wt	<u>97.1303</u>	$\mu$ g
Date and time of wt	<u>9/19/97 1600</u>	Gross wt	<u>97.1308</u>	$\mu$ g
		Average gross wt	<u>97.1306</u>	$\mu$ g
		Tare wt	<u>97.1301</u>	$\mu$ g
		Weight of particulate on filter(s) ( $m_f$ )	<u>0.0005</u>	$\mu$ g
		Weight of particulate in acetone rinse	<u>(0.0000)</u>	$\mu$ g
		Total weight of particulate ( $m_n$ )	<u>0.0005</u>	$\mu$ g

Note: In no case should a blank residue >0.01 mg/g or 0.001% of the weight of acetone used be subtracted from the sample weight.

Remarks \_\_\_\_\_

Signature of analyst [Signature]

Signature of reviewer \_\_\_\_\_





PACIFIC ENVIRONMENTAL SERVICES, INC.

3708 Mayfair Street, Suite 202  
Durham, North Carolina 27707  
(919) 493-3538  
Fax: (919) 493-7779

SAMPLE ANALYTICAL DATA FORM

Plant ASPHALT PLANT "A" Run number S-29-RB  
Sample location -  
Relative humidity -  
Density of acetone ( $\rho_a$ ) 0.7899 g/ml

Sample type	Sample identifiable	Liquid level marked and/or container sealed
Acetone rinse filter(s)	M-18 M97-008 M-16	

Acetone rinse container number Becker No M-18

Acetone rinse volume ( $V_{aw}$ ) 349.3 ml

Acetone blank residue concentration ( $C_a$ ) ~~0.000~~ mg/g

$W_a = C_a V_{aw} \rho_a = (0.000) (349.3) (0.7899) =$  \_\_\_\_\_ mg

Date and time of wt 9/23/97 0930 Gross wt 98.5469 mg

Date and time of wt 9/23/97 1515 Gross wt 98.5473 mg

Average gross wt 98.5471 mg

Tare wt 98.5472 mg

Less acetone blank wt ( $W_a$ ) - mg

Weight of particulate in acetone rinse ( $m_a$ ) (0.0001) mg

Filter(s) container number Becker No. M-16

Date and time of wt 9/23/97 1515 Gross wt 97.8642 mg

Date and time of wt 9/24/97 0900 Gross wt 97.8641 mg

Average gross wt 97.8642 mg

Filter M97-008 & Becker No M-16 Tare wt 97.8649 mg

Weight of particulate on filter(s) ( $m_f$ ) (0.0007) mg

Weight of particulate in acetone rinse (0.0001) mg

Total weight of particulate ( $m_n$ ) 0.0000 mg

Note: In no case should a blank residue >0.01 mg/g or 0.001% of the weight of acetone used be subtracted from the sample weight.

Remarks \_\_\_\_\_

Signature of analyst [Signature]

Signature of reviewer \_\_\_\_\_

METHOD 5  
TARE WEIGHT

Project Number: S413-004 Item Weighed: BEAKERS

0940 164 110

Date	R.H. (%)	Temp. (°F)	Std. Wt.	Analyst	Field Sample Number	1st	2nd	3rd	4th	5th	Final Wt. (g)	Tare Wt. (g)	Difference (mg)
8/5/97								9/12/97					
	78		100.0000										
	7AA												
M-1						99.5289	99.5285					99.5287	
M-2						96.9302	96.9392					96.9392	
M-3						96.7072	96.7078	96.7075				96.7077	
M-4						102.4354	102.4352					102.4353	
M-5						96.8489	96.8487					96.8488	
M-6						91.8831	91.8832					91.8832	
M-7						99.5035	99.5033					99.5034	
M-8						101.1552	101.1548					101.1550	
M-9						96.6742	96.6737					96.6740	
M-10						100.5937	100.5939					100.5938	
M-11						100.9631	100.9630					100.9631	
M-12						103.6085	103.6078	103.6078				103.6078	
M-13						101.8551	101.8541	101.8547				101.8544	
M-14						96.7441	96.7489					96.7490	
M-15						102.5882	102.5877					102.5880	
M-16						97.4828	97.4822					97.4825	
M-17						99.6888	99.6882	99.6883				99.6883	
M-18						98.5374	98.5366					98.5472	
M-19						100.0674	100.0670					100.0678	
M-20						92.3073	92.3072					92.3073	
M-21						102.7444	102.7484					102.7492	
M-22						96.6699	96.6694					96.6697	
M-23						100.1799	100.1792	100.1793				100.1793	
M-24						101.8553	101.8548					101.8551	

**METHOD 5  
TARE WEIGHT**

Project Number: S413.004 Item Weighed: Filters

1100  
1100  
M7070

Date	R.H. (%)	Temp. (°F)	Std. Wt.	Analyst	Field Sample Number	1st	2nd	3rd	4th	5th	Final Wt. (g)	Tare Wt. (g)	Difference (mg)
2/17/97	74°	76°	0.5000	MMJM		0.3837	0.3831				0.3832		
						0.3809	0.3807				0.3808		
						0.3926	0.3923				0.3925		
						0.3829	0.3829				0.3829		
						0.3761	0.3758				0.3760		
						0.3812	0.3810				0.3811		
						0.3825	0.3822				0.3824		
						0.3804	0.3804				0.3804		
					REA I-M7A-1	0.3801	0.3800				0.3801		
					REA I-M7A-1	0.5073	0.5075				0.5074		
					REA I-M7A-1	0.5124	0.5126				0.5125		
						0.5051	0.5052				0.5052		
					REA I-M7A-1	0.5079	0.5082				0.5081		
					REA I-M7A-1	0.5175	0.5177				0.5175		
						0.5114	0.5117				0.5116		
						0.4470	0.4467				0.4469		
						0.4517	0.4516				0.4517		
						0.4509	0.4509				0.4509		
						0.4526	0.4524				0.4525		
						0.4513	0.4512				0.4513		
						0.4414	0.4415				0.4415		
						0.4524	0.4521				0.4523		
						0.4473	0.4470				0.4472		

**METHOD 5  
TARE WEIGHT**

Project Number: S413-004      1100      7026      Item Weighed: Filters

Date	R.H. (%)	Temp. (°F)	Std. Wt.	Analyst	Field Sample Number	1st	2nd	3rd	4th	5th	Final Wt. (g)	Tare Wt. (g)	Difference (mg)
8/17/97		74°	0.5000	UM/M		0.4493	0.4491				0.4492		
8/17/97		76°	0.5000	UM/M		0.4489	0.4487				0.4488		
						0.4447	0.4446				0.4447		
						0.4550	0.4550				0.4550		
						0.4531	0.4531				0.4530		







METHOD 5  
FINAL WEIGHT

Item Weighed: Filters & Filters

Project Number: S413-004

Date	1835	0905	2025	0935					
R.H. (%)	9/24/97	9/24/97	9/25/97	9/26/97					
Temp. (°F)	70.5	68	70.2	68.3					
Std. Wt.	99.9996	100.0000	99.9998	100.0000					
Analyst	MMM	MMM	MMM	MMM					
ID Number	Field Sample Number	1st	2nd	3rd	4th	5th	Tare Wt. (g)	Final Wt. (g)	Difference (mg)
M-8	WA7-005 S-2A-0-4	101.5392						101.5390	
M-16	WA7-008 S-7A-PB	97.8604						97.8602	
M-18	FH RINSE P-2A-I-2	<del>95.9214</del>							
M-20	F-2A-I-3	95.9214							
M-21	FH RINSE P-2A-I-3		95.9424	45.9428					
M-22			103.6790	103.6798	103.6787	103.6787			
M-23			100.7699	96.7004	96.7007			96.7008	
M-24			100.7699	100.7683	100.7684			100.7684	
M-10				101.8786	101.8797	101.8800		101.8799	
M-11				103.8609	103.8617	103.8613			
M-12			103.8076	103.8077					
			108.2100	108.2096					
CHK WT			0.5000	0.5000					
WA7-019			0.5244	0.5242					
WA7-017			0.4471	0.4468					
M-12*				235.0	234.8				
M-19*				369.2	368.8				
<p>These bottles were weighed on an Ohaus Triple-Beam balance because the gross weight exceeded to capacity of the Micro-balance</p>									



Appendix C.2

Analytical Data

Method 23 PCDDs/PCDFs





# TRIANGLE LABS

## CASE NARRATIVE

**Analysis of Samples for the Presence of  
Polychlorinated Dibenzo-*p*-Dioxins and Dibenzofurans by  
High-Resolution Chromatography / High-Resolution Mass Spectrometry**

### Method 23 (6/93)

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<b>Date:</b>	September 11, 1997
<b>Client ID:</b>	Pacific Environmental Services
<b>P.O. Number:</b>	104-98-0019 & -0020
<b>TLI Project Number:</b>	43057

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Rev. 05/08/97

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Research Triangle Park, NC 27709-3485  
Fax # 919-544-5491

### Overview

Seven M23 samples were received from Pacific Environmental Services at 19 °C in good condition on August 29, 1997 and were stored in a refrigerator at 4°C. One XAD trap for sample O-M23-RB was received without a chain-of-custody from Pacific Environmental Services at ambient temperature in good condition on September 5, 1997 and was stored in a refrigerator at 4°C. The results for sample O-M23-4 are not included in this data package. The remaining M23 samples and any associated QC samples were extracted and analyzed according to procedures described in the Triangle Laboratories' Data User's Manual (Rev. 12/92-HK-2-AH-2/93). Any particular difficulties encountered during the sample handling by Triangle Laboratories will be discussed in the QC Remarks section below. Results reported relate only to the items tested.

### Quality Control Samples

A laboratory method blank, identified as the TLI Blank, was prepared along with the samples.

### Quality Control Remarks

This release of this particular set of Pacific Environmental Services analytical data by Triangle Laboratories was authorized by the Quality Control Chemist who has reviewed each sample data package individually following a series of inspections/reviews. When applicable, general deviations from acceptable QC requirements are identified below and comments are made on the effect of these deviations upon the validity and reliability of the results. Please consult Triangle Laboratories' Data User's Manual for further details. Specific QC issues associated with this particular project are:

*Sample Preparation Laboratory:* None

*Mass Spectrometry:* None

*Data Review:* Sample O-M23-4 was lost during filtration. Therefore, it was scheduled for re-extraction. The results for this sample will be forwarded as soon as they are available.

The percent recoveries of the internal standards in sample O-M23-3 are elevated due to an insufficient amount of recovery standard added to this sample. However, the areas of the internal standards are not affected by the amount of recovery standard in the sample. Therefore, the concentrations of any analytes detected in sample O-M23-3 are not affected because they are calculated based upon the areas of the internal standards.

**Other Comments:** Any analytes found in the TLI Blank are detected at a level equal to or less than the Target Detection Limit. This level of contamination is acceptable as per TLI guidelines.

**Sample Calculations:**

Analyte Concentration

The amount of any analyte is calculated using the following expression.

$$\text{Amt}_{(\sigma)} = \frac{A_{\sigma} * Q_{\beta}}{A_{\beta} * \text{RRF}_{(\sigma)} * W}$$

Where:

$\text{Amt}_{(\sigma)}$  is the amount of a given analyte,

$A_{\sigma}$  is the integrated current for the characteristic ions of the analyte,

$A_{\beta}$  is the integrated current of the characteristic ions of the corresponding internal standard,

$Q_{\beta}$  represents the amount of internal standard added to the sample before extraction,

$\text{RRF}_{(\sigma)}$  is the mean analyte relative response factor from the initial calibration (ICal) and,

$W$  is the sample weight or volume ( $W = 1$  for M23)

The amount is expressed in nanograms (ng) or picograms (pg).

Detection Limits

The detection limit reported for a target analyte that is not detected or presents an analyte response that is less than 2.5 times the background level is calculated by using the following expression. The area of the analyte is replaced by the noise level measured in a region of the chromatogram clear of genuine GC signals multiplied by an empirically determined factor. The detection limits represent the maximum possible concentration of a target analyte that could be present without being detected.

$$\text{DL}_{(\sigma)} = \frac{2 * 2.5 * (F * H) * Q_{\beta}}{A_{\beta} * \text{RRF}_{(\sigma)} * W}$$

Where:

$DL_{(\sigma)}$  is the estimated detection limit for a target analyte,

2.5 is the minimum response required for a GC signal,

F is an empirical number that approximates the area to height ratio for a GC signal. This number is 3.7 for both the DB-5 GC column and the DB-225 GC column,

H is the height of the noise

$A_{\beta}$  is the integrated current of the characteristic ions of the corresponding internal standard,

$Q_{\beta}$  represents the amount of internal standard added to the sample before extraction,

$RRF_{(\sigma)}$  is the mean analyte relative response factor from the initial calibration (ICal) and,

W is the sample weight or volume

The detection limit is expressed in nanograms (ng) or picograms (pg).

Other sample calculations may be found in the Triangle Laboratories Data User's Manual.

### *Data Flags*

In order to assist with data interpretation, data qualifier flags are used on the final reports, as discussed in Triangle Laboratories' Method 23 Data User's Manual. Please note that all data qualifier flags are subjective and are applied as consistently as possible. Each flag has been reviewed by two independent Chemists and the impact of the data qualifier flag on the quality of the data discussed above. The most commonly used flags are:

A 'B' flag is used to indicate that an analyte has been detected in the laboratory method blank as well as in an associated field sample. The 'B' flag will be used only when the concentration of analyte found in the sample is less than 20 times that found in the associated blank. This flag denotes possible contribution of background laboratory contamination to the concentration or amount of that analyte detected in the field sample. Under Triangle Laboratories guidelines, a laboratory blank is acceptable if the tetra- through hepta-CDD/CDF levels are all below the target detection limits (TDLS) or if the contamination levels are less than 5% of the levels detected in the associated field samples.

If these conditions are satisfied or if the blank is unable to be reextracted, the interpretation of the contamination levels relative to the samples should be as follows: 1) analyte quantitations should be considered valid if the level of blank contamination is less than five percent of the level detected in the field sample, 2) analyte quantitations should be considered estimated if the analyte level in the sample is five to twenty times the level of the analyte in the blank, or 3) analytes whose level in a sample is the same as or less than five times the level detected in the associated blank should be considered present likely due to laboratory contamination and not native to the sample.

An 'E' flag is used to indicate that an PCDF peak has eluted at the same time as the associated diphenyl ether (DPE) and that the DPE peak intensity is ten percent or more of the PCDF peak intensity. Total PCDF values are flagged 'E' if the total DPE contribution to the total PCDF value is greater than ten percent. All PCDF peaks that are significantly influenced by the presence of DPE peaks are quantitated with EMPC values, regardless of the isotopic abundance ratio. These EMPC values are most likely overestimated due to the DPE contribution to the peak area.

An 'I' flag is used to indicate labeled standards have been interfered with on the GC column by coeluting, interferent peaks. The interference may have caused the standard's area to be overestimated. All quantitations relative to this standard, therefore, may be underestimated.

A 'PR' flag is used to indicate that a GC peak is poorly resolved. This resolution problem may be seen as two closely eluting peaks without a reasonable valley between the peak tops, overly broad peaks, or peaks whose shapes vary greatly from a normal distribution. The concentrations or amounts reported for such peaks are most likely overestimated.

A 'Q' flag is used to indicate the presence of QC ion instabilities caused by quantitative interferences. Affected analytes may be overestimated or underestimated as a result of this interference. A peak is flagged 'Q' only if it is affected by a QC ion deviation greater than 20% full scale as determined relative to the labeled standard against which it is quantitated. Total PCDF/PCDF quantitations will be flagged 'Q' if the interferences affect ten percent or more of the total PCDD/PCDF peak areas.

An 'RO' flag is used to indicate that a labeled standard has an ion abundance ratio that is outside of the acceptable QC limits, most likely due to a coeluting interference. This may have caused the percent recovery of the standard to be overestimated. All quantitations versus this standard, therefore, may be underestimated.

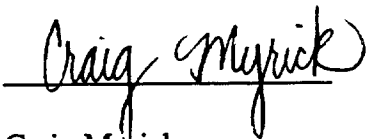
A 'U' flag is used to indicate that a specific (2,3,7,8-substituted) isomer cannot be resolved from a large, coeluting interferent GC peak. The specific isomer is reported as not detected as a valid concentration/amount cannot be determined. The calculated detection limit, therefore, should be considered an underestimated value.

A 'V' flag is used to indicate that, although the percent recovery of a labeled standard may be below a specific QC limit, the signal-to-noise ratio of the peak is greater than ten-to-one. The standard is considered reliably quantifiable. All quantitations derived from the standard are considered valid as well.

By our interpretation, the analytical data in this project are valid based on the guidelines of EPA Method 23 (6/93) and Triangle Laboratories' Method 23 Data User's Manual. Any specific QC concerns or problems have been discussed in the QC Remarks section of this case narrative with emphasis on their effect on the data. Should Pacific Environmental Services have any questions or comments regarding this data package, please feel free to contact our Project Scientist, Amy Boehm, at 919/544-5729 ext. 268.

For Triangle Laboratories, Inc.,

Released by



Craig Myrick  
Report Preparation Chemist

The total number of pages in the data package is : 2163 .

# TRIANGLE LABS

## TRIANGLE LABORATORIES, INC.

### LIST OF CERTIFICATIONS AND ACCREDITATIONS

#### ENVIRONMENTAL

**American Association for Laboratory Accreditation.** Expires July 31, 1997. Certificate Number 0226-01. Accreditation for technical competence in Environmental Testing.(Including Waste Water, Sol/Haz Waste, Pulp/Paper, and Air Matrices) Parameters are AOX/TOX, Volatiles, Pesticides, PCB's, BNA's, and Dioxin/Furan. Method 1613 for Drinking Water.

**State of Alabama, Department of Environmental Management.** Expires December 31, 1997. Laboratory I.D. # 40950. Dioxin in drinking water.

**State of Alaska, Department of Environmental Conservation.** Expires December 21, 1997. Certificate number OS-00397. Dioxin in drinking water.

**State of Arizona, Department of Health Services.** Expires May 26, 1998. Certificate #AZ0423. Drinking Water for Dioxin, Dioxin in WW and S/H Waste.

**State of Arkansas, Department of Pollution Control and Ecology.** Expires February 18, 1998. Pulp/paper, soil, water, and Hazardous Waste for Dioxin/Furan; AOX/TOX.

**State of California, Department of Health Services.** Expires August 31, 1997. Certificate #1922. Selected Metals in Waste Water, Volatiles, Semi-volatiles, and Dioxin/furan in WW and Sol/Haz Waste. Dioxin in drinking water.

**State of Connecticut, Department of Health Services.** Expires September 30, 1997. Registration # PH-0117. Dioxin in drinking water.

**Delaware Health and Social Services.** Expires December 31, 1997. Certificate #NC 140. Dioxin in drinking water.

**Florida Department of Health and Rehabilitative Services.** Expires June 30, 1997. Dioxin in DW. Drinking Water ID HRS# 87424. Metals, Extractable Organics (GC/MS), Pesticides/PCB's (GC) and Volatiles (GC/MS) in Environmental Samples. Environmental water ID HRS# E87411.



Hawaii Department of Health. Expires March 1, 1998. Dioxin in drinking water. "Accepted" status for regulatory purposes .

Idaho Department of Health and Welfare. Expires November 30, 1997. Dioxin in drinking water.

State of Kansas, Department of Health and Environment. Expires January 31, 1998. Environmental Analyses/Non potable Water and Solid and Hazardous Waste. Method 1613 for drinking water. ID #'s - Drinking water and/or pollution control - E-215. Solid or Hazardous Waste - E-1209.

Commonwealth of Kentucky, Department for Environmental Protection. Expires December 31, 1997. ID#90060. Dioxin in drinking water.

Maryland Department of Health and Mental Hygiene. Expires September 30, 1997. Certification #235. Drinking water by Method 1613A.

State of Michigan, Department of Public Health. Expires March 31, 1997. Drinking water by Method 1613.

Mississippi State Department of Health. No expiration date.. Dioxin in drinking water.

Montana Department of Health and Environmental Services. Expires December 31, 1997. Dioxin in drinking water.

State of New Jersey, Department of Environmental Protection and Energy. Extended by state. Temporary certificate until June 30, 1997 or sooner. ID #67851. BNAs and Volatiles. Dioxin in drinking water.

State of New Mexico, Environment Department. Expires July 31, 1997. Dioxin in drinking water.

New York State Department of Health. Expires June 30, 1997. ID #11026. Environmental Analyses of non-potable Water, Solid and Hazardous Waste. Method 1613 in DW.

State of North Carolina, Department of Environment Health and Natural Resources Expires December 31, 1997. Certificate # 37751. Dioxin in drinking water.

State of North Carolina, Department of Environment, Health, and Natural Resources, Division of Environmental Management. Expires December 31, 1997. Certificate # 485. Metals, pesticides & PCBs, semi-volatiles and volatiles: TCLP.

North Dakota State Department of Health and Consolidated Laboratories. Expires December 31, 1997. Certificate # R-076. Effective October 4, 1993. Dioxin in drinking water.

Oklahoma Department of Environmental Quality. Expires October 31, 1997. Laboratory #9612. Dioxin by 1613A, 8290 and 8280.

State of South Carolina, Department of Health and Environmental Control. Expires June 30, 1997. Certificate number #99040001 (drinking water). Expires August 31, 1997. Certificate number #99040002 (other parameters). Dioxin/Furans, BNA, Volatiles, and PCBs/pesticides under Clean Water Act. 2,3,7,8-TCDD for Drinking Water, and Organic extractables for Solid and Hazardous Waste.

State of Tennessee, Department of Environment and Conservation. Expires February 5, 1999. ID #02992. Method 1613 Drinking water only.

U.S. Department of Agriculture Soil Permit. Expires September 30, 2002. Permit No. S-4958. Under the authority of the Federal Plant Pest Act, permission is granted to receive foreign soil samples for use in laboratory analysis.

U.S. Army Corps of Engineers. Expires November 30, 1997. Validated to perform methods 8280 & 8290 for Lockbourne Landfill Site Investigation, Defense Distribution Depot Projects, and assorted projects for the USACE North Pacific Division Laboratory.

U.S. EPA Region V. Expires November 14, 1999. Dioxin in drinking water.

U.S. EPA Region VIII, for the State of Wyoming. Expires November 13, 1997. Dioxin in drinking water.

State of Utah, Department of Health. Expires December 31, 1997. Certificate Number E-166. Certification for the following parameters: Semi-Volatiles and Volatiles under RCRA; Volatiles under Clean Water Act; Dioxin/furans by Method 8280; Drinking water for Dioxin by Method 1613; Metals including Mercury and Microwave Digestion.

Commonwealth of Virginia, Department of General Services, Division of Consolidated Laboratory Services. Expires June 30, 1998. ID # 00341. Dioxin in drinking water.

State of Washington, Department of Ecology. Expires September 11, 1997. Lab Accreditation Number C067. Scope of Accreditation applies to water analyses for Polychlorinated Dibenzo-p-dioxins and Polychlorinated Dibenzofurans, BNA Extr (Semivolatile) Organics and Purgeable (Volatile) Organics.

State of Washington, Department of Health. Expires April 30, 1998. Dioxin in drinking water. Lab I.D. 129

State of West Virginia, Department of Health. Expires December 31, 1997. Certificate No. 9923(C). Dioxin in drinking water.

State of Wisconsin, Department of Natural Resources. Expires June 30, 1997. Laboratory ID Number 999869530. Certification for the following categories of Organics: Purgeable, Base/Neutral, Acid, PCBs, and Dioxin. Expires November 14, 1999. Laboratory ID 999869530. Dioxin in drinking water.

### PHARMACEUTICAL

Drug Enforcement Agency (DEA). Expires November 30, 1997. Registration number RT01195835. Controlled substance registration for schedules 1,2,3,3N,4,5.

N.C. Department of Human Resources. Expires October 31, 1997. Registration number NC-PT 0000 0031. North Carolina controlled substances registration. Application submitted for renewal.

Food & Drug Administration (FDA) Registration. Expires July 1997. ID #'s 001500 1053481. Annual registration of drug establishment. Annual registration of drug establishment.

### OTHER

Clinical Laboratory Improvement Amendments (CLIA) Registration. Expires May 30, 1999. ID # 34D0705123. Department of Health & Human Services, Health Care Financing Administration.

U.S. EPA Large Quantity Hazardous Waste Generator. No expiration date. EPA ID #NCD982156879. Permit indicates that the laboratory is a large generator of hazardous waste.

North Carolina Radioactive Materials License. Expires April 30 1998. License No. 032-0954-1. License authorizes the licensee to receive, acquire, own, possess, transfer, import and use such radioactive materials as designated.

North Carolina General License for Radiation Protection. No. expiration date. License No. 032-875-OG. The general license applies only to radioactive material contained in devices which have been manufactured and labeled in accordance with specific requirements.

**TRIANGLE LABS**

DOCUMENT  
CONTROL

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**COPY** of 8/29/97

**CHAIN OF CUSTODY**

**Sampler's Signature:**

**Comments:**

Company: PES, Inc.

Contact: Mike Maret

Address: 5001 S. Miami Blvd.

Project Name: ASPHER TREAT "A"

RTP, NC 27709-2077

Project Location: Garner, NC

P.O. #:

Phone #: 919-941-0333

Fax #: 919-941-0234

Field Sample I.D. #:

# of Cont.

Analysis Required:

Remarks:

Location Sampled:	Date:	Time:	Grab or Comp.:	Field Sample I.D. #:	# of Cont.	Analysis Required:	Remarks:
Inlet	8/19/97	9:15	Composite	I-M23-1-XAD	1	Poly-chlorinated Dioxin/Furans	XAD
Inlet	8/19/97	↓	Composite	I-M23-1-Ace/Toluene	1	Poly-chlorinated Dioxin/Furans	Ace/Toluene
Inlet	8-19-97	↓	Composite	I-M23-1-Filler	1	Poly-chlorinated Dioxin/Furans	Filler
Inlet	8-19-97	↓	Composite	I-M23-1-IMP	1	Poly-chlorinated Dioxin/Furans	ARCHIVE
Outlet	8-19-97	9:15	Composite	O-M23-1-XAD	1	Poly-chlorinated Dioxin/Furans	XAD
Outlet	↓	↓	Composite	O-M23-1-Ace/Toluene	1	Poly-chlorinated Dioxin/Furans	Ace/Toluene
Outlet	↓	↓	Composite	O-M23-1-Filler	1	Poly-chlorinated Dioxin/Furans	Filler
Outlet	↓	↓	Composite	O-M23-1-IMP	1	Poly-chlorinated Dioxin/Furans	ARCHIVE
Outlet	8-20-97	8:22	Composite	O-M23-2-XAD	1	Poly-chlorinated Dioxin/Furans	XAD
Outlet	↓	↓	Composite	O-M23-2-Ace/Toluene	1	Poly-chlorinated Dioxin/Furans	Ace/Toluene
Relinquished By:			Date/Time:	Received By:	Relinquished By:	Date/Time:	Received By:
Relinquished By:			Date/Time:	Received By:	Relinquished By:	Date/Time:	Received By:
Relinquished By:			Date/Time:	Received By:	Relinquished By:	Date/Time:	Received By:

Relinquished By: [Signature]  
 Date/Time: 8/29/97 12:45

Received By: [Signature]  
 Date/Time: 8/29/97 12:45

Received By: [Signature]  
 Date/Time: 8/29/97 12:45

Send Samples To: Triangle Laboratories, Inc.  
801 Capicola Drive  
Durham, North Carolina 27713

[Handwritten Signature]

COPY ✓ 8/29/97

**CHAIN OF CUSTODY**

Sampler's Signature: \_\_\_\_\_

Company: PES, Inc.

Contact: Mike Maret

Comments: \_\_\_\_\_

Address: 5001 S. Miami Blvd.

Project Name: ASPHALT TRAIT "A"

RTP, NC 27709-2077

Project Location: Garner, NC

P.O. #: \_\_\_\_\_

Phone #: 919-941-0333

Fax #: 919-941-0234

Location Sampled:	Date:	Time:	Grab or Comp.:	Field Sample I.D. #:	# of Cont.	Analysis Required:	Remarks:
Outlet	8-20-97	6:22	Composite	O-M23-2-Filler	1	Poly-chlorinated Dioxin/Furans	Filter
Outlet	✓	✓	Composite	O-M23-2-IMP	2	Poly-chlorinated Dioxin/Furans	ARCHIVE
Outlet	8-20-97	14:05	Composite	O-M23-3-XAD	1	Poly-chlorinated Dioxin/Furans	XAD
Outlet	✓	✓	Composite	O-M23-3-Ace/Toluene	1	Poly-chlorinated Dioxin/Furans	Ace/Toluene
Outlet	✓	✓	Composite	O-M23-3-Filler	1	Poly-chlorinated Dioxin/Furans	Filter
Outlet	8-19-97	15:19	Composite	O-M23-FB-XAD	1	Poly-chlorinated Dioxin/Furans	XAD
Outlet	✓	✓	Composite	O-M23-FB-Ace/Toluene	1	Poly-chlorinated Dioxin/Furans	Ace/Toluene
Outlet	✓	✓	Composite	O-M23-FB-Filler	1	Poly-chlorinated Dioxin/Furans	Filter
Outlet	✓	✓	Composite	O-M23-FB-IMP	1	Poly-chlorinated Dioxin/Furans	ARCHIVE
Relinquished By:	Date/Time:	Received By:	Date/Time:	Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By: <u>Mike Maret</u>	Date/Time: <u>8/29/97 12:45</u>	Received By:	Date/Time:	Relinquished By:	Date/Time:	Received By:	Date/Time:
Received for Laboratory By/Signature: <u>[Signature]</u>	Date/Time:	Received By:	Date/Time:	Relinquished By:	Date/Time:	Received By:	Date/Time:
		Date/Time: <u>8/29/97 12:45</u>			Send Samples To: <b>Triangle Laboratories, Inc.</b> 801 Capicola Drive Durham, North Carolina 27713		

**COPY**  
 8/29/97

**CHAIN OF CUSTODY**

Sampler's Signature: \_\_\_\_\_

Comments:

Company: PES, Inc. Contact: Mike Maret

Address: 5001 S. Miami Blvd. Project Name: ASPHALT PLANT "A"

RTP, NC 27709-2077 Project Location: Garner, NC

Phone #: 919-941-0333 Fax #: 919-941-0234

Field Sample I.D. #: \_\_\_\_\_

Location Sampled: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

Outlet 108 Date: 8.21.97 Time: 7:41 Grab or Comp.: Composite

Outlet \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Grab or Comp.: Composite

Outlet \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Grab or Comp.: Composite

Outlet \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Grab or Comp.: Composite

Outlet \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Grab or Comp.: Composite

Outlet \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Grab or Comp.: Composite

Outlet \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Grab or Comp.: Composite

Outlet \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Grab or Comp.: Composite

Outlet \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Grab or Comp.: Composite

Outlet \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Grab or Comp.: Composite

Outlet \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Grab or Comp.: Composite

Outlet \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Grab or Comp.: Composite

Outlet \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Grab or Comp.: Composite

Outlet \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Grab or Comp.: Composite

# of Cont. \_\_\_\_\_ Analysis Required: \_\_\_\_\_

16 Free Metals Plus Hg \_\_\_\_\_ HCL \_\_\_\_\_

Poly-chlorinated Dioxin/Furans \_\_\_\_\_ XAD \_\_\_\_\_

Poly-chlorinated Dioxin/Furans \_\_\_\_\_ Ace/Toluene \_\_\_\_\_

Poly-chlorinated Dioxin/Furans \_\_\_\_\_ Filler \_\_\_\_\_

Poly-chlorinated Dioxin/Furans \_\_\_\_\_ ARCHIVE \_\_\_\_\_

Poly-chlorinated Dioxin/Furans \_\_\_\_\_

Poly-chlorinated Dioxin/Furans \_\_\_\_\_

Poly-chlorinated Dioxin/Furans \_\_\_\_\_

Poly-chlorinated Dioxin/Furans \_\_\_\_\_

Poly-chlorinated Dioxin/Furans \_\_\_\_\_

Poly-chlorinated Dioxin/Furans \_\_\_\_\_

Poly-chlorinated Dioxin/Furans \_\_\_\_\_

Poly-chlorinated Dioxin/Furans \_\_\_\_\_

Poly-chlorinated Dioxin/Furans \_\_\_\_\_

Poly-chlorinated Dioxin/Furans \_\_\_\_\_

Remarks: \_\_\_\_\_

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Relinquished By: Mike Maret

Date/Time: 8/29/97 12:45

Received for Laboratory By/Signature: Mike Maret

Received By: \_\_\_\_\_

Date/Time: 8/29/97 12:45

Send Samples To: \_\_\_\_\_

Triangle Laboratories, Inc.

901 Capitol Drive

Durham, North Carolina 27713

COPY

8/29/97

CHAIN OF CUSTODY

Sampler's Signature:

Comments:

Company: PES, Inc.

Contact: Mike Maret

Address: 5001 S. Miami Blvd.

Project Name: ASPHALT PAVEMENT "A"

RTP, NC 27709-2077

Project Location: Garner, NC

P.O. #:

Phone #: 919-941-0333

Fax #: 919-941-0234

Location Sampled:	Date:	Time:	Grab or Comp.:	Field Sample I.D.#:	# of Cont.	Analysis Required:	Remarks:
			Composite	O-M23-RB-XAD	1	Poly-chlorinated Dioxin/Furans	XAD
			Composite	O-M23-RB-Ace/Toluene	1	Poly-chlorinated Dioxin/Furans	Ace/Toluene
			Composite	O-M23-RB-Filler	1	Poly-chlorinated Dioxin/Furans	Filler
			Composite	O-M23-RB-IMP	1	Poly-chlorinated Dioxin/Furans	ARCHIVE

NOT RESENT 8/29/97

Relinquished By:	Date/Time:	Received By:	Date/Time:	Relinquished By:	Date/Time:	Received By:	Date/Time:

Relinquished By: *[Signature]*  
 Date/Time: 8/29/97 12:45

Received By: *[Signature]*  
 Date/Time: 8/29/97 12:45

Send Samples To: Triangle Laboratories, Inc.  
 801 Capicola Drive  
 Durham, North Carolina 27713

Received for Laboratory By/Signature: *[Signature]*



TRIANGLE LABORATORIES, INC. -- LOG IN RECORD/CHAIN OF CUSTODY

Custody Seal : Absent  
 Chain of Custody : Present  
 Sample Tags : Absent  
 Sample Tag Numbers: Not Listed on Chain of Custody  
 SMO Forms : N/A

Sample Seals: Absent  
 Container: Intact

TLI Project Number 43057  
 Client: PSC01 - PSS, Inc.

Date Received 08/29/97 By *[Signature]*

Carrier and Number FRANK PHOENIX

Book 181  
 Page 27

TLI Number	Client Sample ID	Matrix	To LAB Date/Int	To STORAGE Date/Int	To LAB Date/Int	To STORAGE Date/Int	To LAB Date/Int	To STORAGE Date/Int	To LAB Date/Int	To STORAGE Date/Int	DISPOSED Date/Int
181-27-1A	I-M23-1-XAD	XAD			9/16/97						
181-27-1B	I-M23-1-ACB/TOLUENE I-M23-1-ACB/TOLUENE	ACB/TOLUENE	9-5-97 754	9-5-97 754							
181-27-1C	I-M23-1-FILTER	FILTER									
181-27-1D	I-M23-1-IMP I-M23-1-IMP	IMP									
181-27-2A	O-M23-1-XAD O-M23-1-XAD	XAD									
181-27-2B	O-M23-1-ACB/TOLUENE O-M23-1-ACB/TOLUENE	ACB/TOLUENE	9-5-97 754	9-5-97 754							
181-27-2C	O-M23-1-FILTER O-M23-1-FILTER	FILTER									
181-27-2D	O-M23-1-IMP O-M23-1-IMP	IMP									
181-27-3A	O-M23-2-XAD O-M23-2-XAD	XAD									
181-27-3B	O-M23-2-ACB/TOLUENE O-M23-2-ACB/TOLUENE	ACB/TOLUENE	9-5-97 754	9-5-97 754							
181-27-3C	O-M23-2-FILTER O-M23-2-FILTER	FILTER									
181-27-3D	O-M23-2-IMP O-M23-2-IMP	IMP									
181-27-3E	O-M23-2-IMP O-M23-2-IMP	IMP									
181-27-4A	O-M23-3-XAD O-M23-3-XAD	XAD									

Receiving Remarks: SAMPLES DELIVERED IN 3 BOXES AND 1 COOLER. ICE IN COOLER WAS WATER WHEN RECEIVED. SAMPLE

Archive Remarks:

TRIANGLE LABORATORIES, INC. -- LOG IN RECORD/CHAIN OF CUSTODY

Custody Seal : Absent  
 Chain of Custody : Present  
 Sample Tags : Absent  
 Sample Tag Numbers: Not Listed on Chain of Custody  
 SMO Forms : N/A

Sample Seals: Absent  
 Container: Intact

TLI Project Number 43057  
 Client: PSC01 - PES, Inc.

Date Received 08/29/97 By *[Signature]* Page 27

Ice Chest/box ICB Temp 19.0 C Carrier and Number FRANK PHOENIX

TLI Number	Client Sample ID	Matrix	To LAB Date/Inlt	To STORAGE Date/Inlt	To LAB Date/Inlt	To STORAGE Date/Inlt	To LAB Date/Inlt	To STORAGE Date/Inlt	To LAB Date/Inlt	To STORAGE Date/Inlt	DISPOSED Date/Inlt
181-27-4B	O-M23-3-ACE/TOLUENE	ACE/TOLUENE	9-5-97 JSY	9-5-97 JSY							
181-27-4C	O-M23-3-FILTER	FILTER									
181-27-4D	O-M23-3-IMP	IMP									
181-27-4E	O-M23-3-IMP	IMP									
181-27-5A	O-M23-FB-XAD	XAD									
181-27-5B	O-M23-FB-ACE/TOLUENE	ACE/TOLUENE	9-5-97 JSY	9-5-97 JSY							
181-27-5C	O-M23-FB-FILTER	FILTER									
181-27-5D	O-M23-FB-IMP	IMP									
181-27-6A	O-M23-4-XAD	XAD									
181-27-6B	O-M23-4-ACE/TOLUENE	ACE/TOLUENE	9-5-97 JSY	9-5-97 JSY							
181-27-6C	O-M23-4-FILTER	FILTER									
181-27-6D	O-M23-4-IMP	IMP									
181-27-7A	O-M23-RB-ACE/TOLUENE	ACE/TOLUENE	9-5-97 JSY	9-5-97 JSY							
181-27-7B	O-M23-RB-FILTER	FILTER									

Receiving Remarks: SAMPLES DELIVERED IN 3 BOXES AND 1 COOLER. ICE IN COOLER WAS WATER WHEN RECEIVED. SAMPLE O-M23-RB-XAD WAS NOT WITH SHIPMENT.

TRIANGLE LABORATORIES, INC. -- LOG IN RECORD/CHAIN OF CUSTODY

TLI Project Number 43113  
 Client: PES03 - Pacific Environmental Services

Book 101

Custody Seal : Absent  
 Chain of Custody : Absent  
 Sample Tags : Absent  
 Sample Tag Numbers: Not Listed on Chain of Custody  
 SMO Forms : Absent

Sample Seals: Absent  
 Container....: Intact

Date Received 09/05/97 By *[Signature]* Page 83

Carrier and Number DEBBIE HAGE

NO COOLANT

TLI Number	Client Sample ID	Matrix	To LAB Date/Inlt	To STORAGE Date/Inlt	To LAB Date/Inlt	To STORAGE Date/Inlt	To LAB Date/Inlt	To STORAGE Date/Inlt	To LAB Date/Inlt	To STORAGE Date/Inlt	DISPOSED Date/Inlt
------------	------------------	--------	------------------	----------------------	------------------	----------------------	------------------	----------------------	------------------	----------------------	--------------------

101-93-1 Reagent Blank Xad no C.O.C. C01 XAD

*LA*  
*9/6/97* *[Signature]*

Receiving Remarks: Debbie Hage said this was a sample that belonged to client.  
 No paperwork arrived with samples; CLIENT needs to provide a Chain of Custody with sample IDs matching the sample labels.

Archive Remarks:



TLI Project Number: 43057

Use this form to record all exchanges of information between production units as well as personnel handling this project. Decisions, corrective actions and recommendations must also appear on this tracking document.

Date	Name	Comment / Decision / Resolution / Action / Observation
	PSC01-PES, Inc. I-M23-1-FILTER Project: 43057 181-27-1C	XAD - white 1 Filter - white with approx 6Gg of brown ash residue gas smell
	PSC01-PES, Inc. I-M23-1-XAD Project: 43057 181-27-1A	XAD - white 1 Filter - white / brown gas smell
	PSC01-PES, Inc. O-M23-1-FILTER Project: 43057 181-27-2C	XAD - white 1 Filter - white / brown gas smell
	PSC01-PES, Inc. O-M23-1-XAD Project: 43057 181-27-2A	XAD - white 1 Filter - white / brown gas smell
	PSC01-PES, Inc. O-M23-2-FILTER Project: 43057 181-27-3C	XAD - white 1 Filter - white / brown gas smell
	PSC01-PES, Inc. O-M23-2-XAD Project: 43057 181-27-3A	XAD - white 1 Filter - white / brown gas smell

TLI Project Number: 43057

Use this form to record all exchanges of information between production units as well as personnel handling this project. Decisions, corrective actions and recommendations must also appear on this tracking document.

e	Name	Comment / Decision / Resolution / Action / Observation
	PSC01-PES, Inc. O-M23-3-XAD Project: 43057 181-27-4A	XAD - white
	PSC01-PES, Inc. O-M23-3-FILTER Project: 43057 181-27-4C	1 Filter - white / H brown
	PSC01-PES, Inc. O-M23-FB-XAD Project: 43057 181-27-5A	XAD white
	PSC01-PES, Inc. O-M23-FB-FILTER Project: 43057 181-27-5C	1 Filter white
	PSC01-PES, Inc. O-M23-4-XAD Project: 43057 181-27-6A	white - XAD
	PSC01-PES, Inc. O-M23-4-FILTER Project: 43057 181-27-6C	1 Filter - white with H brown residue
	PES03-Pacific Environmental Services Reagent Blank Xad Project: 43113 181-83-1	1 Filter white
	PSC01-PES, Inc. O-M23-RB-FILTER Project: 43057 181-27-7B	XAD white

Date: 09/06/97  
Time: 15:16

TRIANGLE LABORATORIES, INC.  
Met Lab WMS/PUF Observations  
Project: 43057

PRDPERC V4.00  
Page: 1

22

Sample #	TLI Number	Customer Sample Id	F. No	XAD Color	Filter Color	Glass Wool Color	PUF Color	Odor	Alt Q.No.	Entered By	Date	Time
000	TLI Blank	TLI M23 Blank	0	WHITE	WHITE/BRWN	WHITE		NONE	03804	ADKINS	09/06	15:14 F
001	181-27-1A-C	I-M23-1	1	WHITE	WHITE/BRWN	WHITE		GAS	03804	ADKINS	09/06	15:14 F
002	181-27-2A-C	O-M23-1	1	WHITE	WHITE/BRWN	WHITE		GAS	03804	ADKINS	09/06	15:14 F
003	181-27-3A-C	O-M23-2	1	WHITE	WHITE/BRWN	WHITE		GAS	03804	ADKINS	09/06	15:14 F
004	181-27-4A-C	O-M23-3	1	WHITE	WHITE/BRWN	WHITE		NONE	03804	ADKINS	09/06	15:14 F
005	181-27-5A-C	O-M23-FB	1	WHITE	WHITE	WHITE		GAS	03804	ADKINS	09/06	15:14 F
006	181-27-6A-C	O-M23-4	1	WHITE	WHITE/BRWN	WHITE		NONE	03804	ADKINS	09/06	15:16 F
007	181-27-7AB4	O-M23-RB	1	WHITE	WHITE	WHITE		NONE	ADKINS	ADKINS	09/06	15:14 F
008	TLI LCS	TLI LCS	0	WHITE								
009	TLI LCSD	TLI LCSD	0	WHITE						ADKINS	09/06	15:14 F

\*\*\* End of Report \*\*\*

Dioxin Sample Preparation Tracking & Management Form

ject: 43057

Client: Pacific Environmental Services (PES03)

vent(s)/Acid(s): 5000 / 1 / 1  
 Numbers: 74861 / 1 / 1

Method: Method 23:Tetra-Octa (Tot Combined) Matrix: 120  
 Extraction Date: 9/16/97 5 FEB 5

- Spike: 40 µl conc: 0.1000 ng/µl
- Spike: 40 µl conc: 0.1000 ng/µl
- Spike: 0 µl conc: 0.0000 ng/µl
- Spike: 0 µl conc: 0.0000 ng/µl
- Spike: 20 µl conc: 0.01 ng/µl

LA	LA	GM	Chemist
5234I	5233B	5235E	
USF I	USF MX	USF-A	
7/02/96	12/17/97	07/02/98	
9/06/97	9/06/97	9/08/97	
14:00	14:03	13:45	
0.1 ng/µl	0.01 ng/µl	0.1 ng/µl	
40 µl	40 µl	40 µl	

TLI / SAMPLE ID	CLIENT / SAMPLE ID	GROSS WEIGHT Before After	SAMPLE SIZE g / ml	ng/µl	ng/µl	ng/µl	ng/µl	Vol.
TLI Blank	TLI M23 Blank	+		L.C.		MS		
181-27-1A-C	I-M23-1	+		L.C.		MS		
181-27-2A-C	O-M23-1	+		L.C.		MS		
181-27-3A-C	O-M23-2	+		L.C.		MS		
181-27-4A-C	O-M23-3	+		L.C.		MS		
181-27-5A-C	O-M23-FB	+		L.C.		MS		
181-27-6A-C	O-M23-4	+		L.C.		MS		
181-27-7A& 181-83-1	O-M23-RB	+		L.C.		MS		
TLI LCS	TLI LCS	+		L.C.	*L.C.	MS		
TLI LCSD	TLI LCSD	+		L.C.	*L.C.	MS		

TLI Blank	TLI M23 Blank	+		L.C.		MS		Any Left
181-27-1A-C	I-M23-1	+		L.C.		MS		yes/no
181-27-2A-C	O-M23-1	+		L.C.		MS		yes/no
181-27-3A-C	O-M23-2	+		L.C.		MS		yes/no
181-27-4A-C	O-M23-3	+		L.C.		MS		yes/no
181-27-5A-C	O-M23-FB	+		L.C.		MS		yes/no
181-27-6A-C	O-M23-4	+		L.C.		MS		yes/no
181-27-7A& 181-83-1	O-M23-RB	+		L.C.		MS		yes/no
TLI LCS	TLI LCS	+		L.C.	*L.C.	MS		yes/no
TLI LCSD	TLI LCSD	+		L.C.	*L.C.	MS		yes/no

Gross weight of sample container + sample before/after aliquot removal.

Comments: 1 & 2 acetone/Toluene Rinses had fine particles - they were filtered through softener before Rotolapping 9/15/97

Initials: LA Date: 9/16/97



TRIANGLE LABORATORIES, INC.  
 DIOXIN SAMPLE EXTRACTION and CLEANUP TRACKING FORM  
 TLI Project No.: 43057

Ext S#. crd and TLI Number	1	2	4	6	3	5	7	EA	9
000 TLI Blank	LA 9/16/97	MS 9/8/97	MS 9/8/97	MS 9/8/97	TMW 9-8-97	TMW 9-8-97	TMW 9-8-97	CA 9/9/97	9/9/97
001 181-27-1A-C									
002 181-27-2A-C									
003 181-27-3A-C									
004 181-27-4A-C									
005 181-27-5A-C									
006 181-27-6A-C					TMW 9-8-97				sample lost 40J 9/10/97
007 181-27-7AB& 181-83-1				MS 9-8-97					
008 TLI LCS				TMW 9-8-97					
009 TLI LCSD									JLE

Enter the procedure number below into the box at the top of each column to signify the step performed.  
 Initial and date each sample for each numbered procedure performed.

- #..... PROCEDURE..... DETAILS (circle)
- 1) EXTRACTION ON  OFF  Soxhlet  Jar / Sep Funnel / Steam Dist / Cont LL / ASE / Waste Dilution
  - 2) SPIKE AFTER EXTRACTION 9/16/97 9/7/97 LA 14:50 26:30
  - 3) ADD TRIDECANE 40mL / 10mL / Dryness
  - 4) ROTOVAP
  - 5) COMBINE
  - 6) DIVIDE / LIPID DETERMINATION 20%/80% 50%/50% 5mL/20mL Other \_\_\_\_\_
  - 7) SOLVENT EXCHANGE A
  - 8) CLEANUP Double Column DSP 260 / DSP 225 / DSP 115 / DSP 215 / DSP 267 / Other \_\_\_\_\_
  - 9) TRANSFER
  - 10) ADDITIONAL CLEANUP Mod. DSP 260 / DSP 225 / DSP 115 / DSP 215 / DSP 267 / Other \_\_\_\_\_
  - 11) FINAL TRANSFER

Comments: \_\_\_\_\_

TRIANGLE LABORATORIES, INC.  
Transfer Chain-of-Custody Form  
Project 43057

Transfer From: DWLH5 To: DMS5

	Initials..	Date.....	Time...
Released by:	<u>  JCH  </u>	<u>  09/10/97  </u>	<u>  12:10  </u>
Accepted by:	<u>  Wa  </u>	<u>  9/10/97  </u>	<u>  14:36  </u>

MILES.ID.....	TLI_No.....	Cust.Id.....
43057- -000	TLI Blank	TLI M23 Blank
43057- -001	181-27-1A-C	I-M23-1
43057- -002	181-27-2A-C	O-M23-1
43057- -003	181-27-3A-C	O-M23-2
43057- -004	181-27-4A-C	O-M23-3
43057- -005	181-27-5A-C	O-M23-FB
43057- -007	181-27-7AB&	O-M23-RB
43057- -008	TLI LCS	TLI LCS
43057- -009	TLI LCSD	TLI LCSD

-----XfrCOC (Rev 11/01/94)-----

Additional comments or instructions:

TRIANGLE LABORATORIES, INC.  
HR GC/HRMS ANALYSIS

Method: Method 23:Tetra-Octa (Tol Combined)  
Required Detection Limit: 0.05 ng

PROJECT: 43057

SAMPLE INFORMATION

RS Conc  
20 µl @ 100.0 PG/µl

S#.crd	TLI SAMPLE ID / CLIENT SAMPLE ID	1ST COLUMN		2ND COLUMN		USP-RS VOLUME	USP-RS INIT. DATE	ANALYSIS COMMENTS
		GC/MS FILENAME	CONFIRM	CONFIRM FILENAME	CONFIRM			
000	TLI Blank	TLI M23 Blank	S 975809	X 973081		20µl	BSG	16:30
001	181-27-1A-C	I-M23-1	S 975808		82			
002	181-27-2A-C	O-M23-1	S 975819		83			
003	181-27-3A-C	O-M23-2	S 975810	P 973845				
004	181-27-4A-C	O-M23-3	S 975819		46			
005	181-27-5A-C	O-M23-FB	S 975816			20µl	BSG	9/10/97
006	181-27-6A-C	O-M23-4	sample lost	9/10/97				
007	181-27-7AB& 181-83-1	O-M23-RB	S 975817	P 973847		20µl	BSG	9/10/97
008	TLI LCS	TLI LCS	S 975818					
009	TLI LCSD	TLI LCSD	S 975819			20µl	BSG	9/10/97

Type: A

Comments:

Spike File: SPX23704

Amt of Extract: 50%

REV 03/07/95 (PSTMF 6)

Triangle Laboratories, Inc.  
Run Log

Instrument ID: F05 Column Type: DB5 Column ID: 571413 Plot Name: 702 Inj. Vol: 2.0 uL Acquisition: EMW52 GIC: FVCL5  
 Signature: [Signature] Date: 9/10/92

Filename	Date*	Time*	Project #	Sample #	No.	Client Sample ID	Syr	332	Operator/Date	Comments**
5975794	9/10/92	01:01	43026A	191-G-2	1	GM075-SL-087-31 (NY Adlo	Auto	7.5 64	MD 9/9/92	
87										
88					2	TLU LCS		8.8 66		
89					3	TLU LCSD		1.0 67		
90					0	TLU PUF Blank		1.0 67		
91					1	FX D1003 920829		1.0 67		
92					2	EX D1003 920829		1.0 67		
93										
5975793	9/10/92	5:38		4513		8290 CCS.0		6.1 66	1mm 9/10/92	Load Empty only 9/10/92
5975794	9/10/92	6:41		4513		8290 CCS.0		6.1 66	1mm 9/10/92	D5C Run 9/10/92
5975795	9/10/92	9:36		5170B		RTCHK		12%	BTG 9/10/92	Good 856 9/10/92
5975796	9/10/92			4514G		M23 (Ment SA.C		7.8 66	BTG 9/10/92	NG 3rd Chromatography 9/10/92
5975797	9/10/92	12:08		4514G		M23 (Ment SA.C		7.8 66	BTG 9/10/92	Good 856 9/10/92
5975798	9/10/92	13:11		5170B		RTCHK		12%	BTG 9/10/92	Good 856 9/10/92
5975799	9/10/92	14:06		503C		M23 (Ment SA.C		7.8 66	BTG 9/10/92	Good 856 9/10/92

Transcribed from chromatographic data  
 Dated initials required  
 ConCal Due: 6:03 AM  
 ConCal Due: 00:00 (12:00 AM)

Instrument ID: 705 Column Type: DSS Column ID: 5711413 Plot Name: T02 Inj. Vol: 2.000 Acquisition: SPC052 G/C: SPC05  
 Signature: [Signature] Date: 9/10/97

Filename	Date*	Time*	Project #	Sample#	No.	Client Sample ID	Syr	332	Operator/Date	Comments**
S975800	9/10/97	15:33	43107	TL1 Blank	0	TL1 m23 Blank	AUTO	S <sub>1</sub> E <sub>6</sub>	BGS 9/10/97	MTS-01541
S975801		16:14		181-77-1-4	1	N-008-1-4-XIP-707		S <sub>4</sub> E <sub>6</sub>		
S975802		16:54		TL1 CS5	2	TL1 CS5	AUTO	S <sub>4</sub> E <sub>6</sub>	BGS 9/10/97	
S975803	9/10/97	17:33	43107	TL1 CS10	3	TL1 CS10	AUTO	S <sub>4</sub> E <sub>6</sub>	ML 9/10/97	
S975804	9/10/97	18:30	—	S294 J	—	RS-100	AUTO	S <sub>4</sub> E <sub>6</sub>	ML 9/10/97	
S975805		19:13	43107	TL1 Blank	0	TL1 M23 Blank		S <sub>2</sub> E <sub>6</sub>		
S975806		19:52	↓	181-77-1-4	1	N-008-1-4-XIP-707		S <sub>6</sub> E <sub>6</sub>		
S975807		20:32	43089	TL1 Blank	0	TL1 M23 Blank		S <sub>2</sub> E <sub>6</sub>		
S975808		21:11		181-27-1AC	1	J-M23-1		S <sub>5</sub> E <sub>6</sub>		
S975809		21:50		181-27-2AC	2	D. M23-1		S <sub>5</sub> E <sub>6</sub>		
S975810	↓	22:27		181-27-3AC	3	D. M23-2		S <sub>4</sub> E <sub>6</sub>		
S975811	↓	23:09	↓	181-27-4AC	4	D. M23-3	↓	S <sub>4</sub> E <sub>6</sub>		
S975812	9/10/97 22:47			5170 B	—	RETENTION WINDOW Check	Peak		KS 9/10/97	

\* Transcribed from chromatographic data  
 \*\* Dated initials required

ConCal Due: 00:08 (12:08 AM)  
 ConCal Due: \_\_\_\_\_

Instrument ID: 105      Column Type: PDS      Column ID: 5711413      Plot Name: T02      Inj. Vol: 20ul      Acquisition: EPUS2      G/C: GC200  
 Signature: *[Signature]*      Date: 9/11/97

Filename	Date*	Time*	Project #	Sample#	No.	Client Sample ID	Syr	332	Operator/Date	Comments**
S915813	9/11/97	20:59		45144	-	M23 Anal 500	M-0	-	9/11/97	AC 02/24/97 5/11/97
S915814	9/11/97	2:02		45144	-	Standard 500	M-0	4	9/11/97	Good 9/11/97
15	↓	3:08	43085	Blank	0	TLC M23 Blank	Auto	38	9/11/97	ac deblocks 57C 9/11/97
16	↓	3:40	43052	171-22-57C	5	D-M23-F3		40		
17		4:25		171-22-149 & 151	2	D-M23-A15		4.4		
15		5:04		LC3	9	LC3		3.5		PRIME 57C 9/11/97 R.O. OCPD IS 9/11/97
19		5:44	43052	LC30	9	LC30		4.4		
20		6:23	43085	171-55-146E	1	D-M23-1		1.5		Return on time 57C 57C 9/11/97 (MS)
21		7:02		-2M9E	2	D-M23-2		1.5		Return on time 57C 57C 9/11/97 (MS)
22		7:42		-3M9E	3	D-M23-3		1.8		Return on time 57C 57C 9/11/97 (MS)
23				-4M9D	4	D-M23-F4				Return on time 57C 57C 9/11/97 (MS)
24				-5M9D	5	D-M23-1				Return on time 57C 57C 9/11/97 (MS)
S915825			43085	171-95-6A9D	6	D-M23-2	Auto		9/11/97	Return on time 57C 57C 9/11/97 (MS)

Transcribed from chromatographic data  
 Dated initials required

ConCal Due: 14:02  
 ConCal Due:

Instrument ID: 70X Column Type: DB225 Column ID: 630112 Plot Name: TTI Inj. Vol.: 2.0ul Acquisition: X-CONF-TT GIC: X-CONF-TT  
 Signature: Richard A. Glenn Date: 9/10/97

Filename	Date	Time	Project #	Sample#	No.	Client Sample ID	Syr	332	Operator/Date	Comments**
X973062	9/10/97	9:00	—	4497D	—	TERRA CONCALSO	TERRA 5.0	4.3	BTC 9/10/97	Good for back up BTC 9/10/97
X973063	9/10/97	10:04	—	5296J	—	RS-100	RS100	3.8	BTC 9/10/97	clean BTC BTC 9/10/97
X973064	9/10/97	12:02	42792.1	TL1 BLANK	1	TL1 WATER BLANK	X8261	7.6	BTC 9/10/97	SOURCE BTC
X973065	9/10/97	12:51	42752.1	178-59-1B	2	C9708067-4	X9261	3.7	BTC 9/10/97	HEATER BTC
X973066	9/10/97	—	42792.1	178-59-3B	4	G9708067-9	X8261	—	BTC 9/10/97	ROUND BTC
X973067	9/10/97	—	42811.3	178-78-6	7	CON-2-003	X8261	—	BTC 9/10/97	REMOOT BTC
X973068	9-11-97	12:00	—	5170B	—	RTCKK	RTCKK	12%	GB 9-11-97	OSSE BTC BTC 9/11/97
X973069	9/11/97	12:00	—	4497D	—	TERRA CONCALSO	TERRA 5.0	3.5	BTC 9/11/97	Good BTC BTC 9/11/97
X973070	9/11/97	12:58	—	5296L	—	PS 100	PS100	3.7	MC 9/11/97	clean BTC BTC 9/11/97
X973071	9/11/97	13:38	42999	580-68-7	7	RUN#16 CLEANING	X8261	12.2	BTC 9/11/97	DATE 0 SOURCE BTC BTC 9/11/97
X973072	9/11/97	14:19	43088B	181-6-1A	1	GAD75-WF-087-03749	X8261	8.7	BTC 9/11/97	DATE 0 SOURCE BTC BTC 9/11/97
X973073	9/11/97	15:00	42792.1	TL1 BLANK	0	TL1 WATER BLANK	X8261	6.7	BTC 9/11/97	DATE 0 SOURCE BTC BTC 9/11/97
X973074	9/11/97	15:42	42792.1	178-59-113	1	G9708067-4	X8261	2.4	BTC 9/11/97	DATE 0 SOURCE BTC BTC 9/11/97

Transcribed from chromatographic data  
 Dated initials required

ConCal Due: 9/11/97  
 ConCal Due: 09:00 (12:00 AM)

Instrument ID: 708 Column Type: D2225 Column ID: 630112 Plot Name: TT1 Inj. Vol.: 2014 Acquisition: X-CONF-TT GIC  
 Signature: [Signature] Date: 9/11/97

Filename	Date*	Time*	Project #	Sample#	No.	Client Sample ID	Syr	332	Operator/Date	Comments**
X973075	9/11/97	15:42	427921	178-59-2B	4	59708067-9	X8261	2.4	MS 9/11/97	added 5ul more. 9/14/97
X973076	9/11/97	16:24	428119	178-38-6	7	GR-2-003	X861	2.8		not start overwritten
X973077	9/11/97	17:16	43064	181-34-1A	2	TEC0897B	X861	2.4	MS 9/11/97	6 ul more added; 3ul silver added
X973078	9/11/97	18:03	43064	181-34-2A	3	TEC0897Y	X8261	2.7	MS 9/11/97	
X973079	9/11/97	18:51	43064	clean-up B15	4	clean-up B15	X8261	3.4	MS 9/11/97	
X973080	9/11/97	15:34	43065B	181-35-3	2	NO-LAKE 8/28/97	X8261	3.6	MS 9/11/97	
X973081	9/11/97	21:07	43067	TL1 Blank	0	TL1H23 Blank	X8261	2.9	MS 9/11/97	
X973082	9/11/97	21:48	43067	181-27-1A	1	I-M23-1	X8261	3.7	MS 9/11/97	6ul more added 9/15/97
X973083	9/11/97	22:34	43067	181-27-2C	2	0-M23-1	X8261	2.9	MS 9/11/97	
X973084	9/11/97	23:23	43067	497-D	-	TECRA 5.0	X8261	2.9	MS 9/11/97	Good FTS
X973085	9/11/97	00:09		5170B	-	Retention Window set	X8261		MS 9/11/97	MS 9/11/97
X973086	9/11/97	01:05		5170B	-	" " "	X8261		MS 9/11/97	MS 9/11/97

Transcribed from chromatographic data  
 Dated initials required  
 ConCal Due: 09:00 (12:00 AM) 9/11/97  
 ConCal Due: 9/11/97



Instrument ID: SDX Column Type: Ds225 Column ID: 630112 Plot Name: TI Inj. Vol: 2.0ul Acquisition: XCONF-TI XCONF-TI G/C  
 Date: 9-12-97 Signature: [Signature] Date: 9-12-97

Filename	Date*	Time*	Project #	Sample#	No.	Client Sample ID	Syr	332	Operator/Date	Comments**
X973087	9-12-97	10:59	---	51708	---	RTCHK	RTCHK TETRA SD	4.0	GG 9-12-97	
X973088	9-12-97	13:06	---	4520C	---	TETRA CONCAL SD	LSND	6.7	GG 9-12-97	
X973089	9-12-97		---	5296L	---	R\$1DD			GG 9-12-97	
X973090	9-12-97		43033	181-3-14	2	2801-001-3097	Y8261		GG 9-12-97	

\* Transcribed from chromatographic data  
 \*\* Dated initials required

ConCal Due: \_\_\_\_\_  
 ConCal Due: \_\_\_\_\_

Instrument ID FOP Column Type DR 2V Column ID G360413 Plot Name TT1 Inj. Vol. 20ul Acquisition DR 2V G/C DR 2V  
 Date 9/12/97 Signature [Signature] Date 9/12/97

Filename	Date	Time	Project #	Sample #	No.	Client Sample ID	Syr	332	Operator/Date	Comments**
P945442	9/12/97	10:13	—	51603	—	PTCHK	meth	14in	AB 9/12/97	
1 43	1	11:04	—	4494D	—	TETRA SOLAR 5.0	TETRA 5.0	1.9	1	
1 44	1	11:59	—	5296L	—	DR-100	1.7	EL	1	
1 45	1	12:45	4305T	181-21-34C	3	0-H23-2	P9581	1.9	1	
1 46	1	13:32	1	1-44C	4	-3	3.0	PC	1	
1 47	1	14:19	1	1-TAC 181-83-1	1	-R03	2.9	EL	1	
1 48	1									

Transcribed from chromatographic data  
Dated initials required

ConCal Due: \_\_\_\_\_  
ConCal Due: \_\_\_\_\_

SAMPLE  
DATA

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*Triangle Laboratories, Inc.*  
801 Capitola Drive  
Durham, NC 27713-4411  
919-544-5729

P.O. Box 13485  
Research Triangle Park, NC 27709-3485  
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TRIANGLE LABORATORIES, INC.  
 Sample Result Summary for Project 43057  
 Method 23X Full Screen Analyses (DB-5)

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Data File	S975807	S975808	S975809	S975810
Sample ID	TLI M23 Blank	I-M23-1	O-M23-1	O-M23-2
Units	ng	ng	ng	ng
Extraction Date	09/06/97	09/06/97	09/06/97	09/06/97
Analysis Date	09/10/97	09/10/97	09/10/97	09/10/97
Instrument	S	S	S	S
Matrix	XAD	M23TRAIN	M23TRAIN	M23TRAIN
Extraction Type	Soxhlet	Soxhlet	Soxhlet	Soxhlet

Analytes				
2378-TCDD	(0.003)	{0.004}	(0.003)	(0.006)
12378-PeCDD	(0.004)	0.01	(0.005)	(0.008)
123478-HxCDD	(0.006)	0.02	(0.006)	(0.01)
123678-HxCDD	(0.005)	0.04	0.01	{0.02}
123789-HxCDD	(0.005)	0.05 PR	0.02	(0.01)
1234678-HpCDD	0.03	0.72	0.06 B	{0.04} B
OCDD	{0.02}	44.5	0.53	0.19 B
2378-TCDF	0.007	0.04 B	0.02 B	0.03 B
12378-PeCDF	(0.003)	0.008	{0.006}	(0.006)
23478-PeCDF	0.007	0.02 B	{0.01} B	(0.006)
123478-HxCDF	0.03	0.06 PRB	0.04 PRB	0.04 B
123678-HxCDF	{0.008}	0.02 B	0.01 B	0.01 B
234678-HxCDF	0.01	{0.02} PRB	0.02 PRB	0.02 PRB
123789-HxCDF	(0.004)	0.007	(0.004)	(0.008)
1234678-HpCDF	0.04	0.12 PRB	{0.07} PRB	0.07 PRB
1234789-HpCDF	{0.01}	0.04 B	0.04 B	0.02 B
OCDF	{0.02}	0.16 B	0.04 B	0.06 B
TOTAL TCDD	0.008	0.05	0.007	0.02
TOTAL PeCDD	{0.01}	0.07	{0.04}	0.03
TOTAL HxCDD	0.04	0.45	0.12	0.08
TOTAL HpCDD	0.03	1.6	0.10	0.04
TOTAL TCDF	0.01	0.14	0.03	0.04
TOTAL PeCDF	0.007	0.12	0.05	(0.006)
TOTAL HxCDF	0.05	0.19	0.12	0.11
TOTAL HpCDF	0.06	0.30	0.04	0.12

Other Standards Percent Recovery Summary (% Rec)

37C1-TCDD	98.6	97.6	96.1	98.8
13C12-PeCDF 234	93.3	93.2	86.1	85.1
13C12-HxCDF 478	90.4	94.6	87.3	92.1
13C12-HxCDD 478	82.3	88.0	81.0	91.9
13C12-HpCDF 789	75.1	83.6	88.7	84.9

Other Standards Percent Recovery Summary (% Rec)

13C12-HxCDF 789	80.9	91.3	58.1	54.3
13C12-HxCDF 234	95.7	99.0	61.4	62.0

Internal Standards Percent Recovery Summary (% Rec)

13C12-2378-TCDF	90.5	98.5	69.4	62.4
13C12-2378-TCDD	76.0	89.0	63.2	55.6
13C12-PeCDF 123	87.2	95.5	67.1	57.6
13C12-PeCDD 123	93.1	103	68.2	60.5

TRIANGLE LABORATORIES, INC.  
 Sample Result Summary for Project 43057  
 Method 23X Full Screen Analyses (DB-5)

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Data File	S975807	S975808	S975809	S975810
Sample ID	TLI M23 Blank	I-M23-1	O-M23-1	O-M23-2
Units	ng	ng	ng	ng
Extraction Date	09/06/97	09/06/97	09/06/97	09/06/97
Analysis Date	09/10/97	09/10/97	09/10/97	09/10/97
Instrument	S	S	S	S
Matrix	XAD	M23TRAIN	M23TRAIN	M23TRAIN
Extraction Type	Soxhlet	Soxhlet	Soxhlet	Soxhlet

Internal Standards	Percent Recovery	Summary (% Rec)		
13C12-HxCDF 678	102	102	68.8	65.7
13C12-HxCDD 678	87.2	93.6	65.4	58.8
13C12-HpCDF 678	78.9	71.1	42.3	41.3
13C12-HpCDD 678	80.2	78.3	50.4	44.9
13C12-OCDD	55.7	60.5	36.0	27.5

TRIANGLE LABORATORIES, INC.  
 Sample Result Summary for Project 43057  
 Method 23X Full Screen Analyses (DB-5)

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Data File	S975811	S975816	S975817
Sample ID	O-M23-3	O-M23-FB	O-M23-RB
Units	ng	ng	ng
Extraction Date	09/06/97	09/06/97	09/06/97
Analysis Date	09/10/97	09/11/97	09/11/97
Instrument	S	S	S
Matrix	M23TRAIN	M23TRAIN	M23TRAIN
Extraction Type	Soxhlet	Soxhlet	Soxhlet

Analytes

2378-TCDD	{0.003}	(0.01)	(0.004)
12378-PeCDD	0.005	(0.01)	0.01
123478-HxCDD	0.008	(0.01)	(0.006)
123678-HxCDD	0.02	{0.02}	0.02
123789-HxCDD	{0.01} PR	{0.02} PR	{0.02} PR
1234678-HpCDD	0.06 B	0.06 B	0.08 B
OCDD	0.13 B	0.11 B	0.11 B
2378-TCDF	0.02 B	(0.006)	{0.006}B
12378-PeCDF	0.007	{0.01}	{0.008}
23478-PeCDF	0.01 B	0.03 B	0.02 B
123478-HxCDF	0.06 PRB	0.07 B	0.06 PRB
123678-HxCDF	0.02 B	0.03 B	0.02 B
234678-HxCDF	0.02 PRB	0.03 PRB	0.03 PRB
123789-HxCDF	(0.003)	(0.01)	0.007
1234678-HpCDF	0.09 PRB	{0.09} PRB	0.11 B
1234789-HpCDF	{0.03} B	0.04 B	0.04 B
OCDF	0.06 B	0.07 B	0.06 B
TOTAL TCDD	0.01	{0.02}	{0.01}
TOTAL PeCDD	0.03	0.02	0.05
TOTAL HxCDD	0.15	0.06	0.15
TOTAL HpCDD	0.06	0.06	0.13
TOTAL TCDF	0.03	(0.006)	{0.006}
TOTAL PeCDF	0.06	0.03	0.02
TOTAL HxCDF	0.17	0.13	0.18
TOTAL HpCDF	0.09	0.10	0.17

Other Standards Percent Recovery Summary (% Rec)

37C1-TCDD	98.4	123	107
13C12-PeCDF 234	88.6	112	102
13C12-HxCDF 478	98.2	91.1	90.2
13C12-HxCDD 478	87.9	82.4	91.6
13C12-HpCDF 789	91.3	85.4	89.0

Other Standards Percent Recovery Summary (% Rec)

13C12-HxCDF 789	120	32.2	V	66.8
13C12-HxCDF 234	173	34.1	V	76.9

Internal Standards Percent Recovery Summary (% Rec)

13C12-2378-TCDF	184	49.5		88.5
13C12-2378-TCDD	163	34.3	V	76.4
13C12-PeCDF 123	161	44.9		89.1
13C12-PeCDD 123	170	54.8		99.3

TRIANGLE LABORATORIES, INC.  
 Sample Result Summary for Project 43057  
 Method 23X Full Screen Analyses (DB-5)

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	S975811	S975816	S975817
Data File	O-M23-3	O-M23-FB	O-M23-RB
Sample ID			
Units	ng	ng	ng
Extraction Date	09/06/97	09/06/97	09/06/97
Analysis Date	09/10/97	09/11/97	09/11/97
Instrument	S	S	S
Matrix	M23TRAIN	M23TRAIN	M23TRAIN
Extraction Type	Soxhlet	Soxhlet	Soxhlet

Internal Standards	Percent Recovery	Summary (% Rec)	
13C12-HxCDF 678	187	34.7	V 74.0
13C12-HxCDD 678	173	40.1	78.2
13C12-HpCDF 678	105	32.7	56.7
13C12-HpCDD 678	109	38.2	61.3
13C12-OCDD	65.1	36.9	60.9

{Estimated Maximum Possible Concentration}, (Detection Limit).

TRIANGLE LABORATORIES, INC.  
Sample Result Summary for Project 43057  
Method 23X (DB-225)

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Data File	X973081	X973082	X973083	P973845
Sample ID	TLI M23 Blank	I-M23-1	O-M23-1	O-M23-2
Units	ng	ng	ng	ng
Extraction Date	09/06/97	09/06/97	09/06/97	09/06/97
Analysis Date	09/11/97	09/11/97	09/11/97	09/12/97
Instrument	X	X	X	P
Matrix	XAD	M23TRAIN	M23TRAIN	M23TRAIN
Extraction Type	Soxhlet	Soxhlet	Soxhlet	Soxhlet

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Analytes  
2378-TCDF                    0.005 B                    {0.02} B                    {0.008}B                    (0.02)

Internal Standards Percent Recovery Summary (% Rec)  
13C12-2378-TCDF            72.6                    73.7                    59.8                    52.4



TRIANGLE LABORATORIES, INC.  
Sample Result Summary for Project 43057  
Method 23X (DB-225)

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Data File	P973846	P973847
Sample ID	O-M23-3	O-M23-RB
Units	ng	ng
Extraction Date	09/06/97	09/06/97
Analysis Date	09/12/97	09/12/97
Instrument	P	P
Matrix	M23TRAIN	M23TRAIN
Extraction Type	Soxhlet	Soxhlet

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Analytes  
2378-TCDF                    0.02 B                    (0.01)

Internal Standards Percent Recovery Summary (% Rec)  
13C12-2378-TCDF            148                    67.7

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{Estimated Maximum Possible Concentration}, (Detection Limit).

**Pacific Environmental Services**

TLI Project: 43057  
 Client Sample: TLI M23 Blank

Method 23 PCDD/PCDF Analysis (a)  
 Analysis File: S975807

Client Project:	ASPHALT PLANT "A"		
Sample Matrix:	XAD	Date Received:	//
TLI ID:	TLI Blank	Date Extracted:	09/06/97
		Date Analyzed:	09/10/97
		Spike File:	SPX23704
		ICal:	SF56117
		ConCal:	S975797
Sample Size:	1.000	Dilution Factor:	n/a
Dry Weight:	n/a	Blank File:	S975807
GC Column:	DB-5	Analyst:	ML
		% Moisture:	n/a
		% Lipid:	n/a
		% Solids:	n/a

Analytes	Amt. (ng)	DL	EMPC	Ratio	RT	Flags
2,3,7,8-TCDD	ND	0.003				---
1,2,3,7,8-PeCDD	ND	0.004				---
1,2,3,4,7,8-HxCDD	ND	0.006				---
1,2,3,6,7,8-HxCDD	ND	0.005				---
1,2,3,7,8,9-HxCDD	ND	0.005				---
1,2,3,4,6,7,8-HpCDD	0.03			1.14	32:02	---
1,2,3,4,6,7,8,9-OCDD	EMPC		0.02			---
2,3,7,8-TCDF	0.007			0.68	20:25	---
1,2,3,7,8-PeCDF	ND	0.003				---
2,3,4,7,8-PeCDF	0.007			1.76	25:30	---
1,2,3,4,7,8-HxCDF	0.03			1.09	28:22	---
1,2,3,6,7,8-HxCDF	EMPC		0.008			---
2,3,4,6,7,8-HxCDF	0.01			1.13	29:00	---
1,2,3,7,8,9-HxCDF	ND	0.004				---
1,2,3,4,6,7,8-HpCDF	0.04			0.96	31:11	---
1,2,3,4,7,8,9-HpCDF	EMPC		0.01			---
1,2,3,4,6,7,8,9-OCDF	EMPC		0.02			---

Totals	Amt. (ng)	Number	DL	EMPC	Flags
Total TCDD	0.008	1			---
Total PeCDD	EMPC			0.01	---
Total HxCDD	0.04	1		0.06	---
Total HpCDD	0.03	1		0.05	---
Total TCDF	0.01	2			---
Total PeCDF	0.007	1			---
Total HxCDF	0.05	3		0.08	---
Total HpCDF	0.06	3		0.07	---



Initial CM Date 9/11/99

Data Review By: CM Calculated Noise Area: 1.48

The Total Area for each peak with an ion abundance ratio outside ratio limits has been recalculated according to method requirements.

Page No. 1 Listing of S975807B.dbf  
09/11/97 Matched GC Peaks / Ratio / Ret. Time

Compound/  
M\_Z.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

		0.65-0.89				0.823-1.104			
304-306	DC NL	0:00	RO	0.12	0.16			0.000	
	DC SN	16:57	RO	1.17	2.16			0.831	
	DC SN	17:57	RO	1.35	1.31			0.880	
	DC SN	18:07	RO	0.48	2.92			0.888	
D	D SN	18:53	RO	1.26	4.16			0.926	
D	D SN	19:30	RO	1.54	6.27			0.956	
D	D SN	19:44		0.89	4.72			0.967	
		19:55		0.78	6.92	3.03		0.976	
		20:25		0.68	13.19	5.36	3.89	0.976	
D	D SN	22:20	RO	0.53	5.61		7.83	1.001	2378-TCDF AN
	DC WH	22:44	RO	0.99	2.69			1.095	
304-306	2 Peaks				20.11			1.114	

		0.65-0.89				0.951-1.049			
13C12-TCDF	DC NL	0:00	RO	5.57	0.12			0.000	
316-318	DC WL	19:11		0.72	37.82			0.940	
		19:33	RO	0.90	6.32	3.23	3.57	0.958	
		19:54		0.73	26.14	11.03	15.11	0.975	
		20:24		0.74	5,711.00	2,422.50	3,288.50	1.000	13C12-2378-TCDF ISO
		20:54	RO	0.60	21.68	9.43	15.77	1.025	
316-318	4 Peaks				5,765.14				

----- Above: TCDF / TCDD Follows -----

		0.65-0.89				0.857-1.061			
320-322	DC NL	0:00	RO	1.14	0.12			0.000	
		18:16		0.89	9.47	4.47	5.00	0.861	
D	D SN	18:44	RO	1.11	5.15			0.883	
	DC SN	19:15	RO	7.10	0.18			0.907	
	DC SN	19:55	RO	2.05	2.64			0.939	
	DC SN	20:21	RO	4.52	1.61			0.959	
	DC SN	20:36	RO	1.05	1.31			0.971	
	DC SN	21:01	RO	0.47	0.46			0.991	
	DC SN	21:16	RO	0.41	3.75			1.002	2378-TCDD AN
	DC SN	21:39	RO	0.58	0.57			1.020	
	DC SN	22:03	RO	1.95	0.35			1.039	
	DC SN	22:07	RO	1.35	0.55			1.042	
	DC SN	22:19	RO	0.52	0.74			1.052	
	DC WH	22:37	RO	2.20	1.13			1.066	
	DC WH	22:44		0.69	2.25			1.071	
320-322	1 Peak				9.47				

Compound/  
M\_2.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

						0.906-1.094			
37Cl-TCDD							0.000		
328	DC NL	0:00		0.07			0.927		
		19:40		17.32	17.32				
		21:14		3,223.15	3,223.15		1.001	37Cl-TCDD	SUR1
328		2 Peaks		3,240.47					

						0.906-1.094			
13C12-TCDD							0.000		
332-334	DC NL	0:00	RO 25.25	0.14			0.936		
		19:52	0.86	20.47	9.47	11.00			
		21:00	0.80	4,787.66	2,133.57	2,654.09	0.990	13C12-1234-TCDD	RS1
		21:13	0.78	3,879.19	1,696.09	2,183.10	1.000	13C12-2378-TCDD	IS1
		21:35	RO 0.92	57.53	29.78	32.50	1.017		
		22:19	RO 3.23	3.75	6.85	2.12	1.052		
332-334		5 Peaks		8,748.60					

----- Above: TCDD / PeCDF Follows -----

						0.909-1.079			
PeCDF							0.000		
340-342	DC NL	0:00	RO 0.89	0.13			0.916		
		22:38	RO 1.21	3.54			0.948		
		23:25	RO 0.07	0.10			0.965		
D	D SN	23:50	RO 1.28	10.18			0.970		
		23:58	RO 3.19	2.14			0.979		
		24:11	1.57	4.19			0.997		
		24:38	RO 2.33	3.72			1.001	12378-PeCDF	AN
		24:43	RO 2.64	4.11			1.007		
		24:53	RO 0.72	1.09			1.009		
		24:56	RO 0.17	0.81			1.032	23478-PeCDF	AN
		25:30	1.76	9.48	6.04	3.44	1.039		
		25:40	RO 2.76	4.21			1.059		
		26:10	RO 0.87	0.95			1.072		
		26:28	RO 1.30	2.88					
340-342		1 Peak		9.48					

						0.838-1.162			
13C12-PeCDF							0.000		
352-354	DC NL	0:00	RO 1.00	0.13			0.964		
		23:49	1.46	62.35	36.99	25.36			
		24:21	RO 1.26	22.00	13.37	10.60	0.986		
		24:42	1.44	4,731.50	2,794.06	1,937.44	1.000	13C12-PeCDF 123	IS2
		24:53	1.34	20.34	11.65	8.69	1.007		
		25:01	1.60	31.38	19.30	12.08	1.013		
		25:29	1.46	4,282.56	2,541.48	1,741.08	1.032	13C12-PeCDF 234	SUR2
		26:28	1.34	10.58	6.06	4.52	1.072		
352-354		7 Peaks		9,160.71					

----- Above: PeCDF / PeCDD Follows -----

						0.921-1.026			
PeCDD							0.000		
356-358	DC NL	0:00	RO 1.14	0.13			0.927		
		23:58	RO 1.13	11.57	7.03	6.24			
D	D SN	24:44	RO 2.59	7.14			0.957		
		24:54	RO 3.32	0.94			0.963		

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Listing of S975807B.dbf  
Matched GC Peaks / Ratio / Ret. Time

Compound/ID... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

	D	SN	25:04	RO	1.99	6.30			0.970		
	DC	SN	25:23	RO	1.98	2.42			0.982		
	DC	SN	25:33	RO	2.13	3.24			0.988		
	DC	SN	25:52		1.48	3.30			1.001	12378-PeCDD	AN
	DC	WH	26:36	RO	1.85	1.50			1.029		
356-358			1 Peak			11.57					

									0.845-1.155		
13C12-PeCDD									0.000		
368-370	DC	NL	0:00	RO	1.00	0.12			1.000	13C12-PeCDD 123	IS3
			25:51		1.52	2,831.82	1,707.75	1,124.07	1.000		
			25:59		1.57	274.19	167.61	106.58	1.005		
368-370			2 Peaks			3,106.01					

----- Above: PeCDD / HxCDF Follows -----

									0.957-1.053		
HxCDF									0.000		
374-376	DC	NL	0:00	RO	1.92	2.37			0.956		
	DC	WL	27:13	RO	1.89	1.77			0.961		
			27:22		1.15	10.70	5.72	4.98	0.967		
			27:32	RO	1.02	20.47	11.33	11.15	0.978		
D	D	SN	27:50	RO	1.45	5.08			0.984		
	DC	SN	28:00	RO	0.62	2.64			0.986		
	DC	SN	28:04		1.20	1.10			0.996	123478-HxCDF	AN
M			28:22		1.09	28.80	15.00	13.80	1.001	123678-HxCDF	AN
M			28:29	RO	1.47	11.42	7.51	5.10	1.005		
D	D	SN	28:36		1.23	4.29			1.019	234678-HxCDF	AN
			29:00		1.13	16.45	8.74	7.71	1.025		
	DC	SN	29:10	RO	0.25	0.51			1.035		
	DC	SN	29:28	RO	0.45	1.10			1.043	123789-HxCDF	AN
	DC	SN	29:42	RO	1.76	2.60			1.047		
D	D	SN	29:48		1.25	8.16			1.050		
	DC	SN	29:53	RO	0.31	0.38			1.053		
	DC	SN	29:58	RO	2.42	2.15			1.056		
	DC	WH	30:03		1.40	2.21			1.059		
	DC	WH	30:08	RO	3.02	2.49			1.064		
	DC	WH	30:17	RO	0.52	0.90					
374-376			5 Peaks			87.84					

									0.859-1.141		
13C12-HxCDF									0.000		
384-386	DC	NL	0:00		0.56	4.28			0.961		
			27:22	RO	0.61	8.29	3.37	5.49	0.966		
			27:30		0.49	20.48	6.72	13.76	0.996	13C12-HxCDF 478	SUR3
			28:22		0.50	3,106.44	1,035.27	2,071.17	1.000	13C12-HxCDF 678	IS4
			28:28		0.51	3,584.38	1,213.22	2,371.16	1.011		
			28:46	RO	0.62	6.37	2.60	4.22	1.018	13C12-HxCDF 234	ALT2
			28:59		0.50	3,127.95	1,039.98	2,087.97	1.043	13C12-HxCDF 789	ALT1
			29:41		0.50	2,300.71	765.04	1,535.67	1.052		
			29:56	RO	0.32	5.66	1.91	6.06			
384-386			8 Peaks			12,160.28					

----- Above: HxCDF / HxCDD Follows -----

Compound/  
M\_2.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

HxCDD		1.05-1.43				0.951-1.015			
390-392	DC NL	0:00	RO	1.34	1.94			0.000	
	DC SN	27:48	RO	0.68	1.63			0.952	
	DC SN	27:55		1.23	4.12			0.956	
	DC SN	28:00	RO	1.02	0.79			0.959	
		28:22		1.08	26.87	13.95	12.92	0.971	
	DC SN	28:28	RO	3.23	2.37			0.975	
		28:36	RO	0.88	12.36	6.84	7.80	0.979	
	DC SN	28:45		1.41	0.99			0.985	
	DC SN	28:59	RO	3.64	2.04			0.993	
	DC SN	29:08	RO	0.44	1.30			0.998	123478-HxCDD AN
D	D SN	29:12	RO	0.90	5.40			1.000	123678-HxCDD AN
	DC SN	29:23	RO	5.21	0.65			1.006	
D	D SN	29:30		1.13	9.23			1.010	123789-HxCDD AN
	DC SN	29:37		1.11	2.55			1.014	
	DC SN	29:39	RO	1.66	4.12			1.015	
	DC WH	29:52	RO	0.78	2.62			1.023	
390-392	2 Peaks				39.23				

13C12-HxCDD		1.05-1.43				0.966-1.034			
402-404	DC NL	0:00		1.11	4.32			0.000	
		28:35		1.06	14.32	7.37	6.95	0.979	
	DC SN	28:53	RO	0.30	1.32			0.989	
		29:06		1.21	2,038.12	1,115.09	923.03	0.997	13C12-HxCDD 478 SUR4
		29:12		1.22	2,545.55	1,400.67	1,144.88	1.000	13C12-HxCDD 678 IS5
		29:29		1.24	2,932.97	1,622.47	1,310.50	1.010	13C12-HxCDD 789 RS2
	DC SN	29:39		1.21	3.76			1.015	
		29:43	RO	0.89	6.39	3.54	3.97	1.018	
		29:48		1.10	7.09	3.71	3.38	1.021	
402-404	6 Peaks				7,544.44				

----- Above: HxCDD / HpCDF Follows -----

HpCDF		0.88-1.20				0.995-1.045			
408-410	DC NL	0:00	RO	16.57	0.14			0.000	
		31:11		0.96	31.12	15.23	15.89	1.000	1234678-HpCDF AN
		31:25		1.02	7.91	4.00	3.91	1.007	
		31:31		1.08	8.66	4.49	4.17	1.011	
	DC SN	31:41	RO	0.70	1.10			1.016	
	DC SN	31:51	RO	8.22	0.47			1.021	
	DC SN	32:03	RO	1.49	1.04			1.028	
M		32:24	RO	1.30	6.04	3.84	2.96	1.039	1234789-HpCDF AN
	DC WH	32:43	RO	2.70	1.08			1.049	
	DC WH	32:52	RO	3.88	0.86			1.054	
408-410	4 Peaks				53.73				

13C12-HpCDF		0.37-0.51				0.936-1.128			
418-420	DC NL	0:00	RO	0.60	1.83			0.000	
		31:11		0.44	2,053.55	627.33	1,426.22	1.000	13C12-HpCDF 678 IS6
		32:23		0.43	1,189.64	360.12	829.52	1.038	13C12-HpCDF 789 SUR5
418-420	2 Peaks				3,243.19				

Compound/  
M\_Z.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1... Area.Peak.2... Rel.RT Compound.Name... ID.. Flags.

----- Above: HpCDF / HpCDD Follows -----

Compound	DC	NL	RO	Ratio	Total Area	Area Peak 1	Area Peak 2	Rel RT	Compound Name	ID	Flags
424-426			0:00	0.19	0.14			0.977-1.006			
			31:26	1.39	9.24	6.28	4.53	0.981			
	DC	SN	31:44	0.29	0.35			0.991			
			32:02	1.14	16.10	8.59	7.51	1.000	1234678-HpCDD	AN	
M											
424-426	2 Peaks 25.34										

Compound	DC	NL	RO	Ratio	Total Area	Area Peak 1	Area Peak 2	Rel RT	Compound Name	ID	Flags
436-438			0:00	0.90	3.07			0.969-1.031			
			31:26	1.10	6.35	3.32	3.03	0.981			
			32:02	1.06	1,916.64	984.58	932.06	1.000	13C12-HpCDD 678	IS7	
M											
436-438	2 Peaks 1,922.99										

----- Above: HpCDD / Octa-CDD and CDF Follows -----

Compound	DC	NL	RO	Ratio	Total Area	Area Peak 1	Area Peak 2	Rel RT	Compound Name	ID	Flags	
442-444			0:00	0.16	0.15			0.884-1.116				
			31:11	0.81	0.65			0.903				
			31:13	0.43	0.28			0.904				
			31:20	0.60	0.45			0.908				
			31:49	0.23	0.28			0.922				
			32:04	1.93	0.79			0.929				
			32:12	1.67	0.85			0.933				
			32:19	0.71	0.68			0.936				
			32:27	0.15	0.23			0.940				
			32:59	3.88	0.45			0.956				
			33:12	4.92	0.23			0.962				
			33:37	0.92	0.48			0.974				
			33:40	0.41	0.38			0.975				
			33:49	0.74	0.53			0.980				
			34:05	0.17	0.53			0.987				
			34:23	1.61	0.68			0.996				
			34:27	0.36	0.49			0.998				
			34:39	1.03	7.09	3.86	3.75	1.004	OCDF	AN		
	M											
	442-444	1 Peak 7.09										

Compound	DC	NL	RO	Ratio	Total Area	Area Peak 1	Area Peak 2	Rel RT	Compound Name	ID	Flags
458-460			0:00	1.00	0.14			0.884-1.116			
			34:31	0.60	5.52	2.60	4.33	1.000	OCDD	AN	
			34:51	0.44	0.57			1.010			
		34:55	0.09	0.36			1.012				
M											
458-460	1 Peak 5.52										

Compound	DC	NL	RO	Ratio	Total Area	Area Peak 1	Area Peak 2	Rel RT	Compound Name	ID	Flags
470-472			0:00	1.50	0.11			0.996-1.005			
			34:31	0.89	1,696.66	797.67	898.99	1.000	13C12-OCDD	IS8	



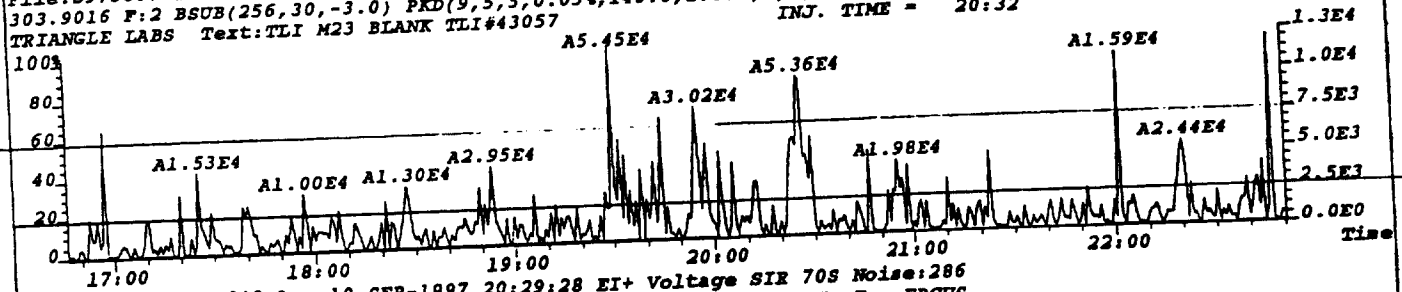
Compound/ M_2....	QC.Log	Omit	Why	..RT.	OK	Ratio	Total.Area...	Area.Peak.1..	Area.Peak.2..	Rel.RT	Compound.Name..	ID..	Flags.
470-472	DC	WH	34:53	RO	1.19		3.08			1.011			
			1 Peak				1,696.66						

Column Description..... "Why" Code Description..... QC Log Desc.....

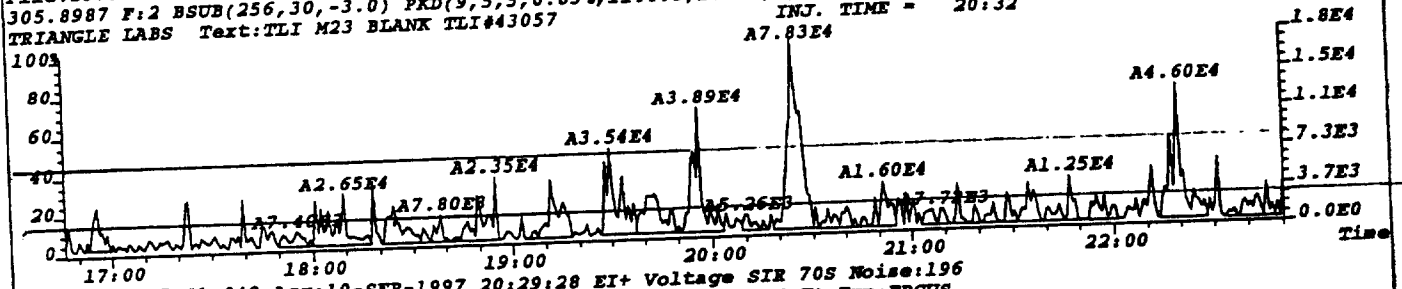
M_2	-Nominal Ion Mass(es)	WL	-Below Retention Time Window	A	-Peak Added
..RT.	-Retention Time (mm:ss)	WH	-Above Retention Time Window	K	-Peak Kept
Rat.1	-Ratio of M/M-2 Ions	SN	-Below Signal to Noise Level	D	-Peak Deleted
OK	-RO=Ratio Outside Limits	<M	-Below Method Detection Limit	T	-Time Changed
Rel.RT	-Relative Retention Time	NL	-Channel Specific Noise Level	M	-Peak Area Changed
				N	-Name Changed
				E	-Ether Interference

\*\*\* End of Report \*\*\*

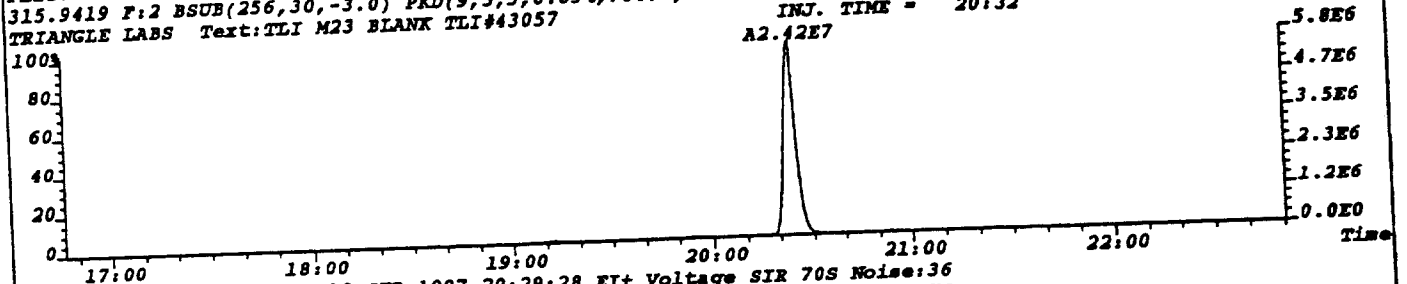
File:S975807 #1-848 Acq:10-SEP-1997 20:29:28 EI+ Voltage SIR 70S Noise:35  
303.9016 F:2 BSUB(256,30,-3.0) PKD(9,5,5,0.05%,140.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:TLI M23 BLANK TLI#43057 INJ. TIME = 20:32



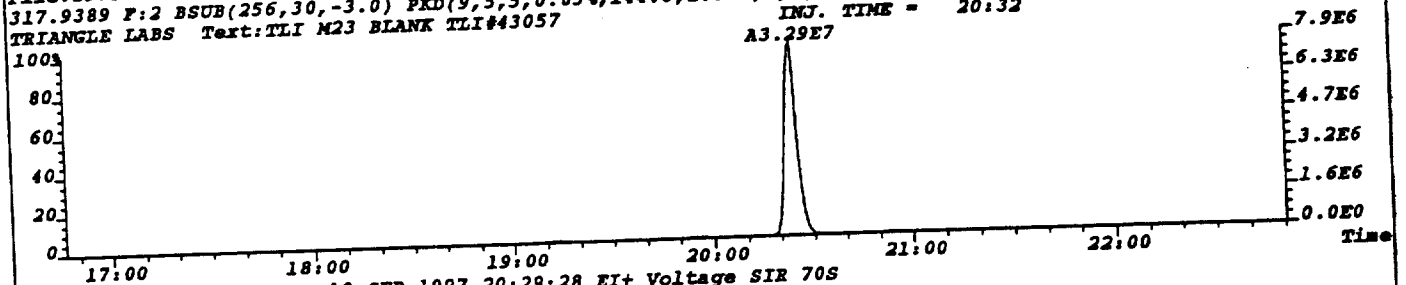
File:S975807 #1-848 Acq:10-SEP-1997 20:29:28 EI+ Voltage SIR 70S Noise:286  
305.8987 F:2 BSUB(256,30,-3.0) PKD(9,5,5,0.05%,1144.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:TLI M23 BLANK TLI#43057 INJ. TIME = 20:32



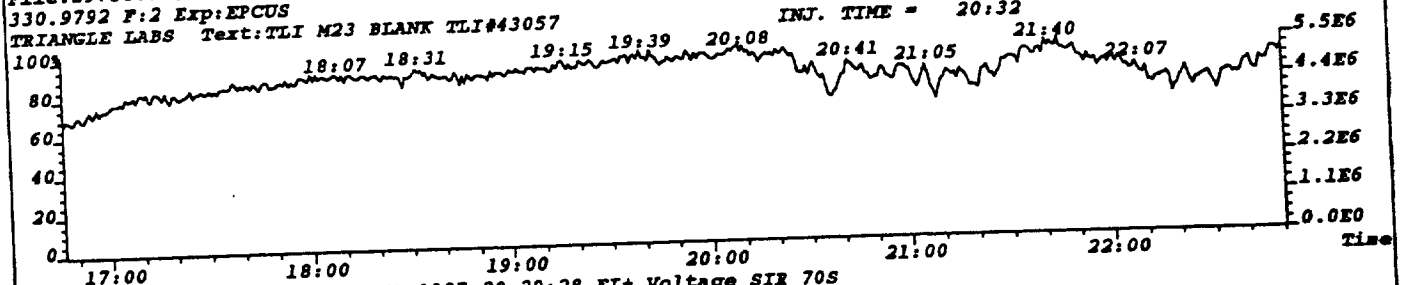
File:S975807 #1-848 Acq:10-SEP-1997 20:29:28 EI+ Voltage SIR 70S Noise:196  
315.9419 F:2 BSUB(256,30,-3.0) PKD(9,5,5,0.05%,784.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:TLI M23 BLANK TLI#43057 INJ. TIME = 20:32



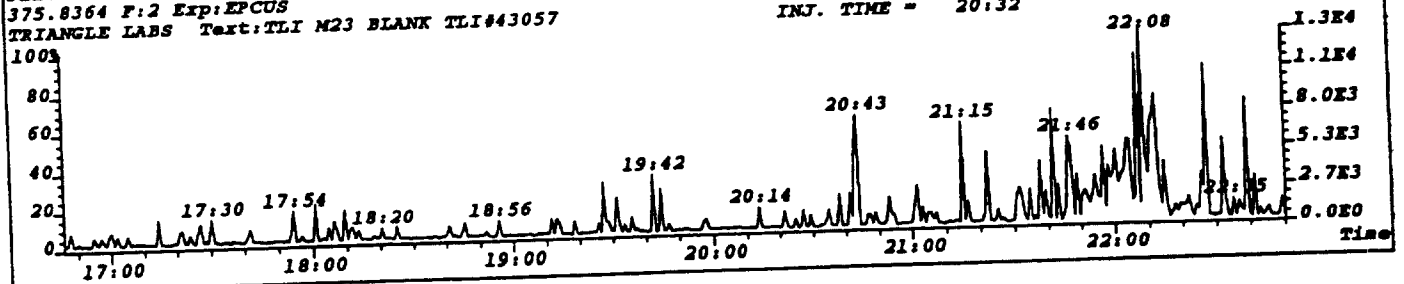
File:S975807 #1-848 Acq:10-SEP-1997 20:29:28 EI+ Voltage SIR 70S Noise:36  
317.9389 F:2 BSUB(256,30,-3.0) PKD(9,5,5,0.05%,144.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:TLI M23 BLANK TLI#43057 INJ. TIME = 20:32



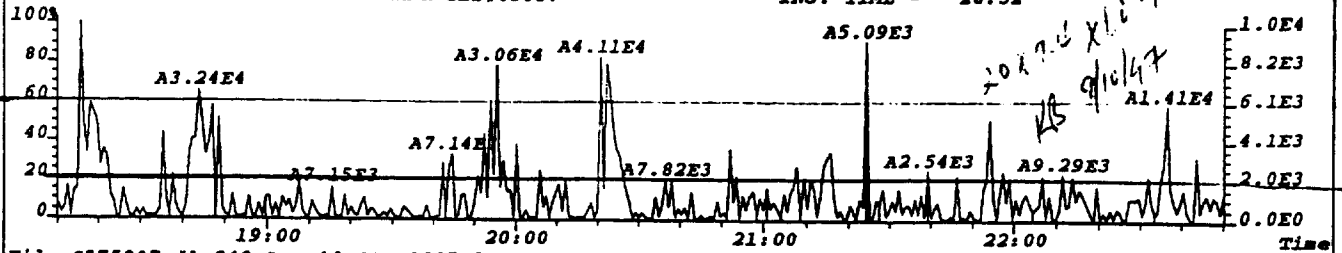
File:S975807 #1-848 Acq:10-SEP-1997 20:29:28 EI+ Voltage SIR 70S  
330.9792 F:2 Exp:EPCUS  
TRIANGLE LABS Text:TLI M23 BLANK TLI#43057 INJ. TIME = 20:32



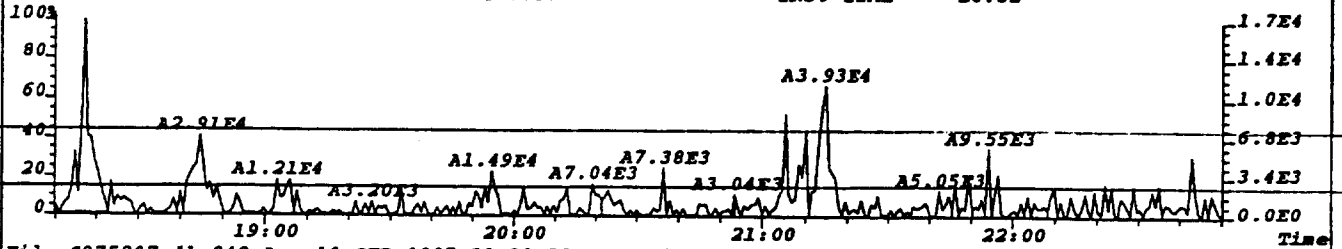
File:S975807 #1-848 Acq:10-SEP-1997 20:29:28 EI+ Voltage SIR 70S  
375.8364 F:2 Exp:EPCUS  
TRIANGLE LABS Text:TLI M23 BLANK TLI#43057 INJ. TIME = 20:32



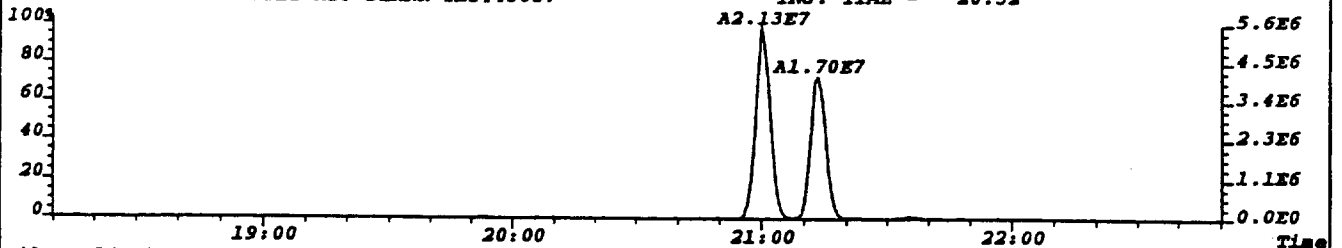
File:S975807 #1-848 Acq:10-SEP-1997 20:29:28 EI+ Voltage SIR 70S Noise:38  
319.8965 F:2 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,152.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:TLI M23 BLANK TLI#43057 INJ. TIME = 20:32



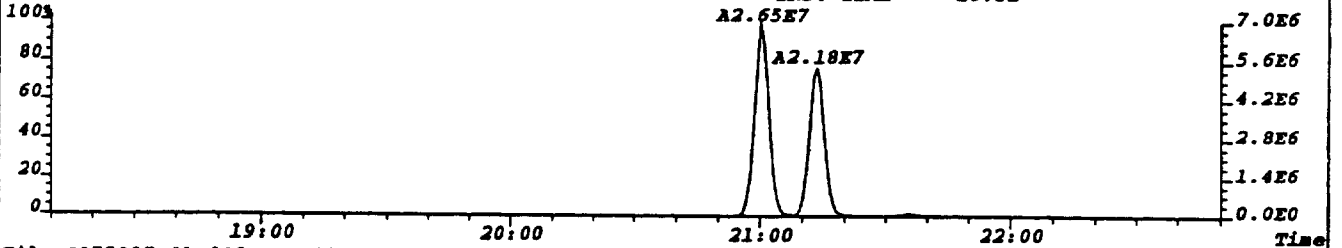
File:S975807 #1-848 Acq:10-SEP-1997 20:29:28 EI+ Voltage SIR 70S Noise:37  
321.8936 F:2 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,148.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:TLI M23 BLANK TLI#43057 INJ. TIME = 20:32



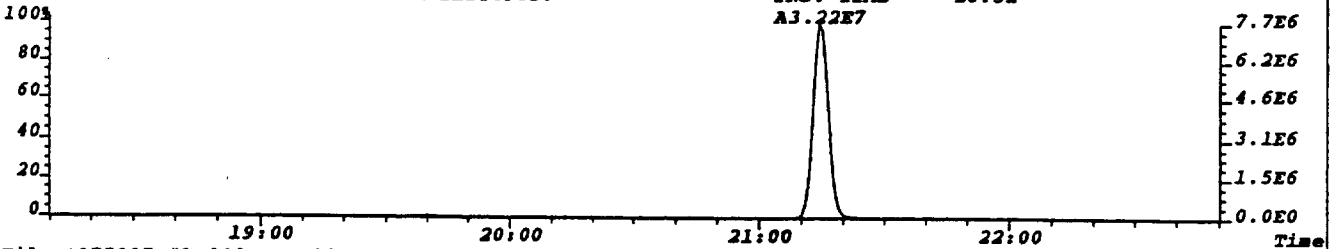
File:S975807 #1-848 Acq:10-SEP-1997 20:29:28 EI+ Voltage SIR 70S Noise:1012  
331.9368 F:2 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,4048.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:TLI M23 BLANK TLI#43057 INJ. TIME = 20:32



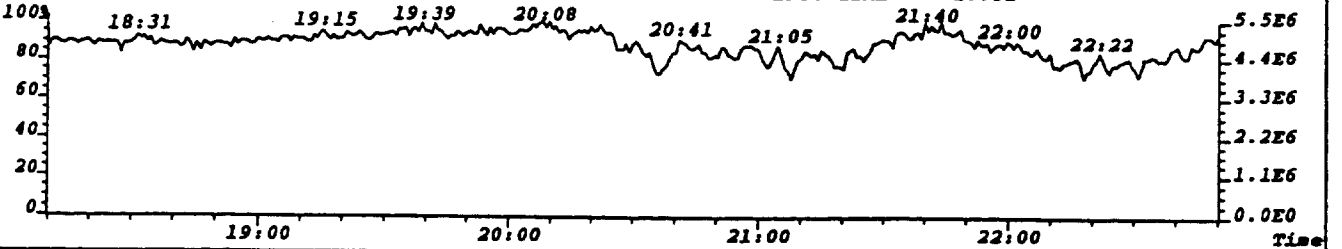
File:S975807 #1-848 Acq:10-SEP-1997 20:29:28 EI+ Voltage SIR 70S Noise:42  
333.9338 F:2 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,168.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:TLI M23 BLANK TLI#43057 INJ. TIME = 20:32



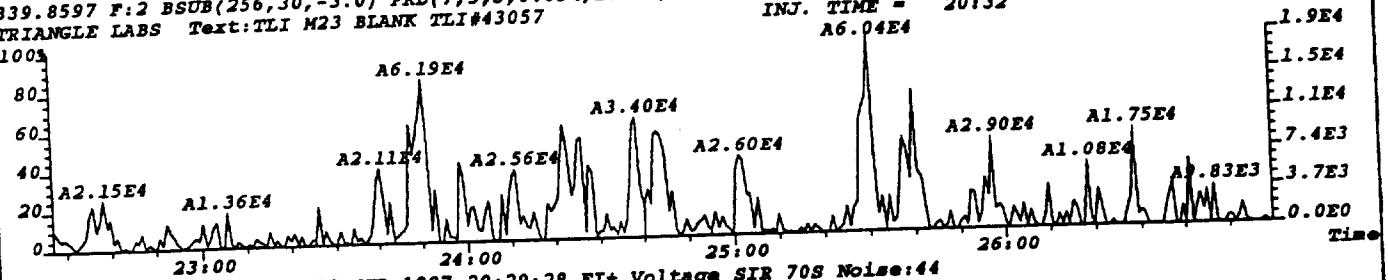
File:S975807 #1-848 Acq:10-SEP-1997 20:29:28 EI+ Voltage SIR 70S Noise:34  
327.8847 F:2 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,136.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:TLI M23 BLANK TLI#43057 INJ. TIME = 20:32



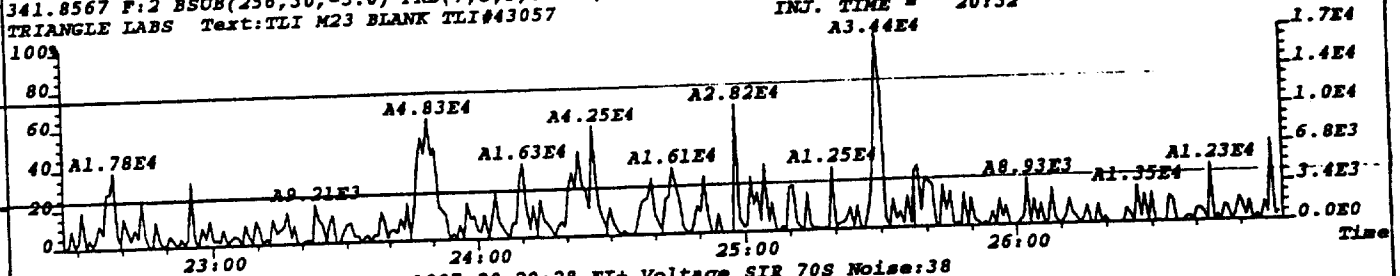
File:S975807 #1-848 Acq:10-SEP-1997 20:29:28 EI+ Voltage SIR 70S  
330.9792 F:2 Exp:EPCUS  
TRIANGLE LABS Text:TLI M23 BLANK TLI#43057 INJ. TIME = 20:32



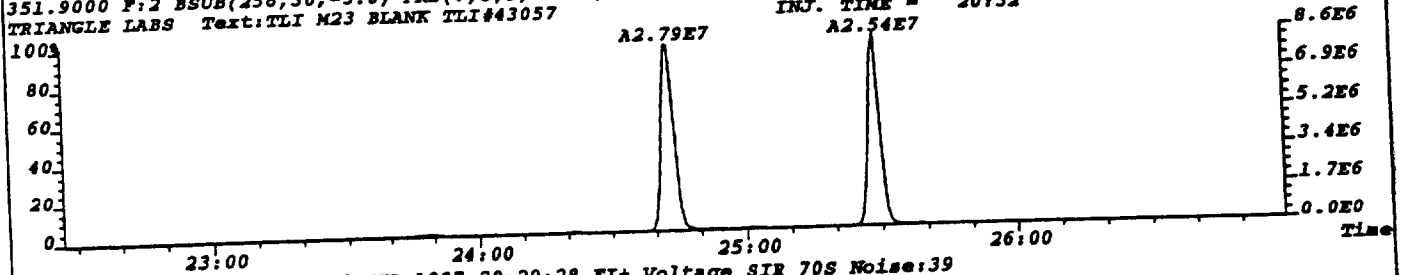
File: S975807 #1-848 Acq:10-SEP-1997 20:29:28 EI+ Voltage SIR 70S Noise:39  
 339.8597 F:2 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,156.0,1.00%,F,T) Exp:EPCUS  
 TRIANGLE LABS Text:TLI M23 BLANK TLI#43057 INJ. TIME = 20:32



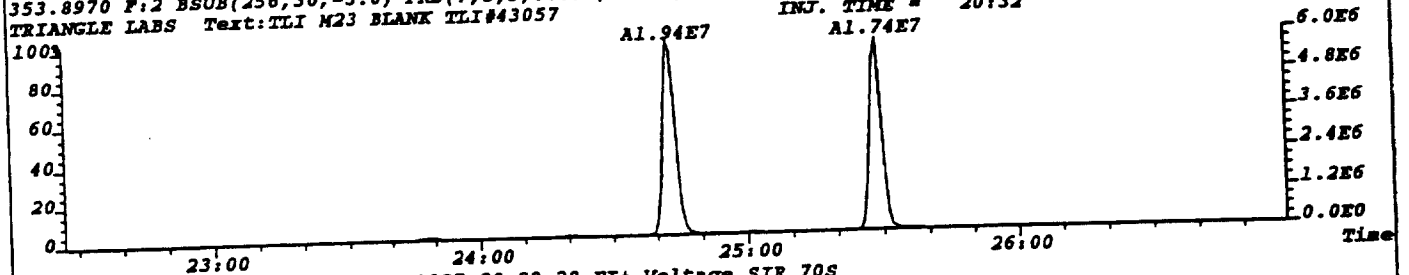
File: S975807 #1-848 Acq:10-SEP-1997 20:29:28 EI+ Voltage SIR 70S Noise:44  
 341.8567 F:2 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,176.0,1.00%,F,T) Exp:EPCUS  
 TRIANGLE LABS Text:TLI M23 BLANK TLI#43057 INJ. TIME = 20:32



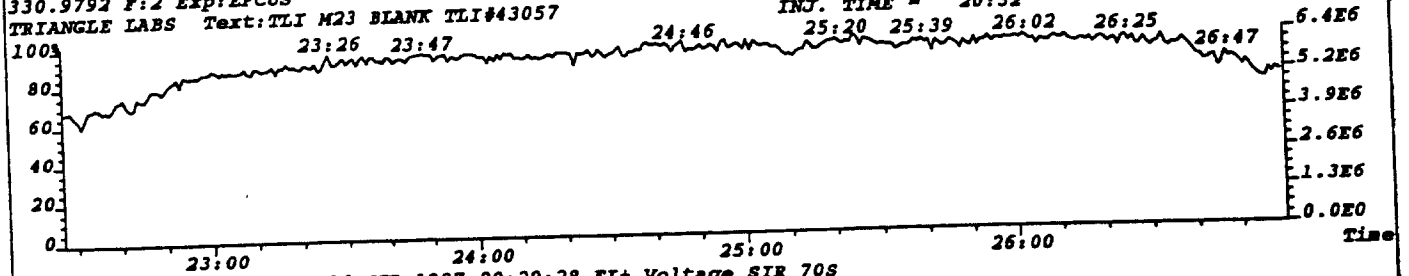
File: S975807 #1-848 Acq:10-SEP-1997 20:29:28 EI+ Voltage SIR 70S Noise:38  
 351.9000 F:2 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,152.0,1.00%,F,T) Exp:EPCUS  
 TRIANGLE LABS Text:TLI M23 BLANK TLI#43057 INJ. TIME = 20:32



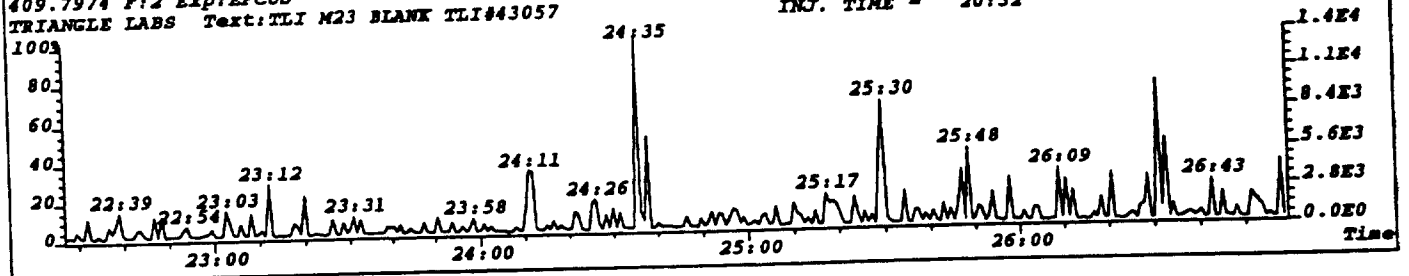
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 353.8970 F:2 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,156.0,1.00%,F,T) Exp:EPCUS  
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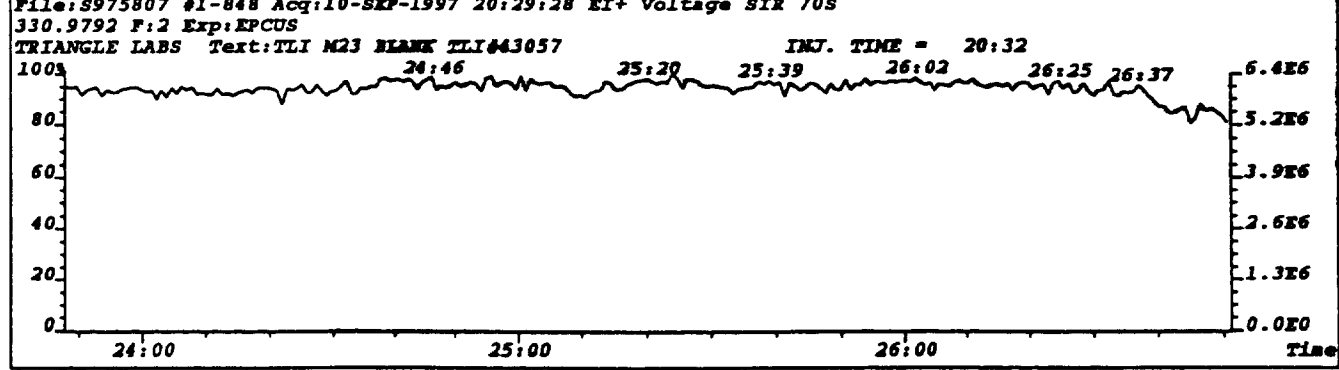
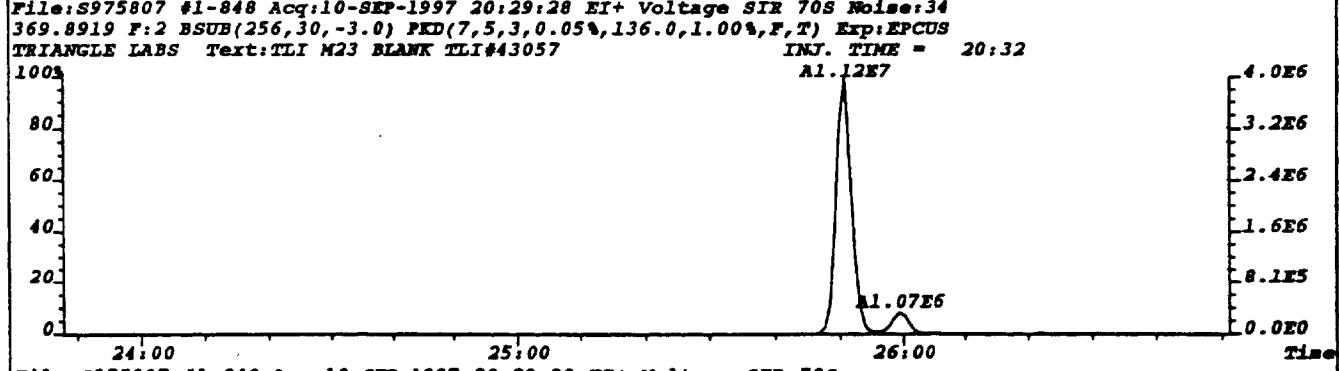
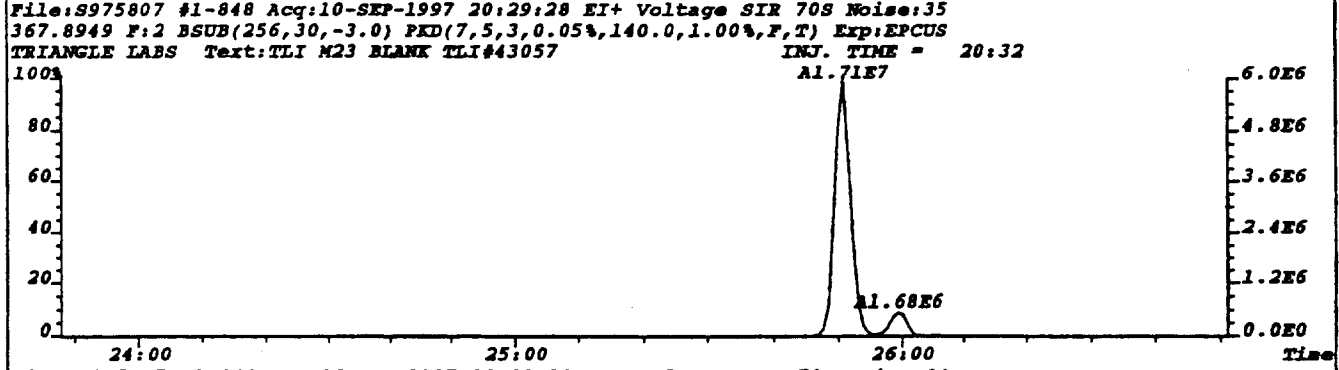
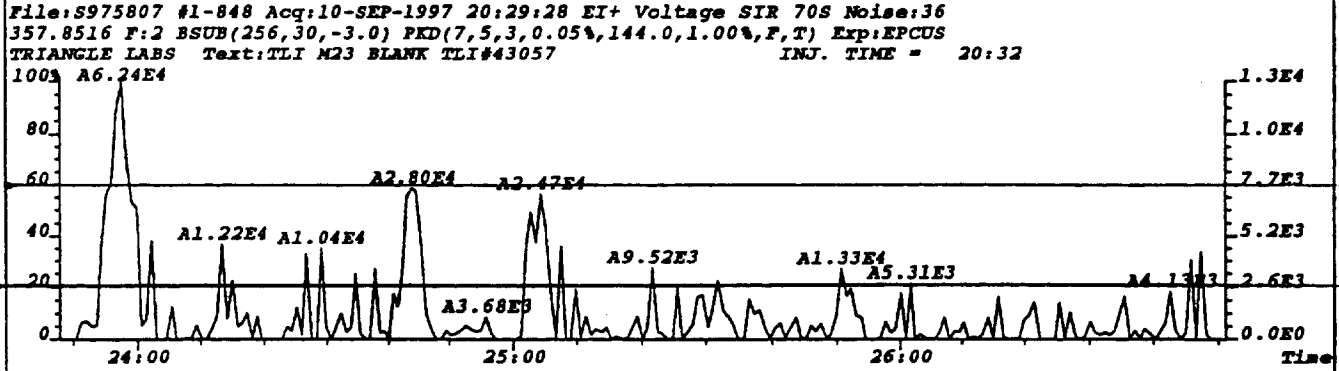
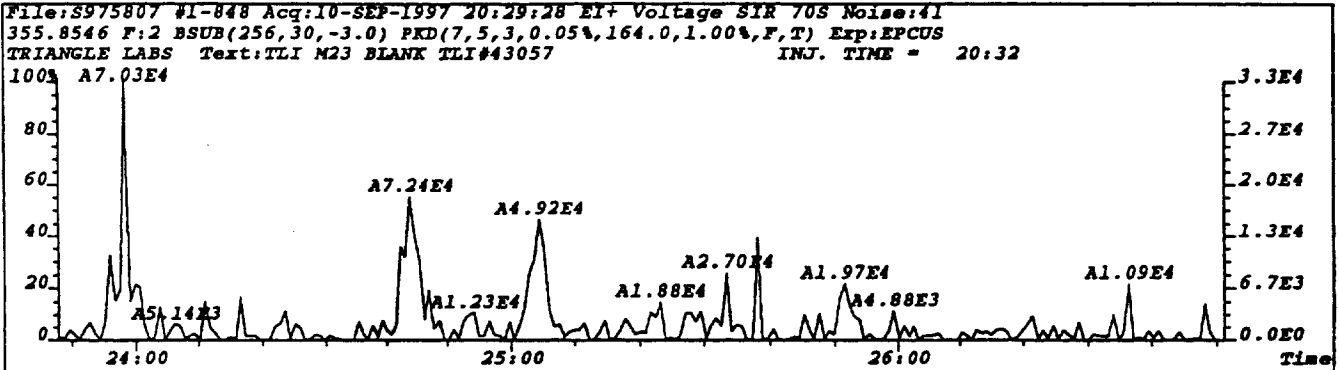


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 330.9792 F:2 Exp:EPCUS  
 TRIANGLE LABS Text:TLI M23 BLANK TLI#43057 INJ. TIME = 20:32

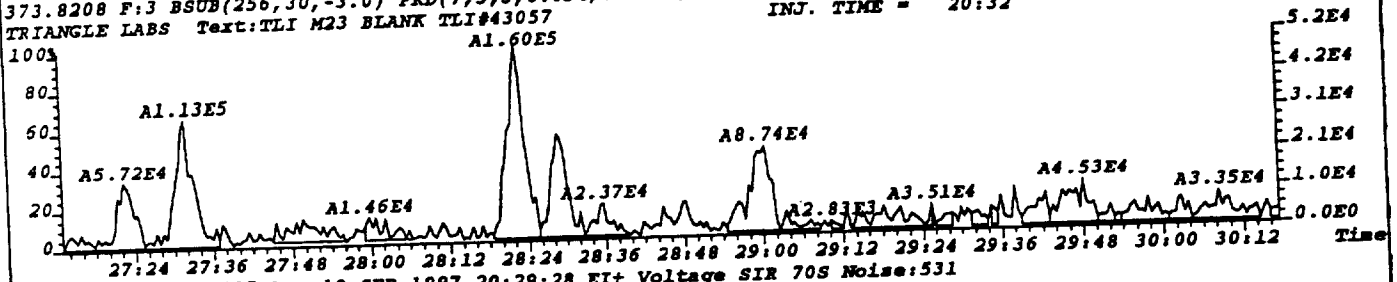


File: S975807 #1-848 Acq:10-SEP-1997 20:29:28 EI+ Voltage SIR 70S  
 409.7974 F:2 Exp:EPCUS  
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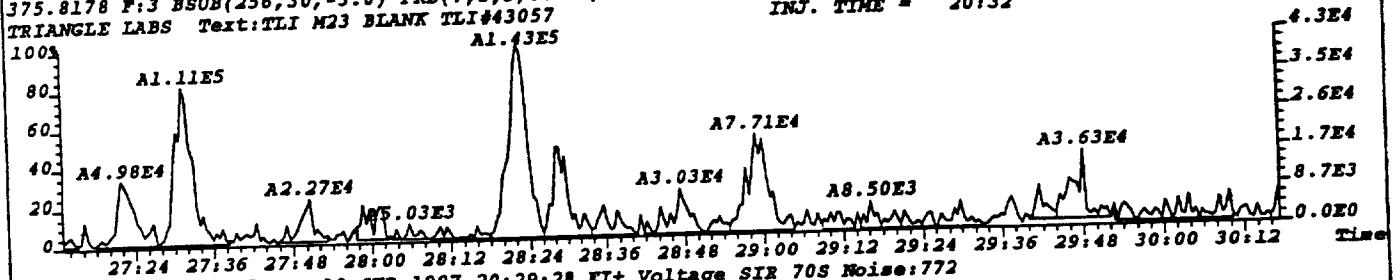




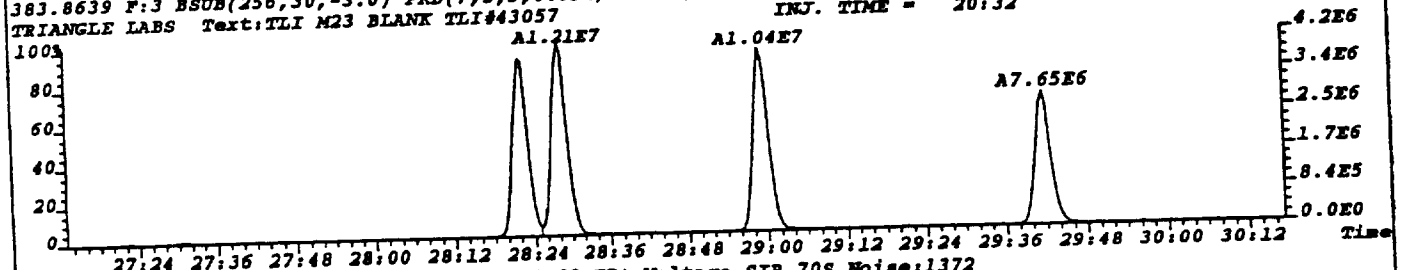
File:S975807 #1-405 Acq:10-SEP-1997 20:29:28 EI+ Voltage SIR 70S Noise:1018  
373.8208 F:3 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,4072.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:TLI M23 BLANK TLI#43057 INJ. TIME = 20:32



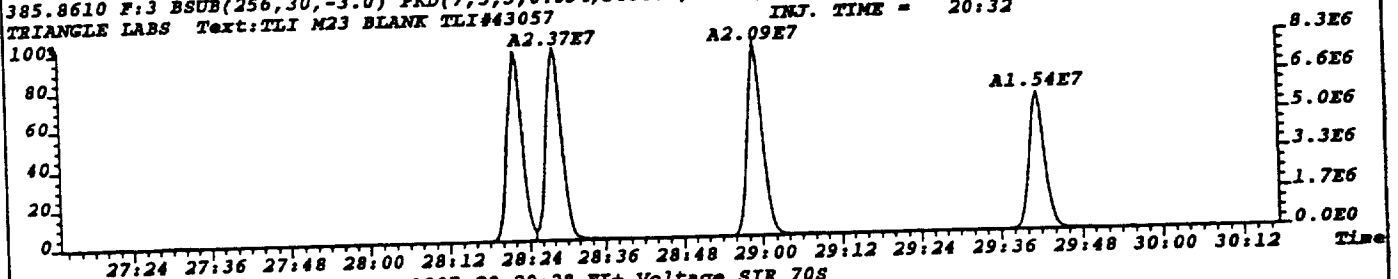
File:S975807 #1-405 Acq:10-SEP-1997 20:29:28 EI+ Voltage SIR 70S Noise:531  
375.8178 F:3 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,2124.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:TLI M23 BLANK TLI#43057 INJ. TIME = 20:32



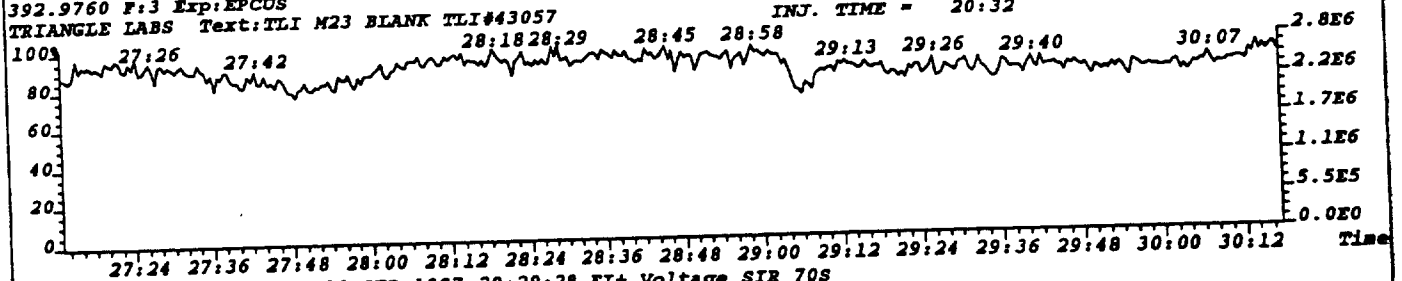
File:S975807 #1-405 Acq:10-SEP-1997 20:29:28 EI+ Voltage SIR 70S Noise:772  
383.8639 F:3 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,3088.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:TLI M23 BLANK TLI#43057 INJ. TIME = 20:32



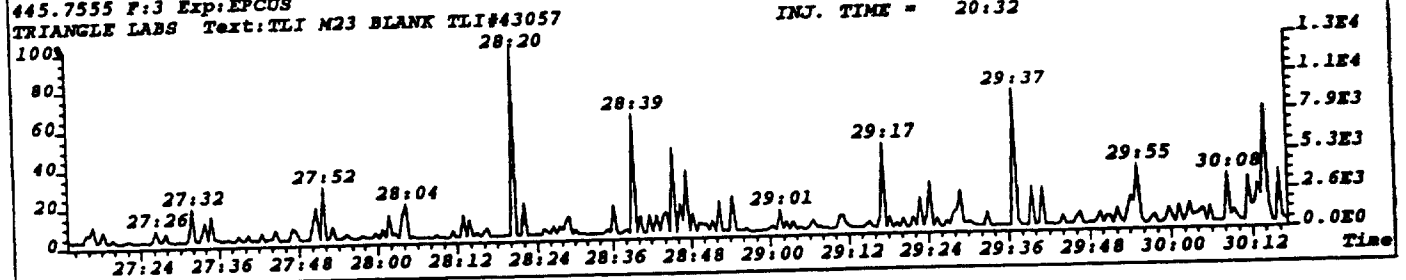
File:S975807 #1-405 Acq:10-SEP-1997 20:29:28 EI+ Voltage SIR 70S Noise:1372  
385.8610 F:3 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,5488.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:TLI M23 BLANK TLI#43057 INJ. TIME = 20:32



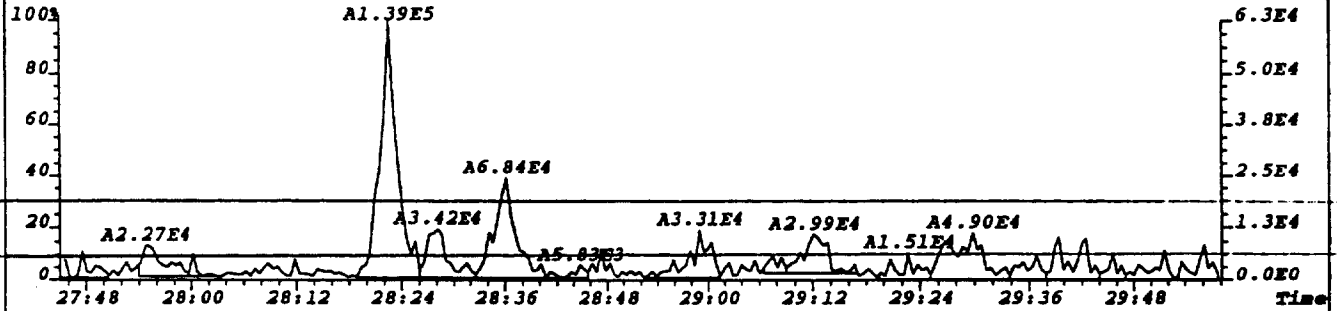
File:S975807 #1-405 Acq:10-SEP-1997 20:29:28 EI+ Voltage SIR 70S  
392.9760 F:3 Exp:EPCUS INJ. TIME = 20:32  
TRIANGLE LABS Text:TLI M23 BLANK TLI#43057



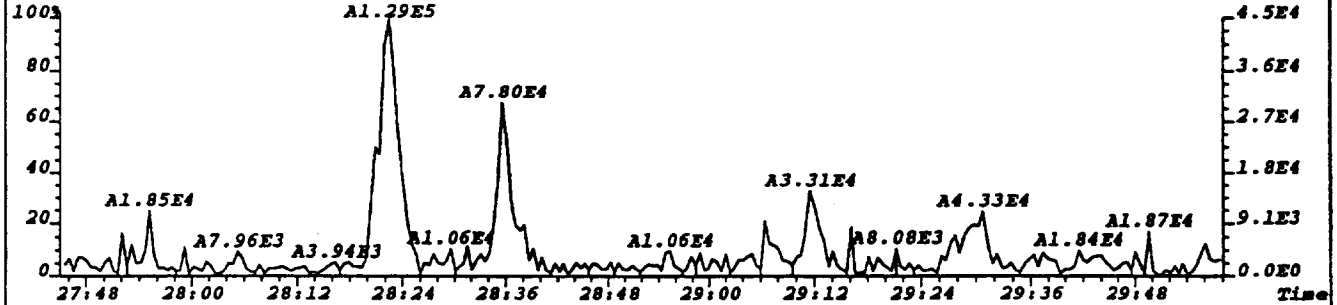
File:S975807 #1-405 Acq:10-SEP-1997 20:29:28 EI+ Voltage SIR 70S  
445.7555 F:3 Exp:EPCUS INJ. TIME = 20:32  
TRIANGLE LABS Text:TLI M23 BLANK TLI#43057



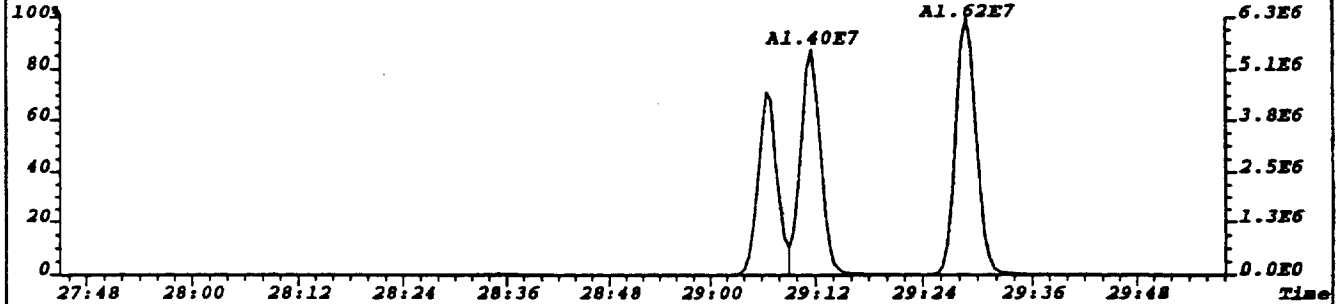
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389.8156 F:3 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,2216.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:TLI M23 BLANK TLI#43057 INJ. TIME = 20:32



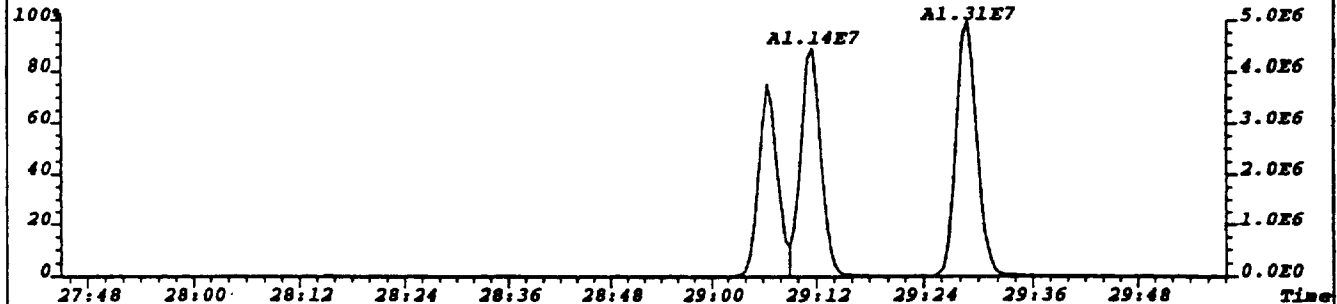
File:S975807 #1-405 Acq:10-SEP-1997 20:29:28 EI+ Voltage SIR 70S Noise:416  
391.8127 F:3 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,1664.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:TLI M23 BLANK TLI#43057 INJ. TIME = 20:32



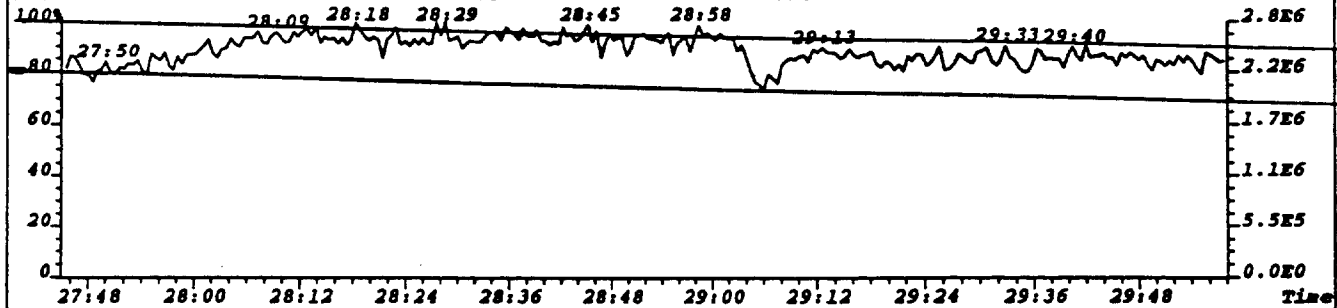
File:S975807 #1-405 Acq:10-SEP-1997 20:29:28 EI+ Voltage SIR 70S Noise:1135  
401.8558 F:3 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,4540.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:TLI M23 BLANK TLI#43057 INJ. TIME = 20:32

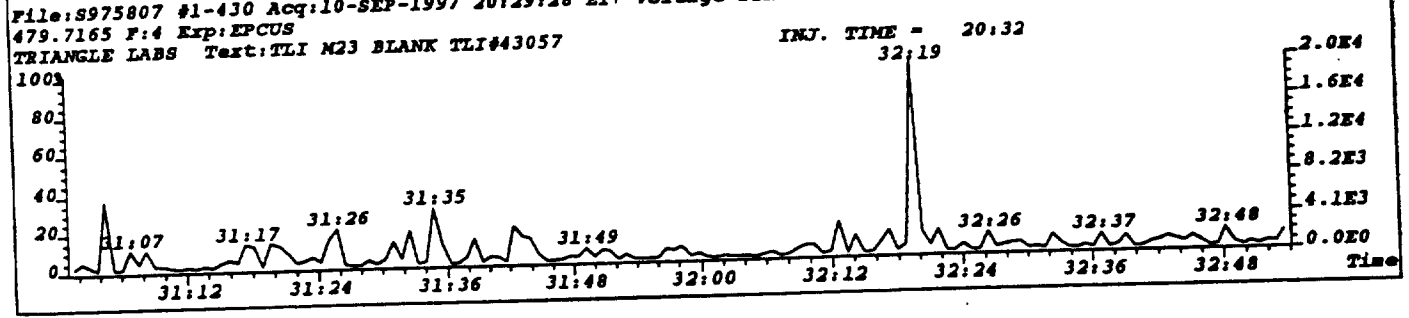
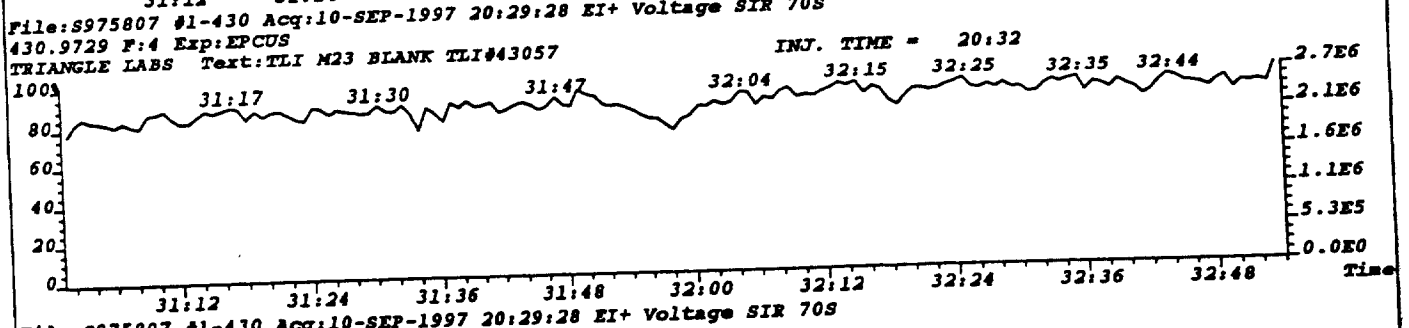
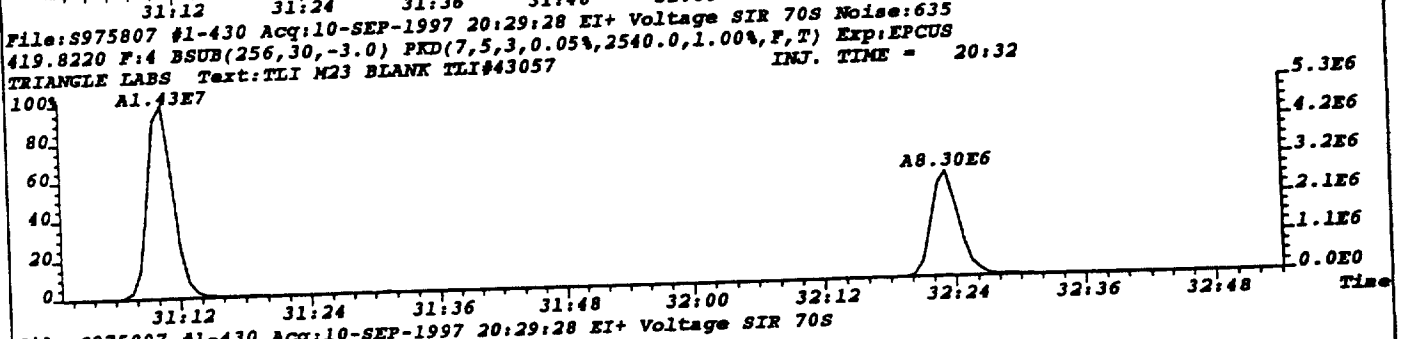
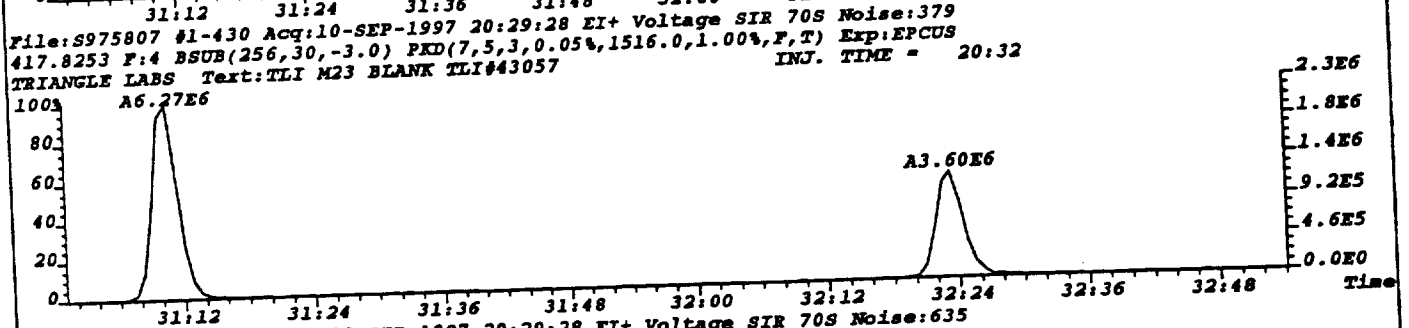
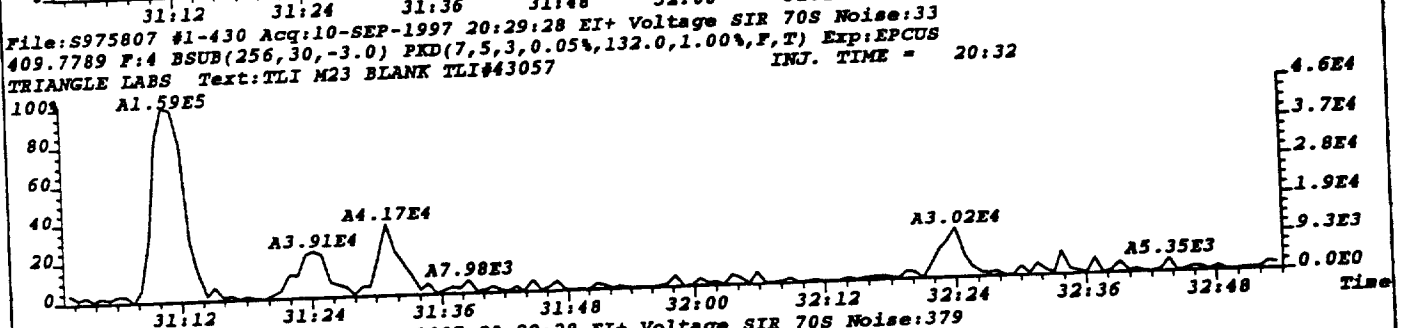
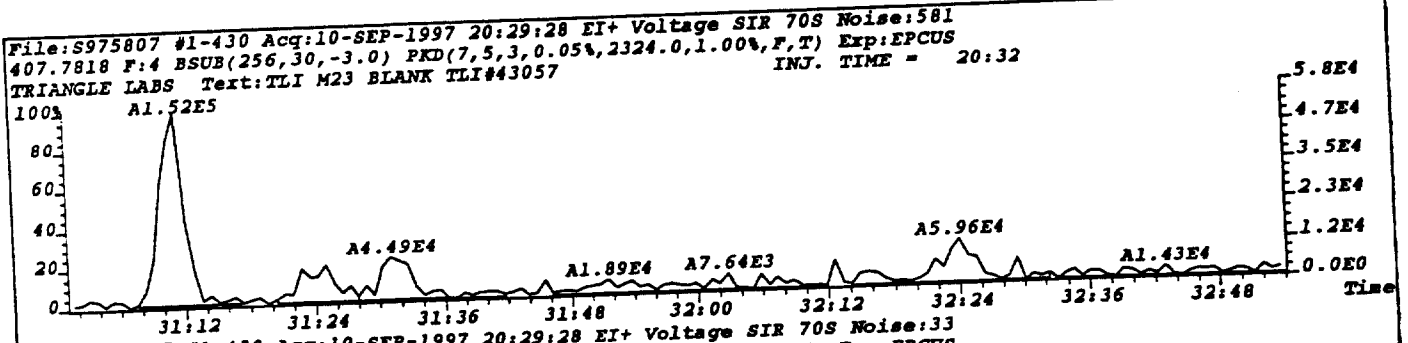


File:S975807 #1-405 Acq:10-SEP-1997 20:29:28 EI+ Voltage SIR 70S Noise:1024  
403.8529 F:3 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,4096.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:TLI M23 BLANK TLI#43057 INJ. TIME = 20:32

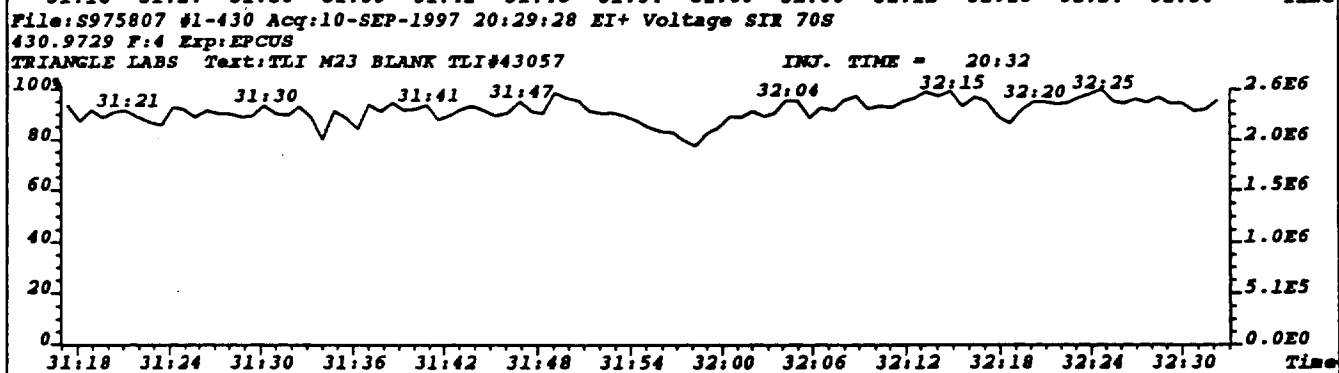
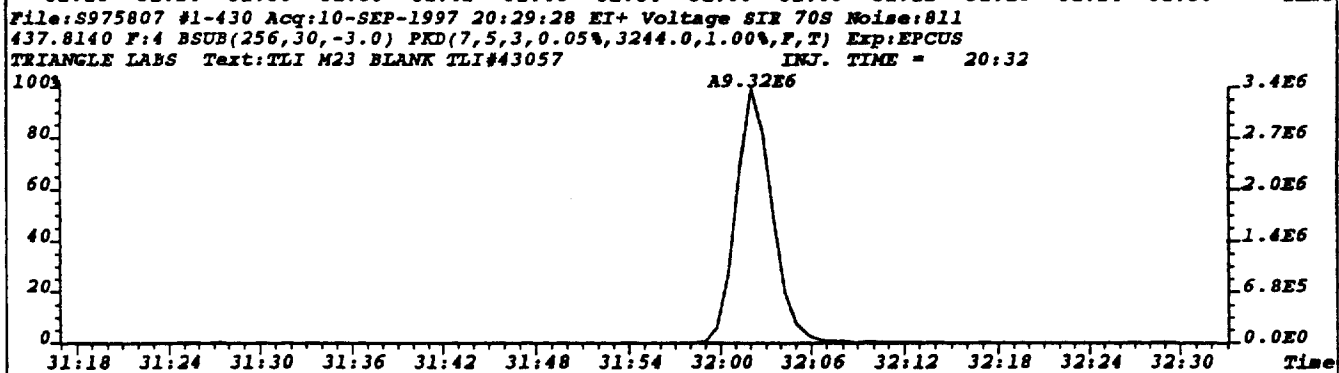
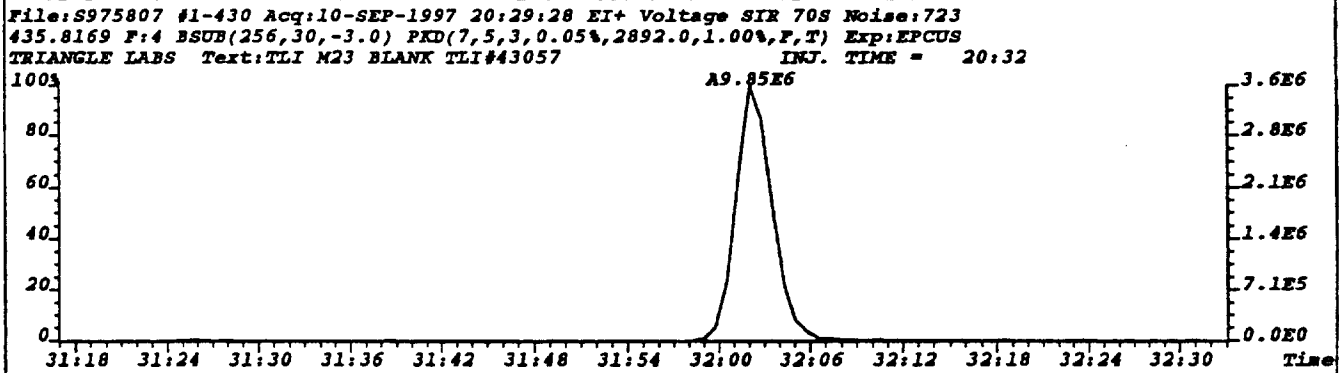
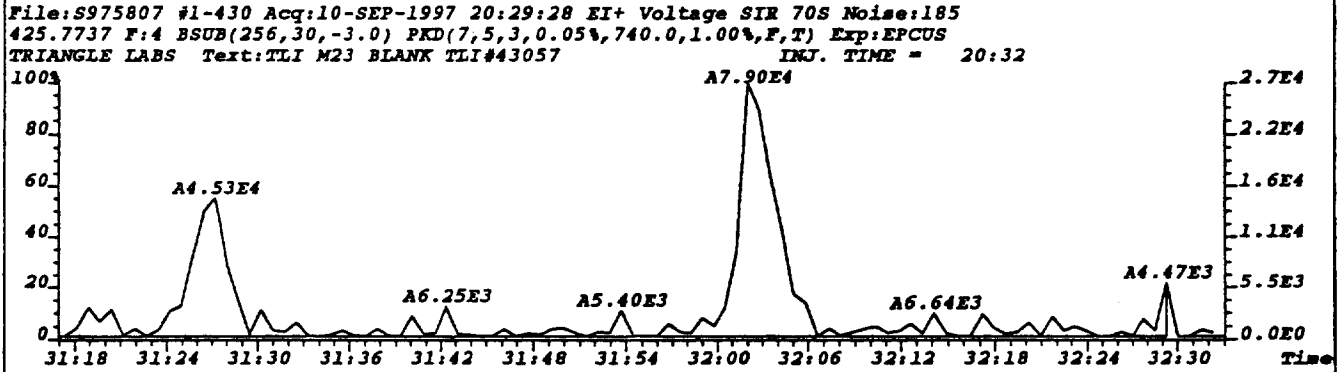
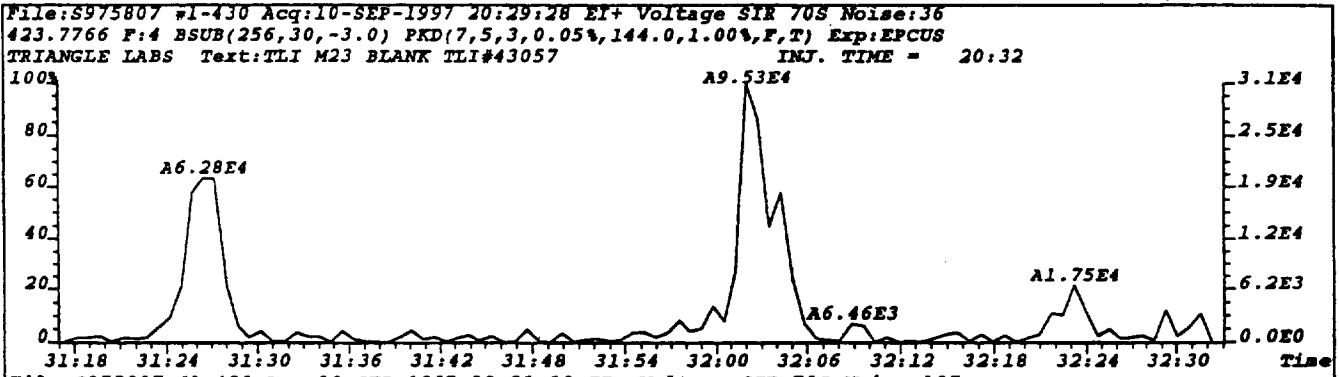


File:S975807 #1-405 Acq:10-SEP-1997 20:29:28 EI+ Voltage SIR 70S  
392.9760 F:3 Exp:EPCUS  
TRIANGLE LABS Text:TLI M23 BLANK TLI#43057 INJ. TIME = 20:32

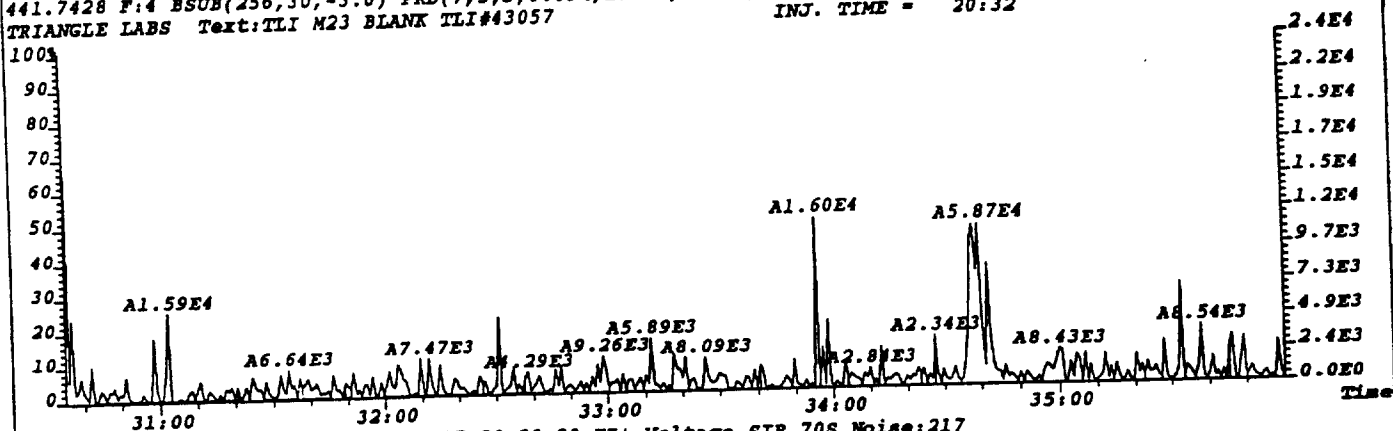




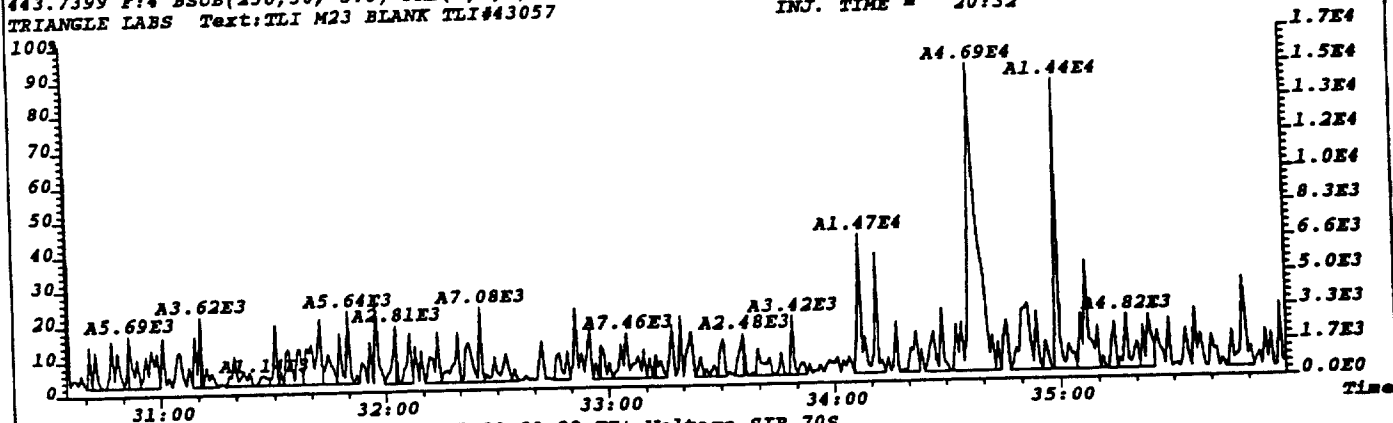




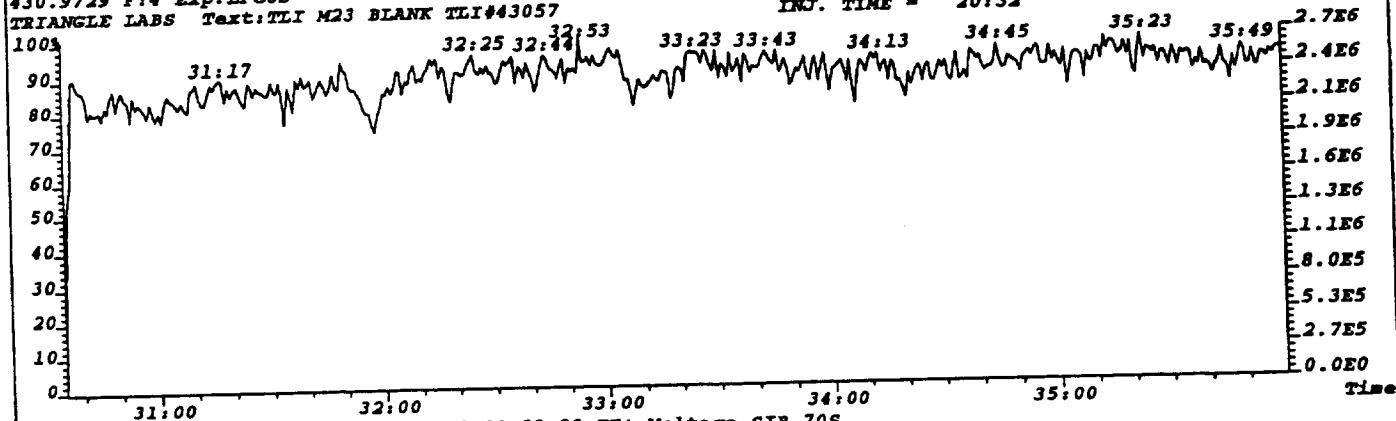
File: S975807 #1-430 Acq: 10-SEP-1997 20:29:28 EI+ Voltage SIR 70S Noise: 33  
441.7428 F: 4 BSub(256, 30, -3.0) PKD(7, 5, 3, 0.05%, 132.0, 1.00%, F, T) Exp: EPCUS  
TRIANGLE LABS Text: TLI M23 BLANK TLI#43057 INJ. TIME = 20:32



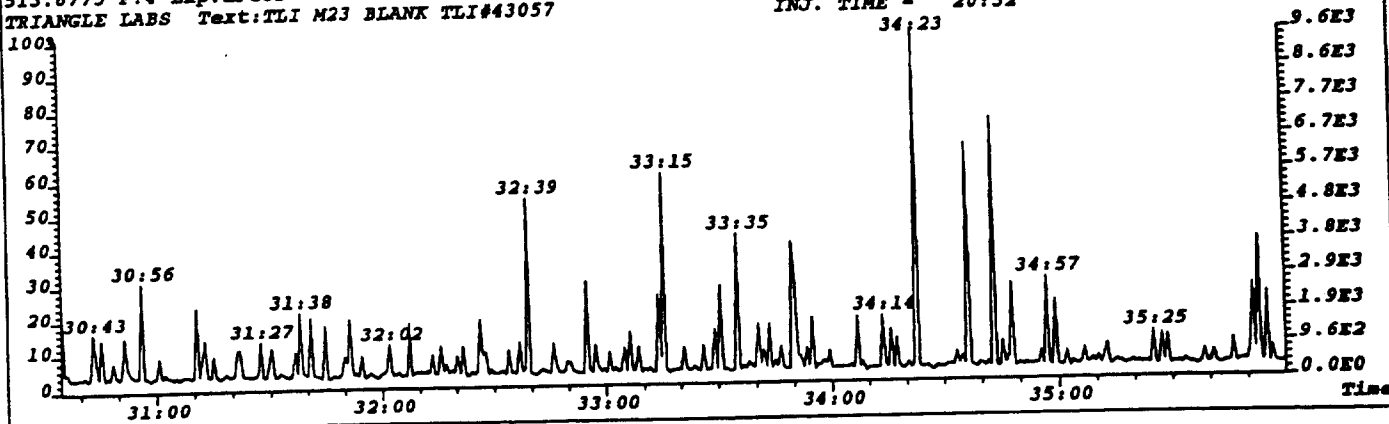
File: S975807 #1-430 Acq: 10-SEP-1997 20:29:28 EI+ Voltage SIR 70S Noise: 217  
443.7399 F: 4 BSub(256, 30, -3.0) PKD(7, 5, 3, 0.05%, 868.0, 1.00%, F, T) Exp: EPCUS  
TRIANGLE LABS Text: TLI M23 BLANK TLI#43057 INJ. TIME = 20:32

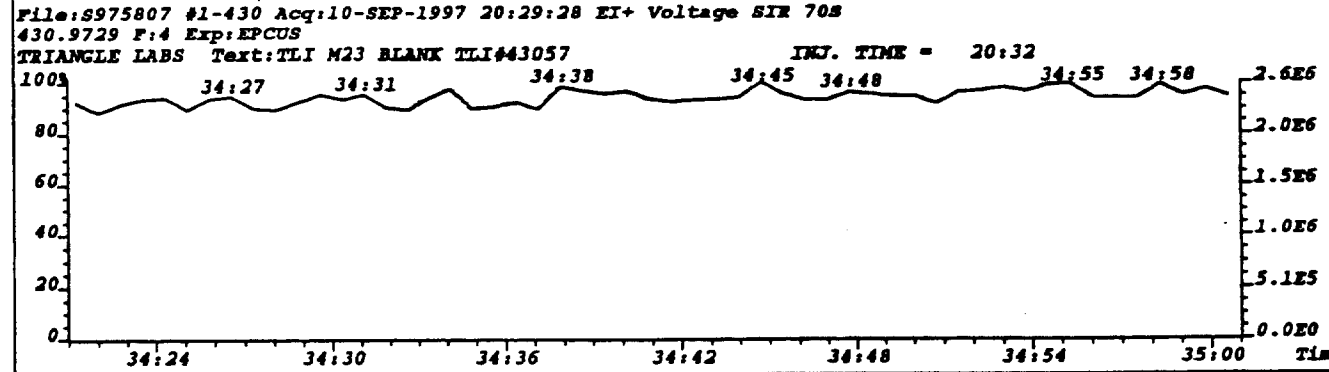
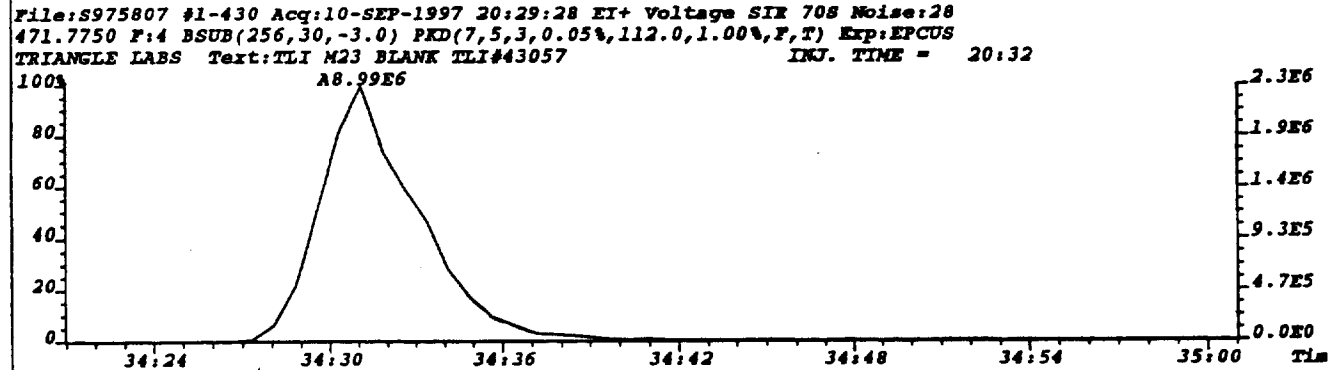
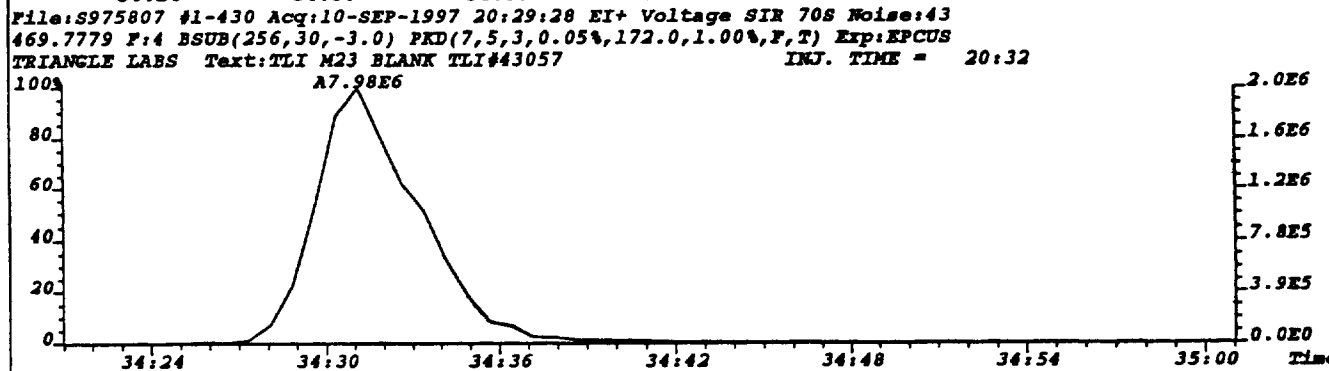
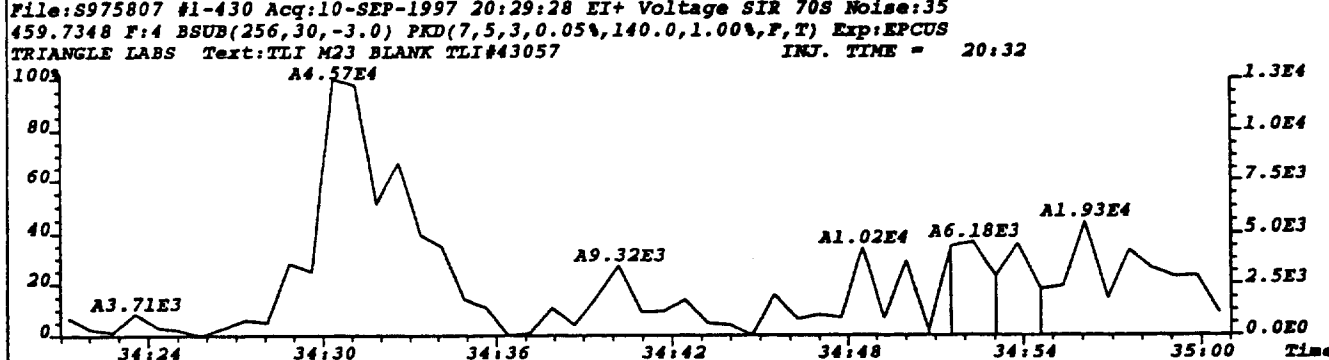
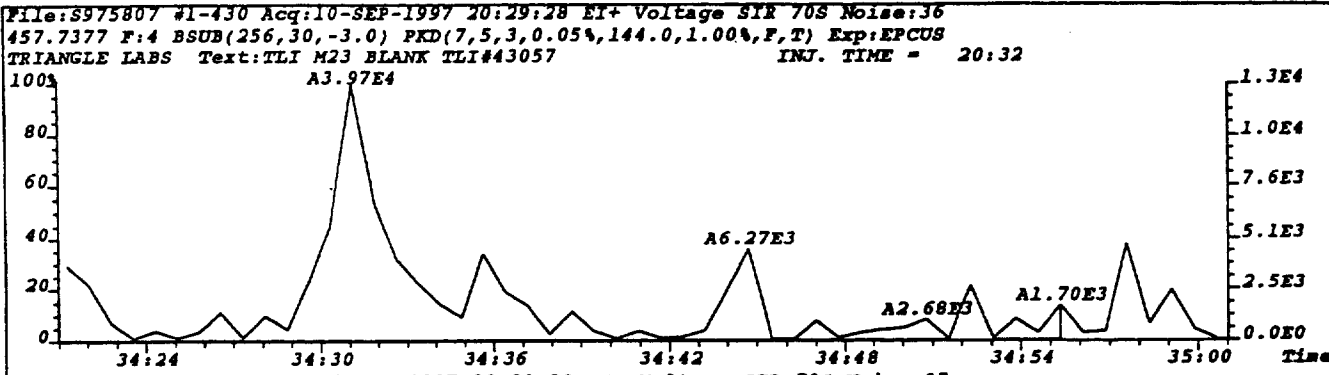


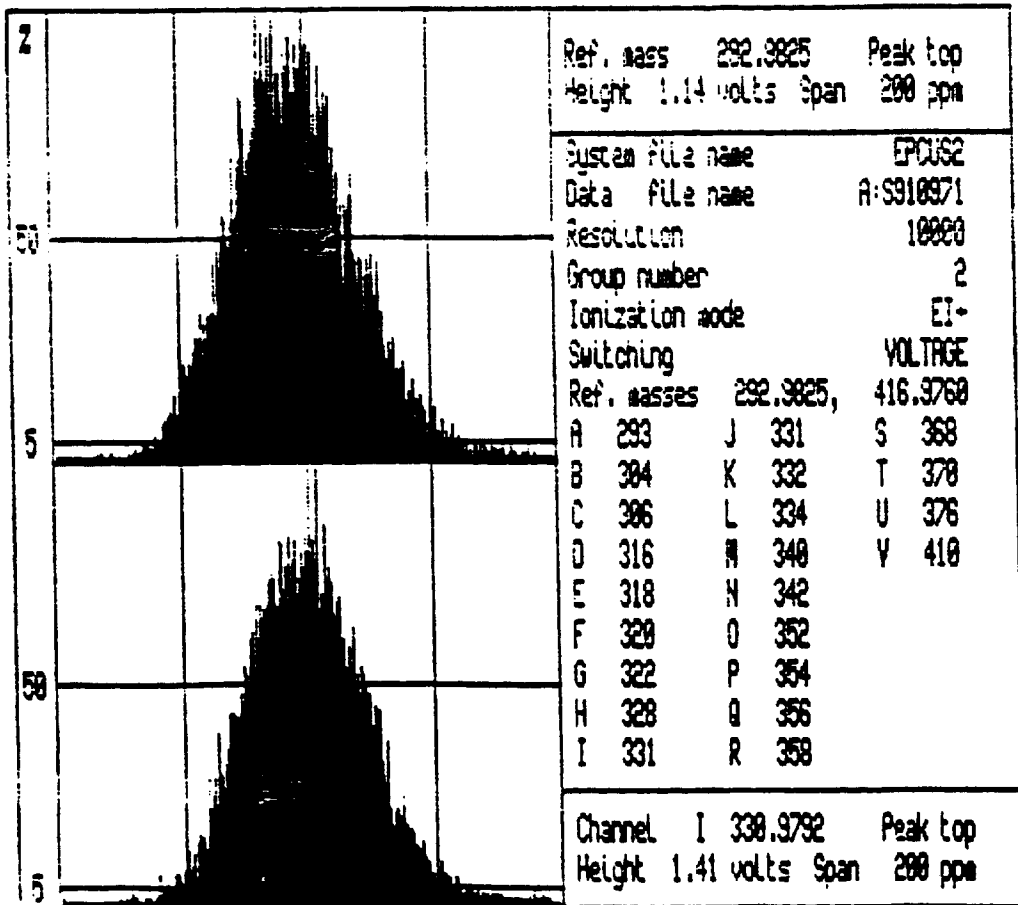
File: S975807 #1-430 Acq: 10-SEP-1997 20:29:28 EI+ Voltage SIR 70S  
430.9729 F: 4 Exp: EPCUS  
TRIANGLE LABS Text: TLI M23 BLANK TLI#43057 INJ. TIME = 20:32



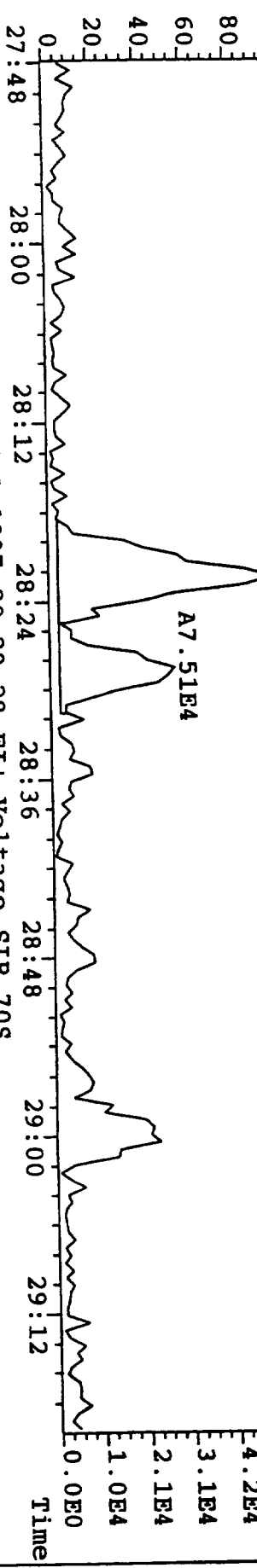
File: S975807 #1-430 Acq: 10-SEP-1997 20:29:28 EI+ Voltage SIR 70S  
513.6775 F: 4 Exp: EPCUS  
TRIANGLE LABS Text: TLI M23 BLANK TLI#43057 INJ. TIME = 20:32



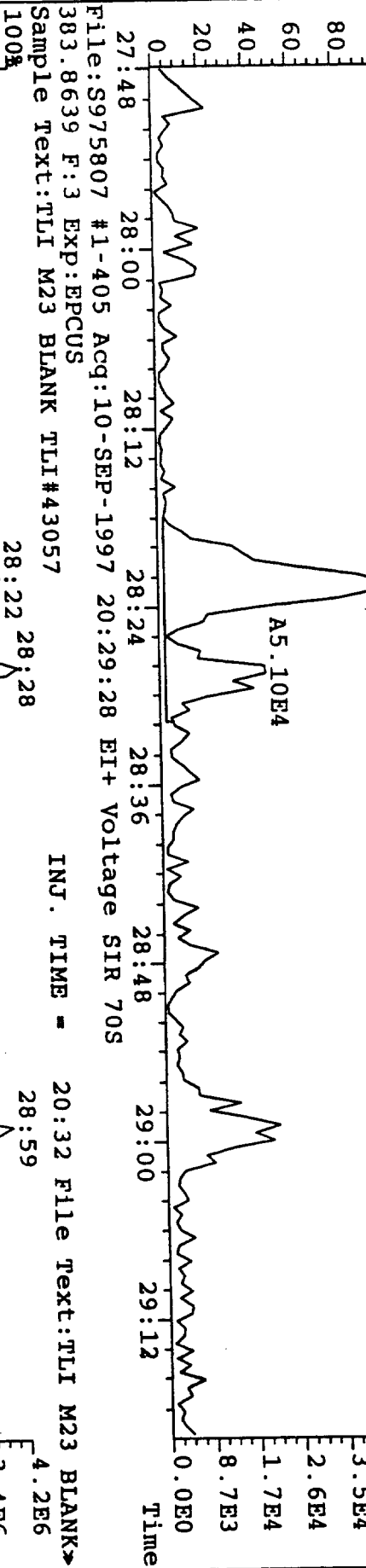




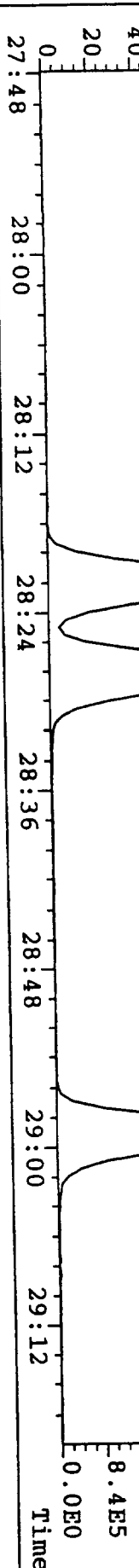
File: S975807 #1-405 Acq: 10-SEP-1997 20:29:28 EI+ Voltage SIR 705  
 373.8208 F: 3 Exp: EPCUS  
 Sample Text: TLI M23 BLANK TLI#43057  
 INJ. TIME = 20:32 File Text: TLI M23 BLANK



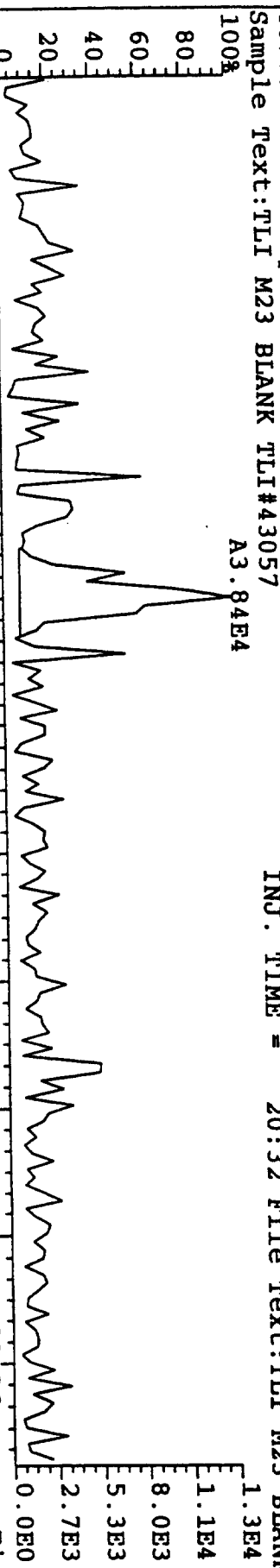
File: S975807 #1-405 Acq: 10-SEP-1997 20:29:28 EI+ Voltage SIR 705  
 375.8178 F: 3 Exp: EPCUS  
 Sample Text: TLI M23 BLANK TLI#43057  
 INJ. TIME = 20:32 File Text: TLI M23 BLANK



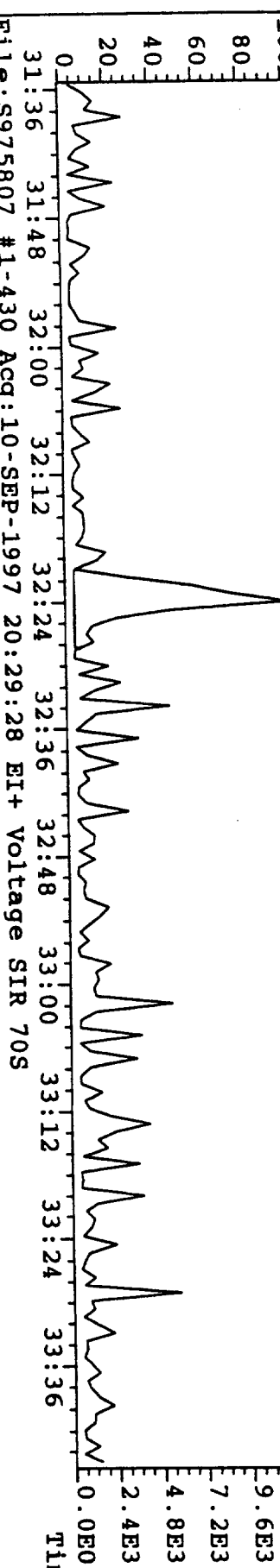
File: S975807 #1-405 Acq: 10-SEP-1997 20:29:28 EI+ Voltage SIR 705  
 383.8639 F: 3 Exp: EPCUS  
 Sample Text: TLI M23 BLANK TLI#43057  
 INJ. TIME = 20:32 File Text: TLI M23 BLANK



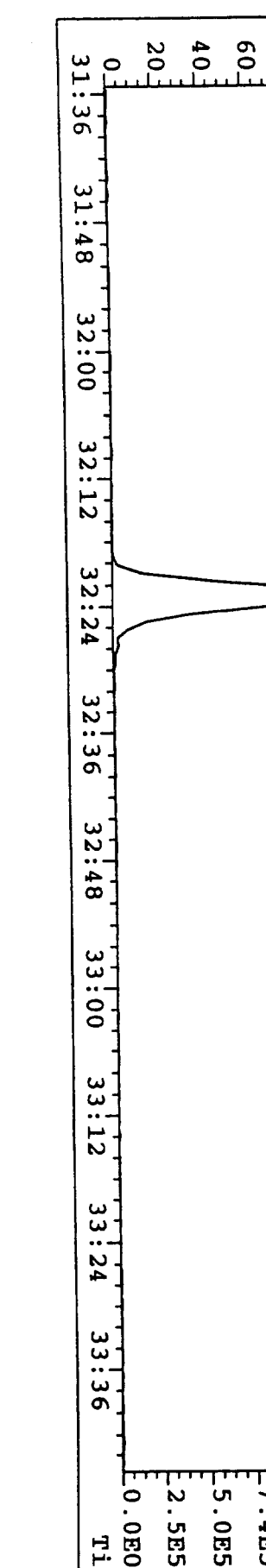
File:S975807 #1-430 Acq:10-SEP-1997 20:29:28 EI+ Voltage SIR 70S  
407.7818 F:4 Exp:EPCUS  
Sample Text:TLI M23 BLANK TLI#43057  
INJ. TIME = 20:32 File Text:TLI M23 BLANK



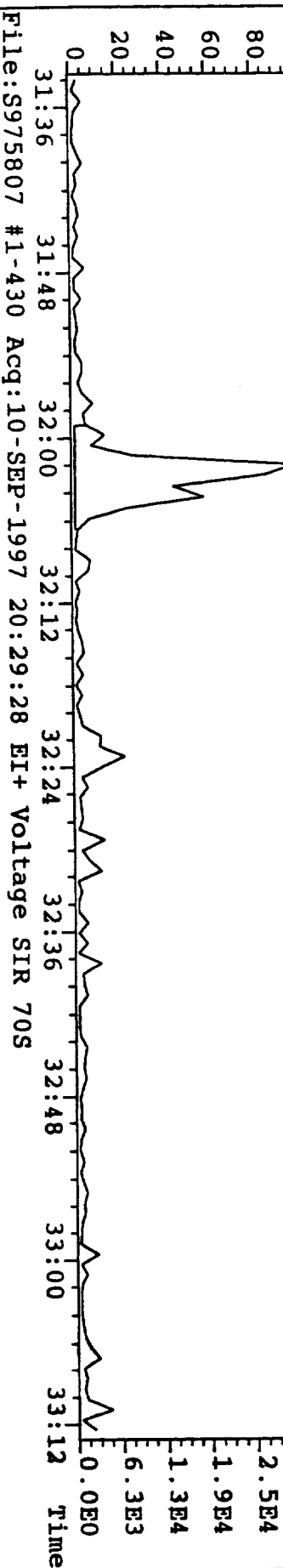
File:S975807 #1-430 Acq:10-SEP-1997 20:29:28 EI+ Voltage SIR 70S  
409.7789 F:4 Exp:EPCUS  
Sample Text:TLI M23 BLANK TLI#43057  
INJ. TIME = 20:32 File Text:TLI M23 BLANK



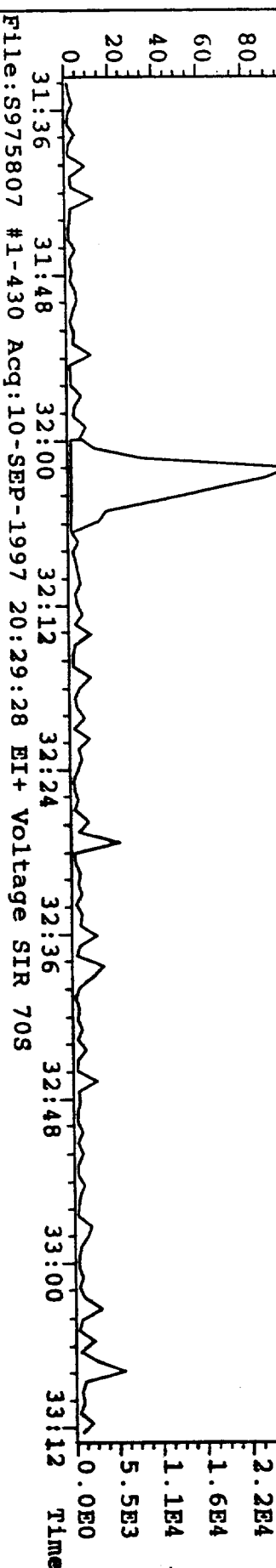
File:S975807 #1-430 Acq:10-SEP-1997 20:29:28 EI+ Voltage SIR 70S  
417.8253 F:4 Exp:EPCUS  
Sample Text:TLI M23 BLANK TLI#43057  
INJ. TIME = 20:32 File Text:TLI M23 BLANK



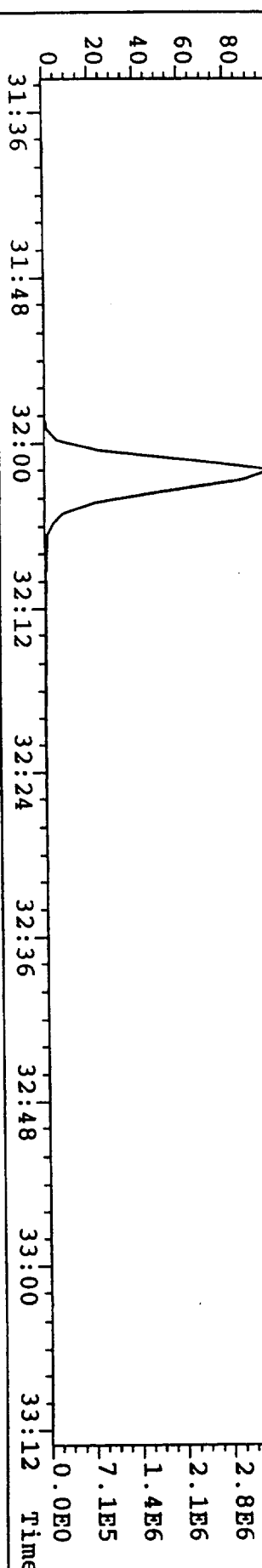
File: S975807 #1-430 Acq: 10-SEP-1997 20:29:28 EI+ Voltage SIR 70S  
 423.7766 F:4 Exp: EPCUS  
 Sample Text: TLI M23 BLANK TLI#43057  
 INJ. TIME = 20:32 File Text: TLI M23 BLANK  
 100% A8.59E4 3.2E4



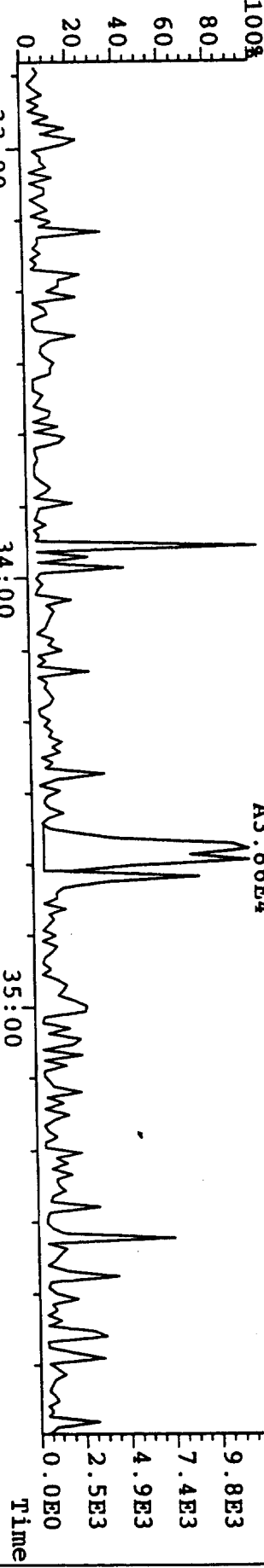
File: S975807 #1-430 Acq: 10-SEP-1997 20:29:28 EI+ Voltage SIR 70S  
 425.7737 F:4 Exp: EPCUS  
 Sample Text: TLI M23 BLANK TLI#43057  
 INJ. TIME = 20:32 File Text: TLI M23 BLANK  
 100% A7.51E4 2.7E4



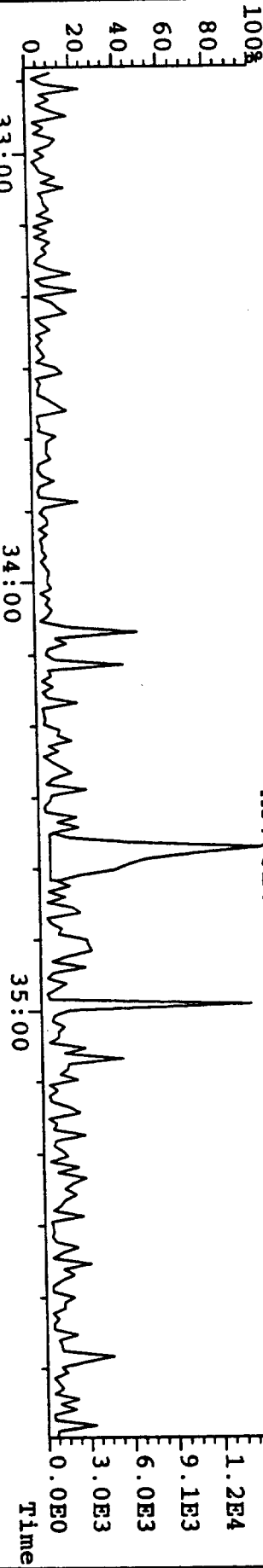
File: S975807 #1-430 Acq: 10-SEP-1997 20:29:28 EI+ Voltage SIR 70S  
 435.8169 F:4 Exp: EPCUS  
 Sample Text: TLI M23 BLANK TLI#43057  
 INJ. TIME = 20:32 File Text: TLI M23 BLANK  
 100% 32:02 3.6E6



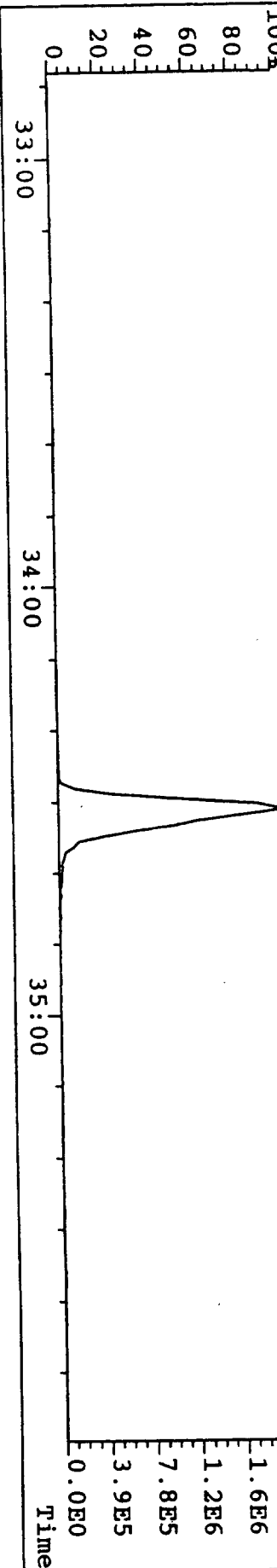
File: S975807 #1-430 Acq: 10-SEP-1997 20:29:28 EI+ Voltage SIR 70S  
441.7428 F: 4 Exp: EPCUS  
Sample Text: TLI M23 BLANK TLI#43057  
INJ. TIME = 20:32 File Text: TLI M23 BLANK  
1.2E4



File: S975807 #1-430 Acq: 10-SEP-1997 20:29:28 EI+ Voltage SIR 70S  
443.7399 F: 4 Exp: EPCUS  
Sample Text: TLI M23 BLANK TLI#43057  
INJ. TIME = 20:32 File Text: TLI M23 BLANK  
1.5E4

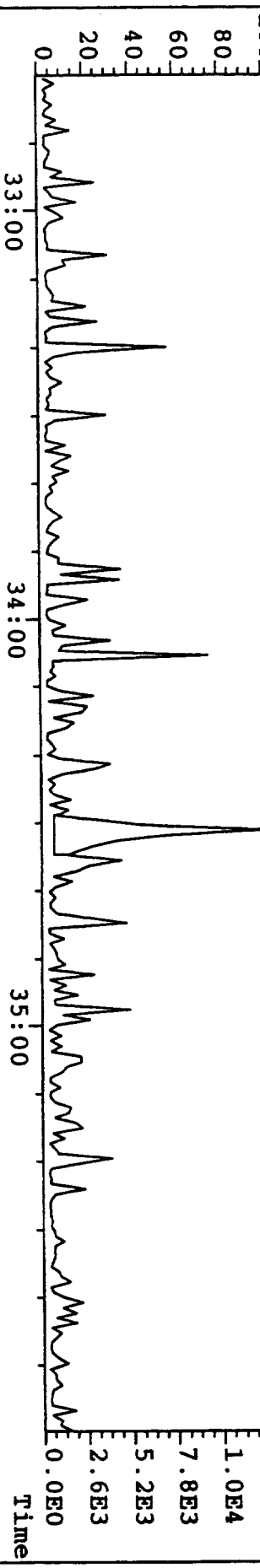


File: S975807 #1-430 Acq: 10-SEP-1997 20:29:28 EI+ Voltage SIR 70S  
469.7779 F: 4 Exp: EPCUS  
Sample Text: TLI M23 BLANK TLI#43057  
INJ. TIME = 20:32 File Text: TLI M23 BLANK  
2.0E6

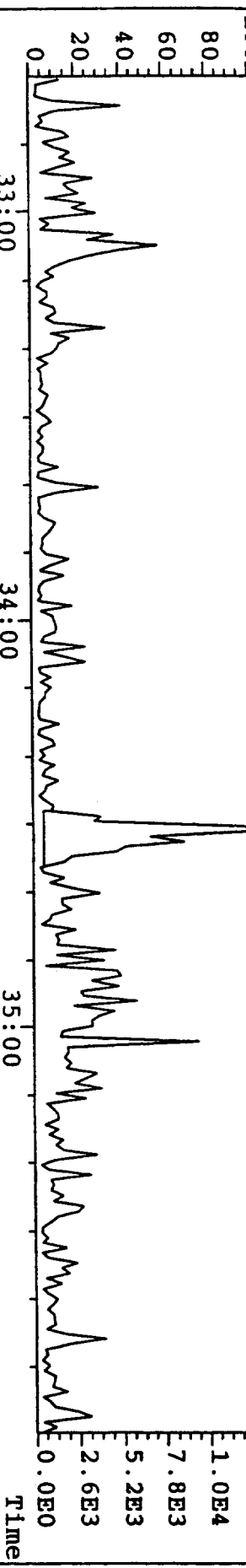




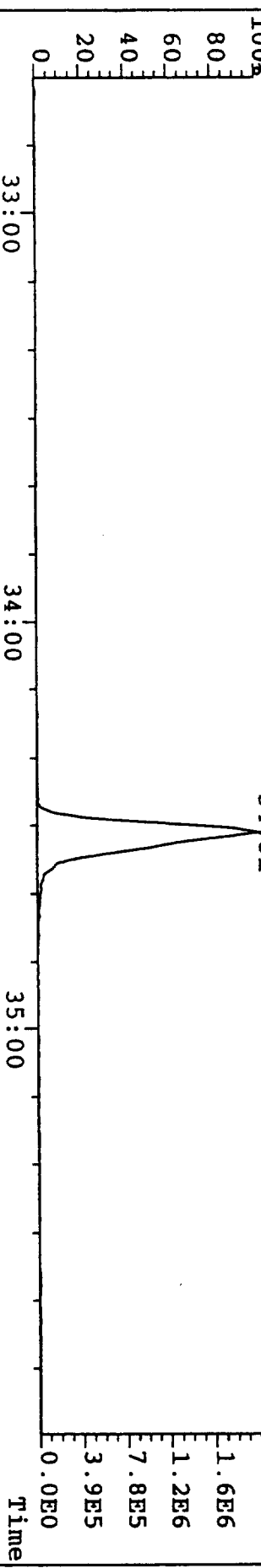
File: S975807 #1-430 Acq: 10-SEP-1997 20:29:28 EI+ Voltage SIR 70S  
457.7377 F:4 Exp: EPCUS  
Sample Text: TLI M23 BLANK TLI#43057  
INJ. TIME = 20:32 File Text: TLI M23 BLANK  
1.3E4



File: S975807 #1-430 Acq: 10-SEP-1997 20:29:28 EI+ Voltage SIR 70S  
459.7348 F:4 Exp: EPCUS  
Sample Text: TLI M23 BLANK TLI#43057  
INJ. TIME = 20:32 File Text: TLI M23 BLANK  
1.3E4



File: S975807 #1-430 Acq: 10-SEP-1997 20:29:28 EI+ Voltage SIR 70S  
469.7779 F:4 Exp: EPCUS  
Sample Text: TLI M23 BLANK TLI#43057  
INJ. TIME = 20:32 File Text: TLI M23 BLANK  
2.0E6





Initial , ....Date...

Data Review By:

*MSA* 9/13/97

Calculated Noise Area: n/a

The Total Area for each peak with an ion abundance ratio outside ratio limits has been recalculated according to method requirements.

Page No. 1 Listing of X973081B.dbf  
09/12/97 Matched GC Peaks / Ratio / Ret. Time

Compound/  
M\_2.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

TCDF				0.65-0.89			0.797-1.100		
304-306	DC	NL	0:00	RO 1.76	3.54		0.000		
	DC	SN	18:13	RO 5.21	1.49		0.809		
	DC	SN	18:20	RO 0.84	7.42		0.814		
	DC	SN	18:25	RO 2.53	0.60		0.818		
	DC	SN	18:31	RO 1.04	5.82		0.822		
	DC	SN	18:37	RO 0.56	1.20		0.827		
	DC	SN	18:41	RO 0.79	9.48		0.830		
	DC	SN	18:55	RO 2.07	5.61		0.840		
			19:06	RO 0.73	57.04	24.05	32.99	0.848	
	DC	SN	19:20	RO 1.23	6.05		0.859		
	DC	SN	19:32	RO 0.87	6.89		0.868		
	DC	SN	19:47	RO 2.52	13.45		0.879		
	DC	SN	20:06	RO 1.92	15.35		0.893		
			20:16	RO 2.13	18.23	21.97	10.30	0.900	
	DC	SN	20:20	RO 0.61	4.80		0.903		
	DC	SN	20:24	RO 0.57	6.11		0.906		
	DC	SN	20:33	RO 0.33	3.10		0.913		
	DC	SN	20:42	RO 1.39	6.62		0.919		
	DC	SN	20:49	RO 0.65	19.28		0.925		
	DC	SN	20:54	RO 0.36	3.59		0.928		
			21:13	RO 0.76	27.16	11.70	15.46	0.942	
	DC	SN	21:20	RO 3.46	1.50		0.947		
	DC	SN	21:28	RO 1.31	8.66		0.953		
	DC	SN	21:32	RO 0.48	8.92		0.956		
	DC	SN	21:36	RO 0.27	3.03		0.959		
	DC	SN	21:46	RO 0.38	2.99		0.967		
	DC	SN	21:53	RO 0.85	6.44		0.972		
	DC	SN	21:56	RO 0.07	0.87		0.974		
	DC	SN	22:03	RO 2.73	2.99		0.979		
	DC	SN	22:25	RO 0.60	9.47		0.996		
M			22:32	RO 0.83	27.80	12.60	15.20	1.001	2378-TCDF AN
	DC	SN	23:10	RO 2.16	3.98		1.029		
	DC	SN	23:13	RO 0.20	1.59		1.031		
	DC	SN	23:34	RO 0.60	7.42		1.047		
	DC	SN	23:51	RO 0.57	2.74		1.059		
	DC	SN	24:18	RO 0.40	1.26		1.079		
	DC	SN	24:28	RO 1.64	2.55		1.087		
	DC	SN	24:36	RO 0.43	7.79		1.093		
	DC	SN	24:40	RO 3.60	1.19		1.095		
	DC	WH	24:58	RO 1.94	1.38		1.109		
	DC	WH	25:01	RO 0.68	4.02		1.111		
304-306			4 Peaks		130.23				

Page No. 2  
9/12/97

Listing of X973081B.dbf  
Matched GC Peaks / Ratio / Ret. Time

Compound/  
M\_Z... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

		0.65-0.89				0.955-1.045			
13C12-TCDF									
116-318	DC NL	0:00	RO	1.24	8.04			0.000	
	DC WL	21:11	RO	0.92	116.20			0.941	
	DC WL	21:26		0.76	140.82			0.952	
		22:31		0.78	25,717.50	11,307.90	14,409.60	1.000	13C12-2378-TCDF ISO
		23:06		0.83	74.32	33.73	40.59	1.026	
	DC WH	24:31		0.66	263.74			1.089	
316-318		2 Peaks			25,791.82				

----- Above: TCDF / TCDD Follows -----

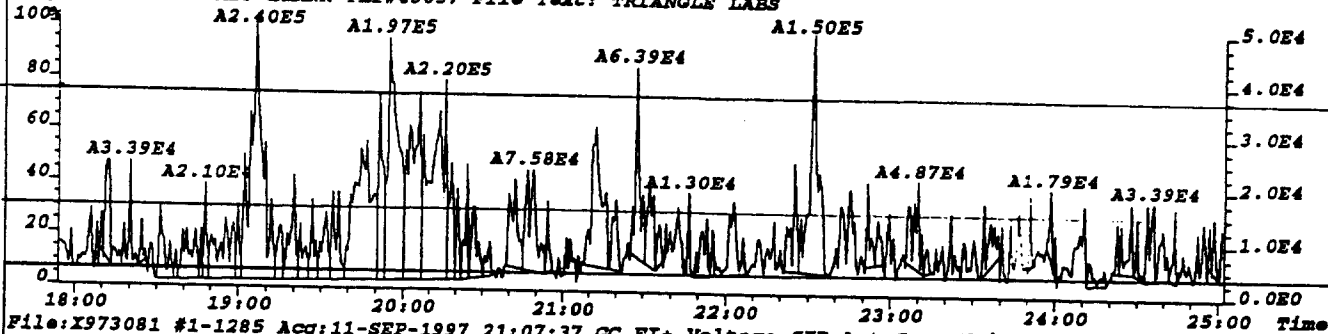
		0.65-0.89				0.906-1.094			
13C12-TCDD									
332-334	DC NL	0:00	RO	2.13	6.73			0.000	
		20:08	RO	1.01	97.12	55.52	54.87	0.948	
		21:14		0.77	20,642.36	8,983.46	11,658.90	1.000	13C12-2378-TCDD IS1
		21:30		0.80	25,442.00	11,298.80	14,143.20	1.013	13C12-1234-TCDD RS1
		22:10		0.77	267.84	116.93	150.91	1.044	
	DC WH	23:50	RO	0.40	35.47			1.122	
332-334		4 Peaks			46,449.32				

Column Description..... "Why" Code Description..... QC Log Desc.....

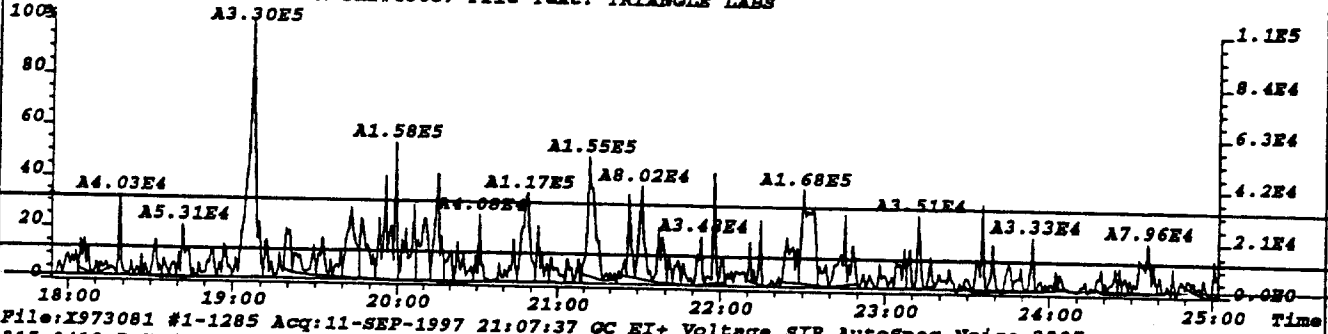
M\_Z -Nominal Ion Mass(es) WL-Below Retention Time Window A-Peak Added  
 ..RT. -Retention Time (mm:ss) WH-Above Retention Time Window K-Peak Kept  
 Rat.1 -Ratio of M/M+2 Ions SN-Below Signal to Noise Level D-Peak Deleted  
 OK -RO-Ratio Outside Limits <M-Below Method Detection Limit T-Time Changed  
 Rel.RT-Relative Retention Time NL-Channel Specific Noise Level M-Peak Area Changed  
 N-Name Changed  
 E-Ether Interference

\*\*\* End of Report \*\*\*

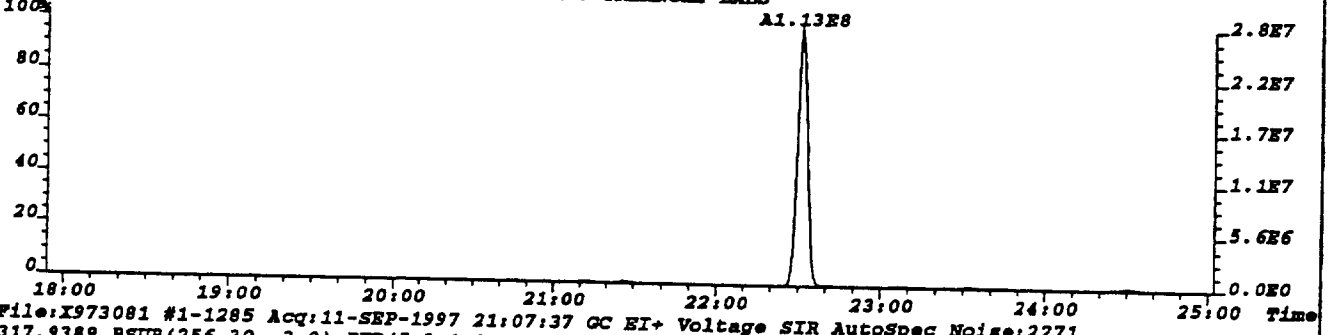
File: X973081 #1-1285 Acq: 11-SEP-1997 21:07:37 GC EI+ Voltage SIR AutoSpec Noise: 1753  
303.9016 BSUB(256,30,-3.0) PKD(5,3,1,0.10%,7012.0,0.00%,F,F) Exp: XCONF\_TT  
Sample Text: TLI M23 BLANK TLI#43057 File Text: TRIANGLE LABS



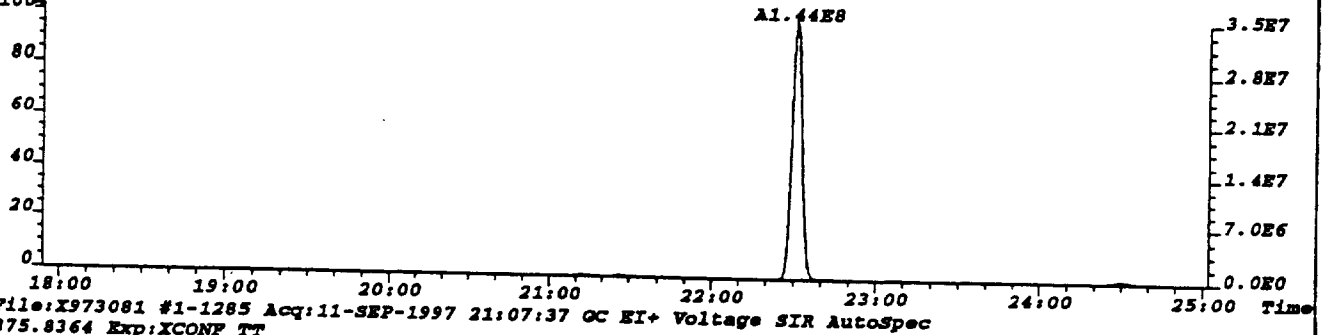
File: X973081 #1-1285 Acq: 11-SEP-1997 21:07:37 GC EI+ Voltage SIR AutoSpec Noise: 1000  
305.8987 BSUB(256,30,-3.0) PKD(5,3,1,0.10%,4000.0,0.00%,F,F) Exp: XCONF\_TT  
Sample Text: TLI M23 BLANK TLI#43057 File Text: TRIANGLE LABS



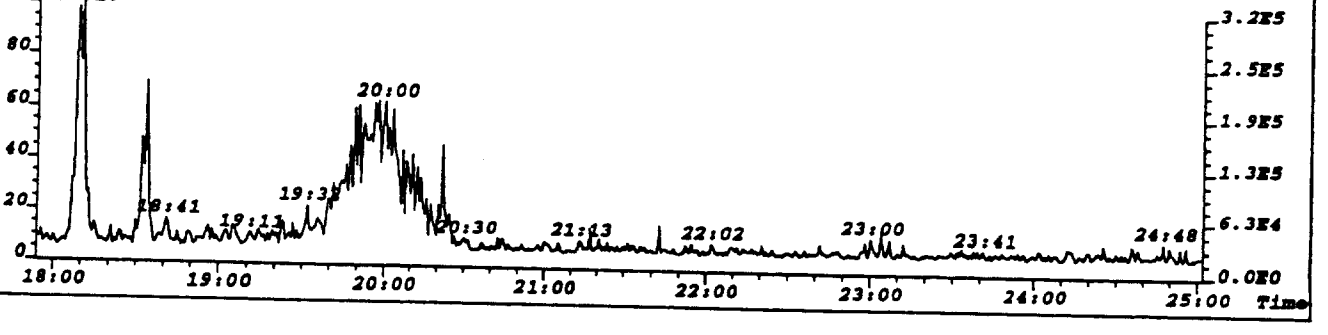
File: X973081 #1-1285 Acq: 11-SEP-1997 21:07:37 GC EI+ Voltage SIR AutoSpec Noise: 2805  
315.9419 BSUB(256,30,-3.0) PKD(5,3,1,0.10%,11220.0,0.00%,F,F) Exp: XCONF\_TT  
Sample Text: TLI M23 BLANK TLI#43057 File Text: TRIANGLE LABS



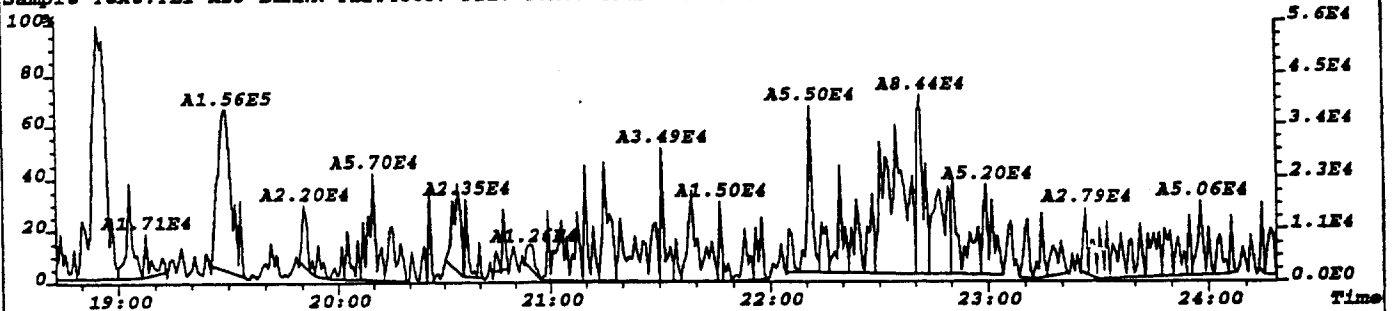
File: X973081 #1-1285 Acq: 11-SEP-1997 21:07:37 GC EI+ Voltage SIR AutoSpec Noise: 2271  
317.9389 BSUB(256,30,-3.0) PKD(5,3,1,0.10%,9084.0,0.00%,F,F) Exp: XCONF\_TT  
Sample Text: TLI M23 BLANK TLI#43057 File Text: TRIANGLE LABS



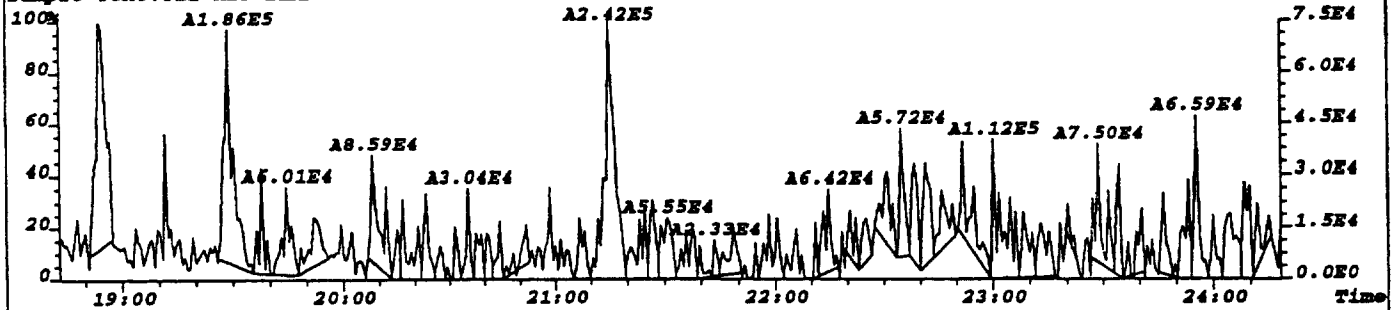
File: X973081 #1-1285 Acq: 11-SEP-1997 21:07:37 GC EI+ Voltage SIR AutoSpec  
375.8364 Exp: XCONF\_TT  
Sample Text: TLI M23 BLANK TLI#43057 File Text: TRIANGLE LABS



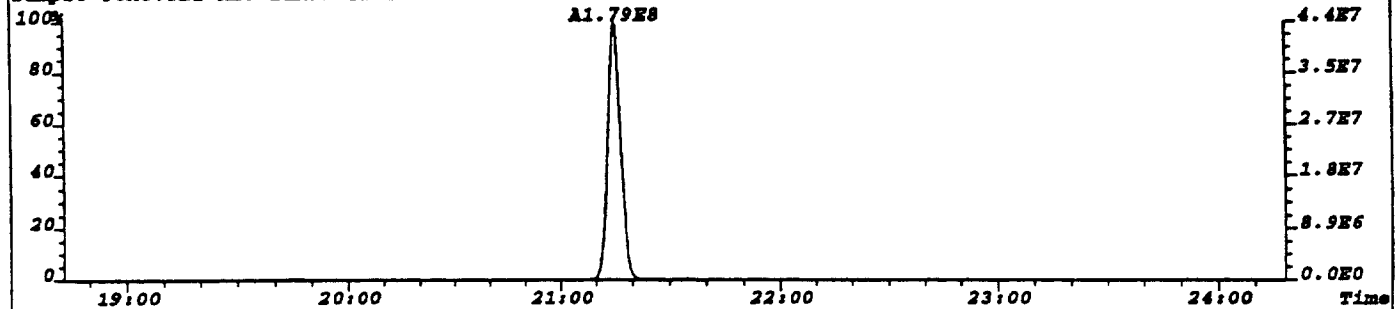
File: X973081 #1-1285 Acq: 11-SEP-1997 21:07:37 GC EI+ Voltage SIR AutoSpec Noise: 1086  
319.8965 BSUB(256,30,-3.0) PKD(5,3,1,0.10%,4344.0,0.00%,F,F) Exp: XCONF\_TT  
Sample Text: TLI M23 BLANK TLI#43057 File Text: TRIANGLE LABS



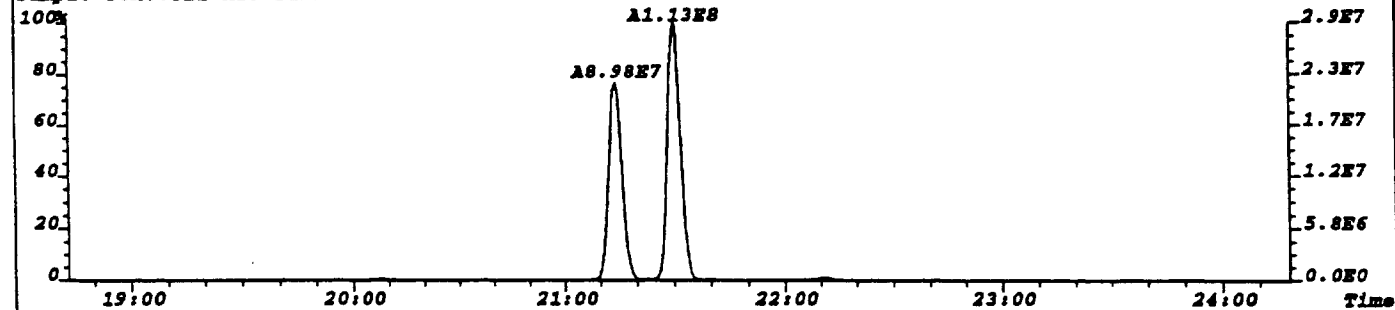
File: X973081 #1-1285 Acq: 11-SEP-1997 21:07:37 GC EI+ Voltage SIR AutoSpec Noise: 2463  
321.8936 BSUB(256,30,-3.0) PKD(5,3,1,0.10%,9852.0,0.00%,F,F) Exp: XCONF\_TT  
Sample Text: TLI M23 BLANK TLI#43057 File Text: TRIANGLE LABS



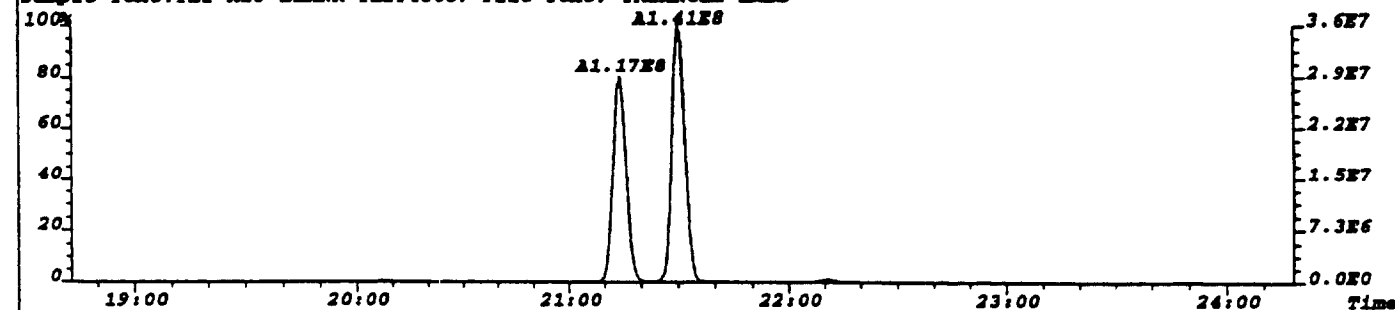
File: X973081 #1-1285 Acq: 11-SEP-1997 21:07:37 GC EI+ Voltage SIR AutoSpec Noise: 1077  
327.8847 BSUB(256,30,-3.0) PKD(5,3,1,0.10%,4308.0,0.00%,F,F) Exp: XCONF\_TT  
Sample Text: TLI M23 BLANK TLI#43057 File Text: TRIANGLE LABS



File: X973081 #1-1285 Acq: 11-SEP-1997 21:07:37 GC EI+ Voltage SIR AutoSpec Noise: 4038  
331.9368 BSUB(256,30,-3.0) PKD(5,3,1,0.10%,16152.0,0.00%,F,F) Exp: XCONF\_TT  
Sample Text: TLI M23 BLANK TLI#43057 File Text: TRIANGLE LABS

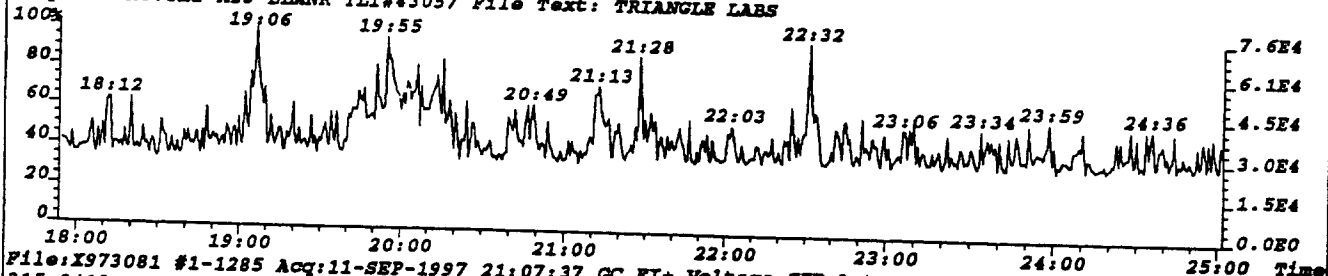


File: X973081 #1-1285 Acq: 11-SEP-1997 21:07:37 GC EI+ Voltage SIR AutoSpec Noise: 1899  
333.9338 BSUB(256,30,-3.0) PKD(5,3,1,0.10%,7596.0,0.00%,F,F) Exp: XCONF\_TT  
Sample Text: TLI M23 BLANK TLI#43057 File Text: TRIANGLE LABS



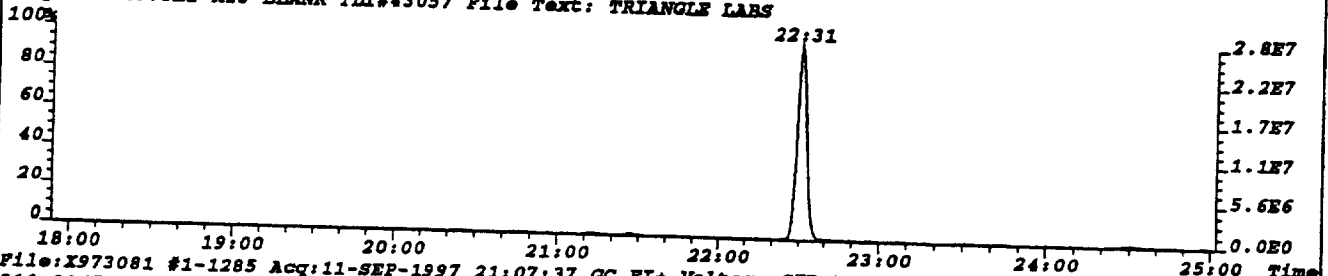
File: X973081 #1-1285 Acq: 11-SEP-1997 21:07:37 GC EI+ Voltage SIR AutoSpec  
303.9016 Exp: XCONF\_TT

Sample Text: TLI M23 BLANK TLI#43057 File Text: TRIANGLE LABS



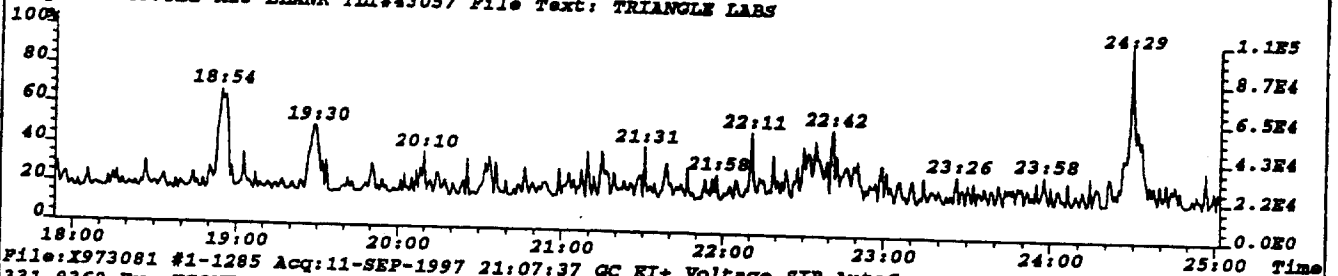
File: X973081 #1-1285 Acq: 11-SEP-1997 21:07:37 GC EI+ Voltage SIR AutoSpec  
315.9419 Exp: XCONF\_TT

Sample Text: TLI M23 BLANK TLI#43057 File Text: TRIANGLE LABS



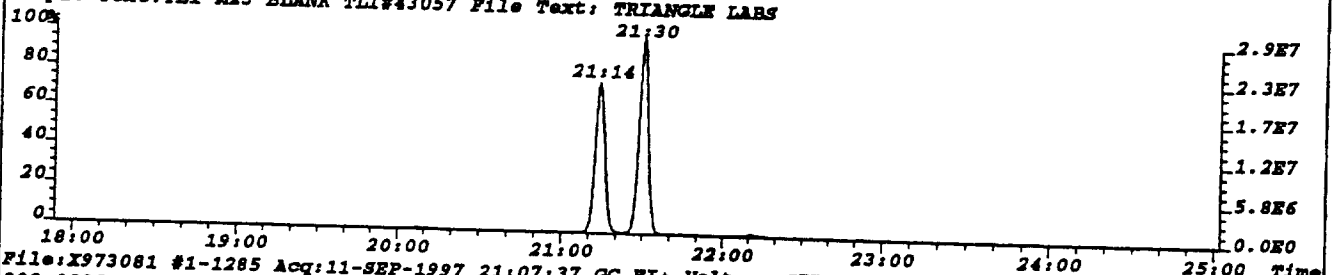
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319.8965 Exp: XCONF\_TT

Sample Text: TLI M23 BLANK TLI#43057 File Text: TRIANGLE LABS



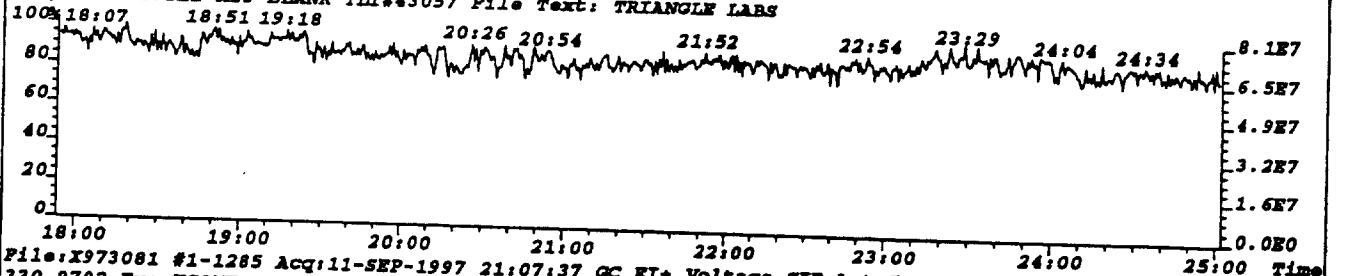
File: X973081 #1-1285 Acq: 11-SEP-1997 21:07:37 GC EI+ Voltage SIR AutoSpec  
331.9368 Exp: XCONF\_TT

Sample Text: TLI M23 BLANK TLI#43057 File Text: TRIANGLE LABS



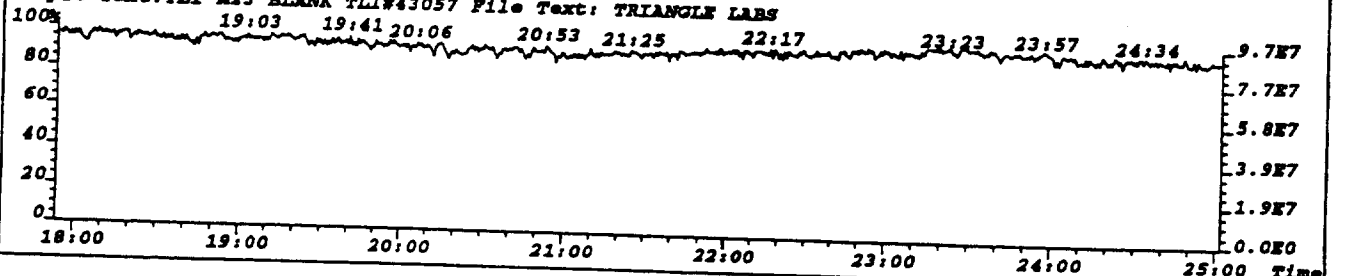
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292.9825 Exp: XCONF\_TT

Sample Text: TLI M23 BLANK TLI#43057 File Text: TRIANGLE LABS



File: X973081 #1-1285 Acq: 11-SEP-1997 21:07:37 GC EI+ Voltage SIR AutoSpec  
330.9792 Exp: XCONF\_TT

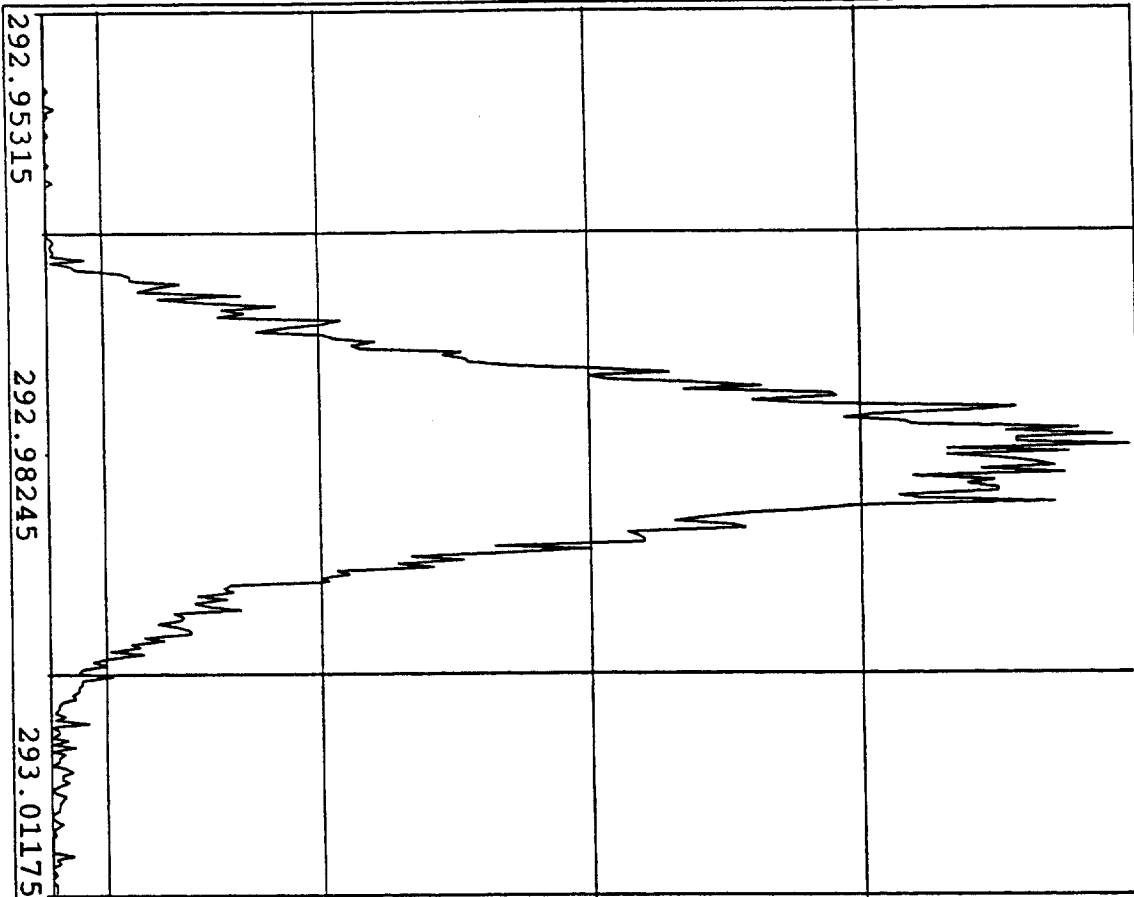
Sample Text: TLI M23 BLANK TLI#43057 File Text: TRIANGLE LABS



Peak Locate Examination: 11-SEP-1997: 21:07 File: X973081  
Experiment: XCONF\_TR Function: 1 Reference: PFK

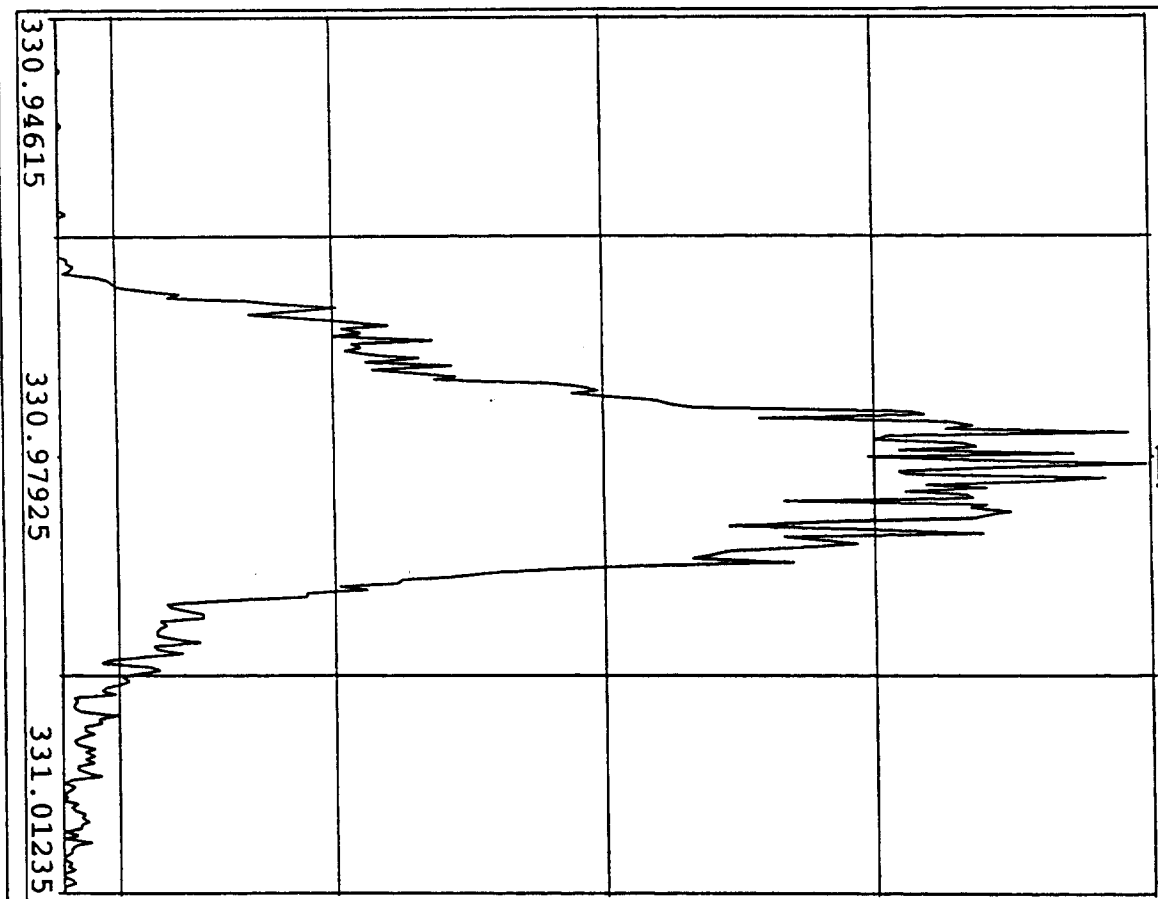
PPM  
200

Volts  
0.8981



PPM  
200

Volts  
0.8562





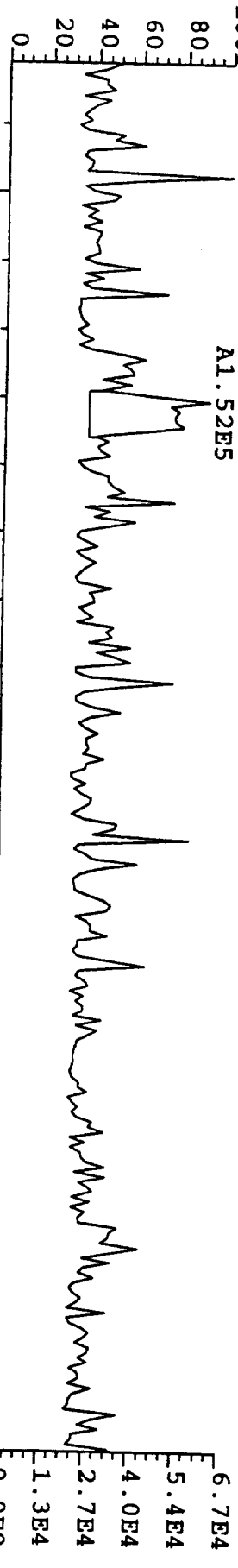
File: X973081 #1-1285 Acq: 11-SEP-1997 21:07:37 GC EI+ Voltage SIR AutoSpec  
303.9016 Exp: XCONF\_TT

Sample Text: TLI M23 BLANK TLI#43057 File Text: TRIANGLE LABS



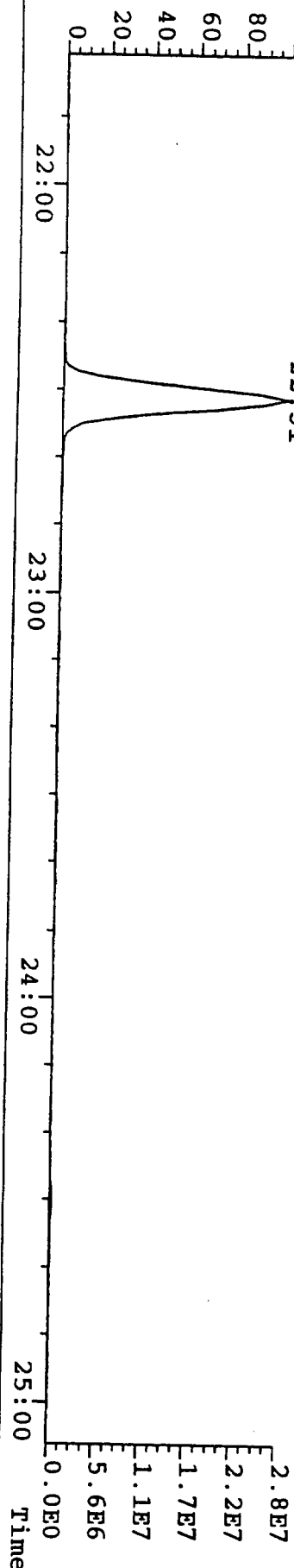
File: X973081 #1-1285 Acq: 11-SEP-1997 21:07:37 GC EI+ Voltage SIR AutoSpec  
305.8987 Exp: XCONF\_TT

Sample Text: TLI M23 BLANK TLI#43057 File Text: TRIANGLE LABS



File: X973081 #1-1285 Acq: 11-SEP-1997 21:07:37 GC EI+ Voltage SIR AutoSpec  
315.9419 Exp: XCONF\_TT

Sample Text: TLI M23 BLANK TLI#43057 File Text: TRIANGLE LABS



**Pacific Environmental Services**

LI Project: 43057  
 Client Sample: I-M23-1

Method 23 PCDD/PCDF Analysis (a)  
 Analysis File: S975808

Client Project: ASPHALT PLANT "A"	Date Received: 08/29/97	Spike File: SPX23704
Sample Matrix: M23TRAIN	Date Extracted: 09/06/97	ICal: SF56117
PLI ID: 181-27-1A-C	Date Analyzed: 09/10/97	ConCal: S975797

Sample Size: 1.000	Dilution Factor: n/a	% Moisture: n/a
Dry Weight: n/a	Blank File: S975807	% Lipid: n/a
GC Column: DB-5	Analyst: ML	% Solids: n/a

Analytes	Amt. (ng)	DL	EMPC	Ratio	RT	Flags
2,3,7,8-TCDD	EMPC		0.004			---
2,3,7,8-PeCDD	0.01			1.34	25:52	---
2,3,4,7,8-HxCDD	0.02			1.42	29:08	---
1,2,3,6,7,8-HxCDD	0.04			1.16	29:13	---
1,2,3,7,8,9-HxCDD	0.05			1.09	29:30	PR_
1,2,3,4,6,7,8-HpCDD	0.72			0.98	32:04	---
1,2,3,4,6,7,8,9-OCDD	44.5			0.87	34:33	---
2,3,7,8-TCDF	0.04			0.75	20:26	B_
1,2,3,7,8-PeCDF	0.008			1.68	24:44	---
2,3,4,7,8-PeCDF	0.02			1.46	25:30	B_
1,2,3,4,7,8-HxCDF	0.06			1.37	28:23	PRB
1,2,3,6,7,8-HxCDF	0.02			1.32	28:29	B_
2,3,4,6,7,8-HxCDF	EMPC		0.02			PRB
1,2,3,7,8,9-HxCDF	0.007			1.40	29:42	---
1,2,3,4,6,7,8-HpCDF	0.12			1.13	31:11	PRB
1,2,3,4,7,8,9-HpCDF	0.04			0.97	32:24	B_
1,2,3,4,6,7,8,9-OCDF	0.16			0.90	34:39	B_

Totals	Amt. (ng)	Number	DL	EMPC	Flags
Total TCDD	0.05	4		0.06	---
Total PeCDD	0.07	3		0.21	---
Total HxCDD	0.45	7			---
Total HpCDD	1.6	2			---
Total TCDF	0.14	10		0.17	---
Total PeCDF	0.12	5		0.12	---
Total HxCDF	0.19	8		0.23	---
Total HpCDF	0.30	4			---

**Pacific Environmental Services**

TLI Project: 43057  
 Client Sample: I-M23-1

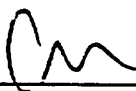
Method 23 PCDD/PCDF Analysis (a)  
 Analysis File: S975808

Internal Standards	Amt. (ng)	% Recovery	QC Limits	Ratio	RT	Flags
<sup>13</sup> C <sub>12</sub> -2,3,7,8-TCDF	3.9	98.5	40%-130%	0.76	20:24	—
<sup>13</sup> C <sub>12</sub> -2,3,7,8-TCDD	3.6	89.0	40%-130%	0.79	21:13	—
<sup>13</sup> C <sub>12</sub> -1,2,3,7,8-PeCDF	3.8	95.5	40%-130%	1.42	24:43	—
<sup>13</sup> C <sub>12</sub> -1,2,3,7,8-PeCDD	4.1	103	40%-130%	1.49	25:51	—
<sup>13</sup> C <sub>12</sub> -1,2,3,6,7,8-HxCDF	4.1	102	40%-130%	0.50	28:29	—
<sup>13</sup> C <sub>12</sub> -1,2,3,6,7,8-HxCDD	3.7	93.6	40%-130%	1.24	29:12	—
<sup>13</sup> C <sub>12</sub> -1,2,3,4,6,7,8-HpCDF	2.8	71.1	25%-130%	0.45	31:11	—
<sup>13</sup> C <sub>12</sub> -1,2,3,4,6,7,8-HpCDD	3.1	78.3	25%-130%	1.03	32:03	—
<sup>13</sup> C <sub>12</sub> -1,2,3,4,6,7,8,9-OCDD	4.8	60.5	25%-130%	0.86	34:32	—

Surrogate Standards (Type A)	Amt. (ng)	% Recovery	QC Limits	Ratio	RT	Flags
<sup>37</sup> Cl <sub>4</sub> -2,3,7,8-TCDD	3.9	97.6	70%-140%		21:14	—
<sup>13</sup> C <sub>12</sub> -2,3,4,7,8-PeCDF	3.7	93.2	70%-140%	1.45	25:29	—
<sup>13</sup> C <sub>12</sub> -1,2,3,4,7,8-HxCDF	3.8	94.6	70%-140%	0.50	28:22	—
<sup>13</sup> C <sub>12</sub> -1,2,3,4,7,8-HxCDD	3.5	88.0	70%-140%	1.20	29:07	—
<sup>13</sup> C <sub>12</sub> -1,2,3,4,7,8,9-HpCDF	3.3	83.6	70%-140%	0.41	32:23	—

Alternate Standards (Type A)	Amt. (ng)	% Recovery	QC Limits	Ratio	RT	Flags
<sup>13</sup> C <sub>12</sub> -1,2,3,7,8,9-HxCDF	3.7	91.3	40%-130%	0.50	29:42	—
<sup>13</sup> C <sub>12</sub> -2,3,4,6,7,8-HxCDF	4.0	99.0	40%-130%	0.49	28:59	—

Recovery Standards	Ratio	RT	Flags
<sup>13</sup> C <sub>12</sub> -1,2,3,4-TCDD	0.80	21:01	—
<sup>13</sup> C <sub>12</sub> -1,2,3,7,8,9-HxCDD	1.23	29:29	—

Data Reviewer:  09/11/97

Initial CM Date 9/11/97

ata Review By: Calculated Noise Area: 2.89

The Total Area for each peak with an ion abundance ratio outside ratio limits has been recalculated according to method requirements.

Page No. 1 Listing of S975808B.dbf  
09/11/97 Matched GC Peaks / Ratio / Ret. Time

Compound/  
M\_Z.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

		0.65-0.89				0.823-1.104			
TCDF		0.000				0.000			
304-306	DC NL	0:00	RO	0.15	0.14				
		16:56		0.75	6.90	2.95	3.95	0.830	
K		17:23		0.74	8.43	3.58	4.85	0.852	
K		17:40		0.73	10.53	4.46	6.07	0.866	
		18:04	RO	0.98	18.92	10.47	10.69	0.886	
		18:27		0.81	24.57	11.02	13.55	0.904	
A		18:54		0.88	30.00	14.00	16.00	0.926	
		19:14		0.68	25.49	10.35	15.14	0.943	
M		19:43		0.88	31.80	14.90	16.90	0.967	
		19:58		0.71	40.05	16.66	23.39	0.979	
		20:12		0.82	11.18	5.05	6.13	0.990	
		20:26		0.75	75.49	32.29	43.20	1.002	2378-TCDF AN
		20:55	RO	0.94	15.12	8.07	8.54	1.025	
		21:09	RO	1.07	7.81	4.72	4.41	1.037	
	DC SN	21:43		0.84	3.50			1.065	
		22:20	RO	0.95	12.27	6.59	6.93	1.095	
304-306		14 Peaks				318.56			

		0.65-0.89				0.951-1.049			
13C12-TCDF		0.000				0.000			
316-318	DC NL	0:00		0.75	2.05				
	DC WL	19:12		0.66	21.11			0.941	
		19:40		0.66	32.43	12.88	19.55	0.964	
		19:55	RO	0.50	26.32	11.45	23.12	0.976	
		20:24		0.76	6,033.07	2,601.46	3,431.61	1.000	13C12-2378-TCDF ISO
		20:54	RO	1.10	22.87	14.24	12.92	1.025	
316-318		4 Peaks				6,114.69			

----- Above: TCDF / TCDD Follows -----

		0.65-0.89				0.857-1.061			
TCDD		0.000				0.000			
320-322	DC NL	0:00	RO	0.13	0.16				
	DC WL	18:10	RO	0.58	0.80			0.856	
		18:18		0.73	27.69	11.72	15.97	0.863	
		18:45		0.66	15.97	6.36	9.61	0.884	
K		19:08		0.81	6.74	3.02	3.72	0.902	
		19:08		0.81				0.910	
	DC SN	19:19		0.71	0.82			0.927	
	DC SN	19:40	RO	0.53	1.36			0.932	
	DC SN	19:46	RO	0.23	0.46			0.937	
A		19:53	RO	0.48	12.96	5.64	11.80	0.937	
		20:05	RO	1.33	3.56			0.947	
	DC SN	20:46		0.88	1.05			0.979	
MK		20:57		0.86	10.21	4.73	5.48	0.987	
M		21:14	RO	0.37	5.63	2.45	6.57	1.001	2378-TCDD AN

Compound/  
M\_2.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

Compound	QC	Log	Omit	Why	RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Rel.RT	Compound.Name	ID	Flags
K	DC	SN			21:24	RO	0.14	1.63			1.009			
					21:37	RO	0.47	3.24	1.41	2.97	1.019			
	DC	SN			22:03	RO	0.29	0.90			1.039			
	DC	WH			22:39	RO	0.59	1.13			1.068			
320-322				7 Peaks			82.44							
37C1-TCDD										0.906-1.094				
328	DC	NL			0:00			1.00			0.000			
	DC	WL			18:36			671.91			0.877			
	DC	WL			18:45			146.56			0.884			
					19:41			18,140.50	18,140.50		0.928			
					21:14			3,630.46	3,630.46		1.001	37C1-TCDD	SUR1	
					21:42			183.22	183.22		1.023			
328					3 Peaks			21,954.18						
13C12-TCDD											0.906-1.094			
332-334	DC	NL			0:00	RO	17.57	0.12			0.000			
					19:54	RO	0.94	20.87	11.14	11.79	0.938			
					21:01			4,648.40	2,068.45	2,579.95	0.991	13C12-1234-TCDD	RS1	
					21:13			4,411.05	1,945.04	2,466.01	1.000	13C12-2378-TCDD	IS1	
					21:35			69.35	29.97	39.38	1.017			
332-334					4 Peaks			9,149.67						

----- Above: TCDD / PeCDF Follows -----

Compound	QC	Log	Omit	Why	RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Rel.RT	Compound.Name	ID	Flags
PeCDF											1.32-1.78			
340-342	DC	NL			0:00	RO	0.78	0.12			0.000			
	DC	SN			22:29	RO	1.04	1.92			0.910			
					22:37			40.44	24.67	15.77	0.915			
	DC	SN			22:55	RO	0.16	0.54			0.927			
	DC	SN			23:42	RO	1.13	5.05			0.959			
					23:49			53.70	32.09	21.61	0.964			
	DC	SN			24:00			8.97			0.971			
D	D	SN			24:09			9.00			0.977			
A					24:21			26.50	15.80	10.70	0.985			
	DC	SN			24:38	RO	1.95	8.42			0.997			
M					24:44			10.65	6.68	3.97	1.001	12378-PeCDF	AN	
	DC	SN			24:53			8.01			1.007			
D	D	SN			25:04	RO	1.81	14.13			1.014			
					25:30			29.89	17.76	12.13	1.032	23478-PeCDF	AN	
	DC	SN			25:57	RO	0.72	2.73			1.050			
					26:21	RO	1.09	11.91	7.24	6.64	1.066			
	DC	SN			26:28			6.22			1.071			
	DC	SN			26:38	RO	0.42	1.86			1.078			
	DC	WH			26:55			3.82			1.089			
340-342					6 Peaks			173.09						
13C12-PeCDF											1.32-1.78			
352-354	DC	NL			0:00	RO	1.14	0.13			0.000			
					23:49			39.40	23.80	15.60	0.964			
					24:21			22.55	13.25	9.30	0.985			
					24:43			5,030.90	2,953.19	2,077.71	1.000	13C12-PeCDF 123	IS2	

Compound/ 2.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Rel.RT	Compound.Name	ID	Flags
25:02		1.61	34.52	21.28	13.24	1.013			
25:29		1.45	4,547.45	2,691.90	1,855.55	1.031	13C12-PeCDF	234	SUR2
26:27	RO	4.31	8.26			1.070			
5 Peaks			9,674.82						

52-354

----- Above: PeCDF / PeCDD Follows -----

RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Rel.RT	Compound.Name	ID	Flags
1.32-1.78						0.921-1.026			
PeCDD						0.000			
356-358	DC	NL	0:00	RO	0.88	0.12			
			23:58	RO	0.01	55.24	33.58	4,006.77	0.927
			24:11	RO	0.01	18.79	11.42	846.02	0.936
			24:27	RO	2.79	24.15	26.39	9.47	0.946
			24:44	RO	1.98	22.29	17.28	8.74	0.957
			25:04		1.36	18.58	10.70	7.88	0.970
			25:18		1.51	38.84	23.37	15.47	0.979
			25:32	RO	1.27	8.69	5.28	4.15	0.988
			25:52		1.34	9.59	5.50	4.09	1.001
8 Peaks			196.17						

356-358

RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Rel.RT	Compound.Name	ID	Flags
1.32-1.78						0.845-1.155			
13C12-PeCDD						0.000			
368-370	DC	NL	0:00	RO	1.00	0.12			
			24:47	RO	0.62	3.88			
			25:13	RO	0.82	2.81			
			25:51		1.49	3,028.25	1,813.06	1,215.19	1.000
			26:00		1.52	293.47	177.23	116.24	1.006
			26:19	RO	0.73	4.95			
			26:51	RO	0.32	9.08	5.52	17.44	1.039
3 Peaks			3,330.80						

368-370

----- Above: PeCDD / HxCDF Follows -----

RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Rel.RT	Compound.Name	ID	Flags
1.05-1.43						0.957-1.053			
HxCDF						0.000			
374-376	DC	NL	0:00		1.30	2.00			
			27:23	RO	1.52	19.47	13.20	8.69	0.961
			27:32		1.37	62.51	36.14	26.37	0.967
			27:50		1.24	9.10	5.04	4.06	0.977
			28:00		1.29	31.54	17.77	13.77	0.983
			28:23		1.37	75.02	43.35	31.67	0.996
			28:29		1.32	29.20	16.64	12.56	1.000
			28:36		1.22	7.16	3.93	3.23	1.004
			28:46		1.24	9.81	5.43	4.38	1.010
			28:57	RO	0.99	7.55	4.18	4.23	1.016
			28:59	RO	1.86	19.04	15.80	8.50	1.018
			29:07	RO	1.45	1.34			1.022
			29:14	RO	3.90	0.87			1.026
			29:24	RO	0.57	1.01			1.032
			29:31	RO	11.93	0.31			1.036
			29:38	RO	7.38	0.72			1.040
			29:42		1.40	7.57	4.42	3.15	1.043
			29:48	RO	1.61	11.47	8.24	5.12	1.046
			29:55	RO	3.55	1.05			1.050
			30:02	RO	0.73	1.03			1.054

K

A  
M

MK  
M

Compound/  
M\_Z.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

Compound	DC	WH	30:16	RO	1.47	3.43			1.063
374-376			12 Peaks			289.44			
13C12-HxCDF			0.43-0.59						0.859-1.141
384-386	DC	NL	0:00	RO	0.98	3.47			0.000
	DC	SN	27:23		0.53	6.19			0.961
			27:31		0.51	16.32	5.54	10.78	0.966
			28:22		0.50	3,532.36	1,175.53	2,356.83	0.996 13C12-HxCDF 478 SUR3
			28:29		0.50	3,893.18	1,290.86	2,602.32	1.000 13C12-HxCDF 678 IS4
	DC	SN	28:46	RO	1.19	2.67			1.010
			28:59		0.49	3,490.34	1,154.25	2,336.09	1.018 13C12-HxCDF 234 ALT2
	DC	SN	29:14	RO	0.88	2.07			1.026
			29:23	RO	1.74	7.19	8.30	4.76	1.032
	DC	SN	29:31	RO	0.89	4.27			1.036
			29:42		0.50	2,799.07	931.12	1,867.95	1.043 13C12-HxCDF 789 ALT1
384-386			6 Peaks			13,738.46			

----- Above: HxCDF / HxCDD Follows -----

HxCDD	DC	NL	0:00	RO	1.56	2.08			0.951-1.015
390-392			27:55		1.22	75.74	41.58	34.16	0.956
			28:23		1.29	68.09	38.41	29.68	0.972
	DC	SN	28:28	RO	3.38	1.75			0.975
			28:36		1.19	103.06	55.90	47.16	0.979
			28:45		1.18	17.87	9.67	8.20	0.985
	DC	SN	28:53	RO	0.75	2.33			0.989
			29:08		1.42	15.54	9.11	6.43	0.998 123478-HxCDD AN
			29:13		1.16	29.95	16.07	13.88	1.001 123678-HxCDD AN
			29:30		1.09	42.60	22.25	20.35	1.010 123789-HxCDD AN PR
	DC	WH	29:41	RO	0.85	5.18			1.017
390-392			7 Peaks			352.85			

13C12-HxCDD	DC	NL	0:00	RO	0.82	1.45			0.966-1.034
402-404	DC	WL	27:52	RO	0.66	2.96			0.954
			28:36		1.23	12.52	6.91	5.61	0.979
			29:07		1.20	2,521.18	1,375.41	1,145.77	0.997 13C12-HxCDD 478 SUR4
			29:12		1.24	2,943.73	1,628.34	1,315.39	1.000 13C12-HxCDD 678 IS5
			29:29		1.23	3,161.62	1,743.31	1,418.31	1.010 13C12-HxCDD 789 RS2
			29:41		1.36	9.42	5.42	4.00	1.017
	DC	SN	29:48	RO	2.82	1.39			1.021
402-404			5 Peaks			8,648.47			

----- Above: HxCDD / HpCDF Follows -----

HpCDF	DC	NL	0:00	RO	1.64	3.51			0.995-1.045
408-410			31:11		1.13	94.90	50.40	44.50	1.000 1234678-HpCDF AN PR
			31:24		1.10	16.64	8.73	7.91	1.007
			31:33		1.03	78.61	39.83	38.78	1.012
	DC	SN	31:51	RO	0.66	1.26			1.021

ge No. 5  
/11/97

Listing of S975808B.dbf  
Matched GC Peaks / Ratio / Ret. Time

mpound/  
Z.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

									1.025		
	DC	SN	31:58	RO	2.11						
			32:24		0.97			10.45	10.82	1.039	1234789-HpCDF AN
08-410			4 Peaks			211.42					

	DC	NL	0:00	RO	0.82						
			31:11		0.45	1,994.27	614.76	1,379.51	1.000		13C12-HpCDF 678 IS6
			32:23		0.41	1,285.52	375.39	910.13	1.038		13C12-HpCDF 789 SUR5
18-420			2 Peaks			3,279.79					

----- Above: HpCDF / HpCDD Follows -----

	DC	NL	0:00	RO	1.74						
			31:27		0.96	463.72	227.09	236.63	0.981		
			32:04		0.98	385.95	190.80	195.15	1.001		1234678-HpCDD AN
424-426			2 Peaks			849.67					

	DC	NL	0:00	RO	1.22						
			32:03		1.03	2,016.39	1,023.54	992.85	1.000		13C12-HpCDD 678 IS7
436-438			1 Peak			2,016.39					

----- Above: HpCDD / Octa-CDD and CDF Follows -----

	DC	NL	0:00		0.86	0.13					
	DC	SN	30:56	RO	3.00	0.34					
	DC	SN	31:08	RO	0.36	0.45					
	DC	SN	31:33	RO	7.31	0.25					
	DC	SN	31:47	RO	4.29	0.13					
	DC	SN	31:52	RO	0.52	0.91					
	DC	SN	32:01	RO	0.38	0.42					
	DC	SN	32:12	RO	1.04	0.87					
	DC	SN	32:27	RO	1.41	0.42					
	DC	SN	32:35	RO	0.23	0.25					
	DC	SN	32:52	RO	1.16	1.46					
	DC	SN	33:01		0.97	1.40					
	DC	SN	33:08	RO	0.13	0.19					
	DC	SN	33:20	RO	2.16	1.63					
	DC	SN	33:31	RO	1.15	1.23					
	DC	SN	33:34	RO	0.58	0.68					
	DC	SN	33:48	RO	2.41	0.51					
			34:39		0.90	59.10	28.00	31.10	1.003		OCDF AN
	DC	SN	34:55		0.80	4.15					
	DC	SN	35:04	RO	0.35	1.42					
	DC	SN	35:15		0.85	1.26					
	DC	SN	35:26	RO	1.53	1.00					
	DC	SN	35:48	RO	1.05	2.99					
442-444			1 Peak			59.10					



Compound/

M\_Z.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

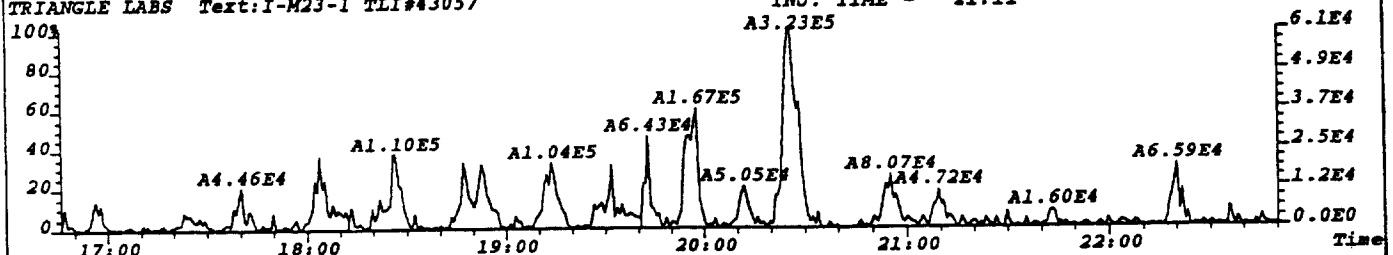
Compound	M_Z	QC	Log	Omit	Why	RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Rel.RT	Compound.Name	ID	Flags
OCDD						0.76-1.02						0.884-1.116			
458-460		DC	NL			0:00		0.86	0.13			0.000			
						34:33		0.87	12,207.19	5,681.55	6,525.64	1.000	OCDD		AN
458-460						1 Peak			12,207.19						
13C12-OCDD						0.76-1.02						0.996-1.005			
470-472		DC	NL			0:00	RO	1.17	0.11			0.000			
						34:32		0.86	1,984.37	920.29	1,064.08	1.000	13C12-OCDD		IS8
		DC	WH			34:55		0.76	2.02			1.011			
470-472						1 Peak			1,984.37						

Column Description..... "Why" Code Description..... QC Log Desc.....

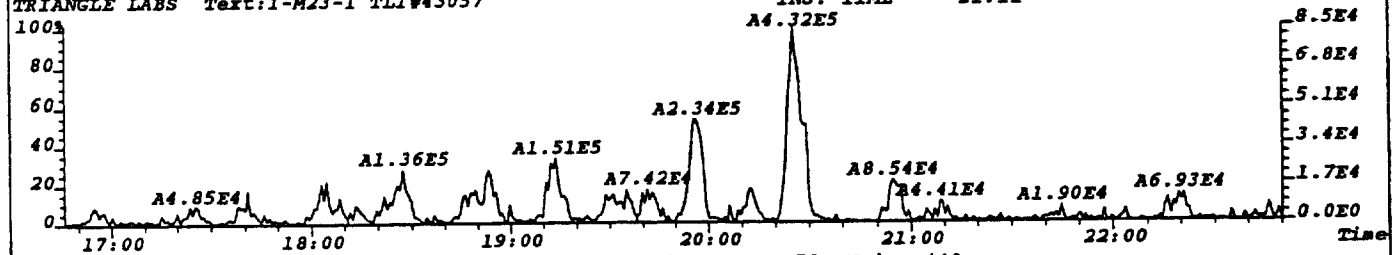
M\_Z -Nominal Ion Mass(es) WL-Below Retention Time Window A-Peak Added  
 ..RT. -Retention Time (mm:ss) WH-Above Retention Time Window K-Peak Kept  
 Rat.1 -Ratio of M/M+2 Ions SN-Below Signal to Noise Level D-Peak Deleted  
 OK -RO=Ratio Outside Limits <M-Below Method Detection Limit T-Time Changed  
 Rel.RT-Relative Retention Time NL-Channel Specific Noise Level M-Peak Area Changed  
 N-Name Changed  
 E-Ether Interference

\*\*\* End of Report \*\*\*

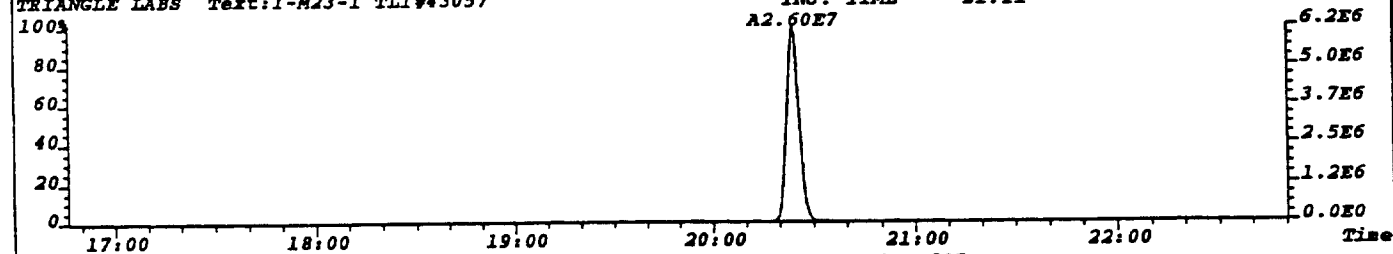
File:S975808 #1-848 Acq:10-SEP-1997 21:08:49 EI+ Voltage SIR 70S Noise:28  
303.9016 F:2 BSUB(256,30,-3.0) PKD(9,5,5,0.05%,112.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:I-M23-1 TLI#43057



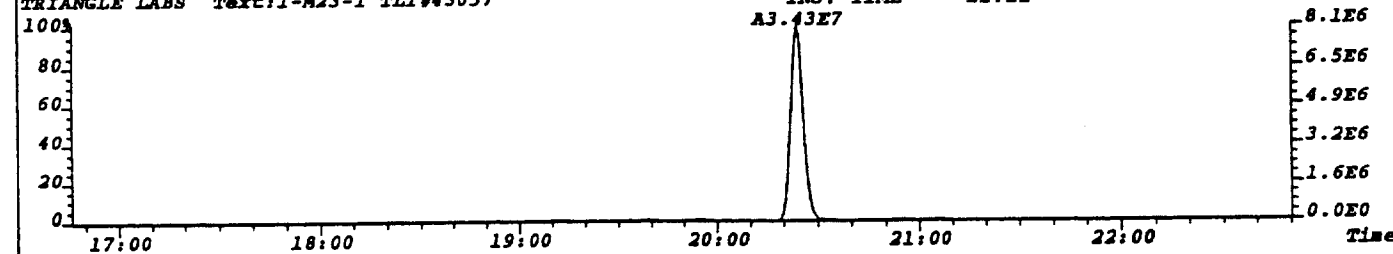
File:S975808 #1-848 Acq:10-SEP-1997 21:08:49 EI+ Voltage SIR 70S Noise:206  
305.8987 F:2 BSUB(256,30,-3.0) PKD(9,5,5,0.05%,824.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:I-M23-1 TLI#43057



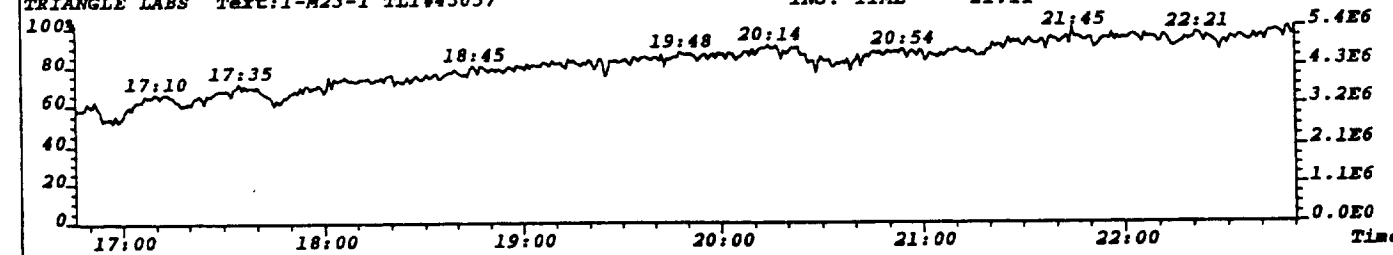
File:S975808 #1-848 Acq:10-SEP-1997 21:08:49 EI+ Voltage SIR 70S Noise:440  
315.9419 F:2 BSUB(256,30,-3.0) PKD(9,5,5,0.05%,1760.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:I-M23-1 TLI#43057



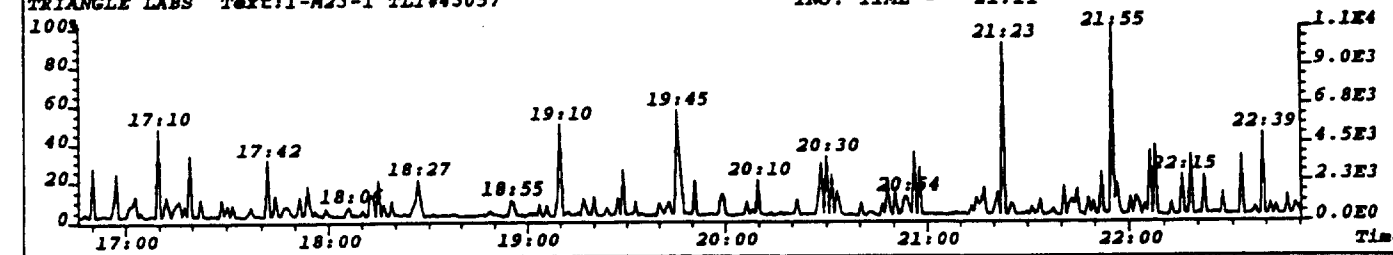
File:S975808 #1-848 Acq:10-SEP-1997 21:08:49 EI+ Voltage SIR 70S Noise:587  
317.9389 F:2 BSUB(256,30,-3.0) PKD(9,5,5,0.05%,2348.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:I-M23-1 TLI#43057

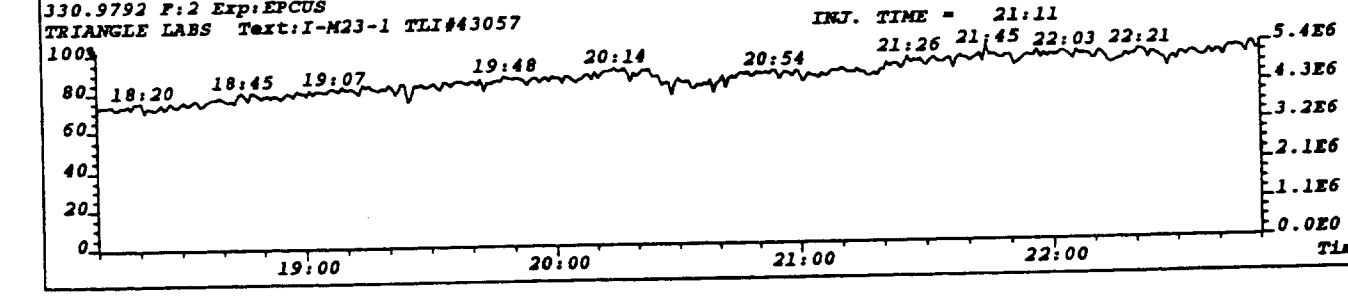
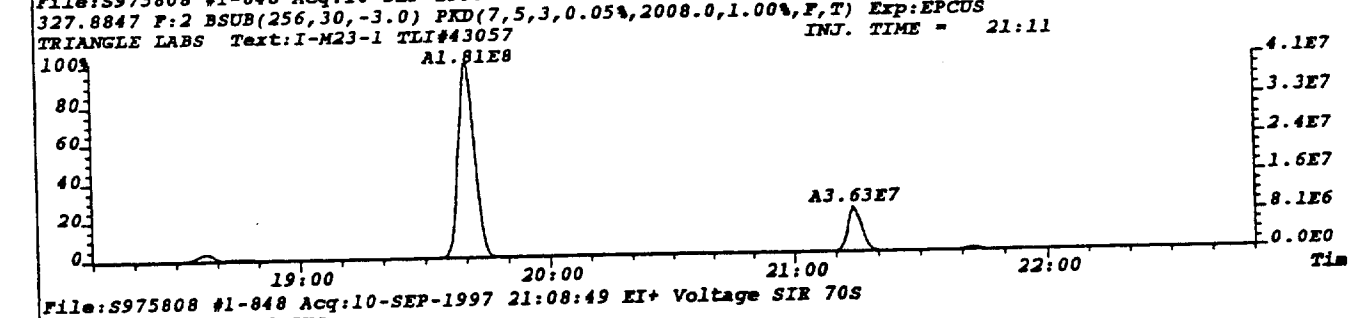
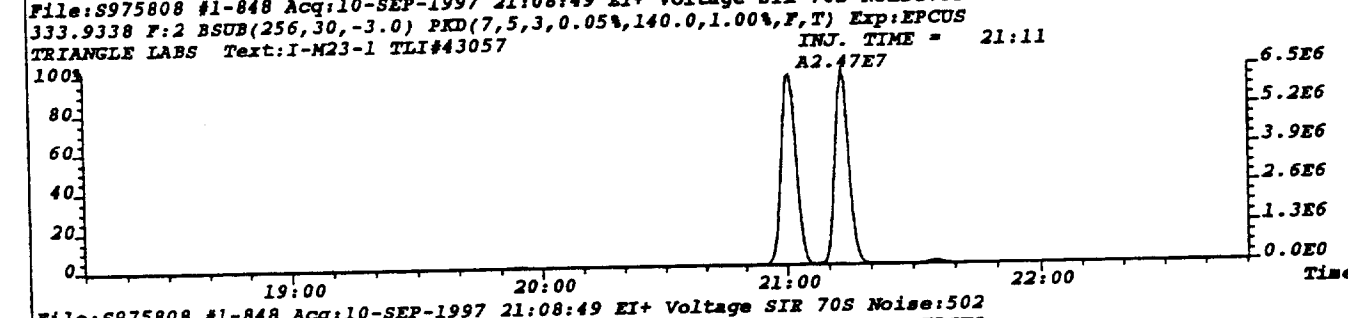
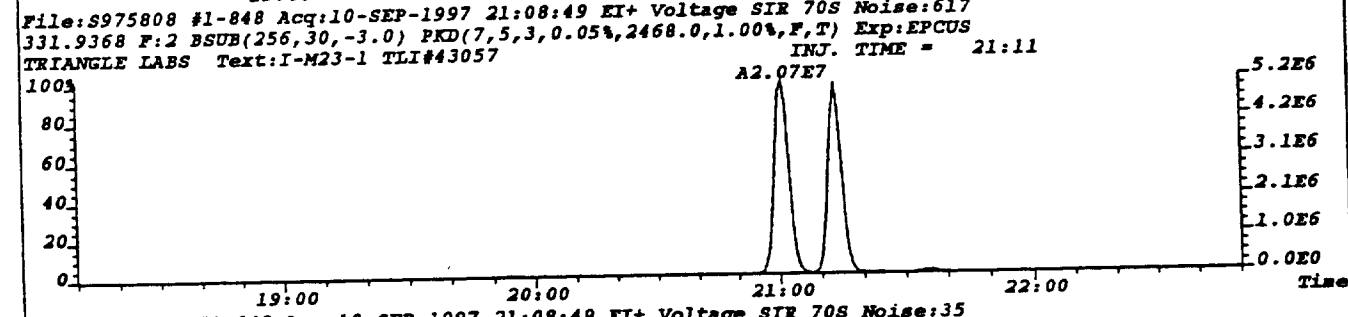
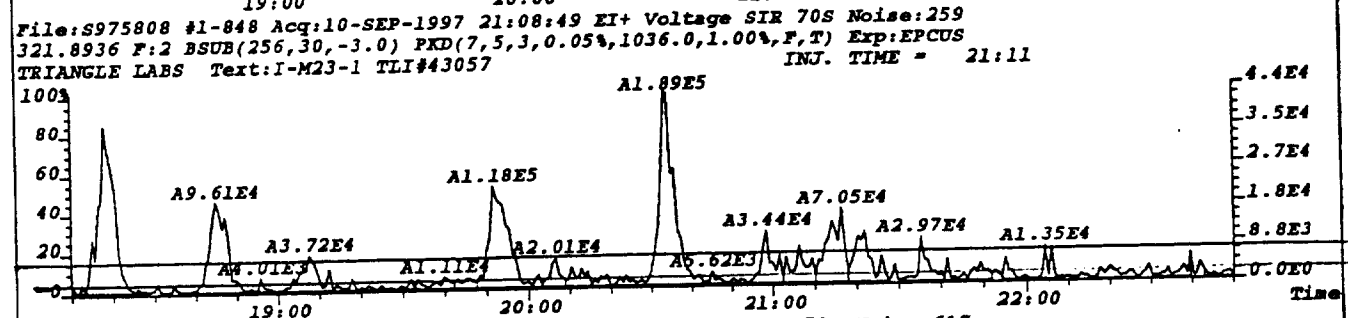
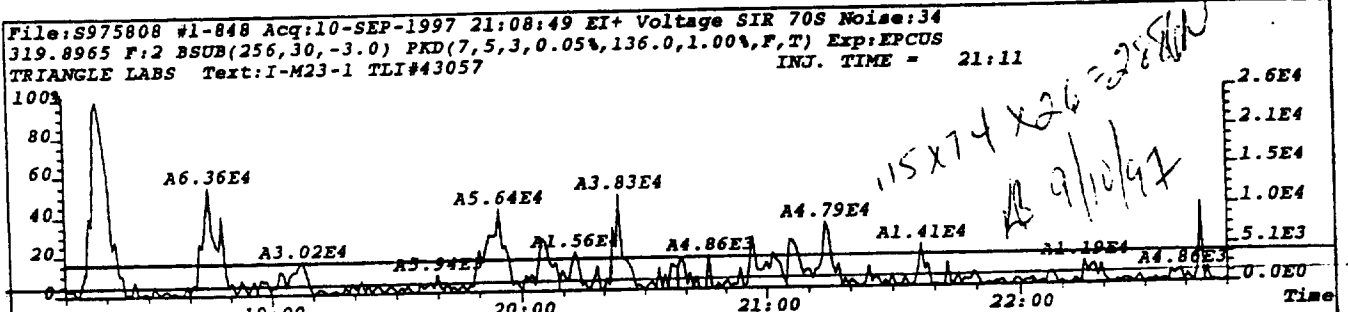


File:S975808 #1-848 Acq:10-SEP-1997 21:08:49 EI+ Voltage SIR 70S  
330.9792 F:2 Exp:EPCUS  
TRIANGLE LABS Text:I-M23-1 TLI#43057

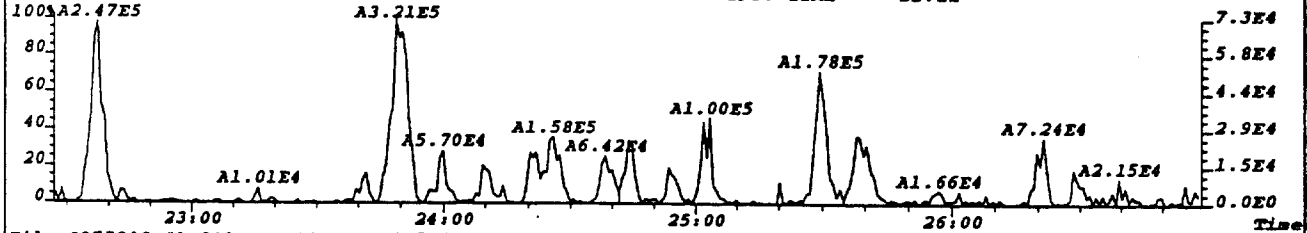


File:S975808 #1-848 Acq:10-SEP-1997 21:08:49 EI+ Voltage SIR 70S  
375.8364 F:2 Exp:EPCUS  
TRIANGLE LABS Text:I-M23-1 TLI#43057

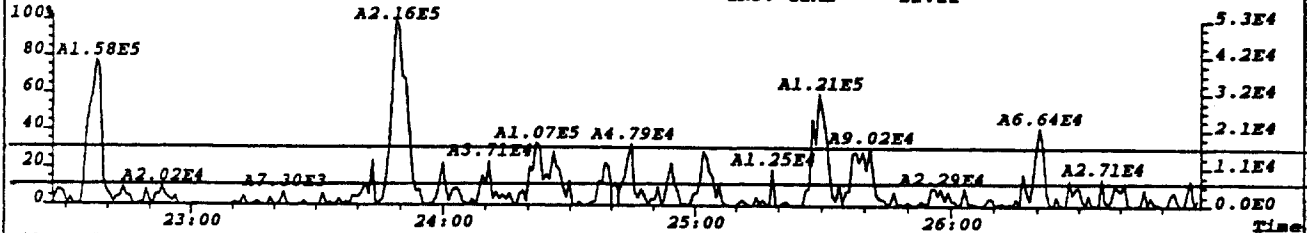




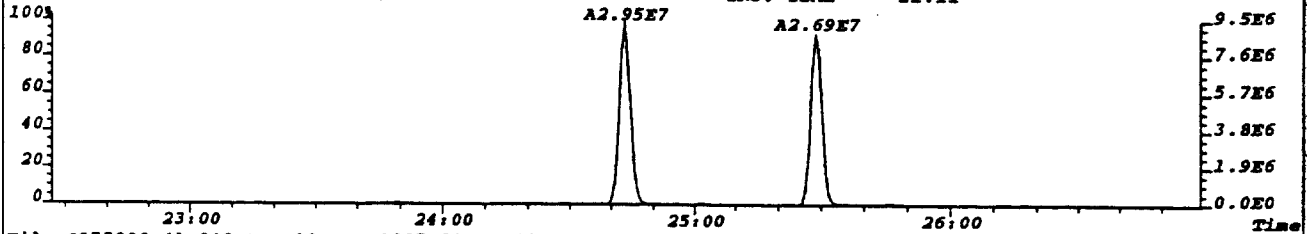
File: S975808 #1-848 Acq: 10-SEP-1997 21:08:49 EI+ Voltage SIR 70S Noise: 35  
 339.8597 F: 2 BSub(256, 30, -3.0) PKD(7, 5, 3, 0.05%, 140.0, 1.00%, F, T) Exp: EPCUS  
 TRIANGLE LABS Text: I-M23-1 TLI#43057 INJ. TIME = 21:11



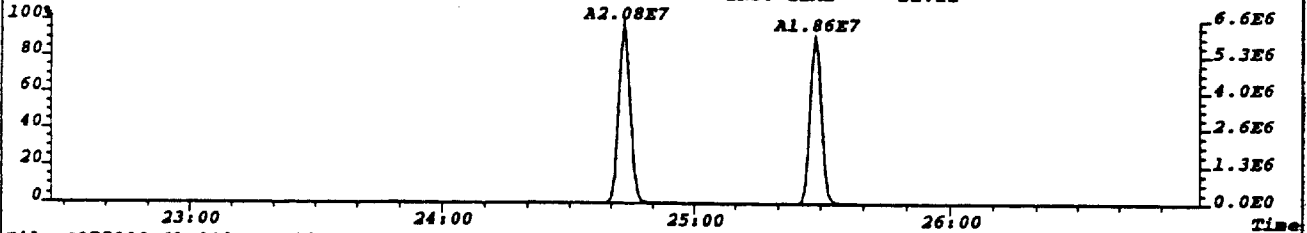
File: S975808 #1-848 Acq: 10-SEP-1997 21:08:49 EI+ Voltage SIR 70S Noise: 46  
 341.8567 F: 2 BSub(256, 30, -3.0) PKD(7, 5, 3, 0.05%, 184.0, 1.00%, F, T) Exp: EPCUS  
 TRIANGLE LABS Text: I-M23-1 TLI#43057 INJ. TIME = 21:11



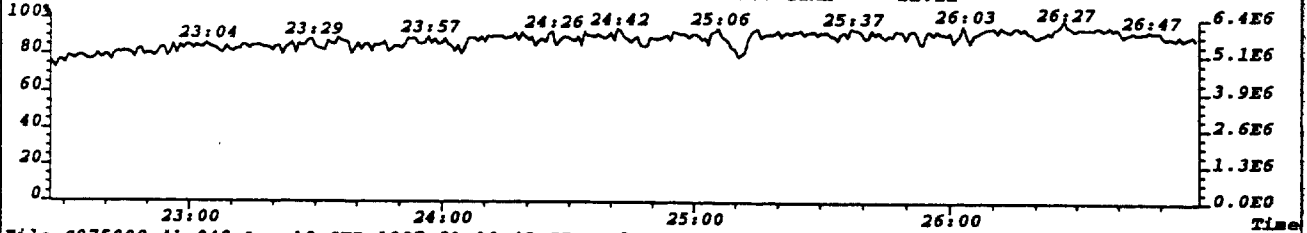
File: S975808 #1-848 Acq: 10-SEP-1997 21:08:49 EI+ Voltage SIR 70S Noise: 42  
 351.9000 F: 2 BSub(256, 30, -3.0) PKD(7, 5, 3, 0.05%, 168.0, 1.00%, F, T) Exp: EPCUS  
 TRIANGLE LABS Text: I-M23-1 TLI#43057 INJ. TIME = 21:11



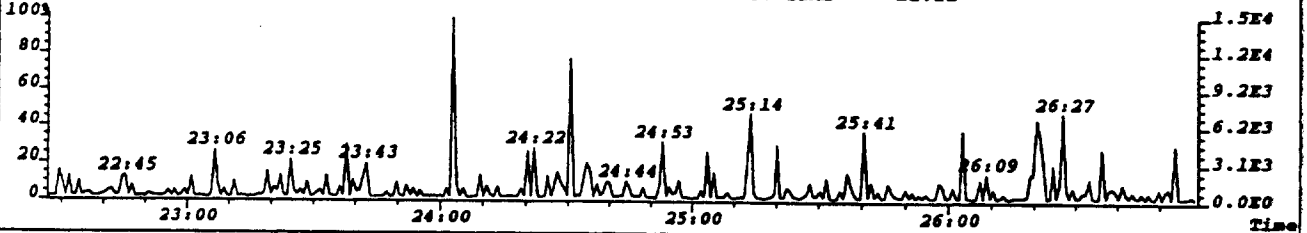
File: S975808 #1-848 Acq: 10-SEP-1997 21:08:49 EI+ Voltage SIR 70S Noise: 35  
 353.8970 F: 2 BSub(256, 30, -3.0) PKD(7, 5, 3, 0.05%, 140.0, 1.00%, F, T) Exp: EPCUS  
 TRIANGLE LABS Text: I-M23-1 TLI#43057 INJ. TIME = 21:11



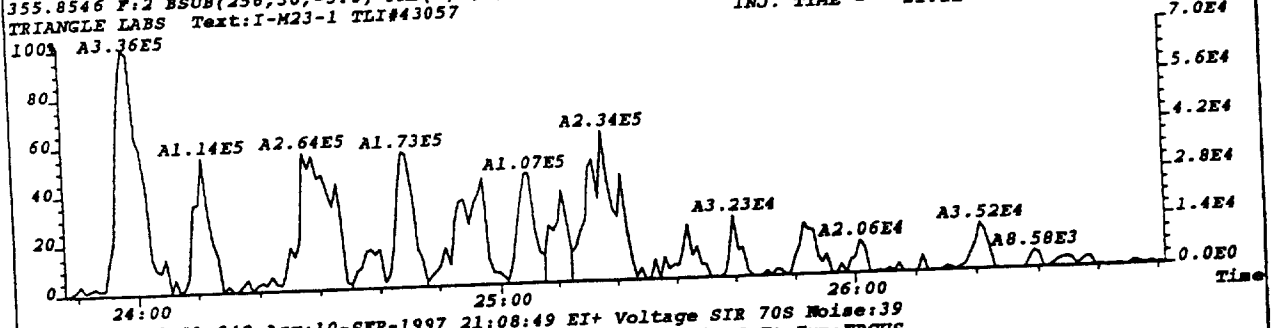
File: S975808 #1-848 Acq: 10-SEP-1997 21:08:49 EI+ Voltage SIR 70S  
 330.9792 F: 2 Exp: EPCUS  
 TRIANGLE LABS Text: I-M23-1 TLI#43057 INJ. TIME = 21:11



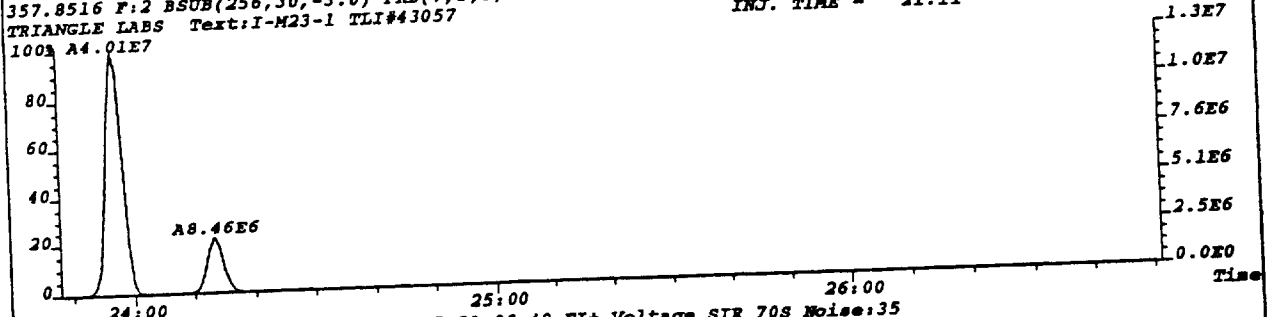
File: S975808 #1-848 Acq: 10-SEP-1997 21:08:49 EI+ Voltage SIR 70S  
 409.7974 F: 2 Exp: EPCUS  
 TRIANGLE LABS Text: I-M23-1 TLI#43057 INJ. TIME = 21:11



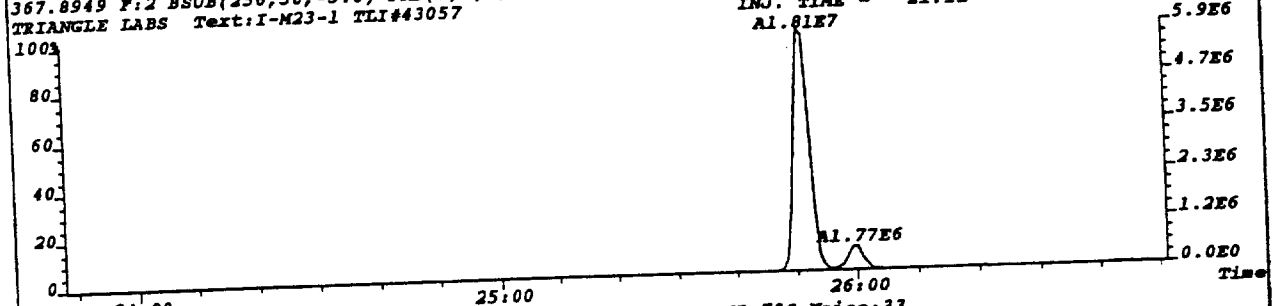
File: S975808 #1-848 Acq: 10-SEP-1997 21:08:49 EI+ Voltage SIR 70S Noise: 34  
 355.8546 F: 2 BSUB(256, 30, -3.0) PKD(7, 5, 3, 0.05%, 136.0, 1.00%, F, T) Exp: EPCUS  
 TRIANGLE LABS Text: I-M23-1 TLI#43057 INJ. TIME = 21:11



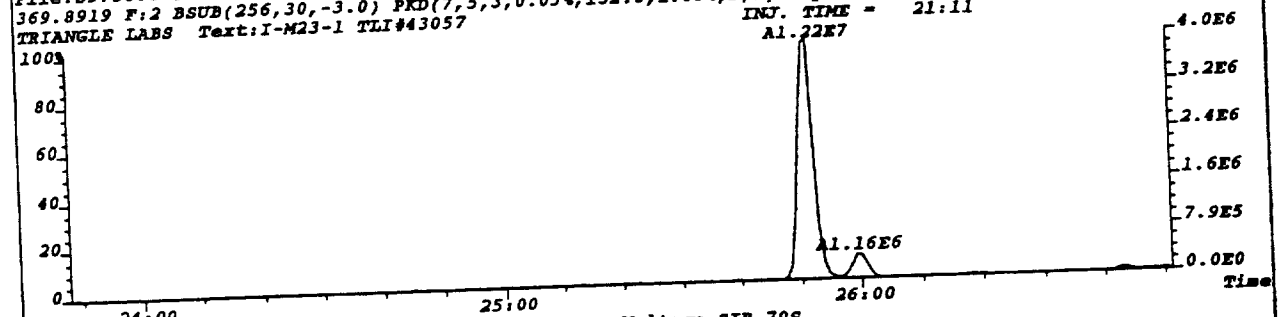
File: S975808 #1-848 Acq: 10-SEP-1997 21:08:49 EI+ Voltage SIR 70S Noise: 39  
 357.8516 F: 2 BSUB(256, 30, -3.0) PKD(7, 5, 3, 0.05%, 156.0, 1.00%, F, T) Exp: EPCUS  
 TRIANGLE LABS Text: I-M23-1 TLI#43057 INJ. TIME = 21:11



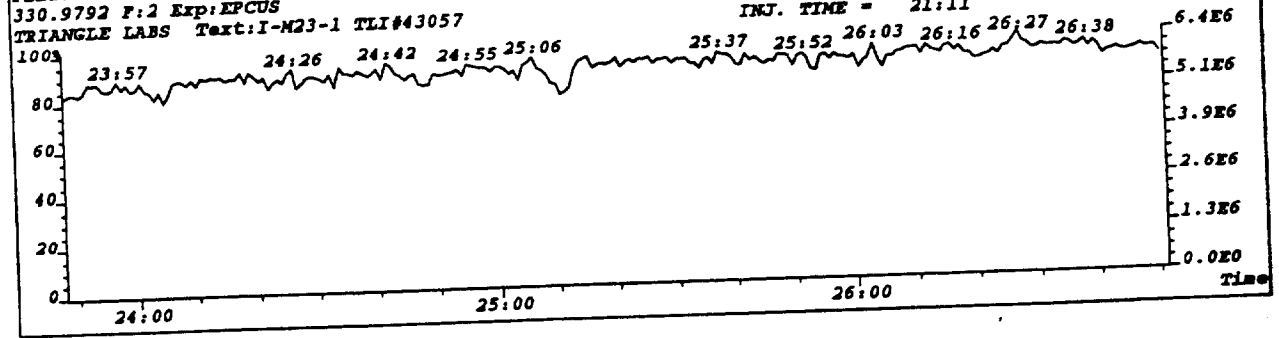
File: S975808 #1-848 Acq: 10-SEP-1997 21:08:49 EI+ Voltage SIR 70S Noise: 35  
 367.8949 F: 2 BSUB(256, 30, -3.0) PKD(7, 5, 3, 0.05%, 140.0, 1.00%, F, T) Exp: EPCUS  
 TRIANGLE LABS Text: I-M23-1 TLI#43057 INJ. TIME = 21:11



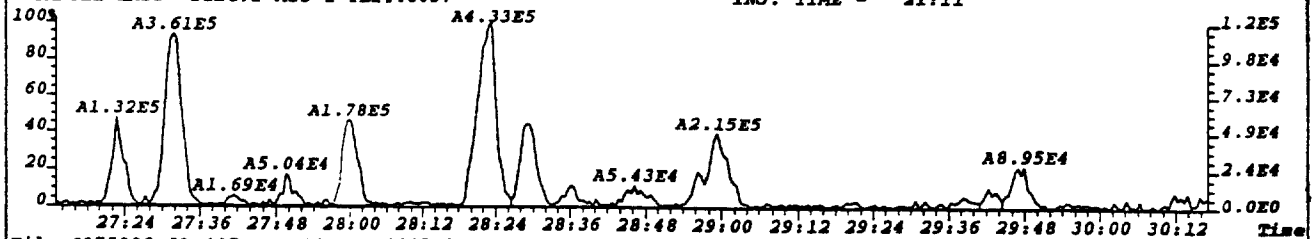
File: S975808 #1-848 Acq: 10-SEP-1997 21:08:49 EI+ Voltage SIR 70S Noise: 33  
 369.8919 F: 2 BSUB(256, 30, -3.0) PKD(7, 5, 3, 0.05%, 132.0, 1.00%, F, T) Exp: EPCUS  
 TRIANGLE LABS Text: I-M23-1 TLI#43057 INJ. TIME = 21:11



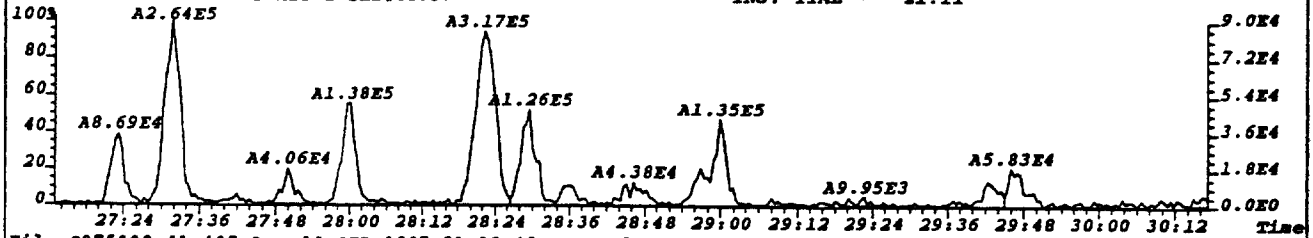
File: S975808 #1-848 Acq: 10-SEP-1997 21:08:49 EI+ Voltage SIR 70S  
 330.9792 F: 2 Exp: EPCUS INJ. TIME = 21:11  
 TRIANGLE LABS Text: I-M23-1 TLI#43057



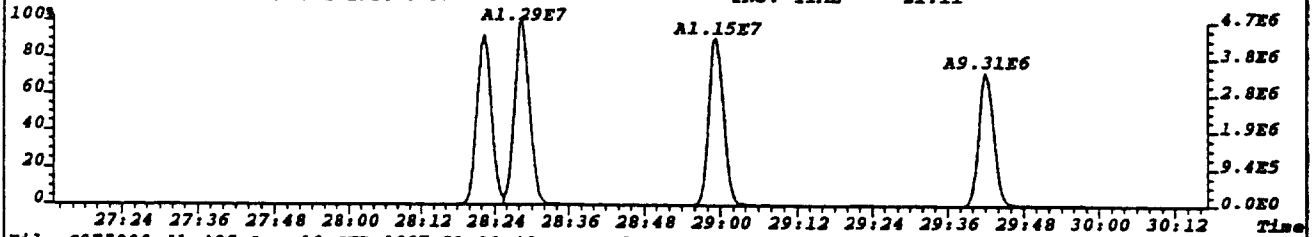
File:S975808 #1-405 Acq:10-SEP-1997 21:08:49 EI+ Voltage SIR 70S Noise:563  
373.8208 F:3 BSub(256,30,-3.0) PKD(7,5,3,0.05%,2252.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:I-M23-1 TLI#43057 INJ. TIME = 21:11



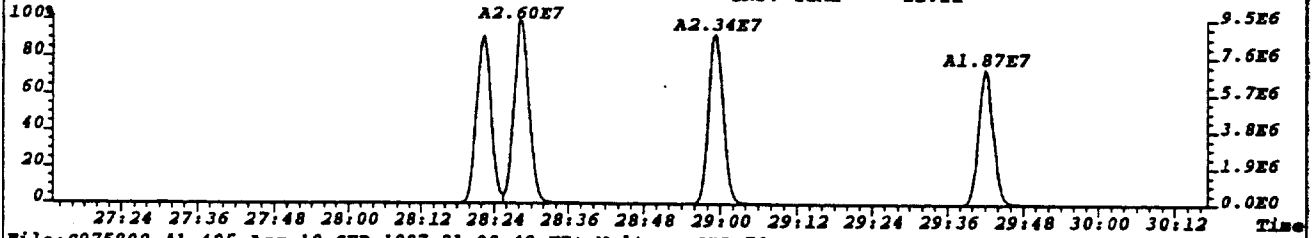
File:S975808 #1-405 Acq:10-SEP-1997 21:08:49 EI+ Voltage SIR 70S Noise:434  
375.8178 F:3 BSub(256,30,-3.0) PKD(7,5,3,0.05%,1736.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:I-M23-1 TLI#43057 INJ. TIME = 21:11



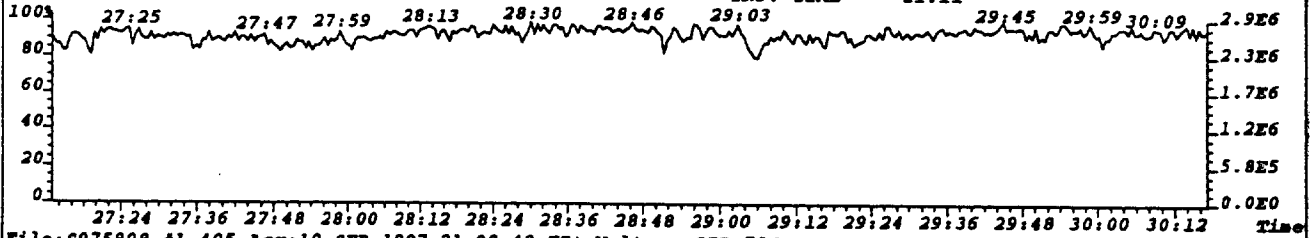
File:S975808 #1-405 Acq:10-SEP-1997 21:08:49 EI+ Voltage SIR 70S Noise:1126  
383.8639 F:3 BSub(256,30,-3.0) PKD(7,5,3,0.05%,4504.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:I-M23-1 TLI#43057 INJ. TIME = 21:11



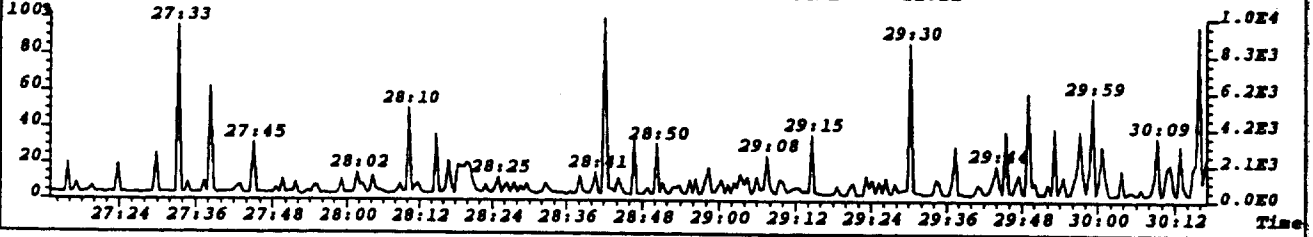
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385.8610 F:3 BSub(256,30,-3.0) PKD(7,5,3,0.05%,4604.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:I-M23-1 TLI#43057 INJ. TIME = 21:11

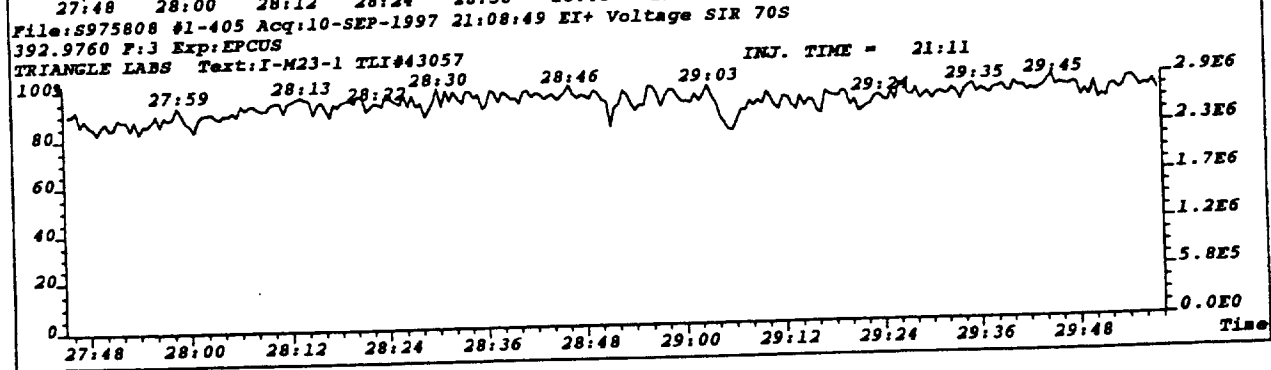
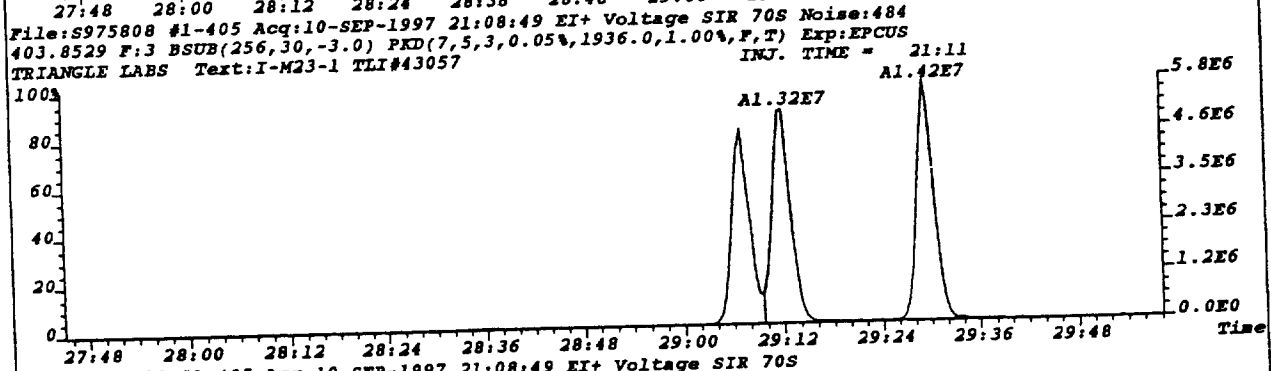
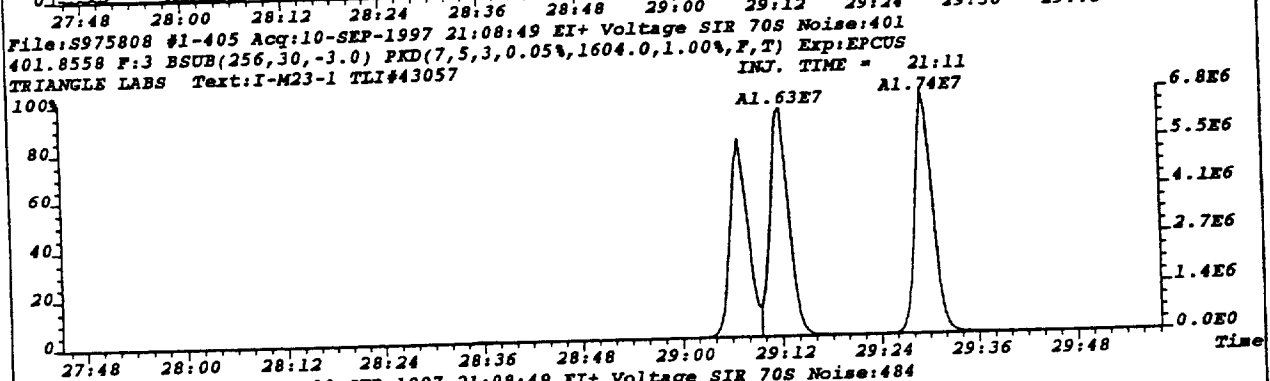
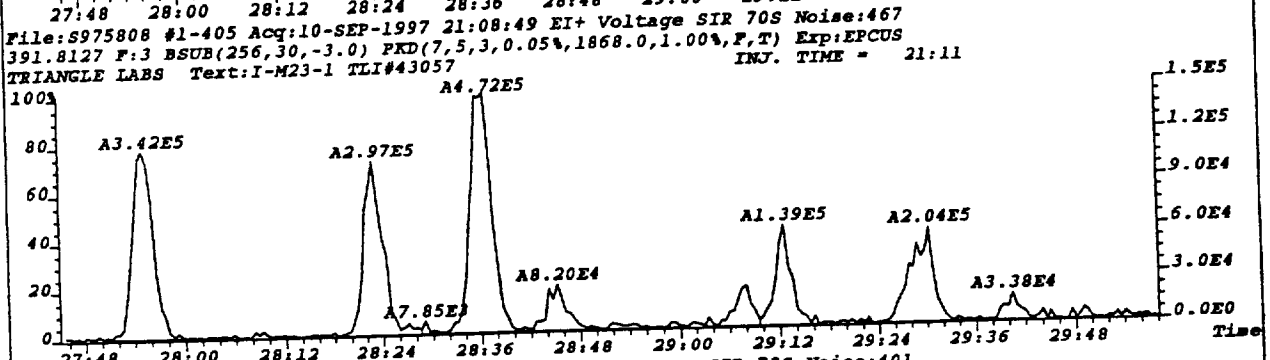
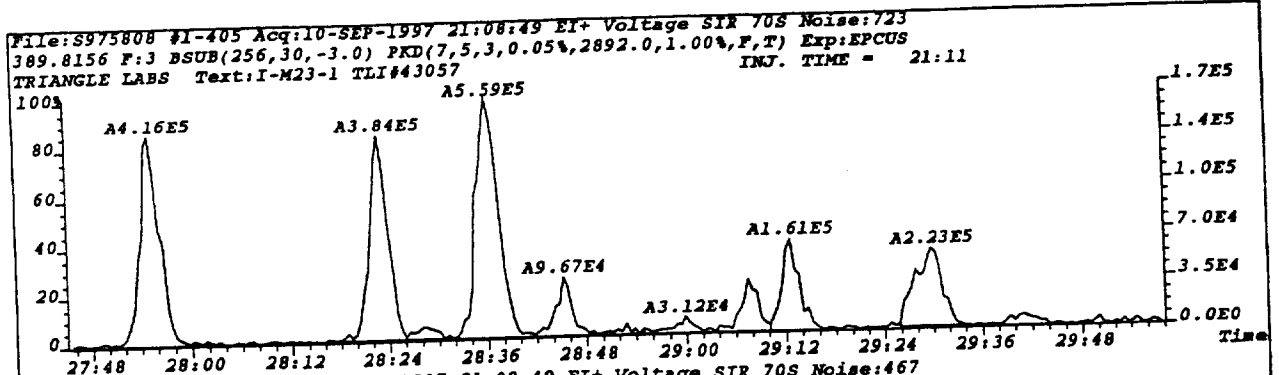


File:S975808 #1-405 Acq:10-SEP-1997 21:08:49 EI+ Voltage SIR 70S  
392.9760 F:3 Exp:EPCUS  
TRIANGLE LABS Text:I-M23-1 TLI#43057 INJ. TIME = 21:11

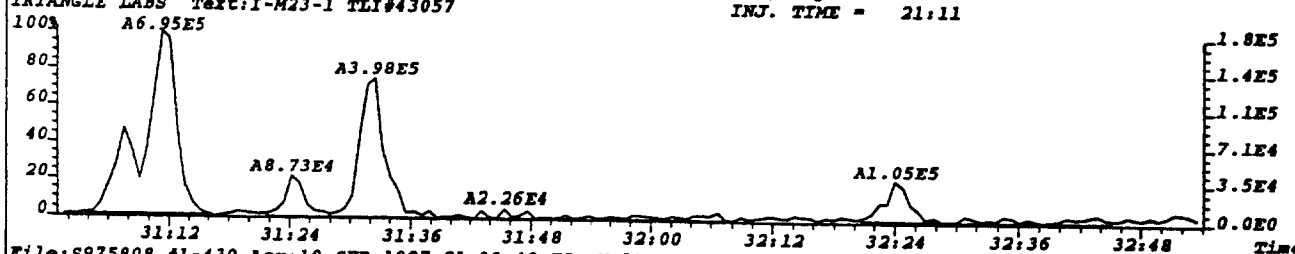


File:S975808 #1-405 Acq:10-SEP-1997 21:08:49 EI+ Voltage SIR 70S  
445.7555 F:3 Exp:EPCUS  
TRIANGLE LABS Text:I-M23-1 TLI#43057 INJ. TIME = 21:11

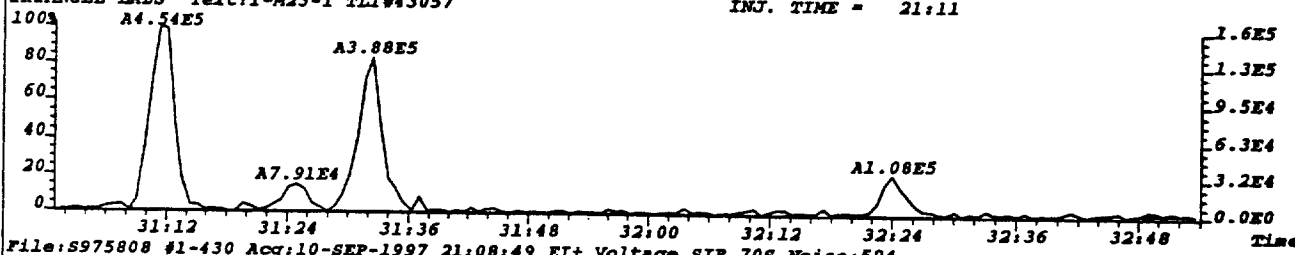




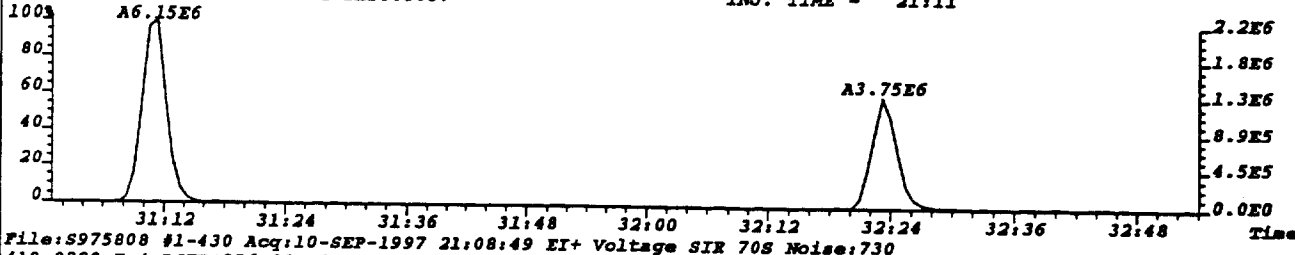
File: S975808 #1-430 Acq: 10-SEP-1997 21:08:49 EI+ Voltage SIR 70S Noise: 1412  
407.7818 F: 4 BSub(256, 30, -3.0) PKD(7, 5, 3, 0.05%, 5648.0, 1.00%, F, T) Exp: EPCUS  
TRIANGLE LABS Text: I-M23-1 TLI#43057 INJ. TIME = 21:11



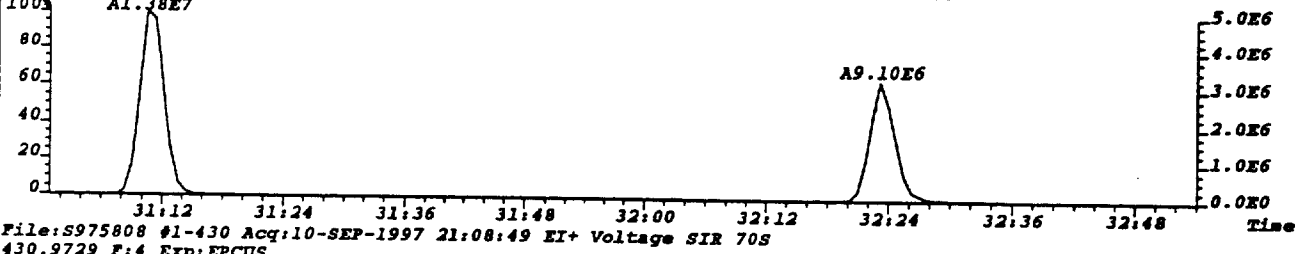
File: S975808 #1-430 Acq: 10-SEP-1997 21:08:49 EI+ Voltage SIR 70S Noise: 862  
409.7789 F: 4 BSub(256, 30, -3.0) PKD(7, 5, 3, 0.05%, 3448.0, 1.00%, F, T) Exp: EPCUS  
TRIANGLE LABS Text: I-M23-1 TLI#43057 INJ. TIME = 21:11



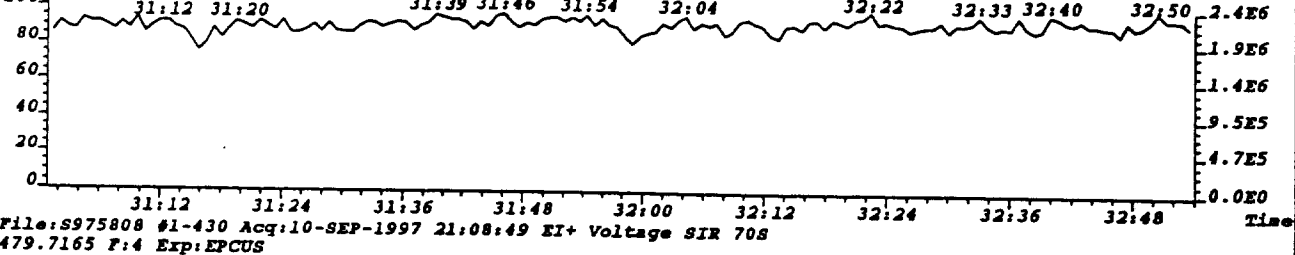
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417.8223 F: 4 BSub(256, 30, -3.0) PKD(7, 5, 3, 0.05%, 2376.0, 1.00%, F, T) Exp: EPCUS  
TRIANGLE LABS Text: I-M23-1 TLI#43057 INJ. TIME = 21:11



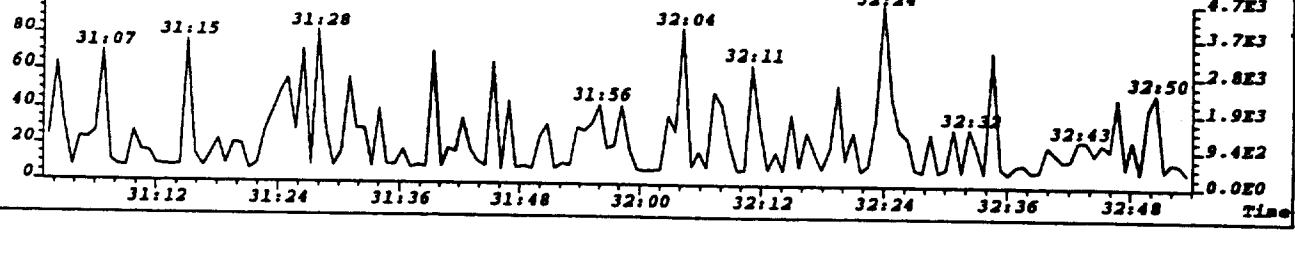
File: S975808 #1-430 Acq: 10-SEP-1997 21:08:49 EI+ Voltage SIR 70S Noise: 730  
419.8220 F: 4 BSub(256, 30, -3.0) PKD(7, 5, 3, 0.05%, 2920.0, 1.00%, F, T) Exp: EPCUS  
TRIANGLE LABS Text: I-M23-1 TLI#43057 INJ. TIME = 21:11



File: S975808 #1-430 Acq: 10-SEP-1997 21:08:49 EI+ Voltage SIR 70S  
430.9729 F: 4 Exp: EPCUS  
TRIANGLE LABS Text: I-M23-1 TLI#43057 INJ. TIME = 21:11

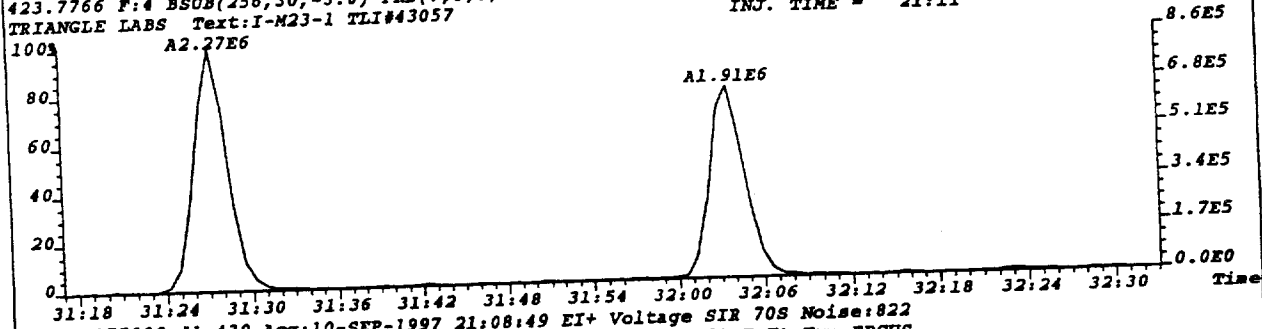


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479.7165 F: 4 Exp: EPCUS  
TRIANGLE LABS Text: I-M23-1 TLI#43057 INJ. TIME = 21:11

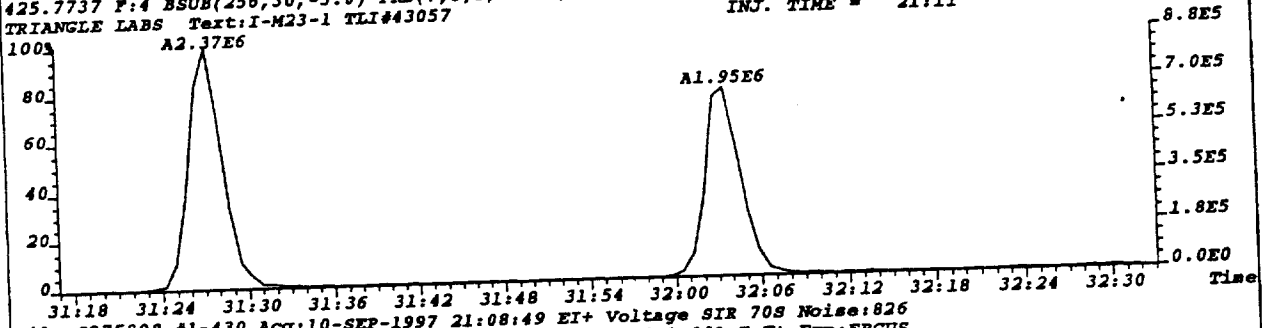




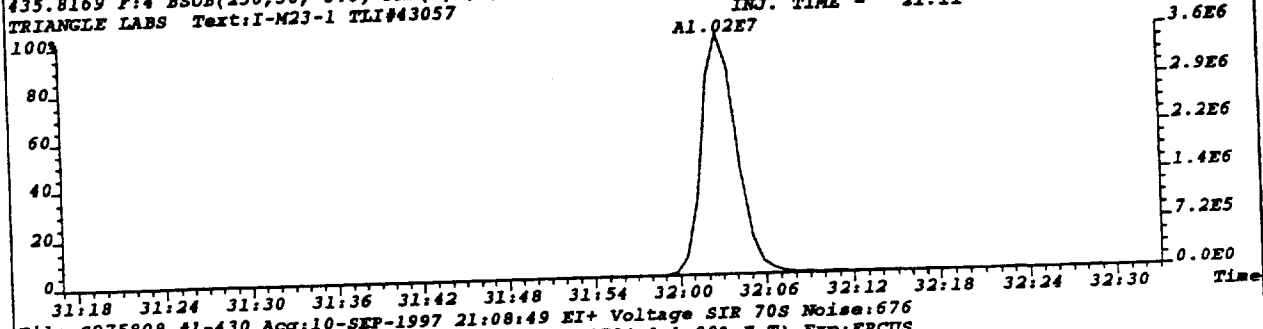
File: S975808 #1-430 Acq: 10-SEP-1997 21:08:49 EI+ Voltage SIR 70S Noise: 1429  
423.7766 F: 4 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,5716.0,1.00%,F,T) Exp: EPCUS  
TRIANGLE LABS Text: I-M23-1 TLI#43057 INJ. TIME = 21:11



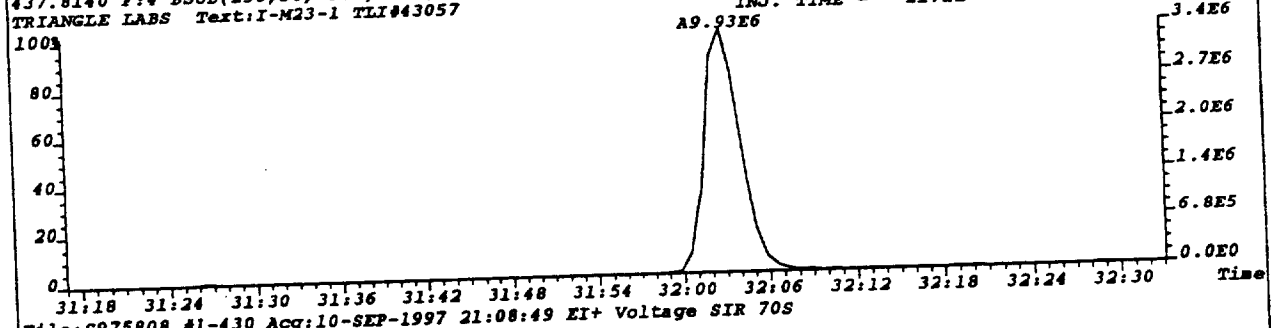
File: S975808 #1-430 Acq: 10-SEP-1997 21:08:49 EI+ Voltage SIR 70S Noise: 822  
425.7737 F: 4 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,3288.0,1.00%,F,T) Exp: EPCUS  
TRIANGLE LABS Text: I-M23-1 TLI#43057 INJ. TIME = 21:11



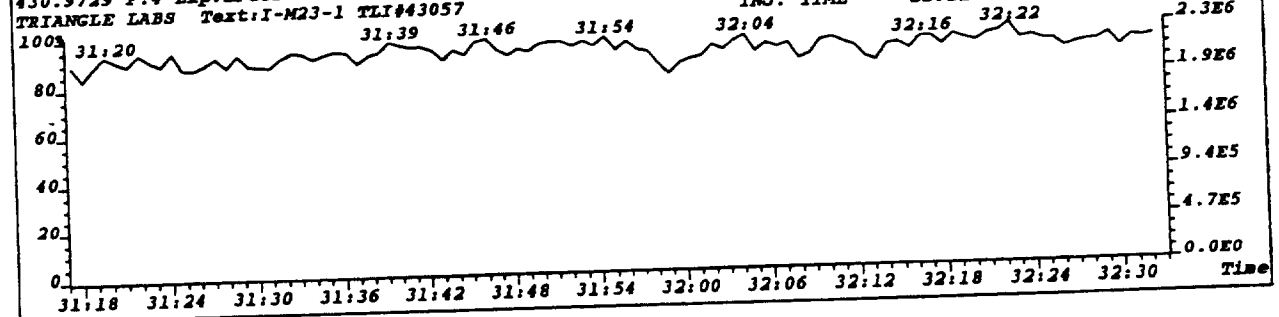
File: S975808 #1-430 Acq: 10-SEP-1997 21:08:49 EI+ Voltage SIR 70S Noise: 826  
435.8169 F: 4 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,3304.0,1.00%,F,T) Exp: EPCUS  
TRIANGLE LABS Text: I-M23-1 TLI#43057 INJ. TIME = 21:11



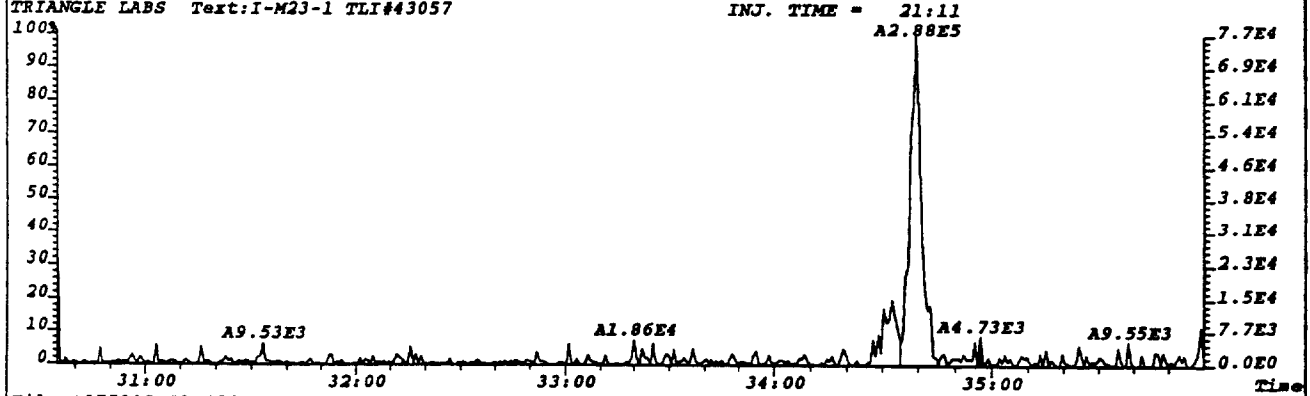
File: S975808 #1-430 Acq: 10-SEP-1997 21:08:49 EI+ Voltage SIR 70S Noise: 676  
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TRIANGLE LABS Text: I-M23-1 TLI#43057 INJ. TIME = 21:11



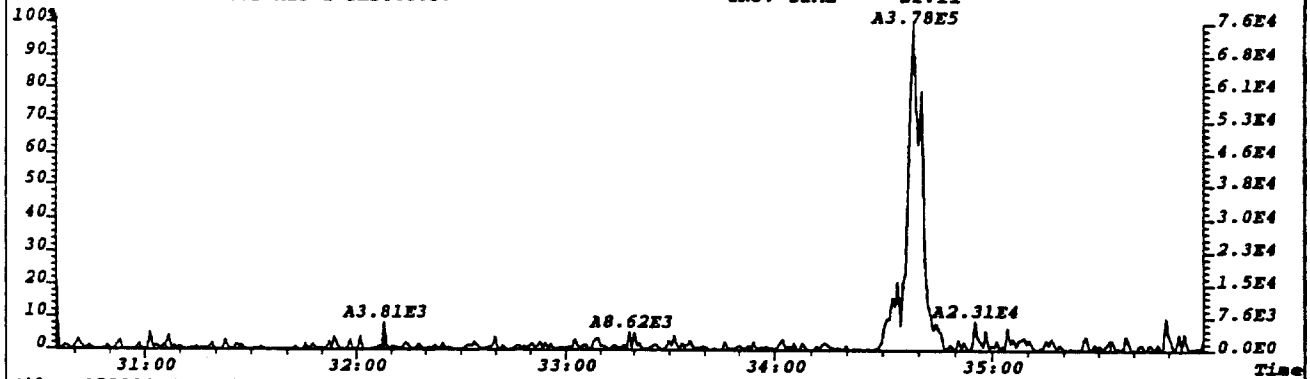
File: S975808 #1-430 Acq: 10-SEP-1997 21:08:49 EI+ Voltage SIR 70S  
430.9729 F: 4 Exp: EPCUS  
TRIANGLE LABS Text: I-M23-1 TLI#43057 INJ. TIME = 21:11



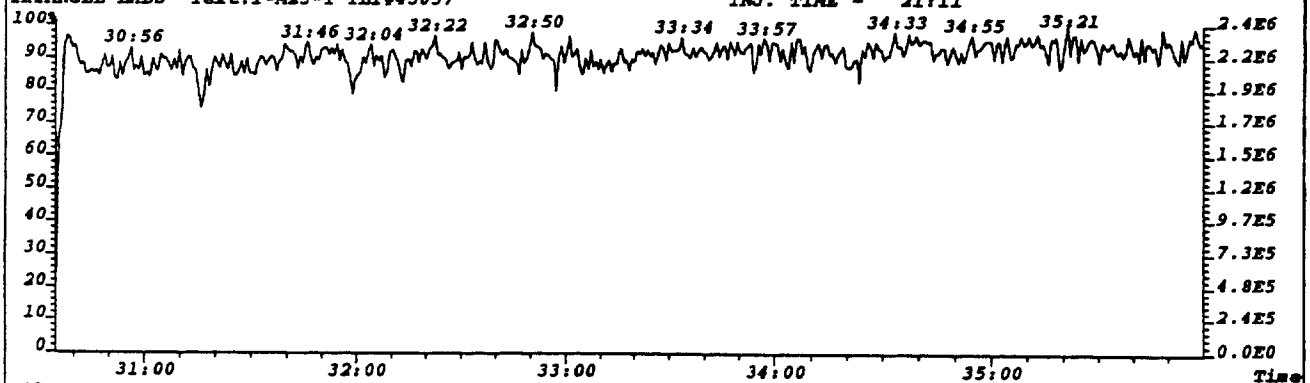
File:S975808 #1-430 Acq:10-SEP-1997 21:08:49 EI+ Voltage SIR 70S Noise:33  
441.7428 F:4 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,128.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:I-M23-1 TLI#43057



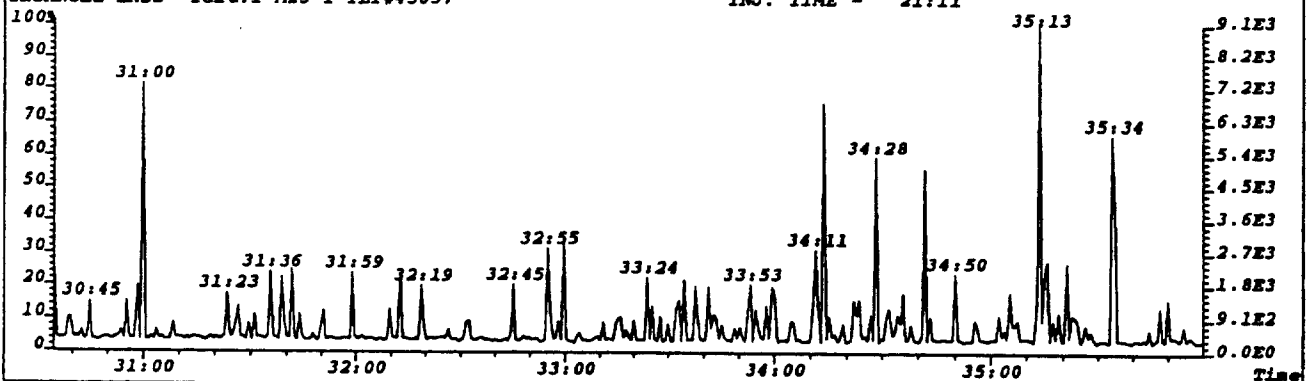
File:S975808 #1-430 Acq:10-SEP-1997 21:08:49 EI+ Voltage SIR 70S Noise:33  
443.7399 F:4 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,132.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:I-M23-1 TLI#43057

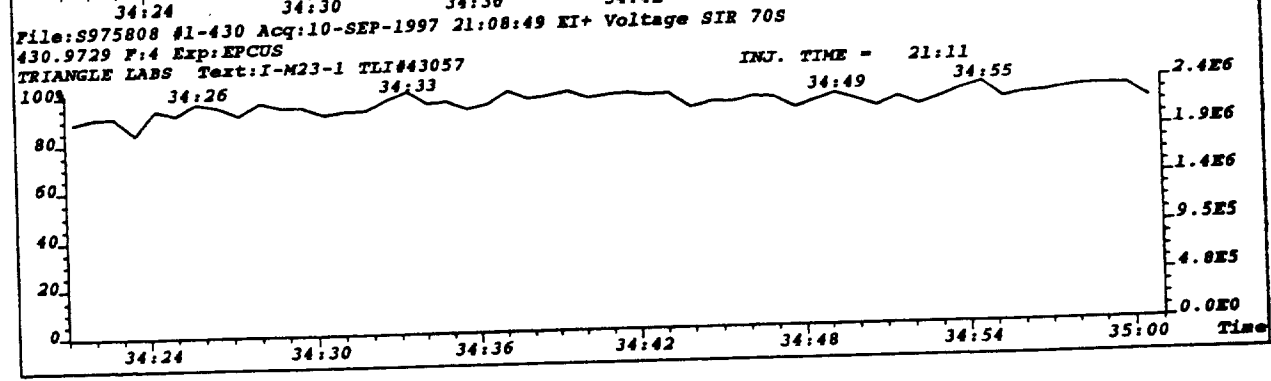
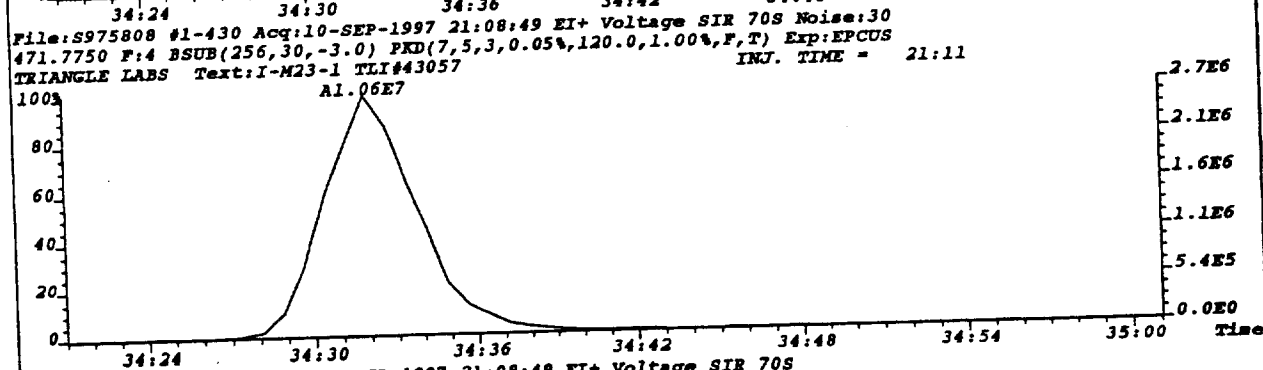
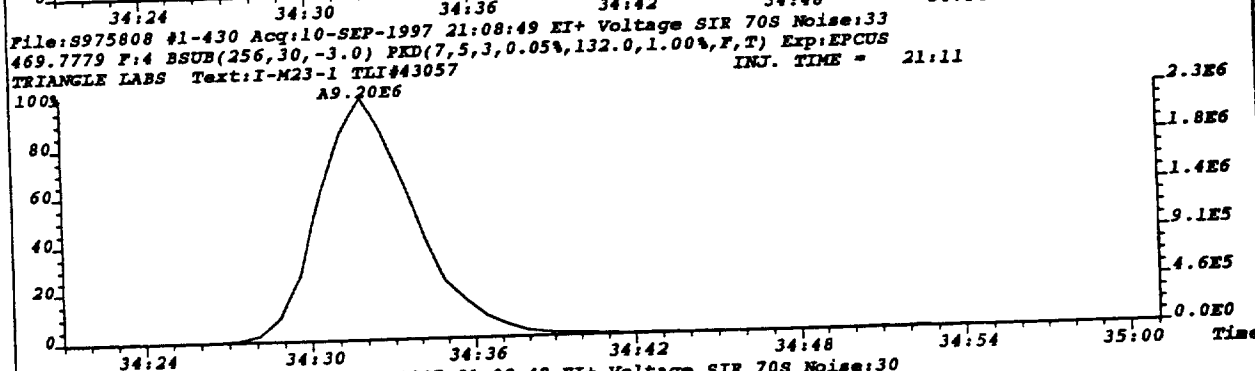
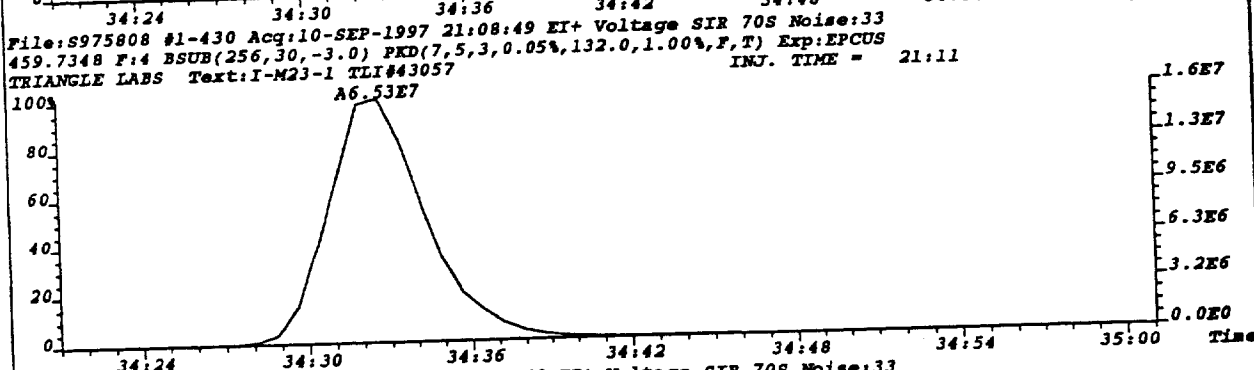
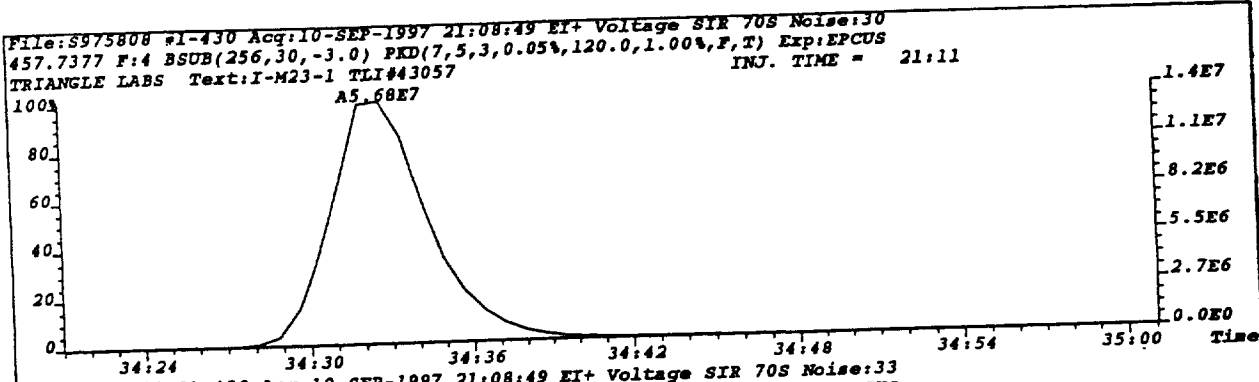


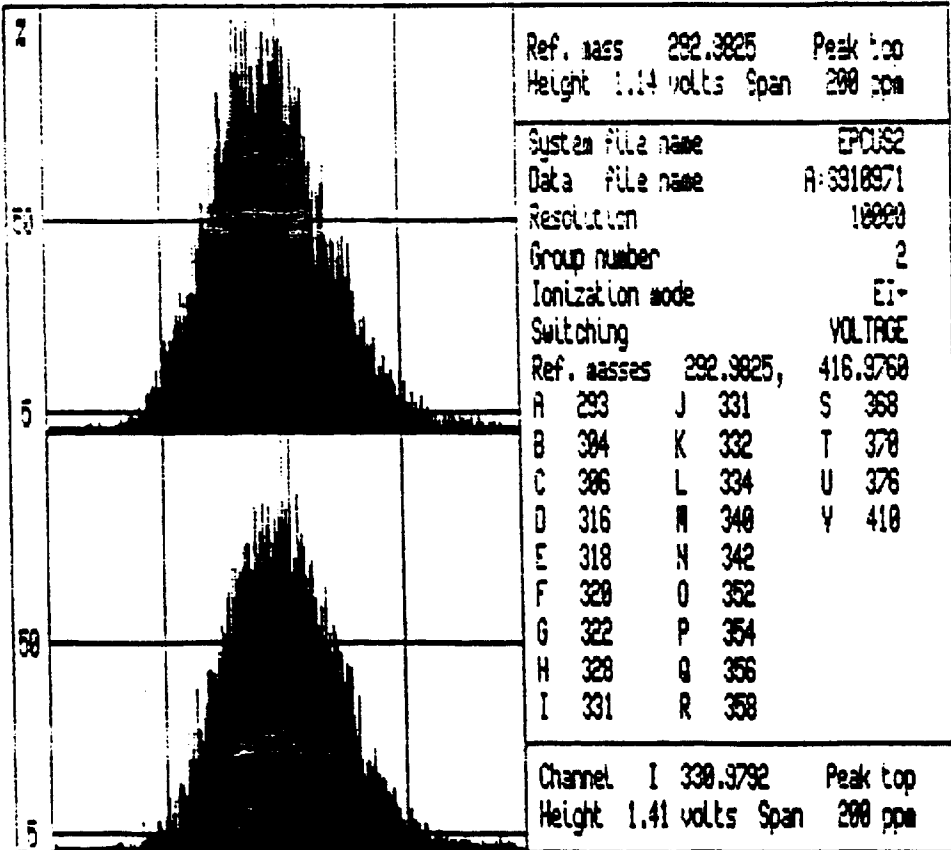
File:S975808 #1-430 Acq:10-SEP-1997 21:08:49 EI+ Voltage SIR 70S  
430.9729 F:4 Exp:EPCUS  
TRIANGLE LABS Text:I-M23-1 TLI#43057



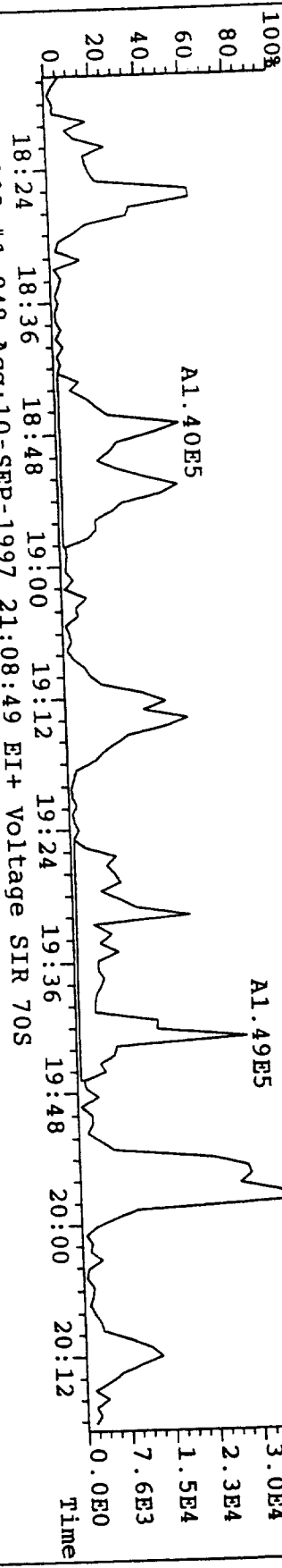
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513.6775 F:4 Exp:EPCUS  
TRIANGLE LABS Text:I-M23-1 TLI#43057



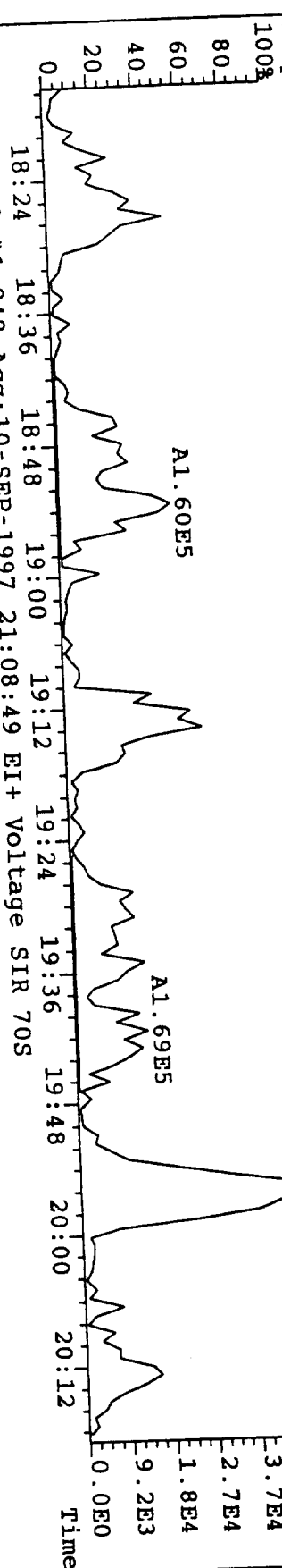




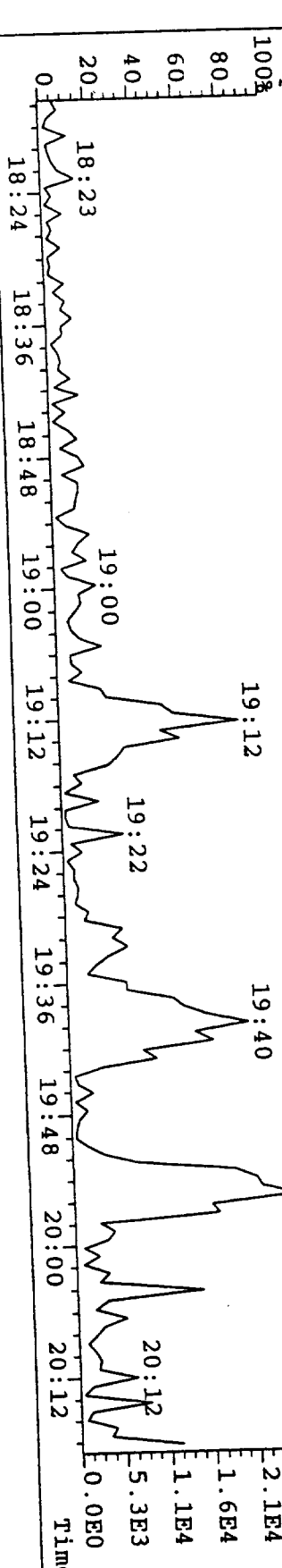
File: S975808 #1-848 Acq: 10-SEP-1997 21:08:49 EI+ Voltage SIR 705  
 303.9016 F: 2 Exp: EPCUS  
 Sample Text: I-M23-1 TLI#43057



File: S975808 #1-848 Acq: 10-SEP-1997 21:08:49 EI+ Voltage SIR 705  
 305.8987 F: 2 Exp: EPCUS  
 Sample Text: I-M23-1 TLI#43057



File: S975808 #1-848 Acq: 10-SEP-1997 21:08:49 EI+ Voltage SIR 705  
 315.9419 F: 2 Exp: EPCUS  
 Sample Text: I-M23-1 TLI#43057



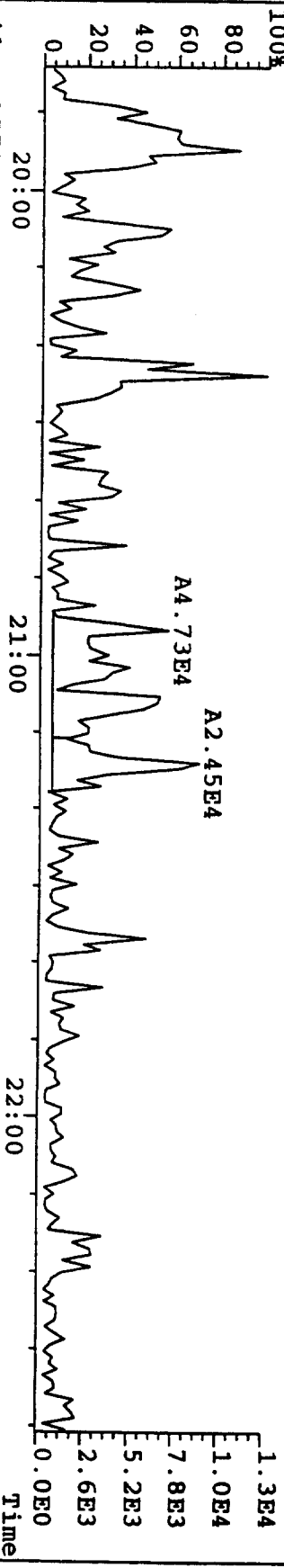
INJ. TIME = 21:11 File Text: I-M23-1 TLI#4

INJ. TIME = 21:11 File Text: I-M23-1 TLI#4

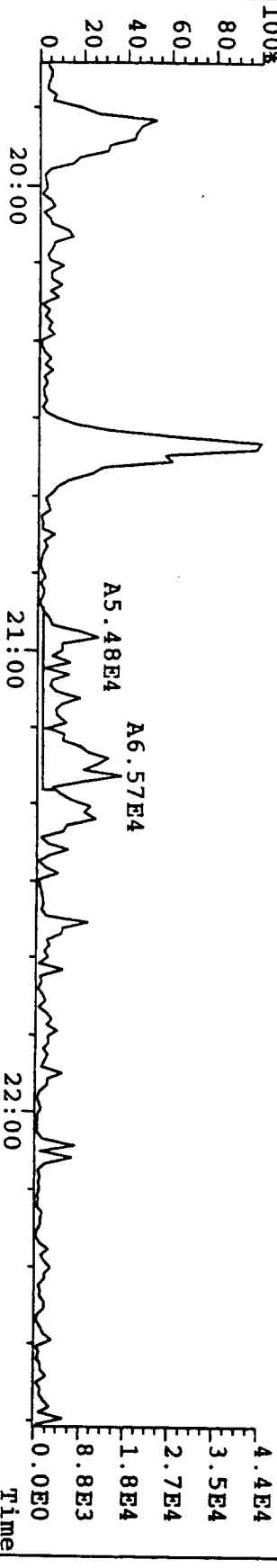
INJ. TIME = 21:11 File Text: I-M23-1 TLI#4

- 3.8E4
- 3.0E4
- 2.3E4
- 1.5E4
- 7.6E3
- 0.0E0
- 4.6E4
- 3.7E4
- 2.7E4
- 1.8E4
- 9.2E3
- 0.0E0
- 2.6E4
- 2.1E4
- 1.6E4
- 1.1E4
- 5.3E3
- 0.0E0

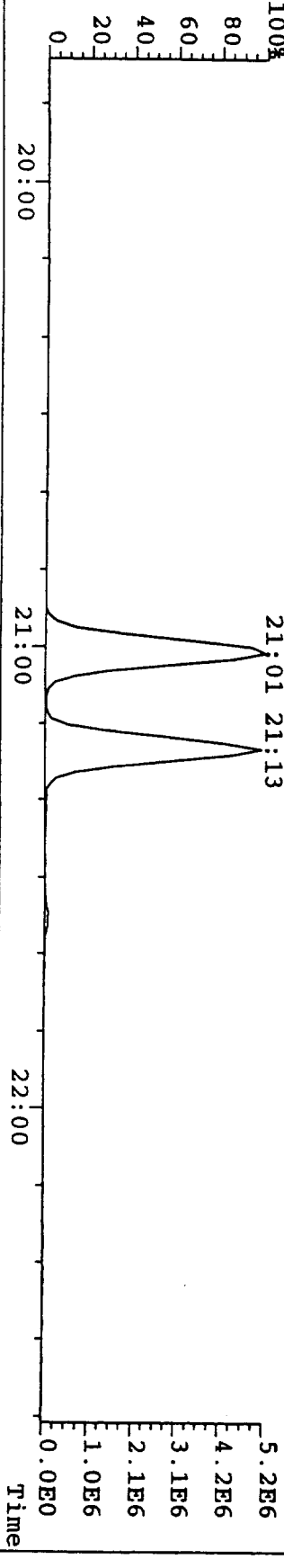
File: S975808 #1-848 Acq: 10-SEP-1997 21:08:49 EI+ Voltage SIR 70S  
319.8965 F: 2 Exp: EPCUS  
Sample Text: I-M23-1 TLI#43057  
INJ. TIME = 21:11 File Text: I-M23-1 TLI#4>



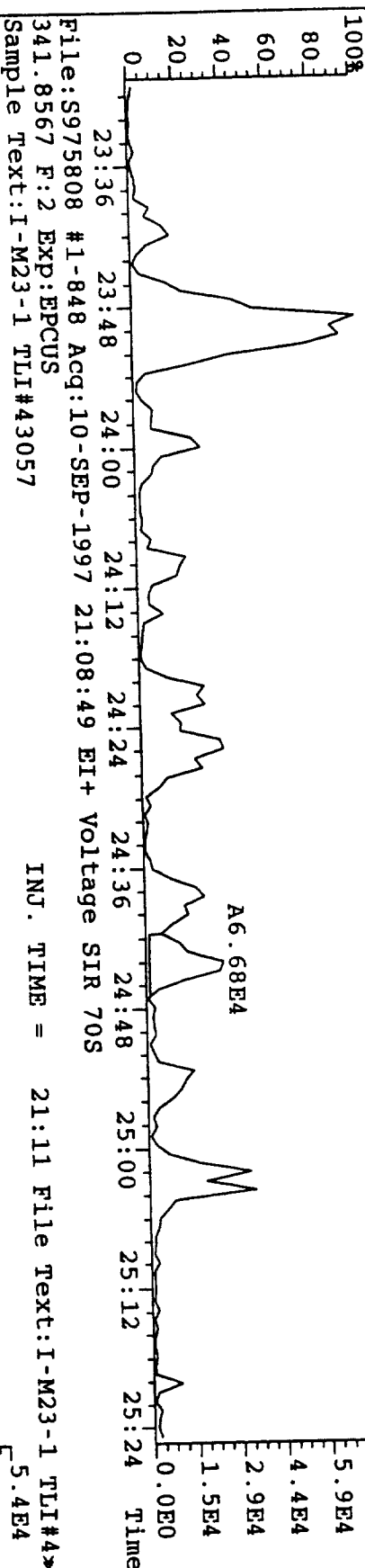
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Sample Text: I-M23-1 TLI#43057  
INJ. TIME = 21:11 File Text: I-M23-1 TLI#4>



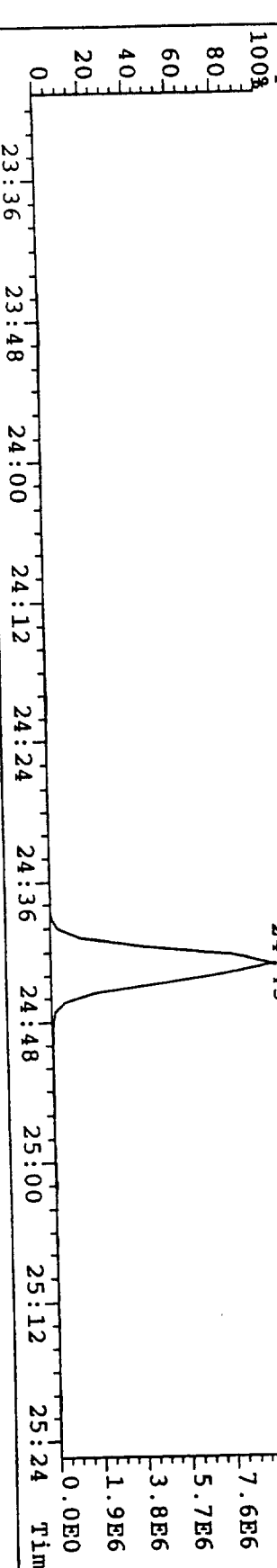
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331.9368 F: 2 Exp: EPCUS  
Sample Text: I-M23-1 TLI#43057  
INJ. TIME = 21:11 File Text: I-M23-1 TLI#4>



File: S975808 #1-848 Acq: 10-SEP-1997 21:08:49 EI+ Voltage SIR 70S  
 339.8597 F: 2 Exp: EPCUS  
 Sample Text: I-M23-1 TLI#43057  
 INJ. TIME = 21:11 File Text: I-M23-1 TLI#4



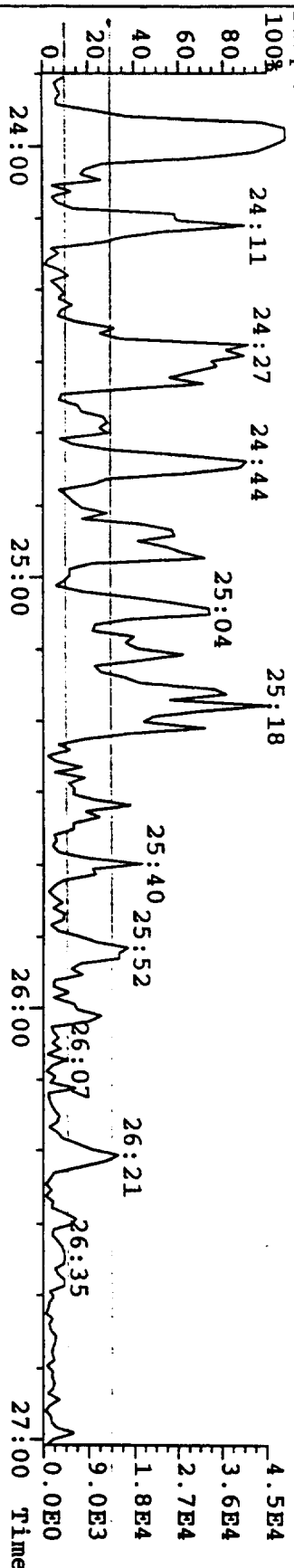
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 Sample Text: I-M23-1 TLI#43057  
 INJ. TIME = 21:11 File Text: I-M23-1 TLI#4



File:S975808 #1-848 Acq:10-SEP-1997 21:08:49 EI+ Voltage SIR 70S

355.8546 F:2 Exp:EPCUS

Sample Text:I-M23-1 TLI#43057

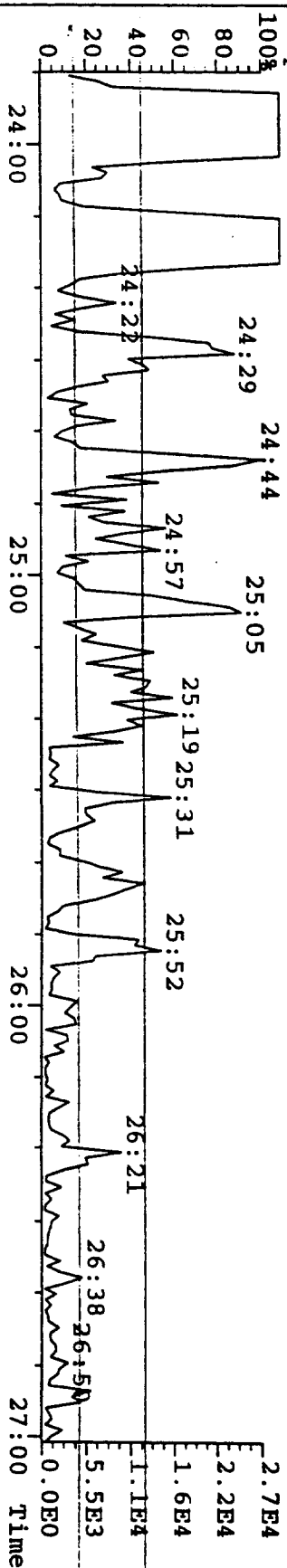


INJ. TIME = 21:11 File Text:I-M23-1 TLI#4

File:S975808 #1-848 Acq:10-SEP-1997 21:08:49 EI+ Voltage SIR 70S

357.8516 F:2 Exp:EPCUS

Sample Text:I-M23-1 TLI#43057

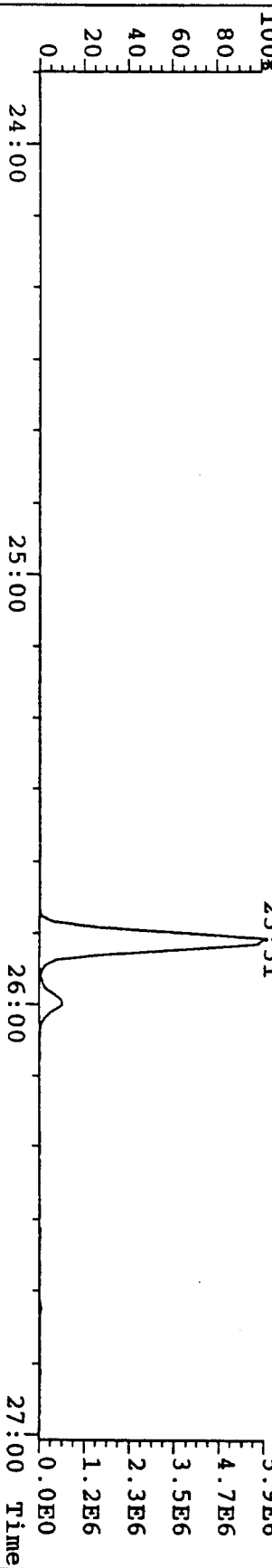


INJ. TIME = 21:11 File Text:I-M23-1 TLI#4

File:S975808 #1-848 Acq:10-SEP-1997 21:08:49 EI+ Voltage SIR 70S

367.8949 F:2 Exp:EPCUS

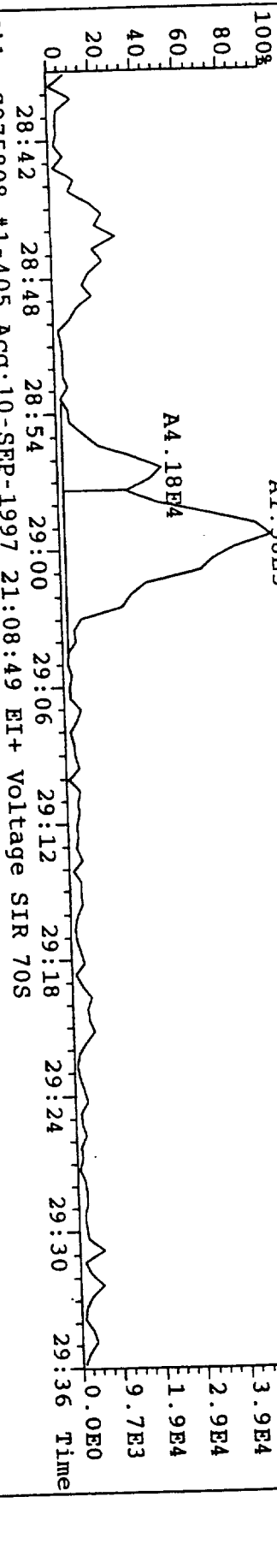
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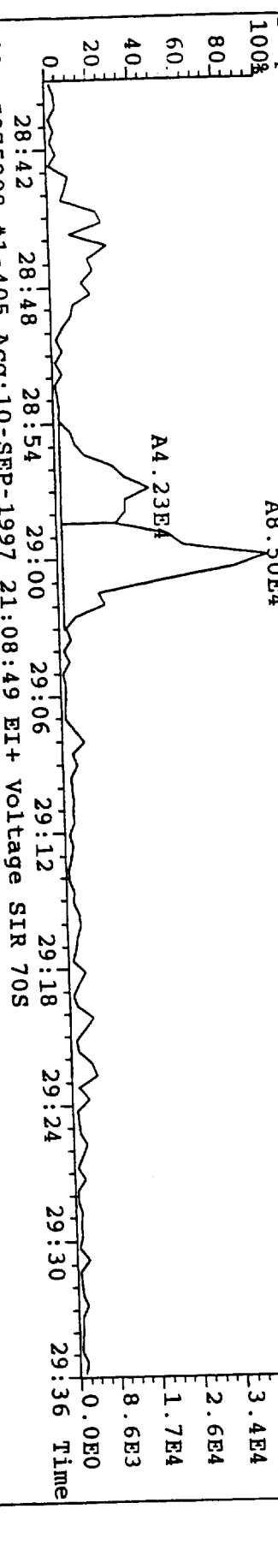
INJ. TIME = 21:11 File Text:I-M23-1 TLI#4



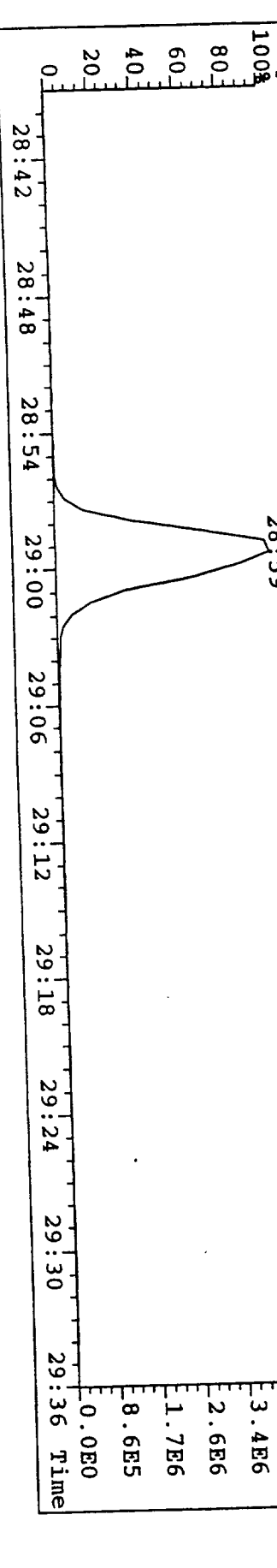
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 373.8208 F: 3 Exp: EPCUS  
 Sample Text: I-M23-1 TLI#43057  
 INJ. TIME = 21:11 File Text: I-M23-1 TLI#4



File: S975808 #1-405 Acq: 10-SEP-1997 21:08:49 EI+ Voltage SIR 70S  
 375.8178 F: 3 Exp: EPCUS  
 Sample Text: I-M23-1 TLI#43057  
 INJ. TIME = 21:11 File Text: I-M23-1 TLI#4



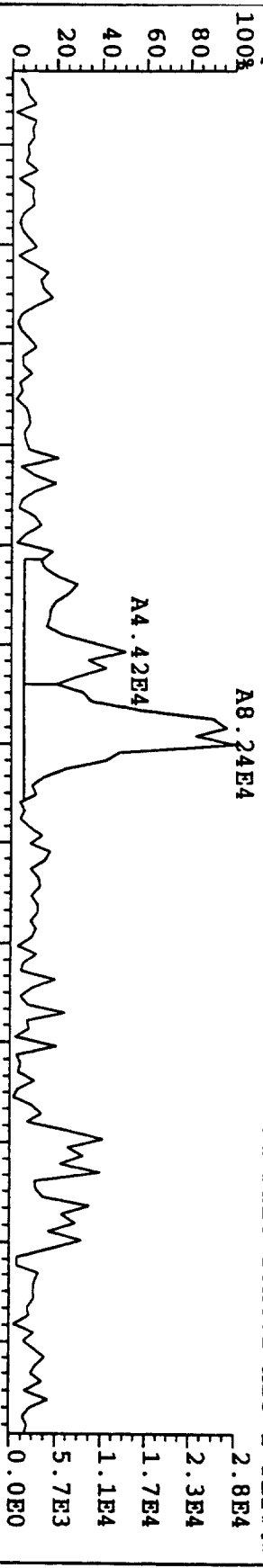
File: S975808 #1-405 Acq: 10-SEP-1997 21:08:49 EI+ Voltage SIR 70S  
 383.8639 F: 3 Exp: EPCUS  
 Sample Text: I-M23-1 TLI#43057  
 INJ. TIME = 21:11 File Text: I-M23-1 TLI#4



File:S975808 #1-405 Acq:10-SEP-1997 21:08:49 EI+ Voltage SIR 70S

373.8208 F:3 Exp:EPCUS  
Sample Text:I-M23-1 TLI#43057

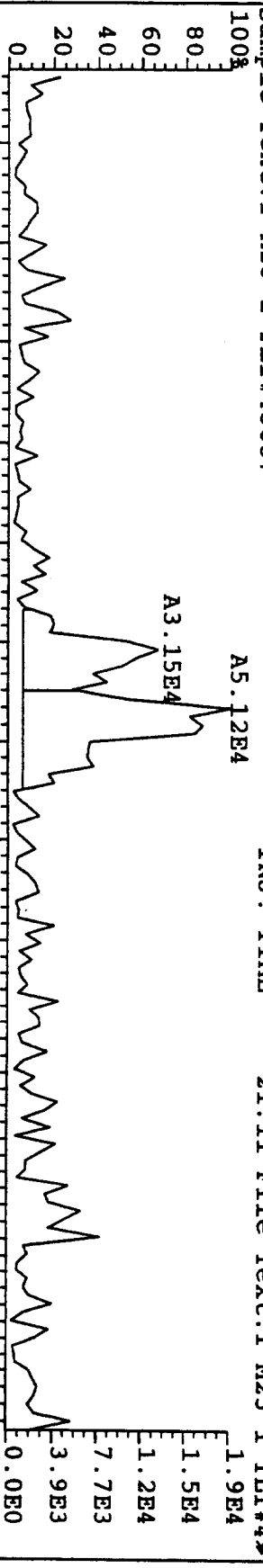
INJ. TIME = 21:11 File Text:I-M23-1 TLI#4



File:S975808 #1-405 Acq:10-SEP-1997 21:08:49 EI+ Voltage SIR 70S

375.8178 F:3 Exp:EPCUS  
Sample Text:I-M23-1 TLI#43057

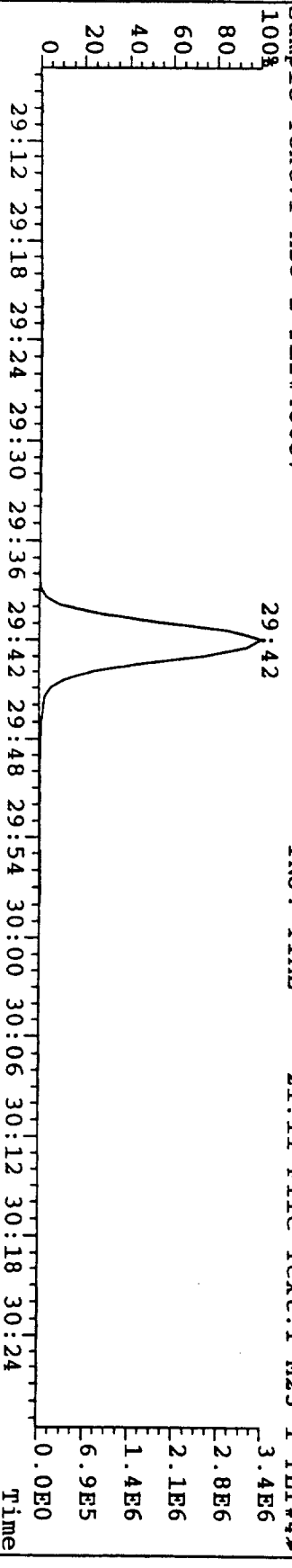
INJ. TIME = 21:11 File Text:I-M23-1 TLI#4



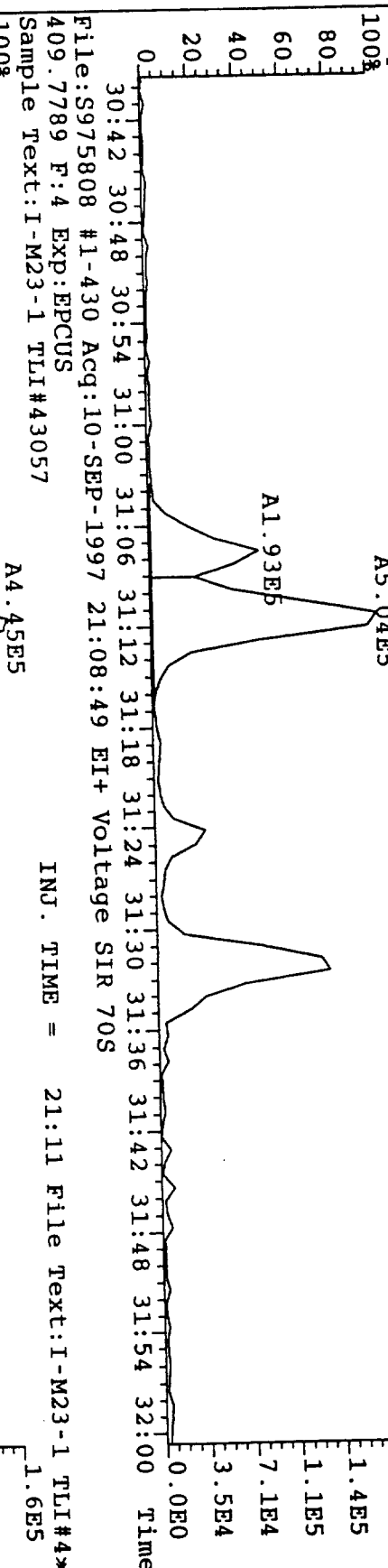
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383.8639 F:3 Exp:EPCUS  
Sample Text:I-M23-1 TLI#43057

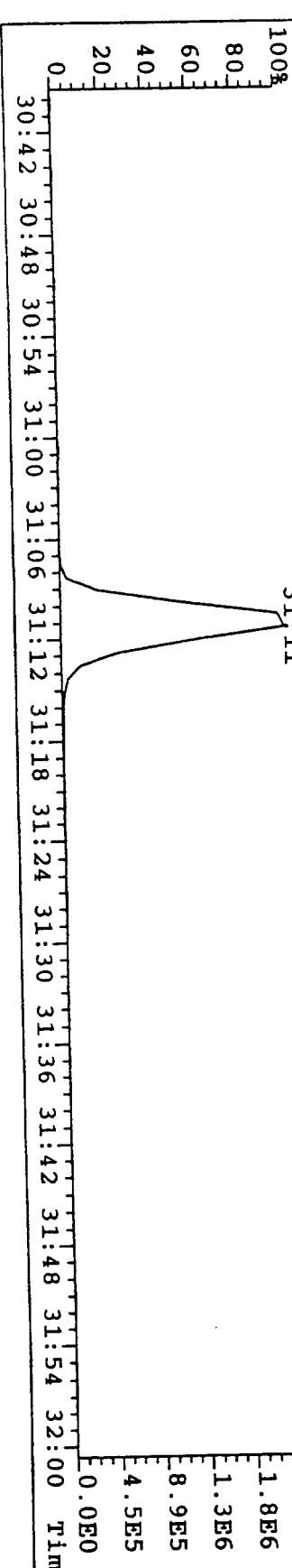
INJ. TIME = 21:11 File Text:I-M23-1 TLI#4



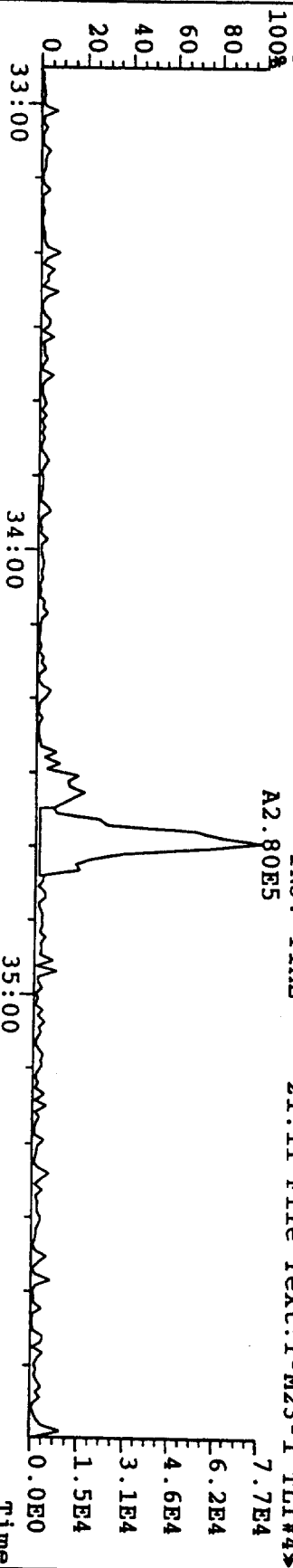
File: S975808 #1-430 Acq: 10-SEP-1997 21:08:49 EI+ Voltage SIR 705  
 407.7818 F:4 Exp: EPCUS  
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 INJ. TIME = 21:11 File Text: I-M23-1 TLI#4



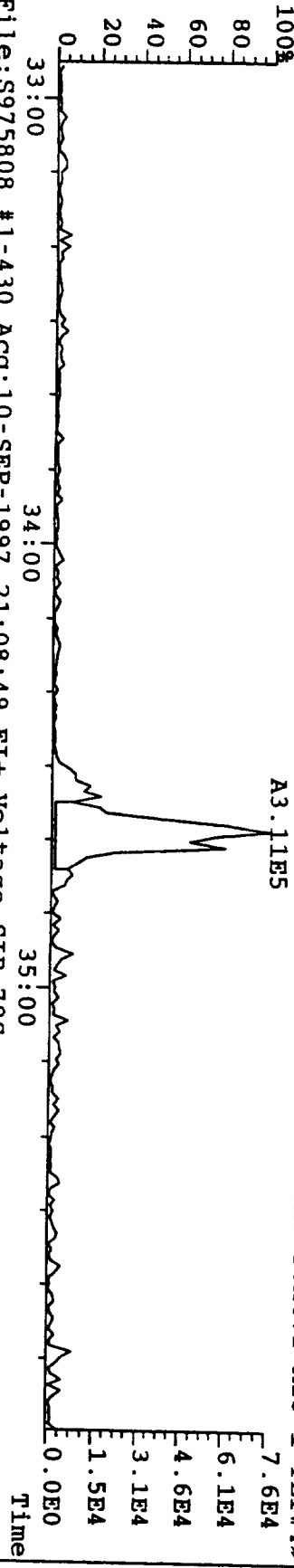
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 409.7789 F:4 Exp: EPCUS  
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 INJ. TIME = 21:11 File Text: I-M23-1 TLI#4



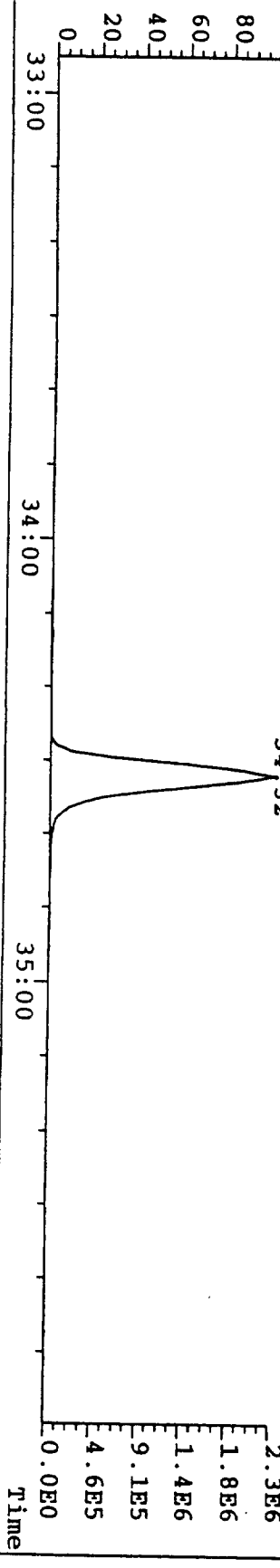
File: S975808 #1-430 Acq: 10-SEP-1997 21:08:49 EI+ Voltage SIR 70S  
441.7428 F:4 Exp: EPCUS  
Sample Text: I-M23-1 TLI#43057  
INJ. TIME = 21:11 File Text: I-M23-1 TLI#4



File: S975808 #1-430 Acq: 10-SEP-1997 21:08:49 EI+ Voltage SIR 70S  
443.7399 F:4 Exp: EPCUS  
Sample Text: I-M23-1 TLI#43057  
INJ. TIME = 21:11 File Text: I-M23-1 TLI#4



File: S975808 #1-430 Acq: 10-SEP-1997 21:08:49 EI+ Voltage SIR 70S  
469.7779 F:4 Exp: EPCUS  
Sample Text: I-M23-1 TLI#43057  
INJ. TIME = 21:11 File Text: I-M23-1 TLI#4



Pacific Environmental Services

TLI Project: 43057  
 Client Sample: I-M23-1

Method 23 TCDD/TCDF Analysis (DB-225)  
 Analysis File: X973082

Client Project:	ASPHALT PLANT "A"	Date Received:	08/29/97	Spike File:	SPC2NF04
Sample Matrix:	M23TRAIN	Date Extracted:	09/06/97	ICal:	XF24087
TLI ID:	181-27-1A-C	Date Analyzed:	09/11/97	ConCal:	X973069
Sample Size:	1.000	Dilution Factor:	n/a	% Moisture:	n/a
Dry Weight:	n/a	Blank File:	S975807	% Lipid:	n/a
GC Column:	DB-225	Analyst:	MS	% Solids:	n/a

Analytes	Amt. (ng)	DL	EMPC	Ratio	RT	Flags
2,3,7,8-TCDF	EMPC		0.02			B_

Internal Standard	Amt. (ng)	% Recovery	QC Limits	Ratio	RT	Flags
<sup>13</sup> C <sub>12</sub> -2,3,7,8-TCDF	2.9	73.7	40%-130%	0.79	22:31	—

Recovery Standard	Ratio	RT	Flags
<sup>13</sup> C <sub>12</sub> -1,2,3,4-TCDD	0.76	21:30	—

Data Reviewer: *M. L. H.* 09/12/97

Initial ....Date...

Data Review By: MLH 9/12/97 Calculated Noise Area: n/a

The Total Area for each peak with an ion abundance ratio outside ratio limits has been recalculated according to method requirements.

Page No. 1 Listing of X973082B.dbf  
09/12/97 Matched GC Peaks / Ratio / Ret. Time

Compound/

M\_Z.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

TCDF		0.65-0.89				0.797-1.100			
304-306	DC NL	0:00	RO	1.96	2.94				0.000
	DC SN	18:05	RO	0.62	5.98				0.803
	DC SN	18:40		0.83	3.32				0.829
	DC SN	18:45	RO	3.63	1.13				0.833
	DC SN	18:52		0.85	2.26				0.838
	DC SN	18:56	RO	0.24	1.72				0.841
	DC SN	19:01	RO	0.47	7.47				0.845
	DC SN	19:21	RO	0.23	5.56				0.859
	DC SN	19:49	RO	1.59	6.14				0.880
	DC SN	20:03	RO	3.71	8.25				0.890
	DC SN	20:08	RO	0.43	10.67				0.894
	DC SN	20:12	RO	0.31	6.74				0.897
	DC SN	20:35	RO	5.61	1.45				0.914
	DC SN	20:46	RO	0.39	6.44				0.922
	DC SN	20:56	RO	0.97	5.08				0.930
	DC SN	21:01	RO	0.11	0.92				0.933
	DC SN	21:13	RO	0.48	11.98				0.942
	DC SN	21:21	RO	4.18	0.97				0.948
	DC SN	21:40	RO	0.25	4.32				0.962
	DC SN	21:52	RO	3.16	1.24				0.971
	DC SN	21:57	RO	0.12	0.64				0.975
	DC SN	22:12		0.82	3.63				0.986
	DC SN	22:26	RO	0.47	4.71				0.996
	MK	22:32	RO	0.36	14.53	6.32	17.40	1.001	2378-TCDF AN
	DC SN	22:39	RO	0.26	1.88				1.006
	DC SN	22:43		0.78	11.26				1.009
	DC SN	23:02	RO	0.44	6.46				1.023
	DC SN	23:09		0.78	11.97				1.028
	DC SN	24:35	RO	0.47	4.09				1.092
	DC WH	24:58	RO	2.27	1.84				1.109
304-306		1 Peak			14.53				
13C12-TCDF		0.65-0.89				0.955-1.045			
316-318	DC NL	0:00	RO	1.84	8.69				0.000
	DC WL	18:03	RO	0.26	2.51				0.802
	DC WL	18:07	RO	1.89	3.29				0.805
	DC WL	18:28	RO	1.07	4.41				0.820
	DC WL	18:31	RO	1.11	5.06				0.822
	DC WL	19:28	RO	4.82	2.37				0.865
	DC WL	21:11	RO	0.59	13.42				0.941
	DC SN	21:48	RO	1.25	6.39				0.968
	DC SN	22:17		0.76	8.50				0.990
		22:31		0.79	3,272.27	1,441.48	1,830.79	1.000	13C12-2378-TCDF ISO

Compound/ M_Z	QC	Log	Omit	Why	..RT.	OK	Ratio	Total.Area...	Area.Peak.1..	Area.Peak.2..	Rel.RT	Compound.Name..	ID..	Flags.
	DC	SN			22:56	RO	1.45	3.72						1.019
	DC	SN			23:14	RO	0.45	4.78						1.032
	DC	WH			23:58	RO	1.51	5.86						1.064
	DC	WH			24:00	RO	3.94	2.21						1.066
	DC	WH			24:12	RO	1.21	12.83						1.075
	DC	WH			24:18		0.87	9.69						1.079
	DC	WH			24:21		0.87	14.15						1.081
	DC	WH			24:31	RO	1.39	69.76						1.089
	DC	WH			24:58	RO	5.37	2.41						1.109
316-318							1 Peak	3,272.27						

----- Above: TCDF / TCDD Follows -----

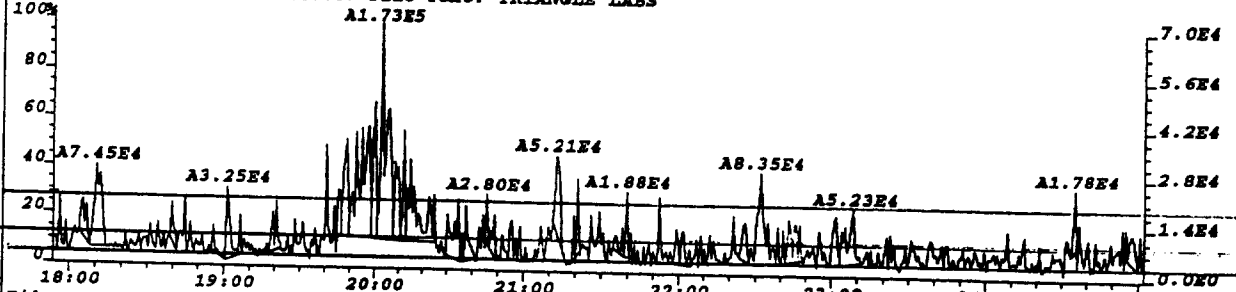
13C12-TCDD				0.65-0.89				0.906-1.094
332-334	DC	NL		0:00	0.84	30.92		0.000
				21:13	0.74	2,790.70	1,190.85	1,599.85
				21:30	0.76	3,190.90	1,375.74	1,815.16
	DC	SN		22:01	RO	1.55	13.81	1.038
	DC	SN		22:05	RO	1.83	11.47	1.041
	DC	WH		23:30	RO	1.41	8.87	1.108
332-334				2 Peaks		5,981.60		

Column Description..... "Why" Code Description..... QC Log Desc.....

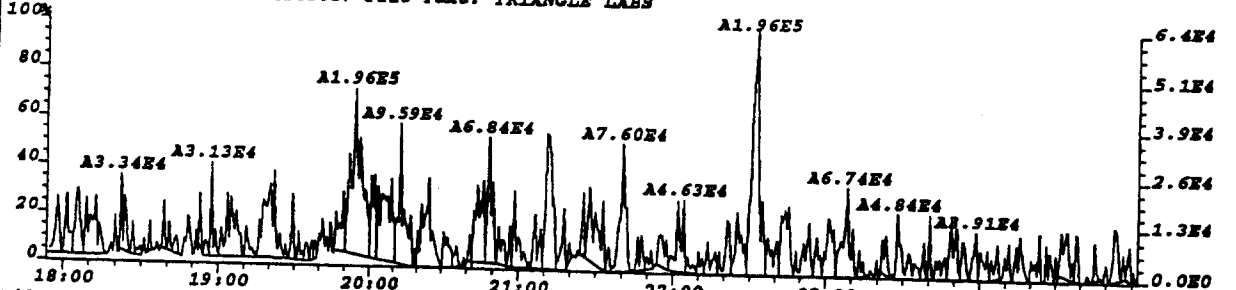
M\_Z -Nominal Ion Mass(es) WL-Below Retention Time Window A-Peak Added  
 ..RT. -Retention Time (mm:ss) WH-Above Retention Time Window K-Peak Kept  
 Rat.1 -Ratio of M/M+2 Ions SN-Below Signal to Noise Level D-Peak Deleted  
 OK -RO=Ratio Outside Limits <M-Below Method Detection Limit T-Time Changed  
 Rel.RT-Relative Retention Time NL-Channel Specific Noise Level M-Peak Area Changed  
 N-Name Changed  
 E-Ether Interference

\*\*\* End of Report \*\*\*

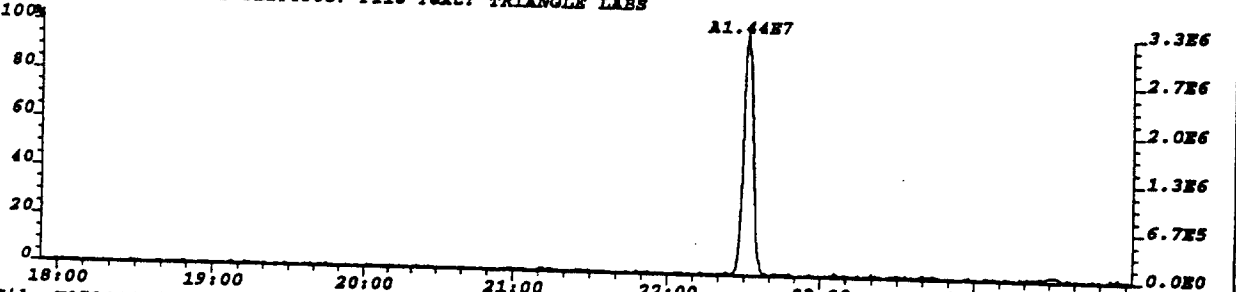
File: X973082 #1-1285 Acq: 11-SEP-1997 21:48:10 GC EI+ Voltage SIR AutoSpec Noise: 1632  
303.9016 BSub(256,30,-3.0) PKD(5,3,1,0.10%,6528.0,0.00%,F,F) Exp: XCONF\_TT  
Sample Text: I-M23-1 TLI#43057 File Text: TRIANGLE LABS



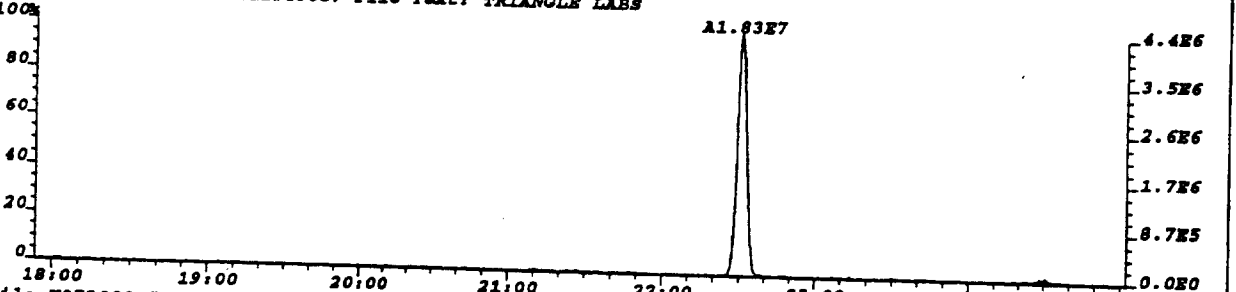
File: X973082 #1-1285 Acq: 11-SEP-1997 21:48:10 GC EI+ Voltage SIR AutoSpec Noise: 832  
305.8987 BSub(256,30,-3.0) PKD(5,3,1,0.10%,3328.0,0.00%,F,F) Exp: XCONF\_TT  
Sample Text: I-M23-1 TLI#43057 File Text: TRIANGLE LABS



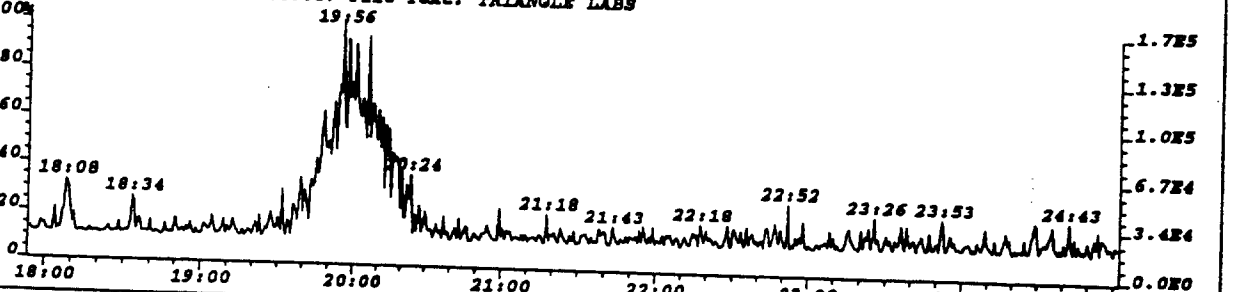
File: X973082 #1-1285 Acq: 11-SEP-1997 21:48:10 GC EI+ Voltage SIR AutoSpec Noise: 4524  
315.9419 BSub(256,30,-3.0) PKD(5,3,1,0.10%,18096.0,0.00%,F,F) Exp: XCONF\_TT  
Sample Text: I-M23-1 TLI#43057 File Text: TRIANGLE LABS



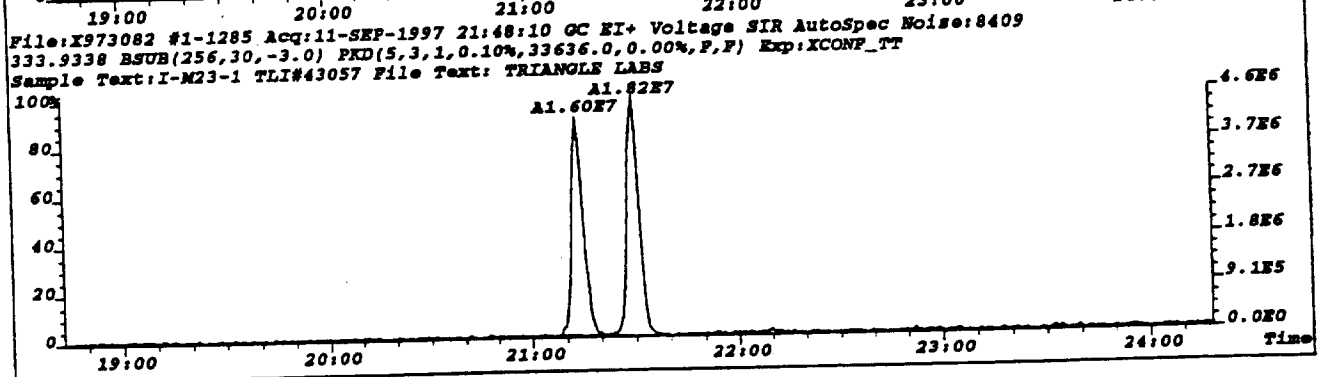
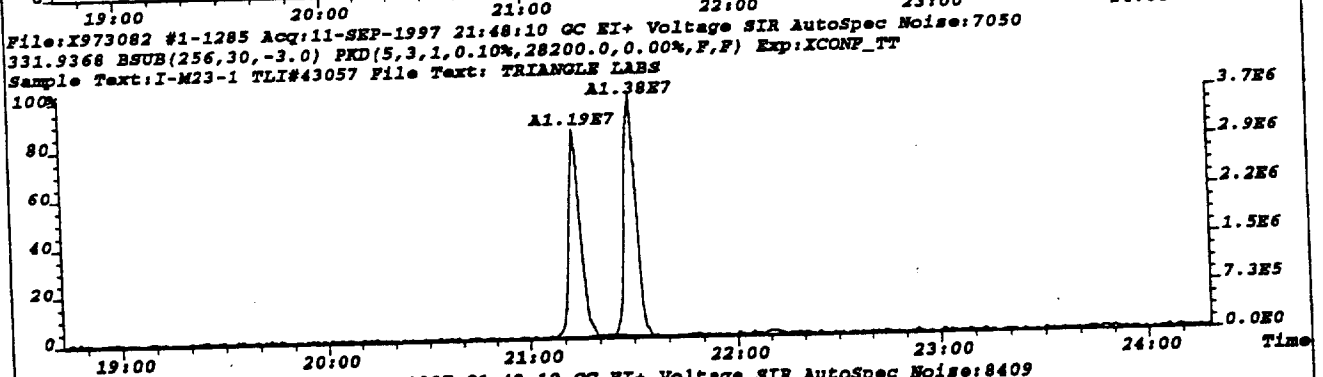
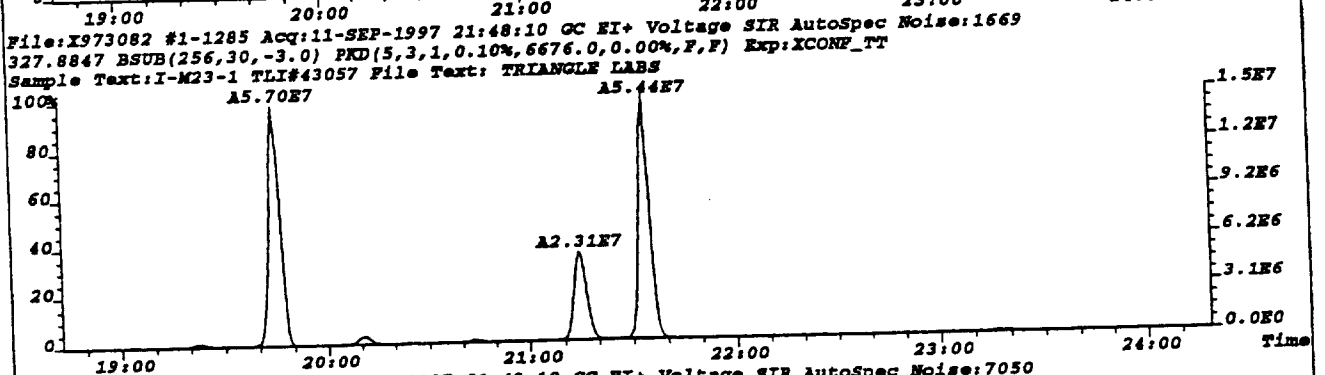
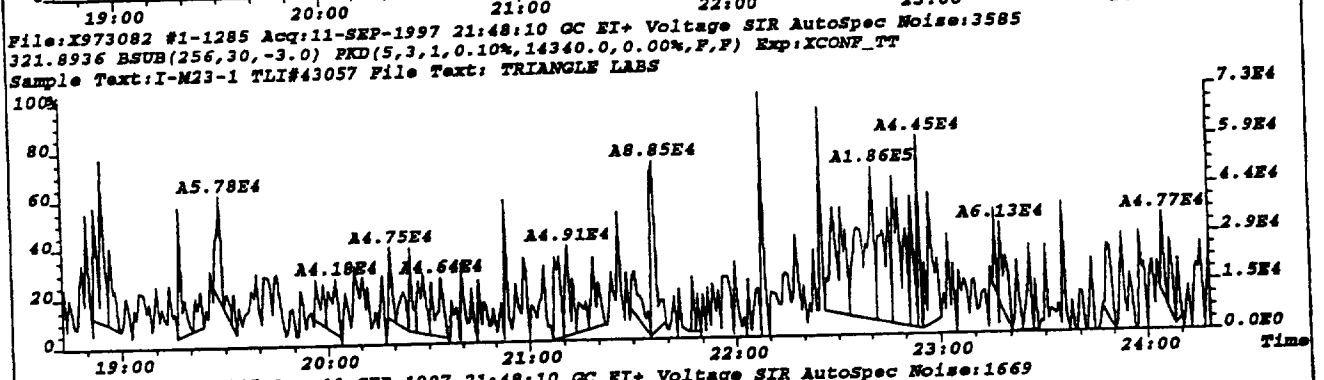
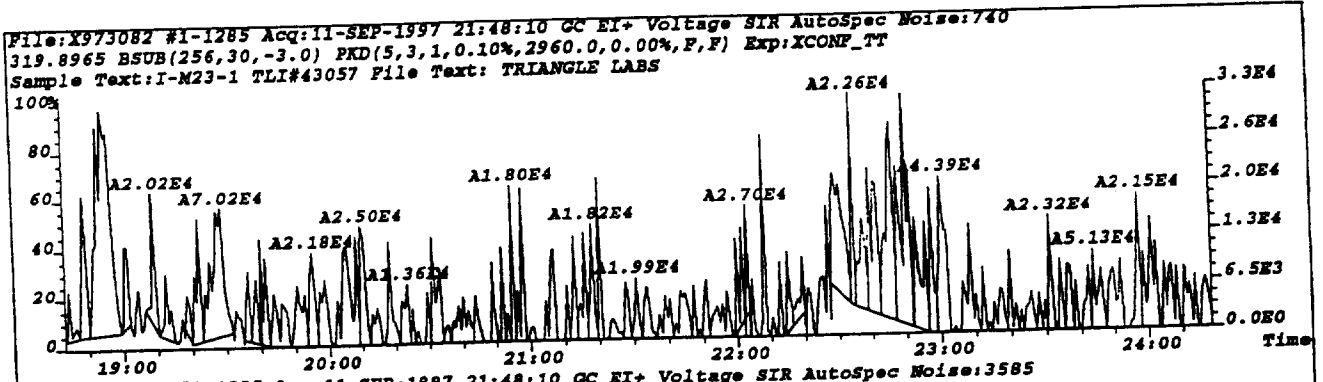
File: X973082 #1-1285 Acq: 11-SEP-1997 21:48:10 GC EI+ Voltage SIR AutoSpec Noise: 2454  
317.9389 BSub(256,30,-3.0) PKD(5,3,1,0.10%,9816.0,0.00%,F,F) Exp: XCONF\_TT  
Sample Text: I-M23-1 TLI#43057 File Text: TRIANGLE LABS

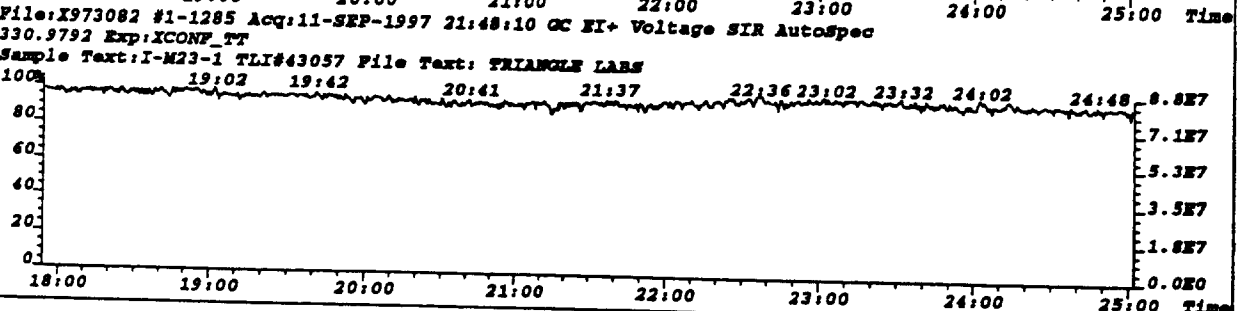
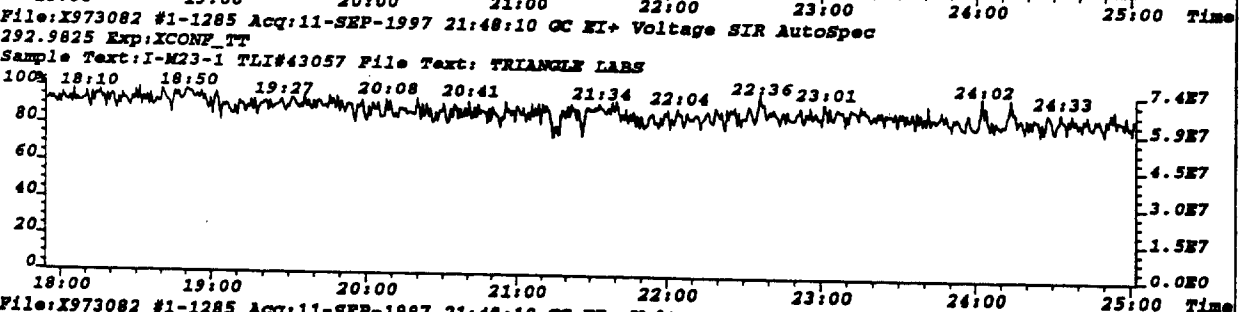
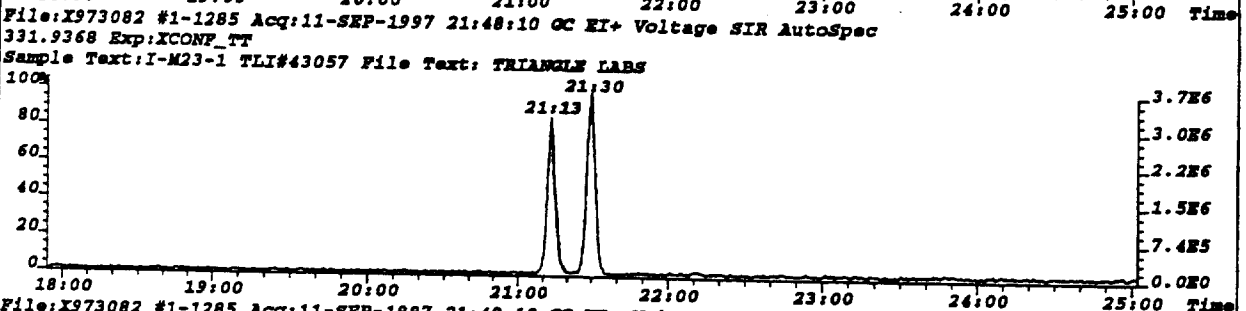
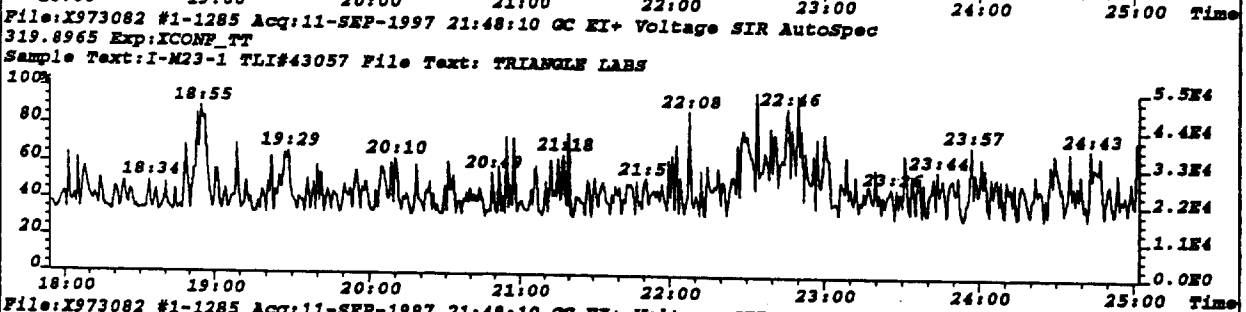
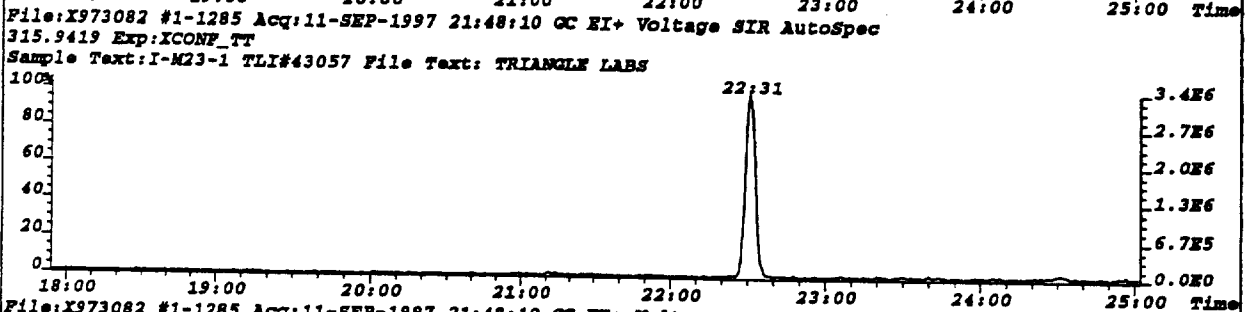
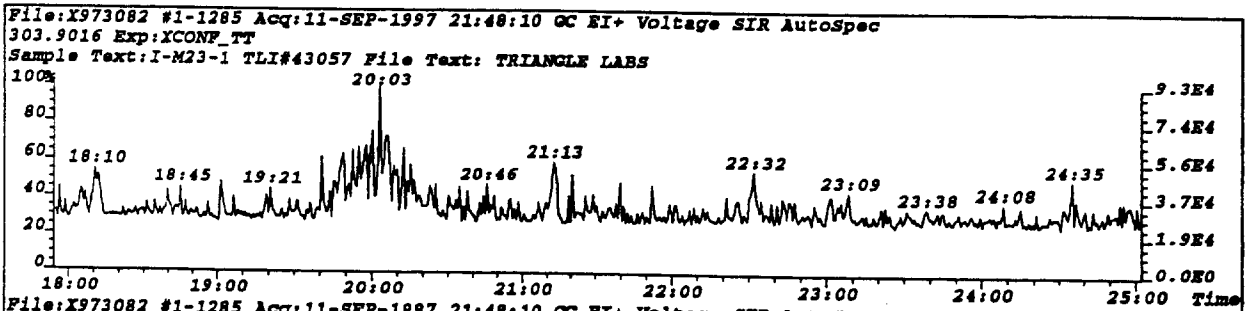


File: X973082 #1-1285 Acq: 11-SEP-1997 21:48:10 GC EI+ Voltage SIR AutoSpec  
375.8364 Exp: XCONF\_TT  
Sample Text: I-M23-1 TLI#43057 File Text: TRIANGLE LABS

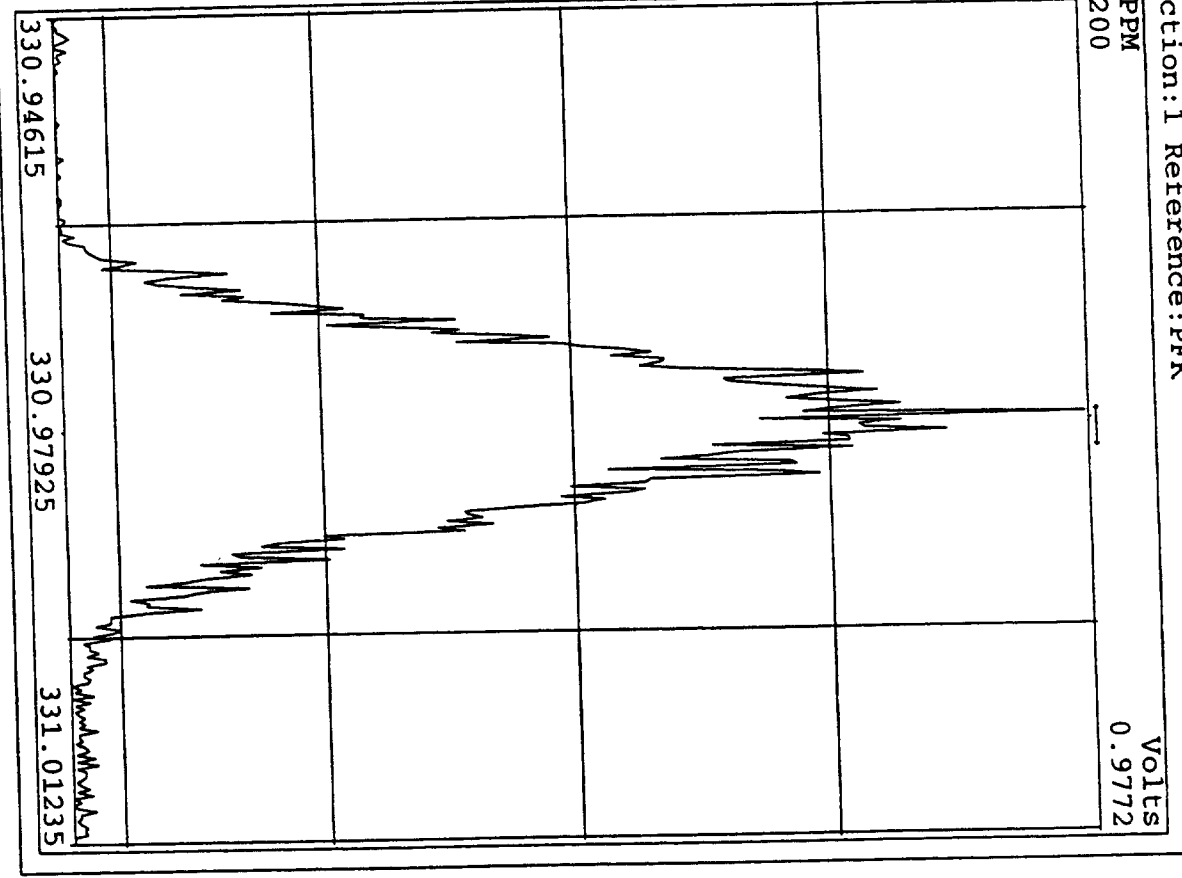
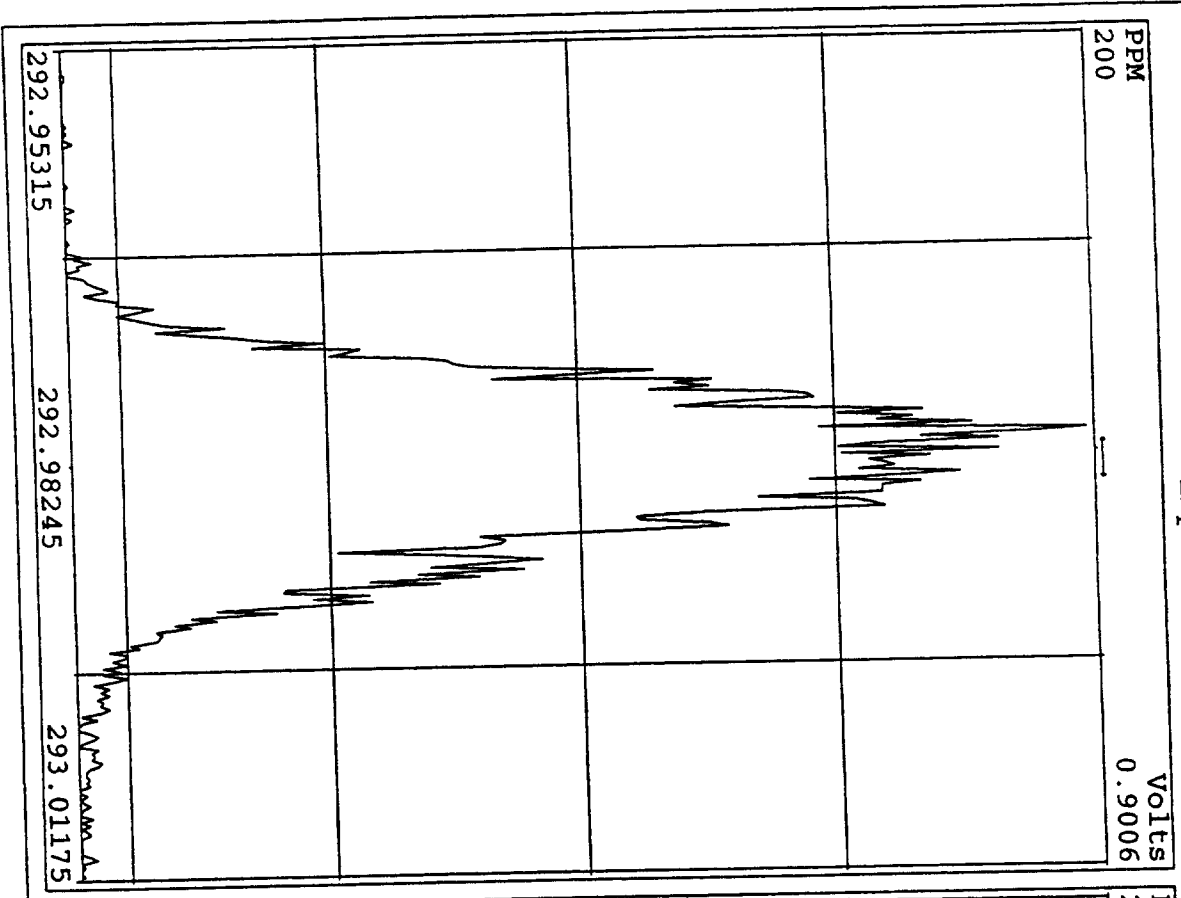




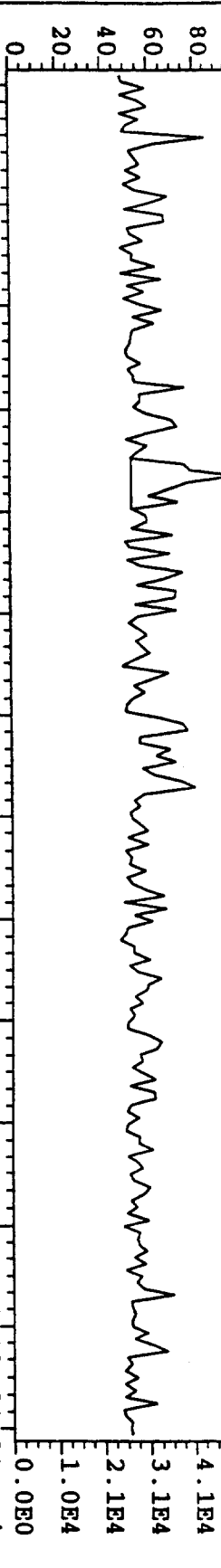




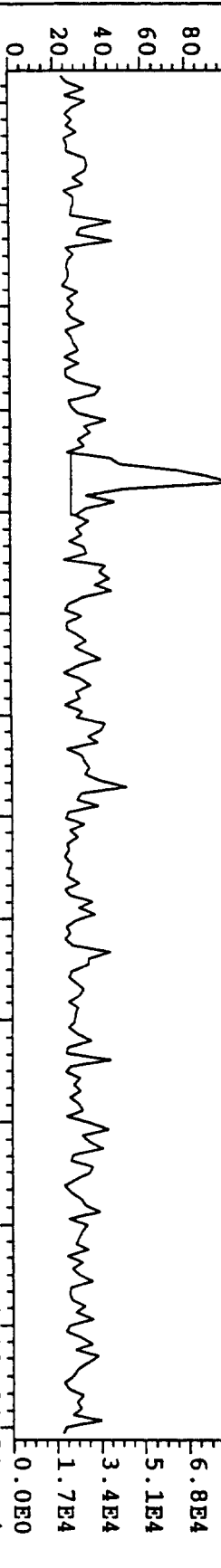
Peak Locate Examination: 11-SEP-1997: 21: 47 File: X973082  
Experiment: XCONF\_TR Function: 1 Reference: PFK



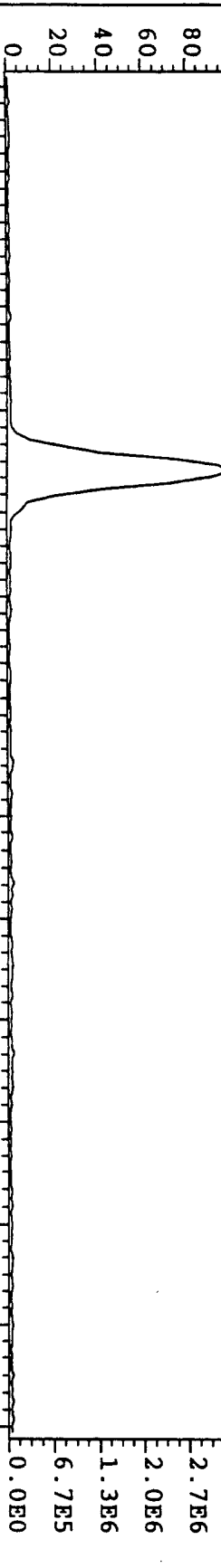
File: X973082 #1-1285 Acq: 11-SEP-1997 21:48:10 GC FI+ Voltage SIR AutoSpec  
 303.9016 Exp: XCONF\_TT  
 Sample Text: I-M23-1 TLI#43057 File Text: TRIANGLE LABS  
 100%



File: X973082 #1-1285 Acq: 11-SEP-1997 21:48:10 GC FI+ Voltage SIR AutoSpec  
 305.8987 Exp: XCONF\_TT  
 Sample Text: I-M23-1 TLI#43057 File Text: TRIANGLE LABS  
 100%



File: X973082 #1-1285 Acq: 11-SEP-1997 21:48:10 GC FI+ Voltage SIR AutoSpec  
 315.9419 Exp: XCONF\_TT  
 Sample Text: I-M23-1 TLI#43057 File Text: TRIANGLE LABS  
 100%



5.2E4

4.1E4

3.1E4

2.1E4

1.0E4

0.0E0

Time

8.5E4

6.8E4

5.1E4

3.4E4

1.7E4

0.0E0

Time

3.4E6

2.7E6

2.0E6

1.3E6

6.7E5

0.0E0

Time

**Pacific Environmental Services**

TLI Project: 43057  
 Client Sample: O-M23-1

Method 23 PCDD/PCDF Analysis (a)  
 Analysis File: S975809

Client Project: ASPHALT PLANT "A"	Date Received: 08/29/97	Spike File: SPX23704
Sample Matrix: M23TRAIN	Date Extracted: 09/06/97	ICal: SF56117
TLI ID: 181-27-2A-C	Date Analyzed: 09/10/97	ConCal: S975797
Sample Size: 1.000	Dilution Factor: n/a	% Moisture: n/a
Dry Weight: n/a	Blank File: S975807	% Lipid: n/a
GC Column: DB-5	Analyst: ML	% Solids: n/a

Analytes	Amt. (ng)	DL	EMPC	Ratio	RT	Flags
2,3,7,8-TCDD	ND	0.003				---
1,2,3,7,8-PeCDD	ND	0.005				---
1,2,3,4,7,8-HxCDD	ND	0.006				---
1,2,3,6,7,8-HxCDD	0.01			1.24	29:13	---
1,2,3,7,8,9-HxCDD	0.02			1.29	29:30	---
1,2,3,4,6,7,8-HpCDD	0.06			0.99	32:04	B_
1,2,3,4,6,7,8,9-OCDD	0.53			0.91	34:33	---
2,3,7,8-TCDF	0.02			0.81	20:25	B_
1,2,3,7,8-PeCDF	EMPC		0.006			---
2,3,4,7,8-PeCDF	EMPC		0.01			B_
1,2,3,4,7,8-HxCDF	0.04			1.32	28:23	PRB
1,2,3,6,7,8-HxCDF	0.01			1.36	28:29	B_
2,3,4,6,7,8-HxCDF	0.02			1.33	29:00	PRB
1,2,3,7,8,9-HxCDF	ND	0.004				---
1,2,3,4,6,7,8-HpCDF	EMPC		0.07			PRB
1,2,3,4,7,8,9-HpCDF	0.04			1.17	32:24	B_
1,2,3,4,6,7,8,9-OCDF	0.04			0.80	34:41	B_

Totals	Amt. (ng)	Number	DL	EMPC	Flags
Total TCDD	0.007	1		0.02	---
Total PeCDD	EMPC			0.04	---
Total HxCDD	0.12	5			---
Total HpCDD	0.10	2			---
Total TCDF	0.03	3		0.04	---
Total PeCDF	0.05	4		0.07	---
Total HxCDF	0.12	6			---
Total HpCDF	0.04	1		0.15	---



Initial AM Date 9/11/97

Data Review By: \_\_\_\_\_ Calculated Noise Area: 1.22

The Total Area for each peak with an ion abundance ratio outside ratio limits has been recalculated according to method requirements.

Page No. 1 Listing of S975809B.dbf  
09/11/97 Matched GC Peaks / Ratio / Ret. Time

Compound/  
M\_2.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

		0.65-0.89				0.823-1.104			
TCDF									
304-306	DC NL	0:00	RO	1.33	0.11			0.000	
	DC SN	16:54		0.83	2.95			0.828	
	DC SN	17:16		0.73	0.57			0.846	
	DC SN	17:26	RO	0.33	1.03			0.855	
D	D SN	17:41		0.74	3.67			0.867	
D	D SN	18:29		0.84	5.69			0.906	
D	D SN	19:15		0.81	4.60			0.944	
		19:31	RO	1.01	8.58	4.89		4.85	0.957
		19:57		0.78	13.28	5.82		7.46	0.978
	DC SN	20:12	RO	0.57	1.82				0.990
		20:25		0.81	20.65	9.27		11.38	1.001 2378-TCDF AN
D	D SN	20:56	RO	0.64	4.09				1.026
	DC SN	21:44	RO	1.09	0.96				1.065
		22:20		0.72	6.54	2.74		3.80	1.095
	DC WH	22:50	RO	1.41	0.69				1.119
304-306		4 Peaks			49.05				

		0.65-0.89				0.951-1.049			
13C12-TCDF									
316-318	DC NL	0:00	RO	1.00	0.12			0.000	
	DC WL	19:11	RO	0.99	7.19			0.940	
		19:55		0.73	23.80	10.08		13.72	0.976
		20:24		0.76	4,405.97	1,897.60		2,508.37	1.000 13C12-2378-TCDF ISO
		20:54		0.67	22.67	9.13		13.54	1.025
316-318		3 Peaks			4,452.44				

----- Above: TCDF / TCDD Follows -----

		0.65-0.89				0.857-1.061			
TCDD									
320-322	DC NL	0:00	RO	1.17	0.11			0.000	
A		18:19	RO	0.56	8.99	3.91		6.94	0.863
		18:48	RO	0.90	6.74	3.43		3.81	0.886
	DC SN	19:00	RO	1.14	0.50				0.896
	DC SN	19:13	RO	0.51	0.53				0.906
	DC SN	19:27		0.87	0.58				0.917
	DC SN	19:37	RO	0.51	0.41				0.925
		19:56		0.78	6.67	2.93		3.74	0.940
	DC SN	20:23	RO	3.57	1.43				0.961
	DC SN	21:50	RO	1.74	0.41				1.029
	DC SN	21:55	RO	2.96	0.46				1.033
	DC SN	22:02	RO	8.50	0.07				1.038
	DC SN	22:09	RO	1.38	0.28				1.044
	DC SN	22:16		0.66	0.48				1.049
	DC WH	22:32	RO	2.63	0.48				1.062

Compound/

M\_2.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

Compound	Peaks	Ratio	Total Area	Area Peak 1	Area Peak 2	Rel. RT	Compound Name	ID	Flags
320-322	3 Peaks		22.40						
37C1-TCDD						0.906-1.094			
328	DC NL	0:00	0.07			0.000			
	DC WL	18:38	1.02			0.878			
		19:41	13.99	13.99		0.928			
		21:14	2,629.87	2,629.87		1.001	37C1-TCDD	SUR1	
		21:26	5.05	5.05		1.010			
		21:33	5.28	5.28		1.016			
	DC SN	21:41	1.24			1.022			
		21:42	3.65	3.65		1.023			
328	5 Peaks		2,657.84						
13C12-TCDD						0.906-1.094			
332-334	DC NL	0:00 RO	14.00	0.14		0.000			
		19:54	0.79	21.85	9.61	12.24	0.938		
		20:39 RO	1.80	2.89	2.93	1.63	0.973		
		21:00	0.80	4,818.59	2,143.61	2,674.98	0.990	13C12-1234-TCDD	RS1
		21:13	0.78	3,245.44	1,421.01	1,824.43	1.000	13C12-2378-TCDD	IS1
		21:36	0.83	56.81	25.81	31.00	1.018		
	DC SN	22:22	0.79	3.12		1.054			
332-334	5 Peaks		8,145.58						

----- Above: TCDD / PeCDF Follows -----

Compound	Peaks	Ratio	Total Area	Area Peak 1	Area Peak 2	Rel. RT	Compound Name	ID	Flags
PeCDF						0.909-1.079			
340-342	DC NL	0:00 RO	1.00	0.12		0.000			
	D	SN	22:37 RO	1.20	5.43	0.915			
	DC	SN	22:48	1.76	0.47	0.922			
	DC	SN	22:53 RO	4.36	0.36	0.926			
	DC	SN	23:06 RO	0.14	0.23	0.935			
	DC	SN	23:11 RO	0.56	0.31	0.938			
		23:50	1.56	15.18	9.25	5.93	0.964		
		23:59	1.53	7.33	4.43	2.90	0.970		
	A		24:27	1.33	14.78	8.45	6.33	0.989	
	M		24:44 RO	1.88	6.27	4.62	2.46	1.001	12378-PeCDF
	D	SN	25:02 RO	1.18	5.89		1.013		AN
	M		25:30 RO	1.11	9.28	5.64	5.06	1.032	23478-PeCDF
		25:39	1.55	9.27	5.64	3.63	1.038		AN
	DC	SN	25:57	1.44	3.08		1.050		
	DC	SN	26:05 RO	1.23	1.07		1.055		
		26:21 RO	2.19	4.67	4.00	1.83	1.066		
340-342	7 Peaks		66.78						
13C12-PeCDF						0.838-1.162			
352-354	DC NL	0:00 RO	1.14	0.13		0.000			
		23:48	1.33	16.12	9.21	6.91	0.963		
		24:22 RO	1.20	14.05	8.54	7.11	0.986		
		24:43	1.46	3,661.64	2,170.84	1,490.80	1.000	13C12-PeCDF	123 IS2
		25:03	1.40	24.31	14.18	10.13	1.013		
		25:30	1.45	3,058.59	1,808.68	1,249.91	1.032	13C12-PeCDF	234 SUR2
		26:29 RO	2.22	7.85	6.84	3.08	1.071		



Compound/

M\_Z.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

352-354 6 Peaks 6,782.56

----- Above: PeCDF / PeCDD Follows -----

PeCDD			1.32-1.78				0.921-1.026		
356-358	DC NL	0:00	RO 1.00	0.10			0.000		
		23:59	RO 0.54		4.70	8.71	0.927		
	DC SN	24:21	RO 2.37	0.89			0.941		
		24:45	RO 1.84	9.72	7.00	3.81	0.957		
		25:04	RO 2.55	5.74	5.74	2.25	0.969		
	DC SN	25:43	RO 0.24	0.28			0.994		
	DC SN	25:52	RO 1.41	3.67			1.000	12378-PeCDD	AN
	DC SN	26:21	RO 0.62	1.53			1.019		
	DC WH	26:39	RO 0.08	0.10			1.030		
	DC WH	26:47	RO 1.81	0.41			1.035		
356-358			3 Peaks	23.19					

13C12-PeCDD			1.32-1.78				0.845-1.155		
368-370	DC NL	0:00	RO 0.86	0.10			0.000		
		25:52	RO 1.50	2,086.84	1,253.47	833.37	1.000	13C12-PeCDD 123 IS3	
		26:00	RO 1.46	204.01	121.24	82.77	1.005		
368-370			2 Peaks	2,290.85					

----- Above: PeCDD / HxCDF Follows -----

HxCDF			1.05-1.43				0.957-1.053		
374-376	DC NL	0:00	RO 2.92	0.85			0.000		
		27:24	RO 1.27	10.74	6.01	4.73	0.962		
		27:32	RO 1.20	21.58	11.75	9.83	0.967		
	DC SN	27:41	RO 0.89	1.32			0.972		
D	D SN	27:49	RO 1.35	3.71			0.977		
D	D SN	27:58	RO 1.60	4.59			0.982		
		28:23	RO 1.32	31.94	18.17	13.77	0.996	123478-HxCDF	AN PR
		28:29	RO 1.36	15.18	8.76	6.42	1.000	123678-HxCDF	AN
D	D SN	28:35	RO 1.22	4.04			1.004		
D	D SN	28:47	RO 1.77	4.52			1.011		
		29:00	RO 1.33	16.89	9.65	7.24	1.018	234678-HxCDF	AN PR
	DC SN	29:07	RO 1.06	0.99			1.022		
	DC SN	29:17	RO 3.00	0.18			1.028		
	DC SN	29:32	RO 1.85	1.03			1.037		
	DC SN	29:38	RO 2.87	0.52			1.040		
	DC SN	29:42	RO 2.77	1.46			1.043	123789-HxCDF	AN
		29:49	RO 1.24	6.79	3.76	3.03	1.047		
	DC WH	30:00	RO 0.18	0.11			1.053		
	DC WH	30:13	RO 1.45	0.69			1.061		
	DC WH	30:18	RO 1.26	0.70			1.064		
374-376			6 Peaks	103.12					

13C12-HxCDF			0.43-0.59				0.859-1.141		
384-386	DC NL	0:00	RO 0.68	2.14			0.000		
	DC SN	27:31	RO 0.33	4.20			0.966		
		28:22	RO 0.49	2,209.82	722.29	1,487.53	0.996	13C12-HxCDF 478 SUR3	

Compound/ M_Z....	QC	Log	Omit	Why	..RT.	OK	Ratio	Total.Area...	Area.Peak.1..	Area.Peak.2..	Rel.RT	Compound.Name..	ID..	Flags.
					28:29		0.50	2,639.14	876.59	1,762.55	1.000	13C12-HxCDF	678	IS4
	DC	SN			28:45	RO	0.31	2.96			1.009			
					28:59		0.51	2,178.85	734.47	1,444.38	1.018	13C12-HxCDF	234	ALT2
	DC	SN			29:30	RO	0.80	1.84			1.036			
					29:42		0.49	1,792.82	589.87	1,202.95	1.043	13C12-HxCDF	789	ALT1
					29:56	RO	1.20	2.61	2.07	1.73	1.051			
	DC	SN			30:17	RO	0.28	0.89			1.063			
384-386					5 Peaks			8,823.24						

----- Above: HxCDF / HxCDD Follows -----

HxCDD	1.05-1.43							0.951-1.015								
390-392	DC	NL			0:00	RO	0.19	0.16								
	DC	WL			27:45	RO	0.29	0.18								
					27:54		1.21	5.95	3.26	2.69	0.955					
					28:23		1.13	30.36	16.11	14.25	0.972					
	DC	SN			28:27	RO	2.59	1.79			0.974					
					28:36		1.20	14.79	8.06	6.73	0.979					
	DC	SN			28:45	RO	1.94	1.61			0.985					
	DC	SN			29:00	RO	7.03	0.74			0.993					
	D	SN			29:08		1.22	3.48			0.998	123478-HxCDD		AN		
					29:13		1.24	7.72	4.27	3.45	1.001	123678-HxCDD		AN		
					29:30		1.29	9.13	5.14	3.99	1.010	123789-HxCDD		AN		
	DC	WH			29:59	RO	0.91	3.09			1.027					
390-392					5 Peaks			67.95								

13C12-HxCDD	1.05-1.43							0.966-1.034								
402-404	DC	NL			0:00		1.10	1.72								
					28:36	RO	1.52	6.74	4.57	3.01	0.979					
					29:07		1.22	1,631.57	897.42	734.15	0.997	13C12-HxCDD	478	SUR4		
					29:12		1.24	2,071.02	1,145.28	925.74	1.000	13C12-HxCDD	678	IS5		
					29:30		1.23	3,184.06	1,756.61	1,427.45	1.010	13C12-HxCDD	789	RS2		
					29:43	RO	1.44	8.98	5.76	4.01	1.018					
	DC	SN			29:58	RO	3.40	2.15			1.026					
402-404					5 Peaks			6,902.37								

----- Above: HxCDD / HpCDF Follows -----

HpCDF	0.88-1.20							0.995-1.045								
408-410	DC	NL			0:00	RO	23.14	0.14								
					31:12	RO	1.39	31.62	21.60	15.50	1.001	1234678-HpCDF		AN	PR	
					31:26	RO	1.47	7.02	5.05	3.44	1.008					
					31:33	RO	1.22	10.02	6.01	4.91	1.012					
	DC	SN			31:44	RO	2.33	0.67			1.018					
	DC	SN			32:14	RO	1.78	0.73			1.034					
					32:24		1.17	12.93	6.98	5.95	1.039	1234789-HpCDF		AN		
	DC	WH			32:42	RO	6.03	0.73			1.049					
	DC	WH			32:51	RO	2.00	1.04			1.053					
408-410					4 Peaks			61.59								

13C12-HpCDF	0.37-0.51							0.936-1.128								
418-420	DC	NL			0:00	RO	0.88	1.40								
											0.000					

Compound/  
M\_2.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

Compound	QC	Log	Omit	Why	RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Rel.RT	Compound.Name	ID	Flags
418-420	DC	SN			31:11		0.44	1,194.47	365.70	828.77	1.000	13C12-HpCDF	678	IS6
					31:29	RO	0.22	2.00		1.010				
					32:24		0.42	816.94	240.77	576.17	1.039	13C12-HpCDF	789	SUR5
					2 Peaks			2,011.41						

----- Above: HpCDF / HpCDD Follows -----

Compound	QC	Log	Omit	Why	RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Rel.RT	Compound.Name	ID	Flags
424-426	DC	NL			0.88-1.20						0.977-1.006			
					0:00		1.00	0.14		0.000				
					31:28		1.09	16.15	8.43	7.72	0.982			
424-426	DC	WH			32:04		0.99	19.94	9.90	10.04	1.001	1234678-HpCDD		AN
					32:32	RO	2.00	0.27		1.015				
					2 Peaks			36.09						

Compound	QC	Log	Omit	Why	RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Rel.RT	Compound.Name	ID	Flags
436-438	DC	NL			0.88-1.20						0.969-1.031			
					0:00	RO	2.00	2.16		0.000				
					31:26	RO	2.97	3.08		0.981				
436-438	DC	SN			32:03		1.05	1,307.85	670.48	637.37	1.000	13C12-HpCDD	678	IS7
					1 Peak			1,307.85						

----- Above: HpCDD / Octa-CDD and CDF Follows -----

Compound	QC	Log	Omit	Why	RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Rel.RT	Compound.Name	ID	Flags					
442-444	DC	NL			0.76-1.02						0.884-1.116								
					0:00	RO	1.40	0.09		0.000									
					30:43	RO	0.27	0.15		0.889									
					31:07	RO	1.06	0.32		0.901									
					31:35		0.83	1.48		0.914									
					31:51	RO	0.24	0.17		0.922									
					32:13	RO	3.44	0.30		0.932									
					32:18	RO	1.76	0.72		0.935									
					32:51	RO	0.74	1.40		0.951									
					32:58	RO	0.38	0.59		0.954									
					33:33	RO	4.78	0.17		0.971									
					33:59	RO	3.53	0.32		0.984									
					34:08	RO	1.15	0.89		0.988									
					34:11	RO	1.40	0.19		0.989									
					34:21	RO	1.18	0.76		0.994									
					M	DC	SN			34:41		0.80	9.20	4.10	5.10	1.004	OCDF		AN
										34:59	RO	0.18	0.66		1.013				
										35:10	RO	2.52	0.40		1.018				
										35:23	RO	1.35	1.42		1.024				
					442-444	DC	SN			35:31	RO	0.71	0.72		1.028				
35:49	RO	0.74	0.30							1.037									
1 Peak			9.20																

Compound	QC	Log	Omit	Why	RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Rel.RT	Compound.Name	ID	Flags
458-460	DC	NL			0.76-1.02						0.884-1.116			
					0:00		0.86	0.13		0.000				
					34:22	RO	2.17	0.45		0.995				
458-460	DC	SN			34:33		0.91	86.40	41.23	45.17	1.000	OCDD		AN
					34:49	RO	1.49	0.96		1.008				
					1 Peak			86.40						

Compound/

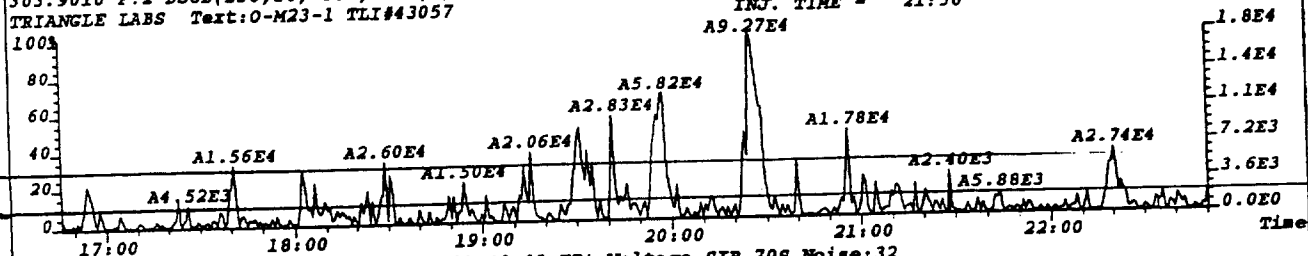
M_Z	QC	Log	Omit	Why	..RT.	OK	Ratio	Total.Area	Area.Peak.1..	Area.Peak.2..	Rel.RT	Compound.Name..	ID..	Flags.
13C12-OCDD					0.76-1.02						0.996-1.005			
470-472	DC	NL			0:00	RO	9.50	0.11			0.000			
					34:33		0.89	1,190.52	560.85	629.67	1.000	13C12-OCDD	IS8	
	DC	WH			34:52	RO	0.14	0.53			1.009			
470-472					1 Peak			1,190.52						

Column Description..... "Why" Code Description..... QC Log Desc.....

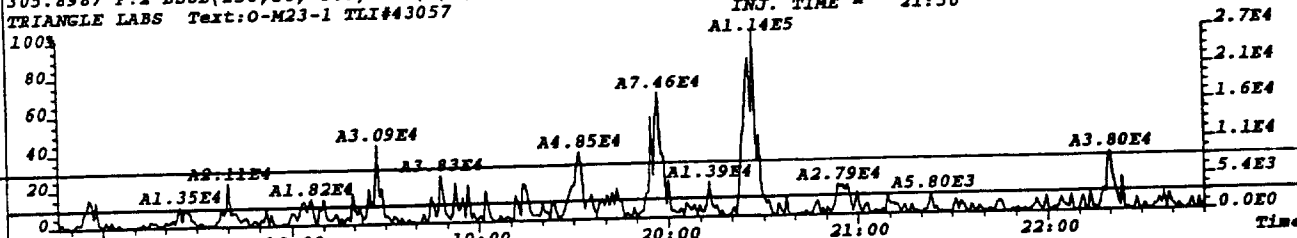
M_Z	-Nominal Ion Mass(es)	WL-Below Retention Time Window	A-Peak Added
..RT.	-Retention Time (mm:ss)	WH-Above Retention Time Window	K-Peak Kept
Rat.1	-Ratio of M/M+2 Ions	SN-Below Signal to Noise Level	D-Peak Deleted
OK	-RO-Ratio Outside Limits	<M-Below Method Detection Limit	T-Time Changed
Rel.RT	-Relative Retention Time	NL-Channel Specific Noise Level	M-Peak Area Changed
			N-Name Changed
			E-Ether Interference

\*\*\* End of Report \*\*\*

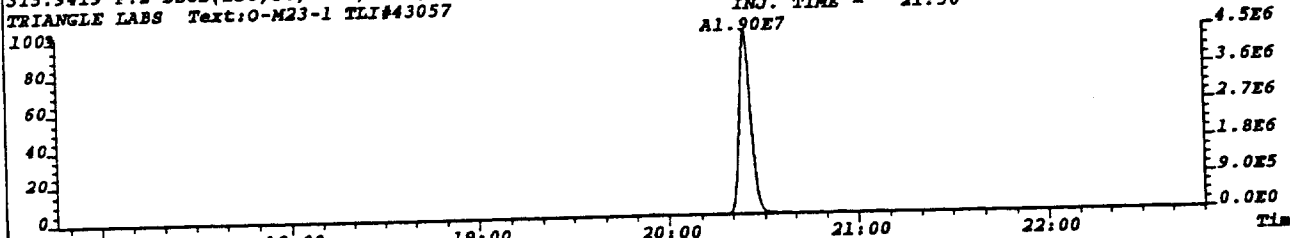
File: S975809 #1-848 Acq: 10-SEP-1997 21:48:09 EI+ Voltage SIR 70S Noise: 41  
303.9016 F: 2 BSUB(256, 30, -3.0) PKD(9, 5, 5, 0.05%, 164.0, 1.00%, F, T) Exp: EPCUS  
TRIANGLE LABS Text: 0-M23-1 TLI#43057 INJ. TIME = 21:50



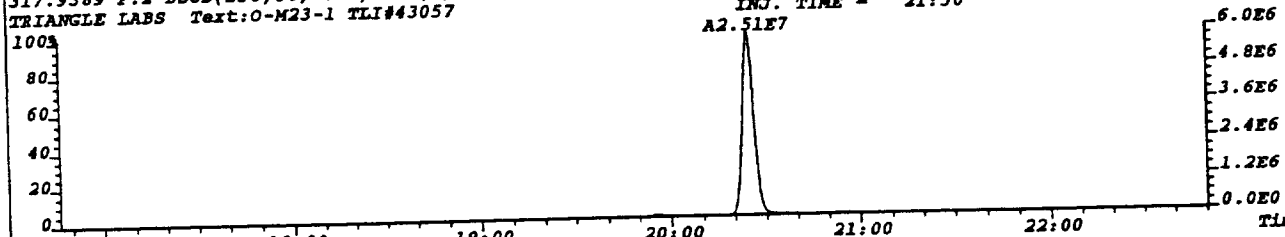
File: S975809 #1-848 Acq: 10-SEP-1997 21:48:09 EI+ Voltage SIR 70S Noise: 32  
305.8987 F: 2 BSUB(256, 30, -3.0) PKD(9, 5, 5, 0.05%, 128.0, 1.00%, F, T) Exp: EPCUS  
TRIANGLE LABS Text: 0-M23-1 TLI#43057 INJ. TIME = 21:50



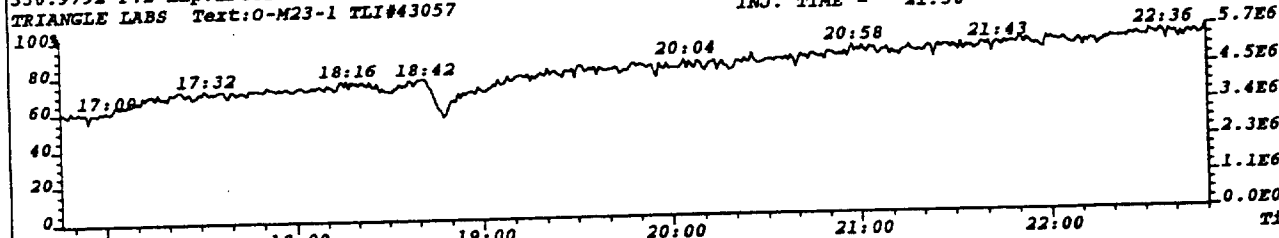
File: S975809 #1-848 Acq: 10-SEP-1997 21:48:09 EI+ Voltage SIR 70S Noise: 35  
315.9419 F: 2 BSUB(256, 30, -3.0) PKD(9, 5, 5, 0.05%, 140.0, 1.00%, F, T) Exp: EPCUS  
TRIANGLE LABS Text: 0-M23-1 TLI#43057 INJ. TIME = 21:50



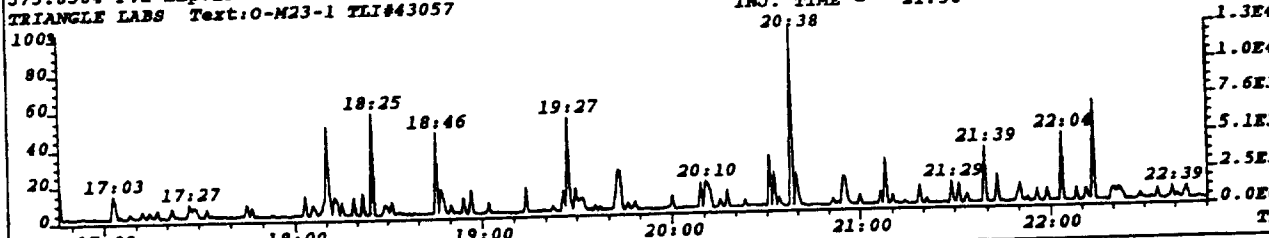
File: S975809 #1-848 Acq: 10-SEP-1997 21:48:09 EI+ Voltage SIR 70S Noise: 37  
317.9389 F: 2 BSUB(256, 30, -3.0) PKD(9, 5, 5, 0.05%, 148.0, 1.00%, F, T) Exp: EPCUS  
TRIANGLE LABS Text: 0-M23-1 TLI#43057 INJ. TIME = 21:50



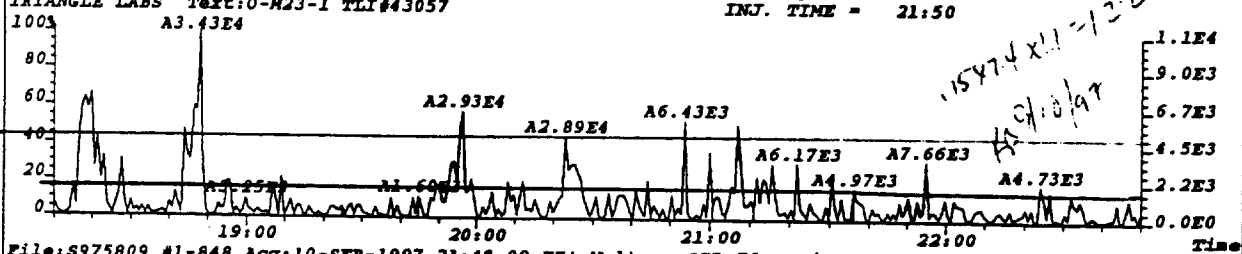
File: S975809 #1-848 Acq: 10-SEP-1997 21:48:09 EI+ Voltage SIR 70S  
330.9792 F: 2 Exp: EPCUS  
TRIANGLE LABS Text: 0-M23-1 TLI#43057 INJ. TIME = 21:50



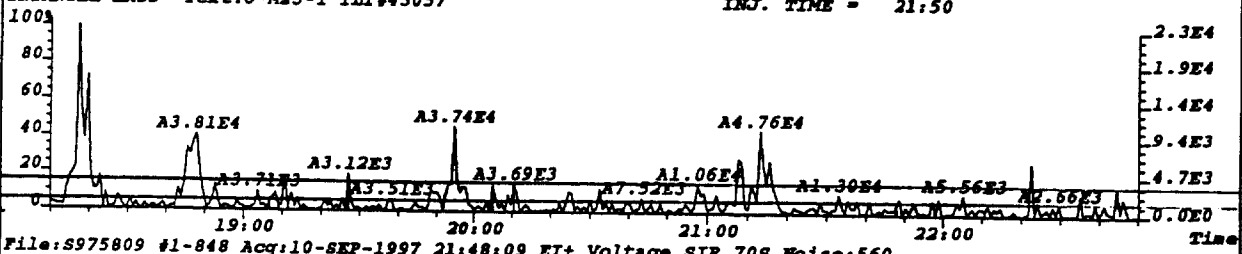
File: S975809 #1-848 Acq: 10-SEP-1997 21:48:09 EI+ Voltage SIR 70S  
375.8364 F: 2 Exp: EPCUS  
TRIANGLE LABS Text: 0-M23-1 TLI#43057 INJ. TIME = 21:50



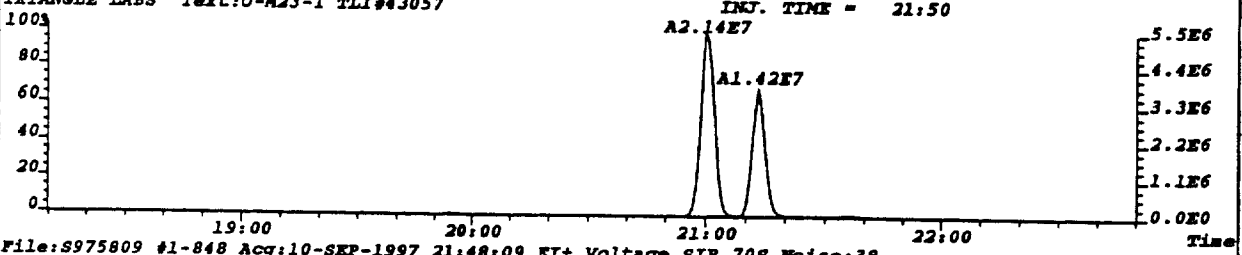
File: S975809 #1-848 Acq: 10-SEP-1997 21:48:09 EI+ Voltage SIR 70S Noise: 37  
 319.8965 F: 2 BSUB(256, 30, -3.0) PKD(7, 5, 3, 0.05%, 148.0, 1.00%, F, T) Exp: EPCUS  
 TRIANGLE LABS Text: 0-M23-1 TLI#43057 INJ. TIME = 21:50



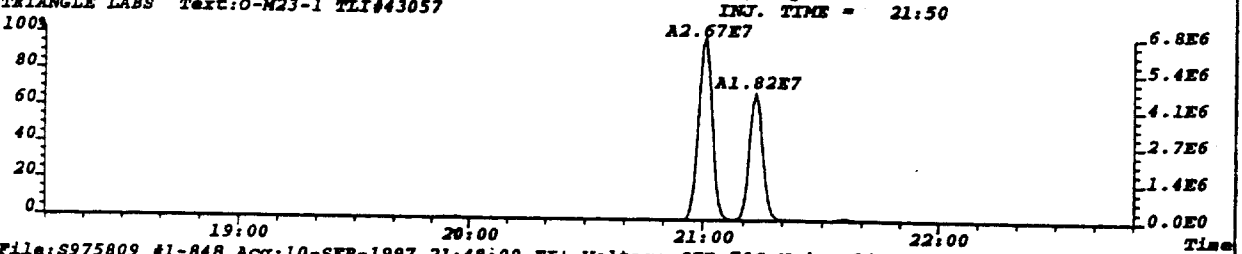
File: S975809 #1-848 Acq: 10-SEP-1997 21:48:09 EI+ Voltage SIR 70S Noise: 32  
 321.8936 F: 2 BSUB(256, 30, -3.0) PKD(7, 5, 3, 0.05%, 128.0, 1.00%, F, T) Exp: EPCUS  
 TRIANGLE LABS Text: 0-M23-1 TLI#43057 INJ. TIME = 21:50



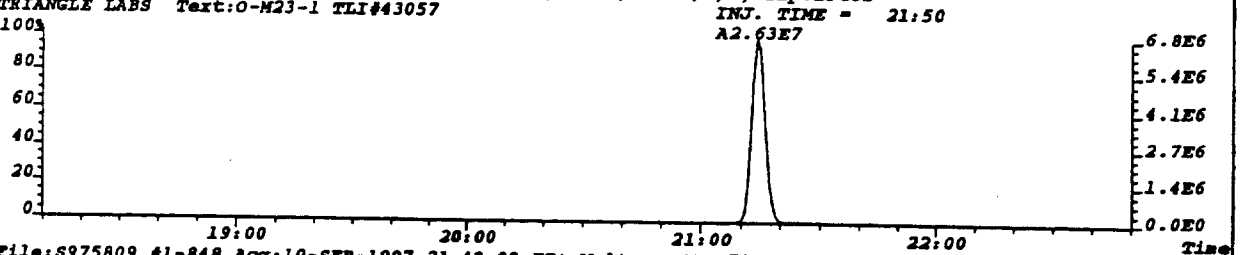
File: S975809 #1-848 Acq: 10-SEP-1997 21:48:09 EI+ Voltage SIR 70S Noise: 560  
 331.9368 F: 2 BSUB(256, 30, -3.0) PKD(7, 5, 3, 0.05%, 2240.0, 1.00%, F, T) Exp: EPCUS  
 TRIANGLE LABS Text: 0-M23-1 TLI#43057 INJ. TIME = 21:50



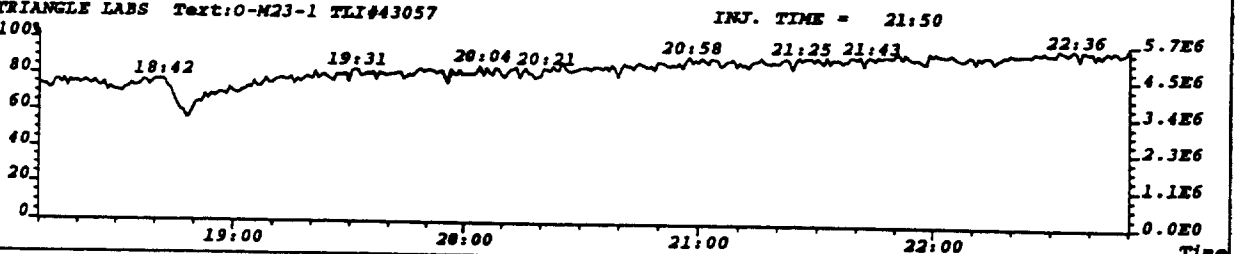
File: S975809 #1-848 Acq: 10-SEP-1997 21:48:09 EI+ Voltage SIR 70S Noise: 38  
 333.9338 F: 2 BSUB(256, 30, -3.0) PKD(7, 5, 3, 0.05%, 152.0, 1.00%, F, T) Exp: EPCUS  
 TRIANGLE LABS Text: 0-M23-1 TLI#43057 INJ. TIME = 21:50

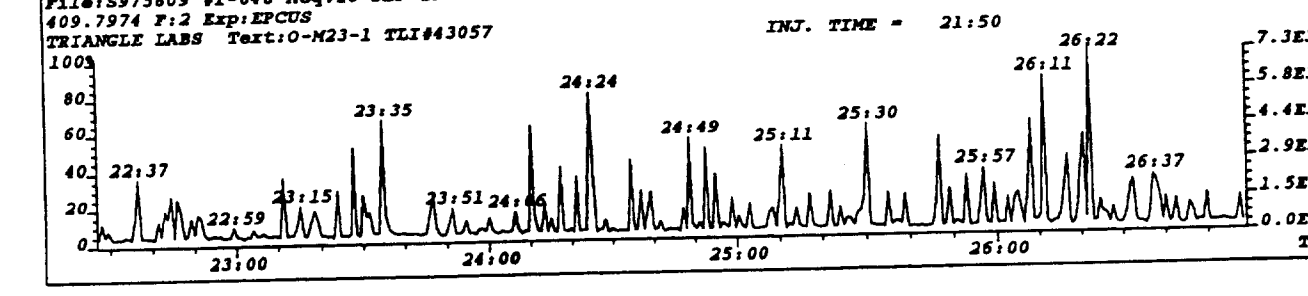
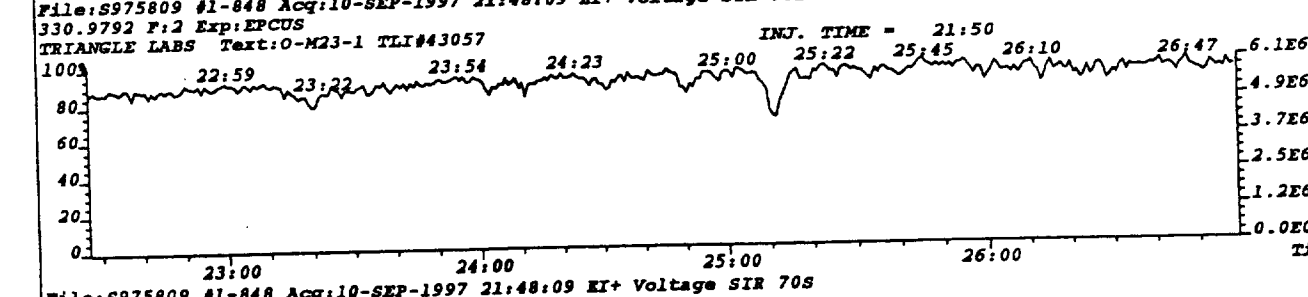
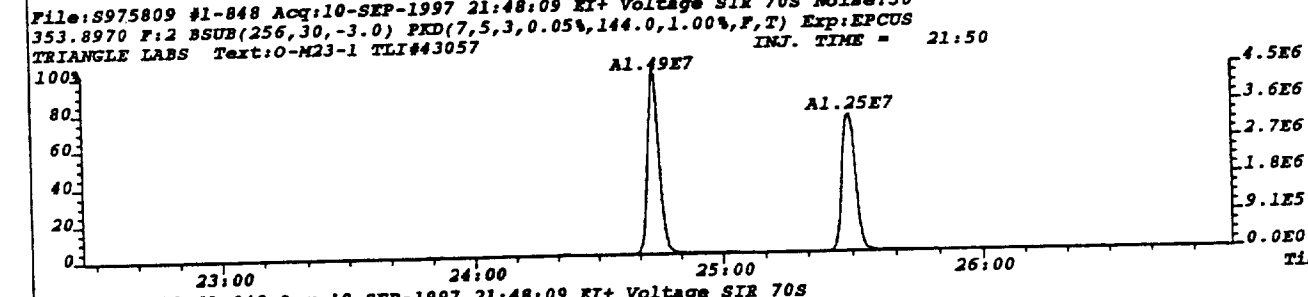
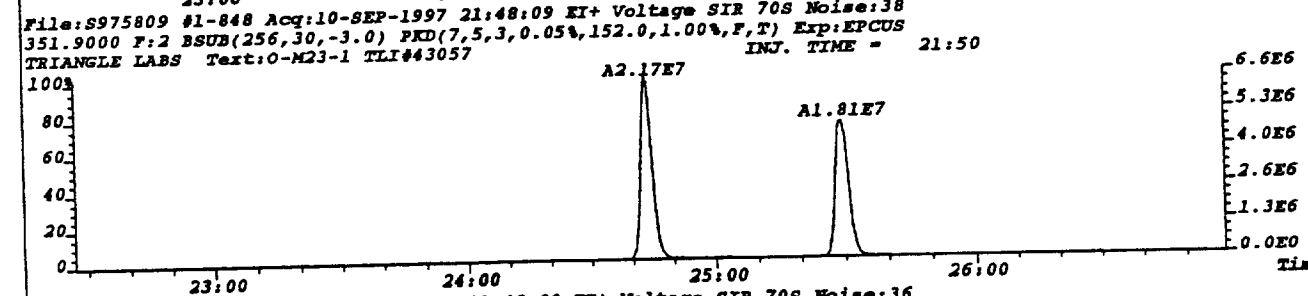
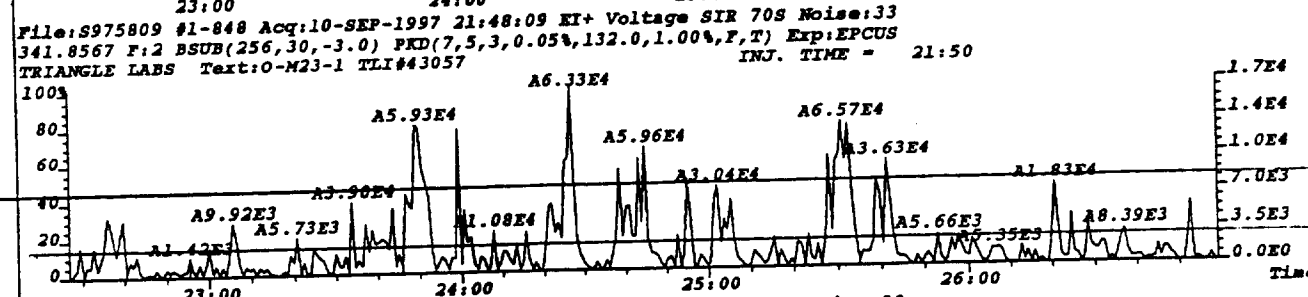
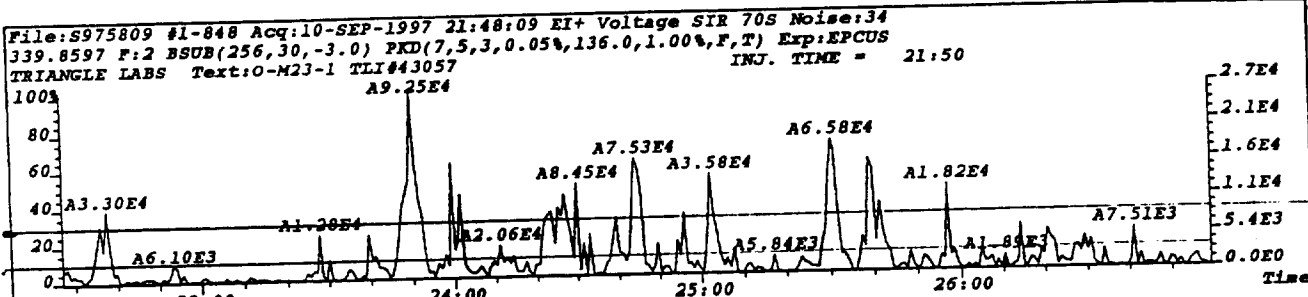


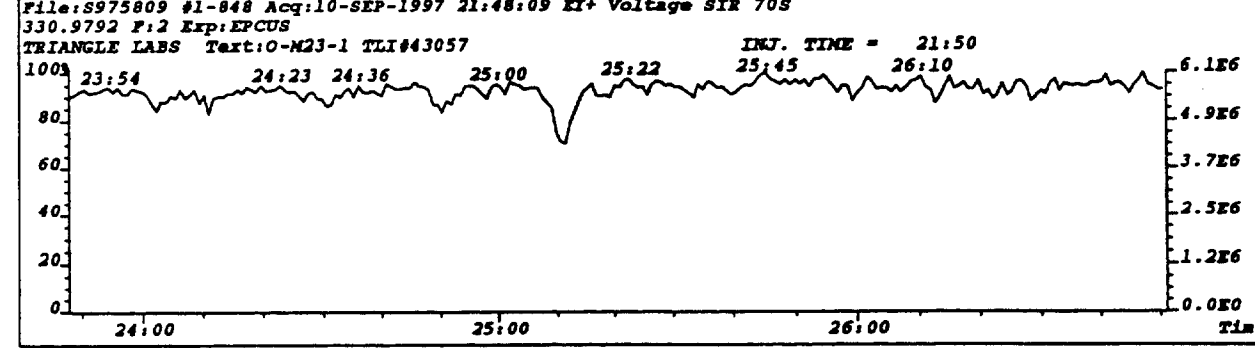
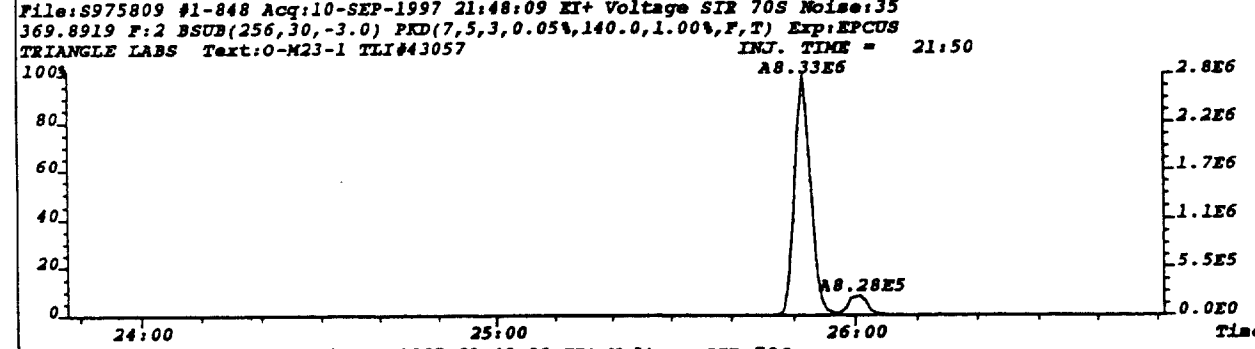
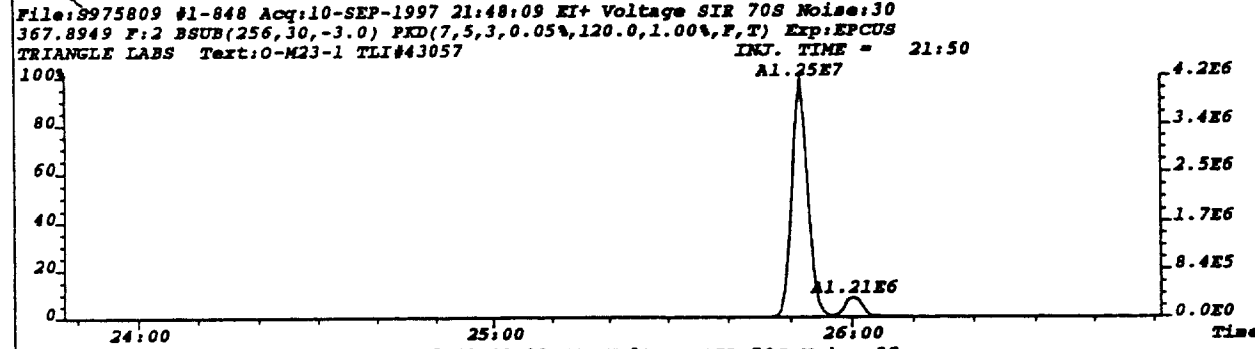
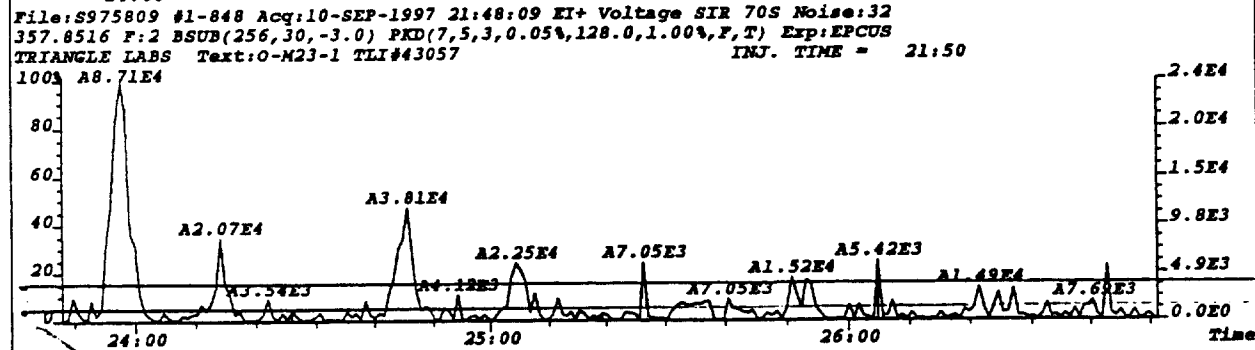
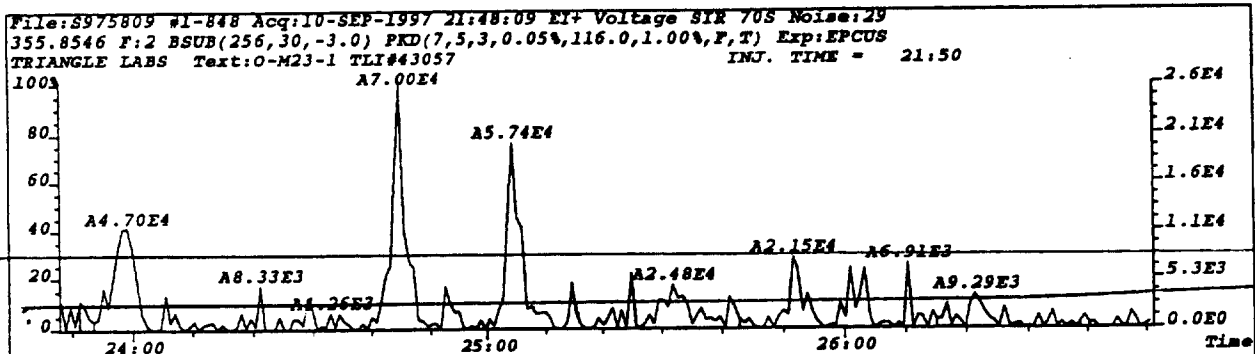
File: S975809 #1-848 Acq: 10-SEP-1997 21:48:09 EI+ Voltage SIR 70S Noise: 34  
 327.8847 F: 2 BSUB(256, 30, -3.0) PKD(7, 5, 3, 0.05%, 136.0, 1.00%, F, T) Exp: EPCUS  
 TRIANGLE LABS Text: 0-M23-1 TLI#43057 INJ. TIME = 21:50



File: S975809 #1-848 Acq: 10-SEP-1997 21:48:09 EI+ Voltage SIR 70S  
 330.9792 F: 2 Exp: EPCUS  
 TRIANGLE LABS Text: 0-M23-1 TLI#43057 INJ. TIME = 21:50

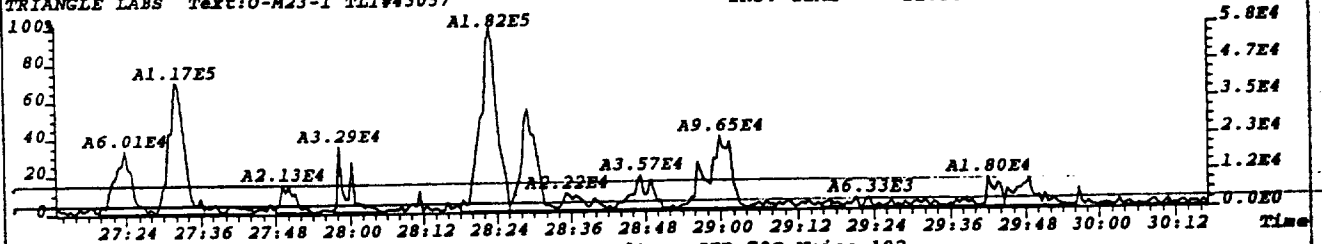




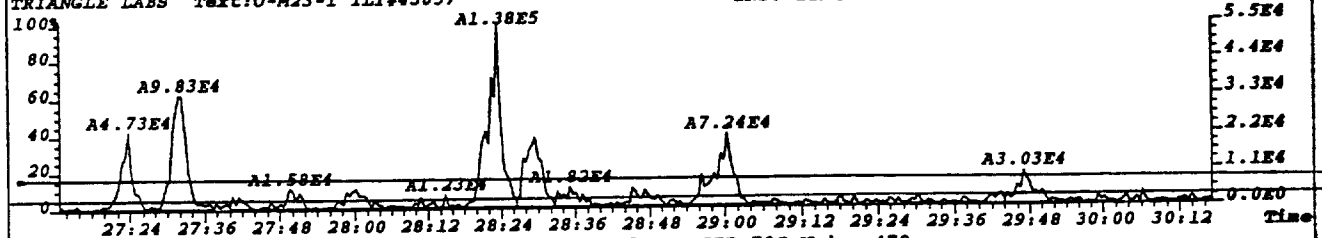




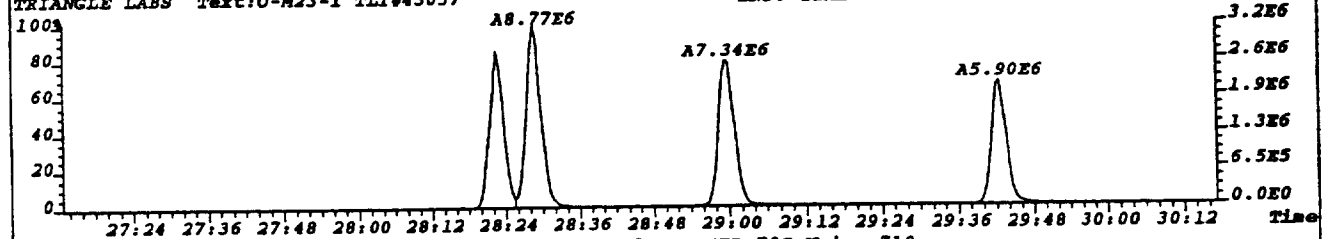
File:S975809 #1-405 Acq:10-SEP-1997 21:48:09 EI+ Voltage SIR 70S Noise:557  
373.8208 F:3 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,2228.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:O-M23-1 TLI#43057 INJ. TIME = 21:50



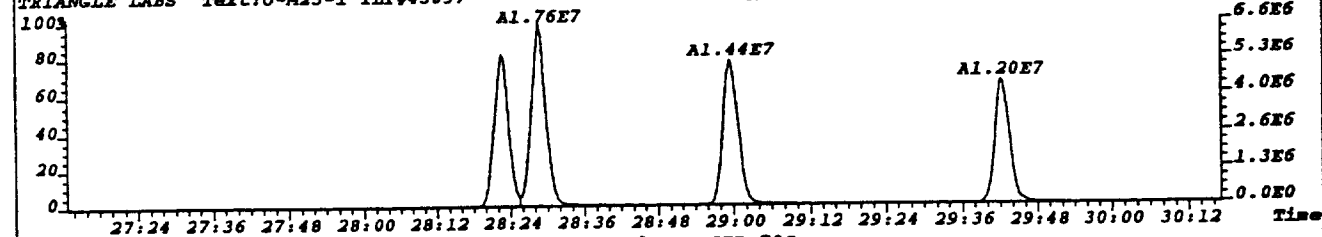
File:S975809 #1-405 Acq:10-SEP-1997 21:48:09 EI+ Voltage SIR 70S Noise:192  
375.8178 F:3 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,768.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:O-M23-1 TLI#43057 INJ. TIME = 21:50



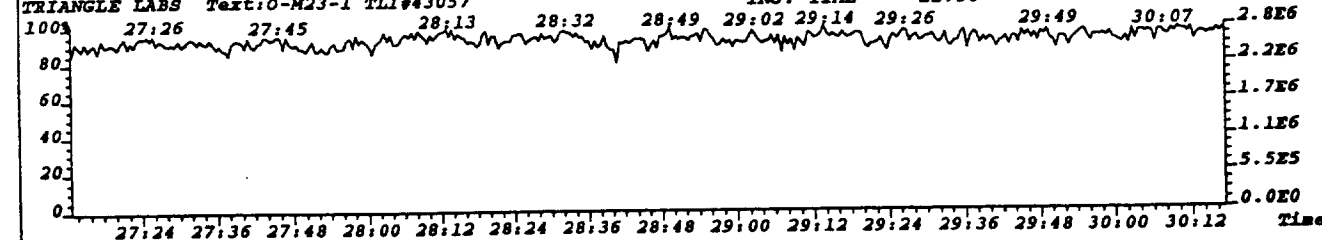
File:S975809 #1-405 Acq:10-SEP-1997 21:48:09 EI+ Voltage SIR 70S Noise:479  
383.8639 F:3 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,1916.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:O-M23-1 TLI#43057 INJ. TIME = 21:50



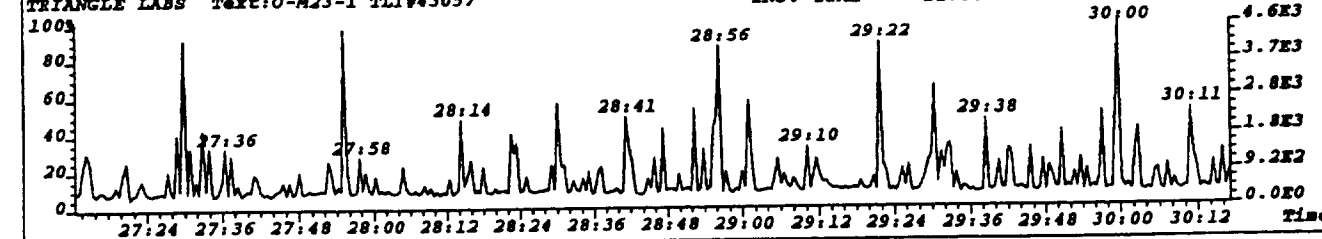
File:S975809 #1-405 Acq:10-SEP-1997 21:48:09 EI+ Voltage SIR 70S Noise:710  
385.8610 F:3 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,2840.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:O-M23-1 TLI#43057 INJ. TIME = 21:50

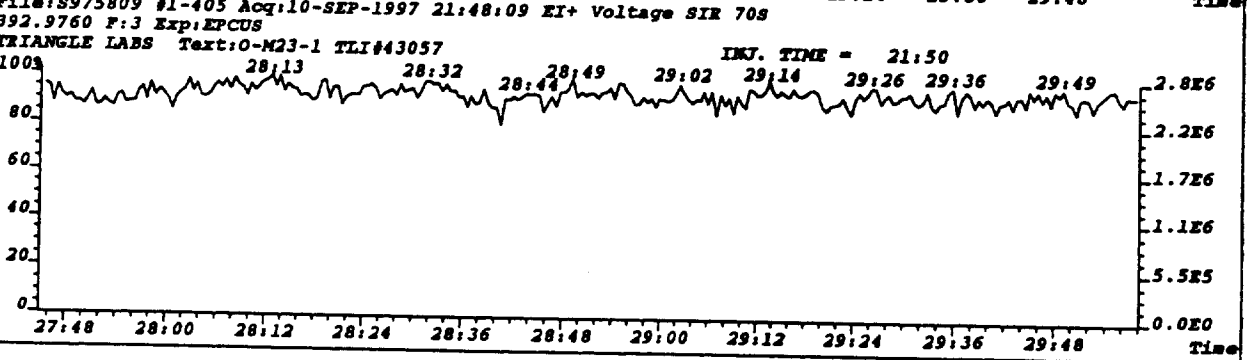
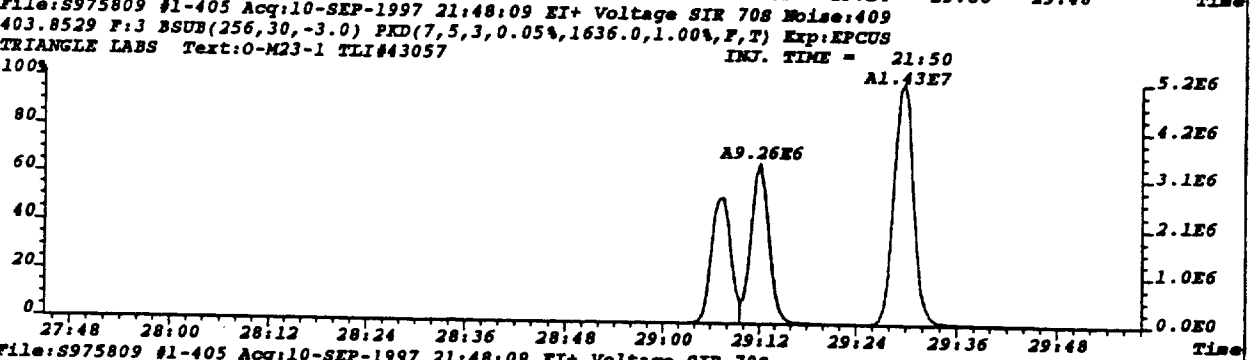
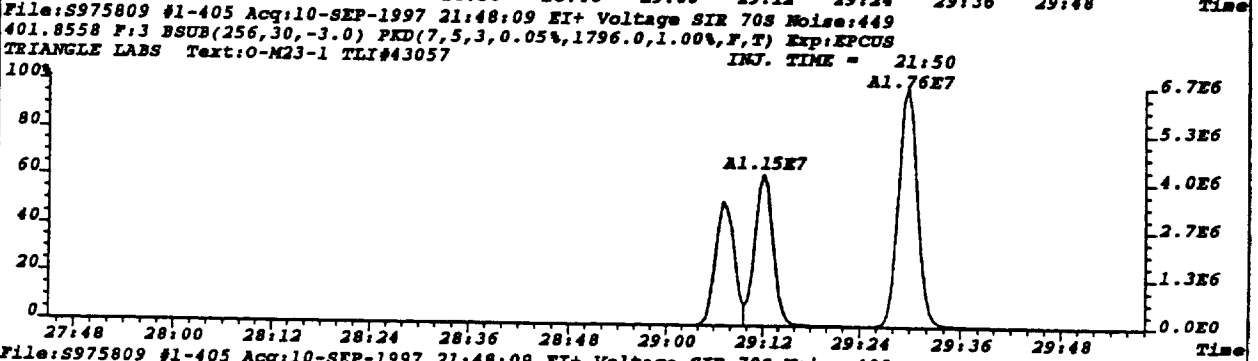
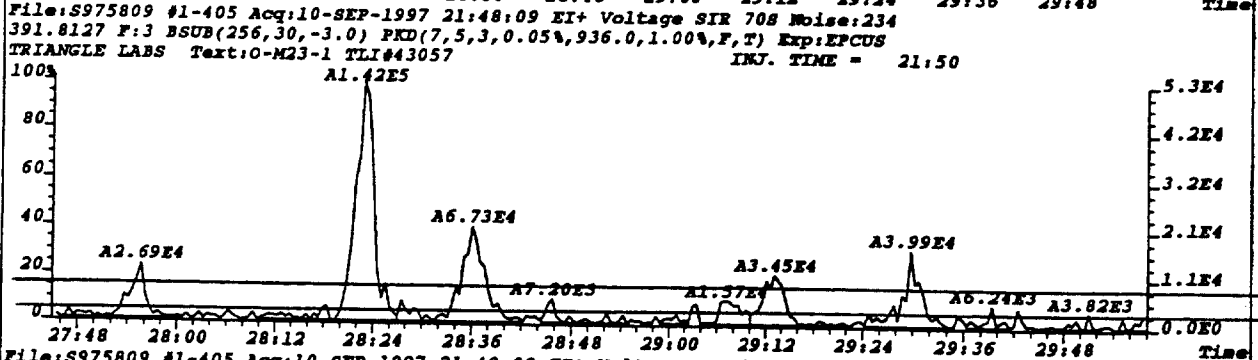
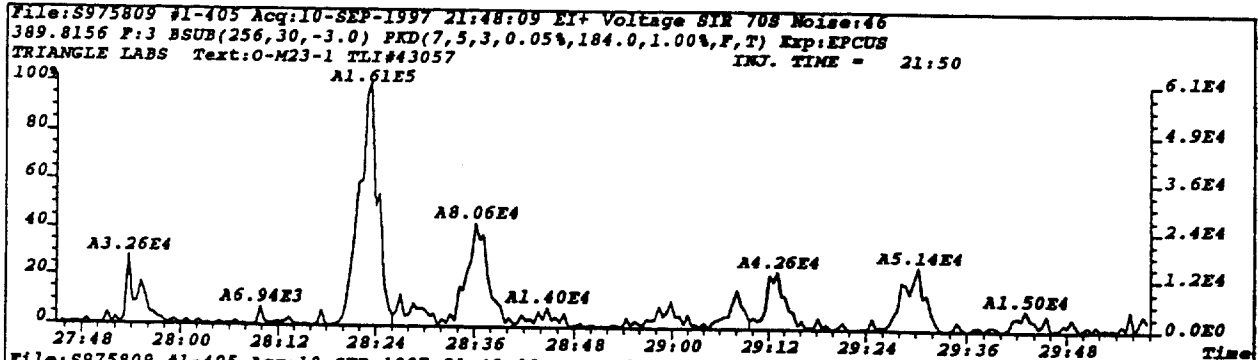


File:S975809 #1-405 Acq:10-SEP-1997 21:48:09 EI+ Voltage SIR 70S  
392.9760 F:3 Exp:EPCUS  
TRIANGLE LABS Text:O-M23-1 TLI#43057 INJ. TIME = 21:50

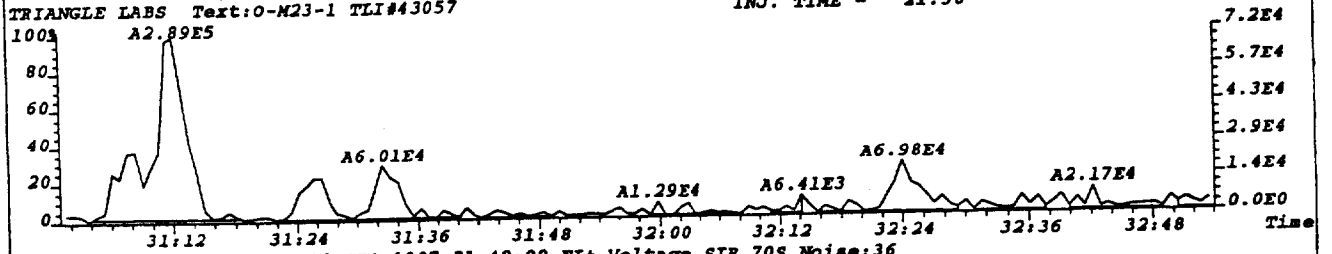


File:S975809 #1-405 Acq:10-SEP-1997 21:48:09 EI+ Voltage SIR 70S  
445.7555 F:3 Exp:EPCUS  
TRIANGLE LABS Text:O-M23-1 TLI#43057 INJ. TIME = 21:50

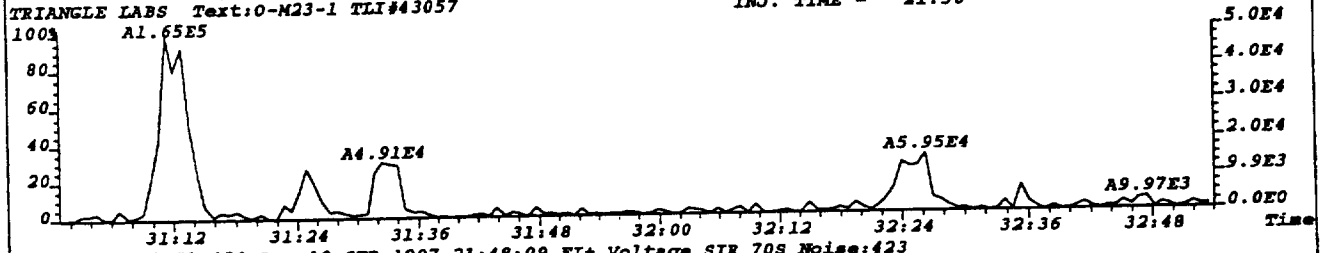




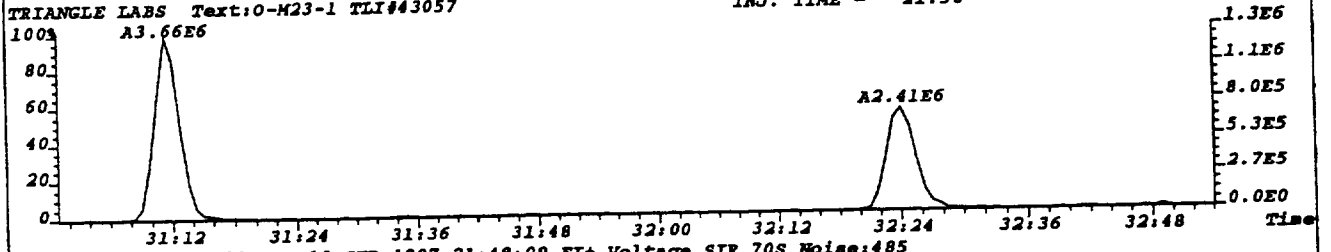
File:S975809 #1-430 Acq:10-SEP-1997 21:48:09 EI+ Voltage SIR 70S Noise:809  
407.7818 F:4 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,3236.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:0-M23-1 TLI#43057 INJ. TIME = 21:50



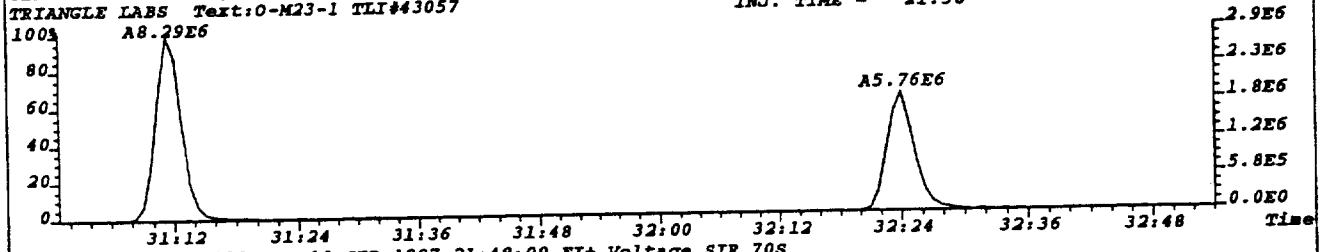
File:S975809 #1-430 Acq:10-SEP-1997 21:48:09 EI+ Voltage SIR 70S Noise:36  
409.7789 F:4 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,144.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:0-M23-1 TLI#43057 INJ. TIME = 21:50



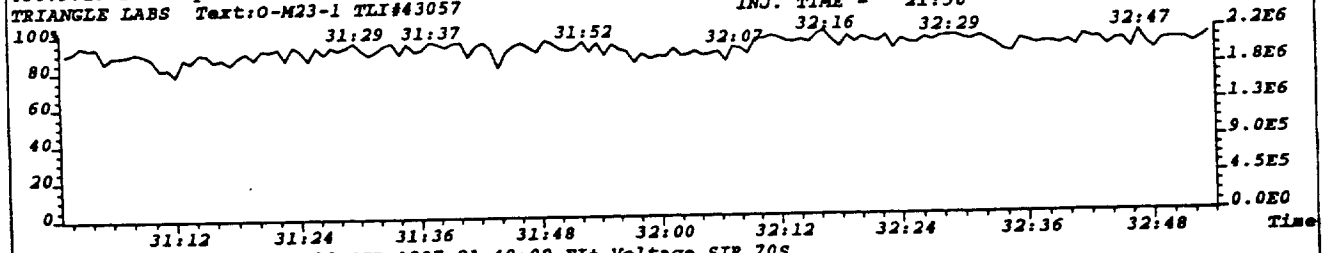
File:S975809 #1-430 Acq:10-SEP-1997 21:48:09 EI+ Voltage SIR 70S Noise:423  
417.8253 F:4 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,1692.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:0-M23-1 TLI#43057 INJ. TIME = 21:50



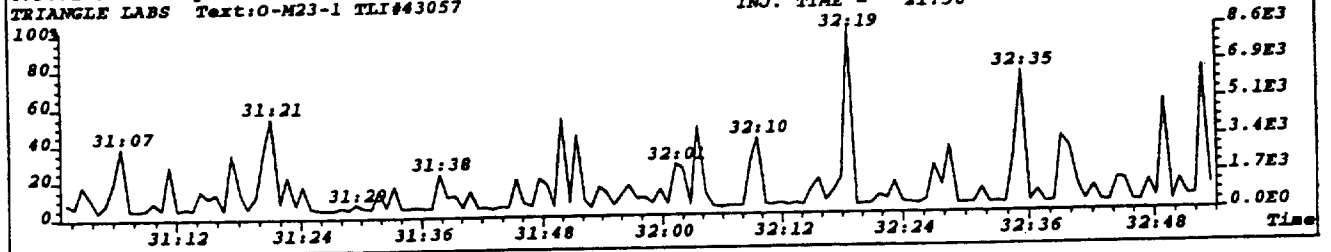
File:S975809 #1-430 Acq:10-SEP-1997 21:48:09 EI+ Voltage SIR 70S Noise:485  
419.8220 F:4 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,1940.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:0-M23-1 TLI#43057 INJ. TIME = 21:50

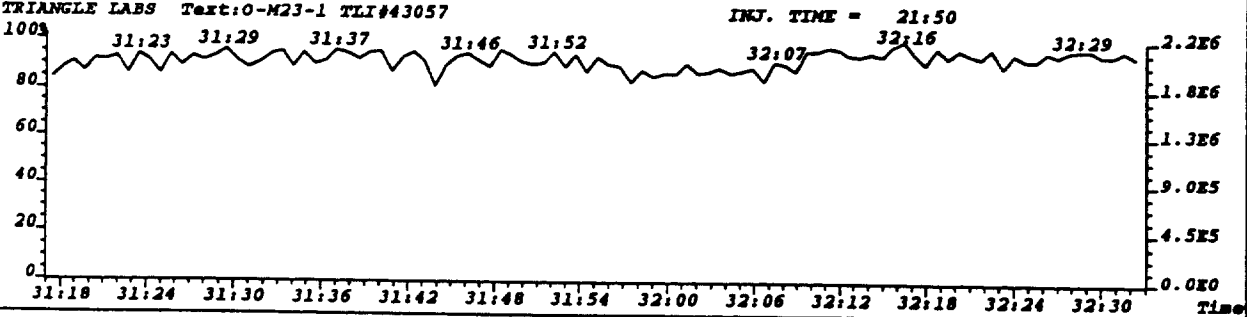
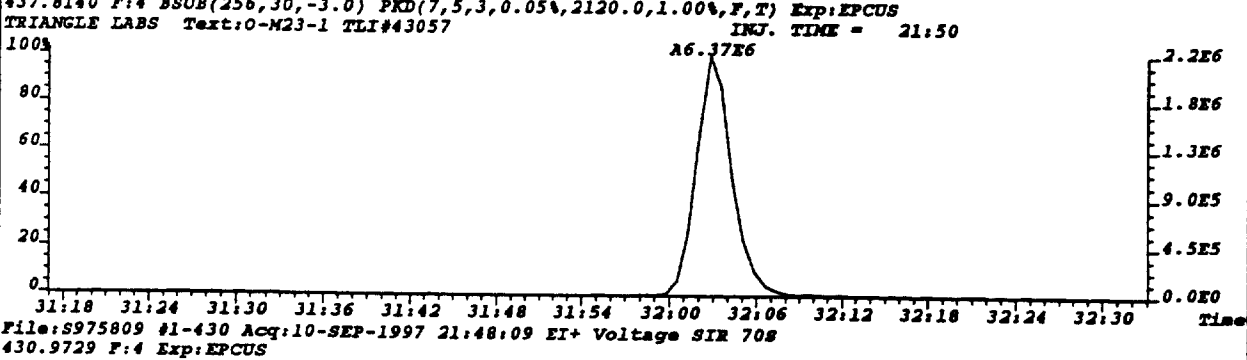
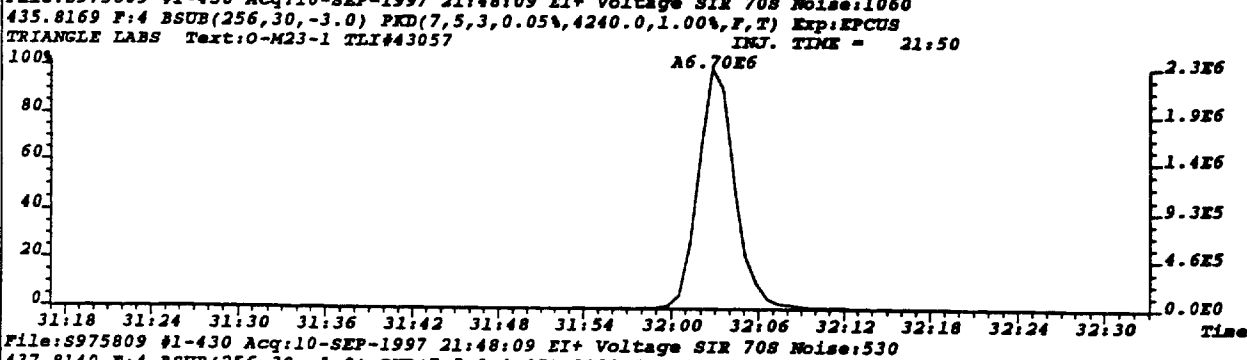
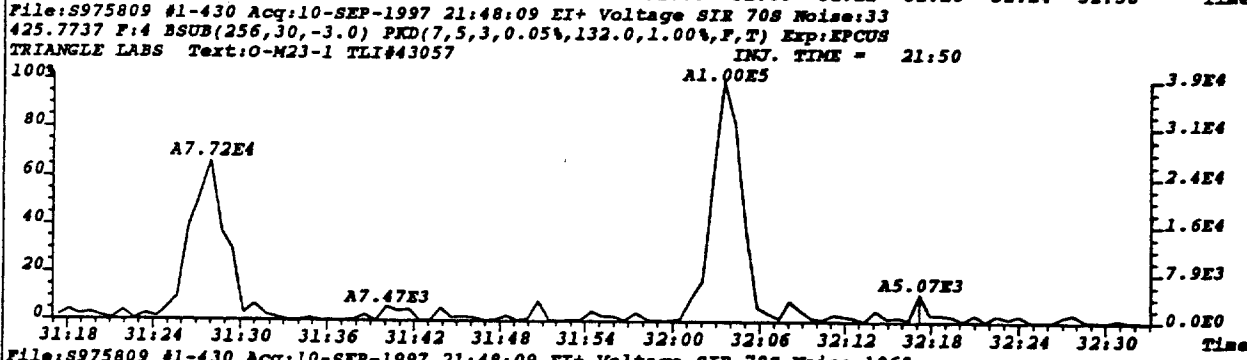
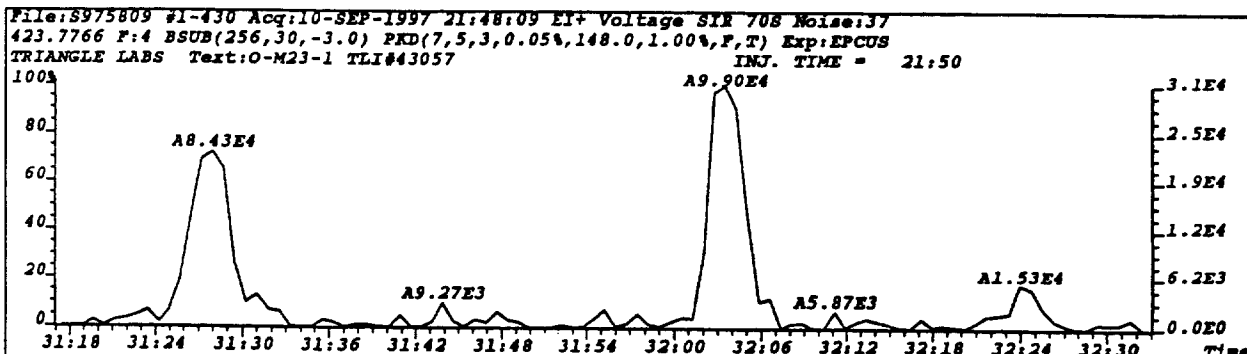


File:S975809 #1-430 Acq:10-SEP-1997 21:48:09 EI+ Voltage SIR 70S  
430.9729 F:4 Exp:EPCUS INJ. TIME = 21:50  
TRIANGLE LABS Text:0-M23-1 TLI#43057

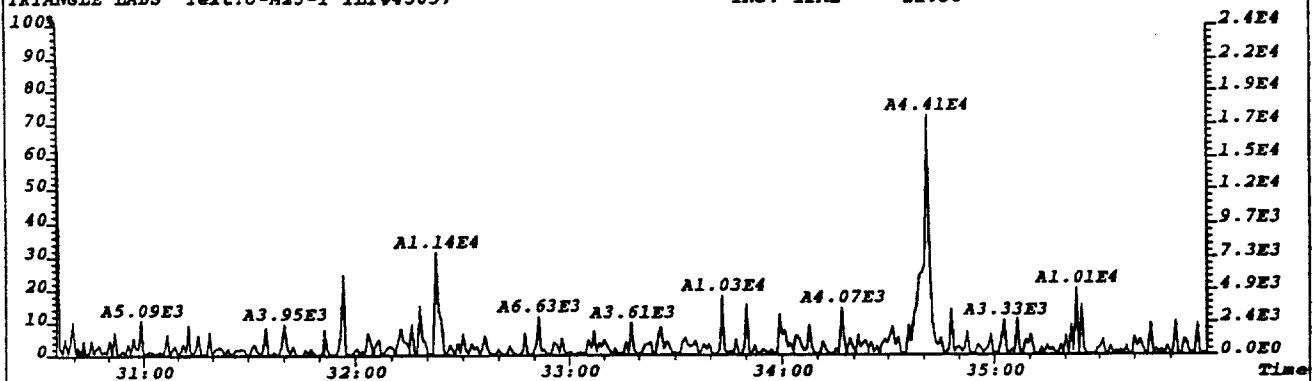


File:S975809 #1-430 Acq:10-SEP-1997 21:48:09 EI+ Voltage SIR 70S  
479.7165 F:4 Exp:EPCUS INJ. TIME = 21:50  
TRIANGLE LABS Text:0-M23-1 TLI#43057

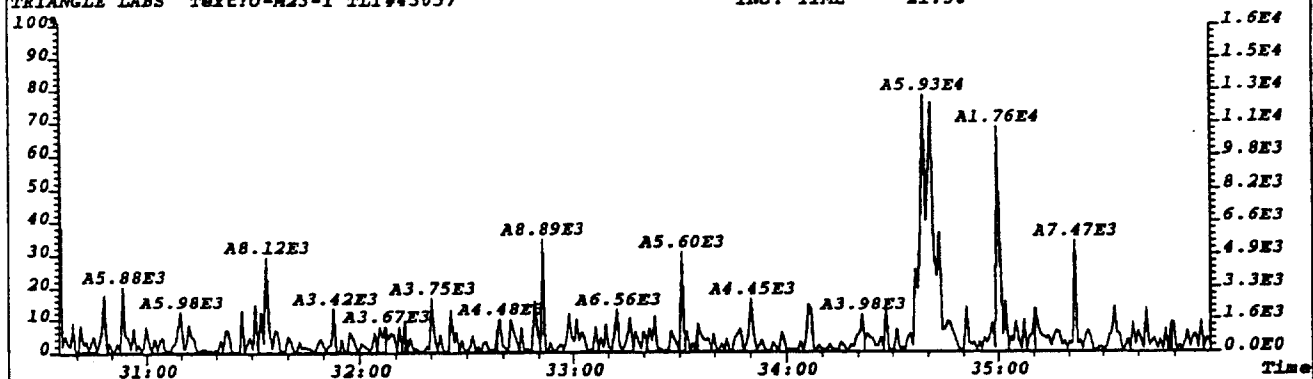




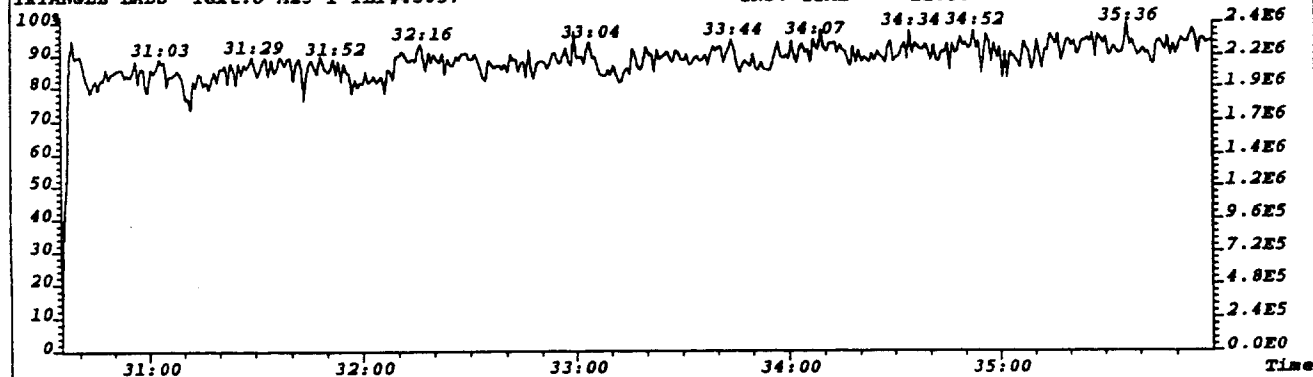
File: S975809 #1-430 Acq: 10-SEP-1997 21:48:09 EI+ Voltage SIR 70S Noise: 34  
 441.7428 F: 4 BSUB(256, 30, -3.0) PKD(7, 5, 3, 0.05%, 136.0, 1.00%, F, T) Exp: EPCUS  
 TRIANGLE LABS Text: 0-M23-1 TLI#43057 INJ. TIME = 21:50



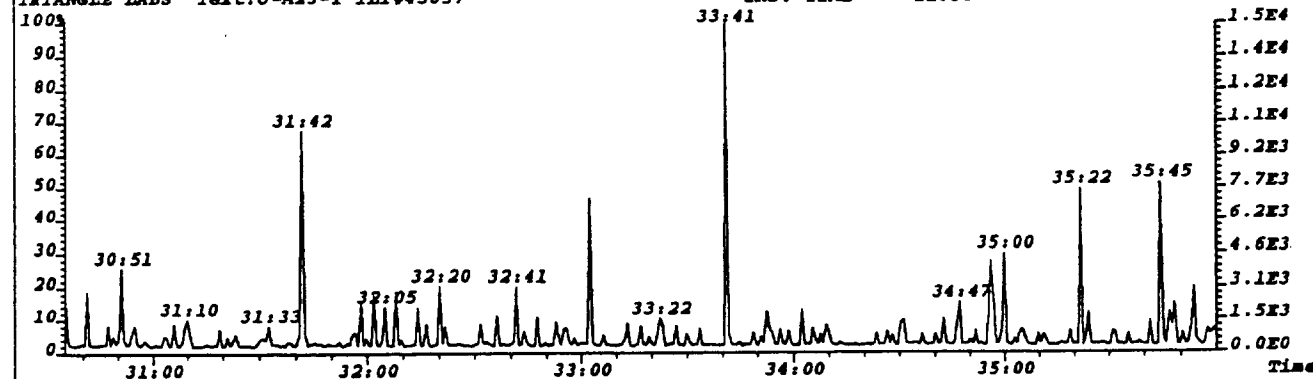
File: S975809 #1-430 Acq: 10-SEP-1997 21:48:09 EI+ Voltage SIR 70S Noise: 27  
 443.7399 F: 4 BSUB(256, 30, -3.0) PKD(7, 5, 3, 0.05%, 108.0, 1.00%, F, T) Exp: EPCUS  
 TRIANGLE LABS Text: 0-M23-1 TLI#43057 INJ. TIME = 21:50



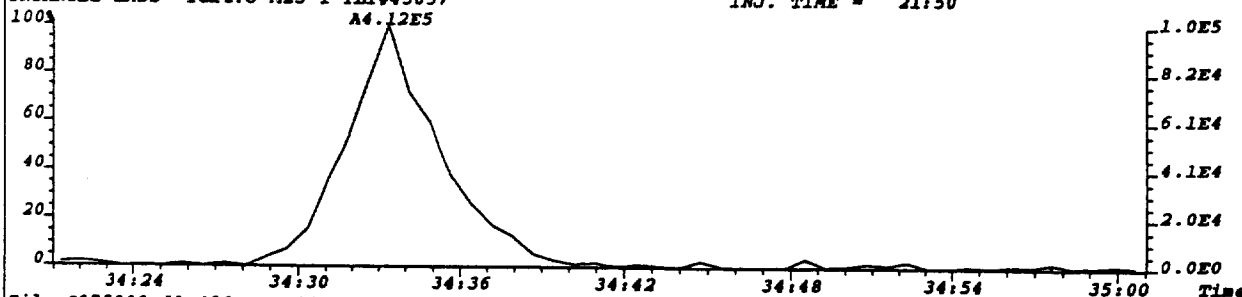
File: S975809 #1-430 Acq: 10-SEP-1997 21:48:09 EI+ Voltage SIR 70S  
 430.9729 F: 4 Exp: EPCUS  
 TRIANGLE LABS Text: 0-M23-1 TLI#43057 INJ. TIME = 21:50



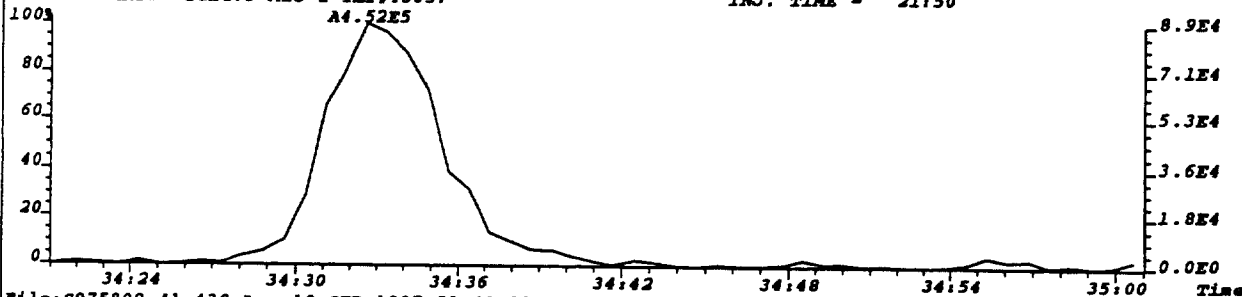
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 513.6775 F: 4 Exp: EPCUS  
 TRIANGLE LABS Text: 0-M23-1 TLI#43057 INJ. TIME = 21:50



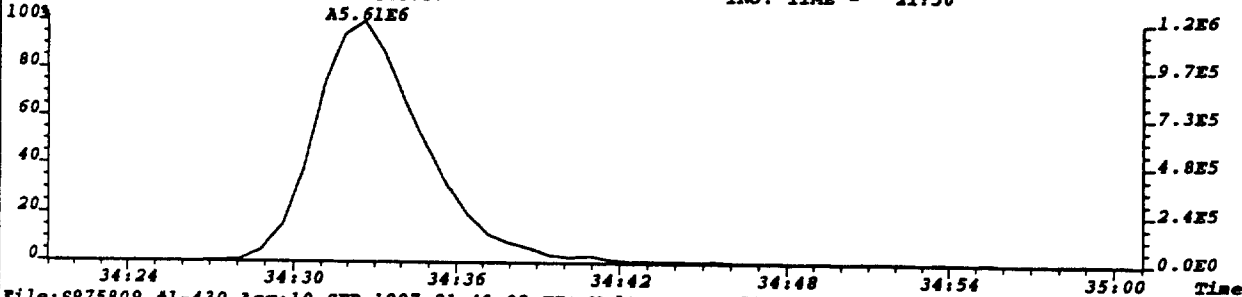
File:S975809 #1-430 Acq:10-SEP-1997 21:48:09 EI+ Voltage SIR 70S Noise:28  
457.7377 F:4 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,112.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:0-M23-1 TLI#43057 INJ. TIME = 21:50



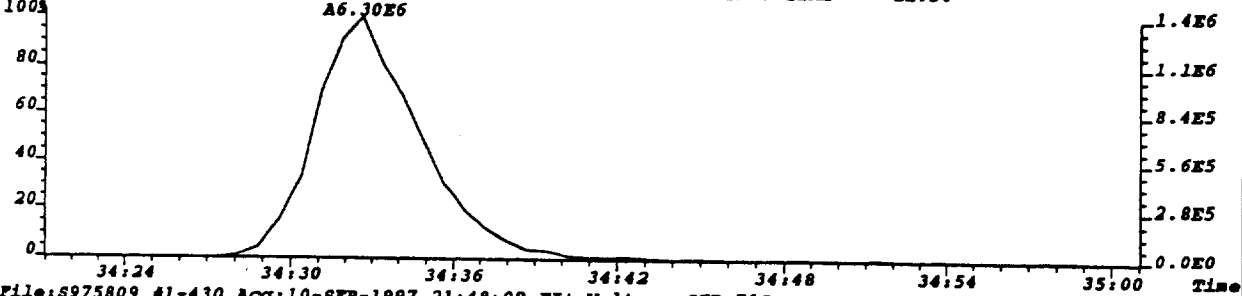
File:S975809 #1-430 Acq:10-SEP-1997 21:48:09 EI+ Voltage SIR 70S Noise:34  
459.7348 F:4 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,136.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:0-M23-1 TLI#43057 INJ. TIME = 21:50



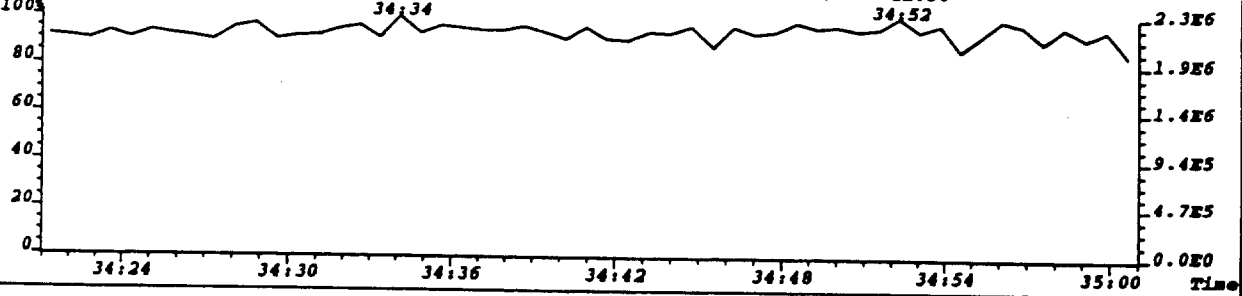
File:S975809 #1-430 Acq:10-SEP-1997 21:48:09 EI+ Voltage SIR 70S Noise:284  
469.7779 F:4 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,136.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:0-M23-1 TLI#43057 INJ. TIME = 21:50

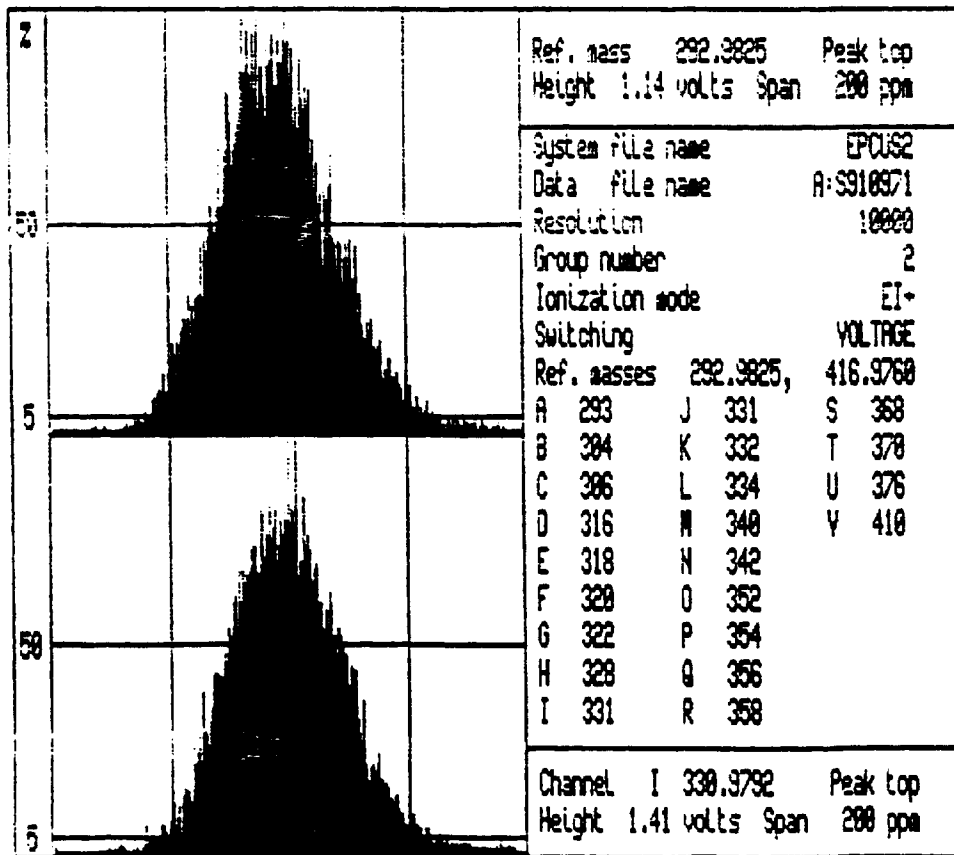


File:S975809 #1-430 Acq:10-SEP-1997 21:48:09 EI+ Voltage SIR 70S Noise:32  
471.7750 F:4 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,128.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:0-M23-1 TLI#43057 INJ. TIME = 21:50

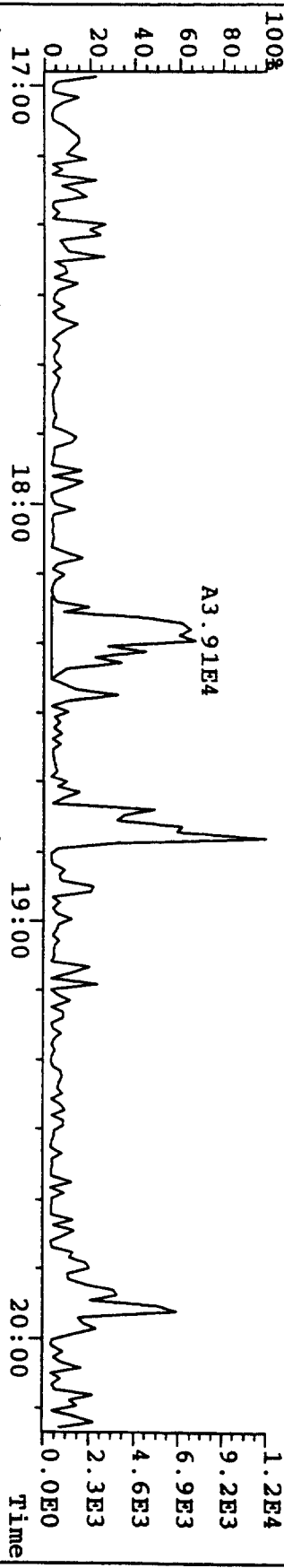


File:S975809 #1-430 Acq:10-SEP-1997 21:48:09 EI+ Voltage SIR 70S  
430.9729 F:4 Exp:EPCUS  
TRIANGLE LABS Text:0-M23-1 TLI#43057 INJ. TIME = 21:50

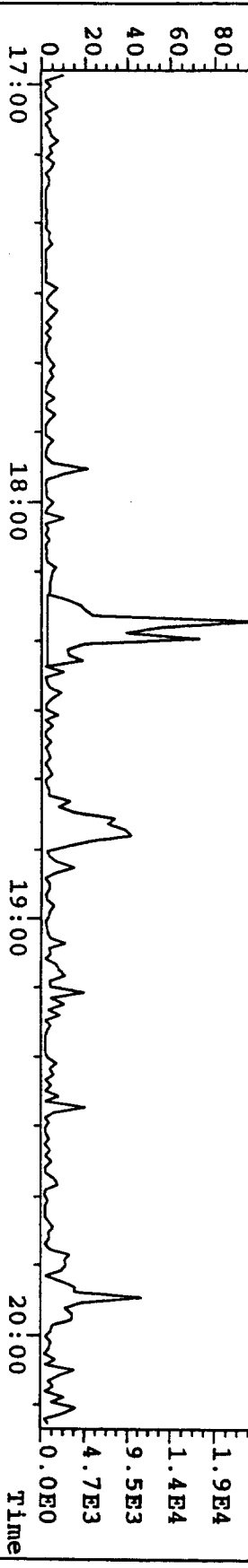




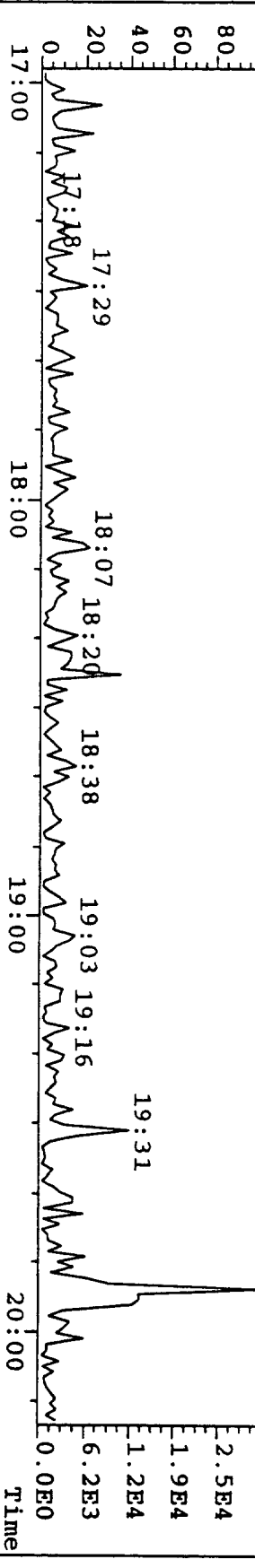
File: S975809 #1-848 Acq: 10-SEP-1997 21:48:09 EI+ Voltage SIR 70S  
 319.8965 F: 2 Exp: EPCUS  
 Sample Text: O-M23-1 TLI#43057  
 INJ. TIME = 21:50 File Text: O-M23-1 TLI#4\*



File: S975809 #1-848 Acq: 10-SEP-1997 21:48:09 EI+ Voltage SIR 70S  
 321.8936 F: 2 Exp: EPCUS  
 Sample Text: O-M23-1 TLI#43057  
 INJ. TIME = 21:50 File Text: O-M23-1 TLI#4\*

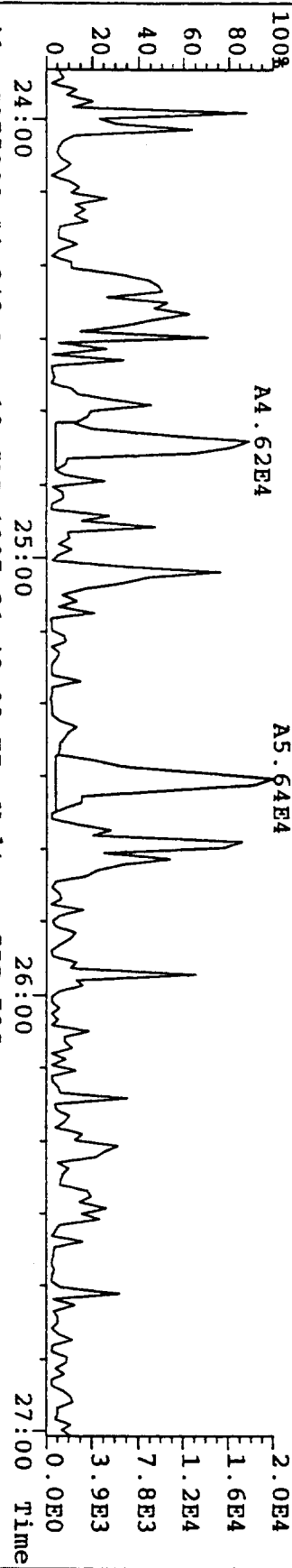


File: S975809 #1-848 Acq: 10-SEP-1997 21:48:09 EI+ Voltage SIR 70S  
 331.9368 F: 2 Exp: EPCUS  
 Sample Text: O-M23-1 TLI#43057  
 INJ. TIME = 21:50 File Text: O-M23-1 TLI#4\*

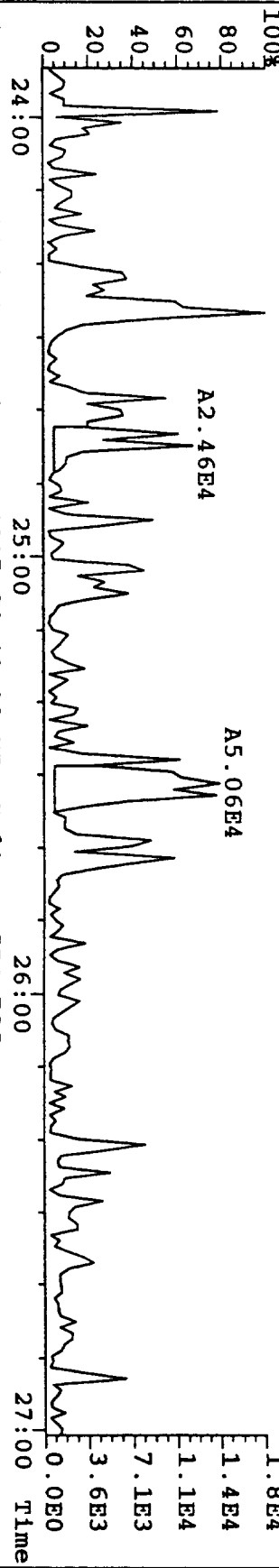




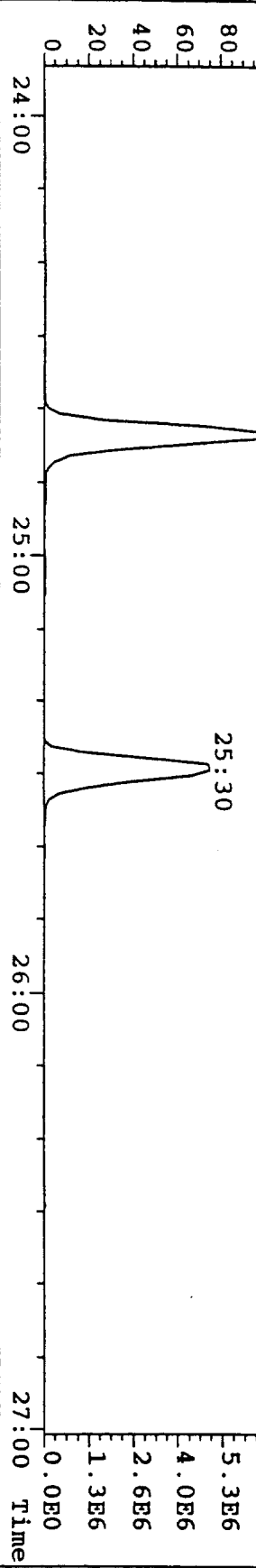
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339.8597 F:2 Exp:EPCUS  
Sample Text:O-M23-1 TLI#43057  
INJ. TIME = 21:50 File Text:O-M23-1 TLI#4



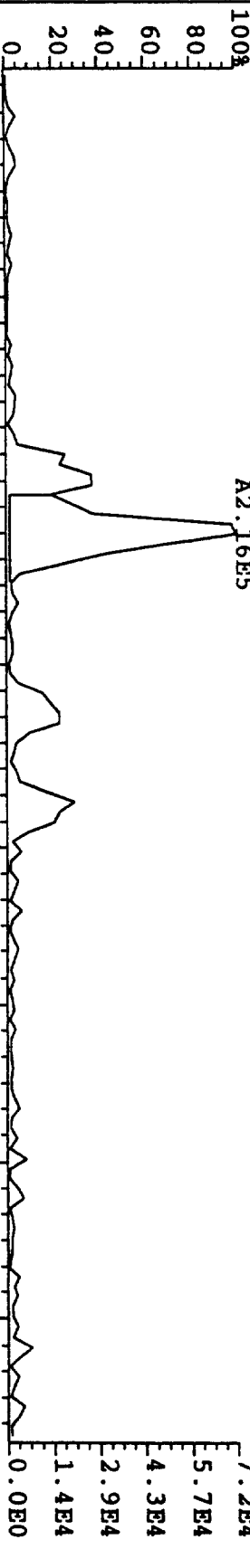
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341.8567 F:2 Exp:EPCUS  
Sample Text:O-M23-1 TLI#43057  
INJ. TIME = 21:50 File Text:O-M23-1 TLI#4



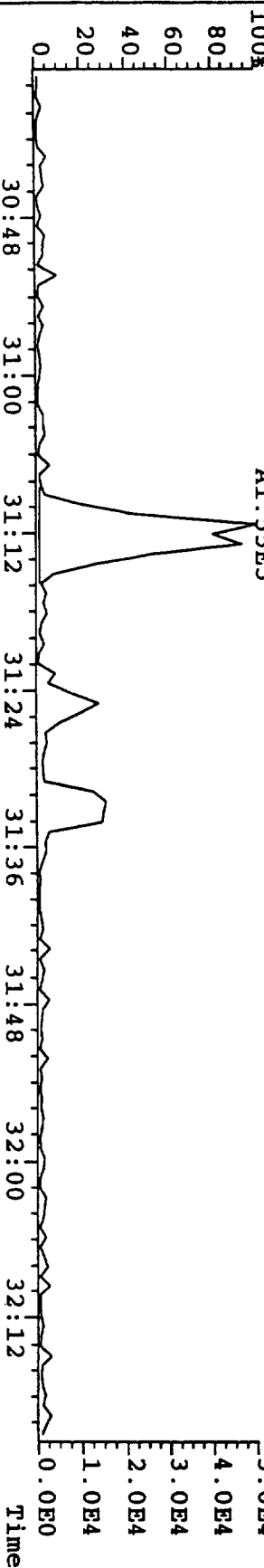
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351.9000 F:2 Exp:EPCUS  
Sample Text:O-M23-1 TLI#43057  
INJ. TIME = 21:50 File Text:O-M23-1 TLI#4



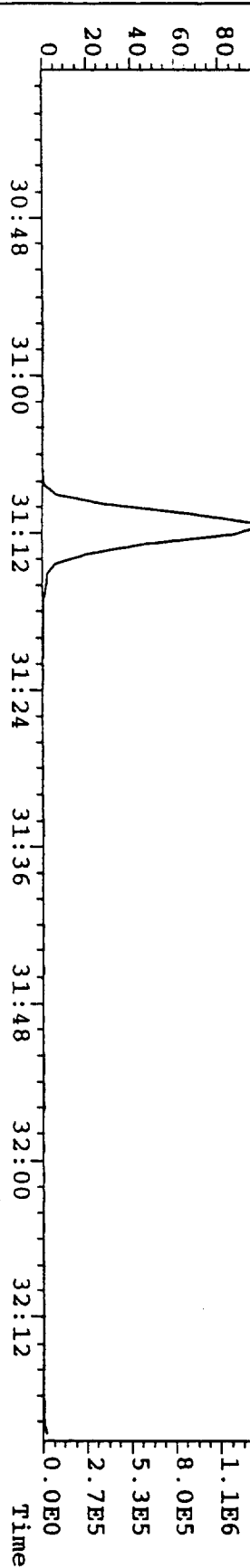
File: S975809 #1-430 Acq: 10-SEP-1997 21:48:09 EI+ Voltage SIR 70S  
 407.7818 F: 4 Exp: EPCUS  
 Sample Text: O-M23-1 TLI#43057  
 INJ. TIME = 21:50 File Text: O-M23-1 TLI#4



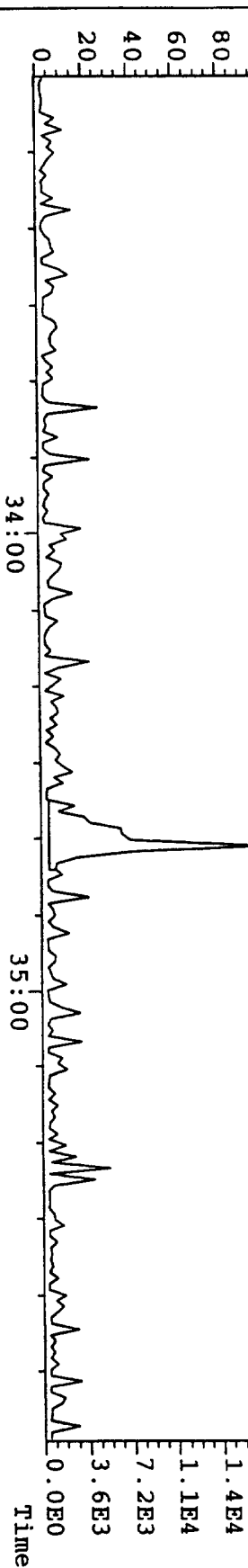
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 409.7789 F: 4 Exp: EPCUS  
 Sample Text: O-M23-1 TLI#43057  
 INJ. TIME = 21:50 File Text: O-M23-1 TLI#4



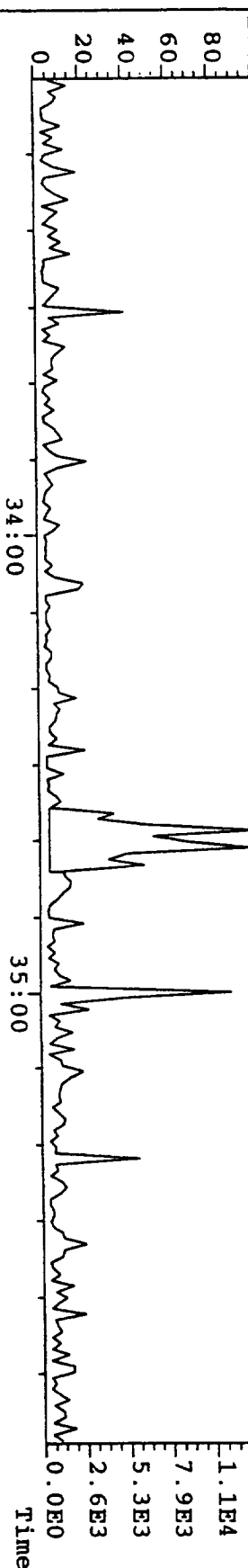
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 INJ. TIME = 21:50 File Text: O-M23-1 TLI#4



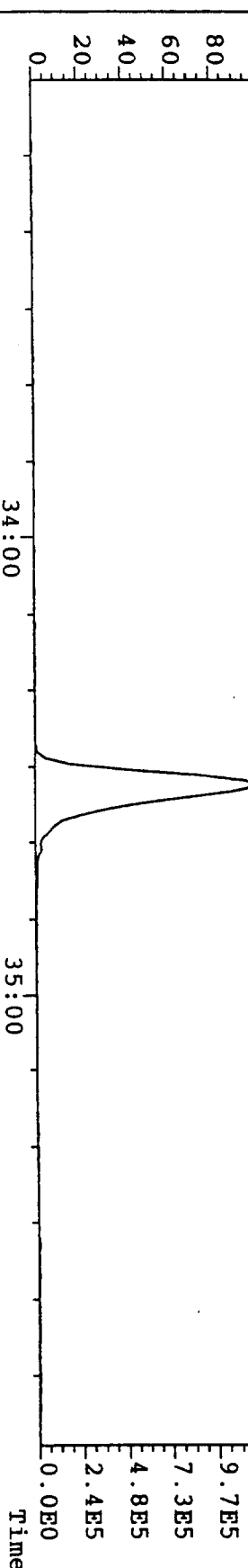
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 441.7428 F:4 Exp: EPCUS  
 Sample Text: O-M23-1 TLI#43057  
 INJ. TIME = 21:50 File Text: O-M23-1 TLI#4  
 1.8E4  
 1.4E4  
 1.1E4  
 7.2E3  
 3.6E3  
 0.0E0



File: S975809 #1-430 Acq: 10-SEP-1997 21:48:09 EI+ Voltage SIR 70S  
 443.7399 F:4 Exp: EPCUS  
 Sample Text: O-M23-1 TLI#43057  
 INJ. TIME = 21:50 File Text: O-M23-1 TLI#4  
 1.3E4  
 1.1E4  
 7.9E3  
 5.3E3  
 2.6E3  
 0.0E0



File: S975809 #1-430 Acq: 10-SEP-1997 21:48:09 EI+ Voltage SIR 70S  
 469.7779 F:4 Exp: EPCUS  
 Sample Text: O-M23-1 TLI#43057  
 INJ. TIME = 21:50 File Text: O-M23-1 TLI#4  
 1.2E6  
 9.7E5  
 7.3E5  
 4.8E5  
 2.4E5  
 0.0E0





Initial ....Date...

Data Review By:

AKH 9/12/97

Calculated Noise Area: n/a

The Total Area for each peak with an ion abundance ratio outside ratio limits has been recalculated according to method requirements.

Page No. 1  
09/12/97

Listing of X973083B.dbf  
Matched GC Peaks / Ratio / Ret. Time

Compound/

M\_Z.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

Compound/	M_Z....	QC.Log	Omit	Why	..RT.	OK	Ratio	Total.Area...	Area.Peak.1..	Area.Peak.2..	Rel.RT	Compound.Name..	ID..	Flags.
TCDF								0.65-0.89				0.797-1.100		
304-306	DC	NL			0:00	RO	1.02	7.88						0.000
					18:42	RO	1.65	8.25	7.68	4.66	0.830			
					19:07		0.75	81.84	35.02	46.82	0.849			
					19:56	RO	1.59	7.31	6.57	4.13	0.885			
					20:00	RO	1.43	5.31	4.29	3.00	0.888			
					20:11		0.71	14.69	6.11	8.58	0.896			
					20:15		0.75	22.50	9.63	12.87	0.899			
					20:25	RO	0.15	3.31	1.44	9.61	0.907			
					20:33	RO	0.42	4.37	1.90	4.51	0.913			
					20:46	RO	0.58	16.67	7.25	12.50	0.922			
					21:13	RO	0.93	36.16	19.07	20.43	0.942			
					21:29	RO	2.97	4.12	6.93	2.33	0.954			
					22:02	RO	0.48	7.49	3.26	6.82	0.979			
					22:24	RO	0.38	7.93	3.45	9.14	0.995			
	M				22:32	RO	1.02	43.37	25.10	24.50	1.001	2378-TCDF		AN
					22:49	RO	2.09	4.46	5.27	2.52	1.013			
					22:55		0.72	9.03	3.77	5.26	1.018			
					23:00	RO	1.70	8.07	7.76	4.56	1.021			
					23:08	RO	2.59	8.90	13.05	5.03	1.027			
					23:22	RO	0.17	2.64			1.038			
		DC	SN		23:28	RO	1.82	3.54	3.63	2.00	1.042			
					23:31		0.75	11.08	4.74	6.34	1.044			
					23:37	RO	0.33	0.87			1.049			
					23:54	RO	0.23	5.45	2.37	10.22	1.061			
					24:09	RO	4.28	1.13			1.073			
					24:27	RO	0.29	6.05	2.63	8.94	1.086			
					24:37	RO	1.41	12.32	9.82	6.96	1.093			
					24:39	RO	1.31	9.56	7.09	5.40	1.095			
					24:49	RO	0.48	5.20			1.102			
304-306					24 Peaks			341.78						
13C12-TCDF								0.65-0.89				0.955-1.045		
316-318	DC	NL			0:00	RO	1.70	10.34						0.000
					20:20		0.71	11.53			0.903			
					20:43	RO	3.54	7.50			0.920			
					21:12	RO	1.10	92.73			0.942			
					21:29	RO	0.19	11.36			0.954			
					22:31		0.79	21,370.95	9,401.85	11,969.10	1.000	13C12-2378-TCDF		ISO
					22:42	RO	1.53	18.07	15.64	10.21	1.008			
					23:09	RO	1.19	62.41	42.12	35.26	1.028			
					23:43	RO	2.66	20.90			1.053			
					23:53	RO	1.02	10.87			1.061			
					24:30		0.86	469.56			1.088			

Compound/  
 M\_Z.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

316-318 3 Peaks 21,451.43

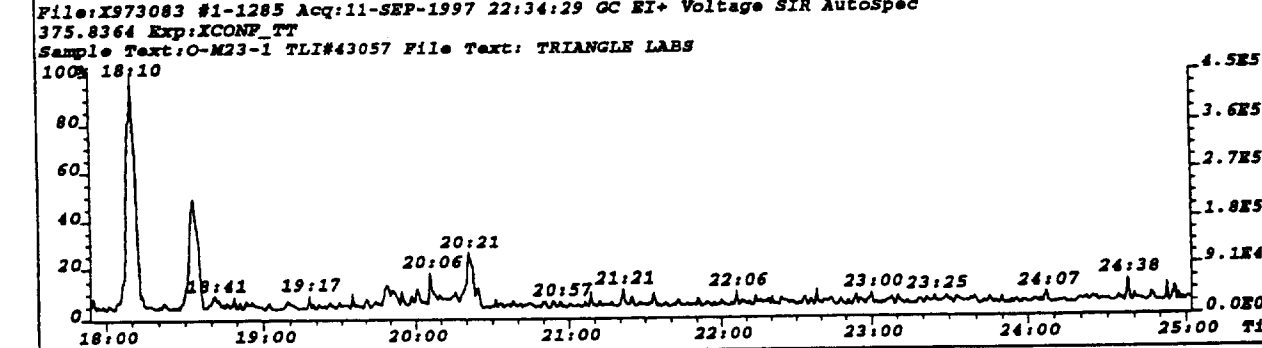
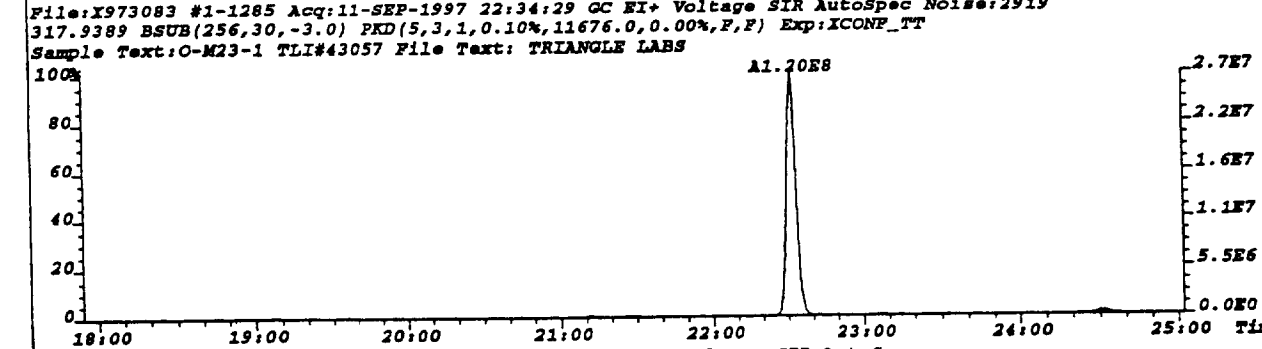
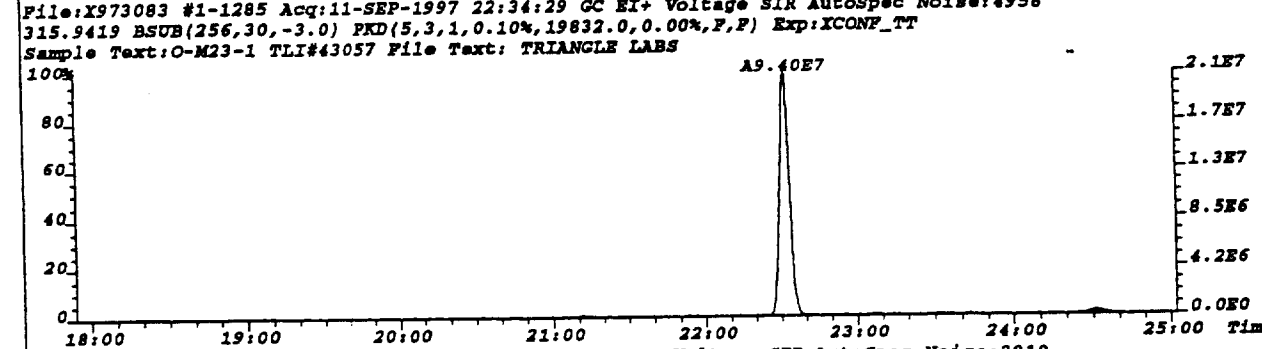
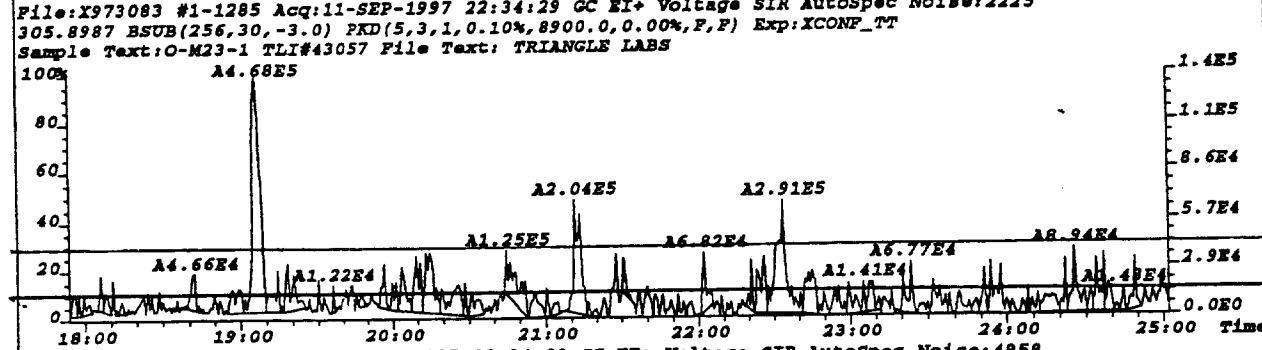
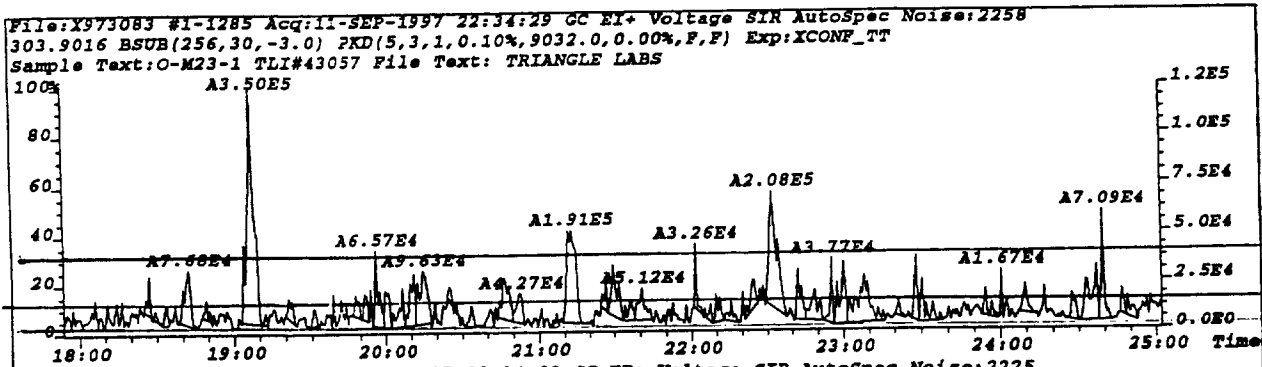
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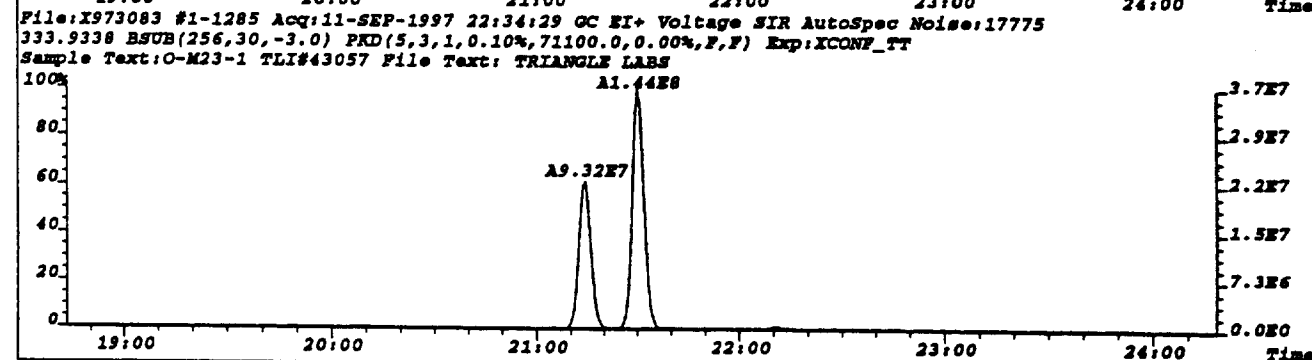
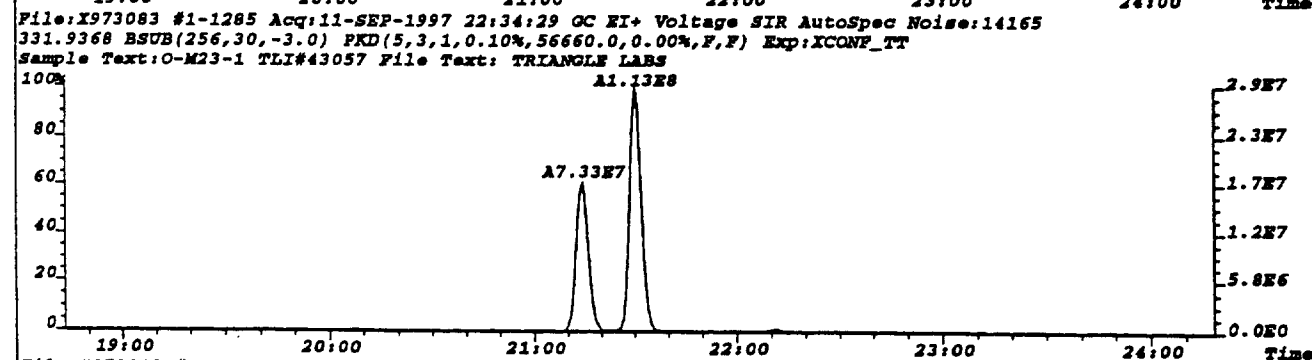
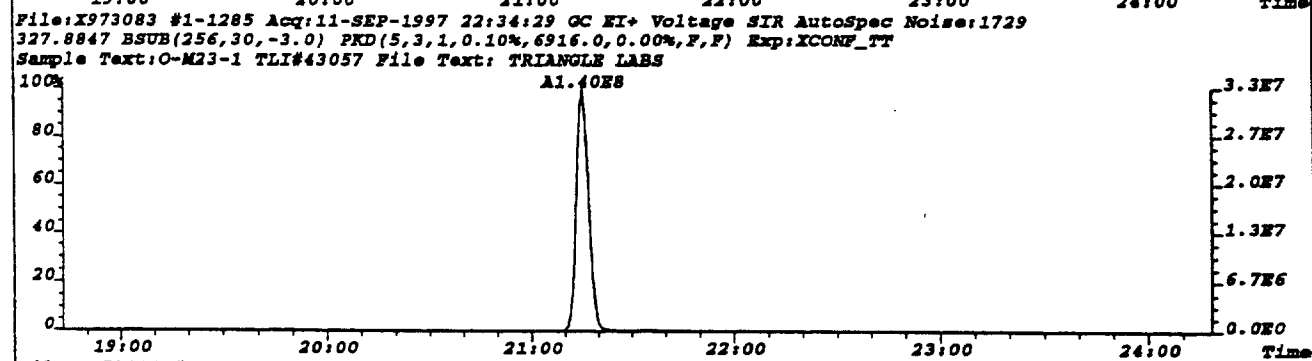
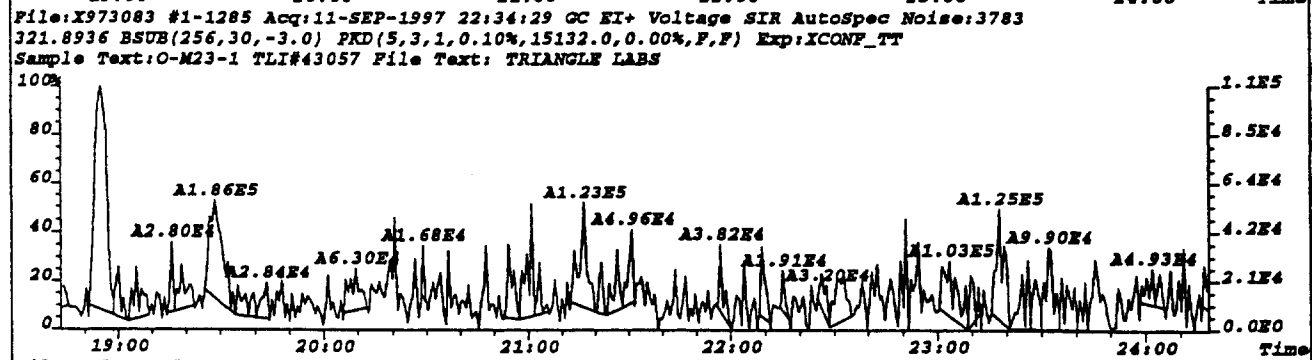
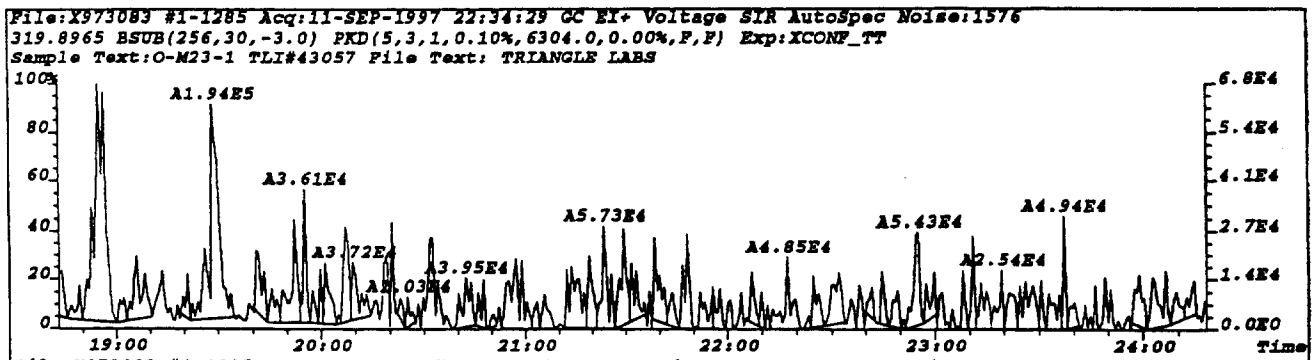
13C12-TCDD			0.65-0.89				0.906-1.094		
332-334	DC	NL	0:00	0.80	63.88		0.000		
			20:08	RO 0.96	75.01	40.76	42.38	0.947	
			21:15	0.79	16,649.95	7,331.99	9,317.96	1.000	13C12-2378-TCDD IS1
			21:30	0.79	25,684.70	11,297.00	14,387.70	1.012	13C12-1234-TCDD RS1
			22:11	0.83	264.89	119.91	144.98	1.044	
			22:28	RO 0.22	22.00	9.57	42.82	1.057	
			22:40	RO 0.37	23.40	10.18	27.77	1.067	
	DC	WH	23:49	RO 0.31	62.55			1.121	
332-334					6 Peaks	42,719.95			

Column Description..... "Why" Code Description..... QC Log Desc.....

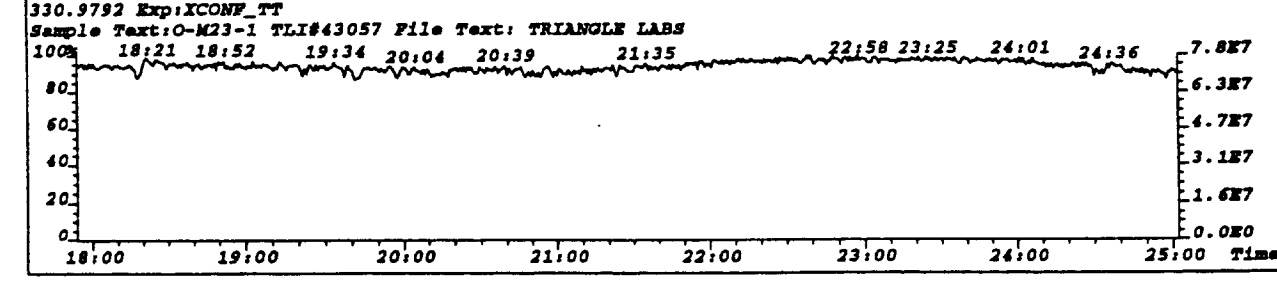
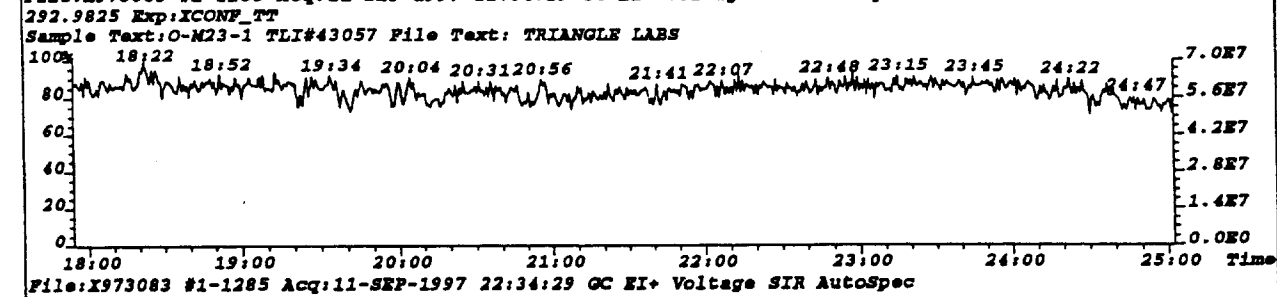
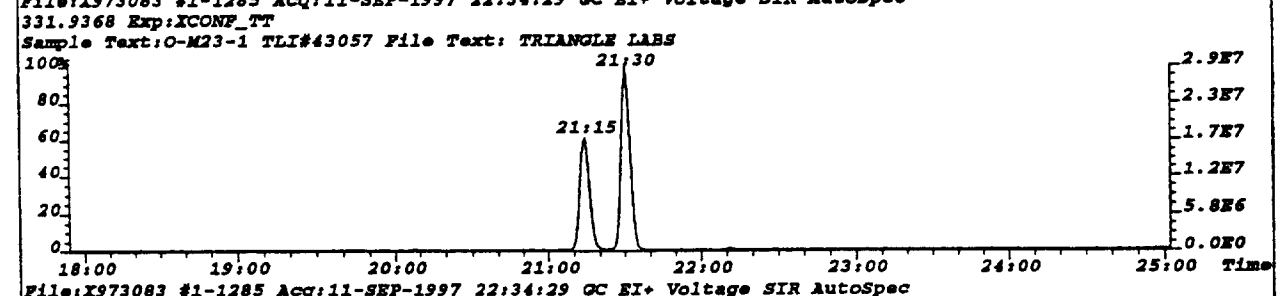
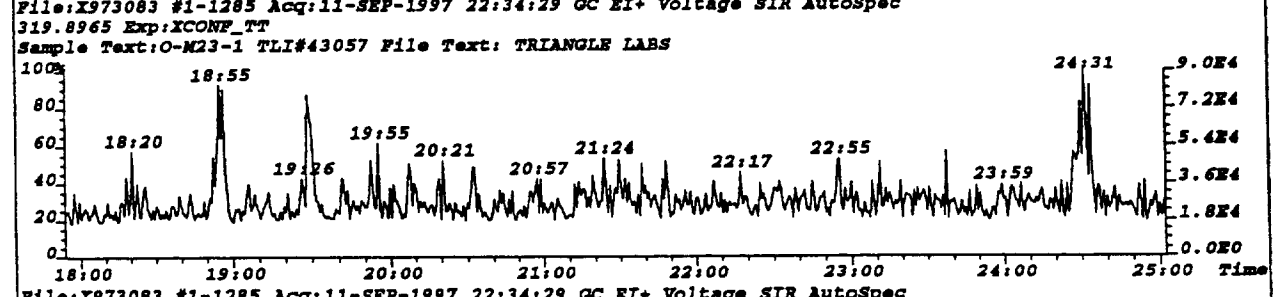
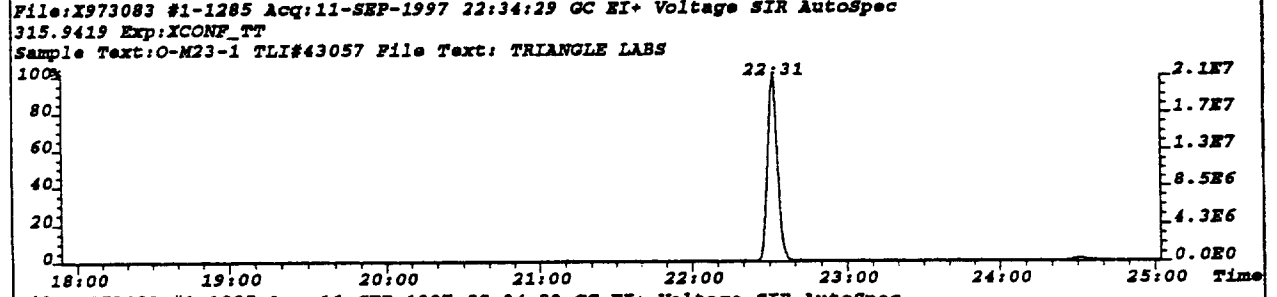
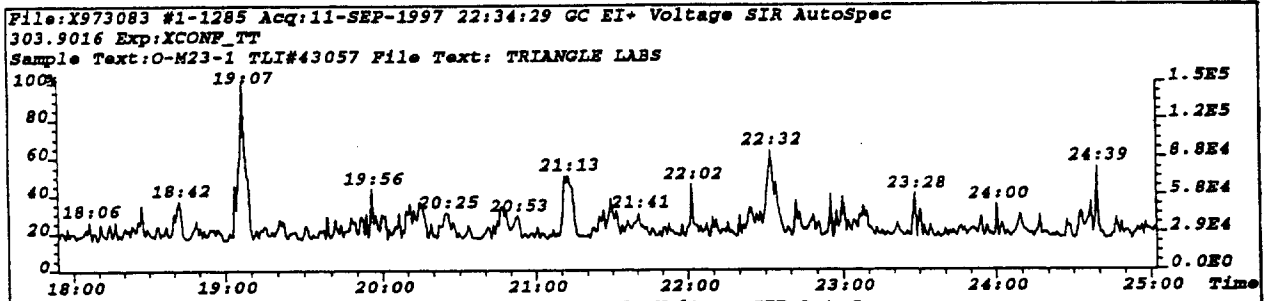
M\_Z -Nominal Ion Mass(es) WL-Below Retention Time Window A-Peak Added  
 ..RT. -Retention Time (mm:ss) WH-Above Retention Time Window K-Peak Kept  
 Rat.1 -Ratio of M/M+2 Ions SN-Below Signal to Noise Level D-Peak Deleted  
 OK -RO=Ratio Outside Limits <M-Below Method Detection Limit T-Time Changed  
 Rel.RT-Relative Retention Time NL-Channel Specific Noise Level M-Peak Area Changed  
 N-Name Changed  
 E-Ether Interference

\*\*\* End of Report \*\*\*

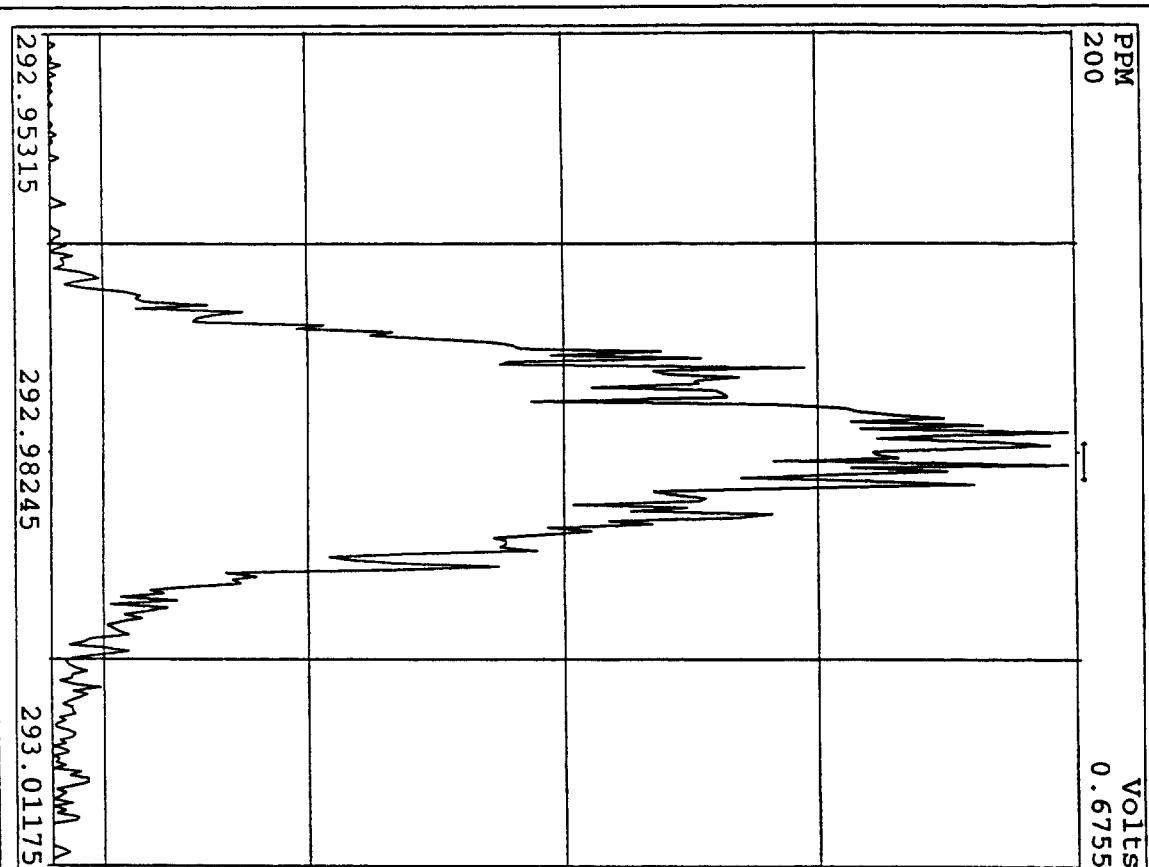




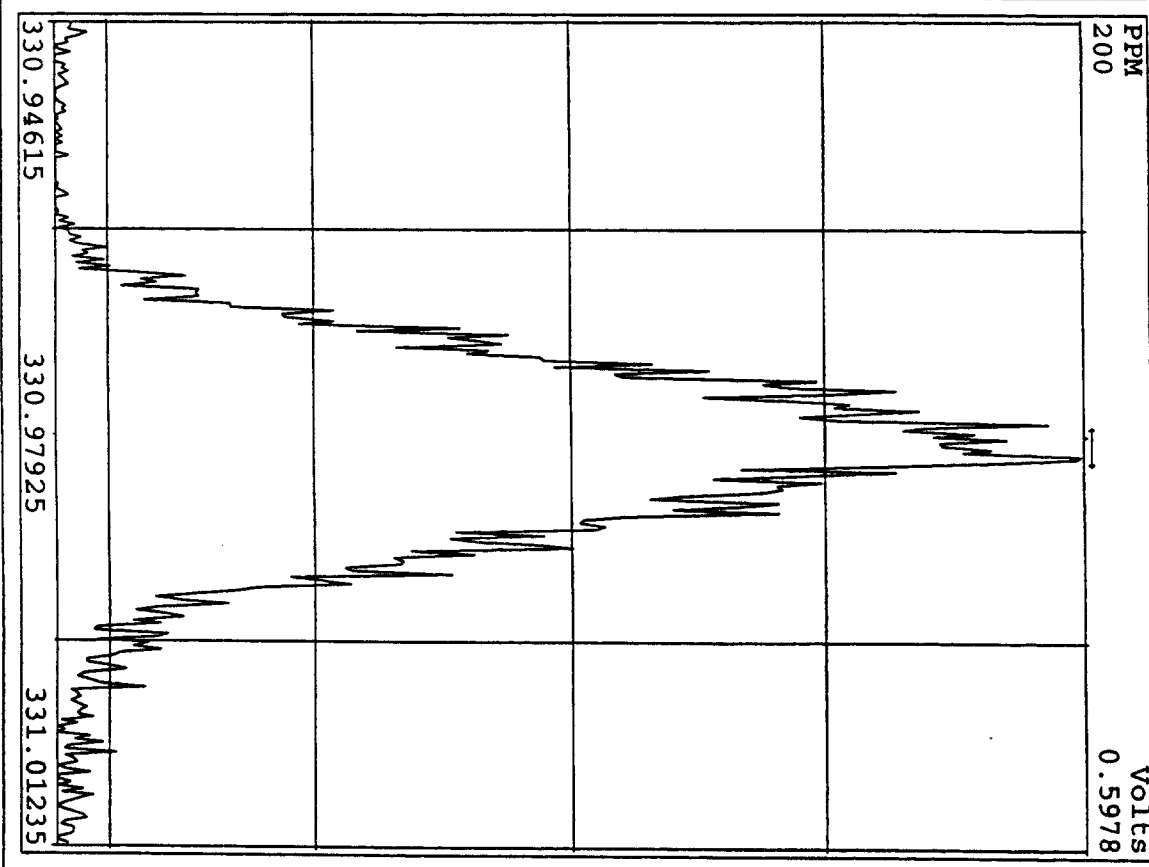




Peak Locate Examination: 11-SEP-1997:22:34 File: X973083  
Experiment: XCONF\_TR Function: 1 Reference: PFK



292.95315 292.98245 293.01175



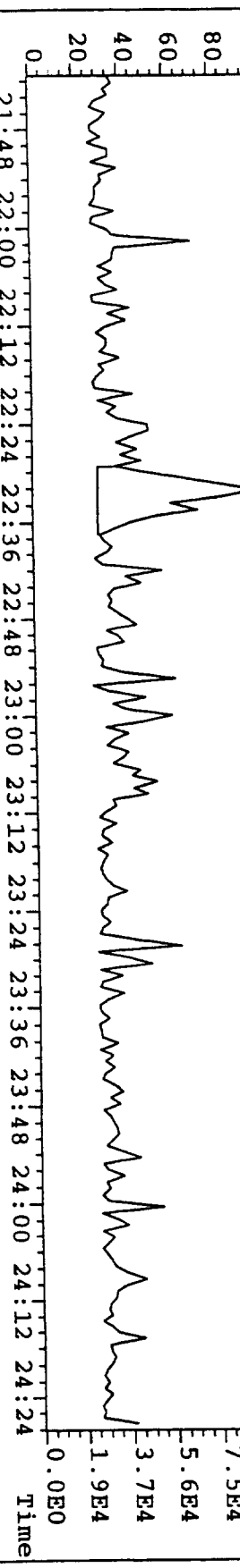
330.94615 330.97925 331.01235

File: X973083 #1-1285 Acq: 11-SEP-1997 22:34:29 GC EI+ Voltage SIR AutoSpec

303.9016 Exp: XCONF.TT

Sample Text: O-M23-1 TLI#43057 File Text: TRIANGLE LABS

100% A2.51E5

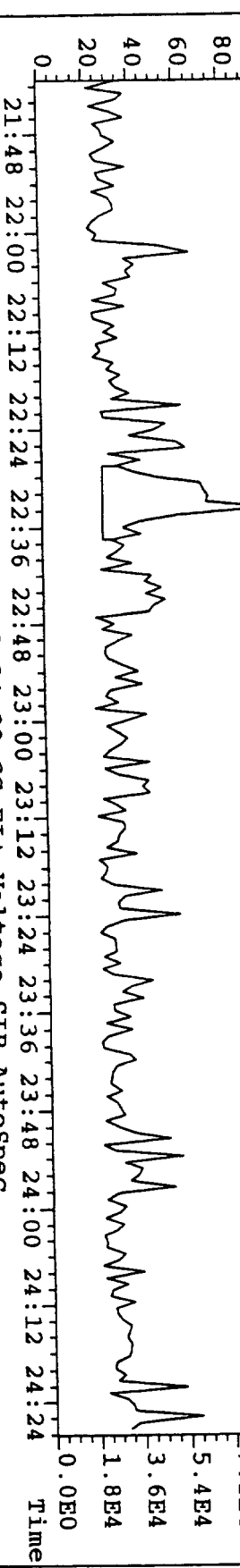


File: X973083 #1-1285 Acq: 11-SEP-1997 22:34:29 GC EI+ Voltage SIR AutoSpec

305.8987 Exp: XCONF.TT

Sample Text: O-M23-1 TLI#43057 File Text: TRIANGLE LABS

100% A2.45E5

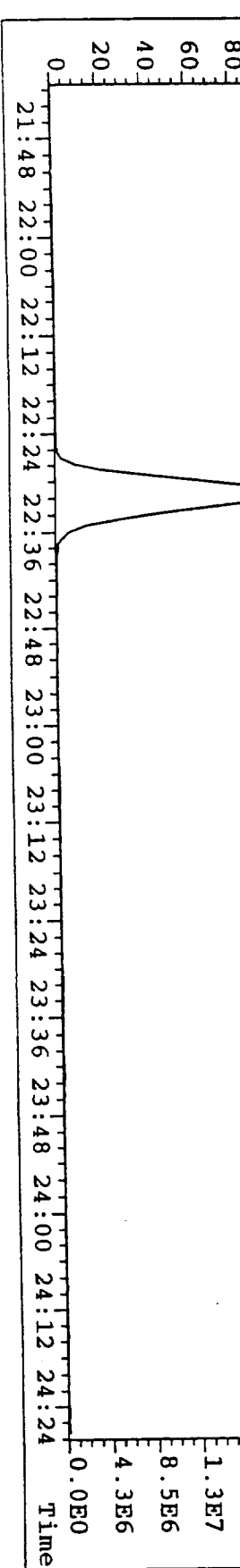


File: X973083 #1-1285 Acq: 11-SEP-1997 22:34:29 GC EI+ Voltage SIR AutoSpec

315.9419 Exp: XCONF.TT

Sample Text: O-M23-1 TLI#43057 File Text: TRIANGLE LABS

100% 22:31



**Pacific Environmental Services**

TLI Project: 43057  
 Client Sample: O-M23-2

Method 23 PCDD/PCDF Analysis (a)  
 Analysis File: S975810

Client Project:	ASPHALT PLANT "A"	Date Received:	08/29/97	Spike File:	SPX23704
Sample Matrix:	M23TRAIN	Date Extracted:	09/06/97	ICal:	SF56117
TLI ID:	181-27-3A-C	Date Analyzed:	09/10/97	ConCal:	S975797
Sample Size:	1.000	Dilution Factor:	n/a	% Moisture:	n/a
Dry Weight:	n/a	Blank File:	S975807	% Lipid:	n/a
GC Column:	DB-5	Analyst:	ML	% Solids:	n/a

Analytes	Amt. (ng)	DL	EMPC	Ratio	RT	Flags
2,3,7,8-TCDD	ND	0.006				---
1,2,3,7,8-PeCDD	ND	0.008				---
1,2,3,4,7,8-HxCDD	ND	0.01				---
1,2,3,6,7,8-HxCDD	EMPC		0.02			---
1,2,3,7,8,9-HxCDD	ND	0.01				---
1,2,3,4,6,7,8-HpCDD	EMPC		0.04			B_
1,2,3,4,6,7,8,9-OCDD	0.19			0.90	34:34	B_
2,3,7,8-TCDF	0.03			0.79	20:27	B_
1,2,3,7,8-PeCDF	ND	0.006				---
2,3,4,7,8-PeCDF	ND	0.006				---
1,2,3,4,7,8-HxCDF	0.04			1.27	28:25	B_
1,2,3,6,7,8-HxCDF	0.01			1.21	28:32	B_
2,3,4,6,7,8-HxCDF	0.02			1.37	29:02	PRB
1,2,3,7,8,9-HxCDF	ND	0.008				---
1,2,3,4,6,7,8-HpCDF	0.07			0.88	31:14	PRB
1,2,3,4,7,8,9-HpCDF	0.02			1.19	32:25	B_
1,2,3,4,6,7,8,9-OCDF	0.06			0.95	34:42	B_

Totals	Amt. (ng)	Number	DL	EMPC	Flags
Total TCDD	0.02	1			---
Total PeCDD	0.03	1		0.06	---
Total HxCDD	0.08	1		0.10	---
Total HpCDD	0.04	1		0.08	---
Total TCDF	0.04	2			---
Total PeCDF	ND		0.006		---
Total HxCDF	0.11	5			---
Total HpCDF	0.12	3			---



Initial CM Date 9/11/97

Data Review By: \_\_\_\_\_ Calculated Noise Area: 1.67

The Total Area for each peak with an ion abundance ratio outside ratio limits has been recalculated according to method requirements.

Page No. 1 Listing of S975810B.dbf  
09/11/97 Matched GC Peaks / Ratio / Ret. Time

Compound/  
M\_2.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

TCDF		0.65-0.89				0.823-1.104			
304-306	DC NL	0:00	RO	0.08	0.14			0.000	
	D	D SN	16:59	RO	1.01	5.79		0.831	
	D	D SN	17:28	RO	0.95	4.05		0.855	
	D	D SN	17:43	RO	0.64	8.05		0.867	
	D	D SN	18:09	RO	0.93	10.80		0.888	
	D	D SN	18:31	RO	1.05	7.97		0.906	
	D	D SN	18:56	RO	1.79	4.09		0.927	
	D	D SN	19:16		0.77	11.50		0.943	
	D	D SN	19:36	RO	0.96	16.41		0.959	
	D	D SN	19:44		0.68	11.99		0.966	
	A		19:58		0.65	16.82	6.62	10.20	0.977
			20:27		0.79	31.20	13.81	17.39	1.001 2378-TCDF AN
	D	D SN	20:57	RO	0.54	4.94		1.025	
	DC	SN	22:09	RO	1.26	1.91		1.084	
304-306		2 Peaks				48.02			

13C12-TCDF		0.65-0.89				0.951-1.049			
316-318	DC NL	0:00	RO	8.71	0.12			0.000	
	DC WL	19:16	RO	1.10	5.22			0.943	
		19:57		0.68	23.12	9.34	13.78	0.976	
		20:26		0.75	3,447.55	1,477.22	1,970.33	1.000 13C12-2378-TCDF ISO	
		20:56		0.78	17.22	7.52	9.70	1.024	
316-318		3 Peaks			3,487.89				

----- Above: TCDF / TCDD Follows -----

TCDD		0.65-0.89				0.857-1.061			
320-322	DC NL	0:00	RO	1.00	0.14			0.000	
	DC WL	18:10	RO	0.57	0.67			0.854	
		18:21		0.71	14.55	6.05	8.50	0.863	
	D	D SN	18:50		0.67	6.41		0.886	
		DC SN	19:22		0.82	0.31		0.911	
		DC SN	19:23	RO	1.41	0.60		0.911	
		DC SN	19:42	RO	1.28	0.64		0.926	
	D	D SN	20:00	RO	0.98	4.64		0.940	
		DC SN	20:14		0.78	2.15		0.951	
		DC SN	20:40	RO	1.32	1.61		0.972	
		DC SN	20:51	RO	1.20	0.44		0.980	
	D	D SN	21:09	RO	0.93	4.71		0.995	
		DC SN	21:21	RO	0.26	0.85		1.004	
		DC SN	21:49	RO	0.30	0.46		1.026	
		DC SN	22:10	RO	0.31	0.78		1.042	
	DC	WH	22:38		0.85	3.31		1.064	

Compound/  
 M\_Z.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1... Area.Peak.2... Rel.RT Compound.Name.. ID.. Flags.

Compound	QC	Log	Omit	Why	RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Rel.RT	Compound.Name	ID	Flags
320-322								14.55						
37C1-TCDD											0.906-1.094			
328	DC	NL			0:00			0.07			0.000			
					19:44			11.72	11.72		0.928			
					21:17			2,069.93	2,069.93		1.001	37C1-TCDD	SUR1	
					21:25			8.38	8.38		1.007			
					21:45			3.53	3.53		1.023			
	DC	SN			21:55			1.48			1.031			
	DC	SN			22:21			1.31			1.051			
	DC	SN			22:29			1.57			1.057			
328								4 Peaks	2,093.56					
13C12-TCDD											0.906-1.094			
332-334	DC	NL			0:00	RO	18.33	0.11			0.000			
					19:56	RO	0.90	11.93	6.08	6.74	0.937			
					21:02		0.82	4,190.27	1,890.11	2,300.16	0.989	13C12-1234-TCDD	RS1	
					21:16		0.81	2,484.18	1,109.29	1,374.89	1.000	13C12-2378-TCDD	IS1	
	DC	SN			21:29	RO	1.35	3.54			1.010			
					21:38		0.87	33.89	15.79	18.10	1.017			
332-334								4 Peaks	6,720.27					

----- Above: TCDD / PeCDF Follows -----

Compound	QC	Log	Omit	Why	RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Rel.RT	Compound.Name	ID	Flags
PeCDF											0.909-1.079			
340-342	DC	NL			0:00	RO	1.14	0.13			0.000			
	D	SN			22:40	RO	1.06	8.29			0.916			
	DC	SN			22:46	RO	0.45	1.09			0.920			
	DC	SN			23:43		1.67	3.15			0.958			
	D	SN			23:51		1.58	14.48			0.964			
	D	SN			24:10	RO	0.84	3.52			0.976			
	D	SN			24:45		1.55	6.96			1.000	12378-PeCDF	AN	
	DC	SN			25:04	RO	3.28	4.23			1.013			
	D	SN			25:34		1.38	11.74			1.033	23478-PeCDF	AN	
	DC	SN			25:42	RO	1.80	4.31			1.038			
	DC	SN			26:34		1.60	4.24			1.073			
	DC	SN			26:39	RO	1.06	2.75			1.077			
340-342								0 Peaks	0.00					
13C12-PeCDF											0.838-1.162			
352-354	DC	NL			0:00	RO	1.14	0.13			0.000			
					23:50	RO	1.25	7.65	4.65	3.73	0.963			
					24:23		1.34	11.91	6.83	5.08	0.985			
					24:45		1.45	2,733.22	1,617.73	1,115.49	1.000	13C12-PeCDF 123	IS2	
					24:55		1.61	11.42	7.04	4.38	1.007			
					25:04	RO	1.14	14.89	9.05	7.92	1.013			
					25:33		1.43	2,257.14	1,330.15	926.99	1.032	13C12-PeCDF 234	SUR2	
	DC	SN			25:50		1.37	3.01			1.044			
	DC	SN			25:55		1.50	3.03			1.047			
	DC	SN			26:31	RO	2.54	4.62			1.071			
	DC	SN			26:39	RO	1.00	1.51			1.077			
352-354								6 Peaks	5,036.23					

Compound/  
M\_Z.... QC.Log Omit Why .RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

----- Above: PeCDF / PeCDD Follows -----

PeCDD			1.32-1.78				0.921-1.026		
356-358	DC	NL	0:00	RO	0.71		0.08		0.000
	A		24:00	RO	0.72		14.08	8.56	11.90 0.927
	DC	SN	24:18	RO	0.44		1.43		0.938
	DC	SN	24:30	RO	2.24		1.94		0.946
			24:47		1.32		14.76	8.40	6.36 0.957
	DC	SN	24:57	RO	0.51		1.56		0.963
	D	SN	25:06	RO	1.06		5.71		0.969
	DC	SN	25:19	RO	0.61		1.32		0.977
	DC	SN	25:56	RO	1.87		2.70		1.001 12378-PeCDD AN
	DC	SN	26:24	RO	1.02		2.12		1.019
	DC	WH	26:46	RO	1.12		2.47		1.033
356-358			2 Peaks				28.84		

13C12-PeCDD			1.32-1.78				0.845-1.155		
368-370	DC	NL	0:00	RO	1.00		0.12		0.000
	DC	SN	24:46		1.53		3.04		0.956
			25:54		1.55	1,608.95	978.75	630.20	1.000 13C12-PeCDD 123 IS3
			26:03		1.38	161.72	93.83	67.89	1.006
	DC	SN	26:25	RO	1.23		3.49		1.020
368-370			2 Peaks			1,770.67			

----- Above: PeCDD / HxCDF Follows -----

HxCDF			1.05-1.43				0.957-1.053		
374-376	DC	NL	0:00		1.19		4.49		0.000
			27:25		1.16		7.59	4.07	3.52 0.961
			27:34		1.25		16.00	8.88	7.12 0.967
	M		28:25		1.27		20.56	11.50	9.06 0.996 123478-HxCDF AN
	M		28:32		1.21		9.40	5.14	4.26 1.001 123678-HxCDF AN
	DC	SN	28:39		1.18		4.19		1.005
	D	SN	28:50	RO	0.72		4.81		1.011
	M		29:02		1.37		9.00	5.21	3.79 1.018 234678-HxCDF AN PR
	DC	SN	29:12	RO	3.08		0.85		1.024
	D	SN	29:48	RO	0.83		4.43		1.045 123789-HxCDF AN
	DC	SN	29:53		1.16		1.97		1.048
	DC	SN	30:00	RO	0.53		2.67		1.052
	DC	WH	30:15		1.09		3.47		1.061
374-376			5 Peaks			62.55			

13C12-HxCDF			0.43-0.59				0.859-1.141		
384-386	DC	NL	0:00	RO	0.89		3.17		0.000
	DC	SN	28:11	RO	0.96		1.43		0.988
			28:24		0.50	1,591.97	532.51	1,059.46	0.996 13C12-HxCDF 478 SUR3
			28:31		0.50	1,801.94	600.54	1,201.40	1.000 13C12-HxCDF 678 IS4
	DC	SN	28:40	RO	0.28		4.35		1.005
	DC	SN	28:43	RO	1.72		1.75		1.007
			29:01		0.49	1,574.02	519.44	1,054.58	1.018 13C12-HxCDF 234 ALT2
			29:44		0.50	1,197.58	400.47	797.11	1.043 13C12-HxCDF 789 ALT1
	DC	SN	30:09	RO	0.70		2.31		1.057



Compound/  
M\_Z.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1... Area.Peak.2... Rel.RT Compound.Name.. ID.. Flags.

384-386 4 Peaks 6,165.51

----- Above: HxCDF / HxCDD Follows -----

		1.05-1.43				0.951-1.015	
HxCDD							0.000
390-392	DC NL	0:00	RO 1.63	1.50			0.956
	DC SN	27:57	RO 1.57	4.03			0.964
	DC SN	28:11	RO 4.05	0.43			0.967
	DC SN	28:16	RO 0.85	0.63			0.972
		28:25	1.23	29.72	16.41	13.31	0.980
	D SN	28:39	1.34	10.90			0.985
	DC SN	28:47	RO 1.02	2.11			0.988
	DC SN	28:53	1.17	0.91			0.992
	DC SN	29:00	1.37	2.58			0.997 123478-HxCDD AN
	DC SN	29:09	1.33	4.06			1.000 123678-HxCDD AN
	M	29:14	RO 0.95	6.41	3.55	3.72	1.010 123789-HxCDD AN
	D SN	29:32	RO 0.71	5.35			1.016
	DC WH	29:42	RO 3.86	1.25			1.021
	DC WH	29:50	RO 0.74	1.86			
390-392		2 Peaks		36.13			

		1.05-1.43				0.966-1.034	
13C12-HxCDD							0.000
402-404	DC NL	0:00	RO 0.88	1.26			0.979
		28:38	1.13	7.89	4.18	3.71	0.986
	DC SN	28:50	RO 0.66	1.77			0.997 13C12-HxCDD 478 SUR4
		29:09	1.23	1,191.87	657.77	534.10	1.000 13C12-HxCDD 678 IS5
		29:14	1.24	1,332.37	737.61	594.76	1.010 13C12-HxCDD 789 RS2
		29:31	1.22	2,276.32	1,249.58	1,026.74	
402-404		4 Peaks		4,808.45			

----- Above: HxCDD / HpCDF Follows -----

		0.88-1.20				0.995-1.045	
HpCDF							0.000
408-410	DC NL	0:00	RO 1.55	1.90			1.001 1234678-HpCDF AN PR
		31:14	0.88	22.50	10.50	12.00	1.007
		31:26	1.03	8.11	4.11	4.00	1.011
	D SN	31:34	1.11	6.87			1.038 1234789-HpCDF AN
	M	32:25	1.19	4.98	2.71	2.27	1.043
	DC SN	32:34	RO 1.48	1.57			1.046
	DC WH	32:39	0.96	1.92			1.053
	DC WH	32:52	1.15	4.22			
408-410		3 Peaks		35.59			

		0.37-0.51				0.936-1.128	
13C12-HpCDF							0.000
418-420	DC NL	0:00	RO 0.91	1.47			1.000 13C12-HpCDF 678 IS6
		31:13	0.44	834.38	254.39	579.99	1.011
	DC SN	31:33	RO 1.60	1.17			1.038 13C12-HpCDF 789 SUR5
		32:25	0.42	546.46	161.53	384.93	1.052
	DC SN	32:51	RO 1.33	1.40			
418-420		2 Peaks		1,380.84			

Compound/

M\_Z.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

----- Above: HpCDF / HpCDD Follows -----

HpCDD		0.88-1.20			0.977-1.006		
424-426	DC NL	0:00	RO 1.30	1.16		0.000	
		31:29	1.05	9.61	4.92	4.69	0.982
	DC SN	31:42	RO 2.92	0.75			0.989
M		32:05	RO 0.86	8.12	4.14	4.83	1.001 1234678-HpCDD AN
	DC WH	32:17	RO 0.28	0.65			1.007
	DC WH	32:29	RO 0.50	1.20			1.013
424-426		2 Peaks		17.73			

13C12-HpCDD		0.88-1.20			0.969-1.031		
436-438	DC NL	0:00	RO 1.16	1.38		0.000	
	DC SN	31:28	RO 0.26	1.04			0.981
		32:04	1.05	833.58	427.57	406.01	1.000 13C12-HpCDD 678 IS7
436-438		1 Peak		833.58			

----- Above: HpCDD / Octa-CDD and CDF Follows -----

OCDF		0.76-1.02			0.884-1.116		
442-444	DC NL	0:00	RO 1.29	0.13		0.000	
	DC SN	31:26	0.93	1.43			0.909
	DC SN	31:36	RO 2.06	0.59			0.914
	DC SN	31:56	RO 2.40	1.19			0.924
	DC SN	32:12	RO 0.18	0.45			0.932
	DC SN	32:22	RO 0.57	1.44			0.936
	DC SN	32:50	RO 0.59	0.96			0.950
	DC SN	33:17	RO 0.04	0.17			0.963
	DC SN	33:24	RO 1.71	1.36			0.966
	DC SN	33:30	RO 0.64	0.57			0.969
	DC SN	33:43	RO 0.58	0.38			0.975
	DC SN	34:00	RO 6.26	0.36			0.984
	DC SN	34:29	RO 0.41	0.74			0.998
		34:42	0.95	7.27	3.55	3.72	1.004 OCDF AN
	DC SN	35:01	RO 0.11	0.19			1.013
	DC SN	35:25	RO 1.86	1.06			1.025
	DC SN	35:34	0.99	2.13			1.029
	DC SN	35:55	RO 1.45	0.21			1.039
442-444		1 Peak		7.27			

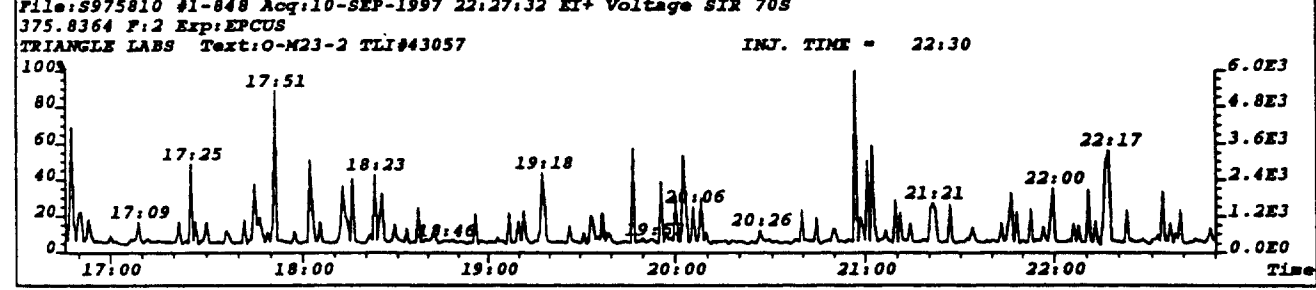
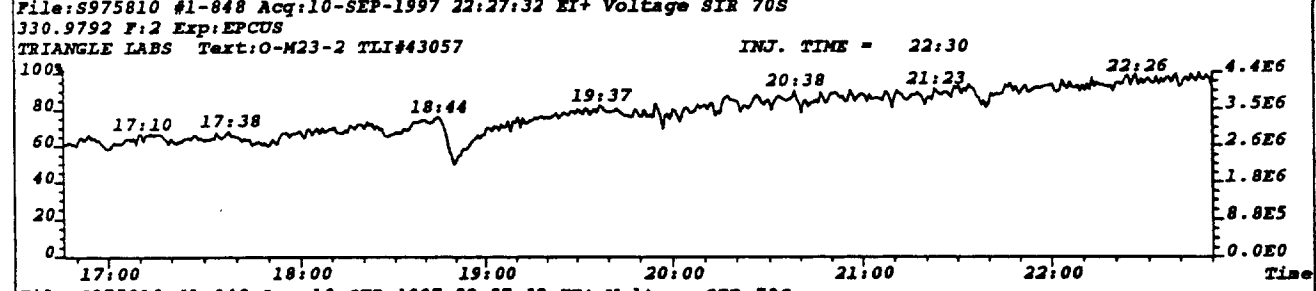
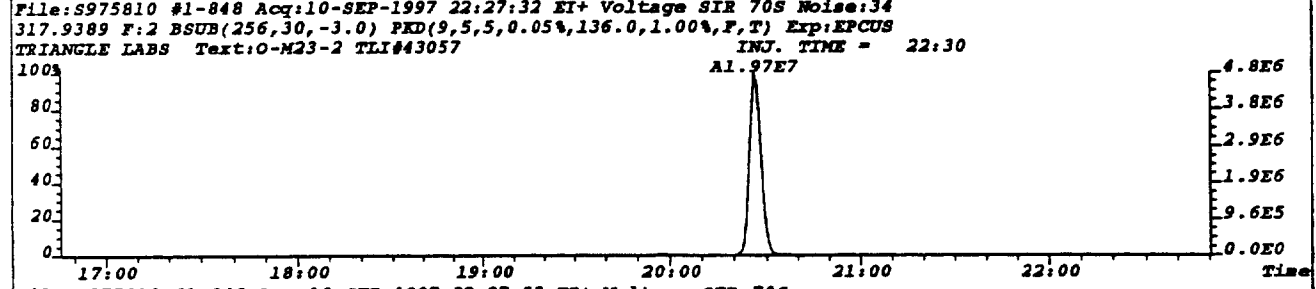
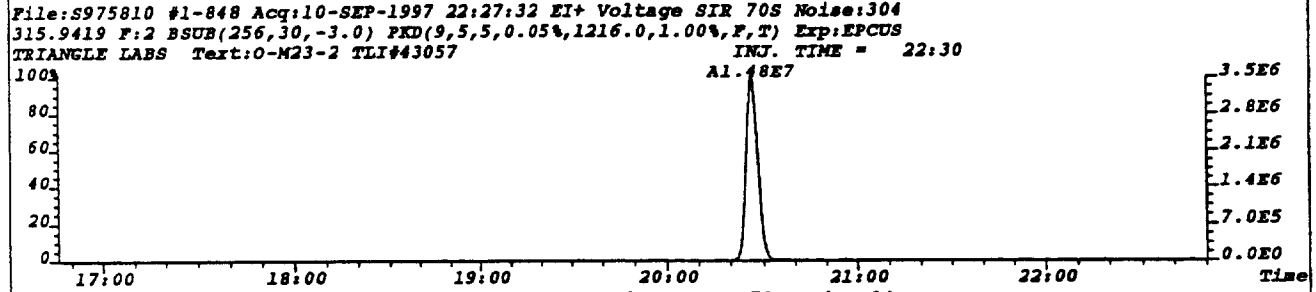
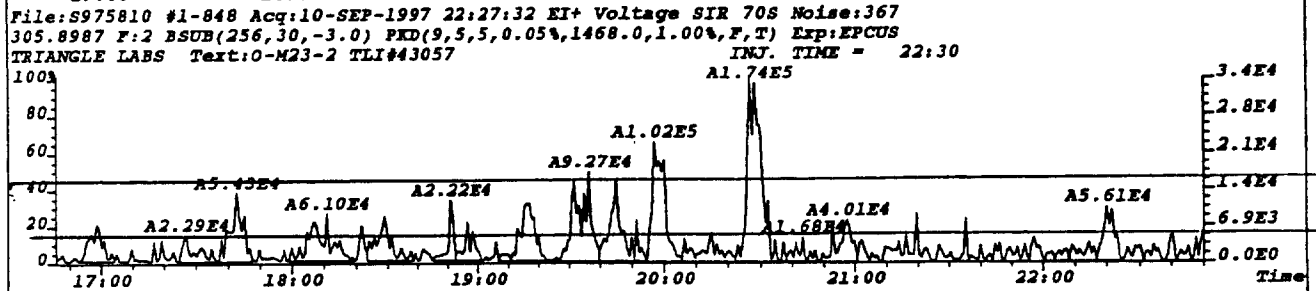
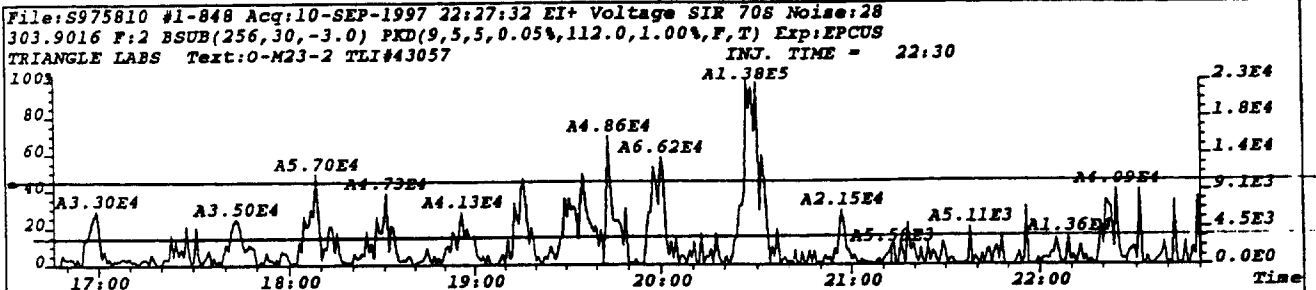
OCDD		0.76-1.02			0.884-1.116		
458-460	DC NL	0:00	RO 1.17	0.11		0.000	
		34:34	0.90	17.03	8.09	8.94	1.000 OCDD AN
	DC SN	34:58	RO 0.16	0.30			1.012
458-460		1 Peak		17.03			

13C12-OCDD		0.76-1.02			0.996-1.005		
470-472	DC NL	0:00	RO 0.67	0.08		0.000	
		34:34	0.86	650.55	301.53	349.02	1.000 13C12-OCDD IS8
	DC WH	35:04	RO 2.39	1.74			1.014
470-472		1 Peak		650.55			

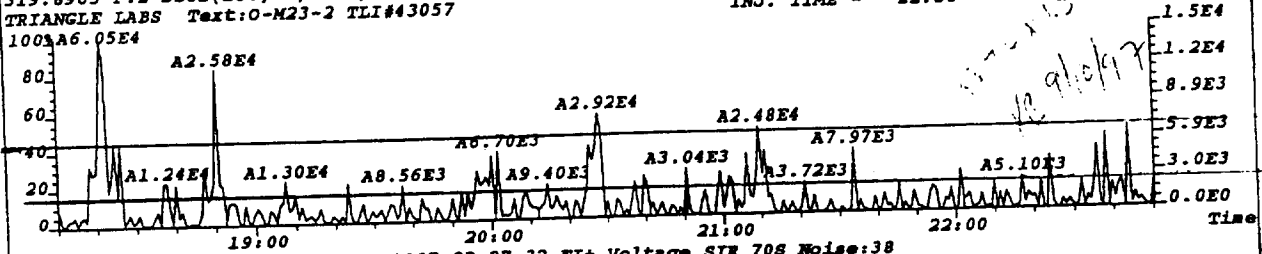
Compound/  
M\_Z.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

Column Description.....	"Why" Code	Description.....	QC Log Desc.....
M_Z	-Nominal Ion Mass(es)	WL-Below Retention Time Window	A-Peak Added
..RT.	-Retention Time (mm:ss)	WH-Above Retention Time Window	K-Peak Kept
Rat.1	-Ratio of M/M+2 Ions	SN-Below Signal to Noise Level	D-Peak Deleted
OK	-RO=Ratio Outside Limits	<M-Below Method Detection Limit	T-Time Changed
Rel.RT	-Relative Retention Time	NL-Channel Specific Noise Level	M-Peak Area Changed
			N-Name Changed
			E-Ether Interference

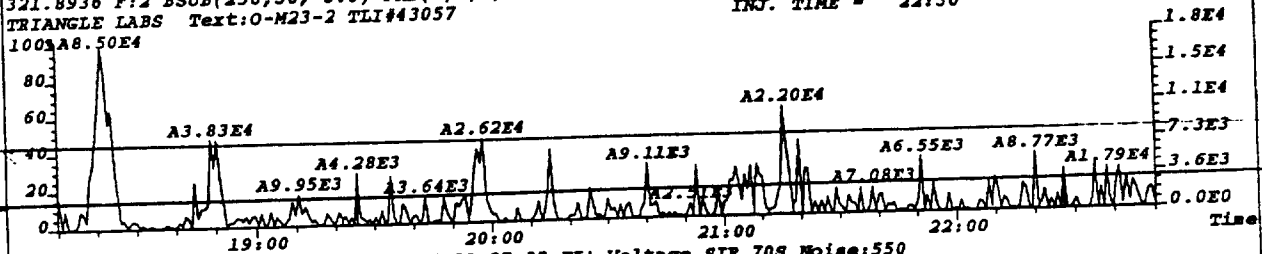
\*\*\* End of Report \*\*\*



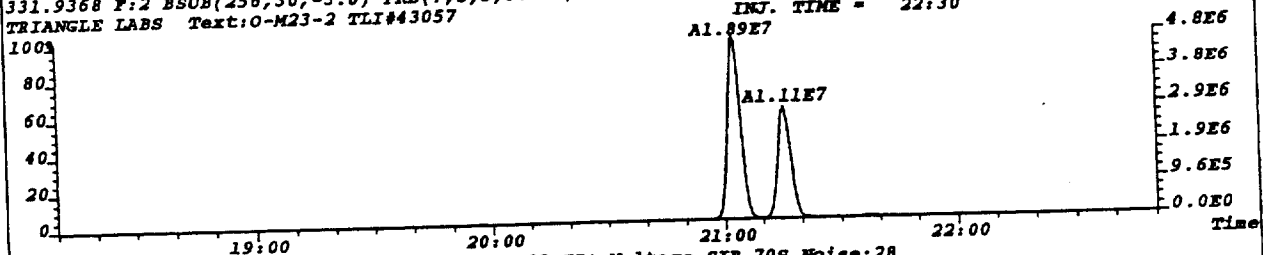
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 319.8965 F:2 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,152.0,1.00%,F,T) Exp:EPCUS  
 TRIANGLE LABS Text:O-M23-2 TLI#43057 INJ. TIME = 22:30



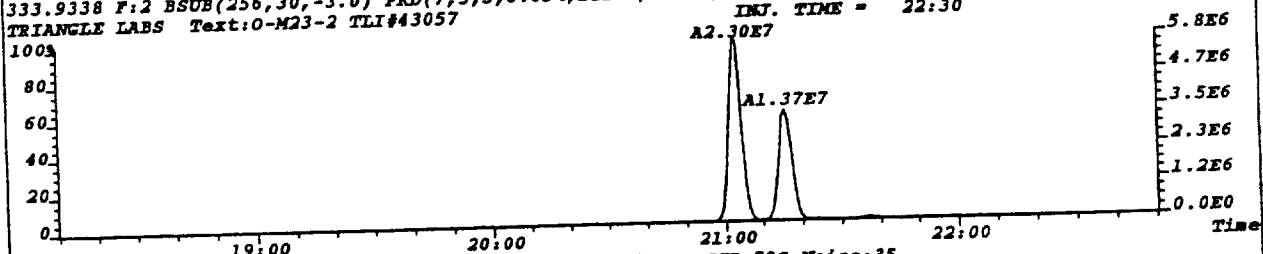
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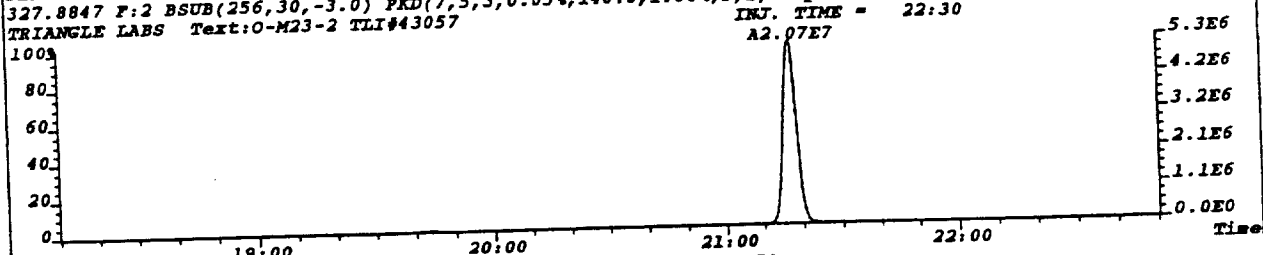
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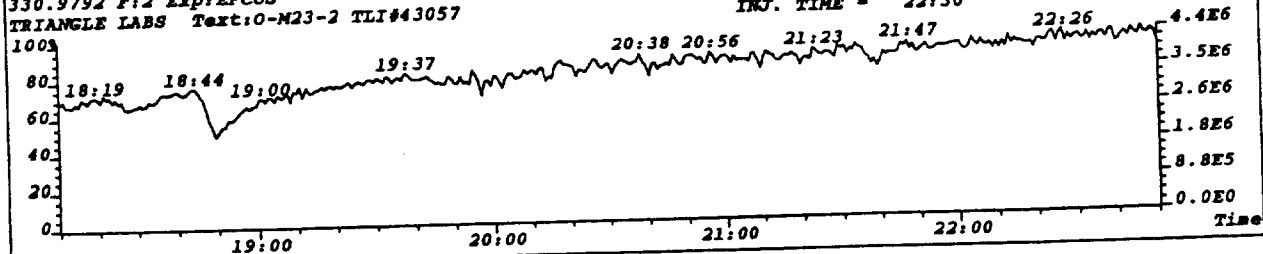
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 333.9338 F:2 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,112.0,1.00%,F,T) Exp:EPCUS  
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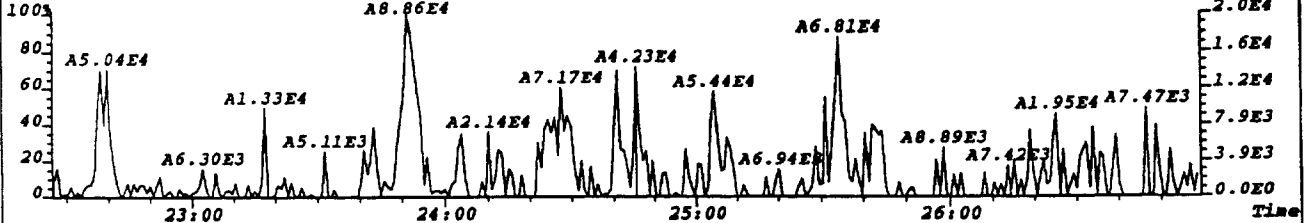
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 327.8847 F:2 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,140.0,1.00%,F,T) Exp:EPCUS  
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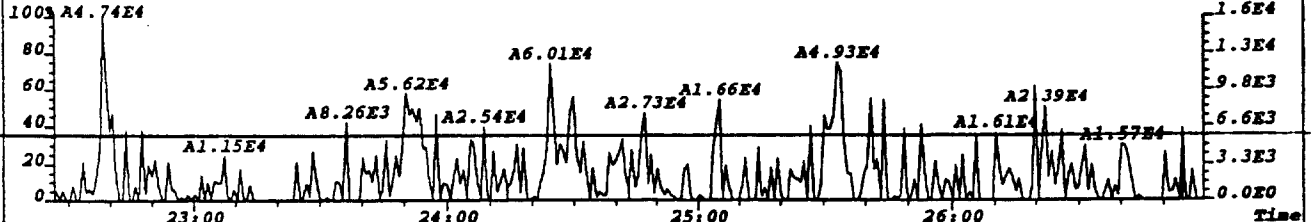
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 330.9792 F:2 Exp:EPCUS  
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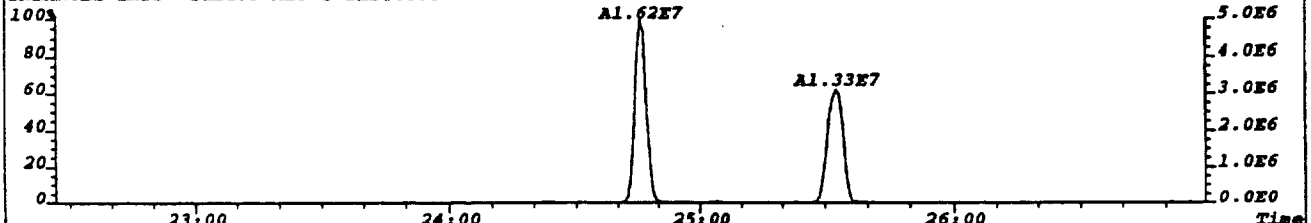
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339.8597 F:2 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,152.0,1.00%,F,T) Exp:EPCUS  
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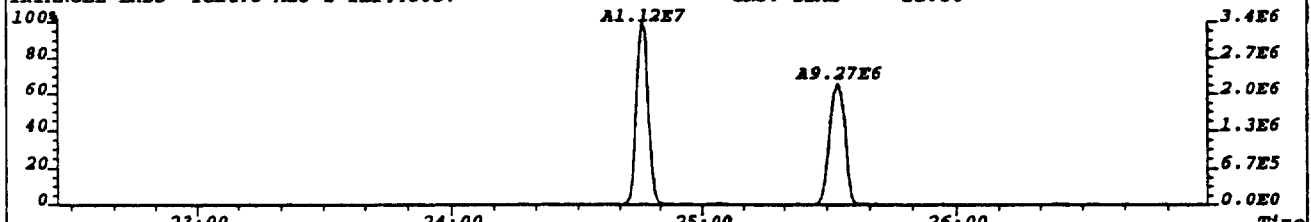
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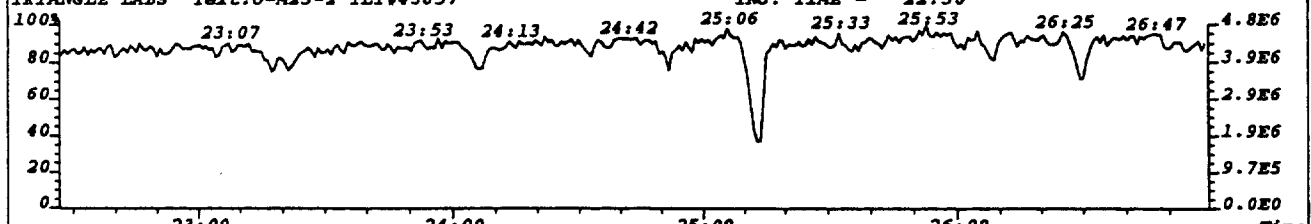
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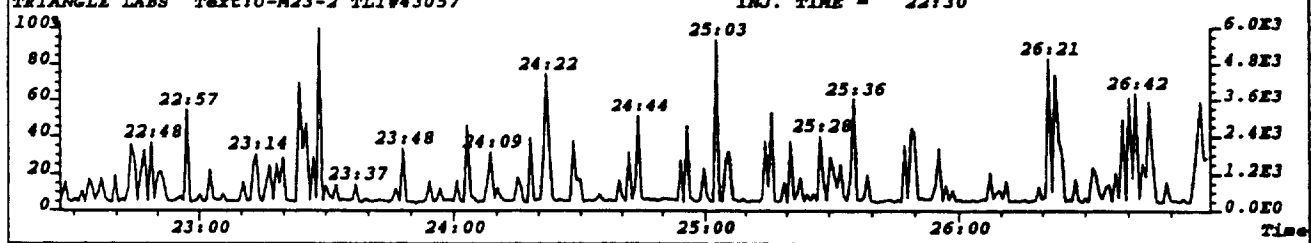
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353.8970 F:2 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,148.0,1.00%,F,T) Exp:EPCUS  
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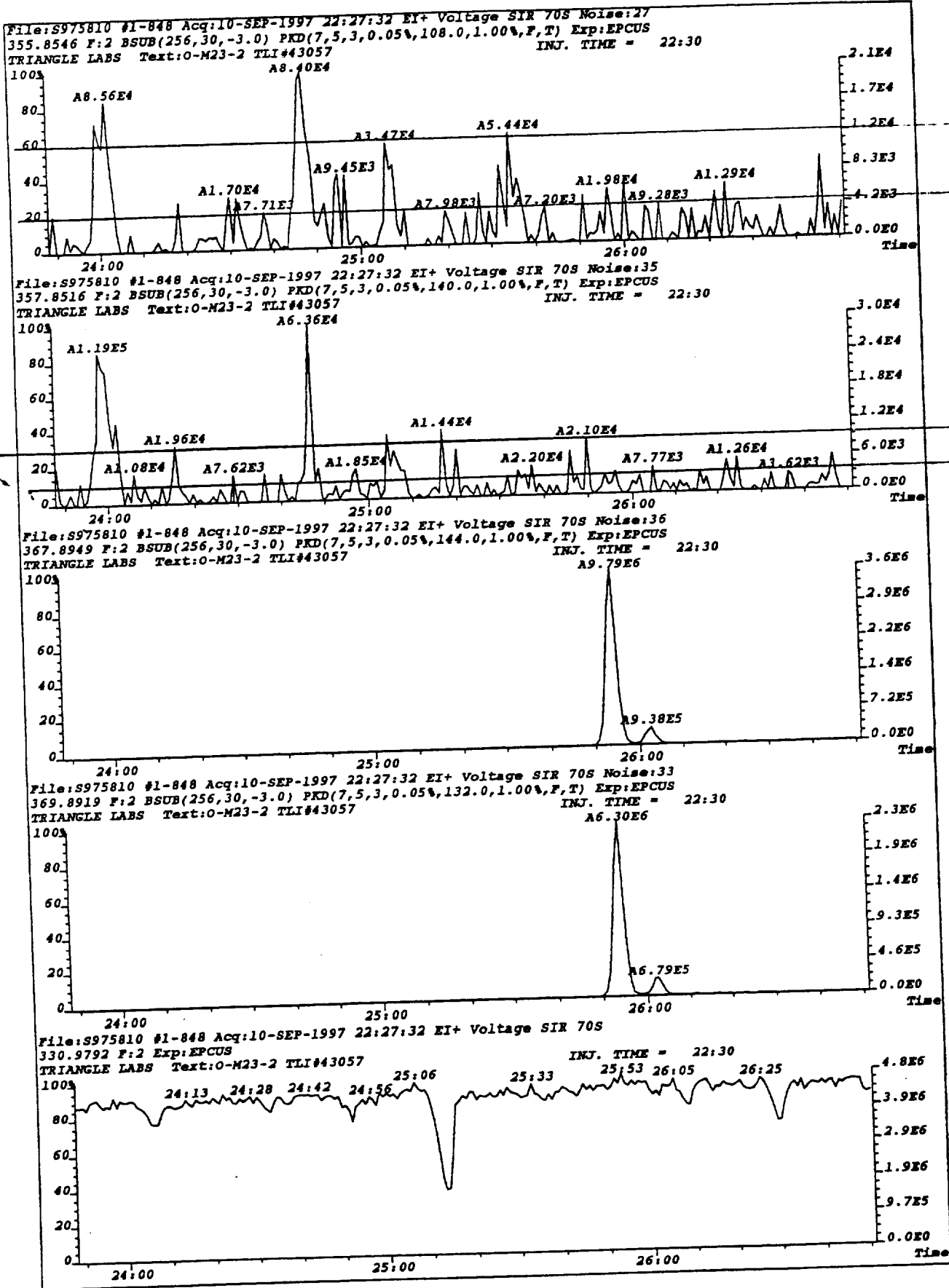


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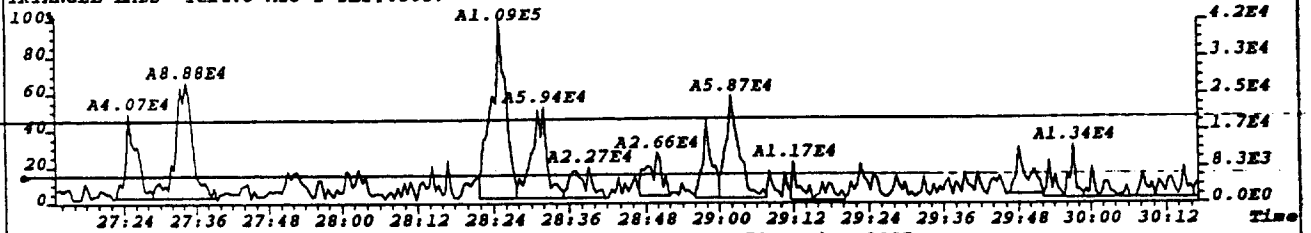


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409.7974 F:2 Exp:EPCUS  
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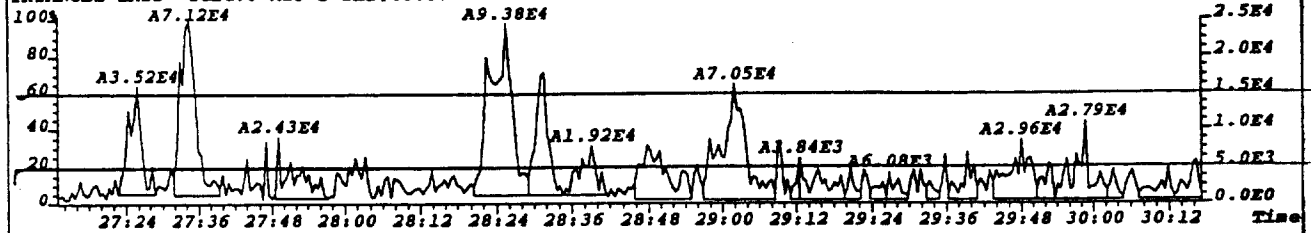




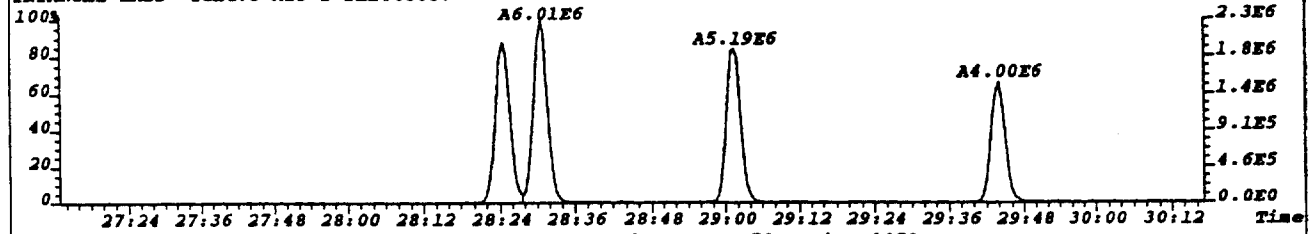
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TRIANGLE LABS Text:0-M23-2 TLI#43057 INJ. TIME = 22:30



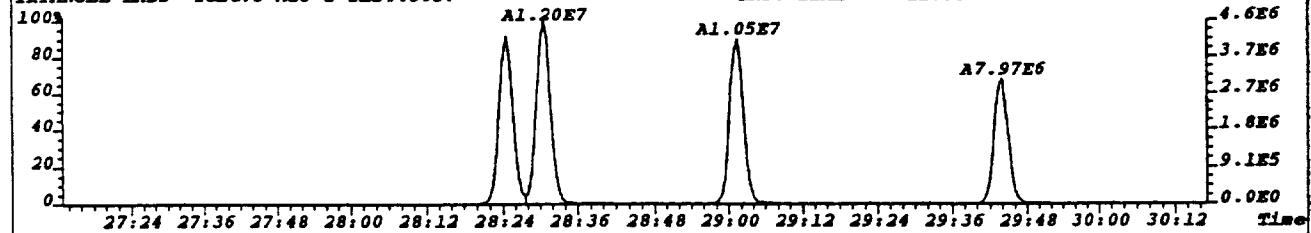
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375.8178 F:3 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,4108.0,1.00%,F,T) Exp:EPCUS  
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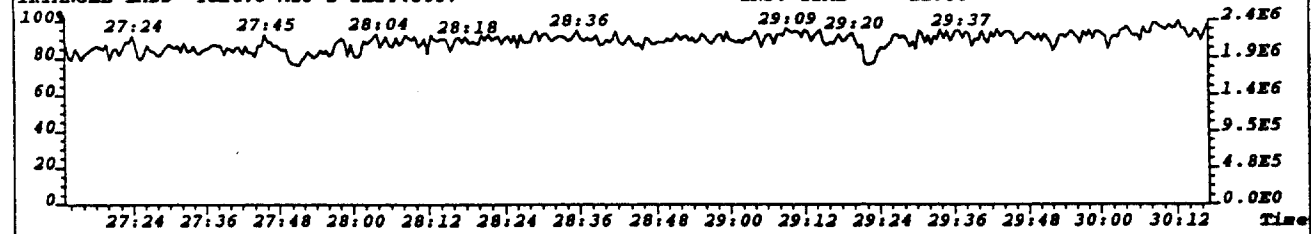
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383.8639 F:3 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,3740.0,1.00%,F,T) Exp:EPCUS  
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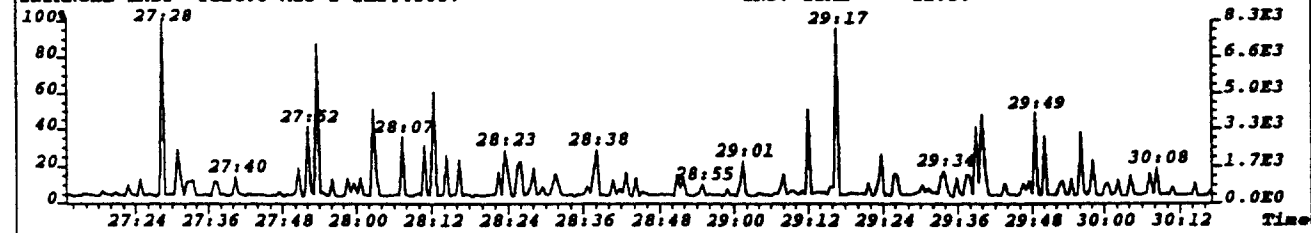
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385.8610 F:3 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,4204.0,1.00%,F,T) Exp:EPCUS  
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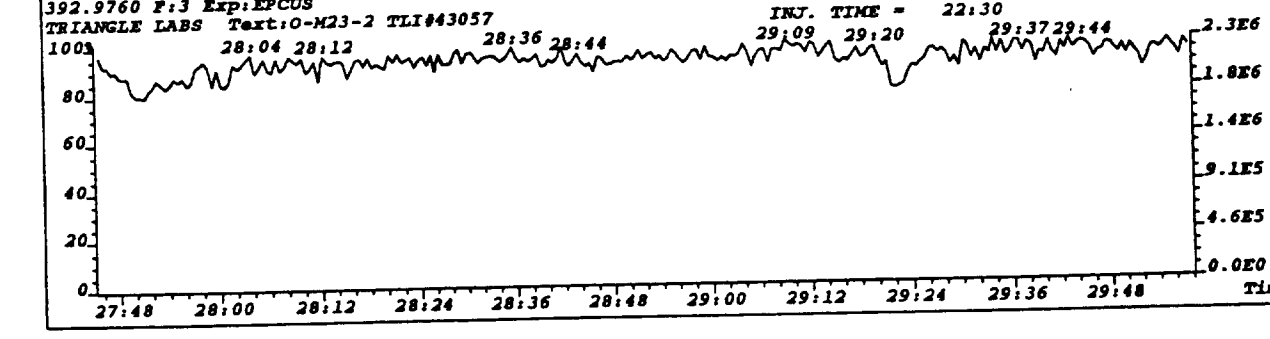
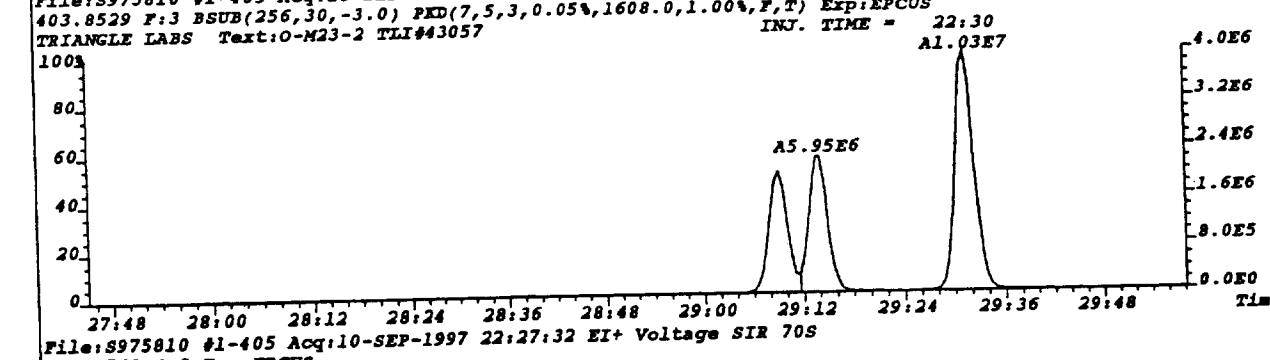
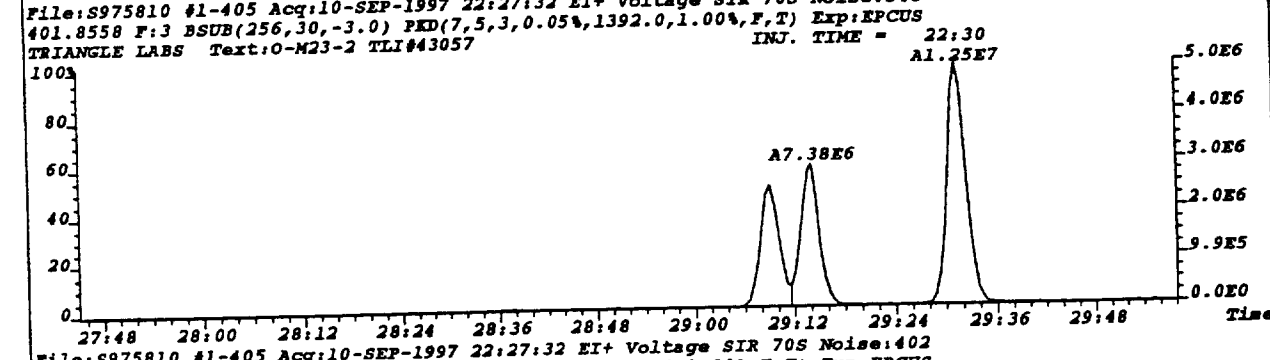
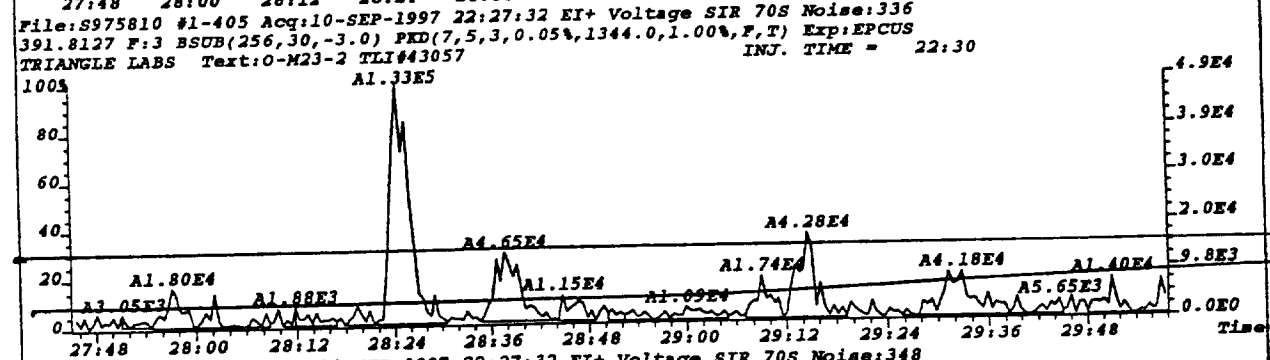
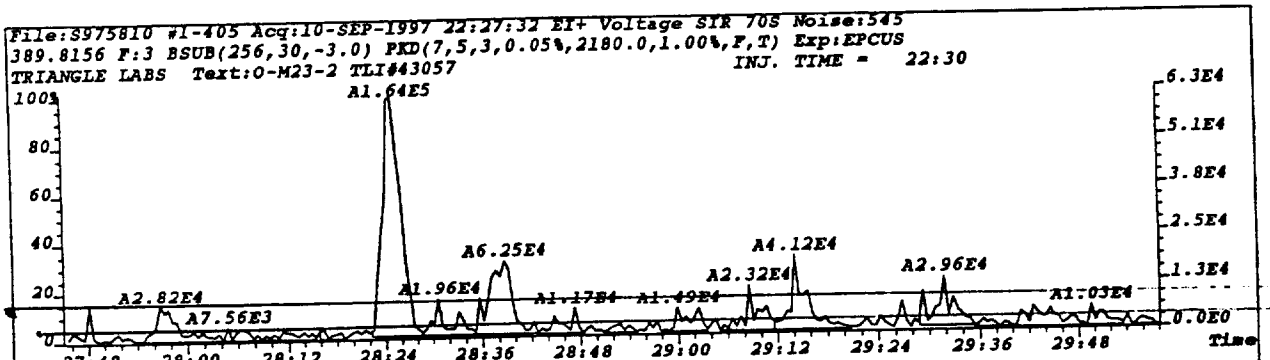
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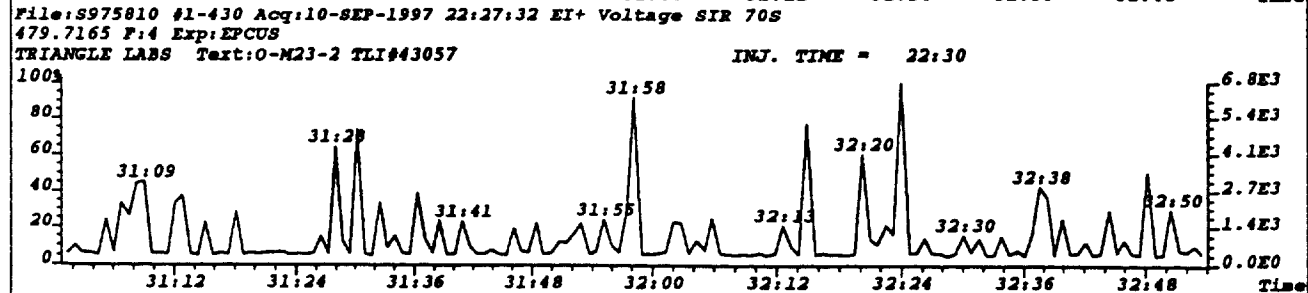
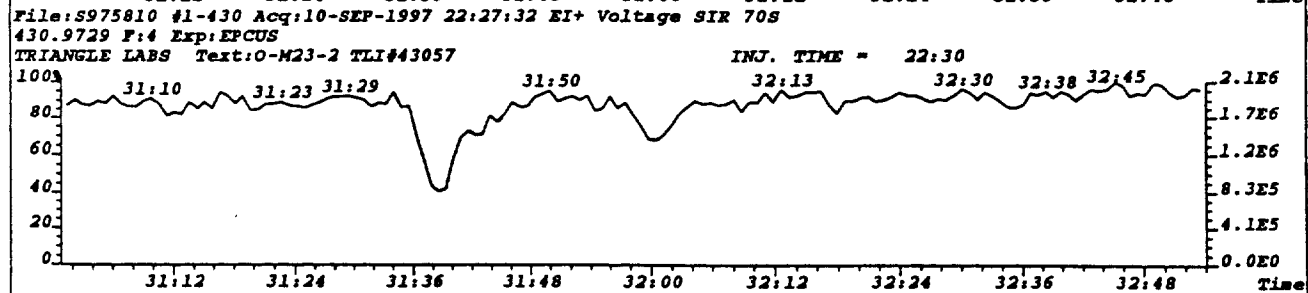
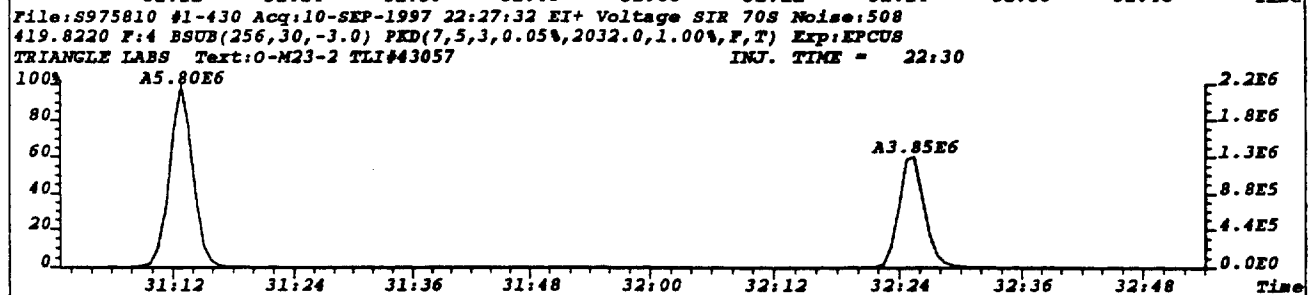
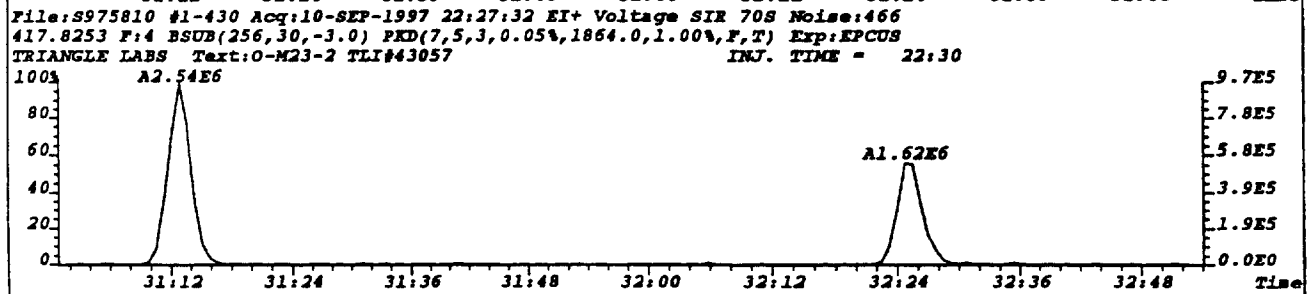
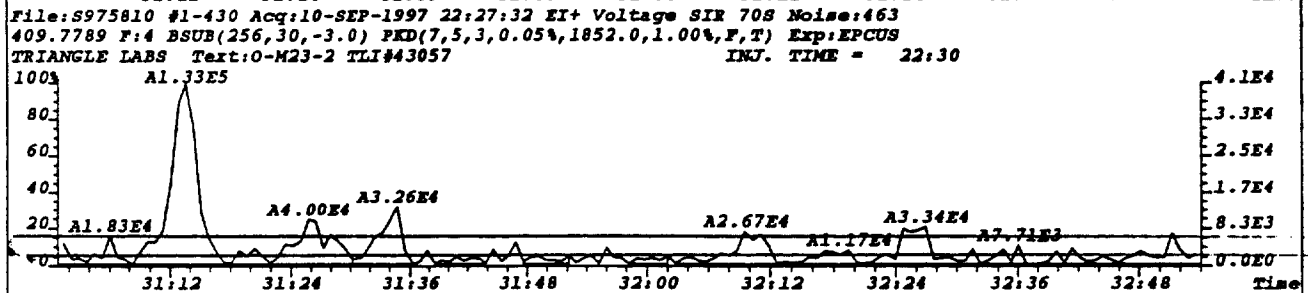
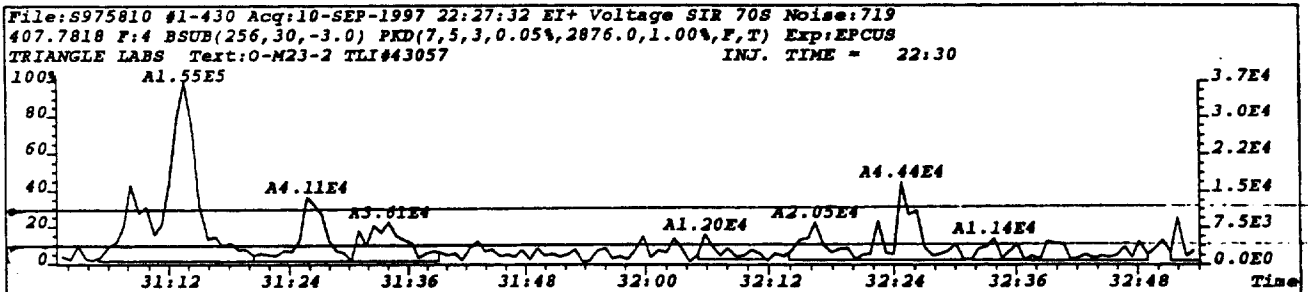


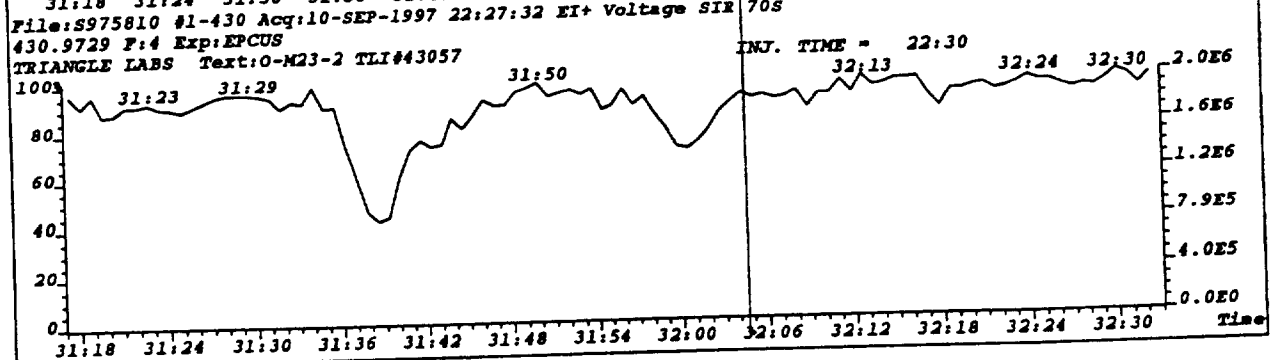
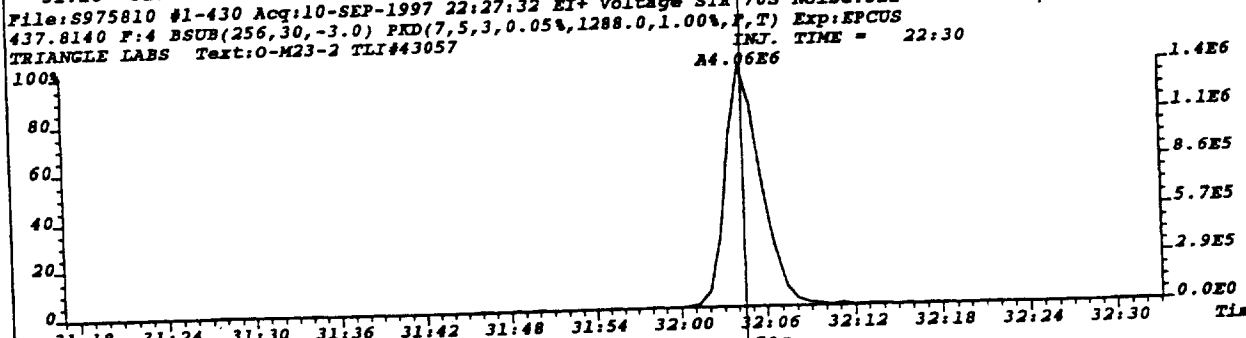
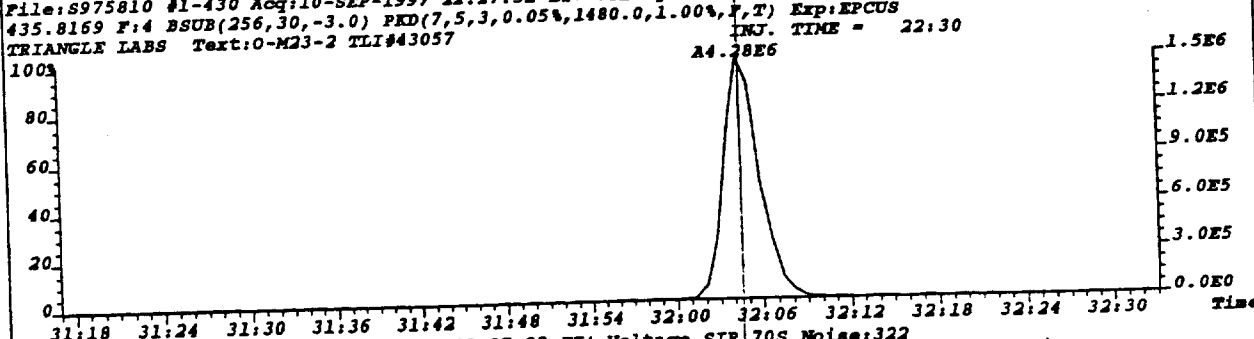
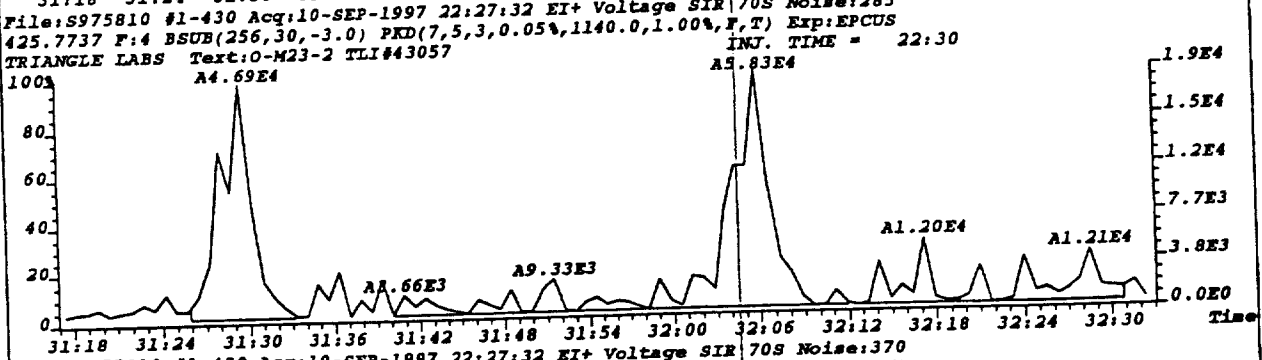
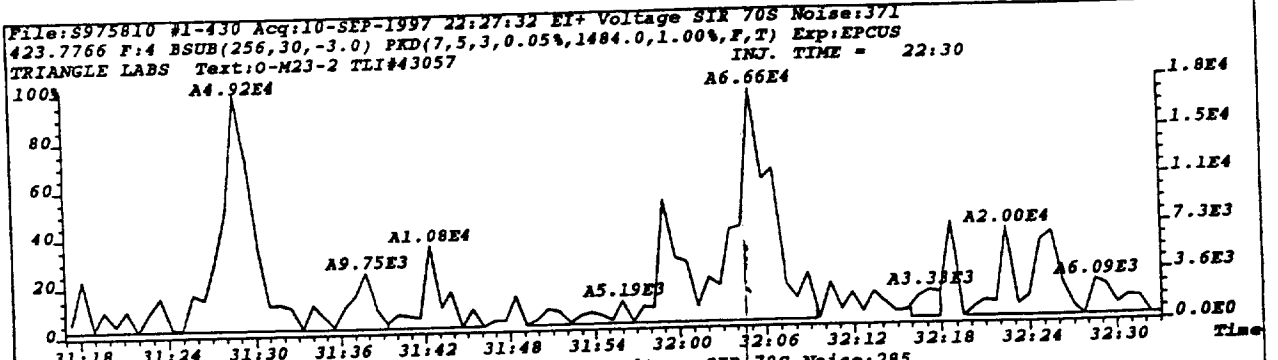
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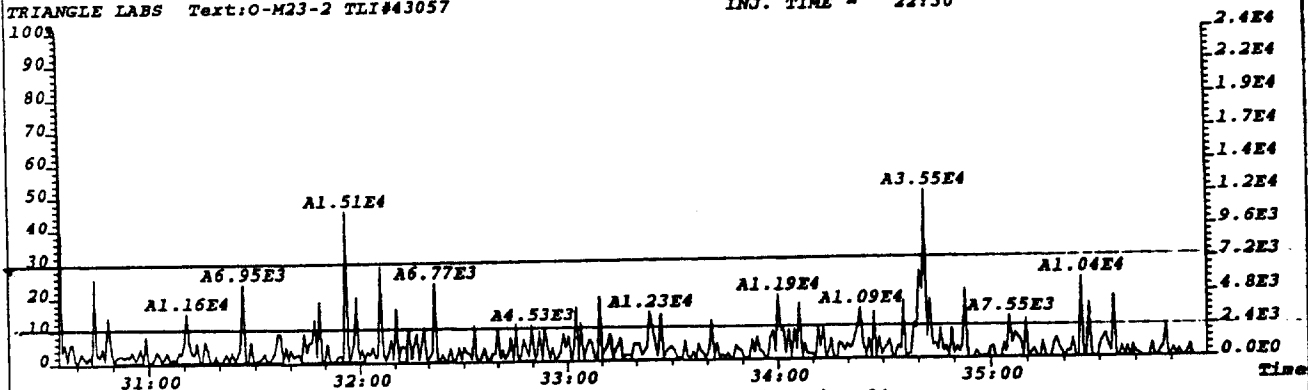




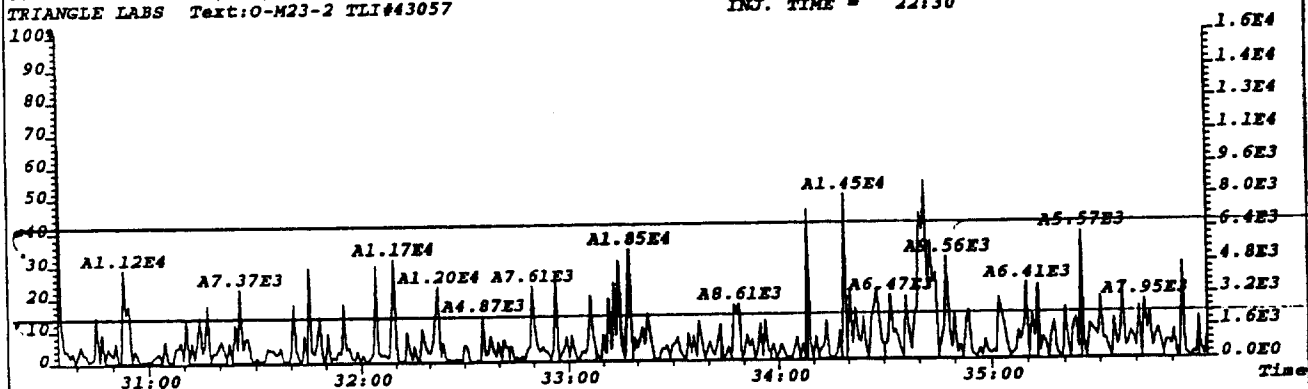




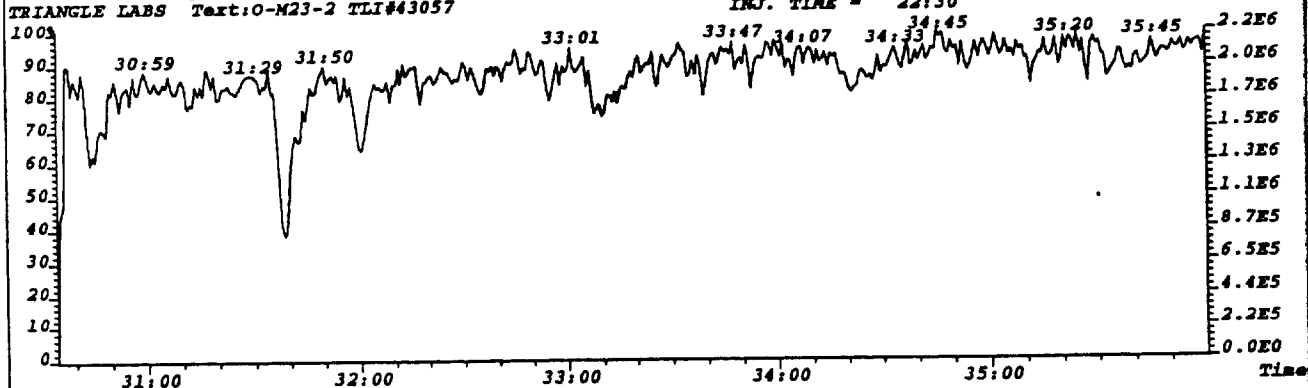
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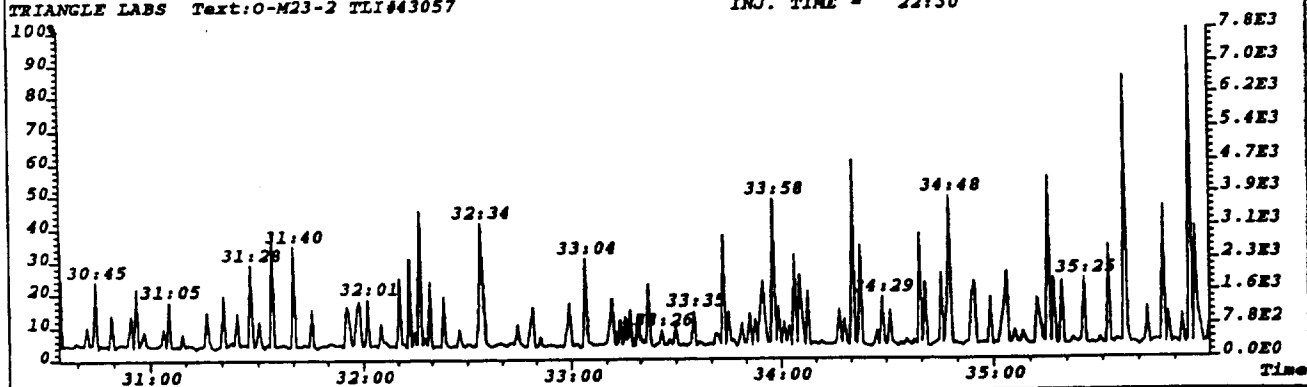
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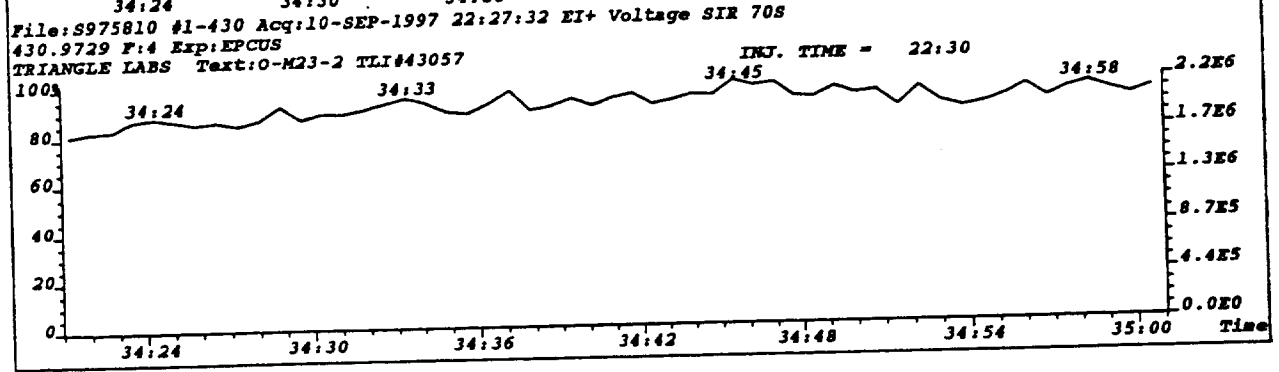
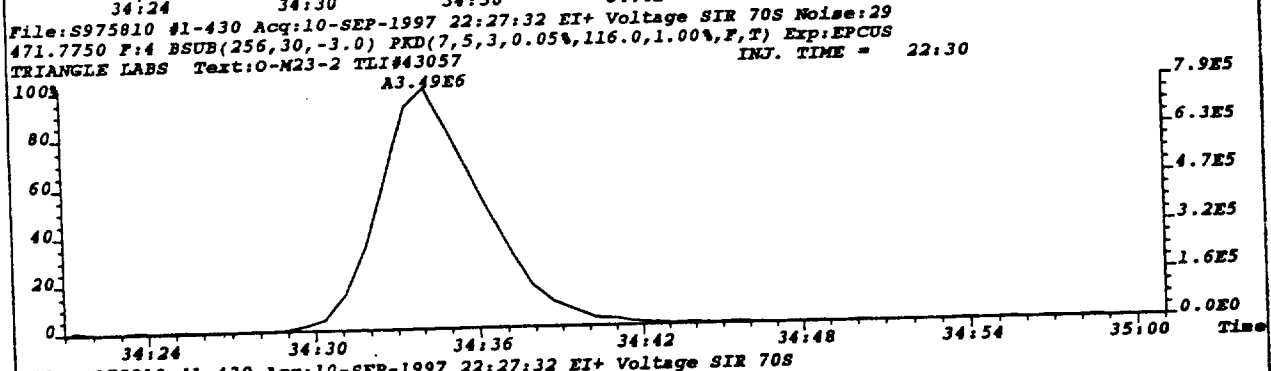
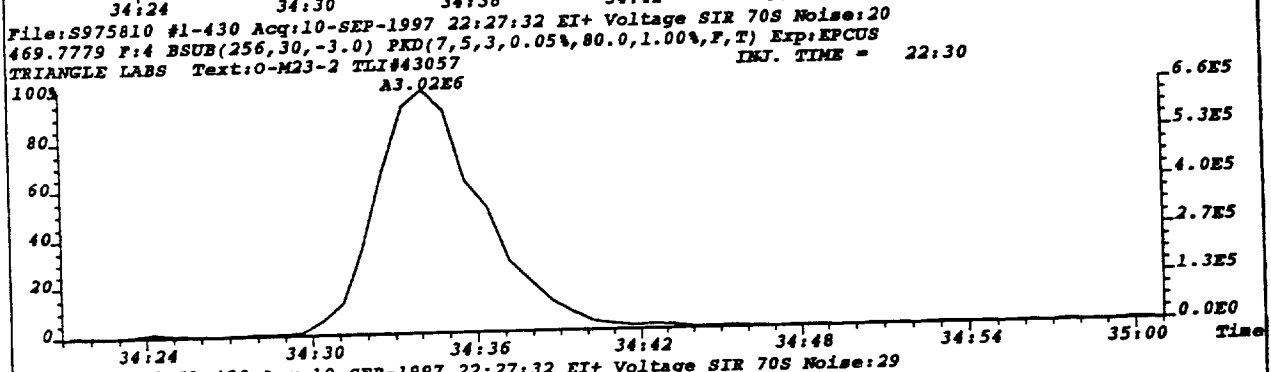
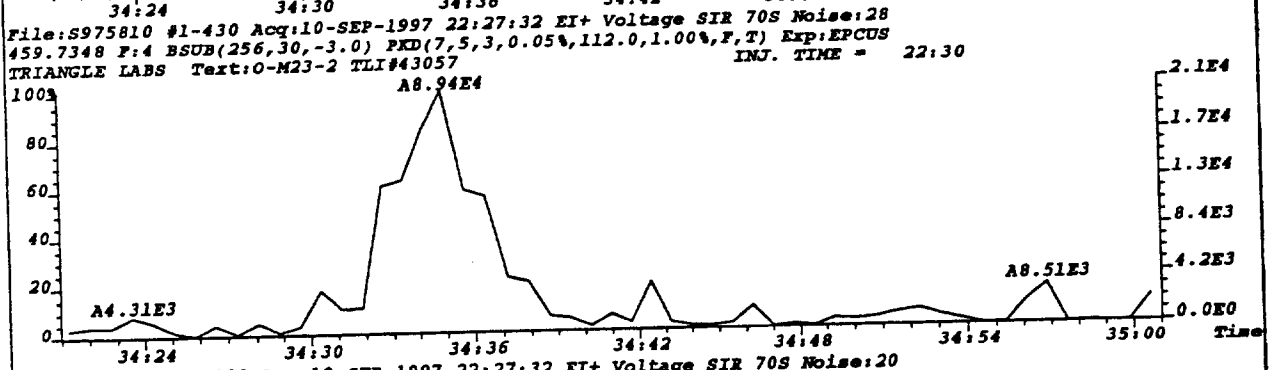
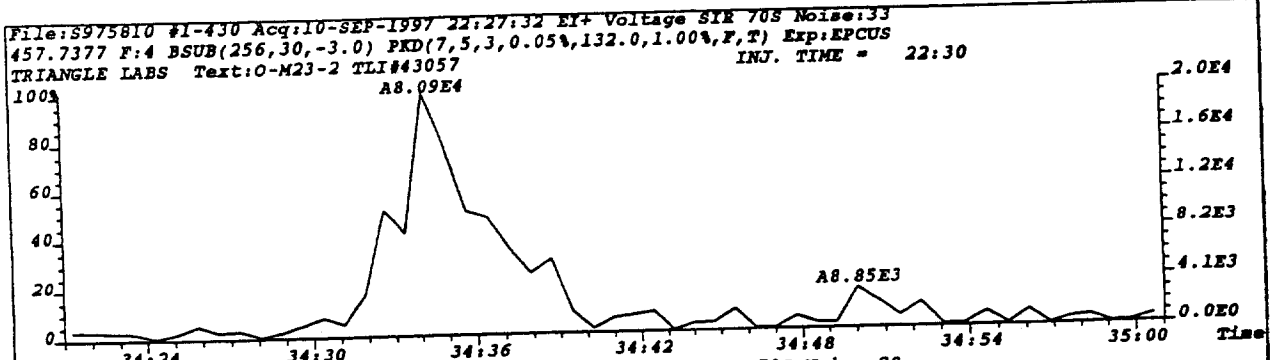


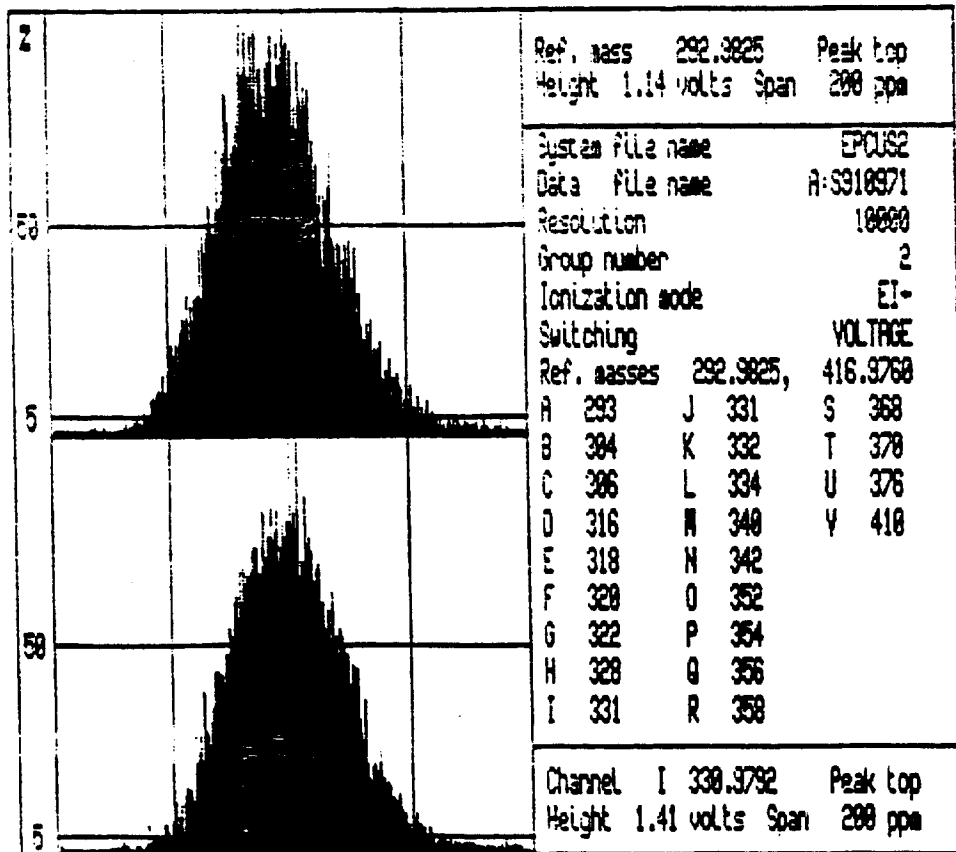
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TRIANGLE LABS Text:O-M23-2 TLI#43057 INJ. TIME = 22:30



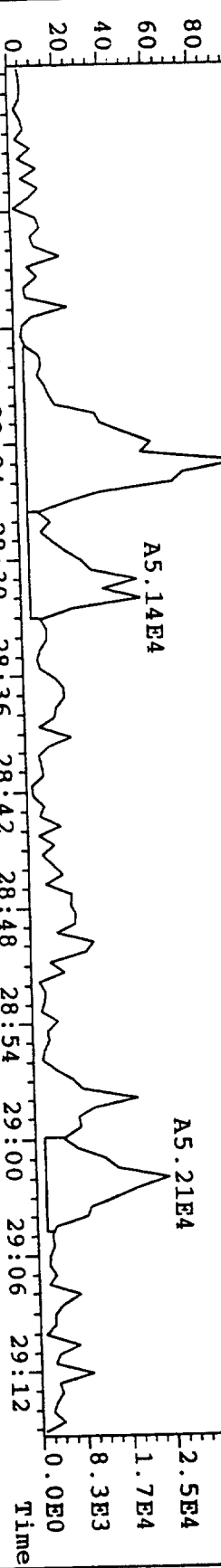
File:S975810 #1-430 Acq:10-SEP-1997 22:27:32 EI+ Voltage SIR 70S  
513.6775 F:4 Exp:EPCUS  
TRIANGLE LABS Text:O-M23-2 TLI#43057 INJ. TIME = 22:30



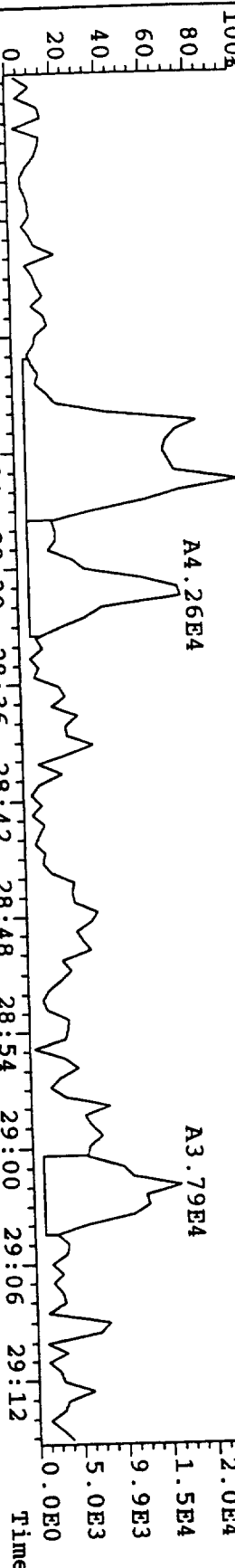




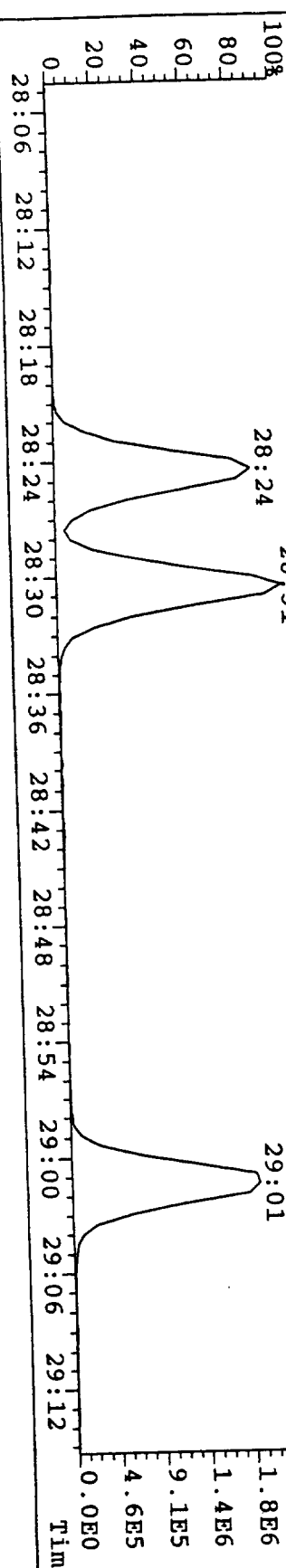
File: S975810 #1-405 Acq: 10-SEP-1997 22:27:32 EI+ Voltage SIR 70S  
 373.8208 F: 3 Exp: EPCUS  
 Sample Text: O-M23-2 TLI#43057  
 INJ. TIME = 22:30 File Text: O-M23-2 TLI#4  
 4.2E4



File: S975810 #1-405 Acq: 10-SEP-1997 22:27:32 EI+ Voltage SIR 70S  
 375.8178 F: 3 Exp: EPCUS  
 Sample Text: O-M23-2 TLI#43057  
 INJ. TIME = 22:30 File Text: O-M23-2 TLI#4  
 2.5E4



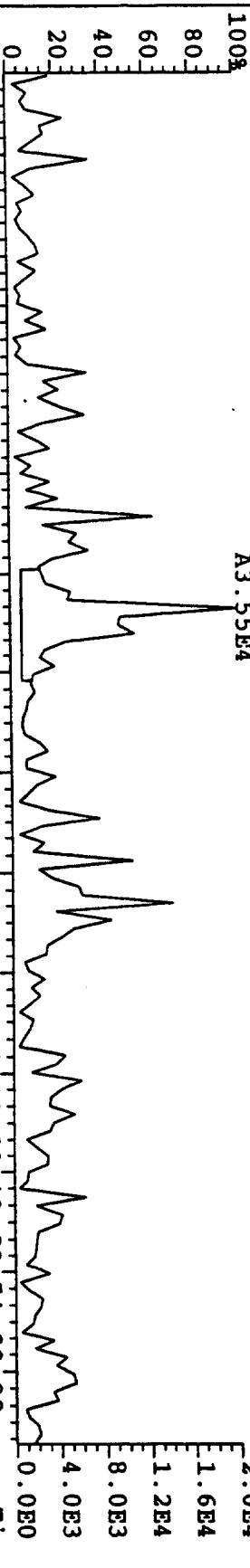
File: S975810 #1-405 Acq: 10-SEP-1997 22:27:32 EI+ Voltage SIR 70S  
 383.8639 F: 3 Exp: EPCUS  
 Sample Text: O-M23-2 TLI#43057  
 INJ. TIME = 22:30 File Text: O-M23-2 TLI#4  
 2.3E6



File:S975810 #1-405 Acq:10-SEP-1997 22:27:32 EI+ Voltage SIR 70S

389.8156 F:3 Exp:EPCUS

Sample Text:O-M23-2 TLI#43057



INJ. TIME = 22:30 File Text:O-M23-2 TLI#4

2.0E4

1.6E4

1.2E4

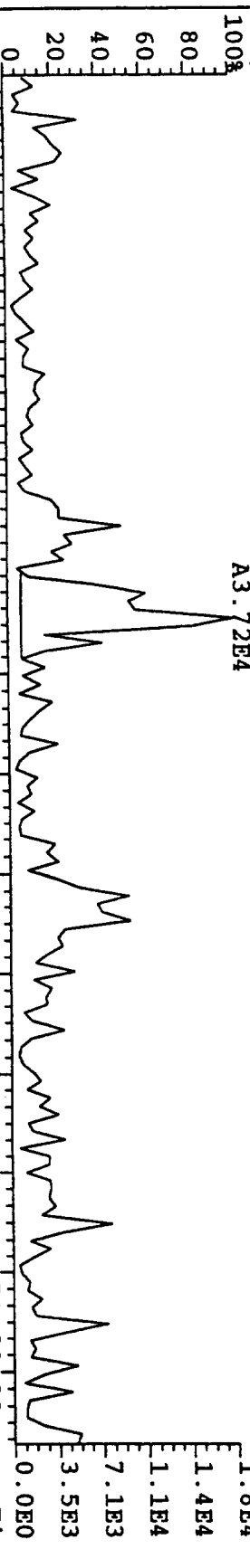
8.0E3

4.0E3

0.0E0

Time

File:S975810 #1-405 Acq:10-SEP-1997 22:27:32 EI+ Voltage SIR 70S  
391.8127 F:3 Exp:EPCUS  
Sample Text:O-M23-2 TLI#43057



INJ. TIME = 22:30 File Text:O-M23-2 TLI#4

1.8E4

1.4E4

1.1E4

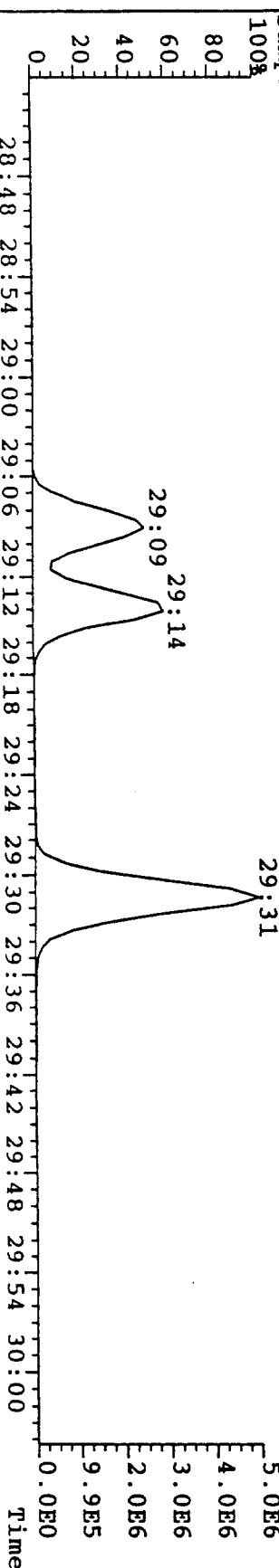
7.1E3

3.5E3

0.0E0

Time

File:S975810 #1-405 Acq:10-SEP-1997 22:27:32 EI+ Voltage SIR 70S  
401.8558 F:3 Exp:EPCUS  
Sample Text:O-M23-2 TLI#43057



INJ. TIME = 22:30 File Text:O-M23-2 TLI#4

5.0E6

4.0E6

3.0E6

2.0E6

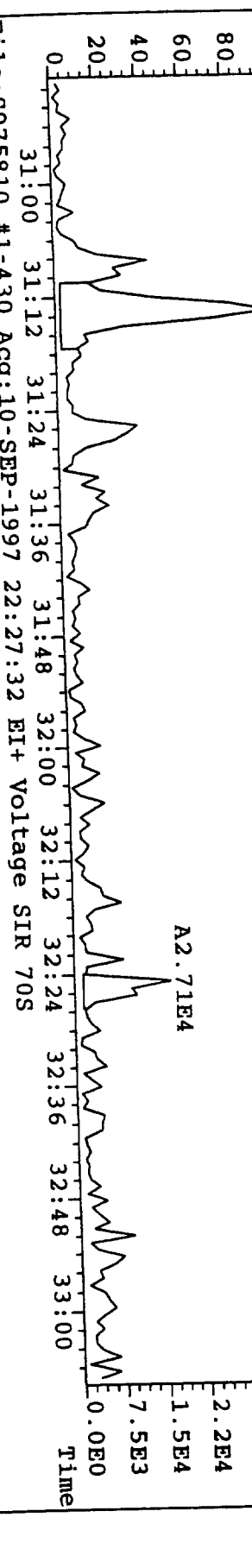
9.9E5

0.0E0

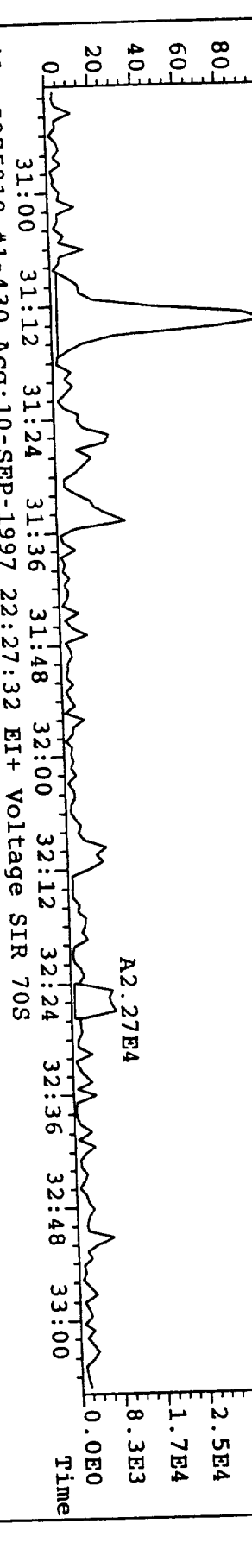
Time



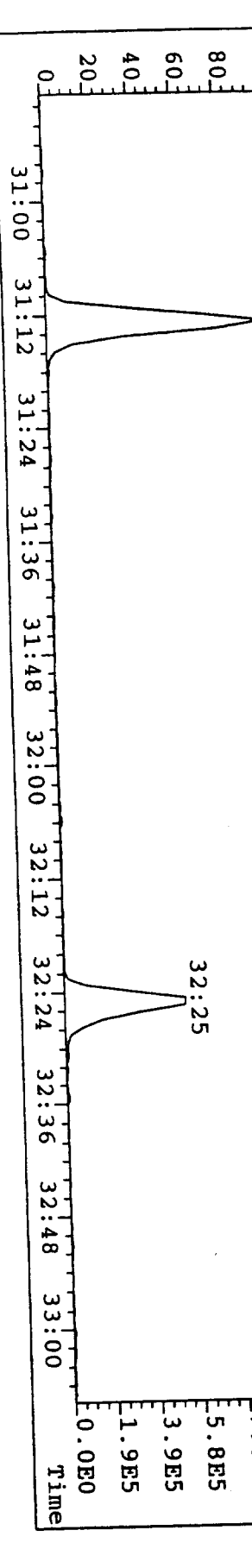
File: S975810 #1-430 Acq: 10-SEP-1997 22:27:32 EI+ Voltage SIR 70S  
 407.7818 F: 4 Exp: EPCUS  
 Sample Text: O-M23-2 TLI#43057  
 A1.05E5  
 INJ. TIME = 22:30 File Text: O-M23-2 TLI#4  
 3.7E4



File: S975810 #1-430 Acq: 10-SEP-1997 22:27:32 EI+ Voltage SIR 70S  
 409.7789 F: 4 Exp: EPCUS  
 Sample Text: O-M23-2 TLI#43057  
 A1.20E5  
 INJ. TIME = 22:30 File Text: O-M23-2 TLI#4  
 4.1E4

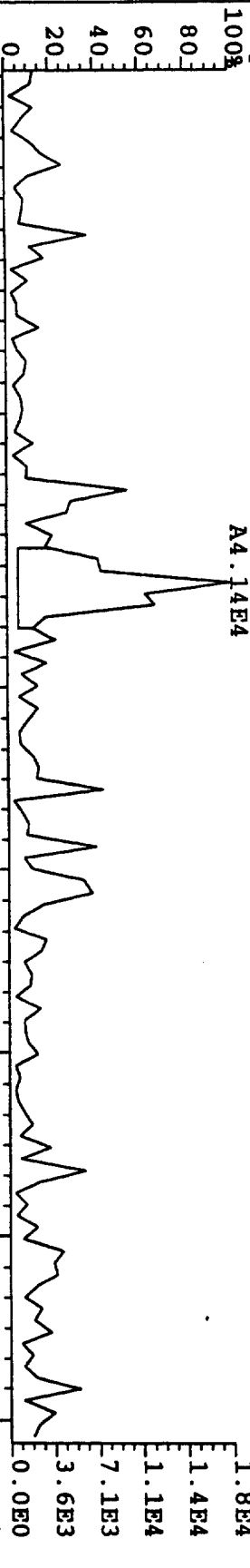


File: S975810 #1-430 Acq: 10-SEP-1997 22:27:32 EI+ Voltage SIR 70S  
 417.8253 F: 4 Exp: EPCUS  
 Sample Text: O-M23-2 TLI#43057  
 31.13  
 INJ. TIME = 22:30 File Text: O-M23-2 TLI#4  
 9.7E5



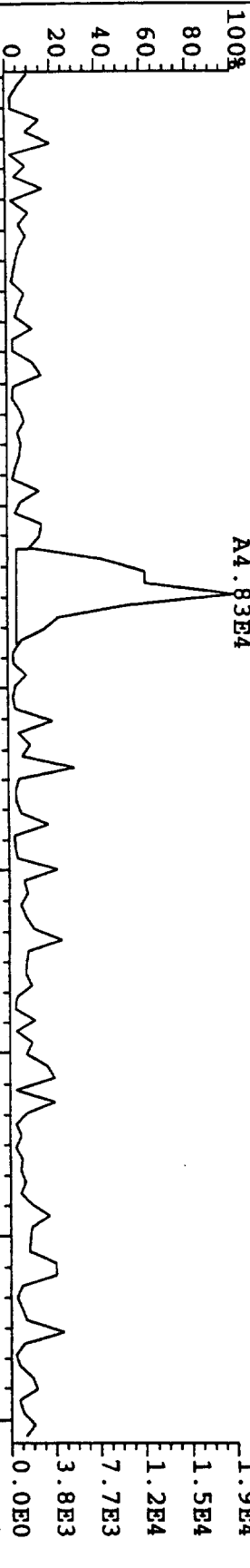
File: S975810 #1-430 Acq: 10-SEP-1997 22:27:32 EI+ Voltage SIR 70S  
423.7766 F:4 Exp: EPCUS  
Sample Text: O-M23-2 TLI#43057

INJ. TIME = 22:30 File Text: O-M23-2 TLI#4



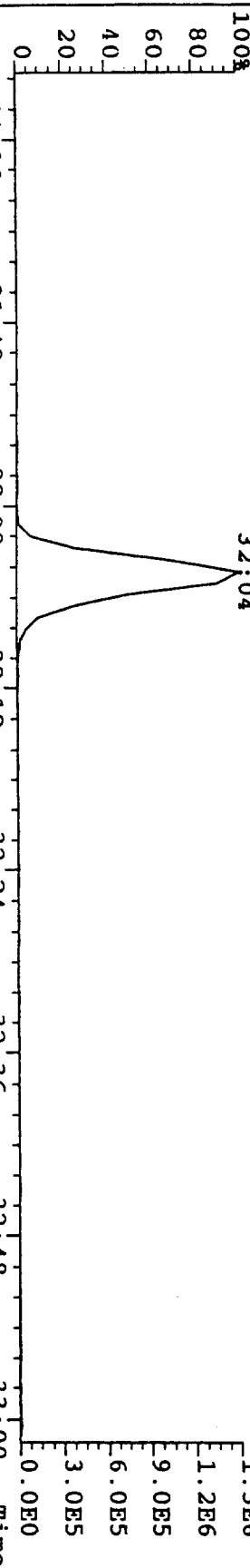
File: S975810 #1-430 Acq: 10-SEP-1997 22:27:32 EI+ Voltage SIR 70S  
425.7737 F:4 Exp: EPCUS  
Sample Text: O-M23-2 TLI#43057

INJ. TIME = 22:30 File Text: O-M23-2 TLI#4



File: S975810 #1-430 Acq: 10-SEP-1997 22:27:32 EI+ Voltage SIR 70S  
435.8169 F:4 Exp: EPCUS  
Sample Text: O-M23-2 TLI#43057

INJ. TIME = 22:30 File Text: O-M23-2 TLI#4





Initial ....Date...

Data Review By:

*AWB* 09/12/97

Calculated Noise Area: 2.11

The Total Area for each peak with an ion abundance ratio outside ratio limits has been recalculated according to method requirements.

Page No. 1 Listing of P973845B.dbf  
09/12/97 Matched GC Peaks / Ratio / Ret. Time

Compound/

M\_Z.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

TCDF		0.65-0.89				0.786-1.096			
304-306	DC NL	0:00	0.85	3.17				0.000	
	DC SN	19:03	RO 1.22	3.26				0.920	
	DC SN	19:26	RO 1.16	2.28				0.939	
	DC SN	20:42	RO 1.09	3.08				1.000	2378-TCDF AN
304-306	0 Peaks			0.00					
13C12-TCDF		0.65-0.89				0.952-1.048			
316-318	DC NL	0:00	RO 1.11	2.51				0.000	
	DC WL	19:27	RO 1.01	4.18				0.940	
		20:42	0.76	1,088.09	469.12	618.97	1.000	13C12-2378-TCDF	ISO
	DC SN	21:38	0.78	1.98				1.045	
	DC WH	22:34	RO 0.29	3.79				1.090	
316-318	1 Peak			1,088.09					

----- Above: TCDF / TCDD Follows -----

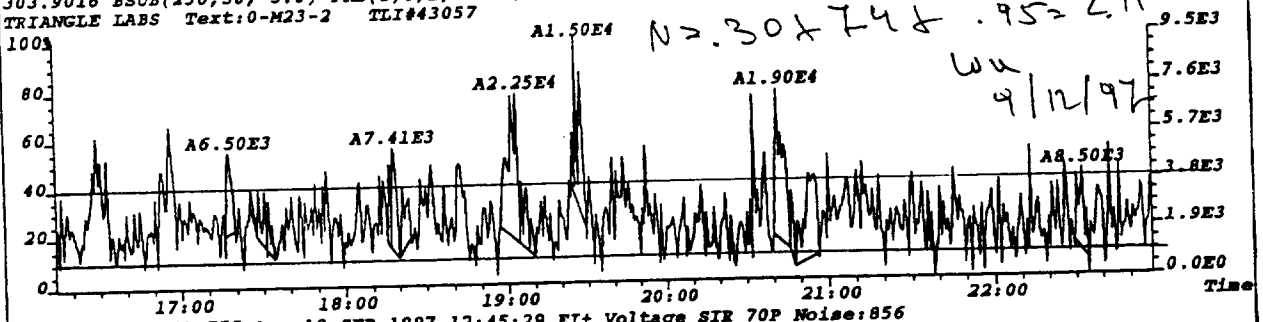
13C12-TCDD		0.65-0.89				0.897-1.103			
332-334	DC NL	0:00	RO 1.38	2.58				0.000	
	DC SN	19:01	RO 1.48	1.95				0.974	
		19:31	0.79	832.51	367.79	464.72	1.000	13C12-2378-TCDD	IS1
		19:44	0.79	1,495.20	661.22	833.98	1.011	13C12-1234-TCDD	RS1
		20:24	0.82	11.35	5.10	6.25	1.045		
	DC SN	20:29	RO 2.62	0.65				1.050	
	DC SN	20:58	RO 0.22	0.71				1.074	
	DC WH	21:45	RO 2.27	1.91				1.114	
332-334	3 Peaks			2,339.06					

Column Description..... "Why" Code Description..... QC Log Desc.....

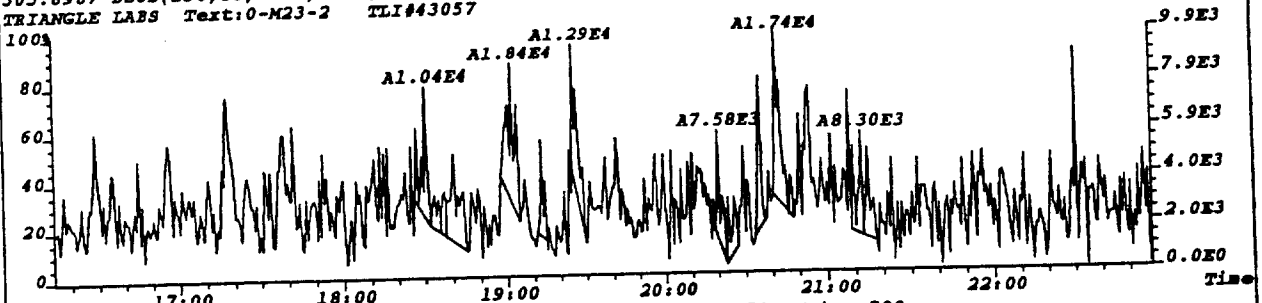
M\_Z -Nominal Ion Mass(es) WL-Below Retention Time Window A-Peak Added  
 ..RT. -Retention Time (mm:ss) WH-Above Retention Time Window K-Peak Kept  
 Rat.1 -Ratio of M/M+2 Ions SN-Below Signal to Noise Level D-Peak Deleted  
 OK -RO-Ratio Outside Limits <M-Below Method Detection Limit T-Time Changed  
 Rel.RT-Relative Retention Time NL-Channel Specific Noise Level M-Peak Area Changed  
 N-Name Changed  
 E-Ether Interference

\*\*\* End of Report \*\*\*

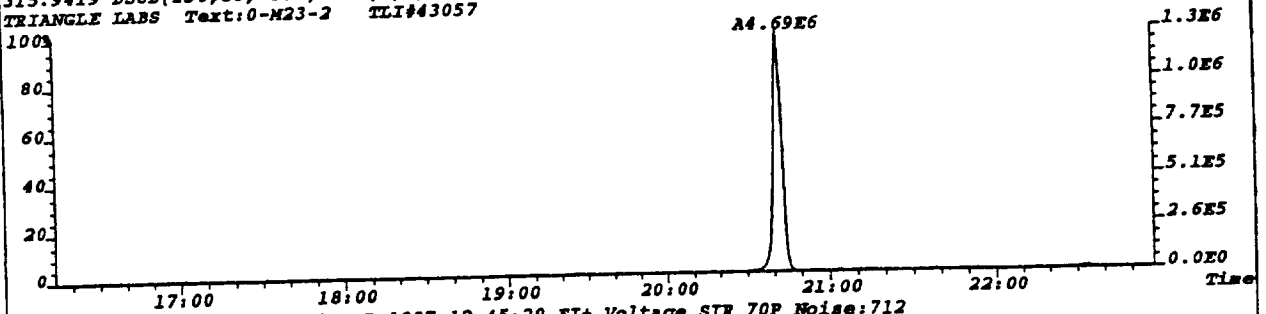
File:P973845 #1-755 Acq:12-SEP-1997 12:45:29 EI+ Voltage SIR 70P Noise:728  
303.9016 BSUB(256,30,-3.0) PKD(5,3,1,0.10%,2912.0,0.00%,F,F) Exp:DB225  
TRIANGLE LABS Text:0-M23-2 TLI#43057



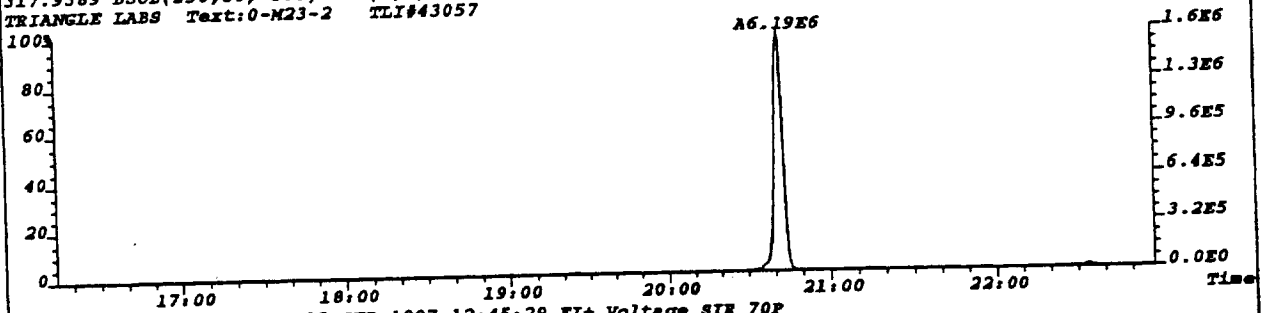
File:P973845 #1-755 Acq:12-SEP-1997 12:45:29 EI+ Voltage SIR 70P Noise:856  
305.8987 BSUB(256,30,-3.0) PKD(5,3,1,0.10%,3424.0,0.00%,F,F) Exp:DB225  
TRIANGLE LABS Text:0-M23-2 TLI#43057



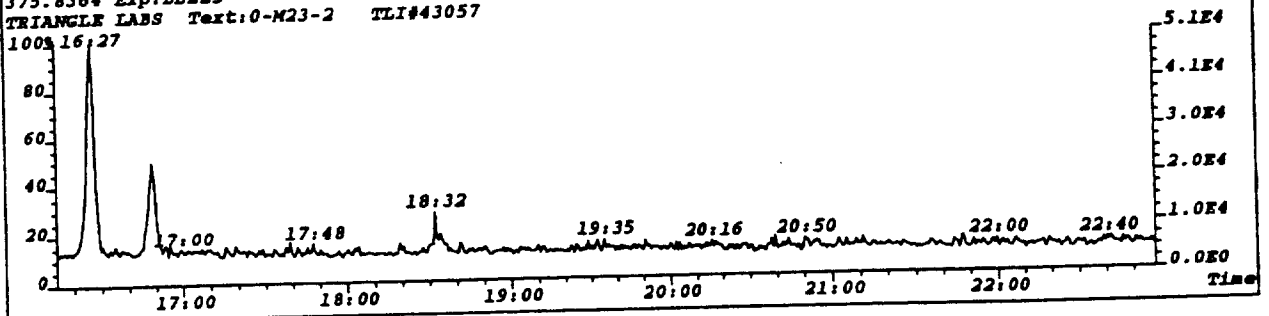
File:P973845 #1-755 Acq:12-SEP-1997 12:45:29 EI+ Voltage SIR 70P Noise:788  
315.9419 BSUB(256,30,-3.0) PKD(5,3,1,0.10%,3152.0,0.00%,F,F) Exp:DB225  
TRIANGLE LABS Text:0-M23-2 TLI#43057



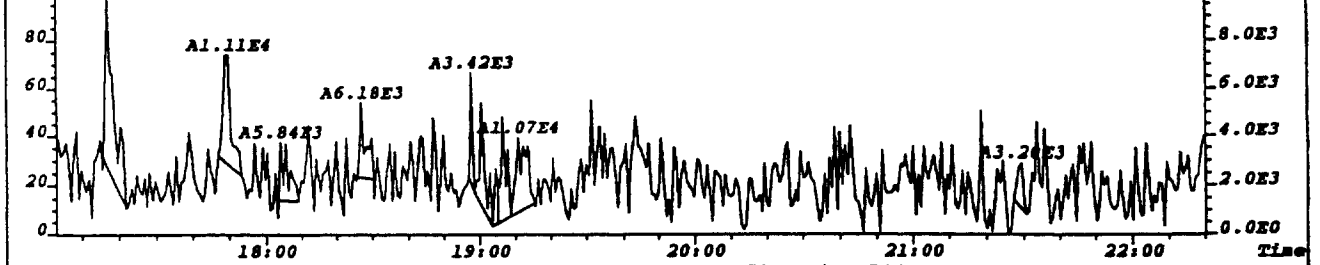
File:P973845 #1-755 Acq:12-SEP-1997 12:45:29 EI+ Voltage SIR 70P Noise:712  
317.9389 BSUB(256,30,-3.0) PKD(5,3,1,0.10%,2848.0,0.00%,F,F) Exp:DB225  
TRIANGLE LABS Text:0-M23-2 TLI#43057



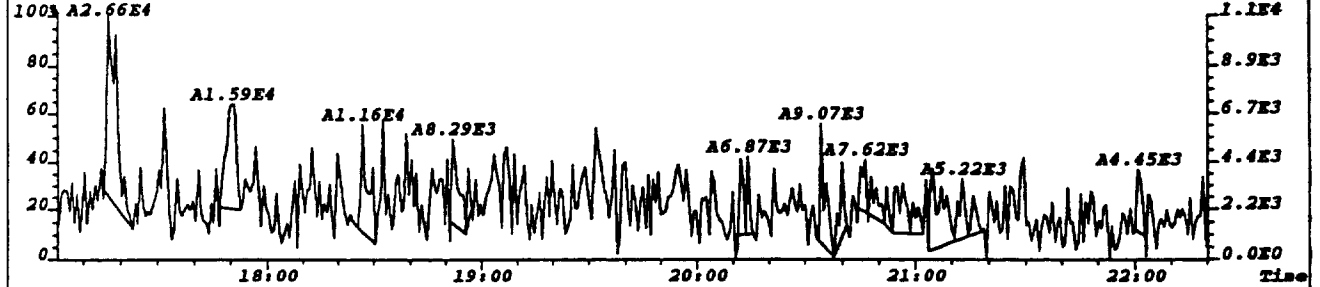
File:P973845 #1-755 Acq:12-SEP-1997 12:45:29 EI+ Voltage SIR 70P  
375.8364 Exp:DB225  
TRIANGLE LABS Text:0-M23-2 TLI#43057



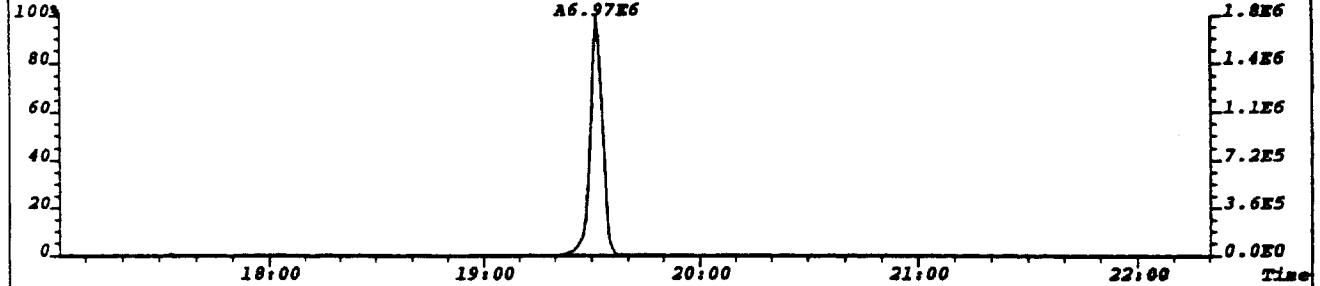
File:P973845 #1-755 Acq:12-SEP-1997 12:45:29 EI+ Voltage SIR 70P Noise:670  
319.8965 BSUB(256,30,-3.0) PKD(5,3,1,0.10%,2680.0,0.00%,F,F) Exp:DB225  
TRIANGLE LABS Text:0-M23-2 TLI#43057



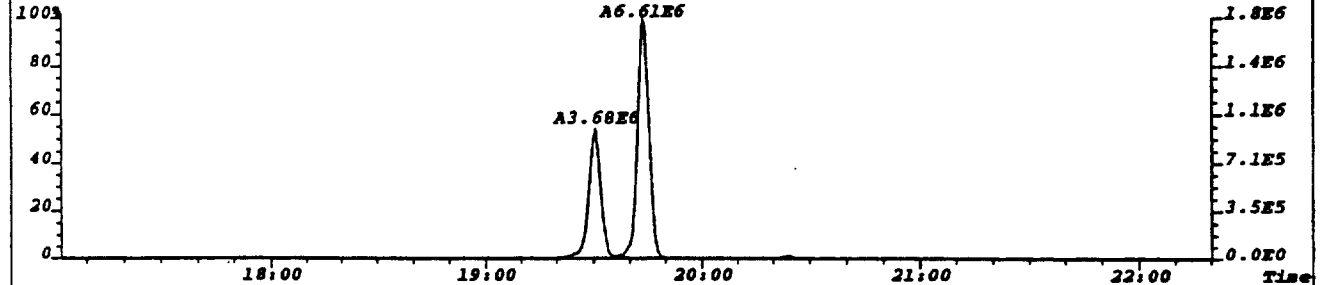
File:P973845 #1-755 Acq:12-SEP-1997 12:45:29 EI+ Voltage SIR 70P Noise:746  
321.8936 BSUB(256,30,-3.0) PKD(5,3,1,0.10%,2984.0,0.00%,F,F) Exp:DB225  
TRIANGLE LABS Text:0-M23-2 TLI#43057



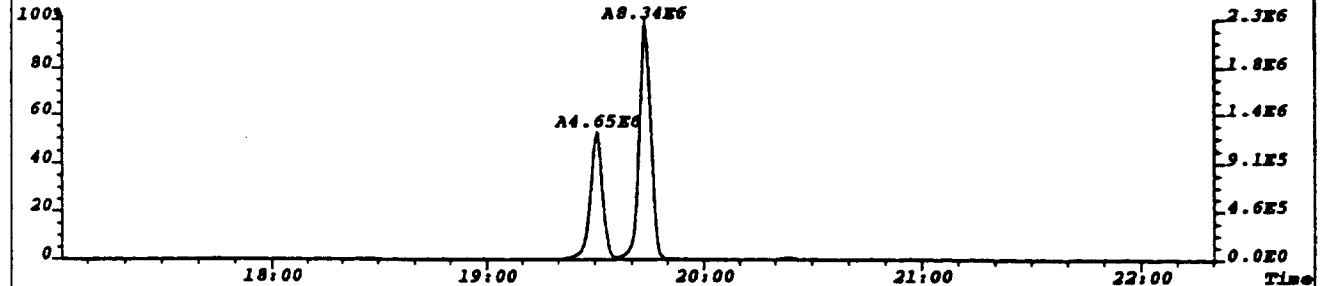
File:P973845 #1-755 Acq:12-SEP-1997 12:45:29 EI+ Voltage SIR 70P Noise:854  
327.8847 BSUB(256,30,-3.0) PKD(5,3,1,0.10%,3416.0,0.00%,F,F) Exp:DB225  
TRIANGLE LABS Text:0-M23-2 TLI#43057



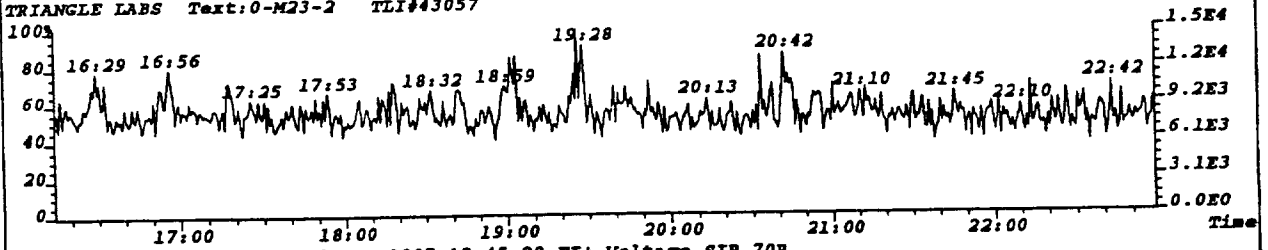
File:P973845 #1-755 Acq:12-SEP-1997 12:45:29 EI+ Voltage SIR 70P Noise:1009  
331.9368 BSUB(256,30,-3.0) PKD(5,3,1,0.10%,4036.0,0.00%,F,F) Exp:DB225  
TRIANGLE LABS Text:0-M23-2 TLI#43057



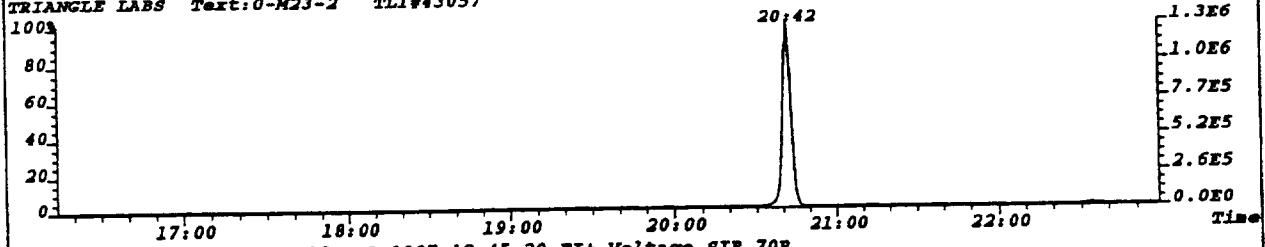
File:P973845 #1-755 Acq:12-SEP-1997 12:45:29 EI+ Voltage SIR 70P Noise:729  
333.9338 BSUB(256,30,-3.0) PKD(5,3,1,0.10%,2916.0,0.00%,F,F) Exp:DB225  
TRIANGLE LABS Text:0-M23-2 TLI#43057



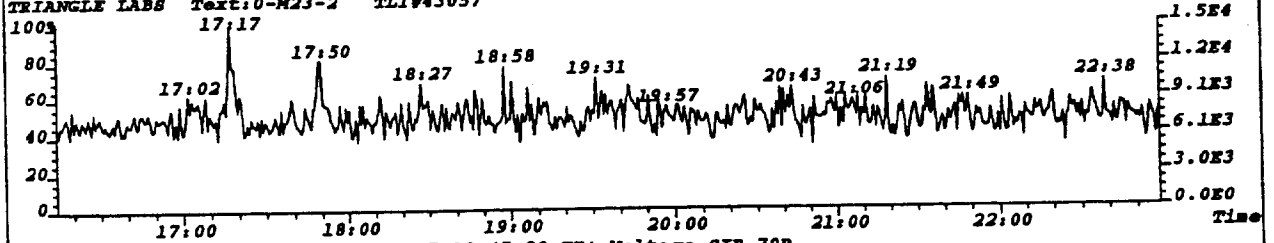
File:P973845 #1-755 Acq:12-SEP-1997 12:45:29 EI+ Voltage SIR 70P  
303.9016 Exp:DB225  
TRIANGLE LABS Text:0-M23-2 TLI#43057



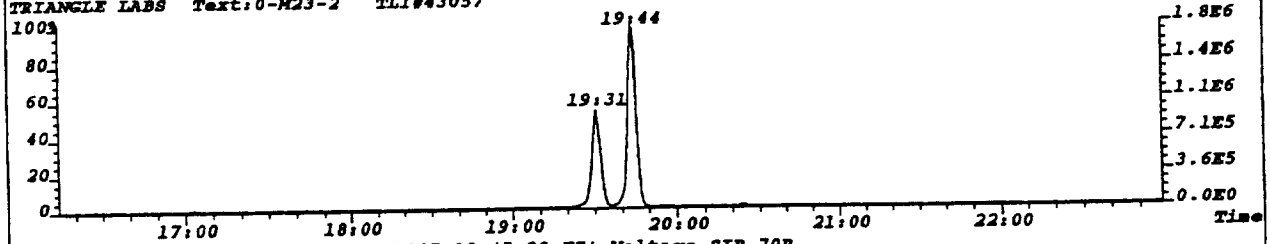
File:P973845 #1-755 Acq:12-SEP-1997 12:45:29 EI+ Voltage SIR 70P  
315.9419 Exp:DB225  
TRIANGLE LABS Text:0-M23-2 TLI#43057



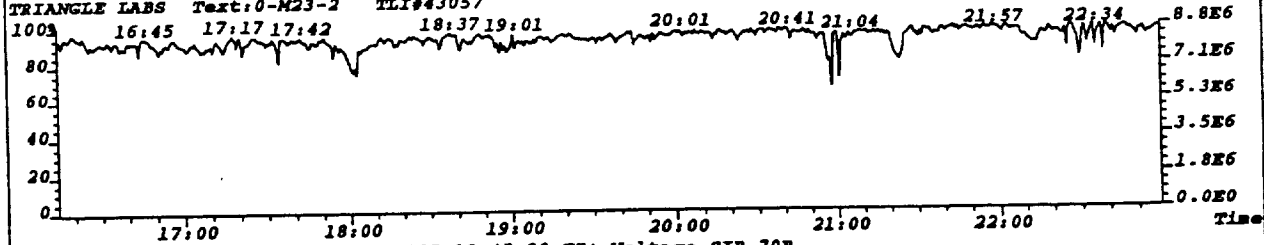
File:P973845 #1-755 Acq:12-SEP-1997 12:45:29 EI+ Voltage SIR 70P  
319.8965 Exp:DB225  
TRIANGLE LABS Text:0-M23-2 TLI#43057



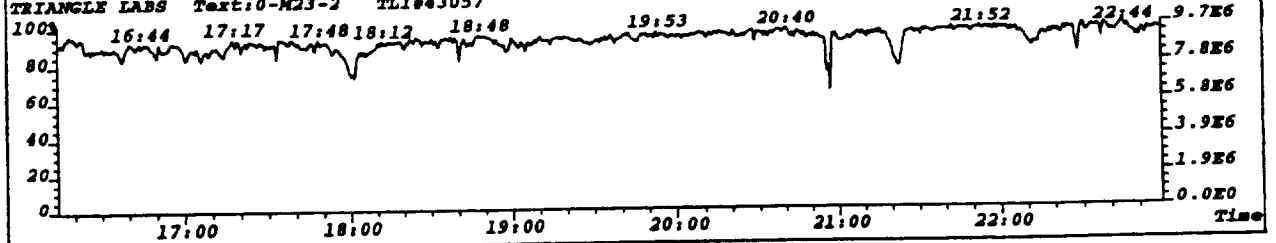
File:P973845 #1-755 Acq:12-SEP-1997 12:45:29 EI+ Voltage SIR 70P  
331.9368 Exp:DB225  
TRIANGLE LABS Text:0-M23-2 TLI#43057

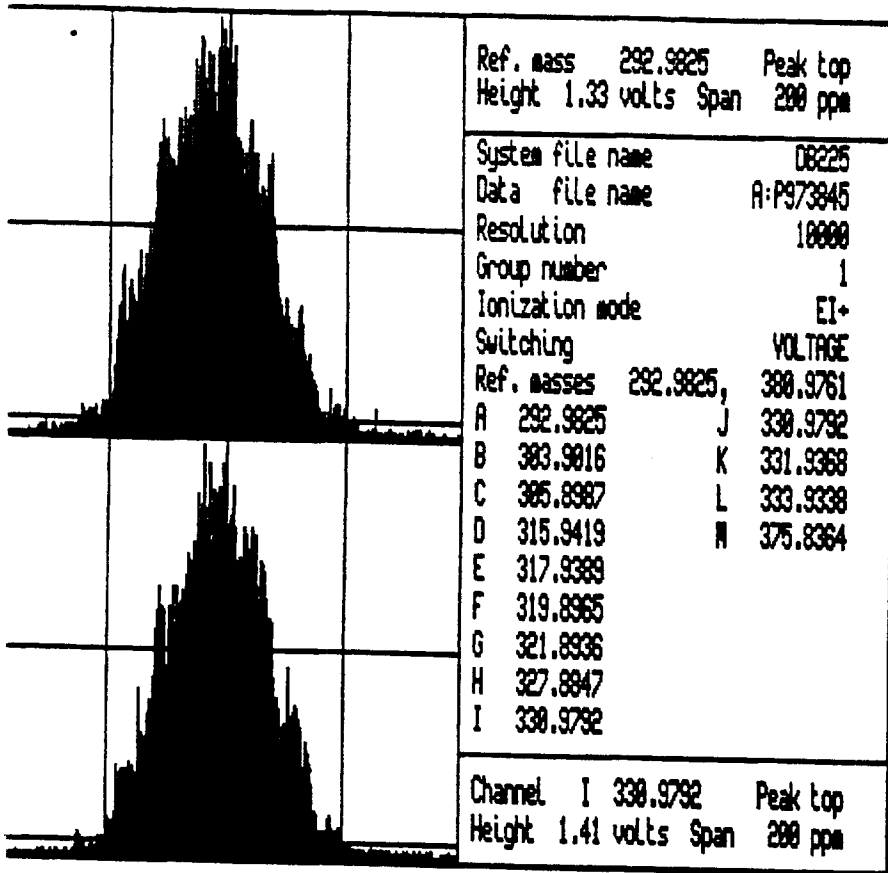


File:P973845 #1-755 Acq:12-SEP-1997 12:45:29 EI+ Voltage SIR 70P  
292.9825 Exp:DB225  
TRIANGLE LABS Text:0-M23-2 TLI#43057



File:P973845 #1-755 Acq:12-SEP-1997 12:45:29 EI+ Voltage SIR 70P  
330.9792 Exp:DB225  
TRIANGLE LABS Text:0-M23-2 TLI#43057







**Pacific Environmental Services**

TLI Project: **43057**  
 Client Sample: **O-M23-3**

Method 23 PCDD/PCDF Analysis (a)  
 Analysis File: **S975811**

Client Project: <i>ASPHALT PLANT "A"</i>	Date Received: <b>08/29/97</b>	Spike File: <b>SPX23704</b>
Sample Matrix: <b>M23TRAIN</b>	Date Extracted: <b>09/06/97</b>	ICal: <b>SF56117</b>
TLI ID: <b>181-27-4A-C</b>	Date Analyzed: <b>09/10/97</b>	ConCal: <b>S975797</b>
Sample Size: <b>1.000</b>	Dilution Factor: <b>n/a</b>	% Moisture: <b>n/a</b>
Dry Weight: <b>n/a</b>	Blank File: <b>S975807</b>	% Lipid: <b>n/a</b>
GC Column: <b>DB-5</b>	Analyst: <b>ML</b>	% Solids: <b>n/a</b>

Analytes	Amt. (ng)	DL	EMPC	Ratio	RT	Flags
2,3,7,8-TCDD	EMPC		0.003			—
1,2,3,7,8-PeCDD	0.005			1.49	25:55	—
1,2,3,4,7,8-HxCDD	0.008			1.10	29:11	—
1,2,3,6,7,8-HxCDD	0.02			1.41	29:16	—
1,2,3,7,8,9-HxCDD	EMPC		0.01			PR_
1,2,3,4,6,7,8-HpCDD	0.06			1.05	32:07	B_
1,2,3,4,6,7,8,9-OCDD	0.13			0.80	34:36	B_
2,3,7,8-TCDF	0.02			0.73	20:28	B_
1,2,3,7,8-PeCDF	0.007			1.61	24:45	—
2,3,4,7,8-PeCDF	0.01			1.32	25:31	B_
1,2,3,4,7,8-HxCDF	0.06			1.20	28:25	PRB
1,2,3,6,7,8-HxCDF	0.02			1.14	28:32	B_
2,3,4,6,7,8-HxCDF	0.02			1.09	29:02	PRB
1,2,3,7,8,9-HxCDF	ND	0.003				—
1,2,3,4,6,7,8-HpCDF	0.09			1.00	31:16	PRB
1,2,3,4,7,8,9-HpCDF	EMPC		0.03			B_
1,2,3,4,6,7,8,9-OCDF	0.06			0.82	34:42	B_

Totals	Amt (ng)	Number	DL	EMPC	Flags
Total TCDD	0.01	2		0.02	—
Total PeCDD	0.03	3		0.05	—
Total HxCDD	0.15	5		0.16	—
Total HpCDD	0.06	1		0.11	—
Total TCDF	0.03	3		0.04	—
Total PeCDF	0.06	6		0.07	—
Total HxCDF	0.17	7			—
Total HpCDF	0.09	1		0.17	—



Initial CA Date 9/12/97

Data Review By: \_\_\_\_\_ Calculated Noise Area: 1.55

The Total Area for each peak with an ion abundance ratio outside ratio limits has been recalculated according to method requirements.

Page No. 1 Listing of S975811B.dbf  
09/12/97 Matched GC Peaks / Ratio / Ret. Time

Compound/  
M\_2.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

TCDF		0.65-0.89				0.823-1.104			
304-306	DC NL	0:00	RO	1.14	0.12				0.000
	DC SN	17:24	RO	1.84	0.80				0.852
	DC SN	17:26	RO	2.19	2.00				0.854
	DC SN	17:43	RO	0.48	4.71				0.868
D	D SN	18:07		0.89	7.30				0.887
D	D SN	18:27	RO	1.01	12.55				0.904
D	D SN	19:17		0.68	14.25				0.944
A		19:34		0.81	17.93	8.01	9.92	0.958	
M		19:44		0.72	10.72	4.47	6.25	0.967	
		19:58	RO	0.95	35.86	19.29	20.26	0.978	
	DC SN	20:15		0.77	6.36				0.992
		20:28		0.73	65.40	27.55	37.85	1.002	2378-TCDF AN
D	D SN	20:56	RO	1.00	9.77				1.025
		22:21	RO	0.90	17.13	8.67	9.68	1.095	
	DC WH	22:38		0.88	2.76				1.109
304-306	5 Peaks				147.04				
13C12-TCDF		0.65-0.89				0.951-1.049			
316-318	DC NL	0:00	RO	5.88	0.14				0.000
	DC WL	19:15		0.84	17.19				0.943
		19:57		0.89	48.30	22.68	25.62	0.977	
		20:25		0.76	11,230.27	4,833.79	6,396.48	1.000	13C12-2378-TCDF ISO
		20:55	RO	1.11	35.82	22.46	20.24	1.024	
316-318	3 Peaks				11,314.39				

----- Above: TCDF / TCDD Follows -----

TCDD		0.65-0.89				0.857-1.061			
320-322	DC NL	0:00	RO	1.17	0.11				0.000
	DC WL	18:08	RO	1.00	0.37				0.853
		18:22		0.84	20.83	9.48	11.35	0.864	
	DC SN	18:40	RO	1.17	0.94				0.878
D		18:51		0.68	9.52	3.85	5.67	0.887	
	D SN	19:55		0.84	7.63				0.937
	DC SN	20:14	RO	1.01	1.79				0.952
	DC SN	20:26	RO	2.69	3.40				0.962
	DC SN	20:40	RO	0.63	2.46				0.973
	DC SN	20:47		0.67	1.10				0.978
	DC SN	21:00		0.74	2.56				0.988
	DC SN	21:08	RO	2.10	2.53				0.995
MK		21:17	RO	0.38	5.98	2.60	6.81	1.002	2378-TCDD AN
	DC SN	21:36	RO	0.49	1.06				1.016
	DC SN	22:24	RO	0.98	1.03				1.054

Compound/

M\_2.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

Compound/	QC.Log	Omit	Why	..RT.	OK	Ratio	Total.Area...	Area.Peak.1..	Area.Peak.2..	Rel.RT	Compound.Name..	ID..	Flags.
320-322							36.33						
37C1-TCDD										0.906-1.094			
328	DC	NL		0:00			0.06			0.000			
				19:42			12.62	12.62		0.927			
				21:16			6,682.06	6,682.06		1.001	37C1-TCDD	SUR1	
328							6,694.68						
13C12-TCDD										0.906-1.094			
332-334	DC	NL		0:00	RO	11.11	0.16			0.000			
				19:55	RO	0.90	38.25	19.55		21.61	0.937		
				21:02		0.80	4,631.87	2,054.00		2,577.87	0.990	13C12-1234-TCDD	RS1
				21:15		0.80	8,057.34	3,572.72		4,484.62	1.000	13C12-2378-TCDD	IS1
				21:38	RO	0.93	115.35	60.39		65.17	1.018		
332-334							12,842.81						

----- Above: TCDD / PeCDF Follows -----

Compound/	QC.Log	Omit	Why	..RT.	OK	Ratio	Total.Area...	Area.Peak.1..	Area.Peak.2..	Rel.RT	Compound.Name..	ID..	Flags.
PeCDF										0.909-1.079			
340-342	DC	NL		0:00	RO	0.89	0.13			0.000			
	DC	SN		22:30	RO	0.68	1.84			0.909			
				22:39		1.64	15.92	9.89		6.03	0.915		
	DC	SN		22:53	RO	0.30	0.41			0.925			
	DC	SN		23:18	RO	0.61	0.72			0.941			
D	D	SN		23:43	RO	1.25	8.67			0.958			
				23:51		1.34	41.00	23.45		17.55	0.964		
D	D	SN		24:02		1.40	8.29			0.971			
D	D	SN		24:12		1.36	7.91			0.978			
A				24:25		1.39	36.10	21.00		15.10	0.987		
A				24:40	RO	1.92	13.92	10.50		5.46	0.997		
AN				24:45		1.61	16.68	10.30		6.38	1.000	12378-PeCDF	AN
	DC	SN		24:57	RO	1.18	5.00			1.008			
				25:04		1.36	14.32	8.25		6.07	1.013		
				25:31		1.32	28.52	16.23		12.29	1.031	23478-PeCDF	AN
D	D	SN		25:41		1.51	15.93			1.038			
	DC	SN		25:59	RO	0.67	3.69			1.050			
D	D	SN		26:31	RO	2.18	8.13			1.071			
	DC	SN		26:38	RO	1.04	1.25			1.076			
340-342							166.46						
13C12-PeCDF										0.838-1.162			
352-354	DC	NL		0:00	RO	1.00	0.12			0.000			
				23:51		1.61	36.62	22.57		14.05	0.964		
				24:23		1.33	42.06	23.97		18.09	0.985		
				24:45		1.45	8,446.74	5,005.88		3,440.86	1.000	13C12-PeCDF 123	IS2
				24:56	RO	0.93	27.98	17.01		18.20	1.007		
				25:04		1.36	55.81	32.18		23.63	1.013		
				25:31		1.45	7,255.87	4,294.07		2,961.80	1.031	13C12-PeCDF 234	SUR2
				26:30		1.49	15.15	9.06		6.09	1.071		
352-354							15,880.23						

Compound/  
M\_2.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

----- Above: PeCDF / PeCDD Follows -----

PeCDD	1.32-1.78				0.921-1.026			
356-358	DC NL	0:00	1.33	0.14				0.000
		24:00	RO 0.75	18.34	11.15	14.78	0.927	
	DC SN	24:12	1.41	1.66			0.935	
	DC SN	24:31	RO 2.13	1.58			0.947	
		24:47	1.51	26.98	16.21	10.77	0.958	
	DC SN	24:54	RO 1.04	2.47			0.962	
		25:06	1.59	19.78	12.15	7.63	0.970	
K		25:55	1.49	7.06	4.22	2.84	1.001	12378-PeCDD AN
	DC SN	26:03	RO 0.90	2.29			1.006	
	DC SN	26:22	RO 0.96	3.24			1.019	
356-358	4 Peaks			72.16				

13C12-PeCDD	1.32-1.78				0.845-1.155			
368-370	DC NL	0:00	RO 1.17	0.12				0.000
	DC SN	24:48	1.38	5.26				0.958
		25:53	1.50	4,994.81	2,999.63	1,995.18	1.000	13C12-PeCDD 123 IS3
		26:02	1.52	457.99	276.47	181.52	1.006	
368-370	2 Peaks			5,452.80				

----- Above: PeCDD / HxCDF Follows -----

HxCDF	1.05-1.43				0.957-1.053			
374-376	DC NL	0:00	RO 1.87	2.60				0.000
		27:25	1.18	29.45	15.93	13.52	0.961	
		27:34	1.15	60.86	32.57	28.29	0.967	
		27:53	1.31	12.18	6.91	5.27	0.978	
		28:03	1.31	9.11	5.17	3.94	0.984	
		28:25	1.20	87.48	47.75	39.73	0.996	123478-HxCDF AN PR
		28:32	1.14	37.44	19.94	17.50	1.001	123678-HxCDF AN
D	D SN	28:38	1.42	9.37			1.004	
D	D SN	28:51	1.19	11.62			1.012	
		29:02	1.09	38.17	19.94	18.23	1.018	234678-HxCDF AN PR
	DC SN	29:10	RO 0.39	1.07			1.023	
	D SN	29:51	RO 0.97	14.22			1.047	
D	DC WH	30:10	RO 1.54	0.87			1.058	
	DC WH	30:12	RO 0.55	0.74			1.059	
	DC WH	30:17	RO 1.44	2.67			1.062	
374-376	7 Peaks			274.69				

13C12-HxCDF	0.43-0.59				0.859-1.141			
384-386	DC NL	0:00	RO 0.29	1.66				0.000
		27:35	0.47	11.85	3.79	8.06	0.967	
		28:24	0.50	4,748.79	1,587.75	3,161.04	0.996	13C12-HxCDF 478 SUR3
		28:31	0.50	5,041.60	1,680.96	3,360.64	1.000	13C12-HxCDF 678 IS4
		29:02	0.50	4,322.80	1,442.18	2,880.62	1.018	13C12-HxCDF 234 ALT2
		29:44	0.50	2,605.10	863.60	1,741.50	1.043	13C12-HxCDF 789 ALT1
384-386	5 Peaks			16,730.14				

Compound/  
M\_2.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

----- Above: HxCDF / HxCDD Follows -----

HxCDD		1.05-1.43				0.951-1.015			
390-392	DC NL	0:00	RO	1.69	1.68			0.000	
	DC SN	27:49	RO	1.92	1.12			0.952	
		27:57		1.12	11.13	5.87	5.26	0.956	
	DC SN	28:05	RO	0.80	1.08			0.961	
	DC SN	28:14	RO	1.02	1.07			0.966	
		28:25		1.34	81.45	46.69	34.76	0.972	
		28:39		1.06	34.17	17.62	16.55	0.980	
		29:11		1.10	7.34	3.85	3.49	0.998	123478-HxCDD AN
		29:16		1.41	18.22	10.65	7.57	1.001	123678-HxCDD AN
M		29:32	RO	0.93	15.50	8.58	9.20	1.010	123789-HxCDD AN FR
	DC WH	29:51		1.06	0.74			1.021	
	DC WH	29:56	RO	2.27	0.83			1.024	
390-392		6 Peaks			167.81				

13C12-HxCDD		1.05-1.43				0.966-1.034			
402-404	DC NL	0:00	RO	0.76	1.55			0.000	
		28:38		1.32	15.50	8.83	6.67	0.979	
		29:10		1.25	3,306.01	1,838.10	1,467.91	0.998	13C12-HxCDD 478 SUR4
		29:14		1.22	3,863.39	2,122.72	1,740.67	1.000	13C12-HxCDD 678 IS5
		29:32		1.21	2,240.36	1,225.15	1,015.21	1.010	13C12-HxCDD 789 RS2
	DC SN	29:45	RO	0.21	0.83			1.018	
	DC SN	29:45		1.07	3.39			1.018	
402-404		4 Peaks			9,425.26				

----- Above: HxCDD / HpCDF Follows -----

HpCDF		0.88-1.20				0.995-1.045			
408-410	DC NL	0:00	RO	1.94	1.67			0.000	
M		31:16		1.00	70.60	35.30	35.30	1.001	1234678-HpCDF AN FR
		31:29	RO	1.30	14.99	9.52	7.35	1.007	
		31:37	RO	1.21	22.73	13.53	11.14	1.012	
	DC SN	31:53	RO	1.22	1.29			1.020	
M		32:29	RO	1.37	15.81	10.60	7.75	1.039	1234789-HpCDF AN
408-410		4 Peaks			124.13				

13C12-HpCDF		0.37-0.51				0.936-1.128			
418-420	DC NL	0:00	RO	1.14	1.31			0.000	
		31:15		0.43	2,076.79	620.98	1,455.81	1.000	13C12-HpCDF 678 IS6
	DC SN	31:34	RO	0.94	1.89			1.010	
		32:27		0.40	1,462.44	417.67	1,044.77	1.038	13C12-HpCDF 789 SUR5
418-420		2 Peaks			3,539.23				

----- Above: HpCDF / HpCDD Follows -----

HpCDD		0.88-1.20				0.977-1.006			
424-426	DC NL	0:00		1.00	0.12			0.000	
	DC WL	31:15	RO	2.83	3.28			0.973	
	DC SN	31:23		1.00	1.52			0.977	
		31:31	RO	0.78	24.26	12.37	15.89	0.981	

Compound/  
M\_Z.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1... Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

Compound	QC	Log	Omit	Why	RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Rel.RT	Compound.Name	ID	Flags
M	DC	SN			31:49		0.89	1.08			0.991			
					32:07		1.05	33.60	17.20	16.40	1.000	1234678-HpCDD	AN	
424-426	DC	WH			32:27	RO	2.44	3.12			1.010			
					2 Peaks			57.86						
13C12-HpCDD					0.88-1.20						0.969-1.031			
	DC	NL			0:00	RO	1.33	2.18			0.000			
436-438	DC	SN			31:31		1.11	4.93			0.981			
					32:07		1.08	1,993.23	1,032.68	960.55	1.000	13C12-HpCDD 678 IS7		
436-438	DC	SN			32:19	RO	0.79	3.02			1.006			
					1 Peak			1,993.23						

----- Above: HpCDD / Octa-CDD and CDF Follows -----

Compound	QC	Log	Omit	Why	RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Rel.RT	Compound.Name	ID	Flags
OCDF					0.76-1.02						0.884-1.116			
	DC	NL			0:00	RO	0.25	0.15			0.000			
442-444	DC	SN			30:45	RO	3.21	0.45			0.889			
	DC	SN			31:01	RO	1.25	0.68			0.897			
	DC	SN			31:16	RO	1.78	0.87			0.904			
	DC	SN			31:40		0.93	2.26			0.916			
	DC	SN			31:49	RO	0.14	0.21			0.920			
	DC	SN			32:00	RO	0.15	0.30			0.925			
	DC	SN			32:16	RO	0.32	0.47			0.933			
	DC	SN			32:44	RO	10.86	0.13			0.947			
	DC	SN			33:01	RO	1.81	0.59			0.955			
	DC	SN			33:17	RO	1.39	1.34			0.962			
	DC	SN			33:59	RO	0.74	0.49			0.983			
	DC	SN			34:24	RO	0.55	0.59			0.995			
	DC	SN			34:29	RO	1.76	0.85			0.997			
442-444					34:42		0.82	18.35	8.27	10.08	1.003	OCDF	AN	
	DC	SN			34:56	RO	1.20	1.34			1.010			
	DC	SN			35:20	RO	0.46	1.13			1.022			
	DC	SN			35:35	RO	0.33	0.81			1.029			
					1 Peak			18.35						

Compound	QC	Log	Omit	Why	RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Rel.RT	Compound.Name	ID	Flags
OCDD					0.76-1.02						0.884-1.116			
	DC	NL			0:00	RO	1.17	0.11			0.000			
458-460	DC	SN			34:24	RO	1.34	1.06			0.995			
					34:36		0.80	26.24	11.70	14.54	1.000	OCDD	AN	
458-460	DC	SN			34:54	RO	2.15	0.25			1.009			
					1 Peak			26.24						

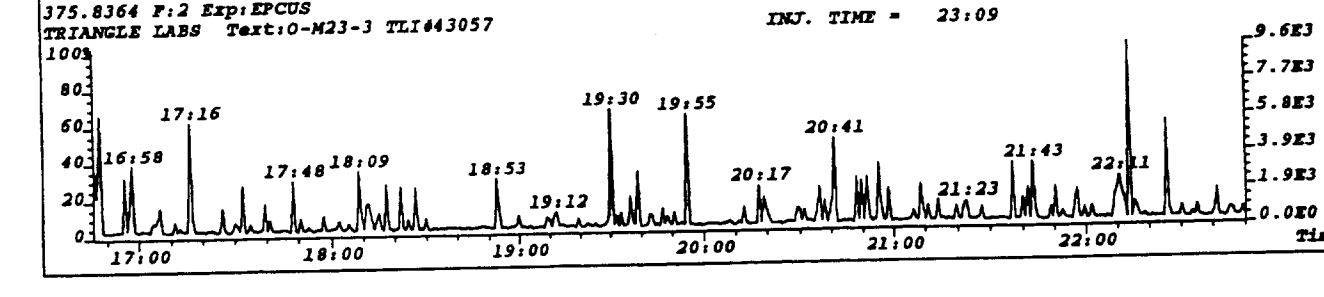
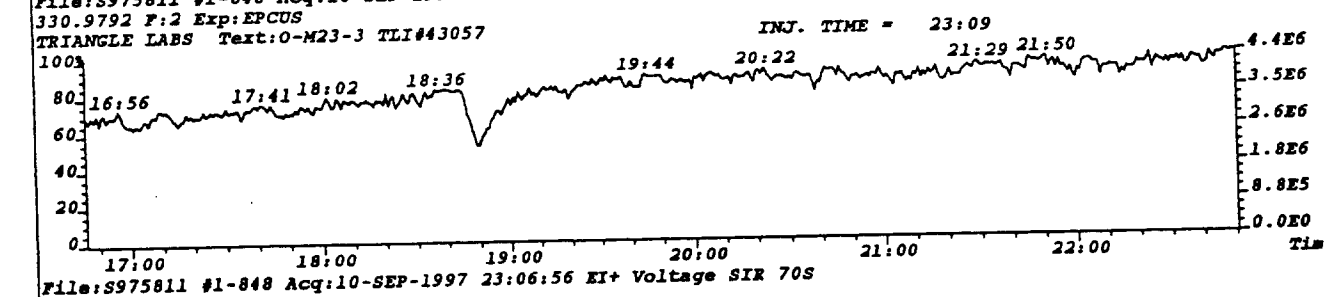
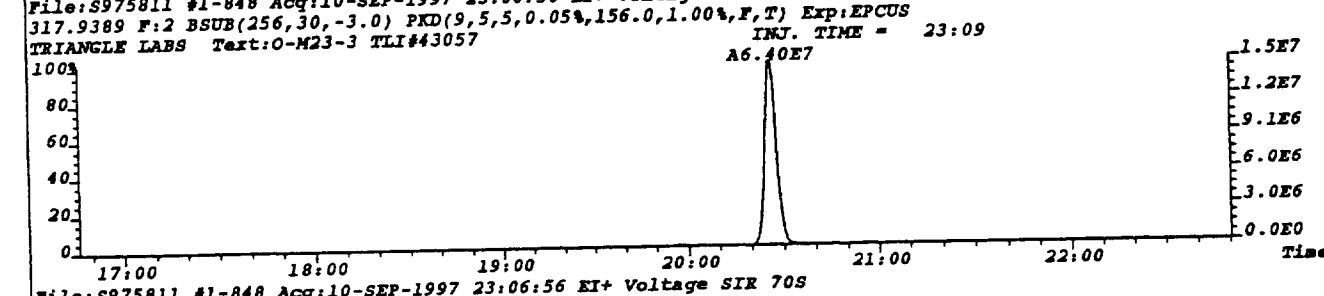
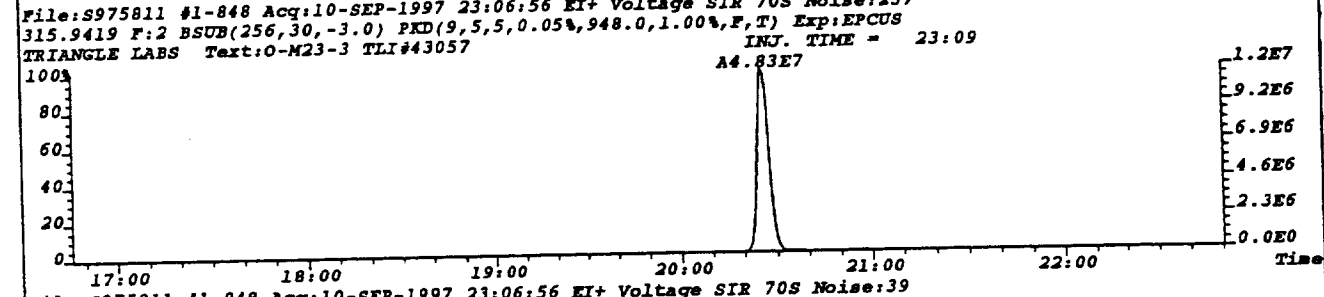
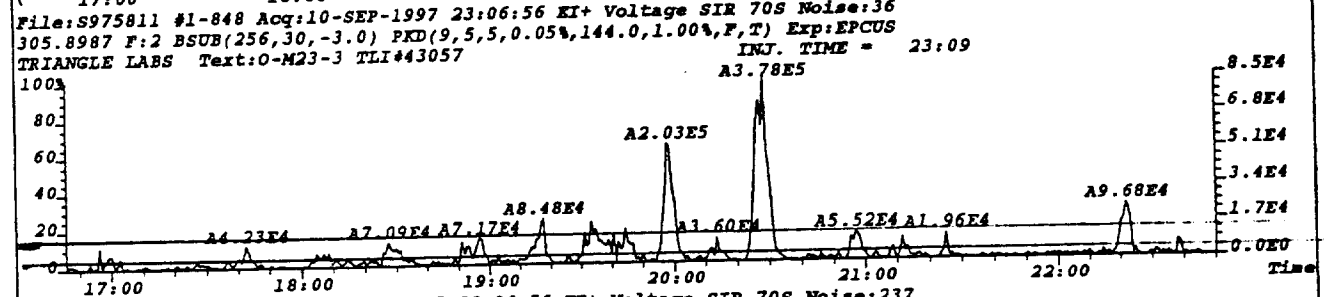
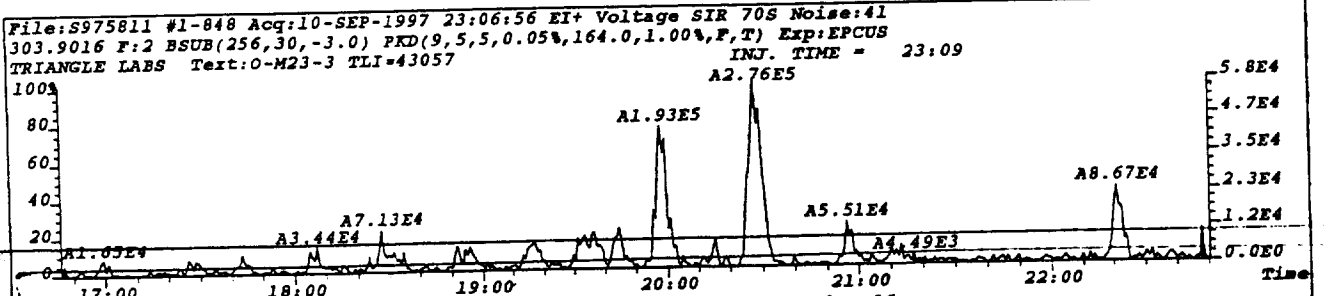
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13C12-OCDD					0.76-1.02						0.996-1.005			
	DC	NL			0:00	RO	1.33	0.11			0.000			
470-472					34:35		0.88	1,514.41	708.89	805.52	1.000	13C12-OCDD	IS8	
	DC	WH			34:55	RO	0.51	1.44			1.010			
470-472					1 Peak			1,514.41						

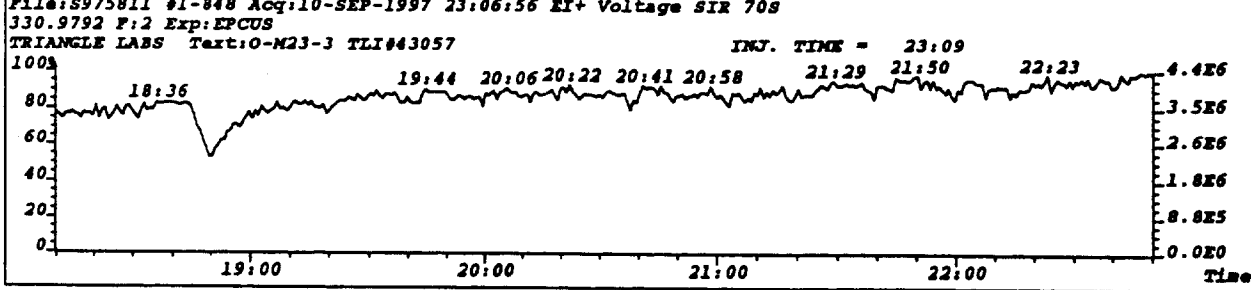
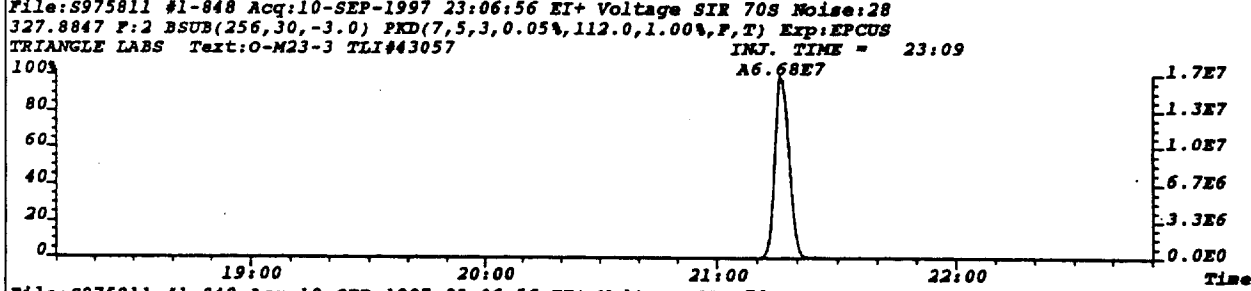
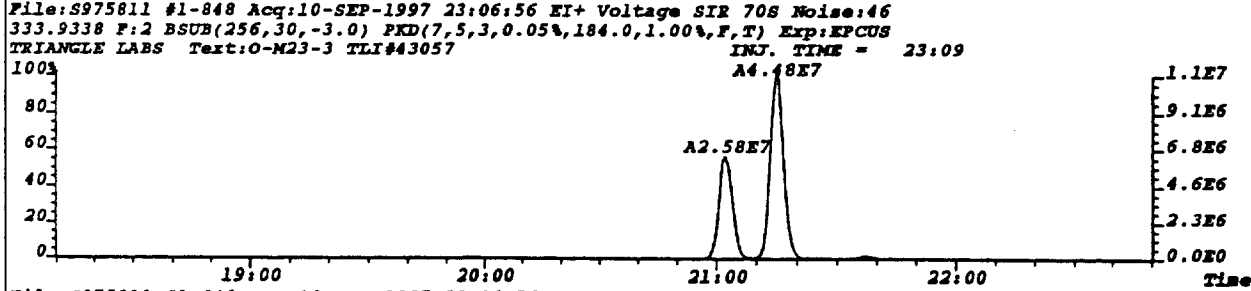
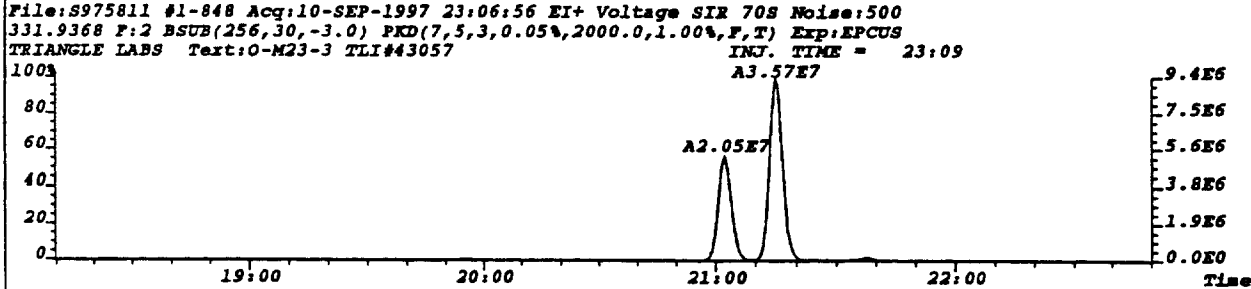
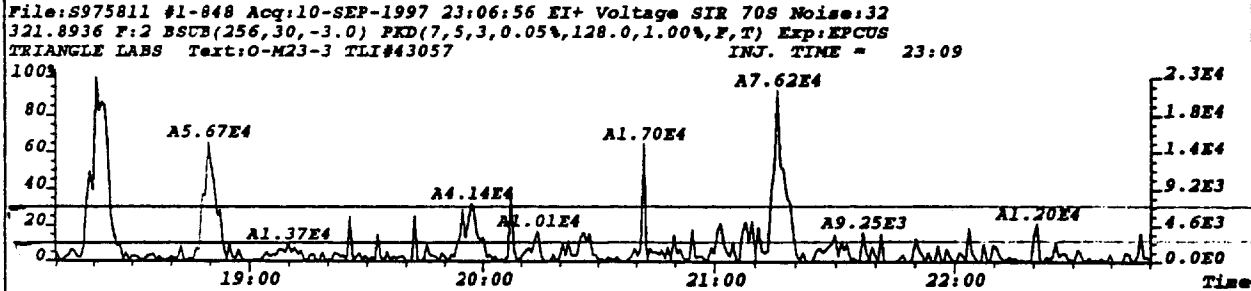
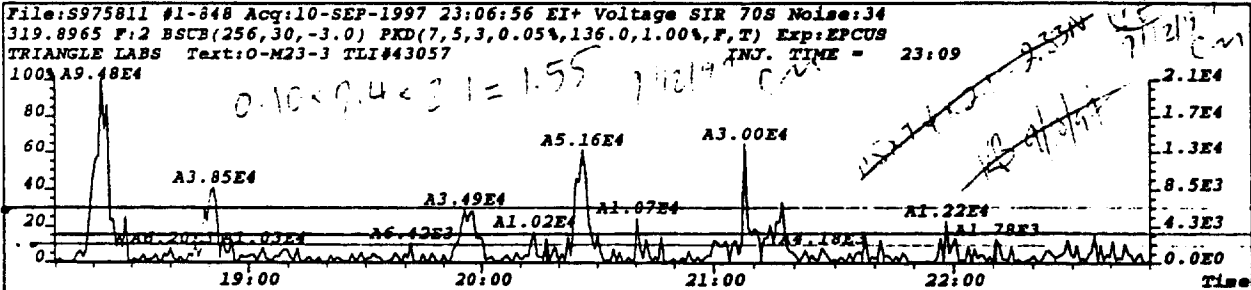
Compound/  
M\_Z.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

Column Description.....	"Why" Code Description.....	QC Log Desc.....
M_Z -Nominal Ion Mass(es)	WL-Below Retention Time Window	A-Peak Added
..RT. -Retention Time (mm:ss)	WH-Above Retention Time Window	K-Peak Kept
Rat.1 -Ratio of M/M+2 Ions	SN-Below Signal to Noise Level	D-Peak Deleted
OK -RO-Ratio Outside Limits	<M-Below Method Detection Limit	T-Time Changed
Rel.RT-Relative Retention Time	NL-Channel Specific Noise Level	M-Peak Area Changed
		N-Name Changed
		E-Ether Interference

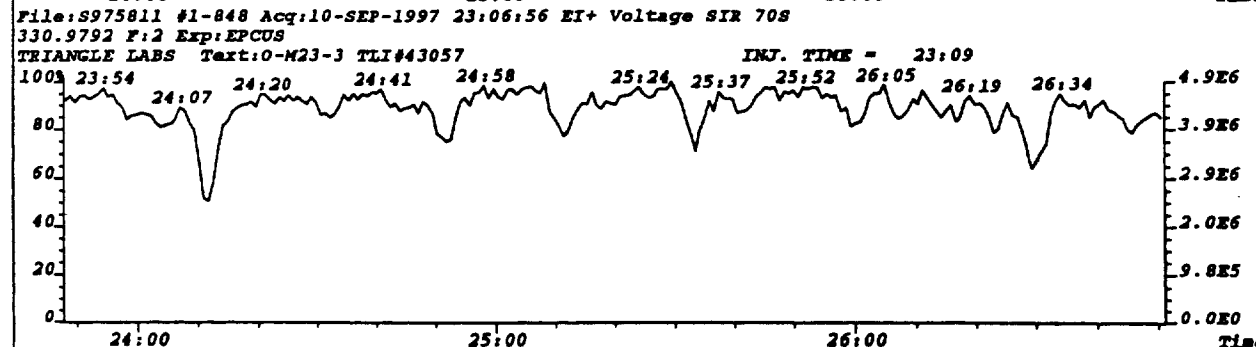
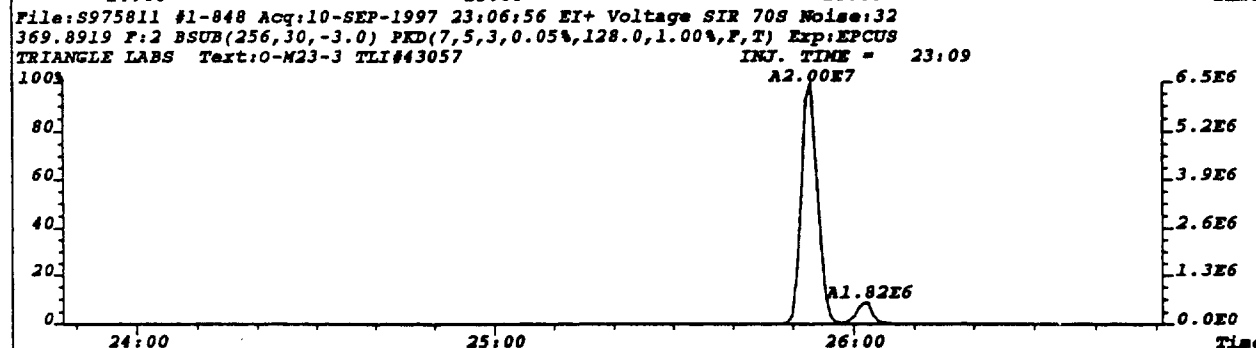
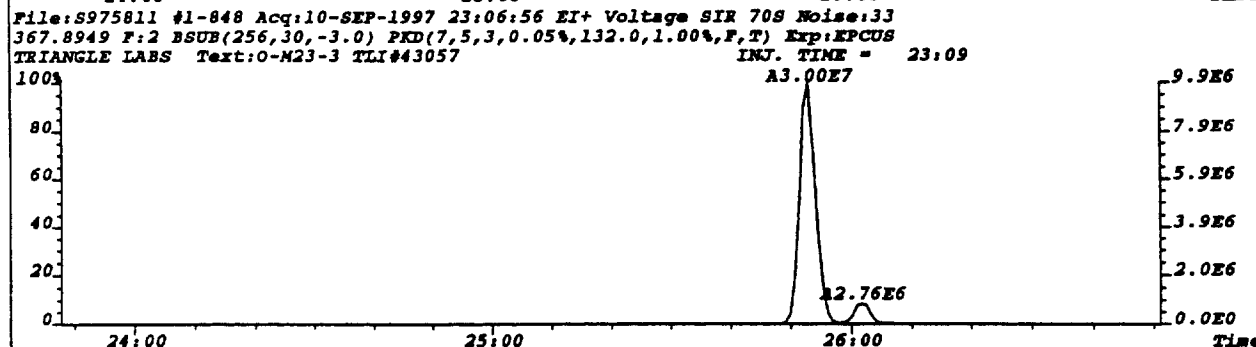
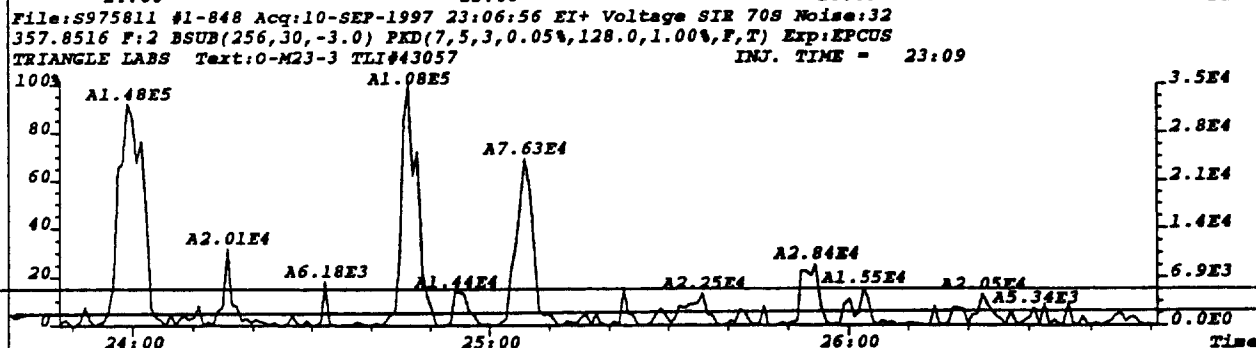
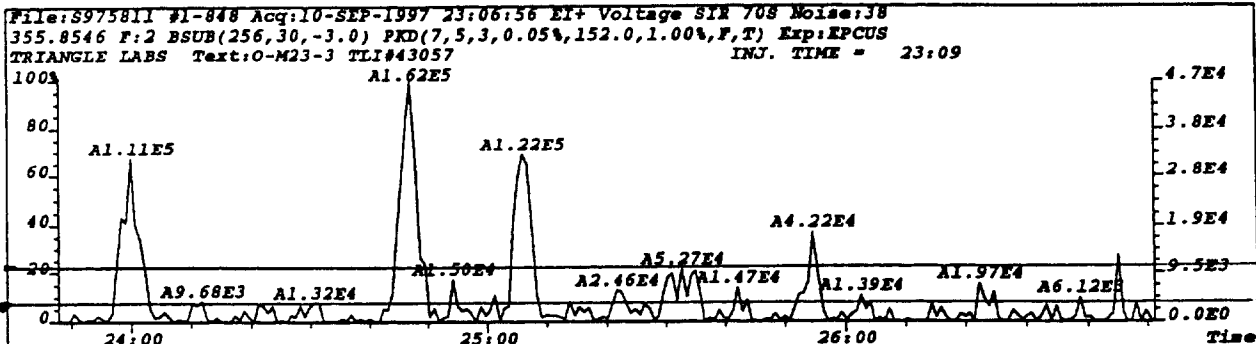
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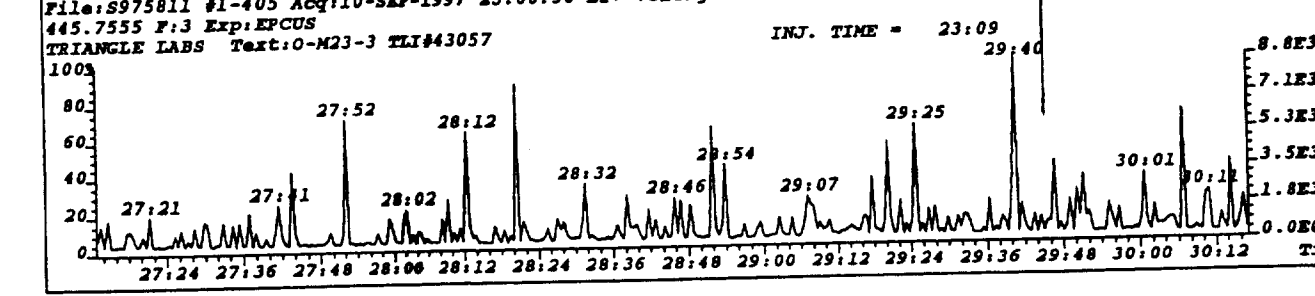
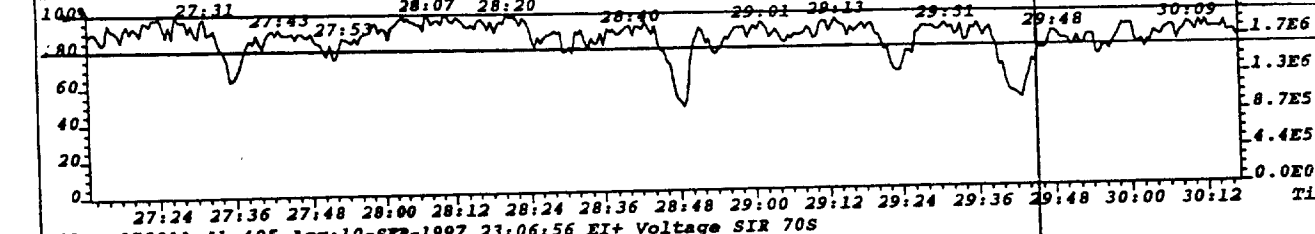
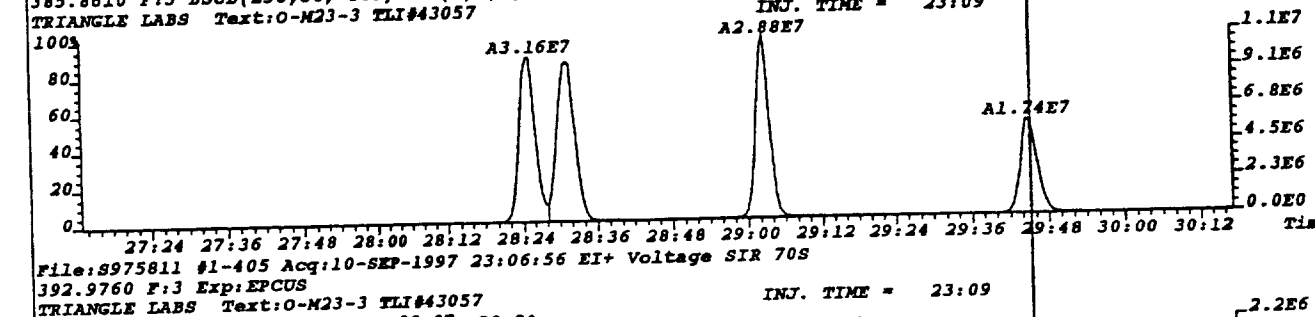
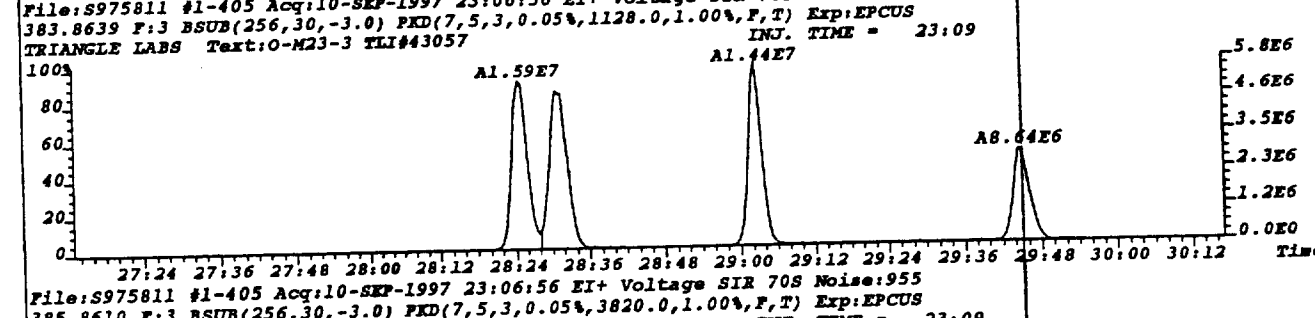
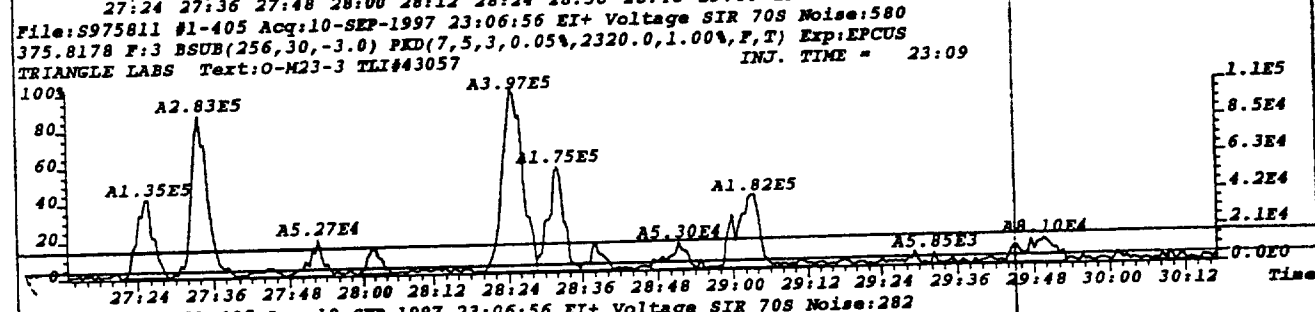
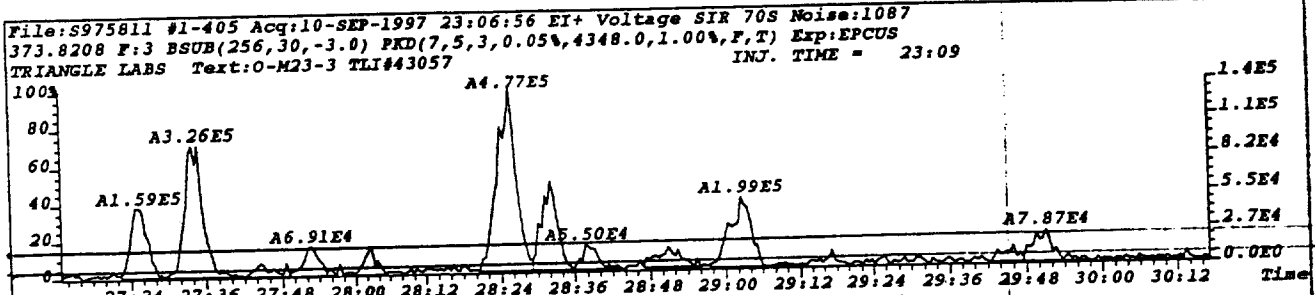


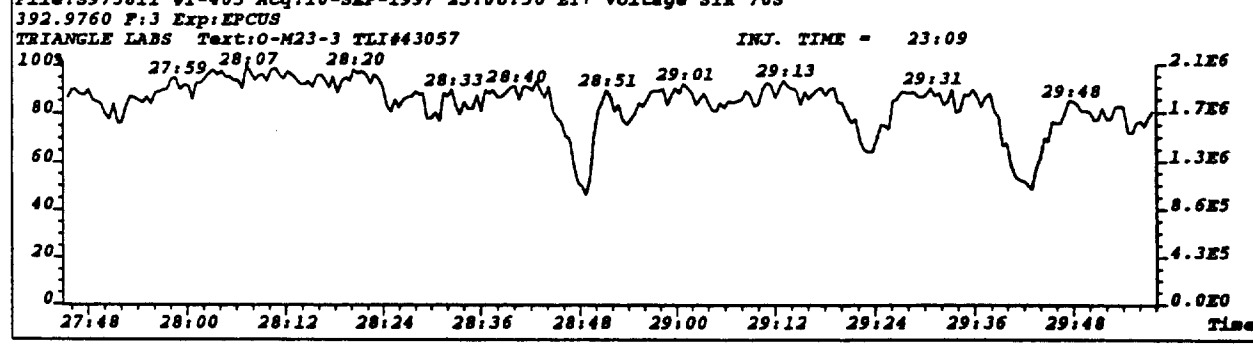
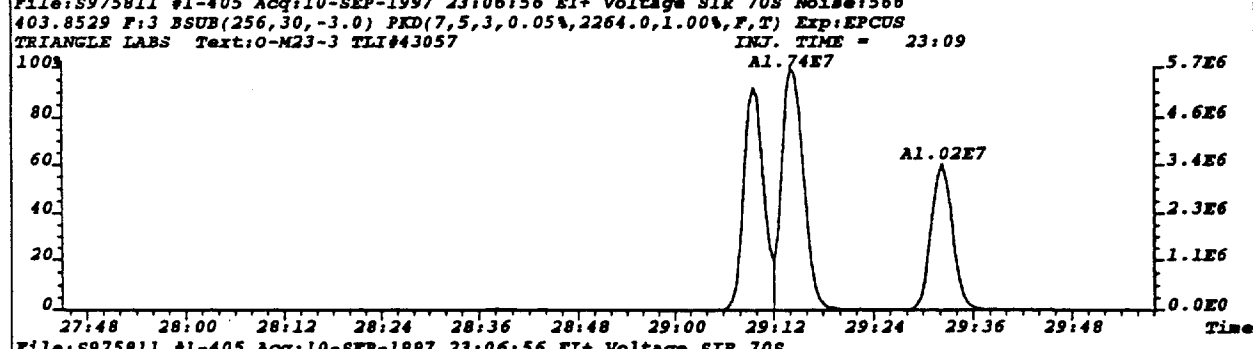
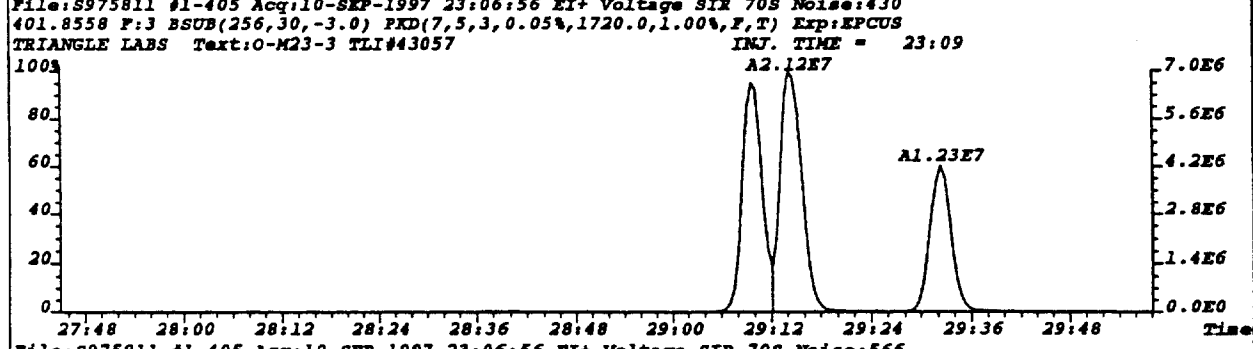
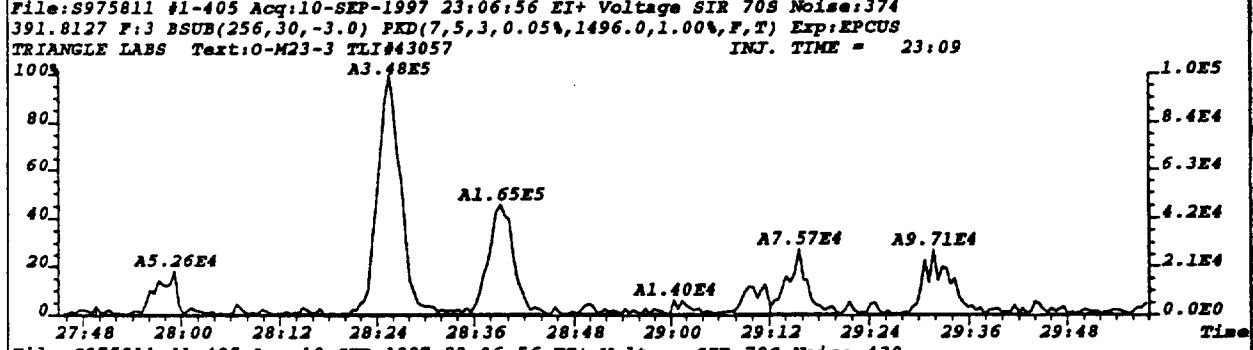
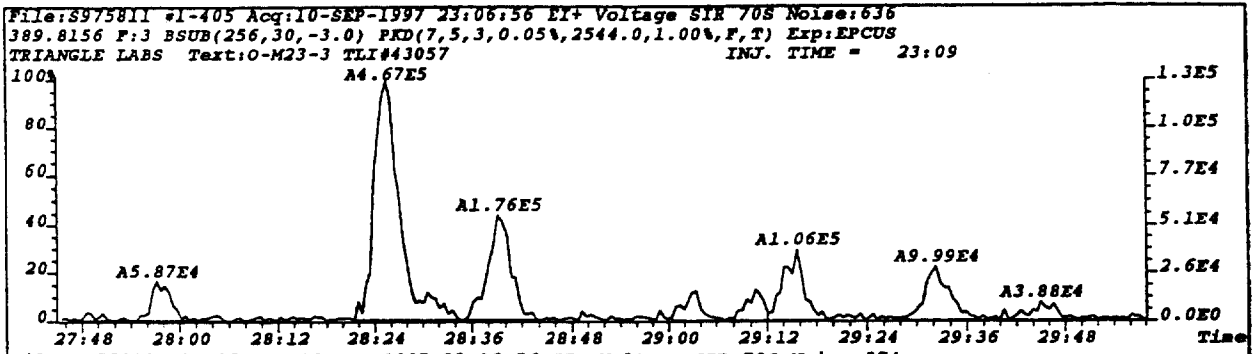


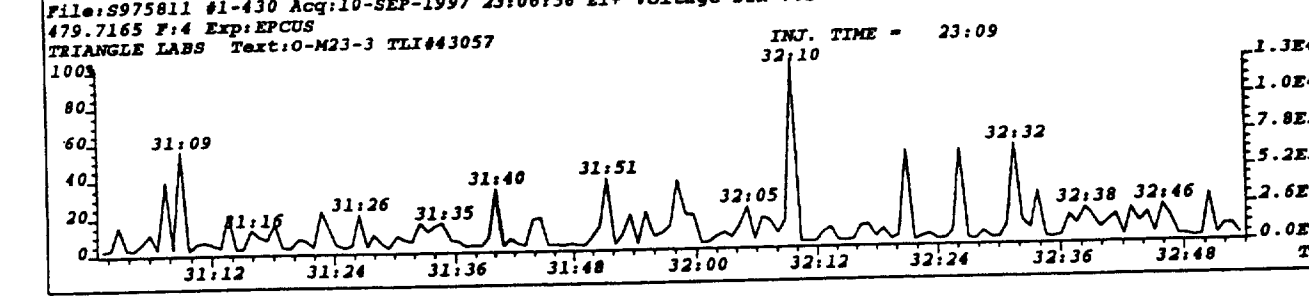
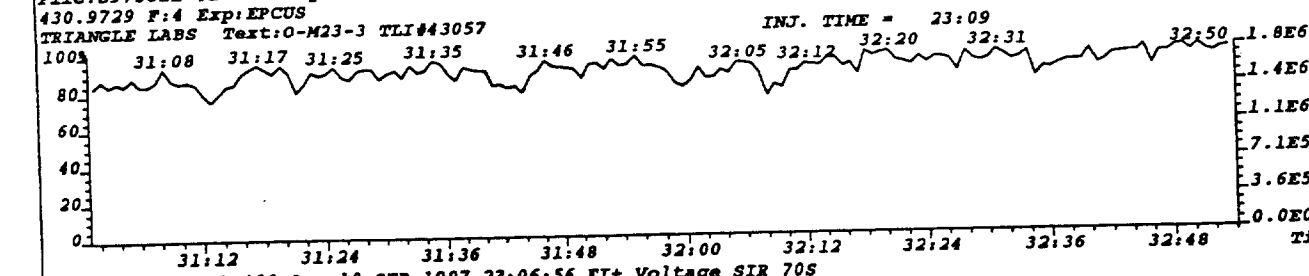
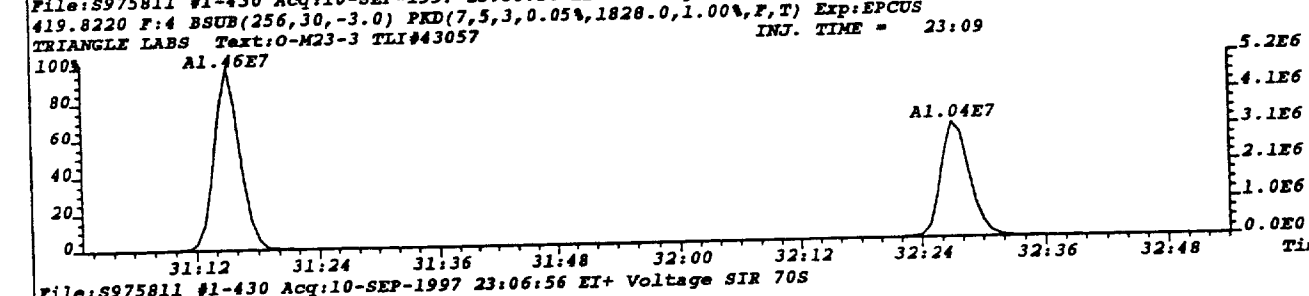
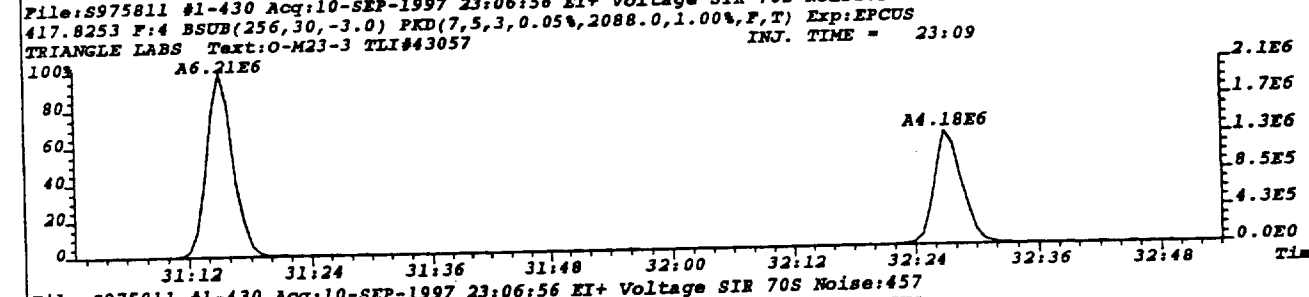
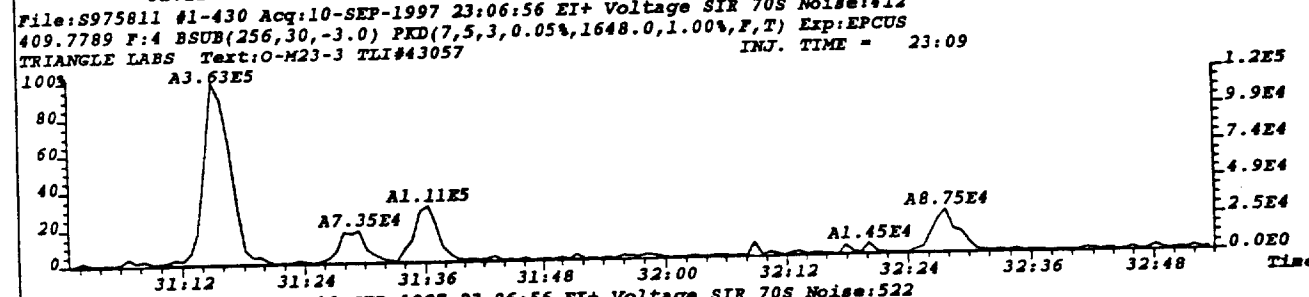
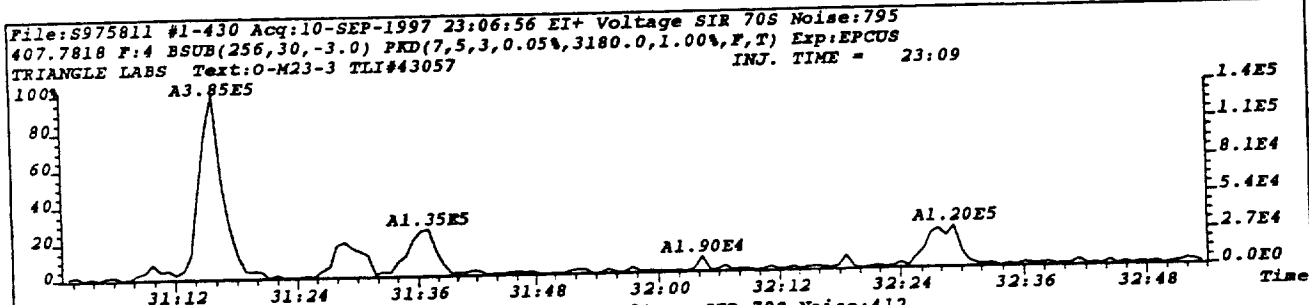


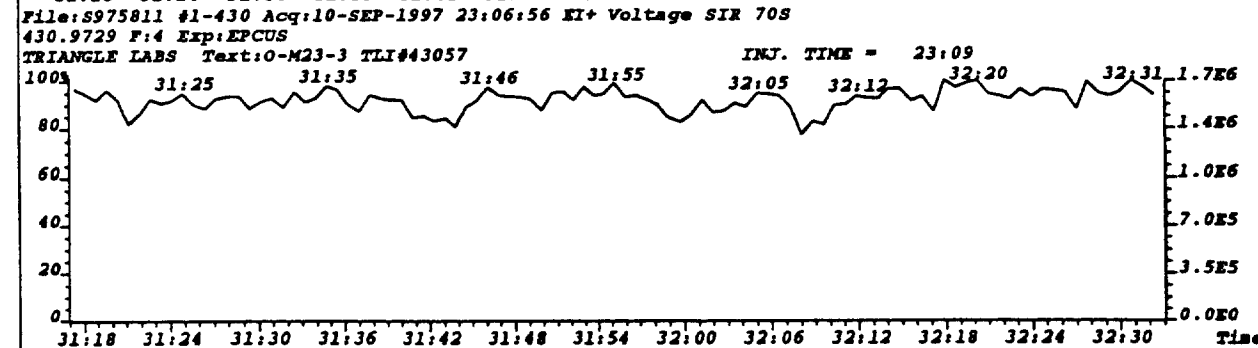
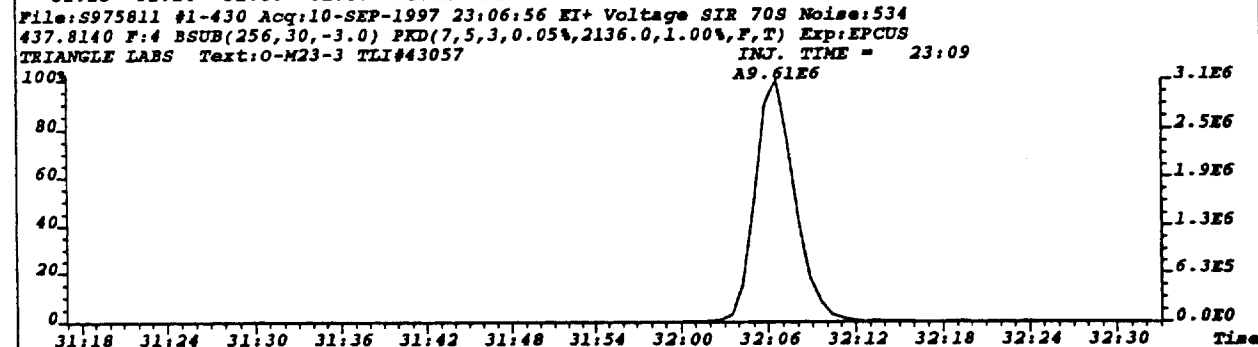
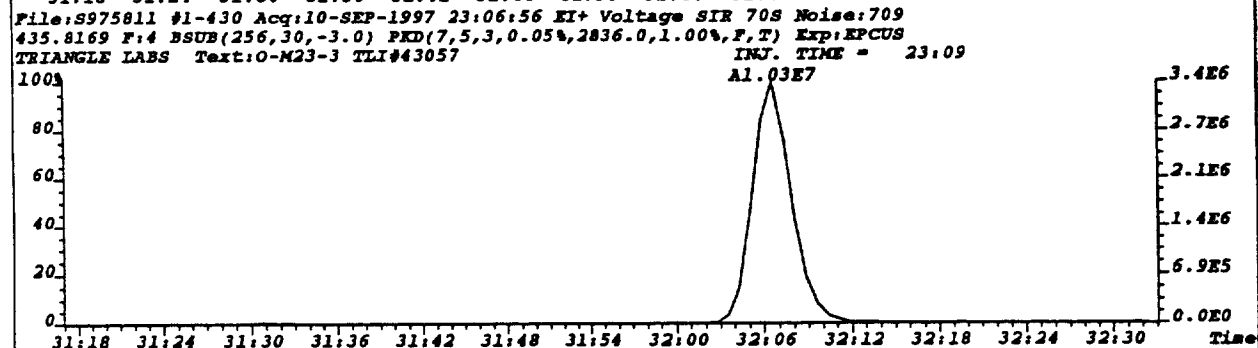
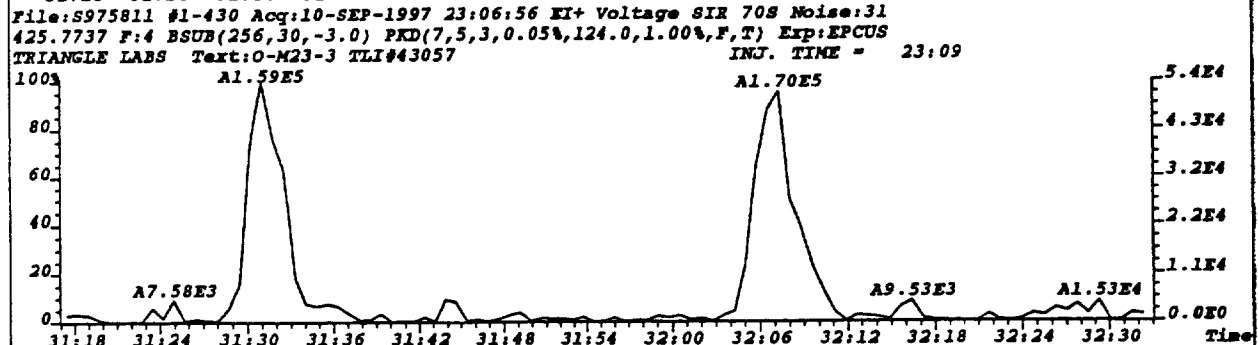
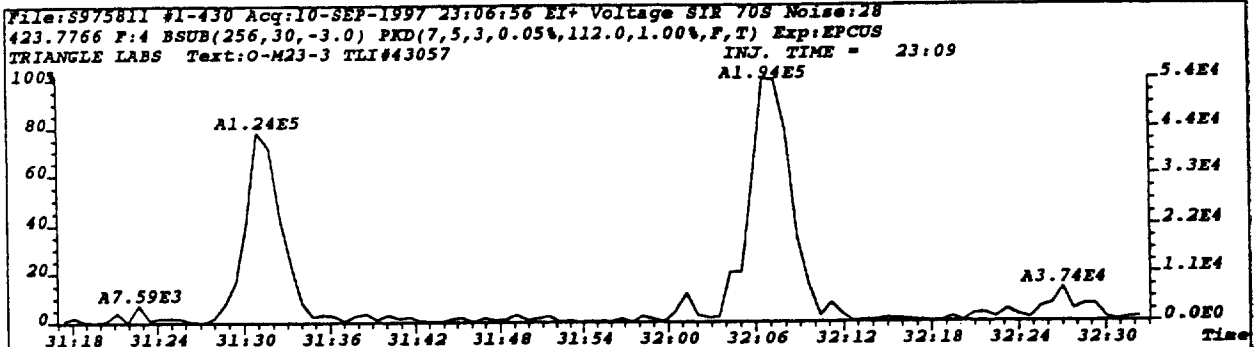






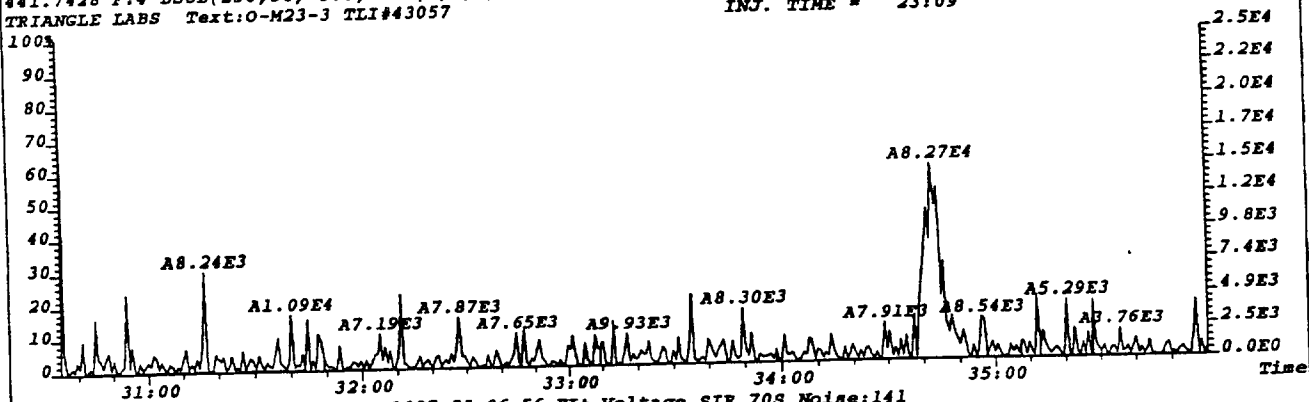




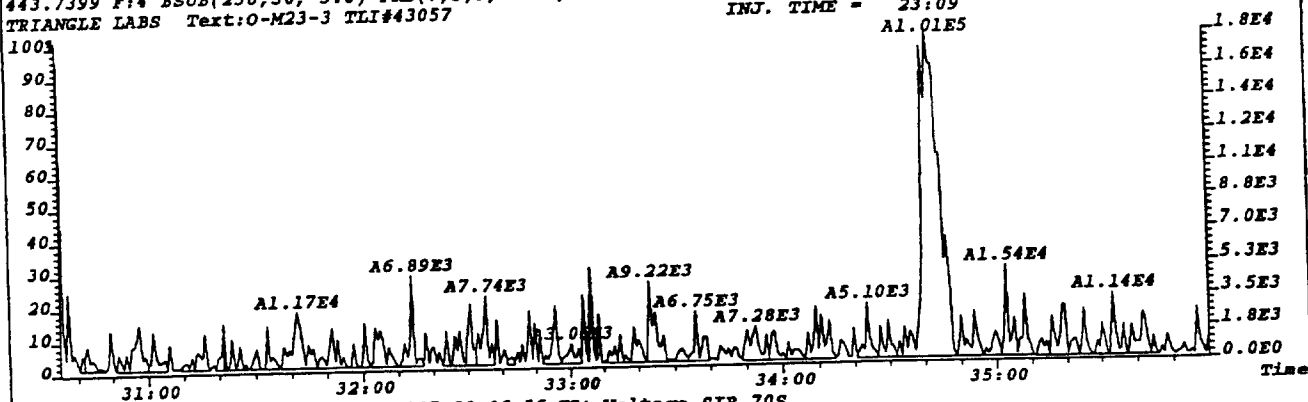




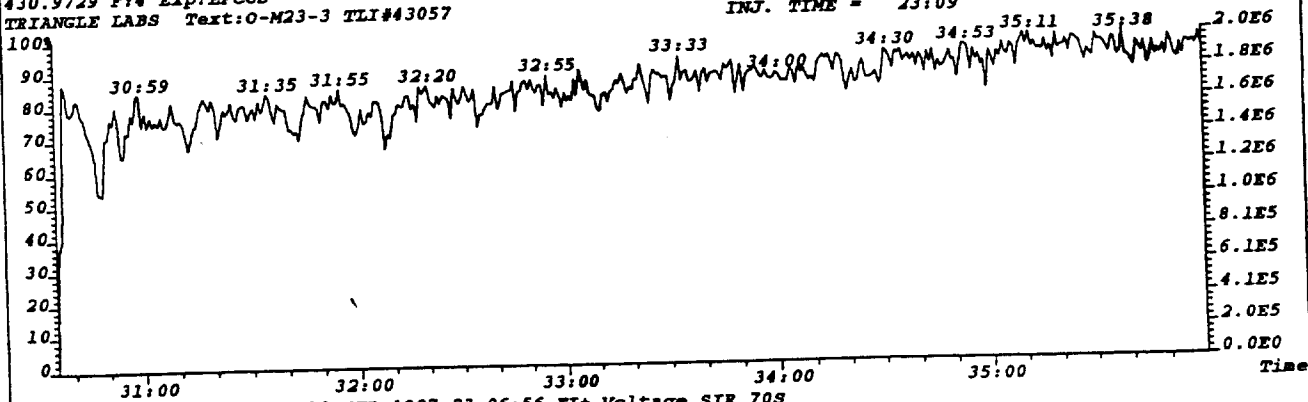
File:S975811 #1-430 Acq:10-SEP-1997 23:06:56 EI+ Voltage SIR 70S Noise:35  
 441.7428 F:4 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,140.0,1.00%,F,T) Exp:EPCUS  
 TRIANGLE LABS Text:O-M23-3 TLI#43057 INJ. TIME = 23:09



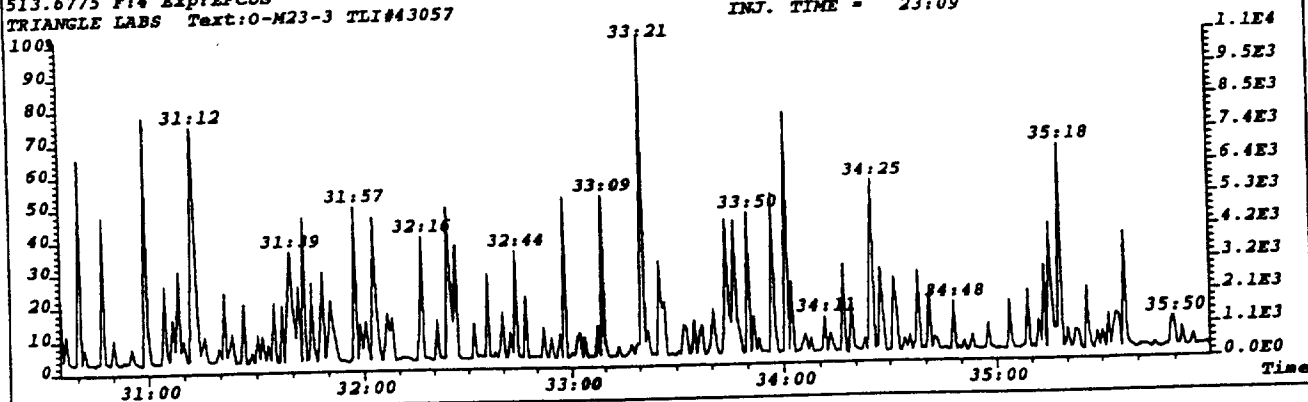
File:S975811 #1-430 Acq:10-SEP-1997 23:06:56 EI+ Voltage SIR 70S Noise:141  
 443.7399 F:4 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,564.0,1.00%,F,T) Exp:EPCUS  
 TRIANGLE LABS Text:O-M23-3 TLI#43057 INJ. TIME = 23:09

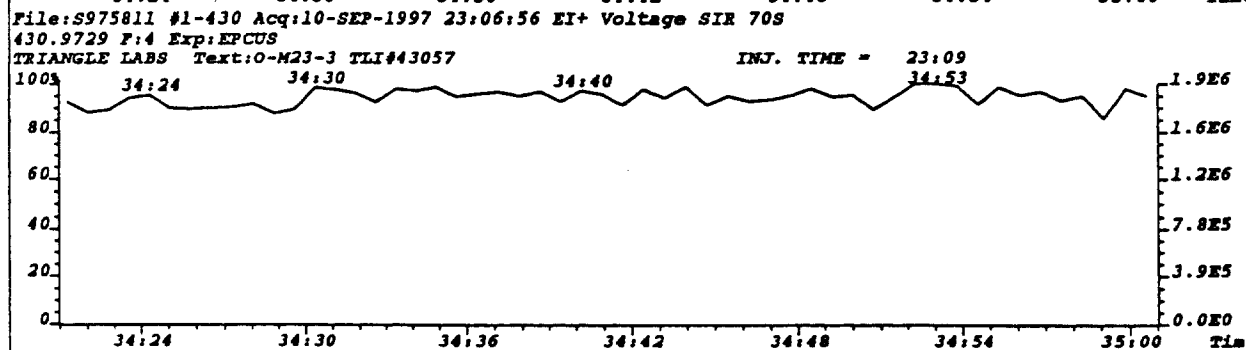
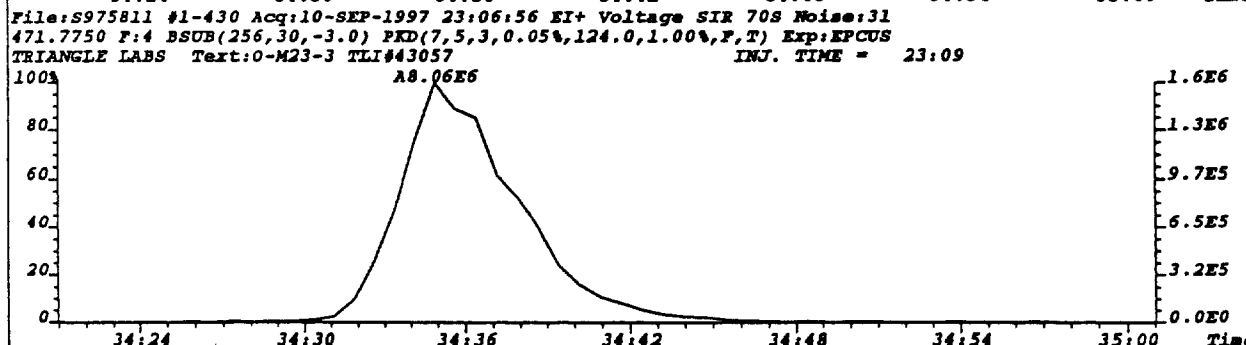
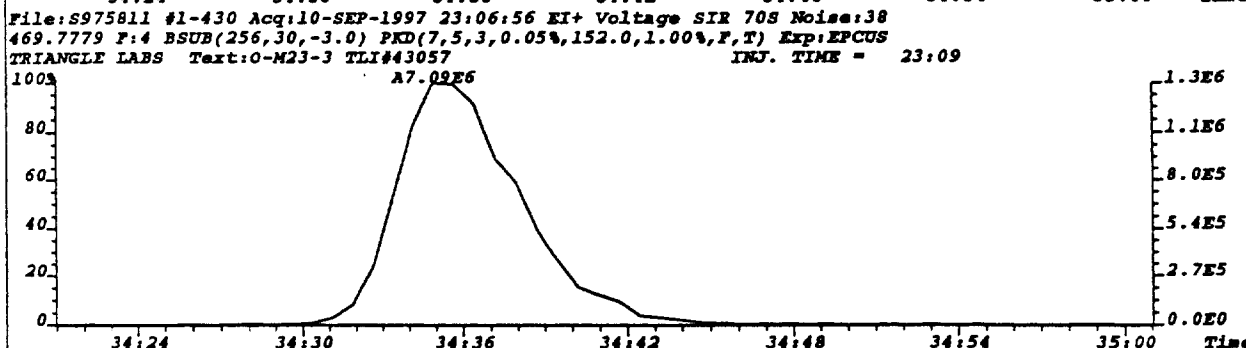
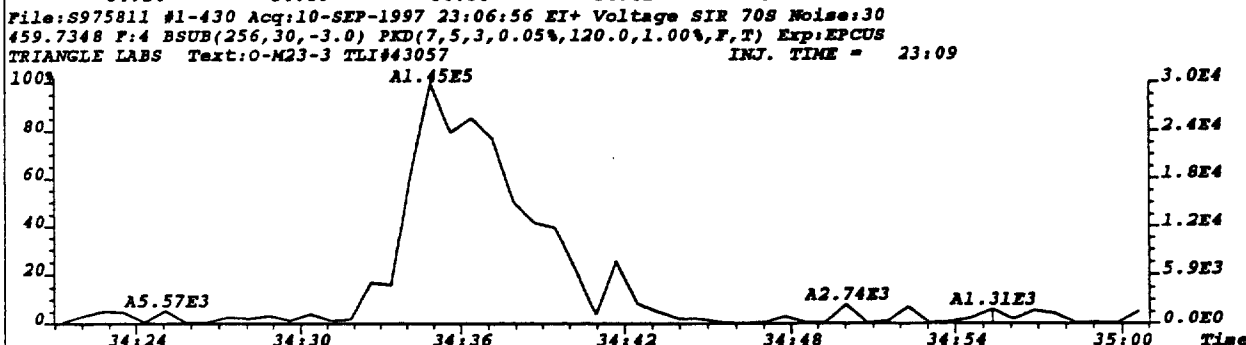
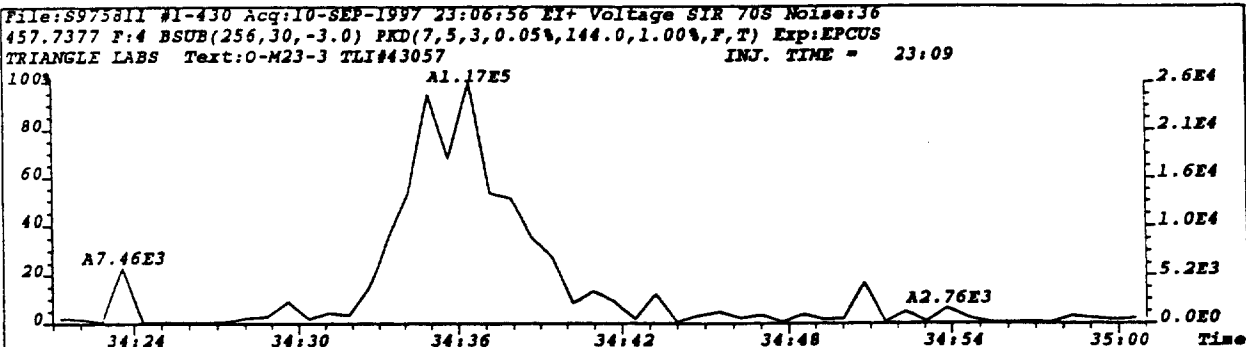


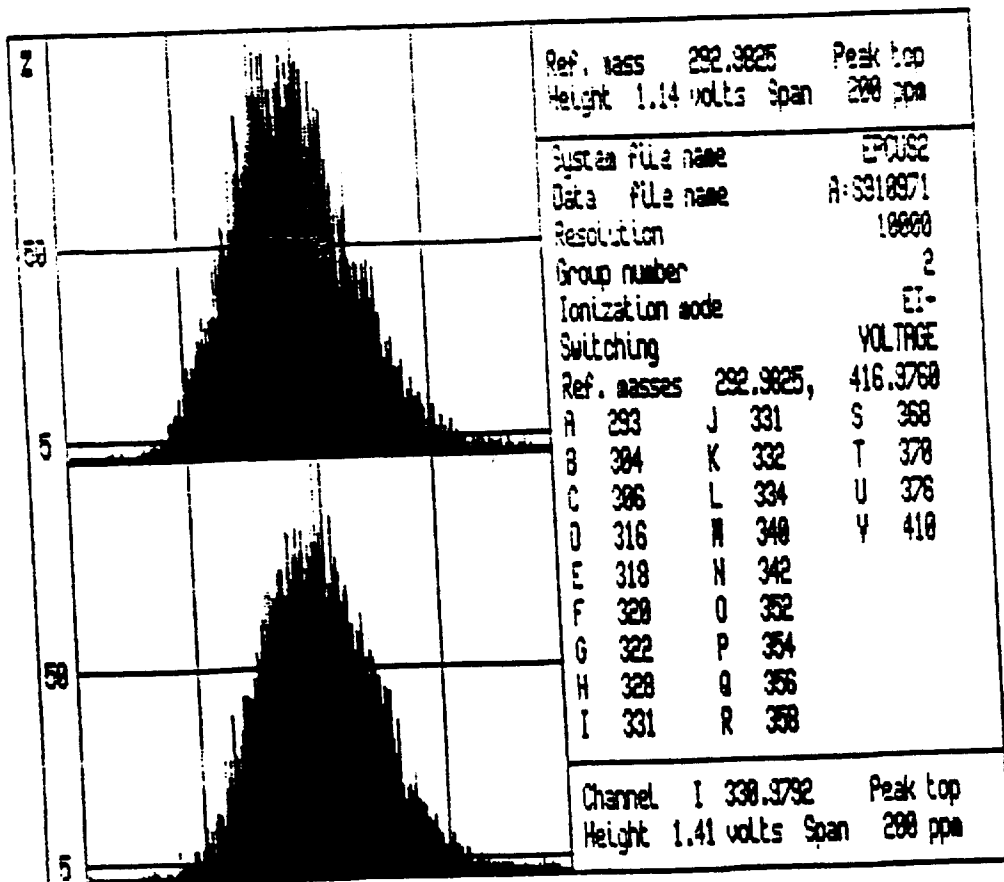
File:S975811 #1-430 Acq:10-SEP-1997 23:06:56 EI+ Voltage SIR 70S  
 430.9729 F:4 Exp:EPCUS  
 TRIANGLE LABS Text:O-M23-3 TLI#43057 INJ. TIME = 23:09



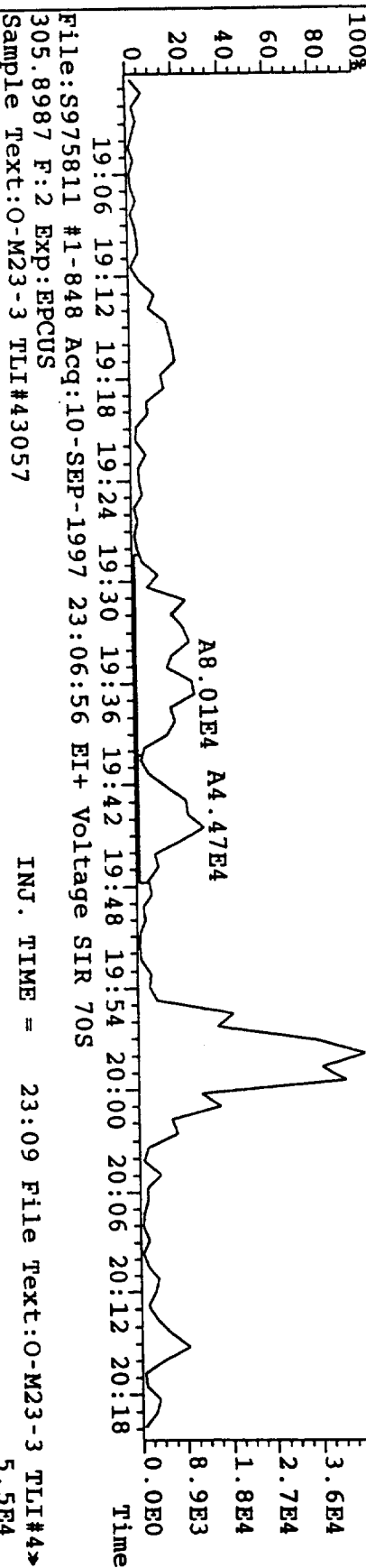
File:S975811 #1-430 Acq:10-SEP-1997 23:06:56 EI+ Voltage SIR 70S  
 513.6775 F:4 Exp:EPCUS  
 TRIANGLE LABS Text:O-M23-3 TLI#43057 INJ. TIME = 23:09



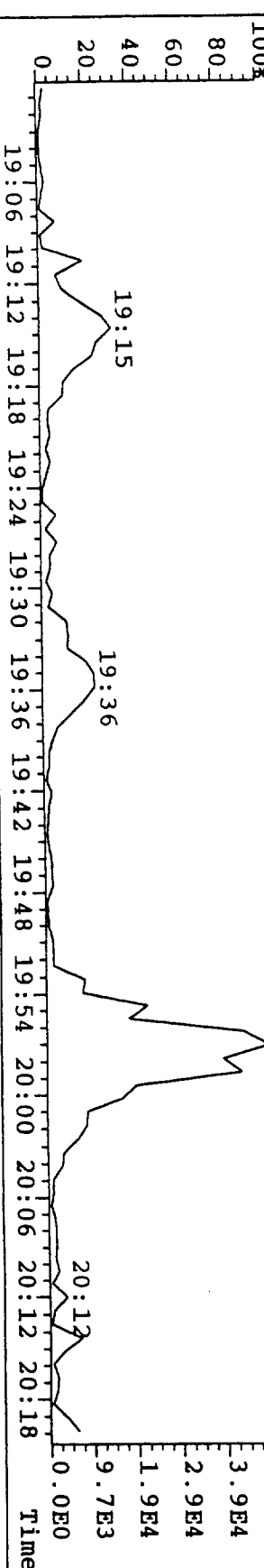




File: S975811 #1-848 Acq: 10-SEP-1997 23:06:56 EI+ Voltage SIR 70S  
 303.9016 F: 2 Exp: EPCUS  
 Sample Text: O-M23-3 TLI#43057  
 INJ. TIME = 23:09 File Text: O-M23-3 TLI#4

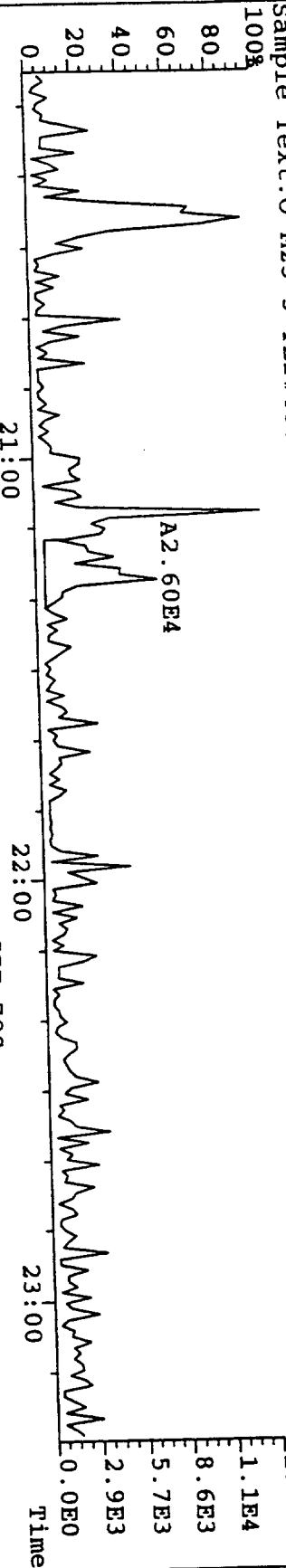


File: S975811 #1-848 Acq: 10-SEP-1997 23:06:56 EI+ Voltage SIR 70S  
 315.9419 F: 2 Exp: EPCUS  
 Sample Text: O-M23-3 TLI#43057  
 INJ. TIME = 23:09 File Text: O-M23-3 TLI#4



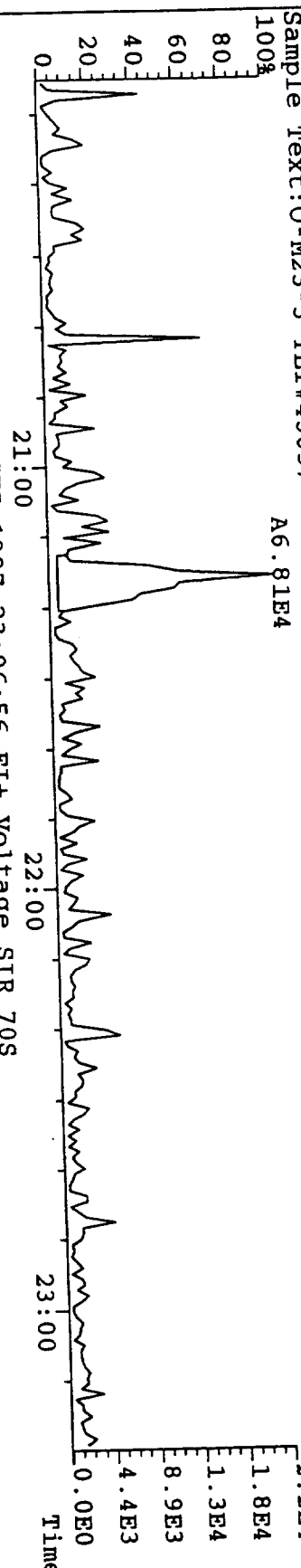
File:S975811 #1-848 Acq:10-SEP-1997 23:06:56 EI+ Voltage SIR 70S  
319.8965 F:2 Exp:EPCUS  
Sample Text:O-M23-3 TLI#43057

INJ. TIME = 23:09 File Text:O-M23-3 TLI#4



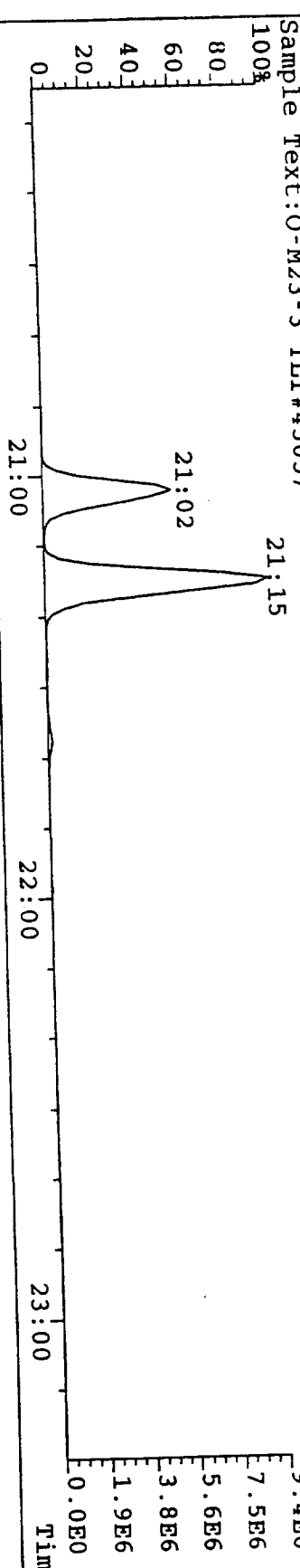
File:S975811 #1-848 Acq:10-SEP-1997 23:06:56 EI+ Voltage SIR 70S  
321.8936 F:2 Exp:EPCUS  
Sample Text:O-M23-3 TLI#43057

INJ. TIME = 23:09 File Text:O-M23-3 TLI#4

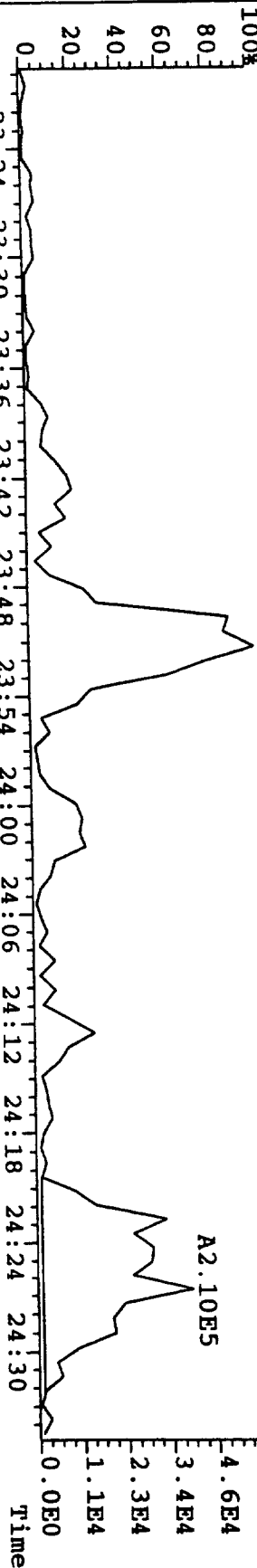


File:S975811 #1-848 Acq:10-SEP-1997 23:06:56 EI+ Voltage SIR 70S  
331.9368 F:2 Exp:EPCUS  
Sample Text:O-M23-3 TLI#43057

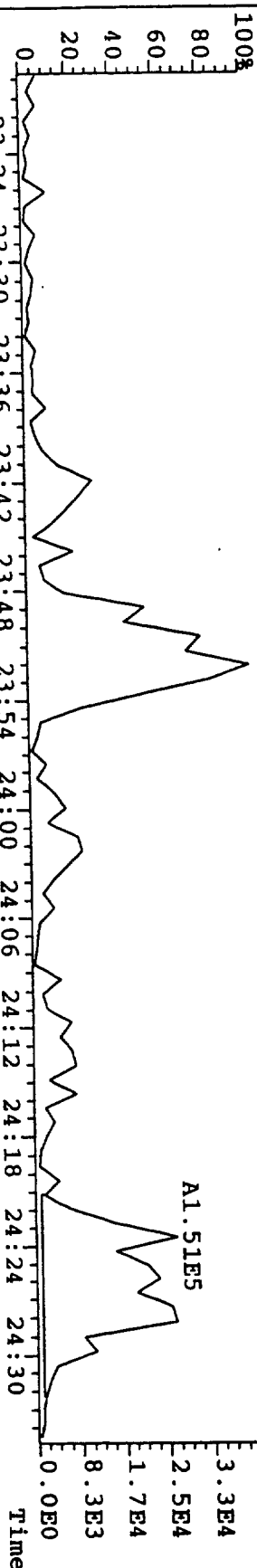
INJ. TIME = 23:09 File Text:O-M23-3 TLI#4



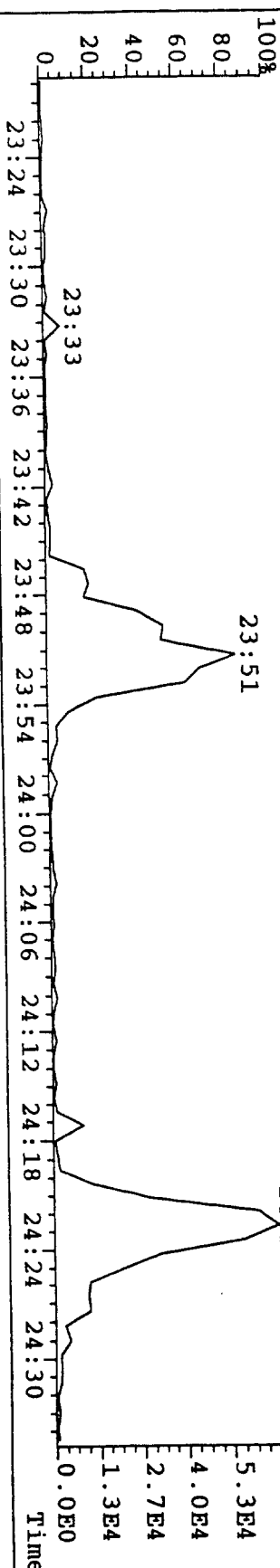
File: S975811 #1-848 Acq: 10-SEP-1997 23:06:56 EI+ Voltage SIR 70S  
 339.8597 F: 2 Exp: EPCUS  
 Sample Text: O-M23-3 TLI#43057  
 INJ. TIME = 23:09 File Text: O-M23-3 TLI#4



File: S975811 #1-848 Acq: 10-SEP-1997 23:06:56 EI+ Voltage SIR 70S  
 341.8567 F: 2 Exp: EPCUS  
 Sample Text: O-M23-3 TLI#43057  
 INJ. TIME = 23:09 File Text: O-M23-3 TLI#4



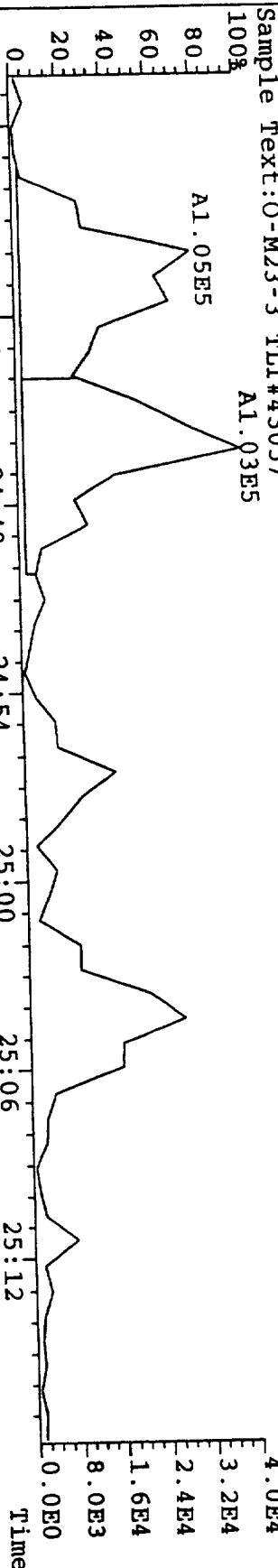
File: S975811 #1-848 Acq: 10-SEP-1997 23:06:56 EI+ Voltage SIR 70S  
 351.9000 F: 2 Exp: EPCUS  
 Sample Text: O-M23-3 TLI#43057  
 INJ. TIME = 23:09 File Text: O-M23-3 TLI#4



File:S975811 #1-848 Acq:10-SEP-1997 23:06:56 EI+ Voltage SIR 70S

339.8597 F:2 Exp:EPCUS  
Sample Text:O-M23-3 TLI#43057

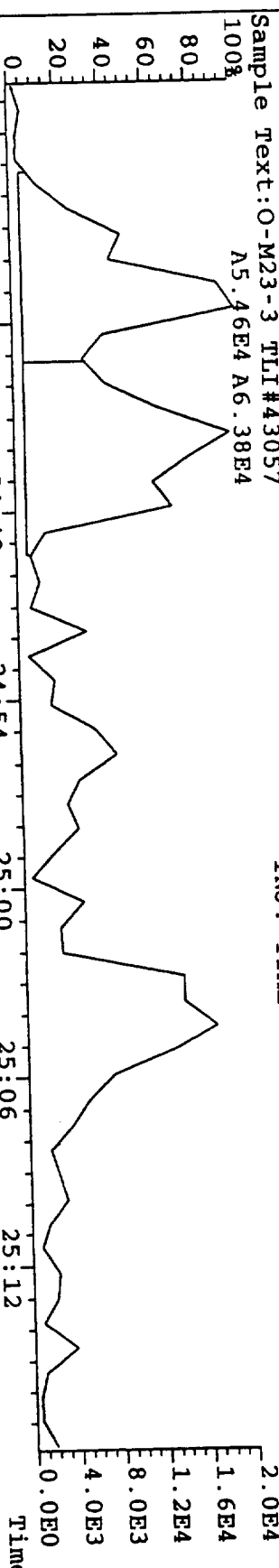
INJ. TIME = 23:09 File Text:O-M23-3 TLI#4



File:S975811 #1-848 Acq:10-SEP-1997 23:06:56 EI+ Voltage SIR 70S

341.8567 F:2 Exp:EPCUS  
Sample Text:O-M23-3 TLI#43057

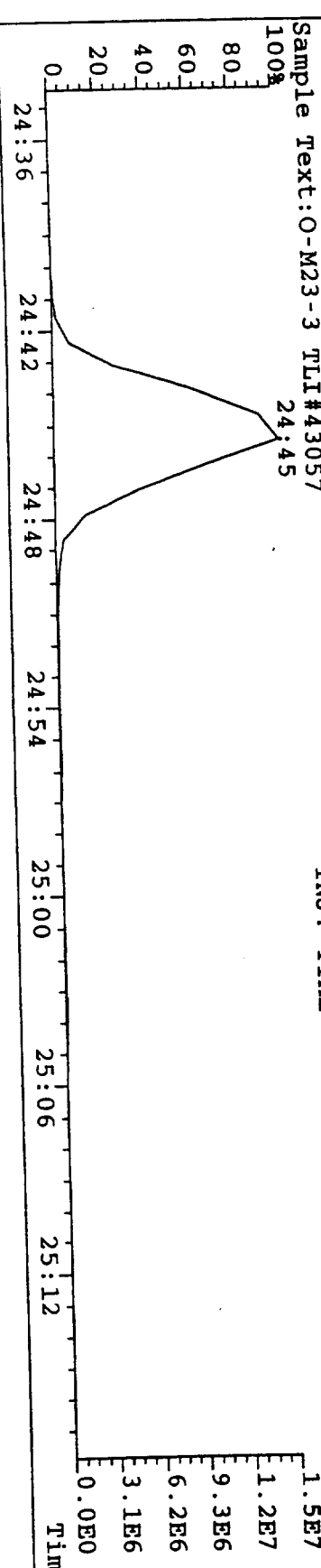
INJ. TIME = 23:09 File Text:O-M23-3 TLI#4



File:S975811 #1-848 Acq:10-SEP-1997 23:06:56 EI+ Voltage SIR 70S

351.9000 F:2 Exp:EPCUS  
Sample Text:O-M23-3 TLI#43057

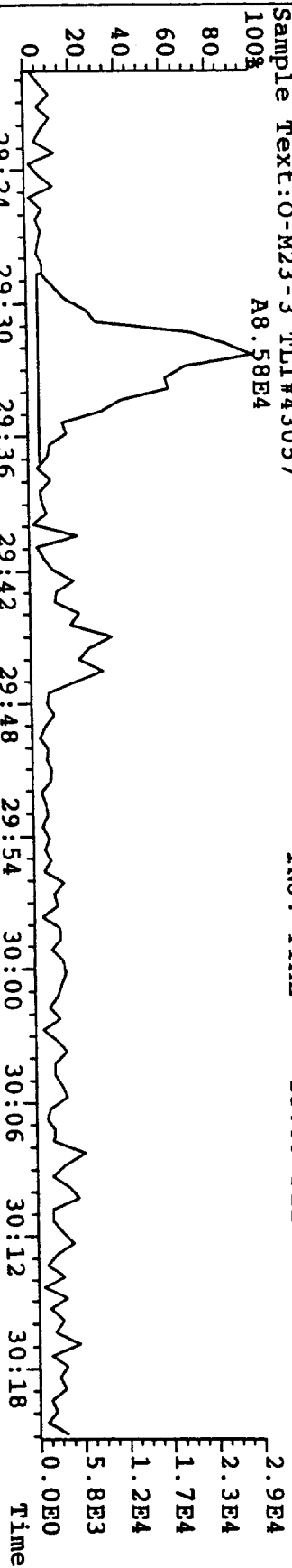
INJ. TIME = 23:09 File Text:O-M23-3 TLI#4



File:S975811 #1-405 Acq:10-SEP-1997 23:06:56 EI+ Voltage SIR 70S

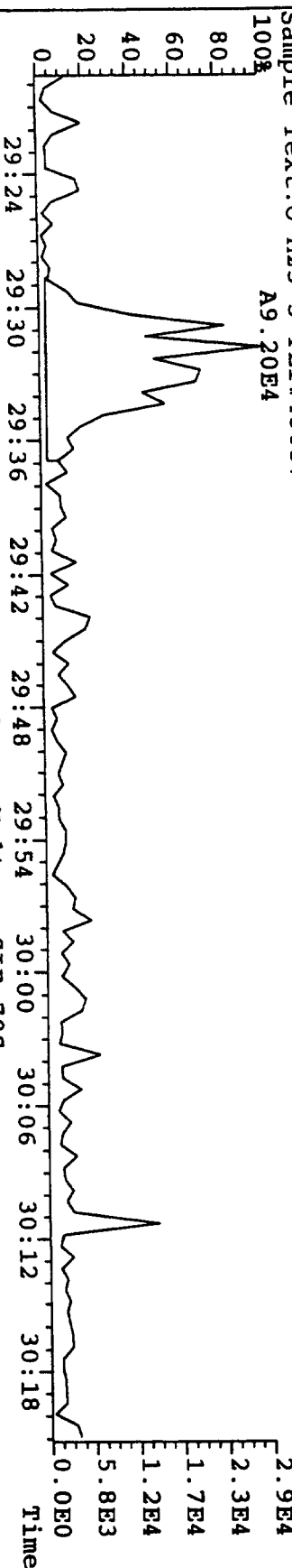
389.8156 F:3 Exp:EPCUS  
Sample Text:O-M23-3 TLI#43057

INT. TIME = 23:09 File Text:O-M23-3 TLI#4



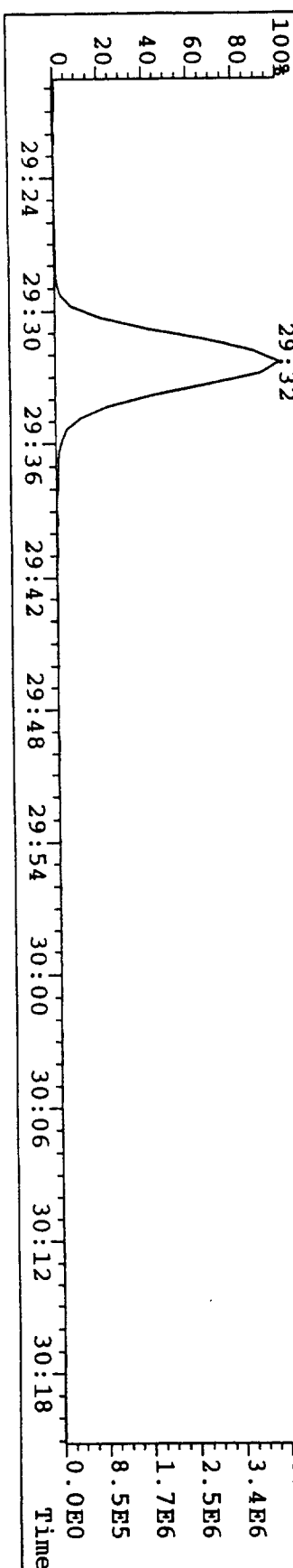
File:S975811 #1-405 Acq:10-SEP-1997 23:06:56 EI+ Voltage SIR 70S  
391.8127 F:3 Exp:EPCUS  
Sample Text:O-M23-3 TLI#43057

INT. TIME = 23:09 File Text:O-M23-3 TLI#4



File:S975811 #1-405 Acq:10-SEP-1997 23:06:56 EI+ Voltage SIR 70S  
401.8558 F:3 Exp:EPCUS  
Sample Text:O-M23-3 TLI#43057

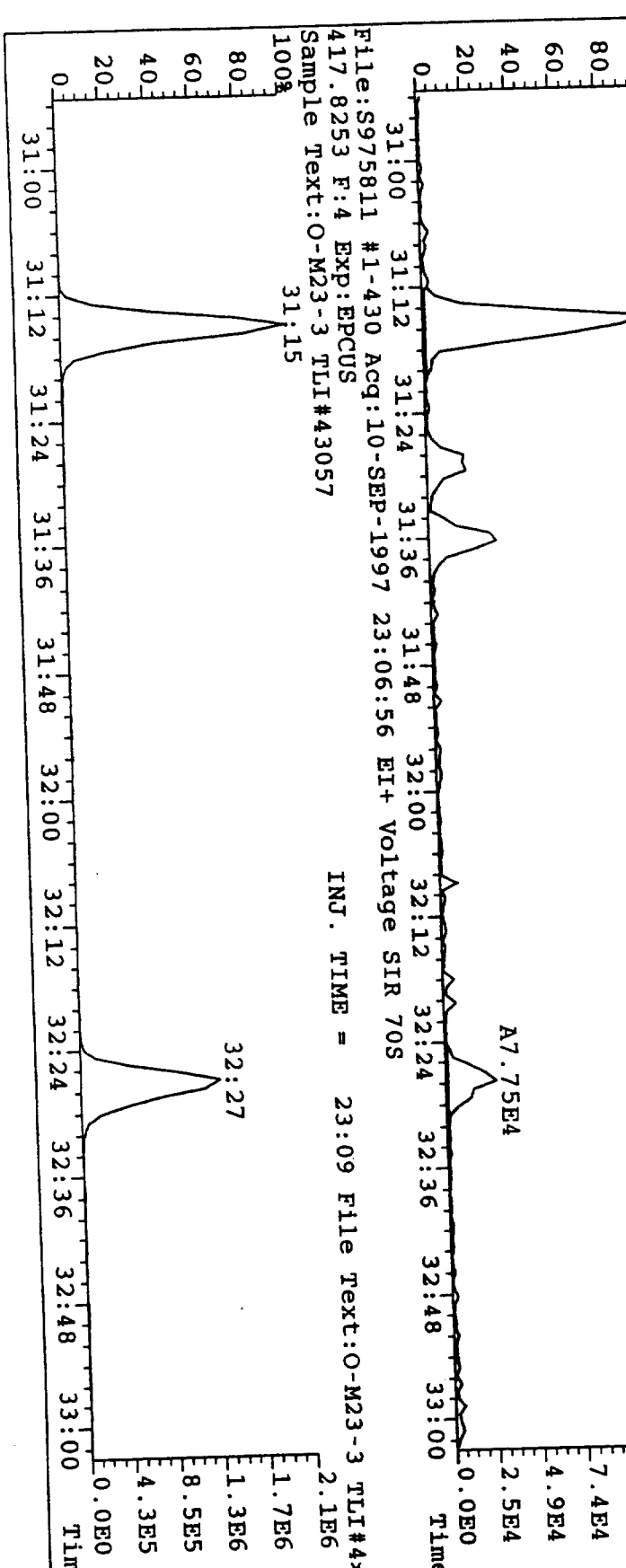
INT. TIME = 23:09 File Text:O-M23-3 TLI#4



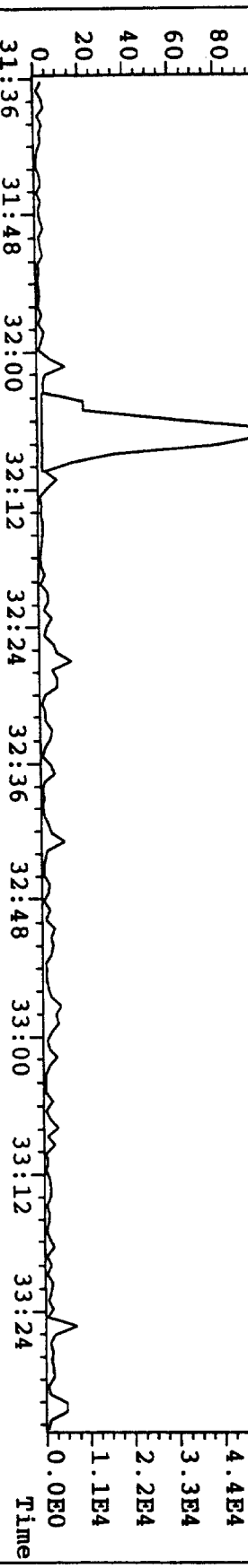


File: S975811 #1-430 Acq: 10-SEP-1997 23:06:56 EI+ Voltage SIR 70S  
 407.7818 F:4 Exp: EPCUS  
 Sample Text: O-M23-3 TLI#43057  
 A3.53E5  
 100%

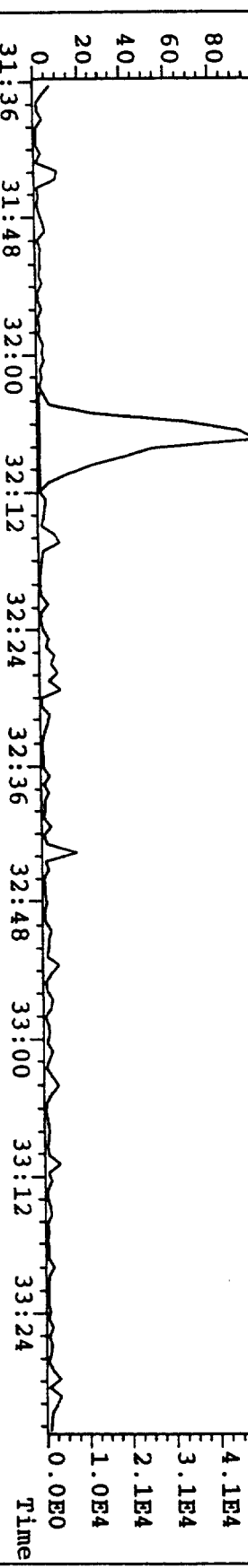
File: S975811 #1-430 Acq: 10-SEP-1997 23:06:56 EI+ Voltage SIR 70S  
 409.7789 F:4 Exp: EPCUS  
 Sample Text: O-M23-3 TLI#43057  
 A3.53E5  
 100%



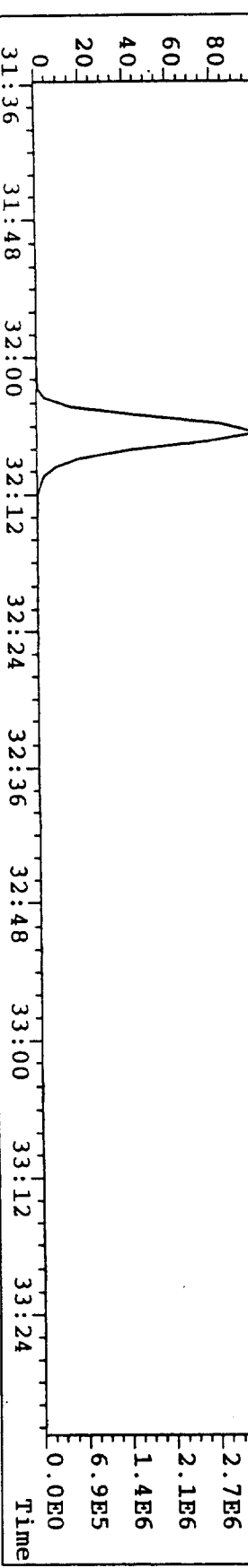
File: S975811 #1-430 Acq: 10-SEP-1997 23:06:56 EI+ Voltage SIR 70S  
 423.7766 F: 4 Exp: EPCUS  
 Sample Text: O-M23-3 TLI#43057  
 100% A1.72E5  
 INJ. TIME = 23:09 File Text: O-M23-3 TLI#4



File: S975811 #1-430 Acq: 10-SEP-1997 23:06:56 EI+ Voltage SIR 70S  
 425.7737 F: 4 Exp: EPCUS  
 Sample Text: O-M23-3 TLI#43057  
 100% A1.64E5  
 INJ. TIME = 23:09 File Text: O-M23-3 TLI#4



File: S975811 #1-430 Acq: 10-SEP-1997 23:06:56 EI+ Voltage SIR 70S  
 435.8169 F: 4 Exp: EPCUS  
 Sample Text: O-M23-3 TLI#43057  
 100% 32:07  
 INJ. TIME = 23:09 File Text: O-M23-3 TLI#4





Initial , ....Date...

Data Review By:

*ASAT* 9/12/97

Calculated Noise Area: n/a

The Total Area for each peak with an ion abundance ratio outside ratio limits has been recalculated according to method requirements.

Page No. 1 Listing of P973846B.dbf  
09/12/97 Matched GC Peaks / Ratio / Ret. Time

Compound/  
M\_Z.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

TCDF		0.65-0.89				0.786-1.096			
304-306	DC NL	0:00	0.72	2.68				0.000	
	DC SN	17:17	0.58	4.85				0.836	
	DC SN	18:15	1.06	0.62				0.883	
	DC SN	19:00	0.34	1.33				0.919	
	DC SN	19:26	0.77	10.77				0.940	
MK		20:42	0.85	13.00	5.98	7.02	1.002	2378-TCDF	AN
	DC SN	21:09	0.71	1.92				1.023	
	DC SN	21:26	0.92	0.69				1.037	
	DC SN	22:30	0.57	1.56				1.089	
304-306		1 Peak		13.00					

13C12-TCDF		0.65-0.89				0.952-1.048			
316-318	DC NL	0:00	0.99	2.46				0.000	
	DC WL	19:24	0.85	15.86				0.939	
		20:40	0.77	3,307.74	1,434.55	1,873.19	1.000	13C12-2378-TCDF	ISO
	DC SN	21:13	0.73	9.13				1.027	
	DC SN	21:37	2.39	5.42				1.046	
	DC WH	22:31	0.48	16.64				1.090	
316-318		1 Peak		3,307.74					

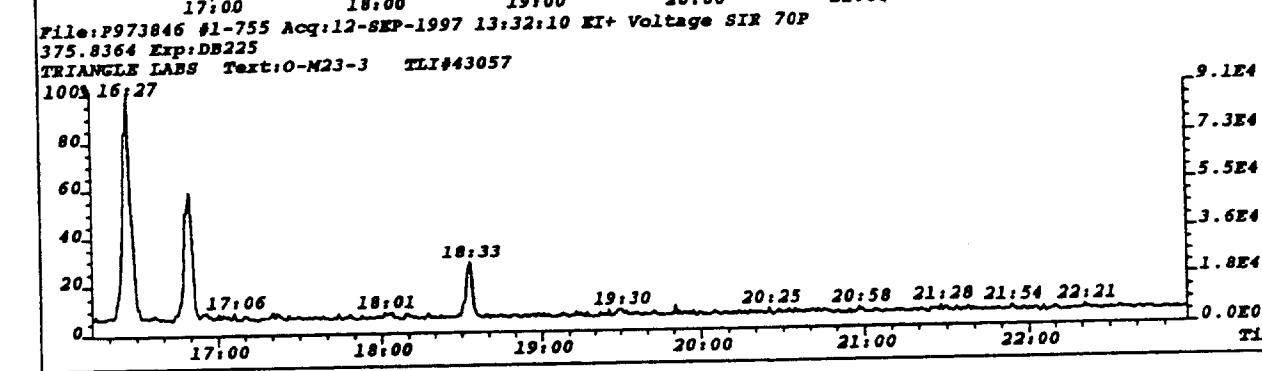
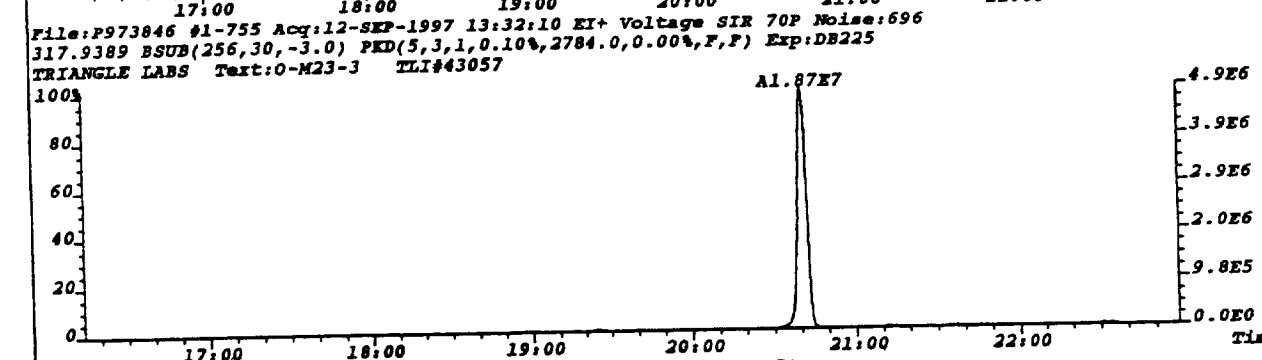
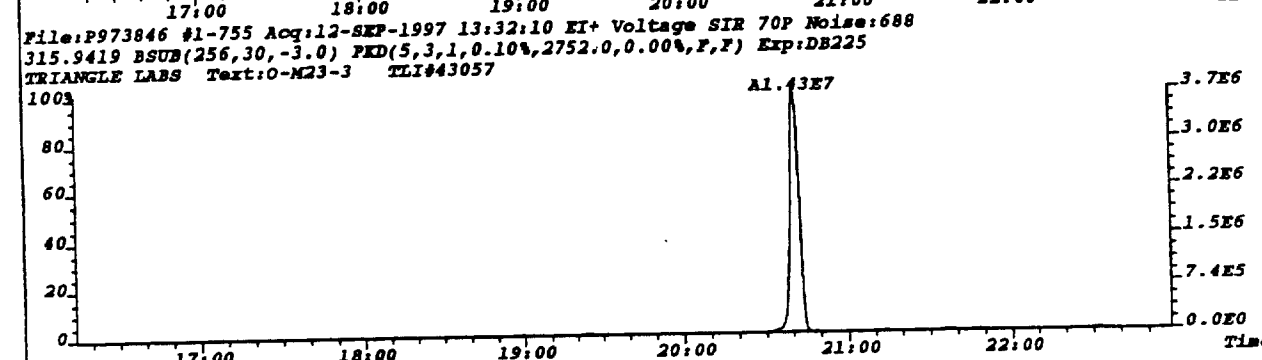
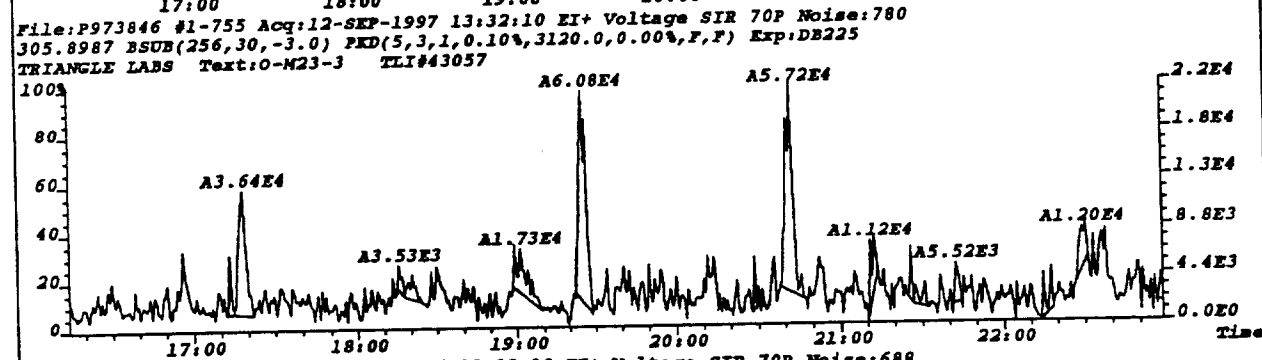
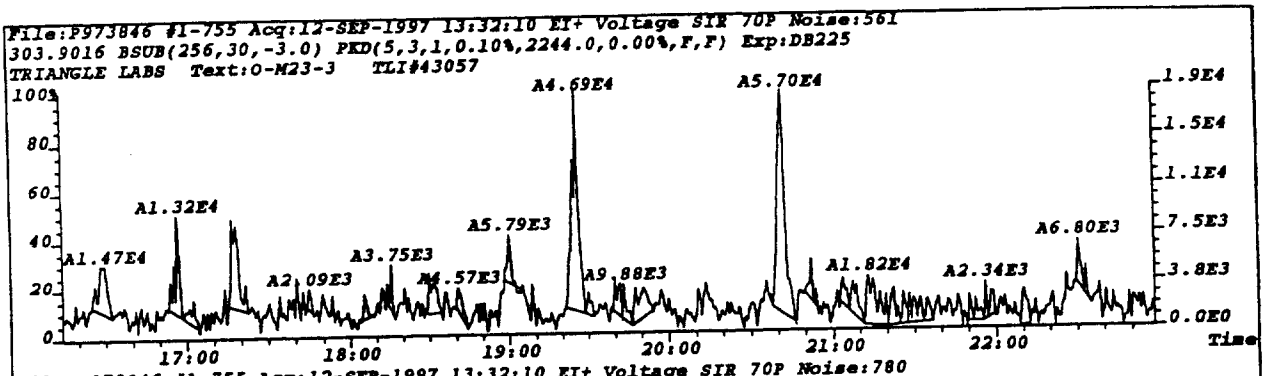
----- Above: TCDF / TCDD Follows -----

13C12-TCDD		0.65-0.89				0.897-1.103			
332-334	DC NL	0:00	1.37	2.25				0.000	
	DC SN	18:26	0.74	12.45				0.946	
		19:29	0.79	2,580.19	1,135.41	1,444.78	1.000	13C12-2378-TCDD	IS1
		19:44	0.80	1,612.66	717.25	895.41	1.013	13C12-1234-TCDD	RS1
	DC SN	20:23	0.81	34.52				1.046	
	DC WH	21:30	0.60	1.70				1.104	
	DC WH	21:56	0.94	16.37				1.126	
332-334		2 Peaks		4,192.85					

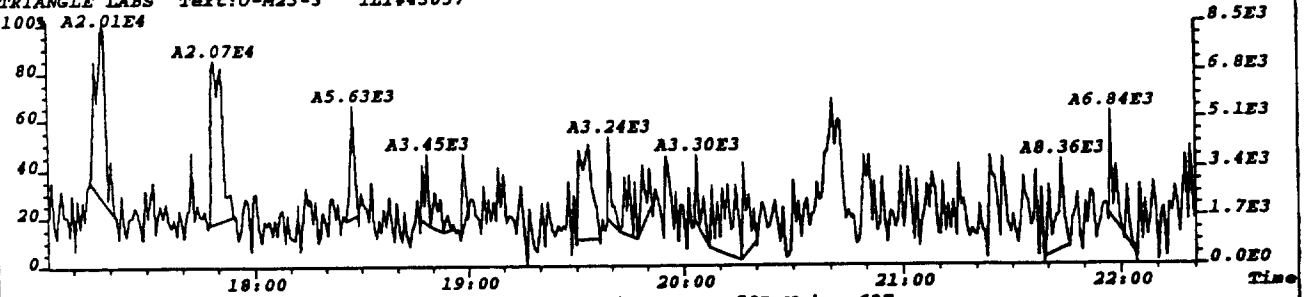
Column Description..... "Why" Code Description..... QC Log Desc.....

M\_Z -Nominal Ion Mass(es) WL-Below Retention Time Window A-Peak Added  
 ..RT. -Retention Time (mm:ss) WH-Above Retention Time Window K-Peak Kept  
 Rat.1 -Ratio of M/M+2 Ions SN-Below Signal to Noise Level D-Peak Deleted  
 OK -RO-Ratio Outside Limits <M-Below Method Detection Limit T-Time Changed  
 Rel.RT-Relative Retention Time NL-Channel Specific Noise Level N-Peak Area Changed  
 N-Name Changed  
 E-Ether Interference

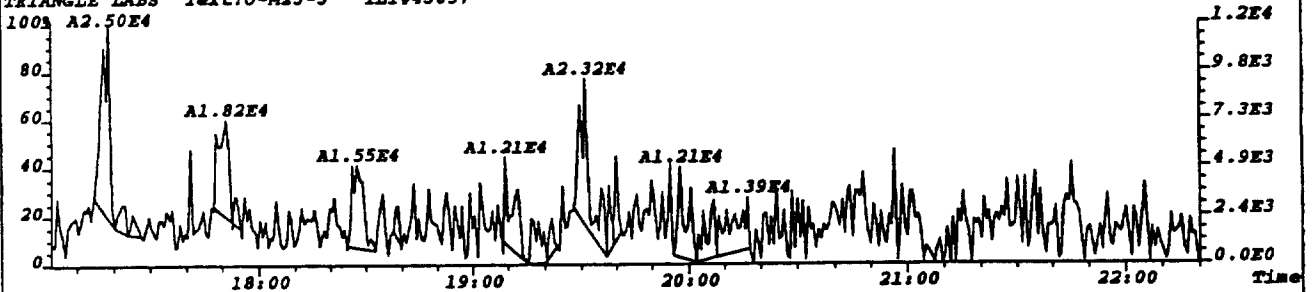
\*\*\* End of Report \*\*\*



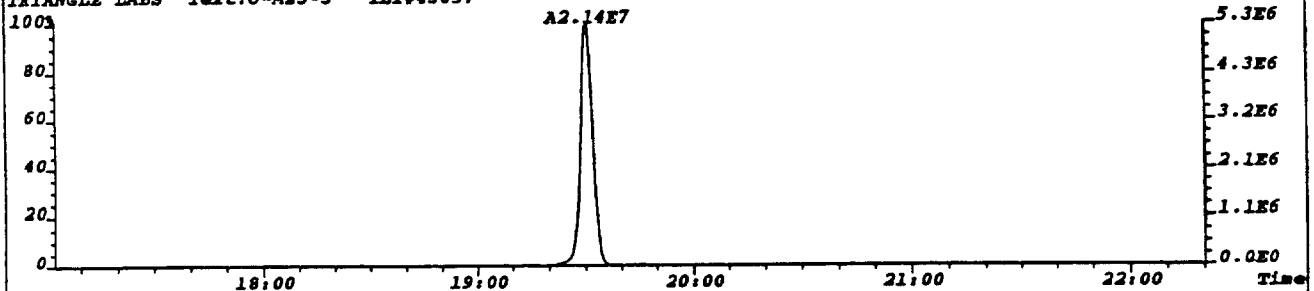
File:P973846 #1-755 Acq:12-SEP-1997 13:32:10 EI+ Voltage SIR 70P Noise:563  
319.8965 BSUB(256,30,-3.0) PKD(5,3,1,0.10%,2252.0,0.00%,F,F) Exp:DB225  
TRIANGLE LABS Text:O-M23-3 TLI#43057



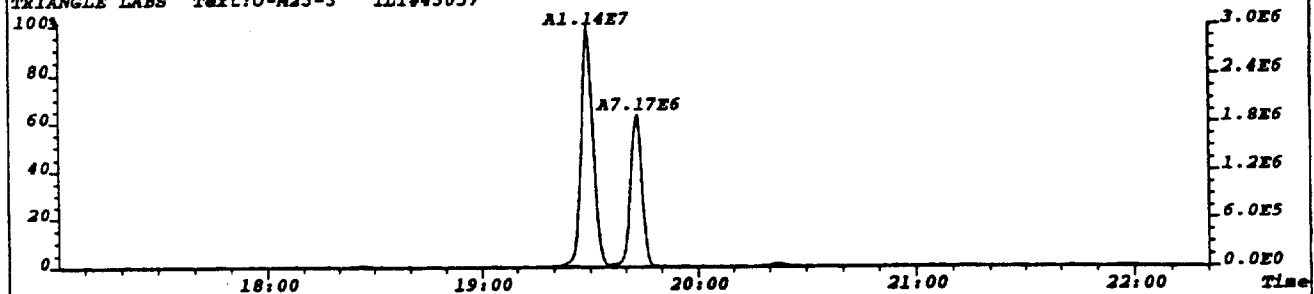
File:P973846 #1-755 Acq:12-SEP-1997 13:32:10 EI+ Voltage SIR 70P Noise:627  
321.8936 BSUB(256,30,-3.0) PKD(5,3,1,0.10%,2508.0,0.00%,F,F) Exp:DB225  
TRIANGLE LABS Text:O-M23-3 TLI#43057



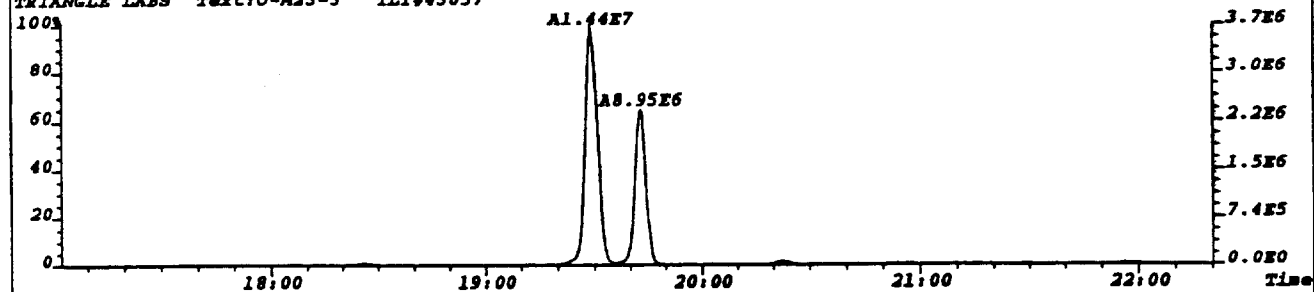
File:P973846 #1-755 Acq:12-SEP-1997 13:32:10 EI+ Voltage SIR 70P Noise:509  
327.8847 BSUB(256,30,-3.0) PKD(5,3,1,0.10%,2036.0,0.00%,F,F) Exp:DB225  
TRIANGLE LABS Text:O-M23-3 TLI#43057

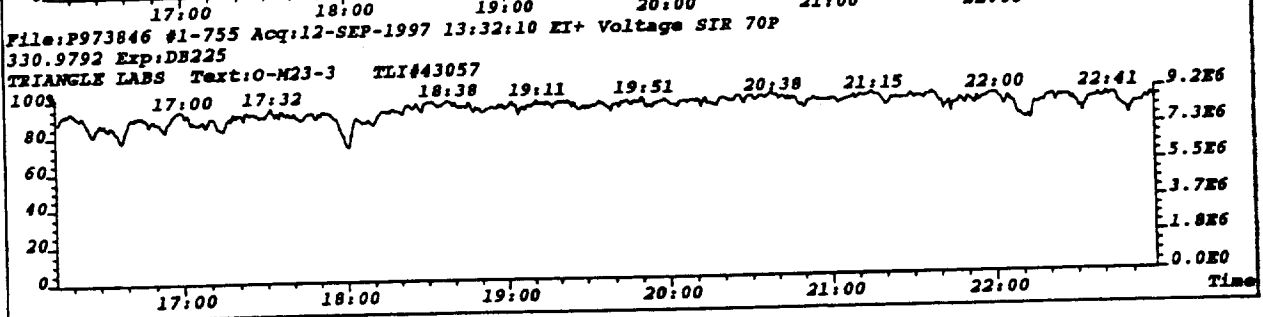
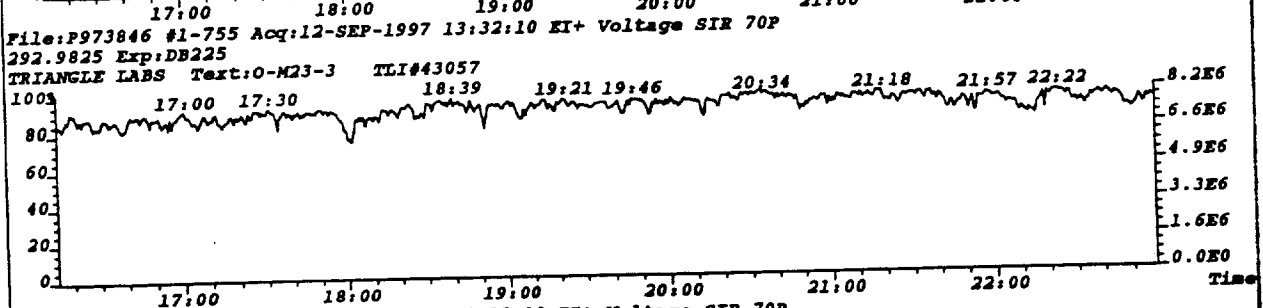
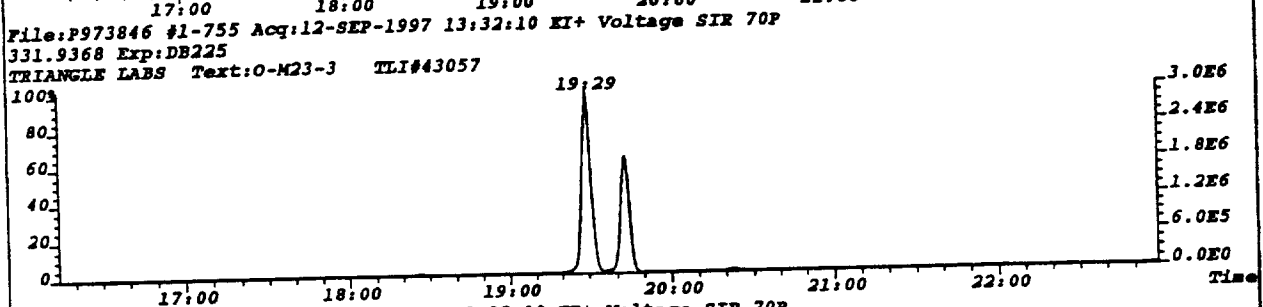
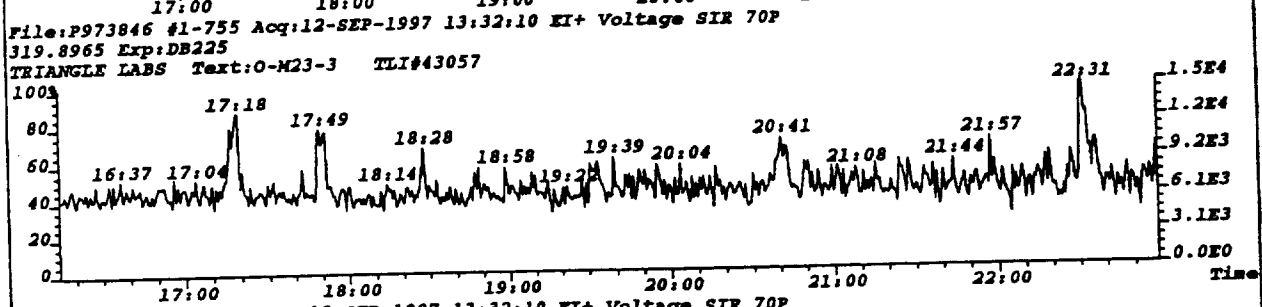
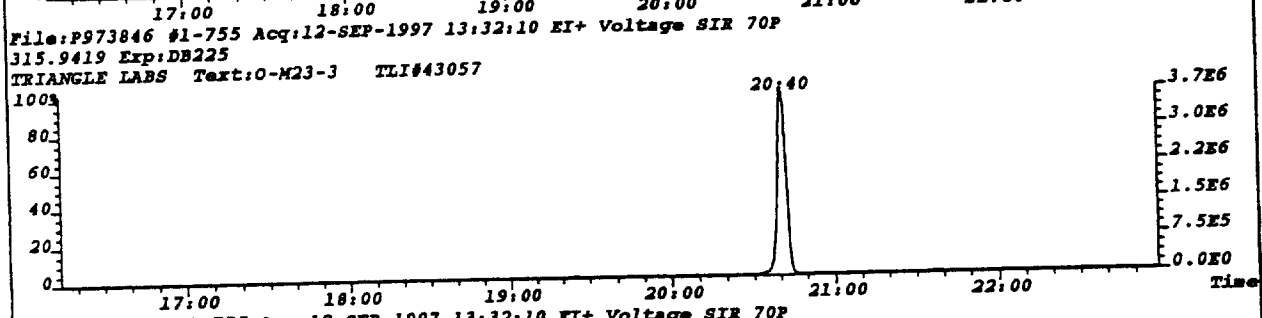
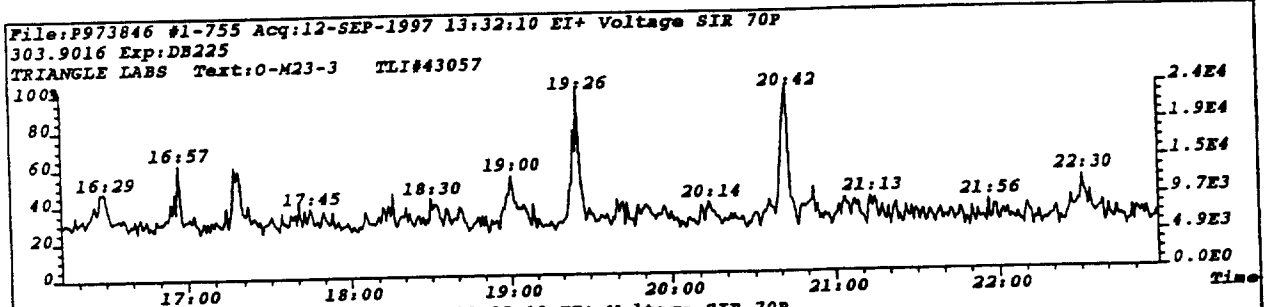


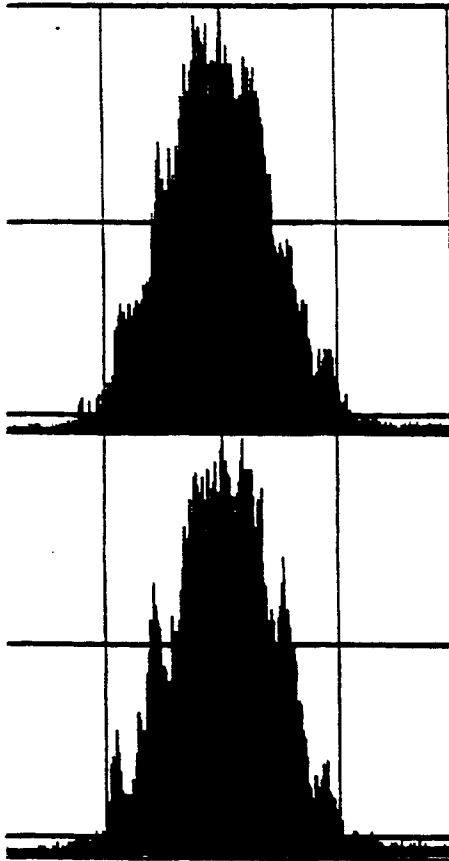
File:P973846 #1-755 Acq:12-SEP-1997 13:32:10 EI+ Voltage SIR 70P Noise:870  
331.9368 BSUB(256,30,-3.0) PKD(5,3,1,0.10%,3480.0,0.00%,F,F) Exp:DB225  
TRIANGLE LABS Text:O-M23-3 TLI#43057



File:P973846 #1-755 Acq:12-SEP-1997 13:32:10 EI+ Voltage SIR 70P Noise:636  
333.9338 BSUB(256,30,-3.0) PKD(5,3,1,0.10%,2544.0,0.00%,F,F) Exp:DB225  
TRIANGLE LABS Text:O-M23-3 TLI#43057



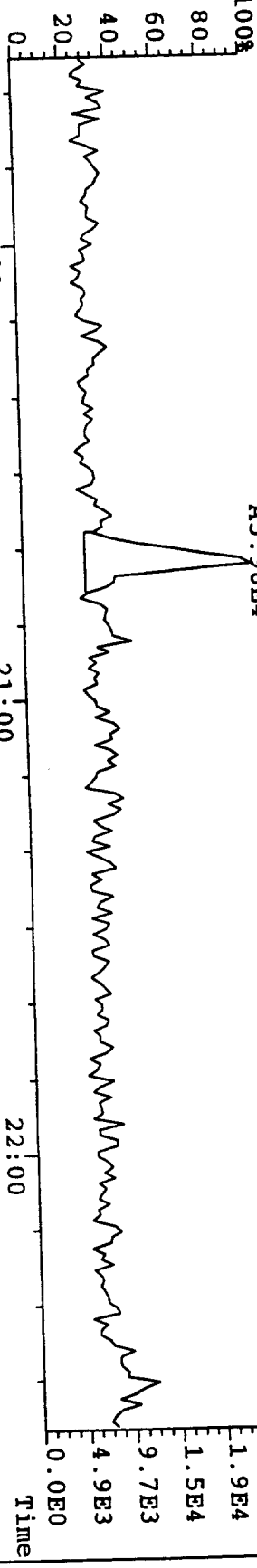




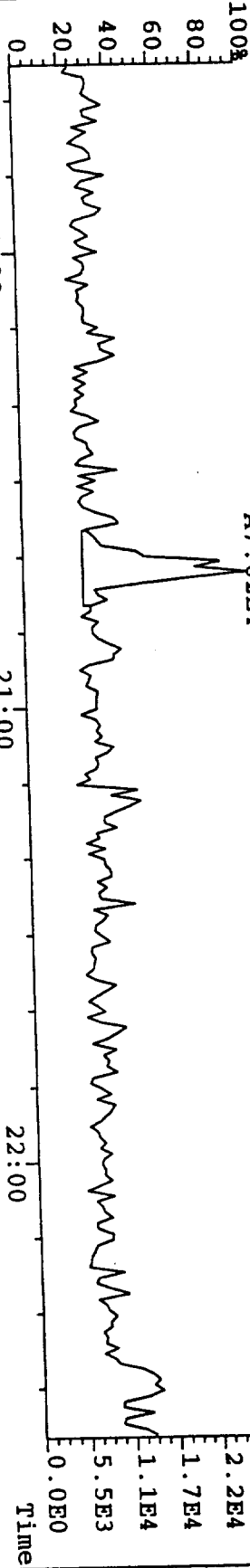
Ref. mass	292.9825	Peak top
Height	1.92 volts	Span 200 ppm
System file name DB225		
Data file name A:P973846		
Resolution 10000		
Group number 1		
Ionization mode EI+		
Switching VOLTAGE		
Ref. masses	292.9825,	388.9761
A	292.9825	J 338.9792
B	303.9816	K 331.9368
C	305.8987	L 333.9338
D	315.9419	M 375.8364
E	317.9389	
F	319.8965	
G	321.8936	
H	327.8847	
I	338.9792	
Channel	I 338.9792	Peak top
Height	1.94 volts	Span 200 ppm



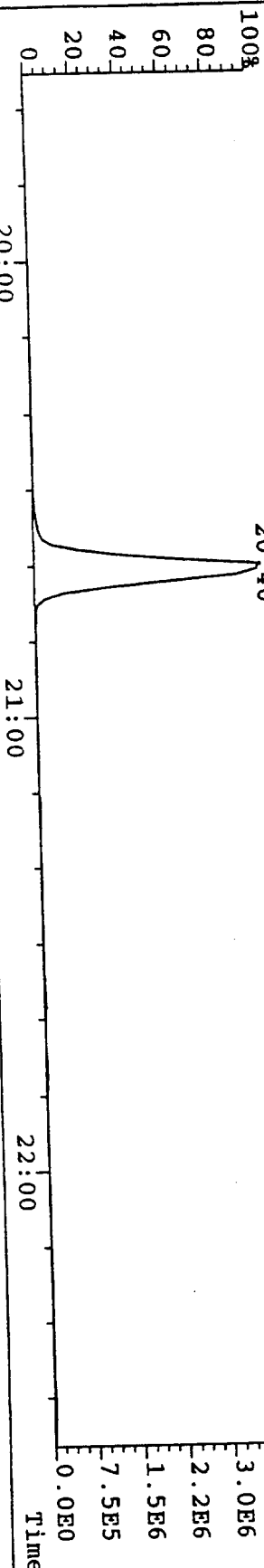
File: P973846 #1-755 Acq: 12-SEP-1997 13:32:10 EI+ Voltage SIR 70P  
303.9016 Exp: DB225 TLI#43057 File Text: O-M23-3 TLI#43057  
Sample Text: O-M23-3 A5.98E4



File: P973846 #1-755 Acq: 12-SEP-1997 13:32:10 EI+ Voltage SIR 70P  
305.8987 Exp: DB225 TLI#43057 File Text: O-M23-3 TLI#43057  
Sample Text: O-M23-3 A7.02E4



File: P973846 #1-755 Acq: 12-SEP-1997 13:32:10 EI+ Voltage SIR 70P  
315.9419 Exp: DB225 TLI#43057 File Text: O-M23-3 TLI#43057  
Sample Text: O-M23-3



**Pacific Environmental Services**

TLI Project: 43057  
 Client Sample: O-M23-FB

Method 23 PCDD/PCDF Analysis (a)  
 Analysis File: S975816

Client Project:	ASPHALT PLANT "A"				
Sample Matrix:	M23TRAIN	Date Received:	08/29/97	Spike File:	SPX23704
TLI ID:	181-27-5A-C	Date Extracted:	09/06/97	ICal:	SF56117
		Date Analyzed:	09/11/97	ConCal:	S975814
Sample Size:	1.000	Dilution Factor:	n/a	% Moisture:	n/a
Dry Weight:	n/a	Blank File:	S975807	% Lipid:	n/a
GC Column:	DB-5	Analyst:	HLM	% Solids:	n/a

Analytes	Amt. (ng)	DL	EMPC	Ratio	RT	Flags
2,3,7,8-TCDD	ND	0.01				---
1,2,3,7,8-PeCDD	ND	0.01				---
1,2,3,4,7,8-HxCDD	ND	0.01				---
1,2,3,6,7,8-HxCDD	EMPC		0.02			---
1,2,3,7,8,9-HxCDD	EMPC		0.02			PR_
1,2,3,4,6,7,8-HpCDD	0.06			1.02	32:03	B_
1,2,3,4,6,7,8,9-OCDD	0.11			0.86	34:33	B_
2,3,7,8-TCDF	ND	0.006				---
1,2,3,7,8-PeCDF	EMPC		0.01			---
2,3,4,7,8-PeCDF	0.03			1.49	25:28	B_
1,2,3,4,7,8-HxCDF	0.07			1.43	28:21	B_
1,2,3,6,7,8-HxCDF	0.03			1.10	28:28	B_
2,3,4,6,7,8-HxCDF	0.03			1.21	28:59	PRB
1,2,3,7,8,9-HxCDF	ND	0.01				---
1,2,3,4,6,7,8-HpCDF	EMPC		0.09			PRB
1,2,3,4,7,8,9-HpCDF	0.04			1.02	32:24	B_
1,2,3,4,6,7,8,9-OCDF	0.07			0.88	34:39	B_

Totals	Amt. (ng)	Number	DL	EMPC	Flags
Total TCDD	EMPC			0.02	---
Total PeCDD	0.02	1		0.07	---
Total HxCDD	0.06	1		0.13	---
Total HpCDD	0.06	1		0.11	---
Total TCDF	ND		0.006		---
Total PeCDF	0.03	1		0.04	---
Total HxCDF	0.13	3		0.18	---
Total HpCDF	0.10	3		0.18	---



Initial LM Date 9/11/97

Data Review By: \_\_\_\_\_ Calculated Noise Area: 1.67

The Total Area for each peak with an ion abundance ratio outside ratio limits has been recalculated according to method requirements.

Page No. 1 Listing of S975816B.dbf  
09/11/97 Matched GC Peaks / Ratio / Ret. Time

Compound/  
M\_2.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

		0.65-0.89				0.820-1.101			
304-306	DC NL	0:00	RO	0.67	1.12				0.000
	DC SN	16:53	RO	0.63	1.59				0.829
	DC SN	17:47	RO	0.46	0.83				0.873
	DC SN	18:44	RO	1.58	1.38				0.920
	DC SN	19:11	RO	1.03	3.65				0.942
	DC SN	19:53	RO	0.55	3.03				0.976
D	D SN	20:24		0.77	6.03			1.002	2378-TCDF AN
	DC SN	21:54		0.65	2.58			1.075	
304-306	0 Peaks				0.00				

		0.65-0.89				0.951-1.049			
13C12-TCDF	DC NL	0:00	RO	0.14	0.16				0.000
316-318	DC WL	18:02	RO	0.23	1.06				0.885
	DC WL	19:10	RO	0.58	7.36				0.941
	DC WL	19:20	RO	0.58	2.41				0.949
	DC SN	19:30		0.69	3.05				0.957
		19:51		0.76	12.39	5.36	7.03	0.975	
		20:22		0.75	2,231.29	953.97	1,277.32	1.000	13C12-2378-TCDF ISO
	DC WH	21:41	RO	1.36	3.03			1.065	
	DC WH	22:40	RO	0.94	3.82			1.113	
316-318	2 Peaks				2,243.68				

----- Above: TCDF / TCDD Follows -----

		0.65-0.89				0.853-1.059			
320-322	DC NL	0:00	RO	5.25	0.14				0.000
		18:16	RO	0.90	5.93	3.02	3.35	0.862	
	DC SN	18:27	RO	0.36	0.62			0.871	
	DC SN	18:55	RO	0.23	0.32			0.893	
	DC SN	19:03	RO	0.91	2.12			0.899	
	DC SN	19:22		0.66	1.11			0.914	
	DC SN	19:39	RO	3.07	0.50			0.928	
	DC SN	19:52	RO	0.57	1.93			0.938	
	DC SN	20:07	RO	1.95	1.12			0.950	
	DC SN	20:37	RO	0.98	1.06			0.973	
	DC SN	20:51	RO	0.59	0.39			0.984	
	DC SN	21:12	RO	0.33	1.75			1.001	2378-TCDD AN
	DC SN	21:36	RO	0.50	1.40			1.020	
	DC SN	21:58	RO	0.52	0.90			1.037	
	DC SN	22:07	RO	1.16	0.34			1.044	
	DC SN	22:09	RO	1.98	0.99			1.046	
320-322	1 Peak				5.93				

Compound/  
M\_2.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

						0.906-1.094	
37Cl-TCDD							
328	DC NL	0:00		0.09		0.000	
	DC WL	18:08		0.75		0.856	
	DC WL	18:35		2.67		0.877	
	DC WL	18:44		2.10		0.884	
		19:39		70.71	70.71	0.928	
	DC SN	20:14		0.59		0.955	
	DC SN	20:55		0.84		0.987	
		21:13		1,299.45	1,299.45	1.002	37Cl-TCDD SUR1
	DC SN	21:27		1.92		1.013	
	DC SN	21:32		1.97		1.017	
		21:41		2.23	2.23	1.024	
	DC SN	21:48		1.30		1.029	
	DC SN	22:05		1.38		1.042	
	DC SN	22:12		0.90		1.048	
	DC SN	22:31		1.27		1.063	
	DC SN	22:44		1.21		1.073	
328		3 Peaks		1,372.39			

		0.65-0.89				0.906-1.094	
13C12-TCDD							
332-334	DC NL	0:00 RO	22.13	0.14		0.000	
		19:52 RO	0.90	6.97	3.53	3.94	0.938
		20:58	0.86	3,420.53	1,580.25	1,840.28	0.990 13C12-1234-TCDD RS1
		21:11	0.80	1,251.49	555.65	695.84	1.000 13C12-2378-TCDD IS1
		21:35 RO	1.06	22.05	13.26	12.46	1.019
332-334		4 Peaks		4,701.04			

----- Above: TCDD / PeCDF Follows -----

		1.32-1.78				0.907-1.078	
PeCDF							
340-342	DC NL	0:00 RO	0.16	0.10		0.000	
	DC SN	22:35 RO	0.93	2.83		0.914	
	DC SN	22:42 RO	0.24	0.41		0.919	
	DC SN	23:11 RO	0.36	0.72		0.939	
	DC SN	23:58 RO	1.87	2.40		0.970	
	DC SN	24:11 RO	10.79	0.48		0.979	
M		24:42 RO	0.95	5.45	3.31	3.49	1.000 12378-PeCDF AN
	DC SN	24:53 RO	1.10	3.47		1.007	
D	D SN	25:02 RO	1.15	5.35		1.013	
	DC SN	25:15 RO	0.25	0.72		1.022	
		25:28	1.49	14.41	8.62	5.79	1.031 23478-PeCDF AN
	DC SN	25:37 RO	1.95	5.10		1.037	
	DC SN	25:55 RO	3.02	1.43		1.049	
	DC SN	26:15 RO	3.90	1.22		1.063	
	DC SN	26:28 RO	0.77	2.37		1.072	
	DC WH	26:50 RO	0.70	1.66		1.086	
	DC WH	27:00 RO	1.15	1.55		1.093	
340-342		2 Peaks		19.86			

		1.32-1.78				0.838-1.162	
13C12-PeCDF							
352-354	DC NL	0:00 RO	0.88	0.12		0.000	
		23:48	1.51	9.61	5.78	3.83	0.964

Compound/

M\_Z.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

Compound/	M_Z	QC	Log	Omit	Why	RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Rel.RT	Compound.Name	ID	Flags
						24:20		1.38	6.69	3.88	2.81	0.985			
						24:42		1.65	1,740.67	1,084.59	656.08	1.000	13C12-PeCDF	123	IS2
						24:53	RO	1.81	12.93	9.18	5.07	1.007			
						25:00		1.55	13.81	8.39	5.42	1.012			
						25:27		1.49	1,897.18	1,135.82	761.36	1.030	13C12-PeCDF	234	SUR2
						25:44	RO	2.86	3.75			1.042			
						25:51	RO	1.16	3.04			1.047			
						26:28	RO	0.92	5.71	3.47	3.79	1.072			
352-354						7 Peaks			3,686.60						

----- Above: PeCDF / PeCDD Follows -----

Compound/	M_Z	QC	Log	Omit	Why	RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Rel.RT	Compound.Name	ID	Flags
						1.32-1.78						0.921-1.026			
356-358						0:00	RO	13.80	0.13			0.000			
						23:58	RO	0.31	9.94	6.04	19.68	0.928			
						24:27	RO	7.11	0.46			0.946			
						24:44		1.36	8.65	4.98	3.67	0.957			
						24:50	RO	3.34	0.97			0.961			
						25:04	RO	1.23	6.27	3.81	3.09	0.970			
						25:17		1.62	2.80			0.979			
						25:31	RO	3.38	2.70			0.988			
						25:50	RO	2.49	4.82			1.000	12378-PeCDD		AN
						25:59	RO	3.11	0.94			1.006			
						26:10	RO	0.88	0.86			1.013			
						26:40	RO	1.01	1.45			1.032			
356-358						3 Peaks			24.86						

Compound/	M_Z	QC	Log	Omit	Why	RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Rel.RT	Compound.Name	ID	Flags
						1.32-1.78						0.845-1.155			
368-370						0:00	RO	1.29	0.15			0.000			
						24:13	RO	1.95	1.50			0.937			
						25:03	RO	0.62	1.63			0.970			
						25:50		1.45	1,189.98	703.40	486.58	1.000	13C12-PeCDD	123	IS3
						25:59		1.58	119.39	73.12	46.27	1.006			
						26:08	RO	0.93	1.74			1.012			
						26:14	RO	3.75	0.61			1.015			
						26:23	RO	2.91	1.38			1.021			
368-370						2 Peaks			1,309.37						

----- Above: PeCDD / HxCDF Follows -----

Compound/	M_Z	QC	Log	Omit	Why	RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Rel.RT	Compound.Name	ID	Flags
						1.05-1.43						0.955-1.052			
374-376						0:00	RO	1.86	1.57			0.000			
						27:21	RO	1.48	8.49	5.60	3.79	0.961			
						27:32	RO	1.46	18.66	12.19	8.33	0.967			
						27:40	RO	1.04	1.73			0.972			
						27:49		1.31	5.06			0.977			
						27:58		1.32	4.36			0.982			
						28:21		1.43	32.67	19.24	13.43	0.996	123478-HxCDF		AN
						28:28		1.10	15.58	8.16	7.42	1.000	123678-HxCDF		AN
						28:34		1.18	4.65			1.004			
						28:47	RO	0.79	4.17			1.011			
						28:59		1.21	16.81	9.22	7.59	1.018	234678-HxCDF		AN PR

Compound/  
M\_Z.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1... Area.Peak.2... Rel.RT Compound.Name.. ID.. Flags.

Compound	QC	Log	Omit	Why	RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Rel.RT	Compound.Name	ID	Flags	
					29:10		1.14	1.39			1.025				
					29:23	RO	6.40	0.67			1.032				
					29:29	RO	3.24	0.47			1.036				
					29:33	RO	3.42	0.27			1.038				
					29:41		1.24	6.64			1.043	123789-HxCDF	AN		
D					29:46	RO	1.56	4.88			1.046				
D					30:02	RO	2.87	0.67			1.055				
					30:05	RO	0.70	0.47			1.057				
					30:09	RO	2.30	0.60			1.059				
374-376					5 Peaks			92.21							

Compound	QC	Log	Omit	Why	RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Rel.RT	Compound.Name	ID	Flags
13C12-HxCDF					0.43-0.59						0.859-1.141			
384-386					0:00	RO	0.37	2.78			0.000			
					27:30	RO	0.41	4.91			0.966			
					28:21		0.48	1,360.71	441.73	918.98	0.996	13C12-HxCDF 478	SUR3	
					28:28		0.48	1,558.16	506.87	1,051.29	1.000	13C12-HxCDF 678	IS4	
					28:43	RO	0.94	2.22			1.009			
					28:50	RO	0.38	1.69			1.013			
					28:58		0.49	1,420.56	467.71	952.85	1.018	13C12-HxCDF 234	ALT2	
					29:10	RO	1.35	1.65			1.025			
					29:41		0.49	1,164.20	383.10	781.10	1.043	13C12-HxCDF 789	ALT1	
					29:54	RO	1.00	2.49			1.050			
					29:58	RO	2.07	1.56			1.053			
					30:08		0.58	2.27			1.059			
384-386					4 Peaks			5,503.63						

----- Above: HxCDF / HxCDD Follows -----

Compound	QC	Log	Omit	Why	RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Rel.RT	Compound.Name	ID	Flags
HxCDD					1.05-1.43						0.950-1.015			
390-392					0:00	RO	0.63	0.65			0.000			
D					27:55		1.06	4.81			0.957			
					28:00	RO	0.38	0.45			0.959			
					28:03		1.37	0.45			0.961			
					28:08	RO	0.66	0.52			0.964			
					28:15	RO	0.23	0.27			0.968			
					28:21		1.26	24.46	13.65	10.81	0.971			
					28:26		1.16	2.03			0.974			
					28:35	RO	0.97	10.06	5.57	5.76	0.979			
					28:43	RO	2.02	1.01			0.984			
					28:51	RO	0.77	0.36			0.989			
					28:54	RO	0.38	0.70			0.990			
					29:06	RO	0.62	2.85			0.997	123478-HxCDD	AN	
M					29:11	RO	1.48	7.53	4.97	3.36	1.000	123678-HxCDD	AN	
					29:20	RO	0.06	0.07			1.005			
M					29:29	RO	0.95	8.13	4.50	4.74	1.010	123789-HxCDD	AN	PR
					29:57	RO	3.29	0.63			1.026			
390-392					4 Peaks			50.18						

Compound	QC	Log	Omit	Why	RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Rel.RT	Compound.Name	ID	Flags
13C12-HxCDD					1.05-1.43						0.966-1.034			
402-404					0:00	RO	0.52	0.79			0.000			
					28:35		1.35	5.84	3.36	2.48	0.979			
					29:06		1.24	1,192.66	659.69	532.97	0.997	13C12-HxCDD 478	SUR4	

Compound/  
 M\_Z.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

Compound	QC	Log	Omit	Why	RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Rel.RT	Compound.Name	ID	Flags
					29:11		1.14	1,488.29	794.20	694.09	1.000	13C12-HxCDD	678	IS5
					29:28		1.18	3,734.26	2,022.59	1,711.67	1.010	13C12-HxCDD	789	RS2
402-404	DC	SN			29:43	RO	0.63	3.74			1.018			
					4 Peaks			6,421.05						

----- Above: HxCDD / HpCDF Follows -----

Compound	QC	Log	Omit	Why	RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Rel.RT	Compound.Name	ID	Flags
408-410	DC	NL			0:00	RO	2.52	0.67			0.000			
					31:11	RO	1.32	35.70	23.10	17.50	1.001	1234678-HpCDF	AN	PR
					31:24		1.14	10.15	5.41	4.74	1.007			
					31:31		1.00	10.97	5.48	5.49	1.011			
	DC	SN			32:08	RO	3.45	0.45			1.031			
					32:24		1.02	13.14	6.62	6.52	1.040	1234789-HpCDF	AN	
408-410	DC	WH			32:39	RO	3.94	0.71			1.048			
					4 Peaks			69.96						

Compound	QC	Log	Omit	Why	RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Rel.RT	Compound.Name	ID	Flags
418-420	DC	NL			0:00	RO	1.42	0.96			0.000			
					31:10		0.42	1,082.87	322.74	760.13	1.000	13C12-HpCDF	678	IS6
	DC	SN			32:02	RO	0.83	1.41			1.028			
					32:22		0.43	712.92	212.82	500.10	1.039	13C12-HpCDF	789	SUR5
	DC	SN			32:39	RO	1.71	1.68			1.048			
	DC	SN			32:48		0.47	2.77			1.052			
418-420					2 Peaks			1,795.79						

----- Above: HpCDF / HpCDD Follows -----

Compound	QC	Log	Omit	Why	RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Rel.RT	Compound.Name	ID	Flags
424-426	DC	NL			0:00	RO	0.81	0.69			0.000			
	DC	SN			31:17	RO	0.32	0.57			0.977			
					31:26	RO	1.29	13.16	8.29	6.45	0.981			
	DC	SN			31:51	RO	3.44	0.51			0.994			
					32:03		1.02	20.03	10.10	9.93	1.001	1234678-HpCDD	AN	
424-426					2 Peaks			33.19						

Compound	QC	Log	Omit	Why	RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Rel.RT	Compound.Name	ID	Flags
436-438	DC	NL			0:00		1.00	3.24			0.000			
					32:02		0.98	1,162.82	574.07	588.75	1.000	13C12-HpCDD	678	IS7
436-438					1 Peak			1,162.82						

----- Above: HpCDD / Octa-CDD and CDF Follows -----

Compound	QC	Log	Omit	Why	RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Rel.RT	Compound.Name	ID	Flags
442-444	DC	NL			0:00		1.00	0.12			0.000			
	DC	SN			30:55	RO	0.22	0.47			0.895			
	DC	SN			31:13	RO	0.22	0.68			0.904			
	DC	SN			31:17	RO	3.50	0.45			0.906			
	DC	SN			31:29	RO	1.63	1.17			0.912			
	DC	SN			31:48	RO	1.89	1.02			0.921			
	DC	SN			32:16	RO	2.46	1.30			0.934			
	DC	SN			32:25		1.00	0.84			0.939			



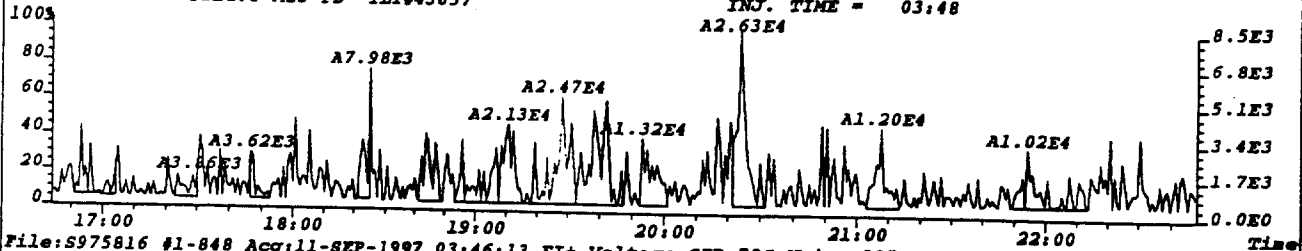
Compound/ M_2....	QC.Log	Omit	Why	..RT.	OK	Ratio	Total.Area...	Area.Peak.1..	Area.Peak.2..	Rel.RT	Compound.Name..	ID..	Flags.
	DC	SN		32:36	RO	0.54	0.28			0.944			
	DC	SN		32:52		0.96	1.37			0.952			
	DC	SN		33:00	RO	0.71	0.74			0.956			
	DC	SN		33:04	RO	0.74	1.23			0.958			
	DC	SN		33:10	RO	0.40	1.04			0.960			
	DC	SN		33:47	RO	0.38	0.79			0.978			
	DC	SN		34:15	RO	1.49	1.19			0.992			
				34:39		0.88	19.66	9.19	10.47	1.003	OCDF	AN	
	DC	SN		34:55	RO	8.43	0.57			1.011			
	DC	SN		35:13	RO	0.23	0.30			1.020			
	DC	SN		35:30	RO	1.65	0.49			1.028			
442-444				1 Peak			19.66						
										0.884-1.116			
OCDD										0.000			
458-460	DC	NL		0:00	RO	1.17	0.11			1.000	OCDD	AN	
				34:33		0.86	22.70	10.48	12.22	1.013			
	DC	SN		34:59	RO	0.48	1.78						
458-460				1 Peak			22.70						
										0.995-1.005			
13C12-OCDD										0.000			
470-472	DC	NL		0:00		1.00	0.16			1.000	13C12-OCDD	IS8	
				34:32		0.81	1,430.19	638.80	791.39				
470-472				1 Peak			1,430.19						

Column Description..... "Why" Code Description..... QC Log Desc.....

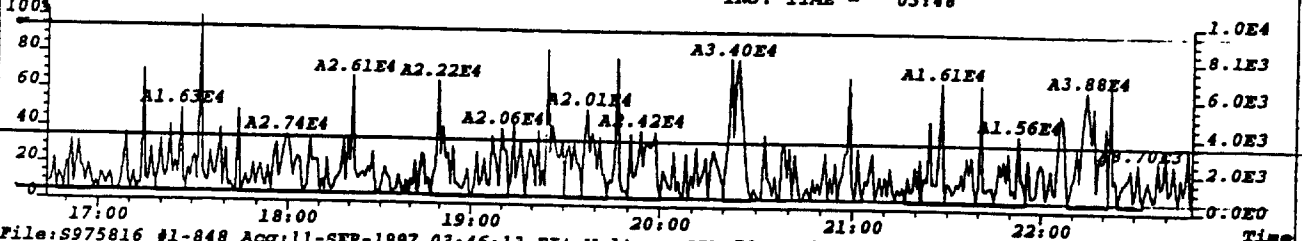
M\_2 -Nominal Ion Mass(es) WL-Below Retention Time Window A-Peak Added  
 ..RT. -Retention Time (mm:ss) WH-Above Retention Time Window K-Peak Kept  
 Rat.1 -Ratio of M/M+2 Ions SN-Below Signal to Noise Level D-Peak Deleted  
 OK -RO=Ratio Outside Limits <M-Below Method Detection Limit T-Time Changed  
 Rel.RT-Relative Retention Time NL-Channel Specific Noise Level M-Peak Area Changed  
 N-Name Changed  
 E-Ether Interference

\*\*\* End of Report \*\*\*

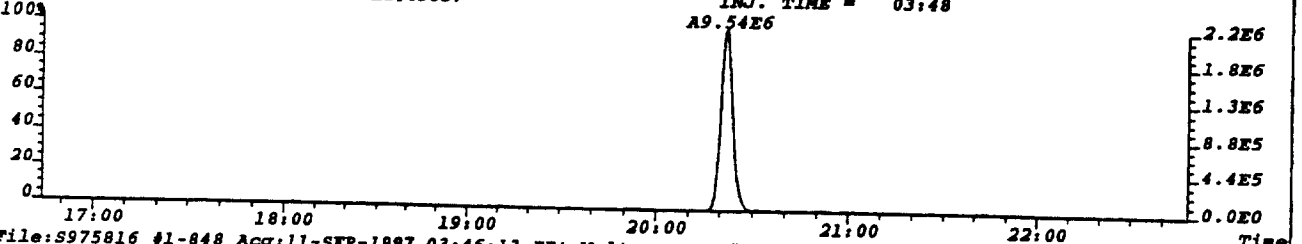
File:S975816 #1-848 Acq:11-SEP-1997 03:46:13 EI+ Voltage SIR 70S Noise:227  
303.9016 F:2 BSUB(256,30,-3.0) PKD(9,5,5,0.05%,908.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:O-M23-FB TLI#43057 INJ. TIME = 03:48



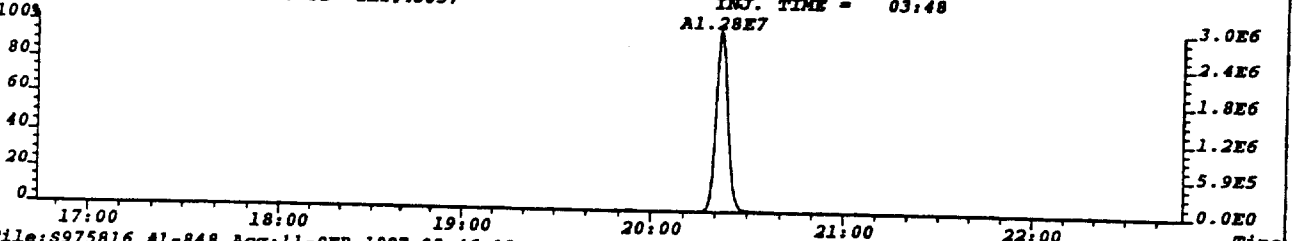
File:S975816 #1-848 Acq:11-SEP-1997 03:46:13 EI+ Voltage SIR 70S Noise:335  
305.8987 F:2 BSUB(256,30,-3.0) PKD(9,5,5,0.05%,1340.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:O-M23-FB TLI#43057 INJ. TIME = 03:48



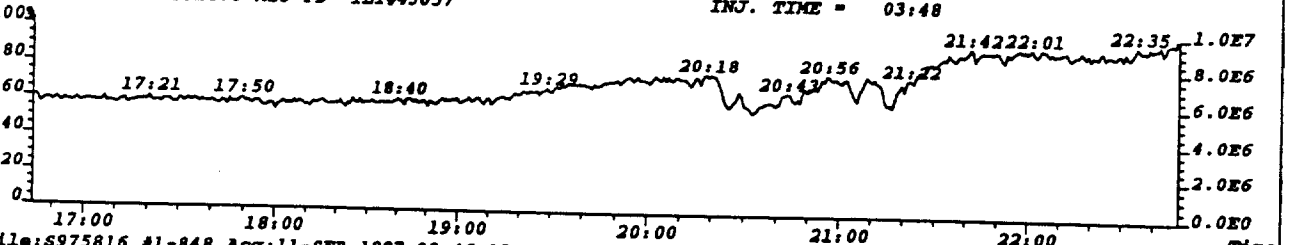
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315.9419 F:2 BSUB(256,30,-3.0) PKD(9,5,5,0.05%,148.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:O-M23-FB TLI#43057 INJ. TIME = 03:48



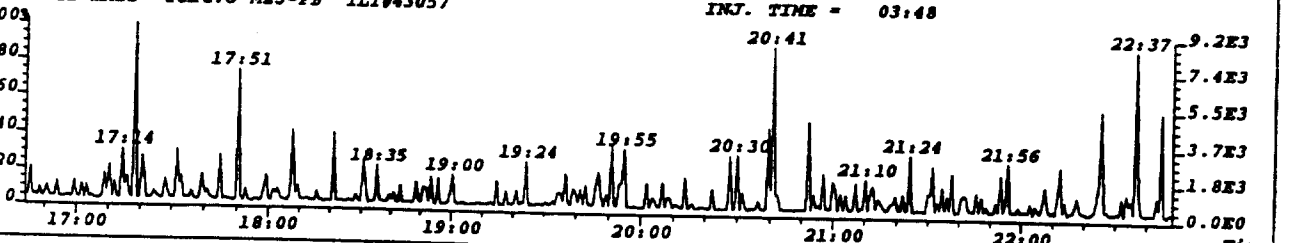
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317.9389 F:2 BSUB(256,30,-3.0) PKD(9,5,5,0.05%,1008.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:O-M23-FB TLI#43057 INJ. TIME = 03:48

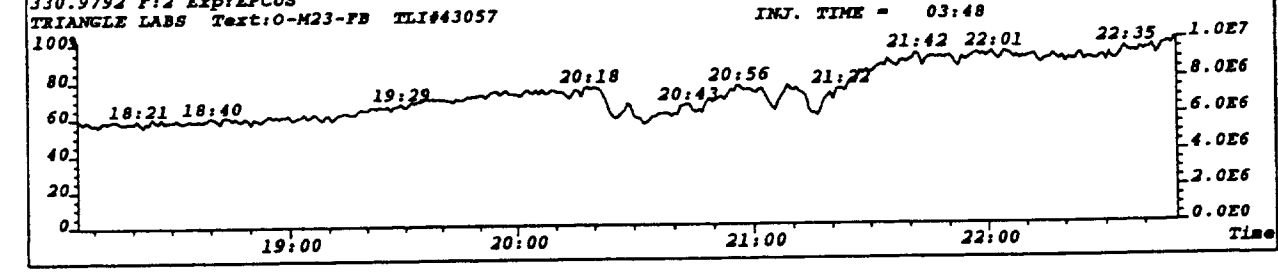
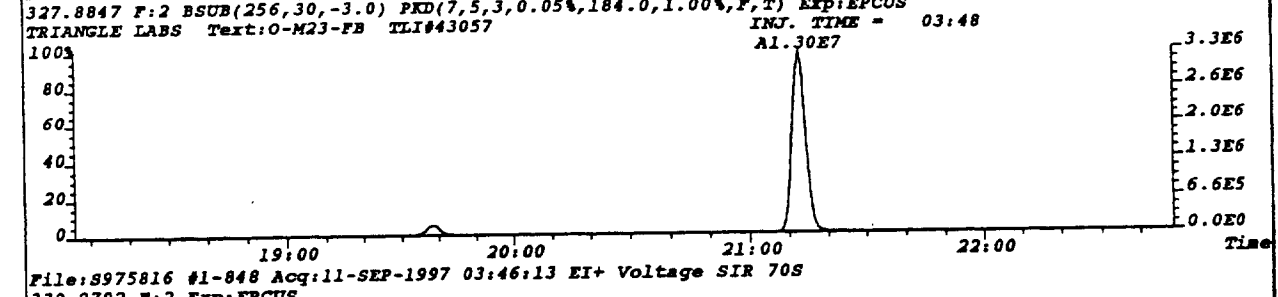
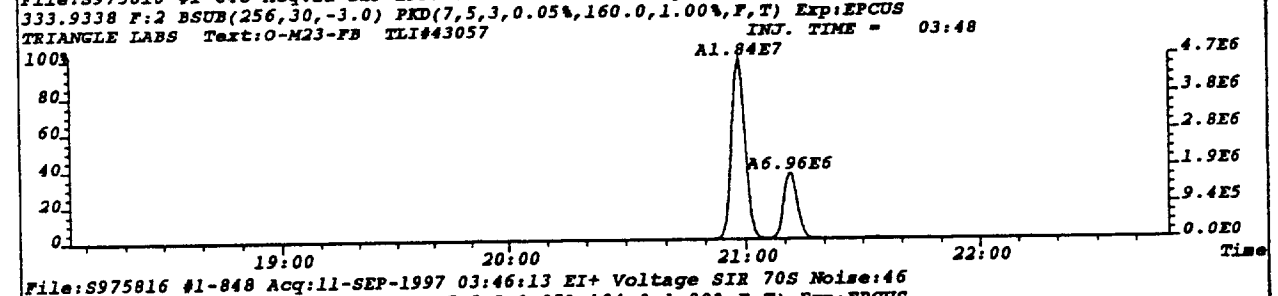
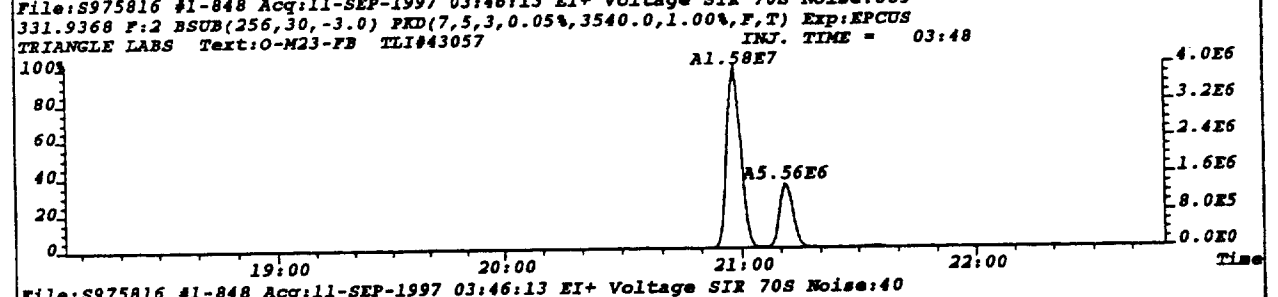
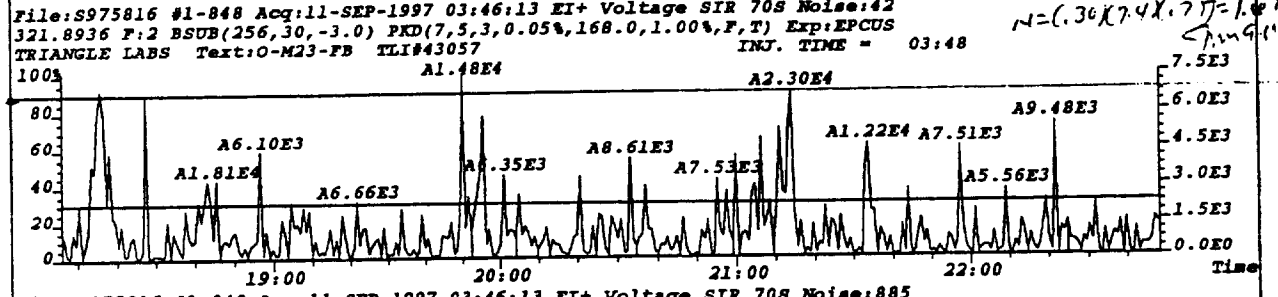
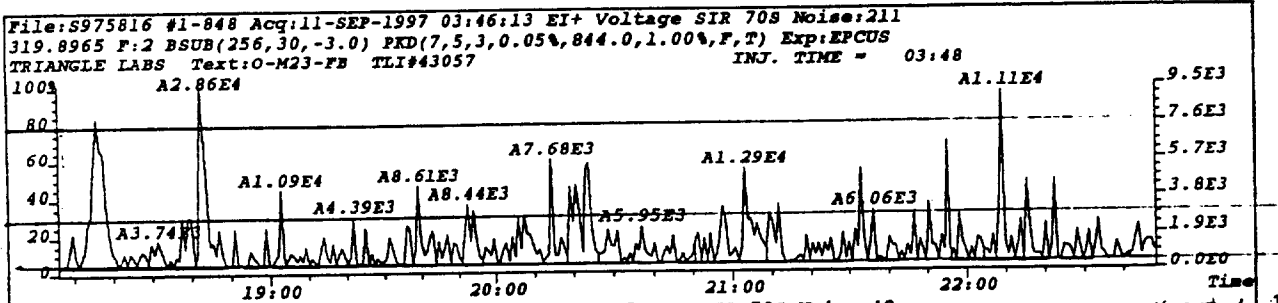


File:S975816 #1-848 Acq:11-SEP-1997 03:46:13 EI+ Voltage SIR 70S  
330.9792 F:2 Exp:EPCUS  
TRIANGLE LABS Text:O-M23-FB TLI#43057 INJ. TIME = 03:48

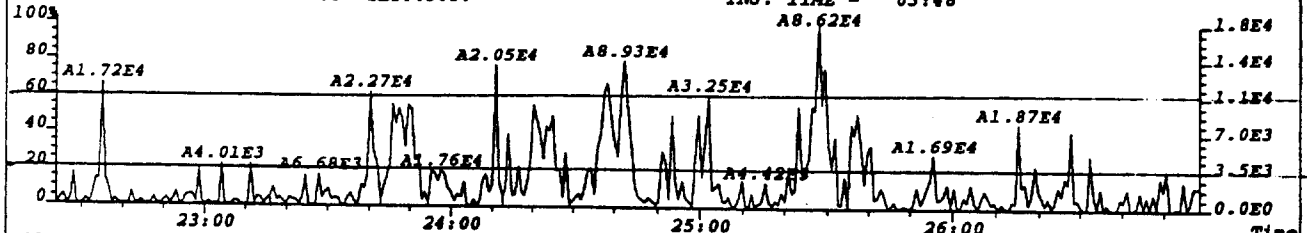


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375.8364 F:2 Exp:EPCUS  
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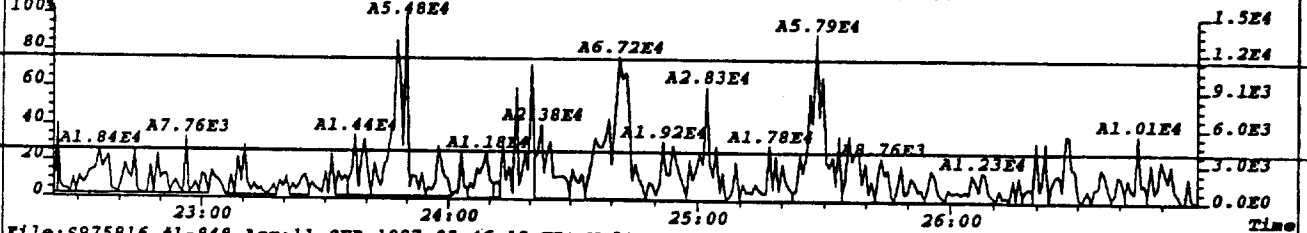




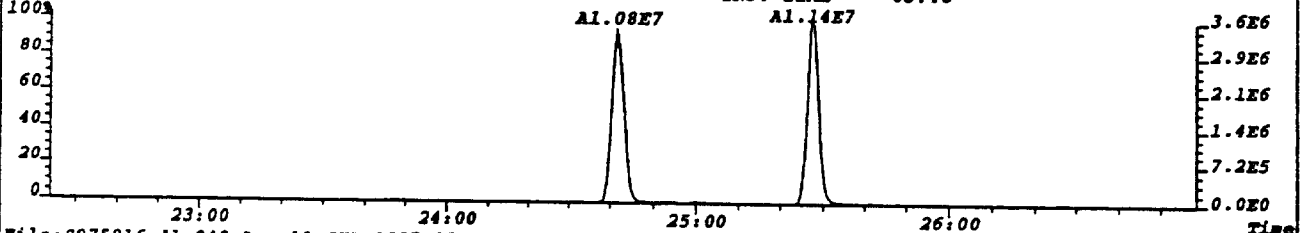
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339.8597 F:2 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,128.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:O-M23-FB TLI#43057 INJ. TIME = 03:48



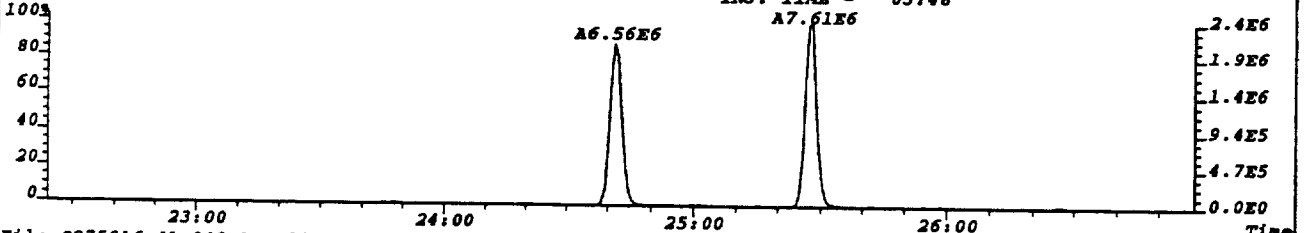
File:S975816 #1-848 Acq:11-SEP-1997 03:46:13 EI+ Voltage SIR 70S Noise:187  
341.8567 F:2 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,748.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:O-M23-FB TLI#43057 INJ. TIME = 03:48



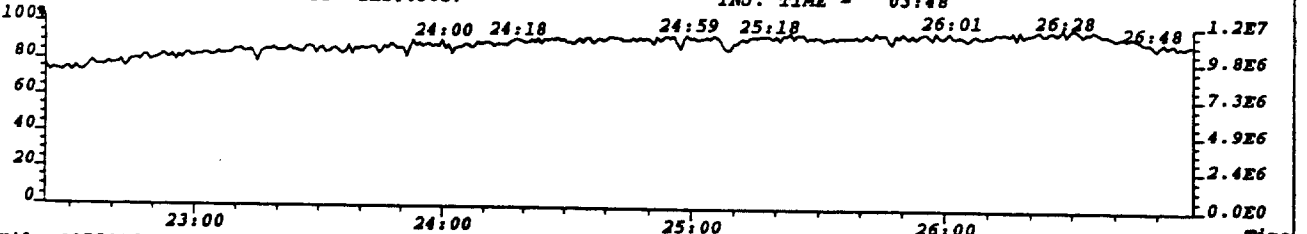
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351.9000 F:2 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,132.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:O-M23-FB TLI#43057 INJ. TIME = 03:48



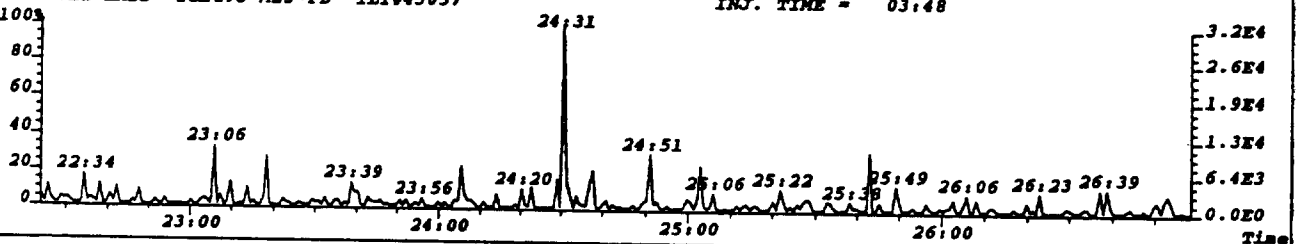
File:S975816 #1-848 Acq:11-SEP-1997 03:46:13 EI+ Voltage SIR 70S Noise:40  
353.8970 F:2 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,160.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:O-M23-FB TLI#43057 INJ. TIME = 03:48



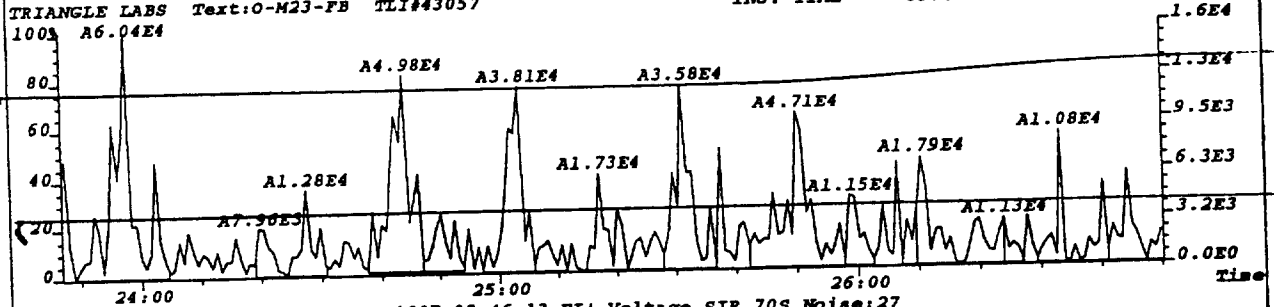
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330.9792 F:2 Exp:EPCUS  
TRIANGLE LABS Text:O-M23-FB TLI#43057 INJ. TIME = 03:48



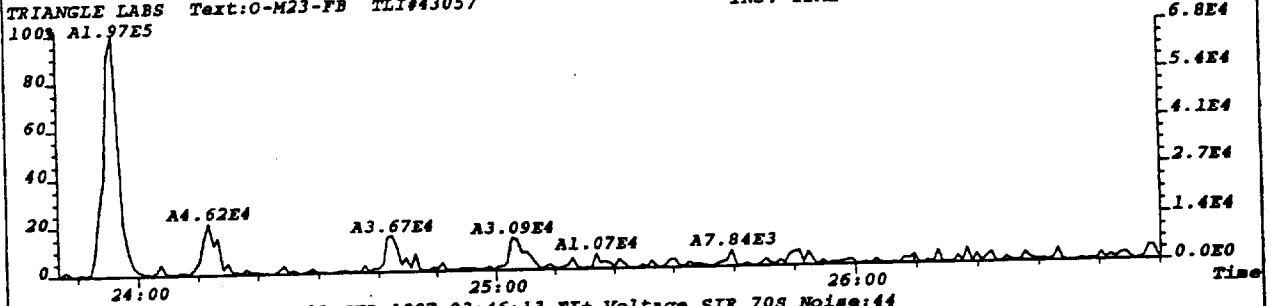
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409.7974 F:2 Exp:EPCUS  
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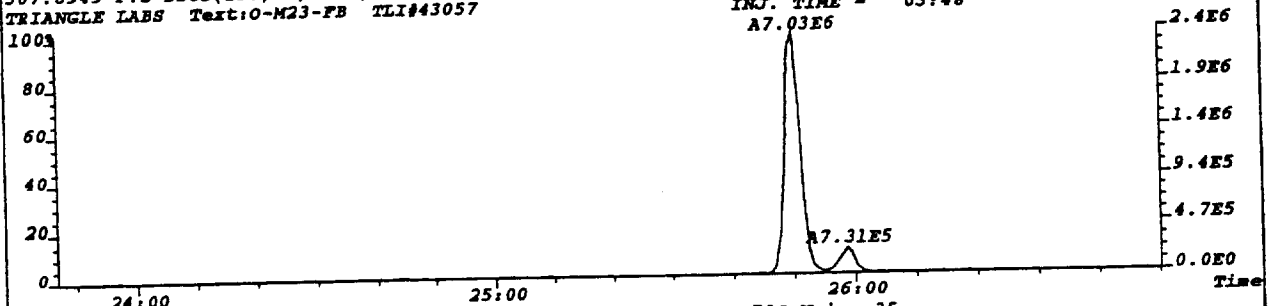
File:S975816 #1-848 Acq:11-SEP-1997 03:46:13 EI+ Voltage SIR 70S Noise:345  
 355.8546 F:2 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,1380.0,1.00%,F,T) Exp:EPCUS  
 TRIANGLE LABS Text:O-M23-FB TLI#43057 INJ. TIME = 03:48



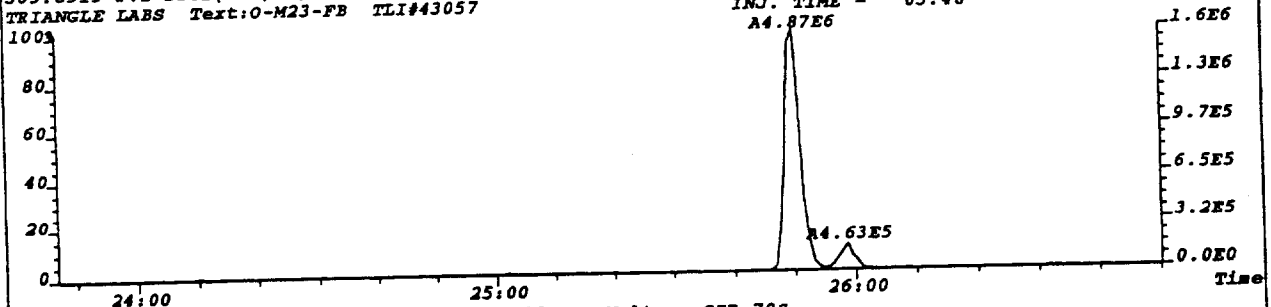
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 357.8516 F:2 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,108.0,1.00%,F,T) Exp:EPCUS  
 TRIANGLE LABS Text:O-M23-FB TLI#43057 INJ. TIME = 03:48



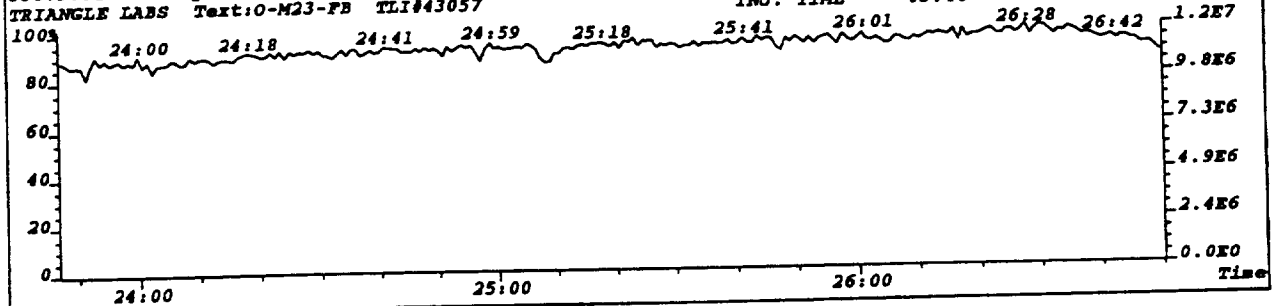
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 367.8949 F:2 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,176.0,1.00%,F,T) Exp:EPCUS  
 TRIANGLE LABS Text:O-M23-FB TLI#43057 INJ. TIME = 03:48



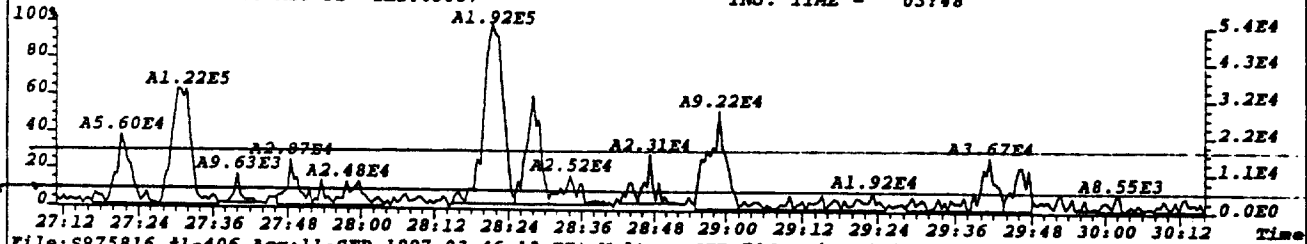
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 369.8919 F:2 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,140.0,1.00%,F,T) Exp:EPCUS  
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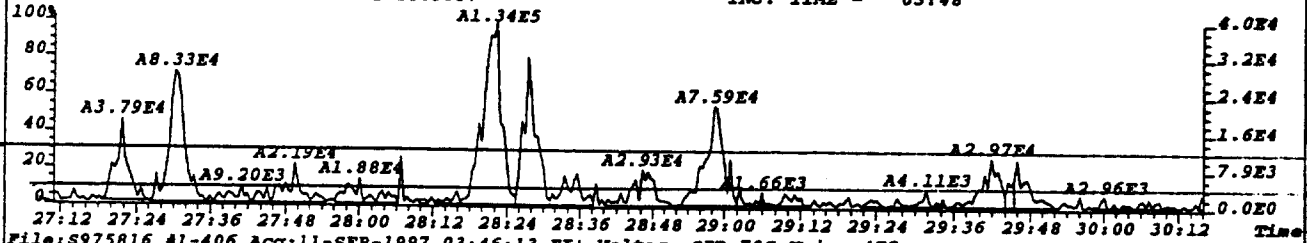
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 330.9792 F:2 Exp:EPCUS  
 TRIANGLE LABS Text:O-M23-FB TLI#43057 INJ. TIME = 03:48



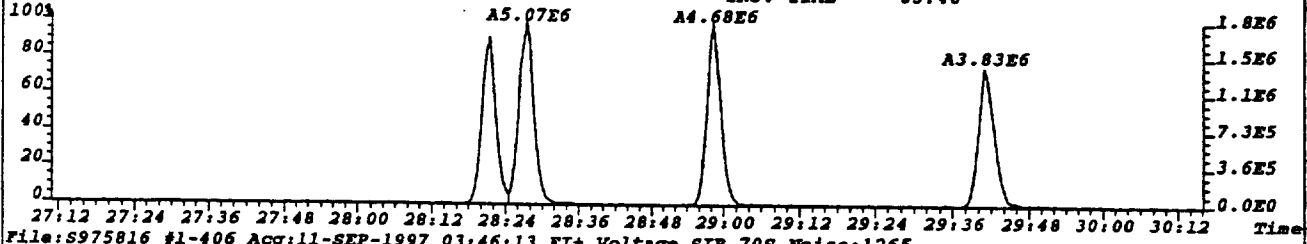
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373.8208 F: 3 BSub(256, 30, -3.0) PKD(7, 5, 3, 0.05%, 2604.0, 1.00%, F, T) Exp: EPCUS  
TRIANGLE LABS Text: O-M23-FB TLI#43057 INJ. TIME = 03:48



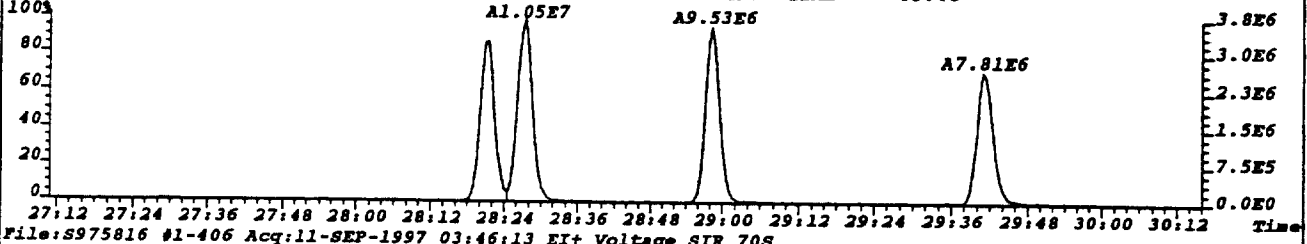
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375.8178 F: 3 BSub(256, 30, -3.0) PKD(7, 5, 3, 0.05%, 1396.0, 1.00%, F, T) Exp: EPCUS  
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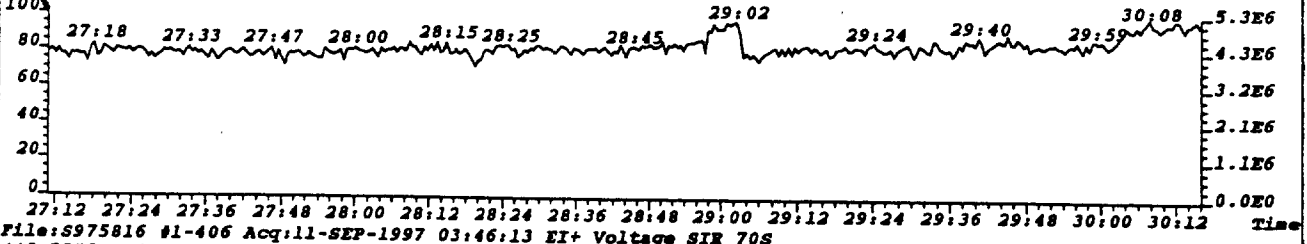
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383.8639 F: 3 BSub(256, 30, -3.0) PKD(7, 5, 3, 0.05%, 1888.0, 1.00%, F, T) Exp: EPCUS  
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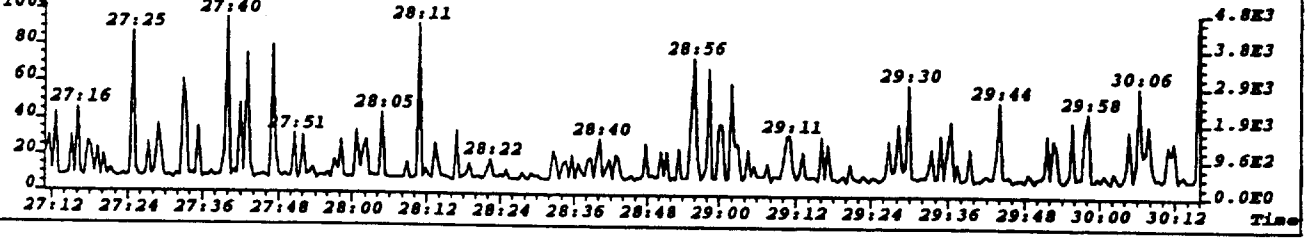
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385.8610 F: 3 BSub(256, 30, -3.0) PKD(7, 5, 3, 0.05%, 5060.0, 1.00%, F, T) Exp: EPCUS  
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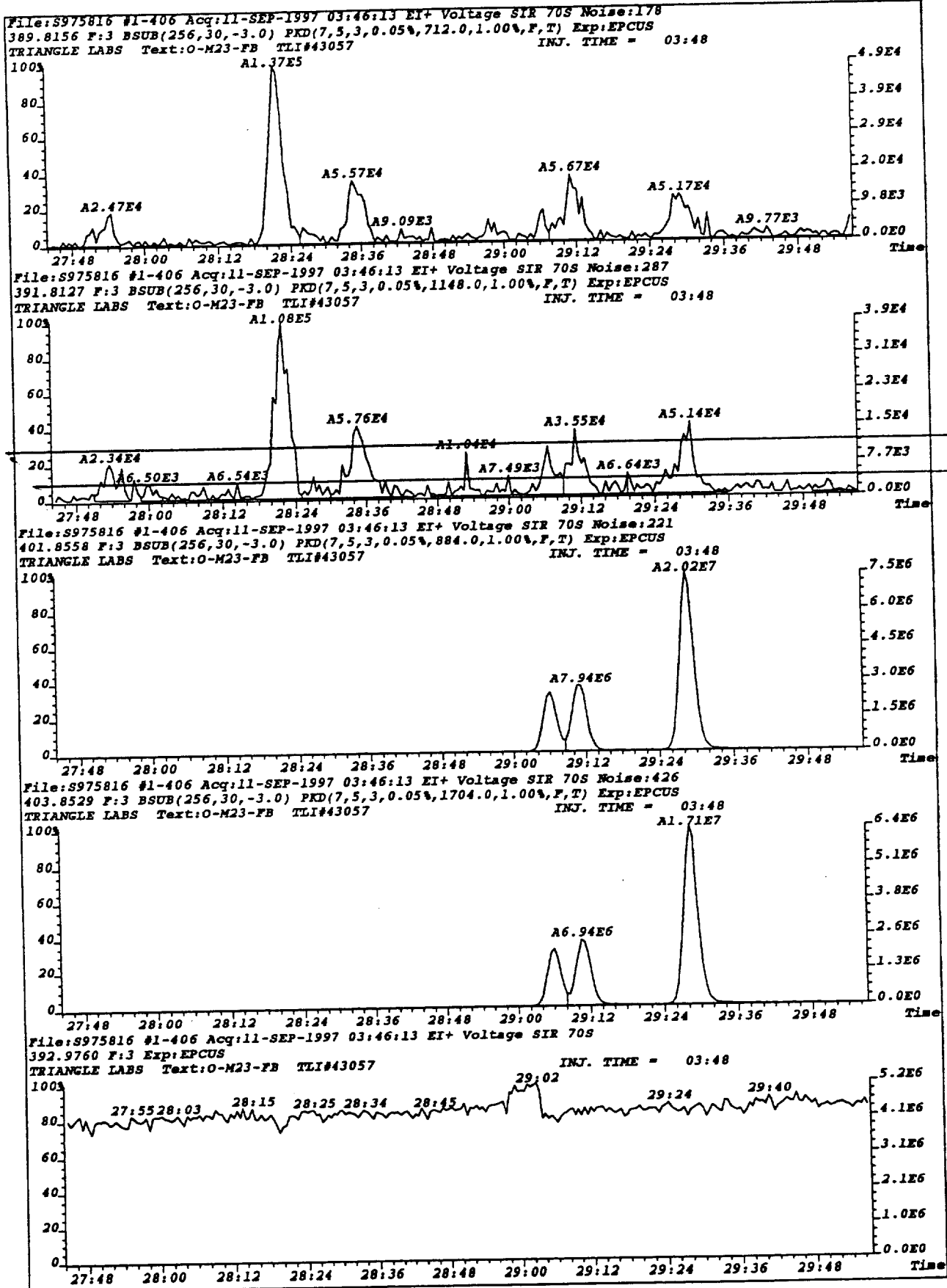


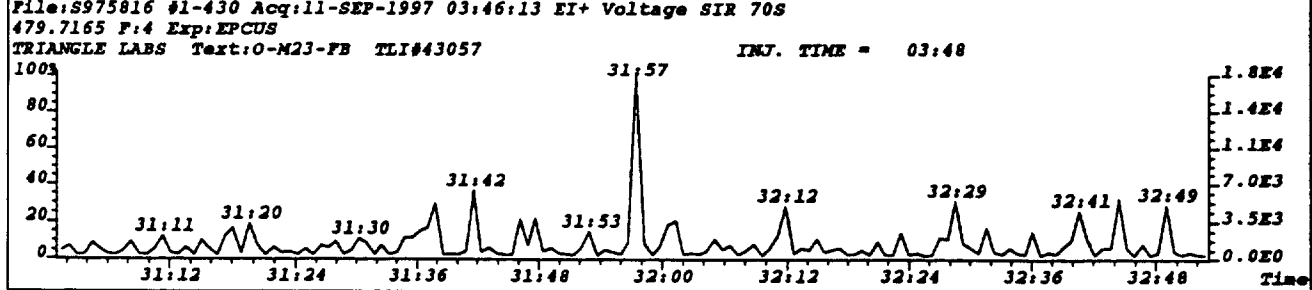
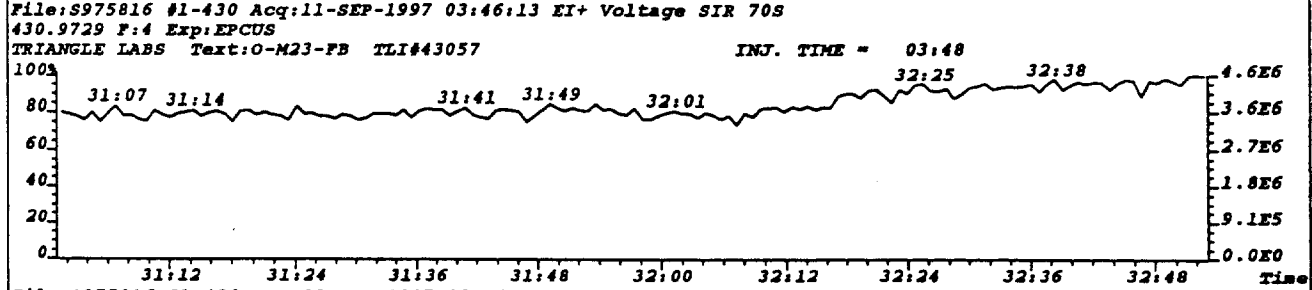
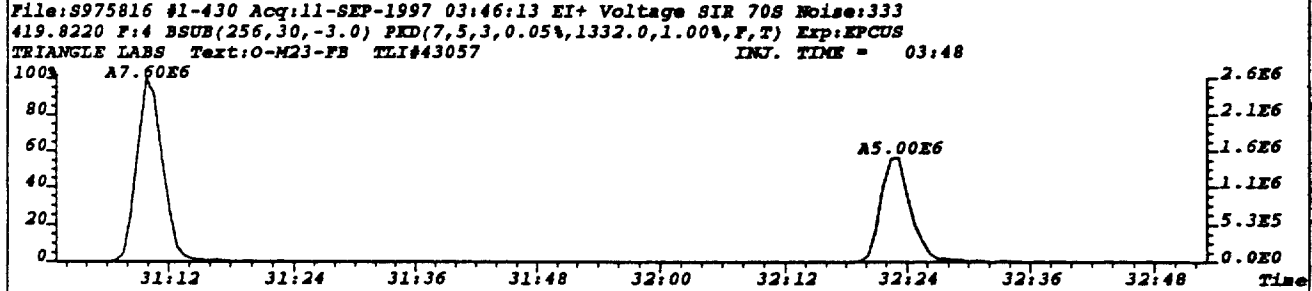
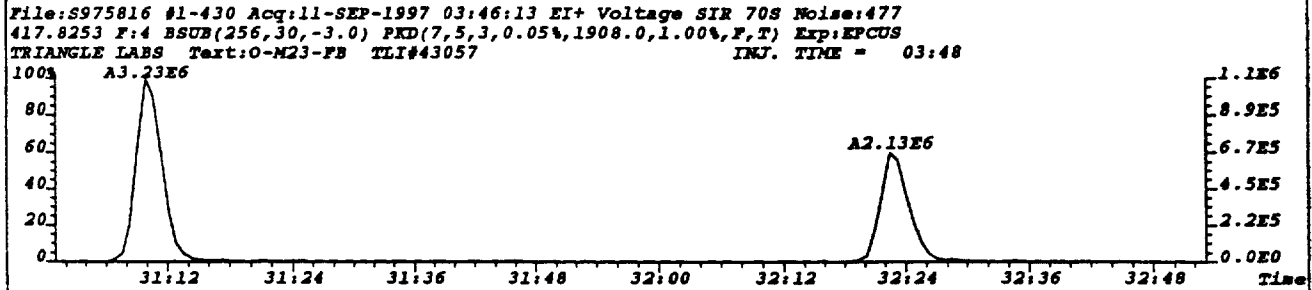
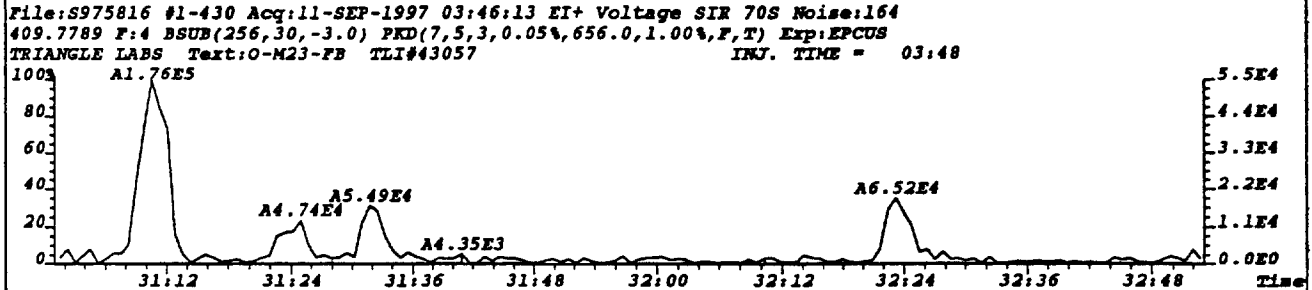
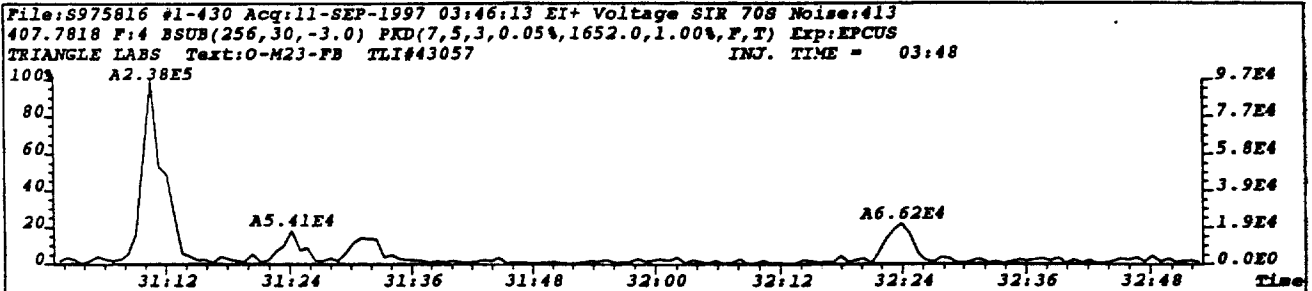
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392.9760 F: 3 Exp: EPCUS  
TRIANGLE LABS Text: O-M23-FB TLI#43057 INJ. TIME = 03:48



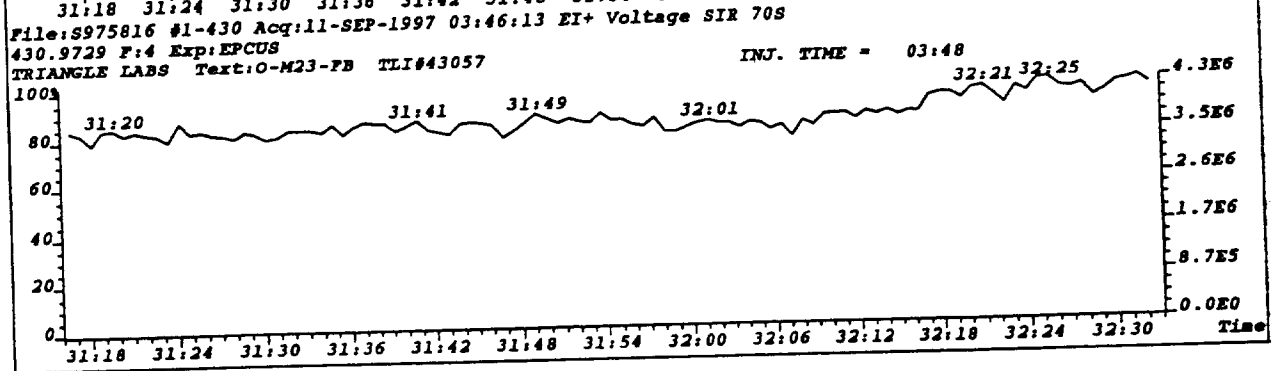
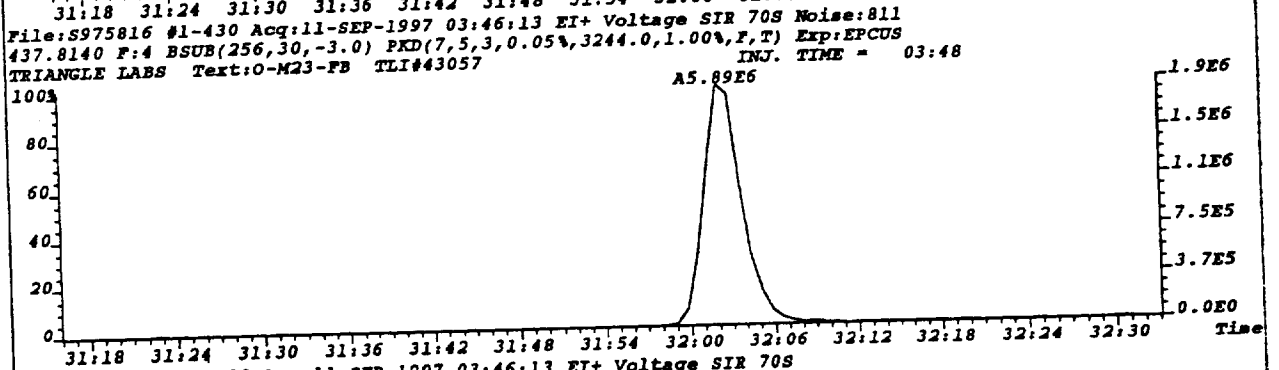
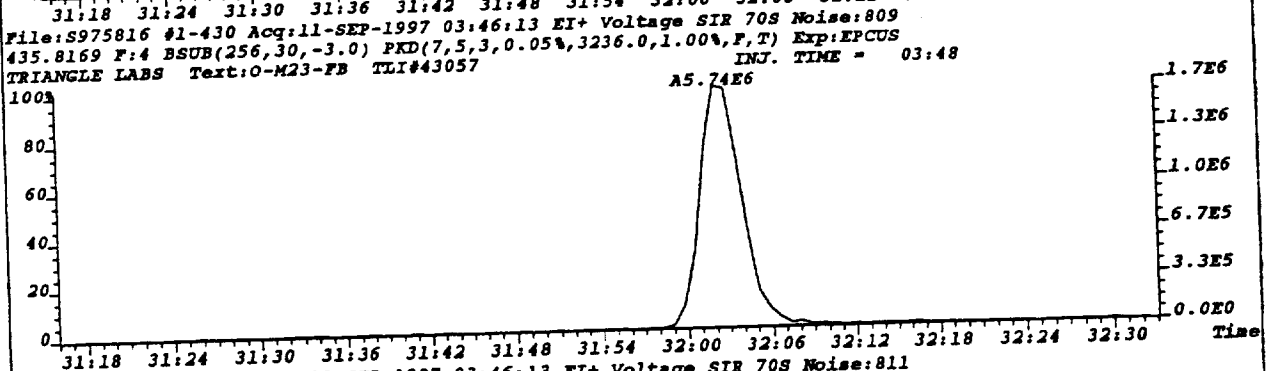
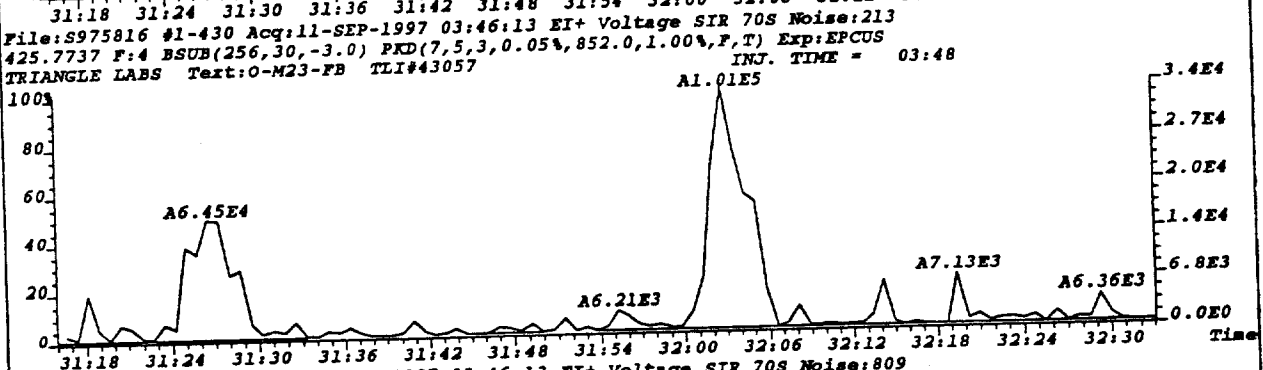
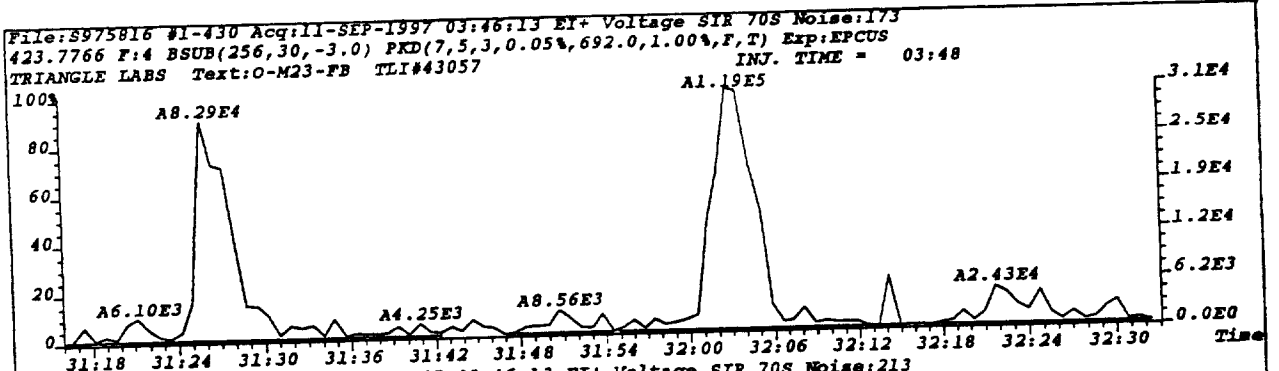
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TRIANGLE LABS Text: O-M23-FB TLI#43057 INJ. TIME = 03:48



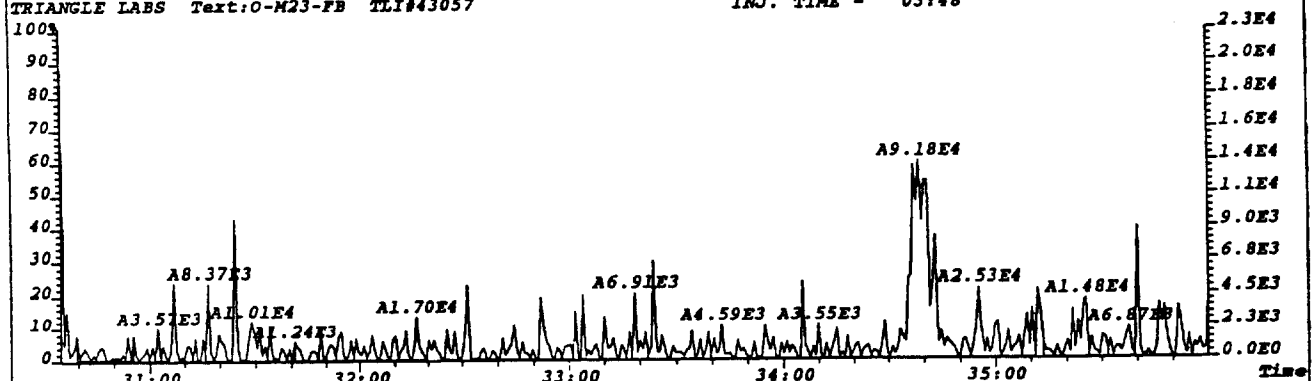




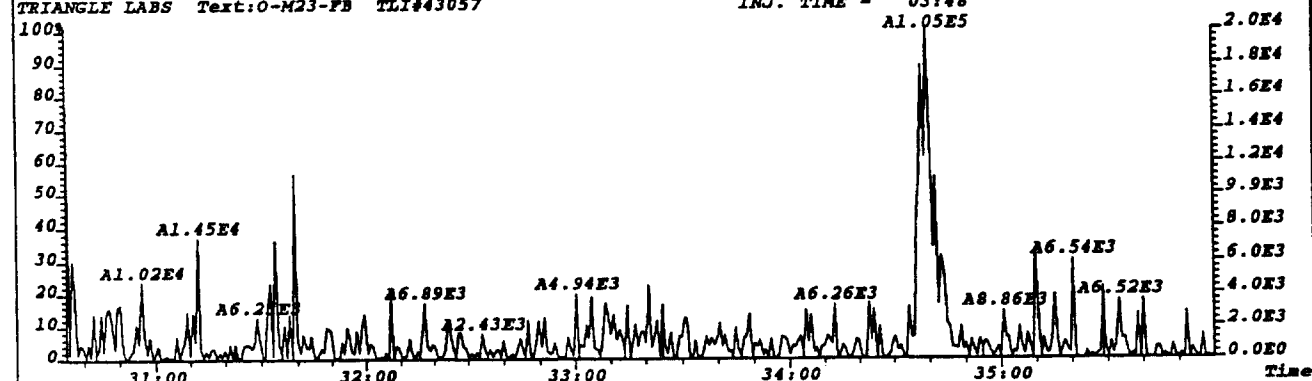




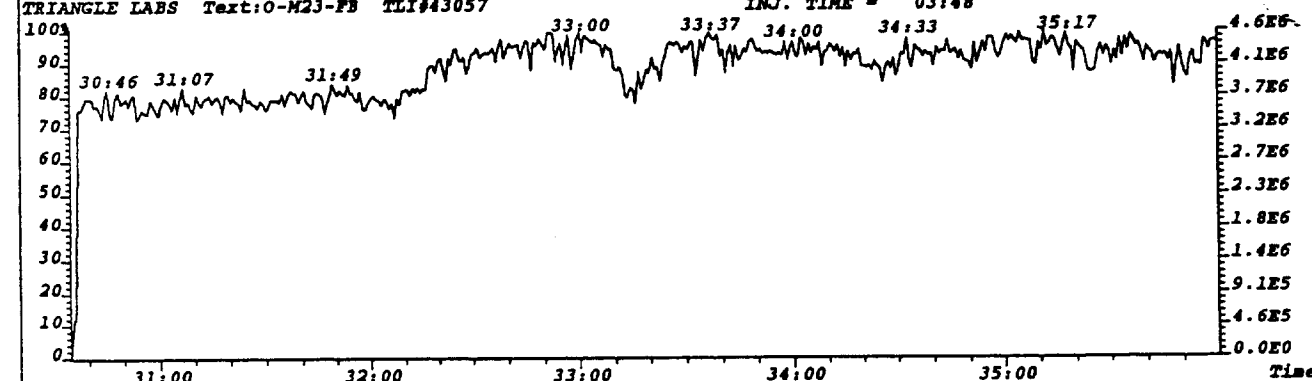
File:S975816 #1-430 Acq:11-SEP-1997 03:46:13 EI+ Voltage SIR 70S Noise:32  
441.7428 F:4 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,128.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:O-M23-FB TLI#43057 INJ. TIME = 03:48



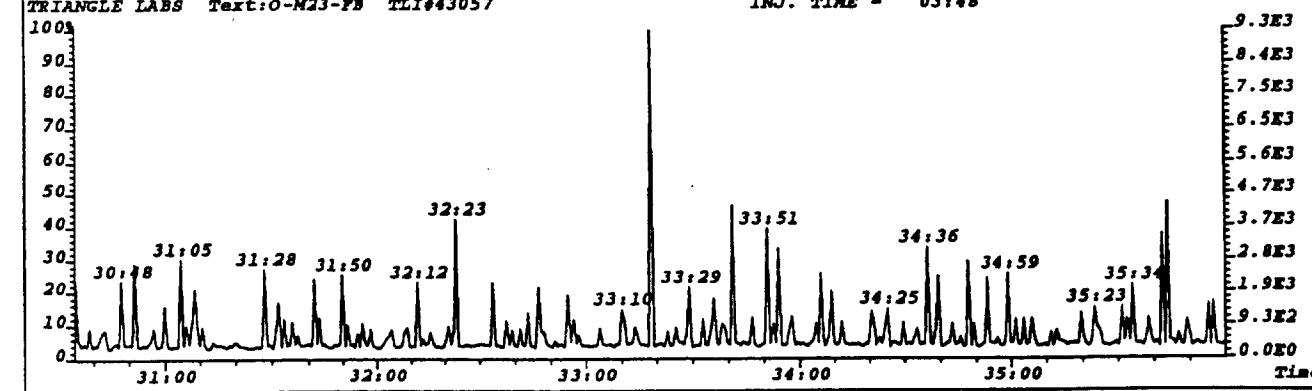
File:S975816 #1-430 Acq:11-SEP-1997 03:46:13 EI+ Voltage SIR 70S Noise:30  
443.7399 F:4 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,120.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:O-M23-FB TLI#43057 INJ. TIME = 03:48



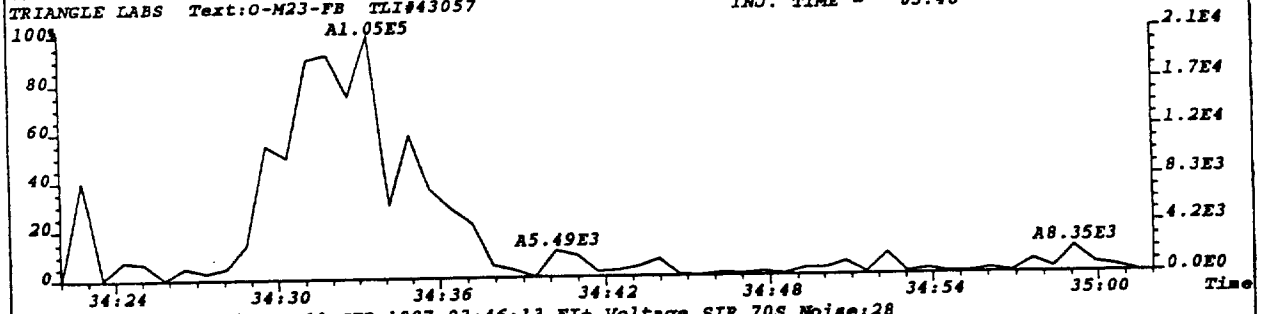
File:S975816 #1-430 Acq:11-SEP-1997 03:46:13 EI+ Voltage SIR 70S  
430.9729 F:4 Exp:EPCUS  
TRIANGLE LABS Text:O-M23-FB TLI#43057 INJ. TIME = 03:48



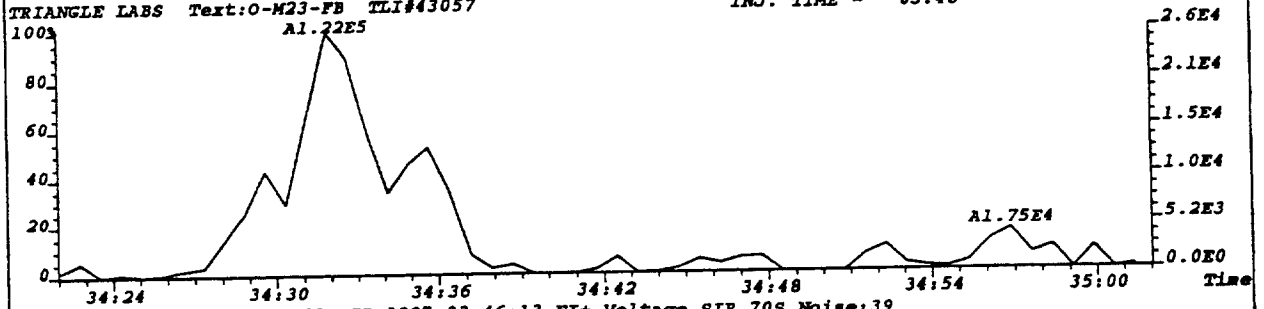
File:S975816 #1-430 Acq:11-SEP-1997 03:46:13 EI+ Voltage SIR 70S  
513.6775 F:4 Exp:EPCUS  
TRIANGLE LABS Text:O-M23-FB TLI#43057 INJ. TIME = 03:48



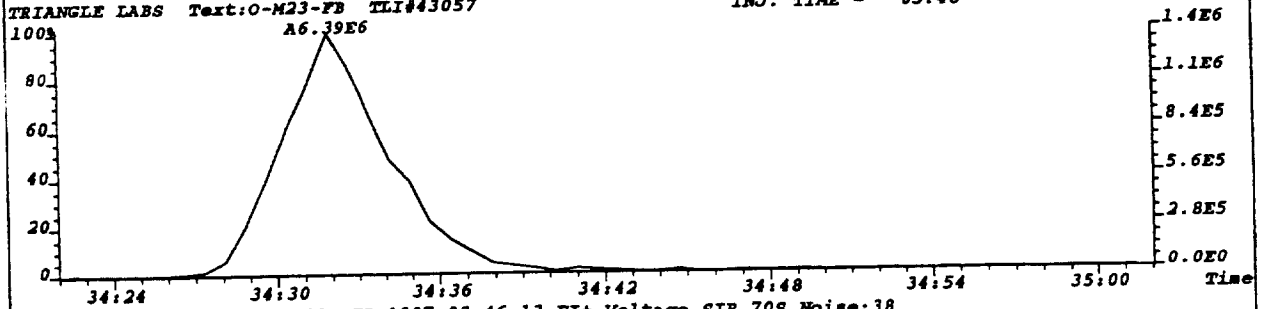
File:S975816 #1-430 Acq:11-SEP-1997 03:46:13 EI+ Voltage SIR 70S Noise:34  
457.7377 F:4 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,136.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:O-M23-FB TLI#43057 INJ. TIME = 03:48



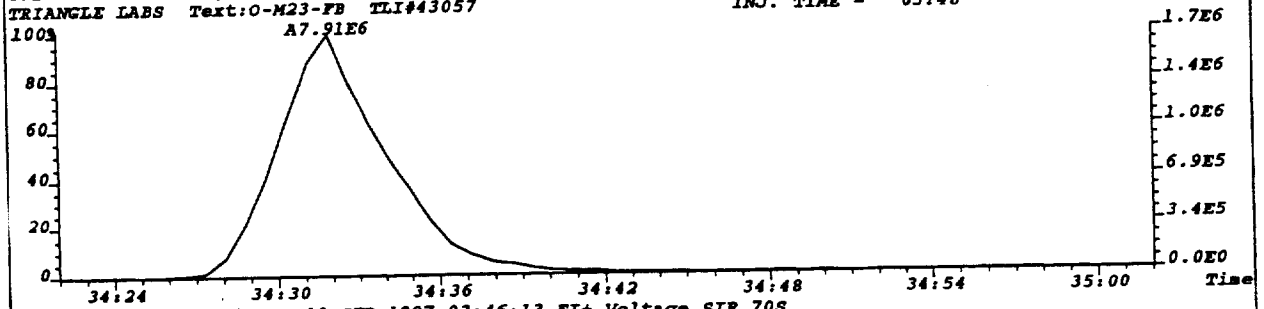
File:S975816 #1-430 Acq:11-SEP-1997 03:46:13 EI+ Voltage SIR 70S Noise:28  
459.7348 F:4 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,112.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:O-M23-FB TLI#43057 INJ. TIME = 03:48



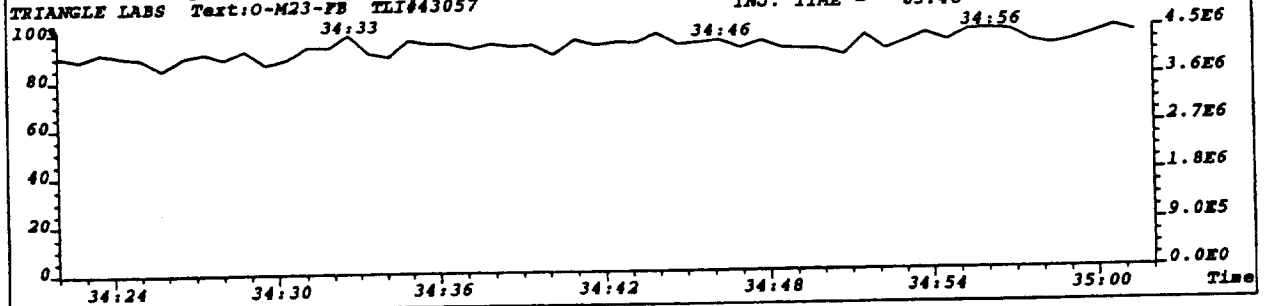
File:S975816 #1-430 Acq:11-SEP-1997 03:46:13 EI+ Voltage SIR 70S Noise:39  
469.7779 F:4 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,156.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:O-M23-FB TLI#43057 INJ. TIME = 03:48

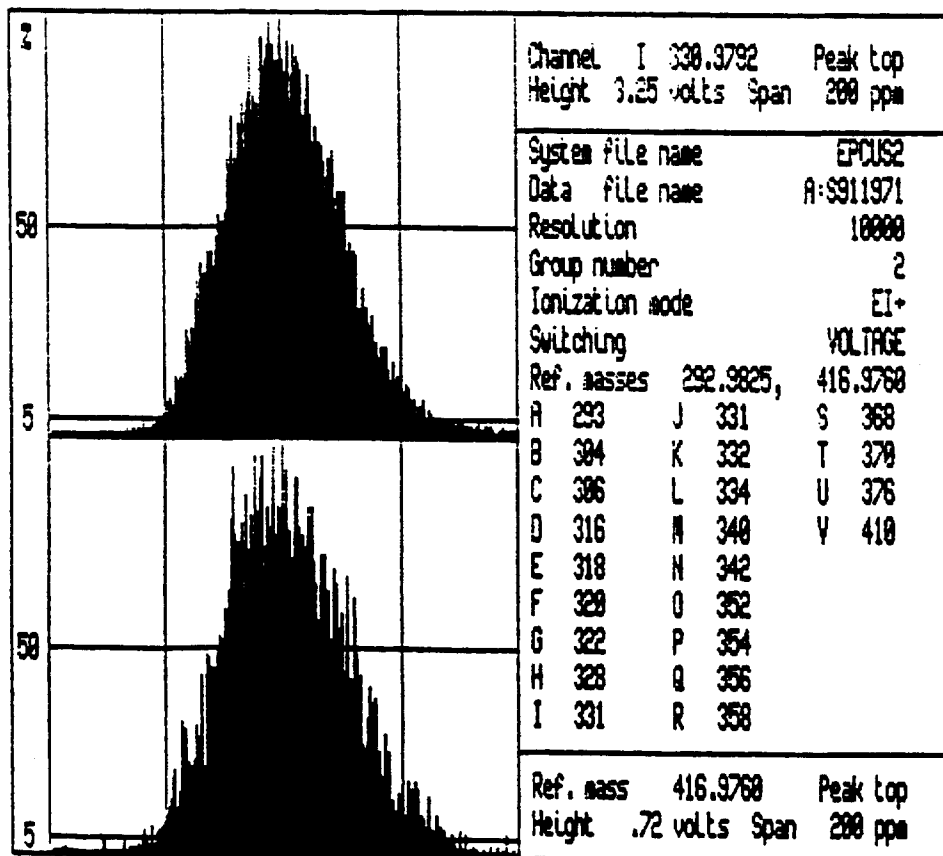


File:S975816 #1-430 Acq:11-SEP-1997 03:46:13 EI+ Voltage SIR 70S Noise:38  
471.7750 F:4 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,152.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:O-M23-FB TLI#43057 INJ. TIME = 03:48

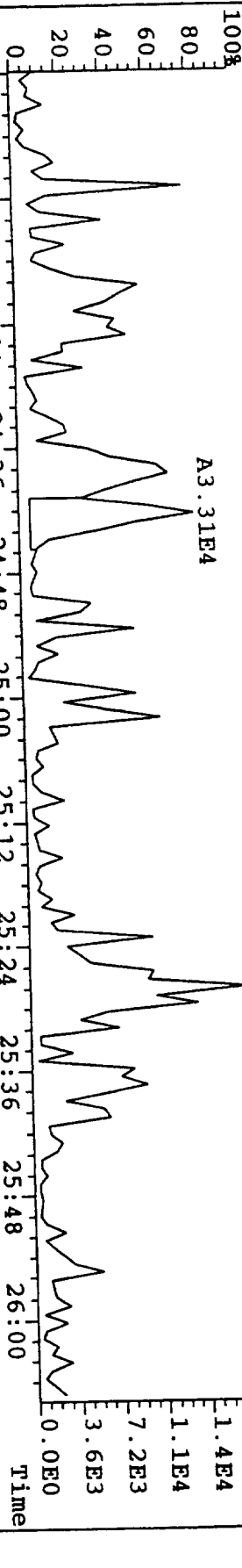


File:S975816 #1-430 Acq:11-SEP-1997 03:46:13 EI+ Voltage SIR 70S  
430.9729 F:4 Exp:EPCUS  
TRIANGLE LABS Text:O-M23-FB TLI#43057 INJ. TIME = 03:48

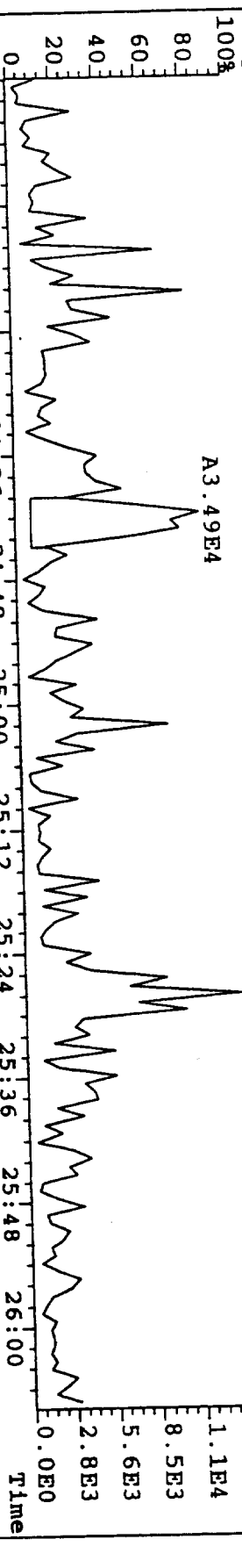




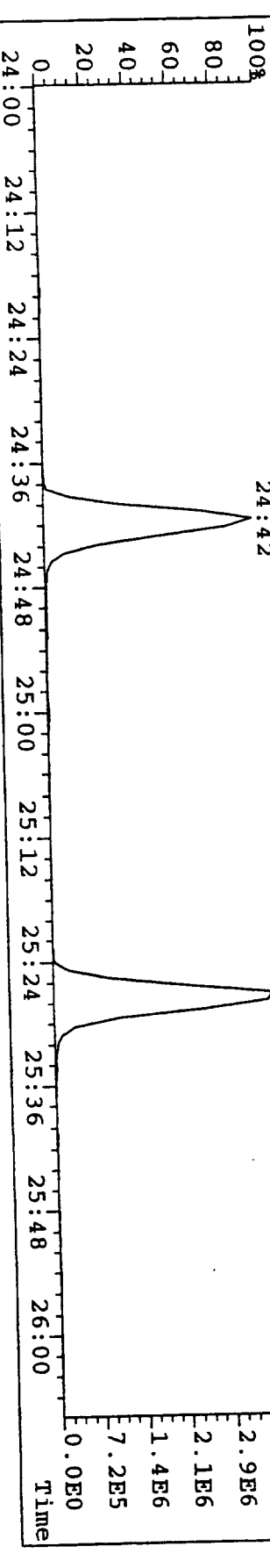
File: S975816 #1-848 Acq: 11-SEP-1997 03:46:13 EI+ Voltage SIR 70S  
339.8597 F: 2 Exp: EPCUS INJ. TIME = 03:48 File Text: O-M23-FB TLI#  
Sample Text: O-M23-FB TLI#43057 1.8E4



File: S975816 #1-848 Acq: 11-SEP-1997 03:46:13 EI+ Voltage SIR 70S  
341.8567 F: 2 Exp: EPCUS INJ. TIME = 03:48 File Text: O-M23-FB TLI#  
Sample Text: O-M23-FB TLI#43057 1.4E4

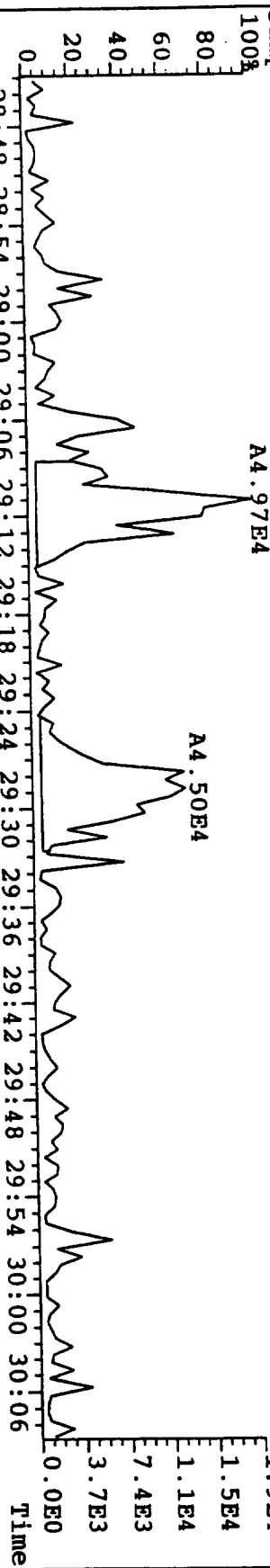


File: S975816 #1-848 Acq: 11-SEP-1997 03:46:13 EI+ Voltage SIR 70S  
351.9000 F: 2 Exp: EPCUS INJ. TIME = 03:48 File Text: O-M23-FB TLI#  
Sample Text: O-M23-FB TLI#43057 3.6E6



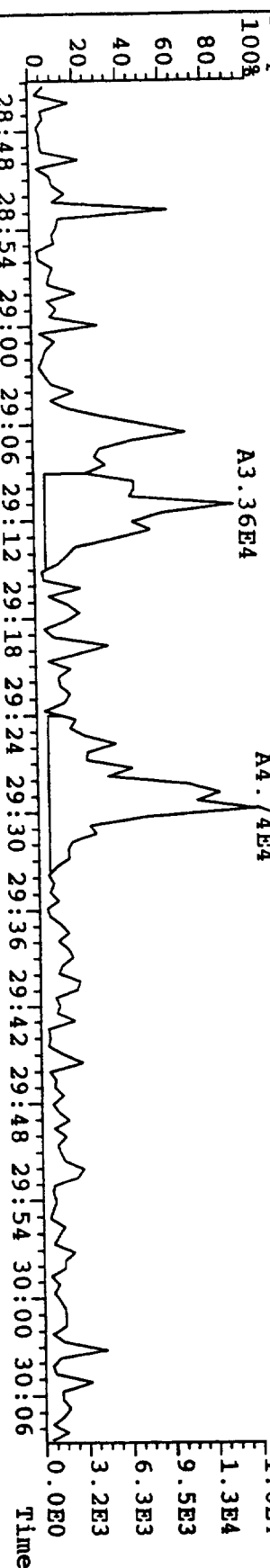
File: S975816 #1-406 Acq: 11-SEP-1997 03:46:13 EI+ Voltage SIR 70S

389.8156 F:3 Exp: EPCUS TLI#43057 INJ. TIME = 03:48 File Text: O-M23-FB TLI#



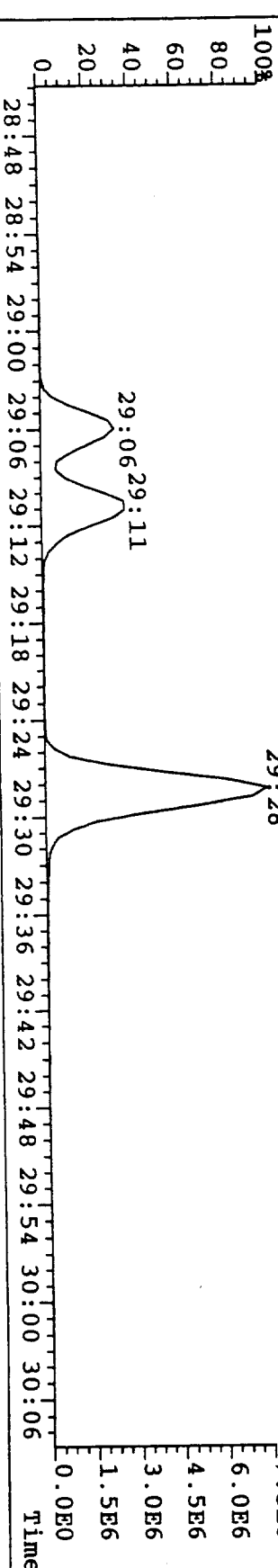
File: S975816 #1-406 Acq: 11-SEP-1997 03:46:13 EI+ Voltage SIR 70S

391.8127 F:3 Exp: EPCUS TLI#43057 INJ. TIME = 03:48 File Text: O-M23-FB TLI#



File: S975816 #1-406 Acq: 11-SEP-1997 03:46:13 EI+ Voltage SIR 70S

401.8558 F:3 Exp: EPCUS TLI#43057 INJ. TIME = 03:48 File Text: O-M23-FB TLI#



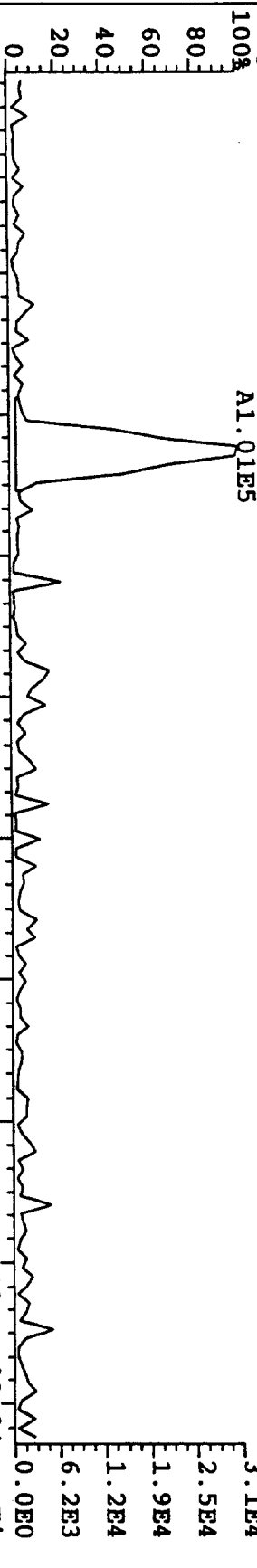


File:S975816 #1-430 Acq:11-SEP-1997 03:46:13 EI+ Voltage SIR 70S

423.7766 F:4 Exp:EPCUS

Sample Text:O-M23-FB TLI#43057

INJ. TIME = 03:48 File Text:O-M23-FB TLI#

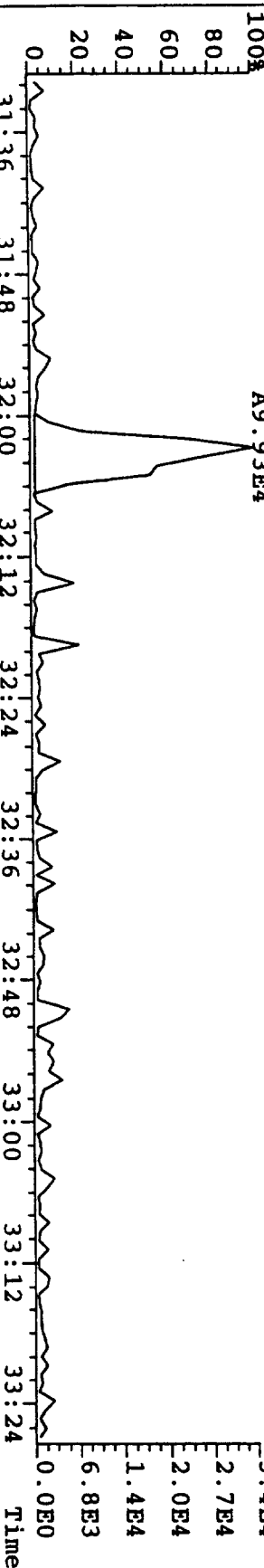


File:S975816 #1-430 Acq:11-SEP-1997 03:46:13 EI+ Voltage SIR 70S

425.7737 F:4 Exp:EPCUS

Sample Text:O-M23-FB TLI#43057

INJ. TIME = 03:48 File Text:O-M23-FB TLI#

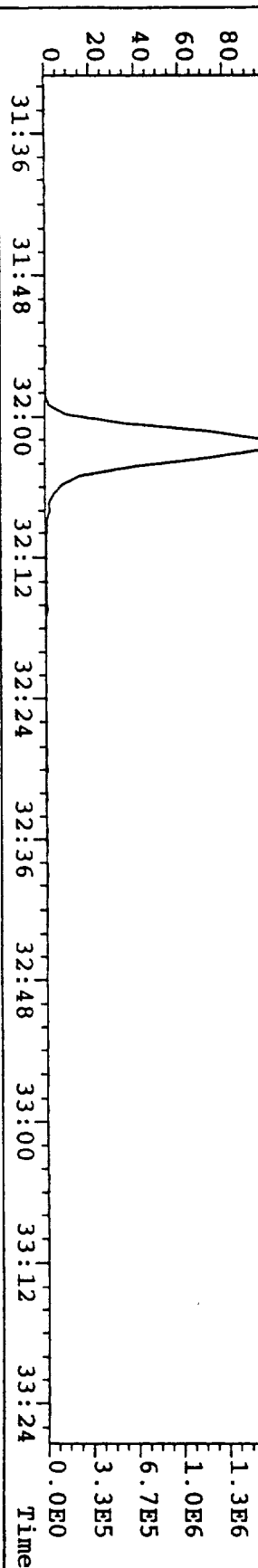


File:S975816 #1-430 Acq:11-SEP-1997 03:46:13 EI+ Voltage SIR 70S

435.8169 F:4 Exp:EPCUS

Sample Text:O-M23-FB TLI#43057

INJ. TIME = 03:48 File Text:O-M23-FB TLI#





**Pacific Environmental Services**

TLI Project: 43057  
 Client Sample: O-M23-RB

Method 23 PCDD/PCDF Analysis (a)  
 Analysis File: S975817

Client Project:	" ASPHALT PLANT "A"	Date Received:	08/29/97	Spike File:	SPX23704
Sample Matrix:	M23TRAIN	Date Extracted:	09/06/97	ICal:	SF56117
TLI ID:	181-27-7AB&*	Date Analyzed:	09/11/97	ConCal:	S975814

Sample Size:	1.000	Dilution Factor:	n/a	% Moisture:	n/a
Dry Weight:	n/a	Blank File:	S975807	% Lipid:	n/a
GC Column:	DB-5	Analyst:	HLM	% Solids:	n/a

Analytes	Amt. (ng)	DL	EMPC	Ratio	RT	Flags
2,3,7,8-TCDD	ND	0.004		1.70	25:51	---
1,2,3,7,8-PeCDD	0.01					---
1,2,3,4,7,8-HxCDD	ND	0.006		1.16	29:11	---
1,2,3,6,7,8-HxCDD	0.02					PR_
1,2,3,7,8,9-HxCDD	EMPC		0.02	1.09	32:02	B_
1,2,3,4,6,7,8-HpCDD	0.08			0.94	34:32	B_
1,2,3,4,6,7,8,9-OCDD	0.11					B_
2,3,7,8-TCDF	EMPC		0.006			---
1,2,3,7,8-PeCDF	EMPC		0.008	1.54	25:27	B_
2,3,4,7,8-PeCDF	0.02			1.25	28:20	PRB
1,2,3,4,7,8-HxCDF	0.06			1.19	28:28	B_
1,2,3,6,7,8-HxCDF	0.02			1.20	28:58	PRB
2,3,4,6,7,8-HxCDF	0.03			1.33	29:41	---
1,2,3,7,8,9-HxCDF	0.007			0.99	31:11	B_
1,2,3,4,6,7,8-HpCDF	0.11			1.03	32:22	B_
1,2,3,4,7,8,9-HpCDF	0.04			0.83	34:40	B_
1,2,3,4,6,7,8,9-OCDF	0.06					---

Totals	Amt. (ng)	Number	DL	EMPC	Flags
Total TCDD	EMPC			0.01	---
Total PeCDD	0.05	3		0.06	---
Total HxCDD	0.15	4		0.16	---
Total HpCDD	0.13	2			---
Total TCDF	EMPC			0.006	---
Total PeCDF	0.02	1		0.05	---
Total HxCDF	0.18	6		0.20	---
Total HpCDF	0.17	3		0.20	---



Initial AM Date 9/12/97

Data Review By: \_\_\_\_\_ Calculated Noise Area: 1.44

The Total Area for each peak with an ion abundance ratio outside ratio limits has been recalculated according to method requirements.

Page No. 1 Listing of S975817B.dbf  
09/12/97 Matched GC Peaks / Ratio / Ret. Time

Compound/  
M\_Z.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags..

		0.65-0.89				0.820-1.101			
TCDF									
304-306	DC NL	0:00	RO	0.11	0.18			0.000	
	DC SN	16:51	RO	4.04	0.48			0.828	
	DC SN	18:00	RO	0.18	0.94			0.885	
	DC SN	18:26	RO	1.27	3.29			0.906	
	DC SN	19:13	RO	0.57	3.13			0.944	
	D SN	19:31		0.80	5.63			0.959	
D									
M									
		20:23	RO	0.61	8.94	3.89	6.42	1.002	2378-TCDF AN
	DC SN	20:36	RO	0.13	0.25			1.012	
	DC SN	20:52	RO	0.18	0.85			1.025	
	DC SN	21:07	RO	0.36	2.87			1.038	
	DC SN	22:18	RO	1.58	2.34			1.096	
304-306				1 Peak	8.94				

		0.65-0.89				0.951-1.049			
13C12-TCDF									
316-318	DC NL	0:00	RO	0.13	0.21			0.000	
	DC WL	19:10		0.88	25.07			0.942	
		19:30		0.65	6.98	2.74	4.24	0.958	
		19:53		0.81	20.74	9.29	11.45	0.977	
		20:21		0.75	4,446.87	1,900.95	2,545.92	1.000	13C12-2378-TCDF ISO
		20:51		0.78	26.08	11.39	14.69	1.025	
316-318				4 Peaks	4,500.67				

----- Above: TCDF / TCDD Follows -----

		0.65-0.89				0.853-1.059			
TCDD									
320-322	DC NL	0:00	RO	1.50	0.11			0.000	
		18:16	RO	1.02	10.51	6.08	5.94	0.863	
	DC SN	18:24		0.66	0.83			0.869	
D	D SN	18:43		0.83	7.86			0.884	
	DC SN	18:59	RO	1.80	0.71			0.897	
	DC SN	19:03	RO	1.55	0.90			0.900	
	DC SN	19:10	RO	0.24	0.44			0.906	
	DC SN	19:16	RO	2.40	0.44			0.910	
	DC SN	19:26		0.78	0.48			0.918	
	DC SN	19:36	RO	0.27	0.48			0.926	
	DC SN	19:52		0.87	4.08			0.939	
	DC SN	20:06	RO	2.69	0.74			0.950	
	DC SN	20:37	RO	4.22	0.41			0.974	
	DC SN	20:42	RO	1.32	1.36			0.978	
	DC SN	20:54	RO	0.44	1.13			0.987	
	DC SN	21:05	RO	1.38	2.41			0.996	
	DC SN	21:13	RO	0.42	3.49			1.002	2378-TCDD AN
	DC SN	21:24	RO	2.04	0.80			1.011	

Compound/

M\_Z.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

	DC	SN	21:30	RO	1.00	0.50			1.016		
	DC	SN	21:56		0.84	1.23			1.036		
	DC	SN	22:22	RO	0.33	0.57			1.057		
	DC	WH	22:34	RO	1.11	0.94			1.066		
320-322			1 Peak			10.51					
37C1-TCDD									0.906-1.094		
328	DC	NL	0:00			0.06			0.000		
			19:38			9.52		9.52	0.928		
			21:12			2,813.25	2,813.25		1.002	37C1-TCDD	SUR1
			21:31			2.95	2.95		1.017		
	DC	SN	21:38			1.79			1.022		
	DC	SN	22:01			1.15			1.040		
328			3 Peaks			2,825.72					
13C12-TCDD									0.906-1.094		
332-334	DC	NL	0:00	RO	25.00	0.12			0.000		
			19:52			0.75	18.99	8.11	10.88	0.939	
			20:58			0.88	3,814.33	1,789.34	2,024.99	0.991	13C12-1234-TCDD RS1
			21:10			0.82	3,105.96	1,398.93	1,707.03	1.000	13C12-2378-TCDD IS1
			21:32	RO	1.25	49.12	34.58	27.75	1.017		
332-334			4 Peaks			6,988.40					

----- Above: TCDD / PeCDF Follows -----

PeCDF									1.32-1.78		0.907-1.078
340-342	DC	NL	0:00	RO	0.14	0.13			0.000		
	DC	SN	22:35	RO	1.96	5.10			0.915		
	DC	SN	22:48	RO	0.31	0.36			0.924		
	DC	SN	23:00	RO	0.60	1.96			0.932		
	DC	SN	23:16	RO	0.43	0.94			0.943		
D	D	SN	23:39	RO	0.81	5.05			0.958		
A			23:48	RO	1.81	17.44	12.40	6.84	0.964		
D	D	SN	23:57	RO	1.16	4.80			0.970		
	DC	SN	24:09	RO	3.34	1.20			0.978		
M			24:42	RO	1.23	8.46	5.14	4.17	1.001	12378-PeCDF	AN
	DC	SN	24:54	RO	0.75	2.80			1.009		
D	D	SN	25:00		1.32	11.43			1.013		
			25:27		1.54	21.27	12.91	8.36	1.031	23478-PeCDF	AN
			25:38	RO	1.05	9.84	5.98	5.70	1.038		
	DC	SN	25:48	RO	0.58	0.79			1.045		
	DC	SN	25:55	RO	0.58	2.68			1.050		
	DC	SN	26:06	RO	0.89	1.12			1.057		
D	D	SN	26:28	RO	0.95	5.68			1.072		
	DC	WH	26:54		1.38	1.38			1.090		
340-342			4 Peaks			57.01					
13C12-PeCDF									1.32-1.78		0.838-1.162
352-354	DC	NL	0:00	RO	1.13	0.15			0.000		
			23:47	RO	1.29	39.27	23.87	18.48	0.964		
			24:20		1.75	20.78	13.23	7.55	0.986		
			24:41		1.46	3,850.99	2,284.48	1,566.51	1.000	13C12-PeCDF 123	IS2

Compound/  
M\_Z.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

Compound/	M_Z	QC	Log	Omit	Why	RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Rel.RT	Compound.Name	ID	Flags
						24:59		1.38	34.61	20.09	14.52	1.012			
						25:27		1.49	3,791.96	2,267.29	1,524.67	1.031	13C12-PeCDF	234	SUR2
						25:49	RO	0.82	5.73	3.48	4.25	1.046			
						25:55	RO	1.89	4.69			1.050			
						26:06	RO	1.09	3.64			1.057			
						26:27	RO	0.89	10.53	6.40	7.23	1.072			
352-354						7 Peaks			7,753.87						

----- Above: PeCDF / PeCDD Follows -----

Compound/	M_Z	QC	Log	Omit	Why	RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Rel.RT	Compound.Name	ID	Flags
PecDD						1.32-1.78							0.921-1.026		
356-358						0:00	NL	RO	14.29	0.18			0.000		
						23:57		1.41	13.85	8.11	5.74	0.928			
						24:08	SN	RO	9.81	0.41		0.935			
						24:17	SN	RO	3.21	0.61		0.941			
						24:42		1.47	15.46	9.21	6.25	0.957			
						24:52	SN	RO	1.21	2.78		0.963			
						25:04	RO	2.22	9.44	8.23	3.70	0.971			
						25:13	SN	RO	8.85	0.69		0.977			
						25:22	SN	RO	1.35	2.37		0.983			
						25:31	SN	RO	2.80	2.98		0.988			
						25:39	SN	RO	1.12	2.39		0.994			
						25:51		1.70	7.21	4.54	2.67	1.001	12378-PeCDD		AN
						26:05	SN	RO	0.51	1.35		1.010			
						26:47	WH	RO	4.84	0.79		1.037			
356-358						4 Peaks			45.96						

Compound/	M_Z	QC	Log	Omit	Why	RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Rel.RT	Compound.Name	ID	Flags
13C12-PeCDD						1.32-1.78							0.845-1.155		
368-370						0:00	NL	RO	1.43	0.17			0.000		
						24:41	SN	RO	0.78	2.24		0.956			
						25:49		1.55	2,405.29	1,463.62	941.67	1.000	13C12-PeCDD	123	IS3
						25:58		1.60	228.84	140.66	88.18	1.006			
						26:08	SN	RO	2.39	4.82		1.012			
368-370						2 Peaks			2,634.13						

----- Above: PeCDD / HxCDF Follows -----

Compound/	M_Z	QC	Log	Omit	Why	RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Rel.RT	Compound.Name	ID	Flags
HxCDF						1.05-1.43							0.955-1.052		
374-376						0:00	NL	RO	2.82	1.34			0.000		
						27:21		1.10	19.50	10.20	9.30	0.961			
						27:30		1.21	40.31	22.07	18.24	0.967			
						27:38	SN	RO	0.93	2.69		0.971			
						27:49	D	SN	1.15	8.35		0.978			
						27:59	SN	RO	0.40	1.90		0.984			
						28:20		1.25	60.57	33.66	26.91	0.996	123478-HxCDF		AN PR
						28:28		1.19	30.75	16.69	14.06	1.001	123678-HxCDF		AN
						28:34	D	SN	1.26	8.31		1.004			
						28:47	D	SN	1.32	10.54		1.012			
						28:58		1.20	28.41	15.50	12.91	1.018	234678-HxCDF		AN PR
						29:06	SN	RO	3.03	0.69		1.023			
						29:10	SN	RO	2.41	0.87		1.025			
						29:17	SN	RO	0.40	0.45		1.029			

Compound/

M\_2.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags..

DC	SN	RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Rel.RT	Compound.Name	ID	Flags
		29:28	RO	0.82	0.76			1.036			
		29:41		1.33	6.37	3.64	2.73	1.043	123789-HxCDF	AN	
		29:46	RO	1.49	13.08	8.70	5.84	1.046			
DC	SN	29:53	RO	2.29	1.01			1.050			
DC	WH	30:01	RO	0.80	0.72			1.055			
DC	WH	30:12	RO	1.62	0.65			1.062			
374-376		7 Peaks			198.99						

		0.43-0.59				0.859-1.141					
13C12-HxCDF											
384-386	DC	NL	0:00	RO	1.22	1.86		0.000			
	DC	SN	27:20	RO	0.40	6.01		0.961			
			27:28	RO	0.66	15.89	6.94	10.52	0.965		
			28:20		0.48	2,718.04	884.25	1,833.79	0.996	13C12-HxCDF 478	SUR3
			28:27		0.46	3,143.19	997.30	2,145.89	1.000	13C12-HxCDF 678	IS4
	DC	SN	28:41	RO	0.71	4.79		1.008			
	DC	SN	28:44	RO	0.26	4.47		1.010			
			28:58		0.48	3,022.43	985.40	2,037.03	1.018	13C12-HxCDF 234	ALT2
			29:40		0.46	2,284.00	715.21	1,568.79	1.043	13C12-HxCDF 789	ALT1
	DC	SN	29:57	RO	0.26	0.89		1.053			
384-386		5 Peaks			11,183.55						

----- Above: HxCDF / HxCDD Follows -----

		1.05-1.43				0.950-1.015					
HxCDD											
390-392	DC	NL	0:00	RO	0.64	0.78		0.000			
	DC	SN	27:46	RO	1.48	0.56		0.951			
			27:53		1.15	8.05	4.30	3.75	0.955		
	DC	SN	28:04	RO	0.88	0.63		0.962			
	DC	SN	28:09	RO	1.00	0.49		0.965			
			28:21		1.21	56.45	30.92	25.53	0.971		
			28:35		1.23	26.65	14.70	11.95	0.979		
	DC	SN	28:57	RO	1.49	2.60		0.992			
D	D	SN	29:06	RO	0.91	5.08		0.997	123478-HxCDD	AN	
			29:11		1.16	16.17	8.67	7.50	1.000	123678-HxCDD	AN
	DC	SN	29:18	RO	0.89	1.01		1.004			
M			29:28	RO	0.92	12.14	6.72	7.32	1.010	123789-HxCDD	AN PR
	DC	SN	29:35	RO	0.26	0.36		1.014			
	DC	WH	29:40	RO	1.71	1.86		1.017			
	DC	WH	29:50	RO	0.22	0.25		1.022			
	DC	WH	29:52	RO	0.17	0.34		1.023			
390-392		5 Peaks			119.46						

		1.05-1.43				0.966-1.034					
13C12-HxCDD											
402-404	DC	NL	0:00	RO	0.92	1.19		0.000			
			28:35		1.11	11.12	5.84	5.28	0.979		
			29:05		1.22	2,448.25	1,343.08	1,105.17	0.997	13C12-HxCDD 478	SUR4
			29:11		1.22	2,745.61	1,511.31	1,234.30	1.000	13C12-HxCDD 678	IS5
			29:28		1.20	3,527.42	1,926.48	1,600.94	1.010	13C12-HxCDD 789	RS2
			29:39	RO	0.77	6.34	3.51	4.56	1.016		
	DC	SN	29:43		1.10	4.63		1.018			
	DC	SN	29:46	RO	2.32	2.49		1.020			
402-404		5 Peaks			8,738.74						

Compound/  
M\_Z.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

----- Above: HxCDD / HpCDF Follows -----

		0.88-1.20				0.995-1.044			
HpCDF									
408-410	DC NL	0:00	RO	1.47	1.16			0.000	
					1.22			0.996	
	DC SN	31:02	RO	0.32					
		31:11		0.99	73.54	36.50	37.04	1.001	1234678-HpCDF AN
		31:23		1.02	13.17	6.64	6.53	1.007	
		31:32	RO	1.30	17.75	11.35	8.70	1.012	
		32:22		1.03	20.51	10.43	10.08	1.039	1234789-HpCDF AN
408-410		4 Peaks			124.97				

		0.37-0.51				0.936-1.128			
13C12-HpCDF									
418-420	DC NL	0:00	RO	1.37	1.12			0.000	
		31:10		0.43	1,772.47	535.60	1,236.87	1.000	13C12-HpCDF 678 IS6
		31:27	RO	0.90	4.18	2.60	2.90	1.009	
	DC SN	32:03	RO	0.94	2.45			1.028	
		32:22		0.44	1,215.65	370.55	845.10	1.039	13C12-HpCDF 789 SUR5
	DC SN	32:46	RO	0.24	1.41			1.051	
418-420		3 Peaks			2,992.30				

----- Above: HpCDF / HpCDD Follows -----

		0.88-1.20				0.976-1.006			
HpCDD									
424-426	DC NL	0:00		1.00	0.14			0.000	
		31:26		1.10	21.45	11.22	10.23	0.982	
	DC SN	31:38	RO	4.08	0.27			0.988	
	DC SN	31:48	RO	2.07	0.31			0.993	
		32:02		1.09	39.68	20.66	19.02	1.001	1234678-HpCDD AN
	DC WH	32:16	RO	1.59	0.55			1.008	
	DC WH	32:22	RO	2.29	1.43			1.011	
424-426		2 Peaks			61.13				

		0.88-1.20				0.969-1.031			
13C12-HpCDD									
436-438	DC NL	0:00	RO	1.69	3.06			0.000	
		31:26	RO	1.29	5.41	3.42	2.65	0.982	
		32:01		1.01	1,762.45	884.29	878.16	1.000	13C12-HpCDD 678 IS7
436-438		2 Peaks			1,767.86				

----- Above: HpCDD / Octa-CDD and CDF Follows -----

		0.76-1.02				0.884-1.116			
OCDF									
442-444	DC NL	0:00	RO	0.18	0.17			0.000	
	DC SN	30:50	RO	1.59	1.49			0.893	
	DC SN	31:05	RO	0.51	0.59			0.900	
	DC SN	31:18	RO	2.16	0.36			0.906	
	DC SN	32:02		0.85	0.87			0.928	
	DC SN	32:10	RO	1.30	0.70			0.931	
	DC SN	33:40	RO	1.62	0.85			0.975	
	DC SN	33:59	RO	0.67	1.38			0.984	
	DC SN	34:25	RO	0.08	0.42			0.997	
		34:40		0.83	24.70	11.18	13.52	1.004	OCDF AN
	DC SN	35:33	RO	1.77	1.15			1.029	

Compound/

M_Z	QC	Log	Omit	Why	..RT.	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Rel.RT	Compound.Name	ID	Flags
442-444	DC	SN			35:52	RO	0.65	1.21			1.039			
								24.70						
OCDD								0.76-1.02			0.884-1.116			
458-460	DC	NL			0:00	RO	1.00	0.14			0.000			
					34:32		0.94	33.29	16.12	17.17	1.000	OCDD	AN	
458-460	DC	SN			34:59	RO	1.25	1.00			1.013			
								33.29						
13C12-OCDD								0.76-1.02			0.995-1.005			
470-472	DC	NL			0:00	RO	1.17	0.11			0.000			
					34:32		0.79	2,228.58	986.97	1,241.61	1.000	13C12-OCDD	IS8	
470-472	DC	WH			34:52	RO	0.36	2.19			1.010			
								2,228.58						

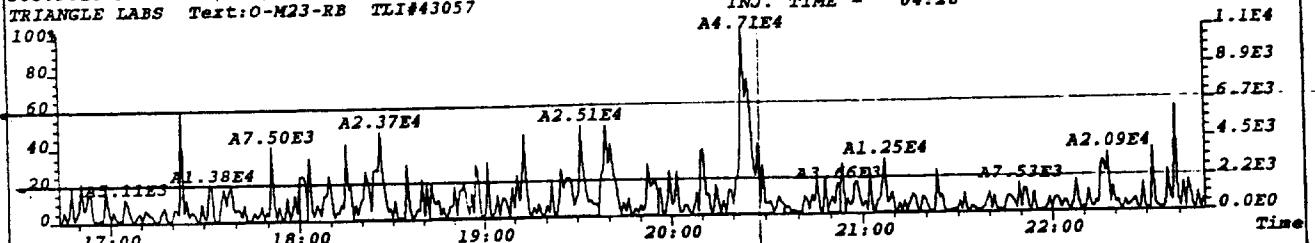
Column Description..... "Why" Code Description..... QC Log Desc.....

M_Z	-Nominal Ion Mass(es)	WL	-Below Retention Time Window	A	-Peak Added
..RT.	-Retention Time (mm:ss)	WH	-Above Retention Time Window	K	-Peak Kept
Rat.1	-Ratio of M/M+2 Ions	SN	-Below Signal to Noise Level	D	-Peak Deleted
OK	-RO=Ratio Outside Limits	<M	-Below Method Detection Limit	T	-Time Changed
Rel.RT	-Relative Retention Time	NL	-Channel Specific Noise Level	M	-Peak Area Changed
				N	-Name Changed
				E	-Ether Interference

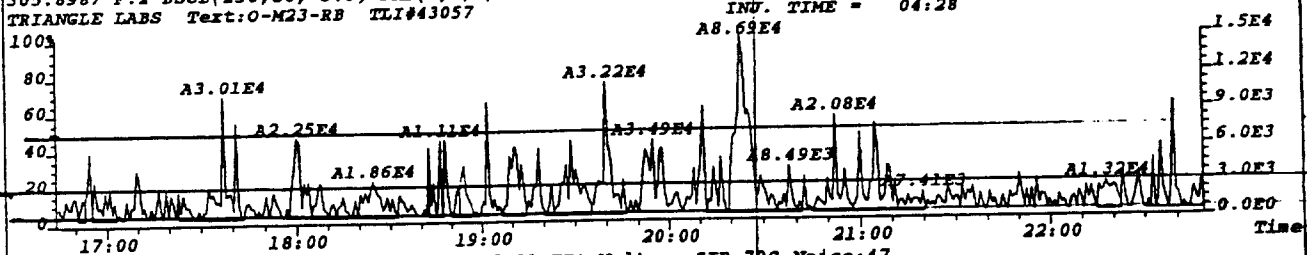
\*\*\* End of Report \*\*\*



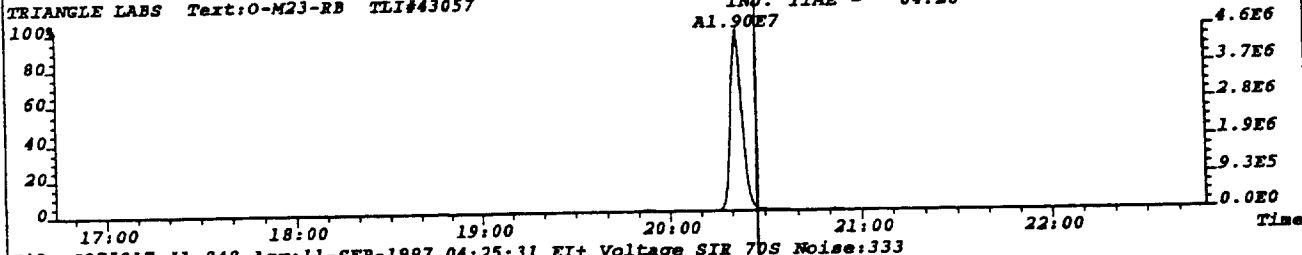
File:S975817 #1-848 Acq:11-SEP-1997 04:25:31 EI+ Voltage SIR 70S Noise:40  
303.9016 F:2 BSUB(256,30,-3.0) PKD(9,5,5,0.05%,160.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:O-M23-RB TLI#43057 INJ. TIME = 04:28



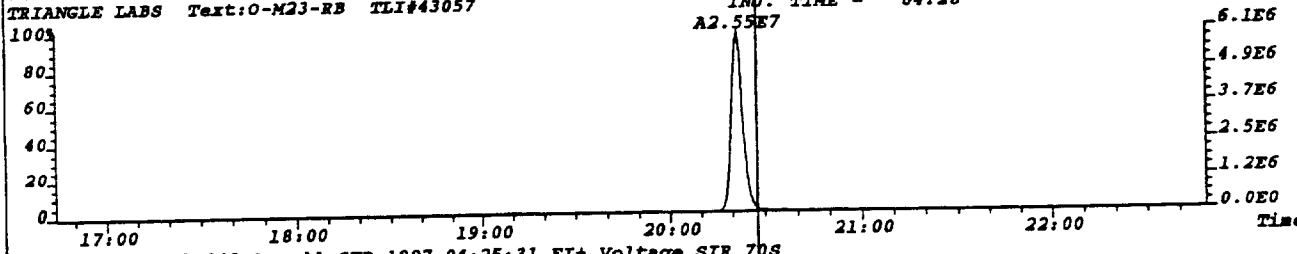
File:S975817 #1-848 Acq:11-SEP-1997 04:25:31 EI+ Voltage SIR 70S Noise:378  
305.8987 F:2 BSUB(256,30,-3.0) PKD(9,5,5,0.05%,1512.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:O-M23-RB TLI#43057 INJ. TIME = 04:28



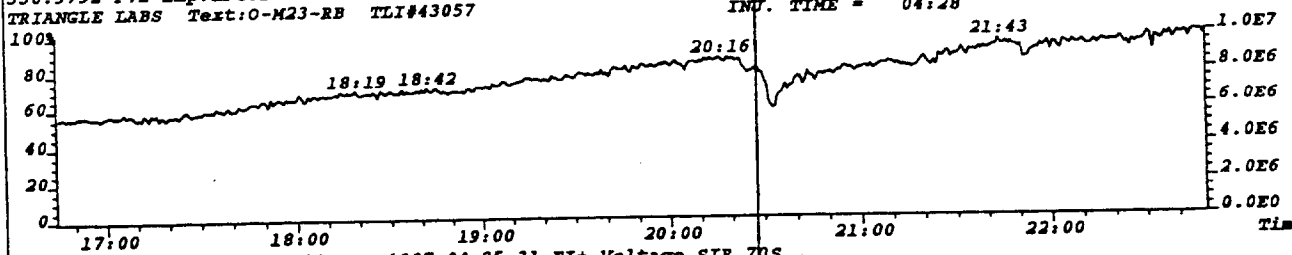
File:S975817 #1-848 Acq:11-SEP-1997 04:25:31 EI+ Voltage SIR 70S Noise:47  
315.9419 F:2 BSUB(256,30,-3.0) PKD(9,5,5,0.05%,188.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:O-M23-RB TLI#43057 INJ. TIME = 04:28



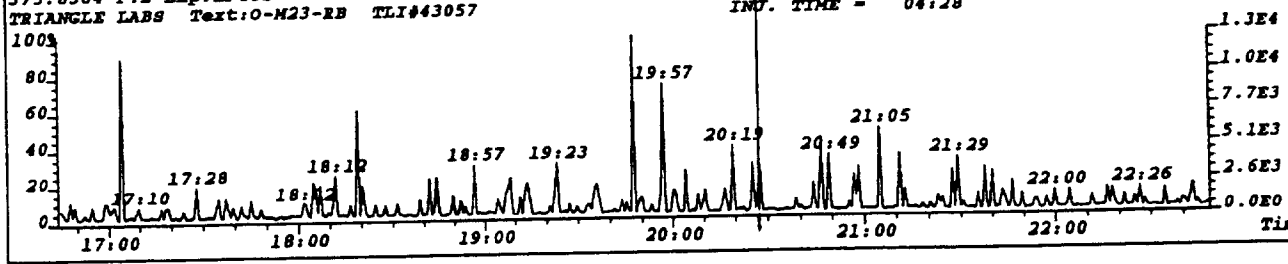
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317.9389 F:2 BSUB(256,30,-3.0) PKD(9,5,5,0.05%,1332.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:O-M23-RB TLI#43057 INJ. TIME = 04:28



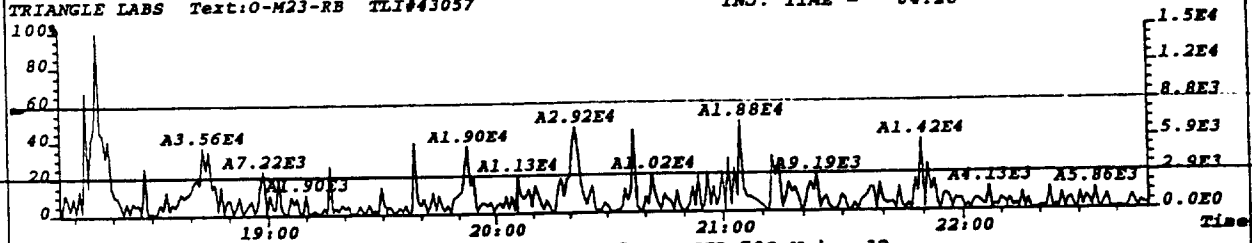
File:S975817 #1-848 Acq:11-SEP-1997 04:25:31 EI+ Voltage SIR 70S  
330.9792 F:2 Exp:EPCUS  
TRIANGLE LABS Text:O-M23-RB TLI#43057 INJ. TIME = 04:28



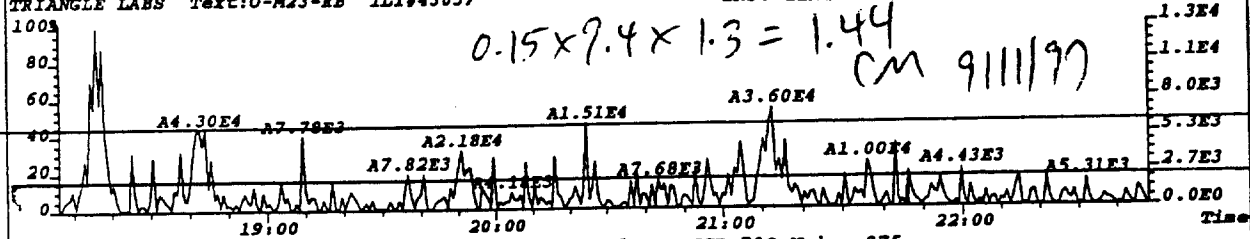
File:S975817 #1-848 Acq:11-SEP-1997 04:25:31 EI+ Voltage SIR 70S  
375.8364 F:2 Exp:EPCUS  
TRIANGLE LABS Text:O-M23-RB TLI#43057 INJ. TIME = 04:28



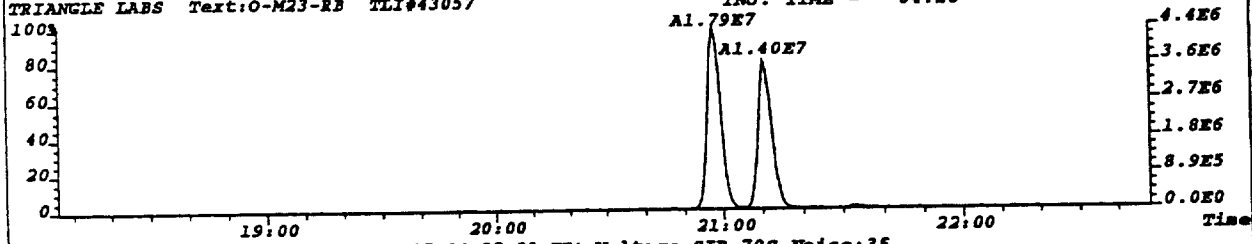
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319.8965 F: 2 BSub(256, 30, -3.0) PKD(7, 5, 3, 0.05%, 180.0, 1.00%, F, T) Exp: EPCUS  
TRIANGLE LABS Text: 0-M23-RB TLI#43057 INJ. TIME = 04:28



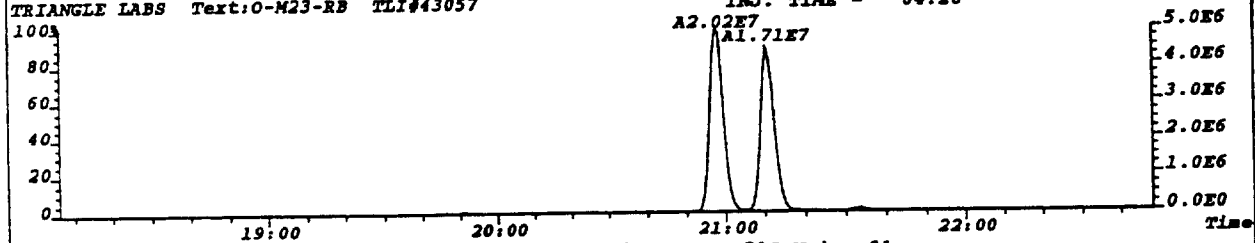
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321.8936 F: 2 BSub(256, 30, -3.0) PKD(7, 5, 3, 0.05%, 128.0, 1.00%, F, T) Exp: EPCUS  
TRIANGLE LABS Text: 0-M23-RB TLI#43057 INJ. TIME = 04:28



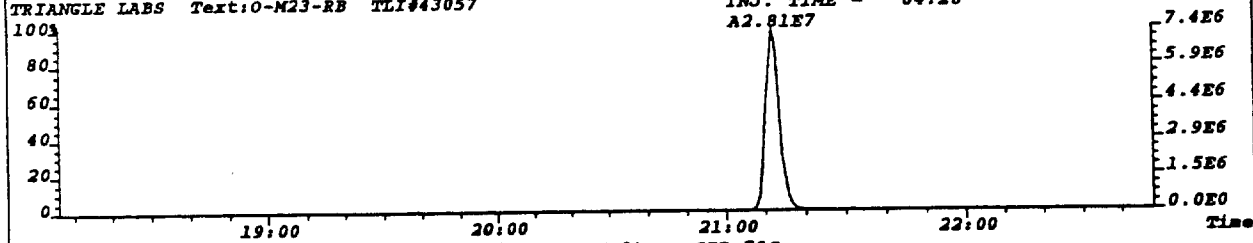
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331.9368 F: 2 BSub(256, 30, -3.0) PKD(7, 5, 3, 0.05%, 3500.0, 1.00%, F, T) Exp: EPCUS  
TRIANGLE LABS Text: 0-M23-RB TLI#43057 INJ. TIME = 04:28



File: S975817 #1-848 Acq: 11-SEP-1997 04:25:31 EI+ Voltage SIR 70S Noise: 35  
333.9338 F: 2 BSub(256, 30, -3.0) PKD(7, 5, 3, 0.05%, 140.0, 1.00%, F, T) Exp: EPCUS  
TRIANGLE LABS Text: 0-M23-RB TLI#43057 INJ. TIME = 04:28

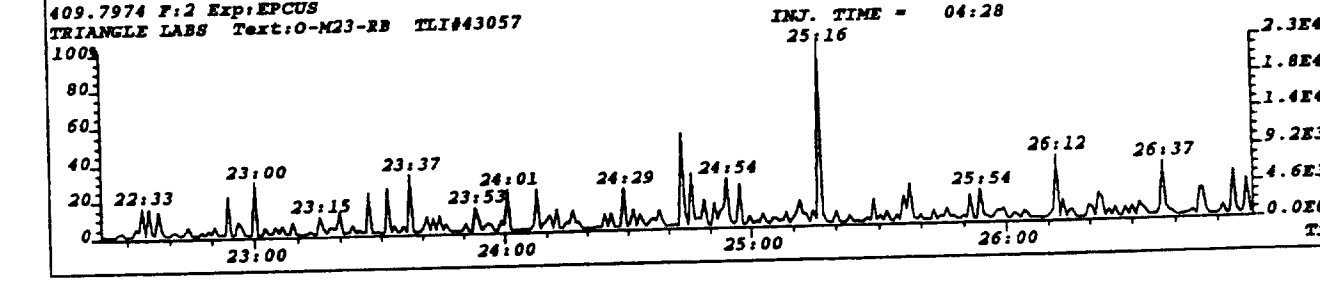
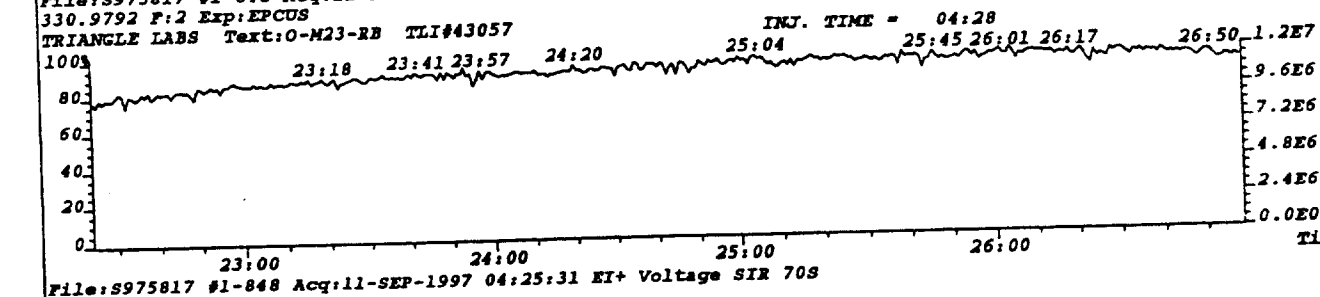
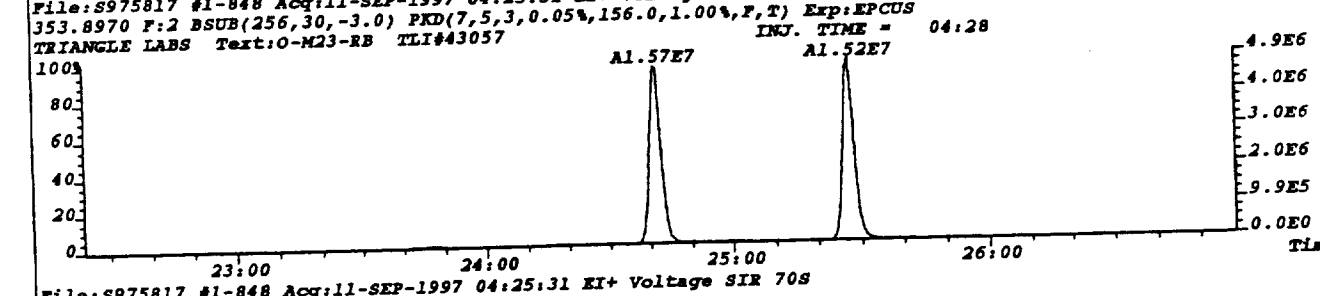
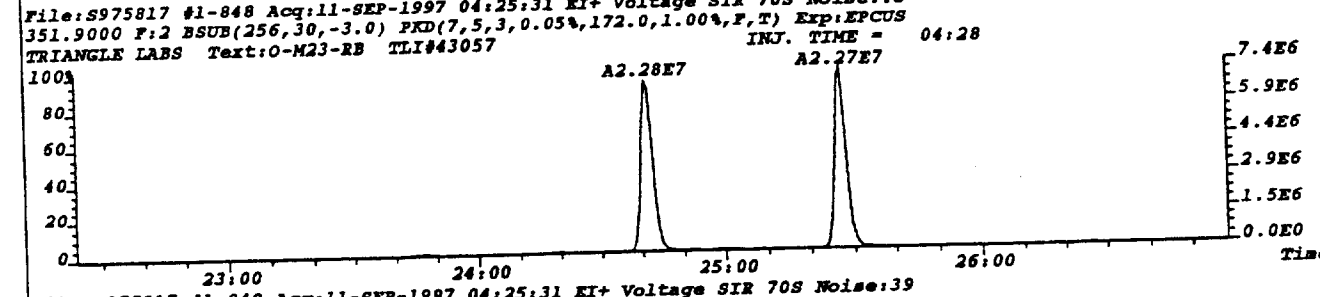
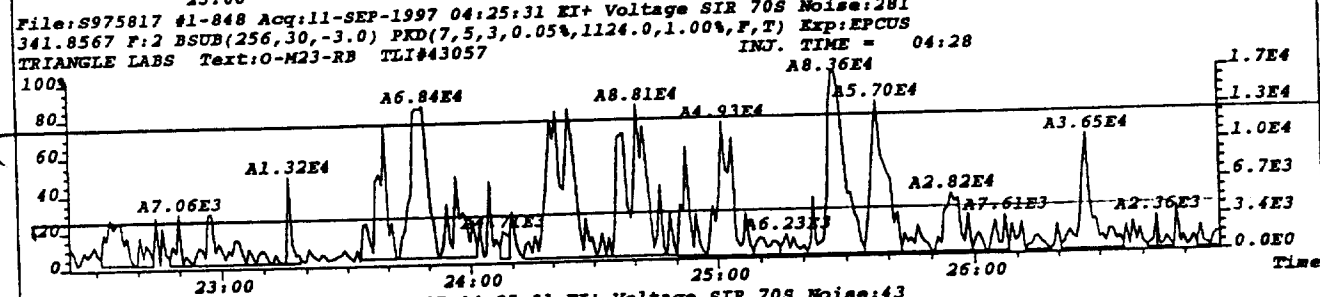
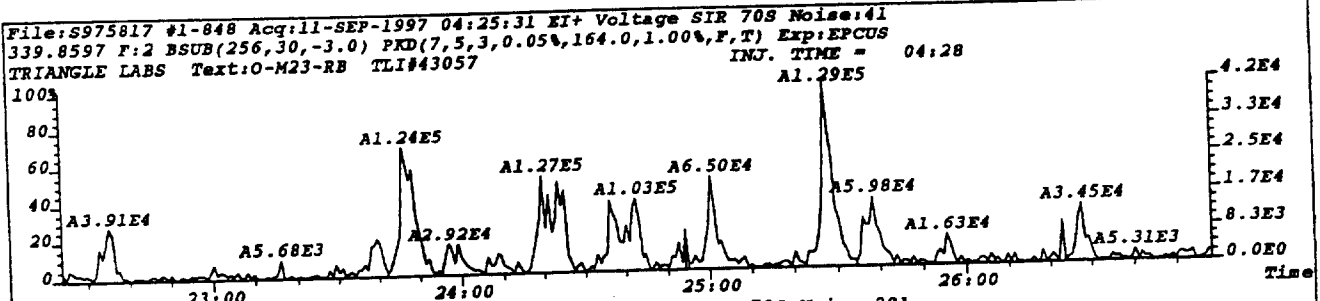


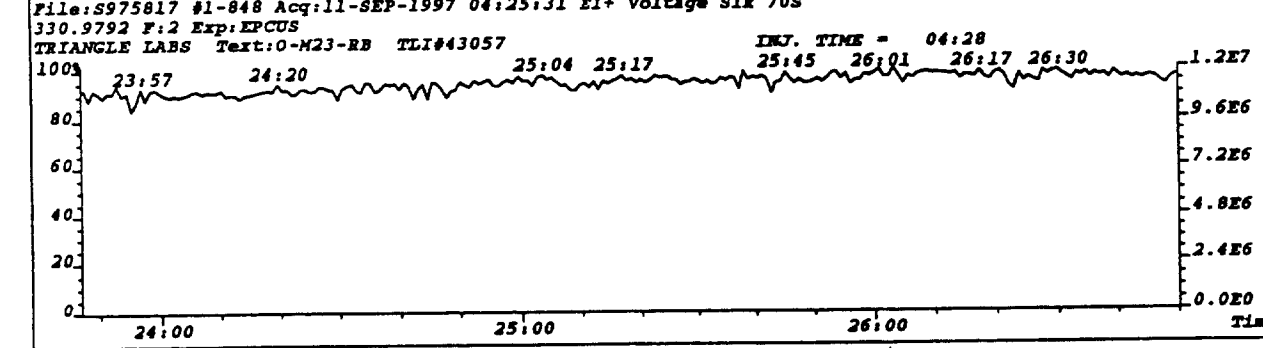
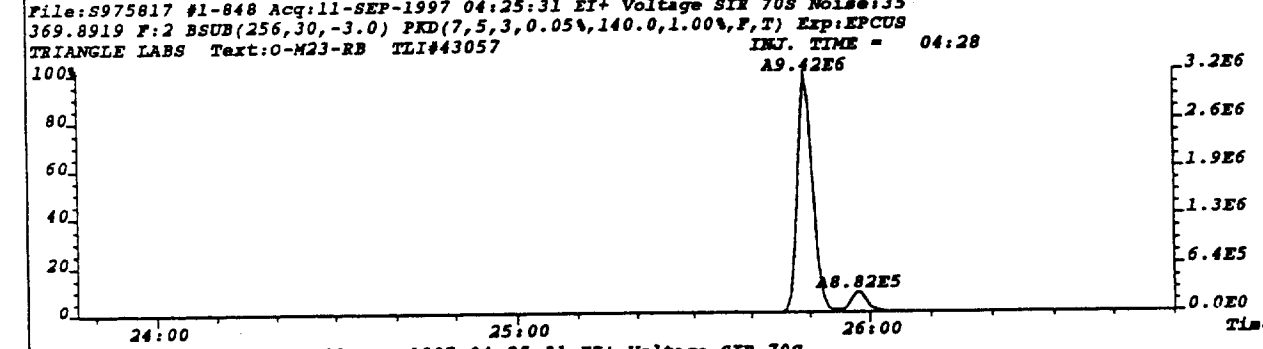
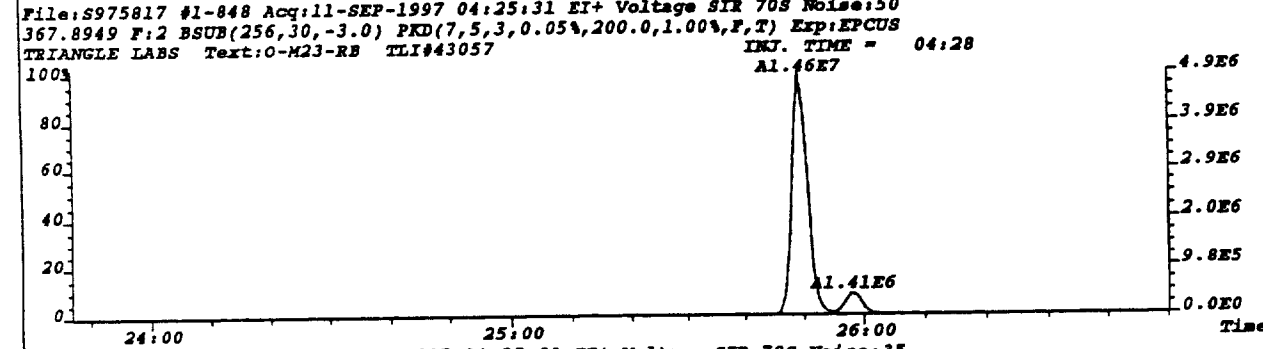
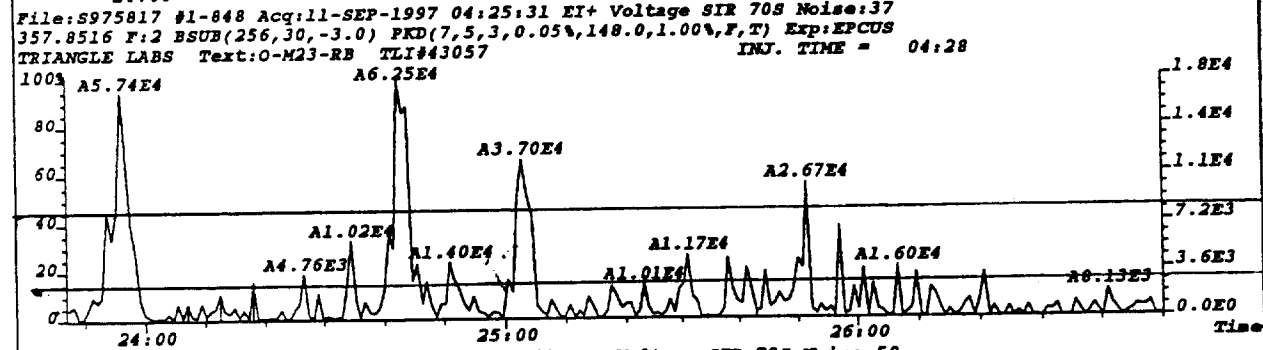
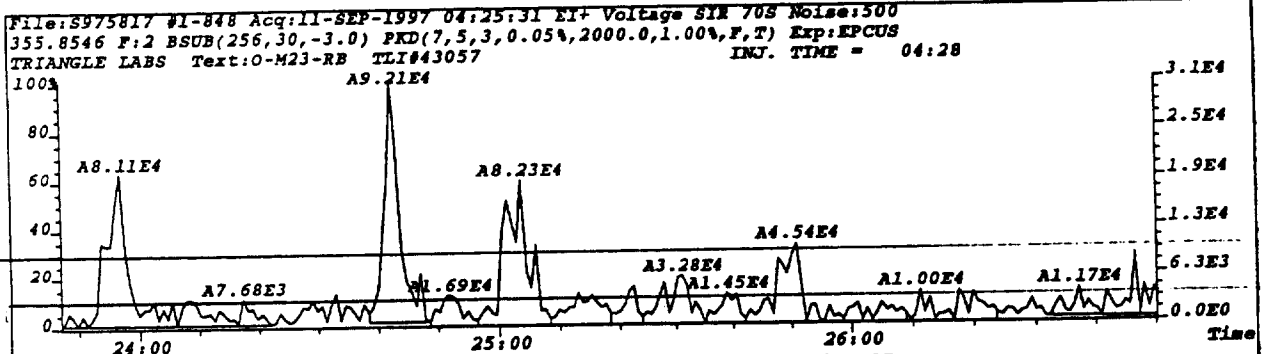
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327.8847 F: 2 BSub(256, 30, -3.0) PKD(7, 5, 3, 0.05%, 124.0, 1.00%, F, T) Exp: EPCUS  
TRIANGLE LABS Text: 0-M23-RB TLI#43057 INJ. TIME = 04:28



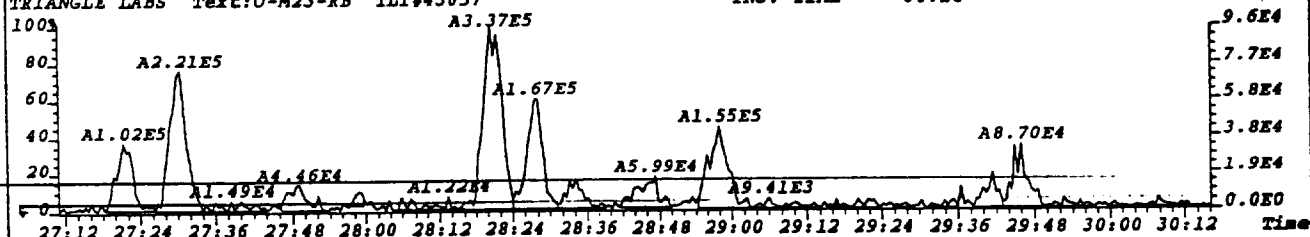
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330.9792 F: 2 Exp: EPCUS  
TRIANGLE LABS Text: 0-M23-RB TLI#43057 INJ. TIME = 04:28



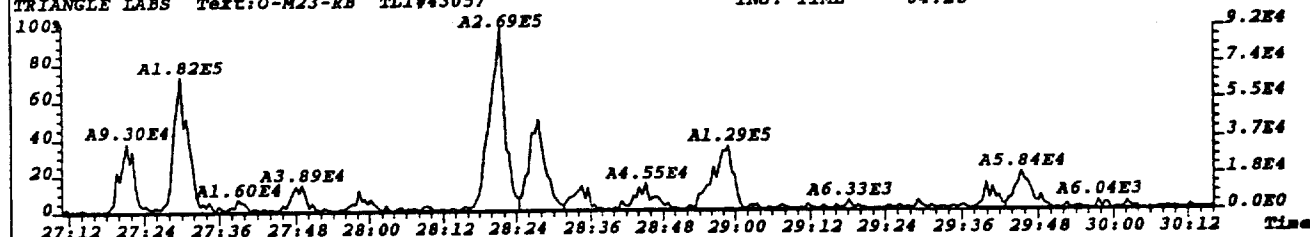




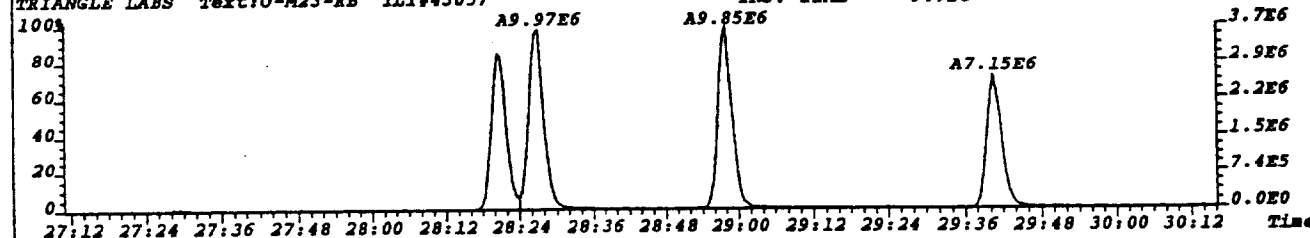
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373.8208 F: 3 BSub(256, 30, -3.0) PKD(7, 5, 3, 0.05%, 3388.0, 1.00%, F, T) Exp: EPCUS  
TRIANGLE LABS Text: O-M23-RB TLI#43057 INJ. TIME = 04:28



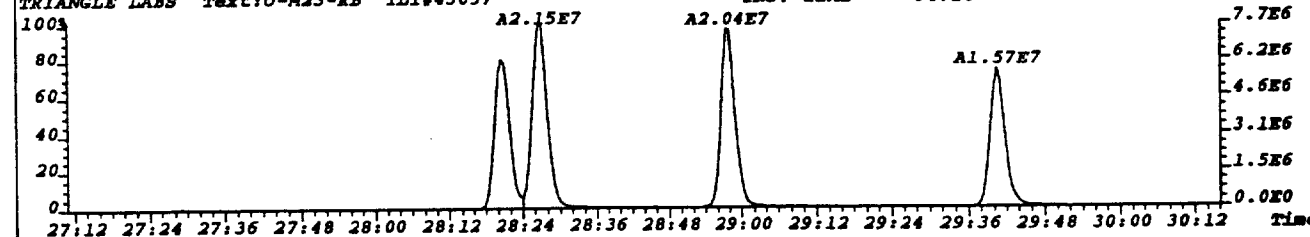
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375.8178 F: 3 BSub(256, 30, -3.0) PKD(7, 5, 3, 0.05%, 1204.0, 1.00%, F, T) Exp: EPCUS  
TRIANGLE LABS Text: O-M23-RB TLI#43057 INJ. TIME = 04:28



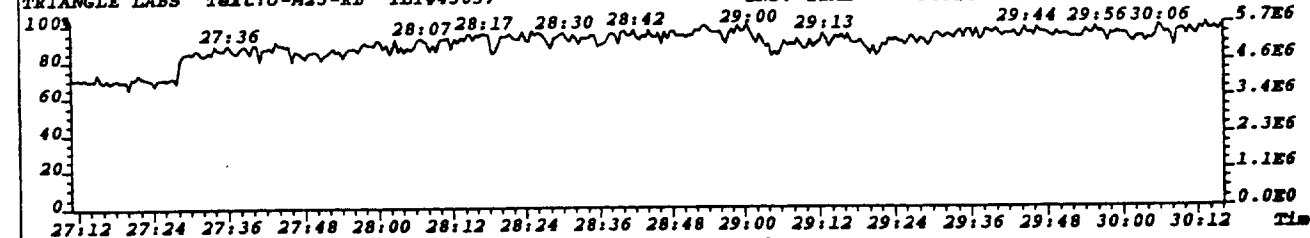
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383.8639 F: 3 BSub(256, 30, -3.0) PKD(7, 5, 3, 0.05%, 2992.0, 1.00%, F, T) Exp: EPCUS  
TRIANGLE LABS Text: O-M23-RB TLI#43057 INJ. TIME = 04:28



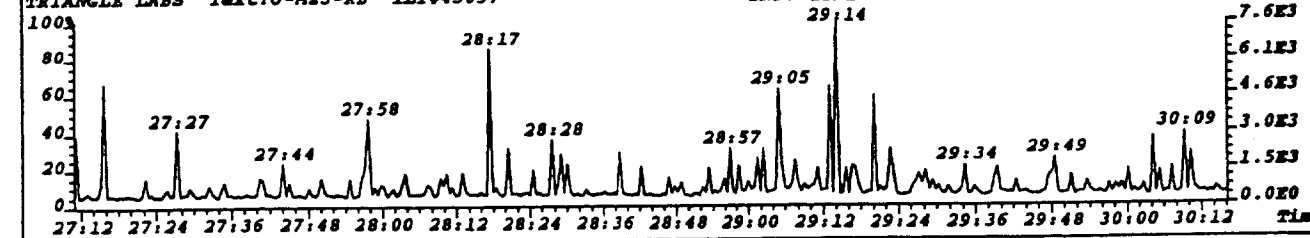
File: S975817 #1-406 Acq: 11-SEP-1997 04:25:31 EI+ Voltage SIR 70S Noise: 613  
385.8610 F: 3 BSub(256, 30, -3.0) PKD(7, 5, 3, 0.05%, 2452.0, 1.00%, F, T) Exp: EPCUS  
TRIANGLE LABS Text: O-M23-RB TLI#43057 INJ. TIME = 04:28



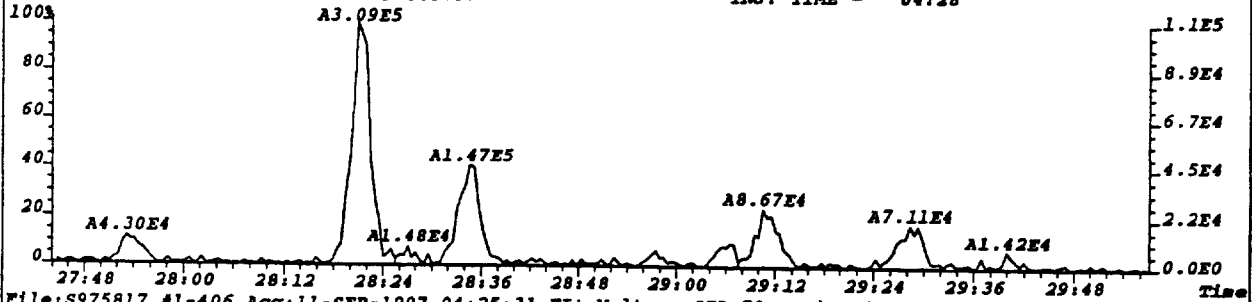
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392.9760 F: 3 Exp: EPCUS  
TRIANGLE LABS Text: O-M23-RB TLI#43057 INJ. TIME = 04:28



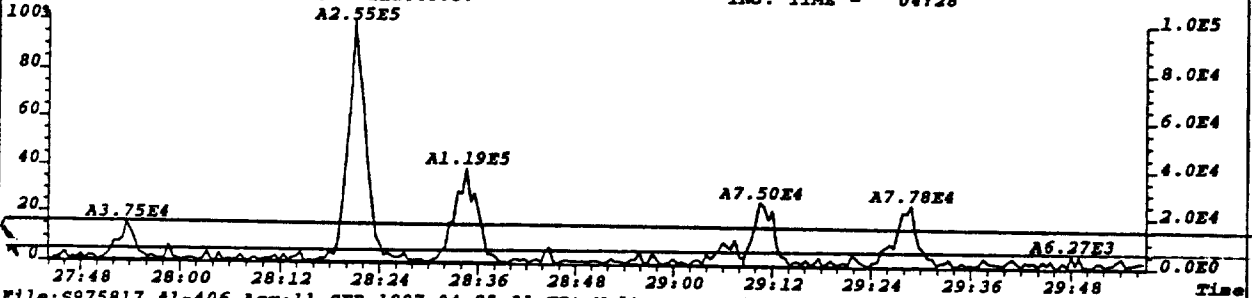
File: S975817 #1-406 Acq: 11-SEP-1997 04:25:31 EI+ Voltage SIR 70S  
445.7555 F: 3 Exp: EPCUS  
TRIANGLE LABS Text: O-M23-RB TLI#43057 INJ. TIME = 04:28



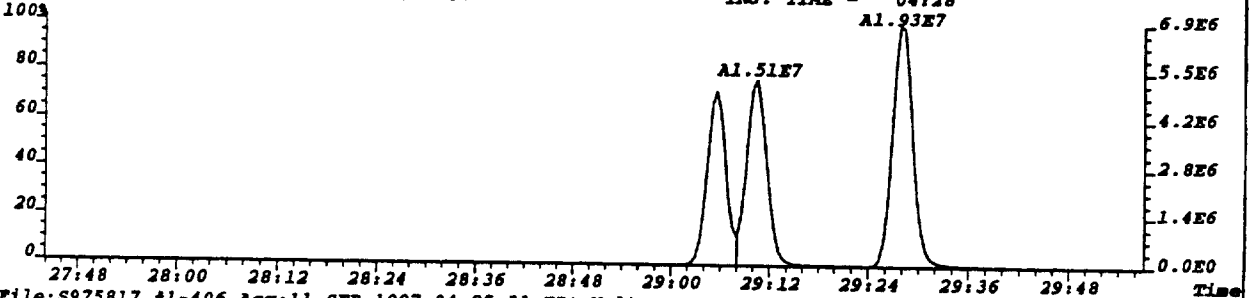
File:S975817 #1-406 Acq:11-SEP-1997 04:25:31 EI+ Voltage SIR 70S Noise:214  
389.8156 F:3 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,856.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:O-M23-RB TLI#43057 INJ. TIME = 04:28



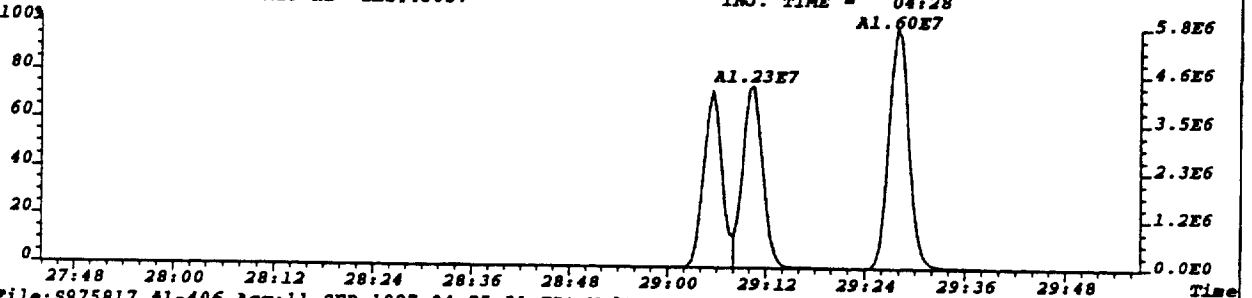
File:S975817 #1-406 Acq:11-SEP-1997 04:25:31 EI+ Voltage SIR 70S Noise:336  
391.8127 F:3 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,1344.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:O-M23-RB TLI#43057 INJ. TIME = 04:28



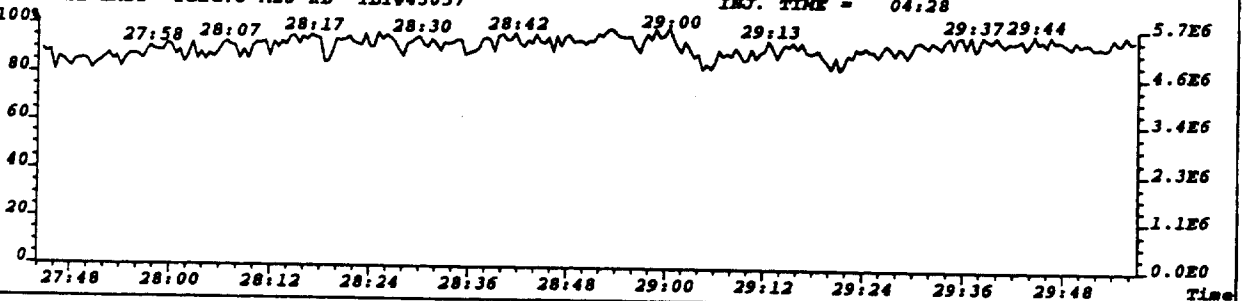
File:S975817 #1-406 Acq:11-SEP-1997 04:25:31 EI+ Voltage SIR 70S Noise:331  
401.8558 F:3 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,1324.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:O-M23-RB TLI#43057 INJ. TIME = 04:28



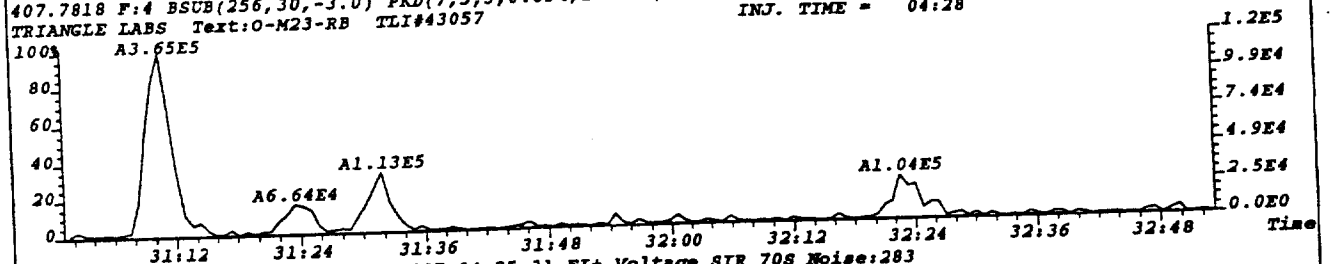
File:S975817 #1-406 Acq:11-SEP-1997 04:25:31 EI+ Voltage SIR 70S Noise:362  
403.8529 F:3 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,1448.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:O-M23-RB TLI#43057 INJ. TIME = 04:28



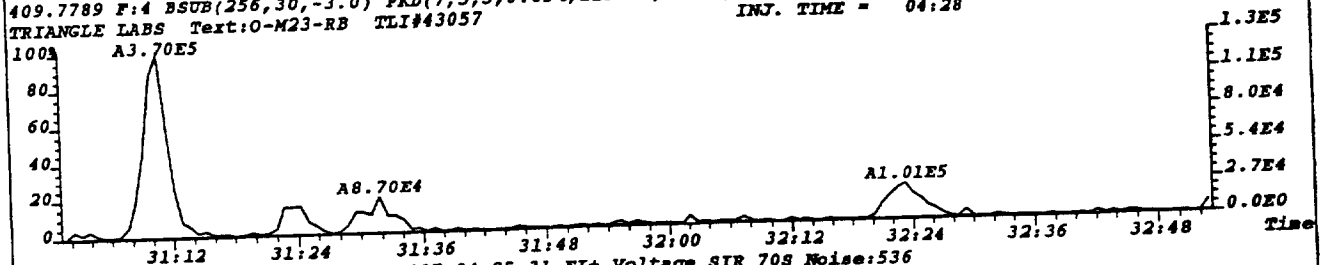
File:S975817 #1-406 Acq:11-SEP-1997 04:25:31 EI+ Voltage SIR 70S  
392.9760 F:3 Exp:EPCUS  
TRIANGLE LABS Text:O-M23-RB TLI#43057 INJ. TIME = 04:28



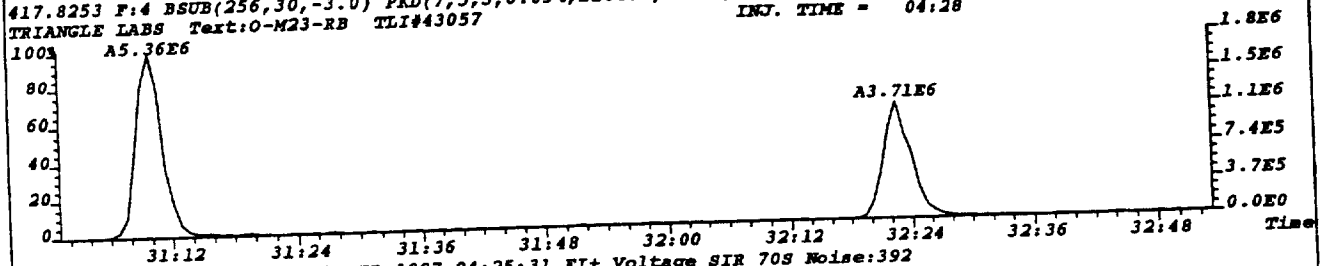
File:S975817 #1-430 Acq:11-SEP-1997 04:25:31 EI+ Voltage SIR 70S Noise:421  
407.7818 F:4 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,1684.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:O-M23-RB TLI#43057 INJ. TIME = 04:28



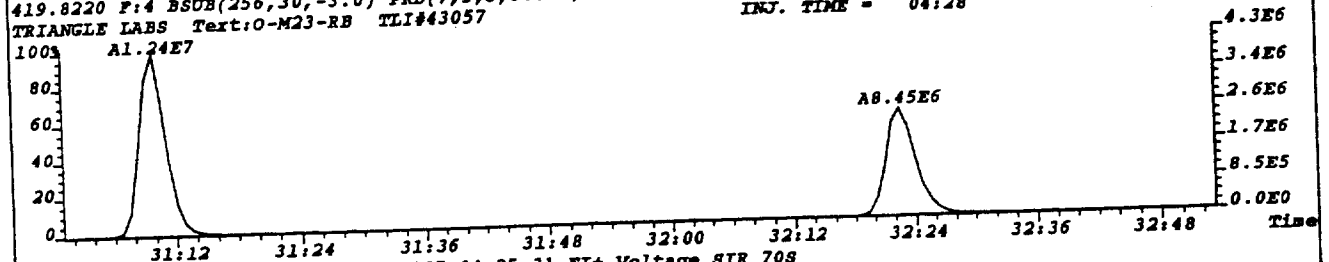
File:S975817 #1-430 Acq:11-SEP-1997 04:25:31 EI+ Voltage SIR 70S Noise:283  
409.7789 F:4 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,1132.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:O-M23-RB TLI#43057 INJ. TIME = 04:28



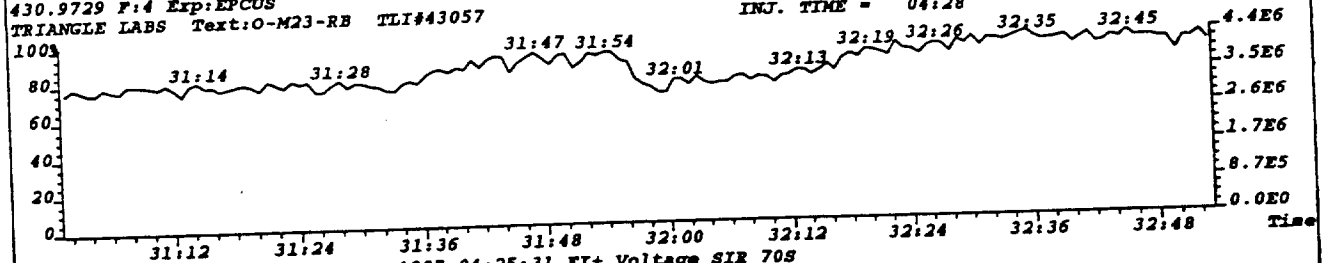
File:S975817 #1-430 Acq:11-SEP-1997 04:25:31 EI+ Voltage SIR 70S Noise:536  
417.8253 F:4 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,2144.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:O-M23-RB TLI#43057 INJ. TIME = 04:28



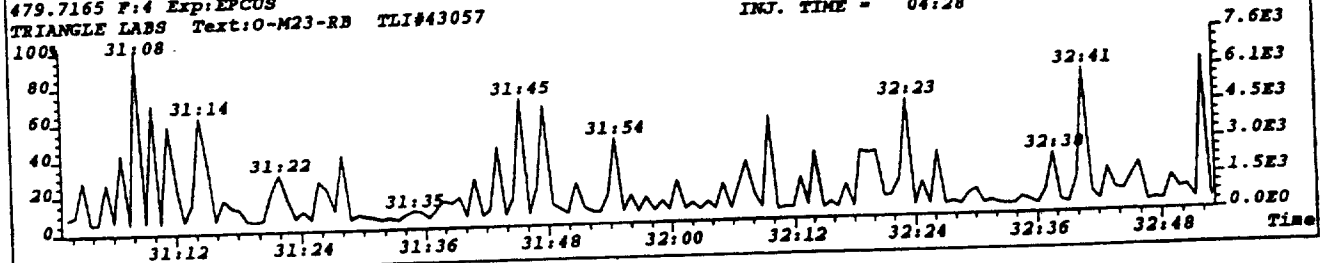
File:S975817 #1-430 Acq:11-SEP-1997 04:25:31 EI+ Voltage SIR 70S Noise:392  
419.8220 F:4 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,1568.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:O-M23-RB TLI#43057 INJ. TIME = 04:28

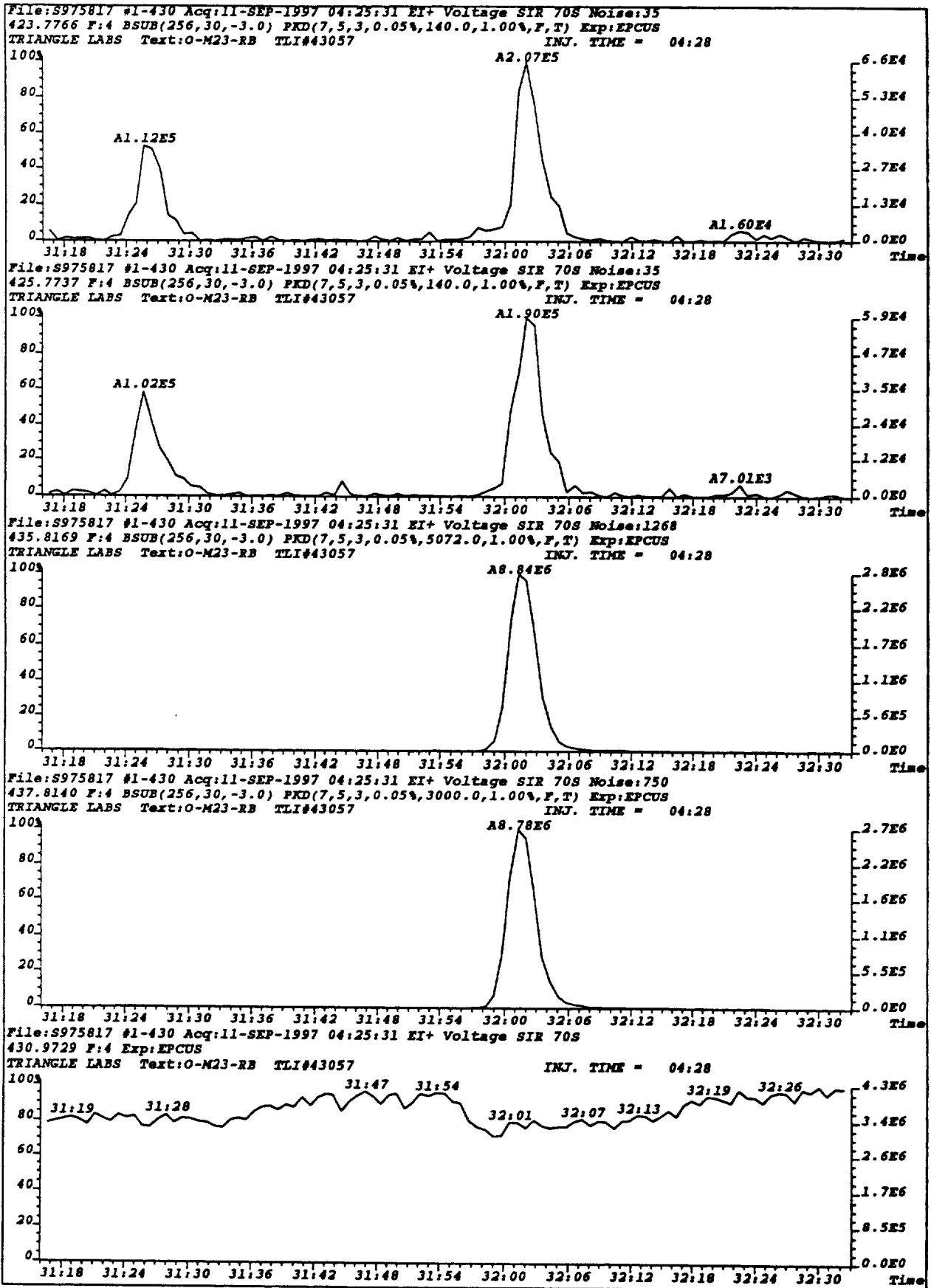


File:S975817 #1-430 Acq:11-SEP-1997 04:25:31 EI+ Voltage SIR 70S  
430.9729 F:4 Exp:EPCUS INJ. TIME = 04:28  
TRIANGLE LABS Text:O-M23-RB TLI#43057

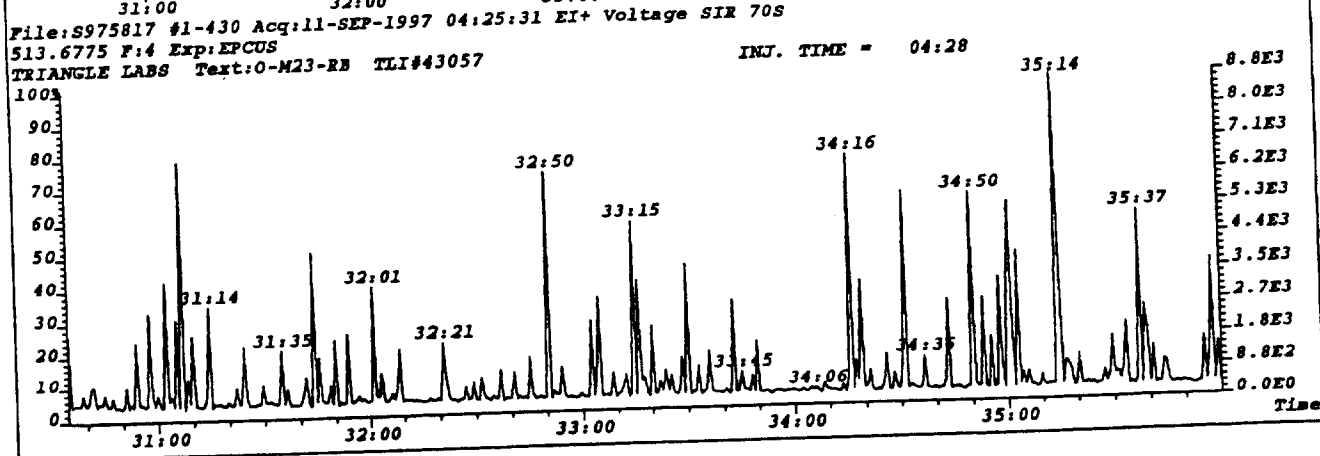
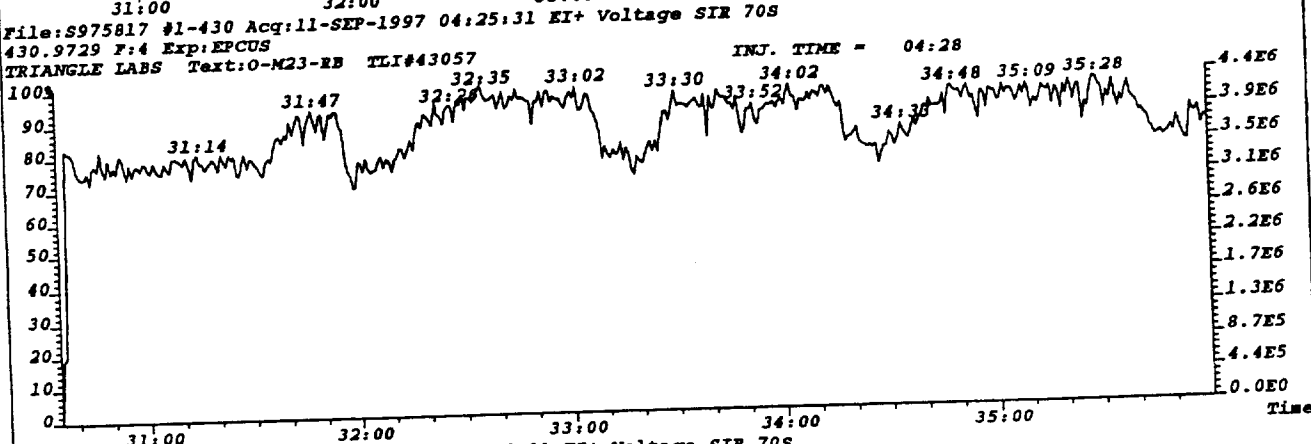
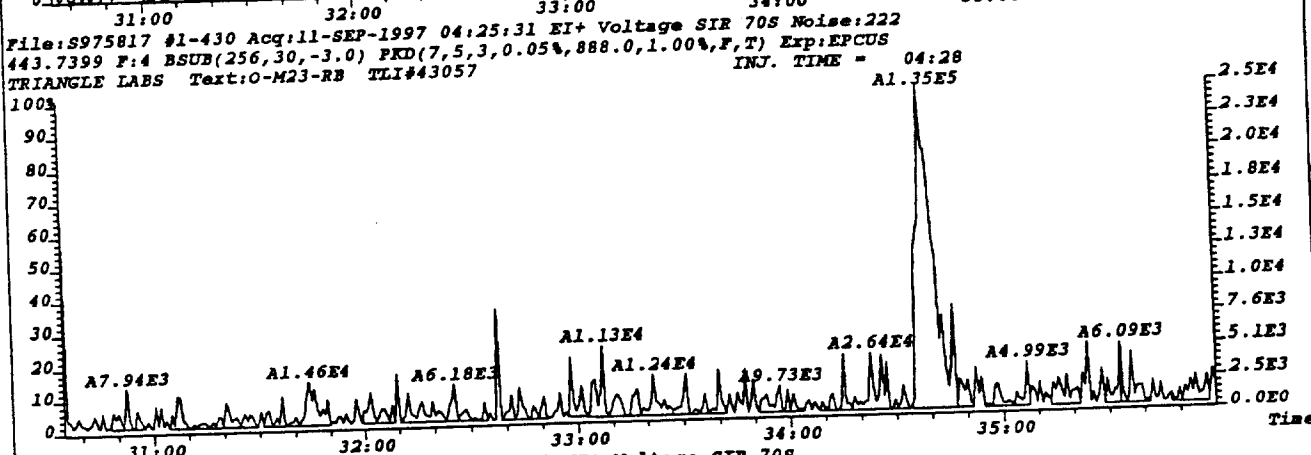
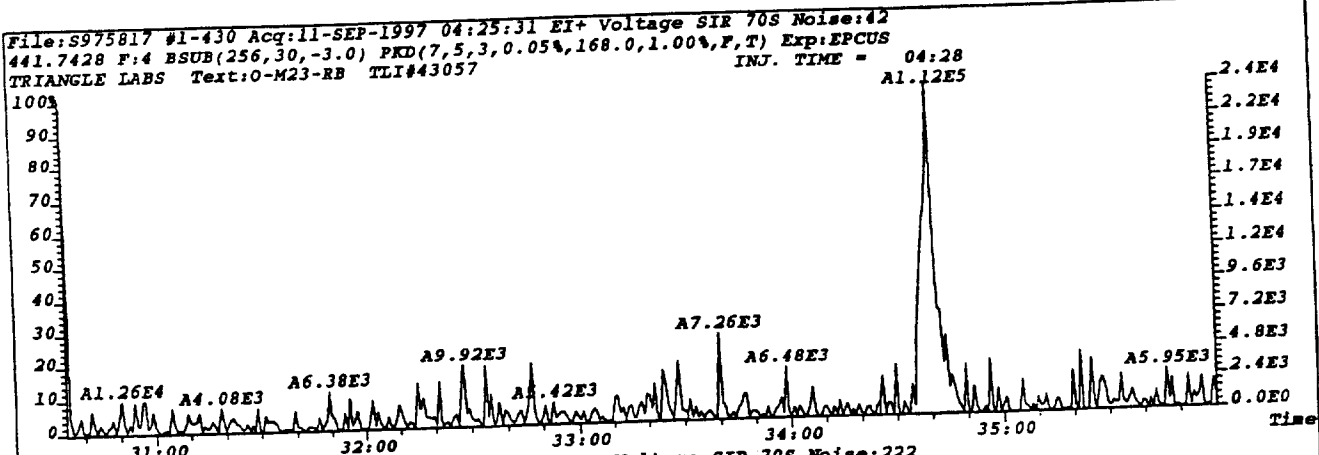


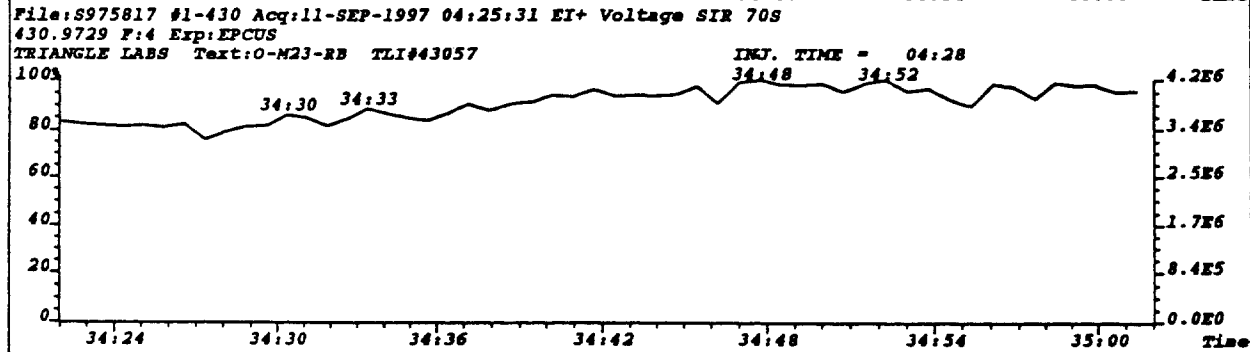
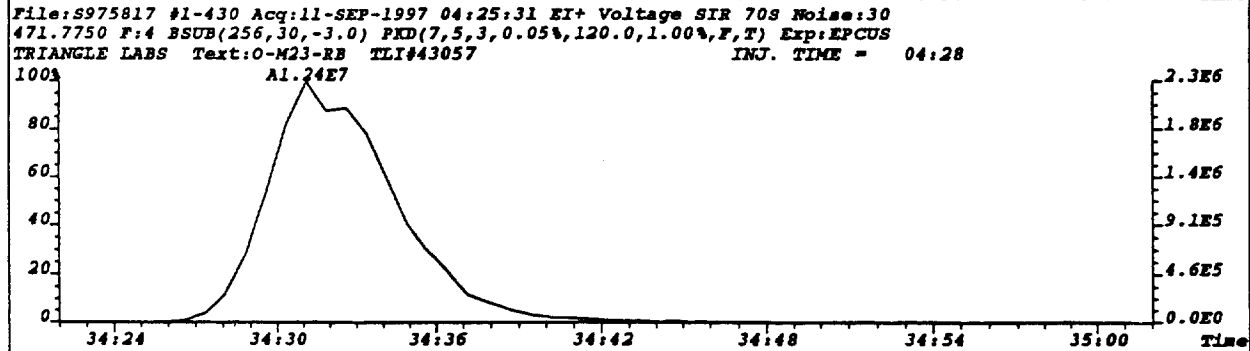
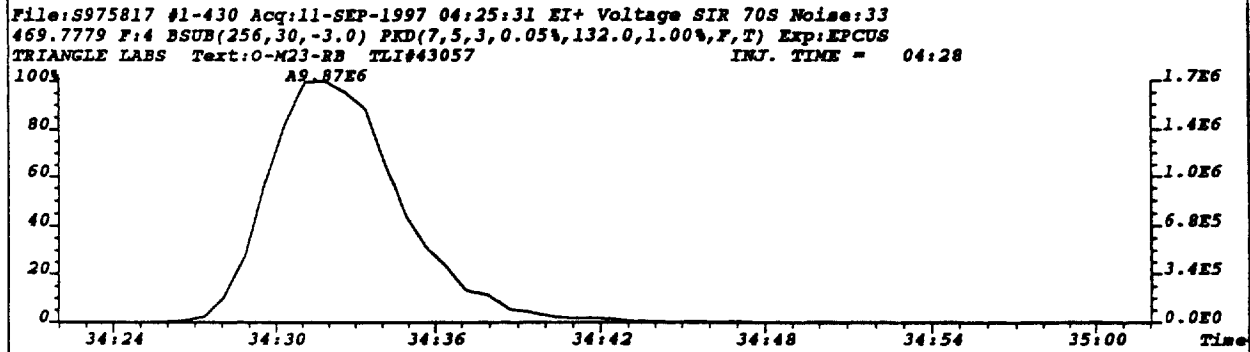
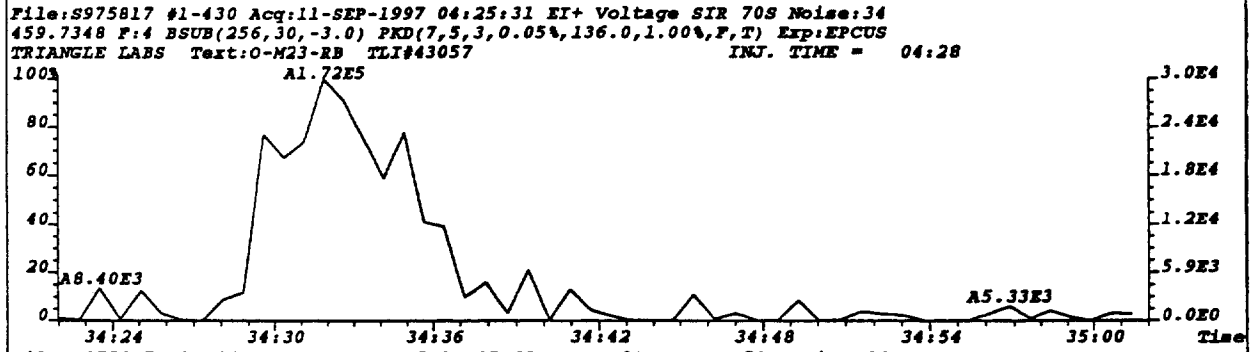
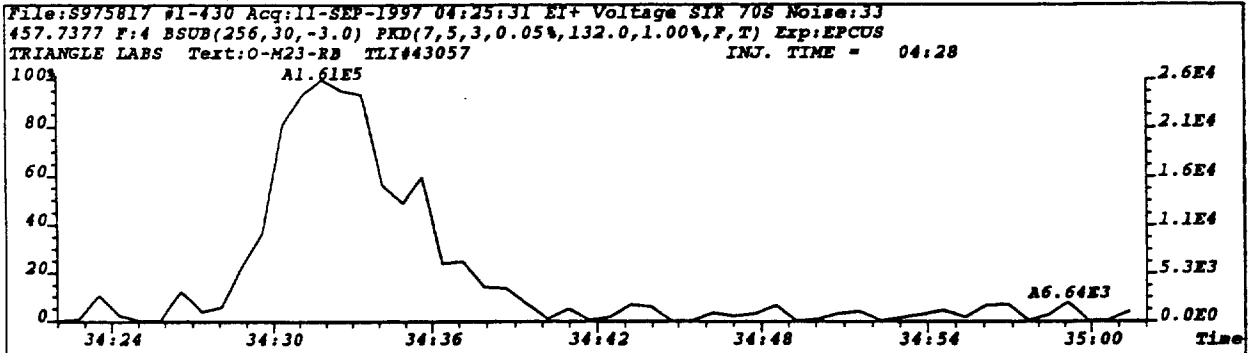
File:S975817 #1-430 Acq:11-SEP-1997 04:25:31 EI+ Voltage SIR 70S  
479.7165 F:4 Exp:EPCUS INJ. TIME = 04:28  
TRIANGLE LABS Text:O-M23-RB TLI#43057



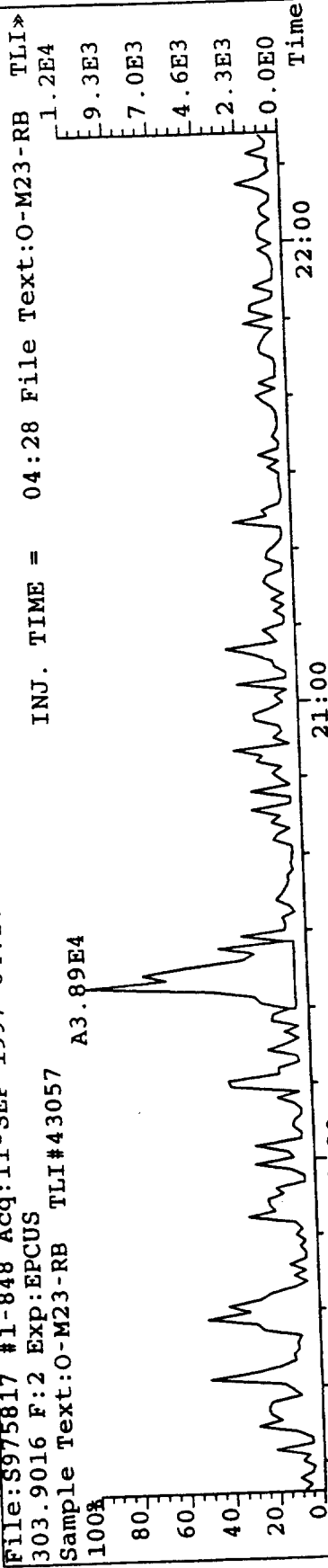




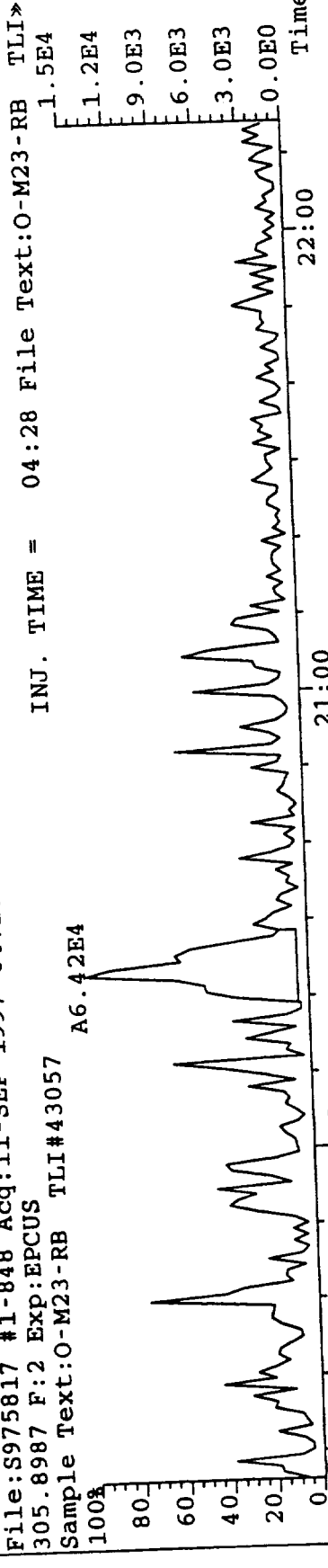




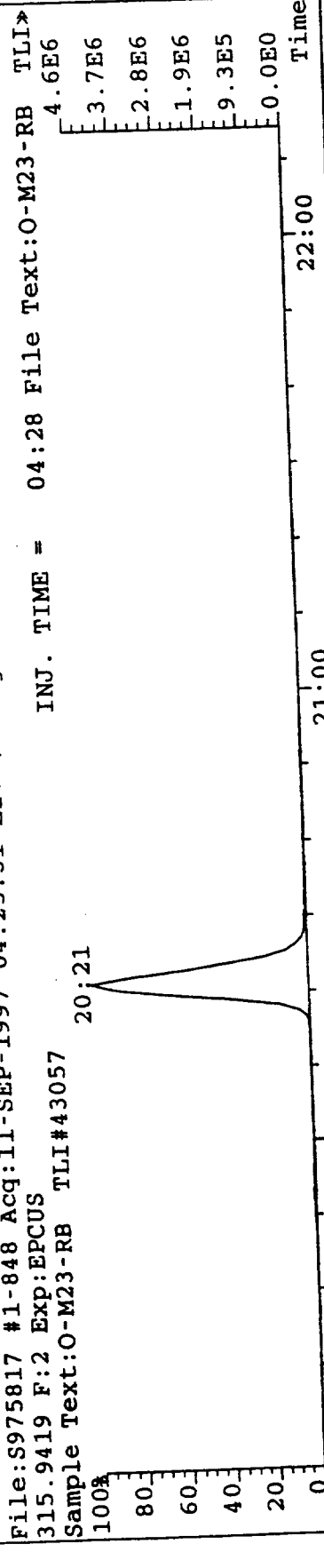
File: S975817 #1-848 Acq: 11-SEP-1997 04:25:31 EI+ Voltage SIR 70S



File: S975817 #1-848 Acq: 11-SEP-1997 04:25:31 EI+ Voltage SIR 70S



File: S975817 #1-848 Acq: 11-SEP-1997 04:25:31 EI+ Voltage SIR 70S

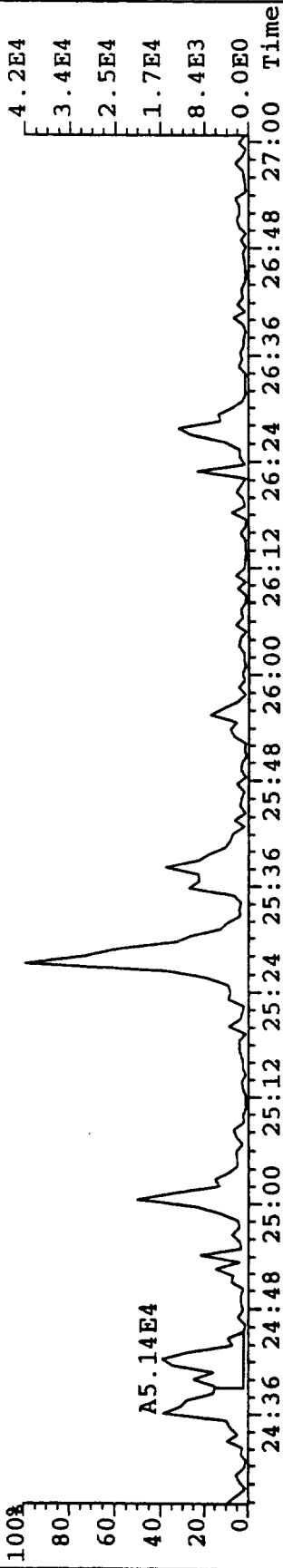


File: S975817 #1-848 Acq: 11-SEP-1997 04:25:31 EI+ Voltage SIR 70S

339.8597 F:2 Exp:EPCUS

Sample Text: O-M23-RB TLI#43057

INJ. TIME = 04:28 File Text: O-M23-RB TLI#

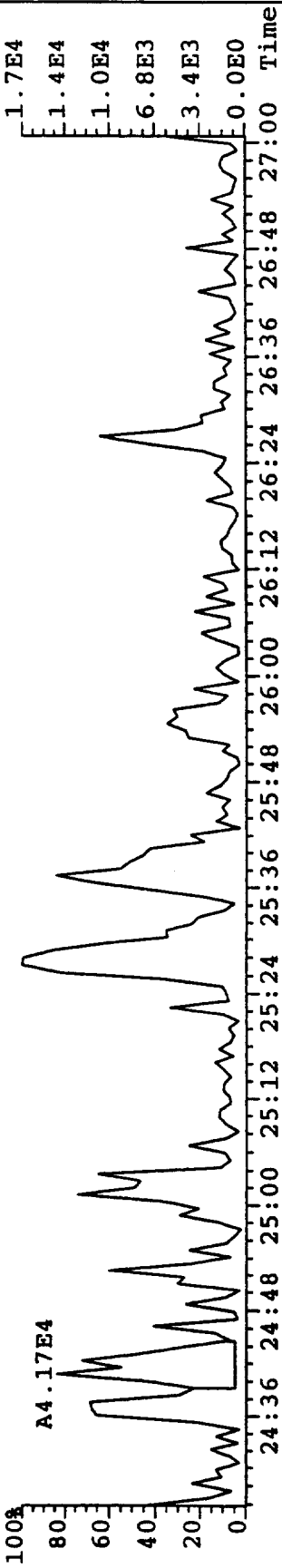


File: S975817 #1-848 Acq: 11-SEP-1997 04:25:31 EI+ Voltage SIR 70S

341.8567 F:2 Exp:EPCUS

Sample Text: O-M23-RB TLI#43057

INJ. TIME = 04:28 File Text: O-M23-RB TLI#

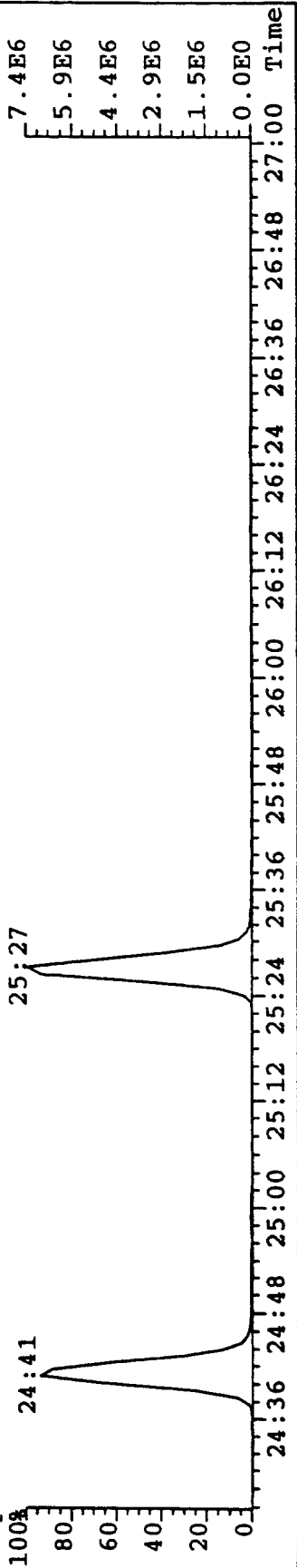


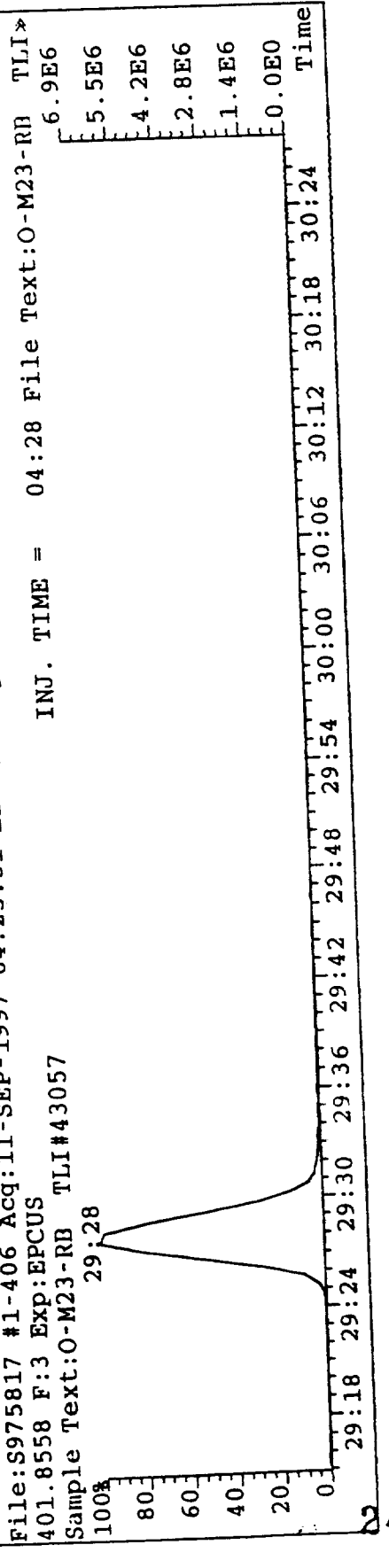
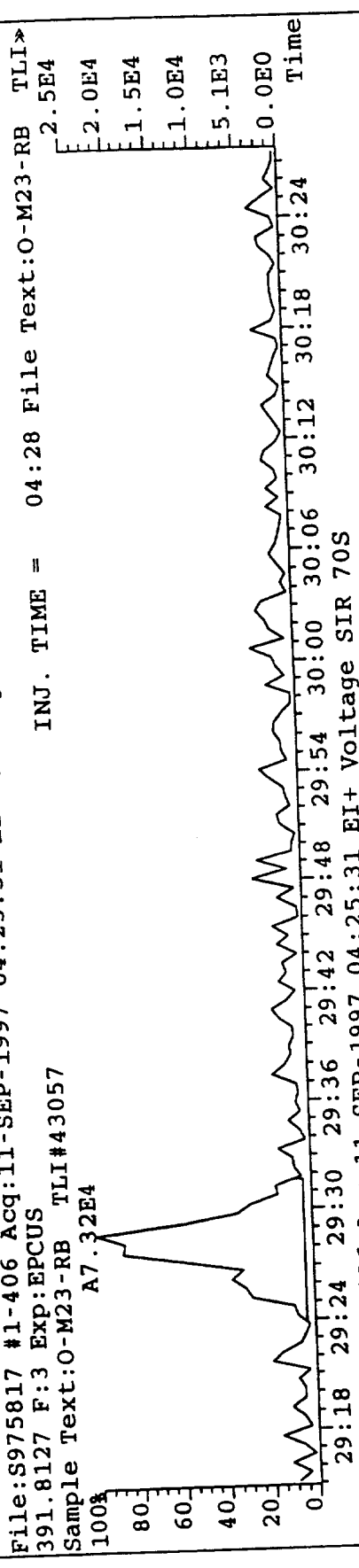
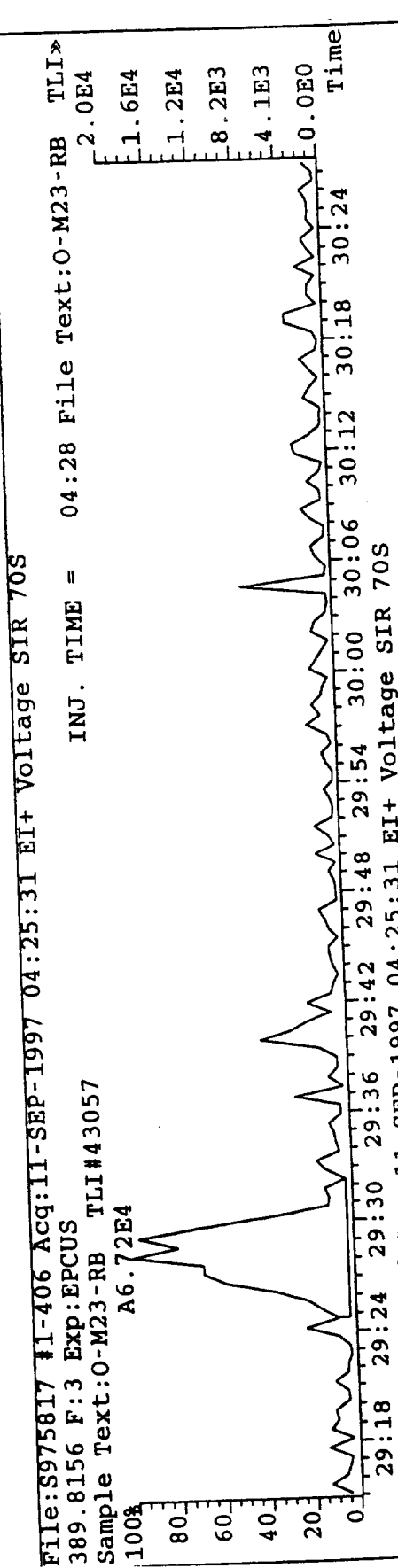
File: S975817 #1-848 Acq: 11-SEP-1997 04:25:31 EI+ Voltage SIR 70S

351.9000 F:2 Exp:EPCUS

Sample Text: O-M23-RB TLI#43057

INJ. TIME = 04:28 File Text: O-M23-RB TLI#







Initial ....Date...

Data Review By: AVH 9/12/97 Calculated Noise Area: 2.07

The Total Area for each peak with an ion abundance ratio outside ratio limits has been recalculated according to method requirements.

Page No. 1 Listing of P973847B.dbf  
09/12/97 Matched GC Peaks / Ratio / Ret. Time

Compound/  
M\_Z.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

Compound	QC	Log	Omit	Why	..RT.	OK	Ratio	Total.Area...	Area.Peak.1..	Area.Peak.2..	Rel.RT	Compound.Name..	ID..	Flags.
TCDF								0.65-0.89						
304-306	DC	NL	0:00	RO	0.95			1.96						0.786-1.096
														0.000
	DC	SN	19:01	RO	0.09			0.44						0.921
	DC	SN	19:05	RO	1.12			0.58						0.924
	DC	SN	19:16	RO	1.09			0.60						0.933
	DC	SN	19:33	RO	0.47			0.83						0.947
	DC	SN	20:11	RO	1.95			0.74						0.977
304-306								0.00						
								0 Peaks						
13C12-TCDF								0.65-0.89						0.952-1.048
316-318	DC	NL	0:00		0.88			2.73						0.000
	DC	WL	19:22		0.69			9.53						0.938
	DC	WL	19:38		0.69			13.11						0.951
			20:39		0.76			2,170.73	937.74	1,232.99	1.000	13C12-2378-TCDF	ISO	
	DC	SN	21:11	RO	2.07			3.82						1.026
	DC	WH	22:31		0.78			18.93						1.090
316-318								2,170.73						
								1 Peak						

----- Above: TCDF / TCDD Follows -----

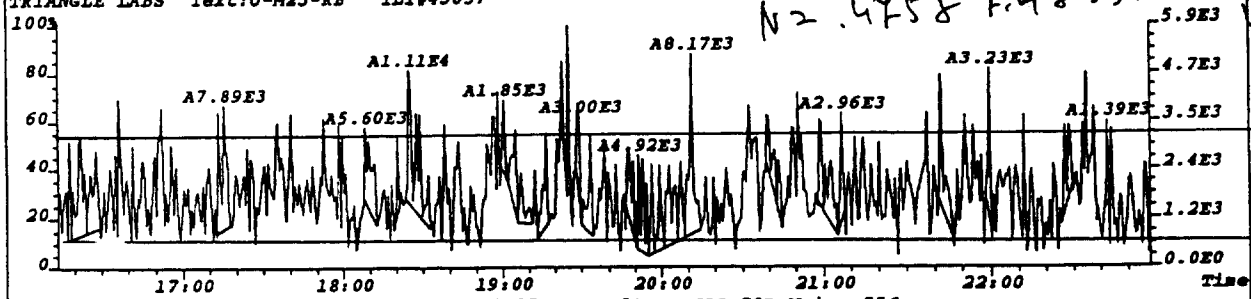
Compound	QC	Log	Omit	Why	..RT.	OK	Ratio	Total.Area...	Area.Peak.1..	Area.Peak.2..	Rel.RT	Compound.Name..	ID..	Flags.
13C12-TCDD								0.65-0.89						0.897-1.103
332-334	DC	NL	0:00	RO	1.93			1.77						0.000
			18:23	RO	0.62			7.54	3.28	5.25	0.945			
			19:27		0.80			1,683.09	749.83	933.26	1.000	13C12-2378-TCDD	IS1	
			19:41		0.80			2,308.84	1,029.03	1,279.81	1.012	13C12-1234-TCDD	RS1	
			20:20		0.85			21.44	9.82	11.62	1.045			
	DC	WH	21:54	RO	2.40			2.14						1.126
332-334								4,020.91						
								4 Peaks						

Column Description..... "Why" Code Description..... QC Log Desc.....

M\_Z -Nominal Ion Mass(es) WL-Below Retention Time Window A-Peak Added  
 ..RT. -Retention Time (mm:ss) WH-Above Retention Time Window K-Peak Kept  
 Rat.1 -Ratio of M/M+2 Ions SN-Below Signal to Noise Level D-Peak Deleted  
 OK -RO-Ratio Outside Limits <M-Below Method Detection Limit T-Time Changed  
 Rel.RT-Relative Retention Time NL-Channel Specific Noise Level N-Peak Area Changed  
 N-Name Changed  
 E-Ether Interference

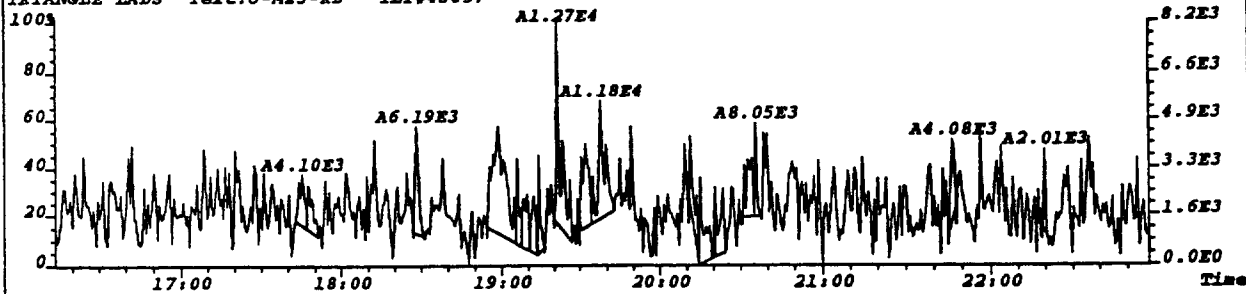
\*\*\* End of Report \*\*\*

File:P973847 #1-755 Acq:12-SEP-1997 14:19:22 KI+ Voltage SIR 70P Noise:528  
303.9016 BSUB(256,30,-3.0) PKD(5,3,1,0.10%,2112.0,0.00%,F,F) Exp:DB225  
TRIANGLE LABS Text:O-M23-RB TLI#43057

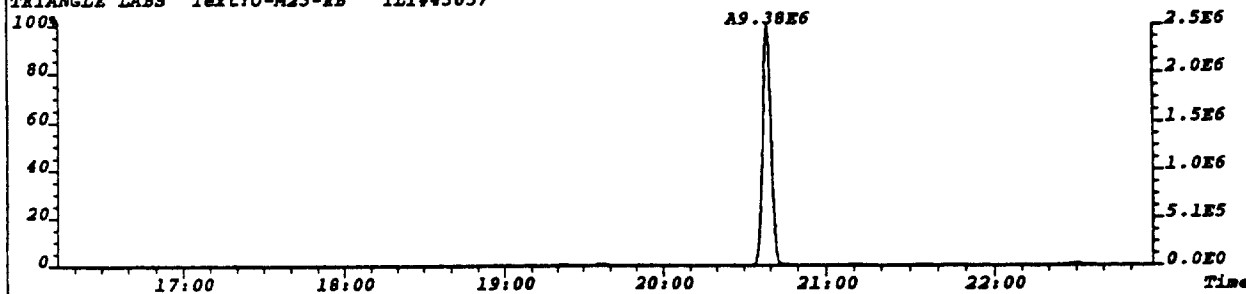


9/14/97

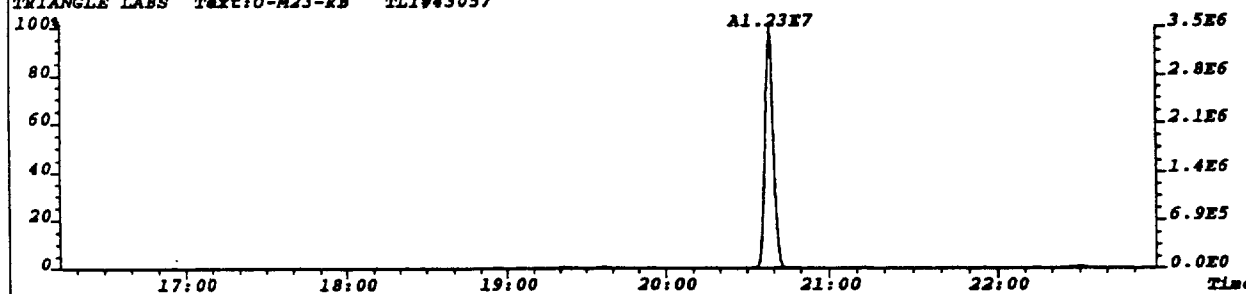
File:P973847 #1-755 Acq:12-SEP-1997 14:19:22 KI+ Voltage SIR 70P Noise:556  
305.8987 BSUB(256,30,-3.0) PKD(5,3,1,0.10%,2224.0,0.00%,F,F) Exp:DB225  
TRIANGLE LABS Text:O-M23-RB TLI#43057



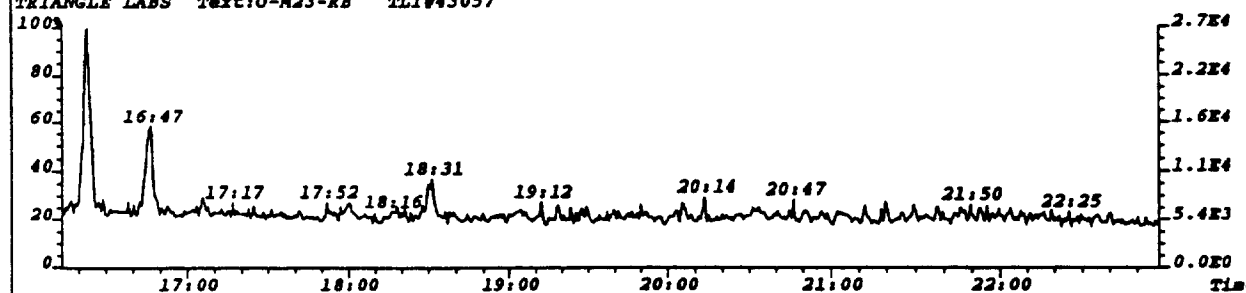
File:P973847 #1-755 Acq:12-SEP-1997 14:19:22 KI+ Voltage SIR 70P Noise:640  
315.9419 BSUB(256,30,-3.0) PKD(5,3,1,0.10%,2560.0,0.00%,F,F) Exp:DB225  
TRIANGLE LABS Text:O-M23-RB TLI#43057



File:P973847 #1-755 Acq:12-SEP-1997 14:19:22 KI+ Voltage SIR 70P Noise:727  
317.9389 BSUB(256,30,-3.0) PKD(5,3,1,0.10%,2908.0,0.00%,F,F) Exp:DB225  
TRIANGLE LABS Text:O-M23-RB TLI#43057

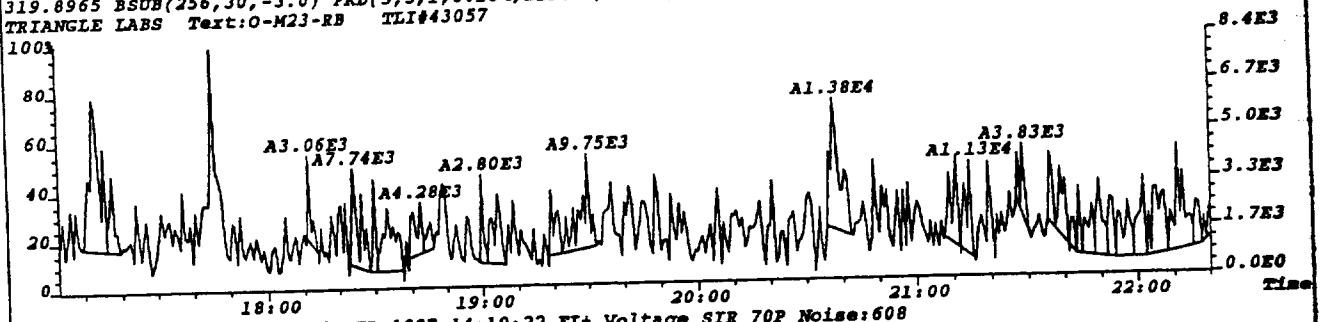


File:P973847 #1-755 Acq:12-SEP-1997 14:19:22 KI+ Voltage SIR 70P  
375.8364 Exp:DB225  
TRIANGLE LABS Text:O-M23-RB TLI#43057

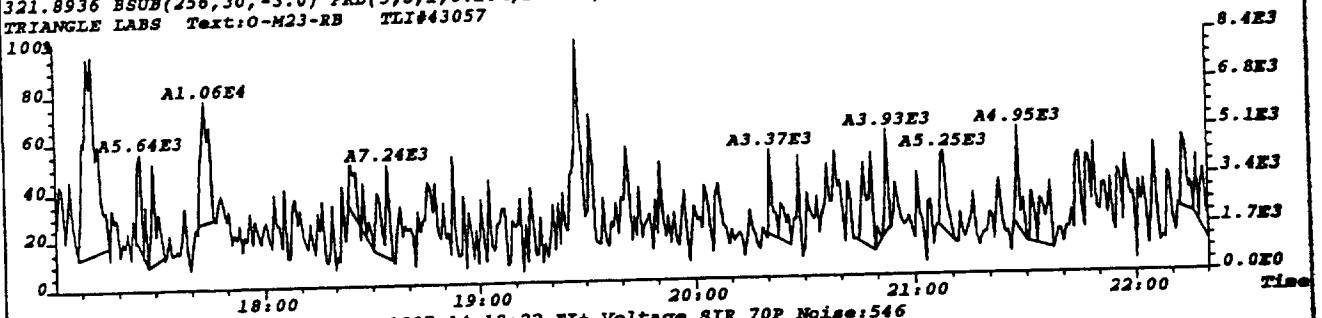




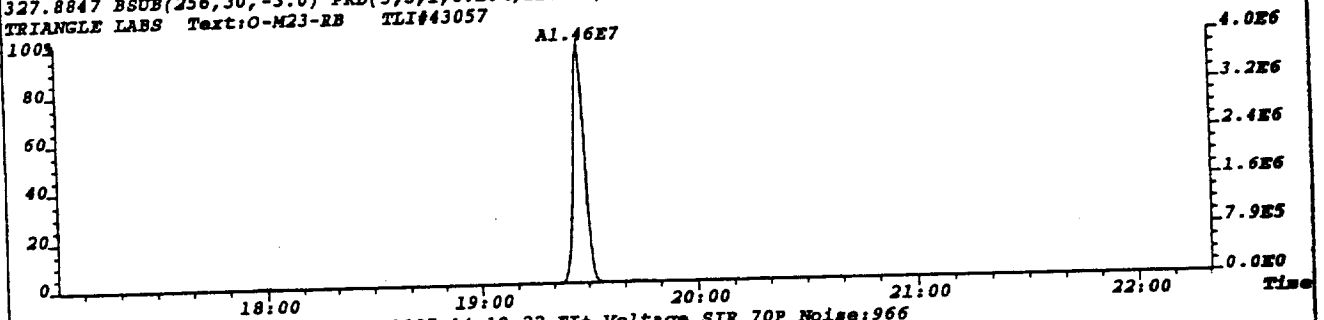
File:P973847 #1-755 Acq:12-SEP-1997 14:19:22 EI+ Voltage SIR 70P Noise:538  
319.8965 BSUB(256,30,-3.0) PKD(5,3,1,0.10%,2152.0,0.00%,F,F) Exp:DB225  
TRIANGLE LABS Text:O-M23-RB TLI#43057



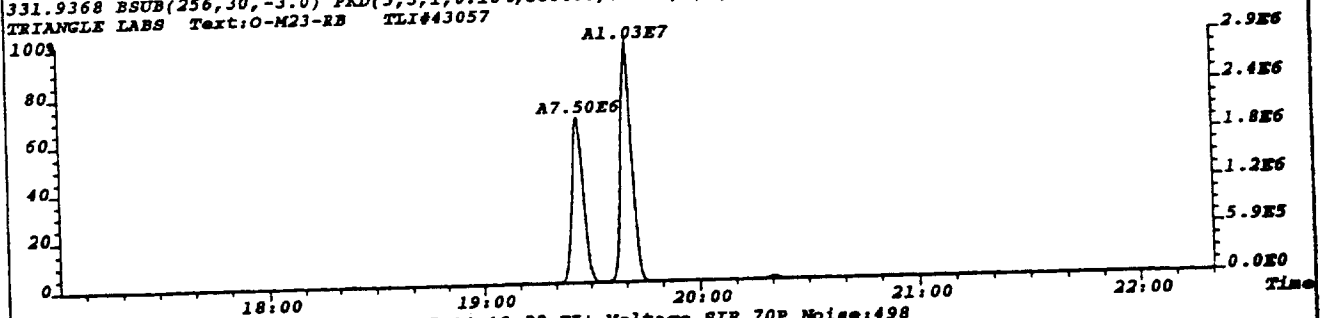
File:P973847 #1-755 Acq:12-SEP-1997 14:19:22 EI+ Voltage SIR 70P Noise:608  
321.8936 BSUB(256,30,-3.0) PKD(5,3,1,0.10%,2432.0,0.00%,F,F) Exp:DB225  
TRIANGLE LABS Text:O-M23-RB TLI#43057



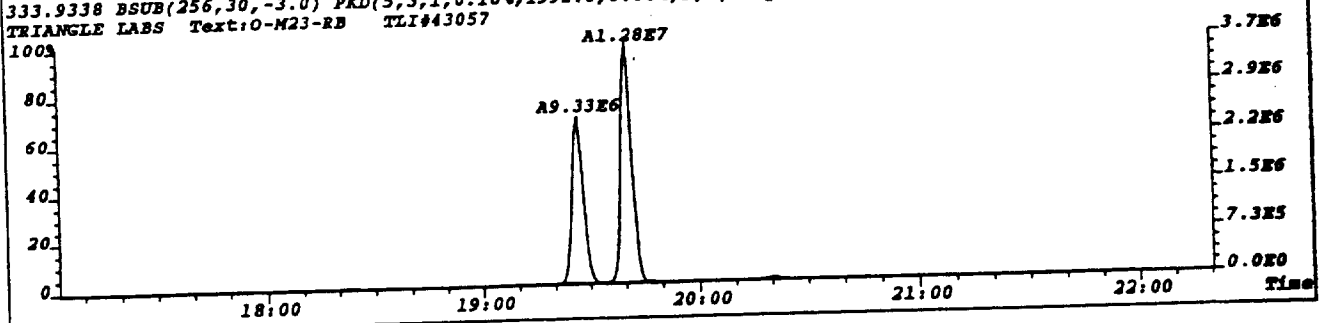
File:P973847 #1-755 Acq:12-SEP-1997 14:19:22 EI+ Voltage SIR 70P Noise:546  
327.8847 BSUB(256,30,-3.0) PKD(5,3,1,0.10%,2184.0,0.00%,F,F) Exp:DB225  
TRIANGLE LABS Text:O-M23-RB TLI#43057

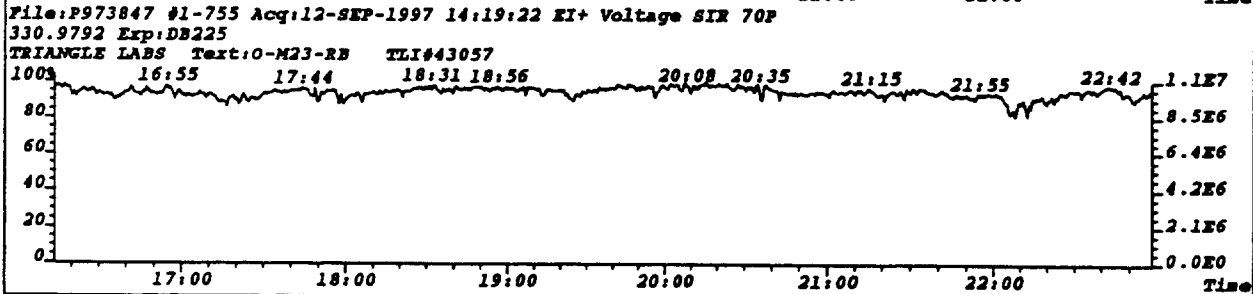
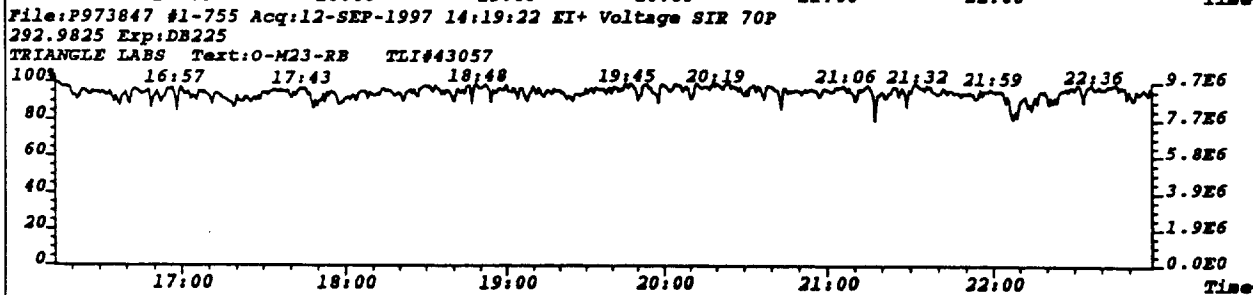
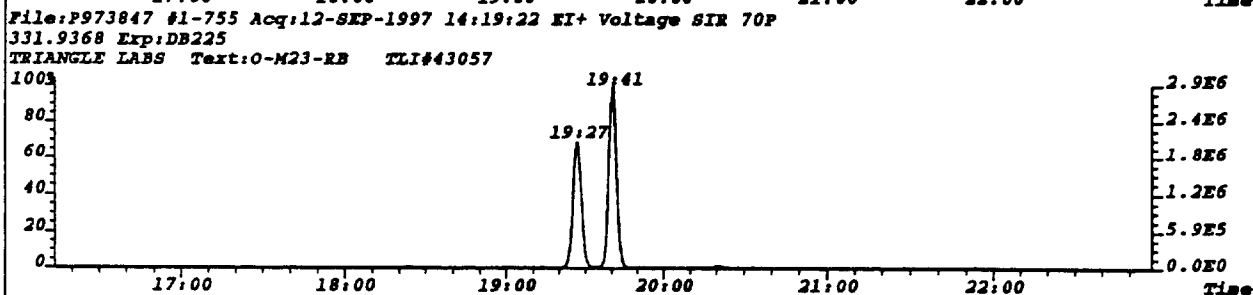
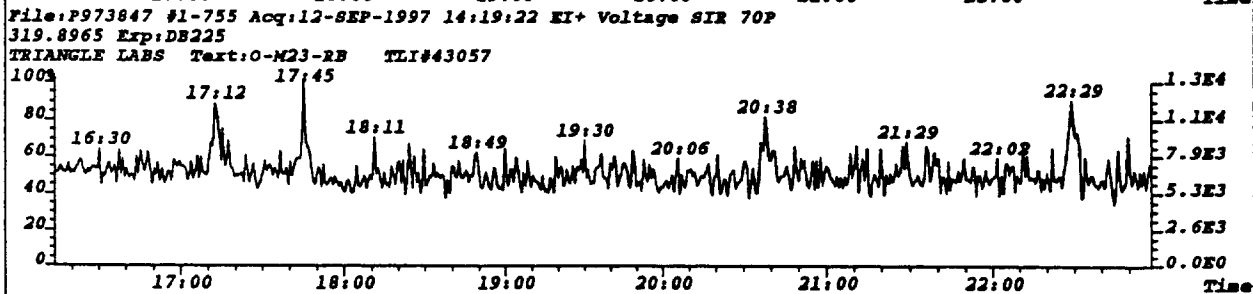
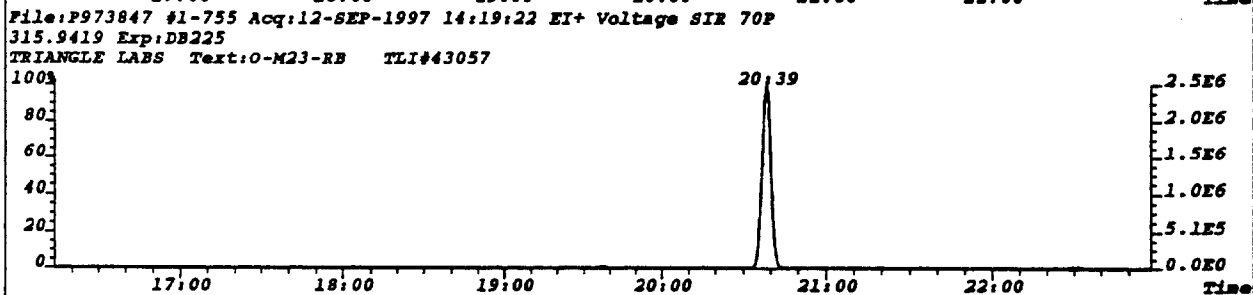
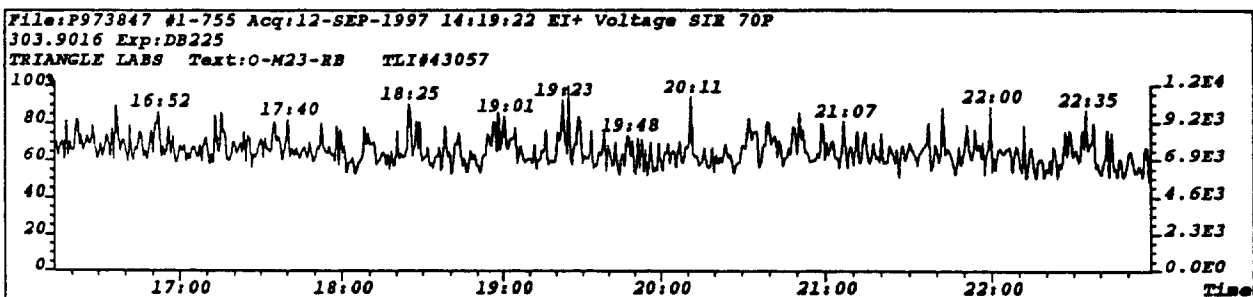


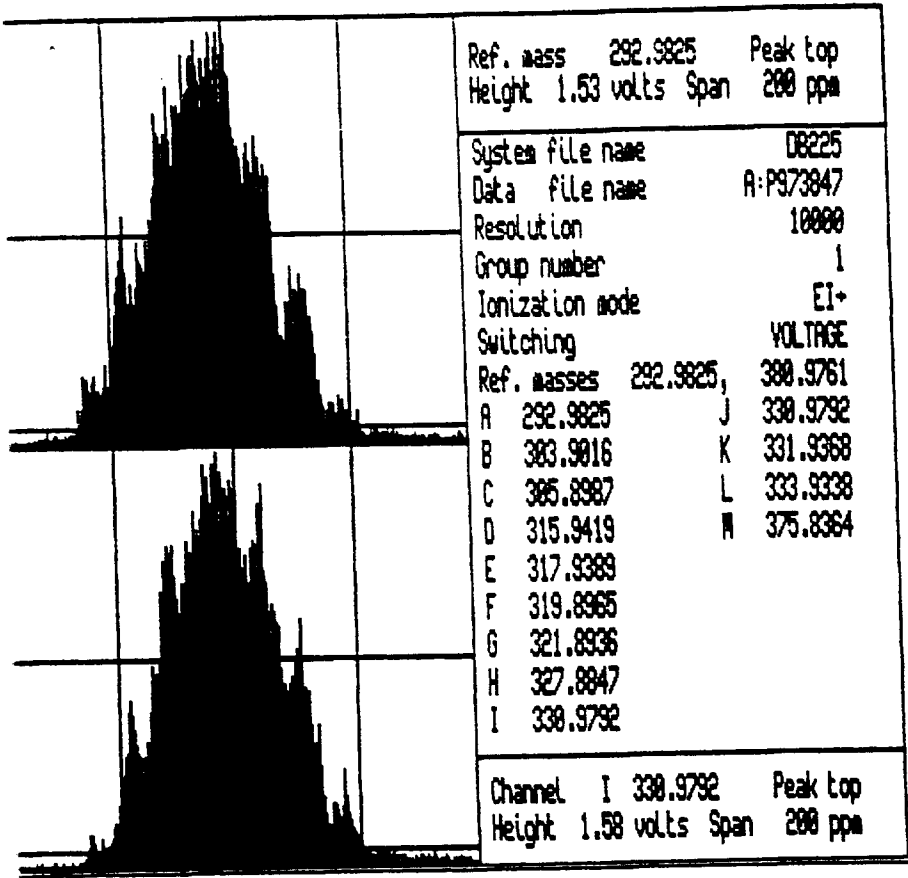
File:P973847 #1-755 Acq:12-SEP-1997 14:19:22 EI+ Voltage SIR 70P Noise:966  
331.9368 BSUB(256,30,-3.0) PKD(5,3,1,0.10%,3864.0,0.00%,F,F) Exp:DB225  
TRIANGLE LABS Text:O-M23-RB TLI#43057



File:P973847 #1-755 Acq:12-SEP-1997 14:19:22 EI+ Voltage SIR 70P Noise:498  
333.9338 BSUB(256,30,-3.0) PKD(5,3,1,0.10%,1992.0,0.00%,F,F) Exp:DB225  
TRIANGLE LABS Text:O-M23-RB TLI#43057







**TRIANGLE LABS**

CALIBRATION  
DATA

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*Triangle Laboratories, Inc.*  
801 Capitola Drive  
Durham, NC 27713-4411  
919-544-5729

P.O. Box 13485  
Research Triangle Park, NC 27709-3485  
Fax # 919-544-5491

TRIANGLE LABORATORIES OF RTP, INC.  
Initial Calibration Summary for PF22206

Date: 02/20/96

Analysis Date....: 02/20/96  
Instrument.....: P

Method.....: C2NF  
GC Column....: DB-225

Analytes	RF	SD	%RSD	RT	RT/LO	RT/HI	Ratio1	Ratio2	N
2378-TCDF	1.040	0.109	10%	21:32	14:31	25:31	0.767		10
TOTAL TCDF	1.040	0.109	10%				0.767		10
2378-TCDD	0.992	0.101	10%	20:12	16:11	24:11	0.782		10
TOTAL TCDD	0.992	0.101	10%				0.782		10
Other Standards	RF	SD	%RSD	RT	RT/LO	RT/HI	Ratio1	Ratio2	N
37C1-TCDD	1.014	0.048	5%	20:12	18:11	22:11			10
Internal Standards	RF	SD	%RSD	RT	RT/LO	RT/HI	Ratio1	Ratio2	N
13C12-2378-TCDF	1.388	0.062	4%	21:31	20:31	22:31	0.758		10
13C12-2378-TCDD	1.067	0.036	3%	20:11	18:11	22:11	0.786		10
Recovery Standards	RF	SD	%RSD	RT	RT/LO	RT/HI	Ratio1	Ratio2	N
13C12-1234-TCDD	1.000	0.000	0%	20:27			0.794		10

\*\*\* End of Report \*\*\*

Analysis Date: 06/10/97 Method: M33  
 Instrument: S

Analytes	RF	SD	%RSD	RT	RT/LO	RT/HI	Ratio1	Ratio2	N
Total MCDF	2.087	0.000	0%	8:15	0:01	13:43	2.931		1
Total MCDD	1.625	0.000	0%	8:42	0:34	14:34	2.827		1
Total DCDF	0.587	0.000	0%	10:38	6:43	14:43	5.965		1
Total DCDD	1.326	0.000	0%	11:09	7:34	15:34	1.609		1
Total TriCDF	1.082	0.000	0%	13:59	10:43	17:43	1.025		1
Total TriCDD	0.933	0.000	0%	14:03	12:34	18:34	1.064		1
2378-TCDF	1.251	0.116	9%	19:43	15:43	23:43	0.799		5
TOTAL TCDF	1.251	0.116	9%				0.799		5
2378-TCDD	1.191	0.231	19%	20:36	16:34	24:34	0.772		5
TOTAL TCDD	1.191	0.231	19%				0.772		5
12378-PeCDF	1.111	0.082	7%	24:12	20:11	28:11	1.552		5
23478-PeCDF	1.115	0.061	5%	24:59			1.470		5
TOTAL PeCDF	1.113	0.069	6%				1.509		5
12378-PeCDD	1.256	0.113	9%	25:22	21:21	29:21	1.526		5
TOTAL PeCDD	1.256	0.113	9%				1.526		5
123478-HxCDF	1.215	0.064	5%	27:55	24:01	32:01	1.247		5
123678-HxCDF	1.574	0.099	6%	28:01			1.260		5
234678-HxCDF	1.247	0.069	6%	28:32			1.243		5
123789-HxCDF	1.105	0.060	5%	29:15			1.246		5
TOTAL HxCDF	1.285	0.062	5%				1.249		5
123478-HxCDD	0.953	0.067	7%	28:41	24:45	32:45	1.265		5
123678-HxCDD	1.133	0.070	6%	28:46			1.251		5
123789-HxCDD	1.091	0.067	6%	29:03			1.233		5
TOTAL HxCDD	1.059	0.067	6%				1.249		5
1234678-HpCDF	1.543	0.103	7%	30:45	26:45	34:45	1.034		5
1234789-HpCDF	1.184	0.100	8%	31:57			1.080		5
TOTAL HpCDF	1.363	0.095	7%				1.053		5
1234678-HpCDD	1.068	0.089	8%	31:37	27:36	35:36	0.993		5
TOTAL HpCDD	1.068	0.089	8%				0.993		5
OCDF	1.493	0.131	9%	34:09	30:02	38:02	0.876		5
OCDD	1.105	0.066	6%	34:03	30:02	38:02	0.902		5

Other Standards	RF	SD	%RSD	RT	RT/LO	RT/HI	Ratio1	Ratio2	N
37C1-TCDD	0.843	0.038	5%	20:36	18:34	22:34			5
13C12-PeCDF 234	0.970	0.030	3%	24:58	22:11	26:11	1.470		5
13C12-HxCDF 478	0.959	0.042	4%	27:55			0.518		5
13C12-HxCDF 234	0.926	0.021	2%	28:32			0.517		5
13C12-HxCDF 789	0.805	0.044	5%	29:15			0.519		5
13C12-HxCDD 478	0.973	0.027	3%	28:40			1.241		5
13C12-HpCDF 789	0.771	0.049	6%	31:57	28:45	34:45	0.424		5

Internal Standards	RF	SD	%RSD	RT	RT/LO	RT/HI	Ratio1	Ratio2	N
13C12-2378-TCDF	1.318	0.065	5%	19:43	18:43	20:43	0.734		5
13C12-2378-TCDD	1.066	0.020	2%	20:34	18:34	22:34	0.802		5
13C12-PeCDF 123	1.133	0.051	5%	24:11	20:11	28:11	1.447		5

TRIANGLE LABORATORIES, INC.

Date: 06/10/97

Initial Calibration Summary for SFS6117

13C12-PeCDD 123	0.635	0.082	13%	25:21	21:21	29:21	1.461		5
13C12-HxCDF 678	1.204	0.073	6%	28:01	24:01	32:01	1.522		5
13C12-HxCDD 678	0.995	0.017	2%	28:45	27:45	29:45	1.240		5
13C12-HpCDF 678	0.387	0.046	5%	30:45	28:45	34:45	1.429		5
13C12-HpCDD 678	0.915	0.077	9%	31:36	30:36	32:36	1.019		5
13C12-OCDD	0.519	0.080	15%	34:02	32:02	36:02	0.866		5
Recovery Standards	RF	SD	%RSD	RT	RT/LO	RT/HI	Ratio1	Ratio2	N
13C12-1234-TCDD	1.000	0.000	0%	20:21			0.811		5
13C12-HxCDD 789	1.000	0.000	0%	29:02			1.231		5

\*\*\* End of Report \*\*\*

TRIANGLE LABORATORIES, INC.  
Initial Calibration Summary for XP24087

Date: 04/09/97

Analysis Date....: 04/08/97  
Instrument.....: X

Method.....: CDMF  
GC Column....: DB-225

Analytes	RF	SD	RRSD	RT	RT/LO	RT/HI	Ratio1	Ratio2	N
2378-TCDF	0.967	0.044	5%	21:49	14:49	25:49	0.779		10
TOTAL TCDF	0.967	0.044	5%				0.779		10
2378-TCDD	1.095	0.097	9%	20:37	16:36	24:36	0.793		10
TOTAL TCDD	1.095	0.097	9%				0.793		10
Other Standards	RF	SD	RRSD	RT	RT/LO	RT/HI	Ratio1	Ratio2	N
37CL-TCDD	1.018	0.047	5%	20:37	18:36	22:36			10
Internal Standards	RF	SD	RRSD	RT	RT/LO	RT/HI	Ratio1	Ratio2	N
13CL2-2378-TCDF	1.392	0.071	5%	21:49	20:49	22:49	0.787		10
13CL2-2378-TCDD	1.105	0.037	3%	20:36	18:36	22:36	0.783		10
Recovery Standards	RF	SD	RRSD	RT	RT/LO	RT/HI	Ratio1	Ratio2	N
13CL2-1234-TCDD	1.000	0.000	0%	20:50			0.796		10

\*\*\* End of Report \*\*\*



Date: 09/12/97

TRIANGLE LABORATORIES OF RTP, INC.

Continuing Calibration for P973343

Analysis Date.....: 09/12/97

Method.....: GCNF

Operator.....: WK

Instrument...: P

Init Calibration..: PF22206

Std.Conc.....: 5.00

ICal Date.....: 02/20/96

GC Column....: DB-225

Analysis Time....: 11:04

Analyte Summary			ICal		Delta		%D	
Name	RF	Ratio	RT	RT	Rel. RT	RF		
2378-TCDF	0.964	0.76	16:14 22:38	20:40	1.0008	1.040	-0.076	-7.3%
TOTAL TCDF	0.964	0.76				1.040	-0.076	-7.3%
2378-TCDD	1.001	0.75	17:03 22:00	19:28	1.0009	0.992	0.009	0.9%
TOTAL TCDD	1.001	0.75				0.992	0.009	0.9%

Other Standard Summary			ICal		Delta		%D	
Name	RF	Ratio	RT	RT	Rel. RT	RF		
37C1-TCDD	0.937	1&2	17:27 21:27	19:28	1.0009	1.014	-0.077	-7.6%

Internal Standard Summary			ICal		Delta		%D	
Name	RF	Ratio	RT	RT	Rel. RT	RF		
13C12-2378-TCDF	1.201	0.77	19:39 21:39	20:39	1.0000	1.388	-0.187	-13.5%
13C12-2378-TCDD	1.006	0.79	17:27 21:27	19:27	1.0000	1.067	-0.061	-5.7%

Recovery Standard Summary			ICal		Delta		%D	
Name	RF	Ratio	RT	RT	Rel. RT	RF		
13C12-1234-TCDD	1.000	0.82	19:41	19:41	1.0120	1.000	0.000	0.0%

Date: 9/10/97

TRIANGLE LABORATORIES, INC.

Continuing Calibration for S975797

Analysis Date: 09/10/97

Method: M237

Operator: BJC

Instrument: S

Init Calibration: SF56117

Std. Conc.: 50.00

ICal Date: 06/10/97

Analyte Summary

Name	RF	Ratio 1&2	RT Lo/High	RT	Rel. RT	ICal RF	Delta RF	%D
Total MCDF	0.000		0:23 14:23			2.087	-2.087	100.0%
Total MCDD	0.000		1:12 15:12			1.625	-1.625	100.0%
Total DCDF	0.000		7:23 15:23			0.687	-0.687	100.0%
Total DCDD	0.000		8:12 16:12			1.326	-1.326	100.0%
Total TriCDF	0.000		11:23 18:23			1.082	-1.082	100.0%
Total TriCDD	0.000		13:12 19:12			0.933	-0.933	100.0%
2378-TCDF	1.150	0.81	16:46 22:30	20:24	1.0008	1.251	-0.101	-8.1%
TOTAL TCDF	1.150	0.81				1.251	-0.101	-8.1%
2378-TCDD	1.191	0.78	18:10 22:30	21:13	1.0008	1.191	0.000	0.0%
TOTAL TCDD	1.191	0.78				1.191	0.000	0.0%
12378-PeCDF	1.091	1.54	22:27 26:39	24:43	1.0007	1.111	-0.020	-1.8%
23478-PeCDF	1.133	1.52		25:29	1.0317	1.115	0.018	1.7%
TOTAL PeCDF	1.112	1.53				1.113	-0.001	-0.1%
12378-PeCDD	1.229	1.58	23:48 26:31	25:52	1.0006	1.256	-0.027	-2.2%
TOTAL PeCDD	1.229	1.58				1.256	-0.027	-2.2%
123478-HxCDF	0.997	1.25	27:13 29:57	28:22	0.9971	1.215	-0.218	-17.9%
123678-HxCDF	1.240	1.26		28:28	1.0006	1.574	-0.334	-21.2%
234678-HxCDF	0.966	1.28		28:59	1.0187	1.247	-0.281	-22.5%
123789-HxCDF	0.889	1.26		29:42	1.0439	1.105	-0.216	-19.6%
TOTAL HxCDF	1.023	1.26				1.285	-0.262	-20.4%
123478-HxCDD	0.942	1.21	27:45 29:38	29:07	0.9977	0.953	-0.011	-1.1%
123678-HxCDD	1.080	1.20		29:12	1.0006	1.133	-0.053	-4.7%

Date: 09/10/97

TRIANGLE LABORATORIES, INC.  
Continuing Calibration for 8975797

Sample Name	RF	Ratio	RT	RT	Rel. RT	ICal RF	Delta RF	%D
123789-HxCDD	1.062	1.19	19:30	19:30	1.0109	1.091	-0.029	-2.6%
TOTAL HxCDD	1.028	1.20				1.059	-0.031	-2.9%
1234678-HpCDF	1.504	1.08	31:11 32:14	31:10	1.0000	1.543	-0.039	-2.5%
1234789-HpCDF	1.157	1.06		32:23	1.0390	1.184	-0.027	-2.3%
TOTAL HpCDF	1.331	1.07				1.363	-0.032	-2.4%
1234678-HpCDD	0.992	1.01	31:17 32:13	32:02	1.0000	1.068	-0.076	-7.1%
TOTAL HpCDD	0.992	1.01				1.068	-0.076	-7.1%
OCDF	1.433	0.93	30:30 38:30	34:38	1.0039	1.493	-0.060	-4.0%
OCDD	1.042	0.84	30:30 38:30	34:31	1.0005	1.105	-0.063	-5.7%

Other Standard Summary

Name	RF	Ratio 1&2	RT Lo/High	RT	Rel. RT	ICal RF	Delta RF	%D
37C1-TCDD	0.955		19:12 23:12	21:13	1.0008	0.843	0.112	13.2%
13C12-PeCDF 234	0.992	1.47	20:42 28:42	25:28	1.0310	0.970	0.022	2.3%
13C12-HxCDF 478	0.982	0.46		28:21	0.9965	0.959	0.023	2.4%
13C12-HxCDF 234	0.906	0.47		28:58	1.0182	0.926	-0.020	-2.1%
13C12-HxCDF 789	0.776	0.44		29:41	1.0434	0.805	-0.029	-3.7%
13C12-HxCDD 478	1.010	1.20		29:06	0.9971	0.973	0.037	3.8%
13C12-HpCDF 789	0.811	0.42	29:10 35:10	32:22	1.0385	0.771	0.040	5.2%

Internal Standard Summary

Name	RF	Ratio 1&2	RT Lo/High	RT	Rel. RT	ICal RF	Delta RF	%D
13C12-2378-TCDF	1.464	0.76	19:23 21:23	20:23	1.0000	1.318	0.146	11.1%
13C12-2378-TCDD	1.086	0.81	19:12 23:12	21:12	1.0000	1.066	0.020	1.9%
13C12-PeCDF 123	1.228	1.44	20:42 28:42	24:42	1.0000	1.133	0.095	8.4%
13C12-PeCDD 123	0.746	1.51	21:51 29:51	25:51	1.0000	0.635	0.111	17.6%
13C12-HxCDF 678	1.243	0.47	24:27 32:27	28:27	1.0000	1.204	0.039	3.3%
13C12-HxCDD 678	0.970	1.20	28:11 30:11	29:11	1.0000	0.995	-0.025	-2.5%

Date: 09/10/97

TRIANGLE LABORATORIES, INC.

Continuing Calibration for 5975797

13C12-HpCDF 678	0.750	0.44	29:10	31:10	1.0000	0.887	-0.137	-15.5%
			35:10					
13C12-HpCDD 678	0.736	1.02	31:02	32:02	1.0000	0.815	-0.029	-3.5%
			33:02					
13C12-OCDD	0.446	0.89	34:21	34:30	1.0000	0.519	-0.073	-14.0%
			34:41					

Recovery Standard Summary

Name	RF	Ratio	RT	RT	Rel. RT	ICal	Delta	%D
		1±2	Lo/High					
13C12-1234-TCDD	1.000	0.80		20:59	0.9898	1.000	0.000	0.0%
13C12-HxCDD 789	1.000	1.22		29:29	1.0103	1.000	0.000	0.0%

QC Front End Check: 1.5494

Date: 09/11/97

TRIANGLE LABORATORIES, INC.  
Continuing Calibration for S975814

Analysis Date..... 09/11/97  
Operator..... JM  
Init Calibration.. SF56117  
ICal Date..... 06/10/97

Method..... M237  
Instrument... S  
Std. Conc..... 50.00  
Related CCal: S975778

Analyte Summary Name	RF	Ratio 1&2	RT Lo/High	RT	Rel. RT	ICal RF	Delta RF	%D
Total MCDF	0.000		0:24			2.087	-2.087	100.0%
Total MCDD	0.000		14:24			1.625	-1.625	100.0%
Total DCDF	0.000		1:13			0.687	-0.687	100.0%
Total DCDD	0.000		15:13			1.326	-1.326	100.0%
Total TricDF	0.000		7:24			1.082	-1.082	100.0%
Total TricDD	0.000		15:24			0.933	-0.933	100.0%
2378-TCDF	1.118	0.80	8:13	20:25	1.0008	1.251	-0.133	-10.6%
TOTAL TCDF	1.118	0.80	16:13			1.251	-0.133	-10.6%
2378-TCDD	1.146	0.80	11:24	21:14	1.0008	1.191	-0.045	-3.8%
TOTAL TCDD	1.146	0.80	18:06	22:28		1.191	-0.045	-3.8%
12378-PeCDF	1.093	1.53	18:24	24:43	1.0007	1.111	-0.018	-1.6%
23478-PeCDF	1.143	1.50	26:38	25:29	1.0317	1.115	0.028	2.5%
TOTAL PeCDF	1.118	1.51				1.113	0.005	0.5%
12378-PeCDD	1.209	1.59	22:24	25:52	1.0013	1.256	-0.047	-3.7%
TOTAL PeCDD	1.209	1.59	26:30			1.256	-0.047	-3.7%
123478-HxCDF	1.097	1.28	27:11	28:22	0.9965	1.215	-0.118	-9.7%
123678-HxCDF	1.379	1.29	29:56	28:28	1.0000	1.574	-0.195	-12.4%
234678-HxCDF	1.073	1.27		28:59	1.0181	1.247	-0.174	-13.9%
123789-HxCDF	0.977	1.29		29:41	1.0427	1.105	-0.128	-11.6%
TOTAL HxCDF	1.132	1.28				1.285	-0.153	-11.9%
123478-HxCDD	0.855	1.23	27:44	29:07	0.9977	0.953	-0.098	-10.3%
123678-HxCDD	1.058	1.24	29:37	29:12	1.0006	1.133	-0.075	-6.6%

Date: 09/11/97

TRIANGLE LABORATORIES, INC.  
Continuing Calibration for S975314

123789-HxCDD	1.052	1.24		29:29	1.0103	1.091	-0.039	-3.5%
TOTAL HxCDD	0.989	1.24				1.059	-0.070	-6.7%
1234678-HpCDF	1.384	1.04	31:01	31:11	1.0000	1.543	-0.159	-10.3%
			32:33					
1234789-HpCDF	1.094	1.05		32:23	1.0385	1.184	-0.090	-7.6%
TOTAL HpCDF	1.239	1.04				1.363	-0.124	-9.1%
1234678-HpCDD	1.001	1.03	31:16	32:03	1.0005	1.068	-0.067	-6.3%
			32:13					
TOTAL HpCDD	1.001	1.03				1.068	-0.067	-6.3%
OCDF	1.470	0.88	30:32	34:39	1.0034	1.493	-0.023	-1.5%
			38:32					
OCDD	1.049	0.90	30:32	34:32	1.0000	1.105	-0.056	-5.1%
			38:32					

Other Standard Summary

Name	RF	Ratio 1&2	RT Lo/High	RT	Rel. RT	ICal RF	Delta RF	%D
37C1-TCDD	0.972		19:13	21:13	1.0000	0.843	0.129	15.3%
			23:13					
13C12-PeCDF 234	1.014	1.54	20:42	25:28	1.0310	0.970	0.044	4.5%
			28:42					
13C12-HxCDF 478	0.955	0.50		28:21	0.9959	0.959	-0.004	-0.4%
13C12-HxCDF 234	0.886	0.49		28:58	1.0176	0.926	-0.040	-4.3%
13C12-HxCDF 789	0.798	0.49		29:41	1.0427	0.805	-0.007	-0.8%
13C12-HxCDD 478	0.897	1.22		29:06	0.9971	0.973	-0.076	-7.8%
13C12-HpCDF 789	0.787	0.43	29:11	32:22	1.0379	0.771	0.016	2.1%
			35:11					

Internal Standard Summary

Name	RF	Ratio 1&2	RT Lo/High	RT	Rel. RT	ICal RF	Delta RF	%D
13C12-2378-TCDF	1.554	0.74	19:24	20:24	1.0000	1.318	0.236	17.9%
			21:24					
13C12-2378-TCDD	1.110	0.78	19:13	21:13	1.0000	1.066	0.044	4.2%
			23:13					
13C12-PeCDF 123	1.243	1.52	20:42	24:42	1.0000	1.133	0.110	9.7%
			28:42					
13C12-PeCDD 123	0.713	1.58	21:50	25:50	1.0000	0.635	0.078	12.3%
			29:50					
13C12-HxCDF 678	1.294	0.50	24:28	28:28	1.0000	1.204	0.090	7.5%
			32:28					
13C12-HxCDD 678	0.964	1.22	28:11	29:11	1.0000	0.995	-0.031	-3.1%
			30:11					



Date: 09/11/97

TRIANGLE LABORATORIES, INC.  
Continuing Calibration for S975814

13C12-HpCDF 678	0.876	0.45	29:11	31:11	1.0000	0.887	-0.011	-1.3%
			35:11					
13C12-HpCDD 678	0.782	1.06	31:02	32:02	1.0000	0.815	-0.033	-4.1%
			33:02					
13C12-OCDD	0.434	0.84	34:22	34:32	1.0000	0.519	-0.085	-16.3%
			34:42					

Recovery Standard Name	Summary		RT Lo/High	RT	Rel. RT	ICal		Delta	
	RF	Ratio 1&2				RF	RF	%D	
13C12-1234-TCDD	1.000	0.83		21:00	0.9898	1.000	0.000	0.0%	
13C12-HxCDD 789	1.000	1.22		29:29	1.0103	1.000	0.000	0.0%	

QC Front End Check: 1.6171

Date: 09/11/97

TRIANGLE LABORATORIES, INC.

Continuing Calibration for X973069

Analysis Date....: 09/11/97

Method.....: C2NF

Operator.....: BJG

Instrument...: X

Init Calibration.: XF24087

Std.Conc.....: 5.00

ICal Date.....: 04/08/97

Analysis Time....: 12:00

GC Column....: DB-225

Analyte Summary

Name	RF	Ratio 1&2	RT Lo/High	RT	Rel. RT	ICal RF	Delta RF	%D
2378-TCDF	1.051	0.81	17:54 24:42	22:29	1.0015	0.967	0.084	8.7%
TOTAL TCDF	1.051	0.81				0.967	0.084	8.7%
2378-TCDD	1.079	0.78	18:43 23:58	21:12	1.0016	1.095	-0.016	-1.4%
TOTAL TCDD	1.079	0.78				1.095	-0.016	-1.4%

Other Standard Summary

Name	RF	Ratio 1&2	RT Lo/High	RT	Rel. RT	ICal RF	Delta RF	%D
37C1-TCDD	0.967		19:10 23:10	21:12	1.0016	1.018	-0.051	-5.0%

Internal Standard Summary

Name	RF	Ratio 1&2	RT Lo/High	RT	Rel. RT	ICal RF	Delta RF	%D
13C12-2378-TCDF	1.285	0.80	21:27 23:27	22:27	1.0000	1.392	-0.107	-7.7%
13C12-2378-TCDD	1.000	0.78	19:10 23:10	21:10	1.0000	1.105	-0.105	-9.5%

Recovery Standard Summary

Name	RF	Ratio 1&2	RT Lo/High	RT	Rel. RT	ICal RF	Delta RF	%D
13C12-1234-TCDD	1.000	0.78		21:27	1.0134	1.000	0.000	0.0%



  
**TRIANGLE LABS****CASE NARRATIVE**

**Analysis of Samples for the Presence of  
Polychlorinated Dibenzo-*p*-Dioxins and Dibenzofurans by  
High-Resolution Chromatography / High-Resolution Mass Spectrometry**

**Method 23 (6/93)**

---

<b>Date:</b>	September 11, 1997
<b>Client ID:</b>	Pacific Environmental Services
<b>P.O. Number:</b>	104-98-0019 & -0020
<b>TLI Project Number:</b>	43057r1

---

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Rev. 05/08/97

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**Triangle Laboratories, Inc.**  
801 Capitola Drive  
Durham, NC 27713-4411  
919-544-5729

**P.O. Box 13485**  
**Research Triangle Park, NC 27709-3485**  
**Fax # 919-544-5491**

1

### Overview

Seven M23 samples were received from Pacific Environmental Services in good condition on August 29, 1997 at 19 °C. One XAD trap for sample O-M23-RB was received from Pacific Environmental Services without a chain-of-custody in good condition on September 5, 1997 at ambient temperature. The samples were stored in a refrigerator at 4°C until the time of extraction. The M23 samples and associated QC sample were extracted and analyzed according to procedures described in the Triangle Laboratories' Data User's Manual (Rev. 12/92-HK-2-AH-2/93). Any particular difficulties encountered during the samples' handling by Triangle Laboratories will be discussed in the QC Remarks section below. Results reported relate only to the items tested.

### Quality Control Samples

A laboratory method blank, identified as the TLI M23 Blank, was prepared along with the samples.

### Quality Control Remarks

This release of this particular set of Pacific Environmental Services analytical data by Triangle Laboratories was authorized by the Quality Control Chemist who has reviewed each sample data package individually following a series of inspections/reviews. When applicable, general deviations from acceptable QC requirements are identified below and comments are made on the effect of these deviations upon the validity and reliability of the results. Please consult Triangle Laboratories' Data User's Manual for further details. Specific QC issues associated with this particular project are:

*Sample Preparation Laboratory:* None

*Mass Spectrometry:* The archived extracts of samples O-M23-4 and the method blank were processed through normal cleanup procedures because sample O-M23-4 was destroyed in the wet laboratory during filtration.

*Data Review:* None

*Other Comments:* Any analytes found in the TLI M23 Blank are detected at a level equal to or less than the Target Detection Limit. This level of contamination is acceptable as per TLI guidelines.

**Sample Calculations:**

Analyte Concentration

The amount of any analyte is calculated using the following expression.

$$\text{Amt}_{(\sigma)} = \frac{A_{\sigma} * Q_{\beta}}{A_{\beta} * \text{RRF}_{(\sigma)} * W}$$

Where:

$\text{Amt}_{(\sigma)}$  is the amount of a given analyte,

$A_{\sigma}$  is the integrated current for the characteristic ions of the analyte,

$A_{\beta}$  is the integrated current of the characteristic ions of the corresponding internal standard,

$Q_{\beta}$  represents the amount of internal standard added to the sample before extraction,

$\text{RRF}_{(\sigma)}$  is the mean analyte relative response factor from the initial calibration (ICal) and,

$W$  is the sample weight or volume ( $W = 1$  for M23)

The amount is expressed in nanograms (ng) or picograms (pg).

Detection Limits

The detection limit reported for a target analyte that is not detected or presents an analyte response that is less than 2.5 times the background level is calculated by using the following expression. The area of the analyte is replaced by the noise level measured in a region of the chromatogram clear of genuine GC signals multiplied by an empirically determined factor. The detection limits represent the maximum possible concentration of a target analyte that could be present without being detected.

$$\text{DL}_{(\sigma)} = \frac{2 * 2.5 * (F * H) * Q_{\beta}}{A_{\beta} * \text{RRF}_{(\sigma)} * W}$$

Where:

3A JMH  
9/15/97

$DL_{(\sigma)}$  is the estimated detection limit for a target analyte,

2.5 is the minimum response required for a GC signal,

F is an empirical number that approximates the area to height ratio for a GC signal. This number is 3.7 for both the DB-5 GC column and the DB-225 GC column,

H is the height of the noise

$A_{\beta}$  is the integrated current of the characteristic ions of the corresponding internal standard,

$Q_{\beta}$  represents the amount of internal standard added to the sample before extraction,

$RRF_{(\sigma)}$  is the mean analyte relative response factor from the initial calibration (ICal) and,

W is the sample weight or volume

The detection limit is expressed in nanograms (ng) or picograms (pg).

Other sample calculations may be found in the Triangle Laboratories Data User's Manual.

### ***Data Flags***

In order to assist with data interpretation, data qualifier flags are used on the final reports, as discussed in Triangle Laboratories' Method 23 Data User's Manual. Please note that all data qualifier flags are subjective and are applied as consistently as possible. Each flag has been reviewed by two independent Chemists and the impact of the data qualifier flag on the quality of the data discussed above. The most commonly used flags are:

A 'B' flag is used to indicate that an analyte has been detected in the laboratory method blank as well as in an associated field sample. The 'B' flag will be used only when the concentration of analyte found in the sample is less than 20 times that found in the associated blank. This flag denotes possible contribution of background laboratory contamination to the concentration or amount of that analyte detected in the field sample. Under Triangle Laboratories guidelines, a laboratory blank is acceptable if the tetra-through hepta-CDD/CDF levels are all below the target detection limits (TDLS) or if the contamination levels are less than 5% of the levels detected in the associated field samples. If these conditions are satisfied or if the blank is unable to be reextracted, the interpretation of the contamination levels relative to the samples should be as follows: 1) analyte quantitations should be considered valid if the level of blank contamination is less than five percent of the level detected in the field sample, 2) analyte quantitations should

be considered estimated if the analyte level in the sample is five to twenty times the level of the analyte in the blank, or 3) analytes whose level in a sample is the same as or less than five times the level detected in the associated blank should be considered present likely due to laboratory contamination and not native to the sample.

An 'E' flag is used to indicate that an PCDF peak has eluted at the same time as the associated diphenyl ether (DPE) and that the DPE peak intensity is ten percent or more of the PCDF peak intensity. Total PCDF values are flagged 'E' if the total DPE contribution to the total PCDF value is greater than ten percent. All PCDF peaks that are significantly influenced by the presence of DPE peaks are quantitated with EMPC values, regardless of the isotopic abundance ratio. These EMPC values are most likely overestimated due to the DPE contribution to the peak area.

An 'I' flag is used to indicate labeled standards have been interfered with on the GC column by coeluting, interferent peaks. The interference may have caused the standard's area to be overestimated. All quantitations relative to this standard, therefore, may be underestimated.

A 'PR' flag is used to indicate that a GC peak is poorly resolved. This resolution problem may be seen as two closely eluting peaks without a reasonable valley between the peak tops, overly broad peaks, or peaks whose shapes vary greatly from a normal distribution. The concentrations or amounts reported for such peaks are most likely overestimated.

A 'Q' flag is used to indicate the presence of QC ion instabilities caused by quantitative interferences. Affected analytes may be overestimated or underestimated as a result of this interference. A peak is flagged 'Q' only if it is affected by a QC ion deviation greater than 20% full scale as determined relative to the labeled standard against which it is quantitated. Total PCDF/PCDF quantitations will be flagged 'Q' if the interferences affect ten percent or more of the total PCDD/PCDF peak areas.

An 'RO' flag is used to indicate that a labeled standard has an ion abundance ratio that is outside of the acceptable QC limits, most likely due to a coeluting interference. This may have caused the percent recovery of the standard to be overestimated. All quantitations versus this standard, therefore, may be underestimated.

A 'U' flag is used to indicate that a specific (2,3,7,8-substituted) isomer cannot be resolved from a large, coeluting interferent GC peak. The specific isomer is reported as not detected as a valid concentration/amount cannot be determined. The calculated detection limit, therefore, should be considered an underestimated value.

A 'V' flag is used to indicate that, although the percent recovery of a labeled standard may be below a specific QC limit, the signal-to-noise ratio of the peak is greater than ten-to-one. The standard is considered reliably quantifiable. All quantitations derived from the standard are considered valid as well.

By our interpretation, the analytical data in this project are valid based on the guidelines of EPA Method 23 (6/93) and Triangle Laboratories' Method 23 Data User's Manual. Any specific QC concerns or problems have been discussed in the QC Remarks section of this case narrative with emphasis on their effect on the data. Should Pacific Environmental Services have any questions or comments regarding this data package, please feel free to contact our Project Scientist, Amy Boehm, at 919/544-5729 ext. 268.

For Triangle Laboratories, Inc.,

Released by Final Quality Control Chemist

Sheila A. Lee-Lewis

Sheila A. Lee-Lewis  
Report Preparation Chemist

The total number of pages in the data package is :

103  
105 CMC 9/18/97

# TRIANGLE LABS

## TRIANGLE LABORATORIES, INC.

### LIST OF CERTIFICATIONS AND ACCREDITATIONS

#### ENVIRONMENTAL

**American Association for Laboratory Accreditation.** Expires July 31, 1997. Certificate Number 0226-01. Accreditation for technical competence in Environmental Testing.(Including Waste Water, Sol/Haz Waste, Pulp/Paper, and Air Matrices) Parameters are AOX/TOX, Volatiles, Pesticides, PCB's, BNA's, and Dioxin/Furan. Method 1613 for Drinking Water.

**State of Alabama, Department of Environmental Management.** Expires December 31, 1997. Laboratory I.D. # 40950. Dioxin in drinking water.

**State of Alaska, Department of Environmental Conservation.** Expires December 21, 1997. Certificate number OS-00397. Dioxin in drinking water.

**State of Arizona, Department of Health Services.** Expires May 26, 1998. Certificate #AZ0423. Drinking Water for Dioxin, Dioxin in WW and S/H Waste.

**State of Arkansas, Department of Pollution Control and Ecology.** Expires February 18, 1998. Pulp/paper, soil, water, and Hazardous Waste for Dioxin/Furan; AOX/TOX.

**State of California, Department of Health Services.** Expires August 31, 1997. Certificate #1922. Selected Metals in Waste Water; Volatiles, Semi-volatiles, and Dioxin/furan in WW and Sol/Haz Waste. Dioxin in drinking water.

**State of Connecticut, Department of Health Services.** Expires September 30, 1997. Registration # PH-0117. Dioxin in drinking water.

**Delaware Health and Social Services.** Expires December 31, 1997. Certificate #NC 140. Dioxin in drinking water.

**Florida Department of Health and Rehabilitative Services.** Expires June 30, 1997. Dioxin in DW. Drinking Water ID HRS# 87424. Metals, Extractable Organics (GC/MS), Pesticides/PCB's (GC) and Volatiles (GC/MS) in Environmental Samples. Environmental water ID HRS# E87411.

**Hawaii Department of Health.** Expires March 1, 1998. Dioxin in drinking water. "Accepted" status for regulatory purposes .

**Idaho Department of Health and Welfare.** Expires November 30, 1997. Dioxin in drinking water.

**State of Kansas, Department of Health and Environment.** Expires January 31, 1998. Environmental Analyses/Non potable Water and Solid and Hazardous Waste. Method 1613 for drinking water. ID #'s - Drinking water and/or pollution control - E-215. Solid or Hazardous Waste - E-1209.

**Commonwealth of Kentucky, Department for Environmental Protection.** Expires December 31, 1997. ID#90060. Dioxin in drinking water.

**Maryland Department of Health and Mental Hygiene.** Expires September 30, 1997. Certification #235. Drinking water by Method 1613A.

**State of Michigan, Department of Public Health.** Expires March 31, 1997. Drinking water by Method 1613.

**Mississippi State Department of Health.** No expiration date.. Dioxin in drinking water.

**Montana Department of Health and Environmental Services.** Expires December 31, 1997. Dioxin in drinking water.

**State of New Jersey, Department of Environmental Protection and Energy.** Extended by state. Temporary certificate until June 30, 1997 or sooner. ID #67851. BNAs and Volatiles. Dioxin in drinking water.

**State of New Mexico, Environment Department.** Expires July 31, 1997. Dioxin in drinking water.

**New York State Department of Health.** Expires June 30, 1997. ID #11026. Environmental Analyses of non-potable Water, Solid and Hazardous Waste. Method 1613 in DW.

**State of North Carolina, Department of Environment Health and Natural Resources** Expires December 31, 1997. Certificate # 37751. Dioxin in drinking water.

**State of North Carolina, Department of Environment, Health, and Natural Resources, Division of Environmental Management.** Expires December 31, 1997. Certificate # 485. Metals, pesticides & PCBs, semi-volatiles and volatiles; TCLP.

**North Dakota State Department of Health and Consolidated Laboratories.** Expires December 31, 1997. Certificate # R-076. Effective October 4, 1993. Dioxin in drinking water.



**Oklahoma Department of Environmental Quality.** Expires October 31, 1997. Laboratory #9612. Dioxin by 1613A, 8290 and 8280.

**State of South Carolina, Department of Health and Environmental Control.** Expires June 30, 1997. Certificate number #99040001 (drinking water). Expires August 31, 1997. Certificate number #99040002 (other parameters). Dioxin/Furans, BNA, Volatiles, and PCBs/pesticides under Clean Water Act, 2,3,7,8-TCDD for Drinking Water, and Organic extractables for Solid and Hazardous Waste.

**State of Tennessee, Department of Environment and Conservation.** Expires February 5, 1999. ID #02992. Method 1613 Drinking water only.

**U.S. Department of Agriculture Soil Permit.** Expires September 30, 2002. Permit No. S-4958. Under the authority of the Federal Plant Pest Act, permission is granted to receive foreign soil samples for use in laboratory analysis.

**U.S. Army Corps of Engineers.** Expires November 30, 1997. Validated to perform methods 8280 & 8290 for Lockbourne Landfill Site Investigation, Defense Distribution Depot Projects, and assorted projects for the USACE North Pacific Division Laboratory.

**U.S. EPA Region V.** Expires November 14, 1999. Dioxin in drinking water.

**U.S. EPA Region VIII, for the State of Wyoming.** Expires November 13, 1997. Dioxin in drinking water.

**State of Utah, Department of Health.** Expires December 31, 1997. Certificate Number E-166. Certification for the following parameters: Semi-Volatiles and Volatiles under RCRA; Volatiles under Clean Water Act; Dioxin/furans by Method 8280; Drinking water for Dioxin by Method 1613; Metals including Mercury and Microwave Digestion.

**Commonwealth of Virginia, Department of General Services, Division of Consolidated Laboratory Services.** Expires June 30, 1998. ID # 00341. Dioxin in drinking water.

**State of Washington, Department of Ecology.** Expires September 11, 1997. Lab Accreditation Number C067. Scope of Accreditation applies to water analyses for Polychlorinated Dibenzo-p-dioxins and Polychlorinated Dibenzofurans, BNA Extr (Semivolatile) Organics and Purgeable (Volatile) Organics.

**State of Washington, Department of Health.** Expires April 30, 1998. Dioxin in drinking water. Lab I.D. 129

**State of West Virginia, Department of Health.** Expires December 31, 1997. Certificate No. 9923(C). Dioxin in drinking water.

**State of Wisconsin, Department of Natural Resources.** Expires June 30, 1997. Laboratory ID Number 999869530. Certification for the following categories of Organics: Purgeable, Base/Neutral, Acid, PCBs, and Dioxin. Expires November 14, 1999. Laboratory ID 999869530. Dioxin in drinking water.

### **PHARMACEUTICAL**

**Drug Enforcement Agency (DEA).** Expires November 30, 1997. Registration number RT01195835. Controlled substance registration for schedules 1,2,3,3N,4,5.

**N.C. Department of Human Resources.** Expires October 31, 1997. Registration number NC-PT 0000 0031. North Carolina controlled substances registration. Application submitted for renewal.

**Food & Drug Administration (FDA) Registration.** Expires July 1997. ID #'s 001500 1053481. Annual registration of drug establishment. Annual registration of drug establishment.

### **OTHER**

**Clinical Laboratory Improvement Amendments (CLIA) Registration.** Expires May 30, 1999. ID # 34D0705123. Department of Health & Human Services, Health Care Financing Administration.

**U.S. EPA Large Quantity Hazardous Waste Generator.** No expiration date. EPA ID #NCD982156879. Permit indicates that the laboratory is a large generator of hazardous waste.

**North Carolina Radioactive Materials License.** Expires April 30 1998. License No. 032-0954-1. License authorizes the licensee to receive, acquire, own, possess, transfer, import and use such radioactive materials as designated.

**North Carolina General License for Radiation Protection.** No. expiration date. License No. 032-875-OG. The general license applies only to radioactive material contained in devices which have been manufactured and labeled in accordance with specific requirements.

**TRIANGLE LABS**

**DOCUMENT**  
**CONTROL**

**Triangle Laboratories, Inc.**  
**801 Capitola Drive**  
**Durham, NC 27713-4411**  
**919-544-5729**

**P.O. Box 13485**  
**Research Triangle Park, NC 27709-3485**  
**Fax # 919-544-5491**

**COPY of 8/29/97**

11

**CHAIN OF CUSTODY**

**Sampler's Signature:** \_\_\_\_\_

**Comments:** \_\_\_\_\_

Company: PES, Inc. Contact: Mike Marel

Address: 5001 S. Miami Blvd. Project Name: ASPHALT TRAIT "A"

RTP, NC 27709-2077 Project Location: Garner, NC

P.O. #: \_\_\_\_\_

Phone #: 919-941-0333 Fax #: 919-941-0234

Location Sampled:	Date:	Time:	Grab or Comp.:	Field Sample I.D.#:	# of Cont.	Analysis Required:	Remarks:
Inlet	8/19/97	9:15	Composite	I-M23-1-XAD	1	Poly-chlorinated Dioxin/Furans	XAD
Inlet	8/19/97	↓	Composite	I-M23-1-Ace/Toluene	1	Poly-chlorinated Dioxin/Furans	Ace/Toluene
Inlet	8-19-97	↓	Composite	I-M23-1-Filter	1	Poly-chlorinated Dioxin/Furans	Filter
Inlet	8-19-97	↓	Composite	I-M23-1-IMP	1	Poly-chlorinated Dioxin/Furans	ARCHIVE
Outlet	8-19-97	9:15	Composite	O-M23-1-XAD	1	Poly-chlorinated Dioxin/Furans	XAD
Outlet	↓	↓	Composite	O-M23-1-Ace/Toluene	1	Poly-chlorinated Dioxin/Furans	Ace/Toluene
Outlet	↓	↓	Composite	O-M23-1-Filter	1	Poly-chlorinated Dioxin/Furans	Filter
Outlet	↓	↓	Composite	O-M23-1-IMP	1	Poly-chlorinated Dioxin/Furans	ARCHIVE
Outlet	8-20-97	8:22	Composite	O-M23-2-XAD	1	Poly-chlorinated Dioxin/Furans	XAD
Outlet	↓	↓	Composite	O-M23-2-Ace/Toluene	1	Poly-chlorinated Dioxin/Furans	Ace/Toluene
Relinquished By:	Date/Time:		Received By:		Date/Time:		Received By:
<i>[Signature]</i>	8/29/97 2:15		<i>[Signature]</i>				
Received for Laboratory By/Signature:	Date/Time:		Received By:		Date/Time:		Received By:
<i>[Signature]</i>	8/29/97 12:45		<i>[Signature]</i>				
Send Samples To:				Triangle Laboratories, Inc.			
				801 Capicola Drive			
				Durham, North Carolina 27713			

COPY of 8/29/97

21

**CHAIN OF CUSTODY**

**Sampler's Signature:**

Company: PES, Inc. Contact: Mike Maret  
 Address: 5001 S. Miami Blvd. Project Name: ASPHALT PLANT "A"  
RTP, NC 27709-2077 Project Location: Garner, NC  
 P.O. #: \_\_\_\_\_

Comments:

Phone #: 919-941-0333 Fax #: 919-941-0234

Location Sampled:	Date:	Time:	Grab or Comp.:	Field Sample I.D.#:	# of Cont.	Analysis Required:	Remarks:
Outlet	8-20-97	6:22	Composite	O-M23-2-Filter	1	Poly-chlorinated Dioxin/Furans	Filter
Outlet	8-20-97	14:05	Composite	O-M23-2-IMP	2	Poly-chlorinated Dioxin/Furans	ARCHIVE
Outlet			Composite	O-M23-3-XAD	1	Poly-chlorinated Dioxin/Furans	XAD
Outlet			Composite	O-M23-3-Ace/Toluene	1	Poly-chlorinated Dioxin/Furans	Ace/Toluene
Outlet			Composite	O-M23-3-Filter	1	Poly-chlorinated Dioxin/Furans	Filter
Outlet	8-19-97	15:19	Composite	O-M23-3-IMP	2	Poly-chlorinated Dioxin/Furans	ARCHIVE
Outlet			Composite	O-M23-FB-XAD	1	Poly-chlorinated Dioxin/Furans	XAD
Outlet			Composite	O-M23-FB-Ace/Toluene	1	Poly-chlorinated Dioxin/Furans	Ace/Toluene
Outlet			Composite	O-M23-FB-Filter	1	Poly-chlorinated Dioxin/Furans	Filter
Outlet			Composite	O-M23-FB-IMP	1	Poly-chlorinated Dioxin/Furans	ARCHIVE

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
 Received By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Relinquished By: Frank D. [Signature] Date/Time: 8/29/97 12:45  
 Received By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Received for Laboratory By/Signature: [Signature] Date/Time: 8/29/97 12:45  
 Send Samples To: Triangle Laboratories, Inc.  
801 Capitola Drive  
Durham, North Carolina 27713

8/29/97

**COPY**

CHAIN OF CUSTODY				Sampler's Signature:			
Company: PES, Inc.		Contact: Mike Maret		Comments:			
Address: 5001 S. Miami Blvd.		Project Name: ASPHALT PLANT "A"					
RTP, NC 27709-2077		Project Location: Garner, NC					
Phone #: 919-941-0333		P.O. #:					
Fax #: 919-941-0234		Field Sample I.D. #:					
Location Sampled:	Date:	Time:	Grab or Comp.:	Field Sample I.D. #:	# of Cont.	Analysis Required:	Remarks:
Outlet	8-21-97	7:41	Composite	O-M23-4-HCl	1	16 Trace Metals Plus Hg	HCl
Outlet			Composite	O-M23-4-XAD	1	Poly-chlorinated Dioxin/Furans	XAD
Outlet			Composite	O-M23-4-Ace/Toluene	1	Poly-chlorinated Dioxin/Furans	Ace/Toluene
Outlet			Composite	O-M23-4-Filter	1	Poly-chlorinated Dioxin/Furans	Filter
Outlet			Composite	O-M23-4-IMP	1	Poly-chlorinated Dioxin/Furans	ARCHIVE
Relinquished By:		Date/Time:		Received By:		Date/Time:	
Relinquished By: <i>[Signature]</i>		Date/Time: 8/29/97 12:45		Received By:		Date/Time:	
Received for Laboratory by/Signature:				Sand Samples To:		Triangle Laboratories, Inc.	
<i>[Signature]</i>				8/29/97 12:45		801 Capitola Drive Durham, North Carolina 27713	



4

TRIANGLE LABORATORIES, INC. -- LOG IN RECORD/CHAIN OF CUSTODY

TLI Project Number 43057 Client: PSC01 - PSS, Inc.

Sample Seal : Absent Sample Seals: Absent  
 Chain of Custody : Present Container: Intact

Date Received 08/29/97 By *[Signature]*

Carrier and Number FRANK PHOENIX

Ice Chest/Box ICE Temp 19.0 C

Client Sample ID.....Matrix To LAB To STORAGE To STORAGE To STORAGE To STORAGE  
 Date/Init Date/Init Date/Init Date/Init Date/Init Date/Init

Client COC ID.....Location.....

181-27-1A I-M23-1-XAD XAD

181-27-1B I-M23-1-ACE/TOLUENE ACE/TOLUENE 9-5-97 7SY 9-5-97 7SY

181-27-1C I-M23-1-FILTER FILTER

181-27-1D I-M23-1-IMP IMP

181-27-2A O-M23-1-XAD XAD

181-27-2B O-M23-1-ACE/TOLUENE ACE/TOLUENE 9-5-97 7SY 9-5-97 7SY

181-27-2C O-M23-1-FILTER FILTER

181-27-2D O-M23-1-IMP IMP

181-27-3A O-M23-2-XAD XAD

181-27-3B O-M23-2-ACE/TOLUENE ACE/TOLUENE 9-5-97 7SY 9-5-97 7SY

181-27-3C O-M23-2-FILTER FILTER

181-27-3D O-M23-2-IMP IMP

181-27-3E O-M23-2-IMP IMP

181-27-4A O-M23-3-XAD XAD

Receiving Remarks: SAMPLES DELIVERED IN 3 BOXES AND 1 COOLER. ICE IN COOLER WAS WATER WHEN RECEIVED. SAMPLES  
 O-M23-RB-XAD WAS NOT WITH SHIPMENT.

Archive Remarks:



TRIANGLE LABORATORIES, INC. -- LOG IN RECORD/CHAIN OF CUSTODY--  
 TLI Project Number 43057  
 Client: PSC01 - PES, Inc.

Book  
181

Date Received 08/29/97 By *[Signature]*

Carrier and Number FRANK PHOENIX

Temp 19.0 C

TLI Number...	Client Sample ID.....	Matrix	To LAB Date/Init	To STORAGE Date/Init	To LAB Date/Init	To STORAGE Date/Init	To LAB Date/Init	To STORAGE Date/Init	DISPOSED Date/Init
181-27-4B	O-M23-3-ACE/TOLUENE	ACE/TOLUENE C02	9-5-97 JSS	9-5-97 JSS	9-5-97 JSS	9-5-97 JSS	9-5-97 JSS	9-5-97 JSS	
181-27-4C	O-M23-3-FILTER	FILTER C02							
181-27-4D	O-M23-3-IMP	IMP C02							
181-27-4E	O-M23-3-IMP	IMP C02							
181-27-5A	O-M23-FB-XAD	XAD C02							
181-27-5B	O-M23-FB-ACE/TOLUENE	ACE/TOLUENE C02	9-5-97 JSS	9-5-97 JSS	9-5-97 JSS	9-5-97 JSS	9-5-97 JSS	9-5-97 JSS	
181-27-5C	O-M23-FB-FILTER	FILTER C02							
181-27-5D	O-M23-FB-IMP	IMP C02							
181-27-6A	O-M23-4-XAD	XAD C02							
181-27-6B	O-M23-4-ACE/TOLUENE	ACE/TOLUENE C02	9-5-97 JSS	9-5-97 JSS	9-5-97 JSS	9-5-97 JSS	9-5-97 JSS	9-5-97 JSS	
181-27-6C	O-M23-4-FILTER	FILTER C02							
181-27-6D	O-M23-4-IMP	IMP C02							
181-27-7A	O-M23-RB-ACE/TOLUENE	ACE/TOLUENE C02	9-5-97 JSS	9-5-97 JSS	9-5-97 JSS	9-5-97 JSS	9-5-97 JSS	9-5-97 JSS	
181-27-7B	O-M23-RB-FILTER	FILTER C02							

Receiving Remarks: SAMPLES DELIVERED IN 3 BOXES AND 1 COOLER. ICE IN COOLER WAS WATER WHEN RECEIVED. SAMPLE  
 O-M23-RB-XAD WAS NOT WITH SHIPMENT.



TRIANGLE LABORATORIES, INC.  
SAMPLE TRACKING AND PROJECT MANAGEMENT FORM

-----ADMINISTRATIVE INFORMATION-----

TLI Proj#: 43057-r1      Samples: 1      TurnAround.: 7 Day(s)  
Prod Code: D23061      Matrix.: M23Train      Hold Time.: 30 Day(s)  
DetectLim: 0.05 ng      Type...: A      Start Date.: 09/05/97  
Recvd...: 08/29/97      Ship By....: 09/11/97      *lm 9/10/97*  
DWL Due Dt.: ~~09/09/97~~      *ASAP*

Analyte List.: tetra-octa PCDDs/PCDFs

Method.....: Method 23:Tetra-Octa (Tol Combined)  
Client Proj..: ASPHALT PLANT "A"  
Client.....: Pacific Environmental Services (PES03)  
P.O. No.....: 104-98-0019 & -0020      Collect Dt/Tm: SeeCOC  
Contact.....: Mike Maret      Phone.....: 919-941-0333  
Proj. Mgr....: Amy J. Boehm      Fax.....: 919-941-0234  
Sample Origin: NC

-----SPECIAL INSTRUCTIONS / QA REQUIREMENTS-----

Prep Project: 03804      Prespike Standard: USF-CS  
Prespike Amount...: 4.0ng  
Extraction Exp....: 09/18/97

-----REPORTING REQUIREMENTS-----

Reporting Format: Report Option II  
See MILES for Instructions/Communications.

Completed by: *lm*      DATE: *9/10/97*  
Reviewed by: *walter mms*      DATE: *9/10/97* (PMGT0197)

TLI Project Number: 43057

Use this form to record all exchanges of information between production units as well as personnel handling this project. Decisions, corrective actions and recommendations must also appear on this tracking document.

Date	Name	Comment / Decision / Resolution / Action / Observation
	PSC01-PES, Inc. I-M23-1-FILTER Project: 43057 181-27-1C	XAD - white 1 Filter white with approx 60g of brown ash residue gas smell
	PSC01-PES, Inc. I-M23-1-XAD Project: 43057 181-27-1A	XAD - white 1 Filter - white / brown gas smell
	PSC01-PES, Inc. O-M23-1-FILTER Project: 43057 181-27-2C	XAD - white 1 Filter white / brown gas smell
	PSC01-PES, Inc. O-M23-1-XAD Project: 43057 181-27-2A	XAD - white 1 Filter white / brown gas smell
	PSC01-PES, Inc. O-M23-2-FILTER Project: 43057 181-27-3C	XAD - white 1 Filter white / brown gas smell
	PSC01-PES, Inc. O-M23-2-XAD Project: 43057 181-27-3A	XAD - white 1 Filter white / brown gas smell

PROJECT COMMUNICATION TRACKING FORM

TLI Project Number: 43057

Use this form to record all exchanges of information between production units as well as personnel handling this project. Decisions, corrective actions and recommendations must also appear on this tracking document.

Date	Name	Comment / Decision / Resolution / Action / Observation
	PSC01-PES, Inc. O-M23-3-XAD Project: 43057 181-27-4A	XAD - white
	PSC01-PES, Inc. O-M23-3-FILTER Project: 43057 181-27-4C	1 Filter - white @ / H brown - gas smell
	PSC01-PES, Inc. O-M23-FB-XAD Project: 43057 181-27-5A	XAD white
	PSC01-PES, Inc. O-M23-FB-FILTER Project: 43057 181-27-5C	1 Filter white
	PSC01-PES, Inc. O-M23-4-XAD Project: 43057 181-27-6A	white - XAD
	PSC01-PES, Inc. O-M23-4-FILTER Project: 43057 181-27-6C	1 Filter - white with H brown residue
	PES03-Pacific Environmental Services Reagent Blank Xad Project: 43113 181-83-1	1 Filter white XAD white
	PSC01-PES, Inc. O-M23-RB-FILTER Project: 43057 181-27-7B	

Dioxin Sample Preparation Tracking & Management Form

Project: 43057

Client: Pacific Environmental Services (PES03)

Solvent(s)/Acid(s): Toluene / \_\_\_\_\_ / \_\_\_\_\_

Method: Method 23:Tetra-Octa (Tol Combined)

Matrix: XAD FILTERS

Lot Numbers: 974861 / \_\_\_\_\_ / \_\_\_\_\_

Extraction Date: 9/6/97

IS Spike: 40 µl conc: 0.1000 ng/µl

SS Spike: \_\_\_\_\_ µl conc: \_\_\_\_\_ ng/µl

MS Spike: 0 µl conc: 0.0000 ng/µl

LCS Spike: 0 µl conc: 0.0000 ng/µl

OPR Spike: 20 µl conc: 0.01 ng/µl

<u>LA</u>	<u>LA</u>	<u>DOM</u>	Chemist
<u>5234I</u>	<u>5233B</u>	<u>5235E</u>	Spike #
<u>USF I</u>	<u>USF MX</u>	<u>USF-A</u>	ID
<u>7/02/98</u>	<u>12/17/97</u>	<u>07/02/98</u>	Expir
<u>9/06/97</u>	<u>9/06/97</u>	<u>9/08/97</u>	Date
<u>14:00</u>	<u>14:03</u>	<u>13:45</u>	Time
<u>0.1 ng/µl</u>	<u>0.01 ng/µl</u>	<u>0.1 ng/µl</u>	Conc.
<u>40 µl</u>	<u>40 µl</u>	<u>40 µl</u>	Vol.

S#. crd	TLI	CLIENT	GROSS WEIGHT		SAMPLE SIZE	ng/µl	µl	ng/µl	µl
	SAMPLE		SAMPLE ID	Before					

000	TLI Blank	TLI M23 Blank	+		L.C.			MS	Any Left <u>yes/no</u>
001	181-27-4A-C	I-M23-1	+		L.C.			MS	Any Left <u>yes/no</u>
002	181-27-2A-C	O-M23-1	+		L.C.			MS	Any Left <u>yes/no</u>
003	181-27-3A-C	O-M23-2	+		L.C.			MS	Any Left <u>yes/no</u>
004	181-27-4A-C	O-M23-3	+		L.C.			MS	Any Left <u>yes/no</u>
005	181-27-5A-C	O-M23-FB	+		L.C.			MS	Any Left <u>yes/no</u>
006	181-27-6A-C	O-M23-4	+		L.C.			MS	Any Left <u>yes/no</u>
007	181-27-7AB& 181-83-1	O-M23-RB	+		L.C.			MS	Any Left <u>yes/no</u>
008	TLI LCS	TLI LCS	+		L.C.	*L.C.		MS	Any Left <u>yes/no</u>
009	TLI LCSD	TLI LCSD	+		L.C.	*L.C.		MS	Any Left <u>yes/no</u>

Gross weight of sample container + sample before/after aliquot removal.

Comments: 1 & 2 Acetone/Toluene Rinses had fine particles they were filtered through 60µm filter before Rotolapping 9/5/97

Initials: LA Date: 9/6/97

Initials of both SPIKER AND OBSERVER must be entered.

XXXXX - Gross Weight not provided for WATER Samples.

TRIANGLE LABORATORIES, INC.  
 DIOXIN SAMPLE EXTRACTION and CLEANUP TRACKING FORM  
 TLI Project No.: 43057

Ext S#.crd and TLI Number	1	2	4A	6	3	7B	7	8A	9
000 TLI Blank	CA 9/6/97	903 MS 9.8.97	MS 9.8.97	MS 9.8.97	TMW 9.8.97	TMW 9.8.97	TMW 9.8.97	CA 9/9/97	9/9/97
001 181-27-1A-C									
002 181-27-2A-C									
003 181-27-3A-C									
004 181-27-4A-C									
005 181-27-5A-C									
006 181-27-6A-C				TMW 9.8.97					
007 181-27-7AB& 181-83-1				MS 9.8.97					
008 TLI LCS				TMW 9.8.97					
009 TLI LCSD									JLE

Enter the procedure number below into the box at the top of each column to signify the step performed.  
 Initial and date each sample for each numbered procedure performed.

- #.....PROCEDURE..... DETAILS (circle)
- 1) EXTRACTION ON  OFF  Soxhlet Jar / Sep Funnel / Steam Dist / Cont LL / ASE / Waste Dilution
  - 2) SPIKE AFTER EXTRACTION 9/6/97 9/7/97 14:30 06:30 LA
  - 3) ADD TRIDECANE
  - 4) ROTOVAP 40mL / 10mL / Dryness
  - 5) COMBINE
  - 6) DIVIDE / LIPID DETERMINATION 20%/80% 50%/50% 5mL/20mL Other \_\_\_\_\_
  - 7) SOLVENT EXCHANGE A
  - 8) CLEANUP Double Column DSP 260 / DSP 225 / DSP 115 / DSP 215 / DSP 267 / Other \_\_\_\_\_
  - 9) TRANSFER
  - 10) ADDITIONAL CLEANUP Mod. DSP 260 / DSP 225 / DSP 115 / DSP 215 / DSP 267 / Other \_\_\_\_\_
  - 11) FINAL TRANSFER

Comments: \_\_\_\_\_

TRIANGLE LABORATORIES, INC.  
 DIOXIN SAMPLE EXTRACTION and CLEANUP TRACKING FORM  
 TLI Project No.: 43057 r1

Ext S#.crd and TLI Number	3	4	7	3A	9															
r1 000 TLI Blank	L.C. 9-10-97	J.L.	Jh.	HH 9/10/97	R 9/11/97															
r1 006 181-27-6A-C	↓	↓	↓	↓ ES 9/10/97	↓															
		9/10/97	9/10/97	SOR																

Enter the procedure number below into the box at the top of each column to signify the step performed.  
 Initial and date each sample for each numbered procedure performed.

- #. . . . . PROCEDURE . . . . . DETAILS (circle)
- 1) EXTRACTION ON \_\_\_ OFF \_\_\_ Soxhlet / Jar / Sep Funnel / Steam Dist / Cont LL / ASE / Waste Dilution
  - 2) SPIKE AFTER EXTRACTION
  - 3) ADD TRIDECANE
  - 4) ROTOVAP 40mL / 10mL / Dryness
  - 5) COMBINE
  - 6) DIVIDE / LIPID DETERMINATION 20%/80% 50%/50% 5mL/20mL Other \_\_\_\_\_
  - 7) SOLVENT EXCHANGE
  - 8) CLEANUP (A) Double Column (DSP 260) / DSP 225 / DSP 115 / DSP 215 / DSP 267 / Other \_\_\_\_\_
  - 9) TRANSFER
  - 10) ADDITIONAL CLEANUP Mod. DSP 260 / DSP 225 / DSP 115 / DSP 215 / DSP 267 / Other \_\_\_\_\_
  - 11) FINAL TRANSFER

Comments: \_\_\_\_\_



TRIANGLE LABORATORIES, INC.  
Transfer Chain-of-Custody Form  
Project 43057-r1

Transfer From: DWLH5 To: DMS5

	Initials..	Date.....	Time...
Released by:	<u>  <i>JR</i>  </u>	<u>  9/11/97  </u>	<u>  11:45h  </u>
Accepted by:	<u>  <i>Jim</i>  </u>	<u>  9/12/97  </u>	<u>  12:35h  </u>

MILES.ID.....	TLI_No.....	Cust.Id.....
43057-r1 -000	TLI Blank	TLI M23 Blank
43057-r1 -006	181-27-6A-C	O-M23-4

-----XfrCOC (Rev 11/01/94)-----

Additional comments or instructions:



Instrument ID	705	Column Type	DB5	Column ID	7458551	Plot Name	702	Inj. Vol.	2.0ml	Acquisition	ERICUSA	QC
											EDC45	9/12/97
Signature: <i>Blanca ...</i>												
Date: 9-12-97												

Filename	Date*	Time*	Project #	Sample#	No.	Client Sample ID	Syr	332	Operator/Date	Comments**
S975858	9-12-97	1937	—	5170B	—	RTCHK	RTCHK	4.4	GG 9-12-97	
S975859	9-12-97	1937	—	45149	—	Cancel S.O.D	M.O.S	8%	MS 9-12-97	Good
S975860	9-11-97	2003	—	5170B	—	RTCHK	RTCHK	6.8	ML 9-12-97	Good
S975861	9-12-97	2120	—	54149	—	Cancel S.O. M13	M.O	6.2	ML 9-12-97	Good
S975862	9-11-97	2220	—	5413	—	8500 Cancel S.O	M.O	6.6	ML 9/12/97	Good
S975863	9-11-97	2306	4287911	TLS Blank	0	TLS M13 Blank	Still	4.9	ML 9/12/97	
S975864	9-11-97	00:14	4305711	TLS Blank	0	TLS M13 Blank	Auto	6.0	ML 9/12/97	
S975865		00:54	↓	181-22-61-C	6	0-M13-4		6.3		
S975866		01:33	43085	181-55-1ABE	1	0-M13-1		6.7		
S975867		02:12	↓	181-55-2ABE	2	0-M13-2		2.4		
S975868		02:52	↓	181-55-3ABE	3	0-M13-3		1.1		10pl of nonane added
S975869		06:31	4305711	TLS Blank	0	TLS Solid Blank		6.1		
S975870		04:11	↓	181-24-1	1	NE050-SL-081-TRIM.SL		6.4		

Transcribed from chromatographic data  
Dated Initials required

ConCal Due: M13 out at 9:20 9/15/97  
ConCal Due: 8:30 out at 10:20 9/15/97

Instrument ID	Column Type	Column ID	Plot Name	Inj. Vol.	Acquisition	GIC
FOP	DB 2W	G360413	T#1	20ul	DB 2W	DB 2W
Signature: <u>LD</u>						Date: <u>9/12/92</u>

Filename	Date*	Time*	Project #	Sample#	No.	Client Sample ID	Syr	332	Operator/Date	Comments**
P975442	9/12/92	10:13	---	SITUB	-	PTECH	meth	147	DL 9/12/92	
1 43	1	11:04	---	4497D	-	TERMA COLUCL 510	TERMA 5.0	1.9 12.6		
1 44	1	11:59	---	5296L	-	P8-100	DC-100	1.7 6.6		clean box 9/14/92
1 45	1	12:45	4305T	181-01-24C	3	0-H23-2	P981	1.9 6.6		
1 46	1	13:32	1	1-44C	4	1-3	1	3.0 12.6		
1 47	1	14:19	1	1-74C 181-83-1	1	-R3	1	1.9 6.6		
1 48	1	15:06	4305T-1	TU BANN	0	TU H23 BLANK	1	2.0 6.6		
1 49	1	15:53	1	181-01-64C	6	0-H23-4	1	1.5 6.6		
P973850	9/12/92	16:42	43085	181-55	3	0-M23-3	1	1.1 6.6	SB 9/12/92	
P973851	9/12/92	17:21	43085	181-55-4ABD	4	0-M23-FB	1	2.4 6.6	ML 9/12/92	
P973852	9/12/92		43085	TU Blank	0	TU M23 Blank	1		ML 9/12/92	

\* Transcribed from chromatographic data  
\*\* Dated initials required

ConCal Due: \_\_\_\_\_  
ConCal Due: \_\_\_\_\_

**TRIANGLE LABS**

SAMPLE  
DATA

Triangle Laboratories, Inc.  
801 Capitola Drive  
Durham, NC 27713-4411  
919-544-5729

P.O. Box 13485  
Research Triangle Park, NC 27709-3485  
Fax # 919-544-5491

TRIANGLE LABORATORIES, INC.  
 Sample Result Summary for Project 43057r1  
 Method 23X Full Screen Analyses (DB-5)

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```

=====
Data File          S975864          S975865
Sample ID         TLI M23 Blank      O-M23-4

Units            ng              ng
Extraction Date  09/06/97          09/06/97
Analysis Date    09/13/97          09/13/97
Instrument        S                  S
Matrix           XAD              M23TRAIN
Extraction Type
=====
  
```

```

Analytes
2378-TCDD          (0.004)          (0.004)
12378-PeCDD        (0.005)          (0.005)
123478-HxCDD       (0.006)          (0.006)
123678-HxCDD       (0.005)          0.01
123789-HxCDD       (0.005)          (0.005)
1234678-HpCDD      0.03             {0.04} B
OCDD               0.04             0.09 B
2378-TCDF          0.008            0.02 B
12378-PeCDF        (0.004)          (0.003)
23478-PeCDF        {0.007}          {0.01} B
123478-HxCDF       0.03             0.03 B
123678-HxCDF       0.01             0.01 B
234678-HxCDF       0.02             0.02 B
123789-HxCDF       (0.004)          (0.004)
1234678-HpCDF      0.05             0.05 B
1234789-HpCDF      0.02             0.02 B
OCDF               0.03             0.05 B
TOTAL TCDD         0.009            {0.007}
TOTAL PeCDD        {0.03}           0.01
TOTAL HxCDD        0.05             0.07
TOTAL HpCDD        0.06             {0.07}
TOTAL TCDF         0.008            0.03
TOTAL PeCDF        {0.007}          0.01
TOTAL HxCDF        0.08             0.09
TOTAL HpCDF        0.08             0.09
  
```

Other Standards Percent Recovery Summary (% Rec)

```

37C1-TCDD          105              106
13C12-PeCDF 234    87.7              93.4
13C12-HxCDF 478    93.9              97.6
13C12-HxCDD 478    89.6              85.9
13C12-HpCDF 789    107               98.7
  
```

Other Standards Percent Recovery Summary (% Rec)

```

13C12-HxCDF 789    97.3              117
13C12-HxCDF 234    84.8              107
  
```

Internal Standards Percent Recovery Summary (% Rec)

```

13C12-2378-TCDF    92.5              120
13C12-2378-TCDD    80.9              98.7
13C12-PeCDF 123    92.4              107
13C12-PeCDD 123    100               112
  
```

TRIANGLE LABORATORIES, INC.  
Sample Result Summary for Project 43057r1  
Method 23X Full Screen Analyses (DB-5)

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09/14/97

=====  
Data File           S975864           S975865  
Sample ID           TLI M23 Blank       O-M23-4

Units               ng                   ng  
Extraction Date     09/06/97           09/06/97  
Analysis Date       09/13/97           09/13/97  
Instrument           S                    S  
Matrix              XAD                 M23TRAIN  
Extraction Type

=====  
Internal Standards Percent Recovery Summary (% Rec)  
13C12-HxCDF 678     92.8               113  
13C12-HxCDD 678     83.6               103  
13C12-HpCDF 678     72.2               88.5  
13C12-HpCDD 678     85.0               90.1  
13C12-OCDD           67.5               68.8  
=====

{Estimated Maximum Possible Concentration}, (Detection Limit).

TRIANGLE LABORATORIES, INC.  
Sample Result Summary for Project 43057r1  
Method 23X (DB-225)

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=====  
Data File           P973848           P973849  
Sample ID           TLI M23 Blank       O-M23-4

Units               ng                   ng  
Extraction Date    09/06/97           09/06/97  
Analysis Date      09/12/97           09/12/97  
Instrument          P                   P  
Matrix             XAD                 M23TRAIN  
Extraction Type

=====  
Analytes  
2378-TCDF               (0.008)           (0.01)

Internal Standards Percent Recovery Summary (% Rec)  
13C12-2378-TCDF       72.7              104

=====  
(Detection Limit).



## Pacific Environmental Services

TLI Project: 43057r1  
 Client Sample: TLI M23 Blank

Method 23 PCDD/PCDF Analysis (a)  
 Analysis File: S975864

Client Project:	ASPHALT PLANT "A"	Date Received:	/ /	Spike File:	SPX23704
Sample Matrix:	XAD	Date Extracted:	09/06/97	ICal:	SF56117
TLI ID:	TLI Blank	Date Analyzed:	09/13/97	ConCal:	S975861

Sample Size:	1.000	Dilution Factor:	n/a	% Moisture:	n/a
Dry Weight:	n/a	Blank File:	S975864	% Lipid:	n/a
GC Column:	DB-5	Analyst:	ML	% Solids:	n/a

Analytes	Amt. (ng)	DL	EMPC	Ratio	RT	Flags
2,3,7,8-TCDD	ND	0.004				—
1,2,3,7,8-PeCDD	ND	0.005				—
1,2,3,4,7,8-HxCDD	ND	0.006				—
1,2,3,6,7,8-HxCDD	ND	0.005				—
1,2,3,7,8,9-HxCDD	ND	0.005				—
1,2,3,4,6,7,8-HpCDD	0.03			1.08	32:45	—
1,2,3,4,6,7,8,9-OCDD	0.04			0.93	35:18	—
2,3,7,8-TCDF	0.008			0.78	21:35	—
1,2,3,7,8-PeCDF	ND	0.004				—
2,3,4,7,8-PeCDF	EMPC		0.007			—
1,2,3,4,7,8-HxCDF	0.03			1.25	29:11	—
1,2,3,6,7,8-HxCDF	0.01			1.22	29:16	—
2,3,4,6,7,8-HxCDF	0.02			1.18	29:46	PR
1,2,3,7,8,9-HxCDF	ND	0.004				—
1,2,3,4,6,7,8-HpCDF	0.05			1.12	31:55	—
1,2,3,4,7,8,9-HpCDF	0.02			1.14	33:06	—
1,2,3,4,6,7,8,9-OCDF	0.03			0.88	35:25	—

Totals	Amt. (ng)	Number	DL	EMPC	Flags
Total TCDD	0.009	1			—
Total PeCDD	EMPC			0.03	—
Total HxCDD	0.05	2			—
Total HpCDD	0.06	2			—
Total TCDF	0.008	1			—
Total PeCDF	EMPC			0.007	—
Total HxCDF	0.08	6			—
Total HpCDF	0.08	3		0.10	—



Initial .....Date....

Data Review By:

VC 1/14/97

Calculated Noise Area: 2.04

The Total Area for each peak with an ion abundance ratio outside ratio limits has been recalculated according to method requirements.

Page No. 1 Listing of S975864B.dbf  
09/14/97 Matched GC Peaks / Ratio / Ret. Time

Compound/  
M\_Z.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

		0.65-0.89				0.838-1.092			
TCDF									
304-306	DC NL	0:00	RO	0.31	0.37			0.000	
	DC SN	19:27	RO	0.60	3.86			0.901	
	DC SN	19:49	RO	0.64	3.70			0.918	
	DC SN	20:07	RO	1.80	1.63			0.932	
	DC SN	20:31	RO	0.63	4.25			0.951	
D	d SN	20:47		0.87	6.05			0.963	
D	d SN	21:09		0.71	7.79			0.980	
	DC SN	21:25	RO	0.36	1.72			0.992	
		21:35		0.78	14.82	6.50	8.32	1.000	2378-TCDF AN
	DC SN	23:22	RO	0.42	4.46			1.083	
304-306		1 Peak			14.82				

		0.65-0.89				0.954-1.046			
13C12-TCDF									
316-318	DC NL	0:00	RO	0.91	1.13			0.000	
	DC WL	20:31		0.65	35.70			0.951	
		21:09		0.72	26.06	10.91	15.15	0.980	
		21:35		0.77	5,889.86	2,569.27	3,320.59	1.000	13C12-2378-TCDF ISO
		22:03	RO	1.13	19.45	12.38	10.99	1.022	
316-318		3 Peaks			5,935.37				

----- Above: TCDF / TCDD Follows -----

		0.65-0.89				0.875-1.055			
TCDD									
320-322	DC NL	0:00	RO	1.13	0.27			0.000	
		19:41		0.85	10.98	5.06	5.92	0.881	
D	d SN	20:05		0.83	8.33			0.899	
	DC SN	20:36	RO	1.90	0.69			0.922	
	DC SN	21:23	RO	1.78	1.15			0.957	
	DC SN	22:09	RO	1.74	1.49			0.992	
	DC SN	22:14		0.88	3.32			0.996	
	DC SN	22:23	RO	0.35	2.67			1.002	2378-TCDD AN
	DC SN	22:37	RO	0.92	1.95			1.013	
	DC SN	22:48	RO	1.24	0.60			1.021	
	DC SN	22:59		0.82	2.02			1.029	
	DC SN	23:10	RO	0.62	0.71			1.037	
	DC SN	23:18		0.70	2.29			1.043	
	DC WH	23:36	RO	0.32	0.46			1.057	
	DC WH	23:36	RO	1.54	0.50			1.057	
320-322		1 Peak			10.98				

		0.910-1.090			
37C1-TCDD					
328	DC NL	0:00		0.43	0.000
		20:57		7.76	0.938

Compound:

M\_Z... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Re..RT Compound.Name.. ID.. Flags.

328 22:22 3,679.73 3,679.73 1.001 37C1-TCDD SUR1  
2 Peaks 3,687.49

13C12-TCDD 0.65-0.89 0.911-1.090  
332-334 DC NL 0:00 RO 3.15 0.73 1.000  
21:07 RO 1.00 22.53 12.71 12.73 0.946  
22:09 0.81 4,831.26 2,158.80 2,672.46 0.992 13C12-1234-TCDD RS1  
22:20 0.78 4,164.20 1,825.02 2,339.18 1.000 13C12-2378-TCDD IS1  
22:41 RO 0.94 53.79 28.64 30.39 1.016  
332-334 4 Peaks 9,071.78

----- Above: TCDD / PeCDF Follows -----

PeCDF 1.32-1.78 0.915-1.074  
340-342 DC NL 0:00 RO 0.59 0.33 1.000  
DC SN 23:39 RO 0.61 2.01 0.921  
DC SN 24:20 1.47 4.70 0.948  
DC SN 24:40 RO 0.57 1.84 0.961  
D d SN 25:17 1.66 10.94 0.985  
DC SN 25:41 1.64 5.20 1.001 12378-PeCDF AN  
DC SN 25:58 RO 0.49 2.70 1.012  
D d SN 26:13 1.71 7.66 1.021  
M 26:23 RO 1.12 10.28 6.25 5.60 1.028 23478-PeCDF AN  
DC SN 26:51 1.47 3.06 1.046  
DC SN 27:21 RO 0.70 2.88 1.066  
DC WH 27:49 RO 0.28 0.39 1.084  
340-342 1 Peak 10.28

13C12-PeCDF 1.32-1.78 0.844-1.156  
352-354 DC NL 0:00 RO 0.82 0.23 0.000  
24:47 1.61 61.90 38.19 23.71 0.966  
25:17 1.45 27.10 16.06 11.04 0.985  
25:40 1.44 5,059.33 2,983.33 2,076.00 1.000 13C12-PeCDF 123 IS2  
25:49 1.35 16.10 9.25 6.85 1.006  
25:57 1.43 29.14 17.16 11.98 1.011  
26:13 1.64 27.67 17.20 10.47 1.021  
26:23 1.42 4,305.66 2,528.87 1,776.79 1.028 13C12-PeCDF 234 SUR2  
27:20 1.33 17.65 10.09 7.56 1.065  
352-354 8 Peaks 9,544.55

----- Above: PeCDF / PeCDD Follows -----

PeCDD 1.32-1.78 0.926-1.024  
356-358 DC NL 0:00 RO 1.10 0.18 0.000  
24:56 RO 1.26 7.77 4.72 3.76 0.933  
25:40 RO 1.15 8.87 5.39 4.68 0.960  
25:59 RO 1.89 7.91 5.87 3.10 0.972  
26:13 RO 3.65 8.98 12.84 3.52 0.981  
DC SN 26:46 RO 0.78 2.98 1.001 12378-PeCDD AN  
DC SN 26:58 RO 1.10 0.92 1.009  
DC SN 27:12 RO 0.62 1.15 1.017  
DC SN 27:23 1.35 1.08 1.024

Compound/  
M\_Z.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Ret. RT Compound.Name.. ID.. Flags.

Compound	QC	Log	Omit	Why	RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Ret. RT	Compound.Name	ID	Flags
356-358	DC	NH			27:40	RO	2.61	0.97			1.035			
					4 Peaks				33.53					
13C12-PeCDD					1.32-1.78							0.850-1.150		
368-370	DC	NL			0:00	RO	1.00	0.21			0.000			
	DC	SN			25:27	RO	2.73	3.16			0.952			
					25:39	RO	1.01	4.77	2.90	2.86	0.959			
					26:13	RO	4.16	14.31	23.32	5.61	0.981			
					26:44		1.48	3,079.17	1,839.82	1,239.35	1.000	13C12-PeCDD	123	IS3
					26:52		1.53	269.84	162.99	106.85	1.005			
368-370					4 Peaks				3,368.09					

----- Above: PeCDD / HxCDF Follows -----

Compound	QC	Log	Omit	Why	RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Ret. RT	Compound.Name	ID	Flags
HxCDF					1.05-1.43							0.959-1.050		
374-376	DC	NL			0:00		1.32	2.20			0.000			
					28:12		1.13	10.81	5.73	5.08	0.964			
					28:21		1.34	23.59	13.52	10.07	0.969			
D	d	SN			28:39		1.23	5.75			0.979			
	DC	SN			28:49	RO	0.99	3.20			0.985			
					29:11		1.25	40.06	22.27	17.79	0.997	123478-HxCDF		AN
					29:16		1.22	17.32	9.53	7.79	1.000	123678-HxCDF		AN
	DC	SN			29:22		1.26	5.15			1.003			
D	d	SN			29:36	RO	0.92	7.33			1.011			
					29:46		1.18	23.53	12.73	10.80	1.017	234678-HxCDF		AN
	DC	SN			30:27	RO	0.94	3.40			1.040			
					30:33		1.07	8.69	4.50	4.19	1.044			
	DC	SN			30:38	RO	0.48	0.54			1.047			
374-376					6 Peaks				124.00					

Compound	QC	Log	Omit	Why	RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Ret. RT	Compound.Name	ID	Flags
13C12-HxCDF					0.43-0.59							0.863-1.137		
384-386	DC	NL			0:00	RO	0.78	2.64			0.000			
					28:11	RO	0.92	7.23	4.39	4.79	0.963			
					28:20		0.50	25.63	8.56	17.07	0.968			
					29:10		0.51	4,188.09	1,409.02	2,779.07	0.997	13C12-HxCDF	478	SUR3
					29:16		0.51	4,653.33	1,563.55	3,089.78	1.000	13C12-HxCDF	678	IS4
					29:46		0.50	3,937.59	1,315.35	2,622.24	1.017	13C12-HxCDF	234	ALT2
	DC	SN			29:53		0.54	4.56			1.021			
					30:28		0.51	3,926.39	1,322.93	2,603.46	1.041	13C12-HxCDF	789	ALT1
384-386					6 Peaks				16,738.26					

----- Above: HxCDF / HxCDD Follows -----

Compound	QC	Log	Omit	Why	RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Ret. RT	Compound.Name	ID	Flags
HxCDD					1.05-1.43							0.953-1.014		
390-392	DC	NL			0:00	RO	0.74	1.32			0.000			
	DC	SN			28:38	RO	0.40	0.52			0.956			
D	d	SN			28:43		1.06	6.20			0.958			
					29:10		1.39	34.81	20.22	14.59	0.973			
					29:22		1.25	15.31	8.51	6.80	0.980			
	DC	SN			29:29	RO	0.31	0.69			0.984			
	DC	SN			29:45		1.40	4.83			0.993			
	DC	SN			29:54	RO	0.83	3.69			0.998	123478-HxCDD		AN

Compound/

M_Z	QC	Log	Omit	Why	RT	OK	Ratio	Total Area	Area.P1	Area.P2	Rel. RT	Compound Name	ID	Flags
D	d	SN			29:58	RO	1.50	8.27			1.000	123678-HxCDD	AN	
	DC	SN			30:08	RO	0.57	0.81			1.006			
D	d	SN			30:15	RO	1.00	8.00			1.009	123789-HxCDD	AN	
	DC	WH			30:40	RO	0.68	1.07			1.023			
390-392					2 Peaks			50.12						

13C12-HxCDD		1.05-1.43		0.967-1.033										
402-404	DC	NL	0:00	RO	1.68	3.18					0.000			
			29:23		1.20	21.19	11.58			9.61	0.981			
			29:53		1.21	3,018.32	1,655.53			1,362.79	0.997	13C12-HxCDD	478	SUR4
			29:58		1.23	3,463.09	1,908.78			1,554.31	1.000	13C12-HxCDD	678	IS5
			30:15		1.22	4,165.65	2,290.18			1,875.47	1.009	13C12-HxCDD	789	RS2
402-404			4 Peaks			10,668.25								

----- Above: HxCDD / HpCDF Follows -----

HpCDF		0.88-1.20		0.995-1.042										
408-410	DC	NL	0:00	RO	0.73	2.10					0.000			
			31:55		1.12	51.95	27.50			24.45	1.001	1234678-HpCDF	AN	
			32:08		0.95	15.04	7.32			7.72	1.007			
			32:15	RO	0.79	18.32	9.34			11.76	1.011			
D	d	nh	32:26	RO	1.66	5.37					1.017			
	DC	SN	32:50	RO	2.45	1.67					1.029			
M			33:06		1.14	12.40	6.60			5.80	1.038	1234789-HpCDF	AN	
	DC	WH	33:23		1.05	0.88					1.046			
	DC	WH	33:35	RO	1.29	3.10					1.053			
408-410			4 Peaks			97.71								

13C12-HpCDF		0.37-0.51		0.937-1.125										
418-420	DC	NL	0:00	RO	1.31	1.44					0.000			
			31:54		0.44	2,668.37	811.03			1,857.34	1.000	13C12-HpCDF	678	IS6
			32:05	RO	0.30	8.28	2.53			8.41	1.006			
			32:15		0.46	22.93	7.19			15.74	1.011			
			32:19		0.39	18.35	5.19			13.16	1.013			
			33:05		0.41	2,205.62	645.09			1,560.53	1.037	13C12-HpCDF	789	SUR5
418-420			5 Peaks			4,923.55								

----- Above: HpCDF / HpCDD Follows -----

HpCDD		0.88-1.20		0.977-1.005										
424-426	DC	NL	0:00	RO	1.88	1.49					0.000			
M			32:09		1.14	18.75	10.00			8.75	0.982			
D	d	nh	32:17	RO	1.76	8.51					0.986			
M			32:45		1.08	25.60	13.30			12.30	1.001	1234678-HpCDD	AN	
	DC	WH	33:05	RO	1.63	4.06					1.011			
424-426			2 Peaks			44.35								

13C12-HpCDD		0.88-1.20		0.969-1.031										
436-438	DC	NL	0:00	RO	0.61	2.37					0.000			
			32:09	RO	1.28	26.07	16.32			12.78	0.982			
			32:44		1.02	2,884.79	1,457.94			1,426.85	1.000	13C12-HpCDD	678	IS7
436-438			2 Peaks			2,910.86								

Compound:

M\_Z... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

----- Above: HpCDD / Octa-CDD and CDF Follows -----

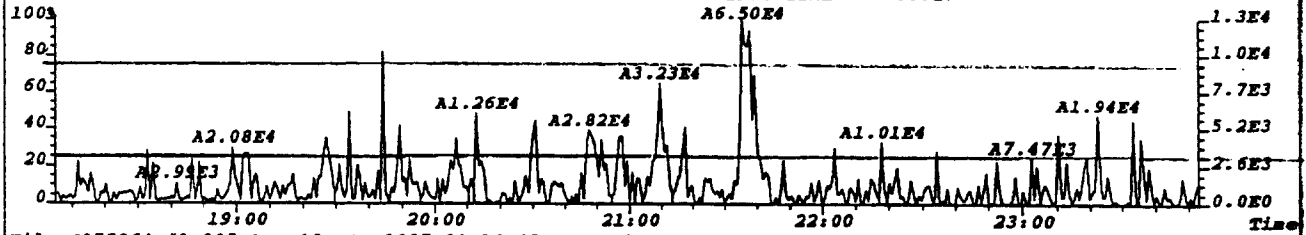
Compound	Retention Time	Ratio	Total Area	Area Peak 1	Area Peak 2	Rel. RT	Compound Name	ID	Flags
OCDF									
0.76-1.02									
442-444	DC NL 0:00	0.88	1.24			0.887-1.113			
	DC SN 31:50 RO	0.37	0.89			0.000			
	DC SN 32:07 RO	1.05	1.98			0.910			
	DC SN 32:18 RO	3.65	0.59			0.915			
	DC SN 33:40 RO	1.03	1.97			0.954			
	DC SN 33:55 RO	1.38	1.23			0.961			
	DC SN 33:58	0.80	1.42			0.963			
	DC SN 34:23 RO	1.12	1.30			0.974			
	DC SN 34:52 RO	0.10	2.06			0.988			
M	35:25	0.88	18.00	8.44	9.56	1.004	OCDF		AN
442-444	1 Peak		18.00						
OCDD									
0.76-1.02									
458-460	DC NL 0:00 RO	0.19	0.28			0.887-1.113			
M	35:18	0.93	16.45	7.91	8.54	1.000	OCDD		AN
	DC SN 35:39 RO	0.52	0.91			1.010			
458-460	1 Peak		16.45						
13C12-OCDD									
0.76-1.02									
470-472	DC NL 0:00	0.92	0.25			0.996-1.005			
	35:17	0.92	2,916.92	1,399.27	1,517.65	1.000	13C12-OCDD		IS8
470-472	1 Peak		2,916.92						

Column Description..... "Why" Code Description..... QC Log Desc.....

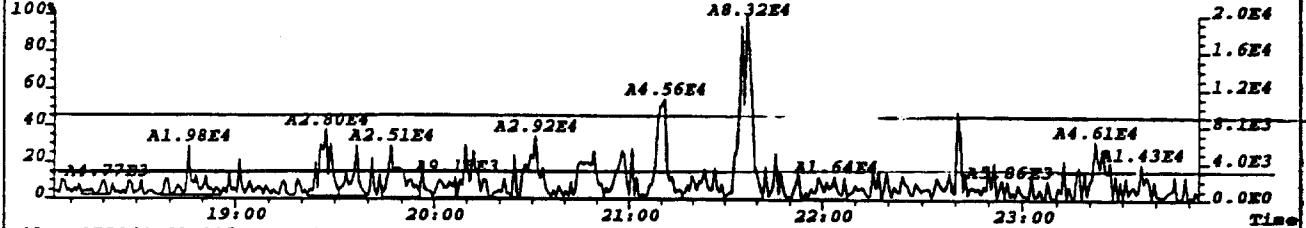
M\_Z -Nominal Ion Mass(es) WL-Below Retention Time Window A-Peak Added  
 ..RT. -Retention Time (mm:ss) WH-Above Retention Time Window K-Peak Kept  
 Rat.1 -Ratio of M/M+2 Ions SN-Below Signal to Noise Level D-Peak Deleted  
 OK -RO=Ratio Outside Limits <M-Below Method Detection Limit T-Time Changed  
 Rel.RT-Relative Retention Time NL-Channel Specific Noise Level M-Peak Area Changed  
 N-Name Changed  
 E-Ether Interference

\*\*\* End of Report \*\*\*

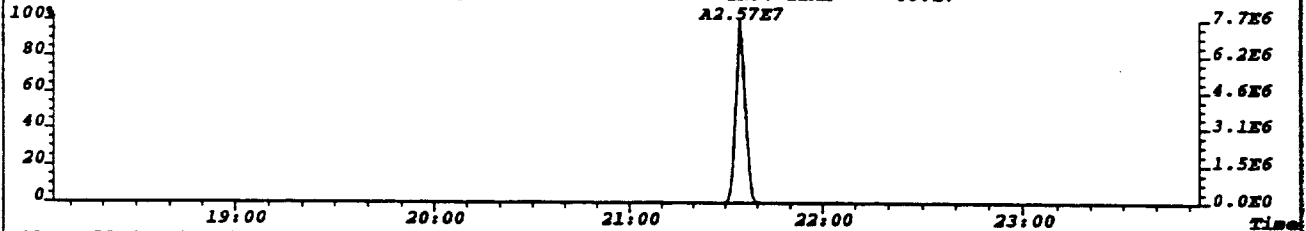
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303.9016 F:2 BSUB(256,30,-3.0) PKD(9,5,5,0.05%,320.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:TLI M23 BLANK TLI#43057R1 INJ. TIME = 00:17



File:S975864 #1-905 Acq:13-SEP-1997 00:14:42 EI+ Voltage SIR 70S Noise:253  
305.8987 F:2 BSUB(256,30,-3.0) PKD(9,5,5,0.05%,1012.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:TLI M23 BLANK TLI#43057R1 INJ. TIME = 00:17



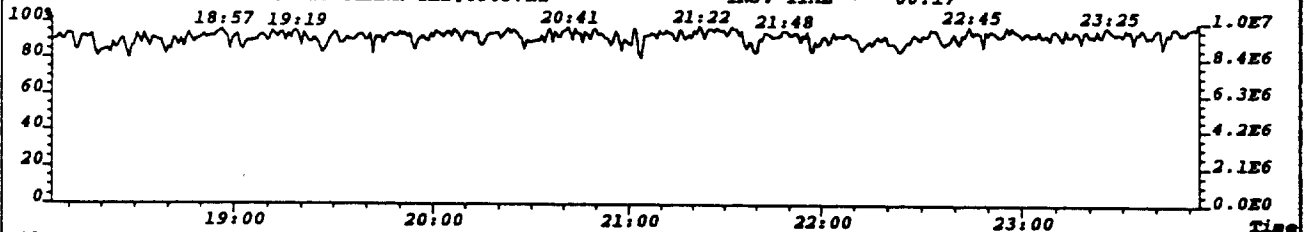
File:S975864 #1-905 Acq:13-SEP-1997 00:14:42 EI+ Voltage SIR 70S Noise:292  
315.9419 F:2 BSUB(256,30,-3.0) PKD(9,5,5,0.05%,1168.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:TLI M23 BLANK TLI#43057R1 INJ. TIME = 00:17



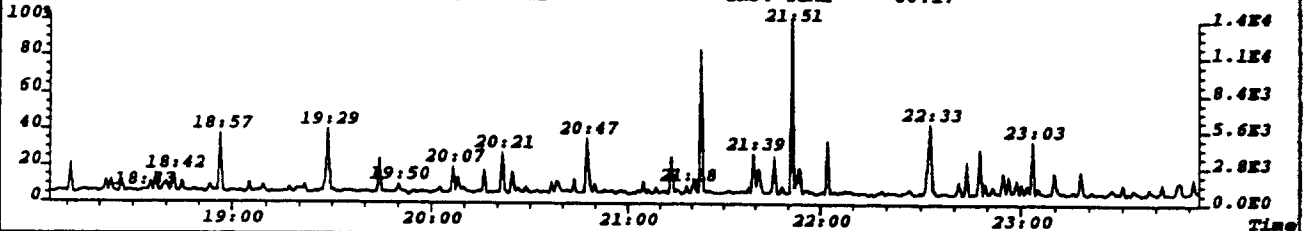
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317.9389 F:2 BSUB(256,30,-3.0) PKD(9,5,5,0.05%,1280.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:TLI M23 BLANK TLI#43057R1 INJ. TIME = 00:17



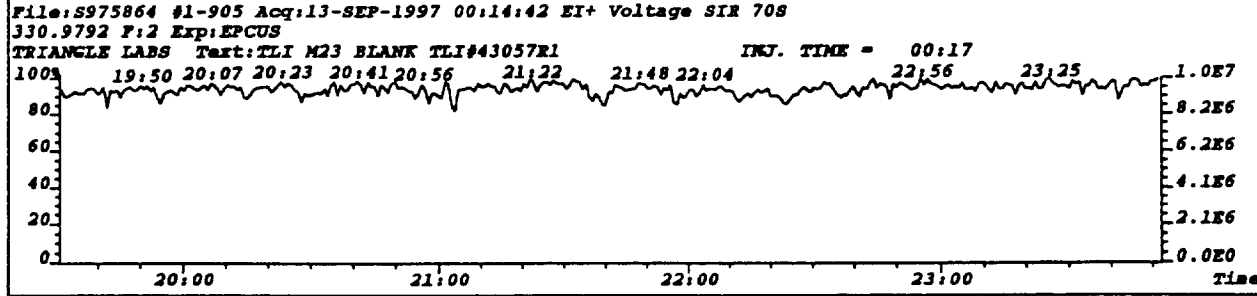
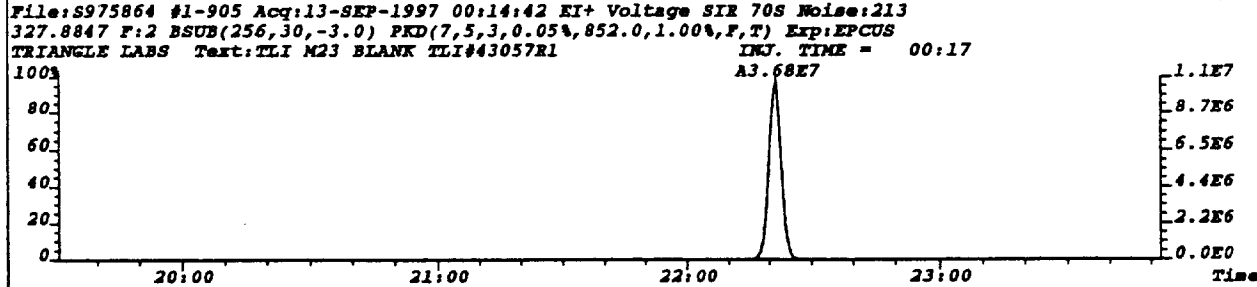
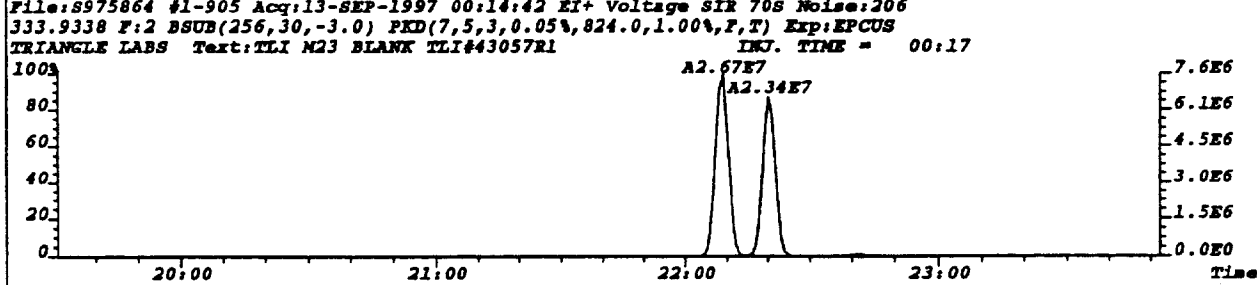
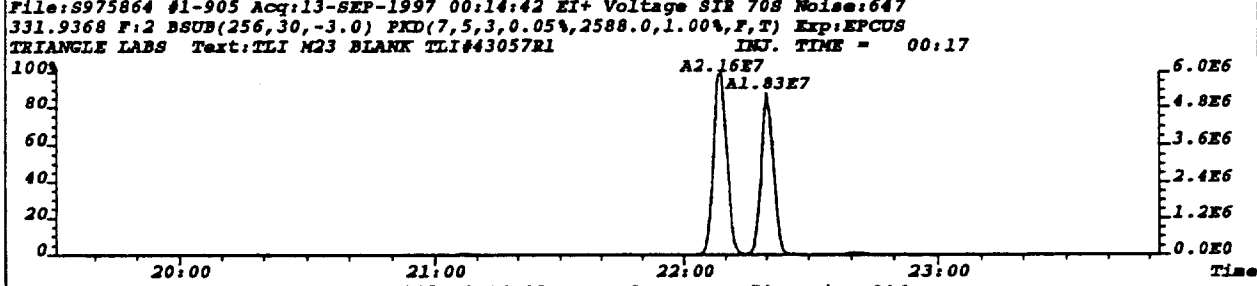
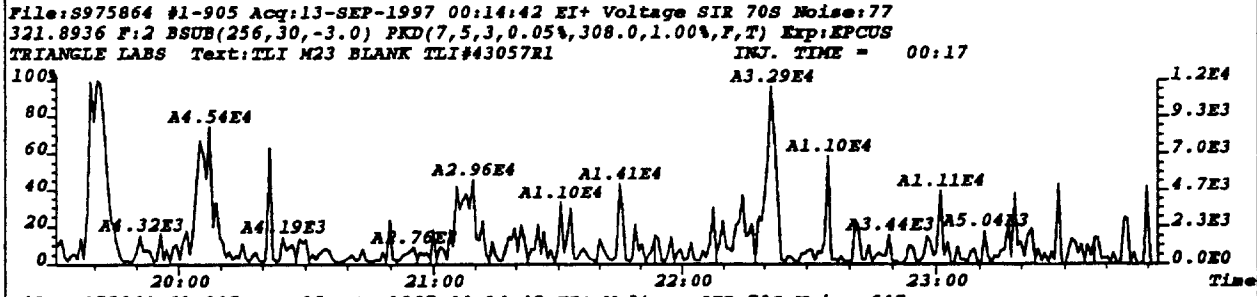
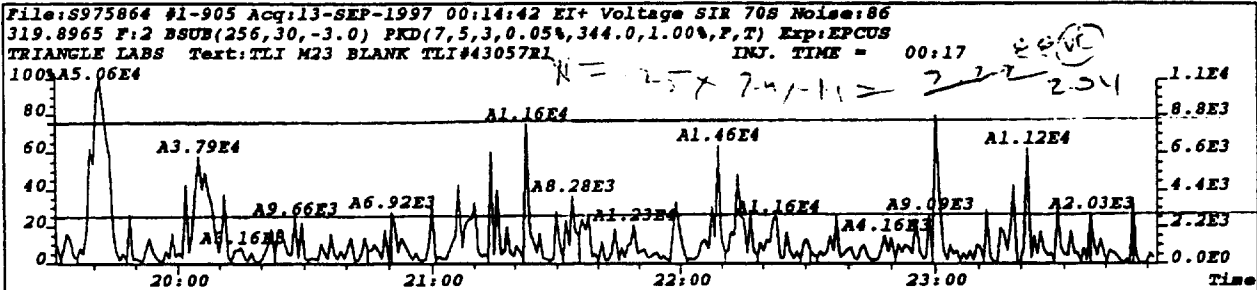
File:S975864 #1-905 Acq:13-SEP-1997 00:14:42 EI+ Voltage SIR 70S  
330.9792 F:2 Exp:EPCUS  
TRIANGLE LABS Text:TLI M23 BLANK TLI#43057R1 INJ. TIME = 00:17



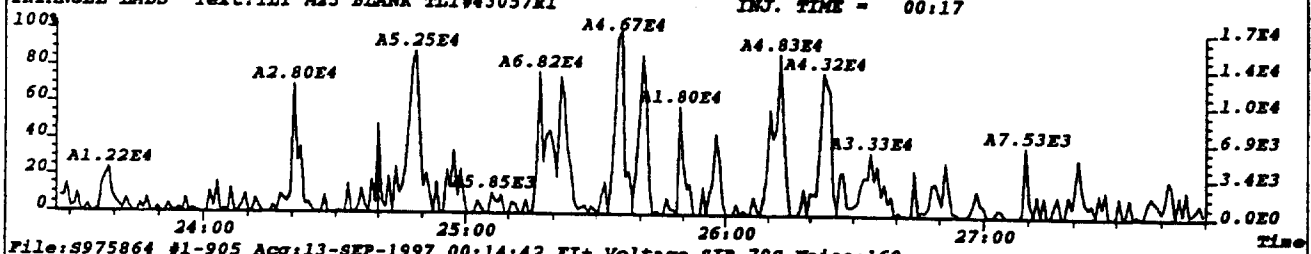
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375.8364 F:2 Exp:EPCUS  
TRIANGLE LABS Text:TLI M23 BLANK TLI#43057R1 INJ. TIME = 00:17



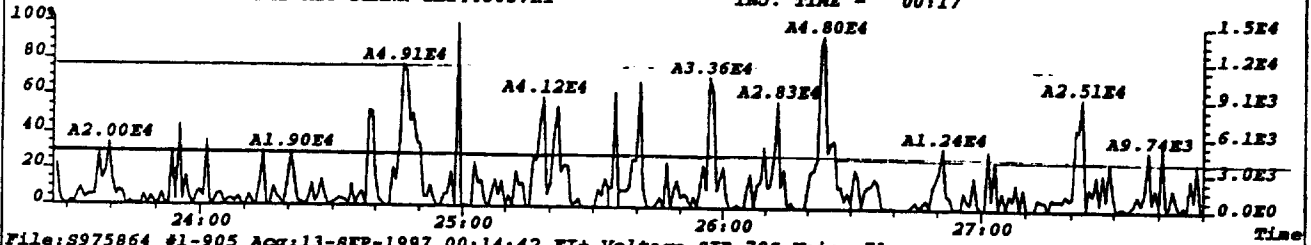




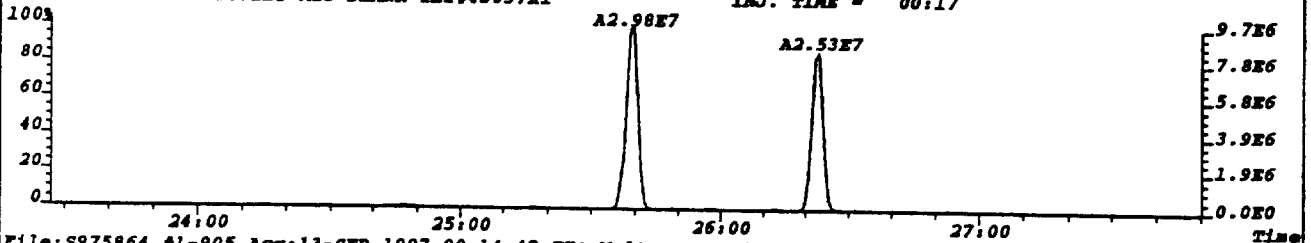
File: S975864 #1-905 Acq: 13-SEP-1997 00:14:42 EI+ Voltage SIR 708 Noise: 98  
 339.8597 F: 2 BSUB(256, 30, -3.0) PKD(7, 5, 3, 0.05%, 392.0, 1.00%, F, T) Exp: EPCUS  
 TRIANGLE LABS Text: TLI M23 BLANK TLI#43057R1 INJ. TIME = 00:17



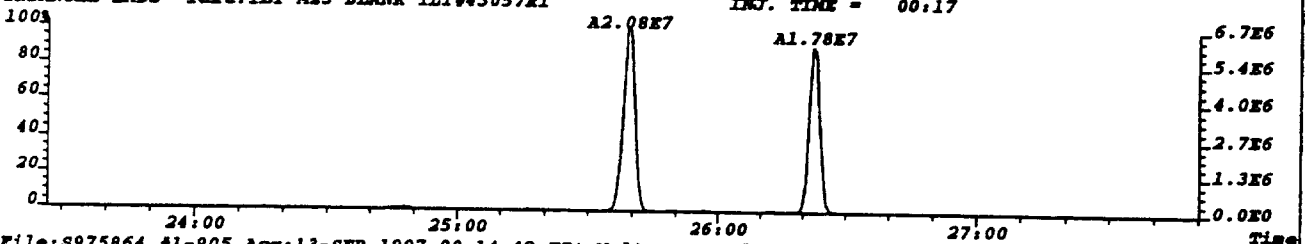
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 341.8567 F: 2 BSUB(256, 30, -3.0) PKD(7, 5, 3, 0.05%, 676.0, 1.00%, F, T) Exp: EPCUS  
 TRIANGLE LABS Text: TLI M23 BLANK TLI#43057R1 INJ. TIME = 00:17



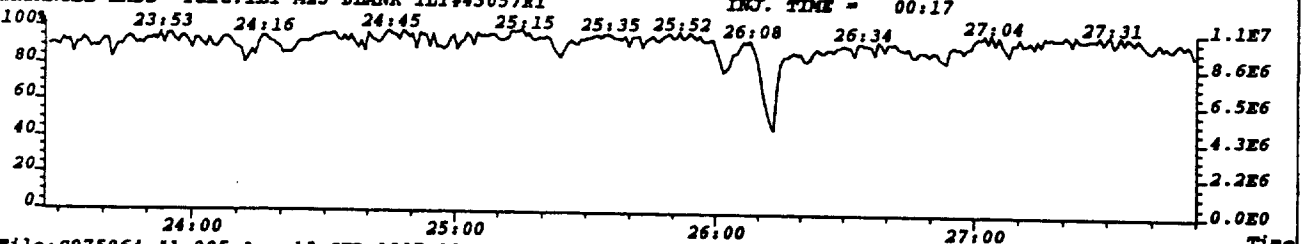
File: S975864 #1-905 Acq: 13-SEP-1997 00:14:42 EI+ Voltage SIR 708 Noise: 71  
 351.9000 F: 2 BSUB(256, 30, -3.0) PKD(7, 5, 3, 0.05%, 284.0, 1.00%, F, T) Exp: EPCUS  
 TRIANGLE LABS Text: TLI M23 BLANK TLI#43057R1 INJ. TIME = 00:17



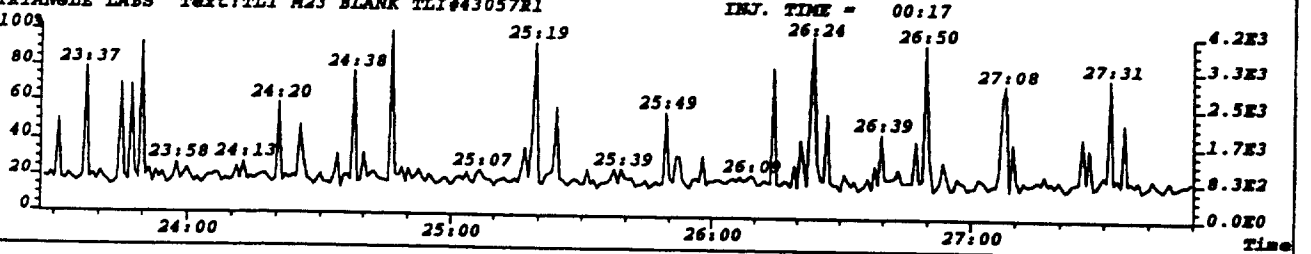
File: S975864 #1-905 Acq: 13-SEP-1997 00:14:42 EI+ Voltage SIR 708 Noise: 83  
 353.8970 F: 2 BSUB(256, 30, -3.0) PKD(7, 5, 3, 0.05%, 332.0, 1.00%, F, T) Exp: EPCUS  
 TRIANGLE LABS Text: TLI M23 BLANK TLI#43057R1 INJ. TIME = 00:17



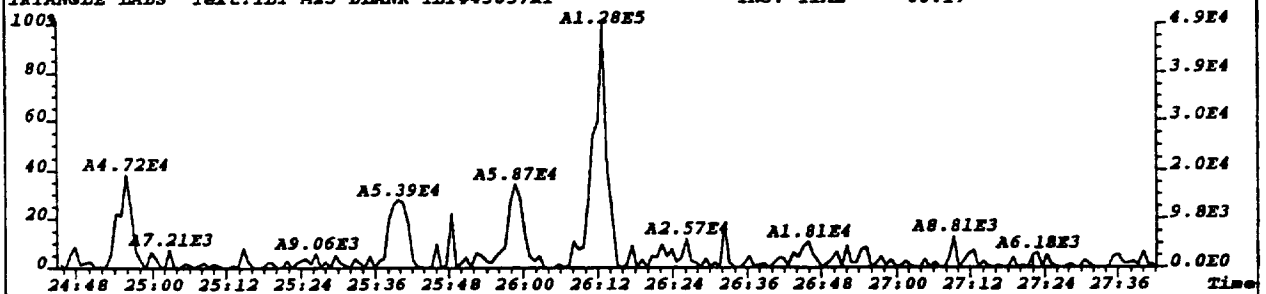
File: S975864 #1-905 Acq: 13-SEP-1997 00:14:42 EI+ Voltage SIR 708  
 330.9792 F: 2 Exp: EPCUS  
 TRIANGLE LABS Text: TLI M23 BLANK TLI#43057R1 INJ. TIME = 00:17



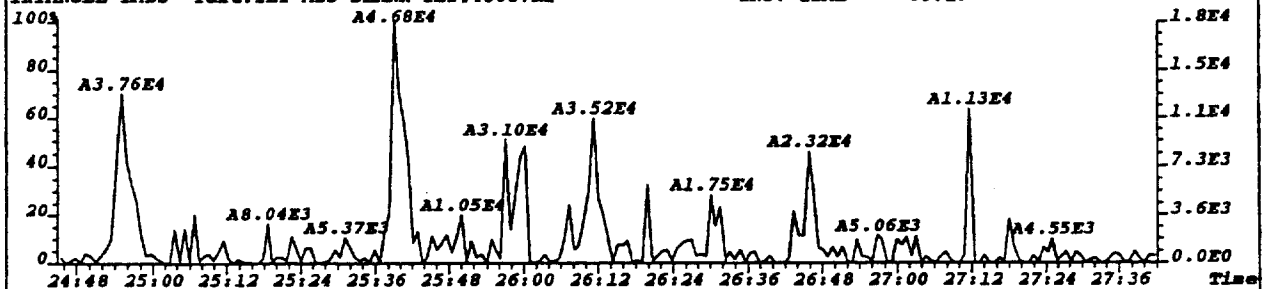
File: S975864 #1-905 Acq: 13-SEP-1997 00:14:42 EI+ Voltage SIR 708  
 409.7974 F: 2 Exp: EPCUS  
 TRIANGLE LABS Text: TLI M23 BLANK TLI#43057R1 INJ. TIME = 00:17



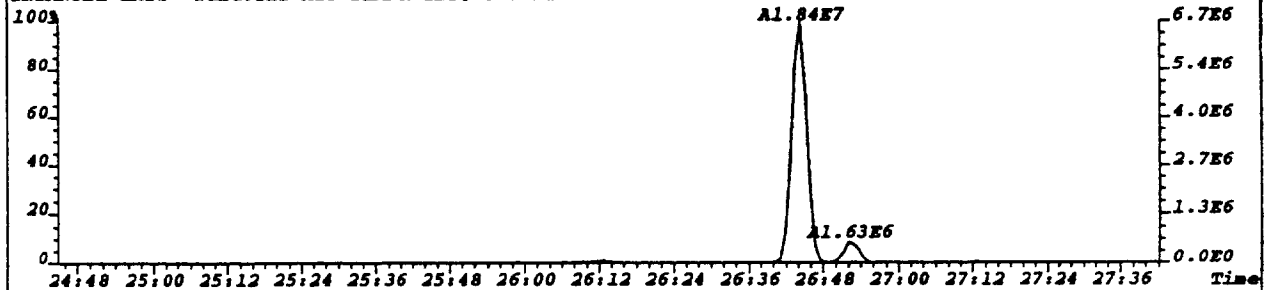
File:S975864 #1-905 Acq:13-SEP-1997 00:14:42 EI+ Voltage SIR 708 Noise:54  
355.8546 F:2 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,216.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:TLI M23 BLANK TLI#43057R1 INJ. TIME = 00:17



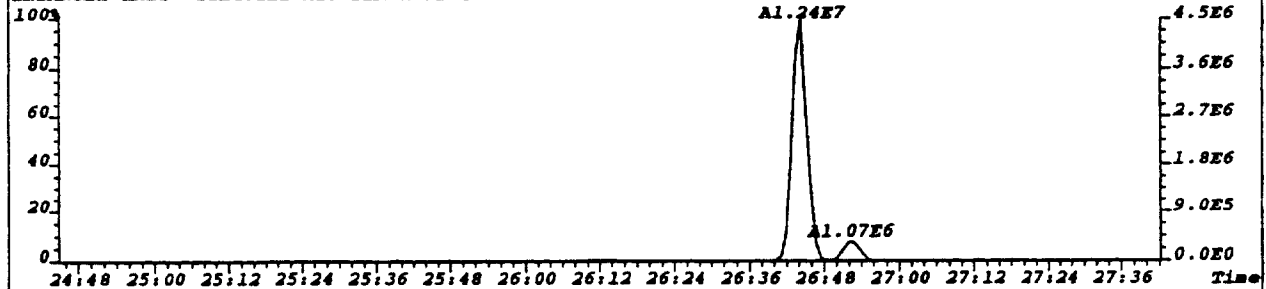
File:S975864 #1-905 Acq:13-SEP-1997 00:14:42 EI+ Voltage SIR 708 Noise:52  
357.8516 F:2 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,208.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:TLI M23 BLANK TLI#43057R1 INJ. TIME = 00:17



File:S975864 #1-905 Acq:13-SEP-1997 00:14:42 EI+ Voltage SIR 708 Noise:64  
367.8949 F:2 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,256.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:TLI M23 BLANK TLI#43057R1 INJ. TIME = 00:17



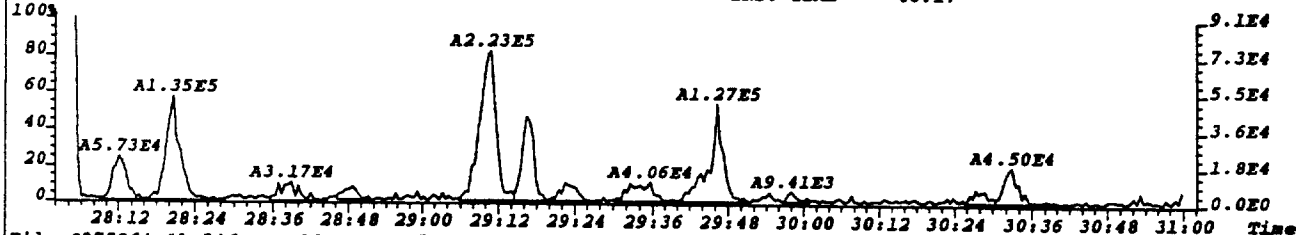
File:S975864 #1-905 Acq:13-SEP-1997 00:14:42 EI+ Voltage SIR 708 Noise:65  
369.8919 F:2 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,260.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:TLI M23 BLANK TLI#43057R1 INJ. TIME = 00:17



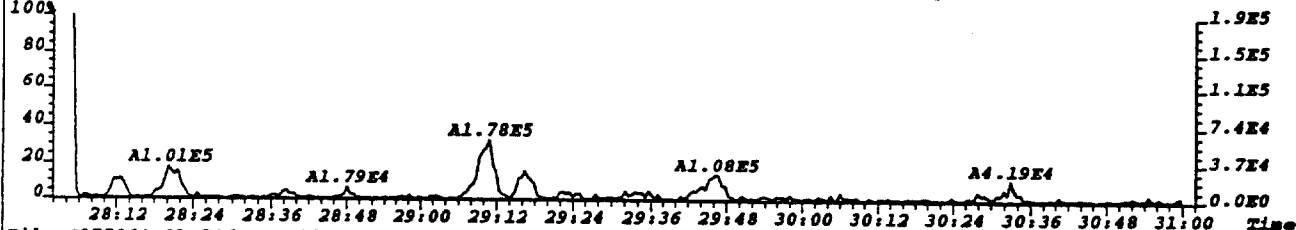
File:S975864 #1-905 Acq:13-SEP-1997 00:14:42 EI+ Voltage SIR 708  
330.9792 F:2 Exp:EPCUS  
TRIANGLE LABS Text:TLI M23 BLANK TLI#43057R1 INJ. TIME = 00:17



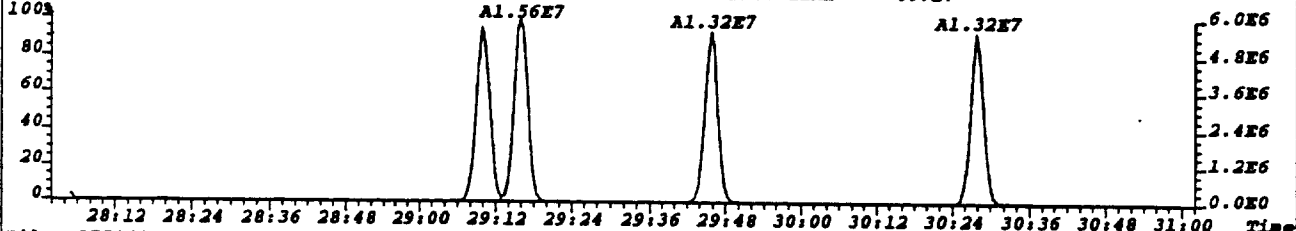
File:S975864 #1-346 Acq:13-SEP-1997 00:14:42 EI+ Voltage SIR 708 Noise:624  
373.8208 F:3 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,2496.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:TLI M23 BLANK TLI#43057R1 INJ. TIME = 00:17



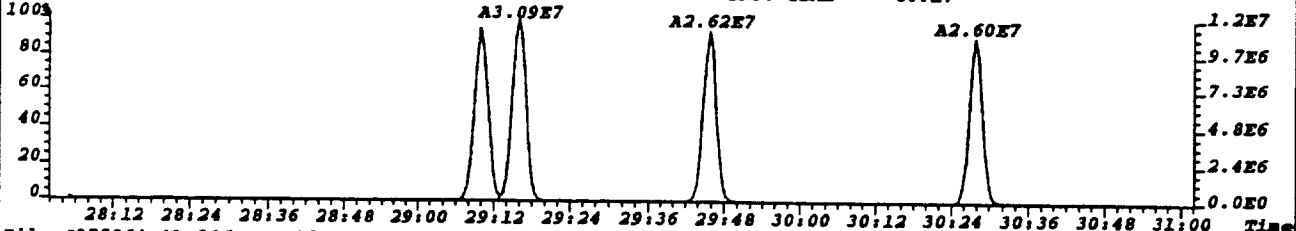
File:S975864 #1-346 Acq:13-SEP-1997 00:14:42 EI+ Voltage SIR 708 Noise:474  
375.8178 F:3 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,1896.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:TLI M23 BLANK TLI#43057R1 INJ. TIME = 00:17



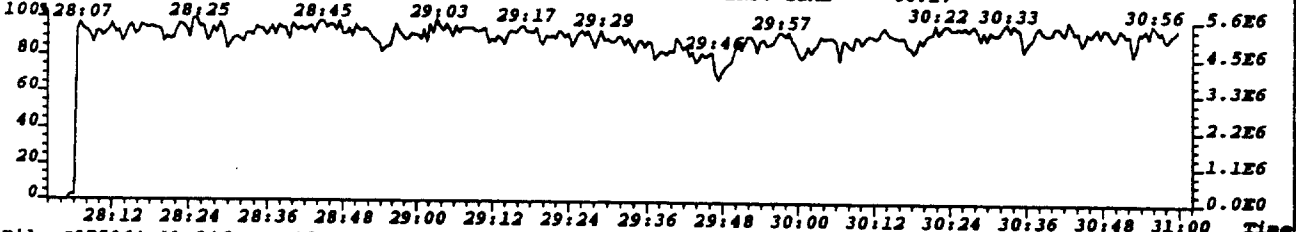
File:S975864 #1-346 Acq:13-SEP-1997 00:14:42 EI+ Voltage SIR 708 Noise:682  
383.8619 F:3 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,2728.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:TLI M23 BLANK TLI#43057R1 INJ. TIME = 00:17



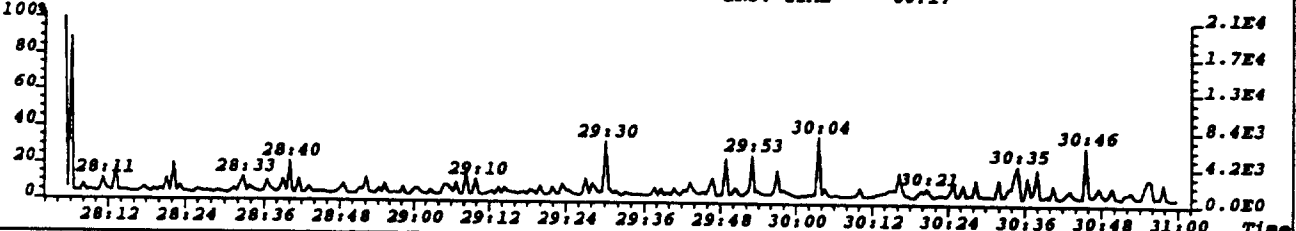
File:S975864 #1-346 Acq:13-SEP-1997 00:14:42 EI+ Voltage SIR 708 Noise:875  
385.8610 F:3 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,3500.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:TLI M23 BLANK TLI#43057R1 INJ. TIME = 00:17



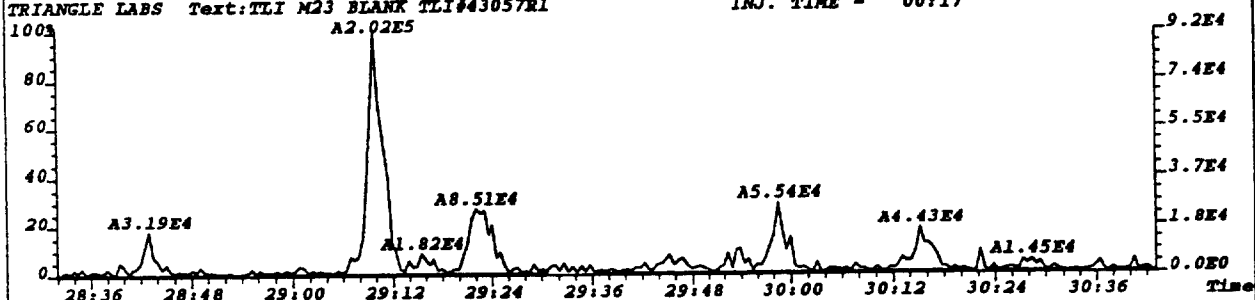
File:S975864 #1-346 Acq:13-SEP-1997 00:14:42 EI+ Voltage SIR 708 Noise:875  
392.9760 F:3 Exp:EPCUS  
TRIANGLE LABS Text:TLI M23 BLANK TLI#43057R1 INJ. TIME = 00:17



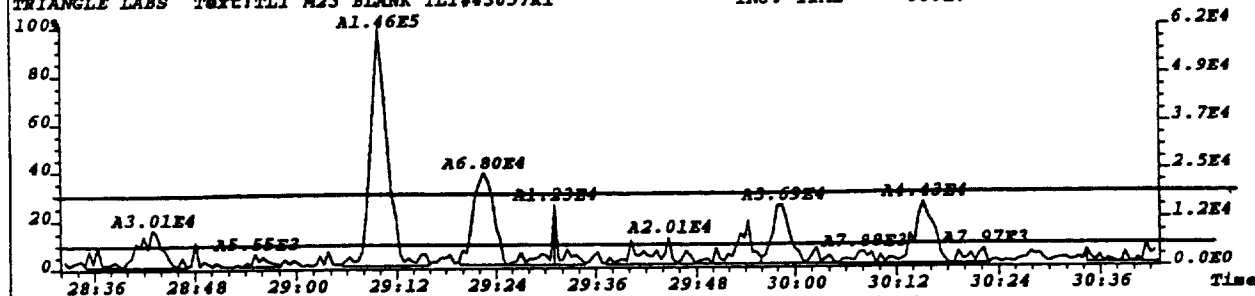
File:S975864 #1-346 Acq:13-SEP-1997 00:14:42 EI+ Voltage SIR 708 Noise:875  
445.7555 F:3 Exp:EPCUS  
TRIANGLE LABS Text:TLI M23 BLANK TLI#43057R1 INJ. TIME = 00:17



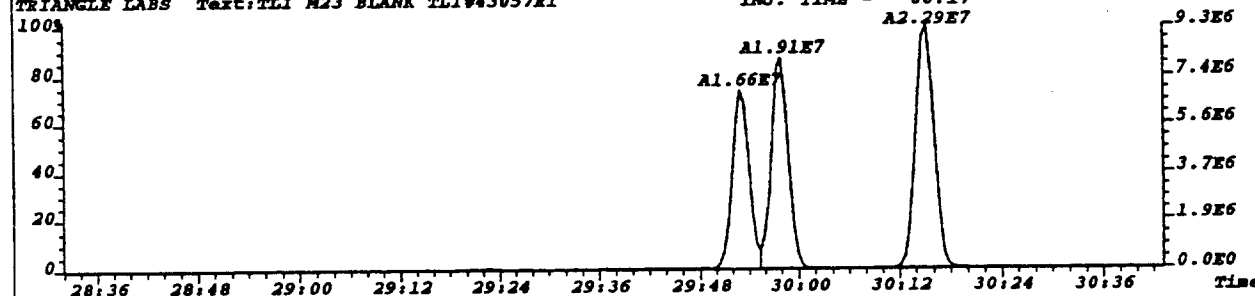
File:S975864 #1-346 Acq:13-SEP-1997 00:14:42 EI+ Voltage SIR 70S Noise:366  
389.8156 F:3 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,1464.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:TLI M23 BLANK TLI#43057R1 INJ. TIME = 00:17



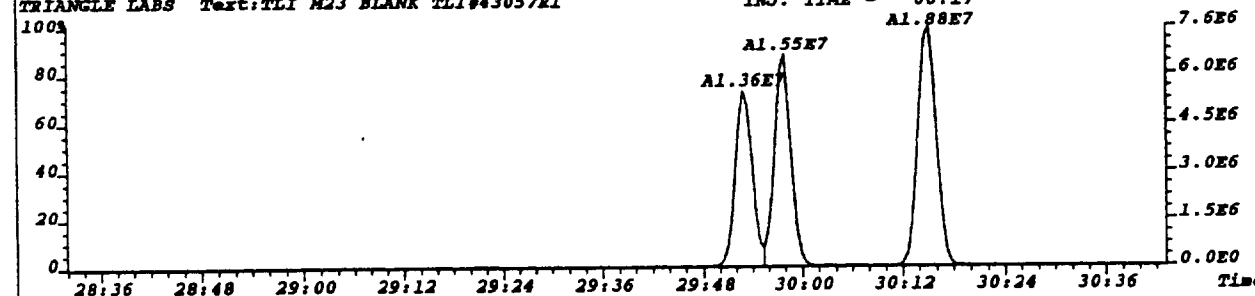
File:S975864 #1-346 Acq:13-SEP-1997 00:14:42 EI+ Voltage SIR 70S Noise:490  
391.8127 F:3 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,1960.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:TLI M23 BLANK TLI#43057R1 INJ. TIME = 00:17



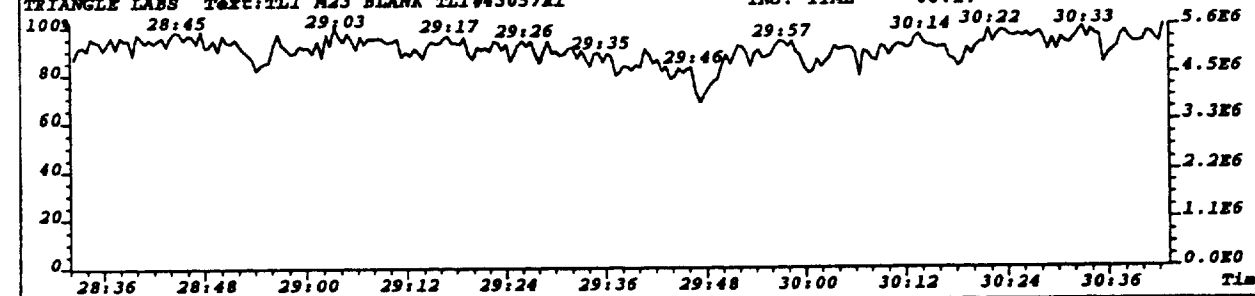
File:S975864 #1-346 Acq:13-SEP-1997 00:14:42 EI+ Voltage SIR 70S Noise:1188  
401.8558 F:3 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,4752.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:TLI M23 BLANK TLI#43057R1 INJ. TIME = 00:17



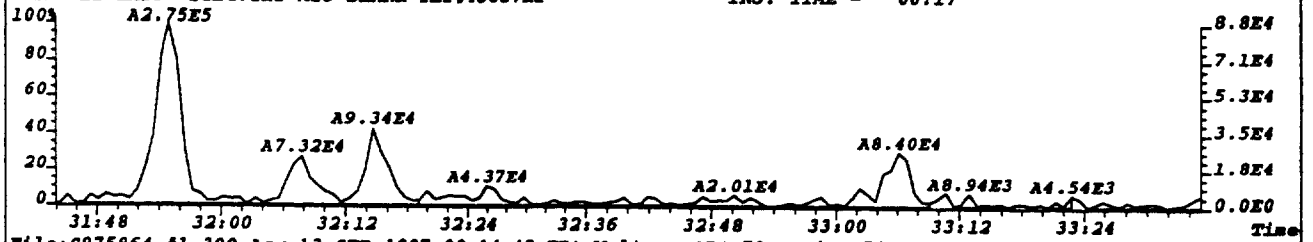
File:S975864 #1-346 Acq:13-SEP-1997 00:14:42 EI+ Voltage SIR 70S Noise:712  
403.8529 F:3 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,2848.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:TLI M23 BLANK TLI#43057R1 INJ. TIME = 00:17



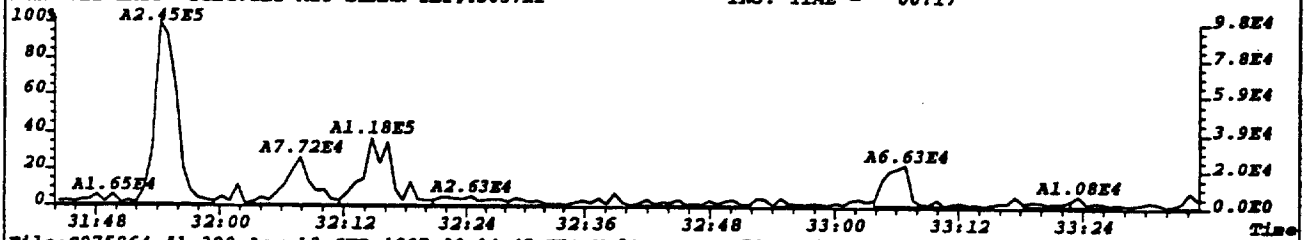
File:S975864 #1-346 Acq:13-SEP-1997 00:14:42 EI+ Voltage SIR 70S  
392.9760 F:3 Exp:EPCUS  
TRIANGLE LABS Text:TLI M23 BLANK TLI#43057R1 INJ. TIME = 00:17



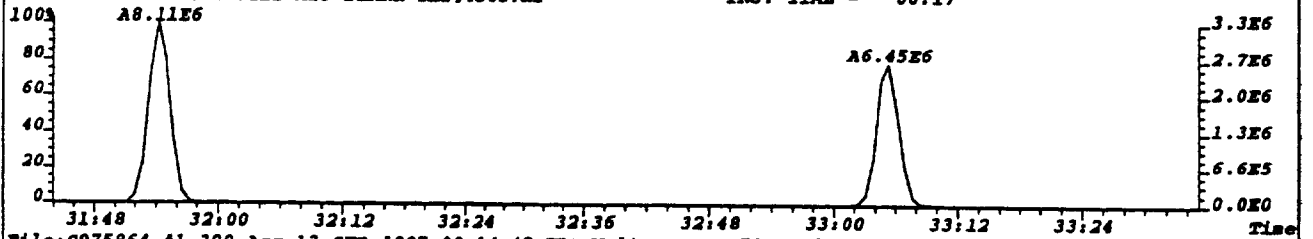
File: S975864 #1-390 Acq: 13-SEP-1997 00:14:42 EI+ Voltage SIR 708 Noise: 533  
407.7818 F: 4 BSUB(256, 30, -3.0) PKD(7, 5, 3, 0.05%, 2132.0, 1.00%, F, T) Exp: EPCUS  
TRIANGLE LABS Text: TLI M23 BLANK TLI#43057R1 INJ. TIME = 00:17



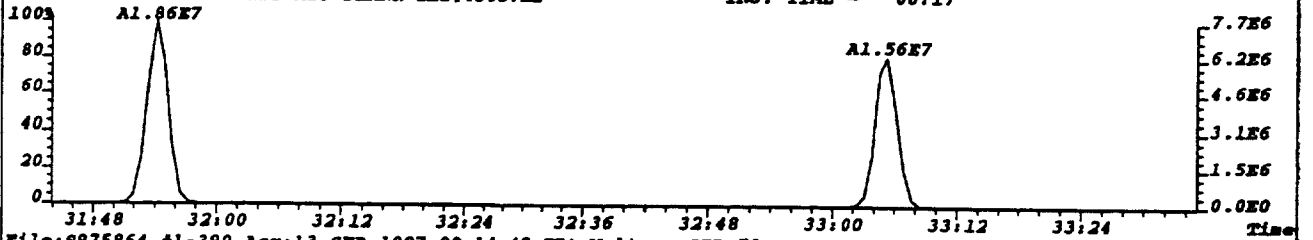
File: S975864 #1-390 Acq: 13-SEP-1997 00:14:42 EI+ Voltage SIR 708 Noise: 730  
409.7789 F: 4 BSUB(256, 30, -3.0) PKD(7, 5, 3, 0.05%, 2920.0, 1.00%, F, T) Exp: EPCUS  
TRIANGLE LABS Text: TLI M23 BLANK TLI#43057R1 INJ. TIME = 00:17



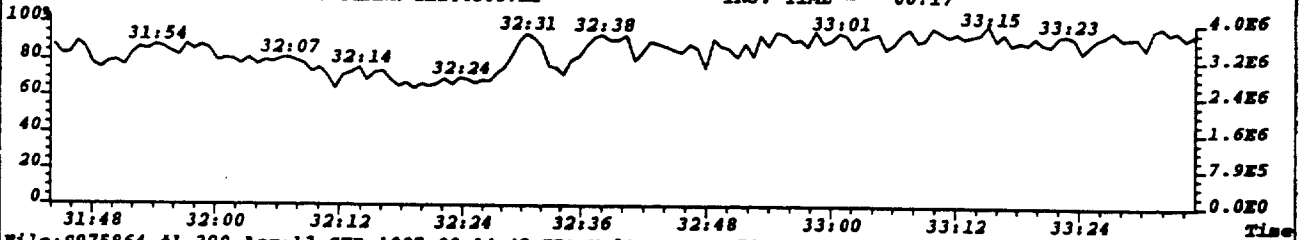
File: S975864 #1-390 Acq: 13-SEP-1997 00:14:42 EI+ Voltage SIR 708 Noise: 656  
417.8253 F: 4 BSUB(256, 30, -3.0) PKD(7, 5, 3, 0.05%, 2624.0, 1.00%, F, T) Exp: EPCUS  
TRIANGLE LABS Text: TLI M23 BLANK TLI#43057R1 INJ. TIME = 00:17



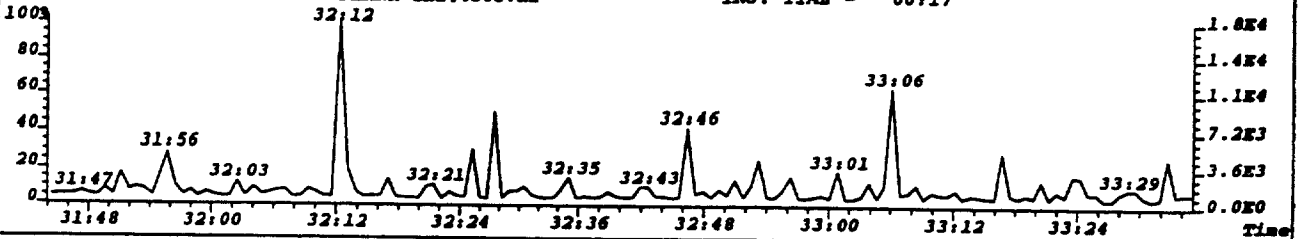
File: S975864 #1-390 Acq: 13-SEP-1997 00:14:42 EI+ Voltage SIR 708 Noise: 498  
419.8220 F: 4 BSUB(256, 30, -3.0) PKD(7, 5, 3, 0.05%, 1992.0, 1.00%, F, T) Exp: EPCUS  
TRIANGLE LABS Text: TLI M23 BLANK TLI#43057R1 INJ. TIME = 00:17

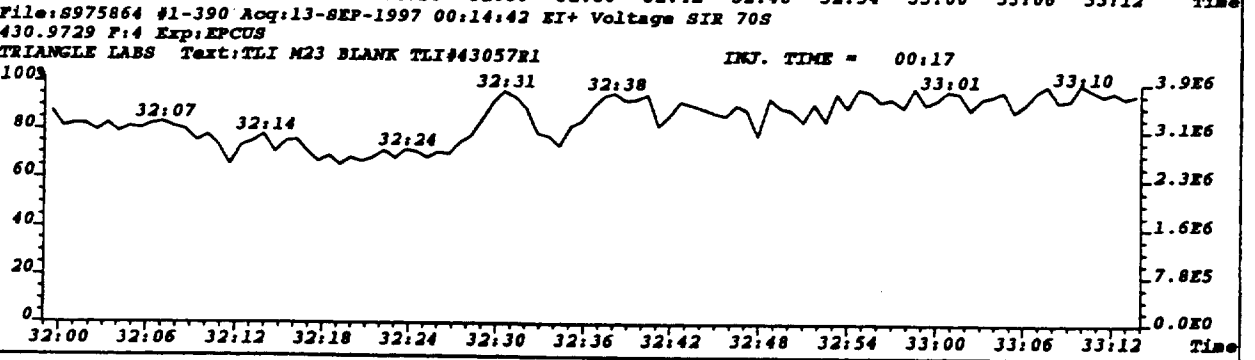
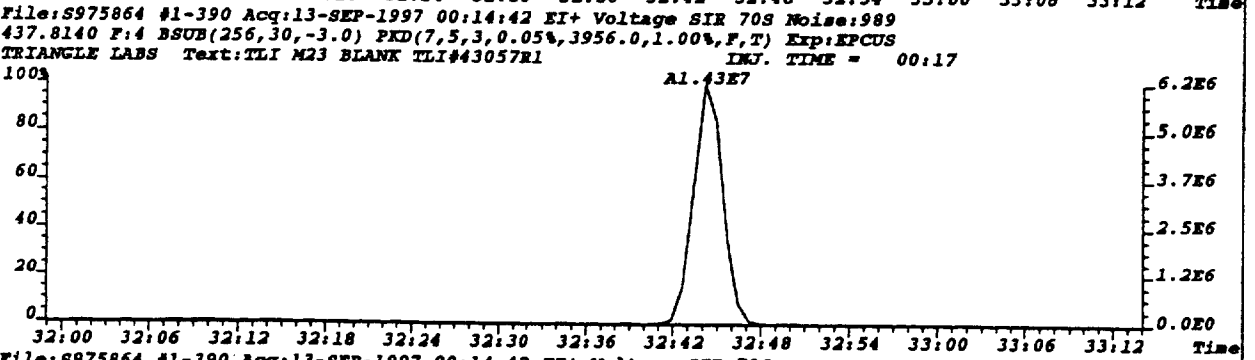
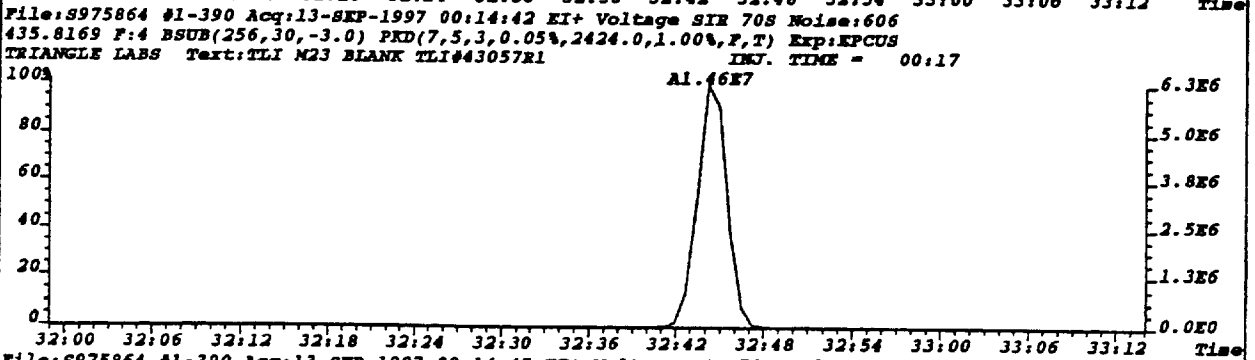
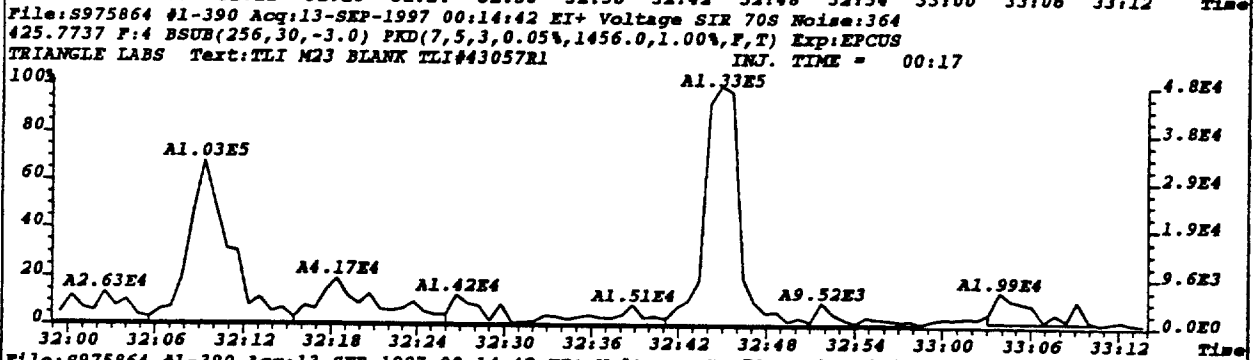
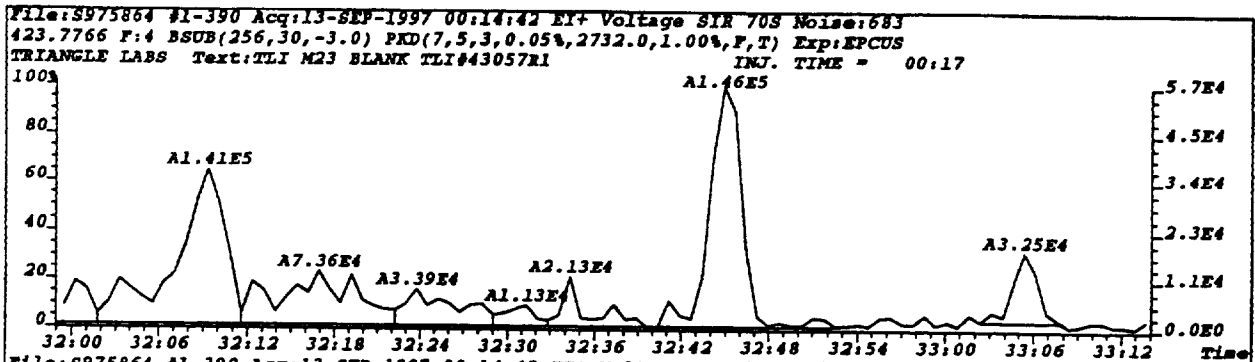


File: S975864 #1-390 Acq: 13-SEP-1997 00:14:42 EI+ Voltage SIR 708  
430.9729 F: 4 Exp: EPCUS  
TRIANGLE LABS Text: TLI M23 BLANK TLI#43057R1 INJ. TIME = 00:17

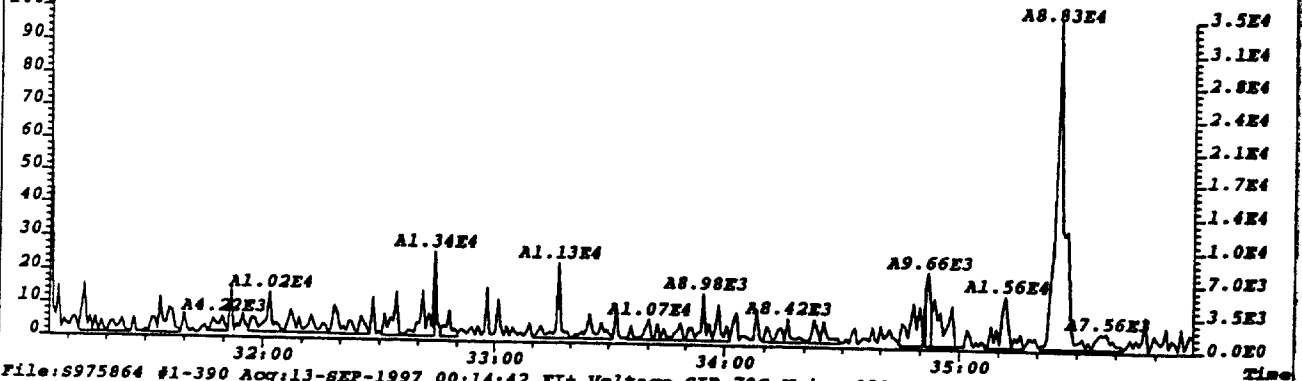


File: S975864 #1-390 Acq: 13-SEP-1997 00:14:42 EI+ Voltage SIR 708  
479.7165 F: 4 Exp: EPCUS  
TRIANGLE LABS Text: TLI M23 BLANK TLI#43057R1 INJ. TIME = 00:17

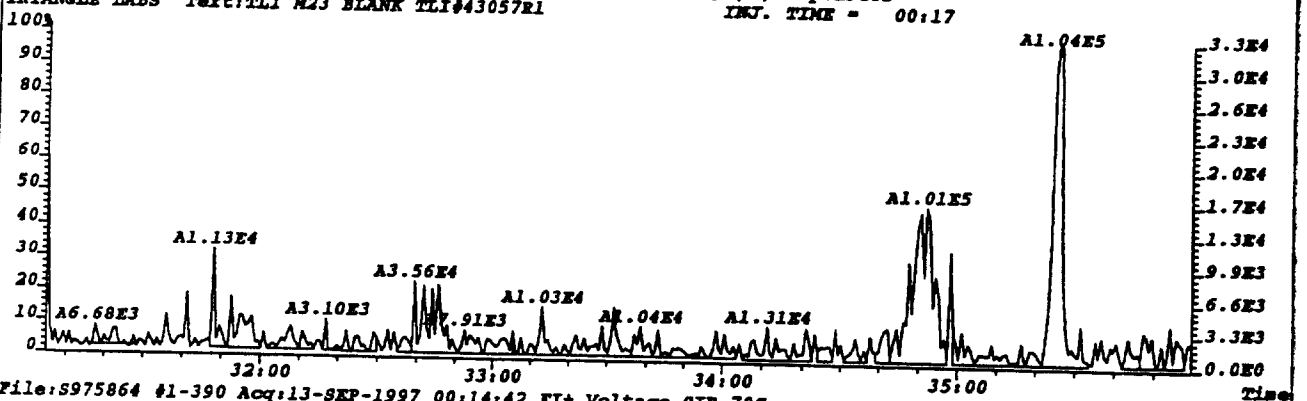




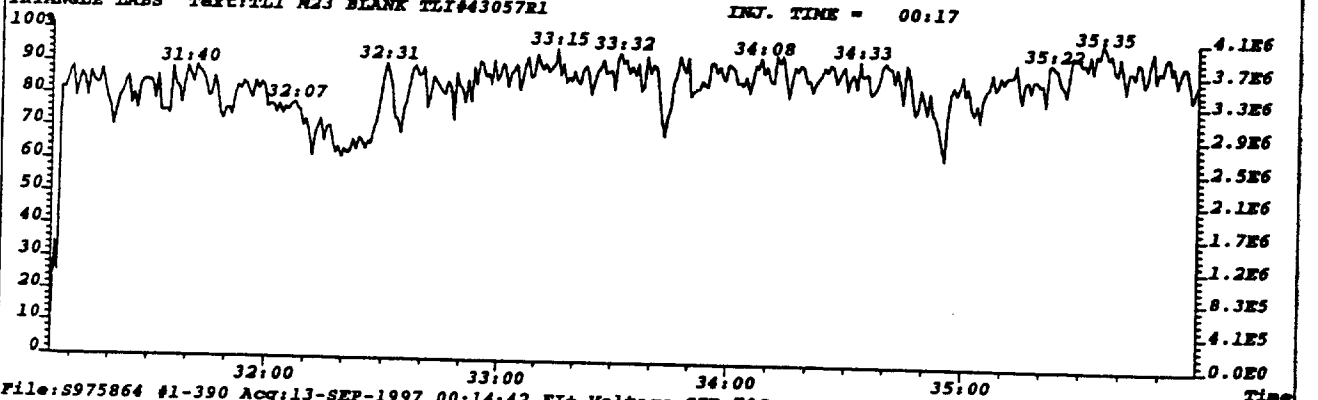
File: S975864 #1-390 Acq: 13-SEP-1997 00:14:42 EI+ Voltage SIR 70S Noise: 288  
441.7428 F: 4 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,1152.0,1.00%,F,T) Exp: EPCUS  
TRIANGLE LABS Text: TLI M23 BLANK TLI#43057R1 INJ. TIME = 00:17



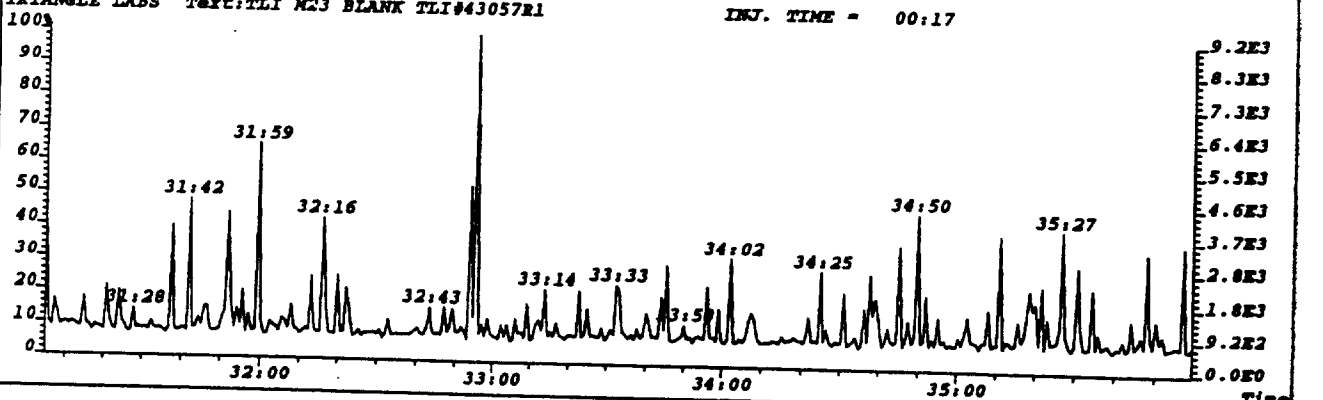
File: S975864 #1-390 Acq: 13-SEP-1997 00:14:42 EI+ Voltage SIR 70S Noise: 328  
443.7399 F: 4 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,1312.0,1.00%,F,T) Exp: EPCUS  
TRIANGLE LABS Text: TLI M23 BLANK TLI#43057R1 INJ. TIME = 00:17



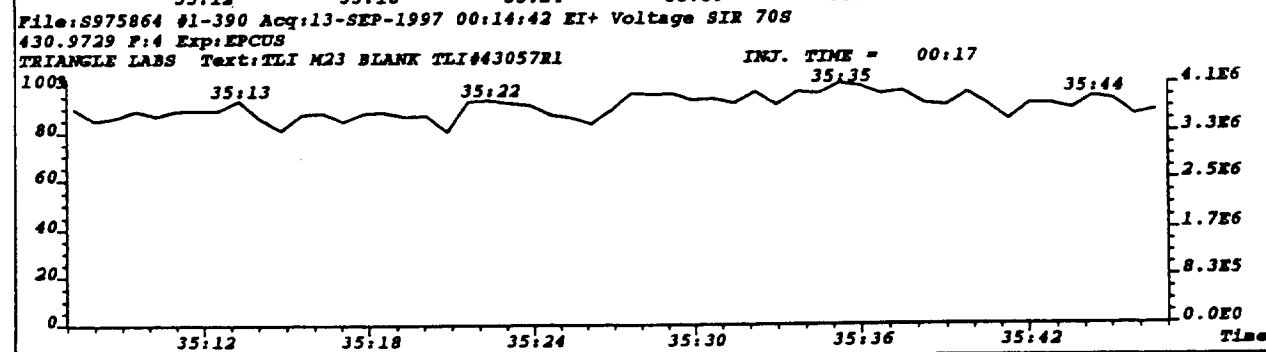
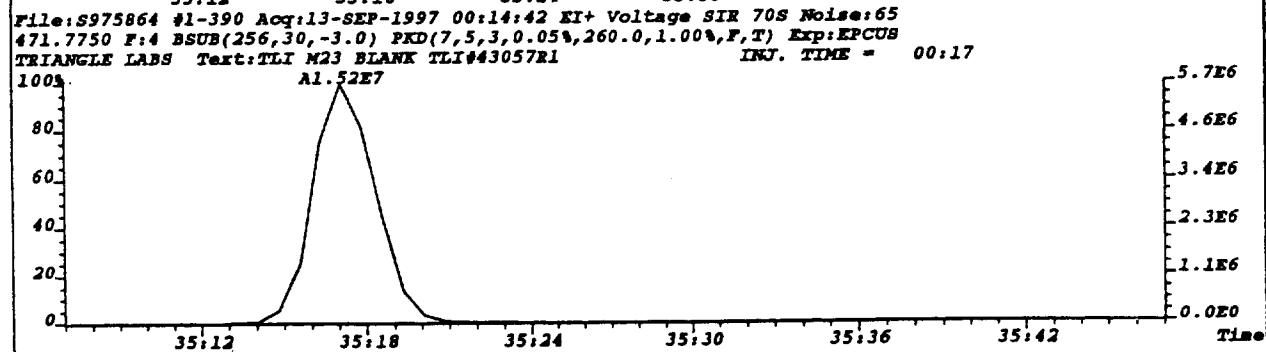
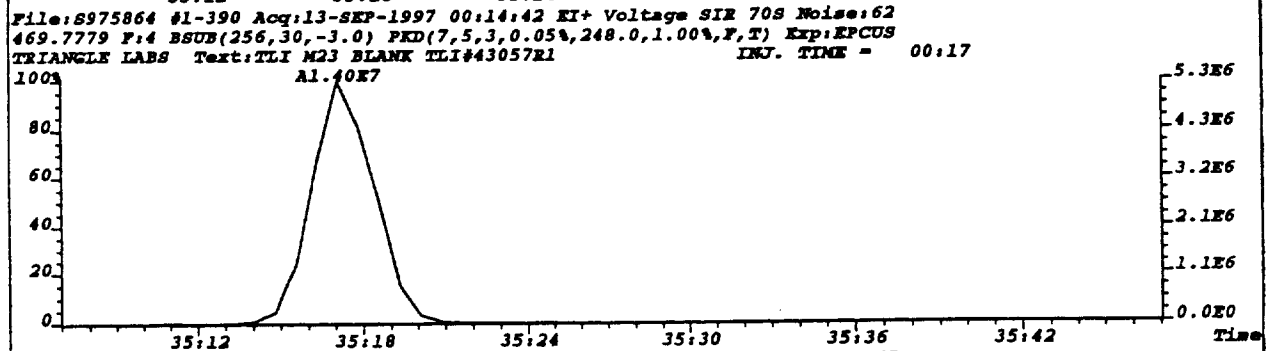
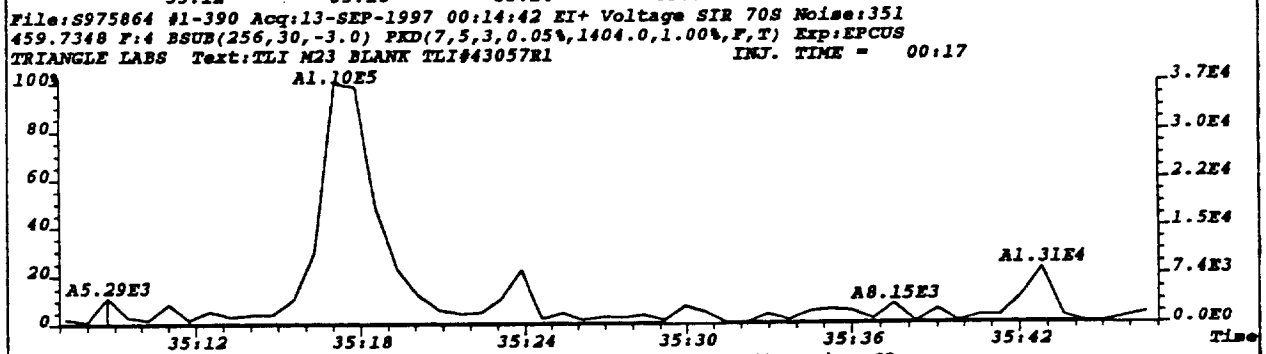
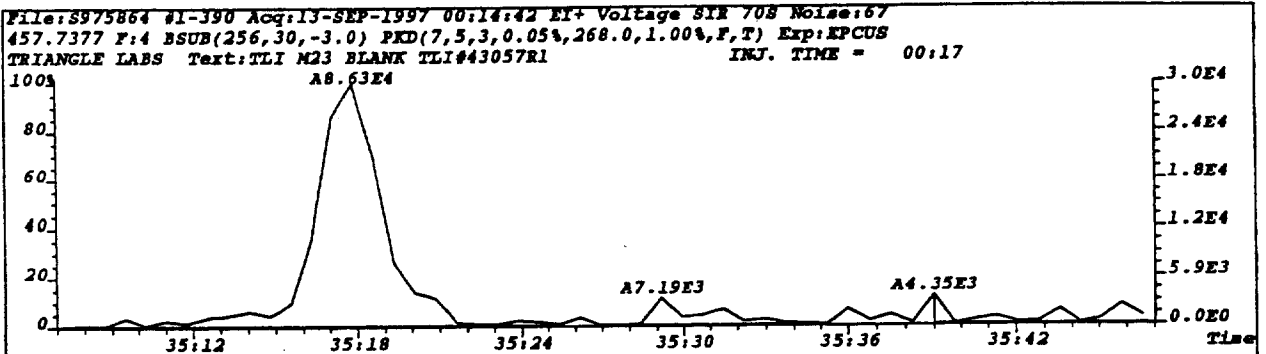
File: S975864 #1-390 Acq: 13-SEP-1997 00:14:42 EI+ Voltage SIR 70S  
430.9729 F: 4 Exp: EPCUS  
TRIANGLE LABS Text: TLI M23 BLANK TLI#43057R1 INJ. TIME = 00:17



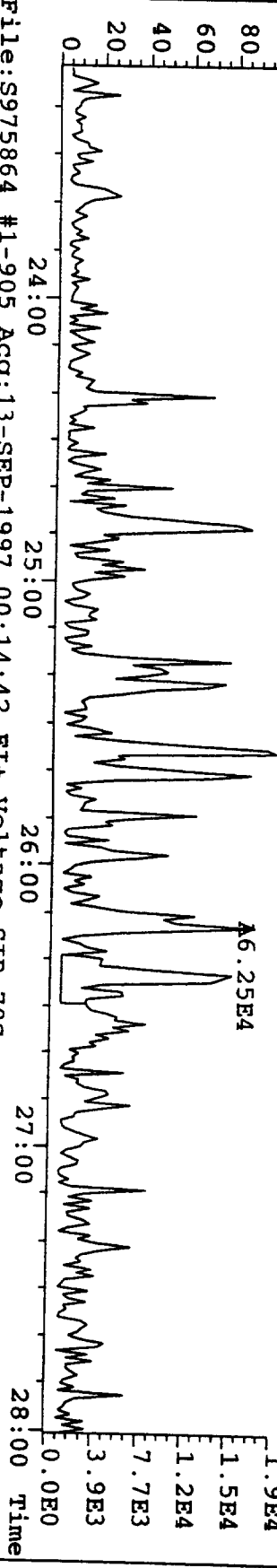
File: S975864 #1-390 Acq: 13-SEP-1997 00:14:42 EI+ Voltage SIR 70S  
513.6775 F: 4 Exp: EPCUS  
TRIANGLE LABS Text: TLI M23 BLANK TLI#43057R1 INJ. TIME = 00:17



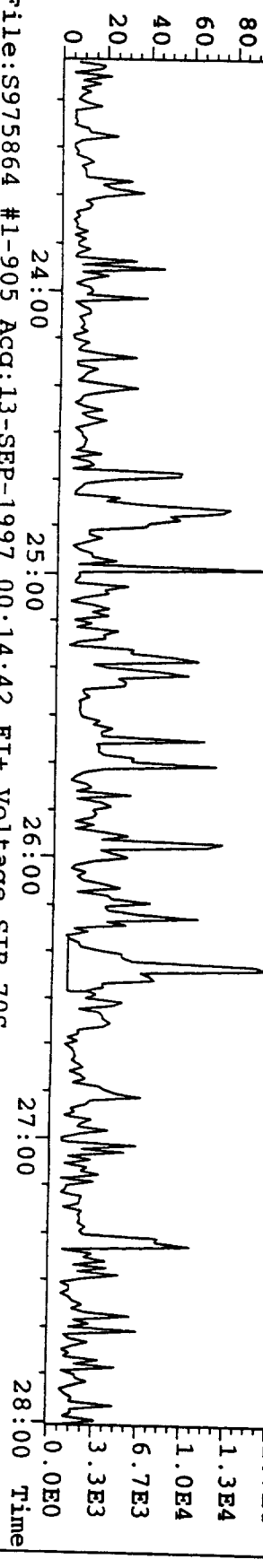




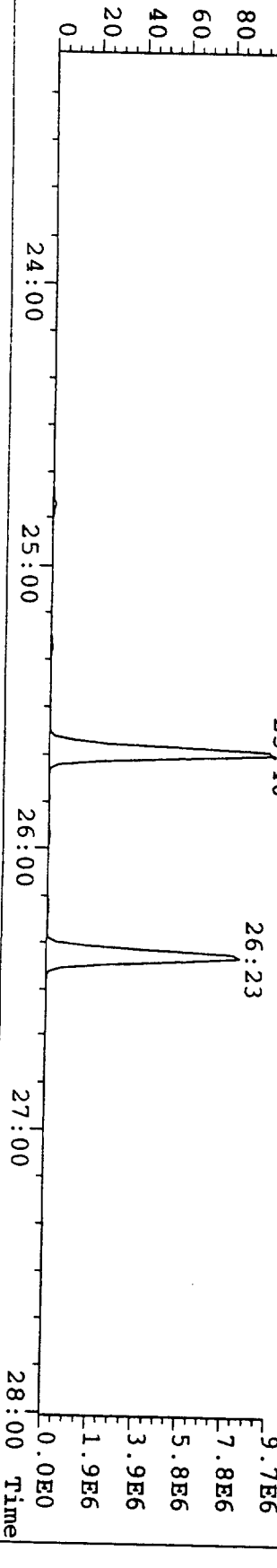
File: S975864 #1-905 Acq: 13-SEP-1997 00:14:42 EI+ Voltage SIR 70S  
 339.8597 F: 2 Exp: EPCUS  
 Sample Text: TLI M23 BLANK TLI#43057R1  
 INJ. TIME = 00:17 File Text: TLI M23 BLANK»  
 100%



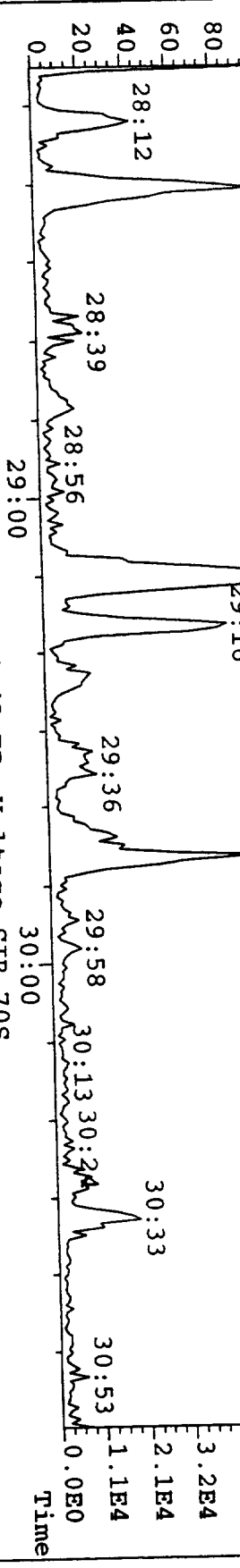
File: S975864 #1-905 Acq: 13-SEP-1997 00:14:42 EI+ Voltage SIR 70S  
 341.8567 F: 2 Exp: EPCUS  
 Sample Text: TLI M23 BLANK TLI#43057R1  
 INJ. TIME = 00:17 File Text: TLI M23 BLANK»  
 100%



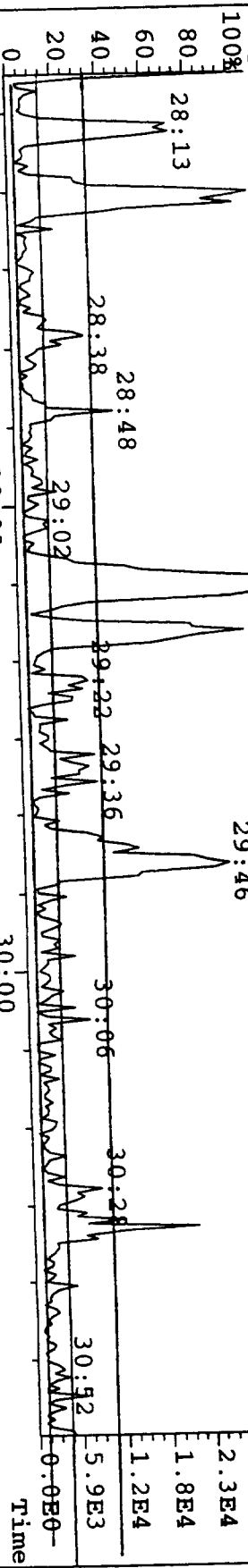
File: S975864 #1-905 Acq: 13-SEP-1997 00:14:42 EI+ Voltage SIR 70S  
 351.9000 F: 2 Exp: EPCUS  
 Sample Text: TLI M23 BLANK TLI#43057R1  
 INJ. TIME = 00:17 File Text: TLI M23 BLANK»  
 100%



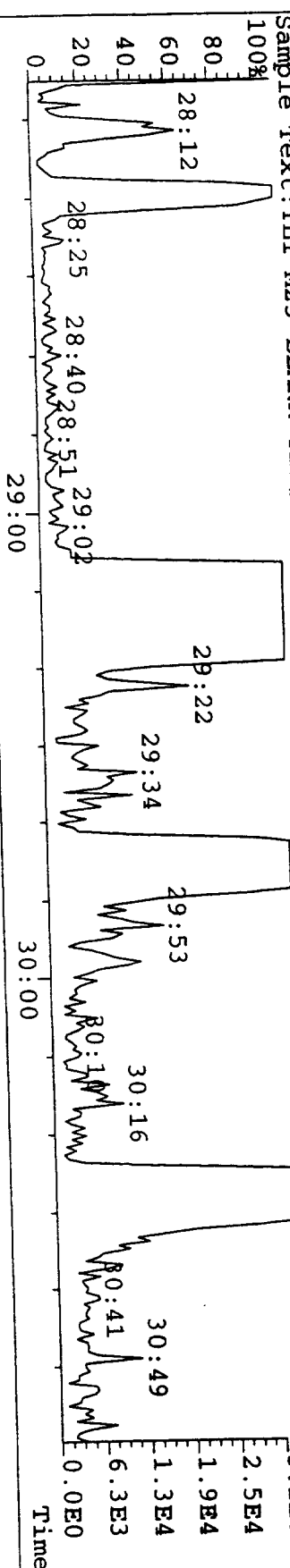
File: S975864 #1-346 Acq: 13-SEP-1997 00:14:42 EI+ Voltage SIR 70S  
 373.8208 F: 3 Exp: EPCUS  
 Sample Text: TLI M23 BLANK TLI#43057R1  
 INJ. TIME = 00:17 File Text: TLI M23 BLANK»  
 5.3E4  
 4.2E4  
 3.2E4  
 2.1E4  
 1.1E4  
 0.0E0



File: S975864 #1-346 Acq: 13-SEP-1997 00:14:42 EI+ Voltage SIR 70S  
 375.8178 F: 3 Exp: EPCUS  
 Sample Text: TLI M23 BLANK TLI#43057R1  
 INJ. TIME = 00:17 File Text: TLI M23 BLANK»  
 2.9E4  
 2.3E4  
 1.8E4  
 1.2E4  
 5.9E3  
 0.0E0

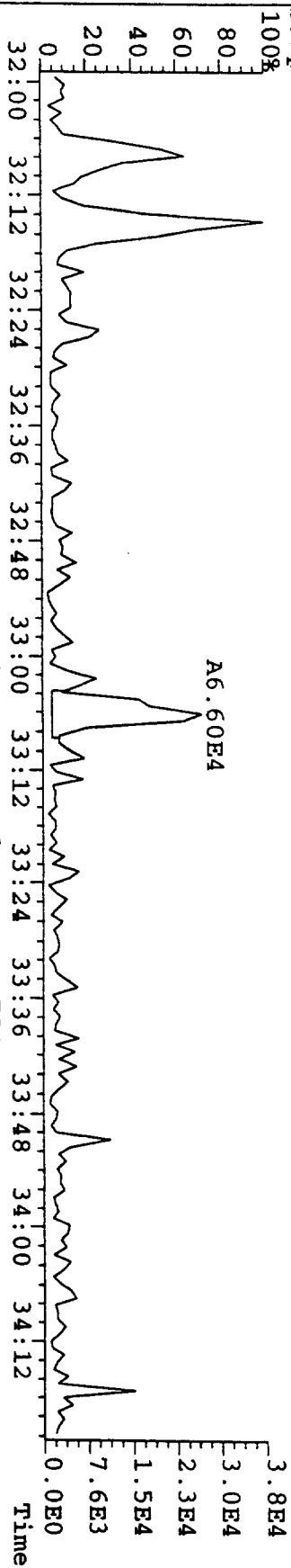


File: S975864 #1-346 Acq: 13-SEP-1997 00:14:42 EI+ Voltage SIR 70S  
 385.8610 F: 3 Exp: EPCUS  
 Sample Text: TLI M23 BLANK TLI#43057R1  
 INJ. TIME = 00:17 File Text: TLI M23 BLANK»  
 3.1E4  
 2.5E4  
 1.9E4  
 1.3E4  
 6.3E3  
 0.0E0



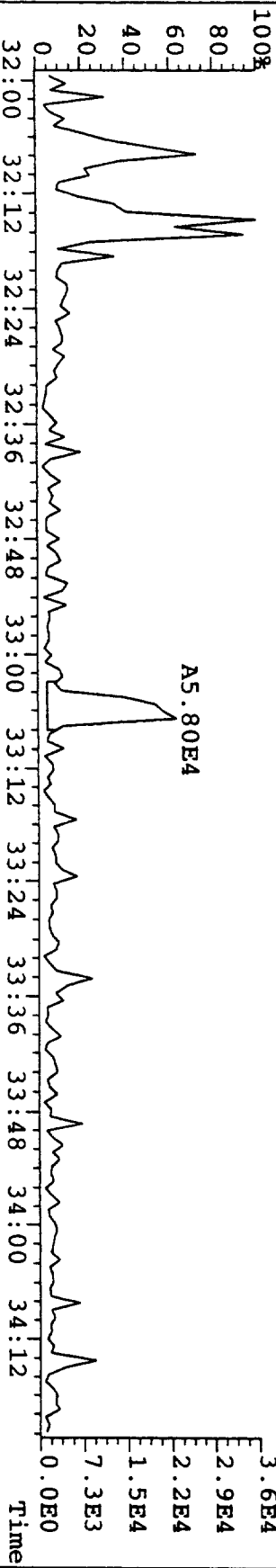
File:S975864 #1-390 Acq:13-SEP-1997 00:14:42 EI+ Voltage SIR 70S  
407.7818 F:4 Exp:EPCUS  
Sample Text:TLI M23 BLANK TLI#43057R1

INJ. TIME = 00:17 File Text:TLI M23 BLANK»



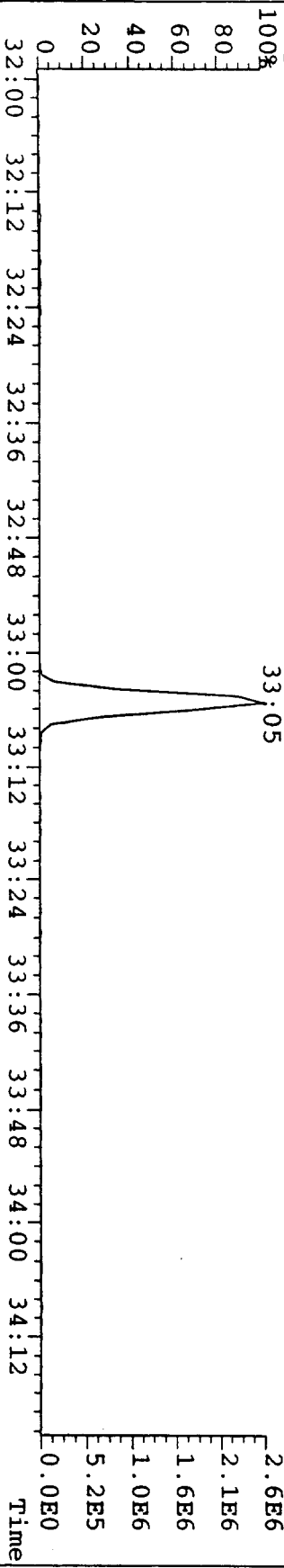
File:S975864 #1-390 Acq:13-SEP-1997 00:14:42 EI+ Voltage SIR 70S  
409.7789 F:4 Exp:EPCUS  
Sample Text:TLI M23 BLANK TLI#43057R1

INJ. TIME = 00:17 File Text:TLI M23 BLANK»

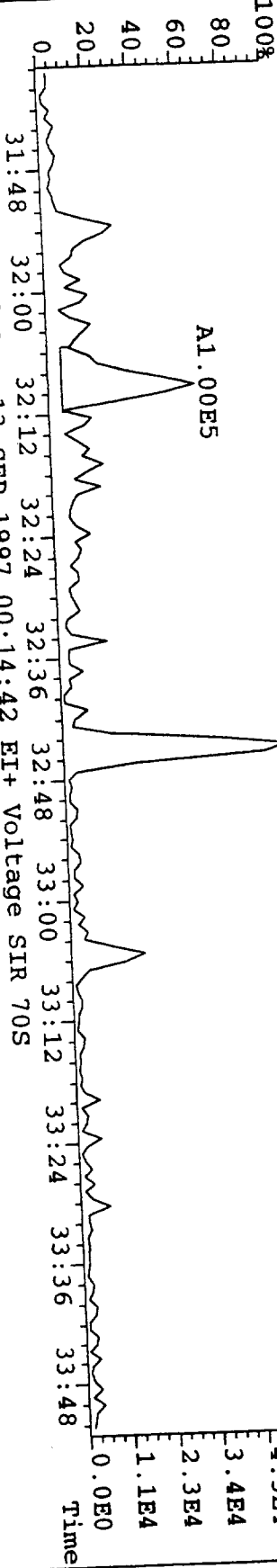


File:S975864 #1-390 Acq:13-SEP-1997 00:14:42 EI+ Voltage SIR 70S  
417.8253 F:4 Exp:EPCUS  
Sample Text:TLI M23 BLANK TLI#43057R1

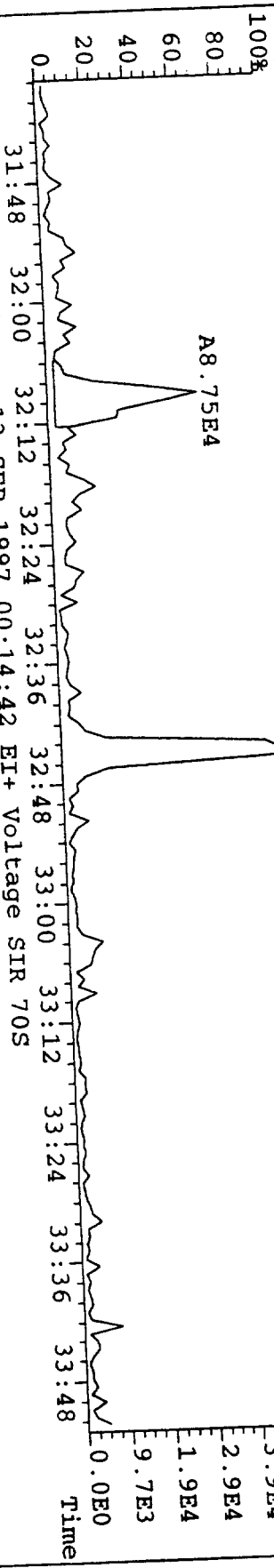
INJ. TIME = 00:17 File Text:TLI M23 BLANK»



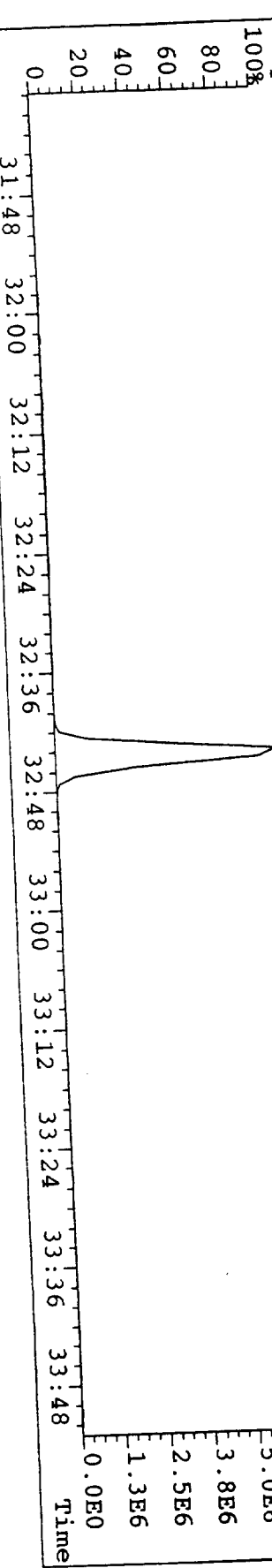
File: S975864 #1-390 Acq: 13-SEP-1997 00:14:42 EI+ Voltage SIR 70S  
 423.7766 F: 4 Exp: EPCUS  
 Sample Text: TLI M23 BLANK TLI#43057R1  
 INJ. TIME = 00:17 File Text: TLI M23 BLANK»



File: S975864 #1-390 Acq: 13-SEP-1997 00:14:42 EI+ Voltage SIR 70S  
 425.7737 F: 4 Exp: EPCUS  
 Sample Text: TLI M23 BLANK TLI#43057R1  
 INJ. TIME = 00:17 File Text: TLI M23 BLANK»

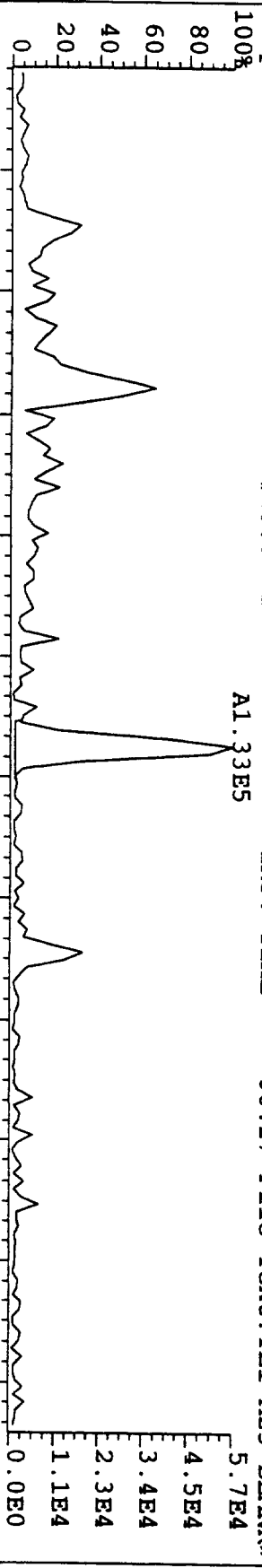


File: S975864 #1-390 Acq: 13-SEP-1997 00:14:42 EI+ Voltage SIR 70S  
 435.8169 F: 4 Exp: EPCUS  
 Sample Text: TLI M23 BLANK TLI#43057R1  
 INJ. TIME = 00:17 File Text: TLI M23 BLANK»



File:S975864 #1-390 Acq:13-SEP-1997 00:14:42 EI+ Voltage SIR 70S  
423.7766 F:4 Exp:EPCUS

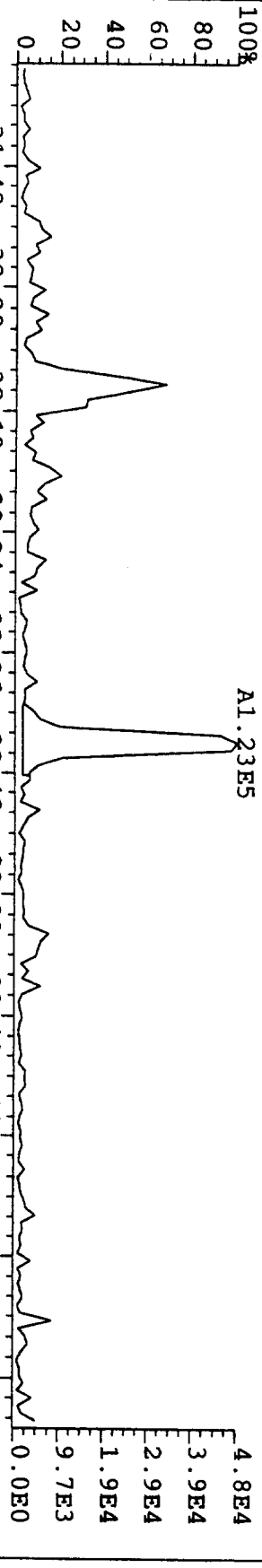
Sample Text:TLI M23 BLANK TLI#43057R1



INJ. TIME = 00:17 File Text:TLI M23 BLANK»

File:S975864 #1-390 Acq:13-SEP-1997 00:14:42 EI+ Voltage SIR 70S  
425.7737 F:4 Exp:EPCUS

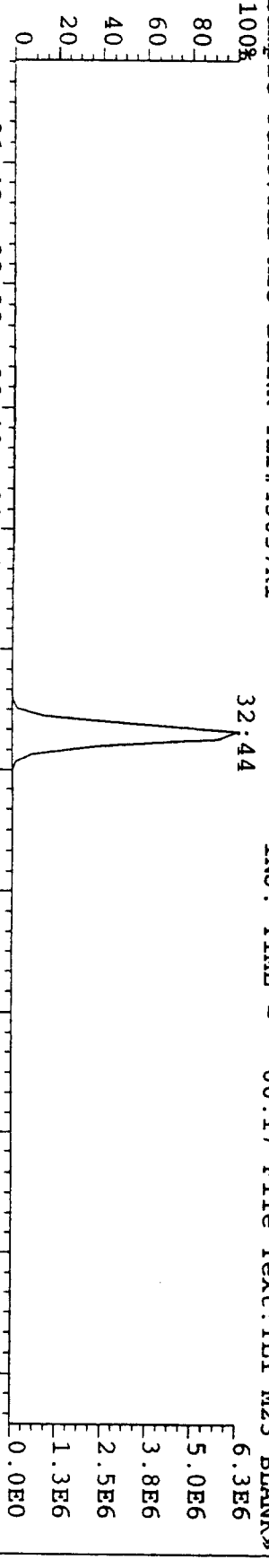
Sample Text:TLI M23 BLANK TLI#43057R1



INJ. TIME = 00:17 File Text:TLI M23 BLANK»

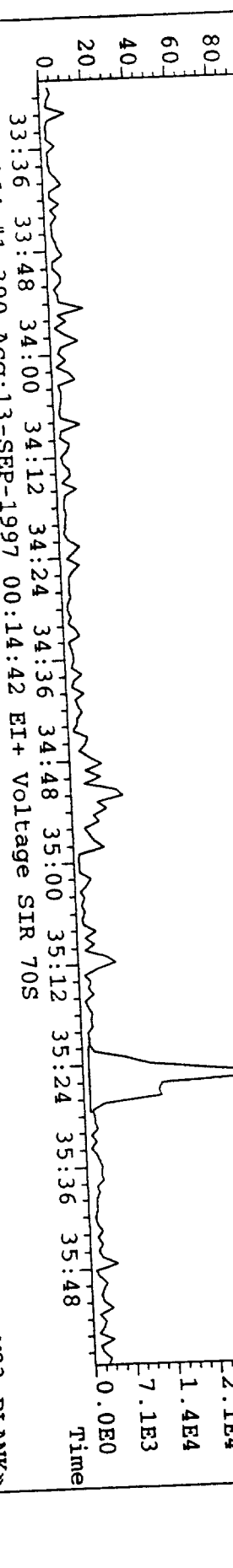
File:S975864 #1-390 Acq:13-SEP-1997 00:14:42 EI+ Voltage SIR 70S  
435.8169 F:4 Exp:EPCUS

Sample Text:TLI M23 BLANK TLI#43057R1

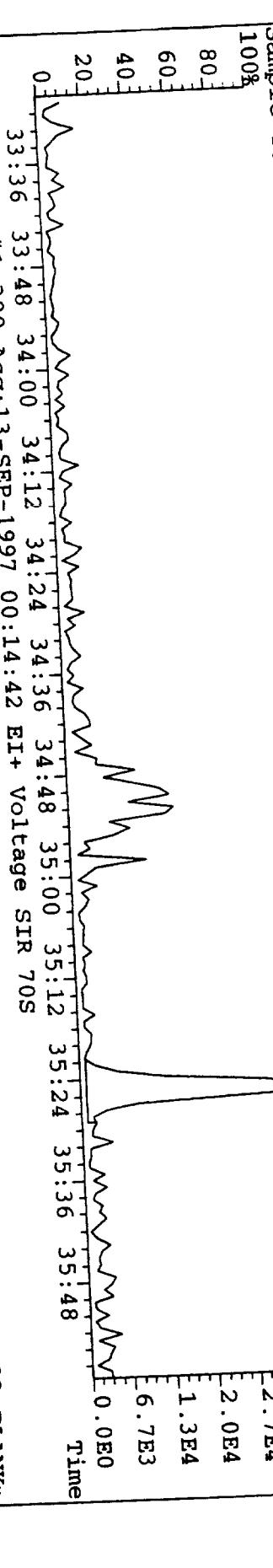


INJ. TIME = 00:17 File Text:TLI M23 BLANK»

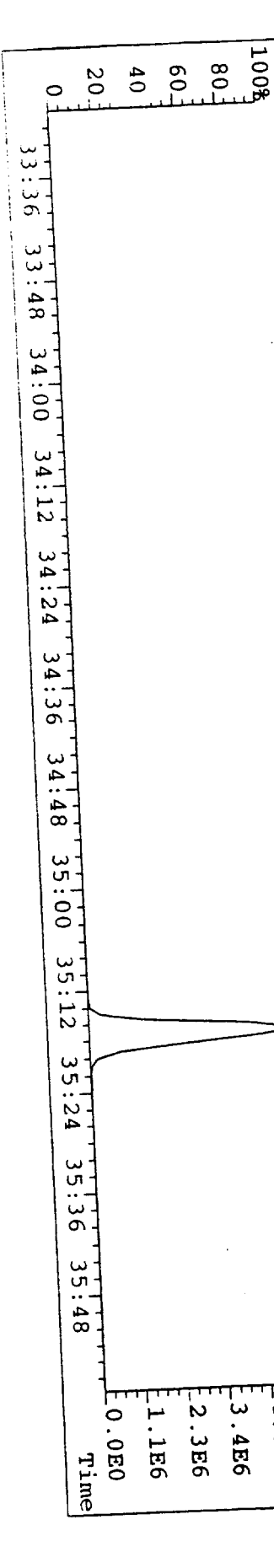
File: S975864 #1-390 Acq: 13-SEP-1997 00:14:42 EI+ Voltage SIR 70S  
 441.7428 F: 4 Exp: EPCUS INJ. TIME = 00:17 File Text: TLI M23 BLANK  
 Sample Text: TLI M23 BLANK TLI#43057R1 3.5E4  
 2.8E4  
 2.1E4  
 1.4E4  
 7.1E3  
 0.0E0



File: S975864 #1-390 Acq: 13-SEP-1997 00:14:42 EI+ Voltage SIR 70S  
 443.7399 F: 4 Exp: EPCUS INJ. TIME = 00:17 File Text: TLI M23 BLANK  
 Sample Text: TLI M23 BLANK TLI#43057R1 3.3E4  
 2.7E4  
 2.0E4  
 1.3E4  
 6.7E3  
 0.0E0

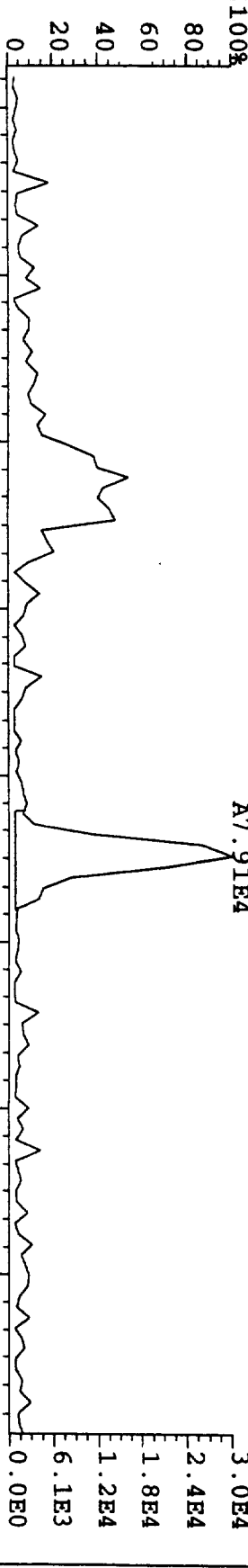


File: S975864 #1-390 Acq: 13-SEP-1997 00:14:42 EI+ Voltage SIR 70S  
 471.7750 F: 4 Exp: EPCUS INJ. TIME = 00:17 File Text: TLI M23 BLANK  
 Sample Text: TLI M23 BLANK TLI#43057R1 5.7E6  
 4.6E6  
 3.4E6  
 2.3E6  
 1.1E6  
 0.0E0



File:S975864 #1-390 Acq:13-SEP-1997 00:14:42 EI+ Voltage SIR 70S  
457.7377 F:4 Exp:EPCUS

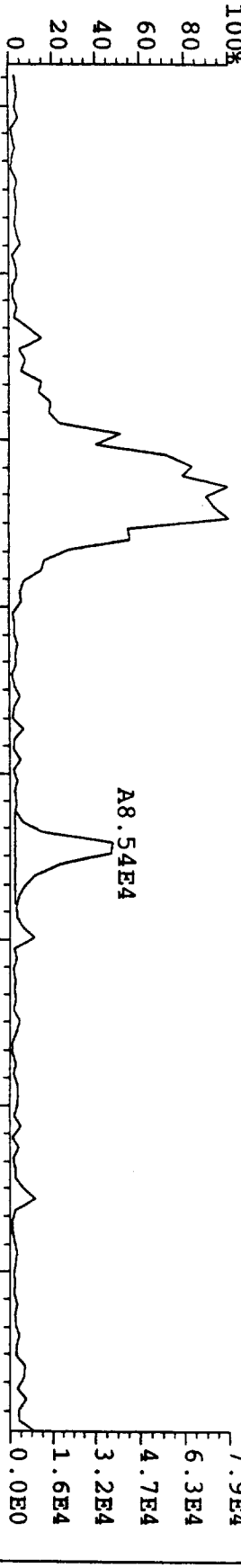
Sample Text:TLI M23 BLANK TLI#43057R1



INJ. TIME = 00:17 File Text:TLI M23 BLANK»

File:S975864 #1-390 Acq:13-SEP-1997 00:14:42 EI+ Voltage SIR 70S  
459.7348 F:4 Exp:EPCUS

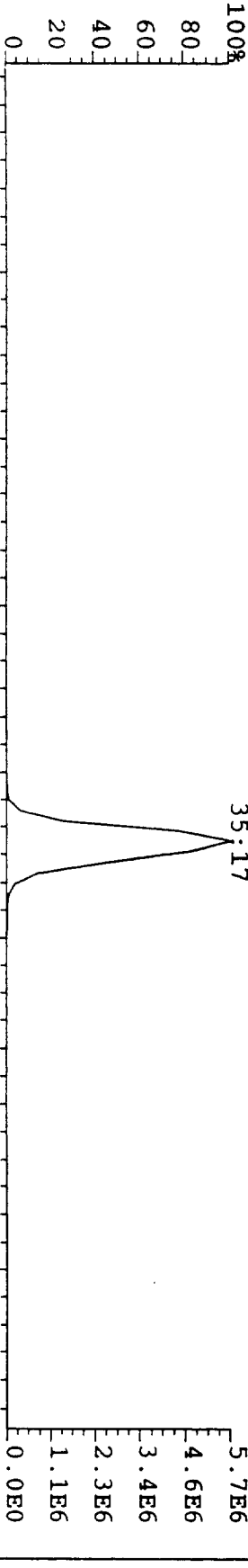
Sample Text:TLI M23 BLANK TLI#43057R1



INJ. TIME = 00:17 File Text:TLI M23 BLANK»

File:S975864 #1-390 Acq:13-SEP-1997 00:14:42 EI+ Voltage SIR 70S  
471.7750 F:4 Exp:EPCUS

Sample Text:TLI M23 BLANK TLI#43057R1



INJ. TIME = 00:17 File Text:TLI M23 BLANK»



**Pacific Environmental Services**

TLI Project: 43057r1 Method 23 TCDD/TCDF Analysis (DB-225)  
 Client Sample: TLI M23 Blank Analysis File: P973848

Client Project: ASPHALT PLANT "A"	Date Received: / /	Spike File: SPC2NF04
Sample Matrix: XAD	Date Extracted: 09/06/97	ICal: PF22206
TLI ID: TLI Blank	Date Analyzed: 09/12/97	ConCal: P973843
Sample Size: 1.000	Dilution Factor: n/a	% Moisture: n/a
Dry Weight: n/a	Blank File: P973848	% Lipid: n/a
GC Column: DB-225	Analyst: WK	% Solids: n/a

Analytes	Amt. (ng)	DL	EMPC	Ratio	RT	Flags
2,3,7,8-TCDF	ND	0.008				—

Internal Standard	Amt. (ng)	% Recovery	QC Limits	Ratio	RT	Flags
<sup>13</sup> C <sub>12</sub> -2,3,7,8-TCDF	2.9	72.7	40%-130%	0.76	20:40	—

Recovery Standard	Ratio	RT	Flags
<sup>13</sup> C <sub>12</sub> -1,2,3,4-TCDD	0.81	19:42	—

Data Reviewer: VC 09/14/97

Initial ....Date...

Data Review By: NLC 9/14/97 Calculated Noise Area: 1.37

The Total Area for each peak with an ion abundance ratio outside ratio limits has been recalculated according to method requirements.

Page No. 1 Listing of P973848B.dbf  
09/14/97 Matched GC Peaks / Ratio / Ret. Time

Compound/

M\_Z.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

TCDF		0.65-0.89				0.786-1.096			
304-306	DC NL	0:00	0.68	1.86				0.000	
	DC SN	19:23	0.42	2.18				0.938	
	DC SN	20:14	1.49	1.01				0.979	
	DC SN	20:17	0.34	0.53				0.981	
	DC SN	20:20	0.56	0.44				0.984	
	DC SN	20:50	0.77	0.83				1.008	
	DC SN	20:52	0.68	1.34				1.010	
	DC SN	21:04	1.43	1.72				1.019	
304-306	0 Peaks			0.00					
13C12-TCDF		0.65-0.89				0.952-1.048			
316-318	DC NL	0:00	0.89	2.49				0.000	
	DC WL	18:57	0.88	1.52				0.917	
	DC WL	19:23	0.75	9.49				0.938	
	DC WL	19:38	1.64	5.95				0.950	
		20:40	0.76	1,683.28	729.00	954.28	1.000	13C12-2378-TCDF	ISO
		21:12	0.82	5.27	2.38	2.89	1.026		
	DC SN	21:38	2.91	1.54				1.047	
	DC WH	22:32	0.73	12.08				1.090	
316-318	2 Peaks			1,688.55					

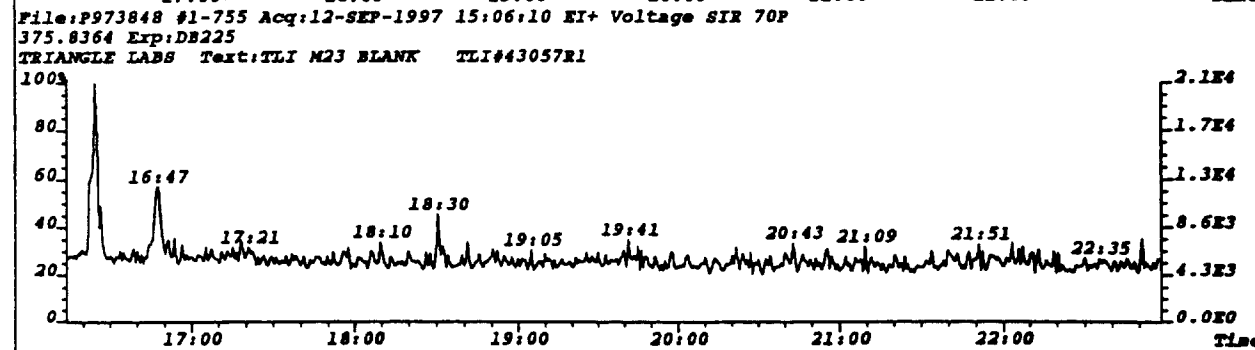
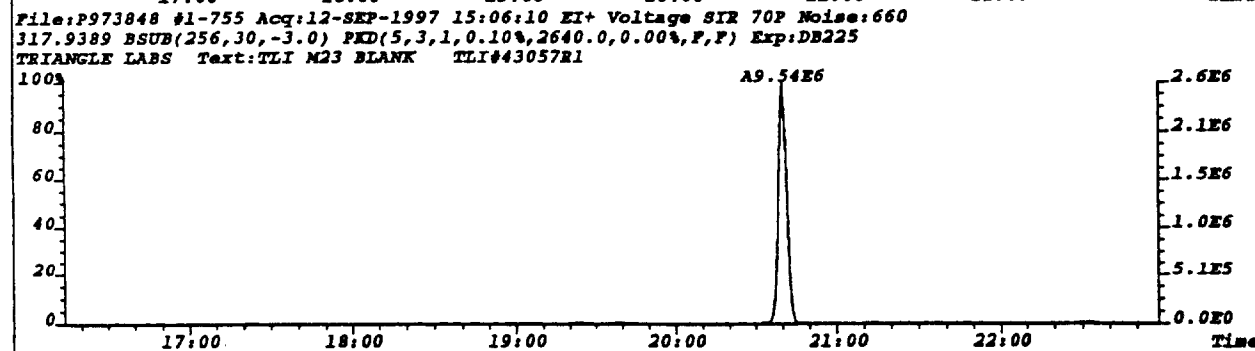
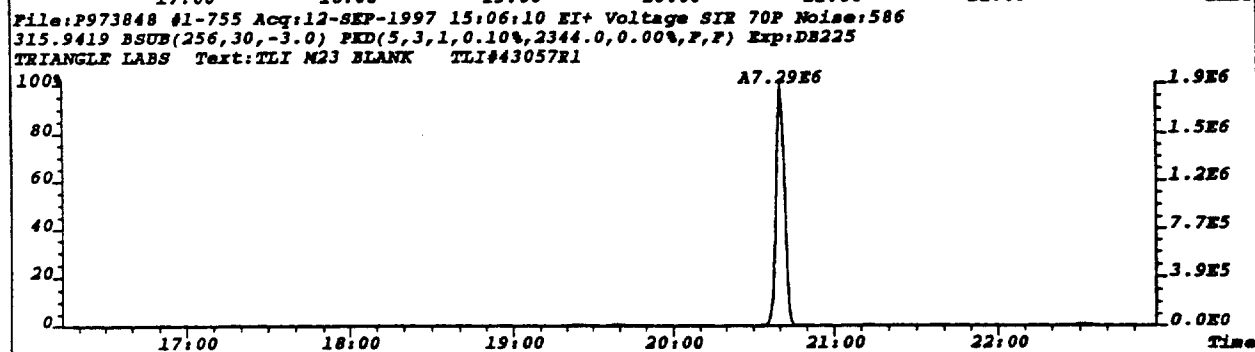
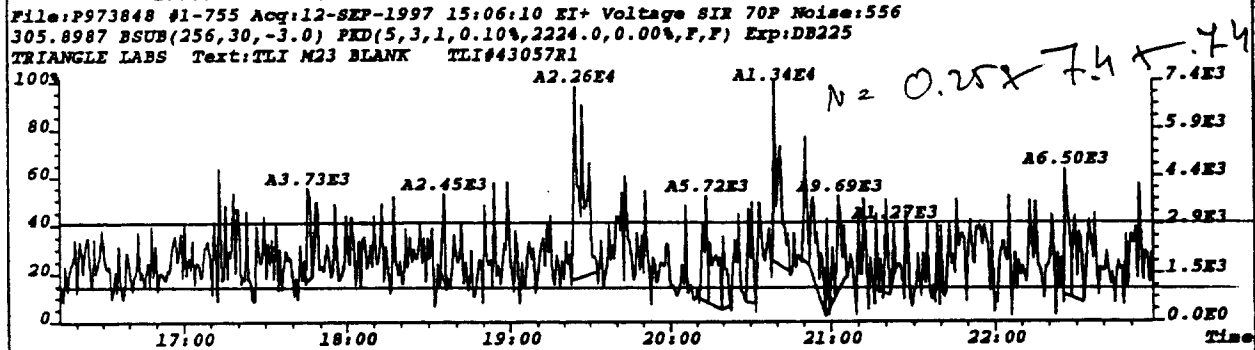
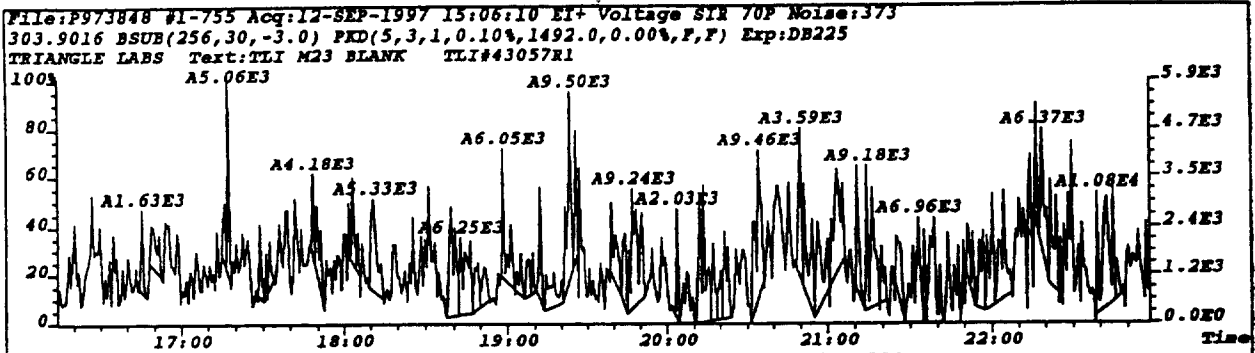
----- Above: TCDF / TCDD Follows -----

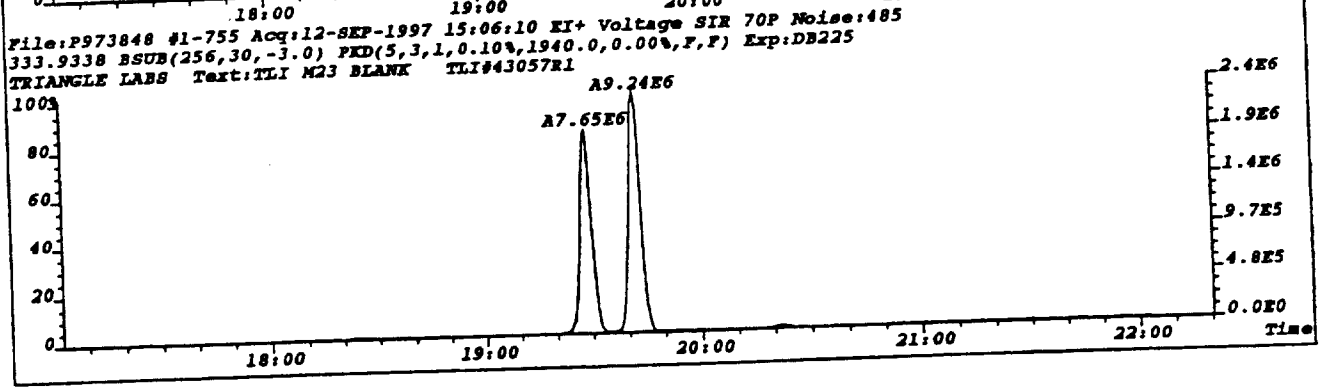
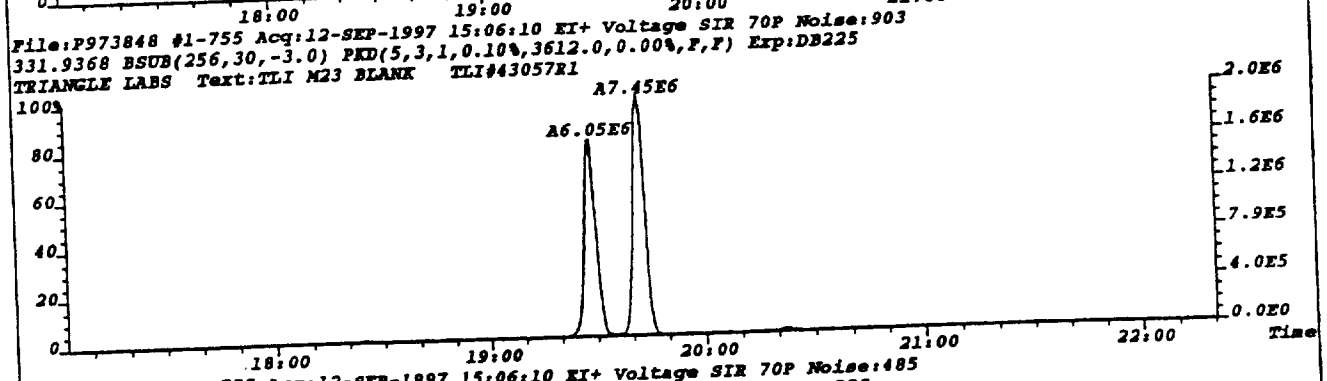
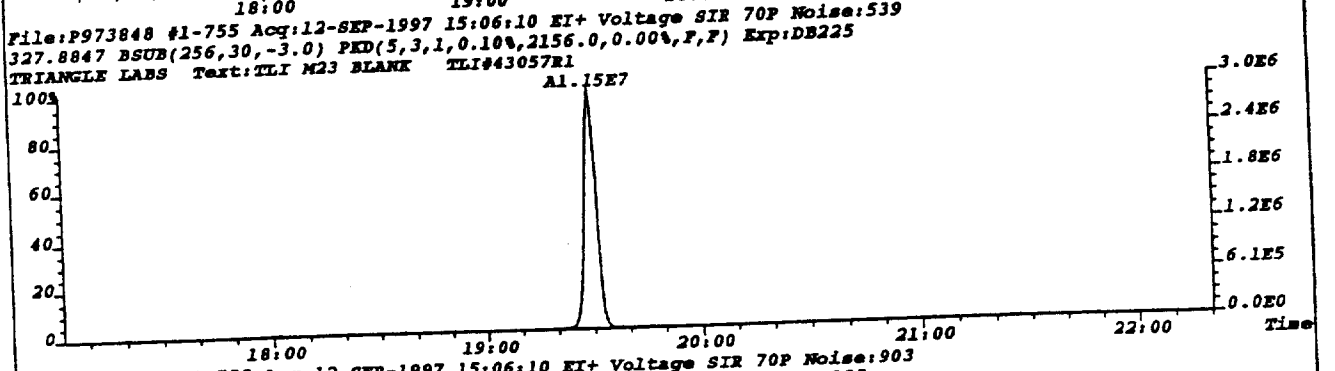
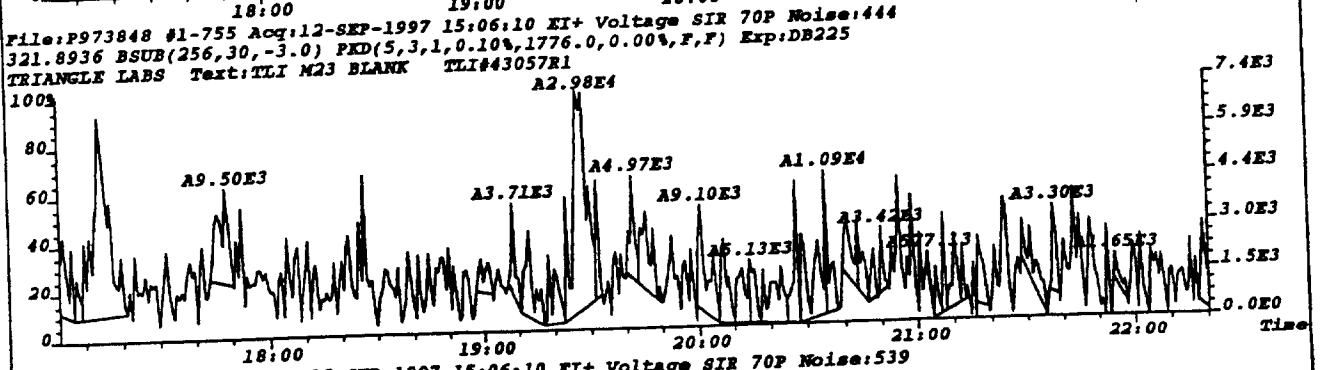
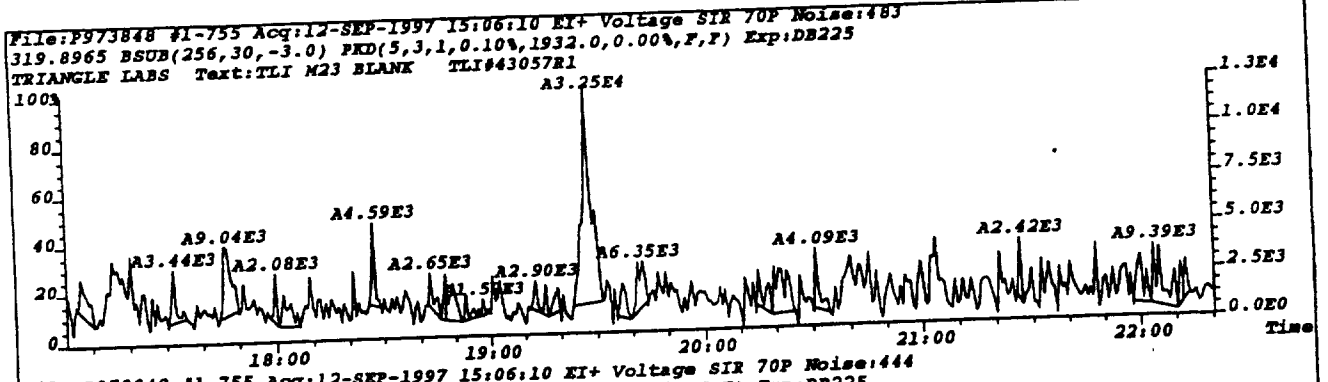
13C12-TCDD		0.65-0.89				0.897-1.103			
332-334	DC NL	0:00	1.87	1.72				0.000	
	DC SN	17:32	2.59	0.51				0.901	
	DC SN	18:26	0.39	3.56				0.947	
		19:28	0.79	1,370.66	605.30	765.36	1.000	13C12-2378-TCDD	IS1
		19:42	0.81	1,668.46	744.76	923.70	1.012	13C12-1234-TCDD	RS1
		20:22	0.82	16.80	7.58	9.22	1.046		
	DC WH	21:34	2.58	0.58				1.108	
	DC WH	21:45	0.43	1.08				1.117	
	DC WH	21:55	0.80	3.76				1.126	
332-334	3 Peaks			3,055.92					

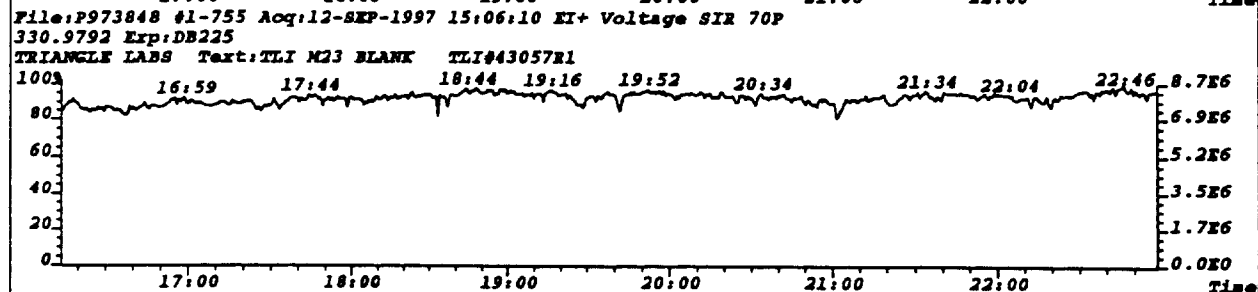
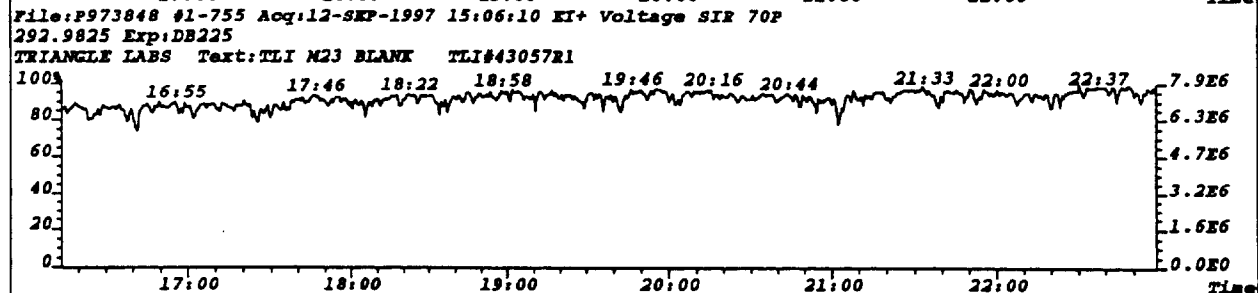
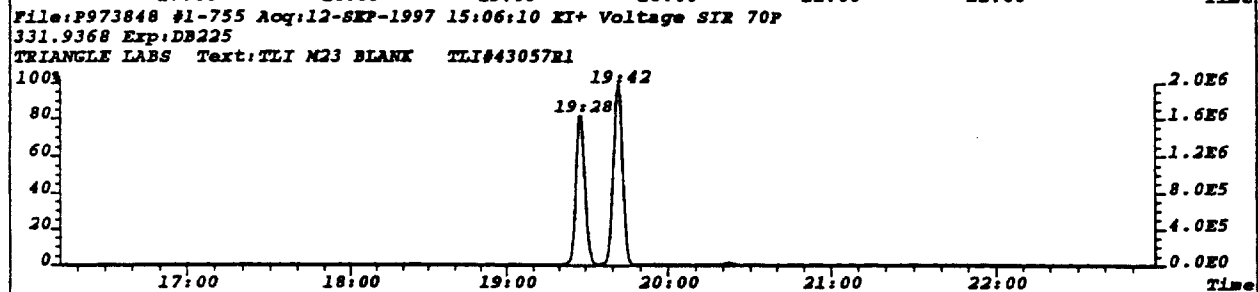
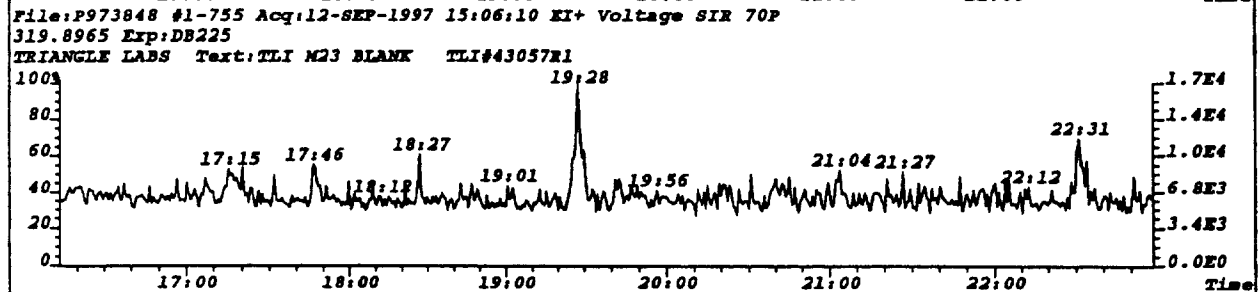
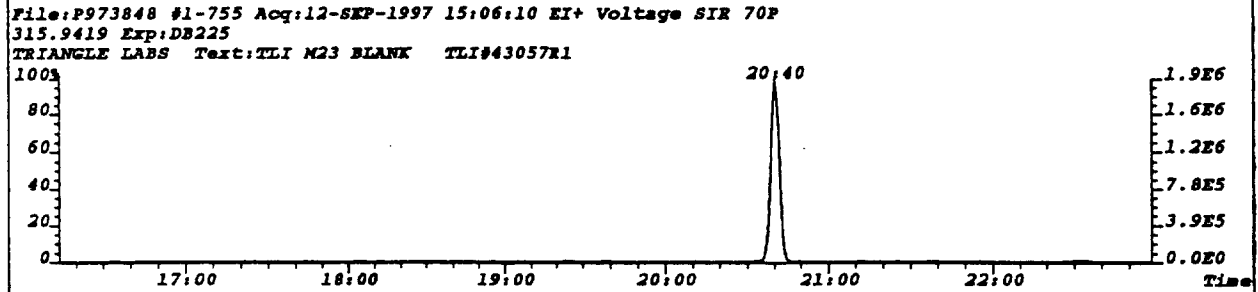
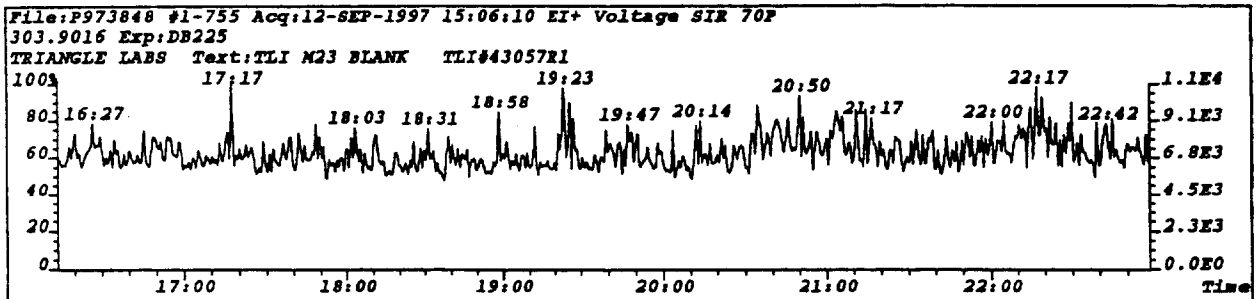
Compound  
M\_Z.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

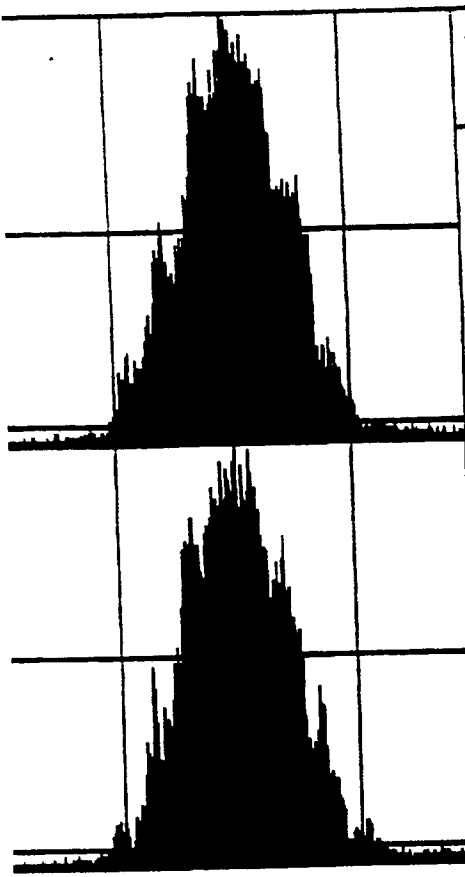
Column Description.....	"Why" Code Description.....	QC Log Desc.....
M_Z -Nominal Ion Mass(es)	WL-Below Retention Time Window	A-Peak Added
..RT. -Retention Time (mm:ss)	WH-Above Retention Time Window	K-Peak Kept
Rat.1 -Ratio of M/M+2 Ions	SN-Below Signal to Noise Level	D-Peak Deleted
OK -RO=Ratio Outside Limits	<M-Below Method Detection Limit	T-Time Changed
Rel.RT-Relative Retention Time	NL-Channel Specific Noise Level	M-Peak Area Changed
		N-Name Changed
		E-Ether Interference

\*\*\* End of Report \*\*\*









Ref. mass	292.9825	Peak top	
Height	1.18 volts	Span	200 ppm
System file name		DB225	
Data file name		A:P973848	
Resolution		10000	
Group number		1	
Ionization mode		EI+	
Switching		VOLTAGE	
Ref. masses	292.9825,	390.9761	
A	292.9825	J	330.9792
B	303.9016	K	331.9368
C	305.8987	L	333.9338
D	315.9419	M	375.8364
E	317.9389		
F	319.8965		
G	321.8936		
H	327.8847		
I	330.9792		
Channel	I	330.9792	Peak top
Height	1.15 volts	Span	200 ppm

**Pacific Environmental Services**

TLI Project: 43057r1  
 Client Sample: O-M23-4

Method 23 PCDD/PCDF Analysis (a)  
 Analysis File: S975865

Client Project:	ASPHALT PLANT "A"				
Sample Matrix:	M23TRAIN	Date Received:	08/29/97	Spike File:	SPX23704
TLI ID:	181-27-6A-C	Date Extracted:	09/06/97	ICal:	SF56117
		Date Analyzed:	09/13/97	ConCal:	S975861
Sample Size:	1.000	Dilution Factor:	n/a	% Moisture:	n/a
Dry Weight:	n/a	Blank File:	S975864	% Lipid:	n/a
GC Column:	DB-5	Analyst:	ML	% Solids:	n/a

Analytes	Amt. (ng)	DL	EMPC	Ratio	RT	Flags
2,3,7,8-TCDD	ND	0.004				---
1,2,3,7,8-PeCDD	ND	0.005				---
1,2,3,4,7,8-HxCDD	ND	0.006				---
1,2,3,6,7,8-HxCDD	0.01			1.27	30:00	---
1,2,3,7,8,9-HxCDD	ND	0.005				---
1,2,3,4,6,7,8-HpCDD	EMPC		0.04			B_
1,2,3,4,6,7,8,9-OCDD	0.09			0.93	35:22	B_
2,3,7,8-TCDF	0.02			0.85	21:39	B_
1,2,3,7,8-PeCDF	ND	0.003				---
2,3,4,7,8-PeCDF	EMPC		0.01			B_
1,2,3,4,7,8-HxCDF	0.03			1.25	29:12	B_
1,2,3,6,7,8-HxCDF	0.01			1.33	29:19	B_
2,3,4,6,7,8-HxCDF	0.02			1.24	29:48	B, PA
1,2,3,7,8,9-HxCDF	ND	0.004				---
1,2,3,4,6,7,8-HpCDF	0.05			0.99	31:58	B_
1,2,3,4,7,8,9-HpCDF	0.02			1.05	33:09	B_
1,2,3,4,6,7,8,9-OCDF	0.05			1.00	35:29	B_

Totals	Amt. (ng)	Number	DL	EMPC	Flags
Total TCDD	EMPC			0.007	---
Total PeCDD	0.01	1		0.02	---
Total HxCDD	0.07	3			---
Total HpCDD	EMPC			0.07	---
Total TCDF	0.03	3			---
Total PeCDF	0.01	1		0.02	---
Total HxCDF	0.09	5		0.10	---
Total HpCDF	0.09	3		0.10	---





Initial ....Date...

Data Review By:

VC 9/14/97

Calculated Noise Area: 2.22

The Total Area for each peak with an ion abundance ratio outside ratio limits has been recalculated according to method requirements.

Page No. 1 Listing of S975865B.dbf  
09/14/97 Matched GC Peaks / Ratio / Ret. Time

Compound:

M\_Z... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

		0.65-0.89				0.838-1.092			
304-306	DC NL	0:00	RO	1.00	0.23			0.000	
	DC SN	18:18	RO	0.54	3.65			0.847	
	DC SN	18:35	RO	0.67	1.84			0.860	
	DC SN	20:33	RO	0.55	5.33			0.951	
D	d SN	20:53	RO	1.13	7.24			0.966	
		21:12		0.84	28.09	12.84	15.25	0.981	
	DC SN	21:28	RO	0.52	3.72			0.993	
		21:39		0.85	39.70	18.25	21.45	1.002	2378-TCDF AN
D	d SN	22:04	RO	1.05	6.05			1.021	
	DC SN	22:22	RO	0.37	1.95			1.035	
A		23:22		0.66	13.66	5.45	8.21	1.081	
304-306		3 Peaks			81.45				

		0.65-0.89				0.954-1.046			
13C12-TCDF	DC NL	0:00	RO	0.39	0.34			0.000	
316-318		21:11		0.72	34.00	14.26	19.74	0.980	
		21:37		0.76	7,668.11	3,317.31	4,350.80	1.000	13C12-2378-TCDF ISO
		22:05		0.76	29.48	12.75	16.73	1.022	
316-318		3 Peaks			7,731.59				

----- Above: TCDF / TCDD Follows -----

		0.65-0.89				0.875-1.055			
TCDD	DC NL	0:00	RO	2.21	0.34			0.000	
320-322	DC WL	19:31	RO	1.26	1.03			0.872	
		19:45	RO	1.04	10.34	6.08	5.84	0.882	
D	d SN	20:15	RO	0.60	6.53			0.905	
	DC SN	20:25	RO	1.41	2.60			0.912	
	DC SN	20:54	RO	0.41	0.69			0.934	
D	d SN	21:10		0.83	6.92			0.946	
	DC SN	21:22		0.76	2.32			0.955	
	DC SN	21:29	RO	1.35	1.49			0.960	
	DC SN	21:37	RO	2.09	2.07			0.966	
	DC SN	21:49	RO	0.59	2.34			0.975	
	DC SN	22:04	RO	2.35	0.60			0.986	
D	d SN	22:17	RO	0.91	5.42			0.996	
	DC SN	22:36	RO	1.38	1.03			1.010	
	DC SN	22:41	RO	0.38	0.71			1.013	
	DC SN	22:49		0.67	1.05			1.019	
	DC SN	23:03	RO	0.13	0.46			1.030	
	DC SN	23:15	RO	1.10	2.23			1.039	
320-322		1 Peak			10.34				

Compound/  
M\_Z.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

Compound	QC	Log	Omit	Why	RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Rel.RT	Compound.Name	ID	Flags
37C1-TCDD											0.910-1.090			
328	DC	NL			0:00			0.47			3.000			
					22:23			4,561.50	4,561.50		1.000	37C1-TCDD	SUR1	
328					1 Peak			4,561.50						

Compound	QC	Log	Omit	Why	RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Rel.RT	Compound.Name	ID	Flags
13C12-TCDD											0.910-1.090			
332-334	DC	NL			0:00	RO	4.09	0.57			0.000			
					21:09	RO	1.08	20.87	12.71		11.79	0.945		
					22:11			4,829.18	2,166.73		2,662.45	0.991	13C12-1234-TCDD	RS1
					22:23			5,081.62	2,248.91		2,832.71	1.000	13C12-2378-TCDD	IS1
					22:43			75.34	34.92		40.42	1.015		
332-334					4 Peaks			10,007.01						

----- Above: TCDD / PeCDF Follows -----

Compound	QC	Log	Omit	Why	RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Rel.RT	Compound.Name	ID	Flags
PeCDF											0.915-1.074			
340-342	DC	NL			0:00	RO	1.03	0.61			0.000			
	DC	SN			23:40	RO	2.79	5.94			0.921			
	DC	SN			23:57	RO	0.66	1.37			0.933			
	DC	SN			24:35	RO	0.97	1.88			0.957			
	DC	SN			24:42	RO	1.23	4.01			0.962			
					24:47			15.41	9.30		6.11	0.965		
	DC	SN			25:09			6.31			0.979			
	DC	SN			25:24	RO	5.98	4.13			0.989			
	DC	SN			25:50	RO	2.23	3.80			1.006			
	DC	SN			25:58	RO	2.09	5.92			1.011			
	DC	SN			26:09	RO	3.57	1.17			1.018			
					26:25	RO	1.83	17.01	12.20		6.67	1.029	23478-PeCDF	AN
	DC	SN			26:50	RO	1.02	4.08			1.045			
	DC	SN			27:04	RO	3.06	1.73			1.054			
	DC	SN			27:31	RO	0.77	1.30			1.071			
	DC	WH			27:47	RO	0.39	0.71			1.082			
340-342					2 Peaks			32.42						

Compound	QC	Log	Omit	Why	RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Rel.RT	Compound.Name	ID	Flags
13C12-PeCDF											0.844-1.156			
352-354	DC	NL			0:00	RO	1.00	0.23			0.000			
					24:49			21.77	13.39		8.38	0.966		
					25:18	RO	1.90	25.09	18.71		9.84	0.985		
					25:41			5,880.80	3,488.97		2,391.83	1.000	13C12-PeCDF	123 IS2
					25:50			20.34	12.33		8.01	1.006		
					25:58			32.07	19.38		12.69	1.011		
					26:24			5,329.39	3,141.80		2,187.59	1.028	13C12-PeCDF	234 SUR2
					27:22	RO	1.02	11.86	7.21		7.08	1.066		
352-354					7 Peaks			11,321.32						

----- Above: PeCDF / PeCDD Follows -----

Compound	QC	Log	Omit	Why	RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Rel.RT	Compound.Name	ID	Flags
PeCDD											0.926-1.024			
356-358	DC	NL			0:00	RO	0.83	0.16			0.000			
	DC	WL			24:44	RO	6.00	0.31			0.925			
					24:56	RO	1.28	7.86	4.78		3.74	0.932		
	DC	SN			25:15	RO	2.84	0.48			0.944			

Compound/

M\_2.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1... Area.Peak.2... Rel.RT Compound.Name.. ID.. Flags.

Compound	QC	Log	Omit	Why	RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Rel.RT	Compound.Name	ID	Flags
K	DC	SN			25:30	RO	0.87	0.76			0.953			
					25:41		1.71	12.35	7.80	4.55	0.960			
					25:59	RO	1.94	5.89	4.47	2.31	0.971			
	DC	SN			26:28	RO	4.73	2.04			0.989			
	DC	SN			26:36	RO	0.48	1.10			0.994			
	DC	SN			26:46	RO	2.18	3.19			1.001	12378-PeCDD	AN	
	DC	SN			26:54	RO	2.68	1.12			1.006			
DC	SN			27:07	RO	1.02	0.89			1.014				
DC	WH			27:30	RO	0.75	1.05			1.028				
356-358							3 Peaks	26.10						

Compound	QC	Log	Omit	Why	RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Rel.RT	Compound.Name	ID	Flags
13C12-PeCDD					1.32-1.78						0.850-1.150			
368-370	DC	NL			0:00	RO	0.83	0.16			0.000			
	DC	SN			26:28	RO	1.27	3.06			0.989			
					26:45		1.55	3,437.52	2,090.64	1,346.88	1.000	13C12-PeCDD 123	IS3	
					26:54		1.55	274.11	166.48	107.63	1.006			
368-370							2 Peaks	3,711.63						

----- Above: PeCDD / HxCDF Follows -----

Compound	QC	Log	Omit	Why	RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Rel.RT	Compound.Name	ID	Flags
HxCDF					1.05-1.43						0.959-1.050			
374-376	DC	NL			0:00		1.21	2.54			0.000			
					28:14		1.21	15.56	8.51	7.05	0.964			
					28:22		1.34	35.02	20.04	14.98	0.968			
D	d	SN			28:39	RO	0.95	6.02			0.978			
	DC	SN			28:49	RO	0.77	4.21			0.984			
	DC	SN			28:59	RO	5.85	0.45			0.989			
					29:12		1.25	50.54	28.07	22.47	0.997	123478-HxCDF	AN	
					29:19		1.33	23.99	13.68	10.31	1.001	123678-HxCDF	AN	
	DC	SN			29:25	RO	1.81	4.88			1.004			
D	d	SN			29:36	RO	1.44	10.12			1.010			
					29:48		1.24	28.71	15.88	12.83	1.017	234678-HxCDF	AN	
	DC	SN			29:56	RO	2.02	1.10			1.022			
	DC	SN			30:08	RO	0.24	0.51			1.028			
	DC	SN			30:31	RO	0.77	3.97			1.042	123789-HxCDF	AN	
					30:34	RO	1.01	9.10	5.04	4.97	1.043			
	DC	SN			30:37	RO	0.79	1.45			1.045			
374-376							6 Peaks	162.92						

Compound	QC	Log	Omit	Why	RT	OK	Ratio	Total.Area	Area.Peak.1	Area.Peak.2	Rel.RT	Compound.Name	ID	Flags
13C12-HxCDF					0.43-0.59						0.863-1.137			
384-386	DC	NL			0:00	RO	1.00	2.49			0.000			
					28:21		0.56	8.55	3.07	5.48	0.968			
					29:12		0.50	4,955.40	1,656.35	3,299.05	0.997	13C12-HxCDF 478	SUR3	
					29:18		0.51	5,294.90	1,782.26	3,512.64	1.000	13C12-HxCDF 678	IS4	
	DC	SN			29:34	RO	0.26	2.58			1.009			
					29:47		0.51	4,637.69	1,563.79	3,073.90	1.016	13C12-HxCDF 234	ALT2	
N					30:29		0.51	4,428.48	1,493.87	2,934.61	1.040	13C12-HxCDF 789	ALT1	
384-386							5 Peaks	19,325.02						

----- Above: HxCDF / HxCDD Follows -----

Compound/  
 M... QC Log Omit Why .. RT. OK Ratio Total Area... Area.Peak.1... Area.Peak.2... Rel. RT Compound.Name.. ID.. Flags.

		1.05-1.43				0.953-1.014			
HxCDD									
390-392	DC NL	0:00	RO	0.90	1.79			0.000	
	DC SN	28:45	RO	0.66	4.50			0.959	
	DC SN	28:50	RO	0.27	0.38			0.962	
	DC SN	29:00	RO	5.35	0.83			0.967	
		29:12		1.30	41.69	23.54	18.15	0.974	
	DC SN	29:17	RO	1.76	3.09			0.977	
		29:25		1.27	20.79	11.63	9.16	0.981	
	DC SN	29:56	RO	0.59	3.50			0.998	123478-HxCDD AN
		30:00		1.27	12.73	7.11	5.62	1.001	123678-HxCDD AN
		30:17		1.18	10.77			1.010	123789-HxCDD AN
D	d SN	30:17						1.017	
	DC WH	30:30	RO	1.01	2.01			1.022	
	DC WH	30:38	RO	0.42	0.54				
390-392		3 Peaks				75.21			

		1.05-1.43				0.967-1.033			
13C12-HxCDD									
402-404	DC NL	0:00		1.08	3.28			0.000	
		29:24		1.10	14.96	7.82	7.14	0.981	
		29:55		1.26	3,341.80	1,862.50	1,479.30	0.998	13C12-HxCDD 478 SUR4
		29:59		1.24	3,998.61	2,212.03	1,786.58	1.000	13C12-HxCDD 678 IS5
		30:17		1.24	3,896.41	2,157.96	1,738.45	1.010	13C12-HxCDD 789 RS2
402-404		4 Peaks				11,251.78			

----- Above: HxCDD / HpCDF Follows -----

		0.88-1.20				0.995-1.042			
HpCDF									
408-410	DC NL	0:00	RO	1.56	4.08			0.000	
		31:58		0.99	57.69	28.69	29.00	1.001	1234678-HpCDF AN
		32:11	RO	1.42	13.73	9.55	6.73	1.007	
		32:18		0.92	18.53	8.88	9.65	1.011	
	DC SN	32:51	RO	0.69	3.96			1.028	
		33:09		1.05	19.72	10.10	9.62	1.038	1234789-HpCDF AN
	DC WH	33:20	RO	0.26	3.24			1.043	
408-410		4 Peaks				109.67			

		0.37-0.51				0.937-1.125			
13C12-HpCDF									
418-420	DC NL	0:00	RO	1.39	3.12			0.000	
		31:57		0.42	3,058.65	906.47	2,152.18	1.000	13C12-HpCDF 678 IS6
		32:30	RO	0.25	14.27	4.36	17.37	1.017	
		32:46	RO	2.72	6.84	12.91	4.75	1.026	
		33:08		0.42	2,327.94	685.97	1,641.97	1.037	13C12-HpCDF 789 SUR5
		33:20	RO	0.18	68.69	20.99	118.75	1.043	
418-420		5 Peaks				5,476.39			

----- Above: HpCDF / HpCDD Follows -----

		0.88-1.20				0.977-1.005			
HpCDD									
424-426	DC NL	0:00	RO	2.13	4.22			0.000	
		32:12	RO	1.54	19.26	14.50	9.44	0.982	
		32:48	RO	1.23	32.44	19.60	15.90	1.000	1234678-HpCDD AN
	DC WH	32:59	RO	6.14	5.20			1.006	
	DC WH	33:14	RO	5.99	4.32			1.013	

Compound/

M\_Z.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

424-425	2 Peaks		51.70						
13C12-HpCDD	0.88-1.20				0.969-1.031				
436-438	DC NL	0:00	1.13	1.51	0.000				
		32:12	RO 0.77	5.77	2.94	3.83	0.982		
		32:48	1.03	2,861.43	1,452.51	1,408.92	1.000	13C12-HpCDD	678 IS7
436-438	2 Peaks		2,867.20						

----- Above: HpCDD / Octa-CDD and CDF Follows -----

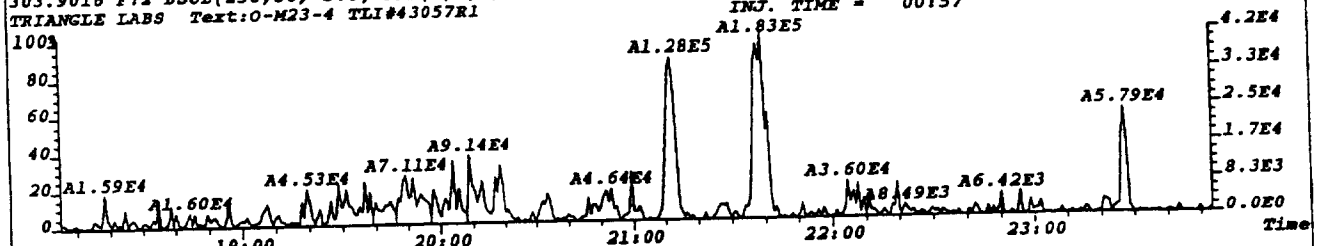
OCDF	0.76-1.02				0.887-1.113				
442-444	DC NL	0:00	RO 0.60	0.74	0.000				
	DC WL	31:20	RO 0.38	0.85	0.886				
	DC SN	31:40	RO 0.33	0.62	0.895				
	DC SN	31:54	RO 0.11	0.32	0.902				
	DC SN	32:27	RO 0.37	0.62	0.918				
	DC SN	32:40	RO 0.51	0.89	0.924				
	DC SN	33:29	RO 2.28	0.76	0.947				
	DC SN	33:59	RO 0.69	0.66	0.961				
	DC SN	34:41	0.96	1.80	0.981				
M		35:29	1.00	23.40	11.70	11.70	1.003	OCDF	AN
	DC SN	35:39	RO 1.18	1.74	1.008				
	DC SN	35:52	0.91	1.62	1.014				
442-444	1 Peak		23.40						
OCDD	0.76-1.02				0.887-1.113				
458-460	DC NL	0:00	RO 1.25	0.30	0.000				
	DC SN	35:09	0.95	1.07	0.994				
M		35:22	0.93	33.80	16.30	17.50	1.000	OCDD	AN
	DC SN	35:34	RO 3.30	0.43	1.006				
	DC SN	35:41	RO 0.44	0.51	1.009				
	DC SN	35:47	RO 1.09	1.66	1.012				
458-460	1 Peak		33.80						
13C12-OCDD	0.76-1.02				0.996-1.005				
470-472	DC NL	0:00	RO 1.20	0.19	0.000				
		35:22	0.92	2,782.87	1,335.35	1,447.52	1.000	13C12-OCDD	IS8
470-472	1 Peak		2,782.87						

Column Description..... "Why" Code Description..... QC Log Desc.....

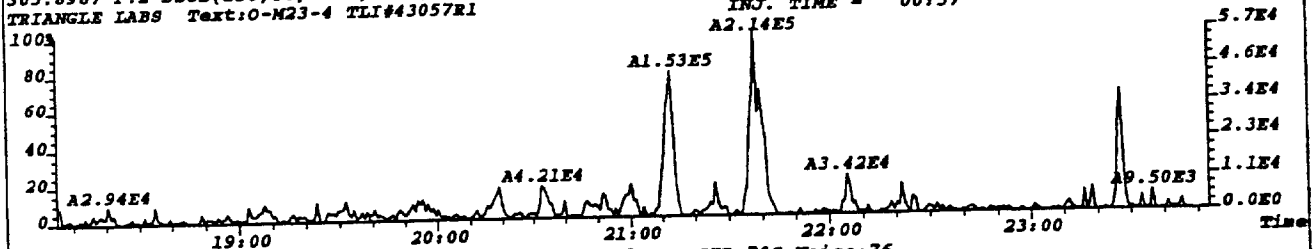
M\_Z -Nominal Ion Mass(es) WL-Below Retention Time Window A-Peak Added  
 ..RT. -Retention Time (mm:ss) WH-Above Retention Time Window K-Peak Kept  
 Rat.1 -Ratio of M/M+2 Ions SN-Below Signal to Noise Level D-Peak Deleted  
 OK -RO=Ratio Outside Limits <M-Below Method Detection Limit T-Time Changed  
 Rel.RT-Relative Retention Time NL-Channel Specific Noise Level M-Peak Area Changed  
 N-Name Changed  
 E-Ether Interference

\*\*\* End of Report \*\*\*

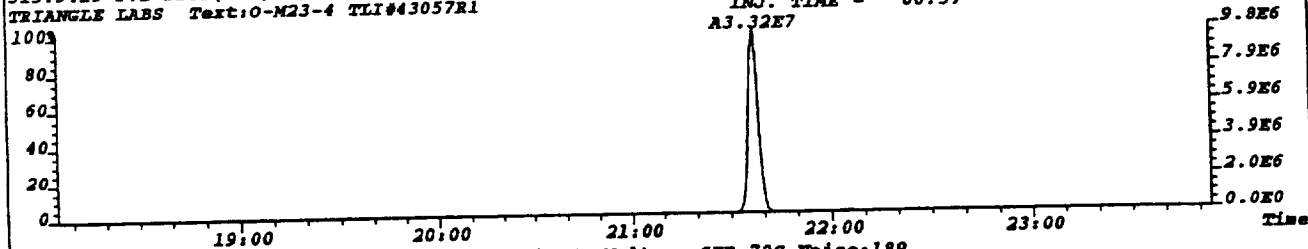
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303.9016 F:2 BSUB(256,30,-3.0) PKD(9,5,5,0.05%,260.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:O-M23-4 TLI#43057R1 INJ. TIME = 00:57



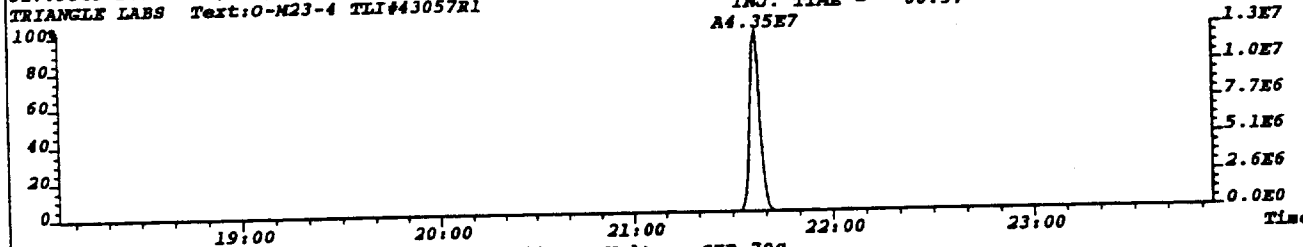
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305.8987 F:2 BSUB(256,30,-3.0) PKD(9,5,5,0.05%,268.0,1.00%,F,T) Exp:EPCUS  
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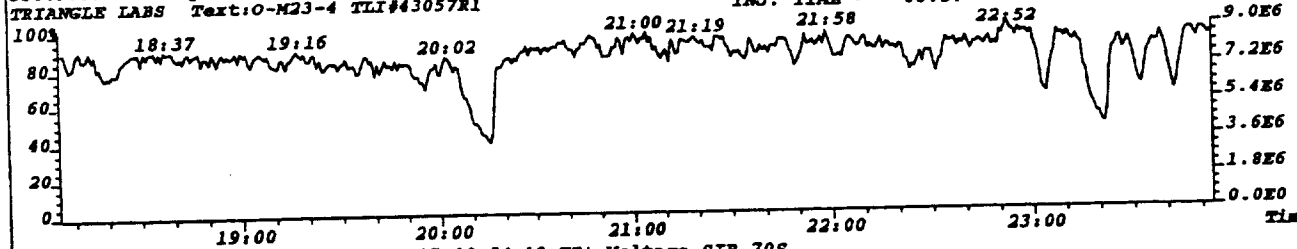
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TRIANGLE LABS Text:O-M23-4 TLI#43057R1 INJ. TIME = 00:57



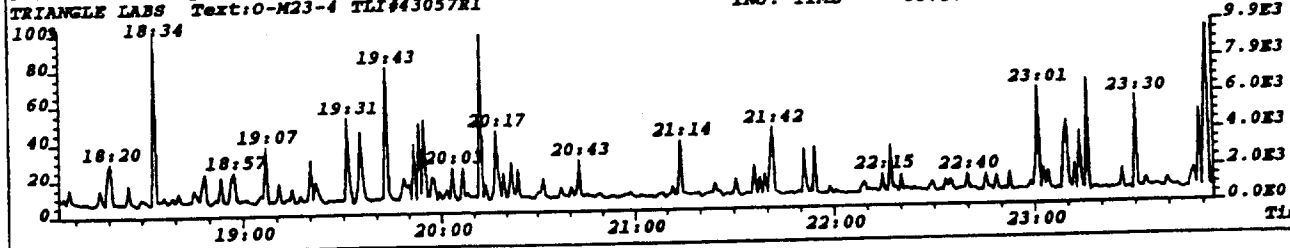
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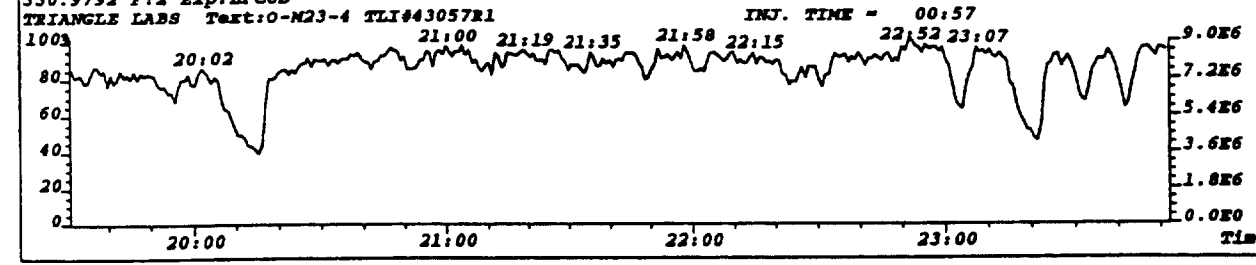
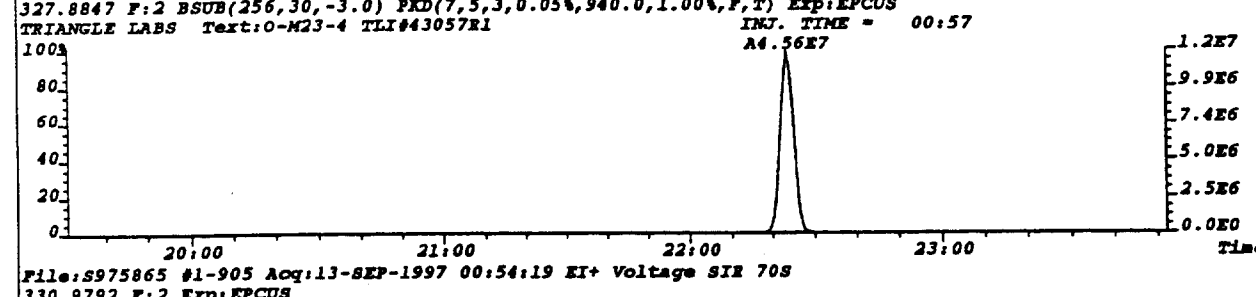
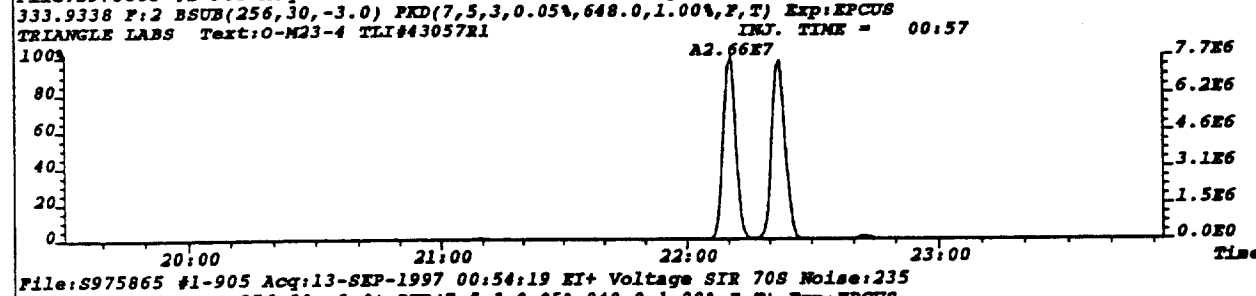
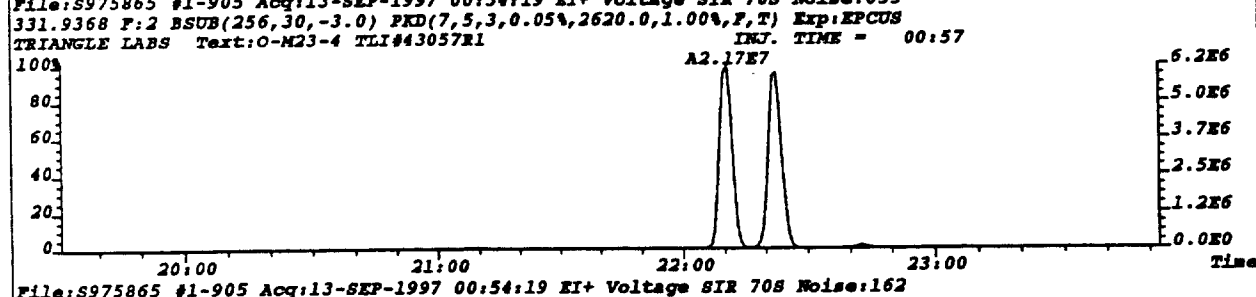
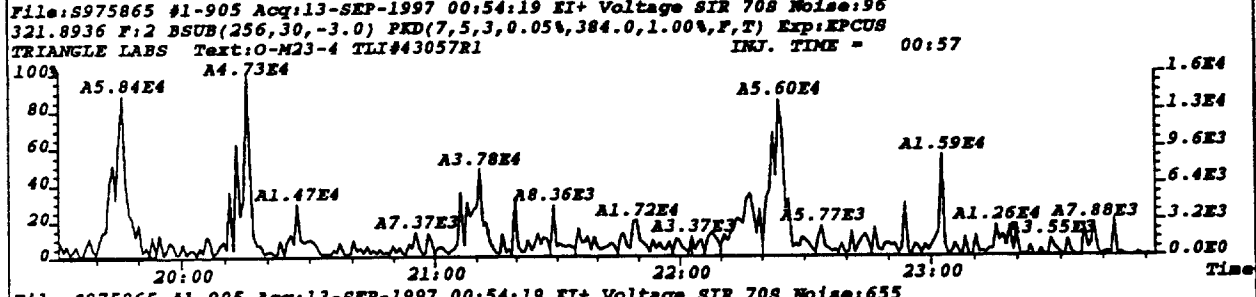
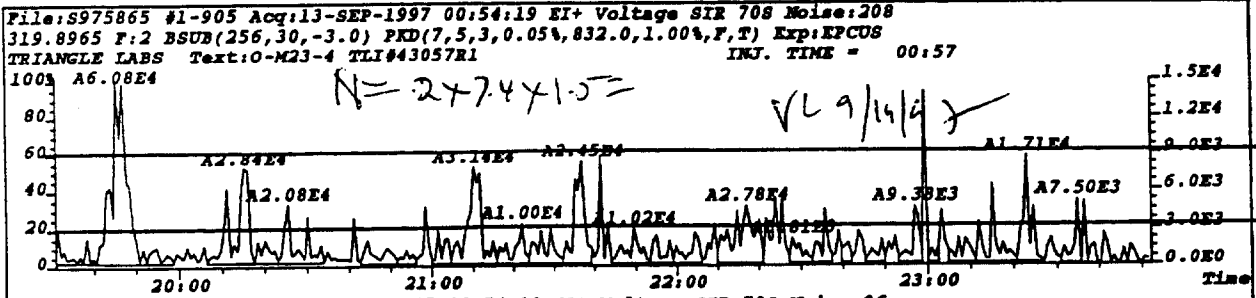


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330.9792 F:2 Exp:EPCUS  
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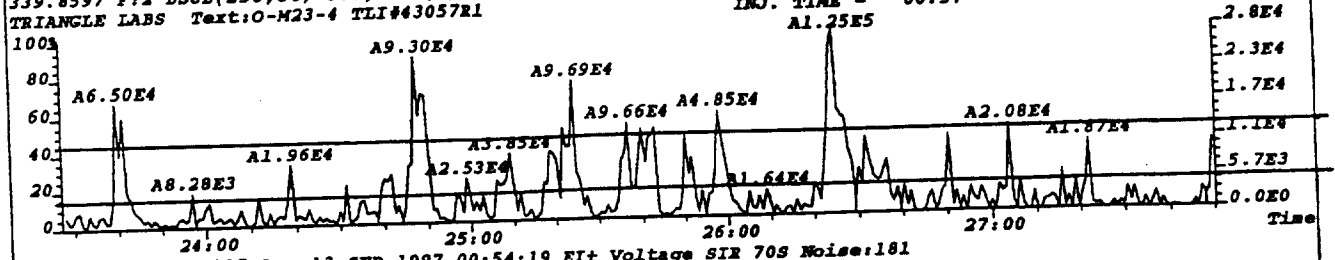
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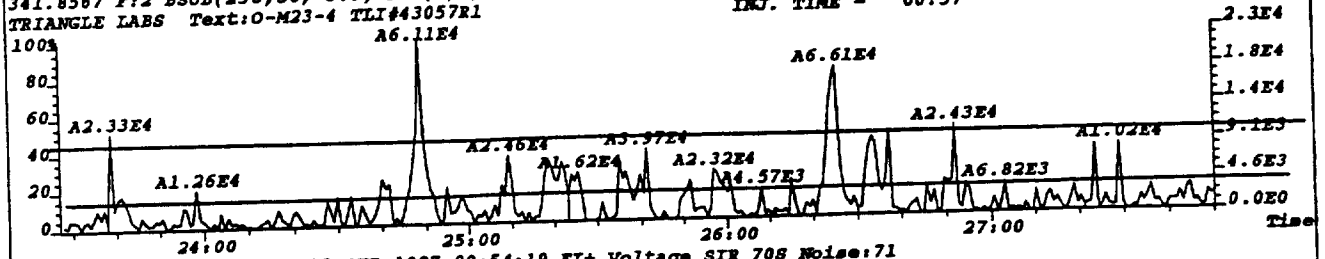




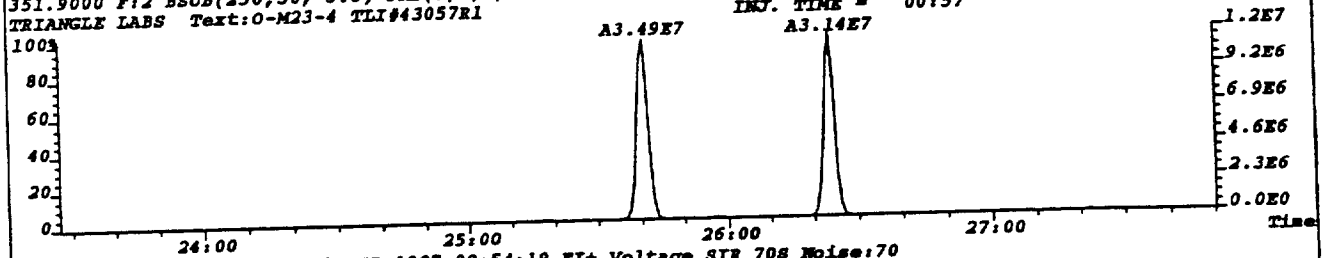
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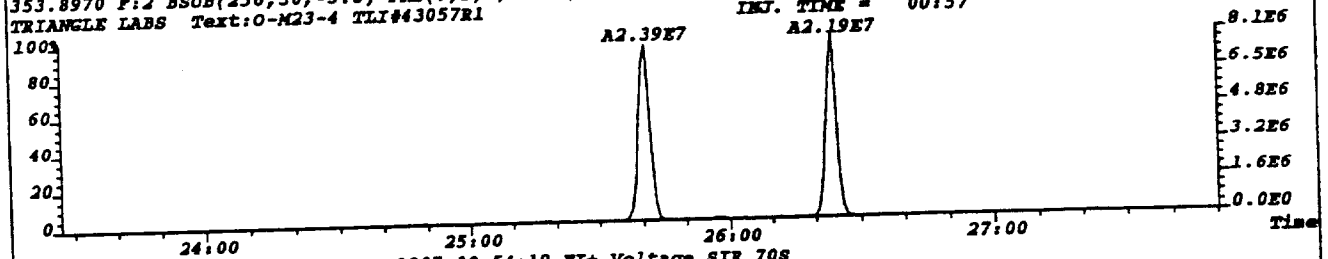
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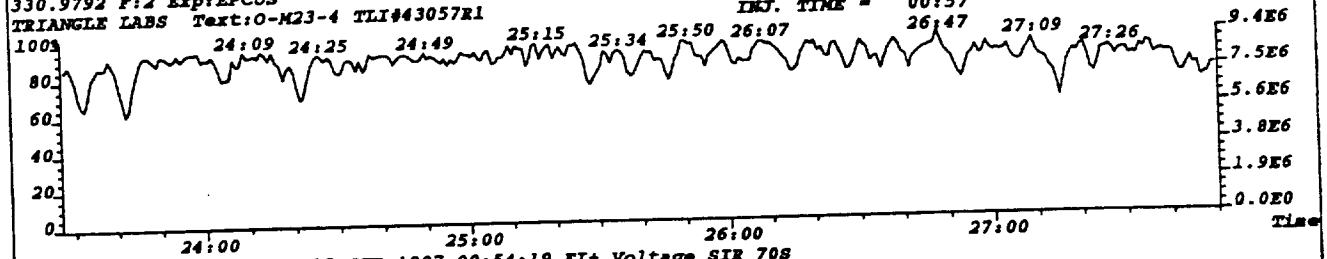
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351.9000 F:2 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,284.0,1.00%,F,T) Exp:EPCUS  
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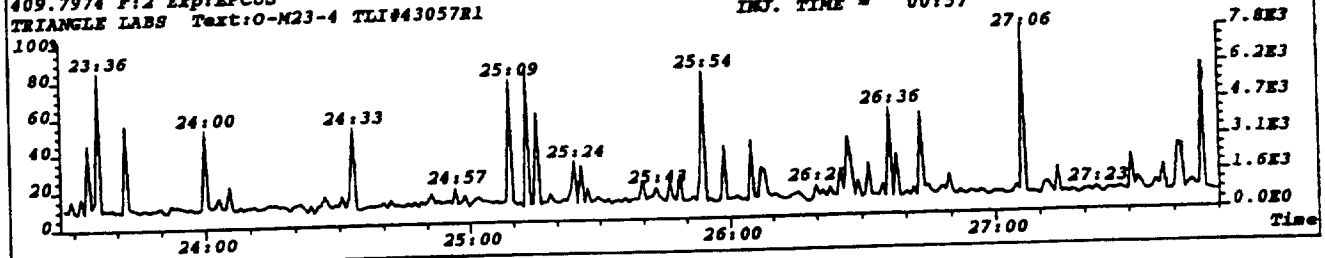
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353.8970 F:2 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,280.0,1.00%,F,T) Exp:EPCUS  
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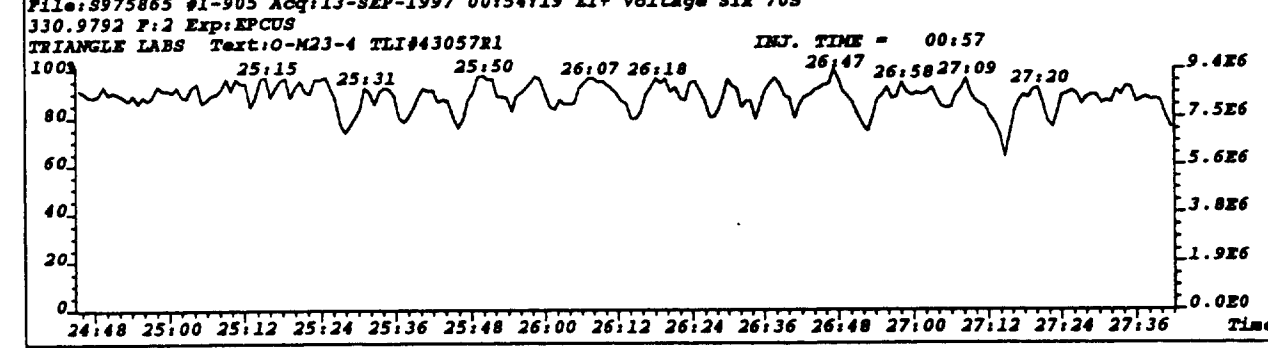
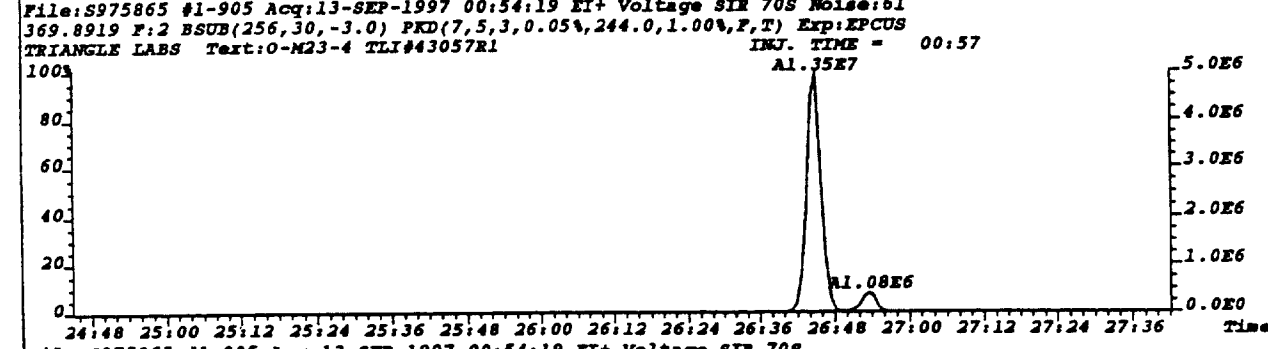
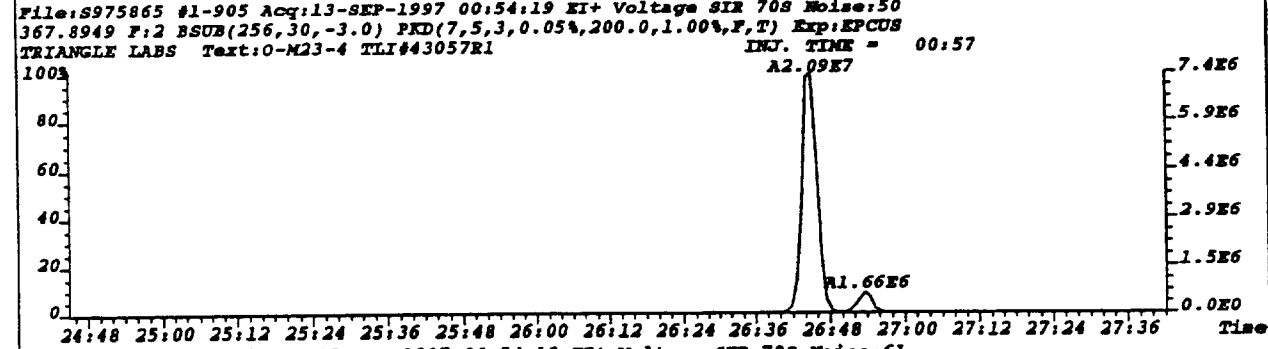
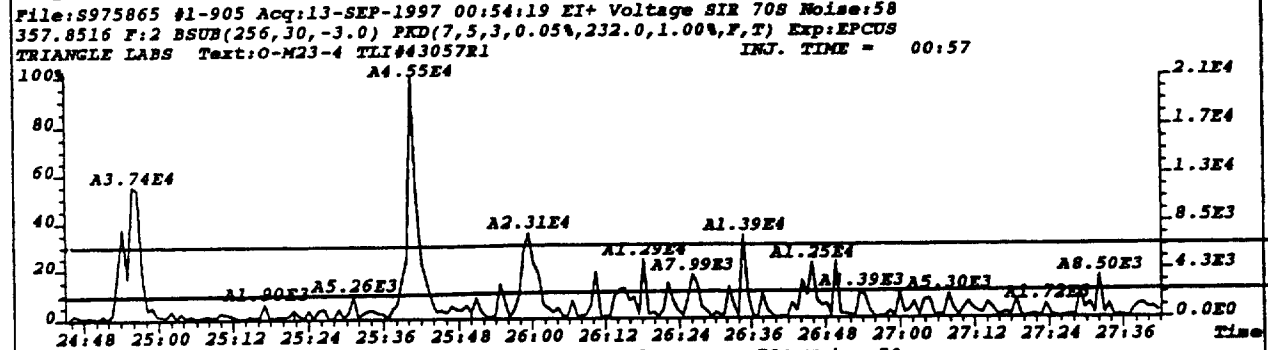
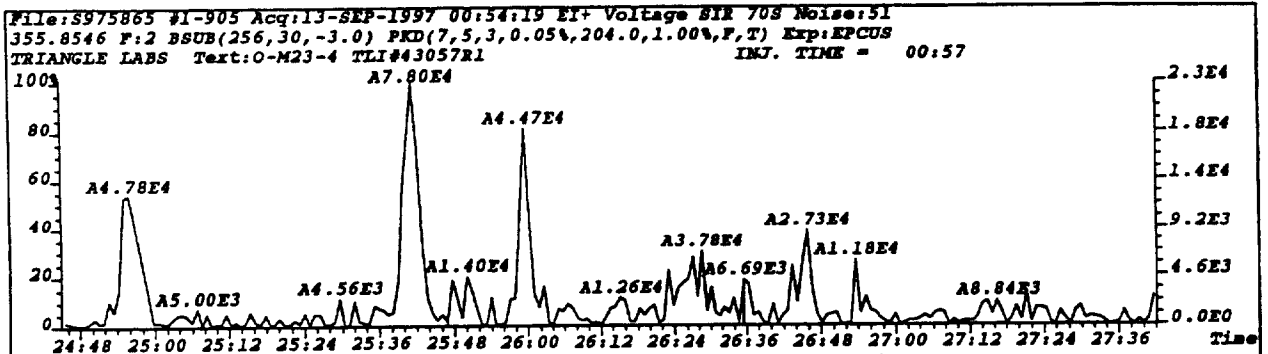


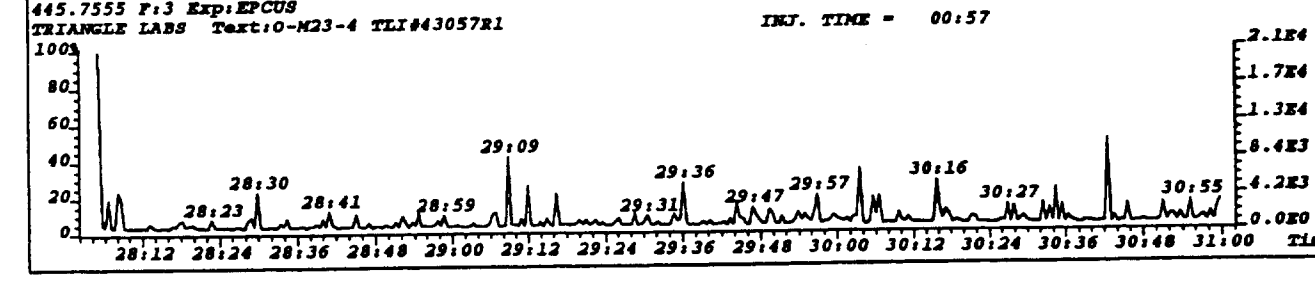
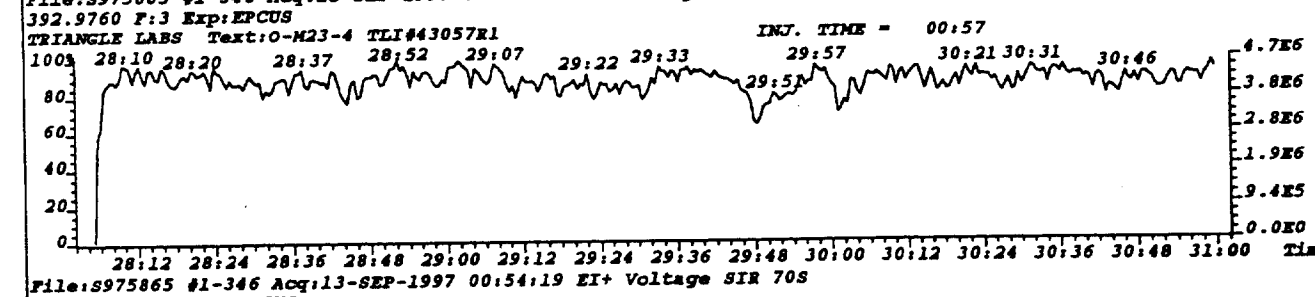
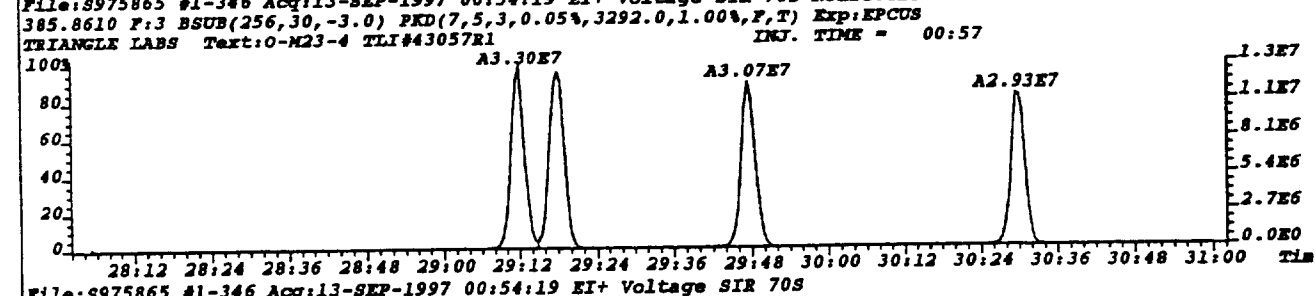
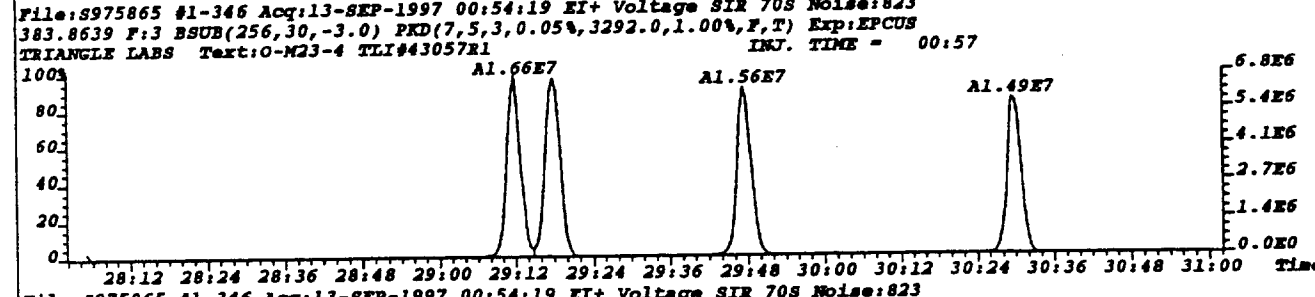
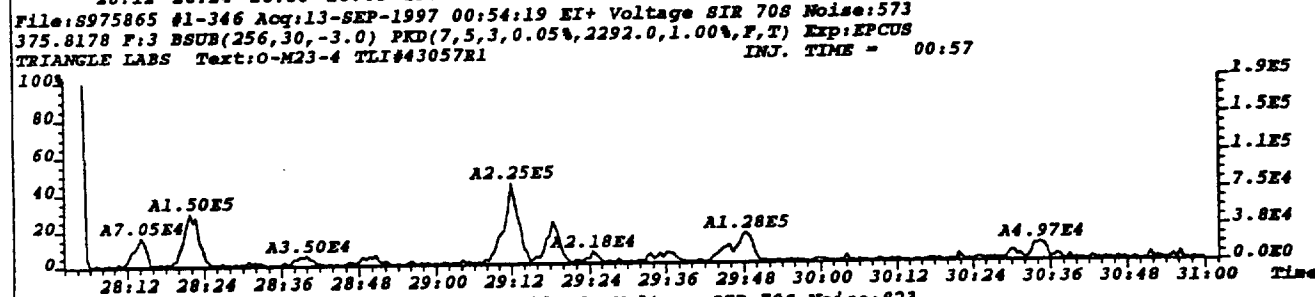
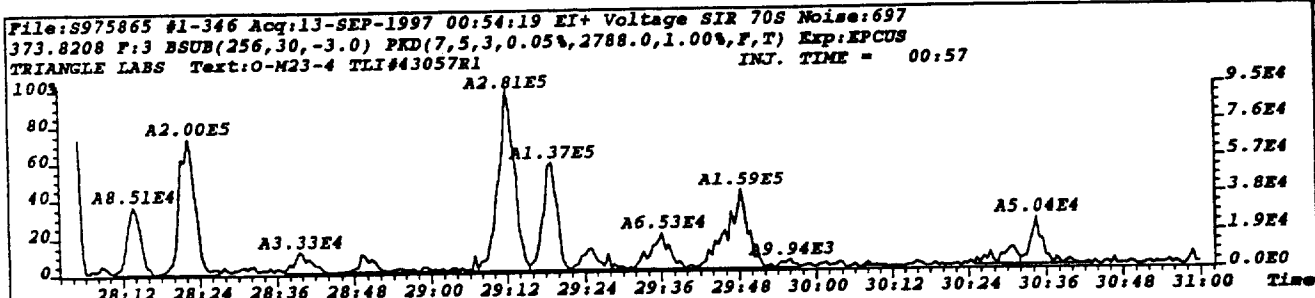
File:S975865 #1-905 Acq:13-SEP-1997 00:54:19 EI+ Voltage SIR 70S  
330.9792 F:2 Exp:EPCUS  
TRIANGLE LABS Text:O-M23-4 TLI#43057R1 INJ. TIME = 00:57

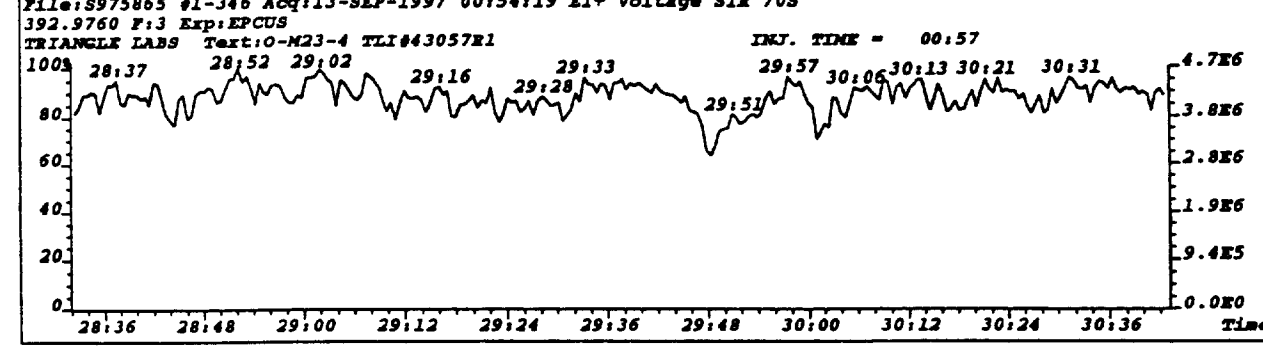
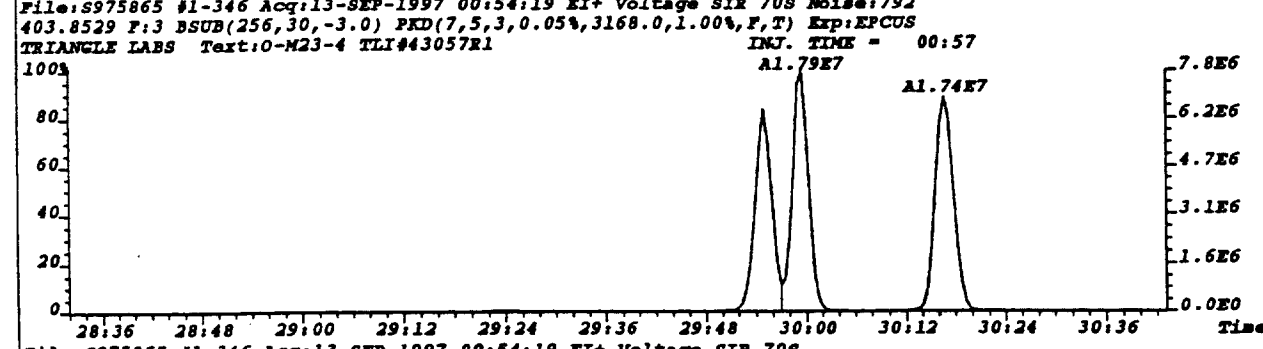
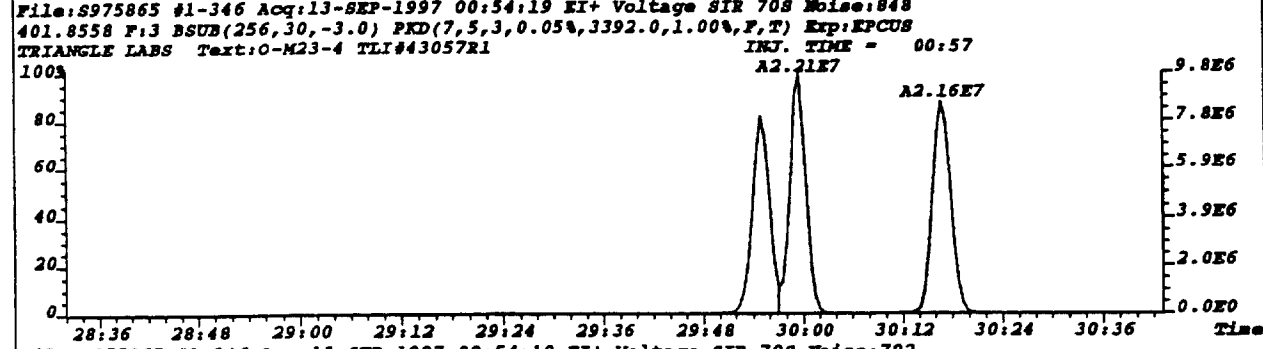
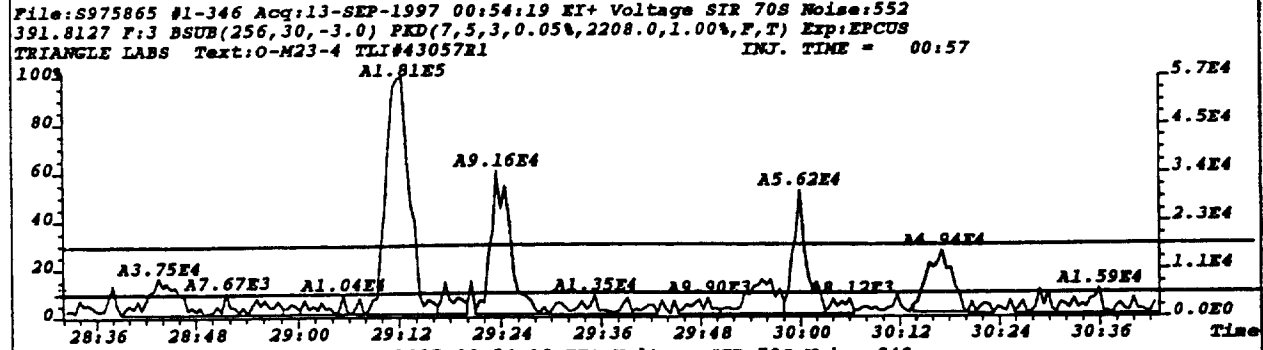
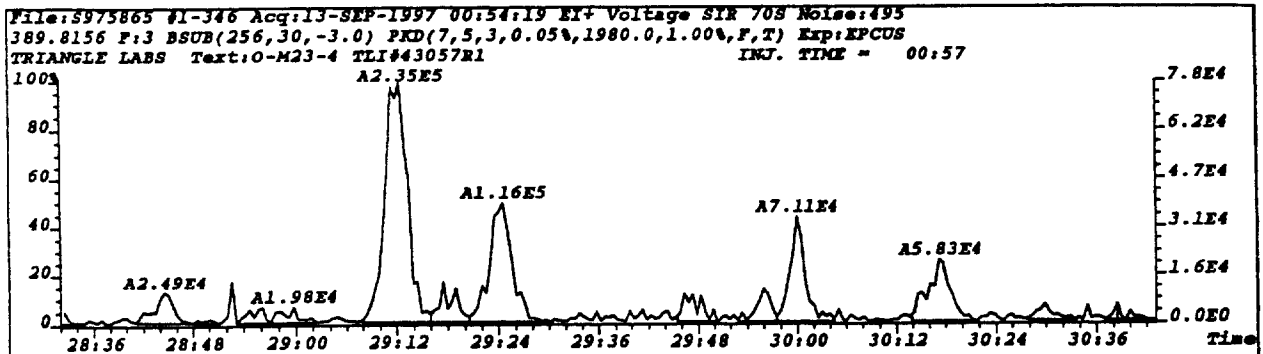


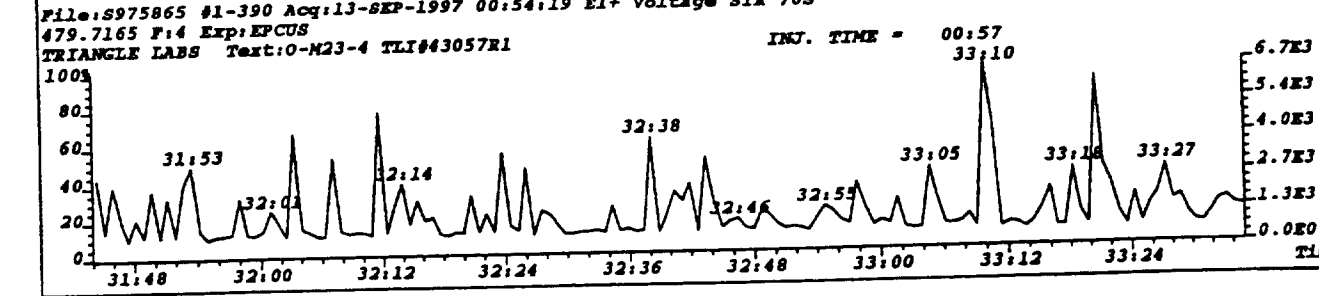
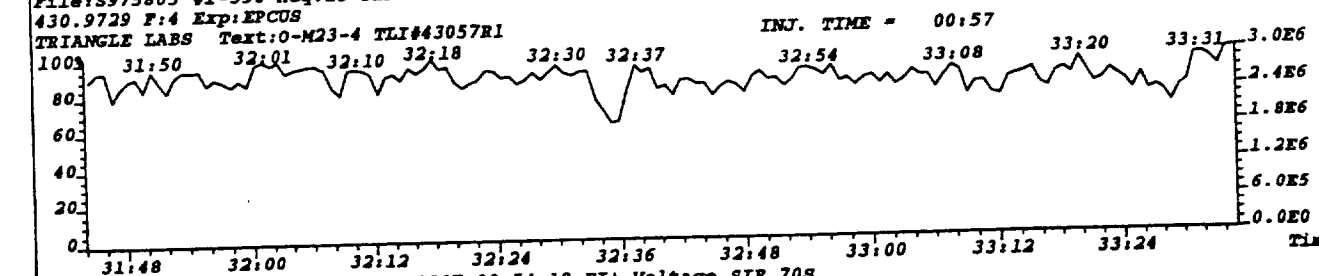
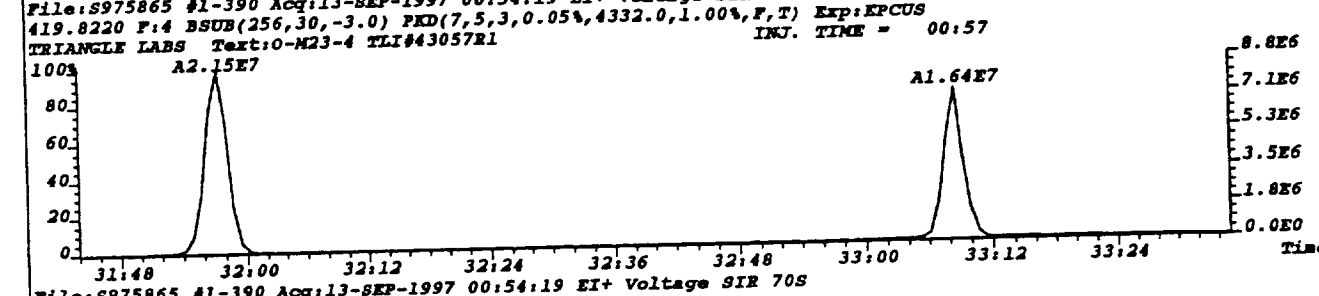
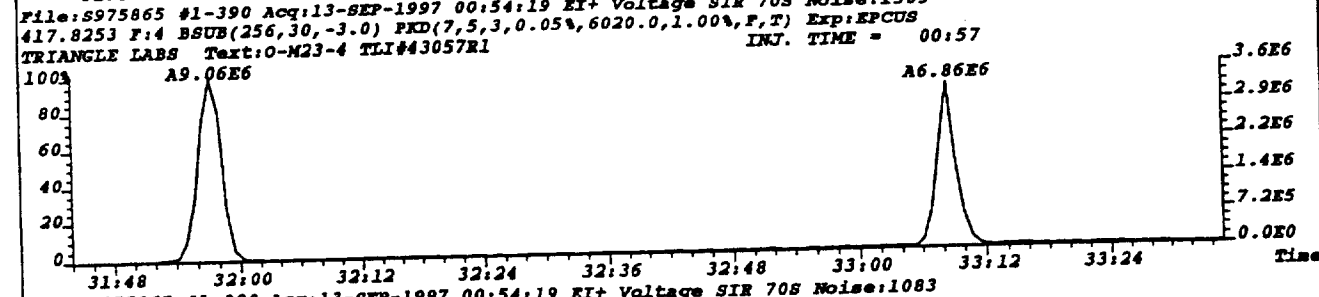
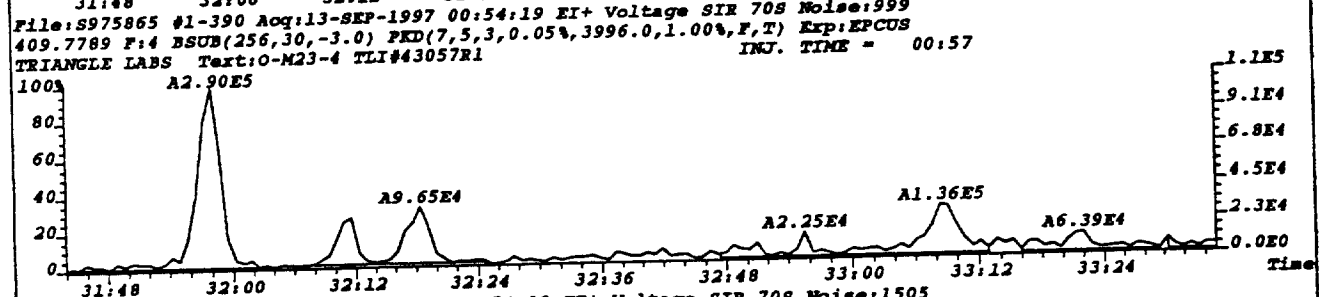
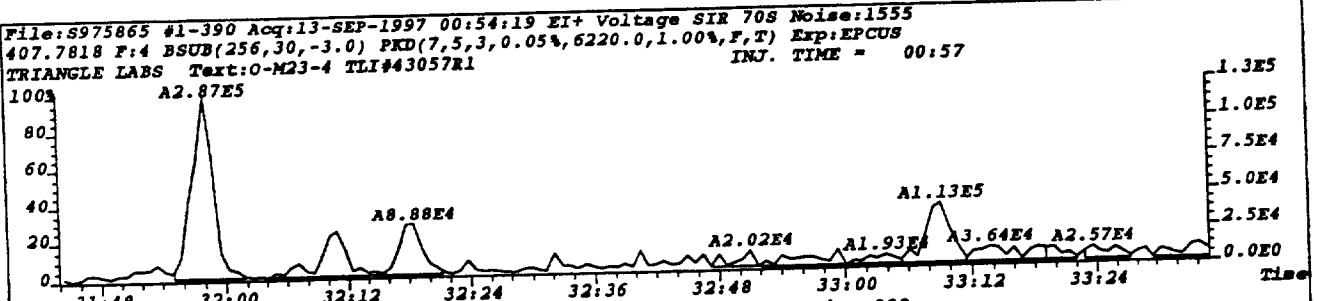
File:S975865 #1-905 Acq:13-SEP-1997 00:54:19 EI+ Voltage SIR 70S  
409.7974 F:2 Exp:EPCUS  
TRIANGLE LABS Text:O-M23-4 TLI#43057R1 INJ. TIME = 00:57

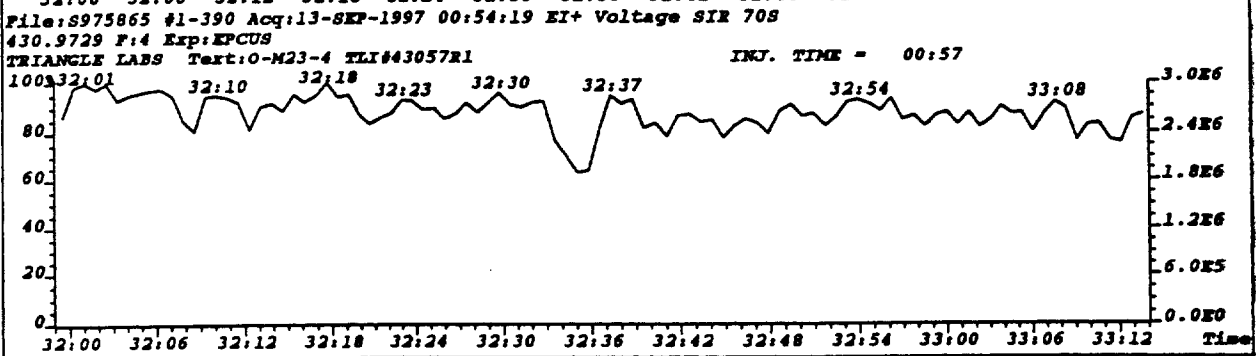
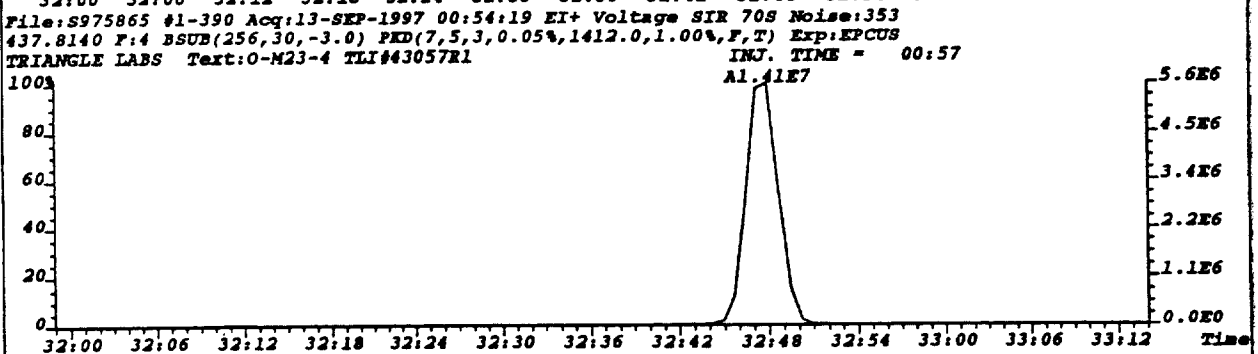
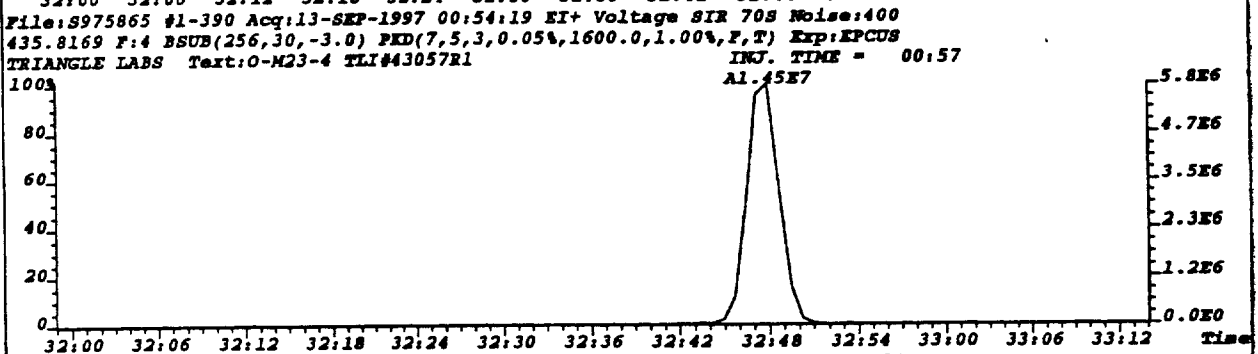
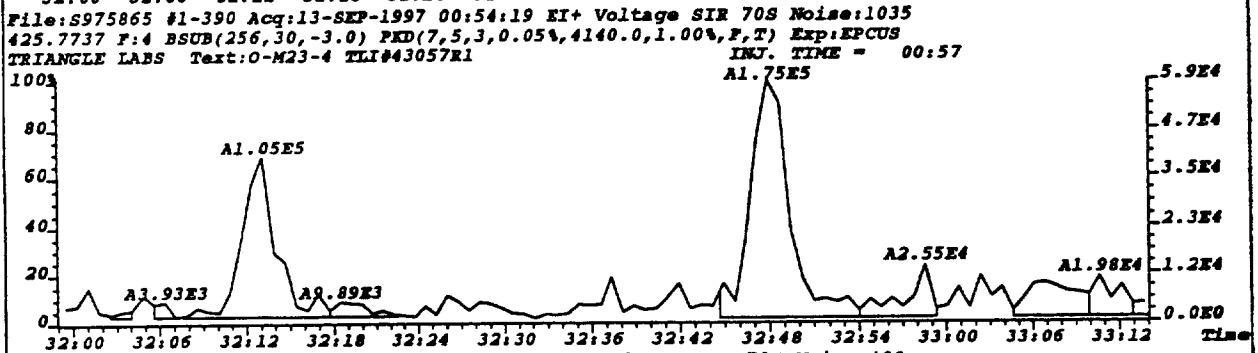
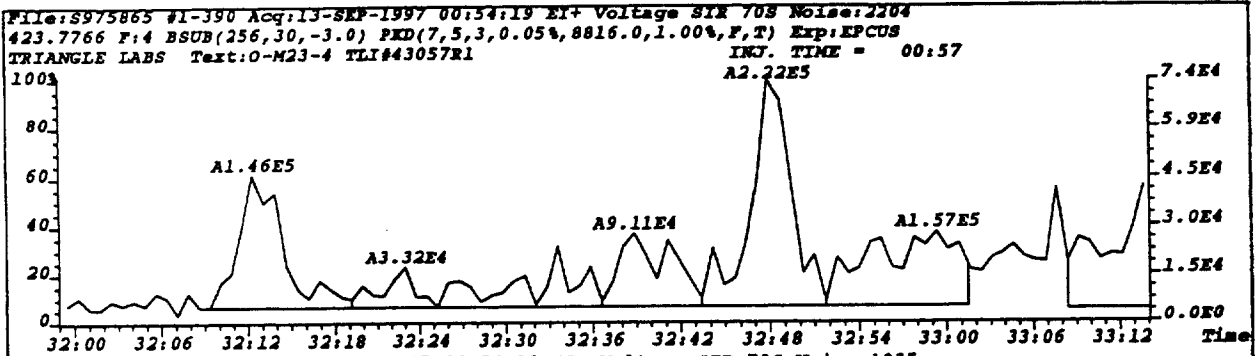




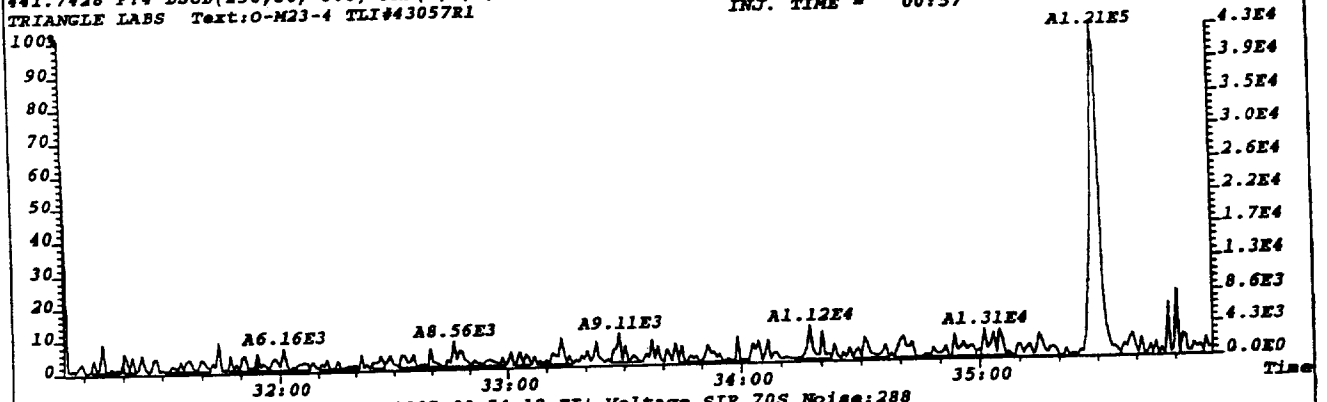




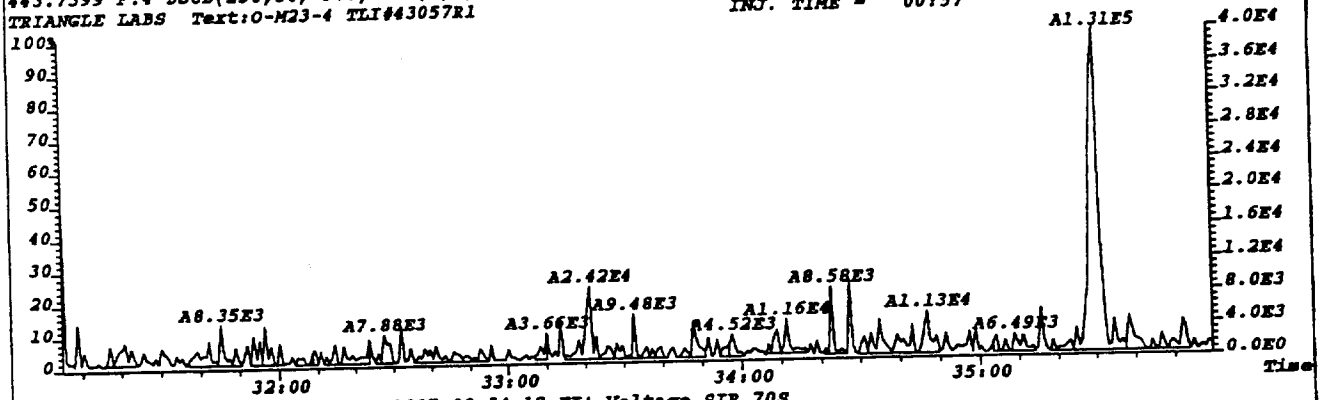




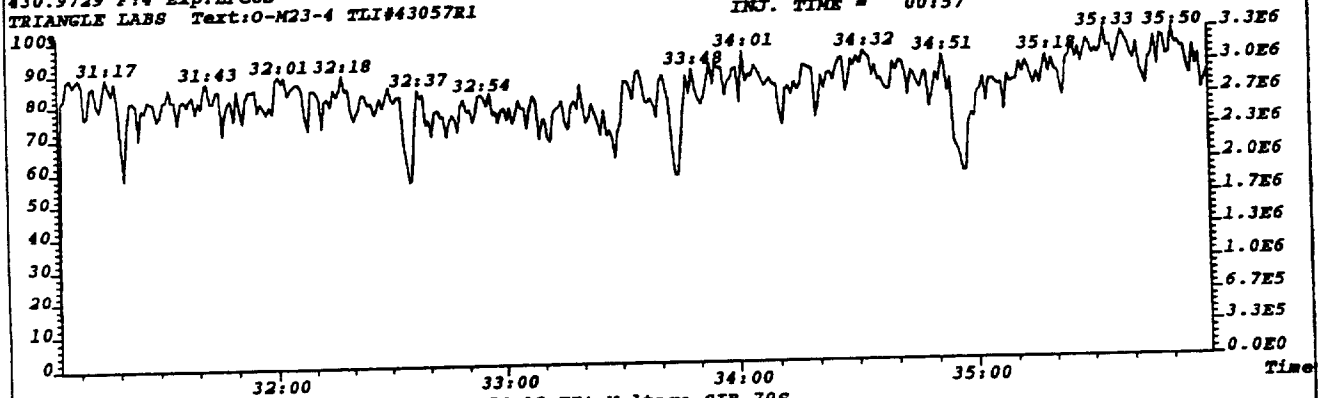
File:S975865 #1-390 Acq:13-SEP-1997 00:54:19 EI+ Voltage SIR 70S Noise:175  
441.7428 F:4 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,700.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:O-M23-4 TLI#43057R1 INJ. TIME = 00:57



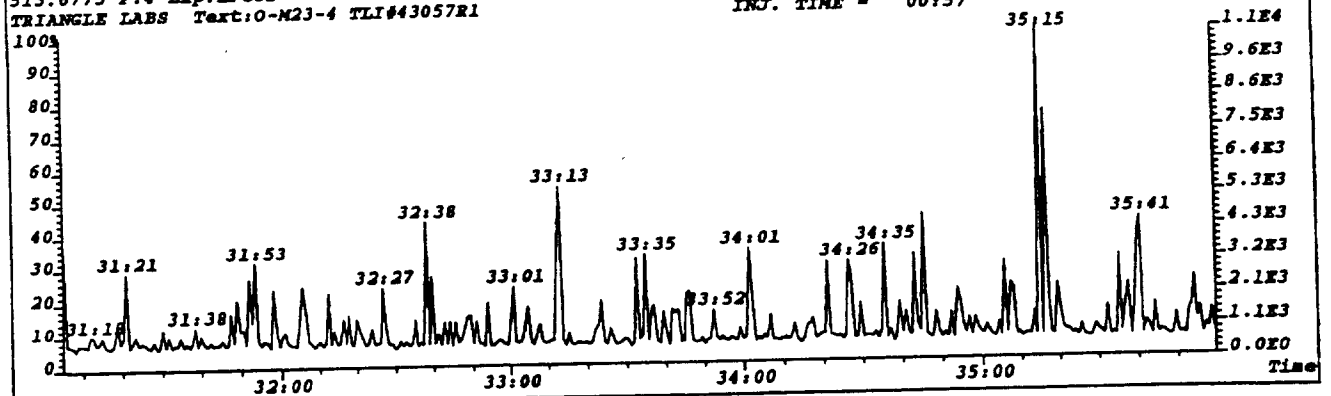
File:S975865 #1-390 Acq:13-SEP-1997 00:54:19 EI+ Voltage SIR 70S Noise:288  
443.7399 F:4 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,1152.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:O-M23-4 TLI#43057R1 INJ. TIME = 00:57



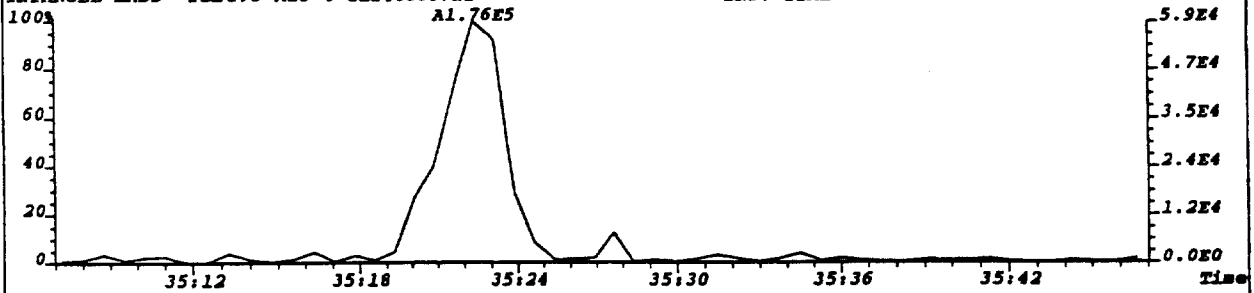
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430.9729 F:4 Exp:EPCUS  
TRIANGLE LABS Text:O-M23-4 TLI#43057R1 INJ. TIME = 00:57



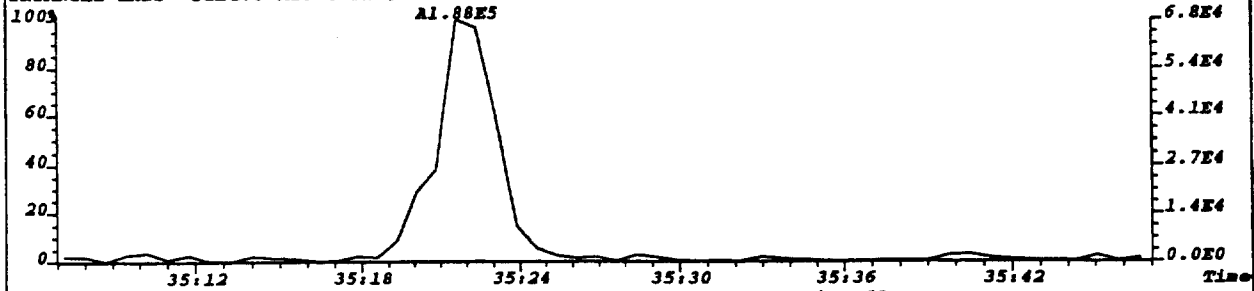
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513.6775 F:4 Exp:EPCUS  
TRIANGLE LABS Text:O-M23-4 TLI#43057R1 INJ. TIME = 00:57



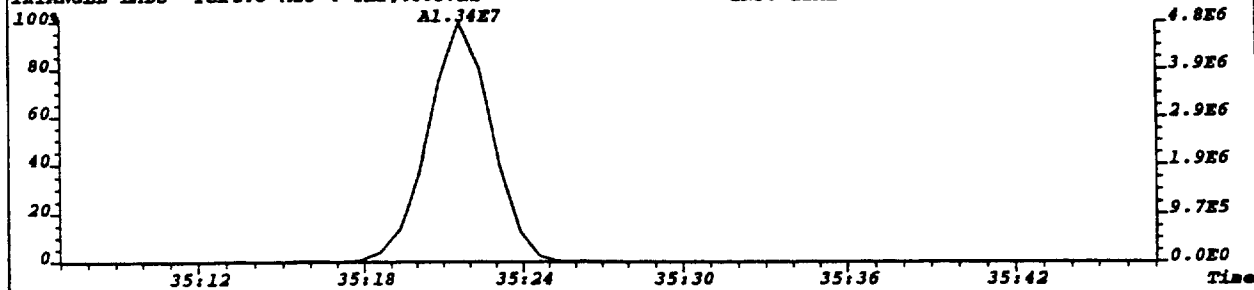
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457.7377 F:4 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,404.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:O-M23-4 TLI#43057R1 INJ. TIME = 00:57



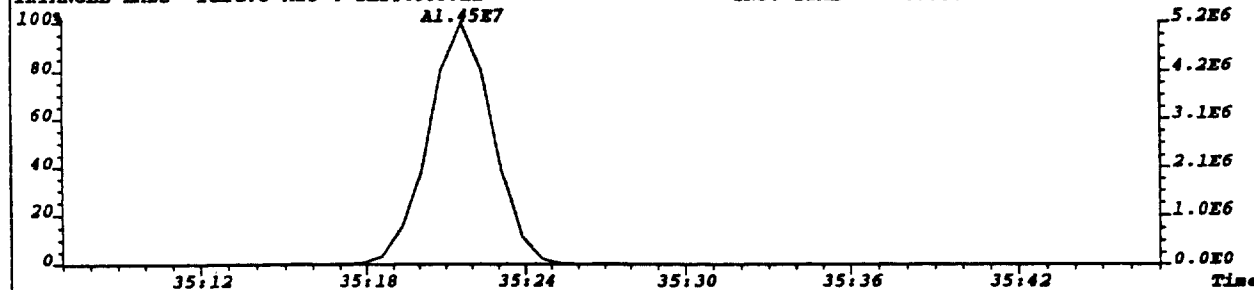
File:S975865 #1-390 Acq:13-SEP-1997 00:54:19 EI+ Voltage SIR 70S Noise:82  
459.7348 F:4 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,328.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:O-M23-4 TLI#43057R1 INJ. TIME = 00:57



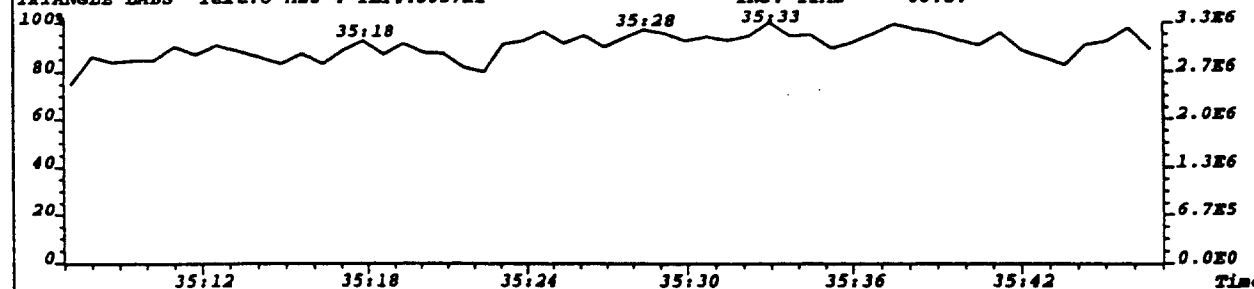
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469.7779 F:4 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,248.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:O-M23-4 TLI#43057R1 INJ. TIME = 00:57



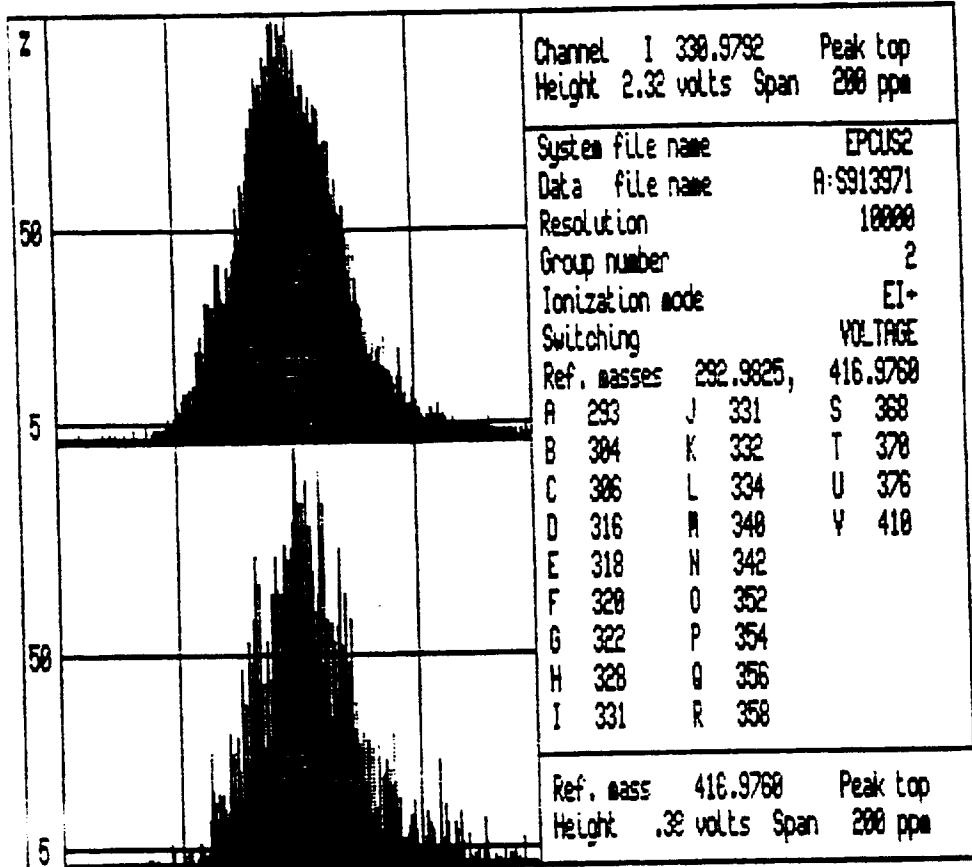
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471.7750 F:4 BSUB(256,30,-3.0) PKD(7,5,3,0.05%,208.0,1.00%,F,T) Exp:EPCUS  
TRIANGLE LABS Text:O-M23-4 TLI#43057R1 INJ. TIME = 00:57



File:S975865 #1-390 Acq:13-SEP-1997 00:54:19 EI+ Voltage SIR 70S  
430.9729 F:4 Exp:EPCUS  
TRIANGLE LABS Text:O-M23-4 TLI#43057R1 INJ. TIME = 00:57



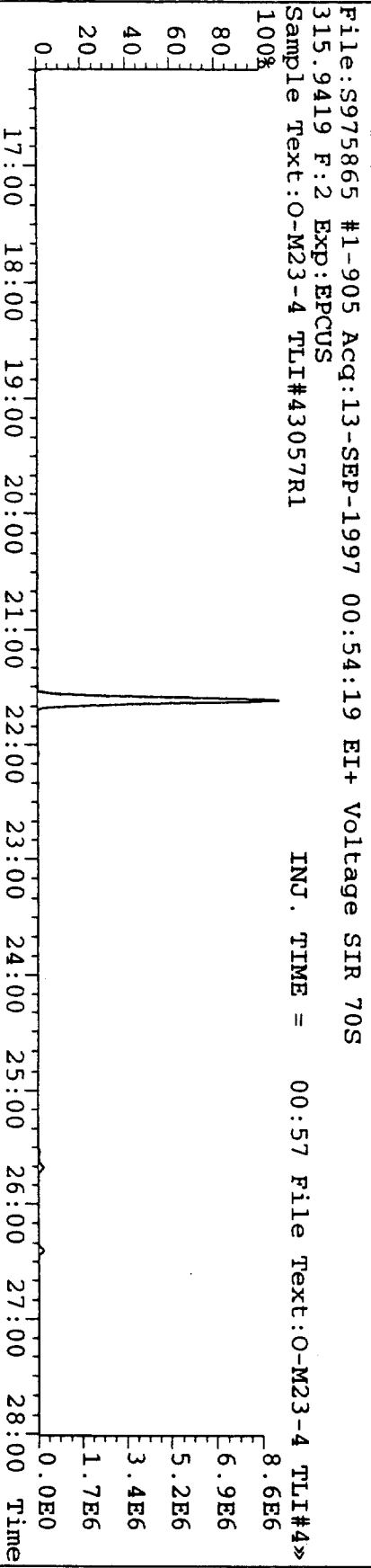
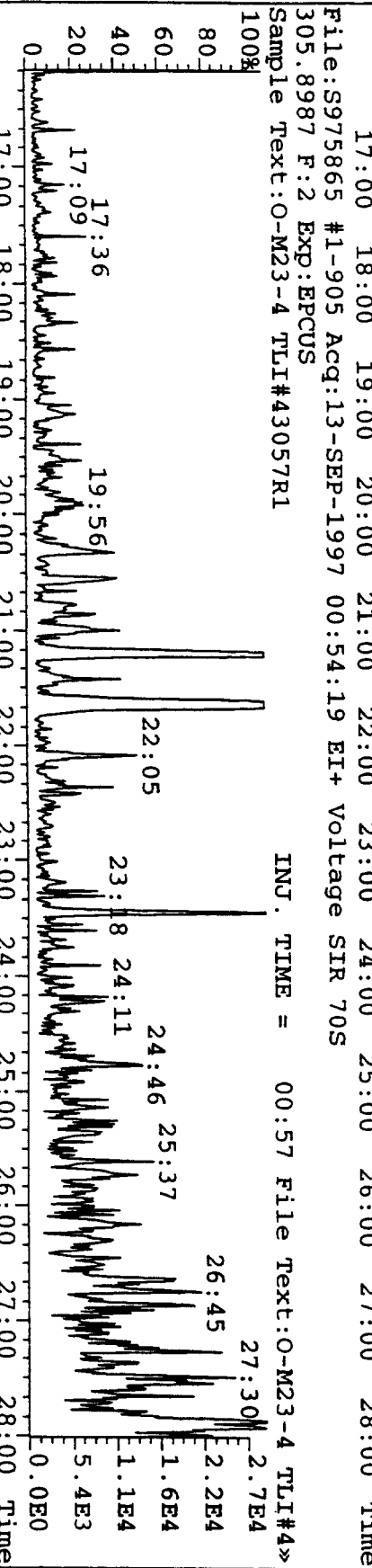
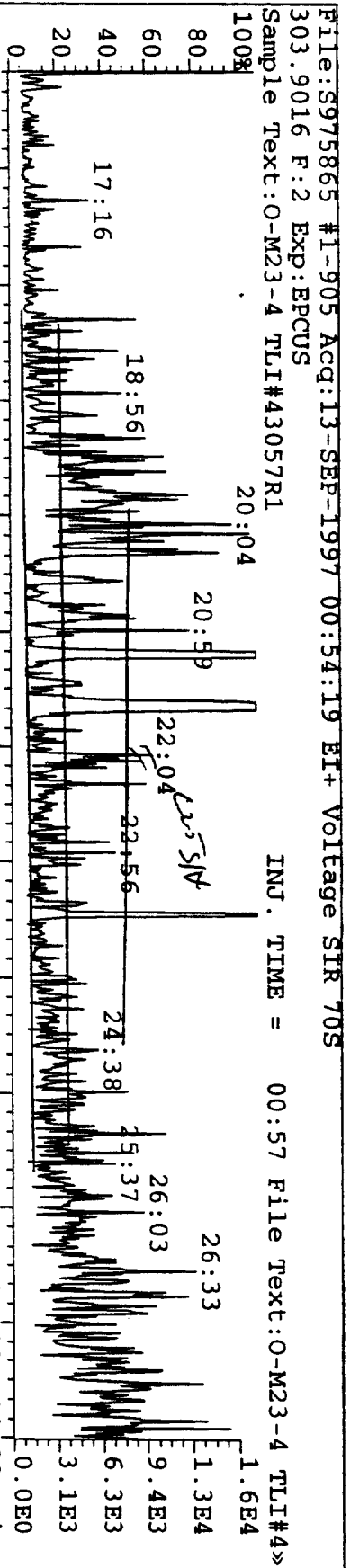




Channel I 330.9792 Peak top  
 Height 2.32 volts Span 200 ppm

System file name EPCUS2  
 Data file name A:S913971  
 Resolution 10000  
 Group number 2  
 Ionization mode EI+  
 Switching VOLTAGE  
 Ref. masses 292.9825, 416.9768  
 A 293 J 331 S 368  
 B 304 K 332 T 370  
 C 306 L 334 U 376  
 D 316 M 340 Y 410  
 E 318 N 342  
 F 320 O 352  
 G 322 P 354  
 H 328 Q 356  
 I 331 R 358

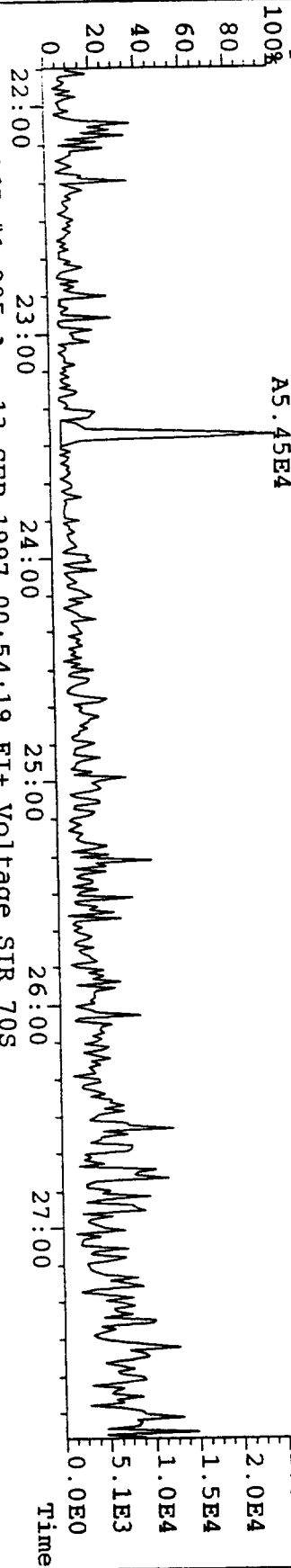
Ref. mass 416.9768 Peak top  
 Height .32 volts Span 200 ppm



File:S975865 #1-905 Acq:13-SEP-1997 00:54:19 EI+ Voltage SIR 70S

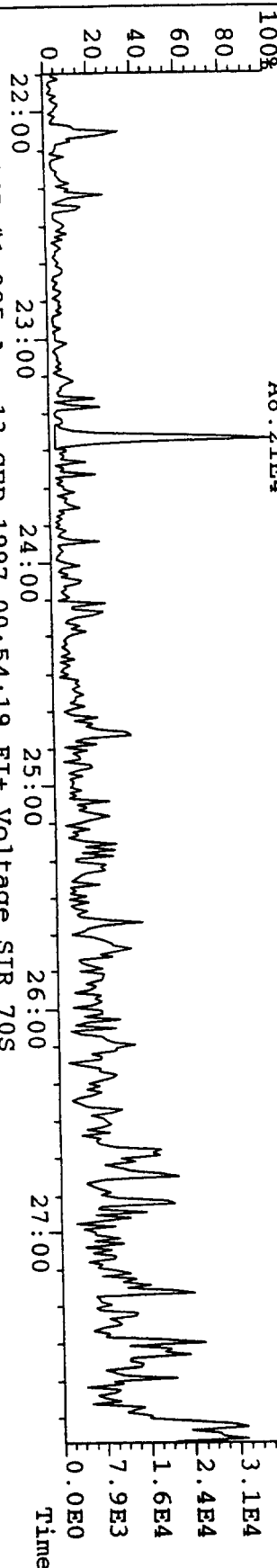
303.9016 F:2 Exp:EPCUS  
Sample Text:O-M23-4 TLI#43057R1

INJ. TIME = 00:57 File Text:O-M23-4 TLI#4»  
2.6E4



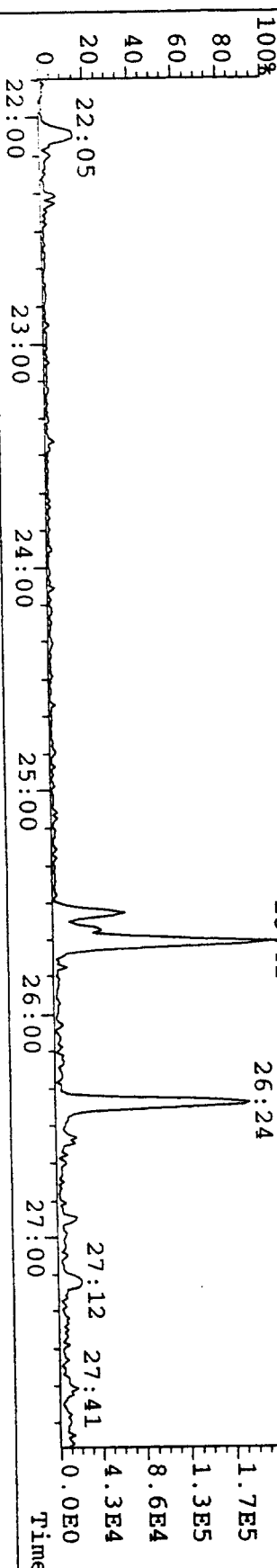
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305.8987 F:2 Exp:EPCUS  
Sample Text:O-M23-4 TLI#43057R1

INJ. TIME = 00:57 File Text:O-M23-4 TLI#4»  
3.9E4

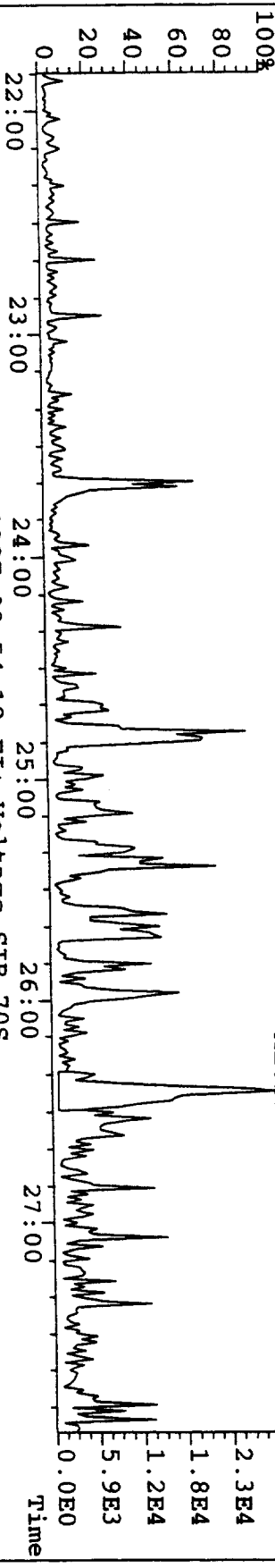


File:S975865 #1-905 Acq:13-SEP-1997 00:54:19 EI+ Voltage SIR 70S  
315.9419 F:2 Exp:EPCUS  
Sample Text:O-M23-4 TLI#43057R1

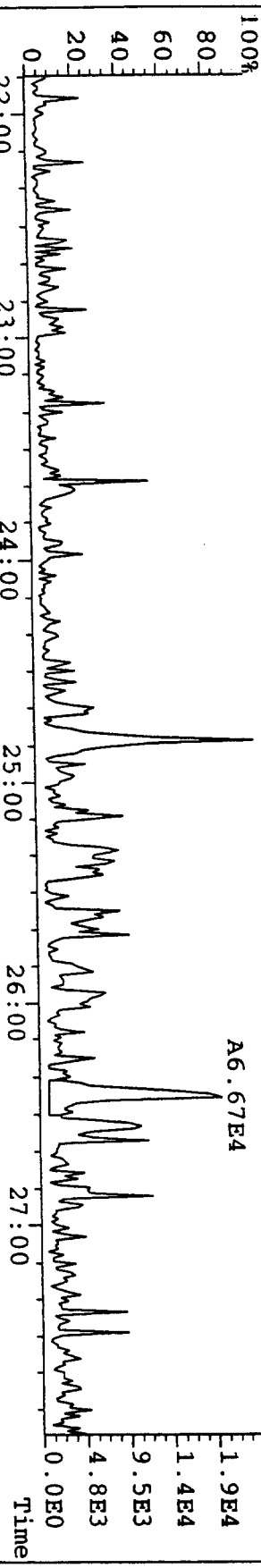
INJ. TIME = 00:57 File Text:O-M23-4 TLI#4»  
2.1E5



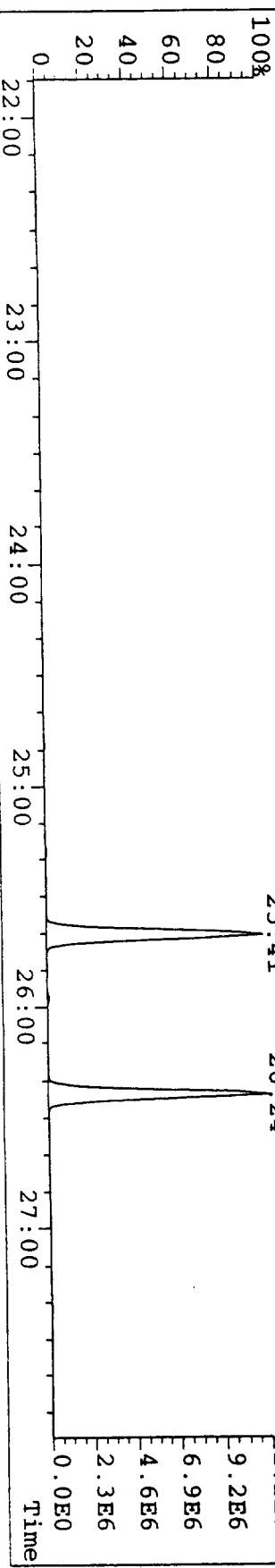
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 339.8597 F: 2 Exp: EPCUS  
 Sample Text: O-M23-4 TLI#43057R1  
 INJ. TIME = 00:57 File Text: O-M23-4 TLI#4»  
 2.9E4



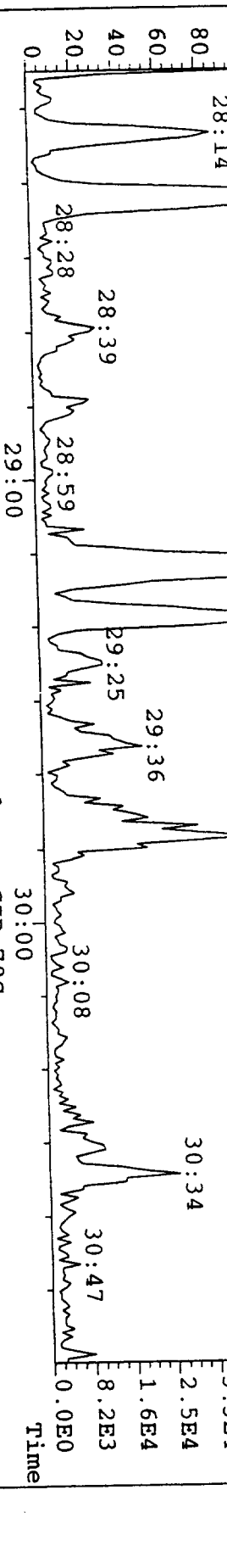
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 Sample Text: O-M23-4 TLI#43057R1  
 INJ. TIME = 00:57 File Text: O-M23-4 TLI#4»  
 2.4E4



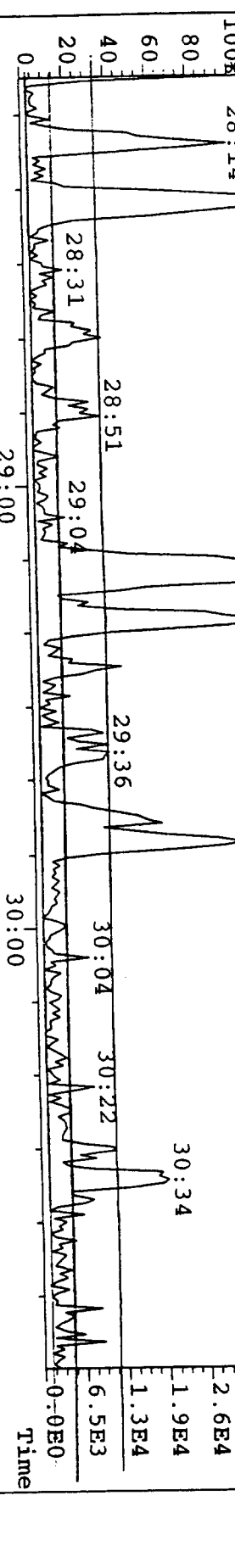
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 351.9000 F: 2 Exp: EPCUS  
 Sample Text: O-M23-4 TLI#43057R1  
 INJ. TIME = 00:57 File Text: O-M23-4 TLI#4»  
 1.2E7



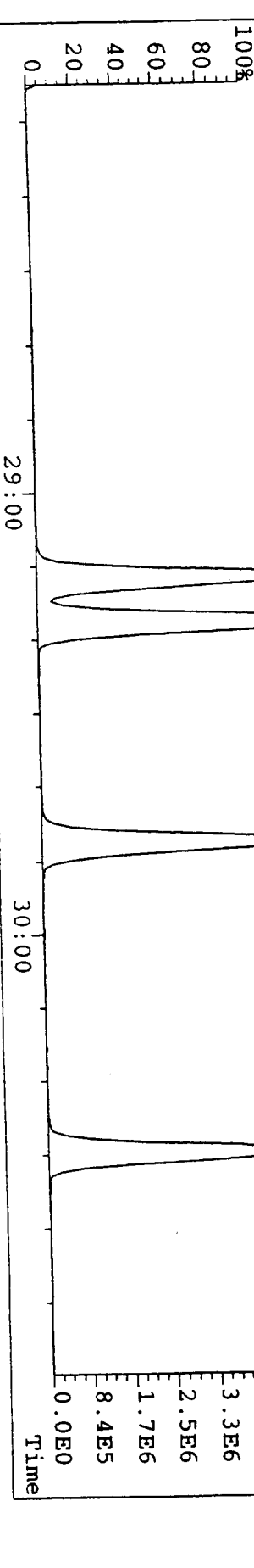
File:S975865 #1-346 Acq:13-SEP-1997 00:54:19 EI+ Voltage SIR 70S  
 373.8208 F:3 Exp:EPCUS  
 Sample Text:O-M23-4 TLI#43057R1  
 INJ. TIME = 00:57 File Text:O-M23-4 TLI#4»  
 4.1E4



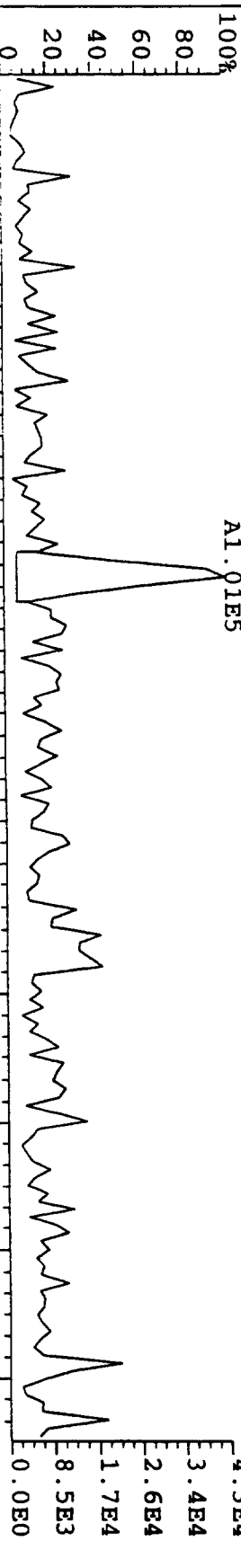
File:S975865 #1-346 Acq:13-SEP-1997 00:54:19 EI+ Voltage SIR 70S  
 375.8178 F:3 Exp:EPCUS  
 Sample Text:O-M23-4 TLI#43057R1  
 INJ. TIME = 00:57 File Text:O-M23-4 TLI#4»  
 3.2E4



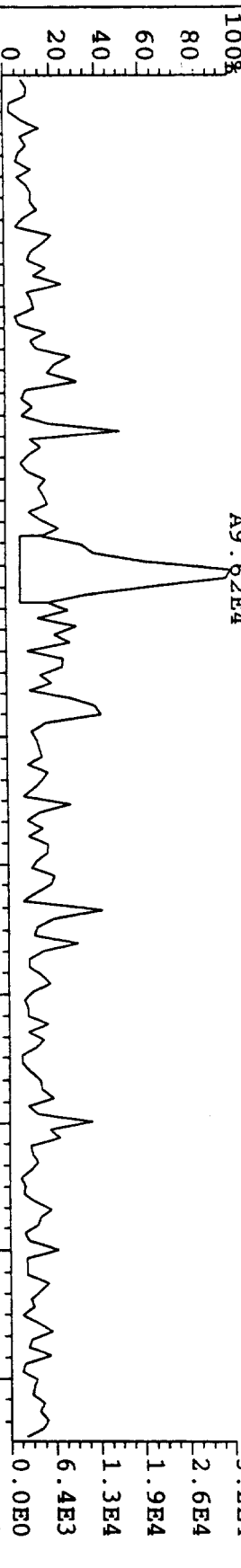
File:S975865 #1-346 Acq:13-SEP-1997 00:54:19 EI+ Voltage SIR 70S  
 383.8639 F:3 Exp:EPCUS  
 Sample Text:O-M23-4 TLI#43057R1  
 INJ. TIME = 00:57 File Text:O-M23-4 TLI#4»  
 4.2E6



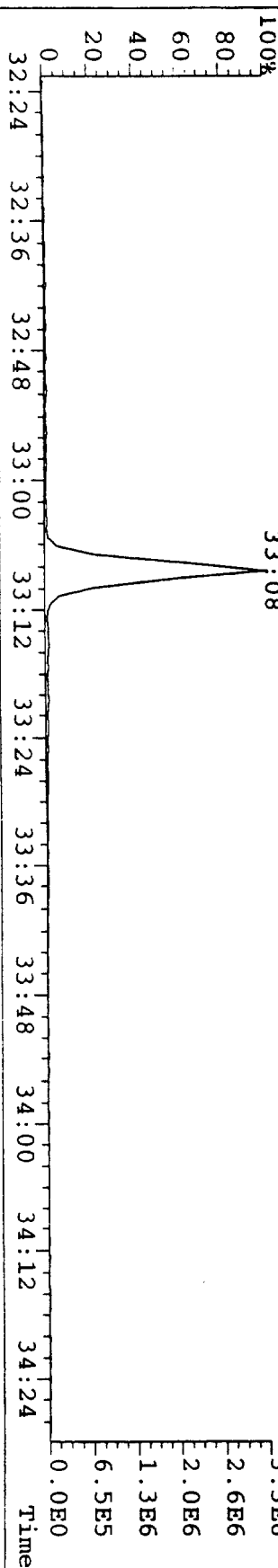
File:S975865 #1-390 Acq:13-SEP-1997 00:54:19 EI+ Voltage SIR 70S  
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 Sample Text:O-M23-4 TLI#43057R1  
 INJ. TIME = 00:57 File Text:O-M23-4 TLI#4»



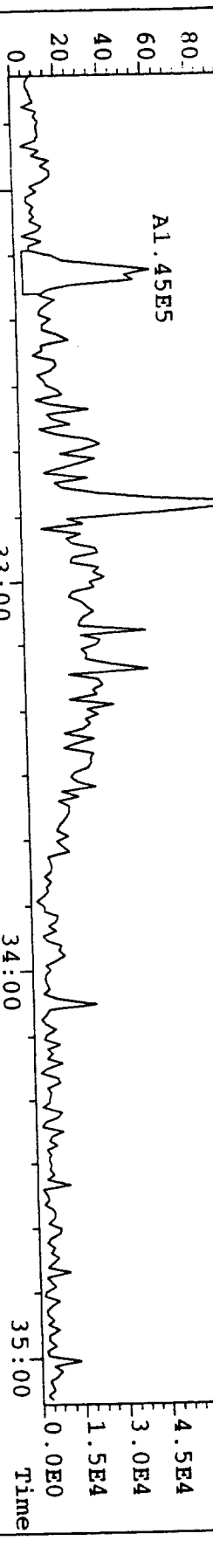
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 409.7789 F:4 Exp:EPCUS  
 Sample Text:O-M23-4 TLI#43057R1  
 INJ. TIME = 00:57 File Text:O-M23-4 TLI#4»



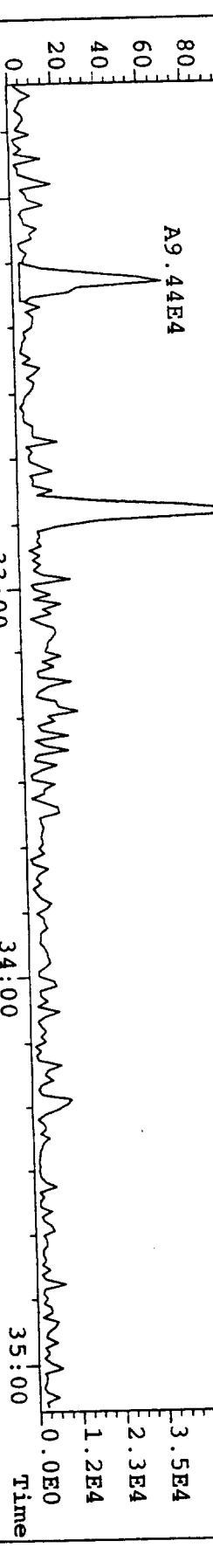
File:S975865 #1-390 Acq:13-SEP-1997 00:54:19 EI+ Voltage SIR 70S  
 417.8253 F:4 Exp:EPCUS  
 Sample Text:O-M23-4 TLI#43057R1  
 INJ. TIME = 00:57 File Text:O-M23-4 TLI#4»



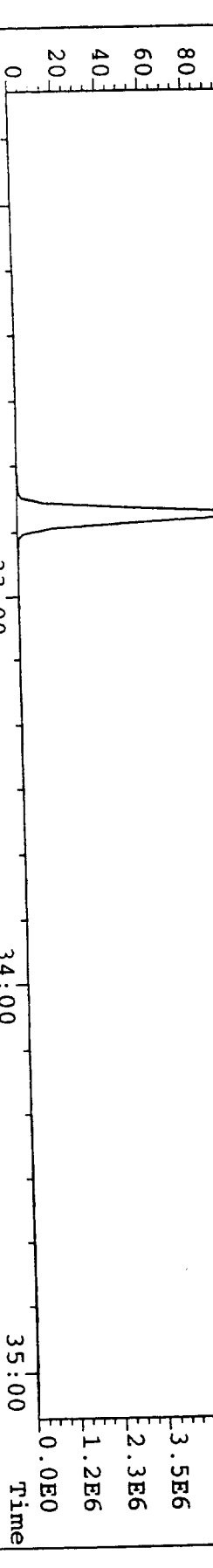
File: S975865 #1-390 Acq: 13-SEP-1997 00:54:19 EI+ Voltage SIR 70S  
 423.7766 F: 4 Exp: EPCUS  
 Sample Text: O-M23-4 TLI#43057R1  
 INJ. TIME = 00:57 File Text: O-M23-4 TLI#4»



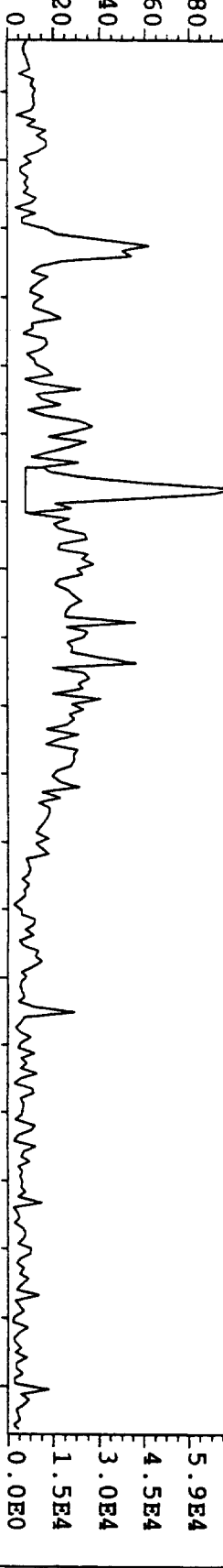
File: S975865 #1-390 Acq: 13-SEP-1997 00:54:19 EI+ Voltage SIR 70S  
 425.7737 F: 4 Exp: EPCUS  
 Sample Text: O-M23-4 TLI#43057R1  
 INJ. TIME = 00:57 File Text: O-M23-4 TLI#4»



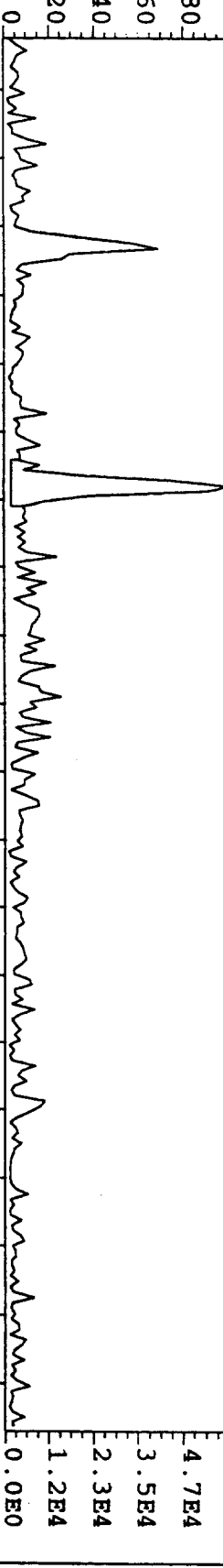
File: S975865 #1-390 Acq: 13-SEP-1997 00:54:19 EI+ Voltage SIR 70S  
 435.8169 F: 4 Exp: EPCUS  
 Sample Text: O-M23-4 TLI#43057R1  
 INJ. TIME = 00:57 File Text: O-M23-4 TLI#4»



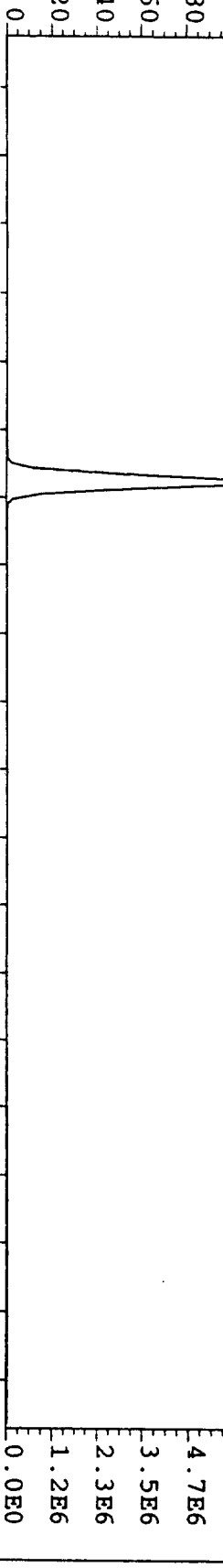
File: S975865 #1-390 Acq: 13-SEP-1997 00:54:19 EI+ Voltage SIR 70S  
423.7766 F: 4 Exp: EPCUS  
Sample Text: O-M23-4 TLI#43057R1  
INJ. TIME = 00:57 File Text: O-M23-4 TLI#4»  
100% A1.966E5



File: S975865 #1-390 Acq: 13-SEP-1997 00:54:19 EI+ Voltage SIR 70S  
425.7737 F: 4 Exp: EPCUS  
Sample Text: O-M23-4 TLI#43057R1  
INJ. TIME = 00:57 File Text: O-M23-4 TLI#4»  
100% A1.599E5

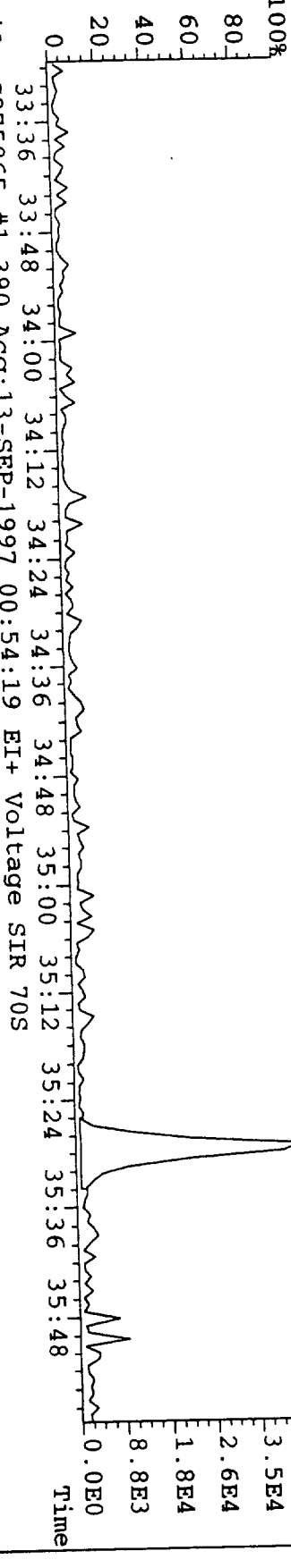


File: S975865 #1-390 Acq: 13-SEP-1997 00:54:19 EI+ Voltage SIR 70S  
435.8169 F: 4 Exp: EPCUS  
Sample Text: O-M23-4 TLI#43057R1  
INJ. TIME = 00:57 File Text: O-M23-4 TLI#4»  
100% 32:48

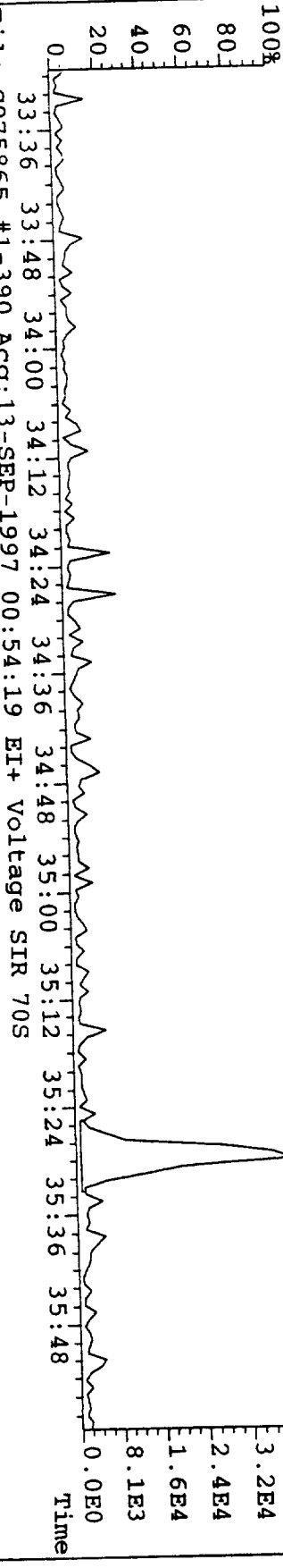




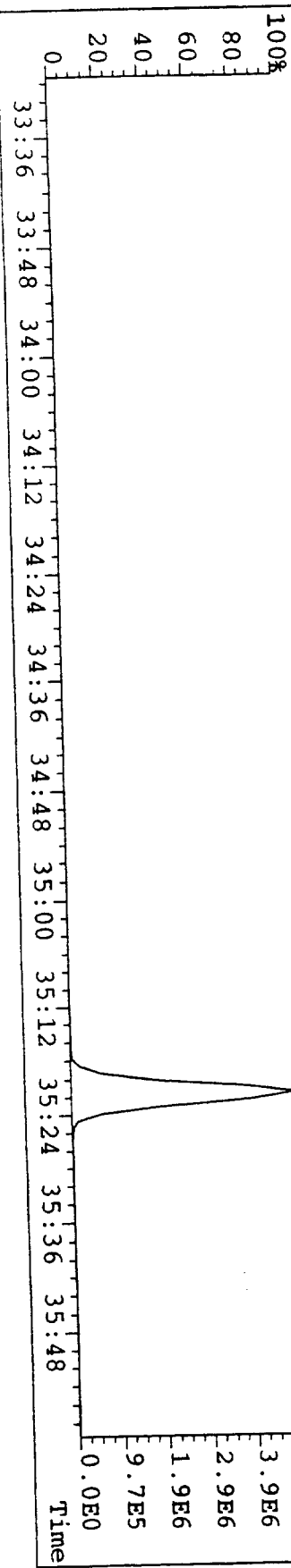
File: S975865 #1-390 Acq: 13-SEP-1997 00:54:19 EI+ Voltage SIR 70S  
 441.7428 F: 4 Exp: EPCUS  
 Sample Text: O-M23-4 TLI#43057R1  
 INJ. TIME = 00:57 File Text: O-M23-4 TLI#4»  
 4.4E4  
 3.5E4  
 2.6E4  
 1.8E4  
 8.8E3  
 0.0E0



File: S975865 #1-390 Acq: 13-SEP-1997 00:54:19 EI+ Voltage SIR 70S  
 443.7399 F: 4 Exp: EPCUS  
 Sample Text: O-M23-4 TLI#43057R1  
 INJ. TIME = 00:57 File Text: O-M23-4 TLI#4»  
 4.1E4  
 3.2E4  
 2.4E4  
 1.6E4  
 8.1E3  
 0.0E0



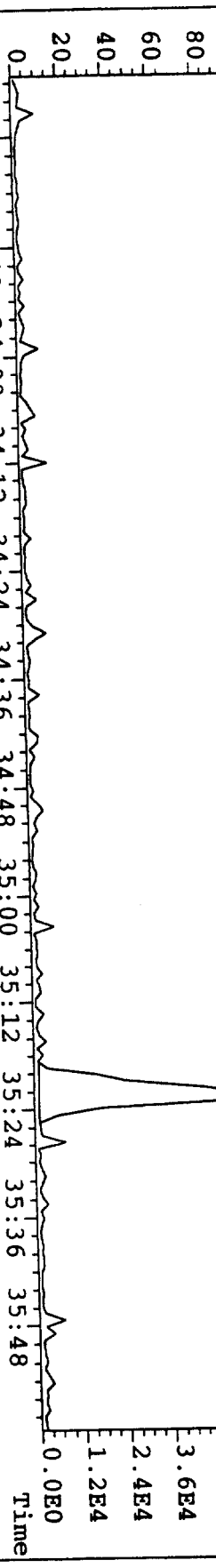
File: S975865 #1-390 Acq: 13-SEP-1997 00:54:19 EI+ Voltage SIR 70S  
 469.7779 F: 4 Exp: EPCUS  
 Sample Text: O-M23-4 TLI#43057R1  
 INJ. TIME = 00:57 File Text: O-M23-4 TLI#4»  
 4.8E6  
 3.9E6  
 2.9E6  
 1.9E6  
 9.7E5  
 0.0E0



File:S975865 #1-390 Acq:13-SEP-1997 00:54:19 EI+ Voltage SIR 70S

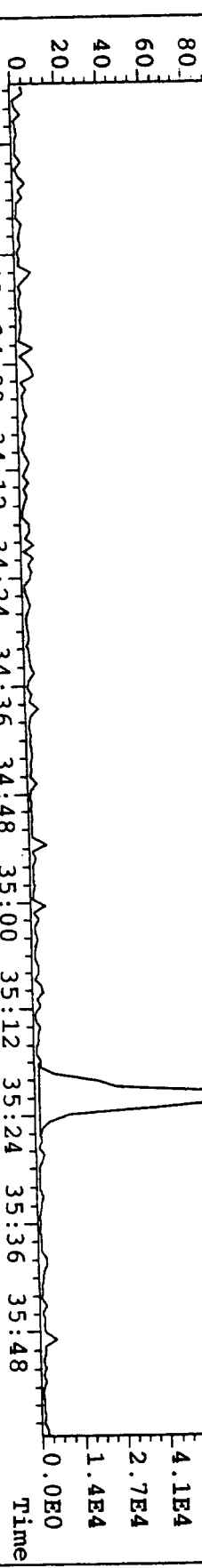
457.7377 F:4 Exp:EPCUS INJ. TIME = 00:57 File Text:O-M23-4 TLI#4»

Sample Text:O-M23-4 TLI#43057R1 6.0E4



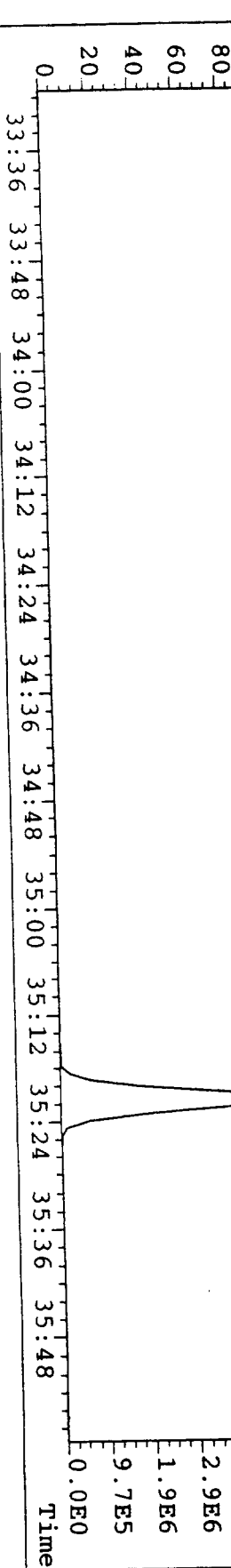
File:S975865 #1-390 Acq:13-SEP-1997 00:54:19 EI+ Voltage SIR 70S INJ. TIME = 00:57 File Text:O-M23-4 TLI#4»

459.7348 F:4 Exp:EPCUS 6.8E4



File:S975865 #1-390 Acq:13-SEP-1997 00:54:19 EI+ Voltage SIR 70S INJ. TIME = 00:57 File Text:O-M23-4 TLI#4»

469.7779 F:4 Exp:EPCUS 4.8E6



Sample Text:O-M23-4 TLI#43057R1



Initial ....Date...

Data Review By:

VC 9/14/97

Calculated Noise Area: 2.55

The Total Area for each peak with an ion abundance ratio outside ratio limits has been recalculated according to method requirements.

Page No. 1 Listing of P973849B.dbf  
09/14/97 Matched GC Peaks / Ratio / Ret. Time

Compound:

M\_2.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID.. Flags.

TCDF		0.65-0.89				0.786-1.096			
304-306	DC NL	0:00	0.75	1.77				0.000	
	DC SN	18:17	2.67	0.85				0.883	
	DC SN	18:22	1.31	0.57				0.887	
	DC SN	18:32	2.68	0.78				0.895	
	DC SN	18:38	0.22	0.44				0.900	
	DC SN	18:43	2.04	0.41				0.904	
	DC SN	18:51	0.13	0.28				0.911	
	DC SN	19:27	1.02	3.10				0.940	
	DC SN	19:46	0.31	0.94				0.955	
	DC SN	19:58	0.29	0.46				0.965	
	DC SN	19:59	0.27	0.60				0.965	
	DC SN	20:03	0.39	0.25				0.969	
	DC SN	20:14	0.24	0.80				0.977	
D	d SN	20:43	0.92	6.94			1.001	2378-TCDF	AN
	DC SN	20:48	1.11	1.15				1.005	
	DC SN	20:56	0.61	2.32				1.011	
	DC SN	20:59	1.46	0.46				1.014	
	DC SN	21:22	0.64	1.86				1.032	
	DC SN	21:28	0.85	0.72				1.037	
	DC SN	21:50	3.11	0.34				1.055	
	DC SN	21:57	4.88	0.57				1.060	
	DC SN	22:12	0.28	0.34				1.072	
304-306		0 Peaks		0.00					

13C12-TCDF		0.65-0.89				0.952-1.048			
316-318	DC NL	0:00	0.97	2.09				0.000	
	DC WL	19:01	1.25	1.15				0.919	
	DC WL	19:26	0.78	6.21				0.939	
	DC SN	20:17	3.24	0.65				0.980	
		20:42	0.76	1,768.72	763.37	1,005.35	1.000	13C12-2378-TCDF	ISO
	DC SN	20:52	0.26	1.38				1.008	
	DC SN	21:02	0.63	0.90				1.016	
		21:14	1.11	5.45	3.43	3.08		1.026	
	DC WH	22:35	0.85	14.24				1.091	
316-318		2 Peaks		1,774.17					

----- Above: TCDF / TCDD Follows -----

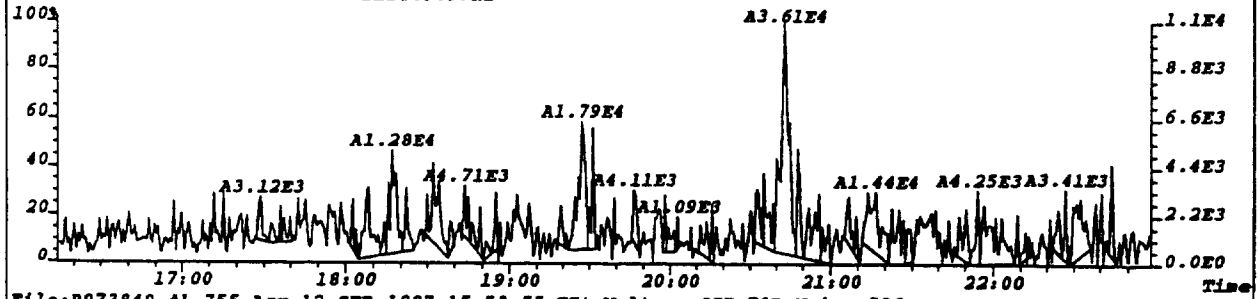
13C12-TCDD		0.65-0.89				0.897-1.103			
332-334	DC NL	0:00	1.58	1.50				0.000	
		18:28	0.67	5.39	2.16	3.23		0.945	
		19:33	0.79	1,310.93	576.92	734.01	1.000	13C12-2378-TCDD	IS1
		19:47	0.81	1,229.21	550.46	678.75	1.012	13C12-1234-TCDD	RS1

Compound/ M_Z	QC.Log	Omit	Why	..RT.	OK	Ratio	Total.Area	Area.Peak.1..	Area.Peak.2..	Rel.RT	Compound.Name..	ID..	Flags.
	DC	SN		19:55	RO	1.02	1.65						1.019
	DC	SN		20:01	RO	0.34	0.53						1.024
				20:25	RO	0.93	16.78	8.78	9.48				1.044
	DC	SN		20:57	RO	0.36	1.72						1.072
	DC	SN		21:08	RO	0.62	0.78						1.081
	DC	SN		21:13		0.73	1.75						1.085
	DC	SN		21:17	RO	1.37	0.81						1.089
	DC	WH		21:42	RO	3.11	0.48						1.110
	DC	WH		21:57		0.68	9.31						1.123
332-334						4 Peaks	2,562.31						

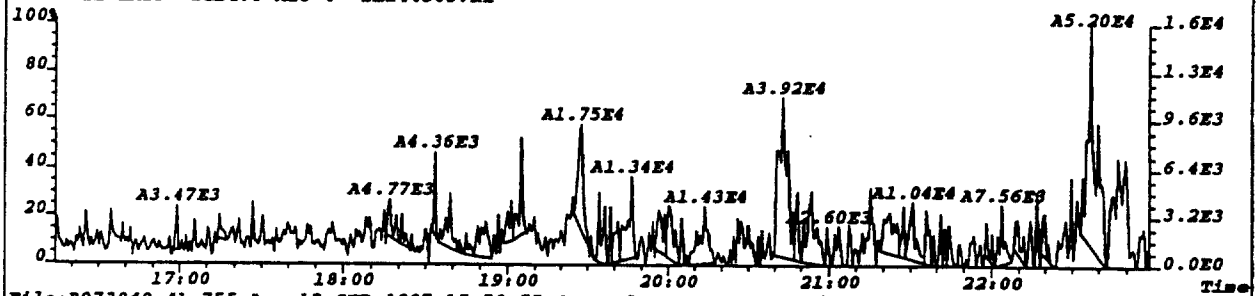
Column Description.....	"Why" Code	Description.....	QC Log Desc.....
M_Z -Nominal Ion Mass(es)	WL	Below Retention Time Window	A-Peak Added
..RT. -Retention Time (mm:ss)	WH	Above Retention Time Window	K-Peak Kept
Rat.1 -Ratio of M/M+2 Ions	SN	Below Signal to Noise Level	D-Peak Deleted
OK -RO=Ratio Outside Limits	<M	Below Method Detection Limit	T-Time Changed
Rel.RT-Relative Retention Time	NL	Channel Specific Noise Level	M-Peak Area Changed
			N-Name Changed
			E-Ether Interference

\*\*\* End of Report \*\*\*

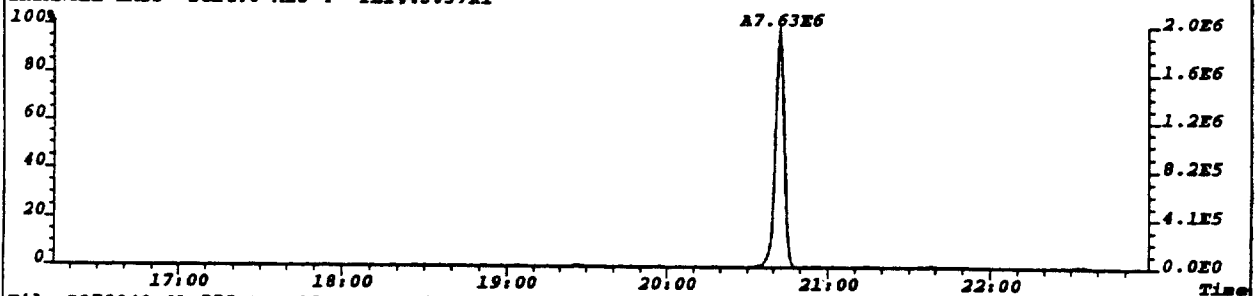
File:P973849 #1-755 Acq:12-SEP-1997 15:53:55 EI+ Voltage SIR 70P Noise:378  
 303.9016 BSUB(256,30,-3.0) PKD(5,3,1,0.10%,1512.0,0.00%,F,F) Exp:DB225  
 TRIANGLE LABS Text:0-M23-4 TLI#43057R1



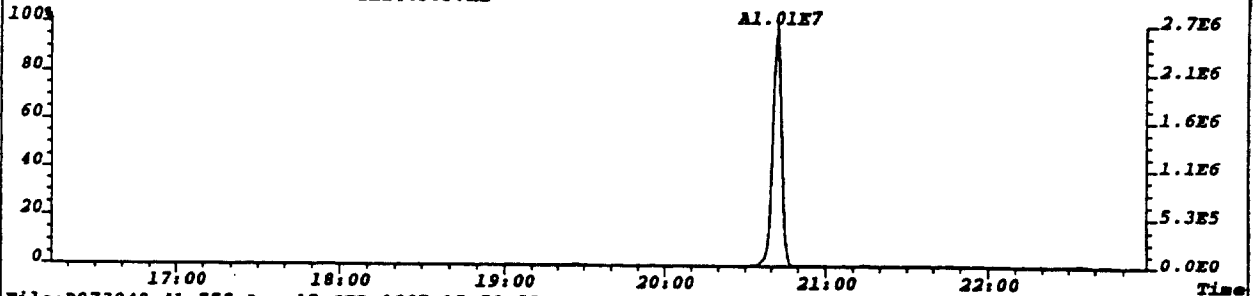
File:P973849 #1-755 Acq:12-SEP-1997 15:53:55 EI+ Voltage SIR 70P Noise:506  
 305.8987 BSUB(256,30,-3.0) PKD(5,3,1,0.10%,2024.0,0.00%,F,F) Exp:DB225  
 TRIANGLE LABS Text:0-M23-4 TLI#43057R1



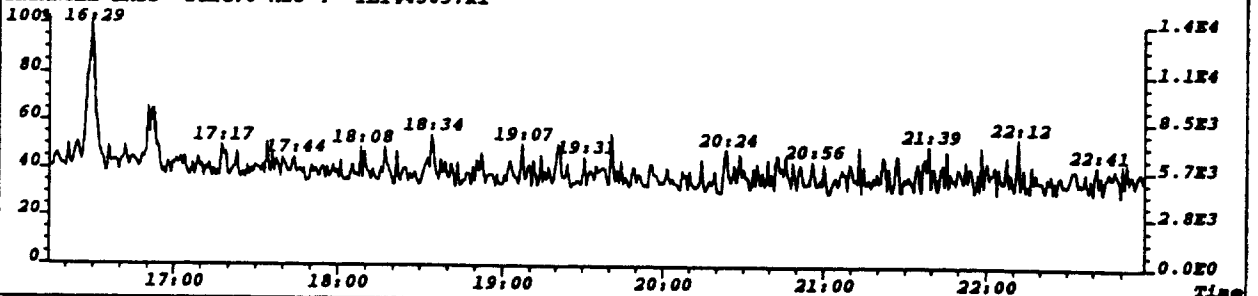
File:P973849 #1-755 Acq:12-SEP-1997 15:53:55 EI+ Voltage SIR 70P Noise:576  
 315.9419 BSUB(256,30,-3.0) PKD(5,3,1,0.10%,2304.0,0.00%,F,F) Exp:DB225  
 TRIANGLE LABS Text:0-M23-4 TLI#43057R1



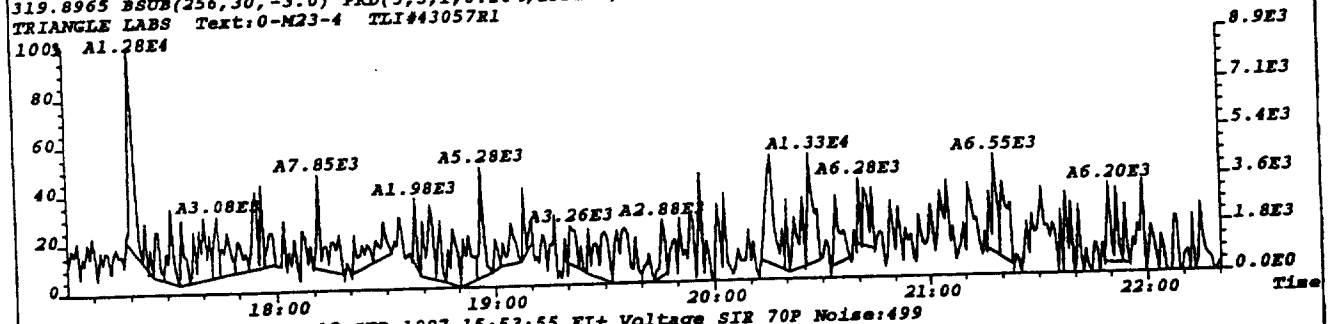
File:P973849 #1-755 Acq:12-SEP-1997 15:53:55 EI+ Voltage SIR 70P Noise:588  
 317.9389 BSUB(256,30,-3.0) PKD(5,3,1,0.10%,2352.0,0.00%,F,F) Exp:DB225  
 TRIANGLE LABS Text:0-M23-4 TLI#43057R1



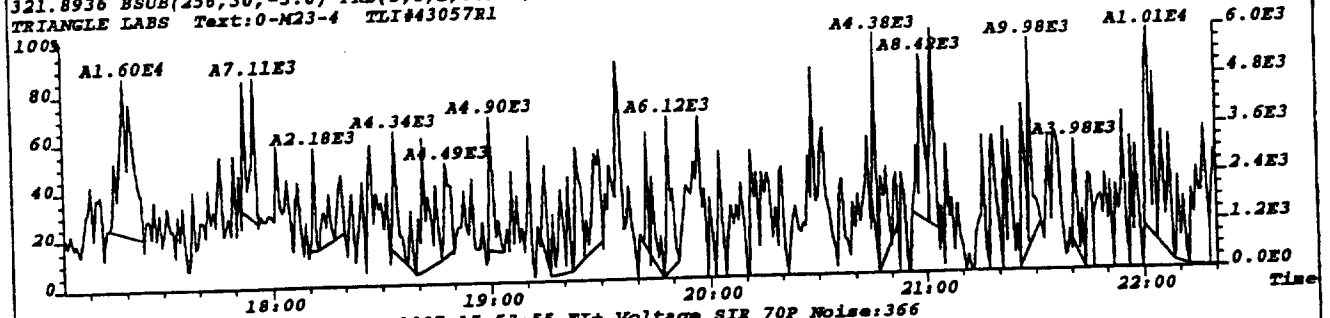
File:P973849 #1-755 Acq:12-SEP-1997 15:53:55 EI+ Voltage SIR 70P  
 375.8364 Exp:DB225  
 TRIANGLE LABS Text:0-M23-4 TLI#43057R1



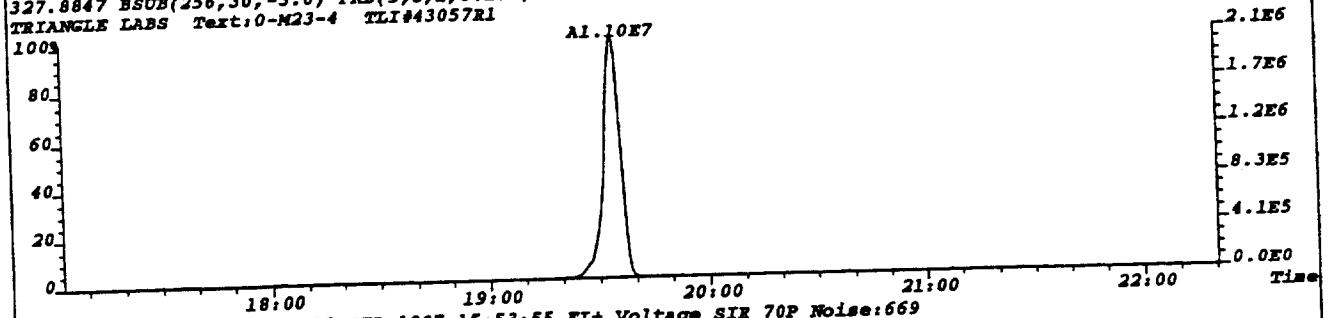
File:P973849 #1-755 Acq:12-SEP-1997 15:53:55 EI+ Voltage SIR 70P Noise:388  
319.8965 BSUB(256,30,-3.0) PKD(5,3,1,0.10%,1552.0,0.00%,F,F) Exp:DB225  
TRIANGLE LABS Text:0-M23-4 TLI#43057R1



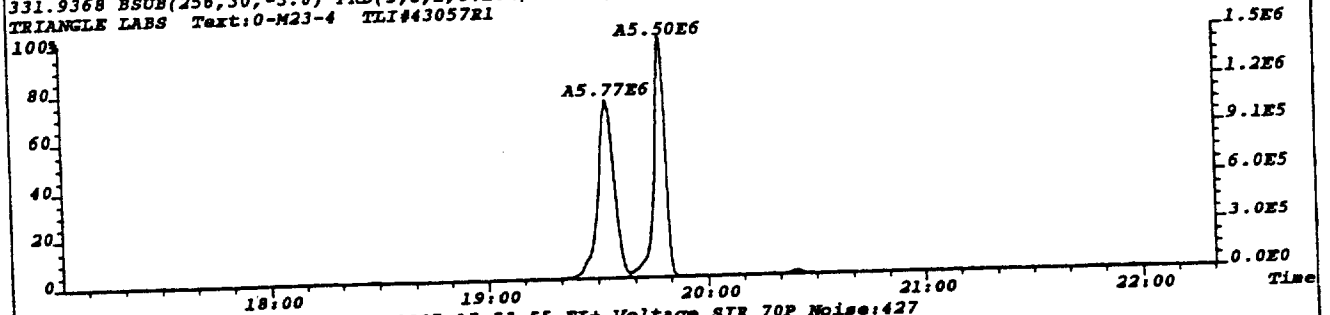
File:P973849 #1-755 Acq:12-SEP-1997 15:53:55 EI+ Voltage SIR 70P Noise:499  
321.8936 BSUB(256,30,-3.0) PKD(5,3,1,0.10%,1996.0,0.00%,F,F) Exp:DB225  
TRIANGLE LABS Text:0-M23-4 TLI#43057R1



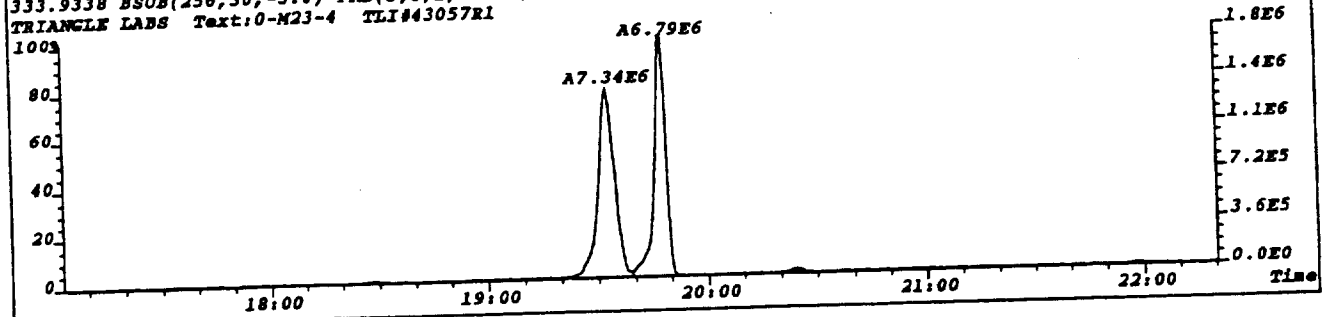
File:P973849 #1-755 Acq:12-SEP-1997 15:53:55 EI+ Voltage SIR 70P Noise:366  
327.8847 BSUB(256,30,-3.0) PKD(5,3,1,0.10%,1464.0,0.00%,F,F) Exp:DB225  
TRIANGLE LABS Text:0-M23-4 TLI#43057R1



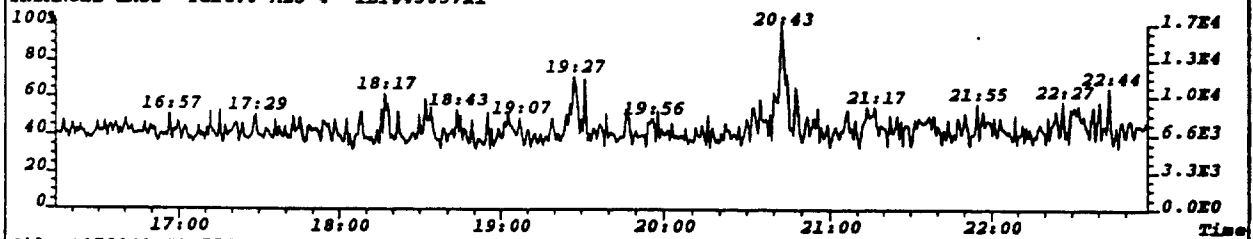
File:P973849 #1-755 Acq:12-SEP-1997 15:53:55 EI+ Voltage SIR 70P Noise:669  
331.9368 BSUB(256,30,-3.0) PKD(5,3,1,0.10%,2676.0,0.00%,F,F) Exp:DB225  
TRIANGLE LABS Text:0-M23-4 TLI#43057R1



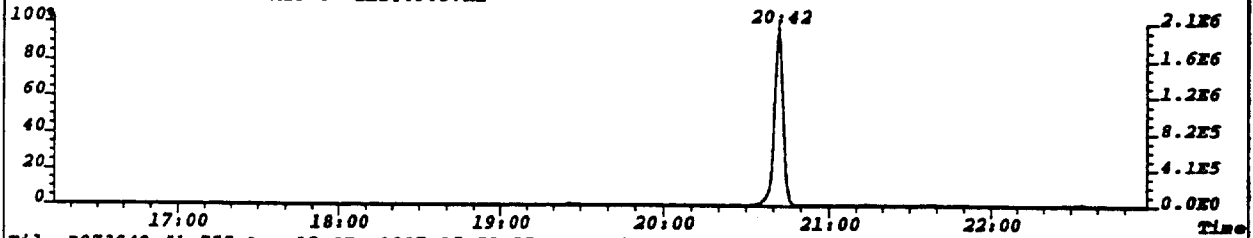
File:P973849 #1-755 Acq:12-SEP-1997 15:53:55 EI+ Voltage SIR 70P Noise:427  
333.9338 BSUB(256,30,-3.0) PKD(5,3,1,0.10%,1708.0,0.00%,F,F) Exp:DB225  
TRIANGLE LABS Text:0-M23-4 TLI#43057R1



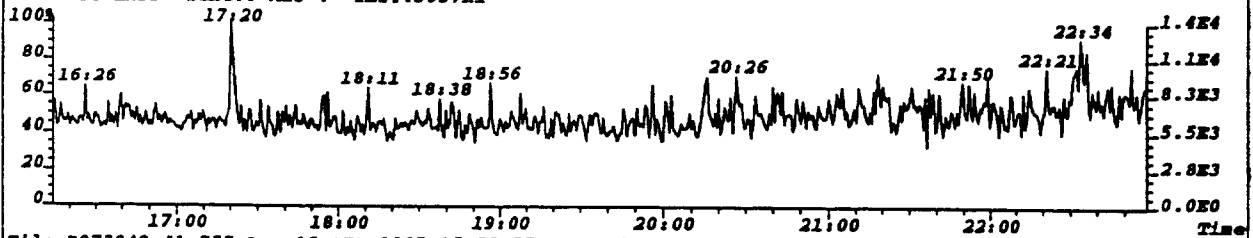
File:P973849 #1-755 Acq:12-SEP-1997 15:53:55 EI+ Voltage SIR 70P  
303.9016 Exp:DB225  
TRIANGLE LABS Text:0-M23-4 TLI#43057R1



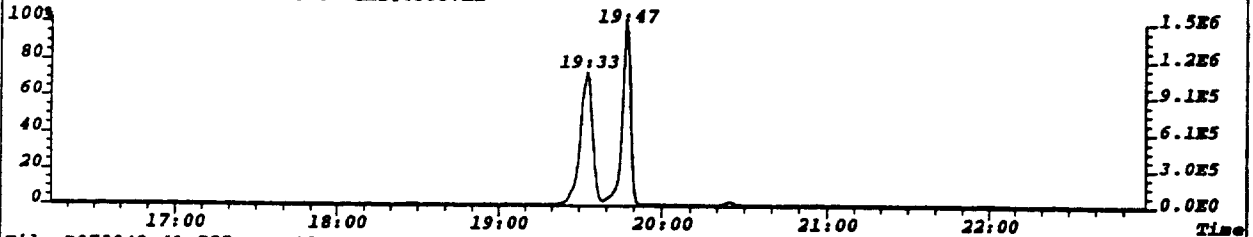
File:P973849 #1-755 Acq:12-SEP-1997 15:53:55 EI+ Voltage SIR 70P  
315.9419 Exp:DB225  
TRIANGLE LABS Text:0-M23-4 TLI#43057R1



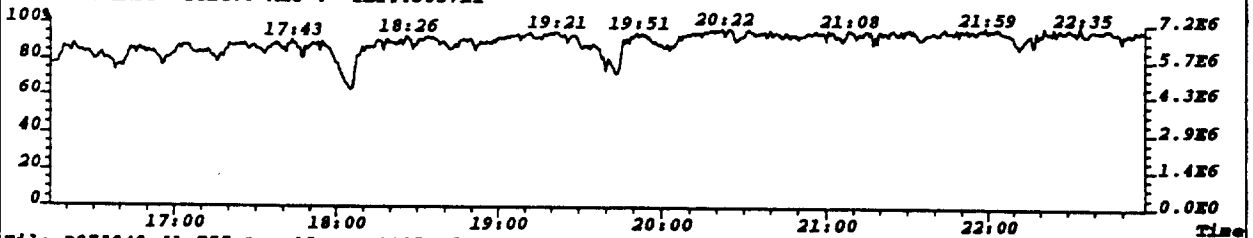
File:P973849 #1-755 Acq:12-SEP-1997 15:53:55 EI+ Voltage SIR 70P  
319.8965 Exp:DB225  
TRIANGLE LABS Text:0-M23-4 TLI#43057R1



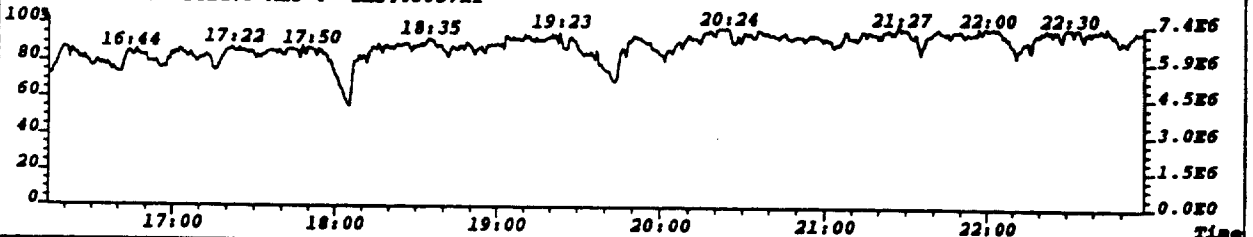
File:P973849 #1-755 Acq:12-SEP-1997 15:53:55 EI+ Voltage SIR 70P  
331.9368 Exp:DB225  
TRIANGLE LABS Text:0-M23-4 TLI#43057R1



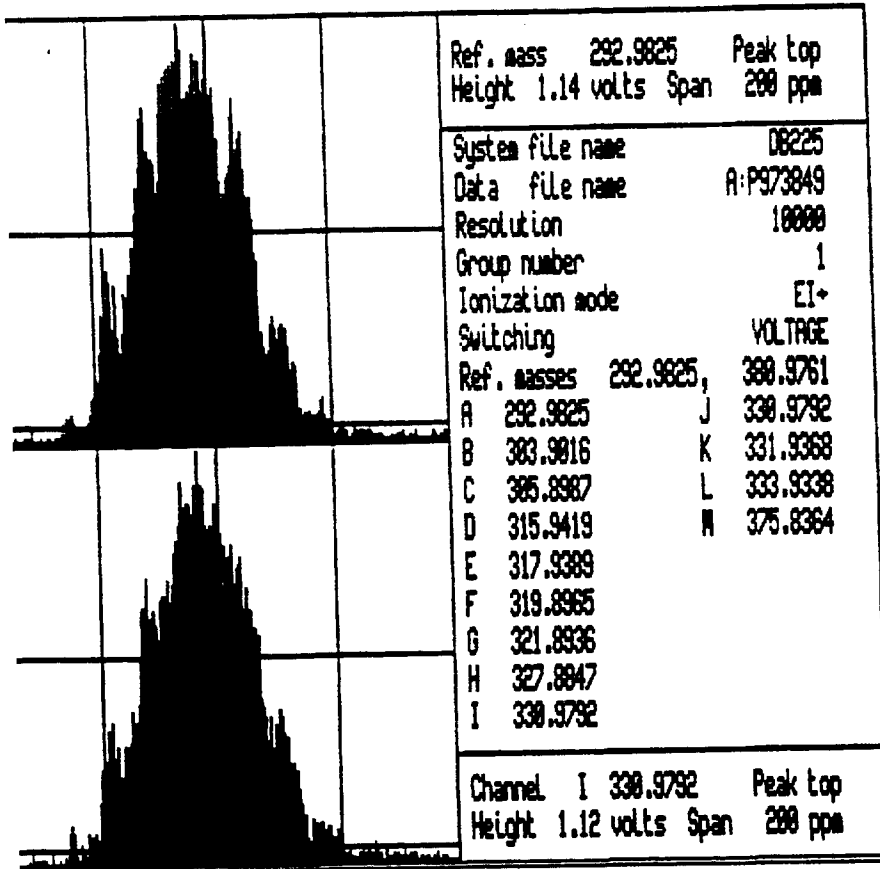
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292.9825 Exp:DB225  
TRIANGLE LABS Text:0-M23-4 TLI#43057R1



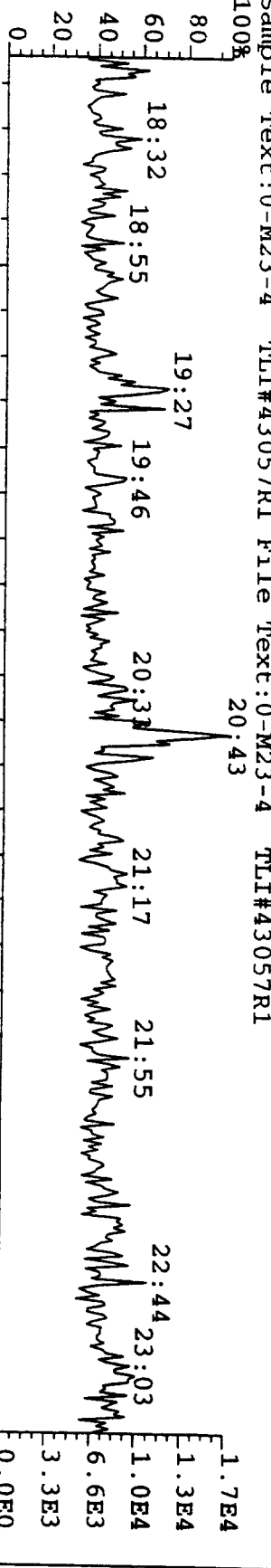
File:P973849 #1-755 Acq:12-SEP-1997 15:53:55 EI+ Voltage SIR 70P  
330.9792 Exp:DB225  
TRIANGLE LABS Text:0-M23-4 TLI#43057R1



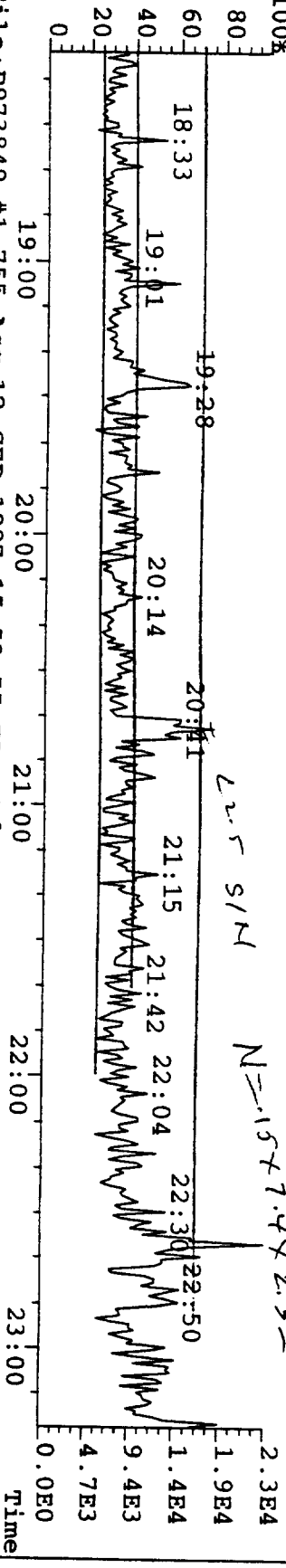




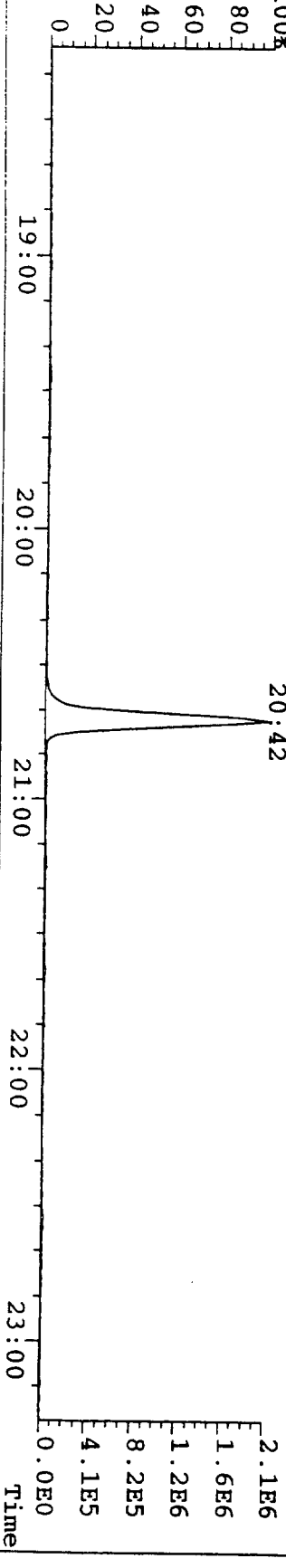
File: P973849 #1-755 Acq: 12-SEP-1997 15:53:55 EI+ Voltage SIR 70P  
 303.9016 Exp: DB225  
 Sample Text: 0-M23-4 TLI#43057R1 File Text: 0-M23-4 TLI#43057R1



File: P973849 #1-755 Acq: 12-SEP-1997 15:53:55 EI+ Voltage SIR 70P  
 305.8987 Exp: DB225  
 Sample Text: 0-M23-4 TLI#43057R1 File Text: 0-M23-4 TLI#43057R1



File: P973849 #1-755 Acq: 12-SEP-1997 15:53:55 EI+ Voltage SIR 70P  
 315.9419 Exp: DB225  
 Sample Text: 0-M23-4 TLI#43057R1 File Text: 0-M23-4 TLI#43057R1



**TRIANGLE LABS**

**CALIBRATION**  
**DATA**

---

**Triangle Laboratories, Inc.**  
**801 Capitola Drive**  
**Durham, NC 27713-4411**  
**919-544-5729**

**P.O. Box 13485**  
**Research Triangle Park, NC 27709-3485**  
**Fax # 919-544-5491**



Date: 09/12/97

TRIANGLE LABORATORIES, INC.  
Continuing Calibration for S975861

Analysis Date....: 09/12/97  
Operator.....: MI  
Init Calibration.: SF56117  
ICal Date.....: 06/10/97

Method.....: M237  
Instrument...: S  
Std.Conc.....: 50.00

Analyte Summary Name	RF	Ratio 1&2	RT Lo/High	RT	Rel. RT	ICal RF	Delta RF	%D
Total MCDF	0.000		1:34			2.087	-2.087	100.0%
			15:34					
Total MCDD	0.000		2:19			1.625	-1.625	100.0%
			16:19					
Total DCDF	0.000		8:34			0.587	-0.687	100.0%
			16:34					
Total DCDD	0.000		9:19			1.326	-1.326	100.0%
			17:19					
Total TriCDF	0.000		12:34			1.082	-1.082	100.0%
			19:34					
Total TriCDD	0.000		14:19			0.933	-0.933	100.0%
			20:19					
2378-TCDF	1.182	0.81	18:05	21:35	1.0008	1.251	-0.069	-5.5%
			23:33					
TOTAL TCDF	1.182	0.81				1.251	-0.069	-5.5%
2378-TCDD	1.078	0.79	19:31	22:20	1.0007	1.191	-0.113	-9.5%
			23:32					
TOTAL TCDD	1.078	0.79				1.191	-0.113	-9.5%
12378-PeCDF	1.051	1.53	23:27	25:38	1.0007	1.111	-0.060	-5.4%
			27:30					
23478-PeCDF	1.100	1.52		26:22	1.0293	1.115	-0.015	-1.4%
TOTAL PeCDF	1.075	1.52				1.113	-0.038	-3.4%
12378-PeCDD	1.210	1.59	24:45	26:43	1.0000	1.256	-0.046	-3.7%
			27:22					
TOTAL PeCDD	1.210	1.59				1.256	-0.046	-3.7%
123478-HxCDF	1.070	1.33	28:02	29:09	0.9971	1.215	-0.145	-11.9%
			30:42					
123678-HxCDF	1.354	1.31		29:15	1.0006	1.574	-0.220	-14.0%
234678-HxCDF	1.059	1.32		29:45	1.0177	1.247	-0.188	-15.1%
123789-HxCDF	0.981	1.34		30:27	1.0416	1.105	-0.124	-11.2%
TOTAL HxCDF	1.116	1.33				1.285	-0.169	-13.1%
123478-HxCDD	0.908	1.25	28:32	29:52	0.9972	0.953	-0.045	-4.7%
			30:23					
123678-HxCDD	1.059	1.25		29:57	1.0000	1.133	-0.074	-6.6%

Date: 09/12/97

TRIANGLE LABORATORIES, INC.  
Continuing Calibration for S975861

123789-HxCDD	1.090	1.25	30:14	1.0095	1.091	-0.001	-0.1%
TOTAL HxCDD	1.019	1.25			1.059	-0.040	-3.8%
1234678-HpCDF	1.503	1.03	31:44 33:15	31:54 1.0000	1.543	-0.040	-2.6%
1234789-HpCDF	1.267	1.03	33:05	1.0371	1.184	0.083	7.0%
TOTAL HpCDF	1.385	1.03			1.363	0.022	1.6%
1234678-HpCDD	0.934	1.00	31:59 32:54	32:44 1.0000	1.068	-0.134	-12.6%
TOTAL HpCDD	0.934	1.00			1.068	-0.134	-12.6%
OCDF	1.597	0.86	31:16 39:16	35:25 1.0043	1.493	0.104	7.0%
OCDD	1.040	0.85	31:16 39:16	35:17 1.0005	1.105	-0.065	-5.9%

Other Standard Summary

Name	RF	Ratio 1±2	RT Lo/High	RT	Rel. RT	ICal RF	Delta RF	%D
37Cl-TCDD	0.842		20:19 24:19	22:20	1.0007	0.843	-0.001	-0.1%
13C12-PeCDF 234	0.975	1.54	21:37 29:37	26:21	1.0286	0.970	0.005	0.5%
13C12-HxCDF 478	0.934	0.50		29:09	0.9971	0.959	-0.025	-2.6%
13C12-HxCDF 234	0.903	0.49		29:44	1.0171	0.926	-0.023	-2.5%
13C12-HxCDF 789	0.789	0.49		30:27	1.0416	0.805	-0.016	-2.0%
13C12-HxCDD 478	0.950	1.21		29:52	0.9972	0.973	-0.023	-2.4%
13C12-HpCDF 789	0.830	0.42	29:54 35:54	33:04	1.0366	0.771	0.059	7.6%

Internal Standard Summary

Name	RF	Ratio 1±2	RT Lo/High	RT	Rel. RT	ICal RF	Delta RF	%D
13C12-2378-TCDF	1.488	0.76	20:34 22:34	21:34	1.0000	1.318	0.170	12.9%
13C12-2378-TCDD	1.131	0.80	20:19 24:19	22:19	1.0000	1.066	0.065	6.1%
13C12-PeCDF 123	1.302	1.53	21:37 29:37	25:37	1.0000	1.133	0.169	14.9%
13C12-PeCDD 123	0.780	1.52	22:43 30:43	26:43	1.0000	0.635	0.145	22.9%
13C12-HxCDF 678	1.171	0.50	25:14 33:14	29:14	1.0000	1.204	-0.033	-2.7%
13C12-HxCDD 678	0.934	1.21	28:57 30:57	29:57	1.0000	0.995	-0.061	-6.1%

Date: 09/12/97

TRIANGLE LABORATORIES, INC.  
Continuing Calibration for S975861

13C12-HpCDF 678	0.831	0.42	29:54 35:54	31:54	1.0000	0.887	-0.056	-6.3%
13C12-HpCDD 678	0.786	1.10	31:44 33:44	32:44	1.0000	0.815	-0.029	-3.5%
13C12-OCDD	0.453	0.94	35:07 35:27	35:16	1.0000	0.519	-0.066	-12.6%

Recovery Standard Name	Summary RF	Ratio 1±2	RT Lo/High	RT	Rel. RT	ICal RF	Delta RF	%D
13C12-1234-TCDD	1.000	0.81		22:08	0.9918	1.000	0.000	0.0%
13C12-HxCDD 789	1.000	1.21		30:14	1.0095	1.000	0.000	0.0%

QC Front End Check: 1.4500

TRIANGLE LABORATORIES, INC.  
Initial Calibration Summary for SP56117

Date: 06/10/97

Analysis Date: 06/10/97  
Instrument: S

Method: M237

Analytes	RF	SD	%RSD	RT	RT/LO	RT/HI	Ratio1	Ratio2	N
Total MCDF	2.087	0.000	0%	8:15	0:01	13:43	2.931		1
Total MCDD	1.625	0.000	0%	8:42	0:34	14:34	2.827		1
Total DCDF	0.687	0.000	0%	10:38	6:43	14:43	5.965		1
Total DCDD	1.326	0.000	0%	11:09	7:34	15:34	1.609		1
Total TriCDF	1.082	0.000	0%	13:59	10:43	17:43	1.025		1
Total TriCDD	0.933	0.000	0%	14:03	12:34	19:34	1.064		1
2378-TCDF	1.251	0.116	9%	19:43	15:43	23:43	0.799		5
TOTAL TCDF	1.251	0.116	9%				0.799		5
2378-TCDD	1.191	0.231	19%	20:36	16:34	24:34	0.772		5
TOTAL TCDD	1.191	0.231	19%				0.772		5
12378-PeCDF	1.111	0.082	7%	24:12	20:11	28:11	1.552		5
23478-PeCDF	1.115	0.061	5%	24:59			1.470		5
TOTAL PeCDF	1.113	0.069	6%				1.509		5
12378-PeCDD	1.256	0.113	9%	25:22	21:21	29:21	1.526		5
TOTAL PeCDD	1.256	0.113	9%				1.526		5
123478-HxCDF	1.215	0.064	5%	27:55	24:01	32:01	1.247		5
123678-HxCDF	1.574	0.099	6%	28:01			1.260		5
234678-HxCDF	1.247	0.069	6%	28:32			1.243		5
123789-HxCDF	1.105	0.060	5%	29:15			1.246		5
TOTAL HxCDF	1.285	0.062	5%				1.249		5
123478-HxCDD	0.953	0.067	7%	28:41	24:45	32:45	1.265		5
123678-HxCDD	1.133	0.070	6%	28:46			1.251		5
123789-HxCDD	1.091	0.067	6%	29:03			1.233		5
TOTAL HxCDD	1.059	0.067	6%				1.249		5
1234678-HpCDF	1.543	0.103	7%	30:45	26:45	34:45	1.034		5
1234789-HpCDF	1.184	0.100	8%	31:57			1.080		5
TOTAL HpCDF	1.363	0.095	7%				1.053		5
1234678-HpCDD	1.068	0.089	8%	31:37	27:36	35:36	0.993		5
TOTAL HpCDD	1.068	0.089	8%				0.993		5
OCDF	1.493	0.131	9%	34:09	30:02	38:02	0.876		5
OCDD	1.105	0.066	6%	34:03	30:02	38:02	0.902		5
Other Standards									
37C1-TCDD	0.843	0.038	5%	20:36	18:34	22:34			5
13C12-PeCDF 234	0.970	0.030	3%	24:58	22:11	26:11	1.470		5
13C12-HxCDF 478	0.959	0.042	4%	27:55			0.518		5
13C12-HxCDF 234	0.926	0.021	2%	28:32			0.517		5
13C12-HxCDF 789	0.805	0.044	5%	29:15			0.519		5
13C12-HxCDD 478	0.973	0.027	3%	28:40			1.241		5
13C12-HpCDF 789	0.771	0.049	6%	31:57	28:45	34:45	0.424		5
Internal Standards									
13C12-2378-TCDF	1.318	0.065	5%	19:43	18:43	20:43	0.734		5
13C12-2378-TCDD	1.066	0.020	2%	20:34	18:34	22:34	0.802		5
13C12-PeCDF 123	1.133	0.051	5%	24:11	20:11	28:11	1.447		5



TRIANGLE LABORATORIES INC.

Date: 06/10/97

Initial Calibration Summary for SF56117

13C12-PeCDD 123	0.635	0.082	13%	25:21	21:21	29:21	1.461		5
13C12-HxCDF 678	1.204	0.073	6%	28:01	24:01	32:01	0.522		5
13C12-HxCDD 678	0.995	0.017	2%	28:45	27:45	29:45	1.240		5
13C12-HpCDF 678	0.887	0.046	5%	30:45	29:45	34:45	0.429		5
13C12-HpCDD 678	0.815	0.077	9%	31:36	30:36	32:36	1.019		5
13C12-OCDD	0.519	0.080	15%	34:02	32:02	36:02	0.866		5

Recovery Standards	RF	SD	%RSD	RT	RT/LO	RT/HI	Ratio1	Ratio2	N
13C12-1234-TCDD	1.000	0.000	0%	20:21			0.811		5
13C12-HxCDD 789	1.000	0.000	0%	29:02			1.231		5

\*\*\* End of Report \*\*\*

TRIANGLE LABORATORIES OF RTP, INC. Date: 02/20/96  
 Initial Calibration Summary for PF22206

Analysis Date..... 02/20/96 Method..... GC/MS  
 Instrument..... P GC Column.... DB-225

Analytes	RF	SD	%RSD	RT	RT/LO	RT/HI	Ratio1	Ratio2	N
2378-TCDF	1.040	0.109	10%	21:32	14:31	25:31	0.767		10
TOTAL TCDF	1.040	0.109	10%				0.767		10
2378-TCDD	0.992	0.101	10%	20:12	16:11	24:11	0.782		10
TOTAL TCDD	0.992	0.101	10%				0.782		10

Other Standards	RF	SD	%RSD	RT	RT/LO	RT/HI	Ratio1	Ratio2	N
37C1-TCDD	1.014	0.048	5%	20:12	18:11	22:11			10

Internal Standards	RF	SD	%RSD	RT	RT/LO	RT/HI	Ratio1	Ratio2	N
13C12-2378-TCDF	1.388	0.062	4%	21:31	20:31	22:31	0.758		10
13C12-2378-TCDD	1.067	0.036	3%	20:11	18:11	22:11	0.786		10

Recovery Standards	RF	SD	%RSD	RT	RT/LO	RT/HI	Ratio1	Ratio2	N
13C12-1234-TCDD	1.000	0.000	0%	20:27			0.794		10

\*\*\* End of Report \*\*\*



Appendix C.3

Analytical Data

Method 29 Multiple Metals



  
**TRIANGLE LABS****CASE NARRATIVE****Analysis of Samples for the Presence of Trace Metals****Method 29 April 1996 Rev.**

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<b>Client:</b>	Pacific Environmental Services
<b>TLI Project Number:</b>	43377
<b>Date:</b>	November 3, 1997

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Rev. 07-May-97

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919-544-5729

P.O. Box 13485  
Research Triangle Park, NC 27709-3485  
Fax # 919-544-5491

### Overview

Six train samples and a blank train sample were analyzed for silver (Ag), arsenic (As), barium (Ba), beryllium (Be), cadmium (Cd), cobalt (Co), chromium (Cr), copper (Cu), manganese (Mn), nickel (Ni), phosphorus (P), lead (Pb), antimony (Sb), selenium (Se), thallium (Tl), zinc (Zn), and mercury (Hg). For all analyses, the samples and associated QC samples were prepared and analyzed following the guidelines of Method 29 April 1996 Rev. Results reported relate only to the items tested.

### QC Remarks

The release of this set of data by Triangle Laboratories, Inc. was authorized by the Quality Control Chemist who has reviewed each sample data package individually following a series of inspections/reviews. When applicable, general deviations from acceptable QC requirements are identified below and comments are made on the effects of these deviations upon the validity and reliability of the results. Specific QC issues associated with this particular project are:

#### *Sample Receipt:*

Seven train samples were received at 22<sup>o</sup>C on September 24, 1997 in good condition. The samples arrived without coolant, which resulted in the high temperature. Sample O-M29-FB-HCl was listed on the client's chain-of-custody, but was not received. The project was processed without this sample.

#### *Sample Preparation:*

Laboratory documentation of the sample preparation is included in the data package.

#### *Instrumentation:*

Silver (Ag), arsenic (As), barium (Ba), beryllium (Be), cadmium (Cd), cobalt (Co), chromium (Cr), copper (Cu), manganese (Mn), nickel (Ni), phosphorus (P), lead (Pb), antimony (Sb), selenium (Se), and zinc (Zn) concentrations were determined by Inductively Coupled Plasma Emission Spectroscopy (ICP).

Thallium (Tl) concentrations were analyzed by Graphite Furnace Atomic Absorption (GFAA).

Mercury (Hg) concentrations were determined by Cold Vapor Atomic Absorption (CVAA).

The linear range for the instrument TJA 61E Trace Analyzer was based on four standards and a blank, which established a correlation coefficient value greater than or equal to 0.995. A calibration curve, based on a blank and one standard, is established for each analytical run, followed by a check high standard and an initial calibration verification (ICV). The check high standard does not deviate from the calibration curve by more than 5%. In addition, continuing calibration verifications (CCVs) are performed throughout the analytical run.

A Reporting Detection Limit (RDL) is used instead of an Instrument Detection Limit (IDL). The spectrometer and atomic absorption instruments can achieve low detection limits between 0.2-8 ppb levels for many analytes. Triangle Labs is using RDL values of 1-10 times the IDL as detection limits for reporting purposes.

*Data Review:*

All analytes found in the method blank (MB) are detected at a level equal to or less than the respective Reporting Detection Limits (RDLs) except for Pb. The following guidelines may be used to assess analyte concentrations relative to the method blank: 1. Analyte quantitations should be considered valid if the level of blank contamination is less than five percent of the level detected in the field sample, 2. Analyte quantitations should be considered estimated if the analyte level in the sample is five to twenty times the level of the analyte in the blank, or 3. Analytes whose level in a sample is the same as or less than five times the level detected in the associated blank should be considered present likely due to laboratory contamination and not native to the sample. Please note that the Pb results that are near the RDL should be considered biased low.

All samples were received outside of the 28 day sampling to analysis holding time for Hg, therefore the holding time for Hg could not be met. All samples were analyzed within the six month sampling to analysis holding time for all other requested analytes.

The sample IDs on the client chain-of-custody did not match with the IDs on the sample containers. The sample IDs on TLI's chain-of-custody matches the IDs on the sample containers. The sample IDs on the Hg spreadsheets for the KMnO<sub>4</sub> and HCl containers do not have the addition description added in order to alleviate redundancy.

The concentrations for Tl demonstrated high negative numbers for the samples analyzed by ICP, therefore the samples were analyzed by GFAA in order to obtain better results. A duplicate analysis is not reported for elements analyzed by GFAA. The GFAA instrument analyzes two separate aliquots of the sample and averages the values for a final result. These two analyses agree within a RPD of 20% or a second run is done for that sample. The ICP instrument analyzes one continuous aliquot three times and averages the values for a final result. The ICP does not take two separate aliquots, therefore a DA is performed.



The post-digestion spike (PDS) for Tl for the sample O-M29-1-FHACE,FHAR,FILTER FH demonstrated a percent recovery outside the QC criteria of 75-125 percent. This result for the front half post-digestion spike (PDS) indicates significant matrix effects specific to this analyte in the native sample matrix. The interference QC analysis is not reported (i.e. MS, MSD, PDS, and serial dilution) for this analyte for the front half samples since the Method of Standard Additions (MSA) was performed. The MSA results are reported if the correlation coefficient value is at least 0.995. The MSA results were reported for all of the front half samples except sample I-M29-1-FHACE,FHAR,FILTER FH. This sample was analyzed two times and the correlation coefficients for both runs were less than 0.995, therefore the results for this sample were taken from ICP.

The serial dilution results for Cr for the sample O-M29-1-FHACE,FHAR,FILTER FH demonstrated a RPD outside the QC control criteria of 10.0 percent, which indicates the presence of an amount of interferences specific to this analyte in the native sample matrix. Please note that the post-digestion spike (PDS) for Cr demonstrated a percent recovery within QC criteria, which indicates no significant amount of interferences specific to this analyte in the native sample matrix. Also note that this sample should be considered biased low for Cr due to matrix interferences.

The serial dilution results for Mn,P, Pb, and Zn for the sample O-M29-1-FHACE,FHAR,FILTER FH demonstrated RPDs slightly outside the QC control criteria of 10.0 percent, which does not indicate the presence of a significant amount of interferences specific to these analytes in the native sample matrix. Please note that the post-digestion spike (PDS) for Pb and P demonstrated percent recoveries within QC criteria, which indicates no significant amount of interferences specific to these analytes in the native sample matrix.

The post-digestion spike (PDS) for Be and Pb for the sample O-M29-1-FHACE,FHAR,FILTER FH and for Mn for sample O-M29-1-HNO3 BH demonstrated percent recoveries outside the QC criteria. These results may indicate significant matrix effects specific to these analytes in the native sample matrix. Please note that sample O-M29-1-FHACE,FHAR,FILTER FH should be considered biased low for Be and Pb due to matrix interferences. Also note that sample O-M29-1-HNO3 BH should be considered biased low for Mn due to matrix interferences.

The post-digestion spike (PDS) for Ag, P, and Se for the sample O-M29-1-FHACE,FHAR,FILTER FH and As for sample O-M29-1-HNO3 BH demonstrated percent recoveries slightly outside the QC criteria, but does not indicate any significant matrix effects specific to these analytes in the native sample matrix.

The recoveries for the post-digestion spike (PDS) are not reported for Ba, Mn and Zn for sample O-M29-1-FHACE,FHAR,FILTER FH. The spike concentrations added were insignificant in comparison to the levels of these analytes present in the native sample.

The pre-digestion spike (MS) and the pre-digestion spike duplicate (MSD) for Hg for the samples O-M29-1-HNO3 BH, O-M29-3-HNO3 BH, and O-M29-4-HNO3 BH demonstrated percent recoveries outside the QC criteria, which may indicate significant matrix effects specific to this analyte in the native sample matrix. Please note that these samples should be considered biased low for Hg due to matrix interferences.

***QC requirements:***

The duplicate analyses for analytes analyzed by ICP cannot be considered valid qualifiers if the concentrations of the analytes in the original and/or duplicate sample are not at least ten times the respective RDLs. The RPDs for these analyses are indicated by or "<RDL" in the Analyte Summary Reports.

For duplicate analyses which are valid qualifiers, the quality control RPD is  $\pm 20.0$  percent. If RPDs are outside this range, interferences are suspected.

The serial dilution analyses for analytes analyzed by GFAA cannot be considered valid qualifiers if the concentrations of the analytes in the serial dilution sample are not at least five times the respective RDLs. The serial dilution RPDs for these analyses are indicated by "<RDL" in the Analyte Summary Reports.

The serial dilution analyses for analytes analyzed by ICP cannot be considered valid qualifiers if the concentrations of the analytes in the serial dilution sample are less than ten times the respective RDLs. The serial dilution RPDs for these analyses are indicated by "<RDL" in the Analyte Summary Reports.

For serial dilution analyses which are valid qualifiers, the quality control RPD is  $\pm 10.0$  percent. If RPDs are outside this range, interferences are suspected.

The quality control range for percent recoveries of laboratory control spiked samples is 80-120.

The quality control range for percent recoveries of spiked samples is 75-125. If recoveries are outside this range, a matrix effect is suspected.

If the analyte concentrations analyzed by GFAA in the native samples are less than five times the respective RDLs, or if valid serial dilution analyses demonstrate RPDs outside the ten percent quality control range, the percent recoveries of post-digestion spiked samples is 75-125. If recoveries are outside this range, all matrix-related samples are analyzed by the Method of Standard Additions (MSA). The MSA analysis for each sample is reported only if the correlation coefficient value is at least 0.995.

Triangle Laboratories, Inc.  
Case Narrative

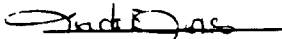
November 3, 1997  
TLI Project #: 43377

By our interpretation, the analytical data in this project are valid based on the guidelines of Method 29 April 1996 Rev. Any specific QC concerns or problems have been discussed in the QC REMARKS section with emphasis on their effect on the data. Should Pacific Environmental Services have any questions or comments regarding this data package, please feel free to contact Project Scientist, Rose West, at (919) 544-5729 ext.270.

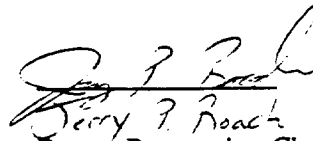
For Triangle Laboratories, Inc.,

Report Preparation

Quality Control



Linda F. Jones  
Report Preparation Chemist



Jerry P. Roach  
Report Preparation Chemist

The total number of pages in this data package is:

~~198~~ 199

# TRIANGLE LABS

## TRIANGLE LABORATORIES, INC.

### LIST OF CERTIFICATIONS AND ACCREDITATIONS

#### ENVIRONMENTAL

American Association for Laboratory Accreditation. Accreditation pending. Certificate Number 0226-01. Accreditation for technical competence in Environmental Testing.(Including Waste Water, Sol/Haz Waste, Pulp/Paper, and Air Matrices) Parameters are AOX/TOX, and Dioxin/Furan. Method 1613 for Drinking Water.

State of Alabama, Department of Environmental Management. Expires December 31, 1997. Laboratory I.D. # 40950. Dioxin in drinking water.

State of Alaska, Department of Environmental Conservation. Expires December 21, 1997. Certificate number OS-00397. Dioxin in drinking water.

State of Arizona, Department of Health Services. Expires May 26, 1998. Certificate #AZ0423. Drinking Water for Dioxin, Dioxin in WW and S/H Waste.

State of Arkansas, Department of Pollution Control and Ecology. Expires February 18, 1998. Pulp/paper, soil, water, and Hazardous Waste for Dioxin/Furan; AOX/TOX.

State of California, Department of Health Services. Expires August 31, 1999. Certificate #1922. Selected Metals in Waste Water, Volatiles, Semi-volatiles, and Dioxin/furan in WW and Sol/Haz Waste. Dioxin in drinking water.

State of Connecticut, Department of Health Services. Recertification pending. Registration # PH-0117. Dioxin in drinking water.

Delaware Health and Social Services. Expires December 31, 1997. Certificate #NC 140. Dioxin in drinking water.

Florida Department of Health and Rehabilitative Services. Expires June 30, 1998. Dioxin in DW. Drinking Water ID HRS# 87424. Metals, Extractable Organics (GC/MS), Pesticides/PCB's (GC) and Volatiles (GC/MS) in Environmental Samples. Environmental water ID HRS# E87411.

Hawaii Department of Health. Expires March 1, 1998. Dioxin in drinking water. "Accepted" status for regulatory purposes.

Revised 10/28/97 RM

Printed 10/29/97

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**Idaho Department of Health and Welfare.** Expires November 30, 1997. Dioxin in drinking water.

**State of Kansas, Department of Health and Environment.** Expires January 31, 1998. Environmental Analyses/Non potable Water and Solid and Hazardous Waste. Method 1613 for drinking water. ID #'s - Drinking water and/or pollution control - E-215. Solid or Hazardous Waste - E-1209.

**Commonwealth of Kentucky, Department for Environmental Protection.** Expires December 31, 1997. ID#90060. Dioxin in drinking water.

**Maryland Department of Health and Mental Hygiene.** Expires September 30, 1998. Certification #235. Drinking water by Method 1613A.

**State of Michigan, Department of Public Health.** Expires June 3, 1998. Drinking water by Method 1613.

**Mississippi State Department of Health.** No expiration date.. Dioxin in drinking water.

**Montana Department of Health and Environmental Services.** Expires December 31, 1997. Dioxin in drinking water.

**State of New Jersey, Department of Environmental Protection and Energy.** Extended by state. Temporary certificate until December 31, 1997. ID #67851. BNAs and Volatiles. Dioxin in drinking water.

**State of New Mexico, Environment Department.** Recertification pending. Dioxin in drinking water.

**New York State Department of Health.** Expires April 1, 1998. ID #11026. Environmental Analyses of non-potable Water, Solid and Hazardous Waste. Method 1613 in DW.

**State of North Carolina, Department of Environment Health and Natural Resources** Expires August 31, 1999. Certificate # 37751. Dioxin in drinking water.

**State of North Carolina, Department of Environment, Health, and Natural Resources, Division of Environmental Management.** Expires December 31, 1997. Certificate # 485. Metals, pesticides & PCBs, semi-volatiles and volatiles; TCLP.

**North Dakota State Department of Health and Consolidated Laboratories.** Expires December 31, 1997. Certificate # R-076. Effective October 4, 1993. Dioxin in drinking water.

**Oklahoma Department of Environmental Quality.** Expires August 31, 1998. Laboratory #9612. Dioxin by 1613A, 8290 and 8280.

**State of South Carolina, Department of Health and Environmental Control.** Expires April 1, 1998. Certificate number #99040001 (drinking water). Expires August 31, 1999. Certificate number #99040002 (other parameters). Dioxin/Furans, BNA, Volatiles, and PCBs/pesticides under Clean Water Act, 2,3,7,8-TCDD for Drinking Water, and Organic extractables for Solid and Hazardous Waste.

**State of Tennessee, Department of Environment and Conservation.** Expires February 5, 1999. ID #02992. Method 1613 Drinking water only.

**U.S. Department of Agriculture Soil Permit.** Expires September 30, 2001. Permit No. S-3790. Under the authority of the Federal Plant Pest Act, permission is granted to receive foreign soil samples for use in laboratory analysis.

**U.S. Army Corps of Engineers.** Expires November 30, 1997. Validated to perform methods 8280 & 8290 for Lockbourne Landfill Site Investigation, Defense Distribution Depot Projects, and assorted projects for the USACE North Pacific Division Laboratory.

**U.S. EPA Region V.** Expires November 14, 1999. Dioxin in drinking water.

**U.S. EPA Region VIII, for the State of Wyoming.** Expires November 13, 1997. Dioxin in drinking water.

**State of Utah, Department of Health.** Expires December 31, 1997. Certificate Number E-166. Certification for the following parameters: Semi-Volatiles and Volatiles under RCRA; Volatiles under Clean Water Act; Dioxin/furans by Method 8280; Drinking water for Dioxin by Method 1613; Metals including Mercury and Microwave Digestion.

**Commonwealth of Virginia, Department of General Services, Division of Consolidated Laboratory Services.** Expires June 30, 1998. ID # 00341. Dioxin in drinking water.

**State of Washington, Department of Ecology.** Expires September 11, 1998. Lab Accreditation Number C067. Scope of Accreditation applies to water analyses for Polychlorinated Dibenzo-p-dioxins and Polychlorinated Dibenzofurans, BNA Extr (Semivolatile) Organics and Purgeable (Volatile) Organics.

**State of Washington, Department of Health.** Expires April 30, 1998. Dioxin in drinking water. Lab I.D. 129

**State of West Virginia, Department of Health.** Expires December 31, 1997. Certificate No. 9923(C). Dioxin in drinking water.

**State of Wisconsin, Department of Natural Resources.** Expires August 31, 1998. Laboratory ID Number 999869530. Certification for the following categories of Organics: Purgeable, Base/Neutral, Acid, PCBs, and Dioxin. Expires November 14, 1999. Laboratory ID 999869530. Dioxin in drinking water.

### PHARMACEUTICAL

**Drug Enforcement Agency (DEA).** Expires November 30, 1997. Registration number RT01195835. Controlled substance registration for schedules 1,2,3,3N,4,5.

**N.C. Department of Human Resources.** Expires October 31, 1998. Registration number NC-PT 0000 0031. North Carolina controlled substances registration. Application submitted for renewal.

**Food & Drug Administration (FDA) Registration.** Expires June 1998. ID #'s 001500 1053481. Annual registration of drug establishment. Annual registration of drug establishment.

### OTHER

**Clinical Laboratory Improvement Amendments (CLIA) Registration.** Expires May 30, 1999. ID # 34D0705123. Department of Health & Human Services, Health Care Financing Administration.

**U.S. EPA Large Quantity Hazardous Waste Generator.** No expiration date. EPA ID #NCD982156879. Permit indicates that the laboratory is a large generator of hazardous waste.

**North Carolina Radioactive Materials License.** Expires April 30 1998. License No. 032-0954-1. License authorizes the licensee to receive, acquire, own, possess, transfer, import and use such radioactive materials as designated.

**North Carolina General License for Radiation Protection.** No. expiration date. License No. 032-875-OG. The general license applies only to radioactive material contained in devices which have been manufactured and labeled in accordance with specific requirements.

## ABBREVIATIONS

BH = Back Half  
CCB = Continuing Calibration Blank  
CCV = Continuing Calibration Verification  
CHECK HS = Check High Standard  
D = DUP = Analytical Duplicate (Prepared Duplicate)  
DA = Duplicate Analysis  
FH = Front Half  
FV = Final Digestate Volume  
ICB = Initial Calibration Blank  
ICV = Initial Calibration Verification  
ICSAB = Interference Check Solution (Solution AB)  
    I = Initial  
    F = Final  
    Solution AB contains common interferences in addition to the analyte of interest.  
IDL = Instrument Detection Limit  
L = Serial Dilution  
LCS = Laboratory Control Spike Sample  
MB = Method Blank  
MPV = Mercury Preparation Volume  
MS = Pre-digestion Spike  
MSD = Pre-digestion Spike Duplicate  
N/A = Not Applicable  
N/Av = Not Available  
N/V = Not Valid  
PDS = Post-digestion Spike  
%REC = Percent Recovery  
RDL = Reporting Detection Limit  
RPD = Relative Percent Difference  
T = Analytical Triplicate (Prepared Triplicate; for Hg analysis by Method 7471 only)  
TV = Total Sample Volume  
< = Analyte concentration in the sample is less than the respective RDL



## STANDARD CONCENTRATIONS for the TJA 61E TRACE ANALYZER

Analyte	Units	High Std	ICV/CCV	ICSAB	RDL	Wavelength
Ag	ppb	1000	500	500	1	3280
As	ppb	1000	500	500	5	1890
Al	ppb	1000	500	500000	50	3082
B	ppb	1000	500	500	7	2496
Ba	ppb	1000	500	500	2	4934
Be	ppb	1000	500	500	1	3130
Ca	ppb	1000	500	500000	60	3179
Cd	ppb	1000	500	500	1	2265
Ce	ppb	1000	500	500	3	4186
Co	ppb	1000	500	500	1	2286
Cr	ppb	1000	500	500	2	2677
Cu	ppb	1000	500	500	2	3247
Fe	ppb	1000	500	200000	40	2714
K	ppb	10000	5000	19000	220	7664
Li	ppb	1000	500	500	1	6706
Mg	ppb	1000	500	500000	30	2790
Mn	ppb	1000	500	500	2	2576
Mo	ppb	1000	500	500	2	2020
Na	ppb	10000	5000	5000	300	3302
Ni	ppb	1000	500	500	3	2316
P	ppb	1000	500	500	30	2149
Pb	ppb	1000	500	500	2	2203
Sb	ppb	1000	500	500	4	2068
Se	ppb	1000	500	500	3	1960
Sn	ppb	1000	500	500	13	1899
Sr	ppb	1000	500	650	1	4215
Ti	ppb	1000	500	500	8	3349
Tl	ppb	1000	500	500	5	1908
V	ppb	1000	500	500	2	2924
Zn	ppb	1000	500	500	12	2062

Note: Use this reference page to review the raw data from the TJA 61E Trace Analyzer.

This page includes the standard concentrations for the check high standard, initial calibration verification (ICV), continuing calibration verification (CCV), and the interference check solution (ICSAB). In addition the reporting detection limit (RDL) and wavelength are reported for each analyte.

Revision Date: 15-Jul-96

## CALCULATIONS FOR AIR SAMPLES

### RESULTS FOR TRACE METALS (except mercury):

$$\text{RESULT in } \mu\text{g (Front Half)} = \frac{\mu\text{g/L} * \text{FV (mL)} * \text{DF}}{1000 \text{ mL/L}}$$

$$\text{RESULT in } \mu\text{g (Back Half \& Impingers)} = \frac{\mu\text{g/L} * \text{TV (mL)} * \text{FV (mL)} * \text{DF}}{\text{mL used} * 1000 \text{ mL/L}}$$

FV = final volume in mL

TV = total volume in mL

DF = Dilution Factor

The RESULTS for combined Front Half & Back Half samples use the same calculation as the Back Half & impinger samples.

### RESULTS FOR MERCURY (Hg):

$$\text{RESULT in } \mu\text{g (Front Half)} = \mu\text{g/L} * (\text{mL FV/mL aliquot}) * \text{MPV} * \text{DF}$$

$$\text{RESULT in } \mu\text{g (Back Half \& Impingers)} = \mu\text{g/L} * (\text{mL TV/mL aliquot}) * \text{MPV} * \text{DF}$$

MPV = mercury preparation volume = 0.1 L

### %REC (Percent Recovery) for MS/MSD Hg spikes:

$$\% \text{REC} = \frac{\text{spike sample results} - \text{original sample results}}{\text{true spike sample results}} * 100$$

NOTE: Original sample results less than the RDL are not used in calculations.

### %REC (Percent Recovery) for PDS:

$$\% \text{REC} = \frac{\text{Spike sample } \mu\text{g/L conc.} - \text{original sample } \mu\text{g/L conc.}}{\text{spike conc. (}\mu\text{g/L)}} * 100$$

### %REC (Percent Recovery) for LCS/LCSD:

$$\% \text{REC} = \frac{\text{Spike sample } \mu\text{g/L conc.}}{\text{spike conc. (}\mu\text{g/L)}} * 100$$

RPDs: 
$$\text{RPD} = \frac{|\text{Result 2} - \text{Result 1}|}{(\text{Result 2} + \text{Result 1})/2} * 100$$

Rev. 2-Oct-96

**Client:** Pacific Environmental Services  
**Project Number:** 43377

## Sample Report

Client Sample ID:	O-M29-1-FHACE,FHAR,FILTER FH
TLI Sample ID:	184-50-1ABC FH
Date Received:	September 24, 1997
Date Prepared:	October 10-14, 1997
Date Analyzed:	October 16,20,21 & 22, 1997
Matrix:	Air

Analyte	Conc. (ug/L)	mL Total Vol.	mL Used	mL Final Vol.	Dilution Factor	Total ug Result
Ag	-0.509	N/A	N/A	100	1	< 0.1
As	26.614	N/A	N/A	100	1	2.66
Ba	2210.242	N/A	N/A	100	1	221
Be	-9.136	N/A	N/A	100	1	< 0.100
Cd	2.179	N/A	N/A	100	1	0.218
Co	18.249	N/A	N/A	100	1	1.820
Cr	147.007	N/A	N/A	100	1	14.7
Cu	173.186	N/A	N/A	100	1	17.3
Mn	2033.351	N/A	N/A	100	1	203
Ni	72.575	N/A	N/A	100	1	7.26
P	3317.880	N/A	N/A	100	1	332
Pb	197.328	N/A	N/A	100	1	19.7
Sb	44.560	N/A	N/A	100	1	4.46
Se	43.871	N/A	N/A	100	1	4.39
Tl	1.400	N/A	N/A	100	1	< 0.200
Zn	1144.375	N/A	N/A	100	1	114







Client: Pacific Environmental Services  
Project Number: 43377

## Sample Report

Client Sample ID:	O-M29-2-FHACE,FHAR,FILTER FH
TLI Sample ID:	184-50-2ABC FH
Date Received:	September 24, 1997
Date Prepared:	October 10-14, 1997
Date Analyzed:	October 16,20,21 & 22, 1997
Matrix:	Air

Analyte	Conc. (ug/L)	mL Total Vol.	mL Used	mL Final Vol.	Dilution Factor	Total ug Result
Ag	1.729	N/A	N/A	100	1	0.173
As	5.922	N/A	N/A	100	1	0.592
Ba	510.774	N/A	N/A	100	1	51.1
Be	-1.516	N/A	N/A	100	1	< 0.100
Cd	21.333	N/A	N/A	100	1	2.13
Co	-18.808	N/A	N/A	100	1	< 0.1
Cr	99.655	N/A	N/A	100	1	9.97
Cu	44.251	N/A	N/A	100	1	4.43
Mn	333.693	N/A	N/A	100	1	33.4
Ni	60.858	N/A	N/A	100	1	6.09
P	603.530	N/A	N/A	100	1	60.4
Pb	57.817	N/A	N/A	100	1	5.78
Sb	41.463	N/A	N/A	100	1	4.15
Se	39.586	N/A	N/A	100	1	3.96
Tl	2.100	N/A	N/A	100	1	0.210
Zn	466.631	N/A	N/A	100	1	46.7

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Client: Pacific Environmental Services  
 Project Number: 43377

## Sample Report

Client Sample ID:	O-M29-FB-HNO3 BH
TLI Sample ID:	184-50-5BD BH
Date Received:	September 24, 1997
Date Prepared:	October 10-14, 1997
Date Analyzed:	October 16,20,21 & 22, 1997
Matrix:	Air

Analyte	Conc. (ug/L)	mL Total Vol.	mL Used	mL Final Vol.	Dilution Factor	Total ug Result
Aq	-0.084	150	150	100	1	< 0.100
As	-5.436	150	150	100	1	< 0.500
Ba	2.368	150	150	100	1	0.237
Be	-0.037	150	150	100	1	< 0.100
Cd	1.295	150	150	100	1	0.130
Co	-0.835	150	150	100	1	< 0.100
Cr	3.764	150	150	100	1	0.376
Cu	6.244	150	150	100	1	0.624
Mn	71.682	150	150	100	1	7.17
Ni	2.070	150	150	100	1	< 0.300
P	120.688	150	150	100	1	12.1
Pb	65.879	150	150	100	1	6.59
Sb	0.971	150	150	100	1	< 0.400
Se	4.210	150	150	100	1	0.421
Tl	-2.80	150	150	100	1	< 0.200
Zn	29.576	150	150	100	1	2.96

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Client: Pacific Environmental Services  
 Project Number: 43377

### Sample Report

Client Sample ID:	I-M29-1-HNO3 BH
TLI Sample ID:	184-50-7D BH
Date Received:	September 24, 1997
Date Prepared:	October 10-14, 1997
Date Analyzed:	October 16, 20, 21 & 22, 1997
Matrix:	Air

Analyte	Conc (ug/L)	mL Total Vol.	mL Used	mL Final Vol.	Dilution Factor	Total ug Result
Ag	0.376	435	335	100	1 <	0.130
As	-2.937	435	335	100	1 <	0.649
Ba	4.655	435	335	100	1	0.604
Be	-0.012	435	335	100	1 <	0.130
Cd	5.279	435	335	100	1	0.686
Co	-1.085	435	335	100	1 <	0.130
Cr	6.758	435	335	100	1	0.878
Cu	7.221	435	335	100	1	0.938
Mn	109.380	435	335	100	1	14.2
Ni	7.742	435	335	100	1	1.01
P	447.197	435	335	100	1	58.1
Pb	42.647	435	335	100	1	5.54
Sb	-0.046	435	335	100	1 <	0.519
Se	7.465	435	335	100	1	0.969
Tl	0.40	435	335	100	1 <	0.26
Zn	163.332	435	335	100	1	21.2

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Client: Pacific Environmental Services  
 Project Number: 43377

Sample Report

Page 1 of 4

Date Received:	September 24, 1997
Date Prepared:	October 10-20, 1997
Date Analyzed:	October 21-22, 1997
DATA FILE:	AB827 & AB828
Matrix:	Air

ANALYTE:	Hg
u/L RDL:	0.2
Analysis Method:	29
Instrument:	P E Zeeman 5100
Spike Conc. (u/L)	5

CVAA ANALYTE SUMMARY REPORT

Client Sample ID	TLI SAMPID	u/L CONC	ml TV	ml EV	ml Aliquot	DIL FACTOR	Total u/L RESULT	Avg RESULT	RPD	%REC
O-M29-1-FHACE,FHAR,FILTER FH	184-50-1ABC	0.034	N/A	100	5	1	< 0.400	--	--	--
O-M29-1-FHACE,FHAR,FILTER FH D	184-50-1ABC D	0.005	N/A	100	5	1	< 0.400	< 0.400	--	--
O-M29-1-HNO3 BH	184-50-1D	0.034	954	N/A	5	1	< 3.82	--	--	--
O-M29-1-HNO3 BH D	184-50-1D D	0.036	954	N/A	5	1	< 3.82	< 3.82	--	--
O-M29-1-BHAR HNO3	184-50-1E	-0.005	37	N/A	5	1	< 0.148	--	--	--
O-M29-1-BHAR HNO3 D	184-50-1E D	-0.005	37	N/A	5	1	< 0.148	< 0.148	--	--
O-M29-1-KMnO4	184-50-1F	0.307	345	N/A	5	1	2.12	--	--	--
O-M29-1-KMnO4 D	184-50-1F D	0.328	345	N/A	5	1	2.26	2.19	--	--
O-M29-1-HCl	184-50-1G	0.016	50	N/A	5	1	< 0.200	--	--	--
O-M29-1-HCl D	184-50-1G D	0.010	50	N/A	5	1	< 0.200	< 0.200	--	--
O-M29-2-FHACE,FHAR,FILTER FH	184-50-2ABC	0.008	N/A	100	5	1	< 0.400	--	--	--
O-M29-2-FHACE,FHAR,FILTER FH D	184-50-2ABC D	-0.008	N/A	100	5	1	< 0.400	< 0.400	--	--
O-M29-2-HNO3 BH	184-50-2DE	0.034	1645	N/A	5	1	< 6.58	--	--	--
O-M29-2-HNO3 BH D	184-50-2DE D	0.023	1645	N/A	5	1	< 6.58	< 6.58	--	--
O-M29-2-BHAR HNO3	184-50-2F	-0.018	35	N/A	5	1	< 0.140	--	--	--
O-M29-2-BHAR HNO3 D	184-50-2F D	-0.016	35	N/A	5	1	< 0.140	< 0.140	--	--
O-M29-2-KMnO4	184-50-2G	0.299	405	N/A	5	1	2.42	--	--	--
O-M29-2-KMnO4 D	184-50-2G D	0.302	405	N/A	5	1	2.45	2.43	--	--
O-M29-2-HCl	184-50-2H	-0.021	95	N/A	5	1	< 0.380	--	--	--
O-M29-2-HCl D	184-50-2H D	-0.018	95	N/A	5	1	< 0.380	< 0.380	--	--
O-M29-3-FHACE,FHAR,FILTER FH	184-50-3ABC	0.000	N/A	100	5	1	< 0.400	--	--	--
O-M29-3-FHACE,FHAR,FILTER FH D	184-50-3ABC D	0.003	N/A	100	5	1	< 0.400	< 0.400	--	--
O-M29-3-HNO3 BH	184-50-3DE	0.549	1130	N/A	5	1	12.4	--	--	--
O-M29-3-HNO3 BH D	184-50-3DE D	0.554	1130	N/A	5	1	12.5	12.5	--	--
O-M29-3-BHAR HNO3	184-50-3F	-0.003	57	N/A	5	1	< 0.228	--	--	--
O-M29-3-BHAR HNO3 D	184-50-3F D	-0.018	57	N/A	5	1	< 0.228	< 0.228	--	--
O-M29-3-KMnO4	184-50-3G	0.442	330	N/A	5	1	2.92	--	--	--
O-M29-3-KMnO4 D	184-50-3G D	0.463	330	N/A	5	1	3.06	2.99	--	--
O-M29-3-HCl	184-50-3H	0.070	95	N/A	5	1	< 0.380	--	--	--
O-M29-3-HCl D	184-50-3H D	0.060	95	N/A	5	1	< 0.380	< 0.380	--	--

Client: Pacific Environmental Services  
 Project Number: 43377

Sample Report

Page 2 of 4

Date Received:	September 24, 1997
Date Prepared:	October 10-20, 1997
Date Analyzed:	October 21-22, 1997
DATA FILE:	AB827 & AB828
Matrix:	Air

ANALYTE:	Hg
ug/L RDL:	0.2
Analysis Method:	29
Instrument:	P E Zeeman 5100
Spike Conc. (ug/L):	5

CVAA ANALYTE SUMMARY REPORT

Client Sample ID	TLI SAMPLE ID	ug/L CONC	ml TV	ml FV	ml Aliquot	DIL FACTOR	Total ug RESULT	Avg RESULT	RPD	%REC
O-M29-4-FHACE,FHAR,FILTER FH	184-50-4ABC	-0.003	N/A	100	5	1	< 0.400	-	-	--
O-M29-4-FHACE,FHAR,FILTER FH D	184-50-4ABC D	-0.016	N/A	100	5	1	< 0.400	< 0.400	-	--
O-M29-4-HNO3 BH	184-50-4DE	0.026	1105	N/A	5	1	< 4.42	-	-	--
O-M29-4-HNO3 BH D	184-50-4DE D	0.029	1105	N/A	5	1	< 4.42	< 4.42	-	--
O-M29-4-BHAR HNO3	184-50-4F	0.018	56	N/A	5	1	< 0.224	-	-	--
O-M29-4-BHAR HNO3 D	184-50-4F D	0.000	56	N/A	5	1	< 0.224	< 0.224	-	--
O-M29-4-KMnO4	184-50-4G	0.299	350	N/A	5	1	2.09	-	-	--
O-M29-4-KMnO4 D	184-50-4G D	0.297	350	N/A	5	1	2.08	2.09	-	--
O-M29-4-HCl	184-50-4H	0.010	61	N/A	5	1	< 0.244	-	-	--
O-M29-4-HCl D	184-50-4H D	0.005	61	N/A	5	1	< 0.244	< 0.244	-	--
O-M29-FB-FHACE,FHAR,FILTER FH	184-50-5ABC	-0.003	N/A	100	5	1	< 0.400	-	-	--
O-M29-FB-FHACE,FHAR,FILTER FH D	184-50-5ABC D	-0.010	N/A	100	5	1	< 0.400	< 0.400	-	--
O-M29-FB-FHAR,HNO3 BH	184-50-5BD	-0.016	150	N/A	5	1	< 0.60	-	-	--
O-M29-FB-FHAR,HNO3 BH D	184-50-5BD D	-0.005	150	N/A	5	1	< 0.60	< 0.60	-	--
O-M29-FB-BHAR HNO3	184-50-5E	-0.013	56	N/A	5	1	< 0.224	-	-	--
O-M29-FB-BHAR HNO3 D	184-50-5E D	-0.013	56	N/A	5	1	< 0.224	< 0.224	-	--
O-M29-FB-KMnO4	184-50-5F	-0.018	155	N/A	5	1	< 0.62	-	-	--
O-M29-FB-KMnO4 D	184-50-5F D	-0.016	155	N/A	5	1	< 0.62	< 0.62	-	--
O-M29-RB-FHACE,FHAR,FILTER FH	184-50-6ABC	-0.016	N/A	100	5	1	< 0.400	-	-	--
O-M29-RB-FHACE,FHAR,FILTER FH D	184-50-6ABC D	-0.003	N/A	100	5	1	< 0.400	< 0.400	-	--
O-M29-RB-FHAR,HNO3 BH	184-50-6BD	0.066	300	N/A	5	1	< 1.20	-	-	--
O-M29-RB-FHAR,HNO3 BH D	184-50-6BD D	0.063	300	N/A	5	1	< 1.20	< 1.20	-	--
O-M29-RB-FHAR HNO3	184-50-6B	0.033	100	N/A	5	1	< 0.400	-	-	--
O-M29-RB-FHAR HNO3 D	184-50-6B D	0.011	100	N/A	5	1	< 0.400	< 0.400	-	--
O-M29-RB-KMnO4	184-50-6E	0.019	290	N/A	5	1	< 1.16	-	-	--
O-M29-RB-KMnO4 D	184-50-6E D	0.028	290	N/A	5	1	< 1.16	< 1.16	-	--
O-M29-RB-HCl	184-50-6FE	0.025	94	N/A	5	1	< 0.376	-	-	--
O-M29-RB-HCl D	184-50-6FE D	0.017	94	N/A	5	1	< 0.376	< 0.376	-	--

Client: Pacific Environmental Services  
 Project Number: 43377

Sample Report

Date Received:	September 24, 1997
Date Prepared:	October 10-20, 1997
Date Analyzed:	October 21-22, 1997
DATA FILE:	AB827 & AB828
Matrix:	Air

ANALYTE:	Hg
uo/L RDL:	0.2
Analysis Method:	29
Instrument:	P E Zeeman 5100
Spike Conc. (uo/L)	5

CVAA ANALYTE SUMMARY REPORT

Client Sample ID	TLI SAMPLE ID	uo/L CONC	ml TV	ml FV	ml Aliquot	DIL FACTOR	Total uo/L RESULT	Avg RESULT	RPD	%REC
I-M29-1-FHACE,FHAR,FILTER FH	184-50-7ABC	0.075	N/A	100	5	1	< 0.400	-	-	-
I-M29-1-FHACE,FHAR,FILTER FH D	184-50-7ABC D	0.063	N/A	100	5	1	< 0.400	< 0.400	-	-
I-M29-1-FHAR,HNO3 BH	184-50-7D	0.166	435	N/A	5	1	< 1.74	-	-	-
I-M29-1-FHAR,HNO3 BH D	184-50-7D D	0.144	435	N/A	5	1	< 1.74	< 1.74	-	-
I-M29-1-FHAR HNO3	184-50-7E	0.022	85	N/A	5	1	< 0.340	-	-	-
I-M29-1-FHAR HNO3 D	184-50-7E D	0.011	85	N/A	5	1	< 0.340	< 0.340	-	-
I-M29-1-KMnO4	184-50-7F	0.075	275	N/A	5	1	< 1.10	-	-	-
I-M29-1-KMnO4 D	184-50-7F D	0.072	275	N/A	5	1	< 1.10	< 1.10	-	-
O-M29-1-HNO3 BH MS	184-50-1D MS	8.522	954	N/A	5	1	163	-	-	170%
O-M29-1-HNO3 BH MSD	184-50-1D MSD	8.504	954	N/A	5	1	162	162	0.211%	170%
O-M29-3-HNO3 BH MS	184-50-3DE MS	8.403	1130	N/A	5	1	190	-	-	168%
O-M29-3-HNO3 BH MSD	184-50-3DE MSD	7.976	1130	N/A	5	1	180	185	5.21%	160%
O-M29-4-HNO3 BH MS	184-50-4DE MS	7.750	1105	N/A	5	1	171	-	-	155%
O-M29-4-HNO3 BH MSD	184-50-4DE MSD	7.575	1105	N/A	5	1	167.4	169	2.28%	152%
O-M29-RB-FHAR,HNO3 BH MS	184-50-6BD MS	4.937	300	N/A	5	1	29.6	-	-	99%
O-M29-RB-FHAR,HNO3 BH MSD	184-50-6BD MSD	5.227	300	N/A	5	1	31.4	30.5	5.71%	105%
I-M29-1-FHAR,HNO3 BH MS	184-50-7D MS	4.424	435	N/A	5	1	38.5	-	-	88%
I-M29-1-FHAR,HNO3 BH MSD	184-50-7D MSD	5.125	435	N/A	5	1	44.6	41.5	14.7%	103%
O-M29-1-HNO3 BH MS	True Spike MS	5	954	N/A	5	1	95.4	-	-	-
O-M29-1-HNO3 BH MSD	True Spike MS	5	954	N/A	5	1	95.4	-	-	-
O-M29-3-HNO3 BH MS	True Spike MS	5	1130	N/A	5	1	113	-	-	-
O-M29-3-HNO3 BH MSD	True Spike MS	5	1130	N/A	5	1	113	-	-	-
O-M29-4-HNO3 BH MS	True Spike MS	5	1105	N/A	5	1	111	-	-	-
O-M29-4-HNO3 BH MSD	True Spike MS	5	1105	N/A	5	1	111	-	-	-
O-M29-RB-FHAR,HNO3 BH MS	True Spike MS	5	300	N/A	5	1	30.0	-	-	-
O-M29-RB-FHAR,HNO3 BH MSD	True Spike MS	5	300	N/A	5	1	30.0	-	-	-
I-M29-1-FHAR,HNO3 BH MS	True Spike MS	5	435	N/A	5	1	43.5	-	-	-
I-M29-1-FHAR,HNO3 BH MSD	True Spike MS	5	435	N/A	5	1	43.5	-	-	-

Client: Pacific Environmental Services  
 Project Number: 43377

Sample Report

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Date Received:	September 24, 1997
Date Prepared:	October 10-20, 1997
Date Analyzed:	October 21-22, 1997
DATA FILE:	AB827 & AB828
Matrix:	Air

ANALYTE:	Hg
uol RDL:	0.2
Analysis Method:	29
Instrument:	P E Zeeman 5100
Spike Conc. (uol):	5

CVAA ANALYTE SUMMARY REPORT

Client Sample ID	TLI SAN#ID	uol CONG	ml TV	ml FV	ml Aliquot	DIL FACTOR	Total uol RESULT	Avg RESULT	RPD	%REC
I-M29-1-FHAR,HNO3 BH MS	True Spike MS	5	435	N/A	5	1	43.5	-	-	--
I-M29-1-FHAR,HNO3 BH MSD	True Spike MS	5	435	N/A	5	1	43.5	-	-	--
Method Blank	43377 MB1	-0.008	-	-	-	-	-	-	-	--
Method Blank D	43377 MB1 D	-0.016	-	-	-	-	-	-	-	--
LCS	43377 LCS1	5.278	-	-	-	-	-	-	-	106%
LCSD	43377 LCS1 D	5.018	-	-	-	-	-	-	-	100%
Method Blank	43377 MB2	0.003	-	-	-	-	-	-	-	--
Method Blank D	43377 MB2 D	-0.003	-	-	-	-	-	-	-	--
LCS	43377 LCS2	4.981	-	-	-	-	-	-	-	100%
LCSD	43377 LCS2 D	4.733	-	-	-	-	-	-	-	95%

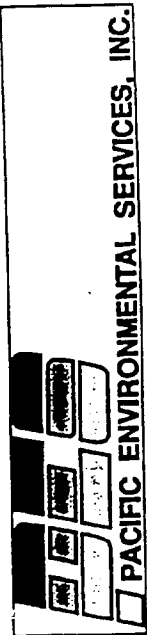
Triangle Laboratories, Inc.  
 801 Capitola Drive \* Durham, North Carolina 27713  
 Tele: (919) 544-5729 \* Fax: (919) 544-5491

Printed: 05-Nov-97 at 04:27 PM



Central Park West  
 5001 South Miami Boulevard, P.O. Box 12077  
 Research Triangle Park, North Carolina 27709-2077  
 (919) 941-0333 FAX: (919) 941-0234

**COPY**  
*MM*  
 9/25/97



**Chain of Custody Record**

Project Name		Project Name		Analysis Requested		Remarks
Project Numb	s413-004	US EPA EMC Asphalt Cement.	PLANT "A"	MM	Hg	
Samplers: Abernathy, Dickerson, Gay						
Date	Time	Field Sample ID	Sample Description	MM	Hg	Remarks
8/19/97	1104	O-M29-1-FHACE	FH Acetone Rinse - Beaker No. M-2	•	•	
8/19/97	1104	O-M29-1-FHAR	FH 0.1 N HNO3 Rinse	•	•	
8/19/97	1104	O-M29-1-Filter	Filter M97-003 - Beaker No. M-1	•	•	
8/19/97	1104	O-M29-1-HNO3	5% HNO3 / 10% H2O2 Absorbing Solution	•	•	
8/19/97	1104	O-M29-1-BHAR	BH 0.1 N HNO3 Rinse	•	•	
8/19/97	1104	O-M29-1-KMnO4	10% H2SO4 / 4% KMnO4 Absorbing Sol.	•	•	
8/19/97	1104	O-M29-1-HCl	8N HCl Rinse	•	•	
8/20/97	0822	O-M29-2-FHACE	FH Acetone Rinse - Beaker No. M-5	•	•	
8/20/97	0822	O-M29-2-FHAR	FH 0.1 N HNO3 Rinse	•	•	
8/20/97	0822	O-M29-2-Filter	Filter M97-002 - Beaker No. M-4	•	•	
8/20/97	0822	O-M29-2-HNO3	5% HNO3 / 10% H2O2 Absorbing Solution	•	•	Bottle 1/2
8/20/97	0822	O-M29-2-HNO3	5% HNO3 / 10% H2O2 Absorbing Solution	•	•	Bottle 2/2
8/20/97	0822	O-M29-2-BHAR	BH 0.1 N HNO3 Rinse	•	•	
8/20/97	0822	O-M29-2-KMnO4	10% H2SO4 / 4% KMnO4 Absorbing Sol.	•	•	
8/20/97	1405	O-M29-2-HCl	8N HCl Rinse	•	•	
8/20/97	1405	O-M29-3-FHACE	FH Acetone Rinse - Beaker No. M-7	•	•	
8/20/97	1405	O-M29-3-FHAR	FH 0.1 N HNO3 Rinse	•	•	
8/20/97	1405	O-M29-3-Filter	Filter M97-004 - Beaker No. M-6	•	•	
Relinquished by: (Signature)		Received by: (Signature)		Relinquished by: (Signature)		Date/Time
Relinquished by: (Signature)		Received by: (Signature)		Relinquished by: (Signature)		Date/Time
Relinquished by: (Signature)		Received by: (Signature)		Relinquished by: (Signature)		Date/Time
Relinquished by: (Signature)		Received by: (Signature)		Relinquished by: (Signature)		Date/Time



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**Chain of Custody Record**

Project Numb s413-004		Project Name US EPA EMC Asphalt Cement,		PLANT "A"		Analysis Requested		Remarks	
Samplers: Abernathy, Dickerson, Gay									
Date	Time	Field Sample ID	Sample Description	MM	Hg				
8/20/97	1405	Q-M29-3-HNO3	5% HNO3 / 10% H2O2 Absorbing Solution						Bottle 1/2
8/20/97	1405	O-M29-3-HNO3	5% HNO3 / 10% H2O2 Absorbing Solution						Bottle 2/2
8/20/97	1405	O-M29-3-BHAR	BH 0.1 N HNO3 Rinse						
8/20/97	1405	O-M29-3-KMnO4	10% H2SO4 / 4% KMnO4 Absorbing Sol.						
8/20/97	1405	O-M29-3-HCl	8N HCl Rinse						
8/21/97	0740	O-M29-4-FHACE	FH Acetone Rinse - Beaker No. M-9						
8/21/97	0740	O-M29-4-FHAR	FH 0.1 N HNO3 Rinse						
8/21/97	0740	O-M29-4-Filter	Filter M97-005 - Beaker No. M-8						
8/21/97	0740	O-M29-4-HNO3	5% HNO3 / 10% H2O2 Absorbing Solution						Bottle 1/2
8/22/97	0741	O-M29-4-HNO4	5% HNO3 / 10% H2O2 Absorbing Solution						Bottle 2/2
8/21/97	0740	O-M29-4-BHAR	BH 0.1 N HNO3 Rinse						
8/21/97	0740	O-M29-4-KMnO4	10% H2SO4 / 4% KMnO4 Absorbing Sol.						
8/21/97	0740	O-M29-4-HCl	8N HCl Rinse						
8/20/97		O-M29-FB-FHACE	FH Acetone Rinse - Beaker No. M-15						
8/20/97		O-M29-FB-FHAR	FH 0.1 N HNO3 Rinse						
8/20/97		O-M29-FB-Filter	Filter M97-006 - Beaker No. M-14						
8/20/97		O-M29-FB-HNO3	5% HNO3 / 10% H2O2 Absorbing Solution						
8/20/97		O-M29-FB-BHAR	BH 0.1 N HNO3 Rinse						
Relinquished by: (Signature)		Received by: (Signature)		Relinquished by: (Signature)		Received by: (Signature)		Date/Time	
Relinquished by: (Signature)		Received by: (Signature)		Relinquished by: (Signature)		Received by: (Signature)		Date/Time	
Relinquished by: (Signature)		Received for lab by: (Signature)		REMARKS				Date/Time	
		9/24/97						Page: 2 of 3	
		1430							



**COPY KML 7/25/97**

TRIANGLE LABORATORIES, INC. -- LOG IN RECORD/CHAIN OF CUSTODY

Custody Seal : Absent  
 Chain of Custody : Present  
 Sample Tags : Absent  
 Sample Tag Numbers: Not Listed on Chain of Custody  
 SMO Forms : N/A

Sample Seals: Absent  
 Container: Intact

Date Received: 09/24/97 By: *[Signature]*

Carrier and Number: HAND DELIVERED

TLJ Project Number: 43377  
 Client: PES03 - Pacific Environmental Services

Book: 184

TLI Number	Client Sample ID	Matrix	To LAB Date/Init	To STORAGE Date/Init	To LAB Date/Init	To STORAGE Date/Init	To LAB Date/Init	To STORAGE Date/Init	DISPOSED Date/Init
184-50-1A	O-M29-1-FHACE O-M29-1-FHACE	FH ACETONE RINSE METALS LAB							
184-50-1B	O-M29-1-FHAR O-M29-1-FHAR	FH IN HNO3 METALS LAB							
184-50-1C	O-M29-1-FILTER O-M29-1-FILTER	FILTER METALS LAB							
184-50-1D	O-M29-1-HNO3 O-M29-1-HNO3	HNO3/H2O2 METALS LAB							
184-50-1E	O-M29-1-BHAR O-M29-1-BHAR	BH HNO3 METALS LAB							
184-50-1F	O-M29-1-KMNO4 O-M29-1-KMNO4	H2SO4/KMNO4 METALS LAB							
184-50-1G	O-M29-1-HCL O-M29-1-HCL	8N HCL METALS LAB							
184-50-2A	O-M29-2-FHACE O-M29-2-FHACE	FH ACETONE RINSE METALS LAB							
184-50-2B	O-M29-2-FHAR O-M29-2-FHAR	FH IN HNO3 METALS LAB							
184-50-2C	O-M29-2-FILTER O-M29-2-FILTER	FILTER METALS LAB							
184-50-2D	O-M29-2-HNO3 O-M29-2-HNO3	HNO3/H2O2 METALS LAB							
184-50-2E	O-M29-2-HNO3 O-M29-2-HNO3	HNO3/H2O2 METALS LAB							
184-50-2F	O-M29-2-BHAR O-M29-2-BHAR	BH HNO3 METALS LAB							
184-50-2G	O-M29-2-KMNO4 O-M29-2-KMNO4	H2SO4/KMNO4 METALS LAB							

Receiving Remarks: NO COOLANT WAS WITH SAMPLES. COC LISTED SAMPLE O-M29-FB-HCL BUT SAMPLE WAS NOT RECEIVED.

Archive Remarks:

TRIANGLE LABORATORIES, INC. -- LOG IN RECORD/CHAIN OF CUSTODY

Custody Seal : Absent  
 Chain of Custody : Present  
 Sample Tags : Absent  
 Sample Tag Numbers: Not Listed on Chain of Custody  
 SMO Forms : N/A

Sample Seals: Absent  
 Container: Intact

TLI Project Number 43377  
 Client: PES03 - Pacific Environmental Services

Date Received 09/24/97 By *Kevin M. Dwyer*

Carrier and Number HAND DELIVERED

Book 184

Ice Chest	NO COOLANT	Temp	20.0 C	To LAB Date/Init	To STORAGE Date/Init	To LAB Date/Init	To STORAGE Date/Init	To LAB Date/Init	To STORAGE Date/Init	DISPOSED Date/Init
TLI Number	Client Sample ID	Matrix	Location	To LAB Date/Init	To STORAGE Date/Init	To LAB Date/Init	To STORAGE Date/Init	To LAB Date/Init	To STORAGE Date/Init	DISPOSED Date/Init
184-50-2H	0-M29-2-HCL 0-M29-2-HCL	8N HCL METALS LAB								
184-50-3A	0-M29-3-FHACE 0-M29-3-FHACE	FH ACETONE RINSE METALS LAB								
184-50-3B	0-M29-3-FHAR 0-M29-3-FHAR	FH 1N HNO3 METALS LAB								
184-50-3C	0-M29-3-FILTER 0-M29-3-FILTER	FILTER METALS LAB								
184-50-3D	0-M29-3-HNO3 0-M29-3-HNO3	HNO3/H2O2 METALS LAB								
184-50-3E	0-M29-3-HNO3 0-M29-3-HNO3	HNO3/H2O2 METALS LAB								
184-50-3F	0-M29-3-BHAR 0-M29-3-BHAR	BH HNO3 METALS LAB								
184-50-3G	0-M29-3-KMN04 0-M29-3-KMN04	H2SO4/KMN04 METALS LAB								
184-50-3H	0-M29-3-HCL 0-M29-3-HCL	8N HCL METALS LAB								
184-50-4A	0-M29-4-FHACE 0-M29-4-FHACE	FH ACETONE RINSE METALS LAB								
184-50-4B	0-M29-4-FHAR 0-M29-4-FHAR	FH 1N HNO3 METALS LAB								
184-50-4C	0-M29-4-FILTER 0-M29-4-FILTER	FILTER METALS LAB								
184-50-4D	0-M29-4-HNO3 0-M29-4-HNO3	HNO3/H2O2 METALS LAB								
184-50-4E	0-M29-4-HNO3 0-M29-4-HNO3	HNO3/H2O2 METALS LAB								

Receiving Remarks: NO COOLANT WAS WITH SAMPLES. COC LISTED SAMPLE O-M29-FB-HCL BUT SAMPLE WAS NOT RECEIVED.

Archive Remarks:

TRIANGLE LABORATORIES, INC. --- LOG IN RECORD/CHAIN OF CUSTODY---

Custody Seal : Absent		Sample Seals: Absent		TLI Project Number 43377		Book	
Chain of Custody : Present		Container...: Intact		Client: PES03 - Pacific Environmental Services		184	
Sample Tags : Absent				Date Received 09/24/97		By <i>[Signature]</i>	
Sample Tag Numbers: Not Listed on Chain of Custody				Carrier and Number		HAND DELIVERED	
SMO Forms : N/A						50	
Ice Chest	NO COOLANT	Temp	20.0 C				
TLI Number..	Client Sample ID.....	Matrix	To LAB Date/Init	To STORAGE Date/Init	To LAB Date/Init	To STORAGE Date/Init	DISPOSED Date/Init
Imp/H:CPM.	Client COC ID.....	Location.....					
184-50-4F	O-M29-4-BHAR	BH HNO3					
	O-M29-4-BHAR	METALS LAB					
184-50-4G	O-M29-4-KMNO4	H2SO4/KMNO4					
	O-M29-4-KMNO4	METALS LAB					
184-50-4H	O-M29-4-HCL	8N HCL					
	O-M29-4-HCL	METALS LAB					
184-50-5A	O-M29-FB-FHACE	FH ACETONE RINSE					
	O-M29-FB-FHACE	METALS LAB					
184-50-5B	O-M29-FB-FHAR	FH 1N HNO3					
	O-M29-FB-FHAR	METALS LAB					
184-50-5C	O-M29-FB-FILTER	FILTER					
	O-M29-FB-FILTER	METALS LAB					
184-50-5D	O-M29-FB-HNO3	HNO3/H2O2					
	O-M29-FB-HNO3	METALS LAB					
184-50-5E	O-M29-FB-BHAR	BH HNO3					
	O-M29-FB-BHAR	METALS LAB					
184-50-5F	O-M29-FB-KMNO4	H2SO4/KMNO4					
	O-M29-FB-KMNO4	METALS LAB					
184-50-6A	O-M29-RB-FHACE	FH ACETONE RINSE					
	O-M29-RB-FHACE	METALS LAB					
184-50-6B	O-M29-RB-FHAR	FH 1 HNO3					
	O-M29-RB-FHAR	METALS LAB					
184-50-6C	O-M29-RB-FILTER	FILTER					
	O-M29-RB-FILTER	METALS LAB					
184-50-6D	O-M29-RB-HNO3	HNO3/H2O2					
	O-M29-RB-HNO3	METALS LAB					
184-50-6E	O-M29-RB-KMNO4	H2SO4/KMNO4					
	O-M29-RB-KMNO4	METALS LAB					

Receiving Remarks: NO COOLANT WAS WITH SAMPLES. COC LISTED SAMPLE O-M29-FB-HCL BUT SAMPLE WAS NOT RECEIVED.

Archive Remarks:

TRIANGLE LABORATORIES, INC. -- LOG IN RECORD/CHAIN OF CUSTODY

Custody Seal : Absent  
 Chain of Custody : Present  
 Sample Tags : Absent  
 Sample Tag Numbers: Not Listed on Chain of Custody  
 SMO Forms : N/A

Sample Seals: Absent  
 Container: Intact

Date Received : 09/24/97 By :  
 Carrier and Number : HAND DELIVERED

TLI Project Number 43377

Client: PES03 - Pacific Environmental Services

Book 184

Page 50

TLI Number	Client Sample ID	Matrix	NO COOLANT		Temp 20.0 C		To STORAGE		To LAB		To STORAGE		To LAB		To STORAGE		To LAB		DISPOSED	
			Date/Init	Date/Init	Date/Init	Date/Init	Date/Init	Date/Init	Date/Init	Date/Init	Date/Init	Date/Init	Date/Init	Date/Init	Date/Init	Date/Init	Date/Init	Date/Init		
184-50-6F	O-M29-RB-HCL	8N HCL																		
	O-M29-RB-HCL	METALS LAB																		
184-50-7A	I-M29-1-PHACE	FH ACETONE RINSE																		
	I-M29-1-PHACE	METALS LAB																		
184-50-7B	I-M29-1-PHAR	FH 1N HNO3																		
	I-M29-1-PHAR	METALS LAB																		
184-50-7C	I-M29-1-FILTER	FILTER																		
	I-M29-1-FILTER	METALS LAB																		
184-50-7D	I-M29-1-HNO3	HNO3/H2O2																		
	I-M29-1-HNO3	METALS LAB																		
184-50-7E	I-M29-1-BHAR	BH HNO3																		
	I-M29-1-BHAR	METALS LAB																		
184-50-7F	I-M29-1-KMNO4	H2SO4/KMNO4																		
	I-M29-1-KMNO4	METALS LAB																		

Receiving Remarks: NO COOLANT WAS WITH SAMPLES. COC LISTED SAMPLE O-M29-FB-HCL BUT SAMPLE WAS NOT RECEIVED.

Archive Remarks:

Project # 43377

Client: Pacific Environmental Services Triangle Laboratories of RTP

Date/Int.: 10/8/97 ASE

Client Run# 0-M 29-1

ICP GFAA FLAA CVA

Ag Ni  
As Pb  
Ba Sb  
Bi Se  
Cd Ti  
Co Zn  
Cr Cu

Hg

CONT # (1)

Filter type: G or E

label 184-50-1C  
Volume DRY

Digestion and redissolve in 10ml conc HNO3  
Int ASE Date 10/14/97

Microwave dig with conc. HF and conc. HNO3  
label 184-50-1C, A, B  
Int ASE Date 10/14/97

Combine digestates

Front-Half Digestate  
Add 500 ul SC

Dilute to 100 ml  
Int ASE Date 10/14/97

label 184-50-1C, A, B  
Volume ADD ML

For Hg  
label 184-50-1A, B, C  
Int SRB Date 10/20/97

Volume 100 ml  
Int ASE Date 10/14/97

post digest spike on FH for GFAA)  
& BH Post dig. spk. Int ASE Date 10/14/97  
Aliquot A: 5 ml  
(No spike required)  
Aliquot B: 5 ml

CONT # (2)

Acetone Rinse

label 184-50-1A  
Volume DRY

Reduce volume to 20 ml on hotplate  
Int ASE Date 10/14/97

Microwave dig with conc. HF and conc. HNO3  
label 184-50-1C, A, B  
Int ASE Date 10/14/97

CONT # (3)

HNO3 Rinse

label 184-50-1B  
Volume 100 ml

Reduce volume to 20 ml on hotplate  
Int ASE Date 10/14/97

Microwave dig with conc. HF and conc. HNO3  
label 184-50-1C, A, B  
Int ASE Date 10/14/97

CONT # (4)

Back Half Impinger

label 184-50-1D  
Volume 954 ml

For Metals For Hg  
label 184-50-1D label 184-50-100  
Volume 854 Volume 100

CONT # (5A)

HNO3

label 184-50-1E  
Volume 37 ml

Aliquot A: 5  
Aliquot B: 5  
Int SRB Date 10/20/97

CONT # (5B)

KMNO4

label 184-50-1F  
Volume 345 ml

Aliquot A: 5  
Aliquot B: 5  
Int SRB Date 10/20/97

CONT # (5C)

HCl

label 184-50-1G  
Volume 50 ml

Aliquot A: 5  
Aliquot B: 5  
Int SRB Date 10/20/97

(Duplicate Analysis of Each)

Spike (1 ml Hg Spike required)

Sample

label 184-50-1D Int SRB  
Volume 100 Date 10/20/97  
Aliquot A: 5  
Aliquot B: 5

label 184-50-1D Int SRB  
Volume 100 Date 10/20/97  
Aliquot A: 5  
Aliquot B: 5

spk of 100 ml ppb Int SRB

final spk conc. added 5 ppb Date 10/20/97

FH & BH Serial dilution performed

ml to ml FV + ul SC  
Initials:



Project # 43377 Analytes ICP - GFAA FLAA CVAA

Client: Triangle Laboratories of RTP  
 Date/Int.: (919) 544-5729

Silent Run# 0-29-2

CONT #	CONT #	CONT #	CONT #	CONT #	CONT #	
(1) Filler Type: G or Q label <u>184-50-2C</u> Volume <u>DRY</u> Desiccate to dryness and redissolve in 10ml conc. HNO3 Int. <u>OSE</u> Date <u>10/14/97</u> Microwave dig with conc. HF and conc. HNO3 label <u>184-50-2C, A, B</u> Int. <u>OSE</u> Date <u>10/14/97</u> Combine digestates Front Half Digestate Add <u>500</u> ul SC Dilute to 100 ml label <u>184-50-2C, A, B</u> Volume <u>100</u> ml For Hg label <u>184-50-2ABC</u> Int. <u>SRB</u> Volume <u>100</u> ml Date <u>10/20/97</u> post digest spike on FI for GFAA) Int. <u>OSE</u> Date <u>10/14/97</u> Volume <u>100</u> ml Aliquot A: <u>5</u> ml (No spike required)	(2) Acetone Rinse label <u>184-50-2A</u> Volume <u>DRY</u> Reduce volume to 20 ml on hotplate Int. <u>OSE</u> Date <u>10/14/97</u> Microwave dig with conc. HF and conc. HNO3 label <u>184-50-2C, A, B</u> Int. <u>OSE</u> Date <u>10/14/97</u> Combine digestates Front Half Digestate Add <u>500</u> ul SC Dilute to 100 ml label <u>184-50-2C, A, B</u> Volume <u>100</u> ml For Hg label <u>184-50-2ABC</u> Int. <u>SRB</u> Volume <u>100</u> ml Date <u>10/20/97</u> post digest spike on FI for GFAA) Int. <u>OSE</u> Date <u>10/14/97</u> Volume <u>100</u> ml Aliquot A: <u>5</u> ml (No spike required)	(3) HNO3 Rinse label <u>184-50-2B</u> Volume <u>9 ml</u> Reduce volume to 20 ml on hotplate Int. <u>OSE</u> Date <u>10/14/97</u> Microwave dig with conc. HF and conc. HNO3 label <u>184-50-2C, A, B</u> Int. <u>OSE</u> Date <u>10/14/97</u> Combine digestates Front Half Digestate Add <u>500</u> ul SC Dilute to 100 ml label <u>184-50-2C, A, B</u> Volume <u>100</u> ml For Hg label <u>184-50-2ABC</u> Int. <u>SRB</u> Volume <u>100</u> ml Date <u>10/20/97</u> post digest spike on FI for GFAA) Int. <u>OSE</u> Date <u>10/14/97</u> Volume <u>100</u> ml Aliquot A: <u>5</u> ml (No spike required)	(4) Back Half Impinger label <u>184-50-2D/E</u> Volume <u>145</u> ml For Metals For Hg label <u>184-50-2D/E</u> Volume <u>100</u> ml Sample label <u>184-50-2DE</u> Int. <u>SRB</u> Volume <u>100</u> ml Date <u>10/20/97</u> Aliquot A: <u>5</u> Aliquot B: <u>5</u>	(5A) HNO3 label <u>184-50-2F</u> Volume <u>35</u> ml Aliquot A: <u>5</u> Aliquot B: <u>5</u> Int. <u>SRB</u> Date <u>10/20/97</u> (Duplicate Analysis of Ear)	(5B) KMNO4 label <u>184-50-2G</u> Volume <u>405</u> ml Aliquot A: <u>5</u> Aliquot B: <u>5</u> Int. <u>SRB</u> Date <u>10/20/97</u>	(5C) HCl label <u>184-50-2</u> Volume <u>95</u> ml Aliquot A: <u>5</u> Aliquot B: <u>5</u> Int. <u>SRB</u> Date <u>10/20/97</u>

Initials: \_\_\_\_\_  
 FH & BH Serial dilution performed  
 \_\_\_\_\_ ml to \_\_\_\_\_ ml FV + \_\_\_\_\_ ul SC

Project # 43377

Client: \_\_\_\_\_

Date/Int.: \_\_\_\_\_

Client Run # 0-M29-3

# Triangle Laboratories of RTP (919) 544-5729

Analytes  
ICP - GFAA FLAA CVAA

CONT #	CONT #	CONT #	CONT #	CONT #	CONT #	
<p>1</p> <p>Filler Type: G or Q</p> <p>label <u>184-50-3C</u> Volume <u>DRY</u></p> <p>Destinate to dryness and redissolve in 10ml con HNO3</p> <p>Int <u>DSE</u> Date <u>10/14/97</u></p> <p>Microwave dig. with conc. HF and conc. HNO3</p> <p>Int <u>DSE</u> Date <u>10/14/97</u></p> <p>Combine digestates</p> <p>Front Half Digestate</p> <p>Add <u>500</u> ul Sc</p> <p>Dilute to 100 ml</p> <p>Int <u>DSE</u> Date <u>10/14/97</u></p> <p>label <u>184-50-3A</u> Volume <u>100</u> ml</p>	<p>2</p> <p>Acetone Rinse</p> <p>label <u>184-50-3B</u> Volume <u>70</u> ml</p> <p>Reduce volume to 20 ml on hotplate</p> <p>Int <u>DSE</u> Date <u>10/14/97</u></p> <p>Microwave dig with conc. HF and conc. HNO3</p> <p>Int <u>DSE</u> Date <u>10/14/97</u></p> <p>label <u>184-50-3A,B</u></p>	<p>3</p> <p>HNO3 Rinse</p> <p>label <u>184-50-3B</u> Volume <u>70</u> ml</p> <p>Reduce volume to 20 ml on hotplate</p> <p>Int <u>DSE</u> Date <u>10/14/97</u></p> <p>Microwave dig with conc. HF and conc. HNO3</p> <p>Int <u>DSE</u> Date <u>10/14/97</u></p> <p>label <u>184-50-3A,B</u></p>	<p>4</p> <p>Back Half Impinger</p> <p>label <u>184-50-3D/E</u> Volume <u>1130</u> ml</p> <p>For Metals For Hg</p> <p>label <u>184-50-3D</u> Volume <u>1030</u> ml</p> <p>Reduce volume to 20 ml on hotplate</p> <p>Int <u>DSE</u> Date <u>10/14/97</u></p> <p>Microwave dig with conc. HF and conc. HNO3</p> <p>Int <u>DSE</u> Date <u>10/14/97</u></p> <p>label <u>184-50-3A,B</u></p>	<p>5A</p> <p>HNO3</p> <p>label <u>184-50-3F</u> Volume <u>57</u> ml</p> <p>Aliquot A <u>5</u> Aliquot B <u>5</u></p> <p>Int <u>SRB</u> Int <u>SRB</u></p> <p>Date <u>10/20/97</u> Date <u>10/20/97</u></p>	<p>5B</p> <p>KMNO4</p> <p>label <u>184-50-3G</u> Volume <u>330</u> ml</p> <p>Aliquot A <u>5</u> Aliquot B <u>5</u></p> <p>Int <u>SRB</u> Int <u>SRB</u></p> <p>Date <u>10/20/97</u> Date <u>10/20/97</u></p>	<p>5C</p> <p>HCl</p> <p>label <u>184-50-3H</u> Volume <u>95</u> ml</p> <p>Aliquot A <u>5</u> Aliquot B <u>5</u></p> <p>Int <u>SRB</u> Int <u>SRB</u></p> <p>Date <u>10/20/97</u> Date <u>10/20/97</u></p>
<p>3D - <u>925</u> mls 3E - <u>305</u> mls</p>			<p>3D - <u>925</u> mls 3E - <u>305</u> mls</p>			
<p>Sample</p> <p>label <u>184-50-3DE</u> Volume <u>100</u> ml</p> <p>Aliquot A: <u>5</u> Aliquot B: <u>5</u></p>			<p>Sample</p> <p>label <u>184-50-3DE</u> Volume <u>100</u> ml</p> <p>Aliquot A: <u>5</u> Aliquot B: <u>5</u></p>			
<p>Spike (10111g Spike required)</p> <p>label <u>184-50-3DE</u> Volume <u>100</u> ml</p> <p>Aliquot A: <u>5</u> Aliquot B: <u>5</u></p>			<p>Spike (10111g Spike required)</p> <p>label <u>184-50-3DE</u> Volume <u>100</u> ml</p> <p>Aliquot A: <u>5</u> Aliquot B: <u>5</u></p>			
<p>Final spk conc. added <u>5</u> ppb</p>			<p>Final spk conc. added <u>5</u> ppb</p>			
<p>FH &amp; BH Serial dilution performed</p> <p>ml to _____ ml FV + _____ ul Sc</p> <p>Initials: _____</p>			<p>FH &amp; BH Serial dilution performed</p> <p>ml to _____ ml FV + _____ ul Sc</p> <p>Initials: _____</p>			

Project # 43377

Client: \_\_\_\_\_

Date/Int.: \_\_\_\_\_

Client Run# 0-129-4

# Triangle Laboratories of RTP (919) 544-5729

ICP - GFAA ICP - GFAA GVAAL  
Analytes FIAA GVAAL

<p>CONT II (1)</p> <p>Filler Type: G or Q</p> <p>label <u>184-50-4C</u></p> <p>Volume <u>DRY</u></p> <p>Desiccate to dryness and redissolve in 10ml con HNO3</p> <p>Int <u>OSE</u> Date <u>10/14/97</u></p> <p>Microwave dig with conc. HF and conc. HNO3</p> <p>label <u>184-50-4C, A, B</u></p> <p>Combine digestates</p> <p>Front Half Digestate</p> <p>Add <u>500</u> ul sc</p> <p>Dilute to 100 ml</p> <p>label <u>184-50-4C, A, B</u></p> <p>Volume <u>100</u> ml</p> <p>For Hg</p> <p>label <u>184-50-4HBC</u></p> <p>Volume <u>100</u> ml</p> <p>Int <u>OSE</u> Date <u>10/14/97</u></p> <p>post digest spike on FI (for GFAA)</p> <p>I &amp; BH Post dig. spk.</p>	<p>CONT II (2)</p> <p>Acetone Rinse</p> <p>label <u>184-50-4A</u></p> <p>Volume <u>DRY</u></p> <p>Reduce volume to 20 ml on hotplate</p> <p>Int <u>OSE</u> Date <u>10/14/97</u></p> <p>Microwave dig with conc. HF and conc. HNO3</p> <p>label <u>184-50-4C, A, B</u></p> <p>Combine digestates</p> <p>Front Half Digestate</p> <p>Add <u>500</u> ul sc</p> <p>Dilute to 100 ml</p> <p>label <u>184-50-4C, A, B</u></p> <p>Volume <u>100</u> ml</p> <p>For Hg</p> <p>label <u>184-50-4HBC</u></p> <p>Volume <u>100</u> ml</p> <p>Int <u>OSE</u> Date <u>10/14/97</u></p> <p>post digest spike on FI (for GFAA)</p> <p>I &amp; BH Post dig. spk.</p>	<p>CONT II (3)</p> <p>HNO3 Rinse</p> <p>label <u>184-50-4B</u></p> <p>Volume <u>63 ml</u></p> <p>Reduce volume to 20 ml on hotplate</p> <p>Int <u>OSE</u> Date <u>10/14/97</u></p> <p>Microwave dig with conc. HF and conc. HNO3</p> <p>label <u>184-50-4C, A, B</u></p> <p>Combine digestates</p> <p>Front Half Digestate</p> <p>Add <u>500</u> ul sc</p> <p>Dilute to 100 ml</p> <p>label <u>184-50-4C, A, B</u></p> <p>Volume <u>100</u> ml</p> <p>For Hg</p> <p>label <u>184-50-4HBC</u></p> <p>Volume <u>100</u> ml</p> <p>Int <u>OSE</u> Date <u>10/14/97</u></p> <p>post digest spike on FI (for GFAA)</p> <p>I &amp; BH Post dig. spk.</p>	<p>CONT II (4)</p> <p>Back Half Impinger</p> <p>label <u>184-50-4D/E</u></p> <p>Volume <u>105</u></p> <p>For Metals</p> <p>label <u>184-50-4D/E</u></p> <p>Volume <u>105</u></p> <p>Sample</p> <p>Reduce Volume to 20 ml on Hotplate</p> <p>Int <u>OSE</u> Date <u>10/14/97</u></p> <p>Holplate dig with HNO3 and H2O2</p> <p>Add <u>500</u> ul sc</p> <p>Dilute to 100 ml</p> <p>label <u>184-50-4D/E</u></p> <p>Volume <u>100</u> ml</p> <p>Int <u>OSE</u> Date <u>10/14/97</u></p> <p>post digest spike on FI (for GFAA)</p> <p>I &amp; BH Post dig. spk.</p>	<p>CONT II (5A)</p> <p>HNO3</p> <p>label <u>184-50-4F</u></p> <p>Volume <u>56</u> ml</p> <p>Aliquot A <u>5</u></p> <p>Aliquot B <u>5</u></p> <p>Int <u>SRB</u></p> <p>Date <u>10/20/97</u></p> <p>Sample</p> <p>Reduce Volume to 20 ml on Hotplate</p> <p>Int <u>OSE</u> Date <u>10/14/97</u></p> <p>Holplate dig with HNO3 and H2O2</p> <p>Add <u>500</u> ul sc</p> <p>Dilute to 100 ml</p> <p>label <u>184-50-4D/E</u></p> <p>Volume <u>100</u> ml</p> <p>Int <u>SRB</u> Date <u>10/20/97</u></p> <p>post digest spike on FI (for GFAA)</p> <p>I &amp; BH Post dig. spk.</p>	<p>CONT II (5B)</p> <p>KMNO4</p> <p>label <u>184-50-4G</u></p> <p>Volume <u>350</u> ml</p> <p>Aliquot A <u>5</u></p> <p>Aliquot B <u>5</u></p> <p>Int <u>SRB</u></p> <p>Date <u>10/20/97</u></p> <p>Sample</p> <p>Reduce Volume to 20 ml on Hotplate</p> <p>Int <u>OSE</u> Date <u>10/14/97</u></p> <p>Holplate dig with HNO3 and H2O2</p> <p>Add <u>500</u> ul sc</p> <p>Dilute to 100 ml</p> <p>label <u>184-50-4D/E</u></p> <p>Volume <u>100</u> ml</p> <p>Int <u>SRB</u> Date <u>10/20/97</u></p> <p>post digest spike on FI (for GFAA)</p> <p>I &amp; BH Post dig. spk.</p>	<p>CONT II (5C)</p> <p>HCl</p> <p>label <u>184-50-4H</u></p> <p>Volume <u>61</u> ml</p> <p>Aliquot A <u>5</u></p> <p>Aliquot B <u>5</u></p> <p>Int <u>SRB</u></p> <p>Date <u>10/20/97</u></p> <p>Sample</p> <p>Reduce Volume to 20 ml on Hotplate</p> <p>Int <u>OSE</u> Date <u>10/14/97</u></p> <p>Holplate dig with HNO3 and H2O2</p> <p>Add <u>500</u> ul sc</p> <p>Dilute to 100 ml</p> <p>label <u>184-50-4D/E</u></p> <p>Volume <u>100</u> ml</p> <p>Int <u>SRB</u> Date <u>10/20/97</u></p> <p>post digest spike on FI (for GFAA)</p> <p>I &amp; BH Post dig. spk.</p>
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Final spk of \_\_\_\_\_ ml of \_\_\_\_\_ ppb

Final spk conc. added \_\_\_\_\_ ppb

FH & BH Serial dilution performed \_\_\_\_\_ ml to \_\_\_\_\_ ml FV + \_\_\_\_\_ ul SC

Initials: \_\_\_\_\_

(One post digestion spk on BI for GFAA)

ICP - GFAA I/LAA CVAAs Analytes

# Triangle Laboratories of RTP

(919) 544-5729

Project # 43377  
 Client: \_\_\_\_\_  
 Date/Int.: \_\_\_\_\_  
 Client Run# 0-M-29 F. Blank

CONT #	CONT #	CONT #	CONT #	CONT #		
<p>1</p> <p>Filler Type: G or Q</p> <p>label <u>184-50-5C</u> Volume <u>DRY</u></p> <p>Dessicate to dryness and redissolve in 10ml con HNO3</p> <p>Int <u>OSE</u> Date <u>10/14/97</u></p> <p>Microwave dig with conc. HF and conc. HNO3</p> <p>label <u>184-50-5CAB</u></p> <p>Combine digestates</p> <p>Front Half Digestate</p> <p>Add <u>500</u> ul SC</p> <p>Dilute to 100 ml</p> <p>Int <u>OSE</u> Date <u>10/14/97</u></p> <p>label <u>184-50-5C, A, B</u> Volume <u>100</u> ml</p> <p>For Hg</p> <p>label <u>184-50-5ABC</u> Int <u>SRB</u> Date <u>10/20/97</u></p> <p>Volume <u>100</u> ml</p> <p>Aliquot A: <u>5</u> ml (No spike required)          Aliquot B: <u>5</u> ml</p>	<p>2</p> <p>Acetone Rinse</p> <p>label <u>184-50-5A</u></p> <p>Reduce volume to 20 ml on hotplate</p> <p>Int <u>OSE</u> Date <u>10/14/97</u></p> <p>Microwave dig with conc. HF and conc. HNO3</p> <p>label <u>184-50-5AB</u></p> <p>Combine digestates</p> <p>Front Half Digestate</p> <p>Add <u>500</u> ul SC</p> <p>Dilute to 100 ml</p> <p>Int <u>OSE</u> Date <u>10/14/97</u></p> <p>label <u>184-50-5A, B</u> Volume <u>100</u> ml</p> <p>For Hg</p> <p>label <u>184-50-5ABC</u> Int <u>SRB</u> Date <u>10/20/97</u></p> <p>Volume <u>100</u> ml</p> <p>Aliquot A: <u>5</u> ml (No spike required)          Aliquot B: <u>5</u> ml</p>	<p>3</p> <p>HNO3 Rinse</p> <p>label <u>184-50-5B</u> Volume <u>107</u> ml = TV</p> <p>Reduce volume to 20 ml on hotplate</p> <p>Int <u>OSE</u> Date <u>10/14/97</u></p> <p>Microwave dig with conc. HF and conc. HNO3</p> <p>label <u>184-50-5AB</u></p> <p>Combine digestates</p> <p>Front Half Digestate</p> <p>Add <u>500</u> ul SC</p> <p>Dilute to 100 ml</p> <p>Int <u>OSE</u> Date <u>10/14/97</u></p> <p>label <u>184-50-5A, B</u> Volume <u>100</u> ml</p> <p>For Hg</p> <p>label <u>184-50-5ABC</u> Int <u>SRB</u> Date <u>10/20/97</u></p> <p>Volume <u>100</u> ml</p> <p>Aliquot A: <u>5</u> ml (No spike required)          Aliquot B: <u>5</u> ml</p>	<p>4</p> <p>Back Half Impinger</p> <p>label <u>184-50-5D</u> Volume <u>255</u> ml = TV</p> <p>For Metals</p> <p>label <u>184-50-5D</u> Volume <u>150</u> ml</p> <p>Reduce volume to 20 ml on hotplate</p> <p>Int <u>OSE</u> Date <u>10/14/97</u></p> <p>Microwave dig with conc. HF and conc. HNO3</p> <p>label <u>184-50-5AB</u></p> <p>Combine digestates</p> <p>Front Half Digestate</p> <p>Add <u>500</u> ul SC</p> <p>Dilute to 100 ml</p> <p>Int <u>OSE</u> Date <u>10/14/97</u></p> <p>label <u>184-50-5A, B</u> Volume <u>100</u> ml</p> <p>For Hg</p> <p>label <u>184-50-5ABC</u> Int <u>SRB</u> Date <u>10/20/97</u></p> <p>Volume <u>100</u> ml</p> <p>Aliquot A: <u>5</u> ml (No spike required)          Aliquot B: <u>5</u> ml</p>	<p>5A</p> <p>HNO3</p> <p>label <u>184-50-5E</u> Volume <u>56</u> ml</p> <p>Aliquot A: <u>5</u> ml</p> <p>Aliquot B: <u>5</u> ml</p> <p>Int <u>SRB</u> Date <u>10/20/97</u></p> <p>label <u>184-50-5BD</u> Int <u>SRB</u> Date <u>10/20/97</u></p> <p>Volume <u>100</u> ml</p> <p>Aliquot A: <u>5</u> ml          Aliquot B: <u>5</u> ml</p>	<p>5B</p> <p>KMNO4</p> <p>label <u>184-50-5F</u> Volume <u>155</u> ml</p> <p>Aliquot A: <u>5</u> ml</p> <p>Aliquot B: <u>5</u> ml</p> <p>Int <u>SRB</u> Date <u>10/20/97</u></p> <p>label <u>184-50-5BD</u> Int <u>SRB</u> Date <u>10/20/97</u></p> <p>Volume <u>100</u> ml</p> <p>Aliquot A: <u>5</u> ml          Aliquot B: <u>5</u> ml</p>	<p>5C</p> <p>HCl</p> <p>label <u>184-50-5G</u> Volume <u>155</u> ml</p> <p>Aliquot A: <u>5</u> ml</p> <p>Aliquot B: <u>5</u> ml</p> <p>Int <u>SRB</u> Date <u>10/20/97</u></p> <p>label <u>184-50-5BD</u> Int <u>SRB</u> Date <u>10/20/97</u></p> <p>Volume <u>100</u> ml</p> <p>Aliquot A: <u>5</u> ml          Aliquot B: <u>5</u> ml</p>

FH & BH Serial dilution performed  
 \_\_\_\_\_ ml to \_\_\_\_\_ ml FV + \_\_\_\_\_ ul SC  
 Initials: \_\_\_\_\_

(One post digestion spk on BH for GFAA)

ICP - GFAA FLAA CVAA Analytes

# Triangle Laboratories of RTP

(919) 544-5729

Project # 43377  
Client: \_\_\_\_\_  
Date/Int.: \_\_\_\_\_  
Client Run# 0-M29-R-Blank

CONT #	CONT #	CONT #	CONT #	CONT #	CONT #	CONT #	CONT #
<p>1</p> <p>Filter paper: G or Q</p> <p>label <u>184-50-6C</u></p> <p>Volume <u>DRY</u></p> <p>Dessicate to dryness and redissolve in 10ml conc. HNO3</p> <p>Int. <u>DSE</u> Date <u>10/19/97</u></p> <p>Microwave dig with conc. HF and conc. HNO3</p> <p>label <u>184-50-6C, A, B</u></p> <p>Combine digestates</p> <p>Front Half Digestate</p> <p>Add <u>500</u> <math>\mu</math>L SC</p> <p>Dilute to 100 ml</p> <p>label <u>184-50-6C, A, B</u></p> <p>Volume <u>100</u> mL</p> <p>For Hg</p> <p>label <u>184-50-6A, B</u></p> <p>Volume <u>100</u> ml</p> <p>Int. <u>DSE</u> Date <u>10/19/97</u></p> <p>Int. <u>SRB</u> Date <u>10/20/97</u></p> <p>post digest spike on FH for GFAA)</p> <p>&amp; BH Post dlg. spk. _____</p> <p>ppb (Instrument spiked)</p> <p>Aliquot A: <u>5</u> ml (No spike required)</p> <p>Aliquot B: <u>5</u> ml</p>	<p>2</p> <p>Acetone Rinse</p> <p>label <u>184-50-6A</u></p> <p>Volume <u>DRY</u></p> <p>Reduce volume to 20 ml on hotplate</p> <p>Int. <u>DSE</u> Date <u>10/19/97</u></p> <p>Microwave dig with conc. HF and conc. HNO3</p> <p>label <u>184-50-6C, A, B</u></p> <p>Combine digestates</p> <p>Front Half Digestate</p> <p>Add <u>500</u> <math>\mu</math>L SC</p> <p>Dilute to 100 ml</p> <p>label <u>184-50-6C, A, B</u></p> <p>Volume <u>100</u> mL</p> <p>For Hg</p> <p>label <u>184-50-6A, B</u></p> <p>Volume <u>100</u> ml</p> <p>Int. <u>DSE</u> Date <u>10/19/97</u></p> <p>Int. <u>SRB</u> Date <u>10/20/97</u></p> <p>post digest spike on FH for GFAA)</p> <p>&amp; BH Post dlg. spk. _____</p> <p>ppb (Instrument spiked)</p> <p>Aliquot A: <u>5</u> ml (No spike required)</p> <p>Aliquot B: <u>5</u> ml</p>	<p>3</p> <p>HNO3 Rinse</p> <p>label <u>184-50-6B</u></p> <p>Volume <u>375</u> ml</p> <p>Reduce volume to 20 ml on hotplate</p> <p>Int. <u>DSE</u> Date <u>10/19/97</u></p> <p>Microwave dig with conc. HF and conc. HNO3</p> <p>label <u>184-50-6C, A, B</u></p> <p>Combine digestates</p> <p>Front Half Digestate</p> <p>Add <u>500</u> <math>\mu</math>L SC</p> <p>Dilute to 100 ml</p> <p>label <u>184-50-6C, A, B</u></p> <p>Volume <u>100</u> mL</p> <p>For Hg</p> <p>label <u>184-50-6A, B</u></p> <p>Volume <u>100</u> ml</p> <p>Int. <u>DSE</u> Date <u>10/19/97</u></p> <p>Int. <u>SRB</u> Date <u>10/20/97</u></p> <p>post digest spike on FH for GFAA)</p> <p>&amp; BH Post dlg. spk. _____</p> <p>ppb (Instrument spiked)</p> <p>Aliquot A: <u>5</u> ml (No spike required)</p> <p>Aliquot B: <u>5</u> ml</p>	<p>4</p> <p>Back Half Impinger</p> <p>label <u>184-50-6D</u></p> <p>Volume <u>300</u> ml</p> <p>For Metals</p> <p>label <u>184-50-6A, B, C, D</u></p> <p>Volume <u>300</u> ml</p> <p>Reduce Volume Int. <u>SE</u> Date <u>10-19-97</u></p> <p>H-plate dig with HNO3 and H2O2</p> <p>Int. <u>DSE</u> Date <u>10/19/97</u></p> <p>Add 500 <math>\mu</math>L SC</p> <p>Dilute to 100 ml</p> <p>label <u>184-50-6B, D</u></p> <p>Volume <u>100</u> ml</p> <p>Int. <u>DSE</u> Date <u>10/19/97</u></p> <p>post digest spike on BH for GFAA)</p> <p>Volume <u>100</u> ml</p> <p>Int. <u>DSE</u> Date <u>10/19/97</u></p> <p>Int. <u>SRB</u> Date <u>10/20/97</u></p> <p>Final spk conc. added _____ ppb</p> <p>Aliquot A: <u>5</u> ml</p> <p>Aliquot B: <u>5</u> ml</p>	<p>5A</p> <p>HNO3</p> <p>label <u>184-50-6B</u></p> <p>Volume <u>100</u> ml</p> <p>Aliquot A: <u>5</u></p> <p>Aliquot B: <u>5</u></p> <p>Int. <u>SRB</u> Date <u>10/21/97</u></p> <p>Sample</p> <p>label <u>184-50-6B, D</u></p> <p>Volume <u>100</u></p> <p>Aliquot A: <u>5</u></p> <p>Aliquot B: <u>5</u></p> <p>Spk (1000 <math>\mu</math>g Spike required)</p> <p>label <u>184-50-6B, D</u></p> <p>Volume <u>100</u></p> <p>Aliquot A: <u>5</u></p> <p>Aliquot B: <u>5</u></p> <p>Final spk conc. added _____ ppb</p> <p>Aliquot A: <u>5</u> ml</p> <p>Aliquot B: <u>5</u> ml</p>	<p>5B</p> <p>KMNO4</p> <p>label <u>184-50-6E</u></p> <p>Volume <u>240</u> ml</p> <p>Aliquot A: <u>5</u></p> <p>Aliquot B: <u>5</u></p> <p>Int. <u>SRB</u> Date <u>10/21/97</u></p> <p>Sample</p> <p>label <u>184-50-6B, D</u></p> <p>Volume <u>100</u></p> <p>Aliquot A: <u>5</u></p> <p>Aliquot B: <u>5</u></p> <p>Spk (1000 <math>\mu</math>g Spike required)</p> <p>label <u>184-50-6B, D</u></p> <p>Volume <u>100</u></p> <p>Aliquot A: <u>5</u></p> <p>Aliquot B: <u>5</u></p> <p>Final spk conc. added _____ ppb</p> <p>Aliquot A: <u>5</u> ml</p> <p>Aliquot B: <u>5</u> ml</p>	<p>5C</p> <p>HCl</p> <p>label <u>184-50-6F</u></p> <p>Volume <u>94</u> ml</p> <p>Aliquot A: <u>5</u></p> <p>Aliquot B: <u>5</u></p> <p>Int. <u>SRB</u> Date <u>10/21/97</u></p> <p>Sample</p> <p>label <u>184-50-6B, D</u></p> <p>Volume <u>100</u></p> <p>Aliquot A: <u>5</u></p> <p>Aliquot B: <u>5</u></p> <p>Spk (1000 <math>\mu</math>g Spike required)</p> <p>label <u>184-50-6B, D</u></p> <p>Volume <u>100</u></p> <p>Aliquot A: <u>5</u></p> <p>Aliquot B: <u>5</u></p> <p>Final spk conc. added _____ ppb</p> <p>Aliquot A: <u>5</u> ml</p> <p>Aliquot B: <u>5</u> ml</p>	

FH & BH Serial dilution performed \_\_\_\_\_ ml to \_\_\_\_\_ ml FV + \_\_\_\_\_  $\mu$ L SC  
Initials: \_\_\_\_\_



# INORGANICS SPIKE LOG

DATE	PROJECT # SAMPLE IDs	ANALYTE	ORIGINAL STANDARD #	ORIGINAL STANDARD CONC. (PPM)	SPIKE SAMPLE		INITIALS	WITNESS
					(μL)	FINAL VOLUME (mL)		
10/13/97	43339-C LCS 184-12-2BMS 184-12-2BMSD	*	3-013-4	*	1000/100	*	DSE	SF
							↓	↓
10/14/97	43478-LCS 185-52-2MS 185-52-2MSD	*	3-013-4	*	250/50	*	SRB	SF
							↓	↓
10/14/97	43482B-LCS 185-56-1CMS 185-56-1CMSD	*	3-013-4	*	1000/100	*	SRB	J.L.S.
							↓	↓
10/14/97	43482E-LCS 185-56-2-4MS 185-56-2-4MSD	*	3-013-4	*	1000/100	*	SRB	SF
							↓	↓
10/14/97	43536-LCS 186-11-2MS 186-11-2MSD	*	3-013-4	*	250/50	*	SRB	DSE
							↓	↓
10/14/97	43377-LCS P	*	3-013-4 2-120-2	*	1000/100 100/100	*	DSE	SRB
				1000		1000	↓	↓

\* SEE SPIKE LOG

TU # 43377

EXP date	Spiking Standard Preparation				SPIKING			combined total
	Element	Standard ID	Ong. Std. (ppm)	Spike(uL) Fvol(100mL)	conc (ppm)	from Spiking Standard Spike(uL) FVol(100ml)	conc (ppb)	
2/1/98	Ag	2-115-4	100	5000	5	1000	50	
9/1/98	As	3-010-10	100	5000	5	1000	50	
2/1/98	Al	2-115-4	100	5000	5	1000	50	
9/1/98	Al	3-010-7	10000	950	95	1000	950	1000
2/1/98	B	2-115-4	100	5000	5	1000	50	
2/1/98	Ba	2-115-4	100	5000	5	1000	50	
9/1/98	Be	3-010-10	100	5000	5	1000	50	
9/1/98	Ca	3-010-10	100	5000	5	1000	50	
9/1/98	Ca	3-012-7	10000	950	95	1000	950	1000
9/1/98	Cd	3-010-10	100	5000	5	1000	50	
9/1/98	Co	3-010-10	100	5000	5	1000	50	
9/1/98	Cr	3-010-10	100	5000	5	1000	50	
9/1/98	Cu	3-010-10	100	5000	5	1000	50	
9/1/98	Fe	3-010-10	100	5000	5	1000	50	
9/1/98	Fe	3-012-6	10000	950	95	1000	950	1000
2/1/98	K	2-115-4	1000	5000	50	1000	500	
9/1/98	K	3-012-5	10000	1500	150	1000	1500	2000
9/1/98	Mg	3-010-10	100	5000	5	1000	50	
8/1/98	Mg	3-010-8	10000	950	95	1000	950	1000
9/1/98	Mn	3-010-10	100	5000	5	1000	50	
9/1/98	Mo	3-010-10	100	5000	5	1000	50	
2/1/98	Na	2-115-4	100	5000	5	1000	50	
8/1/98	Na	3-010-9	10000	1950	195	1000	1950	2000
9/1/98	Ni	3-010-10	100	5000	5	1000	50	
9/1/98	Pb	3-010-10	100	5000	5	1000	50	
9/1/98	Sb	3-010-10	100	5000	5	1000	50	
9/1/98	Se	3-010-10	100	5000	5	1000	50	
9/1/98	Ti	3-010-10	100	5000	5	1000	50	
9/1/98	Ti	3-010-10	100	5000	5	1000	50	
9/1/98	V	3-010-10	100	5000	5	1000	50	
9/1/98	Zn	3-010-10	100	5000	5	1000	50	
8/1/98	Zn	3-010-6	1000	1500	15	1000	150	200

1000uL of the Spiking Standard gives the listed conc. of the above elements.

\*\*Spike separately

Element	Ong Std (ppm)	Spike(uL) Fvol(100m)	conc (ppb)
Au	1000	140	1400
Ce	1000	30	300
Li	1000	70	700
P	1000	100	1000
Pd	1000	180	1800
Pt	1000	300	3000
S	1000	350	3500
Si	10000	350	35000
Sn	1000	20	200
Sr	1000	5	50

Spiking Standard 3-013-4

EXP: 11/26/97

Spiked by:

Predigestion- D. Steeter-Edwards 11/14/97

Postdigestion-



TRIANGLE LABORATORIES, INC.  
 Transfer Chain-of-Custody Form  
 Project 43377

Transfer From: IWLM To: IA I

	Initials..	Date.....	Time...
Released by:	<u>ASE</u>	<u>10/14/97</u>	<u>19:15</u>
Accepted by:	<u>MCA</u>	<u>10/14/97</u>	<u>21:45</u>

MILES.ID.....	TLI_No.....	Cust.Id.....
43377- -000	TLI Blank	TLI Method Blank
43377- -001	184-50-1A	O-M29-1-FHACE
43377- -002	184-50-1B	O-M29-1-FHAR
43377- -003	184-50-1C	O-M29-1-FILTER
43377- -004	184-50-1D	O-M29-1-HNO3
43377- -005	184-50-1E	O-M29-1-BHAR
43377- -006	184-50-1F	O-M29-1-KMNO4
43377- -007	184-50-1G	O-M29-1-HCL
43377- -008	184-50-2A	O-M29-2-FHACE
43377- -009	184-50-2B	O-M29-2-FHAR
43377- -010	184-50-2C	O-M29-2-FILTER
43377- -011	184-50-2D	O-M29-2-HNO3
43377- -012	184-50-2E	O-M29-2-HNO3
43377- -013	184-50-2F	O-M29-2-BHAR
43377- -014	184-50-2G	O-M29-2-KMNO4
43377- -015	184-50-2H	O-M29-2-HCL
43377- -016	184-50-3A	O-M29-3-FHACE
43377- -017	184-50-3B	O-M29-3-FHAR
43377- -018	184-50-3C	O-M29-3-FILTER
43377- -019	184-50-3D	O-M29-3-HNO3
43377- -020	184-50-3E	O-M29-3-HNO3
43377- -021	184-50-3F	O-M29-3-BHAR
43377- -022	184-50-3G	O-M29-3-KMNO4
43377- -023	184-50-3H	O-M29-3-HCL
43377- -024	184-50-4A	O-M29-4-FHACE
43377- -025	184-50-4B	O-M29-4-FHAR
43377- -026	184-50-4C	O-M29-4-FILTER
43377- -027	184-50-4D	O-M29-4-HNO3
43377- -028	184-50-4E	O-M29-4-HNO3
43377- -029	184-50-4F	O-M29-4-BHAR

-----XfrCOC (Rev 11/01/94)-----  
 Additional comments or instructions:

TRIANGLE LABORATORIES, INC.  
 Transfer Chain-of-Custody Form  
 Project 43377

Transfer From: IWLM To: IA I

	Initials..	Date.....	Time...
Released by:	<u>[Signature]</u>	<u>10/14/97</u>	<u>19:15</u>
Accepted by:	<u>[Signature]</u>	<u>10/14/97</u>	<u>21:45</u>

MILES.ID.....	TLI_No.....	Cust.Id.....
43377-030	184-50-4G	O-M29-4-KMNO4
43377-031	184-50-4H	O-M29-4-HCL
43377-032	184-50-5A	O-M29-FB-FHACE
43377-033	184-50-5B	O-M29-FB-FHAR
43377-034	184-50-5C	O-M29-FB-FILTER
43377-035	184-50-5D	O-M29-FB-HNO3
43377-036	184-50-5E	O-M29-FB-BHAR
43377-037	184-50-5F	O-M29-FB-KMNO4
43377-039	184-50-6A	O-M29-RB-FHACE
43377-040	184-50-6B	O-M29-RB-FHAR
43377-041	184-50-6C	O-M29-RB-FILTER
43377-042	184-50-6D	O-M29-RB-HNO3
43377-043	184-50-6E	O-M29-RB-KMNO4
43377-044	184-50-6F	O-M29-RB-HCL
43377-045	184-50-7A	I-M29-1-FHACE
43377-046	184-50-7B	I-M29-1-FHAR
43377-047	184-50-7C	I-M29-1-FILTER
43377-048	184-50-7D	I-M29-1-HNO3
43377-049	184-50-7E	I-M29-1-BHAR
43377-050	184-50-7F	I-M29-1-KMNO4
43377-051	LCS	Lab Control Spike

Additional comments or instructions:

-XfrCOC (Rev 11/01/94)---

Date	Project # or Sample ID	Analyte	Std ID	Std. conc PPM	Spike vol. Sample vol. ml/ml	Spike conc. PPB	Initials
10/16/97	43377	+	3-013-3	+	100/10	+	MCS
	18450-1A BC PMS	P	2-112-4	100	100/10	+	MCS
	18450-1C PMS	↓	↓	↓	↓	↓	↓
10/19/97	43239	+	3-013-3	+	100/10	+	MCS
	183-11-5 PMS	↓	↓	↓	↓	↓	↓
10/19/97	42011 Cal	+	3-013-3	+	100/10	+	MCS
	170-70-3 PMS	↓	↓	↓	↓	↓	↓
10/19/97	43438	+	3-013-3	+	100/10	+	MCS
	185-12-1 PMS	↓	↓	↓	↓	↓	↓
10/20/97	43411	+	3-013-3	+	100/10	+	MCS
	184-84-1A BC PMS	P	2-112-4	100	100/10	(1000) +	↓
	184-84-1D PMS	↓	↓	↓	↓	↓	↓

43377

\* SEE SPIKE LOG

EXP date	Spiking Standard Preparation					SPIKING		combined total
	Element	Standard ID	Orig. Std. (ppm)	Spike(ul) Fvol(100mL)	conc (ppm)	from Spiking Standard Spike(ul) FVol(100ml)	conc (ppb)	
2/1/98	Ag	2-115-4	100	5000	5	1000	50	
9/1/98	As	3-010-10	100	5000	5	1000	50	
2/1/98	AJ	2-115-4	100	5000	5	1000	50	1000
9/1/98	AJ	3-010-7	10000	950	95	1000	950	
2/1/98	B	2-115-4	100	5000	5	1000	50	
2/1/98	Ba	2-115-4	100	5000	5	1000	50	
9/1/98	Be	3-010-10	100	5000	5	1000	50	
9/1/98	Ca	3-010-10	100	5000	5	1000	50	1000
9/1/98	Ca	3-012-7	10000	950	95	1000	950	
9/1/98	Cd	3-010-10	100	5000	5	1000	50	
9/1/98	Co	3-010-10	100	5000	5	1000	50	
9/1/98	Cr	3-010-10	100	5000	5	1000	50	
9/1/98	Cu	3-010-10	100	5000	5	1000	50	
9/1/98	Fe	3-010-10	100	5000	5	1000	90	1000
9/1/98	Fe	3-012-8	10000	950	95	1000	950	
2/1/98	K	2-115-4	1000	5000	50	1000	500	2000
9/1/98	K	3-012-5	10000	1500	150	1000	1500	
9/1/98	Mg	3-010-10	100	5000	5	1000	50	
8/1/98	Mg	3-010-8	10000	950	95	1000	950	1000
9/1/98	Mn	3-010-10	100	5000	5	1000	50	
9/1/98	Mo	3-010-10	100	5000	5	1000	50	
2/1/98	Na	2-115-4	100	5000	5	1000	50	
8/1/98	Na	3-010-9	10000	1950	195	1000	1950	2000
9/1/98	Ni	3-010-10	100	5000	5	1000	50	
9/1/98	Pb	3-010-10	100	5000	5	1000	50	
9/1/98	Sb	3-010-10	100	5000	5	1000	50	
9/1/98	Se	3-010-10	100	5000	5	1000	50	
9/1/98	Ti	3-010-10	100	5000	5	1000	50	
9/1/98	Tl	3-010-10	100	5000	5	1000	50	
9/1/98	V	3-010-10	100	5000	5	1000	50	
9/1/98	Zn	3-010-10	100	5000	5	1000	50	
8/1/98	Zn	3-010-8	1000	1500	15	1000	150	200

100uL of the Spiking Standard gives the listed conc. of the above elements.

\*\*Spike separately

Element	Orig Std (ppm)	Spike(ul) Fvol(100m)	conc (ppb)
Au	1000	140	1400
Ce	1000	30	300
Li	1000	70	700
P	1000	100	1000
Pd	1000	160	1600
Pt	1000	300	3000
S	1000	350	3500
Si	10000	350	35000
Sn	1000	20	200
Sr	1000	5	50

Spiking Standard 3-013-3

EXP: 11/26/97

Spiked by:

Predigestion-

Postdigestion-

10/16/97 DKH

#	Sample Name	File	Method	Date	Time	OpID	Type	Mode
1	STD1-BLANK	101997	TRIANGLE	10/20/97	00:38		Y	IP
2	STD1-BLANK	101997	TRIANGLE	10/20/97	00:48		X	IR
3	STD1	101997	TRIANGLE	10/20/97	00:53		Y	IP
4	STD1	101997	TRIANGLE	10/20/97	00:58	DKH	0	CONC
5	STD1-BLANK	101997	TRIANGLE	10/20/97	01:04		Y	IP
6	STD1-BLANK	101997	TRIANGLE	10/20/97	01:17		X	IS
7	STD1-BLANK	101997	TRIANGLE	10/20/97	01:37		Y	IP
8	STD1	101997	TRIANGLE	10/20/97	01:49		X	IR
9	STD1	101997	TRIANGLE	10/20/97	01:54	DKH	0	CONC
10	STD1-BLANK	101997	TRIANGLE	10/20/97	02:09		Y	IP
11	STD1	101997	TRIANGLE	10/20/97	02:38		X	IR
12	STD1	101997	TRIANGLE	10/20/97	02:43	DKH	0	CONC
13	CHRYSLER	101997	TRIANGLE	10/20/97	02:48	DKH	0	CONC
14	10V/00V	101997	TRIANGLE	10/20/97	02:52	DKH	0	CONC
15	10R/00R	101997	TRIANGLE	10/20/97	02:57	DKH	0	CONC
16	10R/00R	101997	TRIANGLE	10/20/97	03:03	DKH	0	CONC
17	10R/00R	101997	TRIANGLE	10/20/97	03:09	DKH	0	CONC
18	10SAR	101997	TRIANGLE	10/20/97	03:14	DKH	0	CONC
19	43411-NR	101997	TRIANGLE	10/20/97	03:29	DKH	S	CONC
20	43411-TDS	101997	TRIANGLE	10/20/97	03:33	DKH	S	CONC
21	184-R4-1ARC	101997	TRIANGLE	10/20/97	03:38	DKH	S	CONC
22	184-R4-1ARC POS	101997	TRIANGLE	10/20/97	03:43	DKH	S	CONC
23	184-R4-1ARC 1	101997	TRIANGLE	10/20/97	03:47	DKH	S	CONC
24	184-R4-1ARC	101997	TRIANGLE	10/20/97	03:52	DKH	S	CONC
25	184-R4-1ARC DA	101997	TRIANGLE	10/20/97	03:57	DKH	S	CONC
26	184-R4-1ARC	101997	TRIANGLE	10/20/97	04:01	DKH	S	CONC
27	184-R4-1ARC	101997	TRIANGLE	10/20/97	04:06	DKH	S	CONC
28	184-R4-1ARC	101997	TRIANGLE	10/20/97	04:11	DKH	S	CONC
29	184-R4-1ARC	101997	TRIANGLE	10/20/97	04:17	DKH	S	CONC
30	184-R4-1ARC	101997	TRIANGLE	10/20/97	04:21	DKH	0	CONC
31	184-R4-1ARC	101997	TRIANGLE	10/20/97	04:27	DKH	0	CONC
32	184-R4-1ARC	101997	TRIANGLE	10/20/97	04:33	DKH	S	CONC
33	184-R4-1ARC	101997	TRIANGLE	10/20/97	04:38	DKH	S	CONC
34	184-R4-1ARC	101997	TRIANGLE	10/20/97	04:42	DKH	S	CONC
35	184-R4-1ARC POS	101997	TRIANGLE	10/20/97	04:47	DKH	S	CONC
36	184-R4-1ARC 1	101997	TRIANGLE	10/20/97	04:52	DKH	S	CONC
37	184-R4-1ARC	101997	TRIANGLE	10/20/97	04:56	DKH	S	CONC
38	184-R4-1ARC DA	101997	TRIANGLE	10/20/97	05:01	DKH	S	CONC
39	184-R4-1ARC	101997	TRIANGLE	10/20/97	05:06	DKH	S	CONC
40	184-R4-1ARC	101997	TRIANGLE	10/20/97	05:10	DKH	S	CONC
41	184-R4-1ARC	101997	TRIANGLE	10/20/97	05:15	DKH	S	CONC
42	10V/00V	101997	TRIANGLE	10/20/97	05:20	DKH	0	CONC
43	10R/00R	101997	TRIANGLE	10/20/97	05:25	DKH	0	CONC
44	184-R4-1ARC	101997	TRIANGLE	10/20/97	05:31	DKH	S	CONC
45	184-R4-1ARC	101997	TRIANGLE	10/20/97	05:36	DKH	S	CONC
46	184-R4-1ARC	101997	TRIANGLE	10/20/97	05:36	DKH	S	CONC
47	184-R4-1ARC	101997	TRIANGLE	10/20/97	06:05		S	CONC
48	10V/00V	101997	TRIANGLE	10/20/97	06:09	DKH	0	CONC
49	10R/00R	101997	TRIANGLE	10/20/97	06:17	DKH	0	CONC
50	10SAR	101997	TRIANGLE	10/20/97	06:23	DKH	0	CONC

#	Sample Name	File	Method	Date	Time	OpID	Type	Mode
1	STD1-BLANK	101697	TRIANG2	10/16/97	05:22		Y	TP
2	STD3	101697	TRIANG2	10/16/97	05:26		X	TP
3	STD3	101697	TRIANG2	10/16/97	05:31	DXH	Q	CONC
4	CHECK 10	101697	TRIANG2	10/16/97	05:35	DXH	Q	CONC
5	ICV/CCV	101697	TRIANG2	10/16/97	05:39	DXH	Q	CONC
6	ICB/CCB	101697	TRIANG2	10/16/97	05:48	DXH	Q	CONC
7	ICB/CCB	101697	TRIANG2	10/16/97	06:09	DXH	Q	CONC
8	ICB/CCB	101697	TRIANG2	10/16/97	06:14	DXH	Q	CONC
9	43377 MB	101697	TRIANG2	10/16/97	06:27	DXH	S	CONC
10	43377 CBS	101697	TRIANG2	10/16/97	06:31	DXH	S	CONC
11	184-50-1ABC	101697	TRIANG2	10/16/97	06:35	DXH	S	CONC
12	184-50-1ABC POS	101697	TRIANG2	10/16/97	06:40	DXH	S	CONC
13	184-50-1ABC L	101697	TRIANG2	10/16/97	06:44	DXH	S	CONC
14	184-50-2ABC	101697	TRIANG2	10/16/97	06:48	DXH	S	CONC
15	184-50-2ABC DA	101697	TRIANG2	10/16/97	06:53	DXH	S	CONC
16	184-50-3ABC	101697	TRIANG2	10/16/97	06:57	DXH	S	CONC
17	184-50-4ABC	101697	TRIANG2	10/16/97	07:01	DXH	S	CONC
18	184-50-5ABC	101697	TRIANG2	10/16/97	07:06	DXH	S	CONC
19	ICV/CCV	101697	TRIANG2	10/16/97	07:10	DXH	Q	CONC
20	ICB/CCB	101697	TRIANG2	10/16/97	07:46	DXH	Q	CONC
21	ICB/CCB	101697	TRIANG2	10/16/97	07:52	DXH	Q	CONC
22	184-50-6ABC	101697	TRIANG2	10/16/97	07:57	DXH	S	CONC
23	184-50-7ABC	101697	TRIANG2	10/16/97	08:02	DXH	S	CONC
24	184-50-10	101697	TRIANG2	10/16/97	08:06	DXH	S	CONC
25	184-50-10 POS	101697	TRIANG2	10/16/97	08:10	DXH	S	CONC
26	184-50-10 L	101697	TRIANG2	10/16/97	08:14	DXH	S	CONC
27	184-50-20	101697	TRIANG2	10/16/97	08:56	DXH	S	CONC
28	184-50-20 DA	101697	TRIANG2	10/16/97	09:00	DXH	S	CONC
29	184-50-30	101697	TRIANG2	10/16/97	09:04	DXH	S	CONC
30	ICV/CCV	101697	TRIANG2	10/16/97	09:09	DXH	Q	CONC
31	ICB/CCB	101697	TRIANG2	10/16/97	09:35	DXH	Q	CONC
32	ICB/CCB	101697	TRIANG2	10/16/97	09:41	DXH	Q	CONC
33	184-50-40	101697	TRIANG2	10/16/97	09:46	DXH	S	CONC
34	184-50-50	101697	TRIANG2	10/16/97	09:51	DXH	S	CONC
35	184-50-60	101697	TRIANG2	10/16/97	09:55	DXH	S	CONC
36	ICV/CCV	101697	TRIANG2	10/16/97	09:59	DXH	Q	CONC
37	ICV/CCV	101697	TRIANG2	10/16/97	12:11	DXH	Q	CONC
38	ICB/CCB	101697	TRIANG2	10/16/97	12:32	DXH	Q	CONC
39	ICB/CCB	101697	TRIANG2	10/16/97	13:13	DXH	Q	CONC
40	ICB/CCB	101697	TRIANG2	10/16/97	13:22	DXH	Q	CONC

103-976  
 ↓  
 25 184-50-10 POS  
 26 184-50-10 L  
 27 184-50-20  
 28 184-50-20 DA  
 29 184-50-30

103-976  
 ↓  
 33 184-50-40  
 34 184-50-50  
 35 184-50-60

TRIANGLE LABORATORIES, INC.

Sample Preparation Tracking & Management Form

Project: 43377

Client: Pacific Environmental Services (PES03)

Method: 7470 Extraction Date: 11/05/01 317020  
 Solvent/Acids(): HNO<sub>3</sub>/H<sub>2</sub>SO<sub>4</sub> Lot: 117050 317020  
 Sample Information: INO107 version 5 was used for digestion. SRB 10/21/97 Hg

Sample #	TLI / SAMPLE ID	CLIENT / SAMPLE ID	Sample Wgt / Vol	Final Volume	Extraction Date
#	crd		g / ml	ml	
000	TLI Blank 1 TLI Blank Dup 1	TLI Method Blank	N/A / N/A	100	SRB 10/20/97
001	184-50-1A	O-M29-1-FHACE			
002	184-50-1B	O-M29-1-FHAR			
003	184-50-1CAB 184-50-1CAB Dup	O-M29-1-FILTER	5 / 5		SRB 10/20/97
004	184-50-1D 184-50-1D Dup	O-M29-1-HNO3	5 / 5		
005	184-50-1E 184-50-1E Dup	O-M29-1-BHAR	5 / 5		
006	184-50-1F 184-50-1F Dup	O-M29-1-KMNO4	5 / 5		
007	184-50-1G 184-50-1G Dup	O-M29-1-HCL	5 / 5		SRB 10/20/97
008	184-50-2A	O-M29-2-FHACE			
009	184-50-2B	O-M29-2-FHAR			
010	184-50-2CAB 184-50-2CAB Dup	O-M29-2-FILTER	5 / 5		SRB 10/20/97
011	184-50-2DE 184-50-2DE Dup	O-M29-2-HNO3	5 / 5		SRB 10/20/97
012	184-50-2E	O-M29-2-HNO3			

Comments: See HGSL-1, Spike Log p. 68

TRIANGLE LABORATORIES, INC.

Sample Preparation Tracking & Management Form

Project: 43377

Client: Pacific Environmental Services (PES03)

Sample Information

Method: 7470  
 Solvent/Acids(): HNO<sub>3</sub> / H<sub>2</sub>SO<sub>4</sub>  
 Extraction Date: 11/20/97  
 Lot: 317020

Hg

Sample #	TLI / SAMPLE ID	CLIENT / SAMPLE ID	Sample Wgt / Vol	Final Volume	Extraction Date
#	crd		g / ml	ml	
013	184-50-2F <u>184-50-2F Dup</u>	O-M29-2-BHAR	5 / 5	100	SRB 10/20/97
014	184-50-2G <u>184-50-2G Dup</u>	O-M29-2-KMNO4	5 / 5	100	↓
015	184-50-2H <u>184-50-2H Dup</u>	O-M29-2-HCL	5 / 5	100	SRB 10/20/97
016	184-50-3A	O-M29-3-FHACE			
017	184-50-3B	O-M29-3-FHAR			
018	184-50-3C AB <u>184-50-3C AB Dup</u>	O-M29-3-FILTER	5 / 5	100	SRB 10/20/97
019	184-50-3DE <u>184-50-3DE Dup</u>	O-M29-3-HNO3	5 / 5	100	SRB 10/20/97
020	184-50-3ED NS <u>184-50-3ED MS</u>	O-M29-3-HNO3	5 / 5	100	SRB 10/20/97
021	184-50-3F <u>184-50-3F Dup</u>	O-M29-3-BHAR	5 / 5	100	SRB 10/20/97
022	184-50-3G <u>184-50-3G Dup</u>	O-M29-3-KMNO4	5 / 5	100	↓
023	184-50-3H <u>184-50-3H Dup</u>	O-M29-3-HCL	5 / 5	100	SRB 10/20/97
024	184-50-4A	O-M29-4-FHACE			
025	184-50-4B	O-M29-4-FHAR			

Comments: See page 1 of 4



TRIANGLE LABORATORIES, INC.  
Sample Preparation Tracking & Management Form

Project: 43377

Client: Pacific Environmental Services (PES03)

Sample Information

Method: 7470  
Solvent/Acids(): HNO<sub>3</sub>/H<sub>2</sub>SO<sub>4</sub>

Extraction Date:                       
Lot: 110501317020

Hg

Sample #	TLI SAMPLE ID	CLIENT SAMPLE ID	Sample		Final Volume ml	Extraction Date
			Wgt g	Vol ml		
026	184-50-4CAB <u>184-50-4CAB Dup</u>	O-M29-4-FILTER	<u>5</u> <u>5</u>	<u>5</u>	100	SRB 10/20/97
027	184-50-4DE <u>184-50-4DE Dup</u>	O-M29-4-HNO3	<u>5</u> <u>5</u>	<u>5</u>	100	SRB 10/20/97
028	184-50-4ED MS <u>184-50-4ED MSD</u>	O-M29-4-HNO3	<u>5</u> <u>5</u>	<u>5</u>	100	SRB 10/20/97
029	184-50-4F <u>184-50-4F</u>	O-M29-4-BHAR	<u>5</u> <u>5</u>	<u>5</u>	100	SRB 10/20/97
030	184-50-4G <u>184-50-4G Dup</u>	O-M29-4-KMNO4	<u>5</u> <u>5</u>	<u>5</u>	100	↓
031	184-50-4H <u>184-50-4H Dup</u>	O-M29-4-HCL	<u>5</u> <u>5</u>	<u>5</u>	100	SRB 10/20/97
032	184-50-5A	O-M29-FB-FHACE				
033	184-50-5B D <u>184-50-5BD</u>	O-M29-FB-FHAR	<u>5</u> <u>5</u>	<u>5</u>	100	SRB 10/20/97
034	184-50-5C AB <u>184-50-5CAB</u>	O-M29-FB-FILTER	<u>5</u> <u>5</u>	<u>5</u>	100	SRB 10/20/97
035	184-50-5D <u>184-50-</u>	O-M29-FB-HNO3				
036	184-50-5E <u>184-50-5E</u>	O-M29-FB-BHAR	<u>5</u> <u>5</u>	<u>5</u>	100	SRB 10/20/97
037	184-50-5F <u>184-50-5F</u>	O-M29-FB-KMNO4	<u>5</u> <u>5</u>	<u>5</u>	100	SRB 10/20/97
039	184-50-6A	O-M29-RB-FHACE				

Comments:

See page 1 of 4

TRIANGLE LABORATORIES, INC.

Sample Preparation Tracking & Management Form

Project: 43377

Client: Pacific Environmental Services (PES03)

Sample Information

Method: 7470  
 Solvent/Acids (l): HNO<sub>3</sub> / H<sub>2</sub>SO<sub>4</sub>  
 Extraction Date: \_\_\_\_\_  
 Lot: 117050/317020

*Hg*

Sample #	TLI / SAMPLE ID / crd	CLIENT / SAMPLE ID	Sample Wgt / Vol / ml	Final Volume / ml	Extraction Date
040	184-50-6BD <del>184-50-6BD</del>	0-M29-RB-FHAR	5 / 5	100	SRB 10/21/97
041	184-50-6CAB <del>184-50-6CAB Dup</del>	0-M29-RB-FILTER	5 / 5	100	SRB 10/20/97
042	184-50-6DB MS <del>184-50-6DB MSD</del>	0-M29-RB-HNO3	5 / 5	100	SRB 10/21/97
043	184-50-6E <del>184-50-6E Dup</del>	0-M29-RB-KMNO4	5 / 5	100	SRB 10/21/97
044	184-50-6FE <del>184-50-6FE Dup</del>	0-M29-RB-HCL	5 / 5	100	SRB 10/21/97
045	184-50-7A	I-M29-1-PHACE			
046	184-50-7B	I-M29-1-FHAR			
047	184-50-7CAB <del>184-50-7CAB</del>	I-M29-1-FILTER	5 / 5	100	SRB 10/21/97
048	184-50-7D <del>184-50-7D Dup</del>	I-M29-1-HNO3	5 / 5	100	
049	184-50-7E <del>184-50-7E Dup</del>	I-M29-1-BHAR	5 / 5	100	
050	184-50-7F <del>184-50-7F Dup</del>	I-M29-1-KMNO4	5 / 5	100	SRB 10/21/97
051	LCS 1 LCSD 1	Lab Control Spike	N/A / N/A	100	SRB 10/20/97
	184-50-1D MS 184-50-1D MSD		5 / 5	100	SRB 10/20/97

Comments:

*See page 1 of 4*

TRIANGLE LABORATORIES, INC.

Sample Preparation Tracking & Management Form

Project: 43377

Client: Pacific Environmental Services (PES03)

Sample Information

Method: 7470  
 Solvent/Acids(): HNO<sub>3</sub>/H<sub>2</sub>SO<sub>4</sub>

Extraction Date:  
 Lot: 119050/317020

Hg

Sample #	TLI / CLIENT / SAMPLE ID	Sample Wgt / Final Vol / Volume	Extraction Date
1000	TLI Blank 2 / TLI Method Blank	N/A / 100	SRB / 10/21/97
	43377 LCS 2	N/A / 100	SRB
	43377 LCS 2 D	N/A / 100	10/21/97
	184-50-7D MS	5 / 100	SRB
	184-50-7D MSD	5 / 100	10/21/97

Comments:

See page 1 of 4

### MERCURY SPIKE LOG

DATE	PROJECT # SAMPLE IDs	ORIGINAL SPIKE CONC. (Hg)	STANDARD # WORKING STANDARD PREPARED FROM	SPIKE AMOUNT (mL)	SPIKE SAMPLE (PPB)	INITIALS	WITNESS
10/19/97	43411 LCS1 LCS1D	0.1 ppm	3-022-8	5	5	RSE	SF
	184-84-1DEMS 184-84-1DEMSD	↓	↓	↓	↓	↓	↓
	184-84-2DEMS 184-84-2DEMSD	↓	↓	↓	↓	↓	↓
	184-84-4DEMS 184-84-4DEMSD	↓	↓	↓	↓	↓	↓
10/20/97	43411 LCS2 LCS2D	0.1 ppm	3-023-1	5	5	SRB	RSE
	184-84-6DEMS 184-84-6DEMSD	↓	↓	↓	↓	↓	↓
	184-84-7EFMS 184-84-7EFMSD	↓	↓	↓	↓	↓	↓
10/20/97	43377 LCS1 LCS1D	0.1 ppm	3-023-1	5	5	SRB	RSE
	184-50-1DEMS 184-50-1DEMSD	↓	↓	↓	↓	↓	↓
	184-50-3DEMS 184-50-3DEMSD	↓	↓	↓	↓	↓	↓
	184-50-4DEMS 184-50-4DEMSD	↓	↓	↓	↓	↓	↓
10/21/97	43411 LCS3 LCS3D	0.1 ppm	3-023-5	5	5	SRB	RSE
	184-84-5BDMS 184-84-5BDMSD	↓	↓	↓	↓	↓	↓
10/21/97	42011 Cn1 LCS LCS1D	0.1 ppm	3-023-5	5	5	SRB	RSE
	170-70-3MS 170-70-3MSD	↓	↓	↓	↓	↓	↓
10/21/97	43377 LCS2 LCS2D	0.1 ppm	3-023-5	5	5	SRB	RSE
	184-50-6BDMS 184-50-6BDMSD	↓	↓	↓	↓	↓	↓
	184-50-7DMS 184-50-7DMSD	↓	↓	↓	↓	↓	↓

*PKA 10/17/07*

Table Name: HA460 Autosampler Type: TYPE TJA  
 Sample Positions: 170/192 QC Positions: 13/19 # Sets: 1  
 Rinse Station Location is rack -1 pos. -1.

--- Racks ---

Rack #	Type	Usage	#Pos Left	Analyses/Pos
1	Aux (11) Rack	STD/QC/BLANK	13	10
2	Sample (16mm)	Samples	26	1
3	Sample (16mm)	Samples	48	1
4	Sample (16mm)	Samples	48	1
5	Sample (16mm)	Samples	48	1

--- Sample Sets ---

Set#	Type	Prepare?	Description	Method	#Pos	Rack#	StartPos
1	Normal	No	43377	TRIANG2	22	2	1

--- Preparation Info ---

Set#	Intake	Intake#2	Final	Dil.Factor
no Samples Prepared.				

Rack #1

Pos	Row	Col	Sample Name	Set #	#Used	Type
1	1	1	STD3	-NA-	2	Standard
2	1	2	STD1-TRIANG	-NA-	1	Standard
3	1	3	UCSAR	-NA-	2	QC Standard
4	1	4	CHECK 10	-NA-	1	QC Standard
5	1	5	ICV/CCV	-NA-	1	QC Standard
6	1	6	ICB/CCB	-NA-	4	QC Standard
17-19	Not Used					

1-G1-4P  
 1-G1-6P  
 1-G1-5P

*PKA 10/16/07*

Rack #2

Pos	Row	Col	Sample Name	Set #	#Used	Type
1	1	1	43377 MB	1	-NA-	Sample
2	1	2	43377 LCS	1	-NA-	Sample
3	1	3	184-50-1ABC	1	-NA-	Sample
4	1	4	184-50-1ABC PDS	1	-NA-	Sample
5	1	5	184-50-1ABC L	1	-NA-	Sample
6	1	6	184-50-2ABC	1	-NA-	Sample
7	1	7	184-50-2ABC OA	1	-NA-	Sample
8	1	8	184-50-3ABC	1	-NA-	Sample
9	1	9	184-50-4ABC	1	-NA-	Sample
10	1	10	184-50-5ABC	1	-NA-	Sample
11	1	11	184-50-6ABC	1	-NA-	Sample
12	1	12	184-50-7ABC	1	-NA-	Sample
13	2	1	184-50-1D	1	-NA-	Sample
14	2	2	184-50-1D 1	1	-NA-	Sample
15	2	3	184-50-2D E 000-3-9765	1	-NA-	Sample

Rack #2

Pos	Row	Col	Sample Name	Set #	#Used	Type
16	2	1	184-50-20EA	1	-NA-	Sample
17	2	5	184-50-30E	1	-NA-	Sample
18	2	6	184-50-40E	1	-NA-	Sample
19	2	7	184-50-50BD	1	-NA-	Sample
20	2	8	184-50-60BD	1	-NA-	Sample
21	2	9	184-50-70	1	-NA-	Sample
22	2	10	empty 1	1	-NA-	-NA-
123...48			Not Used			

Rack #3

Pos	Row	Col	Sample Name	Set #	#Used	Type
11...48			Not Used			

Rack #4

Pos	Row	Col	Sample Name	Set #	#Used	Type
11...48			Not Used			

Rack #5

Pos	Row	Col	Sample Name	Set #	#Used	Type
11...48			Not Used			

Method: TRIANGL2 Sample Name: STD1-BLANK Operator:  
 Run Time: 10/16/97 05:22 Filename: 101697  
 Mode: IR Type: X Corr. Factor: 1.00000  
 Lab ID.: Cust. Smpl. ID.: Cust. ID.:

Elms	Ag3280	Al3082	As1890	B_2496	Ba4934	Be3130
Units	count	count	count	count	count	count
Avg	0	.0031	-.00019	.00794	.00055	.00025
SDev	.0001	.00001	.00008	.00031	.00001	0
%RSD	3635.78	.52885	42.0003	4.00744	2.42782	2.21217

Elms	Ca3179	Cd2265	Ce4186	Co2286	Cr2677	Cu3247
Units	count	count	count	count	count	count
Avg	.00046	.00022	-.00015	-.00016	.00006	.00308
SDev	0	.00013	.00009	.00002	.00005	.00002
%RSD	1.57036	58.8653	64.6794	15.5198	80.7159	.7618

Elms	Fe2714	K_7664	Li6707	Mg2790	Mn2576	Mo2020
Units	count	count	count	count	count	count
Avg	.0001	4.5752	.08311	.00008	.0001	-.00001
SDev	.00003	.01151	.00015	.00004	.00001	.00002
%RSD	36.0564	.25173	.18524	50.8319	11.5987	186.243

Elms	Na3302	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	count	count	count	count	count	count
Avg	.00353	-.00146	-.00102	.00169	.00033	.00054
SDev	.00172	.00016	.0002	.00035	.00008	.00005
%RSD	48.8019	11.173	20.1455	20.7044	25.2899	9.7444

Elms	1960-1	1960-2	Sn1899	Sr4215	Ti3349	Tl1908
Units	count	count	count	count	count	count
Avg	-.00577	.00224	-.00059	.00026	.00015	-.00057
SDev	.00101	.0003	.00012	0	.00001	.00006
%RSD	17.5492	13.7567	21.21	2.09433	9.73981	12.1448

Elms	V_2924	Zn2062	Si2881
Units	count	count	count
Avg	-.00048	-.00001	.02278
SDev	.00001	0	.00012
%RSD	2.38296	33.0362	.53122

Method: TRIANGL2 Sample Name: STD3 Operator:  
 Run Time: 10/16/97 05:26 Filename: 101697  
 Mode: IR Type: X Corr. Factor: 1.00000  
 Lab ID.: Cust. Smpl. ID.: Cust. ID.:

Elms	Ag3280	Al3082	As1890	B_2496	Ba4934	Be3130
Units	count	count	count	count	count	count
Avg	.43916	.01877	.05497	.18437	.30583	.29617
SDev	.00071	.00009	.00004	.00027	.0002	.00032
%RSD	.16361	.52664	.08152	.15163	.06854	.10884

Elms	Ca3179	Cd2265	Ce4186	Co2286	Cr2677	Cu3247
Units	count	count	count	count	count	count
Avg	.02564	1.03084	.12172	.11502	.16301	.18883
SDev	.00002	.00167	.00009	.0001	.00013	.00055
%RSD	.10205	.16276	.07497	.09089	.08115	.293

Elms	Fe2714	K_7664	Li6707	Mg2790	Mn2576	Mo2020
Units	count	count	count	count	count	count
Avg	.00458	19.5824	12.9	.02237	.14267	.08458
SDev	.00001	.09441	.06776	.00002	.00004	.00017
%RSD	.31172	.48216	.5253	.10176	.02922	.21088

Elms	Na3302	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	count	count	count	count	count	count
Avg	.18151	.38502	.0236	.19632	.09785	.12637
SDev	.0018	.00052	.00014	.00061	.00004	.00007
%RSD	.99529	.13628	.60403	.3121	.04131	.05785

Elms	1960-1	1960-2	Sn1899	Sr4215	Ti3349	Tl1908
Units	count	count	count	count	count	count
Avg	.28236	.16701	.12576	.90196	1.21944	.03222
SDev	.00184	.00052	.0002	.00136	.0001	.00111
%RSD	.65206	.31513	.16687	.15151	.00873	3.45781

Elms	V_2924	Zn2062	Si2881	Pb2203	Se1960
Units	count	count	count		
Avg	.04245	.11347	.49173		
SDev	.00001	.00032	.00093		
%RSD	.02552	.29071	.19002		



Method: TRIANGL2 Sample Name: STD3 Operator: DKH  
 Run Time: 10/16/97 05:31 Filename: 101697  
 Mode: CONC Type: Q Corr. Factor: 1.00000  
 Lab ID.: 4377 Cust. Smpl. ID.: Cust. ID.: 4377D

Elms	Ag3280	Al3082	As1890	B_2496	Ba4934	Be3130
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	992.5	995.9	1001.	996.5	999.6	996.5
SDev	2.427	2.887	4.038	1.381	1.158	1.055
%RSD	.2445	.2899	.4033	.1386	.1158	.1059

Elms	Ca3179	Cd2265	Ce4186	Co2286	Cr2677	Cu3247
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	999.0	1002.	1001.	999.3	998.0	996.1
SDev	1.354	2.02	.8085	.6837	.6912	1.467
%RSD	.1355	.2017	.0808	.0684	.0693	.1472

Elms	Fe2714	K_7664	Li6707	Mg2790	Mn2576	Mo2020
Units	ppb	ppm	ppb	ppb	ppb	ppb
Avg	992.3	9.940	996.4	995.0	997.4	1002.
SDev	4.737	.0333	4.144	4.884	.5499	2.378
%RSD	.4774	.3355	.4159	.4909	.0551	.2374

Elms	Na3302	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	ppm	ppb	ppb	ppb	ppb	ppb
Avg	10.07	1001.	1003.	1001.	1003.	1001.
SDev	.0643	5.343	9.268	.7707	2.273	1.868
%RSD	.6383	.5338	.9236	.077	.2266	.1867

Elms	1960-1	1960-2	Sn1899	Sr4215	Ti3349	Tl1908
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	1005.	1005.	1001.	994.0	997.3	1026.
SDev	4.737	6.572	2.47	1.111	.5543	1.741
%RSD	.4714	.6537	.2467	.1118	.0556	.1698

Elms	V_2924	Zn2062	Si2881	Pb2203	Se1960
Units	ppb	ppb	ppb	ppb	ppb
Avg	998.3	1002.	9987.	1002.	1005.
SDev	1.45	2.799	9.863	1.507	2.897
%RSD	.1453	.2793	.0988	.1504	.2882

Method: TRIANGL2 Sample Name: ICV/CCV Operator: DKH  
 Run Time: 10/16/97 05:39 Filename: 101697  
 Mode: CONC Type: Q Corr. Factor: 1.00000  
 Lab ID.: 4377 Cust. Smpl. ID.: Cust. ID.: 4377D

Elms	Ag3280	Al3082	As1890	B_2496	Ba4934	Be3130
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	497.2	491.6	496.4	488.6	500.2	493.3
SDev	.6174	1.613	.4728	.339	.6356	.4983
%RSD	.1242	.3282	.0952	.0694	.1271	.101

Elms	Ca3179	Cd2265	Ce4186	Co2286	Cr2677	Cu3247
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	495.4	494.7	496.0	494.9	495.4	496.7
SDev	.9225	.3475	.4688	.7794	.724	1.165
%RSD	.1862	.0703	.0945	.1575	.1461	.2345

Elms	Fe2714	K_7664	Li6707	Mg2790	Mn2576	Mo2020
Units	ppb	ppm	ppb	ppb	ppb	ppb
Avg	498.4	4.804	472.3	491.6	494.7	495.7
SDev	10.32	.0177	2.856	.5662	.3527	1.441
%RSD	2.071	.3679	.6047	.1152	.0713	.2907

Elms	Na3302	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	ppm	ppb	ppb	ppb	ppb	ppb
Avg	4.770	494.1	492.4	492.5	495.1	492.8
SDev	.0447	.22	10.29	1.085	2.392	2.136
%RSD	.9369	.0445	2.09	.2203	.4831	.4335

Elms	1960-1	1960-2	Pb2203	Se1960	Sn1899	Sr4215
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	487.9	488.7	494.2	488.4	500.7	494.4
SDev	2.505	3.151	1.883	1.379	1.226	.3327
%RSD	.5134	.6448	.3809	.2824	.2449	.0673

Elms	Ti3349	Tl1908	V_2924	Zn2062	Si2881
Units	ppb	ppb	ppb	ppb	ppb
Avg	494.3	496.4	496.2	494.5	4978.
SDev	.3491	13.91	.2308	.9458	2.399
%RSD	.0706	2.803	.0465	.1913	.0482

Method: TRIANGL2 Sample Name: ICB/CCB Operator: DKH  
 Run Time: 10/16/97 05:48 Filename: 101697  
 Mode: CONC Type: Q Corr. Factor: 1.00000  
 Lab ID.: 4377 Cust. Smpl. ID.: Cust. ID.: 4377D

Elms	Ag3280	Al3082	As1890	B_2496	Ba4934	Be3130
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	.0251	-.1468	-2.552	-16.08	.1743	.1860
SDev	.1606	2.597	.7463	.6816	.0548	.068
%RSD	639.1	1769	29.24	4.238	31.42	36.58

Elms	Ca3179	Cd2265	Ce4186	Co2286	Cr2677	Cu3247
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	-.1737	.0078	.9314	-.0482	-1.020	-.1595
SDev	.5635	.0481	.3562	.3383	.3341	.2928
%RSD	324.4	616.9	38.24	702.2	32.74	183.6

Elms	Fe2714	K_7664	Li6707	Mg2790	Mn2576	Mo2020
Units	ppb	ppm	ppb	ppb	ppb	ppb
Avg	-16.83	.0225	.2375	-.5152	-.1621	1.030
SDev	4.537	.0229	.003	1.067	.0676	.774
%RSD	26.96	102.1	1.264	207.1	41.7	75.18

Elms	Na3302	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	ppm	ppb	ppb	ppb	ppb	ppb
Avg	.0087	-1.752	-2.711	.0122	-.7678	-1.563
SDev	.1181	.4109	6.839	1.914	.4029	.449
%RSD	1351	23.45	252.3	15660	52.48	28.72

Elms	1960-1	1960-2	Pb2203	Se1960	Sn1899	Sr4215
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	-1.449	-2.202	-.5081	-1.951	.2185	.1648
SDev	3.985	.6536	.8916	.9322	.2898	.0437
%RSD	274.9	29.69	175.5	47.77	132.6	26.54

Elms	Ti3349	Tl1908	V_2924	Zn2062	Si2881
Units	ppb	ppb	ppb	ppb	ppb
Avg	.1199	05.732	.0692	.1459	.3217
SDev	.0913	2.911	.2807	.0658	2.27
%RSD	76.15	50.79	405.8	45.06	7.056

*Baseline.  
 Reanalyzed  
 DKH 11/2/97*

Method: TRIANGL2 Sample Name: ICB/CCB Operator: DKH  
 Run Time: 10/16/97 06:09 Filename: 101697  
 Mode: CONC Type: Q Corr. Factor: 1.00000  
 Lab ID.: 4377 Cust. Smpl. ID.: Cust. ID.: 4377D

Elms	Ag3280	Al3082	As1890	B_2496	Ba4934	Be3130
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	-0.0760	-3.872	-2.786	-20.81	.0148	-.0132
SDev	.3345	3.324	2.026	.5299	.0051	.0079
%RSD	439.9	85.84	72.74	2.546	34.37	59.77

Elms	Ca3179	Cd2265	Ce4186	Co2286	Cr2677	Cu3247
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	.6572	-.1600	1.590	.0673	-.9291	-.2390
SDev	.546	.0568	2.161	.3247	.1488	.3005
%RSD	83.08	35.52	135.9	482.5	16.01	125.7

Elms	Fe2714	K_7664	Li6707	Mg2790	Mn2576	Mo2020
Units	ppb	ppm	ppb	ppb	ppb	ppb
Avg	-6.333	-.0188	.0503	-1.393	-.2993	.1903
SDev	4.799	.007	.0079	1.208	.0598	.0328
%RSD	75.78	37.43	15.8	86.69	19.99	17.21

Elms	Na3302	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	ppm	ppb	ppb	ppb	ppb	ppb
Avg	-.0474	-1.111	1.067	-1.100	.0093	-.5879
SDev	.0327	.337	5.132	.2984	1.257	2.165
%RSD	68.98	30.35	481	27.13	13560	368.2

Elms	1960-1	1960-2	Pb2203	Se1960	Sn1899	Sr4215
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	-.8490	.8577	-.3602	.2893	.6021	.0061
SDev	3.533	2.373	.7454	2.744	1.647	.017
%RSD	416.1	276.7	207	948.4	273.6	277.8

Elms	Ti3349	Tl1908	V_2924	Zn2062	Si2881
Units	ppb	ppb	ppb	ppb	ppb
Avg	-.0337	3.651	-.1191	.0471	14.98
SDev	.0638	1.679	.0716	.4796	2.328
%RSD	189.3	45.99	60.15	1019	15.54

Method: TRIANGL2 Sample Name: ICSAB Operator: DKH  
 Run Time: 10/16/97 06:14 Filename: 101697  
 Mode: CONC Type: Q Corr. Factor: 1.00000  
 Lab ID.: 4377 Cust. Smpl. ID.: Cust. ID.: 4377D

Elms	Ag3280	Al3082	As1890	B_2496	Ba4934	Be3130
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	541.0	519700.	521.1	509.7	526.4	493.7
SDev	.2529	1508	3.499	.3806	.3111	1.055
%RSD	.0467	.2902	.6714	.0747	.0591	.2137

Elms	Ca3179	Cd2265	Ce4186	Co2286	Cr2677	Cu3247
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	458700.	477.6	507.8	480.6	485.1	550.2
SDev	269.9	.7423	.8153	1.472	1.05	.3259
%RSD	.0588	.1554	.1606	.3062	.2165	.0592

Elms	Fe2714	K_7664	Li6707	Mg2790	Mn2576	Mo2020
Units	ppb	ppm	ppb	ppb	ppb	ppb
Avge	178200.	026.11	644.8	537000.	465.6	503.8
SDev	188.2	.0261	.1787	465.2	.7978	3.635
%RSD	.1056	.0999	.0277	.0866	.1714	.7216

Elms	Na3302	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	ppm	ppb	ppb	ppb	ppb	ppb
Avge	5.721	462.1	543.4	511.4	476.7	513.9
SDev	.129	1.291	6.619	1.496	2.666	4.053
%RSD	2.255	.2795	1.218	.2925	.5592	.7886

Elms	1960-1	1960-2	Pb2203	Se1960	Sn1899	Sr4215
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	535.8	523.0	488.3	527.3	512.3	514.9
SDev	3.956	2.464	2.012	2.045	4.743	.2951
%RSD	.7383	.4711	.4121	.3879	.9258	.0573

Elms	Ti3349	Tl1908	V_2924	Zn2062	Si2881
Units	ppb	ppb	ppb	ppb	ppb
Avge	503.5	509.5	498.7	452.7	5527.
SDev	.4079	17.96	.2738	.7735	.7959
%RSD	.081	3.525	.0549	.1709	.0144

Method: TRIANGL2 Sample Name: 43377 MB Operator: DKH  
Run Time: 10/16/97 06:27 Filename: 101697  
Mode: CONC Type: S Corr. Factor: 1.00000  
Lab ID.: 4377 Cust. Smpl. ID.: Cust. ID.: 4377D

Elms	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	L-.1281	L-2.091	L.2038	L.0090	L-.4397	L-.1883
SDev	.3852	1.579	.031	.0191	.1182	.343
%RSD	300.6	75.51	15.19	210.9	26.88	182.1

Elms	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	L-1.083	L-.1912	L-.9993	L-.7028	L-2.822	L-1.104
SDev	.3166	.0211	.5802	2.372	1.206	.8904
%RSD	29.22	11.05	58.06	337.5	42.75	80.63

Elms	Se1960	Tl1908	Zn2062	Cu3247
Units	ppb	ppb	ppb	ppb
Avge	L-1.137	5.643	7.273	L.2200
SDev	1.702	.6505	.3766	.0934
%RSD	149.7	11.53	5.179	42.45

Method: TRIANGL2 Sample Name: 43377 LCS Operator: DKH  
Run Time: 10/16/97 06:31 Filename: 101697  
Mode: CONC Type: S Corr. Factor: 1.00000  
Lab ID.: 4377 Cust. Smpl. ID.: Cust. ID.: 4377D

Elms	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	45.11	45.25	49.05	47.58	48.64	49.24
SDev	.2231	1.785	.0139	.1316	.2661	.491
%RSD	.4946	3.944	.0284	.2766	.547	.9973

Elms	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	48.24	48.63	47.19	981.6	46.89	48.51
SDev	.2651	.1117	.3361	3.672	1.369	3.475
%RSD	.5495	.2297	.7123	.3741	2.92	7.163

Elms	Se1960	Tl1908	Zn2062	Cu3247
Units	ppb	ppb	ppb	ppb
Avge	47.66	54.36	199.4	49.07
SDev	.9626	4.224	.5208	.1811
%RSD	2.02	7.77	.2611	.3691

Method: TRIANGL2 Sample Name: 184-50-1ABC Operator: DKH  
 Run Time: 10/16/97 06:35 Filename: 101697  
 Mode: CONC Type: S Corr. Factor: 1.00000  
 Lab ID.: 4377 Cust. Smpl. ID.: Cust. ID.: 4377D

Elms	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	L-.5093	26.61	2210.	L-9.136	2.179	18.25
SDev	.3573	2.85	4.926	.1027	.0807	.3458
%RSD	70.16	10.71	.2229	1.125	3.703	1.895

Elms	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	147.0	2033.	72.58	3318.	197.3	44.56
SDev	.5588	3.064	1.588	2.661	3.371	3.312
%RSD	.3801	.1507	2.188	.0802	1.708	7.432

Elms	Se1960	Tl1908	Zn2062	Cu3247
Units	ppb	ppb	ppb	ppb
Avg	43.87	L-5.140	1144.	173.2
SDev	1.692	3.599	7.068	.7243
%RSD	3.858	70.02	.6177	.4182



Method: TRIANGL2 Sample Name: 184-50-1ABC PDS Operator: DKH  
Run Time: 10/16/97 06:40 Filename: 101697  
Mode: CONC Type: S Corr. Factor: 1.00000  
Lab ID.: 4377 Cust. Smpl. ID.: Cust. ID.: 4377D

Elms	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	37.13	66.21	2208.	31.50	44.31	60.73
SDev	.3988	3.431	14.45	.3373	.2775	.4396
%RSD	1.074	5.182	.6547	1.071	.6263	.7238

Elms	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	187.1	2027.	112.3	4054.	231.3	83.39
SDev	1.437	14.98	.574	37.71	.7707	2.303
%RSD	.7677	.7391	.5111	.9302	.3332	2.762

Elms	Se1960	Tl1908	Zn2062	Cu3247
Units	ppb	ppb	ppb	ppb
Avge	80.62	41.25	1289.	216.0
SDev	1.987	4.864	11.44	1.288
%RSD	2.465	11.79	.8875	.5961

Method: TRIANGL2 Sample Name: 184-50-1ABC L Operator: DKH  
Run Time: 10/16/97 06:44 Filename: 101697  
Mode: CONC Type: S Corr. Factor: 1.00000  
Lab ID.: 4377 Cust. Smpl. ID.: Cust. ID.: 4377D

Elms	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	L-.4440	L3.164	484.8	L-1.931	L.3724	3.906
SDev	.322	3.221	2.054	.0161	.0955	.0837
%RSD	72.51	101.8	.4237	.8347	25.63	2.143

Elms	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	36.48	451.4	17.45	769.6	45.98	9.814
SDev	.1875	1.55	.7885	12.57	.9132	2.429
%RSD	.514	.3433	4.52	1.633	1.986	24.75

Elms	Se1960	Tl1908	Zn2062	Cu3247
Units	ppb	ppb	ppb	ppb
Avg	10.80	L-1.273	260.1	36.29
SDev	.6753	2.955	1.207	.0141
%RSD	6.252	232.2	.4642	.0389

Method: TRIANGL2 Sample Name: 184-50-2ABC Operator: DKH  
Run Time: 10/16/97 06:48 Filename: 101697  
Mode: CONC Type: S Corr. Factor: 1.00000  
Lab ID.: 4377 Cust. Smpl. ID.: Cust. ID.: 4377D

Elms	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	1.729	5.922	510.8	L-1.516	21.33	L-18.81
SDev	.231	5.592	1.262	.0114	.4776	.3065
%RSD	13.36	94.42	.247	.7539	2.239	1.63

Elms	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	99.66	333.7	60.86	603.5	57.82	41.46
SDev	.7343	.5725	.6265	7.819	2.963	2.143
%RSD	.7369	.1716	1.029	1.295	5.125	5.167

Elms	Se1960	Tl1908	Zn2062	Cu3247
Units	ppb	ppb	ppb	ppb
Avge	39.59	L-20.75	466.6	44.25
SDev	2.103	4.068	1.658	.3904
%RSD	5.314	19.6	.3554	.8823

Method: TRIANGL2 Sample Name: 184-50-2ABC DA Operator: DKH  
Run Time: 10/16/97 06:53 Filename: 101697  
Mode: CONC Type: S Corr. Factor: 1.00000  
Lab ID.: 4377 Cust. Smpl. ID.: Cust. ID.: 4377D

Elms	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	1.879	9.131	508.5	L-1.543	21.14	L-19.06
SDev	.1626	1.536	.6701	.018	.2932	.1298
%RSD	8.655	16.82	.1318	1.169	1.387	.6813

Elms	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	100.8	333.8	61.46	595.3	56.00	42.58
SDev	.6976	.1168	.2091	5.056	4.94	2.367
%RSD	.6922	.035	.3402	.8494	8.822	5.558

Elms	Se1960	Tl1908	Zn2062	Cu3247
Units	ppb	ppb	ppb	ppb
Avge	40.58	L-22.75	467.4	43.70
SDev	1.369	3.279	2.011	.1365
%RSD	3.374	14.42	.4304	.3123

Method: TRIANGL2 Sample Name: 184-50-3ABC Operator: DKH  
Run Time: 10/16/97 06:57 Filename: 101697  
Mode: CONC Type: S Corr. Factor: 1.00000  
Lab ID.: 4377 Cust. Smpl. ID.: Cust. ID.: 4377D

Elms	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	8.915	7.679	213.8	L-.6011	L-.9755	L-15.08
SDev	.1884	2.083	.1277	.0096	.3475	.4523
%RSD	2.113	27.13	.0597	1.597	35.62	3

Elms	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	78.48	142.1	43.20	258.3	31.04	33.49
SDev	.0716	.2221	.5583	3.008	1.936	1.467
%RSD	.0912	.1563	1.292	1.165	6.237	4.379

Elms	Se1960	Tl1908	Zn2062	Cu3247
Units	ppb	ppb	ppb	ppb
Avge	30.06	L-18.14	202.8	32.22
SDev	2.758	.807	.1254	.1674
%RSD	9.174	4.45	.0618	.5197

Method: TRIANGL2 Sample Name: 184-50-4ABC Operator: DKH  
Run Time: 10/16/97 07:01 Filename: 101697  
Mode: CONC Type: S Corr. Factor: 1.00000  
Lab ID.: 4377 Cust. Smpl. ID.: Cust. ID.: 4377D

Elms	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	2.082	14.111	139.3	L-.3650	L-2.418	L-16.29
SDev	.3145	.9489	.3593	.014	.0784	.181
%RSD	15.11	23.08	.258	3.836	3.242	1.111

Elms	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	64.36	204.4	28.94	142.3	6.657	27.32
SDev	1.317	.4675	1.379	4.509	2.292	2.046
%RSD	2.046	.2287	4.766	3.169	34.42	7.49

Elms	Se1960	Tl1908	Zn2062	Cu3247
Units	ppb	ppb	ppb	ppb
Avg	24.36	L-18.91	160.5	21.37
SDev	1.049	2.389	.5637	.469
%RSD	4.306	12.63	.3512	2.195

Method: TRIANGL2 Sample Name: 184-50-5ABC Operator: DKH  
Run Time: 10/16/97 07:06 Filename: 101697  
Mode: CONC Type: S Corr. Factor: 1.00000  
Lab ID.: 4377 Cust. Smpl. ID.: Cust. ID.: 4377D

Elms	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	1.066	6.275	46.63	L-.0519	L-6.656	L-31.58
SDev	.1497	4.046	.113	.0165	.1467	.2198
%RSD	14.05	64.48	.2423	31.73	2.203	.6961

Elms	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	94.99	10.86	48.17	L.2013	L-20.78	49.09
SDev	.4271	.0346	.3339	9.721	.6739	1.36
%RSD	.4496	.3188	.6932	4828	3.243	2.771

Elms	Se1960	Tl1908	Zn2062	Cu3247
Units	ppb	ppb	ppb	ppb
Avg	42.70	L-28.34	30.20	10.52
SDev	.6499	5.619	.5619	.1553
%RSD	1.522	19.82	1.861	1.476

Method: TRIANGL2 Sample Name: ICV/CCV Operator: DKH  
 Run Time: 10/16/97 07:10 Filename: 101697  
 Mode: CONC Type: Q Corr. Factor: 1.00000  
 Lab ID.: 4377 Cust. Smpl. ID.: Cust. ID.: 4377D

Elms	Ag3280	Al3082	As1890	B_2496	Ba4934	Be3130
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	497.6	480.4	497.4	1432.	497.5	492.5
SDev	1.296	4.595	.8585	309.7	1.178	1.776
%RSD	.2604	.9565	.1726	21.62	.2368	.3606

Elms	Ca3179	Cd2265	Ce4186	Co2286	Cr2677	Cu3247
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	495.3	490.4	496.7	493.1	502.8	493.8
SDev	1.154	1.266	1.79	1.344	1.048	1.2
%RSD	.233	.2582	.3604	.2727	.2084	.2429

Elms	Fe2714	K_7664	Li6707	Mg2790	Mn2576	Mo2020
Units	ppb	ppm	ppb	ppb	ppb	ppb
Avge	497.8	4.972	482.6	483.5	493.5	496.9
SDev	2.846	.1091	9.826	4.639	1.056	2.046
%RSD	.5717	2.195	2.036	.9596	.2141	.4117

Elms	Na3302	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	ppm	ppb	ppb	ppb	ppb	ppb
Avge	4.848	494.5	493.2	476.8	485.5	494.8
SDev	.0281	1.15	6.169	2.054	3.223	3.576
%RSD	.5799	.2326	1.251	.4309	.6637	.7228

Elms	1960-1	1960-2	Pb2203	Se1960	Sn1899	Sr4215
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	481.9	484.5	482.6	483.6	490.0	494.1
SDev	4.544	2.786	1.525	1.43	2.134	1.144
%RSD	.9428	.575	.3161	.2956	.4355	.2315

Elms	Ti3349	Tl1908	V_2924	Zn2062	Si2881
Units	ppb	ppb	ppb	ppb	ppb
Avge	491.8	493.0	496.4	495.5	Q120100.
SDev	1.006	8.102	1.576	.5795	12690
%RSD	.2047	1.643	.3176	.117	10.56



Method: TRIANGL2 Sample Name: ICB/CCB Operator: DKH  
 Run Time: 10/16/97 07:46 Filename: 101697  
 Mode: CONC Type: Q Corr. Factor: 1.00000  
 Lab ID.: 4377 Cust. Smpl. ID.: Cust. ID.: 4377D

Elms	Ag3280	Al3082	As1890	B_2496	Ba4934	Be3130
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	.0533	-8.541	-1.340	1907.	-.0269	-.0517
SDev	.5781	6.096	.2432	194.5	.0699	.0198
%RSD	1085	71.38	18.15	10.2	259.4	38.3

Elms	Ca3179	Cd2265	Ce4186	<del>Cd2286</del>	Cr2677	Cu3247
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	.7147	-.3193	.8197	Q-1.014	1.244	-.4342
SDev	.907	.0626	.4866	.5074	.748	.3392
%RSD	126.9	19.59	59.37	50.03	60.13	78.13

*Baseline variation  
 Reanalyzed  
 next 11/2/97*

Elms	Fe2714	K_7664	Li6707	<del>Mg2790</del>	Mn2576	Mo2020
Units	ppb	ppm	ppb	ppb	ppb	ppb
Avg	-11.40	.0045	-.0035	-.9826	-.3995	.6451
SDev	6.564	.0222	.0453	3.155	.0642	.5139
%RSD	57.57	490.5	1308	321.1	16.08	79.65

Elms	Na3302	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	ppm	ppb	ppb	ppb	ppb	ppb
Avg	-.0050	.0805	2.006	-1.232	-.7516	.5050
SDev	.1447	.9777	4.174	7.372	3.896	1.575
%RSD	2897	1215	208.1	598.5	518.3	311.8

Elms	1960-1	1960-2	Pb2203	Se1960	Sn1899	Sr4215
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	3.012	-.6267	-.9115	.5850	-1.230	-.0048
SDev	1.688	1.426	.4417	1.225	1.1	.0368
%RSD	56.03	227.6	48.46	209.4	89.46	774.9

Elms	Ti3349	Tl1908	V_2924	Zn2062	Si2881
Units	ppb	ppb	ppb	ppb	ppb
Avg	-.0553	.4464	.3645	-.0630	Q40110.
SDev	.1514	2.371	.6429	.3788	6602
%RSD	273.7	531.1	176.4	600.9	16.46

Method: TRIANGL2 Sample Name: ICB/CCB Operator: DKH  
 Run Time: 10/16/97 07:52 Filename: 101697  
 Mode: CONC Type: Q Corr. Factor: 1.00000  
 Lab ID.: 4377 Cust. Smpl. ID.: Cust. ID.: 4377D

Elms	Ag3280	Al3082	As1890	B_2496	Ba4934	Be3130
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	- .2417	-5.727	-1.300	1884.	- .0146	- .0323
SDev	.1502	1.172	.8748	169.2	.0456	.0263
%RSD	62.12	20.46	67.27	8.982	311.2	81.42

Elms	Ca3179	Cd2265	Ce4186	Co2286	Cr2677	Cu3247
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	.5311	- .3609	.3116	- .5385	.1090	- .2913
SDev	.6907	.0259	.8719	.171	.4543	.0451
%RSD	130.1	7.184	279.8	31.76	416.7	15.48

Elms	Fe2714	K_7664	Li6707	Mg2790	Mn2576	Mo2020
Units	ppb	ppm	ppb	ppb	ppb	ppb
Avge	-7.667	- .0065	- .0156	- .2903	- .3527	.4612
SDev	5.091	.0216	.0346	1.237	.0684	.323
%RSD	66.4	334	221.9	426	19.4	70.04

Elms	Na3302	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	ppm	ppb	ppb	ppb	ppb	ppb
Avge	- .0037	- .3360	2.354	- .3383	-1.221	-1.019
SDev	.0559	.2058	2.648	4.367	.6342	2.344
%RSD	1493	61.24	112.5	1291	51.93	230.1

Elms	1960-1	1960-2	Pb2203	Se1960	Sn1899	Sr4215
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	3.228	- .3380	- .9271	.8494	.3410	- .0071
SDev	2.628	.8337	1.031	.5572	1.272	.0196
%RSD	81.42	246.7	111.2	65.6	373.1	277.3

Elms	Ti3349	Tl1908	V_2924	Zn2062	Si2881
Units	ppb	ppb	ppb	ppb	ppb
Avge	- .0109	2.425	.2912	- .0449	Q21790.
SDev	.0591	.5094	.5035	.3956	2608
%RSD	540.7	21.01	172.9	880.5	11.97

Method: TRIANGL2 Sample Name: 184-50-6ABC Operator: DKH  
Run Time: 10/16/97 07:57 Filename: 101697  
Mode: CONC Type: S Corr. Factor: 1.00000  
Lab ID.: 4377 Cust. Smpl. ID.: Cust. ID.: 4377D

Elms	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	2.705	13.407	43.29	L-.1124	L-6.215	L-29.57
SDev	.348	1.285	.0223	.0227	.1688	.2123
%RSD	12.86	37.71	.0516	20.18	2.717	.7179

Elms	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	93.29	9.109	46.80	L17.60	L-12.88	41.76
SDev	.2013	.0325	.2785	7.247	.9772	3.694
%RSD	.2157	.3564	.5951	41.18	7.586	8.844

Elms	Se1960	Tl1908	Zn2062	Cu3247
Units	ppb	ppb	ppb	ppb
Avge	43.53	L-27.42	25.99	10.58
SDev	1.23	3.657	.4895	.4742
%RSD	2.825	13.34	1.884	4.482

Method: TRIANGL2      Sample Name: 184-50-7ABC      Operator: DKH  
Run Time: 10/16/97 08:02      Filename: 101697  
Mode: CONC      Type: S      Corr. Factor: 1.00000  
Lab ID.: 4377      Cust. Smpl. ID.:      Cust. ID.: 4377D

Elms	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	L-15.49	152.1	6172.	L-35.76	60.01	265.3
SDev	.9335	6.111	5.206	.8206	1.304	.9946
%RSD	6.028	4.018	.0844	2.295	2.173	.3749

Elms	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	358.7	11640.	160.8	34930.	450.8	L-2.294
SDev	1.837	125	.9667	123.5	4.528	14.75
%RSD	.512	1.074	.6012	.3535	1.004	643.1

Elms	Se1960	Tl1908	Zn2062	Cu3247
Units	ppb	ppb	ppb	ppb
Avg	L-55.97	29.04	5033.	1251.
SDev	.4454	12.16	50.46	6.183
%RSD	.7958	41.88	1.003	.4942

Method: TRIANGL2 Sample Name: 184-50-1D Operator: DKH  
 Run Time: 10/16/97 08:06 Filename: 101697  
 Mode: CONC Type: S Corr. Factor: 1.00000  
 Lab ID.: 4377 Cust. Smpl. ID.: Cust. ID.: 4377D

Elms	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	L-2.766	L-2.638	20.51	L-.1251	5.845	L-2.288
SDev	.2345	1.093	2.731	.0185	.185	.3883
%RSD	84.78	41.45	13.32	14.76	3.164	16.97

Elms	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	11.39	45.09	16.34	620.8	63.81	L3.419
SDev	.9235	7.084	.285	11.34	.7614	.2362
%RSD	8.107	15.71	1.744	1.826	1.193	6.907

Elms	Se1960	Tl1908	Zn2062	Cu3247
Units	ppb	ppb	ppb	ppb
Avge	5.132	L-8.268	280.8	22.13
SDev	.7446	3.42	2.001	.6451
%RSD	14.51	41.37	.7124	2.914

Method: TRIANGL2 Sample Name: 184-50-~~10 L~~ <sup>10 PDS</sup> <sup>11/2/97</sup> Operator: DKH  
 Run Time: 10/16/97 08:10 Filename: 101697  
 Mode: CONC Type: S Corr. Factor: 1.00000  
 Lab ID.: 4377 Cust. Smpl. ID.: Cust. ID.: 4377D

Elms	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	41.57	36.64	60.46	45.63	52.79	46.23
SDev	.2792	1.116	1.695	.1066	.2122	.2617
%RSD	.6716	3.047	2.804	.2336	.402	.5661

Elms	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	55.26	68.47	61.19	1409.	108.5	47.69
SDev	.4554	4.15	.4983	13.14	1.194	2.649
%RSD	.8241	6.061	.8144	.9325	1.1	5.555

Elms	Se1960	Tl1908	Zn2062	Cu3247
Units	ppb	ppb	ppb	ppb
Avge	46.09	41.51	456.7	69.47
SDev	1.599	3.872	1.063	.3598
%RSD	3.469	9.327	.2327	.5179

Method: TRIANGL2 Sample Name: 184-50-2D <sup>10 L</sup> ~~EE OKA~~ 11/2/97 Operator: DKH  
 Run Time: 10/16/97 08:14 Filename: 101697  
 Mode: CONC Type: S Corr. Factor: 1.00000  
 Lab ID.: 4377 Cust. Smpl. ID.: Cust. ID.: 4377D

Elms	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	L-.0897	L-1.821	2.332	L-.0501	1.419	L-.1740
SDev	.0648	.896	.4586	.02	.0807	.2324
%RSD	72.25	49.2	19.67	39.9	5.688	133.6

Elms	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	L1.220	4.133	L2.951	131.7	12.38	L-.9951
SDev	.4425	1.078	.2926	2.713	1.461	.6884
%RSD	36.28	26.09	9.914	2.059	11.8	69.18

Elms	Se1960	Tl1908	Zn2062	Cu3247
Units	ppb	ppb	ppb	ppb
Avge	L1.379	L1.796	58.60	3.320
SDev	1.16	2.134	1.027	.1675
%RSD	84.13	118.8	1.753	5.045

*2 DE CERNA 11/2/97*

Method: TRIANGL2 Sample Name: 184-50-~~2D-DA~~ Operator: DKH  
Run Time: 10/16/97 08:56 Filename: 101697  
Mode: CONC Type: S Corr. Factor: 1.00000  
Lab ID.: 4377 Cust. Smpl. ID.: Cust. ID.: 4377D

Elms	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	L-5679	L-7.156	8.581	L-.0070	L.8481	L-1.476
SDev	.6026	.8904	.0121	.0531	.0828	.1998
%RSD	106.1	12.44	.1407	754.6	9.766	13.54

Elms	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	4.083	15.93	7.948	547.6	23.64	L.7714
SDev	.4408	.0612	.6847	5.055	.388	1.848
%RSD	10.8	.3843	8.615	.9231	1.641	239.6

Elms	Se1960	Tl1908	Zn2062	Cu3247
Units	ppb	ppb	ppb	ppb
Avge	3.153	L-6.818	146.5	19.04
SDev	3.032	3.024	1.604	.7372
%RSD	96.15	44.35	1.095	3.872



Method: TRIANGL2 Sample Name: 184-50-30 <sup>20E0A</sup> <sub>Ge not 11/2/97</sub> Operator: DKH  
 Run Time: 10/16/97 09:00 Filename: 101697  
 Mode: CONC Type: S Corr. Factor: 1.00000  
 Lab ID.: 4377 Cust. Smpl. ID.: Cust. ID.: 4377D

Elms	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	L-.0033	L-8.639	8.590	L-.0542	1.010	L-1.200
SDev	.4743	2.526	.0349	.0032	.1699	.1727
%RSD	14540	29.24	.4062	5.994	16.82	14.4

Elms	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	4.012	16.00	8.008	541.7	23.73	L1.277
SDev	.2092	.0218	.4832	2.227	.8123	1.673
%RSD	5.216	.1363	6.034	.411	3.423	131

Elms	Se1960	Tl1908	Zn2062	Cu3247
Units	ppb	ppb	ppb	ppb
Avge	L1.535	L-8.808	147.4	18.27
SDev	1.975	2.69	.2439	.2617
%RSD	128.7	30.55	.1655	1.432

Method: TRIANGL2 Sample Name: 184-50-40 <sup>30E ee nkt 11/2/97</sup> Operator: DKH  
 Run Time: 10/16/97 09:04 Filename: 101697  
 Mode: CONC Type: S Corr. Factor: 1.00000  
 Lab ID.: 4377 Cust. Smpl. ID.: Cust. ID.: 4377D

Elms	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	L-1911	L-7.223	11.26	L-.0539	16.44	L-.5769
SDev	.1505	2.258	.0357	.0202	.2015	.2555
%RSD	78.76	31.26	.317	37.46	1.225	44.29

Elms	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	6.680	17.22	34.81	747.8	964.4	L-.5307
SDev	.3669	.0706	.7899	4.429	2.741	.6234
%RSD	5.493	.4099	2.27	.5922	.2843	117.5

Elms	Se1960	Tl1908	Zn2062	Cu3247
Units	ppb	ppb	ppb	ppb
Avge	86.49	L-5.127	192.1	52.09
SDev	1.669	2.937	.6433	.3094
%RSD	1.93	57.29	.3349	.5941

Method: TRIANGL2 Sample Name: ICV/CCV Operator: DKH  
 Run Time: 10/16/97 09:09 Filename: 101697  
 Mode: CONC Type: Q Corr. Factor: 1.00000  
 Lab ID.: 4377 Cust. Smpl. ID.: Cust. ID.: 4377D

Elms	Ag3280	Al3082	As1890	B_2496	Ba4934	Be3130
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	499.2	475.2	499.3	2149.	503.9	486.6
SDev	3.819	13.69	15.74	81.88	2.32	1.029
%RSD	.765	2.881	3.152	3.811	.4604	.2115

Elms	Ca3179	Cd2265	Ce4186	Co2286	Cr2677	Cu3247
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	482.2	486.7	496.2	486.7	487.2	487.7
SDev	8.614	3.548	6.679	4.786	6.891	5.337
%RSD	1.786	.7291	1.346	.9832	1.415	1.094

Elms	Fe2714	K_7664	Li6707	Mg2790	Mn2576	Mo2020
Units	ppb	ppm	ppb	ppb	ppb	ppb
Avg	452.6	5.116	496.1	466.6	484.0	487.6
SDev	71.05	.1044	6.834	33.91	3.577	1.686
%RSD	15.7	2.04	1.378	7.268	.7391	.3457

Elms	Na3302	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	ppm	ppb	ppb	ppb	ppb	ppb
Avg	4.938	484.9	482.5	470.1	490.0	493.9
SDev	.0967	8.103	23.23	15.77	3.984	3.688
%RSD	1.958	1.671	4.814	3.354	.8132	.7467

Elms	1960-1	1960-2	Pb2203	Se1960	Sn1899	Sr4215
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	468.2	483.2	483.4	478.2	501.2	492.8
SDev	22.64	4.008	7.907	4.894	23.64	2.359
%RSD	4.835	.8296	1.636	1.023	4.716	.4787

Elms	Ti3349	Tl1908	V_2924	Zn2062	Si2881
Units	ppb	ppb	ppb	ppb	ppb
Avg	485.2	501.9	490.1	485.1	Q7971.
SDev	4.465	17.69	2.037	2.417	272.6
%RSD	.9203	3.524	.4156	.4981	3.42

Method: TRIANGL2 Sample Name: ICB/CCB Operator: DKH  
 Run Time: 10/16/97 09:35 Filename: 101697  
 Mode: CONC Type: Q Corr. Factor: 1.00000  
 Lab ID.: 4377 Cust. Smpl. ID.: Cust. ID.: 4377D

Elms	Ag3280	Al3082	As1890	B_2496	Ba4934	Be3130
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	.1502	-1.521	-.9882	950.4	.0421	-.0092
SDev	.3132	4.124	1.361	39.14	.0283	.0405
%RSD	208.6	271.1	137.7	4.118	67.18	438.9

Elms	Ca3179	Cd2265	Ce4186	Co2286	Cr2677	Cu3247
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	-.5445	-.2155	1.001	-.0770	-.8534	-1.613
SDev	.7426	.2165	.4289	.1903	.3149	.2463
%RSD	136.4	100.4	42.83	247	36.9	15.27

Elms	Fe2714	K_7664	Li6707	Mg2790	Mn2576	Mo2020
Units	ppb	ppm	ppb	ppb	ppb	ppb
Avg	-14.15	-.0262	.0035	-1.332	-.3542	.8031
SDev	10.29	.0258	.0483	2.343	.0286	.5252
%RSD	72.74	98.57	1394	175.9	8.064	65.4

*Baseline  
DKH 11/2/97*

Elms	Na3302	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	ppm	ppb	ppb	ppb	ppb	ppb
Avg	.0387	-.8098	6.223	.1146	-1.624	-2.656
SDev	.0963	.454	2.934	.258	2.436	.6835
%RSD	248.7	56.07	47.14	225.2	150	25.74

Elms	1960-1	1960-2	Pb2203	Se1960	Sn1899	Sr4215
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	1.043	-3.656	-1.045	-2.091	1.023	-.0007
SDev	.957	4.068	1.551	2.71	.5067	.0236
%RSD	91.74	111.3	148.4	129.6	49.55	3490

Elms	Ti3349	Tl1908	V_2924	Zn2062	Si2881
Units	ppb	ppb	ppb	ppb	ppb
Avg	-.0544	Q5.106	.8394	.0111	Q1699.
SDev	.0798	3.369	.4161	.3295	156.7
%RSD	146.8	65.99	49.57	2957	9.223

Method: TRIANGL2 Sample Name: ICB/CCB Operator: DKH  
 Run Time: 10/16/97 09:41 Filename: 101697  
 Mode: CONC Type: Q Corr. Factor: 1.00000  
 Lab ID.: 4377 Cust. Smpl. ID.: Cust. ID.: 4377D

Elms	Ag3280	Al3082	As1890	B_2496	Ba4934	Be3130
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	-.1087	-.7477	-2.236	944.4	.0551	-.0248
SDev	.2618	3.542	2.037	25.6	.0229	.0222
%RSD	240.8	473.7	91.1	2.71	41.53	89.67

Elms	Ca3179	Cd2265	Ce4186	Co2286	Cr2677	Cu3247
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	-.3562	-.2554	-.5108	-.0309	-.9233	-1.471
SDev	.267	.1898	.5058	.3512	.3306	.2529
%RSD	74.94	74.31	99.02	1135	35.81	17.19

Elms	Fe2714	K_7664	Li6707	Mg2790	Mn2576	Mo2020
Units	ppb	ppm	ppb	ppb	ppb	ppb
Avge	-13.84	-.0342	-.0052	-.7875	-.3458	.8655
SDev	6.1	.0205	.039	1.658	.0465	.3214
%RSD	44.07	59.96	750.6	210.6	13.44	37.13

Elms	Na3302	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	ppm	ppb	ppb	ppb	ppb	ppb
Avge	-.0350	-.5282	-.8495	-1.145	-.3056	-.2238
SDev	.0291	.5848	4.378	1.302	.8154	.2366
%RSD	83.22	110.7	515.4	113.6	266.8	105.7

Elms	1960-1	1960-2	Pb2203	Se1960	Sn1899	Sr4215
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	1.861	-1.886	-.5852	-.6382	.6340	.0110
SDev	.6219	1.779	.9445	.9812	1.144	.0072
%RSD	33.42	94.34	161.4	153.7	180.4	65.82

Elms	Ti3349	Tl1908	V_2924	Zn2062	Si2881
Units	ppb	ppb	ppb	ppb	ppb
Avge	-.0894	2.843	.7315	.0786	Q1234.
SDev	.0373	1.955	.4703	.2427	42.21
%RSD	41.72	68.77	64.29	309	3.422

LDE

Method: TRIANGL2 Sample Name: 184-50-50 ~~50~~ <sup>11/2/97</sup> Operator: DKH  
 Run Time: 10/16/97 09:46 Filename: 101697  
 Mode: CONC Type: S Corr. Factor: 1.00000  
 Lab ID.: 4377 Cust. Smpl. ID.: Cust. ID.: 4377D

Elms	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	L.3115	L-6.866	5.349	L-.0157	L.1314	L-1.780
SDev	.4234	.4176	.0566	.0227	.1903	.5384
%RSD	135.9	6.083	1.058	144.5	144.8	30.25

Elms	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	2.399	491.5	8.884	555.5	12.48	L-1.163
SDev	.2792	3.037	.5823	2.613	.6875	2.856
%RSD	11.64	.6179	6.555	.4705	5.509	245.6

Elms	Se1960	Tl1908	Zn2062	Cu3247
Units	ppb	ppb	ppb	ppb
Avg	L.9315	L-2.512	94.30	11.29
SDev	.7501	6.04	1.396	.3558
%RSD	80.52	240.5	1.48	3.152

*B x 11-5-97*  
*SD*

Method: TRIANGL2    Sample Name: 184-50-60 *EE MKH*    Operator: DKH  
 Run Time: 10/16/97 09:51    Filename: 101697  
 Mode: CONC    Type: S    Corr. Factor: 1.00000  
 Lab ID.: 4377    Cust. Smpl. ID.:    Cust. ID.: 4377D

Elms	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	L-.0839	L-5.436	2.368	L-.0372	1.295	L-.8354
SDev	.2512	1.249	.0238	.02	.1503	.1079
%RSD	299.5	22.97	1.005	53.88	11.61	12.92

Elms	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	3.764	71.68	L2.070	120.7	65.88	L.9706
SDev	.105	.0245	.1183	2.985	.775	2.807
%RSD	2.79	.0342	5.715	2.473	1.176	289.2

Elms	Se1960	Tl1908	Zn2062	Cu3247
Units	ppb	ppb	ppb	ppb
Avge	4.210	L-1.944	29.58	6.244
SDev	2.228	4.813	.5408	.1993
%RSD	52.92	247.6	1.829	3.192

Method: TRIANGL2 Sample Name: 184-50-78 <sup>B</sup> <sup>GO</sup> <sup>11/2/97</sup> Operator: DKH  
 Run Time: 10/16/97 09:55 Filename: 101697  
 Mode: CONC Type: S Corr. Factor: 1.00000  
 Lab ID.: 4377 Cust. Smpl. ID.: Cust. ID.: 4377D

Elms	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	L-0.610	L-8.994	3.256	L-.0435	L-.5364	L-1.619
SDev	.5059	1.325	.0253	.0074	.0302	.1431
%RSD	829.2	14.73	.7777	17.01	5.626	8.842

Elms	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	2.217	346.9	6.056	553.4	2.647	L1.642
SDev	.163	.2669	.503	7.161	.517	1.483
%RSD	7.351	.0769	8.305	1.294	19.53	90.32

Elms	Se1960	Tl1908	Zn2062	Cu3247
Units	ppb	ppb	ppb	ppb
Avge	L-.0174	L-6.710	20.33	14.38
SDev	1.462	1.841	.2184	.3131
%RSD	8428	27.43	1.075	2.177



Method: TRIANGL2 Sample Name: ICV/CCV Operator: DKH  
 Run Time: 10/16/97 09:59 Filename: 101697  
 Mode: CONC Type: Q Corr. Factor: 1.00000  
 Lab ID.: 4377 Cust. Smpl. ID.: Cust. ID.: 4377D

Elms	Ag3280	Al3082	As1890	B_2496	Ba4934	Be3130
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	Q.0289	Q-157.8	Q-.2775	195.7	Q.0976	Q-.7472
SDev	.2048	1.047	.5037	9.615	.0335	.0087
%RSD	709.6	.6637	181.5	4.913	34.34	1.166

Elms	Ca3179	Cd2265	Ce4186	Co2286	Cr2677	Cu3247
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	Q13.58	Q-.2812	1.721	Q.7068	Q-.3631	Q-13.65
SDev	.4391	.04	.1489	.1939	.1889	.0581
%RSD	3.234	14.22	8.651	27.43	52.03	.4254

Elms	Fe2714	K_7664	Li6707	Mg2790	Mn2576	Mo2020
Units	ppb	ppm	ppb	ppb	ppb	ppb
Avg	Q-6.893	Q.7476	Q1.465	Q-.7281	Q-.3683	Q.2414
SDev	3.949	.0538	.1054	.8972	.1343	.1598
%RSD	57.29	7.201	7.192	123.2	36.47	66.18

Elms	Na3302	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	ppm	ppb	ppb	ppb	ppb	ppb
Avg	Q.2460	Q.7523	Q16.36	-5.639	-1.913	Q-2.677
SDev	.1276	.2237	1.239	2.215	.5583	.7508
%RSD	51.87	29.74	7.573	39.29	29.18	28.05

Elms	1960-1	1960-2	Pb2203	Se1960	Sn1899	Sr4215
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	7.261	-6.855	Q-3.154	Q-2.154	Q1.646	Q.0357
SDev	3.582	1.993	.6018	.4271	.7386	.0067
%RSD	49.33	29.08	19.08	19.82	44.87	18.84

Elms	Ti3349	Tl1908	V_2924	Zn2062	Si2881
Units	ppb	ppb	ppb	ppb	ppb
Avg	Q.3552	Q10.69	Q9.521	Q.1164	Q19.24
SDev	.3145	1.227	.217	.2914	48.69
%RSD	88.56	11.47	2.279	250.3	253.1

*Cup empty  
 next 11/2/97*

Method: TRIANGL2 Sample Name: ICV/CCV Operator: DKH  
 Run Time: 10/16/97 12:11 Filename: 101697  
 Mode: CONC Type: Q Corr. Factor: 1.00000  
 Lab ID.: 4377 Cust. Smpl. ID.: Cust. ID.: 4377D

Elms	Ag3280	Al3082	As1890	B_2496	Ba4934	Be3130
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	496.5	496.4	497.1	589.7	521.8	483.1
SDev	2.094	10.12	2.756	5.924	.7044	1.928
%RSD	.4218	2.038	.5544	1.005	.135	.3992

Elms	Ca3179	Cd2265	Ce4186	Co2286	Cr2677	Cu3247
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	477.3	491.6	507.1	487.0	487.5	498.8
SDev	1.576	.9373	1.745	.9028	1.381	3.083
%RSD	.3302	.1907	.344	.1854	.2833	.618

Elms	Fe2714	K_7664	Li6707	Mg2790	Mn2576	Mo2020
Units	ppb	ppm	ppb	ppb	ppb	ppb
Avge	478.3	5.313	517.9	478.8	488.1	486.0
SDev	5.517	.0461	2.416	1.865	1.115	3.467
%RSD	1.154	.8676	.4664	.3895	.2285	.7132

Elms	Na3302	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	ppm	ppb	ppb	ppb	ppb	ppb
Avge	5.314	489.8	499.4	479.1	484.2	494.4
SDev	.1463	1.218	2.861	3.115	2.795	2.634
%RSD	2.754	.2487	.5729	.6501	.5773	.5328

Elms	1960-1	1960-2	Pb2203	Se1960	Sn1899	Sr4215
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	499.8	496.9	482.5	497.9	489.3	505.4
SDev	6.374	3.053	.9208	2.98	2.196	.6817
%RSD	1.275	.6143	.1909	.5986	.4488	.1349

Elms	Ti3349	Tl1908	V_2924	Zn2062	Si2881
Units	ppb	ppb	ppb	ppb	ppb
Avge	496.0	475.9	490.0	476.9	4965.
SDev	.5585	30.42	1.034	2.736	25.12
%RSD	.1126	6.391	.2111	.5736	.506

Method: TRIANGL2 Sample Name: ICB/CCB Operator: DKH  
 Run Time: 10/16/97 12:32 Filename: 101697  
 Mode: CONC Type: Q Corr. Factor: 1.00000  
 Lab ID.: 4377 Cust. Smpl. ID.: Cust. ID.: 4377D

Elms	Ag3280	Al3082	As1890	B_2496	Ba4934	Be3130
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avgc	-.0211	2.899	-1.641	64.04	.1805	.0874
SDev	.5304	6.708	.2973	4.644	.0282	.0407
%RSD	2512	231.4	18.12	7.251	15.6	46.61

Elms	Ca3179	Cd2265	Ce4186	Co2286	Cr2677	Cu3247
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avgc	-.8989	-.1870	1.192	.4192	-1.059	-1.597
SDev	.6572	.0928	.8145	.1148	.0471	.3766
%RSD	73.11	49.62	68.33	27.4	4.444	23.58

Elms	Fe2714	K_7664	Li6707	Mg2790	Mn2576	Mo2020
Units	ppb	ppm	ppb	ppb	ppb	ppb
Avgc	-14.64	-.1313	-.1855	-1.358	-.2783	.6601
SDev	2.611	.0146	.0227	1.257	.0504	.3691
%RSD	17.84	11.13	12.22	92.54	18.12	55.91

Elms	Na3302	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	ppm	ppb	ppb	ppb	ppb	ppb
Avgc	.0587	-.3710	6.871	-1.392	-1.881	-2.321
SDev	.186	.5011	7.798	2.056	1.06	1.109
%RSD	316.9	135.1	113.5	147.7	56.36	47.78

Elms	1960-1	1960-2	Pb2203	Se1960	Sn1899	Sr4215
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avgc	2.528	-2.544	-1.718	-.8550	.7120	.0851
SDev	3.378	1.409	.267	.1885	1.157	.0079
%RSD	133.6	55.37	15.54	22.05	162.5	9.293

Elms	Ti3349	Tl1908	V_2924	Zn2062	Si2881
Units	ppb	ppb	ppb	ppb	ppb
Avgc	.0736	Q5.661	.8681	.1856	56.57
SDev	.0634	1.711	.4693	.1994	4.884
%RSD	86.18	30.23	54.06	107.4	8.634

*baseline  
 AXA 11/2/97*

Method: TRIANGL2 Sample Name: ICB/CCB Operator: DKH  
 Run Time: 10/16/97 13:13 Filename: 101697  
 Mode: CONC Type: Q Corr. Factor: 1.00000  
 Lab ID.: 4377 Cust. Smpl. ID.: Cust. ID.: 4377D

Elms	Ag3280	Al3082	As1890	B_2496	Ba4934	Be3130
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	-.0448	-11.86	-.0733	32.74	.0667	-.0583
SDev	.1076	5.503	1.112	3.657	.0209	.0233
%RSD	240	46.39	1516	11.17	31.36	39.99

Elms	Ca3179	Cd2265	Ce4186	Co2286	Cr2677	Cu3247
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	.1563	-.2877	-.4351	-.0631	-1.310	-1.093
SDev	.5672	.1993	1.134	.1759	.379	.3509
%RSD	362.9	69.26	260.6	278.8	28.94	32.1

Elms	Fe2714	K_7664	Li6707	Mg2790	Mn2576	Mo2020
Units	ppb	ppm	ppb	ppb	ppb	ppb
Avge	-15.56	-.1034	-.2063	-3.506	-.3785	.3155
SDev	4.357	.038	.0807	1.121	.0222	.2953
%RSD	28	36.76	39.14	31.97	5.861	93.59

Elms	Na3302	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	ppm	ppb	ppb	ppb	ppb	ppb
Avge	-.0362	-.2369	.0303	-.4790	-.8080	-1.452
SDev	.0437	.4007	3.413	1.431	1.298	2.125
%RSD	120.8	169.2	11270	298.9	160.6	146.4

Elms	1960-1	1960-2	Pb2203	Se1960	Sn1899	Sr4215
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	4.483	-3.490	-.6984	-.8349	1.179	-.0038
SDev	.3989	1.281	.6201	.9805	.4081	.0097
%RSD	8.898	36.69	88.78	117.4	34.62	256.3

Elms	Ti3349	Tl1908	V_2924	Zn2062	Si2881
Units	ppb	ppb	ppb	ppb	ppb
Avge	-.1327	Q5.342	-.0945	.2525	43.88
SDev	.0587	1.912	.2961	.4279	1.668
%RSD	44.24	35.79	313.4	169.5	3.802

Method: TRIANGL2 Sample Name: LCSAB Operator: DKH  
 Run Time: 10/16/97 13:22 Filename: 101697  
 Mode: CONC Type: Q Corr. Factor: 1.00000  
 Lab ID.: 4377 Cust. Smpl. ID.: Cust. ID.: 4377D

Elms	Ag3280	Al3082	As1890	B_2496	Ba4934	Be3130
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	546.6	518700.	526.9	567.1	544.1	489.4
SDev	.6686	2500	5.399	5.794	1.932	1.355
%RSD	.1223	.482	1.025	1.022	.3552	.277

Elms	Ca3179	Cd2265	Ce4186	Co2286	Cr2677	Cu3247
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	448800.	475.3	512.3	476.7	479.2	554.2
SDev	1293	.7837	.7578	1.65	1.823	3.371
%RSD	.2881	.1649	.1479	.3462	.3804	.6082

Elms	Fe2714	K_7664	Li6707	Mg2790	Mn2576	Mo2020
Units	ppb	ppm	ppb	ppb	ppb	ppb
Avge	177800.	Q27.72	678.7	531000.	461.0	501.7
SDev	173.2	.2547	4.585	169.7	.9409	1.681
%RSD	.0974	.9189	.6756	.032	.2041	.335

Elms	Na3302	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	ppm	ppb	ppb	ppb	ppb	ppb
Avge	Q6.138	458.4	543.7	513.0	471.9	517.0
SDev	.1359	.3339	14.5	6.568	10.72	5.742
%RSD	2.215	.0728	2.667	1.28	2.271	1.111

Elms	1960-1	1960-2	Pb2203	Se1960	Sn1899	Sr4215
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	552.9	522.7	485.6	532.7	513.7	523.0
SDev	18.88	8.605	5.122	2.276	4.282	1.604
%RSD	3.416	1.646	1.055	.4273	.8334	.3067

Elms	Ti3349	Tl1908	V_2924	Zn2062	Si2881
Units	ppb	ppb	ppb	ppb	ppb
Avge	504.1	499.1	494.6	442.5	5534.
SDev	.3431	26.04	2.004	2.676	9.408
%RSD	.0681	5.218	.4052	.6049	.17

MKD 10/20/97

Table Name: HA462 Autosampler Type: TYPE TJA  
 Sample Positions: 170/192 QC Positions: 13/19 # Sets: 1  
 Rinse Station location is rack -1, pos. -1.

--- Racks ---

Rack #	Type	Usage	#Pos Left	Analyses/Pos
1	Aux (1) Rack	STD/QC/BLANK	13	10
2	Sample (16mm)	Samples	26	1
3	Sample (16mm)	Samples	48	1
4	Sample (16mm)	Samples	48	1
5	Sample (16mm)	Samples	48	1

--- Sample Sets ---

Set #	Type	Prepare?	Description	Method	#Pos	Rack #	StartPos
1	Normal	No	43411	TRIANG2	27	2	1

\* Contains sample 184-SD-7.D  
 for 43377.  
 MKD 10/20/97

--- Preparation Info ---

43377

Set #	Method	Method #	Final	Del Factor
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NO SAMPLES PREPARED

Rack #1

Pos	Row	Col	Sample Name	Set #	#Used	Type
1	1	1	STD3	-NA-	2	Standard 1-61-4P
2	1	2	STD1-BLANK	-NA-	1	Standard
3	1	3	IC/SAR	-NA-	2	QC Standard 1-61-6P
4	1	4	CHECK LO	-NA-	1	QC Standard
5	1	5	TCV/CCV	-NA-	4	QC Standard 1-61-5P
6	1	6	ICB/CCB	-NA-	4	QC Standard

MKD  
 10/19/97

(7, 19 Not Used)

Rack #2

Pos	Row	Col	Sample Name	Set #	#Used	Type
1	1	1	43411 MR	1	-NA-	Sample
2	1	2	43411 LPS	1	-NA-	Sample
3	1	3	184-84-1ARC	1	-NA-	Sample
4	1	4	184-84-1ARC PHS	1	-NA-	Sample
5	1	5	184-84-1ARC I	1	-NA-	Sample
6	1	6	184-84-2ARC	1	-NA-	Sample
7	1	7	184-84-2ARC DA	1	-NA-	Sample
8	1	8	184-84-3ARC	1	-NA-	Sample
9	1	9	184-84-4ARC	1	-NA-	Sample
10	1	10	184-84-5ARC	1	-NA-	Sample
11	1	11	184-84-6ARC	1	-NA-	Sample
12	1	12	184-84-7ARC	1	-NA-	Sample
13	2	1	184-84-1DE	1	-NA-	Sample
14	2	2	184-84-1DE PHS	1	-NA-	Sample
15	2	3	184-84-1DE I	1	-NA-	Sample

Rack #2

Pos	Row	Col	Sample Name	Set #	#Used	Type
16	2	4	184-84-20E	1	-NA-	Sample
17	2	5	184-84-20E DA	1	-NA-	Sample
18	2	6	184-84-30F	1	-NA-	Sample
19	2	7	184-84-40	1	-NA-	Sample
20	2	8	184-84-58D	1	-NA-	Sample
21	2	9	184-84-60	1	-NA-	Sample
22	2	10	184-84-7FF	1	-NA-	Sample
(23... 48)			Not Used			

Rack #3

Pos	Row	Col	Sample Name	Set #	#Used	Type
(1... 48)			Not Used			

Rack #4

Pos	Row	Col	Sample Name	Set #	#Used	Type
(1... 48)			Not Used			

Rack #5

Pos	Row	Col	Sample Name	Set #	#Used	Type
(1... 48)			Not Used			

Method: TRIANGL2 Sample Name: STD1-BLANK Operator:  
 Run Time: 10/20/97 02:34 Filename: 101997  
 Mode: IP Type: X Corr. Factor: 1.00000  
 Lab ID.: Cust. Smpl. ID.: Cust. ID.:

Elms	Aq3280	Al3082	As1890	B_2496	Ba4934	Be3130
Units	count	count	count	count	count	count
Avgc	.00005	.00175	-.00025	.00053	.00016	.00015
Stdev	.00018	.00003	.00016	.00007	0	0
%RSD	324.493	1.92741	64.7338	14.799	5.83794	3.00637

Elms	Ca3179	Cd2265	Ce4186	Co2286	Cr2677	Cu3247
Units	count	count	count	count	count	count
Avgc	.00077	-.00011	-.00015	-.00013	-.00012	.00305
Stdev	0	.00019	.00043	.00005	.00002	.00006
%RSD	.4196	169.969	276.427	38.9774	20.5118	2.00201

Elms	Fe2714	K_7664	Li6707	Mg2790	Mn2576	Mn2020
Units	count	count	count	count	count	count
Avgc	.00005	7.53193	.14862	.00007	.00002	.00005
Stdev	.00001	.03932	.00073	.00006	0	0
%RSD	36.7786	.5221	.49205	78.2225	17.4372	19.3551

Elms	Na3302	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	count	count	count	count	count	count
Avgc	.00288	-.00183	-.00099	.0007	.00003	.00031
Stdev	.00185	.00034	.00002	.00017	.00011	.00004
%RSD	64.1328	18.7786	2.33707	25.1502	307.289	15.2916

Elms	1960-1	1960-2	Sn1899	Sr4215	Ti3340	Ti1908
Units	count	count	count	count	count	count
Avgc	-.00491	.00187	-.00043	.00014	.00008	-.00042
Stdev	.00038	.00033	.00002	.00001	.00011	.00002
%RSD	7.75111	17.6317	6.08648	8.357	132.664	6.83945

Elms	V_2924	Zn7067	Zr2881
Units	count	count	count
Avgc	-.00052	0	.02469
Stdev	.00001	0	.0004
%RSD	2.6048	631.559	1.64285



Method: TRIANG12    Sample Name: STD3                    Operator:  
 Run Time: 10/20/97 02:38                    Filename: 101997  
 Mode: IR                    Type: X                    Corr. Factor:                    1.00000  
 Lab ID.:                    Cust. Smpl. ID.:                    Cust. ID.:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4934	Be3130
Units	count	count	count	count	count	count
Avg	.42951	.01757	.0559	.17083	.29967	.3191
StDev	.00188	.00012	.00055	.00151	.00142	.00285
%RSD	.43819	.72464	1.00079	88584	.4763	.89544

Elem	Ca3179	Cd2265	Ce4J86	Co2286	Cr2677	Cu3247
Units	count	count	count	count	count	count
Avg	.02979	1.16012	.12545	.12851	.18007	.1752
StDev	.00022	.00945	.00078	.00111	.0016	.00013
%RSD	.76907	81485	.62275	.87038	.89392	.07961

Elem	Fe3714	K_7664	Li6707	Mg2790	Mn2576	Mn2020
Units	count	count	count	count	count	count
Avg	.00506	22.8985	13.3093	.0238	.15667	.09006
StDev	.00006	.13666	.06544	.00011	.0012	.00089
%RSD	1.22096	59682	49173	.46229	.76807	.99213

Elem	Na3302	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	count	count	count	count	count	count
Avg	.18664	.41579	.02492	.23202	.10364	.13048
StDev	.00144	.00321	.00015	.00161	.00128	.00103
%RSD	.77628	.77304	.62627	.69755	1.23524	.79634

Elem	1960-1	1960-2	Sn1899	Sr4215	Ti3349	Ti1908
Units	count	count	count	count	count	count
Avg	.29726	.16957	.14125	.90854	1.28231	.03555
StDev	.00188	.00227	.00134	.005	.00816	.001
%RSD	.63477	1.34306	.95018	.55051	.63644	2.83301

Elem	V_2924	Zn2062	Zi2881	Zb2203	Se1960
Units	count	count	count		
Avg	.04404	.13754	.5023		
StDev	.00032	.0014	.00051		
%RSD	.74319	1.02232	.10304		

Method: TRTAN612 Sample Name: STD3 Operator: DKH  
 Run Time: 10/20/97 02:43 Filename: 101997  
 Mode: CONC Type: Q Corr. Factor: 1.00000  
 Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43411

Elem	Ag3280	Al3082	As1890	B_2496	Ba4934	Be3130
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	996.8	999.7	998.2	1013.	1001.	998.0
SDev	2.451	7.16	.6164	2.352	.614	2.751
%RSD	.2459	.7162	.0617	.2322	.0613	.2756

Elem	Ca3179	Cd2265	Ce4186	Co2286	Cr2677	Cu3247
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	1001.	1002.	1001.	1002.	1001.	999.5
SDev	1.699	1.713	1.951	2.245	2.438	4.02
%RSD	.1697	.1709	.1949	.224	.2436	.4022

Elem	Fe2714	K_7664	Li6707	Mg2790	Mn2576	Mo2020
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	1005.	10.46	1040.	1003.	1000.	1005.
SDev	1.19	0.423	1.929	2.091	1.761	1.499
%RSD	.111	.4048	.4742	.2084	.1761	.149

Elem	Ni3309	Ni3316	P_2149	Pb2203-1	Pb2203-2	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	1022	1005.	992.6	994.2	989.8	1004.
SDev	.1834	1.144	2.915	13.09	19.77	.5386
%RSD	1.794	1.138	.2937	1.317	1.998	.0536

Elem	1960-1	1960-2	Sn1899	Sr4215	Ti3349	Tl1908
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	992.7	992.5	1002.	998.8	1000.	1034.
SDev	13.69	24.42	2.265	.667	1.423	13
%RSD	1.379	2.461	.2261	.0668	.1423	1.258

Elem	V_2924	Zn2062	Si2881	Pb2203	Se1960
Units	ppb	ppb	ppb	ppb	ppb
Avg	1002	1000	10000.	991.2	992.6
SDev	1.884	3.755	47.53	10.63	12.71
%RSD	1.881	.3754	.4752	1.073	1.281

Method: TRIANGL2 Sample Name: ICV/CCV Operator: DKH  
 Run Time: 10/20/97 02:52 Filename: 101997  
 Mode: CONC Type: 0 Corr. Factor: 1.00000  
 Lab ID.: Cust. Smpl. ID : Cust. ID.: 43411

Elem	As3280	As13082	As1890	B_2496	Ba4934	Ba3130
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	505.7	497.4	510.3	508.5	503.8	505.6
SD	2.998	5.265	1.771	.82	.6946	1.469
%RSD	.5952	1.059	.3471	.1613	.1379	.2905

Elem	Cd3179	Cd2285	Cd4186	Cd2286	Cr2677	Cu3247
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	506.3	505.5	503.3	504.5	505.2	503.3
SD	1.398	1.315	1.503	1.077	1.547	2.322
%RSD	.2761	.2602	.2987	.2136	.3061	.4614

Elem	Fe2714	K_7664	Li6707	Mg2790	Mn2576	Mn2020
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	522.9	5.008	495.6	506.9	504.0	503.0
SD	5.68	.198	15.86	1.956	1.197	1.576
%RSD	1.086	3.954	3.2	.3858	.2375	.3132

Elem	Na3302	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	4.993	507.4	505.1	512.0	508.3	502.4
SD	.1653	1.78	7.985	.3717	19.37	4.196
%RSD	3.311	.3509	1.581	.0726	3.81	8.352

Elem	1960-1	1960-2	Pb2203	Se1960	Sn1899	Sr4215
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	514.8	511.3	509.5	512.5	507.9	501.0
SD	1.238	21.88	13.01	13.31	2.346	93.2
%RSD	.8031	4.278	2.552	2.598	.4665	.1869

Elem	Ti3349	Ti1908	V_2924	Zn2062	Zn2881
Units	ppb	ppb	ppb	ppb	ppb
Avg	501.4	512.4	503.6	505.1	504.4
SD	.9426	15.04	1.38	2.305	19.68
%RSD	.188	2.934	.2741	.4563	.3902

Method: TRIANGL2 Sample Name: ICB/CC8 Operator: OKH  
 Run Time: 10/20/97 02:57 Filename: 101997  
 Mode: CONC Type: Q Corr. Factor: 1.00000  
 Lab ID.: Cust. Smp. ID.: Cust. ID.: 43411

Conv Not used

10-31-97

Elms	Aq3280	Al3082	As1890	B_2496	Ba4934	Be3130
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	- .1735	-5.811	1.192	8.720	- .0120	- .0320
SDev	.402	3.288	1.525	2.985	.0617	.0137
%RSD	231.6	56.58	127.9	34.23	513.9	42.79

Elms	Ca3179	Cd2265	Ce4186	Co2286	Cr2677	Cu3247
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	.9259	.0783	-1.139	- .1719	.1478	- .8462
SDev	1.035	0.624	2.886	1.664	1.3938	.5876
%RSD	111.8	79.67	251.34	386.5	266.4	69.43

Elms	Fe2714	K_7664	Li6707	Mn2790	Mn2576	Mn2020
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	-5.554	.0727	.1857	-3.464	.0181	1.168
SDev	9.133	.0223	.0351	3.018	.0231	.6304
%RSD	164.4	30.62	18.9	87	127.4	53.95

Elms	Na3302	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	.0447	.4972	2.044	1.735	.0268	1.898
SDev	.0515	.5008	.6453	1.871	1.135	1.578
%RSD	115	100.7	31.56	107.8	4236	83.14

Elms	1960-1	1960-2	Pb2203	Se1960	Sn1899	Sr4215
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	- .5487	1.342	.5957	.7787	.3233	.0013
SDev	.8807	2.524	.3347	1.975	1.28	.0289
%RSD	252.6	188.2	56.19	253.6	395.8	2178

Elms	Ti3349	Tl1908	V_2924	Zn2062	Si2881
Units	ppb	ppb	ppb	ppb	ppb
Avg	- 1024	08.551	5940	- .0219	-3.055
SDev	1978	4.878	5697	.1889	13.76
%RSD	193.3	57.05	95.9	862	450.4

Method: TRIANGLE Sample Name: ICB/CC8 Operator: DKH  
 Run Time: 10/20/97 03:03 Filename: 101997  
 Mode: CONC Type: G Corr. Factor: 1.00000  
 Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43411

*Omit 11-2-99*

Elms	Ag3280	Al3082	As1890	B_2496	Ba4934	Ba3130
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	.2221	-3.678	.0696	2.468	-.0089	-.0133
SDev	.1611	3.804	1.593	.8468	.0311	.0339
%RSD	72.51	103.4	2288	34.32	349.8	255.7

Elms	Ca3179	Cd2265	Ce4186	Co2286	Cr2677	Cu3247
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	.1113	-.0435	-.6623	.0659	.1712	-.5688
SDev	.3358	.11	3.004	.371	.5479	.4993
%RSD	301.8	252.8	453.6	563	320	87.77

Elms	Fe2714	K_7664	Lj6707	Mg2790	Mn2576	Mn2020
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	1.163	.0187	.0405	-2.102	-.0214	-.0177
SDev	3.876	.0281	.0558	2.407	.0181	.0142
%RSD	333.4	150.2	137.7	115.5	84.71	3463

Elms	H3307	Ni2316	P_2149	Zn203-1	Zn203-2	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	.0762	.0617	7.217	2.554	-.5674	.2166
SDev	.0479	.2071	5.95	3.996	3.047	2.294
%RSD	62.87	335.9	82.44	156.5	537	1059

Elms	1960-1	1960-2	Pb2203	Se1960	Sn1899	Sr4215
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	5.125	-2.295	.4719	.1756	-.4727	.0059
SDev	3.879	3.175	1.371	2.334	.4895	.0168
%RSD	75.7	138.3	290.5	1329	103.6	283.2

Elms	Ti3349	Tl1908	V_2924	Zn2062	Si2881	
Units	ppb	ppb	ppb	ppb	ppb	
Avg	-.0504	05.304	.4599	-.1179	-3.202	
SDev	.0672	4.211	.4404	.2772	3.439	
%RSD	133.2	79.4	95.75	235.1	107.4	

Method: TRIANGL2 Sample Name: ICR/CCB Operator: DKH  
 Run Time: 10/20/97 03:09 Filename: 101997  
 Mode: CONC Type: G Corr. Factor: 1.00000  
 Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43411

Elem	As3280	As1582	As1890	Br2496	Ba4934	Be3130
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	0927	- 1024	.0053	.9844	.0678	-.0192
Stdev	.5361	4.777	.6625	.4981	.0099	.0392
%RSD	578	4664	12540	50.59	14.57	203.5

Elem	Ca3179	Cd2265	Ce4186	Co2286	Cr2677	Cu3247
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	.5086	.0567	1.377	-.1144	.5188	-.0714
Stdev	.4261	.1304	.629	.2136	.3834	.6319
%RSD	83.78	230	45.68	186.7	73.9	884.5

Elem	Fe2714	K_7664	Li6707	Mg2790	Mn2576	Mo2020
Units	ppb	ppm	ppb	ppb	ppb	ppb
Avg	4.817	- .0030	-.0034	2.899	.0160	-.0634
Stdev	3.712	.0119	.026	6.988	.0143	.5304
%RSD	77.07	395.7	769.6	216.9	89.63	837

Elem	Na3309	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	ppm	ppb	ppb	ppb	ppb	ppb
Avg	.0859	.5174	9.855	.8028	-.7179	.8024
Stdev	.11	.0783	2.253	1.988	.7336	1.429
%RSD	129.1	73.11	22.86	395.5	102.2	178.1

Elem	1960-1	1960-2	Pb2203	Sr1960	Sn1899	Sr4215
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	.5315	1.143	-.3114	.9392	-.7503	.0229
Stdev	1.457	1.025	.8019	1.065	1.368	.0333
%RSD	274.1	89.7	257.5	113.4	182.4	145.5

Elem	Ti5340	Tl1908	V_2924	Zn2062	Zn2881
Units	ppb	ppb	ppb	ppb	ppb
Avg	.1295	.4138	.5028	.0210	-.10.60
Stdev	.1235	1.767	.426	.1789	9.072
%RSD	95.38	426.9	84.72	851	85.61

Method: TRIANGL2 Sample Name: ICSAB Operator: DKH  
 Run Time: 10/20/97 03:14 Filename: 101997  
 Mode: CONC Type: Q Corr. Factor: 1.00000  
 Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43411

Elem	Ag3280	Al3082	As1890	B_2496	Ba4934	Be3130
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	532.7	514100.	518.1	515.4	509.9	486.5
Stdev	7049	1439	6.113	2.926	5178	1.457
%RSD	1.323	.28	1.18	.5677	.1015	.2994

Elem	Ca4179	Ca2265	Ca4186	Ca2286	Cr2677	Cr3247
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	452300	463.9	491.6	459.9	473.0	524.0
Stdev	1160	.966	1.822	1.181	1.547	1.779
%RSD	.2564	.2082	.3707	.2567	.3271	.3395

Elem	Fe2714	K_7664	Li6707	Mg2790	Mn2576	Mn2020
Units	ppb	ppm	ppb	ppb	ppb	ppb
Avg	171500.	026.15	609.2	528800.	449.0	496.9
Stdev	283.4	.0898	2.652	526.1	1.076	2.026
%RSD	.1652	.3434	.4352	.0995	.2396	.4078

Elem	Na3302	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	ppm	ppb	ppb	ppb	ppb	ppb
Avg	5.574	450.3	500.9	507.2	466.1	505.6
Stdev	0607	6123	33.4	13.61	9.595	11.71
%RSD	1.09	136	6.669	2.683	2.059	2.316

Elem	1960-1	1960-2	Pb2203	Se1960	Sn1899	Sr4215
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	530.8	527.8	479.8	528.8	496.8	502.7
Stdev	17.19	12.55	5.148	4.31	9.848	11.63
%RSD	3.236	2.377	1.073	.8152	1.982	.0321

Elem	113349	111908	V_2924	Zn2062	Zn2881
Units	ppb	ppb	ppb	ppb	ppb
Avg	491.9	506.3	488.3	439.1	5490.
Stdev	6456	14.66	1.108	1.92	5.319
%RSD	1313	2.895	.2268	.4372	.0969

Method: TRIANG2 Sample Name: ICV/CCV Operator: DKH  
 Run Time: 10/20/97 04:21 Filename: 101997  
 Mode: CONC Type: Q Corr. Factor: 1.00000  
 Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43411

Elem	Aq3280	Al3082	As1890	B_2496	Ba4934	Be3130
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	502.9	495.2	509.0	532.9	509.5	504.8
Stdev	1.593	2.501	1.504	20.68	.8612	1.808
%RSD	.3167	1.519	.2954	3.881	.169	.3581

Elem	Ca3179	Cd2265	Ce4186	Ce2286	Cr2677	Cu3247
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	498.7	506.5	506.4	506.1	509.5	506.1
Stdev	3.838	3.023	4.282	2.693	2.346	2.119
%RSD	.7696	.5968	.8455	.532	.4605	.4186

Elem	Fe2714	K_7664	Li6707	Mg2790	Mn2576	Mo2020
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	539.3	4.953	499.9	501.0	496.6	504.9
Stdev	30.63	.1458	13.96	13.14	1.284	3.702
%RSD	5.679	2.944	2.792	2.624	.2585	.7332

Elem	Na3302	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	4.982	508.9	507.6	507.2	519.1	501.1
Stdev	15.14	2.628	10.75	10.46	15.51	5.733
%RSD	3.039	.5164	2.019	2.062	2.988	1.144

Elem	1960-1	1960-2	Pb2203	Se1960	Sn1899	Sr4215
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	501.4	513.7	515.1	509.6	496.7	503.1
Stdev	8.004	20.52	12.42	15.14	2.316	5.268
%RSD	1.636	3.995	2.42	2.971	.4663	10.47

Elem	Ti3349	Tl1908	V_2924	Zn2062	Si2881
Units	ppb	ppb	ppb	ppb	ppb
Avg	491.1	506.7	505.4	504.5	036500
Stdev	1.45	10.26	1.106	4.042	3713
%RSD	.2953	2.026	.2188	.8013	10.17



Method: TRIANG2 Sample Name: ICH/CCB Operator: DKH  
 Run Time: 10/20/97 04:27 Filename: 101997  
 Mode: CONC Type: Q Corr. Factor: 1.00000  
 Lab ID.: Cust. Smp). ID.: Cust. ID.: 43411

Elem	Aq3280	Al3082	As1890	B_2496	Ba4934	Be3130
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	2444	-1.104	.8468	64.48	.2341	.2485
StDev	1.482	4.935	1.792	3.905	.2044	.2476
%RSD	606.4	447.1	211.6	6.057	87.32	99.64

Elem	Ca3129	Co2265	Cr4186	Co2286	Cr2677	Cu3247
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	-1.051	3896	-3917	-4435	1.133	-3975
StDev	146	1817	4.722	4693	.5588	.6875
%RSD	14.16	46.64	1205	105.8	49.3	138.2

Elem	Fe1714	Y_7664	Li6707	Mg2790	Mn2576	Mn2020
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	-3.247	0281	.4390	-3.914	.2216	.8116
StDev	7.307	0176	.2533	3.299	.2505	.3564
%RSD	225.1	70.1	57.69	84.3	113	43.91

Elem	Na3302	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	0157	.7505	-1.1184	1.387	-1.5901	1.280
StDev	.3821	1.057	6.419	1.937	1.867	.8589
%RSD	2430	140.8	5423	139.7	316.4	67.09

Elem	1960-1	1960-2	Pb2203	Se1960	Sn1899	Sr4215
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	1.218	-1.721	.0681	-1.7425	-1.9249	.2630
StDev	1.306	.815	.785	.3985	.6176	.2335
%RSD	107.2	47.34	1152	53.67	66.78	88.78

Elem	Ti3349	Tl1908	V_2924	Zn2062	Si2881
Units	ppb	ppb	ppb	ppb	ppb
Avg	1656	2.476	7337	0267	014950
StDev	2482	2.257	3237	.5394	828.4
%RSD	149.9	91.18	44.05	2020	5.54

Method: TRIANGL2 Sample Name: 184-50-70 Operator:  
 Run Time: 10/20/97 06:05 Filename: 101997  
 Mode: CONC Type: S Corr. Factor: 1.00000  
 Lab ID.: Cust. Smpl. ID.: Cust. ID.:

Elem	As3280	As1890	Ba4934	Ba3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	1.3763	1.2937	4.655	1.0121	5.279	1.085
StDev	.6119	2.461	.0565	.0586	.0311	.5686
%RSD	16.36	83.8	1.214	484.2	.5885	52.39

Elem	Cu3271	Cu3247	Mn2576	Ni2316	P_2119	Pb2203
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	6.758	7.221	109.4	7.742	447.2	42.65
StDev	5762	5265	.3844	.7187	2.932	4862
%RSD	81.526	7.29	.3515	9.283	.6557	1.14

Elem	Sb2068	Se1960	Tl1908	Zn2062
Units	ppb	ppb	ppb	ppb
Avg	1.0461	7.465	1.6667	163.3
StDev	1.986	1.411	3.501	1.675
%RSD	43.08	18.9	52.51	1.025

Method: TRIANG2 Sample Name: ICV/CCV Operator: DKH  
 Run Time: 10/20/97 06:09 Filename: 101997  
 Mode: CONC Type: Q Corr. Factor: 1.00000  
 Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43411

Elem	Ag3280	Al3082	As1890	B_2496	Ba4934	Be3130
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	515.5	505.1	508.2	512.4	506.5	504.5
SDev	2.609	14.09	4.616	1.421	1.437	4.544
%RSD	506	2.789	.9083	.2774	.2836	.9007

Elem	Ca3179	Cd2265	Ce4386	Ce2286	Cr2677	Cu3247
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	498.9	500.0	498.5	506.3	505.7	510.0
SDev	1.709	4.584	2.348	2.901	1.533	3.615
%RSD	3405	9165	4709	573	3032	7089

Elem	Fe2714	K_7664	Li2307	Hg2790	Mn2576	Mn2020
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	516.5	5.269	538.9	502.2	500.0	501.1
SDev	12.10	2.711	20.29	5.671	2.726	3.804
%RSD	2.346	5.144	3.765	1.129	.5451	.759

Elem	Na3300	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	5.264	503.9	506.5	501.1	510.2	499.3
SDev	4491	1.877	5.058	5.469	.5667	2.094
%RSD	8.531	.3724	.9985	1.091	.1111	.4193

Elem	1960-1	1960-2	Pb2203	Se1960	Sn1899	Sr4215
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	495.4	508.2	507.2	504.0	495.3	502.5
SDev	7.969	4.55	2.164	5.632	2.256	?
%RSD	1.608	8954	.4268	1.118	.4555	3979

Elem	Ti3349	Tl1908	V_2924	Zn2062	Zn2881
Units	ppb	ppb	ppb	ppb	ppb
Avg	487.5	506.4	504.1	498.0	509.0
SDev	1.200	11.86	2.069	5.751	64.8
%RSD	507	2.341	.4105	1.155	1.273

Method: ICPANAL Sample Name: ICR/CCR Operator: DKH  
 Run Date: 10/20/97 06:17 Filename: 101997  
 Mode: CDR Type: Q Corr. Factor: 1.00000  
 Lab ID: Cust. Smpl. ID: Cust. ID: 43411

Elem	As3280	As3082	As1890	B_2496	Ba4934	Be3130
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	3540	5698	8032	6.283	1427	1775
SD	5844	3.135	3593	4852	1627	2517
%RSD	165	550.2	44.73	7.721	114	141.8

Elem	Ca3174	Ca2265	Ca4186	Ca2286	Cr2677	Cu3247
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	2677	2130	1543	0687	3013	3605
SD	9295	1861	3572	2555	3698	376
%RSD	343.3	87.38	231.5	371.8	122.7	104.3

Elem	Fe2711	Fe2664	Fe6707	Mn2790	Mn2576	Mn2020
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	5030	0086	7607	1089	2413	3594
SD	1173	0741	37	5675	1239	1687
%RSD	23.31	845.4	0.461	446.7	92.79	41.9

Elem	Mo3009	Mo2316	P_2119	P203-1	P203-2	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	0593	1028	4086	3027	1523	2229
SD	1029	4165	7139	3819	2074	2598
%RSD	199	32.58	1747	118.3	136.2	116.6

Elem	1960-1	1960-2	Pb2203	Se1960	Sn1899	Sr4215
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	3835	1386	0591	3525	4687	1842
SD	3157	8052	5634	1192	865	234
%RSD	82.33	58.1	953.1	338	184.5	127.1

Elem	Ti3349	Ti1908	V_2924	Zn2062	Zn2881
Units	ppb	ppb	ppb	ppb	ppb
Avg	1148	4066	1080	4050	4155.4
SD	1339	1454	4349	1001	5502
%RSD	116.6	35.76	40.28	24.71	3.541

Method: (RI)MGL2 Sample Name: ICSAR Operator: DKH  
 Run Time: 10/20/97 06:23 Filename: 101097  
 Mode: CONC Type: 0 Corr. Factor: 1.00000  
 Lab ID: Cust. Smpl. ID.: Cust. ID.: 43411

Element	As1890	As1892	As1890	As2496	As4934	As3130
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	547.2	527200	524.7	533.7	520.2	483.8
StDev	.92	4070	4.197	1.935	2.825	4.798
%RSD	1.681	7721	7998	.3626	.5431	.9917

Element	Cd3179	Cd2265	Cd4186	Cd2286	Cd2677	Cd3247
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	447000	460.4	493.0	461.1	472.6	539.9
StDev	7103	5.642	4.98	4.999	6.476	6.501
%RSD	1.580	1.226	1.01	1.084	1.37	1.204

Element	Fe2714	Fe7664	Fe6707	Mg2790	Mn2576	Mn2020
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	174800	299.65	704.0	531200	445.1	500.2
StDev	1564	1.364	38.43	2908	4.127	1.2
%RSD	8947	4.601	5.459	5475	9273	2399

Element	Hg3302	Hg2316	Pb2149	Pb203-1	Pb203-2	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	46.344	446.7	545.6	494.3	462.5	519.2
StDev	3054	1.007	19.33	12.87	10.29	7.494
%RSD	6.587	2254	3.544	2.603	2.224	1.443

Element	Pb203-1	Pb203-2	Pb2203	Se1960	Se1899	Se1215
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avg	519.5	531.6	473.1	527.6	495.3	508.9
StDev	12.42	11.6	10.84	4.851	1.598	1.47
%RSD	2.392	2.183	2.292	9194	3227	.289

Element	Ti3349	Ti1908	V2924	Zn2062	Si2881
Units	ppb	ppb	ppb	ppb	ppb
Avg	481.7	524.5	492.2	430.7	5681
StDev	2.212	7.741	3.941	8.13	27.68
%RSD	.4592	1.476	.8006	1.888	.4873

Loc. Concentration

Solutions

0  
1  
2  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
39

50.0 ug/L  
100.0 ug/L

Calib. Blank / Diluent / ICB / CCB  
Stock 1-62-1P  
Stock / Recovery Stock 1-62-2P  
ICV=30ug/L 1-62-3P  
CCV=60ug/L 1-62-4P

MCA  
10/20/97

CHECK LO  
43377 MB  
43377 LCS

184-50-1ABC  
184-50-1ABC L  
184-50-2ABC  
184-50-3ABC  
184-50-4ABC  
184-50-5ABC  
184-50-6ABC  
184-50-7ABC

M SAs will be analyzed.  
11-24726

AKat 10/21/97

All passing except 7ABC!

AKat 10/22/97

184-50-1D  
184-50-1D L  
184-50-2De  
184-50-3De  
184-50-4De  
184-50-5De  
184-50-6De  
184-50-7De

11-24726

11-24726

Modifier 1

Element: Tl  
Print Data: Main+Suppl.  
Print: Calib. Curve

Analyst: HOLSTE  
Peak Storage: 1 Repl./Sample

INSTRUMENT: 4100 ZL  
Wavelength: 276.8 Peak  
Signal Type: Zeeman AA  
Read Time: 5.0  
Sample Replicates: 2  
Standard Replicates: 2

Technique: HGA  
Slit: 0.70 Low  
Signal Measurement: Peak Area  
Read Delay: 0.0  
Version: 7.30  
BOC Time: 2

Spike Replicates: Same as Sample

CALIBRATION:

Solutions	ID	Conc	Location	Volume	Diluent	Modifier
					Volume	#1   #2
Calib. Blank	STD BLK		0	20	5	5
Standard 1	STD1=25ug/L	25.01	1	10	15	5
Standard 2	STD2=50ug/L	50.01	1	20	5	5
Standard 3	STD3=100ug/L	100.01	2	20	5	5
Reslope Std.	150ug/L	50.01	1	20	5	5
Samples				20	5	5

Diluent Location: 0  
Modifier #1 Location: 39  
Calibration Units: ug/L  
Calibration Type: Nonlinear

Modifier #2 Location:  
Sample Units: ug/L

Furnace Time/Temperature Program:

Step	Temp	Ramp	Hold	Gas Flow	Read	Gas Type
1	110	5	30	250		Norm
2	130	1	35	250		Norm
3	700	5	20	250		Norm
4	1600	0	5	0	*	Norm
5	2500	1	5	250		Norm

Injection Temp: 20

Pipette Speed: 85%

Extraction System: On

SEQUENCE:

Step Action and Parameters

- 1 Pipet diluent + modifier 1 + spike + sample/std
- 2 Run HGA steps 1 to End

CHECKS:

Recalibration Type: Reslope  
Locations: None

Conc. Above Calibration Action: Dilute & Reanalyze After 1 Rep  
Alternate Sample Volumes (uL): 5,2,1  
Run Alternate Volume Blanks: Yes

If %RSD > 20.0 and Concentration > 1.7 then Retry 1 times  
Check %RSD on: Samples + Standards + Spikes + QC Samples

Recovery Measurements:

5 uL of 100 ug/L Standard at Location 2 Gives 25.0 ug/L  
Measure Recovery on Samples: 9,10,17,18  
Add to QC Samples: Yes % Recovery Limits: 75 to 125

QC:

#	A/S	QC Sample	Conc.	Limits	After	Periodic	At	Count As
1	Loc.	ID	Lower	Upper	Calib	Check	End	Sample
1	4	ICV=30ug/L	27.0	33.0				
2	0	ICB	-2.0	2.0				
3	5	CCV=60ug/L	48.0	72.0				
4	0	CCB	-2.0	2.0	X			
					X			

Run Periodic QC Samples: Every 10

Out of Limit Action: Reslope and Rerun Samples

Matrix Check Calculations:

% Difference for Dupls: No

Locations:

% Recovery for Spike: No

Locations:

Conc:



-----  
Element File: TL.GEL                    Element: T1                    Wavelength: 276.8  
Date: 10/20/97                        Time: 03:06                    Slit: 0.70 L  
Data File: EB169.DAT                   ID/Wt File: EB169.IDW           Lamp Current: 0  
Technique: HGA                         Calib. Type: Nonlinear           Energy: 43  
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T1    ID: STD BLK                        Seq. No.: 00001                A/S Pos.: 0                    Date: 10/20/9

uL dispensed: 5 from 0, 5 from 39, 20 from 0

~~~~~  
T1    ID: STD BLK                        Seq. No.: 00002                A/S Pos.: 0                    Date: 10/20/9

uL dispensed: 5 from 0, 5 from 39, 20 from 0

Replicate 1                              Time: 03:10  
Peak Area (A-s): -0.000                    Peak Height (A): 0.010  
Background Pk Area (A-s): 0.006            Background Pk Height (A): 0.011  
Blank Corrected Pk Area (A-s): 0.002  
Concentration (ug/L ): 1.1

uL dispensed: 5 from 0, 5 from 39, 20 from 0

Replicate 2 (Peak Stored)                Time: 03:13  
Peak Area (A-s): 0.000                    Peak Height (A): 0.008  
Background Pk Area (A-s): 0.001            Background Pk Height (A): 0.012  
Blank Corrected Pk Area (A-s): 0.002  
Concentration (ug/L ): 1.4

Mean Conc (ug/L ):                        1.3                              SD: 0.20                        RSD(%): 15.91

Auto-zero performed.

~~~~~  
T1    ID: STD1=25ug/L                    Seq. No.: 00003                A/S Pos.: 1                    Date: 10/20/9

uL dispensed: 15 from 0, 5 from 39, 10 from 1

Replicate 1                              Time: 03:16  
Peak Area (A-s): 0.038                    Peak Height (A): 0.054  
Background Pk Area (A-s): 0.020            Background Pk Height (A): 0.029  
Blank Corrected Pk Area (A-s): 0.038  
Concentration (ug/L ): 26.7

uL dispensed: 15 from 0, 5 from 39, 10 from 1

Replicate 2 (Peak Stored)                Time: 03:19  
Peak Area (A-s): 0.029                    Peak Height (A): 0.050  
Background Pk Area (A-s): 0.027            Background Pk Height (A): 0.031  
Blank Corrected Pk Area (A-s): 0.029  
Concentration (ug/L ): 20.2

Mean Conc (ug/L ):                        23.4                              SD: 4.54                        RSD(%): 19.3

Standard number 1 applied. [25.0]  
Correlation coefficient: 1.00000            Slope: 0.0014

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T1    ID: STD2=50ug/L                    Seq. No.: 00004                A/S Pos.: 1                    Date: 10/20/9

uL dispensed: 5 from 0, 5 from 39, 20 from 1

Replicate 1                              Time: 03:22  
Peak Area (A-s): 0.073                    Peak Height (A): 0.102

Blank Corrected Pk Area (A-s): 0.073  
Concentration (ug/L ): 53.8

uL dispensed: 5 from 0, 5 from 39, 20 from 1  
Replicate 2 (Peak Stored) Time: 03:25  
Peak Area (A-s): 0.069 Peak Height (A): 0.099  
Background Pk Area (A-s): 0.039 Background Pk Height (A): 0.057  
Blank Corrected Pk Area (A-s): 0.069  
Concentration (ug/L ): 50.7

Mean Conc (ug/L ): 52.3 SD: 2.15 RSD(%): 4.12

Standard number 2 applied. [50.0]  
Correlation coefficient: 1.00000 Slope: 0.0013

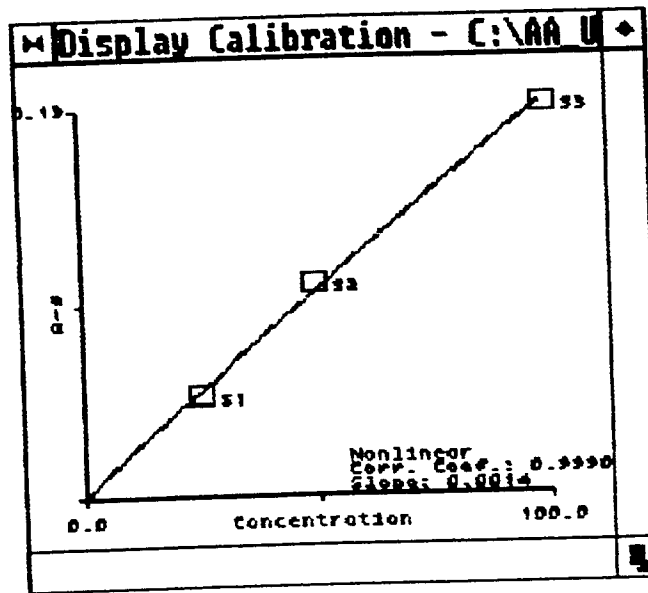
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T1 ID: STD3=100ug/L Seq. No.: 00005 A/S Pos.: 2 Date: 10/20/97

uL dispensed: 5 from 0, 5 from 39, 20 from 2  
Replicate 1 Time: 03:28  
Peak Area (A-s): 0.133 Peak Height (A): 0.182  
Background Pk Area (A-s): 0.075 Background Pk Height (A): 0.106  
Blank Corrected Pk Area (A-s): 0.133  
Concentration (ug/L ): 87.7

uL dispensed: 5 from 0, 5 from 39, 20 from 2  
Replicate 2 (Peak Stored) Time: 03:31  
Peak Area (A-s): 0.130 Peak Height (A): 0.189  
Background Pk Area (A-s): 0.079 Background Pk Height (A): 0.104  
Blank Corrected Pk Area (A-s): 0.130  
Concentration (ug/L ): 85.7

Mean Conc (ug/L ): 86.7 SD: 1.40 RSD(%): 1.61

S-shaped calibration curve detected. 2-coef. equation used.  
Standard number 3 applied. [100.0]  
Correlation coefficient: 0.99909 Slope: 0.0014



Element File: TL.GEL  
Date: 10/20/97  
Data File: EB169.DAT  
Technique: HGA

Element: T1  
Time: 03:33  
ID/Wt File: EB169.IDW  
Calib. Type: Nonlinear

Wavelength: 276.8  
Slit: 0.70 L  
Lamp Current: 0  
Energy: 47

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T1 ID: ICB Seq. No.: 000006 A/S Pos.: 0 Date: 10/20/97

uL dispensed: 5 from 0, 5 from 39, 20 from 0

~~~~~  
T1 ID: ICV=30ug/L Seq. No.: 000007 A/S Pos.: 4 Date: 10/20/97

uL dispensed: 5 from 0, 5 from 39, 20 from 4

Replicate 1 Time: 03:36  
Peak Area (A-s): 0.042 Peak Height (A): 0.063  
Background Pk Area (A-s): 0.028 Background Pk Height (A): 0.036  
Blank Corrected Pk Area (A-s): 0.042  
Concentration (ug/L ): 30.7

uL dispensed: 5 from 0, 5 from 39, 20 from 4

Replicate 2 (Peak Stored) Time: 03:39  
Peak Area (A-s): 0.038 Peak Height (A): 0.063  
Background Pk Area (A-s): 0.029 Background Pk Height (A): 0.036  
Blank Corrected Pk Area (A-s): 0.038  
Concentration (ug/L ): 27.4

Mean Conc (ug/L ): 29.0 SD: 2.32 RSD(%): 7.98

QC sample is within range 27.0 - 33.0

~~~~~  
T1 ID: ICB Seq. No.: 000008 A/S Pos.: 0 Date: 10/20/97

uL dispensed: 5 from 0, 5 from 39, 20 from 0

~~~~~  
T1 ID: ICB Seq. No.: 000009 A/S Pos.: 0 Date: 10/20/97

uL dispensed: 5 from 0, 5 from 39, 20 from 0

~~~~~  
T1 ID: ICB Seq. No.: 000010 A/S Pos.: 0 Date: 10/20/97

uL dispensed: 5 from 0, 5 from 39, 20 from 0

Replicate 1 Time: 03:48  
Peak Area (A-s): 0.001 Peak Height (A): 0.009  
Background Pk Area (A-s): 0.004 Background Pk Height (A): 0.010  
Blank Corrected Pk Area (A-s): 0.001  
Concentration (ug/L ): 0.6

uL dispensed: 5 from 0, 5 from 39, 20 from 0

Replicate 2 (Peak Stored) Time: 03:51  
Peak Area (A-s): -0.002 Peak Height (A): 0.009  
Background Pk Area (A-s): 0.005 Background Pk Height (A): 0.009  
Blank Corrected Pk Area (A-s): -0.002  
Concentration (ug/L ): -1.8

Mean Conc (ug/L ): -0.6 SD: 1.65 RSD(%): 280.61

QC sample is within range -2.0 - 2.0

T1 ID: CHECK LO Seq. No.: 00011 A/S Pos.: 6 Date: 10/20/

uL dispensed: 5 from 0, 5 from 39, 20 from 6  
Replicate 1 Time: 03:54  
Peak Area (A-s): 0.006 Peak Height (A): 0.018  
Background Pk Area (A-s): 0.009 Background Pk Height (A): 0.022  
Blank Corrected Pk Area (A-s): 0.006  
Concentration (ug/L ): 4.0

uL dispensed: 5 from 0, 5 from 39, 20 from 6  
Replicate 2 (Peak Stored) Time: 03:57  
Peak Area (A-s): 0.007 Peak Height (A): 0.015  
Background Pk Area (A-s): 0.006 Background Pk Height (A): 0.013  
Blank Corrected Pk Area (A-s): 0.007  
Concentration (ug/L ): 5.0

Mean Conc (ug/L ): 4.5 SD: 0.72 RSD(%): 15.9

~~~~~  
T1 ID: 43377 MB Seq. No.: 00012 A/S Pos.: 7 Date: 10/20/

uL dispensed: 5 from 0, 5 from 39, 20 from 7  
Replicate 1 Time: 03:59  
Peak Area (A-s): -0.001 Peak Height (A): 0.010  
Background Pk Area (A-s): 0.004 Background Pk Height (A): 0.011  
Blank Corrected Pk Area (A-s): -0.001  
Concentration (ug/L ): -0.8

uL dispensed: 5 from 0, 5 from 39, 20 from 7  
Replicate 2 (Peak Stored) Time: 04:02  
Peak Area (A-s): 0.001 Peak Height (A): 0.011  
Background Pk Area (A-s): 0.004 Background Pk Height (A): 0.011  
Blank Corrected Pk Area (A-s): 0.001  
Concentration (ug/L ): 0.6

Mean Conc (ug/L ): -0.1 SD: 0.99 RSD(%): 992

~~~~~  
T1 ID: 43377 LCS Seq. No.: 00013 A/S Pos.: 8 Date: 10/2

uL dispensed: 5 from 0, 5 from 39, 20 from 8  
Replicate 1 Time: 04:05  
Peak Area (A-s): 0.060 Peak Height (A): 0.080  
Background Pk Area (A-s): 0.036 Background Pk Height (A): 0.053  
Blank Corrected Pk Area (A-s): 0.060  
Concentration (ug/L ): 43.5

uL dispensed: 5 from 0, 5 from 39, 20 from 8  
Replicate 2 (Peak Stored) Time: 04:08  
Peak Area (A-s): 0.064 Peak Height (A): 0.093  
Background Pk Area (A-s): 0.040 Background Pk Height (A): 0.053  
Blank Corrected Pk Area (A-s): 0.064  
Concentration (ug/L ): 46.5

Mean Conc (ug/L ): 45.0 SD: 2.12 RSD(%): 4.

T1 ID: 184-50-1ABC Seq. No.: 00014 A/S Pos.: 9 Date: 10/20/97

uL dispensed: 5 from 0, 5 from 39, 20 from 9  
Replicate 1 Time: 04:11  
Peak Area (A-s): 0.003 Peak Height (A): 0.012  
Background Pk Area (A-s): 0.006 Background Pk Height (A): 0.013  
Blank Corrected Pk Area (A-s): 0.003  
Concentration (ug/L ): 2.4

uL dispensed: 5 from 0, 5 from 39, 20 from 9  
Replicate 2 (Peak Stored) Time: 04:14  
Peak Area (A-s): 0.005 Peak Height (A): 0.013  
Background Pk Area (A-s): 0.003 Background Pk Height (A): 0.014  
Blank Corrected Pk Area (A-s): 0.005  
Concentration (ug/L ): 3.4

Mean Conc (ug/L ): 2.9 SD: 0.76 RSD(%): 26.29

T1 ID: 184-50-1ABC Seq. No.: 00015 A/S Pos.: 9 Date: 10/20/97

uL dispensed: 5 from 0, 5 from 39, 20 from 9  
Replicate 1 Time: 04:17  
Peak Area (A-s): 0.002 Peak Height (A): 0.015  
Background Pk Area (A-s): 0.006 Background Pk Height (A): 0.015  
Blank Corrected Pk Area (A-s): 0.002  
Concentration (ug/L ): 1.7

uL dispensed: 5 from 0, 5 from 39, 20 from 9  
Replicate 2 (Peak Stored) Time: 04:20  
Peak Area (A-s): 0.005 Peak Height (A): 0.016  
Background Pk Area (A-s): 0.008 Background Pk Height (A): 0.016  
Blank Corrected Pk Area (A-s): 0.005  
Concentration (ug/L ): 3.5

Mean Conc (ug/L ): 2.6 SD: 1.29 RSD(%): 48.85

T1 ID: 184-50-1ABC 703 Seq. No.: 00016 A/S Pos.: 9 Date: 10/20/97  
11-31-97 EE

uL dispensed: 5 from 39, 5 from 2, 20 from 9  
Replicate 1 Time: 04:23  
Peak Area (A-s): 0.029 Peak Height (A): 0.065  
Background Pk Area (A-s): 0.022 Background Pk Height (A): 0.053  
Blank Corrected Pk Area (A-s): 0.029  
Concentration (ug/L ): 20.9

uL dispensed: 5 from 39, 5 from 2, 20 from 9  
Replicate 2 (Peak Stored) Time: 04:26  
Peak Area (A-s): 0.025 Peak Height (A): 0.075  
Background Pk Area (A-s): 0.019 Background Pk Height (A): 0.051  
Blank Corrected Pk Area (A-s): 0.025  
Concentration (ug/L ): 18.2

Mean Conc (ug/L ): 19.5 SD: 1.91 RSD(%): 9.78

Recovery is 67.5% (outside of specified limits)

T1 ID: 184-50-1ABC L <sup>102710</sup> Seq. No.: 00017 A/S Pos.: 10 Date: 10/20/97

uL dispensed: 5 from 0, 5 from 39, 20 from 10  
Replicate 1 Time: 04:29  
Peak Area (A-s): -0.002 Peak Height (A): 0.010  
Background Pk Area (A-s): 0.005 Background Pk Height (A): 0.011  
Blank Corrected Pk Area (A-s): -0.002  
Concentration (ug/L ): -1.4

uL dispensed: 5 from 0, 5 from 39, 20 from 10  
Replicate 2 (Peak Stored) Time: 04:32  
Peak Area (A-s): -0.000 Peak Height (A): 0.011  
Background Pk Area (A-s): 0.002 Background Pk Height (A): 0.010  
Blank Corrected Pk Area (A-s): -0.000  
Concentration (ug/L ): -0.1

Mean Conc (ug/L ): -0.7 SD: 0.91 RSD(%): 123.57

~~~~~  
T1 ID: 184-50 1ABC L NR Seq. No.: 00018 A/S Pos.: 10 Date: 10/20/97

uL dispensed: 5 from 39, 5 from 2, 20 from 10  
Replicate 1 Time: 04:35  
Peak Area (A-s): 0.032 Peak Height (A): 0.075  
Background Pk Area (A-s): 0.023 Background Pk Height (A): 0.051  
Blank Corrected Pk Area (A-s): 0.032  
Concentration (ug/L ): 22.9

uL dispensed: 5 from 39, 5 from 2, 20 from 10  
Replicate 2 (Peak Stored) Time: 04:38  
Peak Area (A-s): 0.032 Peak Height (A): 0.079  
Background Pk Area (A-s): 0.019 Background Pk Height (A): 0.050  
Blank Corrected Pk Area (A-s): 0.032  
Concentration (ug/L ): 22.7

Mean Conc (ug/L ): 22.8 SD: 0.12 RSD(%): 0.53

Recovery is 94.1%

~~~~~  
T1 ID: 184-50-2ABC Seq. No.: 00019 A/S Pos.: 11 Date: 10/20/97

uL dispensed: 5 from 0, 5 from 39, 20 from 11  
Replicate 1 Time: 04:41  
Peak Area (A-s): -0.002 Peak Height (A): 0.010  
Background Pk Area (A-s): 0.004 Background Pk Height (A): 0.010  
Blank Corrected Pk Area (A-s): -0.002  
Concentration (ug/L ): -1.4

uL dispensed: 5 from 0, 5 from 39, 20 from 11  
Replicate 2 (Peak Stored) Time: 04:44  
Peak Area (A-s): 0.004 Peak Height (A): 0.010  
Background Pk Area (A-s): 0.003 Background Pk Height (A): 0.012  
Blank Corrected Pk Area (A-s): 0.004  
Concentration (ug/L ): 2.6

Mean Conc (ug/L ): 0.6 SD: 2.86 RSD(%): 489.8

T1 ID: 184-50-3ABC Seq. No.: 00020 A/S Pos.: 12 Date: 10/20/97

uL dispensed: 5 from 0, 5 from 39, 20 from 12  
Replicate 1 Time: 04:46  
Peak Area (A-s): 0.001 Peak Height (A): 0.010  
Background Pk Area (A-s): 0.004 Background Pk Height (A): 0.011  
Blank Corrected Pk Area (A-s): 0.001  
Concentration (ug/L ): 0.9

uL dispensed: 5 from 0, 5 from 39, 20 from 12  
Replicate 2 (Peak Stored) Time: 04:49  
Peak Area (A-s): 0.004 Peak Height (A): 0.009  
Background Pk Area (A-s): 0.001 Background Pk Height (A): 0.008  
Blank Corrected Pk Area (A-s): 0.004  
Concentration (ug/L ): 2.9

Mean Conc (ug/L ): 1.9 SD: 1.37 RSD(%): 71.50

~~~~~  
T1 ID: 184-50-3ABC Seq. No.: 00021 A/S Pos.: 12 Date: 10/20/97

uL dispensed: 5 from 0, 5 from 39, 20 from 12  
Replicate 1 Time: 04:52  
Peak Area (A-s): -0.000 Peak Height (A): 0.009  
Background Pk Area (A-s): -0.001 Background Pk Height (A): 0.009  
Blank Corrected Pk Area (A-s): -0.000  
Concentration (ug/L ): -0.1

uL dispensed: 5 from 0, 5 from 39, 20 from 12  
Replicate 2 (Peak Stored) Time: 04:55  
Peak Area (A-s): -0.000 Peak Height (A): 0.010  
Background Pk Area (A-s): -0.003 Background Pk Height (A): 0.011  
Blank Corrected Pk Area (A-s): -0.000  
Concentration (ug/L ): -0.1

Mean Conc (ug/L ): -0.1 SD: 0.02 RSD(%): 21.76

~~~~~  
T1 ID: CCV=60ug/L Seq. No.: 00022 A/S Pos.: 5 Date: 10/20/97

uL dispensed: 5 from 0, 5 from 39, 20 from 5  
Replicate 1 Time: 04:58  
Peak Area (A-s): 0.094 Peak Height (A): 0.143  
Background Pk Area (A-s): 0.048 Background Pk Height (A): 0.079  
Blank Corrected Pk Area (A-s): 0.094  
Concentration (ug/L ): 69.5

uL dispensed: 5 from 0, 5 from 39, 20 from 5  
Replicate 2 (Peak Stored) Time: 05:01  
Peak Area (A-s): 0.087 Peak Height (A): 0.136  
Background Pk Area (A-s): 0.052 Background Pk Height (A): 0.082  
Blank Corrected Pk Area (A-s): 0.087  
Concentration (ug/L ): 64.1

Mean Conc (ug/L ): 66.8 SD: 3.83 RSD(%): 5.73

QC sample is within range 48.0 - 72.0



T1 ID: CCB Seq. No.: 00023 A/S Pos.: 0 Date: 10/20/9

uL dispensed: 5 from 0, 5 from 39, 20 from 0  
Replicate 1 Time: 05:04  
Peak Area (A-s): 0.001 Peak Height (A): 0.009  
Background Pk Area (A-s): -0.002 Background Pk Height (A): 0.009  
Blank Corrected Pk Area (A-s): 0.001  
Concentration (ug/L ): 0.5

uL dispensed: 5 from 0, 5 from 39, 20 from 0  
Replicate 2 (Peak Stored) Time: 05:07  
Peak Area (A-s): -0.002 Peak Height (A): 0.009  
Background Pk Area (A-s): -0.000 Background Pk Height (A): 0.011  
Blank Corrected Pk Area (A-s): -0.002  
Concentration (ug/L ): -1.3

Mean Conc (ug/L ): -0.4 SD: 1.25 RSD(%): 333.44

QC sample is within range -2.0 - 2.0

~~~~~  
T1 ID: 184-50-4ABC Seq. No.: 00024 A/S Pos.: 13 Date: 10/20/9  
347

uL dispensed: 5 from 0, 5 from 39, 20 from 13  
Replicate 1 Time: 05:10  
Peak Area (A-s): -0.002 Peak Height (A): 0.009  
Background Pk Area (A-s): -0.001 Background Pk Height (A): 0.010  
Blank Corrected Pk Area (A-s): -0.002  
Concentration (ug/L ): -1.5

uL dispensed: 5 from 0, 5 from 39, 20 from 13  
~~~~~  
T1 ID: CCB Seq. No.: 00025 A/S Pos.: 0 Date: 10/20/9

uL dispensed: 5 from 0, 5 from 39, 20 from 0  
Replicate 1 Time: 05:15  
Peak Area (A-s): -0.002 Peak Height (A): 0.011  
Background Pk Area (A-s): 0.002 Background Pk Height (A): 0.010  
Blank Corrected Pk Area (A-s): -0.003  
Concentration (ug/L ): -1.8

uL dispensed: 5 from 0, 5 from 39, 20 from 0  
Replicate 2 (Peak Stored) Time: 05:18  
Peak Area (A-s): 0.000 Peak Height (A): 0.011  
Background Pk Area (A-s): -0.004 Background Pk Height (A): 0.011  
Blank Corrected Pk Area (A-s): -0.000  
Concentration (ug/L ): -0.0

Mean Conc (ug/L ): -0.9 SD: 1.26 RSD(%): 141.

QC sample is within range -2.0 - 2.0

~~~~~  
T1 ID: 184-50-4ABC Seq. No.: 00026 A/S Pos.: 13 Date: 10/20/9

uL dispensed: 5 from 0, 5 from 39, 20 from 13  
Replicate 1 Time: 05:21  
Peak Area (A-s): -0.000 Peak Height (A): 0.010

Background Pk Area (A-s): 0.000  
Blank Corrected Pk Area (A-s): -0.000  
Concentration (ug/L ): -0.2

uL dispensed: 5 from 0, 5 from 39, 20 from 13

~~~~~  
T1 ID: 184-50-4ABC Seq. No.: 00027 A/S Pos.: 13 Date: 10/20/97

uL dispensed: 5 from 0, 5 from 39, 20 from 13

Replicate 1 Time: 05:29  
Peak Area (A-s): -0.002 Peak Height (A): 0.010  
Background Pk Area (A-s): 0.003 Background Pk Height (A): 0.011  
Blank Corrected Pk Area (A-s): -0.002  
Concentration (ug/L ): -1.2

uL dispensed: 5 from 0, 5 from 39, 20 from 13

Replicate 2 (Peak Stored) Time: 05:32  
Peak Area (A-s): -0.001 Peak Height (A): 0.010  
Background Pk Area (A-s): 0.004 Background Pk Height (A): 0.012  
Blank Corrected Pk Area (A-s): -0.001  
Concentration (ug/L ): -0.7

Mean Conc (ug/L ): -0.9 SD: 0.36 RSD(%): 39.44

~~~~~  
T1 ID: 184-50-5ABC Seq. No.: 00028 A/S Pos.: 14 Date: 10/20/97

uL dispensed: 5 from 0, 5 from 39, 20 from 14

Replicate 1 Time: 05:35  
Peak Area (A-s): -0.002 Peak Height (A): 0.009  
Background Pk Area (A-s): 0.004 Background Pk Height (A): 0.010  
Blank Corrected Pk Area (A-s): -0.002  
Concentration (ug/L ): -1.3

uL dispensed: 5 from 0, 5 from 39, 20 from 14

Replicate 2 (Peak Stored) Time: 05:38  
Peak Area (A-s): 0.000 Peak Height (A): 0.010  
Background Pk Area (A-s): 0.004 Background Pk Height (A): 0.010  
Blank Corrected Pk Area (A-s): 0.000  
Concentration (ug/L ): 0.2

Mean Conc (ug/L ): -0.6 SD: 1.01 RSD(%): 181.68

~~~~~  
T1 ID: 184-50-6ABC Seq. No.: 00029 A/S Pos.: 15 Date: 10/20/97

uL dispensed: 5 from 0, 5 from 39, 20 from 15

Replicate 1 Time: 05:40  
Peak Area (A-s): -0.001 Peak Height (A): 0.012  
Background Pk Area (A-s): 0.000 Background Pk Height (A): 0.010  
Blank Corrected Pk Area (A-s): -0.001  
Concentration (ug/L ): -0.5

uL dispensed: 5 from 0, 5 from 39, 20 from 15

Replicate 2 (Peak Stored) Time: 05:43  
Peak Area (A-s): 0.000 Peak Height (A): 0.011  
Background Pk Area (A-s): -0.001 Background Pk Height (A): 0.009  
Blank Corrected Pk Area (A-s): 0.000  
Concentration (ug/L ): 0.2

T1 ID: 184-50-7ABC Seq. No.: 00030 A/S Pos.: 16 Date: 10/20/

uL dispensed: 5 from 0, 5 from 39, 20 from 16  
Replicate 1 Time: 05:46  
Peak Area (A-s): 0.002 Peak Height (A): 0.015  
Background Pk Area (A-s): 0.294 Background Pk Height (A): 0.141  
Blank Corrected Pk Area (A-s): 0.002  
Concentration (ug/L ): 1.2

uL dispensed: 5 from 0, 5 from 39, 20 from 16  
Replicate 2 (Peak Stored) Time: 05:49  
Peak Area (A-s): 0.012 Peak Height (A): 0.023  
Background Pk Area (A-s): 0.495 Background Pk Height (A): 0.241  
Blank Corrected Pk Area (A-s): 0.012  
Concentration (ug/L ): 8.2

Mean Conc (ug/L ): 4.7 SD: 4.94 RSD(%): 104.3

T1 ID: 184-50-7ABC Seq. No.: 00031 A/S Pos.: 16 Date: 10/20/

uL dispensed: 5 from 0, 5 from 39, 20 from 16  
Replicate 1 Time: 05:52  
Peak Area (A-s): 0.005 Peak Height (A): 0.023  
Background Pk Area (A-s): 0.566 Background Pk Height (A): 0.401  
Blank Corrected Pk Area (A-s): 0.005  
Concentration (ug/L ): 3.9

uL dispensed: 5 from 0, 5 from 39, 20 from 16  
Replicate 2 (Peak Stored) Time: 05:55  
Peak Area (A-s): 0.011 Peak Height (A): 0.023  
Background Pk Area (A-s): 0.584 Background Pk Height (A): 0.428  
Blank Corrected Pk Area (A-s): 0.011  
Concentration (ug/L ): 8.2

Mean Conc (ug/L ): 6.0 SD: 3.03 RSD(%): 50.3

T1 ID: 184-50-1D Seq. No.: 00032 A/S Pos.: 17 Date: 10/20/

uL dispensed: 5 from 0, 5 from 39, 20 from 17  
Replicate 1 Time: 05:58  
Peak Area (A-s): -0.001 Peak Height (A): 0.012  
Background Pk Area (A-s): 0.004 Background Pk Height (A): 0.013  
Blank Corrected Pk Area (A-s): -0.001  
Concentration (ug/L ): -0.6

uL dispensed: 5 from 0, 5 from 39, 20 from 17  
Replicate 2 (Peak Stored) Time: 06:01  
Peak Area (A-s): -0.001 Peak Height (A): 0.009  
Background Pk Area (A-s): 0.004 Background Pk Height (A): 0.016  
Blank Corrected Pk Area (A-s): -0.001  
Concentration (ug/L ): -0.4

Mean Conc (ug/L ): -0.5 SD: 0.13 RSD(%): 25.1

T1 ID: 184-50-1D POS <sup>11-2-97 EC</sup> Seq. No.: 00033 A/S Pos.: 17 Date: 10/20/97

uL dispensed: 5 from 39, 5 from 2, 20 from 17  
Replicate 1 Time: 06:04  
Peak Area (A-s): 0.028 Peak Height (A): 0.064  
Background Pk Area (A-s): 0.023 Background Pk Height (A): 0.050  
Blank Corrected Pk Area (A-s): 0.028  
Concentration (ug/L ): 20.4

uL dispensed: 5 from 39, 5 from 2, 20 from 17  
Replicate 2 (Peak Stored) Time: 06:07  
Peak Area (A-s): 0.029 Peak Height (A): 0.056  
Background Pk Area (A-s): 0.023 Background Pk Height (A): 0.045  
Blank Corrected Pk Area (A-s): 0.029  
Concentration (ug/L ): 20.8

Mean Conc. (ug/L ): 20.6 SD: 0.25 RSD(%): 1.23

Recovery is <sup>2.4</sup> 84.6%

~~~~~  
T1 ID: 184-50-1D L <sup>11-2-97 EC</sup> Seq. No.: 00034 A/S Pos.: 18 Date: 10/20/97

uL dispensed: 5 from 0, 5 from 39, 20 from 18  
Replicate 1 Time: 06:10  
Peak Area (A-s): 0.002 Peak Height (A): 0.012  
Background Pk Area (A-s): 0.002 Background Pk Height (A): 0.008  
Blank Corrected Pk Area (A-s): 0.002  
Concentration (ug/L ): 1.3

uL dispensed: 5 from 0, 5 from 39, 20 from 18  
Replicate 2 (Peak Stored) Time: 06:13  
Peak Area (A-s): 0.004 Peak Height (A): 0.010  
Background Pk Area (A-s): -0.000 Background Pk Height (A): 0.009  
Blank Corrected Pk Area (A-s): 0.003  
Concentration (ug/L ): 2.5

Mean Conc. (ug/L ): 1.9 SD: 0.84 RSD(%): 44.23

~~~~~  
T1 ID: 184-50-1D L <sup>11-2-97 EC</sup> Seq. No.: 00035 A/S Pos.: 18 Date: 10/20/97

uL dispensed: 5 from 0, 5 from 39, 20 from 18  
Replicate 1 Time: 06:16  
Peak Area (A-s): -0.001 Peak Height (A): 0.010  
Background Pk Area (A-s): -0.001 Background Pk Height (A): 0.009  
Blank Corrected Pk Area (A-s): -0.001  
Concentration (ug/L ): -0.6

uL dispensed: 5 from 0, 5 from 39, 20 from 18  
Replicate 2 (Peak Stored) Time: 06:19  
Peak Area (A-s): -0.002 Peak Height (A): 0.009  
Background Pk Area (A-s): 0.002 Background Pk Height (A): 0.010  
Blank Corrected Pk Area (A-s): -0.002  
Concentration (ug/L ): -1.1

Mean Conc. (ug/L ): -0.9 SD: 0.37 RSD(%): 41.77

T1 ID: 184-50-1D L NR Seq. No.: 00036 A/S Pos.: 18 Date: 10/20/97

uL dispensed: 5 from 39, 5 from 2, 20 from 18  
Replicate 1  
Peak Area (A-s): 0.038  
Background Pk Area (A-s): 0.018  
Blank Corrected Pk Area (A-s): 0.038  
Concentration (ug/L ): 27.2  
Time: 06:22  
Peak Height (A): 0.069  
Background Pk Height (A): 0.047

uL dispensed: 5 from 39, 5 from 2, 20 from 18  
Replicate 2 (Peak Stored)  
Peak Area (A-s): 0.032  
Background Pk Area (A-s): 0.022  
Blank Corrected Pk Area (A-s): 0.032  
Concentration (ug/L ): 23.2  
Time: 06:25  
Peak Height (A): 0.061  
Background Pk Height (A): 0.041

Mean Conc (ug/L ): 25.2 SD: 2.81 RSD(%): 11.18

Recovery is 104.2%

T1 ID: CCV=60ug/L Seq. No.: 00037 A/S Pos.: 5 Date: 10/20/97

uL dispensed: 5 from 0, 5 from 39, 20 from 5  
Replicate 1  
Peak Area (A-s): 0.077  
Background Pk Area (A-s): 0.050  
Blank Corrected Pk Area (A-s): 0.077  
Concentration (ug/L ): 56.6  
Time: 06:28  
Peak Height (A): 0.150  
Background Pk Height (A): 0.096

uL dispensed: 5 from 0, 5 from 39, 20 from 5  
Replicate 2 (Peak Stored)  
Peak Area (A-s): 0.082  
Background Pk Area (A-s): 0.048  
Blank Corrected Pk Area (A-s): 0.082  
Concentration (ug/L ): 60.6  
Time: 06:31  
Peak Height (A): 0.147  
Background Pk Height (A): 0.093

Mean Conc (ug/L ): 58.6 SD: 2.85 RSD(%): 4.86

QC sample is within range 48.0 - 72.0

T1 ID: CCB Seq. No.: 00038 A/S Pos.: 0 Date: 10/20/97

uL dispensed: 5 from 0, 5 from 39, 20 from 0  
Replicate 1  
Peak Area (A-s): -0.001  
Background Pk Area (A-s): 0.002  
Blank Corrected Pk Area (A-s): -0.001  
Concentration (ug/L ): -0.5  
Time: 06:34  
Peak Height (A): 0.012  
Background Pk Height (A): 0.010

uL dispensed: 5 from 0, 5 from 39, 20 from 0  
Replicate 2 (Peak Stored)  
Peak Area (A-s): 0.002  
Background Pk Area (A-s): 0.001  
Blank Corrected Pk Area (A-s): 0.002  
Concentration (ug/L ): 1.2  
Time: 06:36  
Peak Height (A): 0.012  
Background Pk Height (A): 0.010

QC sample is within range -2.0 - 2.0

~~~~~  
T1 ID: 184-50-2DE *2.41cc* Seq. No.: 00039 A/S Pos.: 19 Date: 10/20/97

uL dispensed: 5 from 0, 5 from 39, 20 from 19  
Replicate 1 Time: 06:39  
Peak Area (A-s): 0.000 Peak Height (A): 0.010  
Background Pk Area (A-s): 0.012 Background Pk Height (A): 0.027  
Blank Corrected Pk Area (A-s): 0.000  
Concentration (ug/L ): 0.3

uL dispensed: 5 from 0, 5 from 39, 20 from 19  
Replicate 2 (Peak Stored) Time: 06:42  
Peak Area (A-s): -0.001 Peak Height (A): 0.010  
Background Pk Area (A-s): 0.016 Background Pk Height (A): 0.035  
Blank Corrected Pk Area (A-s): -0.001  
Concentration (ug/L ): -0.5

Mean Conc (ug/L ): -0.1 SD: 0.59 RSD(%): 494.97

~~~~~  
T1 ID: 184-50-3DE *2.41cc* Seq. No.: 00040 A/S Pos.: 20 Date: 10/20/97

uL dispensed: 5 from 0, 5 from 39, 20 from 20  
Replicate 1 Time: 06:45  
Peak Area (A-s): 0.001 Peak Height (A): 0.009  
Background Pk Area (A-s): 0.010 Background Pk Height (A): 0.028  
Blank Corrected Pk Area (A-s): 0.001  
Concentration (ug/L ): 0.9

uL dispensed: 5 from 0, 5 from 39, 20 from 20  
Replicate 2 (Peak Stored) Time: 06:48  
Peak Area (A-s): 0.003 Peak Height (A): 0.010  
Background Pk Area (A-s): 0.012 Background Pk Height (A): 0.026  
Blank Corrected Pk Area (A-s): 0.003  
Concentration (ug/L ): 2.2

Mean Conc (ug/L ): 1.5 SD: 0.94 RSD(%): 60.83

~~~~~  
T1 ID: 184-50-4DE *2.41cc* Seq. No.: 00041 A/S Pos.: 21 Date: 10/20/97

uL dispensed: 5 from 0, 5 from 39, 20 from 21  
Replicate 1 Time: 06:51  
Peak Area (A-s): 0.003 Peak Height (A): 0.010  
Background Pk Area (A-s): 0.011 Background Pk Height (A): 0.027  
Blank Corrected Pk Area (A-s): 0.003  
Concentration (ug/L ): 2.1

uL dispensed: 5 from 0, 5 from 39, 20 from 21  
Replicate 2 (Peak Stored) Time: 06:54  
Peak Area (A-s): -0.001 Peak Height (A): 0.011  
Background Pk Area (A-s): 0.010 Background Pk Height (A): 0.033  
Blank Corrected Pk Area (A-s): -0.001  
Concentration (ug/L ): -0.4

Mean Conc (ug/L ): 0.0 SD: 1.00  
T1 ID: 184-50-5D Seq. No.: 00042 A/S Pos.: 22 Date: 10/20/9

uL dispensed: 5 from 0, 5 from 39, 20 from 22  
T1 ID: 184-50-1ABC Seq. No.: 00043 A/S Pos.: 9 Date: 10/20/9

uL dispensed: 5 from 0, 5 from 39, 20 from 9  
Replicate 1 Time: 06:58  
Peak Area (A-s): 0.001 Peak Height (A): 0.012  
Background Pk Area (A-s): 0.007 Background Pk Height (A): 0.016  
Blank Corrected Pk Area (A-s): 0.001  
Concentration (ug/L ): 0.6

uL dispensed: 5 from 0, 5 from 39, 20 from 9  
Replicate 2 (Peak Stored) Time: 07:01  
Peak Area (A-s): 0.000 Peak Height (A): 0.018  
Background Pk Area (A-s): 0.010 Background Pk Height (A): 0.019  
Blank Corrected Pk Area (A-s): -0.000  
Concentration (ug/L ): -0.0

Mean Conc (ug/L ): 0.3 SD: 0.43 RSD(%): 149.8

T1 ID: 184-50-1ABC Seq. No.: 00044 A/S Pos.: 9 Date: 10/20/9

uL dispensed: 5 from 39, 5 from 2, 20 from 9  
Replicate 1 Time: 07:04  
Peak Area (A-s): 0.024 Peak Height (A): 0.065  
Background Pk Area (A-s): 0.024 Background Pk Height (A): 0.056  
Blank Corrected Pk Area (A-s): 0.024  
Concentration (ug/L ): 17.5

uL dispensed: 5 from 39, 5 from 2, 20 from 9  
Replicate 2 (Peak Stored) Time: 07:07  
Peak Area (A-s): 0.021 Peak Height (A): 0.066  
Background Pk Area (A-s): 0.026 Background Pk Height (A): 0.054  
Blank Corrected Pk Area (A-s): 0.021  
Concentration (ug/L ): 15.2

Mean Conc (ug/L ): 16.3 SD: 1.67 RSD(%): 10.2

Recovery is 64.2% (outside of specified limits)

T1 ID: 184-50-5D<sup>B</sup> Seq. No.: 00045 A/S Pos.: 22 Date: 10/20/9

uL dispensed: 5 from 0, 5 from 39, 20 from 22  
Replicate 1 Time: 07:10  
Peak Area (A-s): -0.002 Peak Height (A): 0.011  
Background Pk Area (A-s): 0.001 Background Pk Height (A): 0.009  
Blank Corrected Pk Area (A-s): -0.002  
Concentration (ug/L ): -1.5

uL dispensed: 5 from 0, 5 from 39, 20 from 22  
Replicate 2 (Peak Stored) Time: 07:13  
Peak Area (A-s): -0.006 Peak Height (A): 0.012

Blank Corrected Pk Area (A-s): -0.006  
Concentration (ug/L ): -4.1

Mean Conc (ug/L ): -2.8 SD: 1.85 RSD(%): 65.02

~~~~~  
T1 ID: 184-50-6D & 11-2976 Seq. No.: 00046 A/S Pos.: 23 Date: 10/20/97

uL dispensed: 5 from 0, 5 from 39, 20 from 23  
Replicate 1 Time: 07:17  
Peak Area (A-s): -0.001 Peak Height (A): 0.009  
Background Pk Area (A-s): 0.003 Background Pk Height (A): 0.011  
Blank Corrected Pk Area (A-s): -0.001  
Concentration (ug/L ): -0.9

uL dispensed: 5 from 0, 5 from 39, 20 from 23  
Replicate 2 (Peak Stored) Time: 07:20  
Peak Area (A-s): -0.003 Peak Height (A): 0.010  
Background Pk Area (A-s): 0.003 Background Pk Height (A): 0.009  
Blank Corrected Pk Area (A-s): -0.003  
Concentration (ug/L ): -2.1

Mean Conc (ug/L ): -1.5 SD: 0.80 RSD(%): 53.81

~~~~~  
T1 ID: 184-50-7D Seq. No.: 00047 A/S Pos.: 24 Date: 10/20/97

uL dispensed: 5 from 0, 5 from 39, 20 from 24  
Replicate 1 Time: 07:23  
Peak Area (A-s): 0.002 Peak Height (A): 0.009  
Background Pk Area (A-s): 0.003 Background Pk Height (A): 0.011  
Blank Corrected Pk Area (A-s): 0.002  
Concentration (ug/L ): 1.2

uL dispensed: 5 from 0, 5 from 39, 20 from 24  
Replicate 2 (Peak Stored) Time: 07:26  
Peak Area (A-s): -0.001 Peak Height (A): 0.008  
Background Pk Area (A-s): 0.005 Background Pk Height (A): 0.014  
Blank Corrected Pk Area (A-s): -0.001  
Concentration (ug/L ): -0.4

Mean Conc (ug/L ): 0.4 SD: 1.12 RSD(%): 270.75

~~~~~  
T1 ID: CCV=60ug/L Seq. No.: 00048 A/S Pos.: 5 Date: 10/21/97

uL dispensed: 5 from 0, 5 from 39, 20 from 5  
Replicate 1 Time: 00:57  
Peak Area (A-s): 0.074 Peak Height (A): 0.132  
Background Pk Area (A-s): 0.052 Background Pk Height (A): 0.086  
Blank Corrected Pk Area (A-s): 0.074  
Concentration (ug/L ): 54.5

uL dispensed: 5 from 0, 5 from 39, 20 from 5  
Replicate 2 (Peak Stored) Time: 01:00  
Peak Area (A-s): 0.078 Peak Height (A): 0.134  
Background Pk Area (A-s): 0.055 Background Pk Height (A): 0.085  
Blank Corrected Pk Area (A-s): 0.078



Concentration (ug/L) : 7.07.L

Mean Conc (ug/L) : 55.8 SD: 1.96

RSD(%) : 3.50

QC sample is within range 48.0 - 72.0

~~~~~

T1 ID: CCB Seq. No.: 00049 A/S Pos.: 0 Date: 10/21

uL dispensed: 5 from 0, 5 from 39, 20 from 0  
Replicate 1 Time: 01:03  
Peak Area (A-s): -0.001 Peak Height (A): 0.011  
Background Pk Area (A-s): 0.011 Background Pk Height (A): 0.013  
Blank Corrected Pk Area (A-s): -0.001  
Concentration (ug/L) : -0.4

uL dispensed: 5 from 0, 5 from 39, 20 from 0  
Replicate 2 (Peak Stored) Time: 01:06  
Peak Area (A-s): 0.002 Peak Height (A): 0.012  
Background Pk Area (A-s): 0.011 Background Pk Height (A): 0.013  
Blank Corrected Pk Area (A-s): 0.002  
Concentration (ug/L) : 1.3

Mean Conc (ug/L) : 0.4 SD: 1.17

RSD(%) : 265.

QC sample is within range -2.0 - 2.0

MKA  
10/22/97

Loc. Concentration

Solutions

| Loc. | Concentration | Solutions              |
|------|---------------|------------------------|
| 0    |               | Calib. Blank / Diluent |
| 1    | 50.0 ug/L     | Stock 1-62-1P          |
| 2    | 100.0 ug/L    | Stock 1-62-2P          |
| 6    |               | CHECK LO               |
| 7    |               | 43377 MB               |
| 8    |               | 43377 LCS              |
| 9    |               | 184-50-1ABC            |
| 10   |               | 184-50 1ABC L          |
| 11   |               | 184-50-2ABC            |
| 12   |               | 184-50-3ABC            |
| 13   |               | 184-50-4ABC            |
| 14   |               | 184-50-5ABC            |
| 15   |               | 184-50-6ABC            |
| 16   |               | 184-50-7ABC            |
| 17   |               | 184-50-1D              |
| 18   |               | 184-50-1D L            |
| 19   |               | 184-50-2DE             |
| 20   |               | 184-50-3DE             |
| 21   |               | 184-50-4DE             |
| 22   |               | 184-50-5D              |
| 23   |               | 184-50-6D              |
| 24   |               | 184-50-7D              |
| 39   |               | Modifier 1             |

MSAs analyzed  
All pass except 7ABC!  
DK# 10/22/97

11-29100  
↓

Element File: TL\_MSA.GEL  
 Print Data: Main+Suppl.  
 Print: Calib. Curve

Analyst: HOLSTE  
 Peak Storage: 1 Repl./Sample

INSTRUMENT: 4100 ZL  
 Wavelength: 276.8 Peak  
 Signal Type: Zeeman AA  
 Read Time: 4.0  
 Sample Replicates: 2  
 Standard Replicates: 2

Technique: HGA  
 Slit: 0.70 Low  
 Signal Measurement: Peak Area  
 Read Delay: 0.0  
 BOC Time: 2

Spike Replicates: Same as Sample

CALIBRATION:

| Solutions    | ID             | Conc  | Location | Volume | Diluent | Modifier #1 | Modifier #2 |
|--------------|----------------|-------|----------|--------|---------|-------------|-------------|
| Calib. Blank | AUTO ZERO      |       | 0        | 10     | 10      | 5           |             |
| Standard 1   | IADD 1 50 ug/L | 50.0  | 1        | 10     |         | 5           |             |
| Standard 2   | IADD 2 100ug/L | 100.0 | 2        | 10     |         | 5           |             |
| Samples      |                |       |          | 10     | 10      | 5           |             |

Diluent Location: 0  
 Modifier #1 Location: 39  
 Calibration Units: ug/L  
 Calibration Type: Meth. of Add.

Modifier #2 Location:  
 Sample Units: ug/L

Furnace Time/Temperature Program:

| Step | Temp  | Ramp | Hold | Gas Flow | Read | Gas Type |
|------|-------|------|------|----------|------|----------|
| 1    | 110   | 5    | 30   | 250      |      | Norm     |
| 2    | 130   | 1    | 35   | 250      |      | Norm     |
| 3    | 700   | 5    | 20   | 250      |      | Norm     |
| 4    | 11600 | 0    | 5    | 0        | *    | Norm     |
| 5    | 12500 | 1    | 5    | 250      |      | Norm     |

Injection Temp: 20  
 Pipette Speed: 80%  
 Extraction System: On

SEQUENCE:

- Step Action and Parameters
- 1 Pipet diluent + modifier 1 + spike + sample/std
  - 2 Run HGA steps 1 to End

CHECKS:

Additions Preparation: Automated  
 Periodic Autozero Locations: All Samples

If %RSD > 20.0 and Concentration > 1.7 then Retry 1 times  
 Check %RSD on: Samples

QC:

Matrix Check Calculations:  
 % Difference for Dupls: No  
 % Recovery for Spike: No

Locations:  
 Locations: Conc:

```

-----
Element File: TL_MSA.GEL      Element: T1      Wavelength: 276.8
Date: 10/21/97              Time: 02:51     Slit: 0.70 L
Data File: EB170.DAT        ID/Wt File: EB170.IDW  Lamp Current: 0
Technique: HGA              Calib. Type: Meth. of Add.  Energy: 40
-----

```

```

T1 ID: AUTO ZERO          Seq. No.: 00001    A/S Pos.: 0      Date: 10/21/97

```

```

uL dispensed: 10 from 0, 5 from 39, 10 from 0
Replicate 1
Peak Area (A-s): 0.003      Time: 02:54
Background Pk Area (A-s): 0.004    Peak Height (A): 0.013
Blank Corrected Pk Area (A-s): 0.005  Background Pk Height (A): 0.011

```

```

uL dispensed: 10 from 0, 5 from 39, 10 from 0
Replicate 2 (Peak Stored)    Time: 02:57
Peak Area (A-s): -0.001     Peak Height (A): 0.009
Background Pk Area (A-s): 0.003  Background Pk Height (A): 0.006
Blank Corrected Pk Area (A-s): 0.000

```

```

Mean Pk Area (A-s):      0.003      SD: 0.0032      RSD(%): 125.64

```

Auto-zero performed.

```

-----
T1 ID: 184-50-1ABC      Seq. No.: 00002    A/S Pos.: 9      Date: 10/21/97

```

```

uL dispensed: 10 from 0, 5 from 39, 10 from 9
Replicate 1
Peak Area (A-s): 0.002      Time: 03:00
Background Pk Area (A-s): 0.003    Peak Height (A): 0.009
Blank Corrected Pk Area (A-s): 0.002  Background Pk Height (A): 0.010

```

```

uL dispensed: 10 from 0, 5 from 39, 10 from 9
Replicate 2 (Peak Stored)    Time: 03:02
Peak Area (A-s): 0.001     Peak Height (A): 0.015
Background Pk Area (A-s): 0.005  Background Pk Height (A): 0.010
Blank Corrected Pk Area (A-s): 0.000

```

```

Mean Pk Area (A-s):      0.001      SD: 0.0012      RSD(%): 134.79

```

```

T1 ID: ADD 1 50 ug/L    Seq. No.: 00003    A/S Pos.: 9      Date: 10/21/97

```

```

uL dispensed: 5 from 39, 10 from 1, 10 from 9
Replicate 1
Peak Area (A-s): 0.035      Time: 03:06
Background Pk Area (A-s): 0.027    Peak Height (A): 0.077
Blank Corrected Pk Area (A-s): 0.034  Background Pk Height (A): 0.055

```

```

uL dispensed: 5 from 39, 10 from 1, 10 from 9
Replicate 2 (Peak Stored)    Time: 03:09
Peak Area (A-s): 0.034      Peak Height (A): 0.085
Background Pk Area (A-s): 0.026  Background Pk Height (A): 0.059
Blank Corrected Pk Area (A-s): 0.034

```

```

Mean Pk Area (A-s):      0.034      SD: 0.0003      RSD(%): 0.88

```

```

T1 ID: ADD 2 100ug/L    Seq. No.: 00004    A/S Pos.: 9      Date: 10/21/97

```

Replicate 1  
Peak Area (A-s): 0.067  
Background Pk Area (A-s): 0.045  
Blank Corrected Pk Area (A-s): 0.067

Time: 03:12  
Peak Height (A): 0.137  
Background Pk Height (A): 0.093

uL dispensed: 5 from 39, 10 from 2, 10 from 9  
Replicate 2 (Peak Stored)  
Peak Area (A-s): 0.065  
Background Pk Area (A-s): 0.046  
Blank Corrected Pk Area (A-s): 0.064

Time: 03:15  
Peak Height (A): 0.143  
Background Pk Height (A): 0.095

Mean Pk Area (A-s): 0.066

SD: 0.0015

RSD(%): 2.35

T1 ID: 184-50-1ABC

Seq. No.: 00002

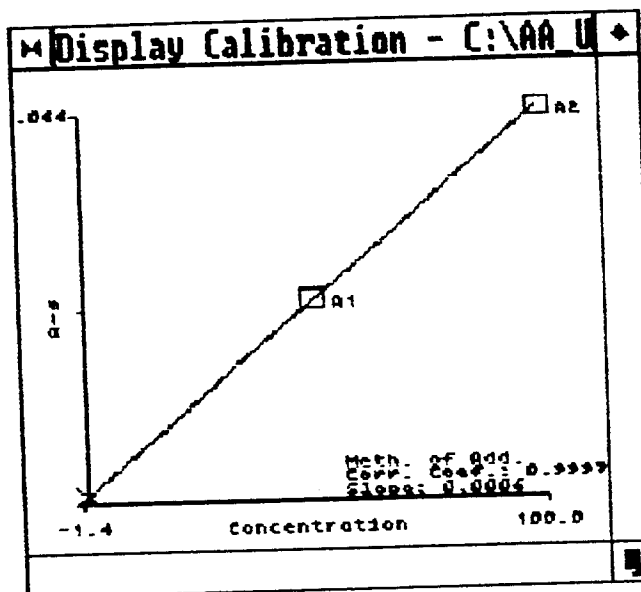
A/S Pos.: 9

Date: 10/21/9

Concentration (ug/L ): 1.4

Correlation coefficient: 0.99973

Slope: 0.0006



~~~~~  
T1 ID: AUTO ZERO Seq. No.: 00005 A/S Pos.: 0 Date: 10/21

uL dispensed: 10 from 0, 5 from 39, 10 from 0

~~~~~  
T1 ID: AUTO ZERO Seq. No.: 00006 A/S Pos.: 0 Date: 10/21

uL dispensed: 10 from 0, 5 from 39, 10 from 0

~~~~~  
T1 ID: AUTO ZERO Seq. No.: 00007 A/S Pos.: 0 Date: 10/21

uL dispensed: 10 from 0, 5 from 39, 10 from 0

Replicate 1  
Peak Area (A-s): 0.000  
Background Pk Area (A-s): 0.000  
Blank Corrected Pk Area (A-s): -0.001

Time: 03:22  
Peak Height (A): 0.000  
Background Pk Height (A): 0.000

Replicate 2 (Peak Stored)  
Peak Area (A-s): -0.002  
Background Pk Area (A-s): 0.003  
Blank Corrected Pk Area (A-s): -0.002

Time: 03:25  
Peak Height (A): 0.005  
Background Pk Height (A): 0.006

Mean Pk Area (A-s): -0.002 SD: 0.0012 RSD(%): 74.42

Auto-zero performed.

~~~~~  
T1 ID: 184-50-2ABC Seq. No.: 00008 A/S Pos.: 11 Date: 10/21/97

uL dispensed: 10 from 0, 5 from 39, 10 from 11

Replicate 1  
Peak Area (A-s): 0.000  
Background Pk Area (A-s): 0.003  
Blank Corrected Pk Area (A-s): 0.001

Time: 03:28  
Peak Height (A): 0.008  
Background Pk Height (A): 0.006

uL dispensed: 10 from 0, 5 from 39, 10 from 11

Replicate 2 (Peak Stored)  
Peak Area (A-s): -0.000  
Background Pk Area (A-s): 0.003  
Blank Corrected Pk Area (A-s): 0.001

Time: 03:31  
Peak Height (A): 0.007  
Background Pk Height (A): 0.008

Mean Pk Area (A-s): 0.001 SD: 0.0005 RSD(%): 50.24

T1 ID: ADD 1 50 ug/L Seq. No.: 00009 A/S Pos.: 11 Date: 10/21/97

uL dispensed: 5 from 39, 10 from 1, 10 from 11

Replicate 1  
Peak Area (A-s): 0.035  
Background Pk Area (A-s): 0.021  
Blank Corrected Pk Area (A-s): 0.026

Time: 03:34  
Peak Height (A): 0.067  
Background Pk Height (A): 0.041

uL dispensed: 5 from 39, 10 from 1, 10 from 11

Replicate 2 (Peak Stored)  
Peak Area (A-s): 0.041  
Background Pk Area (A-s): 0.024  
Blank Corrected Pk Area (A-s): 0.041

Time: 03:37  
Peak Height (A): 0.080  
Background Pk Height (A): 0.050

Mean Pk Area (A-s): 0.039 SD: 0.0039 RSD(%): 10.16

T1 ID: ADD 2 100ug/L Seq. No.: 00010 A/S Pos.: 11 Date: 10/21/97

uL dispensed: 5 from 39, 10 from 2, 10 from 11

Replicate 1  
Peak Area (A-s): 0.063  
Background Pk Area (A-s): 0.043  
Blank Corrected Pk Area (A-s): 0.064

Time: 03:40  
Peak Height (A): 0.126  
Background Pk Height (A): 0.074

uL dispensed: 5 from 39, 10 from 2, 10 from 11

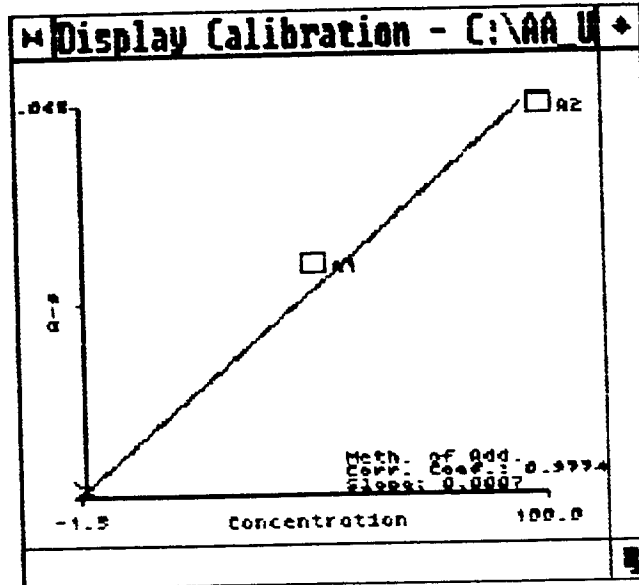
Replicate 2 (Peak Stored)  
Peak Area (A-s): 0.066  
Background Pk Area (A-s): 0.042  
Blank Corrected Pk Area (A-s): 0.067

Time: 03:43  
Peak Height (A): 0.124  
Background Pk Height (A): 0.076

Mean Pk Area (A-s): 0.065 SD: 0.0020 RSD(%): 3.13

*OKA 10/22/97*

T1 ID: 184-50-2ABC Seq. No.: 00008 A/S Pos.: 11 Date: 10/21/9  
 Concentration (ug/L ): 1.5  
 Correlation coefficient: 0.97741 Slope: 0.0007



~~~~~  
 T1 ID: AUTO ZERO Seq. No.: 00011 A/S Pos.: 0 Date: 10/21/  
 uL dispensed: 10 from 0, 5 from 39, 10 from 0  
 Replicate 1 Time: 03:46  
 Peak Area (A-s): -0.001 Peak Height (A): 0.005  
 Background Pk Area (A-s): 0.012 Background Pk Height (A): 0.009  
 Blank Corrected Pk Area (A-s): -0.001  
 uL dispensed: 10 from 0, 5 from 39, 10 from 0  
 Replicate 2 (Peak Stored) Time: 03:49  
 Peak Area (A-s): -0.002 Peak Height (A): 0.006  
 Background Pk Area (A-s): 0.004 Background Pk Height (A): 0.006  
 Blank Corrected Pk Area (A-s): -0.001  
 Mean Pk Area (A-s): -0.001 SD: 0.0006 RSD(%): 61.6  
 Auto-zero performed.

~~~~~  
 T1 ID: 184-50-3ABC Seq. No.: 00012 A/S Pos.: 12 Date: 10/21/  
 uL dispensed: 10 from 0, 5 from 39, 10 from 12  
 Replicate 1 Time: 03:52  
 Peak Area (A-s): -0.001 Peak Height (A): 0.005  
 Background Pk Area (A-s): 0.002 Background Pk Height (A): 0.006  
 Blank Corrected Pk Area (A-s): 0.001  
 uL dispensed: 10 from 0, 5 from 39, 10 from 12  
 Replicate 2 (Peak Stored) Time: 03:55

Background Pk Area (A-s): 0.001      Background Pk Height (A): 0.007  
Blank Corrected Pk Area (A-s): 0.002

Mean Pk Area (A-s):      0.002      SD: 0.0009      RSD(%): 54.83

T1      ID: ADD 1 50 ug/L      Seq. No.: 00013      A/S Pos.: 12      Date: 10/21/97

uL dispensed: 5 from 39, 10 from 1, 10 from 12  
Replicate 1      Time: 03:58  
Peak Area (A-s): 0.037      Peak Height (A): 0.069  
Background Pk Area (A-s): 0.023      Background Pk Height (A): 0.040  
Blank Corrected Pk Area (A-s): 0.039

uL dispensed: 5 from 39, 10 from 1, 10 from 12  
Replicate 2 (Peak Stored)      Time: 04:01  
Peak Area (A-s): 0.038      Peak Height (A): 0.068  
Background Pk Area (A-s): 0.025      Background Pk Height (A): 0.040  
Blank Corrected Pk Area (A-s): 0.040

Mean Pk Area (A-s):      0.039      SD: 0.0006      RSD(%): 1.64

T1      ID: ADD 2 100ug/L      Seq. No.: 00014      A/S Pos.: 12      Date: 10/21/97

uL dispensed: 5 from 39, 10 from 2, 10 from 12  
Replicate 1      Time: 04:04  
Peak Area (A-s): 0.075      Peak Height (A): 0.133  
Background Pk Area (A-s): 0.046      Background Pk Height (A): 0.079  
Blank Corrected Pk Area (A-s): 0.077

uL dispensed: 5 from 39, 10 from 2, 10 from 12  
Replicate 2 (Peak Stored)      Time: 04:07  
Peak Area (A-s): 0.065      Peak Height (A): 0.115  
Background Pk Area (A-s): 0.043      Background Pk Height (A): 0.069  
Blank Corrected Pk Area (A-s): 0.067

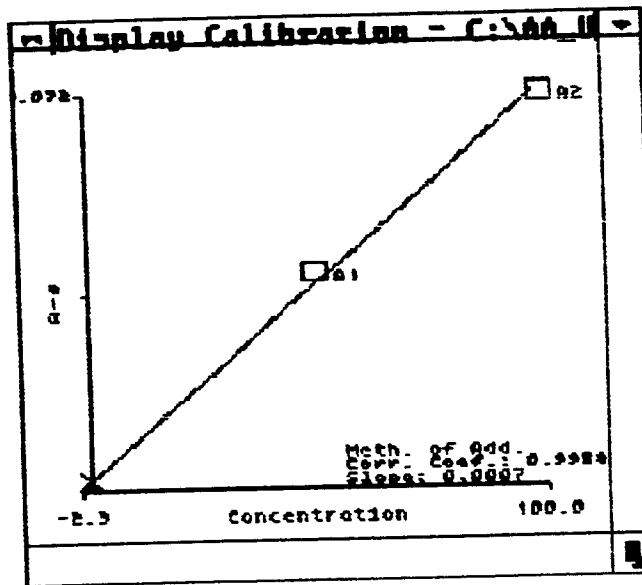
Mean Pk Area (A-s):      0.072      SD: 0.0073      RSD(%): 10.10

T1      ID: 184-50-3ABC      Seq. No.: 00012      A/S Pos.: 12      Date: 10/21/97

Concentration (ug/L ): 2.3

Correlation coefficient: 0.99581      Slope: 0.0007





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 T1 ID: AUTO ZERO Seq. No.: 00015 A/S Pos.: 0 Date: 10/21

uL dispensed: 10 from 0, 5 from 39, 10 from 0  
 Replicate 1 Time: 04:10  
 Peak Area (A-s): -0.003 Peak Height (A): 0.006  
 Background Pk Area (A-s): -0.000 Background Pk Height (A): 0.005  
 Blank Corrected Pk Area (A-s): -0.001

uL dispensed: 10 from 0, 5 from 39, 10 from 0  
 ~~~~~  
 T1 ID: AUTO ZERO Seq. No.: 00016 A/S Pos.: 0 Date: 10/21

uL dispensed: 10 from 0, 5 from 39, 10 from 0  
 Replicate 1 Time: 04:33  
 Peak Area (A-s): 0.000 Peak Height (A): 0.000  
 Background Pk Area (A-s): 0.000 Background Pk Height (A): 0.000  
 Blank Corrected Pk Area (A-s): 0.000

uL dispensed: 10 from 0, 5 from 39, 10 from 0  
 Replicate 2 (Peak Stored) Time: 04:35  
 Peak Area (A-s): 0.000 Peak Height (A): 0.000  
 Background Pk Area (A-s): 0.000 Background Pk Height (A): 0.000  
 Blank Corrected Pk Area (A-s): 0.000

Mean Pk Area (A-s): 0.002 SD: 0.0000 RSD(%): 0.00

Auto-zero performed.

~~~~~  
 T1 ID: 184-50-4ABC Seq. No.: 00017 A/S Pos.: 13 Date: 10/2

uL dispensed: 10 from 0, 5 from 39, 10 from 13  
 Replicate 1 Time: 04:38  
 Peak Area (A-s): -0.001 Peak Height (A): 0.006  
 Background Pk Area (A-s): 0.001 Background Pk Height (A): 0.005  
 Blank Corrected Pk Area (A-s): -0.001

Replicate 2 (Peak Stored) Time: 04:41  
Peak Area (A-s): 0.000 Peak Height (A): 0.007  
Background Pk Area (A-s): 0.001 Background Pk Height (A): 0.005  
Blank Corrected Pk Area (A-s): 0.000

Mean Pk Area (A-s): -0.001 SD: 0.0010 RSD(%): 151.33

T1 ID: ADD 1 50 ug/L Seq. No.: 00018 A/S Pos.: 13 Date: 10/21/97

uL dispensed: 5 from 39, 10 from 1, 10 from 13  
Replicate 1 Time: 04:44  
Peak Area (A-s): 0.033 Peak Height (A): 0.061  
Background Pk Area (A-s): 0.023 Background Pk Height (A): 0.040  
Blank Corrected Pk Area (A-s): 0.033

uL dispensed: 5 from 39, 10 from 1, 10 from 13  
Replicate 2 (Peak Stored) Time: 04:47  
Peak Area (A-s): 0.033 Peak Height (A): 0.059  
Background Pk Area (A-s): 0.023 Background Pk Height (A): 0.040  
Blank Corrected Pk Area (A-s): 0.033

Mean Pk Area (A-s): 0.033 SD: 0.0004 RSD(%): 1.16

T1 ID: ADD 2 100ug/L Seq. No.: 00019 A/S Pos.: 13 Date: 10/21/97

uL dispensed: 5 from 39, 10 from 2, 10 from 13  
Replicate 1 Time: 04:50  
Peak Area (A-s): 0.064 Peak Height (A): 0.115  
Background Pk Area (A-s): 0.041 Background Pk Height (A): 0.070  
Blank Corrected Pk Area (A-s): 0.064

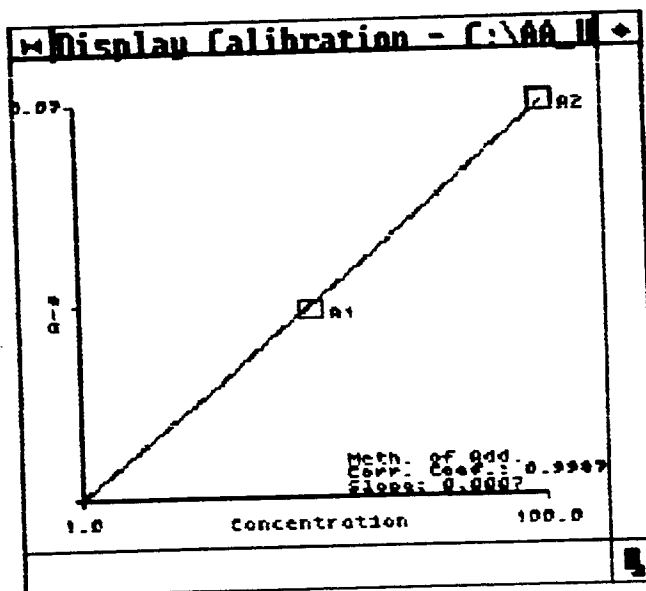
uL dispensed: 5 from 39, 10 from 2, 10 from 13  
Replicate 2 (Peak Stored) Time: 04:53  
Peak Area (A-s): 0.074 Peak Height (A): 0.129  
Background Pk Area (A-s): 0.046 Background Pk Height (A): 0.076  
Blank Corrected Pk Area (A-s): 0.074

Mean Pk Area (A-s): 0.069 SD: 0.0073 RSD(%): 10.60

T1 ID: 184-50-4ABC Seq. No.: 00017 A/S Pos.: 13 Date: 10/21/97

Concentration (ug/L ): -1.0

Correlation coefficient: 0.99874 Slope: 0.0007



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 T1 ID: AUTO ZERO Seq. No.: 00020 A/S Pos.: 0 Date: 10/21/9

uL dispensed: 10 from 0, 5 from 39, 10 from 0

~~~~~  
 T1 ID: AUTO ZERO Seq. No.: 00021 A/S Pos.: 0 Date: 10/21/9

uL dispensed: 10 from 0, 5 from 39, 10 from 0

The background signal is changing during BOC measurement.  
 Replicate 1  
 Peak Area (A-s): -0.003  
 Background Pk Area (A-s): 1.446  
 Blank Corrected Pk Area (A-s): -0.003  
 Time: 05:00  
 Peak Height (A): 0.102  
 Background Pk Height (A): 2.165

~~~~~  
 T1 ID: AUTO ZERO Seq. No.: 00022 A/S Pos.: 0 Date: 10/21/9

uL dispensed: 10 from 0, 5 from 39, 10 from 0

Replicate 1  
 Peak Area (A-s): -0.001  
 Background Pk Area (A-s): 0.002  
 Blank Corrected Pk Area (A-s): -0.001  
 Time: 05:03  
 Peak Height (A): 0.007  
 Background Pk Height (A): 0.006

uL dispensed: 10 from 0, 5 from 39, 10 from 0

Replicate 2 (Peak Stored)  
 Peak Area (A-s): -0.002  
 Background Pk Area (A-s): 0.004  
 Blank Corrected Pk Area (A-s): -0.002  
 Time: 05:06  
 Peak Height (A): 0.005  
 Background Pk Height (A): 0.007

Mean Pk Area (A-s): -0.002 SD: 0.0002 RSD(%): 14.30

Auto-zero performed.

~~~~~  
 T1 ID: 184-50-5ABC Seq. No.: 00023 A/S Pos.: 14 Date: 10/21/9

uL dispensed: 10 from 0, 5 from 39, 10 from 14

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Peak Area (A-s): -0.001  
Background Pk Area (A-s): 0.003  
Blank Corrected Pk Area (A-s): 0.001

Peak Height (A): 0.005  
Background Pk Height (A): 0.006

uL dispensed: 10 from 0, 5 from 39, 10 from 14

Replicate 2 (Peak Stored)  
Peak Area (A-s): -0.001  
Background Pk Area (A-s): 0.002  
Blank Corrected Pk Area (A-s): 0.001

Time: 05:11  
Peak Height (A): 0.008  
Background Pk Height (A): 0.006

Mean Pk Area (A-s): 0.001 SD: 0.0001 RSD(%): 13.20

T1 ID: ADD 1 50 ug/L Seq. No.: 00024 A/S Pos.: 14 Date: 10/21/97

uL dispensed: 5 from 39, 10 from 1, 10 from 14

Replicate 1  
Peak Area (A-s): 0.037  
Background Pk Area (A-s): 0.024  
Blank Corrected Pk Area (A-s): 0.039

Time: 05:14  
Peak Height (A): 0.061  
Background Pk Height (A): 0.040

Mean Pk Area (A-s): 0.039 SD: 0.0002 RSD(%): 0.56

T1 ID: ADD 2 100ug/L Seq. No.: 00025 A/S Pos.: 14 Date: 10/21/97

uL dispensed: 5 from 39, 10 from 2, 10 from 14

Replicate 1  
Peak Area (A-s): 0.065  
Background Pk Area (A-s): 0.041  
Blank Corrected Pk Area (A-s): 0.067

Time: 05:20  
Peak Height (A): 0.114  
Background Pk Height (A): 0.066

Mean Pk Area (A-s): 0.070 SD: 0.0046 RSD(%): 6.61

T1 ID: 184-50-SABC Seq. No.: 00023 A/S Pos.: 14 Date: 10/21/97

uL dispensed: 5 from 39, 10 from 2, 10 from 14

Replicate 2 (Peak Stored)  
Peak Area (A-s): 0.072  
Background Pk Area (A-s): 0.046  
Blank Corrected Pk Area (A-s): 0.074

Time: 05:23  
Peak Height (A): 0.124  
Background Pk Height (A): 0.073

Mean Pk Area (A-s): 0.070 SD: 0.0046 RSD(%): 6.61

T1 ID: 184-50-SABC Seq. No.: 00023 A/S Pos.: 14 Date: 10/21/97

Mean Pk Area (A-s): 0.070 SD: 0.0046 RSD(%): 6.61

T1 ID: 184-50-SABC Seq. No.: 00023 A/S Pos.: 14 Date: 10/21/97

Concentration (ug/L): 1.4

Correlation coefficient: 0.99408 Slope: 0.0007

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T1 ID: AUTO ZERO Seq. No.: 00026 A/S Pos.: 0 Date: 10/21/

uL dispensed: 10 from 0, 5 from 39, 10 from 0  
Replicate 1 Time: 23:11  
Peak Area (A-s): 0.000 Peak Height (A): 0.007  
Background Pk Area (A-s): 0.003 Background Pk Height (A): 0.006  
Blank Corrected Pk Area (A-s): 0.002

uL dispensed: 10 from 0, 5 from 39, 10 from 0  
Replicate 2 (Peak Stored) Time: 23:14  
Peak Area (A-s): -0.001 Peak Height (A): 0.008  
Background Pk Area (A-s): 0.004 Background Pk Height (A): 0.006  
Blank Corrected Pk Area (A-s): 0.001

Mean Pk Area (A-s): 0.001 SD: 0.0005 RSD(%): 36.64

Auto-zero performed.

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T1 ID: 184-50-2ABC Seq. No.: 00027 A/S Pos.: 11 Date: 10/21

uL dispensed: 10 from 0, 5 from 39, 10 from 11  
Replicate 1 Time: 23:17  
Peak Area (A-s): 0.001 Peak Height (A): 0.007  
Background Pk Area (A-s): 0.002 Background Pk Height (A): 0.006  
Blank Corrected Pk Area (A-s): 0.001

uL dispensed: 10 from 0, 5 from 39, 10 from 11  
Replicate 2 (Peak Stored) Time: 23:20  
Peak Area (A-s): 0.002 Peak Height (A): 0.006  
Background Pk Area (A-s): 0.001 Background Pk Height (A): 0.006  
Blank Corrected Pk Area (A-s): 0.002

Mean Pk Area (A-s): 0.002 SD: 0.0012 RSD(%): 74.1

T1 ID: ADD 1 50 ug/L Seq. No.: 00028 A/S Pos.: 11 Date: 10/21

uL dispensed: 5 from 39, 10 from 1, 10 from 11  
Replicate 1 Time: 23:23  
Peak Area (A-s): 0.039 Peak Height (A): 0.086  
Background Pk Area (A-s): 0.025 Background Pk Height (A): 0.053  
Blank Corrected Pk Area (A-s): 0.039

uL dispensed: 5 from 39, 10 from 1, 10 from 11  
Replicate 2 (Peak Stored) Time: 23:26  
Peak Area (A-s): 0.039 Peak Height (A): 0.082  
Background Pk Area (A-s): 0.026 Background Pk Height (A): 0.050  
Blank Corrected Pk Area (A-s): 0.039

Mean Pk Area (A-s): 0.039 SD: 0.0002 RSD(%): 0.5

T1 ID: ADD 2 100ug/L Seq. No.: 00029 A/S Pos.: 11 Date: 10/2

uL dispensed: 5 from 39, 10 from 2, 10 from 11  
Replicate 1 Time: 23:29  
Peak Area (A-s): 0.076 Peak Height (A): 0.156  
Background Pk Area (A-s): 0.048 Background Pk Height (A): 0.092  
Blank Corrected Pk Area (A-s): 0.076

Replicate 2 (Peak Stored)  
Peak Area (A-s): 0.076  
Background Pk Area (A-s): 0.048  
Blank Corrected Pk Area (A-s): 0.076

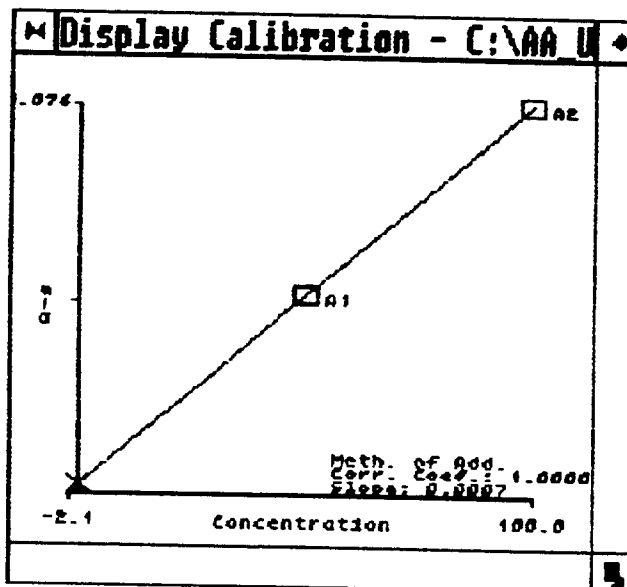
Time: 23:32  
Peak Height (A): 0.162  
Background Pk Height (A): 0.093

Mean Pk Area (A-s): 0.076 SD: 0.0002 RSD(%): 0.26

T1 ID: 184-50-2ABC Seq. No.: 00027 A/S Pos.: 11 Date: 10/21/97

Concentration (ug/L ): 2.1

Correlation coefficient: 1.00000 Slope: 0.0007



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T1 ID: AUTO ZERO Seq. No.: 00030 A/S Pos.: 0 Date: 10/21/97

uL dispensed: 10 from 0, 5 from 39, 10 from 0  
Replicate 1 Time: 23:35  
Peak Area (A-s): -0.002 Peak Height (A): 0.006  
Background Pk Area (A-s): 0.003 Background Pk Height (A): 0.006  
Blank Corrected Pk Area (A-s): -0.002

uL dispensed: 10 from 0, 5 from 39, 10 from 0  
Replicate 2 (Peak Stored) Time: 23:38  
Peak Area (A-s): -0.001 Peak Height (A): 0.006  
Background Pk Area (A-s): 0.005 Background Pk Height (A): 0.006  
Blank Corrected Pk Area (A-s): -0.001

Mean Pk Area (A-s): -0.001 SD: 0.0003 RSD(%): 22.26

Auto-zero performed.

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T1 ID: 184-50-5ABC Seq. No.: 00031 A/S Pos.: 14 Date: 10/21/97

uL dispensed: 10 from 0, 5 from 39, 10 from 14

Peak Area (A-s): -0.003  
Background Pk Area (A-s): 0.005  
Blank Corrected Pk Area (A-s): -0.001  
Peak Height (A): 0.007  
Background Pk Height (A): 0.008

uL dispensed: 10 from 0, 5 from 39, 10 from 14  
Replicate 2 (Peak Stored)  
Peak Area (A-s): 0.001  
Background Pk Area (A-s): 0.002  
Blank Corrected Pk Area (A-s): 0.003  
Time: 23:44  
Peak Height (A): 0.006  
Background Pk Height (A): 0.008

Mean Pk Area (A-s): 0.001 SD: 0.0030 RSD(%): 334.08

T1 ID: ADD 1 50 ug/L Seq. No.: 00032 A/S Pos.: 14 Date: 10/21/9

uL dispensed: 5 from 39, 10 from 1, 10 from 14  
Replicate 1  
Peak Area (A-s): 0.039  
Background Pk Area (A-s): 0.023  
Blank Corrected Pk Area (A-s): 0.041  
Time: 23:47  
Peak Height (A): 0.066  
Background Pk Height (A): 0.039

Mean Pk Area (A-s): 0.040 SD: 0.0003 RSD(%): 0.68

T1 ID: ADD 2 100ug/L Seq. No.: 00033 A/S Pos.: 14 Date: 10/21/9

uL dispensed: 5 from 39, 10 from 1, 10 from 14  
Replicate 2 (Peak Stored)  
Peak Area (A-s): 0.039  
Background Pk Area (A-s): 0.025  
Blank Corrected Pk Area (A-s): 0.040  
Time: 23:50  
Peak Height (A): 0.066  
Background Pk Height (A): 0.040

Mean Pk Area (A-s): 0.040 SD: 0.0003 RSD(%): 0.68

T1 ID: ADD 2 100ug/L Seq. No.: 00033 A/S Pos.: 14 Date: 10/21/9

uL dispensed: 5 from 39, 10 from 2, 10 from 14  
Replicate 1  
Peak Area (A-s): 0.074  
Background Pk Area (A-s): 0.044  
Blank Corrected Pk Area (A-s): 0.076  
Time: 23:53  
Peak Height (A): 0.132  
Background Pk Height (A): 0.074

Mean Pk Area (A-s): 0.076 SD: 0.0006 RSD(%): 0.81

T1 ID: 184-50-5ABC Seq. No.: 00031 A/S Pos.: 14 Date: 10/21/9

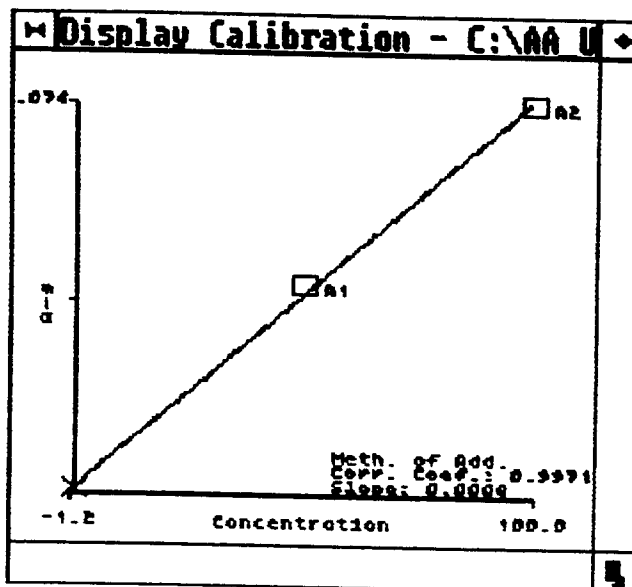
uL dispensed: 5 from 39, 10 from 2, 10 from 14  
Replicate 2 (Peak Stored)  
Peak Area (A-s): 0.074  
Background Pk Area (A-s): 0.043  
Blank Corrected Pk Area (A-s): 0.075  
Time: 23:56  
Peak Height (A): 0.127  
Background Pk Height (A): 0.073

Mean Pk Area (A-s): 0.076 SD: 0.0006 RSD(%): 0.81

T1 ID: 184-50-5ABC Seq. No.: 00031 A/S Pos.: 14 Date: 10/21/9

Concentration (ug/L ): 1.2

Correlation coefficient: 0.99714 Slope: 0.0008



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 T1 ID: AUTO ZERO Seq. No.: 00034 A/S Pos.: 0 Date: 10/21/97

uL dispensed: 10 from 0, 5 from 39, 10 from 0  
 Replicate 1 Time: 23:59  
 Peak Area (A-s): -0.001 Peak Height (A): 0.005  
 Background Pk Area (A-s): 0.002 Background Pk Height (A): 0.006  
 Blank Corrected Pk Area (A-s): 0.001

uL dispensed: 10 from 0, 5 from 39, 10 from 0  
 Replicate 2 (Peak Stored) Time: 00:02  
 Peak Area (A-s): 0.002 Peak Height (A): 0.008  
 Background Pk Area (A-s): -0.001 Background Pk Height (A): 0.010  
 Blank Corrected Pk Area (A-s): 0.004

Mean Pk Area (A-s): 0.002 SD: 0.0023 RSD(%): 94.89

Auto-zero performed.

~~~~~  
 T1 ID: 184-50-6ABC Seq. No.: 00035 A/S Pos.: 15 Date: 10/22/97

uL dispensed: 10 from 0, 5 from 39, 10 from 15  
 Replicate 1 Time: 00:04  
 Peak Area (A-s): -0.002 Peak Height (A): 0.005  
 Background Pk Area (A-s): 0.004 Background Pk Height (A): 0.008  
 Blank Corrected Pk Area (A-s): -0.003

uL dispensed: 10 from 0, 5 from 39, 10 from 15  
 Replicate 2 (Peak Stored) Time: 00:07  
 Peak Area (A-s): -0.000 Peak Height (A): 0.006  
 Background Pk Area (A-s): 0.001 Background Pk Height (A): 0.006  
 Blank Corrected Pk Area (A-s): -0.001

Mean Pk Area (A-s): -0.002 SD: 0.0013 RSD(%): 61.11

T1 ID: ADD 1 50 ug/L Seq. No.: 00036 A/S Pos.: 15 Date: 10/22/97



Replicate 1  
Peak Area (A-s): 0.035  
Background Pk Area (A-s): 0.025  
Blank Corrected Pk Area (A-s): 0.034

Time: 00:10  
Peak Height (A): 0.066  
Background Pk Height (A): 0.042

uL dispensed: 5 from 39, 10 from 1, 10 from 15  
Replicate 2 (Peak Stored)  
Peak Area (A-s): 0.037  
Background Pk Area (A-s): 0.023  
Blank Corrected Pk Area (A-s): 0.036

Time: 00:13  
Peak Height (A): 0.067  
Background Pk Height (A): 0.038

Mean Pk Area (A-s): 0.035 SD: 0.0014 RSD(%): 3.88  
T1 ID: ADD 2 100ug/L Seq. No.: 00037 A/S Pos.: 15 Date: 10/22/

uL dispensed: 5 from 39, 10 from 2, 10 from 15  
Replicate 1  
Peak Area (A-s): 0.070  
Background Pk Area (A-s): 0.044  
Blank Corrected Pk Area (A-s): 0.069

Time: 00:16  
Peak Height (A): 0.125  
Background Pk Height (A): 0.075

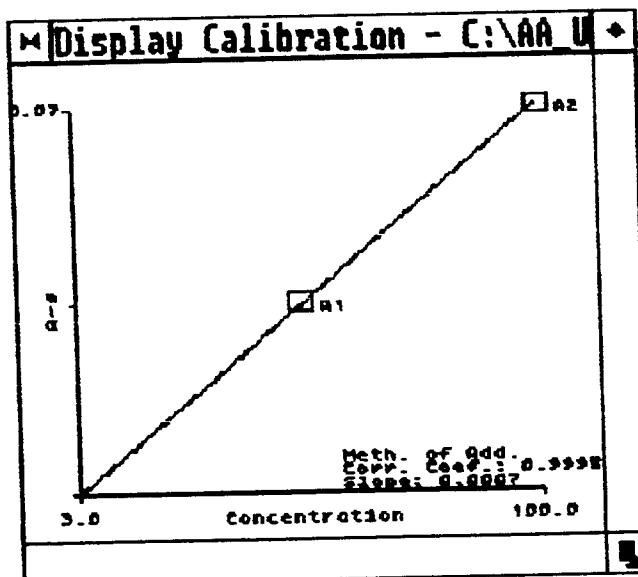
uL dispensed: 5 from 39, 10 from 2, 10 from 15  
Replicate 2 (Peak Stored)  
Peak Area (A-s): 0.072  
Background Pk Area (A-s): 0.044  
Blank Corrected Pk Area (A-s): 0.072

Time: 00:19  
Peak Height (A): 0.135  
Background Pk Height (A): 0.077

Mean Pk Area (A-s): 0.070 SD: 0.0020 RSD(%): 2.90  
T1 ID: 184-50-6ABC Seq. No.: 00035 A/S Pos.: 15 Date: 10/22/

Concentration (ug/L ): -3.0

Correlation coefficient: 0.99954 Slope: 0.0007



T1 ID: AUTO ZERO Seq. No.: 00038 A/S Pos.: 0 Date: 10/22/97

uL dispensed: 10 from 0, 5 from 39, 10 from 0

T1 ID: AUTO ZERO Seq. No.: 00039 A/S Pos.: 0 Date: 10/22/97

uL dispensed: 10 from 0, 5 from 39, 10 from 0

T1 ID: AUTO ZERO Seq. No.: 00040 A/S Pos.: 0 Date: 10/22/97

uL dispensed: 10 from 0, 5 from 39, 10 from 0

Replicate 1 Time: 00:45  
Peak Area (A-s): 0.000 Peak Height (A): 0.000  
Background Pk Area (A-s): 0.000 Background Pk Height (A): 0.000  
Blank Corrected Pk Area (A-s): -0.001

uL dispensed: 10 from 0, 5 from 39, 10 from 0

Replicate 2 (Peak Stored) Time: 00:48  
Peak Area (A-s): 0.001 Peak Height (A): 0.014  
Background Pk Area (A-s): 0.005 Background Pk Height (A): 0.036  
Blank Corrected Pk Area (A-s): -0.000

Mean Pk Area (A-s): -0.001 SD: 0.0005 RSD(%): 93.94

Auto-zero performed.

T1 ID: 184-50-7ABC Seq. No.: 00041 A/S Pos.: 16 Date: 10/22/97

uL dispensed: 10 from 0, 5 from 39, 10 from 16

Replicate 1 Time: 00:50  
Peak Area (A-s): 0.015 Peak Height (A): 0.047  
Background Pk Area (A-s): 0.449 Background Pk Height (A): 0.496  
Blank Corrected Pk Area (A-s): 0.015

uL dispensed: 10 from 0, 5 from 39, 10 from 16

Replicate 2 (Peak Stored) Time: 00:53  
Peak Area (A-s): 0.020 Peak Height (A): 0.107  
Background Pk Area (A-s): 0.710 Background Pk Height (A): 0.844  
Blank Corrected Pk Area (A-s): 0.020

Mean Pk Area (A-s): 0.017 SD: 0.0033 RSD(%): 19.17

T1 ID: ADD 1 50 ug/L Seq. No.: 00042 A/S Pos.: 16 Date: 10/22/97

uL dispensed: 5 from 39, 10 from 1, 10 from 16

Replicate 1 Time: 00:56  
Peak Area (A-s): 0.034 Peak Height (A): 0.056  
Background Pk Area (A-s): 0.901 Background Pk Height (A): 1.201  
Blank Corrected Pk Area (A-s): 0.023

uL dispensed: 5 from 39, 10 from 1, 10 from 16

Replicate 2 (Peak Stored) Time: 00:59  
Peak Area (A-s): 0.026 Peak Height (A): 0.068  
Background Pk Area (A-s): 1.050 Background Pk Height (A): 1.623  
Blank Corrected Pk Area (A-s): 0.025

Mean Pk Area (A-s): 0.024 SD: 0.0015 RSD(%): 6.34

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uL dispensed: 5 from 39, 10 from 2, 10 from 16  
 Replicate 1  
 Peak Area (A-s): 0.026  
 Background Pk Area (A-s): 0.962  
 Blank Corrected Pk Area (A-s): 0.026  
 Time: 01:02  
 Peak Height (A): 0.071  
 Background Pk Height (A): 1.406

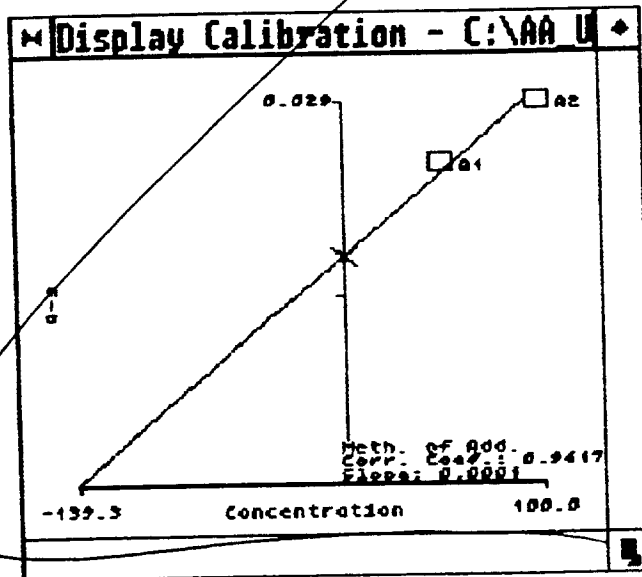
uL dispensed: 5 from 39, 10 from 2, 10 from 16  
 Replicate 2 (Peak Stored)  
 Peak Area (A-s): 0.032  
 Background Pk Area (A-s): 0.872  
 Blank Corrected Pk Area (A-s): 0.032  
 Time: 01:05  
 Peak Height (A): 0.109  
 Background Pk Height (A): 1.269

Mean Pk Area (A-s): 0.029 SD: 0.0040 RSD(%): 13.78

T1 ID: 184-50-7ABC Seq. No.: 00041 A/S Pos.: 16 Date: 10/22/97

Concentration (ug/L ): 139.3

Correlation coefficient: 0.96177 Slope: 0.0001



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 10/22/97

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 T1 ID: AUTO ZERO Seq. No.: 00044 A/S Pos.: 0 Date: 10/22/97

uL dispensed: 10 from 0, 5 from 39, 10 from 0  
 Replicate 1  
 Peak Area (A-s): -0.001  
 Background Pk Area (A-s): 0.004  
 Blank Corrected Pk Area (A-s): -0.001  
 Time: 01:27  
 Peak Height (A): 0.007  
 Background Pk Height (A): 0.007

uL dispensed: 10 from 0, 5 from 39, 10 from 0  
 Replicate 2 (Peak Stored)  
 Peak Area (A-s): -0.000  
 Background Pk Area (A-s): 0.002  
 Blank Corrected Pk Area (A-s): -0.001  
 Time: 01:30  
 Peak Height (A): 0.007  
 Background Pk Height (A): 0.008

Auto-zero performed.

~~~~~  
T1 ID: 184-50-7ABC Seq. No.: 00045 A/S Pos.: 16 Date: 10/22/97

uL dispensed: 10 from 0, 5 from 39, 10 from 16  
Replicate 1 Time: 01:33  
Peak Area (A-s): 0.024 Peak Height (A): 0.058  
Background Pk Area (A-s): 0.500 Background Pk Height (A): 0.568  
Blank Corrected Pk Area (A-s): 0.025

uL dispensed: 10 from 0, 5 from 39, 10 from 16  
Replicate 2 (Peak Stored) Time: 01:36  
Peak Area (A-s): 0.020 Peak Height (A): 0.107  
Background Pk Area (A-s): 0.716 Background Pk Height (A): 1.071  
Blank Corrected Pk Area (A-s): 0.021

Mean Pk Area (A-s): 0.023 SD: 0.0027 RSD(%): 11.63

T1 ID: ADD 1 50 ug/L Seq. No.: 00046 A/S Pos.: 16 Date: 10/22/97

uL dispensed: 5 from 39, 10 from 1, 10 from 16  
Replicate 1 Time: 01:39  
Peak Area (A-s): 0.024 Peak Height (A): 0.087  
Background Pk Area (A-s): 0.776 Background Pk Height (A): 1.151  
Blank Corrected Pk Area (A-s): 0.025

uL dispensed: 5 from 39, 10 from 1, 10 from 16  
Replicate 2 (Peak Stored) Time: 01:42  
Peak Area (A-s): 0.025 Peak Height (A): 0.118  
Background Pk Area (A-s): 0.633 Background Pk Height (A): 0.858  
Blank Corrected Pk Area (A-s): 0.026

Mean Pk Area (A-s): 0.025 SD: 0.0005 RSD(%): 1.83

T1 ID: ADD 2 100ug/L Seq. No.: 00047 A/S Pos.: 16 Date: 10/22/97

uL dispensed: 5 from 39, 10 from 2, 10 from 16  
Replicate 1 Time: 01:45  
Peak Area (A-s): 0.034 Peak Height (A): 0.138  
Background Pk Area (A-s): 0.638 Background Pk Height (A): 0.846  
Blank Corrected Pk Area (A-s): 0.035

uL dispensed: 5 from 39, 10 from 2, 10 from 16  
Replicate 2 (Peak Stored) Time: 01:48  
Peak Area (A-s): 0.033 Peak Height (A): 0.120  
Background Pk Area (A-s): 0.647 Background Pk Height (A): 0.837  
Blank Corrected Pk Area (A-s): 0.034

Mean Pk Area (A-s): 0.034 SD: 0.0008 RSD(%): 2.36

Expansion >100 is not allowed. No calibration has occurred.

T1 ID: 184-50-7ABC Seq. No.: 00045 A/S Pos.: 16 Date: 10/22/97

Concentration (ug/L ): -----

N/V. MKT 10/22/97

ID/Weight File: A6827.IDW  
Sample Volume: 100 ml

Analyst: D.STREETER-EDWARDS  
Nominal Weight: 1.0 g

| Loc. | Sample ID      | Weight                 | Dilution |
|------|----------------|------------------------|----------|
| 0    | ST BLK         |                        |          |
| 1    | STD1=0.2ug/L   | } 3-023-5 DSE 10/21/97 |          |
| 2    | STD2=0.5ug/L   |                        |          |
| 3    | STD3=1.0ug/L   |                        |          |
| 4    | STD4=2.0ug/L   |                        |          |
| 5    | STD5=5.0ug/L   |                        |          |
| 6    | STD6=10.0ug/L  |                        |          |
| 7    | ICV=4.0ug/L    | — 3-023-6 DSE 10/21/97 |          |
| 8    | ICB            |                        |          |
| 9    | CHECK LO       |                        |          |
| 10   | 43411 MB2      |                        |          |
| 11   | 43411 MB2D     |                        |          |
| 12   | 43411 LCS2     |                        |          |
| 13   | 43411 LCS2D    |                        |          |
| 14   | 184-84-60AB    |                        |          |
| 15   | 184-84-60AB D  |                        |          |
| 16   | 184-84-60      |                        |          |
| 17   | 184-84-60 I    |                        |          |
| 18   | 184-84-60 MS   |                        |          |
| 19   | 184-84-60 MSC  |                        |          |
| 20   | CCV7=6.0ug/L   | — 3-023-6 DSE 10/21/97 |          |
| 21   | CCS            |                        |          |
| 22   | 184-84-66      |                        |          |
| 23   | 184-84-66 I    |                        |          |
| 24   | 184-84-66 E    |                        |          |
| 25   | 184-84-66 D    |                        |          |
| 26   | 184-84-66 F    |                        |          |
| 27   | 184-84-66 G    |                        |          |
| 28   | 184-84-700AB   |                        |          |
| 29   | 184-84-700AB I |                        |          |
| 30   | 184-84-76      |                        |          |
| 31   | 184-84-76 I    |                        |          |
| 32   | CCV8=6.0ug/L   | — 3-023-6 DSE 10/21/97 |          |
| 33   | CCS            |                        |          |
| 34   | 184-84-7EF     |                        |          |
| 35   | 184-84-7EF D   |                        |          |
| 36   | 184-84-7EF MS  |                        |          |
| 37   | 184-84-7EF MSC |                        |          |
| 38   | 184-84-7H      |                        |          |
| 39   | 184-84-7H D    |                        |          |
| 40   | 184-84-7I      |                        |          |
| 41   | 184-84-7I D    |                        |          |
| 42   | CCV9=6.0ug/L   | — 3-023-6 DSE 10/21/97 |          |
| 43   | 43377 MB1      |                        |          |
| 44   | 43377 MB1 D    |                        |          |
| 45   | 43377 LCS1     |                        |          |
| 46   | 43377 LCS1D    |                        |          |
| 47   | 184-50-10AB    |                        |          |
| 48   | 184-50-10AB D  |                        |          |
| 49   | 184-50-1D      |                        |          |
| 50   | 184-50-1D E    |                        |          |
| 51   | 184-50-1D MS   |                        |          |
| 52   | 184-50-1D MSC  |                        |          |
| 53   | CCV1=6.0ug/L   | — 3-023-6 DSE 10/21/97 |          |

Hg.

| Lot. | Sample ID      | Weight    | Dilution     |
|------|----------------|-----------|--------------|
| 54   | COB            |           |              |
| 55   | 184-50-1E      |           |              |
| 56   | 184-50-1E D    |           |              |
| 57   | 184-50-1F      |           |              |
| 58   | 184-50-1F D    |           |              |
| 59   | 184-50-1G      |           |              |
| 60   | 184-50-1G D    |           |              |
| 61   | 184-50-2CAE    |           |              |
| 62   | 184-50-2CAE D  |           |              |
| 63   | 184-50-2DE     |           |              |
| 64   | 184-50-2DE D   |           |              |
| 65   | CCV2=6.0ug/L   | — 3-023-6 | DSE 10/21/97 |
| 66   | COB            |           |              |
| 67   | 184-50-2F      |           |              |
| 68   | 184-50-2F D    |           |              |
| 69   | 184-50-2G      |           |              |
| 70   | 184-50-2G D    |           |              |
| 71   | 184-50-2H      |           |              |
| 72   | 184-50-2H D    |           |              |
| 73   | 184-50-2DE     |           |              |
| 74   | 184-50-3DE D   |           |              |
| 75   | 184-50-3DE MS  |           |              |
| 76   | 184-50-3DE MSD |           |              |
| 77   | CCV3=6.0ug/L   | — 3-023-6 | DSE 10/21/97 |
| 78   | COB            |           |              |
| 79   | 184-50-3CAE    |           |              |
| 80   | 184-50-3CAE D  |           |              |
| 81   | 184-50-3F      |           |              |
| 82   | 184-50-3F D    |           |              |
| 83   | 184-50-3G      |           |              |
| 84   | 184-50-3G D    |           |              |
| 85   | 184-50-3H      |           |              |
| 86   | 184-50-3H D    |           |              |
| 87   | 184-50-4CAE    |           |              |
| 88   | 184-50-4CAE D  |           |              |
| 89   | CCV4=6.0ug/L   | — 3-023-6 | DSE 10/21/97 |
| 90   | COB            |           |              |
| 91   | 184-50-4DE     |           |              |
| 92   | 184-50-4DE D   |           |              |
| 93   | 184-50-4DE MS  |           |              |
| 94   | 184-50-4DE MSD |           |              |
| 95   | 184-50-4F      |           |              |
| 96   | 184-50-4F D    |           |              |
| 97   | 184-50-4G      |           |              |
| 98   | 184-50-4G D    |           |              |
| 99   | 184-50-4H      |           |              |
| 100  | 184-50-4H D    |           |              |
| 101  | CCV5=6.0ug/L   | — 3-023-6 | DSE 10/21/97 |
| 102  | COB            |           |              |
| 103  | 184-50-5CAE    |           |              |
| 104  | 184-50-5CAE D  |           |              |
| 105  | 184-50-5BD     |           |              |
| 106  | 184-50-5BD D   |           |              |
| 107  | 184-50-5E      |           |              |
| 108  | 184-50-5E D    |           |              |
| 109  | 184-50-5F      |           |              |

Hg

| Loc. | Sample ID                 | Weight               | Dilution |
|------|---------------------------|----------------------|----------|
| 110  | 184-50-5F D               |                      |          |
| 111  | 184-50-6CAB               |                      |          |
| 112  | 184-50-6CAB D             |                      |          |
| 113  | CCV <sub>6</sub> =6.0ug/L | -3-023-6 DSE 10/2/97 |          |
| 114  | CCB                       |                      |          |

Hg.

Element: Hg2  
Print Data: Main+Suppl.  
Print: Calib. Curve  
Remarks:  
STANDARDS: 3-023-5  
QC: 3-023-4, 6

Analyst: D STREETER-EDWARDS  
Peak Storage: None

Hg.

-----  
INSTRUMENT: 5100                      Technique: MHS                      Version: 7.0i  
Wavelength: 253.7 Peak                      Slit: 0.7 Low  
Signal Type: AA                      Signal Measurement: Peak Height (5)  
Read Time: 30.0                      Read Delay: 1.0                      BGC Time: 2  
Sample Replicates: 1  
Standard Replicates: 1  
-----

FLAME:  
Flame Type: Air                      Flame Sensor: On  
Oxidant Flow: 10.0 L/min                      Fuel Flow: 2.0 L/min  
-----

CALIBRATION:

| Solutions    | ID      | Conc   |
|--------------|---------|--------|
| Calib. Blank | STD BLK |        |
| Standard 1   | STD 1   | 0.200  |
| Standard 2   | STD 2   | 0.500  |
| Standard 3   | STD 3   | 1.000  |
| Standard 4   | STD 4   | 2.000  |
| Standard 5   | STD 5   | 5.000  |
| Standard 6   | STD 6   | 10.000 |

Calibration Units: ug/L                      Sample Units: ug/L  
Calibration Type: Linear  
-----

QC:  
% Rec'd: Calculations:  
% Recovery for Dups: No                      Locations:  
% Recovery for Spike: No                      Locations:                      Conc:



-----  
Element File: HG\_MEL            Element: Hg2            Wavelength: 253.7  
Date: 10/21/97                Time: 10:04            Slit: 0.7 L  
Data File: A8827.DAT           ID/Wt File: A8827.IDW    Lamp Current: 0  
Technique: MMS                Calib. Type: Linear     Energy: 71  
Remark 1: STANDARDS= 3-023-5  
Remark 2: QC= 3-023-4, 4 USE W/BLK7  
-----

Hg2 ID: Seq. 00001            Seq. No.: 00001    A/S Pos.: --    Date: 10/21/97

Replicate 1                    Time: 10:05  
Peak Area (A-s): -0.035        Peak Height (A): -0.001  
Blank Corrected Pk Height (A): -0.001  
Concentration (ug/L ): -0.014

Auto-zero performed.

-----  
Hg2 ID: Seq. 00002            Seq. No.: 00002    A/S Pos.: --    Date: 10/21/97

Replicate 1                    Time: 10:07  
Peak Area (A-s): 0.022         Peak Height (A): 0.001  
Blank Corrected Pk Height (A): 0.001  
Concentration (ug/L ): 0.012

Auto-zero performed.

-----  
Element File: HG\_ME\_            Element: Hg2            Wavelength: 253.7  
Date: 10/21/97            Time: 10:09            Slit: 0.7 L  
Data File: A8827.DAT        ID/Wt File: A8827.IDW        Lamp Current: 0  
Technique: MHS            Calib. Type: Linear        Energy: 71  
Remark 1: STANDARDS= 3-023-5  
Remark 2: QC= 3-023-4, <sup>u DSG</sup> Blank  
-----

Hg2 ID: ST BLK            Seq. No.: 00003    A/S Pos.: --    Date: 10/21/97

Replicate 1                            Time: 10:10  
Peak Area (A-s): -0.004            Peak Height (A): -0.000  
Blank Corrected PK Height (A): -0.000  
Concentration (ug/L ): -0.003

Auto-zero performed.

-----  
Hg2 ID: STD1=0.10ug/L        Seq. No.: 00004    A/S Pos.: --    Date: 10/21/97

Replicate 1                            Time: 10:11  
Peak Area (A-s): 0.170            Peak Height (A): 0.007  
Blank Corrected PK Height (A): 0.007  
Concentration (ug/L ): 0.107

Standard number 1 applied. [0.100]  
Correlation coefficient: 1.00000    Slope: 0.0344

-----  
Hg2 ID: STD2=0.5ug/L        Seq. No.: 00005    A/S Pos.: --    Date: 10/21/97

Sample abs. is greater than that of the largest standard.  
Replicate 1                            Time: 10:12  
Peak Area (A-s): 1.395            Peak Height (A): 0.013  
Blank Corrected PK Height (A): 0.013  
Concentration (ug/L ): 0.525

Standard number 2 applied. [0.500]  
Correlation coefficient: 0.99914    Slope: 0.0361

-----  
Hg2 ID: STD3=1.0ug/L        Seq. No.: 00006    A/S Pos.: --    Date: 10/21/97

Sample abs. is greater than that of the largest standard.  
Replicate 1                            Time: 10:13  
Peak Area (A-s): 0.878            Peak Height (A): 0.039  
Blank Corrected PK Height (A): 0.039  
Concentration (ug/L ): 1.073

Standard number 3 applied. [1.000]  
Correlation coefficient: 0.99824    Slope: 0.0382

-----  
Hg2 ID: STD4=1.0ug/L        Seq. No.: 00007    A/S Pos.: --    Date: 10/21/97

Sample abs. is greater than that of the largest standard.  
Replicate 1                            Time: 10:15  
Peak Area (A-s): 1.761            Peak Height (A): 0.074

Blank Corrected PK Height (A): 0.074  
Concentration (ug/L ): 1.943

Standard number 4 applied. [2.000]  
Correlation coefficient: 0.99947 Slope: 0.0373

-----  
Hg2 ID: STD5=5.0ug/L Seq. No.: 00008 A/S Pos.: -- Date: 10/21/97

Sample abs. is greater than that of the largest standard.  
Replicate 1 Time: 10:16  
Peak Area (A-s): 4.444 Peak Height (A): 0.190  
Blank Corrected PK Height (A): 0.190  
Concentration (ug/L ): 5.088

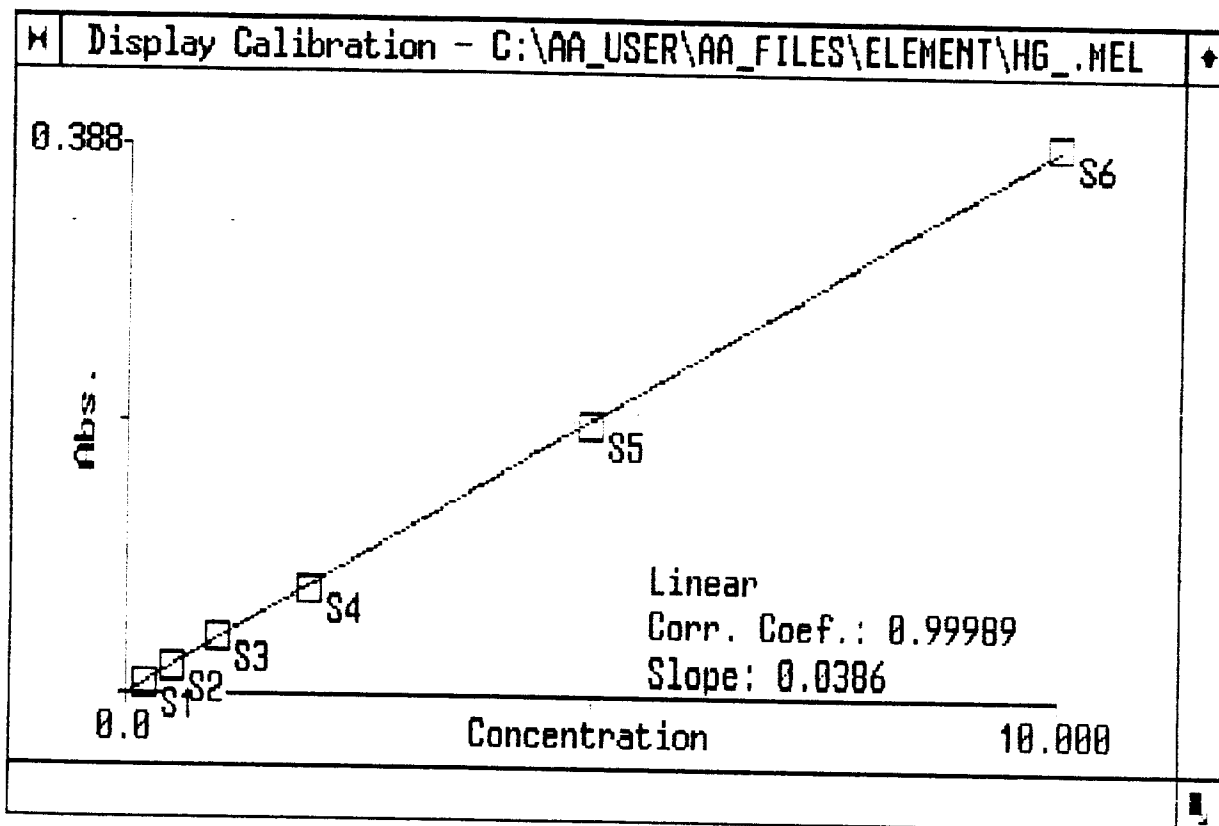
Standard number 5 applied. [5.000]  
Correlation coefficient: 0.99989 Slope: 0.0374

-----  
Hg2 ID: STD6=10.0ug/L Seq. No.: 00009 A/S Pos.: -- Date: 10/21/97

Sample abs. is greater than that of the largest standard.  
Replicate 1 Time: 10:17  
Peak Area (A-s): 8.950 Peak Height (A): 0.388  
Blank Corrected PK Height (A): 0.388  
Concentration (ug/L ): 10.281

Standard number 6 applied. [10.000]  
Correlation coefficient: 0.99989 Slope: 0.0385

-----  
 Element File: HG\_MEL      Element: Hg2      Wavelength: 253.7  
 Date: 10/21/97      Time: 10:18      Slit: 0.7 L  
 Data File: A8827.DAT      ID/Wt File: A8827.IDW      Lamp Current: 0  
 Technique: MHS      Calib. Type: Linear      Energy: 71  
 Remark 1: STANDARDS= 3-023-5  
 Remark 2: QC= 3-023-4, <sup>6</sup>DSE, 10/24/97  
 -----



-----  
Element File: HG\_MEL            Element: Hg2            Wavelength: 253.7  
Date: 10/21/97                Time: 10:19            Slit: 0.7 L  
Data File: AB827.DAT           ID/Wt File: AB827.IDW    Lamp Current: 0  
Technique: MHS                Calib. Type: Linear     Energy: 71  
Remark 1: STANDARDS= 3-023-5  
Remark 2: QC= 3-023-4, *DSE 10/21/97*  
-----

Hg2 ID: ICV=4.0ug/L            Seq. No.: 00010    A/S Pos.: --    Date: 10/21/97

Replicate 1                    Time: 10:21  
Peak Area (A-s): 3.520            Peak Height (A): 0.152  
Blank Corrected PK Height (A): 0.152  
Concentration (ug/L ): 3.941  
-----

Hg2 ID: ICE                    Seq. No.: 00011    A/S Pos.: --    Date: 10/21/97

Replicate 1                    Time: 10:23  
Peak Area (A-s): 0.008            Peak Height (A): 0.000  
Blank Corrected PK Height (A): 0.000  
Concentration (ug/L ): 0.005  
-----

Hg2 ID: CHEC1 LC                Seq. No.: 00012    A/S Pos.: --    Date: 10/21/97

Replicate 1                    Time: 10:24  
Peak Area (A-s): 0.163            Peak Height (A): 0.000  
Blank Corrected PK Height (A): 0.000  
Concentration (ug/L ): 0.100  
-----

Hg2 ID: 43411 MB0                Seq. No.: 00013    A/S Pos.: --    Date: 10/21/97

Replicate 1                    Time: 10:26  
Peak Area (A-s): -0.003            Peak Height (A): 0.000  
Blank Corrected PK Height (A): 0.000  
Concentration (ug/L ): 0.005  
-----

Hg2 ID: 43411 MB20                Seq. No.: 00014    A/S Pos.: --    Date: 10/21/97

Replicate 1                    Time: 10:27  
Peak Area (A-s): -0.000            Peak Height (A): -0.000  
Blank Corrected PK Height (A): -0.000  
Concentration (ug/L ): -0.010  
-----

Hg2 ID: 43411 LCS2                Seq. No.: 00015    A/S Pos.: --    Date: 10/21/97

Replicate 1                    Time: 10:29  
Peak Area (A-s): 7.352            Peak Height (A): 0.321  
Blank Corrected PK Height (A): 0.321  
Concentration (ug/L ): 8.317  
-----

Hg2 ID: 43411 LCS2                Seq. No.: 00016    A/S Pos.: --    Date: 10/21/97

*DSE*  
*10/21/97*

Hg2 ID: 184-84-7I D      Seq. No.: 00046      A/S Pos.: --      Date: 10/21/97

Replicate 1      Time: 12:28  
Peak Area (A-s): 0.004      Peak Height (A): 0.000  
Blank Corrected Pk Height (A): 0.000  
Concentration (ug/L ): 0.003

Hg2 ID: 00V9=6.0ug/L      Seq. No.: 00047      A/S Pos.: --      Date: 10/21/97

Replicate 1      Time: 12:29  
Peak Area (A-s): 5.101      Peak Height (A): 0.216  
Blank Corrected Pk Height (A): 0.216  
Concentration (ug/L ): 5.609

Hg2 ID: 00E      Seq. No.: 00048      A/S Pos.: --      Date: 10/21/97

Replicate 1      Time: 12:33  
Peak Area (A-s): -0.011      Peak Height (A): -0.001  
Blank Corrected Pk Height (A): -0.001  
Concentration (ug/L ): -0.013

Hg2 ID: 43377 MB1      Seq. No.: 00049      A/S Pos.: --      Date: 10/21/97

Replicate 1      Time: 12:34  
Peak Area (A-s): -0.005      Peak Height (A): -0.000  
Blank Corrected Pk Height (A): -0.000  
Concentration (ug/L ): -0.005

Hg2 ID: 43377 MB1 B      Seq. No.: 00050      A/S Pos.: --      Date: 10/21/97

Replicate 1      Time: 12:35  
Peak Area (A-s): -0.011      Peak Height (A): -0.001  
Blank Corrected Pk Height (A): -0.001  
Concentration (ug/L ): -0.016

Hg2 ID: 43377 LCS1      Seq. No.: 00051      A/S Pos.: --      Date: 10/21/97

Replicate 1      Time: 12:36  
Peak Area (A-s): 7.457      Peak Height (A): 0.322  
Blank Corrected Pk Height (A): 0.322  
Concentration (ug/L ): 8.340

EE  
DSE  
10/21/97

Hg2 ID: 43377 LCS1      Seq. No.: 00052      A/S Pos.: --      Date: 10/21/97

Replicate 1      Time: 12:41  
Peak Area (A-s): 4.712      Peak Height (A): 0.204  
Blank Corrected Pk Height (A): 0.204  
Concentration (ug/L ): 5.278

Replicate 1 Time: 12:42  
Peak Area (A-s): 4.594 Peak Height (A): 0.194  
Blank Corrected Pk Height (A): 0.194  
Concentration (ug/L ): 5.018

Hg2 ID: 184-50-10A<sup>ABC</sup> Seq. No.: 00054 A/S Pos.: -- Date: 10/21/97

Replicate 1 Time: 12:43  
Peak Area (A-s): 0.031 Peak Height (A): 0.001  
Blank Corrected Pk Height (A): 0.001  
Concentration (ug/L ): 0.034

Hg2 ID: 184-50-10A<sup>ABC</sup> D Seq. No.: 00055 A/S Pos.: -- Date: 10/21/97

Replicate 1 Time: 12:44  
Peak Area (A-s): 0.014 Peak Height (A): 0.000  
Blank Corrected Pk Height (A): 0.000  
Concentration (ug/L ): 0.005

Hg2 ID: 184-50-10 Seq. No.: 00056 A/S Pos.: -- Date: 10/21/97

Replicate 1 Time: 12:45  
Peak Area (A-s): 0.033 Peak Height (A): 0.001  
Blank Corrected Pk Height (A): 0.001  
Concentration (ug/L ): 0.034

Hg2 ID: 184-50-10 D Seq. No.: 00057 A/S Pos.: -- Date: 10/21/97

Replicate 1 Time: 12:46  
Peak Area (A-s): 0.040 Peak Height (A): 0.001  
Blank Corrected Pk Height (A): 0.001  
Concentration (ug/L ): 0.036

Hg2 ID: 184-50-10 MS Seq. No.: 00058 A/S Pos.: -- Date: 10/21/97

Replicate 1 Time: 12:47  
Peak Area (A-s): 7.796 Peak Height (A): 0.329  
Blank Corrected Pk Height (A): 0.329  
Concentration (ug/L ): 8.522

Hg2 ID: 184-50-10 MSD Seq. No.: 00059 A/S Pos.: -- Date: 10/21/97

Replicate 1 Time: 12:48  
Peak Area (A-s): 7.729 Peak Height (A): 0.328  
Blank Corrected Pk Height (A): 0.328  
Concentration (ug/L ): 8.504

Hg2 ID: CCV1=6.0ug/L Seq. No.: 00060 A/S Pos.: -- Date: 10/21/97

Blank Corrected PK Height (A): 0.231  
Concentration (ug/L ): 5.981

Hg2 ID: CCE                      Seq. No.: 00061    A/S Pos.: --    Date: 10/21/97

Replicate 1                      Time: 12:50  
Peak Area (A-s): 0.043              Peak Height (A): 0.002  
Blank Corrected PK Height (A): 0.002  
Concentration (ug/L ): 0.044

Hg2 ID: 184-50-1E              Seq. No.: 00062    A/S Pos.: --    Date: 10/21/97

Replicate 1                      Time: 12:52  
Peak Area (A-s): 0.000              Peak Height (A): -0.000  
Blank Corrected PK Height (A): -0.000  
Concentration (ug/L ): -0.005

Hg2 ID: 184-50-1E D            Seq. No.: 00063    A/S Pos.: --    Date: 10/21/97

Replicate 1                      Time: 12:53  
Peak Area (A-s): -0.000            Peak Height (A): -0.000  
Blank Corrected PK Height (A): -0.000  
Concentration (ug/L ): -0.005

Hg2 ID: 184-50-1F              Seq. No.: 00064    A/S Pos.: --    Date: 10/21/97

Replicate 1                      Time: 12:54  
Peak Area (A-s): 0.027              Peak Height (A): 0.012  
Blank Corrected PK Height (A): 0.012  
Concentration (ug/L ): 0.307

Hg2 ID: 184-50-1F D            Seq. No.: 00065    A/S Pos.: --    Date: 10/21/97

Replicate 1                      Time: 12:55  
Peak Area (A-s): 0.293              Peak Height (A): 0.013  
Blank Corrected PK Height (A): 0.013  
Concentration (ug/L ): 0.328

Hg2 ID: 184-50-1G              Seq. No.: 00066    A/S Pos.: --    Date: 10/21/97

Replicate 1                      Time: 12:56  
Peak Area (A-s): 0.023              Peak Height (A): 0.001  
Blank Corrected PK Height (A): 0.001  
Concentration (ug/L ): 0.016

Hg2 ID: 184-50-1G D            Seq. No.: 00067    A/S Pos.: --    Date: 10/21/97

Replicate 1                      Time: 12:57  
Peak Area (A-s): 0.021              Peak Height (A): 0.000  
Blank Corrected PK Height (A): 0.000



Hg2 ID: 184-50-2CA8<sup>ABC</sup> Seq. No.: 00068 A/S Pos.: -- Date: 10/21/97

Replicate 1 Time: 12:58  
Peak Area (A-s): 0.001 Peak Height (A): 0.000  
Blank Corrected Pk Height (A): 0.000  
Concentration (ug/L ): 0.008

Hg2 ID: 184-50-2CA8 D<sup>ABC</sup> Seq. No.: 00069 A/S Pos.: -- Date: 10/21/97

Replicate 1 Time: 12:59  
Peak Area (A-s): -0.002 Peak Height (A): -0.000  
Blank Corrected Pk Height (A): -0.000  
Concentration (ug/L ): -0.008

Hg2 ID: 184-50-2DE Seq. No.: 00070 A/S Pos.: -- Date: 10/21/97

Replicate 1 Time: 13:00  
Peak Area (A-s): 0.037 Peak Height (A): 0.001  
Blank Corrected Pk Height (A): 0.001  
Concentration (ug/L ): 0.034

Hg2 ID: 184-50-2DE D Seq. No.: 00071 A/S Pos.: -- Date: 10/21/97

Replicate 1 Time: 13:01  
Peak Area (A-s): 0.027 Peak Height (A): 0.001  
Blank Corrected Pk Height (A): 0.001  
Concentration (ug/L ): 0.023

Hg2 ID: 00VD:6.0ug/L Seq. No.: 00072 A/S Pos.: -- Date: 10/21/97

Replicate 1 Time: 13:02  
Peak Area (A-s): 5.44e Peak Height (A): 0.231  
Blank Corrected Pk Height (A): 0.231  
Concentration (ug/L ): 6.001

Hg2 ID: 00E Seq. No.: 00073 A/S Pos.: -- Date: 10/21/97

Replicate 1 Time: 13:03  
Peak Area (A-s): 0.015 Peak Height (A): 0.000  
Blank Corrected Pk Height (A): 0.000  
Concentration (ug/L ): 0.008

Hg2 ID: 184-50-2F Seq. No.: 00074 A/S Pos.: -- Date: 10/21/97

Replicate 1 Time: 13:04  
Peak Area (A-s): -0.013 Peak Height (A): -0.001  
Blank Corrected Pk Height (A): -0.001  
Concentration (ug/L ): -0.018



Concentration (ug/L ): 8.403

Hg2 ID: 184-50-3DE MSD Seq. No.: 00083 A/S Pos.: -- Date: 10/21/97

Replicate 1 Time: 13:13  
Peak Area (A-s): 7.202 Peak Height (A): 0.308  
Blank Corrected PK Height (A): 0.308  
Concentration (ug/L ): 7.976

Hg2 ID: CCV3-6.0ug/L Seq. No.: 00084 A/S Pos.: -- Date: 10/21/97

Replicate 1 Time: 13:14  
Peak Area (A-s): 5.583 Peak Height (A): 0.235  
Blank Corrected PK Height (A): 0.239  
Concentration (ug/L ): 6.189

Hg2 ID: CCS Seq. No.: 00085 A/S Pos.: -- Date: 10/21/97

Replicate 1 Time: 13:15  
Peak Area (A-s): 0.053 Peak Height (A): 0.002  
Blank Corrected PK Height (A): 0.002  
Concentration (ug/L ): 0.047

Hg2 ID: 184-50-3C<sup>ABC</sup> ~~3C~~ Seq. No.: 00086 A/S Pos.: -- Date: 10/21/97

Replicate 1 Time: 13:16  
Peak Area (A-s): 0.005 Peak Height (A): 0.000  
Blank Corrected PK Height (A): 0.000  
Concentration (ug/L ): 0.000

Hg2 ID: 184-50-3C<sup>ABC</sup> ~~3C~~ Seq. No.: 00087 A/S Pos.: -- Date: 10/21/97

Replicate 1 Time: 13:17  
Peak Area (A-s): 0.001 Peak Height (A): 0.000  
Blank Corrected PK Height (A): 0.000  
Concentration (ug/L ): 0.000

Hg2 ID: 184-50-3F Seq. No.: 00088 A/S Pos.: -- Date: 10/21/97

Replicate 1 Time: 13:18  
Peak Area (A-s): -0.010 Peak Height (A): -0.000  
Blank Corrected PK Height (A): -0.000  
Concentration (ug/L ): -0.005

Hg2 ID: 184-50-3F Seq. No.: 00089 A/S Pos.: -- Date: 10/21/97

Replicate 1 Time: 13:19  
Peak Area (A-s): -0.011 Peak Height (A): -0.001  
Blank Corrected PK Height (A): -0.001  
Concentration (ug/L ): -0.018

Hg2 ID: 184-50-36 Seq. No.: 00090 A/S Pos.: -- Date: 10/21/97

Replicate 1 Time: 13:21  
Peak Area (A-s): 0.440 Peak Height (A): 0.017  
Blank Corrected PK Height (A): 0.017  
Concentration (ug/L ): 0.442

Hg2 ID: 184-50-36 D Seq. No.: 00091 A/S Pos.: -- Date: 10/21/97

Replicate 1 Time: 13:22  
Peak Area (A-s): 0.441 Peak Height (A): 0.018  
Blank Corrected PK Height (A): 0.018  
Concentration (ug/L ): 0.463

Hg2 ID: 184-50-3H Seq. No.: 00092 A/S Pos.: -- Date: 10/21/97

Replicate 1 Time: 13:23  
Peak Area (A-s): 0.060 Peak Height (A): 0.003  
Blank Corrected PK Height (A): 0.003  
Concentration (ug/L ): 0.070

Hg2 ID: 184-50-3H D Seq. No.: 00093 A/S Pos.: -- Date: 10/21/97

Replicate 1 Time: 13:24  
Peak Area (A-s): 0.063 Peak Height (A): 0.002  
Blank Corrected PK Height (A): 0.002  
Concentration (ug/L ): 0.060

Hg2 ID: 184-50-40<sup>ABC</sup>~~40~~ Seq. No.: 00094 A/S Pos.: -- Date: 10/21/97

Replicate 1 Time: 13:25  
Peak Area (A-s): -0.009 Peak Height (A): -0.000  
Blank Corrected PK Height (A): -0.000  
Concentration (ug/L ): -0.003

Hg2 ID: 184-50-40<sup>11-3-97</sup>~~40~~ D Seq. No.: 00095 A/S Pos.: -- Date: 10/21/97

Replicate 1 Time: 13:26  
Peak Area (A-s): -0.014 Peak Height (A): -0.001  
Blank Corrected PK Height (A): -0.001  
Concentration (ug/L ): -0.016

Hg2 ID: 00V4=6.0ug/L Seq. No.: 00096 A/S Pos.: -- Date: 10/21/97

Replicate 1 Time: 13:27  
Peak Area (A-s): 5.489 Peak Height (A): 0.236  
Blank Corrected PK Height (A): 0.236  
Concentration (ug/L ): 6.121

Hg2 ID: 008 Seq. No.: 00097 A/S Pos.: -- Date: 10/21/97

-----  
Peak Area (A-s): 0.026                      Peak Height (A): 0.001  
Blank Corrected Pk Height (A): 0.001  
Concentration (ug/L ): 0.029  
-----

Hg2 ID: 184-50-4DE                      Seq. No.: 00098      A/S Pos.: --      Date: 10/21/97

Replicate 1                                      Time: 13:30  
Peak Area (A-s): 0.022                      Peak Height (A): 0.001  
Blank Corrected Pk Height (A): 0.001  
Concentration (ug/L ): 0.026  
-----

Hg2 ID: 184-50-4DE D                      Seq. No.: 00099      A/S Pos.: --      Date: 10/21/97

Replicate 1                                      Time: 13:31  
Peak Area (A-s): 0.039                      Peak Height (A): 0.001  
Blank Corrected Pk Height (A): 0.001  
Concentration (ug/L ): 0.029  
-----

Hg2 ID: 184-50-4DE MS                      Seq. No.: 00100      A/S Pos.: --      Date: 10/21/97

Replicate 1                                      Time: 13:32  
Peak Area (A-s): 6.870                      Peak Height (A): 0.299  
Blank Corrected Pk Height (A): 0.299  
Concentration (ug/L ): 7.750  
-----

Hg2 ID: 184-50-4DE MS0                      Seq. No.: 00101      A/S Pos.: --      Date: 10/21/97

Replicate 1                                      Time: 13:33  
Peak Area (A-s): 6.810                      Peak Height (A): 0.290  
Blank Corrected Pk Height (A): 0.292  
Concentration (ug/L ): 7.679  
-----

Hg2 ID: 184-50-4F                              Seq. No.: 00102      A/S Pos.: --      Date: 10/21/97

Replicate 1                                      Time: 13:35  
Peak Area (A-s): 0.018                      Peak Height (A): 0.001  
Blank Corrected Pk Height (A): 0.001  
Concentration (ug/L ): 0.019  
-----

Hg2 ID: 184-50-4F D                              Seq. No.: 00103      A/S Pos.: --      Date: 10/21/97

Replicate 1                                      Time: 13:36  
Peak Area (A-s): -0.005                      Peak Height (A): 0.000  
Blank Corrected Pk Height (A): 0.000  
Concentration (ug/L ): 0.000  
-----

Hg2 ID: 184-50-4G                              Seq. No.: 00104      A/S Pos.: --      Date: 10/21/97

Replicate 1                                      Time: 13:37  
Peak Area (A-s): 0.271                      Peak Height (A): 0.012

Hg2 ID: 184-50-4G D Seq. No.: 00105 A/S Pos.: -- Date: 10/21/97

Replicate 1 Time: 13:38  
Peak Area (A-s): 0.279 Peak Height (A): 0.011  
Blank Corrected Pk Height (A): 0.011  
Concentration (ug/L ): 0.297

Hg2 ID: 184-50-4H Seq. No.: 00106 A/S Pos.: -- Date: 10/21/97

Replicate 1 Time: 13:39  
Peak Area (A-s): 0.015 Peak Height (A): 0.000  
Blank Corrected Pk Height (A): 0.000  
Concentration (ug/L ): 0.010

Hg2 ID: 184-50-4H D Seq. No.: 00107 A/S Pos.: -- Date: 10/21/97

Replicate 1 Time: 13:40  
Peak Area (A-s): 0.013 Peak Height (A): 0.000  
Blank Corrected Pk Height (A): 0.000  
Concentration (ug/L ): 0.005

Hg2 ID: 00V8Pc.0LgH Seq. No.: 00108 A/S Pos.: -- Date: 10/21/97

Replicate 1 Time: 13:41  
Peak Area (A-s): 6.527 Peak Height (A): 0.237  
Blank Corrected Pk Height (A): 0.237  
Concentration (ug/L ): 6.158

Hg2 ID: 00B Seq. No.: 00109 A/S Pos.: -- Date: 10/21/97

Replicate 1 Time: 13:42  
Peak Area (A-s): 0.008 Peak Height (A): 0.001  
Blank Corrected Pk Height (A): 0.001  
Concentration (ug/L ): 0.024

Hg2 ID: 184-50-5CAB <sup>ABC</sup> ~~5CAB~~ <sup>u-3-97cc</sup> Seq. No.: 00110 A/S Pos.: -- Date: 10/21/97

Replicate 1 Time: 13:43  
Peak Area (A-s): -0.003 Peak Height (A): -0.000  
Blank Corrected Pk Height (A): -0.000  
Concentration (ug/L ): -0.003

Hg2 ID: 184-50-5CAB <sup>ABC</sup> ~~5CAB~~ <sup>u-3-97cc</sup> D Seq. No.: 00111 A/S Pos.: -- Date: 10/21/97

Replicate 1 Time: 13:44  
Peak Area (A-s): -0.007 Peak Height (A): -0.000  
Blank Corrected Pk Height (A): -0.000

Concentration (ug/L ): -0.010

Replicate 1 Time: 13:45  
Peak Area (A-s): -0.009 Peak Height (A): -0.001  
Blank Corrected Pk Height (A): -0.001  
Concentration (ug/L ): -0.016

Hg2 ID: 184-50-5E0 D Seq. No.: 00113 A/S Pos.: -- Date: 10/21/97

Replicate 1 Time: 13:46  
Peak Area (A-s): -0.005 Peak Height (A): -0.000  
Blank Corrected Pk Height (A): -0.000  
Concentration (ug/L ): -0.005

Hg2 ID: 184-50-5E Seq. No.: 00114 A/S Pos.: -- Date: 10/21/97

Replicate 1 Time: 13:47  
Peak Area (A-s): -0.014 Peak Height (A): -0.001  
Blank Corrected Pk Height (A): -0.001  
Concentration (ug/L ): -0.013

Hg2 ID: 184-50-5E D Seq. No.: 00115 A/S Pos.: -- Date: 10/21/97

Replicate 1 Time: 13:48  
Peak Area (A-s): -0.014 Peak Height (A): -0.001  
Blank Corrected Pk Height (A): -0.001  
Concentration (ug/L ): -0.013

Hg2 ID: 184-50-5F Seq. No.: 00116 A/S Pos.: -- Date: 10/21/97

Replicate 1 Time: 13:49  
Peak Area (A-s): -0.014 Peak Height (A): -0.001  
Blank Corrected Pk Height (A): -0.001  
Concentration (ug/L ): -0.018

Hg2 ID: 184-50-5F D Seq. No.: 00117 A/S Pos.: -- Date: 10/21/97

Replicate 1 Time: 13:50  
Peak Area (A-s): -0.012 Peak Height (A): -0.001  
Blank Corrected Pk Height (A): -0.001  
Concentration (ug/L ): -0.016

Hg2 ID: 184-50-6C<sup>ABC</sup> <sup>11-3-97cc</sup> Seq. No.: 00118 A/S Pos.: -- Date: 10/21/97

Replicate 1 Time: 13:51  
Peak Area (A-s): -0.013 Peak Height (A): -0.001  
Blank Corrected Pk Height (A): -0.001  
Concentration (ug/L ): -0.016

Hg2 ID: 184-50-6C<sup>ABC</sup> <sup>11-3-97cc</sup> D Seq. No.: 00119 A/S Pos.: -- Date: 10/21/97

Blank Corrected PK Height (A): -0.000  
Concentration (ug/L ): -0.003

-----  
Hg2 ID: CCV6=6.0ug/L      Seq. No.: 00120      A/S Pos.: --      Date: 10/21/97

Replicate 1                              Time: 13:53  
Peak Area (A-s): 5.608                  Peak Height (A): 0.244  
Blank Corrected PK Height (A): 0.244  
Concentration (ug/L ): 6.332

-----  
Hg2 ID: CCB                              Seq. No.: 00121      A/S Pos.: --      Date: 10/21/97

Replicate 1                              Time: 13:54  
Peak Area (A-s): 0.008                  Peak Height (A): -0.000  
Blank Corrected PK Height (A): -0.000  
Concentration (ug/L ): -0.003



ID/Weight File: AB828.IOW  
Sample Volume: 100 mL

Analyst: D.STREETER-EDWARDS  
Nominal Weight: 1.0 g

Hg.

| Loc. | Sample ID      | Weight | Dilution |
|------|----------------|--------|----------|
| 0    | ST BLANK       |        |          |
| 1    | STD1=0.2ug/L   |        |          |
| 2    | STD2=0.5ug/L   |        |          |
| 3    | STD3=1.0ug/L   |        |          |
| 4    | STD4=2.0ug/L   |        |          |
| 5    | STD5=5.0ug/L   |        |          |
| 6    | STD6=10.0ug/L  |        |          |
| 7    | ICV=4.0ug/L    |        |          |
| 8    | ICB            |        |          |
| 9    | CHECK LC       |        |          |
| 10   | 43377 MB2      |        |          |
| 11   | 43377 MB2D     |        |          |
| 12   | 43377 LCS      |        |          |
| 13   | 43377 LCSD     |        |          |
| 14   | 184-50-6B      |        |          |
| 15   | 184-50-6B D    |        |          |
| 16   | 184-50-6BD     |        |          |
| 17   | 184-50-6BD D   |        |          |
| 18   | 184-50-6BD MS  |        |          |
| 19   | 184-50-6BD MSD |        |          |
| 20   | CCV7=6.0ug/L   |        |          |
| 21   | CCE            |        |          |
| 22   | 184-50-6E      |        |          |
| 23   | 184-50-6E D    |        |          |
| 24   | 184-50-6FE     |        |          |
| 25   | 184-50-6FE D   |        |          |
| 26   | 184-50-7CAB    |        |          |
| 27   | 184-50-7CAB D  |        |          |
| 28   | 184-50-7E      |        |          |
| 29   | 184-50-7E D    |        |          |
| 30   | 184-50-7F      |        |          |
| 31   | 184-50-7F D    |        |          |
| 32   | CCV8=6.0ug/L   |        |          |
| 33   | CCB            |        |          |
| 34   | 184-50-7D      |        |          |
| 35   | 184-50-7D D    |        |          |
| 36   | 184-50-7D MS   |        |          |
| 37   | 184-50-7D MSD  |        |          |
| 38   | CCV9=6.0ug/L   |        |          |
| 39   | CCB            |        |          |
| 40   | 42011 Cn1 MB   |        |          |
| 41   | 42011 Cn1 MBD  |        |          |
| 42   | 42011 LCS      |        |          |
| 43   | 42011 LCSD     |        |          |
| 44   | 170-70-3       |        |          |
| 45   | 170-70-3 D     |        |          |
| 46   | 170-70-3 MS    |        |          |
| 47   | 170-70-3 MSD   |        |          |
| 48   | CCV9=6.0ug/L   |        |          |
| 49   | CCB            |        |          |
| 50   | 43411 MB3      |        |          |
| 51   | 43411 MB3 D    |        |          |
| 52   | 43411 LCS3     |        |          |
| 53   | 43411 LCS3D    |        |          |

3-023-7 DSE 10/22/97

3-023-8 DSE 10/22/97

3-023-8 DSE 10/22/97

3-023-8 DSE 10/22/97

3-023-8 DSE 10/22/97

3-023-8 DSE 10/22/97

Hg

| Loc. | Sample ID      | Weight | Dilution |
|------|----------------|--------|----------|
| 54   | 184-84-5B0     |        |          |
| 55   | 184-84-5B0 D   |        |          |
| 56   | 184-84-5B0 MS  |        |          |
| 57   | 184-84-5B0 MS0 |        |          |
| 58   | CCV10=6.0ug/L  |        |          |
| 59   | CCE            |        |          |
| 60   | 184-84-5E      |        |          |
| 61   | 184-84-5E D    |        |          |
| 62   | 184-84-5F      |        |          |
| 63   | 184-84-5F D    |        |          |
| 64   | 184-84-5GF     |        |          |
| 65   | 184-84-5GF D   |        |          |
| 66   | CCV11=6.0ug/L  |        |          |
| 67   | CCE            |        |          |

- 3-023-8 RSE 10/22/97

Element File: HG\_MEL  
Element: Hg2  
Print Data: Main+Suppl.  
Print: Calib. Curve  
Remarks:

Analyst: D STREETER-EDWARDS  
Peak Storage: None

Hg

STANDARDS= 3-023-7  
QC= 3-023-8

-----  
INSTRUMENT: 5100                      Technique: MHS                      Version: 7.01  
Wavelength: 253.7 Peak                      Slit: 0.7 Low  
Signal Type: AA                      Signal Measurement: Peak Height (5)  
Read Time: 30.0                      Read Delay: 1.0                      BOC Time: 2  
Sample Replicates: 1  
Standard Replicates: 1  
-----

FLAME:  
Flame Type: Air                      Flame Sensor: On  
Oxidant Flow: 10.0 L/min                      Fuel Flow: 2.0 L/min  
-----

CALIBRATION:

| Solutions    | ID      | Conc   |
|--------------|---------|--------|
| Calib. Blank | STD BLK |        |
| Standard 1   | STD 1   | 0.200  |
| Standard 2   | STD 2   | 0.500  |
| Standard 3   | STD 3   | 1.000  |
| Standard 4   | STD 4   | 2.000  |
| Standard 5   | STD 5   | 5.000  |
| Standard 6   | STD 6   | 10.000 |

Calibration Units: ug/L                      Sample Units: ug/L  
Calibration Type: Linear  
-----

QC:

Matrix Check Calculations:  
% Difference for Dupls: No                      Locations:  
% Recovery for Spike: No                      Locations:                      Conc:

-----  
Element File: HG\_MEL            Element: Hg2            Wavelength: 253.7  
Date: 10/22/97                Time: 09:46            Slit: 0.7 L  
Data File: ABB28.DAT          ID/Wt File: ABB28.IDW    Lamp Current: 0  
Technique: MHS                Calib. Type: Linear      Energy: 71  
Remark 1: STANDARDS: 3-023-7  
Remark 2: QC: 3-023-8  
-----

D.S.E Hg  
10/22/97

-----  
Hg2 ID: Seq. 00001            Seq. No.: 00001    A/S Pos.: --    Date: 10/22/97

Replicate 1                            Time: 09:46  
Peak Area (A-s): 0.290                Peak Height (A): 0.012  
Blank Corrected Pk Height (A): 0.012

Auto-zero performed.

-----  
ID: Seq. 00002            Seq. No.: 00002    A/S Pos.: --    Date: 10/22/97

Replicate 1                            Time: 09:47  
Peak Area (A-s): 0.020                Peak Height (A): 0.001  
Blank Corrected Pk Height (A): 0.001

Auto-zero performed.

-----  
Element File: HG\_MEL      Element: Hg2      Wavelength: 253.7  
Date: 10/22/97      Time: 09:48      Slit: 0.7 L  
Data File: AB828.DAT      ID/Wt File: AB828.IDW      Lamp Current: 0  
Technique: MHS      Calib. Type: Linear      Energy: 71  
Remark 1: STANDARDS= 3-023-7  
Remark 2: QC= 3-023-8  
-----

Hg

Hg2 ID: ST BLANK      Seq. No.: 00003      A/S Pos.: ---      Date: 10/22/97

Replicate 1      Time: 09:50  
Peak Area (A-s): -0.000      Peak Height (A): -0.000  
Blank Corrected Pk Height (A): -0.000

Auto-zero performed.

Hg2 ID: STD1=0.2ug/L      Seq. No.: 00004      A/S Pos.: --      Date: 10/22/97

Replicate 1      Time: 09:52  
Peak Area (A-s): 0.162      Peak Height (A): 0.007  
Blank Corrected Pk Height (A): 0.007

Standard number 1 applied. [0.200]  
Correlation coefficient: 1.00000      Slope: 0.0331

Hg2 ID: STD2=0.5ug/L      Seq. No.: 00005      A/S Pos.: --      Date: 10/22/97

Sample abs. is greater than that of the largest standard.  
Replicate 1      Time: 09:53  
Peak Area (A-s): 0.429      Peak Height (A): 0.018  
Blank Corrected Pk Height (A): 0.018  
Concentration (ug/L ): 0.548

EE  
DSE  
10/22/97  
Didn't exempt  
Data.  
(Re-run)

Hg2 ID: STD3=1.0ug/L      Seq. No.: 00006      A/S Pos.: --      Date: 10/22/97

Sample abs. is greater than that of the largest standard.  
Replicate 1      Time: 09:54  
Peak Area (A-s): 0.886      Peak Height (A): 0.038  
Blank Corrected Pk Height (A): 0.038  
Concentration (ug/L ): 1.145

Hg2 ID: STD2=0.5ug/L      Seq. No.: 00007      A/S Pos.: --      Date: 10/22/97

Sample abs. is greater than that of the largest standard.  
Replicate 1      Time: 10:01  
Peak Area (A-s): 0.470      Peak Height (A): 0.021  
Blank Corrected Pk Height (A): 0.021  
Concentration (ug/L ): 0.621

Standard number 2 applied. [0.500]  
Correlation coefficient: 0.98455      Slope: 0.0402

-----  
Hg2 ID: STD3=1.0ug/L      Seq. No.: 00008      A/S Pos.: --      Date: 10/22/97

Sample abs. is greater than that of the largest standard.

Replicate 1                      Time: 10:02  
Peak Area (A-s): 0.913              Peak Height (A): 0.041  
Blank Corrected Pk Height (A): 0.041  
Concentration (ug/L ): 1.020

Standard number 3 applied. [1.000]  
Correlation coefficient: 0.99775      Slope: 0.0409

-----  
Hg2 ID: STD4=2.0ug/L      Seq. No.: 00009      A/S Pos.: --      Date: 10/22/97

Sample abs. is greater than that of the largest standard.

Replicate 1                      Time: 10:03  
Peak Area (A-s): 1.700              Peak Height (A): 0.073  
Blank Corrected Pk Height (A): 0.073  
Concentration (ug/L ): 1.798

Standard number 4 applied. [2.000]  
Correlation coefficient: 0.99647      Slope: 0.0378

-----  
Hg2 ID: STD5=5.0ug/L      Seq. No.: 00010      A/S Pos.: --      Date: 10/22/97

Sample abs. is greater than that of the largest standard.

Replicate 1                      Time: 10:05  
Peak Area (A-s): 4.214              Peak Height (A): 0.180  
Blank Corrected Pk Height (A): 0.180  
Concentration (ug/L ): 4.768

Standard number 5 applied. [5.000]  
Correlation coefficient: 0.99923      Slope: 0.0364

-----  
Hg2 ID: STD6=10.0ug/L      Seq. No.: 00011      A/S Pos.: --      Date: 10/22/97

Sample abs. is greater than that of the largest standard.

Replicate 1                      Time: 10:06  
Peak Area (A-s): 8.381              Peak Height (A): 0.363  
Blank Corrected Pk Height (A): 0.363  
Concentration (ug/L ): 9.993

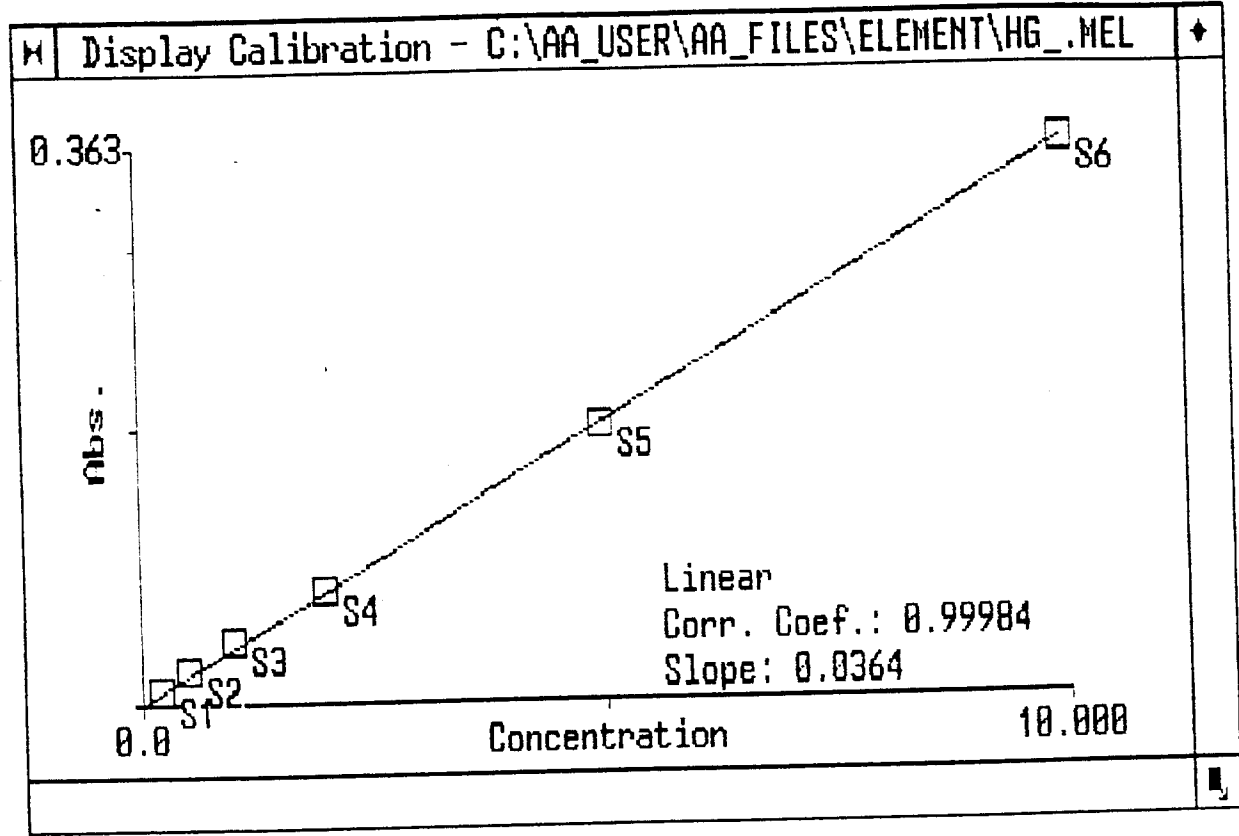
Standard number 6 applied. [10.000]  
Correlation coefficient: 0.99984      Slope: 0.0364

Element File: HG\_MEL  
Date: 10/22/97  
Data File: A8828.DAT  
Technique: MHS  
Remark 1: STANDARDS= 3-023-7  
Remark 2: QC= 3-023-8

Element: Hg2  
Time: 10:07  
ID/Wt File: A8828.IDW  
Calib. Type: Linear

Wavelength: 253.7  
Slit: 0.7 L  
Lamp Current: 0  
Energy: 71

Hg



Hg2 ID: ICV=4.0ug/L Seq. No.: 00012 A/S Pos.: -- Date: 10/22/97

Replicate 1  
Peak Area (A-s): 3.522 Time: 10:12  
Blank Corrected Pk Height (A): 0.150 Peak Height (A): 0.150  
Concentration (ug/L ): 4.137

Hg2 ID: ICB Seq. No.: 00013 A/S Pos.: -- Date: 10/22/97

Replicate 1  
Peak Area (A-s): 0.014 Time: 10:13  
Blank Corrected Pk Height (A): 0.000 Peak Height (A): 0.000  
Concentration (ug/L ): 0.003

Hg2 ID: CHECK LO Seq. No.: 00014 A/S Pos.: -- Date: 10/22/97

Replicate 1  
Peak Area (A-s): 0.173 Time: 10:15  
Blank Corrected Pk Height (A): 0.007 Peak Height (A): 0.007  
Concentration (ug/L ): 0.199

Hg2 ID: 43377 MB2 Seq. No.: 00015 A/S Pos.: -- Date: 10/22/97

Replicate 1  
Peak Area (A-s): 0.003 Time: 10:18  
Blank Corrected Pk Height (A): 0.000 Peak Height (A): 0.000  
Concentration (ug/L ): 0.003

Hg2 ID: 43377 MB2D Seq. No.: 00016 A/S Pos.: -- Date: 10/22/97

Replicate 1  
Peak Area (A-s): 0.005 Time: 10:19  
Blank Corrected Pk Height (A): -0.000 Peak Height (A): -0.000  
Concentration (ug/L ): -0.003

Hg2 ID: 43377 LCS Seq. No.: 00017 A/S Pos.: -- Date: 10/22/97

Replicate 1  
Peak Area (A-s): 4.228 Time: 10:20  
Blank Corrected Pk Height (A): 0.181 Peak Height (A): 0.181  
Concentration (ug/L ): 4.981

Hg2 ID: 43377 LCSD Seq. No.: 00018 A/S Pos.: -- Date: 10/22/97

Replicate 1  
Peak Area (A-s): 4.003 Time: 10:22  
Blank Corrected Pk Height (A): 0.172 Peak Height (A): 0.172  
Concentration (ug/L ): 4.733

Hg2 ID: 184-50-68 Seq. No.: 00019 A/S Pos.: -- Date: 10/22/97



Replicate 1  
Peak Area (A-s): 0.031  
Blank Corrected Pk Height (A): 0.001  
Concentration (ug/L ): 0.033

Time: 10:23  
Peak Height (A): 0.001

Hg2 ID: 184-50-6B D      Seq. No.: 00020      A/S Pos.: --      Date: 10/22/97

Replicate 1  
Peak Area (A-s): 0.011  
Blank Corrected Pk Height (A): 0.000  
Concentration (ug/L ): 0.011

Time: 10:24  
Peak Height (A): 0.000

Hg2 ID: 184-50-6BD-      Seq. No.: 00021      A/S Pos.: --      Date: 10/22/97

Replicate 1  
Peak Area (A-s): 0.065  
Blank Corrected Pk Height (A): 0.002  
Concentration (ug/L ): 0.066

Time: 10:25  
Peak Height (A): 0.002

Hg2 ID: 184-50-6BD D      Seq. No.: 00022      A/S Pos.: --      Date: 10/22/97

Replicate 1  
Peak Area (A-s): 0.059  
Blank Corrected Pk Height (A): 0.003  
Concentration (ug/L ): 0.083

Time: 10:26  
Peak Height (A): 0.003

Hg2 ID: 184-50-6BD MS      Seq. No.: 00023      A/S Pos.: --      Date: 10/22/97

Replicate 1  
Peak Area (A-s): 4.199  
Blank Corrected Pk Height (A): 0.179  
Concentration (ug/L ): 4.937

Time: 10:27  
Peak Height (A): 0.179

Hg2 ID: 184-50-6BD MSD      Seq. No.: 00024      A/S Pos.: --      Date: 10/22/97

Replicate 1  
Peak Area (A-s): 4.372  
Blank Corrected Pk Height (A): 0.190  
Concentration (ug/L ): 5.227

Time: 10:29  
Peak Height (A): 0.190

Hg2 ID: CCV7=6.0ug/L      Seq. No.: 00025      A/S Pos.: --      Date: 10/22/97

Replicate 1  
Peak Area (A-s): 5.185  
Blank Corrected Pk Height (A): 0.227  
Concentration (ug/L ): 6.231

Time: 10:30  
Peak Height (A): 0.227

Hg2 ID: CCB      Seq. No.: 00026      A/S Pos.: --      Date: 10/22/97

Replicate 1  
Peak Area (A-s): 0.030  
Blank Corrected Pk Height (A): 0.001

Time: 10:31  
Peak Height (A): 0.001

Concentration (ug/L ): 0.019

-----  
Hg2 ID: 184-50-6E Seq. No.: 00027 A/S Pos.: -- Date: 10/22/97

Replicate 1 Time: 10:32  
Peak Area (A-s): 0.015 Peak Height (A): 0.001  
Blank Corrected Pk Height (A): 0.001  
Concentration (ug/L ): 0.019

-----  
Hg2 ID: 184-50-6E D Seq. No.: 00028 A/S Pos.: -- Date: 10/22/97

Replicate 1 Time: 10:34  
Peak Area (A-s): 0.017 Peak Height (A): 0.001  
Blank Corrected Pk Height (A): 0.001  
Concentration (ug/L ): 0.028

-----  
Hg2 ID: 184-50-6FE Seq. No.: 00029 A/S Pos.: -- Date: 10/22/97

Replicate 1 Time: 10:34  
Peak Area (A-s): 0.015 Peak Height (A): 0.001  
Blank Corrected Pk Height (A): 0.001  
Concentration (ug/L ): 0.025

-----  
Hg2 ID: 184-50-6FE D Seq. No.: 00030 A/S Pos.: -- Date: 10/22/97

Replicate 1 Time: 10:35  
Peak Area (A-s): 0.020 Peak Height (A): 0.001  
Blank Corrected Pk Height (A): 0.001  
Concentration (ug/L ): 0.017

-----  
Hg2 ID: 184-50-7CAB<sup>REC</sup> Seq. No.: 00031 A/S Pos.: -- Date: 10/22/97

Replicate 1 Time: 10:37  
Peak Area (A-s): 0.065 Peak Height (A): 0.003  
Blank Corrected Pk Height (A): 0.003  
Concentration (ug/L ): 0.075

-----  
Hg2 ID: 184-50-7CAB<sup>REC</sup> D Seq. No.: 00032 A/S Pos.: -- Date: 10/22/97

Replicate 1 Time: 10:38  
Peak Area (A-s): 0.064 Peak Height (A): 0.002  
Blank Corrected Pk Height (A): 0.002  
Concentration (ug/L ): 0.063

-----  
Hg2 ID: 184-50-7E Seq. No.: 00033 A/S Pos.: -- Date: 10/22/97

Replicate 1 Time: 10:39  
Peak Area (A-s): 0.021 Peak Height (A): 0.001  
Blank Corrected Pk Height (A): 0.001  
Concentration (ug/L ): 0.022







**APPENDIX D**  
**COMPUTER SUMMARIES**



**Appendix D.1**

**Computer Summaries**

**Baghouse Inlet - Method 23 & 29**





## Summary of Stack Gas Parameters and Test Results

ASPHALT PLANT "A"

US EPA Test Method 23 - PCDD / PCDF

Baghouse Inlet

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|                   |                  |
|-------------------|------------------|
| <b>RUN NUMBER</b> | <b>S-M23-I-1</b> |
| <b>RUN DATE</b>   | <b>8/19/97</b>   |
| <b>RUN TIME</b>   | <b>0915-1010</b> |

### MEASURED DATA

|                  |                                                                        |        |
|------------------|------------------------------------------------------------------------|--------|
| $\gamma$         | Meter Box Correction Factor                                            | 1.021  |
| $\Delta H$       | Avg Meter Orifice Pressure, in. H <sub>2</sub> O                       | 1.93   |
| $P_{bar}$        | Barometric Pressure, inches Hg                                         | 29.90  |
| $V_m$            | Sample Volume, ft <sup>3</sup>                                         | 11.116 |
| $T_m$            | Average Meter Temperature, °F                                          | 90     |
| $P_{static}$     | Stack Static Pressure, inches H <sub>2</sub> O                         | -2.5   |
| $T_s$            | Average Stack Temperature, °F                                          | 230    |
| $V_{lc}$         | Condensate Collected, ml                                               | 84.0   |
| CO <sub>2</sub>  | Carbon Dioxide content, % by volume                                    | 5.3    |
| O <sub>2</sub>   | Oxygen content, % by volume                                            | 13.1   |
| N <sub>2</sub>   | Nitrogen content, % by volume                                          | 81.6   |
| $C_p$            | Pitot Tube Coefficient                                                 | 0.84   |
| $\Delta p^{1/2}$ | Average Square Root $\Delta p$ , (in. H <sub>2</sub> O) <sup>1/2</sup> | 0.5927 |
| $\Theta$         | Sample Run Duration, minutes                                           | 20     |
| $D_n$            | Nozzle Diameter, inches                                                | 0.312  |

### CALCULATED DATA

|               |                                              |         |
|---------------|----------------------------------------------|---------|
| $A_n$         | Nozzle Area, ft <sup>2</sup>                 | 0.00053 |
| $V_{m(std)}$  | Standard Meter Volume, dscf                  | 10.940  |
| $V_{m(std)}$  | Standard Meter Volume, dscm                  | 0.310   |
| $P_s$         | Stack Pressure, inches Hg                    | 29.72   |
| $B_{ws}$      | Moisture, % by volume                        | 26.5    |
| $B_{ws(sat)}$ | Moisture (at saturation), % by volume        | 141.2   |
| $V_{wstd}$    | Standard Water Vapor Volume, ft <sup>3</sup> | 3.954   |
| $1-B_{ws}$    | Dry Mole Fraction                            | 0.735   |
| $M_d$         | Molecular Weight (d.b.), lb/lb-mole          | 29.37   |
| $M_s$         | Molecular Weight (w.b.), lb/lb-mole          | 26.35   |
| $V_s$         | Stack Gas Velocity, ft/s                     | 39.9    |
| $A$           | Stack Area, ft <sup>2</sup>                  | 12.57   |
| $Q_s$         | Stack Gas Volumetric flow, acfm              | 30,119  |
| $Q_s$         | Stack Gas Volumetric flow, dscfm             | 16,819  |
| $Q_s(cmm)$    | Stack Gas Volumetric flow, dscm              | 476.3   |
| $I$           | Isokinetic Sampling Ratio, %                 | 77.0    |

**Summary of Stack Gas Parameters and Test Results**

*ASPHALT PLANT "A"*

**US EPA Test Method 23 - PCDD / PCDF**

**Baghouse Inlet**

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|                            |                                     |          |
|----------------------------|-------------------------------------|----------|
| <b>RUN NUMBER</b>          | <b>S-M23-I-1</b>                    |          |
| <b>RUN DATE</b>            | <b>8/19/97</b>                      |          |
| <b>RUN TIME</b>            | <b>0915-1010</b>                    |          |
| <b>EMISSIONS DATA</b>      |                                     |          |
| <b>DIOXINS:</b>            |                                     |          |
| <u><b>2378 TCDD</b></u>    |                                     |          |
| (ng)                       | Catch, ng                           | {0.004}  |
| (ng/dscm)                  | Concentration, ng/dscm, as measured | {0.0129} |
| (µg/hr)                    | Emission Rate, µg/hr                | {0.369}  |
| <u><b>Total TCDD</b></u>   |                                     |          |
| (ng)                       | Catch, ng                           | 0.05     |
| (ng/dscm)                  | Concentration, ng/dscm, as measured | 0.161    |
| (µg/hr)                    | Emission Rate, µg/hr                | 4.61     |
| <u><b>12378 PeCDD</b></u>  |                                     |          |
| (ng)                       | Catch, ng                           | 0.005    |
| (ng/dscm)                  | Concentration, ng/dscm, as measured | 0.0161   |
| (µg/hr)                    | Emission Rate, µg/hr                | 0.461    |
| <u><b>Total PeCDD</b></u>  |                                     |          |
| (ng)                       | Catch, ng                           | 0.07     |
| (ng/dscm)                  | Concentration, ng/dscm, as measured | 0.226    |
| (µg/hr)                    | Emission Rate, µg/hr                | 6.46     |
| <u><b>123478 HxCDD</b></u> |                                     |          |
| (ng)                       | Catch, ng                           | 0.02     |
| (ng/dscm)                  | Concentration, ng/dscm, as measured | 0.0646   |
| (µg/hr)                    | Emission Rate, µg/hr                | 1.84     |
| <u><b>123678 HxCDD</b></u> |                                     |          |
| (ng)                       | Catch, ng                           | 0.04     |
| (ng/dscm)                  | Concentration, ng/dscm, as measured | 0.129    |
| (µg/hr)                    | Emission Rate, µg/hr                | 3.69     |

( ) Not Detected. Value shown is the detection limit for that sample.  
 { } Estimated Maximum Possible Concentration.

**Summary of Stack Gas Parameters and Test Results**

ASPHALT PLANT "A"

US EPA Test Method 23 - PCDD / PCDF

Baghouse Inlet

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|                   |                  |
|-------------------|------------------|
| <b>RUN NUMBER</b> | <b>S-M23-I-1</b> |
| <b>RUN DATE</b>   | <b>8/19/97</b>   |
| <b>RUN TIME</b>   | <b>0915-1010</b> |

EMISSIONS DATA -Continued

DIOXINS - Continued

123789 HxCDD

|           |                                     |       |
|-----------|-------------------------------------|-------|
| (ng)      | Catch, ng                           | 0.05  |
| (ng/dscm) | Concentration, ng/dscm, as measured | 0.161 |
| (µg/hr)   | Emission Rate, µg/hr                | 4.61  |

Total HxCDD

|           |                                     |      |
|-----------|-------------------------------------|------|
| (ng)      | Catch, ng                           | 0.45 |
| (ng/dscm) | Concentration, ng/dscm, as measured | 1.45 |
| (µg/hr)   | Emission Rate, µg/hr                | 41.5 |

1234678 HpCDD

|           |                                     |      |
|-----------|-------------------------------------|------|
| (ng)      | Catch, ng                           | 0.72 |
| (ng/dscm) | Concentration, ng/dscm, as measured | 2.32 |
| (µg/hr)   | Emission Rate, µg/hr                | 66.4 |

Total HpCDD

|           |                                     |      |
|-----------|-------------------------------------|------|
| (ng)      | Catch, ng                           | 1.6  |
| (ng/dscm) | Concentration, ng/dscm, as measured | 5.16 |
| (µg/hr)   | Emission Rate, µg/hr                | 148  |

12346789 OCDD

|           |                                     |       |
|-----------|-------------------------------------|-------|
| (ng)      | Catch, ng                           | 44.5  |
| (ng/dscm) | Concentration, ng/dscm, as measured | 144   |
| (µg/hr)   | Emission Rate, µg/hr                | 4,105 |

Total PCDD

|           |                                     |       |
|-----------|-------------------------------------|-------|
| (ng)      | Catch, ng                           | 46.67 |
| (ng/dscm) | Concentration, ng/dscm, as measured | 151   |
| (µg/hr)   | Emission Rate, µg/hr                | 4,305 |

( ) Not Detected. Value shown is the detection limit for that sample.

{ } Estimated Maximum Possible Concentration.

**Summary of Stack Gas Parameters and Test Results**

ASPHALT PLANT "A"

**US EPA Test Method 23 - PCDD / PCDF**

**Baghouse Inlet**

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|                                |                                              |
|--------------------------------|----------------------------------------------|
| <b>RUN NUMBER</b>              | <b>S-M23-I-1</b>                             |
| <b>RUN DATE</b>                | <b>8/19/97</b>                               |
| <b>RUN TIME</b>                | <b>0915-1010</b>                             |
| <br>EMISSIONS DATA - Continued |                                              |
| FURANS                         |                                              |
| <u>2378 TCDF</u>               |                                              |
| (ng)                           | Catch, ng {0.02}                             |
| (ng/dscm)                      | Concentration, ng/dscm, as measured {0.0646} |
| (µg/hr)                        | Emission Rate, µg/hr {1.84}                  |
| <br><u>Total TCDF</u>          |                                              |
| (ng)                           | Catch, ng 0.14                               |
| (ng/dscm)                      | Concentration, ng/dscm, as measured 0.452    |
| (µg/hr)                        | Emission Rate, µg/hr 12.9                    |
| <br><u>12378 PeCDF</u>         |                                              |
| (ng)                           | Catch, ng 0.008                              |
| (ng/dscm)                      | Concentration, ng/dscm, as measured 0.0258   |
| (µg/hr)                        | Emission Rate, µg/hr 0.738                   |
| <br><u>23478 PeCDF</u>         |                                              |
| (ng)                           | Catch, ng 0.02                               |
| (ng/dscm)                      | Concentration, ng/dscm, as measured 0.0646   |
| (µg/hr)                        | Emission Rate, µg/hr 1.84                    |
| <br><u>Total PeCDF</u>         |                                              |
| (ng)                           | Catch, ng 0.12                               |
| (ng/dscm)                      | Concentration, ng/dscm, as measured 0.387    |
| (µg/hr)                        | Emission Rate, µg/hr 11.1                    |
| <br><u>123478 HxCDF</u>        |                                              |
| (ng)                           | Catch, ng 0.06                               |
| (ng/dscm)                      | Concentration, ng/dscm, as measured 0.194    |
| (µg/hr)                        | Emission Rate, µg/hr 5.53                    |

( ) Not Detected. Value shown is the detection limit for that sample.  
 { } Estimated Maximum Possible Concentration.

**Summary of Stack Gas Parameters and Test Results**

ASPHALT PLANT "A"

**US EPA Test Method 23 - PCDD / PCDF**

**Baghouse Inlet**

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|                   |                  |
|-------------------|------------------|
| <b>RUN NUMBER</b> | <b>S-M23-I-1</b> |
| <b>RUN DATE</b>   | <b>8/19/97</b>   |
| <b>RUN TIME</b>   | <b>0915-1010</b> |

EMISSIONS DATA - Continued

Furans - Continued

123678 HxCDF

|           |                                     |        |
|-----------|-------------------------------------|--------|
| (ng)      | Catch, ng                           | 0.02   |
| (ng/dscm) | Concentration, ng/dscm, as measured | 0.0646 |
| (µg/hr)   | Emission Rate, µg/hr                | 1.84   |

234678 HxCDF

|           |                                     |          |
|-----------|-------------------------------------|----------|
| (ng)      | Catch, ng                           | {0.02}   |
| (ng/dscm) | Concentration, ng/dscm, as measured | {0.0646} |
| (µg/hr)   | Emission Rate, µg/hr                | {1.84}   |

123789 HxCDF

|           |                                     |        |
|-----------|-------------------------------------|--------|
| (ng)      | Catch, ng                           | 0.007  |
| (ng/dscm) | Concentration, ng/dscm, as measured | 0.0226 |
| (µg/hr)   | Emission Rate, µg/hr                | 0.646  |

Total HxCDF

|           |                                     |       |
|-----------|-------------------------------------|-------|
| (ng)      | Catch, ng                           | 0.19  |
| (ng/dscm) | Concentration, ng/dscm, as measured | 0.613 |
| (µg/hr)   | Emission Rate, µg/hr                | 17.5  |

1234678 HpCDF

|           |                                     |       |
|-----------|-------------------------------------|-------|
| (ng)      | Catch, ng                           | 0.12  |
| (ng/dscm) | Concentration, ng/dscm, as measured | 0.387 |
| (µg/hr)   | Emission Rate, µg/hr                | 11.1  |

1234789 HpCDF

|           |                                     |       |
|-----------|-------------------------------------|-------|
| (ng)      | Catch, ng                           | 0.04  |
| (ng/dscm) | Concentration, ng/dscm, as measured | 0.129 |
| (µg/hr)   | Emission Rate, µg/hr                | 3.69  |

- ( ) Not Detected. Value shown is the detection limit for that sample.
- { } Estimated Maximum Possible Concentration.

**Summary of Stack Gas Parameters and Test Results**

*ASPHALT PLANT "A"*

**US EPA Test Method 23 - PCDD / PCDF**

**Baghouse Inlet**

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|                                               |                  |
|-----------------------------------------------|------------------|
| <b>RUN NUMBER</b>                             | <b>S-M23-I-1</b> |
| <b>RUN DATE</b>                               | <b>8/19/97</b>   |
| <b>RUN TIME</b>                               | <b>0915-1010</b> |
| <b>EMISSIONS DATA - Continued</b>             |                  |
| <b>Furans - Continued</b>                     |                  |
| <u>Total HpCDE</u>                            |                  |
| (ng) Catch, ng                                | 0.30             |
| (ng/dscm) Concentration, ng/dscm, as measured | 0.968            |
| (µg/hr) Emission Rate, µg/hr                  | 27.7             |
| <u>12346789 OCDF</u>                          |                  |
| (ng) Catch, ng                                | 0.16             |
| (ng/dscm) Concentration, ng/dscm, as measured | 0.516            |
| (µg/hr) Emission Rate, µg/hr                  | 14.8             |
| <u>Total PCDF</u>                             |                  |
| (ng) Catch, ng                                | 0.910            |
| (ng/dscm) Concentration, ng/dscm, as measured | 2.94             |
| (µg/hr) Emission Rate, µg/hr                  | 83.9             |
| <u>Total PCDD + PCDF</u>                      |                  |
| (ng) Catch, ng                                | 47.6             |
| (ng/dscm) Concentration, ng/dscm, as measured | 154              |
| (µg/hr) Emission Rate, µg/hr                  | 4,389            |

( ) Not Detected. Value shown is the detection limit for that sample.

{ } Estimated Maximum Possible Concentration.

**PCDD/PCDF Corrected Stack Gas Concentrations and 2378 TCDD Toxic Equivalent Concentrations**  
**ASPHALT PLANT "A" - Garner, North Carolina**  
**US EPA Test Method 23 - PCDD/PCDF**  
**Baghouse Inlet**

| RUN NUMBER        | CONCENTRATION                              | 2378-TCDD<br>Toxic<br>Equivalent<br>Factor | 2378 TOXIC EQUIVALENCIES                   |
|-------------------|--------------------------------------------|--------------------------------------------|--------------------------------------------|
|                   | (ng/dscmm, adjusted to 7% O <sub>2</sub> ) |                                            | (ng/dscmm, adjusted to 7% O <sub>2</sub> ) |
| RUN DATE          | S-M23-I-1                                  |                                            | S-M23-I-1                                  |
| RUN TIME          | 08/19/97                                   |                                            | 8/19/97                                    |
|                   | 0915-1010                                  |                                            | 0915-1010                                  |
| <b>DIOXINS:</b>   |                                            |                                            |                                            |
| 2378 TCDD         | {0.0230}                                   |                                            |                                            |
| Total TCDD        | 0.288                                      | 1.000                                      | {0.0230}                                   |
| 12378 PeCDD       | 0.0288                                     |                                            |                                            |
| Total PeCDD       | 0.403                                      | 0.500                                      | 0.0144                                     |
| 123478 HxCDD      | 0.115                                      |                                            |                                            |
| 123678 HxCDD      | 0.230                                      | 0.100                                      | 0.0115                                     |
| 123789 HxCDD      | 0.288                                      | 0.100                                      | 0.0230                                     |
| Total HxCDD       | 2.59                                       | 0.100                                      | 0.0288                                     |
| 1234678 HpCDD     | 4.14                                       |                                            |                                            |
| Total HpCDD       | 9.20                                       | 0.010                                      | 0.0414                                     |
| 12346789 OCDD     | 256                                        |                                            |                                            |
| Total PCDD        | 268                                        | 0.001                                      | 0.256<br>{0.398}                           |
| <b>FURANS:</b>    |                                            |                                            |                                            |
| 2378 TCDF         | {0.115}                                    |                                            |                                            |
| Total TCDF        | 0.805                                      | 0.100                                      | {0.0115}                                   |
| 12378 PeCDF       | 0.0460                                     |                                            |                                            |
| 23478 PeCDF       | 0.115                                      | 0.050                                      | 0.00230                                    |
| Total PeCDF       | 0.690                                      | 0.500                                      | 0.0575                                     |
| 123478 HxCDF      | 0.345                                      |                                            |                                            |
| 123678 HxCDF      | 0.115                                      | 0.100                                      | 0.0345                                     |
| 234678 HxCDF      | {0.115}                                    | 0.100                                      | 0.0115                                     |
| 123789 HxCDF      | 0.0403                                     | 0.100                                      | {0.0115}                                   |
| Total HxCDF       | 1.09                                       | 0.100                                      | 0.00403                                    |
| 1234678 HpCDF     | 0.690                                      |                                            |                                            |
| 1234789 HpCDF     | 0.230                                      | 0.010                                      | 0.00690                                    |
| Total HpCDF       | 1.73                                       | 0.010                                      | 0.00230                                    |
| 12346789 OCDF     | 0.920                                      |                                            |                                            |
| Total PCDF        | 5.23                                       | 0.001                                      | 0.000920                                   |
| Total PCDD + PCDF | 274                                        |                                            | 0.120<br>0.518                             |



**Summary of Stack Gas Parameters and Test Results**  
**US EPA EMC Asphalt Concrete Emissions Testing - ASPHALT PLANT "A"**  
**US EPA Test Method 29 - Multiple Metals**  
**Baghouse Inlet**  
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|                   |                  |
|-------------------|------------------|
| <b>RUN NUMBER</b> | <b>S-M29-I-1</b> |
| <b>RUN DATE</b>   | <b>8/19/97</b>   |
| <b>RUN TIME</b>   | <b>0915-1010</b> |

| MEASURED DATA   |                        |          |
|-----------------|------------------------|----------|
|                 | γ                      | 1.016    |
|                 | ΔH                     | 1.10     |
|                 | P <sub>bar</sub>       | 29.90    |
|                 | V <sub>m</sub>         | 10.780   |
|                 | T <sub>m</sub>         | 92       |
|                 | P <sub>static</sub>    | -2.5     |
|                 | T <sub>s</sub>         | 230      |
|                 | V <sub>k</sub>         | 78.8     |
|                 | CO <sub>2</sub>        | 5.3      |
|                 | O <sub>2</sub>         | 13.1     |
|                 | N <sub>2</sub>         | 81.6     |
|                 | C <sub>p</sub>         | 0.84     |
|                 | Δp <sup>1/2</sup>      | 0.4682   |
|                 | Θ                      | 20       |
|                 | D <sub>n</sub>         | 0.311    |
| CALCULATED DATA |                        |          |
|                 | A <sub>n</sub>         | 0.000527 |
|                 | V <sub>m(std) cf</sub> | 10.491   |
|                 | V <sub>m(std) cm</sub> | 0.297    |
|                 | Q <sub>m</sub>         | 0.525    |
|                 | P <sub>s</sub>         | 29.72    |
|                 | B <sub>ws</sub>        | 26.1     |
|                 | B <sub>ws(sat)</sub>   | 141.2    |
|                 | V <sub>wstd</sub>      | 3.709    |
|                 | 1-B <sub>ws</sub>      | 0.739    |
|                 | M <sub>d</sub>         | 29.37    |
|                 | M <sub>s</sub>         | 26.40    |
|                 | V <sub>s</sub>         | 31.5     |
|                 | A                      | 12.57    |
|                 | Q <sub>a</sub>         | 23,773   |
|                 | Q <sub>s cfm</sub>     | 13,353   |
|                 | Q <sub>s cmm</sub>     | 378      |
|                 | I                      | 93.6     |

**Summary of Stack Gas Parameters and Test Results**  
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| <b>RUN NUMBER</b>         | <b>S-M29-I-1</b>                |         |
|---------------------------|---------------------------------|---------|
| <b>RUN DATE</b>           | <b>8/19/97</b>                  |         |
| <b>RUN TIME</b>           | <b>0915-1010</b>                |         |
| <b>EMISSIONS DATA</b>     |                                 |         |
| <u>Particulate Matter</u> |                                 |         |
| g                         | Target Catch, g                 |         |
| gr/dscf                   | Concentration, gr/dscf          | 43.3384 |
| gr/dscf at 7%             | Concentration, gr/dscf at 7% O2 | 63.7    |
| g/dscm                    | Concentration, g/dscm           | 114     |
| g/dscm at 7%              | Concentration, g/dscm at 7% O2  | 146     |
| lb/hr                     | Emission Rate, lb/hr            | 260     |
| kg/hr                     | Emission Rate, kg/hr            | 7,296   |
|                           |                                 | 3,310   |
| <u>Antimony</u>           |                                 |         |
| µg                        | Target Catch, µg                |         |
| µg/dscm                   | Concentration, µg/dscm          | ND      |
| µg/dscm at 7%             | Concentration, µg/dscm at 7% O2 | ND      |
| g/hr                      | Emission Rate, g/hr             | ND      |
|                           |                                 | ND      |
| <u>Arsenic</u>            |                                 |         |
| µg                        | Target Catch, µg                |         |
| µg/dscm                   | Concentration, µg/dscm          | 15.2    |
| µg/dscm at 7%             | Concentration, µg/dscm at 7% O2 | 51.2    |
| g/hr                      | Emission Rate, g/hr             | 91.2    |
|                           |                                 | 1.16    |
| <u>Barium</u>             |                                 |         |
| µg                        | Target Catch, µg                |         |
| µg/dscm                   | Concentration, µg/dscm          | 613.0   |
| µg/dscm at 7%             | Concentration, µg/dscm at 7% O2 | 2,063   |
| g/hr                      | Emission Rate, g/hr             | 3,677   |
|                           |                                 | 46.8    |
| <u>Beryllium</u>          |                                 |         |
| µg                        | Target Catch, µg                |         |
| µg/dscm                   | Concentration, µg/dscm          | ND      |
| µg/dscm at 7%             | Concentration, µg/dscm at 7% O2 | ND      |
| g/hr                      | Emission Rate, g/hr             | ND      |
|                           |                                 | ND      |
| <u>Cadmium</u>            |                                 |         |
| µg                        | Target Catch, µg                |         |
| µg/dscm                   | Concentration, µg/dscm          | 6.69    |
| µg/dscm at 7%             | Concentration, µg/dscm at 7% O2 | 22.5    |
| g/hr                      | Emission Rate, g/hr             | 40.1    |
|                           |                                 | 0.511   |

**Summary of Stack Gas Parameters and Test Results**  
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|                                   |                                                   |
|-----------------------------------|---------------------------------------------------|
| <b>RUN NUMBER</b>                 | <b>S-M29-I-1</b>                                  |
| <b>RUN DATE</b>                   | <b>8/19/97</b>                                    |
| <b>RUN TIME</b>                   | <b>0915-1010</b>                                  |
| <b>EMISSIONS DATA - Continued</b> |                                                   |
| <u><b>Chromium</b></u>            |                                                   |
| µg                                | Target Catch, µg 27.2                             |
| µg/dscm                           | Concentration, µg/dscm 91.7                       |
| µg/dscm at 7%                     | Concentration, µg/dscm at 7% O <sub>2</sub> 163   |
| g/hr                              | Emission Rate, g/hr 2.08                          |
| <u><b>Cobalt</b></u>              |                                                   |
| µg                                | Target Catch, µg 26.5                             |
| µg/dscm                           | Concentration, µg/dscm 89.2                       |
| µg/dscm at 7%                     | Concentration, µg/dscm at 7% O <sub>2</sub> 159   |
| g/hr                              | Emission Rate, g/hr 2.02                          |
| <u><b>Copper</b></u>              |                                                   |
| µg                                | Target Catch, µg 124                              |
| µg/dscm                           | Concentration, µg/dscm 417                        |
| µg/dscm at 7%                     | Concentration, µg/dscm at 7% O <sub>2</sub> 743   |
| g/hr                              | Emission Rate, g/hr 9.46                          |
| <u><b>Lead</b></u>                |                                                   |
| µg                                | Target Catch, µg 50.4                             |
| µg/dscm                           | Concentration, µg/dscm 170                        |
| µg/dscm at 7%                     | Concentration, µg/dscm at 7% O <sub>2</sub> 302   |
| g/hr                              | Emission Rate, g/hr 3.85                          |
| <u><b>Manganese</b></u>           |                                                   |
| µg                                | Target Catch, µg 1,172                            |
| µg/dscm                           | Concentration, µg/dscm 3,946                      |
| µg/dscm at 7%                     | Concentration, µg/dscm at 7% O <sub>2</sub> 7,032 |
| g/hr                              | Emission Rate, g/hr 89.5                          |
| <u><b>Mercury</b></u>             |                                                   |
| µg                                | Target Catch, µg ND                               |
| µg/dscm                           | Concentration, µg/dscm ND                         |
| µg/dscm at 7%                     | Concentration, µg/dscm at 7% O <sub>2</sub> ND    |
| g/hr                              | Emission Rate, g/hr ND                            |

**Summary of Stack Gas Parameters and Test Results**  
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**RUN NUMBER**

**S-M29-I-1**

**RUN DATE**

**8/19/97**

**RUN TIME**

**0915-1010**

**EMISSIONS DATA - Continued**

Nickel

|               |                                 |       |
|---------------|---------------------------------|-------|
| µg            | Target Catch, µg                |       |
| µg/dscm       | Concentration, µg/dscm          | 11.8  |
| µg/dscm at 7% | Concentration, µg/dscm at 7% O2 | 39.8  |
| g/hr          | Emission Rate, g/hr             | 70.9  |
|               |                                 | 0.903 |

Phosphorus

|               |                                 |        |
|---------------|---------------------------------|--------|
| µg            | Target Catch, µg                |        |
| µg/dscm       | Concentration, µg/dscm          | 3,545  |
| µg/dscm at 7% | Concentration, µg/dscm at 7% O2 | 11,934 |
| g/hr          | Emission Rate, g/hr             | 21,267 |
|               |                                 | 271    |

Silver

|               |                                 |    |
|---------------|---------------------------------|----|
| µg            | Target Catch, µg                |    |
| µg/dscm       | Concentration, µg/dscm          | ND |
| µg/dscm at 7% | Concentration, µg/dscm at 7% O2 | ND |
| g/hr          | Emission Rate, g/hr             | ND |
|               |                                 | ND |

Selenium

|               |                                 |        |
|---------------|---------------------------------|--------|
| µg            | Target Catch, µg                |        |
| µg/dscm       | Concentration, µg/dscm          | 0.969  |
| µg/dscm at 7% | Concentration, µg/dscm at 7% O2 | 3.26   |
| g/hr          | Emission Rate, g/hr             | 5.81   |
|               |                                 | 0.0740 |

Thallium

|               |                                 |       |
|---------------|---------------------------------|-------|
| µg            | Target Catch, µg                |       |
| µg/dscm       | Concentration, µg/dscm          | 2.90  |
| µg/dscm at 7% | Concentration, µg/dscm at 7% O2 | 9.76  |
| g/hr          | Emission Rate, g/hr             | 17.4  |
|               |                                 | 0.221 |

Zinc

|               |                                 |       |
|---------------|---------------------------------|-------|
| µg            | Target Catch, µg                |       |
| µg/dscm       | Concentration, µg/dscm          | 520.5 |
| µg/dscm at 7% | Concentration, µg/dscm at 7% O2 | 1,752 |
| g/hr          | Emission Rate, g/hr             | 3,123 |
|               |                                 | 39.8  |



Appendix D.2

Computer Summaries

Baghouse Outlet - Method 9, 23 & 29



## Visible Emission Observation Summary

### Baghouse Outlet

| Run Number                         | <u>S-M9-O-1A</u> | <u>O-M9-1B</u> | <u>O-M9-1C</u> | <u>O-M9-1D</u> |
|------------------------------------|------------------|----------------|----------------|----------------|
| Date                               | 8/19/97          | 8/19/97        | 8/19/97        | 8/19/97        |
| Start Time                         | 0918             | 1107           | 1304           | 1412           |
| Stop Time                          | 1106             | 1207           | 1404           | 1512           |
| Percent Opacity                    |                  |                |                |                |
| Average for entire run             | 1.29             | 0.82           | 2.76           | 3.73           |
| Highest single reading             | 15               | 10             | 10             | 10             |
| Highest six-minute block average   | 2.92             | 1.46           | 3.61           | 6.25           |
| Highest six-minute rolling average | 3.54             | 1.67           | 3.75           | 6.46           |



Date: 8/19/97  
 Start Time: 0918  
 Stop Time: 1106

Baghouse Outlet  
 Run Number: O-M9-1A

| Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, |
|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|
| 0.25                  | NA                                           | 12.25                 | 3.13                                         | 24.25                 | 1.46                                         | 36.25                 | 1.04                                         | 48.25                 | 0.83                                         |
| 0.50                  | NA                                           | 12.50                 | 2.92                                         | 24.50                 | 1.46                                         | 36.50                 | 1.04                                         | 48.50                 | 0.63                                         |
| 0.75                  | NA                                           | 12.75                 | 2.92                                         | 24.75                 | 1.46                                         | 36.75                 | 1.04                                         | 48.75                 | 0.63                                         |
| 1.00                  | NA                                           | 13.00                 | 2.92                                         | 25.00                 | 1.46                                         | 37.00                 | 1.04                                         | 49.00                 | 0.63                                         |
| 1.25                  | NA                                           | 13.25                 | 2.71                                         | 25.25                 | 1.67                                         | 37.25                 | 1.04                                         | 49.25                 | 0.63                                         |
| 1.50                  | NA                                           | 13.50                 | 2.29                                         | 25.50                 | 1.67                                         | 37.50                 | 1.04                                         | 49.50                 | 0.63                                         |
| 1.75                  | NA                                           | 13.75                 | 2.29                                         | 25.75                 | 1.46                                         | 37.75                 | 0.83                                         | 49.75                 | 0.63                                         |
| 2.00                  | NA                                           | 14.00                 | 2.29                                         | 26.00                 | 1.46                                         | 38.00                 | 1.04                                         | 50.00                 | 0.63                                         |
| 2.25                  | NA                                           | 14.25                 | 2.50                                         | 26.25                 | 1.46                                         | 38.25                 | 1.04                                         | 50.25                 | 0.63                                         |
| 2.50                  | NA                                           | 14.50                 | 2.08                                         | 26.50                 | 1.46                                         | 38.50                 | 0.83                                         | 50.50                 | 0.42                                         |
| 2.75                  | NA                                           | 14.75                 | 2.08                                         | 26.75                 | 1.46                                         | 38.75                 | 0.83                                         | 50.75                 | 0.63                                         |
| 3.00                  | NA                                           | 15.00                 | 1.88                                         | 27.00                 | 1.25                                         | 39.00                 | 0.63                                         | 51.00                 | 0.42                                         |
| 3.25                  | NA                                           | 15.25                 | 1.67                                         | 27.25                 | 0.83                                         | 39.25                 | 0.63                                         | 51.25                 | 0.42                                         |
| 3.50                  | NA                                           | 15.50                 | 1.46                                         | 27.50                 | 0.63                                         | 39.50                 | 0.63                                         | 51.50                 | 0.63                                         |
| 3.75                  | NA                                           | 15.75                 | 1.46                                         | 27.75                 | 0.63                                         | 39.75                 | 0.42                                         | 51.75                 | 0.63                                         |
| 4.00                  | NA                                           | 16.00                 | 1.46                                         | 28.00                 | 0.83                                         | 40.00                 | 0.42                                         | 52.00                 | 0.42                                         |
| 4.25                  | NA                                           | 16.25                 | 1.46                                         | 28.25                 | 1.04                                         | 40.25                 | 0.42                                         | 52.25                 | 0.42                                         |
| 4.50                  | NA                                           | 16.50                 | 1.46                                         | 28.50                 | 1.04                                         | 40.50                 | 0.63                                         | 52.50                 | 0.42                                         |
| 4.75                  | NA                                           | 16.75                 | 1.25                                         | 28.75                 | 0.83                                         | 40.75                 | 0.63                                         | 52.75                 | 0.42                                         |
| 5.00                  | NA                                           | 17.00                 | 1.46                                         | 29.00                 | 0.83                                         | 41.00                 | 0.63                                         | 53.00                 | 0.42                                         |
| 5.25                  | NA                                           | 17.25                 | 1.46                                         | 29.25                 | 0.83                                         | 41.25                 | 0.63                                         | 53.25                 | 0.42                                         |
| 5.50                  | NA                                           | 17.50                 | 1.67                                         | 29.50                 | 1.04                                         | 41.50                 | 0.63                                         | 53.50                 | 0.42                                         |
| 5.75                  | NA                                           | 17.75                 | 1.67                                         | 29.75                 | 1.04                                         | 41.75                 | 0.63                                         | 53.75                 | 0.42                                         |
| 6.00                  | 1.88                                         | 18.00                 | 1.67                                         | 30.00                 | 1.04                                         | 42.00                 | 0.42                                         | 54.00                 | 0.42                                         |
| 6.25                  | 1.67                                         | 18.25                 | 1.46                                         | 30.25                 | 1.25                                         | 42.25                 | 0.42                                         | 54.25                 | 0.42                                         |
| 6.50                  | 1.88                                         | 18.50                 | 1.46                                         | 30.50                 | 1.25                                         | 42.50                 | 0.63                                         | 54.50                 | 0.63                                         |
| 6.75                  | 1.67                                         | 18.75                 | 1.46                                         | 30.75                 | 1.25                                         | 42.75                 | 0.63                                         | 54.75                 | 0.63                                         |
| 7.00                  | 1.88                                         | 19.00                 | 1.25                                         | 31.00                 | 1.25                                         | 43.00                 | 0.63                                         | 55.00                 | 0.63                                         |
| 7.25                  | 2.08                                         | 19.25                 | 1.25                                         | 31.25                 | 1.04                                         | 43.25                 | 0.63                                         | 55.25                 | 0.83                                         |
| 7.50                  | 2.50                                         | 19.50                 | 1.25                                         | 31.50                 | 1.04                                         | 43.50                 | 0.63                                         | 55.50                 | 1.04                                         |
| 7.75                  | 2.50                                         | 19.75                 | 1.46                                         | 31.75                 | 1.25                                         | 43.75                 | 0.63                                         | 55.75                 | 1.04                                         |
| 8.00                  | 2.50                                         | 20.00                 | 1.25                                         | 32.00                 | 1.25                                         | 44.00                 | 0.42                                         | 56.00                 | 1.04                                         |
| 8.25                  | 2.50                                         | 20.25                 | 1.25                                         | 32.25                 | 1.04                                         | 44.25                 | 0.42                                         | 56.25                 | 1.04                                         |
| 8.50                  | 3.13                                         | 20.50                 | 1.04                                         | 32.50                 | 1.25                                         | 44.50                 | 0.63                                         | 56.50                 | 1.04                                         |
| 8.75                  | 2.92                                         | 20.75                 | 1.04                                         | 32.75                 | 1.25                                         | 44.75                 | 0.63                                         | 56.75                 | 0.83                                         |
| 9.00                  | 2.92                                         | 21.00                 | 1.25                                         | 33.00                 | 1.46                                         | 45.00                 | 0.83                                         | 57.00                 | 0.83                                         |
| 9.25                  | 3.13                                         | 21.25                 | 1.67                                         | 33.25                 | 1.46                                         | 45.25                 | 0.83                                         | 57.25                 | 0.83                                         |
| 9.50                  | 3.13                                         | 21.50                 | 1.88                                         | 33.50                 | 1.46                                         | 45.50                 | 0.83                                         | 57.50                 | 0.83                                         |
| 9.75                  | 3.33                                         | 21.75                 | 1.67                                         | 33.75                 | 1.67                                         | 45.75                 | 0.83                                         | 57.75                 | 0.83                                         |
| 10.00                 | 3.54                                         | 22.00                 | 1.67                                         | 34.00                 | 1.46                                         | 46.00                 | 1.04                                         | 58.00                 | 0.83                                         |
| 10.25                 | 3.33                                         | 22.25                 | 1.67                                         | 34.25                 | 1.46                                         | 46.25                 | 1.04                                         | 58.25                 | 0.83                                         |
| 10.50                 | 3.13                                         | 22.50                 | 1.67                                         | 34.50                 | 1.25                                         | 46.50                 | 0.83                                         | 58.50                 | 0.83                                         |
| 10.75                 | 3.13                                         | 22.75                 | 1.67                                         | 34.75                 | 1.25                                         | 46.75                 | 0.83                                         | 58.75                 | 0.83                                         |
| 11.00                 | 3.13                                         | 23.00                 | 1.88                                         | 35.00                 | 1.25                                         | 47.00                 | 0.83                                         | 59.00                 | 0.83                                         |
| 11.25                 | 3.13                                         | 23.25                 | 1.67                                         | 35.25                 | 1.25                                         | 47.25                 | 0.83                                         | 59.25                 | 0.83                                         |
| 11.50                 | 3.13                                         | 23.50                 | 1.67                                         | 35.50                 | 1.25                                         | 47.50                 | 0.83                                         | 59.50                 | NA*                                          |
| 11.75                 | 2.92                                         | 23.75                 | 1.46                                         | 35.75                 | 1.04                                         | 47.75                 | 0.83                                         | 59.75                 | NA*                                          |
| 12.00                 | 2.92                                         | 24.00                 | 1.46                                         | 36.00                 | 1.25                                         | 48.00                 | 0.83                                         | 60.00                 | NA*                                          |

HIGHEST SIX-MINUTE BLOCK AVERAGE = 2.92  
 HIGHEST SIX-MINUTE ROLLING AVERAGE = 3.54

AVERAGE OPACITY DURING RUN = 1.29

\* Due to fugitive emission obstructions, a number of readings could not be made. Running averages included the time lapses so that the net run time was shortened. NA indicates that for the time period, an average is Not Applicable.

Date: 8/19/97  
 Start Time: 1107  
 Stop Time: 1207

Baghouse Outlet  
 Run Number: O-M9-1B

| Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, |
|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|
| 0.25                  | NA                                           | 12.25                 | 0.83                                         | 24.25                 | 0.63                                         | 36.25                 | 0.21                                         | 48.25                 | 0.63                                         |
| 0.50                  | NA                                           | 12.50                 | 1.04                                         | 24.50                 | 0.63                                         | 36.50                 | 0.21                                         | 48.50                 | 0.63                                         |
| 0.75                  | NA                                           | 12.75                 | 1.04                                         | 24.75                 | 0.63                                         | 36.75                 | 0.21                                         | 48.75                 | 0.83                                         |
| 1.00                  | NA                                           | 13.00                 | 1.04                                         | 25.00                 | 0.42                                         | 37.00                 | 0.21                                         | 49.00                 | 0.83                                         |
| 1.25                  | NA                                           | 13.25                 | 1.04                                         | 25.25                 | 0.42                                         | 37.25                 | 0.63                                         | 49.25                 | 0.83                                         |
| 1.50                  | NA                                           | 13.50                 | 1.04                                         | 25.50                 | 0.42                                         | 37.50                 | 0.63                                         | 49.50                 | 0.83                                         |
| 1.75                  | NA                                           | 13.75                 | 1.04                                         | 25.75                 | 0.42                                         | 37.75                 | 0.83                                         | 49.75                 | 0.83                                         |
| 2.00                  | NA                                           | 14.00                 | 1.04                                         | 26.00                 | 0.63                                         | 38.00                 | 0.83                                         | 50.00                 | 1.04                                         |
| 2.25                  | NA                                           | 14.25                 | 1.04                                         | 26.25                 | 0.63                                         | 38.25                 | 1.04                                         | 50.25                 | 1.04                                         |
| 2.50                  | NA                                           | 14.50                 | 1.04                                         | 26.50                 | 0.63                                         | 38.50                 | 1.04                                         | 50.50                 | 1.04                                         |
| 2.75                  | NA                                           | 14.75                 | 1.04                                         | 26.75                 | 0.63                                         | 38.75                 | 1.04                                         | 50.75                 | 1.04                                         |
| 3.00                  | NA                                           | 15.00                 | 1.04                                         | 27.00                 | 0.63                                         | 39.00                 | 1.04                                         | 51.00                 | 0.83                                         |
| 3.25                  | NA                                           | 15.25                 | 1.25                                         | 27.25                 | 0.42                                         | 39.25                 | 1.04                                         | 51.25                 | 0.83                                         |
| 3.50                  | NA                                           | 15.50                 | 1.04                                         | 27.50                 | 0.42                                         | 39.50                 | 1.04                                         | 51.50                 | 0.83                                         |
| 3.75                  | NA                                           | 15.75                 | 1.04                                         | 27.75                 | 0.42                                         | 39.75                 | 1.04                                         | 51.75                 | 0.83                                         |
| 4.00                  | NA                                           | 16.00                 | 1.04                                         | 28.00                 | 0.42                                         | 40.00                 | 1.04                                         | 52.00                 | 1.04                                         |
| 4.25                  | NA                                           | 16.25                 | 1.04                                         | 28.25                 | 0.42                                         | 40.25                 | 1.04                                         | 52.25                 | 1.04                                         |
| 4.50                  | NA                                           | 16.50                 | 0.83                                         | 28.50                 | 0.42                                         | 40.50                 | 1.04                                         | 52.50                 | 0.83                                         |
| 4.75                  | NA                                           | 16.75                 | 0.83                                         | 28.75                 | 0.42                                         | 40.75                 | 1.25                                         | 52.75                 | 0.83                                         |
| 5.00                  | NA                                           | 17.00                 | 0.83                                         | 29.00                 | 0.63                                         | 41.00                 | 1.46                                         | 53.00                 | 0.63                                         |
| 5.25                  | NA                                           | 17.25                 | 0.63                                         | 29.25                 | 0.63                                         | 41.25                 | 1.46                                         | 53.25                 | 0.63                                         |
| 5.50                  | NA                                           | 17.50                 | 0.63                                         | 29.50                 | 0.63                                         | 41.50                 | 1.46                                         | 53.50                 | 0.63                                         |
| 5.75                  | NA                                           | 17.75                 | 0.63                                         | 29.75                 | 0.63                                         | 41.75                 | 1.46                                         | 53.75                 | 0.63                                         |
| 6.00                  | 1.25                                         | 18.00                 | 0.63                                         | 30.00                 | 0.42                                         | 42.00                 | 1.46                                         | 54.00                 | 0.83                                         |
| 6.25                  | 1.04                                         | 18.25                 | 0.63                                         | 30.25                 | 0.63                                         | 42.25                 | 1.67                                         | 54.25                 | 0.83                                         |
| 6.50                  | 1.04                                         | 18.50                 | 0.42                                         | 30.50                 | 0.63                                         | 42.50                 | 1.67                                         | 54.50                 | 1.04                                         |
| 6.75                  | 1.04                                         | 18.75                 | 0.42                                         | 30.75                 | 0.63                                         | 42.75                 | 1.67                                         | 54.75                 | 0.83                                         |
| 7.00                  | 1.04                                         | 19.00                 | 0.63                                         | 31.00                 | 0.63                                         | 43.00                 | 1.67                                         | 55.00                 | 0.83                                         |
| 7.25                  | 1.04                                         | 19.25                 | 0.63                                         | 31.25                 | 0.63                                         | 43.25                 | 1.25                                         | 55.25                 | 0.83                                         |
| 7.50                  | 1.04                                         | 19.50                 | 0.63                                         | 31.50                 | 0.63                                         | 43.50                 | 1.25                                         | 55.50                 | 1.04                                         |
| 7.75                  | 1.04                                         | 19.75                 | 0.63                                         | 31.75                 | 0.63                                         | 43.75                 | 1.04                                         | 55.75                 | 1.04                                         |
| 8.00                  | 1.04                                         | 20.00                 | 0.63                                         | 32.00                 | 0.42                                         | 44.00                 | 1.04                                         | 56.00                 | 0.83                                         |
| 8.25                  | 1.04                                         | 20.25                 | 0.63                                         | 32.25                 | 0.42                                         | 44.25                 | 0.83                                         | 56.25                 | 0.83                                         |
| 8.50                  | 1.04                                         | 20.50                 | 0.63                                         | 32.50                 | 0.42                                         | 44.50                 | 0.83                                         | 56.50                 | 0.83                                         |
| 8.75                  | 0.83                                         | 20.75                 | 0.63                                         | 32.75                 | 0.42                                         | 44.75                 | 0.83                                         | 56.75                 | NA*                                          |
| 9.00                  | 0.83                                         | 21.00                 | 0.63                                         | 33.00                 | 0.42                                         | 45.00                 | 1.04                                         | 57.00                 | NA*                                          |
| 9.25                  | 0.83                                         | 21.25                 | 0.63                                         | 33.25                 | 0.42                                         | 45.25                 | 1.04                                         | 57.25                 | NA*                                          |
| 9.50                  | 0.83                                         | 21.50                 | 0.63                                         | 33.50                 | 0.63                                         | 45.50                 | 0.83                                         | 57.50                 | NA*                                          |
| 9.75                  | 0.63                                         | 21.75                 | 0.63                                         | 33.75                 | 0.63                                         | 45.75                 | 0.83                                         | 57.75                 | NA*                                          |
| 10.00                 | 0.42                                         | 22.00                 | 0.63                                         | 34.00                 | 0.63                                         | 46.00                 | 0.83                                         | 58.00                 | NA*                                          |
| 10.25                 | 0.42                                         | 22.25                 | 0.63                                         | 34.25                 | 0.63                                         | 46.25                 | 0.83                                         | 58.25                 | NA*                                          |
| 10.50                 | 0.63                                         | 22.50                 | 0.63                                         | 34.50                 | 0.63                                         | 46.50                 | 1.04                                         | 58.50                 | NA*                                          |
| 10.75                 | 0.83                                         | 22.75                 | 0.42                                         | 34.75                 | 0.63                                         | 46.75                 | 0.83                                         | 58.75                 | NA*                                          |
| 11.00                 | 0.83                                         | 23.00                 | 0.42                                         | 35.00                 | 0.42                                         | 47.00                 | 0.83                                         | 59.00                 | NA*                                          |
| 11.25                 | 0.83                                         | 23.25                 | 0.42                                         | 35.25                 | 0.42                                         | 47.25                 | 0.83                                         | 59.25                 | NA*                                          |
| 11.50                 | 0.83                                         | 23.50                 | 0.42                                         | 35.50                 | 0.42                                         | 47.50                 | 0.83                                         | 59.50                 | NA*                                          |
| 11.75                 | 0.83                                         | 23.75                 | 0.42                                         | 35.75                 | 0.42                                         | 47.75                 | 0.83                                         | 59.75                 | NA*                                          |
| 12.00                 | 0.83                                         | 24.00                 | 0.63                                         | 36.00                 | 0.42                                         | 48.00                 | 0.83                                         | 60.00                 | NA*                                          |

HIGHEST SIX-MINUTE BLOCK AVERAGE = 1.46      AVERAGE OPACITY DURING RUN = 0.82  
 HIGHEST SIX-MINUTE ROLLING AVERAGE = 1.67

\* Due to fugitive emission obstructions, a number of readings could not be made. Running averages included the time lapses so that the net run time was shortened. NA indicates that for the time period, an average is Not Applicable.

Date: 8/19/97  
 Start Time: 1304  
 Stop Time: 1404

Baghouse Outlet  
 Run Number: O-M9-1C

| Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, |
|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|
| 0.25                  | NA                                           | 12.25                 | 1.67                                         | 24.25                 | 2.71                                         | 36.25                 | 3.54                                         | 48.25                 | 2.92                                         |
| 0.50                  | NA                                           | 12.50                 | 1.88                                         | 24.50                 | 2.50                                         | 36.50                 | 3.33                                         | 48.50                 | 2.71                                         |
| 0.75                  | NA                                           | 12.75                 | 1.88                                         | 24.75                 | 2.29                                         | 36.75                 | 3.33                                         | 48.75                 | 2.71                                         |
| 1.00                  | NA                                           | 13.00                 | 2.08                                         | 25.00                 | 2.29                                         | 37.00                 | 3.33                                         | 49.00                 | 2.50                                         |
| 1.25                  | NA                                           | 13.25                 | 2.08                                         | 25.25                 | 2.29                                         | 37.25                 | 3.13                                         | 49.25                 | 2.50                                         |
| 1.50                  | NA                                           | 13.50                 | 1.88                                         | 25.50                 | 2.29                                         | 37.50                 | 3.33                                         | 49.50                 | 2.71                                         |
| 1.75                  | NA                                           | 13.75                 | 1.88                                         | 25.75                 | 2.08                                         | 37.75                 | 3.54                                         | 49.75                 | 2.71                                         |
| 2.00                  | NA                                           | 14.00                 | 2.08                                         | 26.00                 | 2.29                                         | 38.00                 | 3.75                                         | 50.00                 | 2.50                                         |
| 2.25                  | NA                                           | 14.25                 | 2.08                                         | 26.25                 | 2.29                                         | 38.25                 | 3.54                                         | 50.25                 | 2.29                                         |
| 2.50                  | NA                                           | 14.50                 | 2.08                                         | 26.50                 | 2.50                                         | 38.50                 | 3.54                                         | 50.50                 | 2.29                                         |
| 2.75                  | NA                                           | 14.75                 | 1.88                                         | 26.75                 | 2.50                                         | 38.75                 | 3.54                                         | 50.75                 | 2.50                                         |
| 3.00                  | NA                                           | 15.00                 | 1.88                                         | 27.00                 | 2.71                                         | 39.00                 | 3.54                                         | 51.00                 | 2.50                                         |
| 3.25                  | NA                                           | 15.25                 | 2.08                                         | 27.25                 | 2.92                                         | 39.25                 | 3.54                                         | 51.25                 | 2.92                                         |
| 3.50                  | NA                                           | 15.50                 | 1.88                                         | 27.50                 | 2.71                                         | 39.50                 | 3.54                                         | 51.50                 | 2.92                                         |
| 3.75                  | NA                                           | 15.75                 | 1.88                                         | 27.75                 | 2.71                                         | 39.75                 | 3.54                                         | 51.75                 | 2.71                                         |
| 4.00                  | NA                                           | 16.00                 | 1.88                                         | 28.00                 | 2.50                                         | 40.00                 | 3.33                                         | 52.00                 | 2.92                                         |
| 4.25                  | NA                                           | 16.25                 | 1.88                                         | 28.25                 | 2.50                                         | 40.25                 | 3.13                                         | 52.25                 | 2.92                                         |
| 4.50                  | NA                                           | 16.50                 | 2.08                                         | 28.50                 | 2.50                                         | 40.50                 | 3.13                                         | 52.50                 | 3.13                                         |
| 4.75                  | NA                                           | 16.75                 | 2.29                                         | 28.75                 | 2.50                                         | 40.75                 | 3.13                                         | 52.75                 | NA*                                          |
| 5.00                  | NA                                           | 17.00                 | 2.29                                         | 29.00                 | 2.50                                         | 41.00                 | 3.13                                         | 53.00                 | NA*                                          |
| 5.25                  | NA                                           | 17.25                 | 2.29                                         | 29.25                 | 2.50                                         | 41.25                 | 3.33                                         | 53.25                 | NA*                                          |
| 5.50                  | NA                                           | 17.50                 | 2.50                                         | 29.50                 | 2.50                                         | 41.50                 | 3.13                                         | 53.50                 | NA*                                          |
| 5.75                  | NA                                           | 17.75                 | 2.50                                         | 29.75                 | 2.29                                         | 41.75                 | 2.92                                         | 53.75                 | NA*                                          |
| 6.00                  | 2.50                                         | 18.00                 | 2.50                                         | 30.00                 | 2.71                                         | 42.00                 | 2.71                                         | 54.00                 | NA*                                          |
| 6.25                  | 2.29                                         | 18.25                 | 2.71                                         | 30.25                 | 2.71                                         | 42.25                 | 2.71                                         | 54.25                 | NA*                                          |
| 6.50                  | 2.29                                         | 18.50                 | 2.71                                         | 30.50                 | 2.92                                         | 42.50                 | 2.92                                         | 54.50                 | NA*                                          |
| 6.75                  | 2.29                                         | 18.75                 | 2.92                                         | 30.75                 | 3.13                                         | 42.75                 | 2.92                                         | 54.75                 | NA*                                          |
| 7.00                  | 2.08                                         | 19.00                 | 2.71                                         | 31.00                 | 3.33                                         | 43.00                 | 2.92                                         | 55.00                 | NA*                                          |
| 7.25                  | 1.88                                         | 19.25                 | 2.71                                         | 31.25                 | 3.54                                         | 43.25                 | 3.13                                         | 55.25                 | NA*                                          |
| 7.50                  | 2.08                                         | 19.50                 | 2.92                                         | 31.50                 | 3.33                                         | 43.50                 | 2.92                                         | 55.50                 | NA*                                          |
| 7.75                  | 1.88                                         | 19.75                 | 2.92                                         | 31.75                 | 3.54                                         | 43.75                 | 2.71                                         | 55.75                 | NA*                                          |
| 8.00                  | 1.88                                         | 20.00                 | 2.92                                         | 32.00                 | 3.33                                         | 44.00                 | 2.71                                         | 56.00                 | NA*                                          |
| 8.25                  | 1.46                                         | 20.25                 | 2.92                                         | 32.25                 | 3.54                                         | 44.25                 | 2.92                                         | 56.25                 | NA*                                          |
| 8.50                  | 1.46                                         | 20.50                 | 2.71                                         | 32.50                 | 3.54                                         | 44.50                 | 2.92                                         | 56.50                 | NA*                                          |
| 8.75                  | 1.67                                         | 20.75                 | 2.92                                         | 32.75                 | 3.33                                         | 44.75                 | 2.92                                         | 56.75                 | NA*                                          |
| 9.00                  | 1.67                                         | 21.00                 | 3.13                                         | 33.00                 | 2.92                                         | 45.00                 | 3.13                                         | 57.00                 | NA*                                          |
| 9.25                  | 1.67                                         | 21.25                 | 2.92                                         | 33.25                 | 2.92                                         | 45.25                 | 2.92                                         | 57.25                 | NA*                                          |
| 9.50                  | 1.88                                         | 21.50                 | 3.13                                         | 33.50                 | 2.92                                         | 45.50                 | 3.13                                         | 57.50                 | NA*                                          |
| 9.75                  | 1.67                                         | 21.75                 | 3.33                                         | 33.75                 | 3.13                                         | 45.75                 | 3.13                                         | 57.75                 | NA*                                          |
| 10.00                 | 1.88                                         | 22.00                 | 3.13                                         | 34.00                 | 3.33                                         | 46.00                 | 3.13                                         | 58.00                 | NA*                                          |
| 10.25                 | 1.88                                         | 22.25                 | 3.13                                         | 34.25                 | 3.33                                         | 46.25                 | 3.33                                         | 58.25                 | NA*                                          |
| 10.50                 | 2.08                                         | 22.50                 | 2.71                                         | 34.50                 | 3.54                                         | 46.50                 | 3.13                                         | 58.50                 | NA*                                          |
| 10.75                 | 1.88                                         | 22.75                 | 2.50                                         | 34.75                 | 3.54                                         | 46.75                 | 3.33                                         | 58.75                 | NA*                                          |
| 11.00                 | 1.88                                         | 23.00                 | 2.50                                         | 35.00                 | 3.54                                         | 47.00                 | 3.33                                         | 59.00                 | NA*                                          |
| 11.25                 | 1.67                                         | 23.25                 | 2.71                                         | 35.25                 | 3.33                                         | 47.25                 | 3.13                                         | 59.25                 | NA*                                          |
| 11.50                 | 1.67                                         | 23.50                 | 2.71                                         | 35.50                 | 3.33                                         | 47.50                 | 3.33                                         | 59.50                 | NA*                                          |
| 11.75                 | 1.88                                         | 23.75                 | 2.71                                         | 35.75                 | 3.75                                         | 47.75                 | 3.13                                         | 59.75                 | NA*                                          |
| 12.00                 | 1.67                                         | 24.00                 | 2.71                                         | 36.00                 | 3.54                                         | 48.00                 | 3.13                                         | 60.00                 | NA*                                          |

HIGHEST SIX-MINUTE BLOCK AVERAGE = 3.61  
 HIGHEST SIX-MINUTE ROLLING AVERAGE = 3.75  
 \* Due to fugitive emission obstructions, a number of readings could not be made. Running averages included the time lapses so that the net run time was shortened. NA indicates that for the time period, an average is Not Applicable.

AVERAGE OPACITY DURING RUN = 2.76

Date: 8/19/97  
 Start Time: 1412  
 Stop Time: 1512

Baghouse Outlet  
 Run Number: O-M9-1D

| Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, |
|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|
| 0.25                  | NA                                           | 12.25                 | 3.54                                         | 24.25                 | 3.54                                         | 36.25                 | 2.50                                         | 48.25                 | 6.25                                         |
| 0.50                  | NA                                           | 12.50                 | 3.33                                         | 24.50                 | 3.54                                         | 36.50                 | 2.29                                         | 48.50                 | 6.25                                         |
| 0.75                  | NA                                           | 12.75                 | 3.33                                         | 24.75                 | 3.33                                         | 36.75                 | 2.29                                         | 48.75                 | 6.25                                         |
| 1.00                  | NA                                           | 13.00                 | 3.33                                         | 25.00                 | 3.13                                         | 37.00                 | 2.29                                         | 49.00                 | 6.25                                         |
| 1.25                  | NA                                           | 13.25                 | 3.54                                         | 25.25                 | 3.13                                         | 37.25                 | 2.29                                         | 49.25                 | 6.25                                         |
| 1.50                  | NA                                           | 13.50                 | 3.33                                         | 25.50                 | 2.92                                         | 37.50                 | 2.29                                         | 49.50                 | 6.04                                         |
| 1.75                  | NA                                           | 13.75                 | 3.54                                         | 25.75                 | 3.13                                         | 37.75                 | 2.50                                         | 49.75                 | 5.83                                         |
| 2.00                  | NA                                           | 14.00                 | 3.54                                         | 26.00                 | 3.13                                         | 38.00                 | 2.50                                         | 50.00                 | 5.63                                         |
| 2.25                  | NA                                           | 14.25                 | 3.33                                         | 26.25                 | 3.33                                         | 38.25                 | 2.50                                         | 50.25                 | 5.42                                         |
| 2.50                  | NA                                           | 14.50                 | 3.54                                         | 26.50                 | 3.33                                         | 38.50                 | 2.50                                         | 50.50                 | 5.42                                         |
| 2.75                  | NA                                           | 14.75                 | 3.33                                         | 26.75                 | 3.54                                         | 38.75                 | 2.50                                         | 50.75                 | 5.42                                         |
| 3.00                  | NA                                           | 15.00                 | 3.33                                         | 27.00                 | 3.54                                         | 39.00                 | 2.50                                         | 51.00                 | 5.42                                         |
| 3.25                  | NA                                           | 15.25                 | 3.54                                         | 27.25                 | 3.13                                         | 39.25                 | 2.71                                         | 51.25                 | 5.21                                         |
| 3.50                  | NA                                           | 15.50                 | 3.75                                         | 27.50                 | 3.13                                         | 39.50                 | 2.71                                         | 51.50                 | 5.00                                         |
| 3.75                  | NA                                           | 15.75                 | 3.96                                         | 27.75                 | 3.13                                         | 39.75                 | 2.92                                         | 51.75                 | 4.79                                         |
| 4.00                  | NA                                           | 16.00                 | 3.75                                         | 28.00                 | 3.13                                         | 40.00                 | 2.92                                         | 52.00                 | 4.58                                         |
| 4.25                  | NA                                           | 16.25                 | 3.96                                         | 28.25                 | 3.13                                         | 40.25                 | 2.71                                         | 52.25                 | NA*                                          |
| 4.50                  | NA                                           | 16.50                 | 3.75                                         | 28.50                 | 3.13                                         | 40.50                 | 2.92                                         | 52.50                 | NA*                                          |
| 4.75                  | NA                                           | 16.75                 | 3.75                                         | 28.75                 | 3.13                                         | 40.75                 | 3.13                                         | 52.75                 | NA*                                          |
| 5.00                  | NA                                           | 17.00                 | 3.75                                         | 29.00                 | 3.54                                         | 41.00                 | 3.13                                         | 53.00                 | NA*                                          |
| 5.25                  | NA                                           | 17.25                 | 3.75                                         | 29.25                 | 3.54                                         | 41.25                 | 3.13                                         | 53.25                 | NA*                                          |
| 5.50                  | NA                                           | 17.50                 | 3.75                                         | 29.50                 | 3.33                                         | 41.50                 | 3.13                                         | 53.50                 | NA*                                          |
| 5.75                  | NA                                           | 17.75                 | 3.75                                         | 29.75                 | 3.54                                         | 41.75                 | 3.33                                         | 53.75                 | NA*                                          |
| 6.00                  | 2.29                                         | 18.00                 | 3.75                                         | 30.00                 | 3.75                                         | 42.00                 | 3.54                                         | 54.00                 | NA*                                          |
| 6.25                  | 2.29                                         | 18.25                 | 3.75                                         | 30.25                 | 3.75                                         | 42.25                 | 3.75                                         | 54.25                 | NA*                                          |
| 6.50                  | 2.29                                         | 18.50                 | 3.96                                         | 30.50                 | 3.75                                         | 42.50                 | 3.96                                         | 54.50                 | NA*                                          |
| 6.75                  | 2.50                                         | 18.75                 | 3.96                                         | 30.75                 | 3.96                                         | 42.75                 | 3.96                                         | 54.75                 | NA*                                          |
| 7.00                  | 2.29                                         | 19.00                 | 4.17                                         | 31.00                 | 4.17                                         | 43.00                 | 3.96                                         | 55.00                 | NA*                                          |
| 7.25                  | 2.08                                         | 19.25                 | 4.17                                         | 31.25                 | 4.17                                         | 43.25                 | 3.96                                         | 55.25                 | NA*                                          |
| 7.50                  | 2.29                                         | 19.50                 | 4.38                                         | 31.50                 | 4.38                                         | 43.50                 | 4.17                                         | 55.50                 | NA*                                          |
| 7.75                  | 2.29                                         | 19.75                 | 4.17                                         | 31.75                 | 4.17                                         | 43.75                 | 4.38                                         | 55.75                 | NA*                                          |
| 8.00                  | 2.29                                         | 20.00                 | 4.17                                         | 32.00                 | 4.17                                         | 44.00                 | 4.58                                         | 56.00                 | NA*                                          |
| 8.25                  | 2.50                                         | 20.25                 | 4.17                                         | 32.25                 | 4.17                                         | 44.25                 | 4.79                                         | 56.25                 | NA*                                          |
| 8.50                  | 2.29                                         | 20.50                 | 4.17                                         | 32.50                 | 3.96                                         | 44.50                 | 5.00                                         | 56.50                 | NA*                                          |
| 8.75                  | 2.50                                         | 20.75                 | 4.17                                         | 32.75                 | 3.96                                         | 44.75                 | 5.00                                         | 56.75                 | NA*                                          |
| 9.00                  | 2.29                                         | 21.00                 | 4.17                                         | 33.00                 | 3.75                                         | 45.00                 | 5.21                                         | 57.00                 | NA*                                          |
| 9.25                  | 2.29                                         | 21.25                 | 4.38                                         | 33.25                 | 3.75                                         | 45.25                 | 5.21                                         | 57.25                 | NA*                                          |
| 9.50                  | 2.08                                         | 21.50                 | 4.38                                         | 33.50                 | 3.54                                         | 45.50                 | 5.63                                         | 57.50                 | NA*                                          |
| 9.75                  | 2.29                                         | 21.75                 | 3.96                                         | 33.75                 | 3.54                                         | 45.75                 | 5.63                                         | 57.75                 | NA*                                          |
| 10.00                 | 2.50                                         | 22.00                 | 4.17                                         | 34.00                 | 3.54                                         | 46.00                 | 5.83                                         | 58.00                 | NA*                                          |
| 10.25                 | 2.29                                         | 22.25                 | 4.17                                         | 34.25                 | 3.54                                         | 46.25                 | 6.25                                         | 58.25                 | NA*                                          |
| 10.50                 | 2.29                                         | 22.50                 | 4.17                                         | 34.50                 | 3.54                                         | 46.50                 | 6.25                                         | 58.50                 | NA*                                          |
| 10.75                 | 2.50                                         | 22.75                 | 4.17                                         | 34.75                 | 3.33                                         | 46.75                 | 6.25                                         | 58.75                 | NA*                                          |
| 11.00                 | 2.71                                         | 23.00                 | 3.96                                         | 35.00                 | 2.92                                         | 47.00                 | 6.46                                         | 59.00                 | NA*                                          |
| 11.25                 | 2.92                                         | 23.25                 | 3.96                                         | 35.25                 | 2.92                                         | 47.25                 | 6.46                                         | 59.25                 | NA*                                          |
| 11.50                 | 3.13                                         | 23.50                 | 3.96                                         | 35.50                 | 3.13                                         | 47.50                 | 6.46                                         | 59.50                 | NA*                                          |
| 11.75                 | 3.33                                         | 23.75                 | 3.75                                         | 35.75                 | 2.92                                         | 47.75                 | 6.46                                         | 59.75                 | NA*                                          |
| 12.00                 | 3.54                                         | 24.00                 | 3.54                                         | 36.00                 | 2.71                                         | 48.00                 | 6.25                                         | 60.00                 | NA*                                          |

HIGHEST SIX-MINUTE BLOCK AVERAGE = 6.25      AVERAGE OPACITY DURING RUN = 3.73  
 HIGHEST SIX-MINUTE ROLLING AVERAGE = 6.46

\* Due to fugitive emission obstructions, a number of readings could not be made. Running averages included the time lapses so that the net run time was shortened. NA indicates that for the time period, an average is Not Applicable.

**Visible Emission Observation Summary**  
**Baghouse Outlet**

| <b>Run Number</b>                         | <b><u>O-M9-2A</u></b> | <b><u>O-M9-2B</u></b> | <b><u>O-M9-2C</u></b> | <b><u>O-M9-2D</u></b> |
|-------------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <b>Date</b>                               | <b>8/20/97</b>        | <b>8/20/97</b>        | <b>8/20/97</b>        | <b>8/20/97</b>        |
| <b>Start Time</b>                         | <b>0824</b>           | <b>0930</b>           | <b>1035</b>           | <b>1140</b>           |
| <b>Stop Time</b>                          | <b>0924</b>           | <b>1030</b>           | <b>1135</b>           | <b>1240</b>           |
| <b>Percent Opacity</b>                    |                       |                       |                       |                       |
| <b>Average for entire run</b>             | <b>0.80</b>           | <b>1.19</b>           | <b>1.54</b>           | <b>1.29</b>           |
| <b>Highest single reading</b>             | <b>10</b>             | <b>15</b>             | <b>20</b>             | <b>15</b>             |
| <b>Highest six-minute block average</b>   | <b>1.36</b>           | <b>2.39</b>           | <b>2.95</b>           | <b>2.62</b>           |
| <b>Highest six-minute rolling average</b> | <b>1.59</b>           | <b>2.83</b>           | <b>3.70</b>           | <b>2.75</b>           |

Date: 8/20/97  
 Start Time: 0824  
 Stop Time: 0924

Baghouse Outlet  
 Run Number: O-M9-2A

| Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, |
|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|
| 0.25                  | NA                                           | 12.25                 | 0.42                                         | 24.25                 | 0.42                                         | 36.25                 | 1.14                                         | 48.25                 | 1.43                                         |
| 0.50                  | NA                                           | 12.50                 | 0.42                                         | 24.50                 | 0.42                                         | 36.50                 | 0.91                                         | 48.50                 | 1.50                                         |
| 0.75                  | NA                                           | 12.75                 | 0.63                                         | 24.75                 | 0.42                                         | 36.75                 | 1.14                                         | 48.75                 | 1.50                                         |
| 1.00                  | NA                                           | 13.00                 | 0.63                                         | 25.00                 | 0.63                                         | 37.00                 | 1.14                                         | 49.00                 | 1.50                                         |
| 1.25                  | NA                                           | 13.25                 | 0.63                                         | 25.25                 | 0.63                                         | 37.25                 | 1.30                                         | 49.25                 | 1.50                                         |
| 1.50                  | NA                                           | 13.50                 | 0.83                                         | 25.50                 | 0.63                                         | 37.50                 | 1.36                                         | 49.50                 | 1.50                                         |
| 1.75                  | NA                                           | 13.75                 | 0.83                                         | 25.75                 | 0.63                                         | 37.75                 | 1.36                                         | 49.75                 | 1.50                                         |
| 2.00                  | NA                                           | 14.00                 | 0.87                                         | 26.00                 | 0.63                                         | 38.00                 | 1.52                                         | 50.00                 | 1.25                                         |
| 2.25                  | NA                                           | 14.25                 | 0.87                                         | 26.25                 | 0.63                                         | 38.25                 | 1.52                                         | 50.25                 | 1.50                                         |
| 2.50                  | NA                                           | 14.50                 | 0.91                                         | 26.50                 | 0.63                                         | 38.50                 | 1.59                                         | 50.50                 | 1.50                                         |
| 2.75                  | NA                                           | 14.75                 | 0.91                                         | 26.75                 | 0.63                                         | 38.75                 | 1.59                                         | 50.75                 | 1.25                                         |
| 3.00                  | NA                                           | 15.00                 | 0.91                                         | 27.00                 | 0.83                                         | 39.00                 | 1.43                                         | 51.00                 | 1.00                                         |
| 3.25                  | NA                                           | 15.25                 | 0.91                                         | 27.25                 | 0.63                                         | 39.25                 | 1.43                                         | 51.25                 | 0.50                                         |
| 3.50                  | NA                                           | 15.50                 | 0.68                                         | 27.50                 | 0.63                                         | 39.50                 | 1.43                                         | 51.50                 | 0.50                                         |
| 3.75                  | NA                                           | 15.75                 | 0.68                                         | 27.75                 | 0.63                                         | 39.75                 | 1.43                                         | 51.75                 | 0.50                                         |
| 4.00                  | NA                                           | 16.00                 | 0.68                                         | 28.00                 | 0.63                                         | 40.00                 | 1.19                                         | 52.00                 | 0.53                                         |
| 4.25                  | NA                                           | 16.25                 | 0.68                                         | 28.25                 | 0.63                                         | 40.25                 | 1.19                                         | 52.25                 | 0.53                                         |
| 4.50                  | NA                                           | 16.50                 | 0.68                                         | 28.50                 | 0.43                                         | 40.50                 | 0.95                                         | 52.50                 | 0.26                                         |
| 4.75                  | NA                                           | 16.75                 | 0.45                                         | 28.75                 | 0.45                                         | 40.75                 | 1.19                                         | 52.75                 | 0.26                                         |
| 5.00                  | NA                                           | 17.00                 | 0.68                                         | 29.00                 | 0.45                                         | 41.00                 | 1.43                                         | 53.00                 | 0.26                                         |
| 5.25                  | NA                                           | 17.25                 | 0.68                                         | 29.25                 | 0.48                                         | 41.25                 | 1.43                                         | 53.25                 | 0.28                                         |
| 5.50                  | NA                                           | 17.50                 | 0.68                                         | 29.50                 | 0.50                                         | 41.50                 | 1.43                                         | 53.50                 | 0.28                                         |
| 5.75                  | NA                                           | 17.75                 | 0.68                                         | 29.75                 | 0.50                                         | 41.75                 | 1.43                                         | 53.75                 | 0.26                                         |
| 6.00                  | 0.83                                         | 18.00                 | 0.68                                         | 30.00                 | 0.50                                         | 42.00                 | 1.43                                         | 54.00                 | 0.26                                         |
| 6.25                  | 0.83                                         | 18.25                 | 0.75                                         | 30.25                 | 1.19                                         | 42.25                 | 1.19                                         | 54.25                 | 0.25                                         |
| 6.50                  | 0.83                                         | 18.50                 | 0.79                                         | 30.50                 | 1.19                                         | 42.50                 | 1.19                                         | 54.50                 | 0.24                                         |
| 6.75                  | 0.83                                         | 18.75                 | 1.05                                         | 30.75                 | 1.05                                         | 42.75                 | 1.19                                         | 54.75                 | 0.24                                         |
| 7.00                  | 0.83                                         | 19.00                 | 1.05                                         | 31.00                 | 0.95                                         | 43.00                 | 0.95                                         | 55.00                 | 0.24                                         |
| 7.25                  | 0.83                                         | 19.25                 | 0.79                                         | 31.25                 | 0.71                                         | 43.25                 | 0.71                                         | 55.25                 | 0.48                                         |
| 7.50                  | 0.83                                         | 19.50                 | 0.83                                         | 31.50                 | 0.83                                         | 43.50                 | 0.68                                         | 55.50                 | 0.48                                         |
| 7.75                  | 0.83                                         | 19.75                 | 0.83                                         | 31.75                 | 0.68                                         | 43.75                 | 0.68                                         | 55.75                 | 0.50                                         |
| 8.00                  | 0.83                                         | 19.75                 | 0.22                                         | 32.00                 | 0.68                                         | 44.00                 | 0.68                                         | 56.00                 | 0.50                                         |
| 8.25                  | 0.63                                         | 20.00                 | 0.22                                         | 32.25                 | 0.68                                         | 44.25                 | 0.68                                         | 56.25                 | 0.25                                         |
| 8.50                  | 0.63                                         | 20.25                 | 0.21                                         | 32.50                 | 0.65                                         | 44.50                 | 0.65                                         | 56.50                 | 0.25                                         |
| 8.75                  | 0.63                                         | 20.50                 | 0.21                                         | 32.75                 | 0.83                                         | 44.75                 | 0.83                                         | 56.75                 | 0.25                                         |
| 9.00                  | 0.42                                         | 20.75                 | 0.21                                         | 33.00                 | 0.88                                         | 45.00                 | 1.04                                         | 57.00                 | 0.50                                         |
| 9.25                  | 0.42                                         | 21.00                 | 0.42                                         | 33.25                 | 0.88                                         | 45.25                 | 1.46                                         | 57.25                 | 0.50                                         |
| 9.50                  | 0.63                                         | 21.25                 | 0.42                                         | 33.50                 | 0.88                                         | 45.50                 | 1.46                                         | 57.50                 | 0.50                                         |
| 9.75                  | 0.63                                         | 21.50                 | 0.42                                         | 33.75                 | 0.88                                         | 45.75                 | 1.46                                         | 57.75                 | 0.71                                         |
| 10.00                 | 0.63                                         | 21.75                 | 0.42                                         | 34.00                 | 1.18                                         | 46.00                 | 1.46                                         | 58.00                 | 0.71                                         |
| 10.25                 | 0.63                                         | 22.00                 | 0.42                                         | 34.25                 | 1.18                                         | 46.25                 | 1.46                                         | 58.25                 | 0.71                                         |
| 10.50                 | 0.42                                         | 22.25                 | 0.63                                         | 34.50                 | 1.39                                         | 46.50                 | 1.46                                         | 58.50                 | 0.71                                         |
| 10.75                 | 0.42                                         | 22.50                 | 0.63                                         | 34.75                 | 1.32                                         | 46.75                 | 1.46                                         | 58.75                 | 0.95                                         |
| 11.00                 | 0.42                                         | 22.75                 | 0.42                                         | 35.00                 | 1.32                                         | 47.00                 | 1.25                                         | 59.00                 | 0.95                                         |
| 11.25                 | 0.42                                         | 23.00                 | 0.42                                         | 35.25                 | 1.25                                         | 47.25                 | 1.25                                         | 59.25                 | 0.91                                         |
| 11.50                 | 0.42                                         | 23.25                 | 0.42                                         | 35.50                 | 1.19                                         | 47.50                 | 1.30                                         | 59.50                 | NA*                                          |
| 11.75                 | 0.42                                         | 23.50                 | 0.42                                         | 35.75                 | 1.19                                         | 47.75                 | 1.36                                         | 59.75                 | NA*                                          |
| 12.00                 | 0.42                                         | 23.75                 | 0.42                                         | 36.00                 | 1.19                                         | 48.00                 | 1.36                                         | 60.00                 | NA*                                          |

HIGHEST SIX-MINUTE BLOCK AVERAGE = 1.36  
 HIGHEST SIX-MINUTE ROLLING AVERAGE = 1.59  
 AVERAGE OPACITY DURING RUN = 0.80

\* Due to fugitive emission obstructions, a number of readings could not be made. Running averages included the time lapses so that the net run time was shortened. NA indicates that for the time period, an average is Not Applicable.

Date: 8/20/97  
 Start Time: 0930  
 Stop Time: 1030

Baghouse Outlet  
 Run Number: O-M9-2B

| Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, |
|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|
| 0.25                  | NA                                           | 12.25                 | 0.24                                         | 24.25                 | 0.91                                         | 36.25                 | 1.30                                         | 48.25                 | 2.39                                         |
| 0.50                  | NA                                           | 12.50                 | 0.24                                         | 24.50                 | 0.68                                         | 36.50                 | 1.52                                         | 48.50                 | 2.05                                         |
| 0.75                  | NA                                           | 12.75                 | 0.24                                         | 24.75                 | 0.68                                         | 36.75                 | 1.52                                         | 48.75                 | 2.27                                         |
| 1.00                  | NA                                           | 13.00                 | 0.24                                         | 25.00                 | 0.68                                         | 37.00                 | 1.09                                         | 49.00                 | 2.73                                         |
| 1.25                  | NA                                           | 13.25                 | 0.24                                         | 25.25                 | 0.68                                         | 37.25                 | 1.74                                         | 49.25                 | 2.73                                         |
| 1.50                  | NA                                           | 13.50                 | 0.24                                         | 25.50                 | 0.68                                         | 37.50                 | 1.52                                         | 49.50                 | 2.73                                         |
| 1.75                  | NA                                           | 13.75                 | 0.24                                         | 25.75                 | 0.68                                         | 37.75                 | 1.52                                         | 49.75                 | 2.61                                         |
| 2.00                  | NA                                           | 14.00                 | 0.24                                         | 26.00                 | 0.68                                         | 38.00                 | 1.52                                         | 50.00                 | 2.83                                         |
| 2.25                  | NA                                           | 14.25                 | 0.25                                         | 26.25                 | 0.68                                         | 38.25                 | 1.52                                         | 50.25                 | 2.61                                         |
| 2.50                  | NA                                           | 14.50                 | 0.25                                         | 26.50                 | 0.23                                         | 38.50                 | 1.52                                         | 50.50                 | 2.39                                         |
| 2.75                  | NA                                           | 14.75                 | 0.50                                         | 26.75                 | 0.23                                         | 38.75                 | 1.52                                         | 50.75                 | 2.39                                         |
| 3.00                  | NA                                           | 15.00                 | 0.50                                         | 27.00                 | 0.22                                         | 39.00                 | 1.52                                         | 51.00                 | 2.17                                         |
| 3.25                  | NA                                           | 15.25                 | 0.25                                         | 27.25                 | 0.22                                         | 39.25                 | 1.52                                         | 51.25                 | 2.17                                         |
| 3.50                  | NA                                           | 15.50                 | 0.25                                         | 27.50                 | 0.22                                         | 39.50                 | 1.52                                         | 51.50                 | 2.17                                         |
| 3.75                  | NA                                           | 15.75                 | 0.25                                         | 27.75                 | 0.22                                         | 39.75                 | 1.30                                         | 51.75                 | 2.39                                         |
| 4.00                  | NA                                           | 16.00                 | 0.25                                         | 28.00                 | 0.22                                         | 40.00                 | 1.30                                         | 52.00                 | 2.39                                         |
| 4.25                  | NA                                           | 16.25                 | 0.50                                         | 28.25                 | 0.22                                         | 40.25                 | 1.30                                         | 52.25                 | 1.96                                         |
| 4.50                  | NA                                           | 16.50                 | 0.50                                         | 28.50                 | 0.22                                         | 40.50                 | 1.30                                         | 52.50                 | 1.96                                         |
| 4.75                  | NA                                           | 16.75                 | 0.48                                         | 28.75                 | 0.22                                         | 40.75                 | 1.30                                         | 52.75                 | 1.96                                         |
| 5.00                  | NA                                           | 17.00                 | 0.45                                         | 29.00                 | 0.22                                         | 41.00                 | 1.30                                         | 53.00                 | 1.96                                         |
| 5.25                  | NA                                           | 17.25                 | 0.45                                         | 29.25                 | 0.22                                         | 41.25                 | 1.30                                         | 53.25                 | 2.17                                         |
| 5.50                  | NA                                           | 17.50                 | 0.45                                         | 29.50                 | 0.22                                         | 41.50                 | 1.30                                         | 53.50                 | 2.17                                         |
| 5.75                  | NA                                           | 17.75                 | 0.45                                         | 29.75                 | 0.22                                         | 41.75                 | 0.87                                         | 53.75                 | 2.17                                         |
| 6.00                  | 1.09                                         | 18.00                 | 0.45                                         | 30.00                 | 0.22                                         | 42.00                 | 0.83                                         | 54.00                 | 2.17                                         |
| 6.25                  | 1.09                                         | 18.25                 | 0.45                                         | 30.25                 | 0.22                                         | 42.25                 | 0.83                                         | 54.25                 | 2.17                                         |
| 6.50                  | 1.09                                         | 18.50                 | 0.68                                         | 30.50                 | 0.22                                         | 42.50                 | 1.04                                         | 54.50                 | 2.08                                         |
| 6.75                  | 1.09                                         | 18.75                 | 0.68                                         | 30.75                 | 0.22                                         | 42.75                 | 1.04                                         | 54.75                 | 1.88                                         |
| 7.00                  | 1.09                                         | 19.00                 | 0.68                                         | 31.00                 | 0.65                                         | 43.00                 | 1.04                                         | 55.00                 | 1.46                                         |
| 7.25                  | 1.09                                         | 19.25                 | 0.68                                         | 31.25                 | 0.65                                         | 43.25                 | 0.42                                         | 55.25                 | 1.46                                         |
| 7.50                  | 1.09                                         | 19.50                 | 0.68                                         | 31.50                 | 0.87                                         | 43.50                 | 0.83                                         | 55.50                 | 1.04                                         |
| 7.75                  | 0.87                                         | 19.75                 | 0.68                                         | 31.75                 | 0.87                                         | 43.75                 | 0.87                                         | 55.75                 | 1.04                                         |
| 8.00                  | 0.87                                         | 20.00                 | 0.68                                         | 32.00                 | 0.87                                         | 44.00                 | 0.87                                         | 56.00                 | 1.04                                         |
| 8.25                  | 0.83                                         | 20.25                 | 0.65                                         | 32.25                 | 0.87                                         | 44.25                 | 1.09                                         | 56.25                 | 1.04                                         |
| 8.50                  | 0.83                                         | 20.50                 | 1.09                                         | 32.50                 | 0.87                                         | 44.50                 | 1.52                                         | 56.50                 | 0.83                                         |
| 8.75                  | 0.83                                         | 20.75                 | 0.87                                         | 32.75                 | 0.87                                         | 44.75                 | 1.52                                         | 56.75                 | NA*                                          |
| 9.00                  | 0.83                                         | 21.00                 | 0.91                                         | 33.00                 | 0.87                                         | 45.00                 | 1.74                                         | 57.00                 | NA*                                          |
| 9.25                  | 1.04                                         | 21.25                 | 0.91                                         | 33.25                 | 0.87                                         | 45.25                 | 1.74                                         | 57.25                 | NA*                                          |
| 9.50                  | 1.04                                         | 21.50                 | 0.91                                         | 33.50                 | 0.87                                         | 45.50                 | 1.74                                         | 57.50                 | NA*                                          |
| 9.75                  | 1.04                                         | 21.75                 | 0.91                                         | 33.75                 | 1.09                                         | 45.75                 | 1.74                                         | 57.75                 | NA*                                          |
| 10.00                 | 1.04                                         | 22.00                 | 0.91                                         | 34.00                 | 1.09                                         | 46.00                 | 1.74                                         | 58.00                 | NA*                                          |
| 10.25                 | 1.04                                         | 22.25                 | 0.68                                         | 34.25                 | 1.09                                         | 46.25                 | 2.17                                         | 58.25                 | NA*                                          |
| 10.50                 | 0.87                                         | 22.50                 | 0.65                                         | 34.50                 | 1.09                                         | 46.50                 | 2.17                                         | 58.50                 | NA*                                          |
| 10.75                 | 0.91                                         | 22.75                 | 0.65                                         | 34.75                 | 1.09                                         | 46.75                 | 2.17                                         | 58.75                 | NA*                                          |
| 11.00                 | 0.48                                         | 23.00                 | 0.65                                         | 35.00                 | 1.09                                         | 47.00                 | 2.39                                         | 59.00                 | NA*                                          |
| 11.25                 | 0.48                                         | 23.25                 | 0.65                                         | 35.25                 | 1.09                                         | 47.25                 | 2.39                                         | 59.25                 | NA*                                          |
| 11.50                 | 0.48                                         | 23.50                 | 0.65                                         | 35.50                 | 1.09                                         | 47.50                 | 2.39                                         | 59.50                 | NA*                                          |
| 11.75                 | 0.48                                         | 23.75                 | 0.65                                         | 35.75                 | 1.52                                         | 47.75                 | 2.39                                         | 59.75                 | NA*                                          |
| 12.00                 | 0.24                                         | 24.00                 | 0.87                                         | 36.00                 | 1.36                                         | 48.00                 | 2.39                                         | 60.00                 | NA*                                          |

HIGHEST SIX-MINUTE BLOCK AVERAGE = 2.39      AVERAGE OPACITY DURING RUN = 1.19  
 HIGHEST SIX-MINUTE ROLLING AVERAGE = 2.83

\* Due to fugitive emission obstructions, a number of readings could not be made. Running averages included the time lapses so that the net run time was shortened. NA indicates that for the time period, an average is Not Applicable.

Date: 8/20/97  
 Start Time: 1035  
 Stop Time: 1135

Baghouse Outlet  
 Run Number: O-M9-2C

| Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, |
|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|
| 0.25                  | NA                                           | 12.25                 | 1.67                                         | 24.25                 | 1.43                                         | 36.25                 | 2.27                                         | 48.25                 | 1.58                                         |
| 0.50                  | NA                                           | 12.50                 | 1.67                                         | 24.50                 | 1.43                                         | 36.50                 | 2.27                                         | 48.50                 | 1.58                                         |
| 0.75                  | NA                                           | 12.75                 | 1.67                                         | 24.75                 | 1.19                                         | 36.75                 | 2.27                                         | 48.75                 | 1.32                                         |
| 1.00                  | NA                                           | 13.00                 | 0.95                                         | 25.00                 | 1.19                                         | 37.00                 | 2.38                                         | 49.00                 | 1.32                                         |
| 1.25                  | NA                                           | 13.25                 | 0.95                                         | 25.25                 | 0.71                                         | 37.25                 | 2.38                                         | 49.25                 | 1.32                                         |
| 1.50                  | NA                                           | 13.50                 | 0.91                                         | 25.50                 | 0.71                                         | 37.50                 | 1.90                                         | 49.50                 | 1.32                                         |
| 1.75                  | NA                                           | 13.75                 | 1.14                                         | 25.75                 | 0.75                                         | 37.75                 | 1.90                                         | 49.75                 | 0.53                                         |
| 2.00                  | NA                                           | 14.00                 | 1.09                                         | 26.00                 | 1.00                                         | 38.00                 | 0.95                                         | 50.00                 | 0.79                                         |
| 2.25                  | NA                                           | 14.25                 | 1.14                                         | 26.25                 | 1.00                                         | 38.25                 | 1.43                                         | 50.25                 | 1.00                                         |
| 2.50                  | NA                                           | 14.50                 | 1.14                                         | 26.50                 | 1.00                                         | 38.50                 | 1.36                                         | 50.50                 | 1.43                                         |
| 2.75                  | NA                                           | 14.75                 | 1.14                                         | 26.75                 | 1.00                                         | 38.75                 | 1.36                                         | 50.75                 | 1.67                                         |
| 3.00                  | NA                                           | 15.00                 | 1.14                                         | 27.00                 | 0.50                                         | 39.00                 | 1.36                                         | 51.00                 | 1.67                                         |
| 3.25                  | NA                                           | 15.25                 | 1.14                                         | 27.25                 | 0.75                                         | 39.25                 | 1.36                                         | 51.25                 | 1.67                                         |
| 3.50                  | NA                                           | 15.50                 | 1.14                                         | 27.50                 | 0.71                                         | 39.50                 | 0.91                                         | 51.50                 | 1.67                                         |
| 3.75                  | NA                                           | 15.75                 | 0.68                                         | 27.75                 | 0.68                                         | 39.75                 | 1.14                                         | 51.75                 | 1.59                                         |
| 4.00                  | NA                                           | 16.00                 | 0.68                                         | 28.00                 | 1.14                                         | 40.00                 | 0.91                                         | 52.00                 | 1.52                                         |
| 4.25                  | NA                                           | 16.25                 | 0.68                                         | 28.25                 | 1.14                                         | 40.25                 | 0.91                                         | 52.25                 | 1.52                                         |
| 4.50                  | NA                                           | 16.50                 | 0.45                                         | 28.50                 | 1.14                                         | 40.50                 | 0.68                                         | 52.50                 | 1.52                                         |
| 4.75                  | NA                                           | 16.75                 | 0.45                                         | 28.75                 | 1.59                                         | 40.75                 | 1.14                                         | 52.75                 | 1.46                                         |
| 5.00                  | NA                                           | 17.00                 | 0.45                                         | 29.00                 | 1.59                                         | 41.00                 | 1.14                                         | 53.00                 | 1.52                                         |
| 5.25                  | NA                                           | 17.25                 | 0.43                                         | 29.25                 | 1.59                                         | 41.25                 | 1.14                                         | 53.25                 | 1.52                                         |
| 5.50                  | NA                                           | 17.50                 | 0.43                                         | 29.50                 | 2.05                                         | 41.50                 | 1.09                                         | 53.50                 | 1.52                                         |
| 5.75                  | NA                                           | 17.75                 | 0.45                                         | 29.75                 | 1.82                                         | 41.75                 | 1.09                                         | 53.75                 | 1.09                                         |
| 6.00                  | 2.06                                         | 18.00                 | 0.45                                         | 30.00                 | 1.82                                         | 42.00                 | 1.09                                         | 54.00                 | 1.14                                         |
| 6.25                  | 2.06                                         | 18.25                 | 0.48                                         | 30.25                 | 2.39                                         | 42.25                 | 1.14                                         | 54.25                 | 1.14                                         |
| 6.50                  | 1.76                                         | 18.50                 | 0.48                                         | 30.50                 | 2.39                                         | 42.50                 | 1.14                                         | 54.50                 | 1.14                                         |
| 6.75                  | 1.67                                         | 18.75                 | 0.71                                         | 30.75                 | 2.39                                         | 42.75                 | 1.36                                         | 54.75                 | 1.19                                         |
| 7.00                  | 2.50                                         | 19.00                 | 0.71                                         | 31.00                 | 2.39                                         | 43.00                 | 1.30                                         | 55.00                 | 1.19                                         |
| 7.25                  | 2.37                                         | 19.25                 | 1.19                                         | 31.25                 | 2.39                                         | 43.25                 | 1.30                                         | 55.25                 | 1.19                                         |
| 7.50                  | 2.50                                         | 19.50                 | 1.19                                         | 31.50                 | 2.83                                         | 43.50                 | 1.30                                         | 55.50                 | 1.19                                         |
| 7.75                  | 2.50                                         | 19.75                 | 0.95                                         | 31.75                 | 2.71                                         | 43.75                 | 1.96                                         | 55.75                 | 1.19                                         |
| 8.00                  | 2.06                                         | 20.00                 | 0.95                                         | 32.00                 | 3.33                                         | 44.00                 | 1.96                                         | 56.00                 | 1.00                                         |
| 8.25                  | 2.06                                         | 20.25                 | 0.91                                         | 32.25                 | 3.33                                         | 44.25                 | 1.59                                         | 56.25                 | 0.75                                         |
| 8.50                  | 1.94                                         | 20.50                 | 0.91                                         | 32.50                 | 3.48                                         | 44.50                 | 1.67                                         | 56.50                 | 1.00                                         |
| 8.75                  | 1.84                                         | 20.75                 | 0.91                                         | 32.75                 | 3.48                                         | 44.75                 | 1.67                                         | 56.75                 | 0.75                                         |
| 9.00                  | 1.75                                         | 21.00                 | 1.36                                         | 33.00                 | 3.48                                         | 45.00                 | 1.67                                         | 57.00                 | 0.75                                         |
| 9.25                  | 1.67                                         | 21.25                 | 1.36                                         | 33.25                 | 3.26                                         | 45.25                 | 1.67                                         | 57.25                 | 0.75                                         |
| 9.50                  | 1.67                                         | 21.50                 | 1.43                                         | 33.50                 | 3.70                                         | 45.50                 | 1.67                                         | 57.50                 | 0.75                                         |
| 9.75                  | 2.38                                         | 21.75                 | 1.25                                         | 33.75                 | 3.70                                         | 45.75                 | 1.50                                         | 57.75                 | 0.75                                         |
| 10.00                 | 1.67                                         | 22.00                 | 1.25                                         | 34.00                 | 3.48                                         | 46.00                 | 1.58                                         | 58.00                 | 0.79                                         |
| 10.25                 | 1.67                                         | 22.25                 | 1.25                                         | 34.25                 | 3.48                                         | 46.25                 | 1.58                                         | 58.25                 | 0.79                                         |
| 10.50                 | 1.90                                         | 22.50                 | 1.25                                         | 34.50                 | 3.70                                         | 46.50                 | 1.58                                         | 58.50                 | 0.79                                         |
| 10.75                 | 1.67                                         | 22.75                 | 1.25                                         | 34.75                 | 3.26                                         | 46.75                 | 1.11                                         | 58.75                 | 0.83                                         |
| 11.00                 | 1.67                                         | 23.00                 | 1.25                                         | 35.00                 | 3.26                                         | 47.00                 | 1.11                                         | 59.00                 | 0.79                                         |
| 11.25                 | 1.75                                         | 23.25                 | 1.25                                         | 35.25                 | 3.26                                         | 47.25                 | 1.11                                         | 59.25                 | 0.79                                         |
| 11.50                 | 1.67                                         | 23.50                 | 1.25                                         | 35.50                 | 2.95                                         | 47.50                 | 1.11                                         | 59.50                 | 1.32                                         |
| 11.75                 | 1.67                                         | 23.75                 | 1.43                                         | 35.75                 | 2.95                                         | 47.75                 | 1.67                                         | 59.75                 | 1.32                                         |
| 12.00                 | 1.67                                         | 24.00                 | 1.43                                         | 36.00                 | 2.95                                         | 48.00                 | 1.67                                         | 60.00                 | NA*                                          |

HIGHEST SIX-MINUTE BLOCK AVERAGE = 2.95      AVERAGE OPACITY DURING RUN = 1.54  
 HIGHEST SIX-MINUTE ROLLING AVERAGE = 3.70

\* Due to fugitive emission obstructions, a number of readings could not be made. Running averages included the time lapses so that the net run time was shortened. NA indicates that for the time period, an average is Not Applicable.



Date: 8/20/97  
 Start Time: 1140  
 Stop Time: 1240

Baghouse Outlet  
 Run Number: O-M9-2D

| Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, |
|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|
| 0.25                  | NA                                           | 12.25                 | 0.50                                         | 24.25                 | 2.62                                         | 36.25                 | 1.82                                         | 48.25                 | 1.36                                         |
| 0.50                  | NA                                           | 12.50                 | 0.50                                         | 24.50                 | 2.62                                         | 36.50                 | 1.82                                         | 48.50                 | 1.43                                         |
| 0.75                  | NA                                           | 12.75                 | 0.50                                         | 24.75                 | 2.62                                         | 36.75                 | 1.82                                         | 48.75                 | 1.19                                         |
| 1.00                  | NA                                           | 13.00                 | 0.50                                         | 25.00                 | 2.62                                         | 37.00                 | 1.82                                         | 49.00                 | 1.19                                         |
| 1.25                  | NA                                           | 13.25                 | 0.75                                         | 25.25                 | 2.62                                         | 37.25                 | 1.74                                         | 49.25                 | 1.19                                         |
| 1.50                  | NA                                           | 13.50                 | 0.75                                         | 25.50                 | 2.62                                         | 37.50                 | 1.74                                         | 49.50                 | 1.19                                         |
| 1.75                  | NA                                           | 13.75                 | 0.75                                         | 25.75                 | 2.62                                         | 37.75                 | 1.09                                         | 49.75                 | 1.25                                         |
| 2.00                  | NA                                           | 14.00                 | 0.75                                         | 26.00                 | 2.75                                         | 38.00                 | 0.87                                         | 50.00                 | 0.75                                         |
| 2.25                  | NA                                           | 14.25                 | 0.75                                         | 26.25                 | 2.62                                         | 38.25                 | 1.52                                         | 50.25                 | 0.25                                         |
| 2.50                  | NA                                           | 14.50                 | 1.50                                         | 26.50                 | 2.73                                         | 38.50                 | 1.52                                         | 50.50                 | 0.25                                         |
| 2.75                  | NA                                           | 14.75                 | 1.50                                         | 26.75                 | 2.50                                         | 38.75                 | 2.17                                         | 50.75                 | 0.25                                         |
| 3.00                  | NA                                           | 15.00                 | 1.43                                         | 27.00                 | 2.50                                         | 39.00                 | 2.27                                         | 51.00                 | 0.25                                         |
| 3.25                  | NA                                           | 15.25                 | 1.50                                         | 27.25                 | 2.50                                         | 39.25                 | 2.27                                         | 51.25                 | 0.25                                         |
| 3.50                  | NA                                           | 15.50                 | 1.43                                         | 27.50                 | 2.50                                         | 39.50                 | 2.27                                         | 51.50                 | 0.25                                         |
| 3.75                  | NA                                           | 15.75                 | 1.43                                         | 27.75                 | 2.62                                         | 39.75                 | 2.27                                         | 51.75                 | 0.25                                         |
| 4.00                  | NA                                           | 16.00                 | 1.43                                         | 28.00                 | 2.50                                         | 40.00                 | 2.27                                         | 52.00                 | 0.25                                         |
| 4.25                  | NA                                           | 16.25                 | 1.50                                         | 28.25                 | 2.50                                         | 40.25                 | 2.27                                         | 52.25                 | 0.00                                         |
| 4.50                  | NA                                           | 16.50                 | 1.75                                         | 28.50                 | 2.50                                         | 40.50                 | 2.27                                         | 52.50                 | 0.00                                         |
| 4.75                  | NA                                           | 16.75                 | 2.00                                         | 28.75                 | 2.50                                         | 40.75                 | 2.05                                         | 52.75                 | 0.00                                         |
| 5.00                  | NA                                           | 17.00                 | 1.90                                         | 29.00                 | 1.82                                         | 41.00                 | 2.05                                         | 53.00                 | 0.00                                         |
| 5.25                  | NA                                           | 17.25                 | 1.90                                         | 29.25                 | 1.90                                         | 41.25                 | 2.27                                         | 53.25                 | 0.23                                         |
| 5.50                  | NA                                           | 17.50                 | 2.38                                         | 29.50                 | 2.14                                         | 41.50                 | 2.27                                         | 53.50                 | 0.23                                         |
| 5.75                  | NA                                           | 17.75                 | 2.38                                         | 29.75                 | 1.67                                         | 41.75                 | 2.27                                         | 53.75                 | 0.68                                         |
| 6.00                  | 0.56                                         | 18.00                 | 2.38                                         | 30.00                 | 1.00                                         | 42.00                 | 1.59                                         | 54.00                 | 0.68                                         |
| 6.25                  | 0.83                                         | 18.25                 | 2.38                                         | 30.25                 | 1.00                                         | 42.25                 | 1.59                                         | 54.25                 | 0.68                                         |
| 6.50                  | 0.83                                         | 18.50                 | 2.38                                         | 30.50                 | 1.00                                         | 42.50                 | 1.59                                         | 54.50                 | 0.65                                         |
| 6.75                  | 0.79                                         | 18.75                 | 2.38                                         | 30.75                 | 1.00                                         | 42.75                 | 1.82                                         | 54.75                 | 0.65                                         |
| 7.00                  | 0.79                                         | 19.00                 | 2.38                                         | 31.00                 | 1.00                                         | 43.00                 | 1.82                                         | 55.00                 | 0.65                                         |
| 7.25                  | 0.79                                         | 19.25                 | 2.14                                         | 31.25                 | 1.05                                         | 43.25                 | 1.82                                         | 55.25                 | 0.65                                         |
| 7.50                  | 0.75                                         | 19.50                 | 2.14                                         | 31.50                 | 1.05                                         | 43.50                 | 1.82                                         | 55.50                 | 0.65                                         |
| 7.75                  | 0.71                                         | 19.75                 | 2.14                                         | 31.75                 | 1.84                                         | 43.75                 | 1.82                                         | 55.75                 | 0.63                                         |
| 8.00                  | 0.71                                         | 20.00                 | 2.14                                         | 32.00                 | 2.00                                         | 44.00                 | 2.27                                         | 56.00                 | 0.63                                         |
| 8.25                  | 0.71                                         | 20.25                 | 2.25                                         | 32.25                 | 2.00                                         | 44.25                 | 2.05                                         | 56.25                 | 0.63                                         |
| 8.50                  | 0.71                                         | 20.50                 | 1.58                                         | 32.50                 | 1.75                                         | 44.50                 | 2.05                                         | 56.50                 | 0.63                                         |
| 8.75                  | 1.19                                         | 20.75                 | 1.32                                         | 32.75                 | 1.75                                         | 44.75                 | 1.36                                         | 56.75                 | 0.63                                         |
| 9.00                  | 1.19                                         | 21.00                 | 1.32                                         | 33.00                 | 1.75                                         | 45.00                 | 1.30                                         | 57.00                 | 0.63                                         |
| 9.25                  | 1.19                                         | 21.25                 | 1.25                                         | 33.25                 | 1.75                                         | 45.25                 | 1.30                                         | 57.25                 | 0.63                                         |
| 9.50                  | 1.19                                         | 21.50                 | 1.25                                         | 33.50                 | 1.75                                         | 45.50                 | 1.30                                         | 57.50                 | 0.63                                         |
| 9.75                  | 1.19                                         | 21.75                 | 1.25                                         | 33.75                 | 1.67                                         | 45.75                 | 1.30                                         | 57.75                 | 0.63                                         |
| 10.00                 | 1.19                                         | 22.00                 | 1.25                                         | 34.00                 | 1.67                                         | 46.00                 | 1.30                                         | 58.00                 | 0.63                                         |
| 10.25                 | 1.19                                         | 22.25                 | 1.19                                         | 34.25                 | 1.67                                         | 46.25                 | 1.52                                         | 58.25                 | 0.63                                         |
| 10.50                 | 1.19                                         | 22.50                 | 0.95                                         | 34.50                 | 1.67                                         | 46.50                 | 1.59                                         | 58.50                 | 0.63                                         |
| 10.75                 | 1.19                                         | 22.75                 | 0.71                                         | 34.75                 | 1.90                                         | 46.75                 | 1.59                                         | 58.75                 | 0.63                                         |
| 11.00                 | 1.25                                         | 23.00                 | 1.43                                         | 35.00                 | 1.90                                         | 47.00                 | 1.59                                         | 59.00                 | 0.63                                         |
| 11.25                 | 0.75                                         | 23.25                 | 1.43                                         | 35.25                 | 1.82                                         | 47.25                 | 1.43                                         | 59.25                 | 0.42                                         |
| 11.50                 | 0.75                                         | 23.50                 | 1.43                                         | 35.50                 | 1.19                                         | 47.50                 | 1.36                                         | 59.50                 | 0.43                                         |
| 11.75                 | 0.75                                         | 23.75                 | 1.90                                         | 35.75                 | 1.19                                         | 47.75                 | 1.36                                         | 59.75                 | 0.00                                         |
| 12.00                 | 0.75                                         | 24.00                 | 2.62                                         | 36.00                 | 1.82                                         | 48.00                 | 1.36                                         | 60.00                 | 0.00                                         |

HIGHEST SIX-MINUTE BLOCK AVERAGE = 2.62      AVERAGE OPACITY DURING RUN = 1.29  
 HIGHEST SIX-MINUTE ROLLING AVERAGE = 2.75

\* Due to fugitive emission obstructions, a number of readings could not be made. Running averages included the time lapses so that the net run time was shortened. NA indicates that for the time period, an average is Not Applicable.

**Visible Emission Observation Summary**  
**Baghouse Outlet**

|                                    | <u>O-M9-3A</u> | <u>O-M9-3B</u> | <u>O-M9-1C</u> | <u>O-M9-3D</u> |
|------------------------------------|----------------|----------------|----------------|----------------|
| Run Number                         |                |                |                |                |
| Date                               | 8/20/97        | 8/20/97        | 8/20/97        | 8/20/97        |
| Start Time                         | 1405           | 1510           | 1615           | 1722           |
| Stop Time                          | 1505           | 1610           | 1720           | 1742           |
| Percent Opacity                    |                |                |                |                |
| Average for entire run             | 1.02           | 1.02           | 0.68           | 0.06           |
| Highest single reading             | 15             | 15             | 10             | 5              |
| Highest six-minute block average   | 1.67           | 1.59           | 1.67           | 0.22           |
| Highest six-minute rolling average | 2.17           | 1.67           | 1.94           | 0.42           |

Date: 8/20/97  
 Start Time: 1405  
 Stop Time: 1505

Baghouse Outlet  
 Run Number: O-M9-3A

| Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, |
|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|
| 0.25                  | NA                                           | 12.25                 | 1.59                                         | 24.25                 | 1.09                                         | 36.25                 | 0.65                                         | 48.25                 | 1.09                                         |
| 0.50                  | NA                                           | 12.50                 | 1.59                                         | 24.50                 | 1.30                                         | 36.50                 | 0.65                                         | 48.50                 | 1.09                                         |
| 0.75                  | NA                                           | 12.75                 | 1.59                                         | 24.75                 | 1.30                                         | 36.75                 | 0.65                                         | 48.75                 | 0.87                                         |
| 1.00                  | NA                                           | 13.00                 | 1.59                                         | 25.00                 | 1.30                                         | 37.00                 | 0.68                                         | 49.00                 | 0.83                                         |
| 1.25                  | NA                                           | 13.25                 | 1.59                                         | 25.25                 | 1.09                                         | 37.25                 | 1.36                                         | 49.25                 | 0.87                                         |
| 1.50                  | NA                                           | 13.50                 | 1.59                                         | 25.50                 | 1.09                                         | 37.50                 | 1.36                                         | 49.50                 | 0.87                                         |
| 1.75                  | NA                                           | 13.75                 | 2.05                                         | 25.75                 | 1.09                                         | 37.75                 | 1.82                                         | 49.75                 | 0.43                                         |
| 2.00                  | NA                                           | 14.00                 | 2.05                                         | 26.00                 | 1.09                                         | 38.00                 | 1.82                                         | 50.00                 | 0.43                                         |
| 2.25                  | NA                                           | 14.25                 | 2.05                                         | 26.25                 | 1.09                                         | 38.25                 | 1.82                                         | 50.25                 | 0.43                                         |
| 2.50                  | NA                                           | 14.50                 | 2.05                                         | 26.50                 | 1.04                                         | 38.50                 | 1.82                                         | 50.50                 | 0.22                                         |
| 2.75                  | NA                                           | 14.75                 | 1.82                                         | 26.75                 | 1.25                                         | 38.75                 | 1.82                                         | 50.75                 | 0.22                                         |
| 3.00                  | NA                                           | 15.00                 | 2.17                                         | 27.00                 | 0.83                                         | 39.00                 | 1.82                                         | 51.00                 | 0.23                                         |
| 3.25                  | NA                                           | 15.25                 | 2.17                                         | 27.25                 | 0.83                                         | 39.25                 | 1.82                                         | 51.25                 | 0.23                                         |
| 3.50                  | NA                                           | 15.50                 | 1.96                                         | 27.50                 | 0.83                                         | 39.50                 | 1.59                                         | 51.50                 | 0.23                                         |
| 3.75                  | NA                                           | 15.75                 | 1.96                                         | 27.75                 | 0.63                                         | 39.75                 | 1.59                                         | 51.75                 | 0.23                                         |
| 4.00                  | NA                                           | 16.00                 | 2.05                                         | 28.00                 | 0.63                                         | 40.00                 | 1.59                                         | 52.00                 | 0.23                                         |
| 4.25                  | NA                                           | 16.25                 | 2.05                                         | 28.25                 | 0.63                                         | 40.25                 | 1.14                                         | 52.25                 | 0.45                                         |
| 4.50                  | NA                                           | 16.50                 | 1.67                                         | 28.50                 | 1.04                                         | 40.50                 | 1.14                                         | 52.50                 | 0.45                                         |
| 4.75                  | NA                                           | 16.75                 | 1.59                                         | 28.75                 | 1.04                                         | 40.75                 | 1.19                                         | 52.75                 | 0.45                                         |
| 5.00                  | NA                                           | 17.00                 | 1.59                                         | 29.00                 | 1.04                                         | 41.00                 | 1.19                                         | 53.00                 | 0.45                                         |
| 5.25                  | NA                                           | 17.25                 | 1.67                                         | 29.25                 | 1.04                                         | 41.25                 | 1.19                                         | 53.25                 | 0.45                                         |
| 5.50                  | NA                                           | 17.50                 | 2.14                                         | 29.50                 | 1.04                                         | 41.50                 | 1.19                                         | 53.50                 | 0.68                                         |
| 5.75                  | NA                                           | 17.75                 | 2.14                                         | 29.75                 | 1.04                                         | 41.75                 | 1.19                                         | 53.75                 | 0.68                                         |
| 6.00                  | 0.65                                         | 18.00                 | 1.67                                         | 30.00                 | 0.83                                         | 42.00                 | 1.19                                         | 54.00                 | 0.91                                         |
| 6.25                  | 0.68                                         | 18.25                 | 1.67                                         | 30.25                 | 0.83                                         | 42.25                 | 1.14                                         | 54.25                 | 0.68                                         |
| 6.50                  | 0.68                                         | 18.50                 | 1.67                                         | 30.50                 | 0.63                                         | 42.50                 | 1.14                                         | 54.50                 | 0.68                                         |
| 6.75                  | 0.68                                         | 18.75                 | 1.67                                         | 30.75                 | 0.63                                         | 42.75                 | 1.36                                         | 54.75                 | 1.14                                         |
| 7.00                  | 0.68                                         | 19.00                 | 1.67                                         | 31.00                 | 0.63                                         | 43.00                 | 1.36                                         | 55.00                 | 1.14                                         |
| 7.25                  | 0.68                                         | 19.25                 | 1.90                                         | 31.25                 | 0.63                                         | 43.25                 | 0.68                                         | 55.25                 | 1.14                                         |
| 7.50                  | 0.68                                         | 19.50                 | 1.90                                         | 31.50                 | 0.63                                         | 43.50                 | 0.68                                         | 55.50                 | 1.14                                         |
| 7.75                  | 0.87                                         | 19.75                 | 1.19                                         | 31.75                 | 0.63                                         | 43.75                 | 0.68                                         | 55.75                 | 1.14                                         |
| 8.00                  | 0.65                                         | 20.00                 | 1.19                                         | 32.00                 | 0.63                                         | 44.00                 | 0.68                                         | 56.00                 | 1.14                                         |
| 8.25                  | 0.65                                         | 20.25                 | 1.19                                         | 32.25                 | 0.63                                         | 44.25                 | 0.68                                         | 56.25                 | 1.14                                         |
| 8.50                  | 0.65                                         | 20.50                 | 1.25                                         | 32.50                 | 0.63                                         | 44.50                 | 0.91                                         | 56.50                 | 1.14                                         |
| 8.75                  | 0.87                                         | 20.75                 | 1.25                                         | 32.75                 | 0.42                                         | 44.75                 | 0.91                                         | 56.75                 | 1.14                                         |
| 9.00                  | 0.91                                         | 21.00                 | 1.25                                         | 33.00                 | 0.42                                         | 45.00                 | 0.91                                         | 57.00                 | 1.09                                         |
| 9.25                  | 0.68                                         | 21.25                 | 1.25                                         | 33.25                 | 0.42                                         | 45.25                 | 0.91                                         | 57.25                 | 1.30                                         |
| 9.50                  | 0.91                                         | 21.50                 | 1.25                                         | 33.50                 | 0.63                                         | 45.50                 | 0.91                                         | 57.50                 | 1.30                                         |
| 9.75                  | 0.91                                         | 21.75                 | 1.50                                         | 33.75                 | 0.63                                         | 45.75                 | 0.91                                         | 57.75                 | 1.30                                         |
| 10.00                 | 0.91                                         | 22.00                 | 1.43                                         | 34.00                 | 0.63                                         | 46.00                 | 0.91                                         | 58.00                 | 1.30                                         |
| 10.25                 | 0.91                                         | 22.25                 | 1.43                                         | 34.25                 | 1.04                                         | 46.25                 | 0.91                                         | 58.25                 | 1.09                                         |
| 10.50                 | 1.36                                         | 22.50                 | 1.36                                         | 34.50                 | 0.63                                         | 46.50                 | 0.91                                         | 58.50                 | 1.09                                         |
| 10.75                 | 1.43                                         | 22.75                 | 1.36                                         | 34.75                 | 0.63                                         | 46.75                 | 0.87                                         | 58.75                 | 1.09                                         |
| 11.00                 | 1.43                                         | 23.00                 | 1.36                                         | 35.00                 | 0.63                                         | 47.00                 | 0.87                                         | 59.00                 | 1.09                                         |
| 11.25                 | 1.43                                         | 23.25                 | 1.30                                         | 35.25                 | 0.63                                         | 47.25                 | 0.87                                         | 59.25                 | 1.09                                         |
| 11.50                 | 1.19                                         | 23.50                 | 0.87                                         | 35.50                 | 0.63                                         | 47.50                 | 0.87                                         | 59.50                 | NA*                                          |
| 11.75                 | 1.19                                         | 23.75                 | 0.87                                         | 35.75                 | 0.63                                         | 47.75                 | 0.87                                         | 59.75                 | NA*                                          |
| 12.00                 | 1.67                                         | 24.00                 | 1.09                                         | 36.00                 | 0.63                                         | 48.00                 | 0.87                                         | 60.00                 | NA*                                          |

HIGHEST SIX-MINUTE BLOCK AVERAGE = 1.67      AVERAGE OPACITY DURING RUN = 1.02  
 HIGHEST SIX-MINUTE ROLLING AVERAGE = 2.17

\* Due to fugitive emission obstructions, a number of readings could not be made. Running averages included the time lapses so that the net run time was shortened. NA indicates that for the time period, an average is Not Applicable.

Date: 8/20/97  
 Start Time: 1510  
 Stop Time: 1610

Baghouse Outlet  
 Run Number: O-M9-3B

| Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, |
|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|
| 0.25                  | NA                                           | 12.25                 | 1.05                                         | 24.25                 | 1.30                                         | 36.25                 | 0.95                                         | 48.25                 | 1.00                                         |
| 0.50                  | NA                                           | 12.50                 | 1.11                                         | 24.50                 | 1.25                                         | 36.50                 | 0.95                                         | 48.50                 | 1.00                                         |
| 0.75                  | NA                                           | 12.75                 | 1.11                                         | 24.75                 | 0.63                                         | 36.75                 | 0.95                                         | 48.75                 | 1.00                                         |
| 1.00                  | NA                                           | 13.00                 | 1.39                                         | 25.00                 | 0.63                                         | 37.00                 | 0.95                                         | 49.00                 | 1.00                                         |
| 1.25                  | NA                                           | 13.25                 | 1.39                                         | 25.25                 | 0.63                                         | 37.25                 | 0.95                                         | 49.25                 | 0.94                                         |
| 1.50                  | NA                                           | 13.50                 | 1.11                                         | 25.50                 | 1.04                                         | 37.50                 | 0.95                                         | 49.50                 | 1.47                                         |
| 1.75                  | NA                                           | 13.75                 | 1.11                                         | 25.75                 | 1.09                                         | 37.75                 | 0.95                                         | 49.75                 | 1.39                                         |
| 2.00                  | NA                                           | 14.00                 | 1.11                                         | 26.00                 | 1.14                                         | 38.00                 | 0.95                                         | 50.00                 | 1.32                                         |
| 2.25                  | NA                                           | 14.25                 | 1.39                                         | 26.25                 | 1.19                                         | 38.25                 | 0.95                                         | 50.25                 | 1.25                                         |
| 2.50                  | NA                                           | 14.50                 | 1.39                                         | 26.50                 | 1.25                                         | 38.50                 | 0.91                                         | 50.50                 | 1.25                                         |
| 2.75                  | NA                                           | 14.75                 | 1.39                                         | 26.75                 | 1.32                                         | 38.75                 | 0.91                                         | 50.75                 | 1.25                                         |
| 3.00                  | NA                                           | 15.00                 | 1.39                                         | 27.00                 | 1.39                                         | 39.00                 | 0.91                                         | 51.00                 | 1.25                                         |
| 3.25                  | NA                                           | 15.25                 | 1.32                                         | 27.25                 | 1.11                                         | 39.25                 | 1.09                                         | 51.25                 | 1.25                                         |
| 3.50                  | NA                                           | 15.50                 | 1.32                                         | 27.50                 | 0.83                                         | 39.50                 | 1.09                                         | 51.50                 | 1.25                                         |
| 3.75                  | NA                                           | 15.75                 | 1.32                                         | 27.75                 | 0.83                                         | 39.75                 | 0.87                                         | 51.75                 | 1.25                                         |
| 4.00                  | NA                                           | 16.00                 | 1.32                                         | 28.00                 | 0.83                                         | 40.00                 | 0.87                                         | 52.00                 | 1.00                                         |
| 4.25                  | NA                                           | 16.25                 | 1.32                                         | 28.25                 | 0.83                                         | 40.25                 | 0.87                                         | 52.25                 | 1.00                                         |
| 4.50                  | NA                                           | 16.50                 | 1.32                                         | 28.50                 | 0.83                                         | 40.50                 | 0.87                                         | 52.50                 | 1.00                                         |
| 4.75                  | NA                                           | 16.75                 | 0.79                                         | 28.75                 | 0.83                                         | 40.75                 | 0.65                                         | 52.75                 | 0.95                                         |
| 5.00                  | NA                                           | 17.00                 | 0.79                                         | 29.00                 | 0.88                                         | 41.00                 | 0.65                                         | 53.00                 | 0.95                                         |
| 5.25                  | NA                                           | 17.25                 | 0.79                                         | 29.25                 | 0.88                                         | 41.25                 | 0.63                                         | 53.25                 | 1.14                                         |
| 5.50                  | NA                                           | 17.50                 | 0.83                                         | 29.50                 | 0.94                                         | 41.50                 | 0.42                                         | 53.50                 | 1.09                                         |
| 5.75                  | NA                                           | 17.75                 | 0.88                                         | 29.75                 | 0.94                                         | 41.75                 | 0.21                                         | 53.75                 | 1.09                                         |
| 6.00                  | 1.59                                         | 18.00                 | 0.88                                         | 30.00                 | 0.94                                         | 42.00                 | 0.63                                         | 54.00                 | 0.68                                         |
| 6.25                  | 1.59                                         | 18.25                 | 0.83                                         | 30.25                 | 0.94                                         | 42.25                 | 0.63                                         | 54.25                 | 0.71                                         |
| 6.50                  | 1.36                                         | 18.50                 | 0.83                                         | 30.50                 | 0.94                                         | 42.50                 | 0.63                                         | 54.50                 | 0.71                                         |
| 6.75                  | 1.43                                         | 18.75                 | 1.58                                         | 30.75                 | 0.94                                         | 42.75                 | 0.63                                         | 54.75                 | 0.71                                         |
| 7.00                  | 1.43                                         | 19.00                 | 1.32                                         | 31.00                 | 0.94                                         | 43.00                 | 0.63                                         | 55.00                 | 0.95                                         |
| 7.25                  | 0.95                                         | 19.25                 | 1.32                                         | 31.25                 | 0.94                                         | 43.25                 | 0.65                                         | 55.25                 | 1.00                                         |
| 7.50                  | 1.14                                         | 19.50                 | 1.32                                         | 31.50                 | 0.31                                         | 43.50                 | 0.68                                         | 55.50                 | 0.50                                         |
| 7.75                  | 1.14                                         | 19.75                 | 1.32                                         | 31.75                 | 0.29                                         | 43.75                 | 0.71                                         | 55.75                 | 0.50                                         |
| 8.00                  | 0.95                                         | 20.00                 | 1.25                                         | 32.00                 | 0.28                                         | 44.00                 | 0.75                                         | 56.00                 | 0.50                                         |
| 8.25                  | 0.95                                         | 20.25                 | 1.00                                         | 32.25                 | 0.26                                         | 44.25                 | 0.79                                         | 56.25                 | 0.50                                         |
| 8.50                  | 0.95                                         | 20.50                 | 1.00                                         | 32.50                 | 0.26                                         | 44.50                 | 0.83                                         | 56.50                 | 0.48                                         |
| 8.75                  | 0.95                                         | 20.75                 | 1.00                                         | 32.75                 | 0.25                                         | 44.75                 | 0.83                                         | 56.75                 | NA*                                          |
| 9.00                  | 0.50                                         | 21.00                 | 0.95                                         | 33.00                 | 0.24                                         | 45.00                 | 0.83                                         | 57.00                 | NA*                                          |
| 9.25                  | 0.53                                         | 21.25                 | 1.19                                         | 33.25                 | 0.25                                         | 45.25                 | 0.56                                         | 57.25                 | NA*                                          |
| 9.50                  | 0.53                                         | 21.50                 | 1.67                                         | 33.50                 | 0.00                                         | 45.50                 | 0.56                                         | 57.50                 | NA*                                          |
| 9.75                  | 0.53                                         | 21.75                 | 1.67                                         | 33.75                 | 0.25                                         | 45.75                 | 0.56                                         | 57.75                 | NA*                                          |
| 10.00                 | 0.50                                         | 22.00                 | 1.67                                         | 34.00                 | 0.25                                         | 46.00                 | 0.83                                         | 58.00                 | NA*                                          |
| 10.25                 | 0.50                                         | 22.25                 | 1.67                                         | 34.25                 | 0.25                                         | 46.25                 | 0.83                                         | 58.25                 | NA*                                          |
| 10.50                 | 0.50                                         | 22.50                 | 1.67                                         | 34.50                 | 0.25                                         | 46.50                 | 0.83                                         | 58.50                 | NA*                                          |
| 10.75                 | 0.75                                         | 22.75                 | 1.67                                         | 34.75                 | 0.50                                         | 46.75                 | 0.88                                         | 58.75                 | NA*                                          |
| 11.00                 | 0.75                                         | 23.00                 | 1.67                                         | 35.00                 | 0.48                                         | 47.00                 | 0.88                                         | 59.00                 | NA*                                          |
| 11.25                 | 1.00                                         | 23.25                 | 1.43                                         | 35.25                 | 0.50                                         | 47.25                 | 0.94                                         | 59.25                 | NA*                                          |
| 11.50                 | 1.00                                         | 23.50                 | 1.36                                         | 35.50                 | 0.71                                         | 47.50                 | 1.00                                         | 59.50                 | NA*                                          |
| 11.75                 | 1.00                                         | 23.75                 | 1.30                                         | 35.75                 | 0.95                                         | 47.75                 | 1.00                                         | 59.75                 | NA*                                          |
| 12.00                 | 1.00                                         | 24.00                 | 1.30                                         | 36.00                 | 0.95                                         | 48.00                 | 1.00                                         | 60.00                 | NA*                                          |

HIGHEST SIX-MINUTE BLOCK AVERAGE = 1.59      AVERAGE OPACITY DURING RUN = 1.02  
 HIGHEST SIX-MINUTE ROLLING AVERAGE = 1.67

\* Due to fugitive emission obstructions, a number of readings could not be made. Running averages included the time lapses so that the net run time was shortened. NA indicates that for the time period, an average is Not Applicable.

Date: 8/20/97  
 Start Time: 1615  
 Stop Time: 1720

Baghouse Outlet  
 Run Number: O-M9-1C

| Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, |
|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|
| 0.25                  | NA                                           | 12.25                 | 0.68                                         | 24.25                 | 0.63                                         | 36.25                 | 0.22                                         | 48.25                 | 0.75                                         |
| 0.50                  | NA                                           | 12.50                 | 0.68                                         | 24.50                 | 0.63                                         | 36.50                 | 0.22                                         | 48.50                 | 0.75                                         |
| 0.75                  | NA                                           | 12.75                 | 0.68                                         | 24.75                 | 0.83                                         | 36.75                 | 0.23                                         | 48.75                 | 0.75                                         |
| 1.00                  | NA                                           | 13.00                 | 0.68                                         | 25.00                 | 0.83                                         | 37.00                 | 0.24                                         | 49.00                 | 0.79                                         |
| 1.25                  | NA                                           | 13.25                 | 0.45                                         | 25.25                 | 0.83                                         | 37.25                 | 0.25                                         | 49.25                 | 0.79                                         |
| 1.50                  | NA                                           | 13.50                 | 0.48                                         | 25.50                 | 0.83                                         | 37.50                 | 0.25                                         | 49.50                 | 0.79                                         |
| 1.75                  | NA                                           | 13.75                 | 0.50                                         | 25.75                 | 0.83                                         | 37.75                 | 0.25                                         | 49.75                 | 0.79                                         |
| 2.00                  | NA                                           | 14.00                 | 0.50                                         | 26.00                 | 0.83                                         | 38.00                 | 0.25                                         | 50.00                 | 0.79                                         |
| 2.25                  | NA                                           | 14.25                 | 0.50                                         | 26.25                 | 0.87                                         | 38.25                 | 0.75                                         | 50.25                 | 0.79                                         |
| 2.50                  | NA                                           | 14.50                 | 0.48                                         | 26.50                 | 0.87                                         | 38.50                 | 0.75                                         | 50.50                 | 0.79                                         |
| 2.75                  | NA                                           | 14.75                 | 0.50                                         | 26.75                 | 1.09                                         | 38.75                 | 0.75                                         | 50.75                 | 1.05                                         |
| 3.00                  | NA                                           | 15.00                 | 1.00                                         | 27.00                 | 1.09                                         | 39.00                 | 1.25                                         | 51.00                 | 1.05                                         |
| 3.25                  | NA                                           | 15.25                 | 1.00                                         | 27.25                 | 1.09                                         | 39.25                 | 1.25                                         | 51.25                 | 1.05                                         |
| 3.50                  | NA                                           | 15.50                 | 1.00                                         | 27.50                 | 1.09                                         | 39.50                 | 1.25                                         | 51.50                 | 1.05                                         |
| 3.75                  | NA                                           | 15.75                 | 1.00                                         | 27.75                 | 1.09                                         | 39.75                 | 1.25                                         | 51.75                 | 1.32                                         |
| 4.00                  | NA                                           | 16.00                 | 1.00                                         | 28.00                 | 0.65                                         | 40.00                 | 1.25                                         | 52.00                 | 1.32                                         |
| 4.25                  | NA                                           | 16.25                 | 1.00                                         | 28.25                 | 0.65                                         | 40.25                 | 1.75                                         | 52.25                 | 1.32                                         |
| 4.50                  | NA                                           | 16.50                 | 1.00                                         | 28.50                 | 0.65                                         | 40.50                 | 1.84                                         | 52.50                 | 1.32                                         |
| 4.75                  | NA                                           | 16.75                 | 1.00                                         | 28.75                 | 0.65                                         | 40.75                 | 1.94                                         | 52.75                 | 1.25                                         |
| 5.00                  | NA                                           | 17.00                 | 1.05                                         | 29.00                 | 0.87                                         | 41.00                 | 1.84                                         | 53.00                 | 0.75                                         |
| 5.25                  | NA                                           | 17.25                 | 0.79                                         | 29.25                 | 0.87                                         | 41.25                 | 1.67                                         | 53.25                 | 0.50                                         |
| 5.50                  | NA                                           | 17.50                 | 0.79                                         | 29.50                 | 0.87                                         | 41.50                 | 1.67                                         | 53.50                 | 0.48                                         |
| 5.75                  | NA                                           | 17.75                 | 0.83                                         | 29.75                 | 0.87                                         | 41.75                 | 1.67                                         | 53.75                 | 0.48                                         |
| 6.00                  | 0.56                                         | 18.00                 | 0.59                                         | 30.00                 | 0.91                                         | 42.00                 | 1.67                                         | 54.00                 | 0.48                                         |
| 6.25                  | 0.56                                         | 18.25                 | 0.63                                         | 30.25                 | 0.91                                         | 42.25                 | 1.67                                         | 54.25                 | 0.48                                         |
| 6.50                  | 0.56                                         | 18.50                 | 0.94                                         | 30.50                 | 0.68                                         | 42.50                 | 1.67                                         | 54.50                 | 0.48                                         |
| 6.75                  | 0.56                                         | 18.75                 | 0.94                                         | 30.75                 | 0.45                                         | 42.75                 | 1.58                                         | 54.75                 | 0.48                                         |
| 7.00                  | 0.53                                         | 19.00                 | 0.94                                         | 31.00                 | 0.45                                         | 43.00                 | 1.50                                         | 55.00                 | 0.45                                         |
| 7.25                  | 0.79                                         | 19.25                 | 0.94                                         | 31.25                 | 0.45                                         | 43.25                 | 1.43                                         | 55.25                 | 0.45                                         |
| 7.50                  | 0.75                                         | 19.50                 | 0.88                                         | 31.50                 | 0.45                                         | 43.50                 | 1.50                                         | 55.50                 | 0.65                                         |
| 7.75                  | 0.75                                         | 19.75                 | 0.83                                         | 31.75                 | 0.45                                         | 43.75                 | 1.58                                         | 55.75                 | 0.63                                         |
| 8.00                  | 0.79                                         | 20.00                 | 0.79                                         | 32.00                 | 0.45                                         | 44.00                 | 1.58                                         | 56.00                 | 0.63                                         |
| 8.25                  | 0.79                                         | 20.25                 | 0.79                                         | 32.25                 | 0.43                                         | 44.25                 | 1.05                                         | 56.25                 | 0.63                                         |
| 8.50                  | 0.56                                         | 20.50                 | 0.79                                         | 32.50                 | 0.43                                         | 44.50                 | 1.05                                         | 56.50                 | 0.63                                         |
| 8.75                  | 0.56                                         | 20.75                 | 0.75                                         | 32.75                 | 0.22                                         | 44.75                 | 1.05                                         | 56.75                 | 0.42                                         |
| 9.00                  | 0.56                                         | 21.00                 | 0.25                                         | 33.00                 | 0.22                                         | 45.00                 | 0.53                                         | 57.00                 | 0.42                                         |
| 9.25                  | 0.56                                         | 21.25                 | 0.25                                         | 33.25                 | 0.22                                         | 45.25                 | 0.53                                         | 57.25                 | 0.42                                         |
| 9.50                  | 0.56                                         | 21.50                 | 0.25                                         | 33.50                 | 0.22                                         | 45.50                 | 0.53                                         | 57.50                 | 0.43                                         |
| 9.75                  | 0.53                                         | 21.75                 | 0.25                                         | 33.75                 | 0.22                                         | 45.75                 | 0.53                                         | 57.75                 | 0.22                                         |
| 10.00                 | 0.50                                         | 22.00                 | 0.75                                         | 34.00                 | 0.22                                         | 46.00                 | 0.53                                         | 58.00                 | 0.22                                         |
| 10.25                 | 0.50                                         | 22.25                 | 0.75                                         | 34.25                 | 0.22                                         | 46.25                 | 0.00                                         | 58.25                 | 0.23                                         |
| 10.50                 | 0.50                                         | 22.50                 | 0.75                                         | 34.50                 | 0.22                                         | 46.50                 | 0.00                                         | 58.50                 | 0.23                                         |
| 10.75                 | 0.48                                         | 22.75                 | 0.75                                         | 34.75                 | 0.22                                         | 46.75                 | 0.00                                         | 58.75                 | 0.23                                         |
| 11.00                 | 0.48                                         | 23.00                 | 0.71                                         | 35.00                 | 0.00                                         | 47.00                 | 0.50                                         | 59.00                 | 0.23                                         |
| 11.25                 | 0.71                                         | 23.25                 | 0.71                                         | 35.25                 | 0.23                                         | 47.25                 | 0.71                                         | 59.25                 | 0.23                                         |
| 11.50                 | 0.68                                         | 23.50                 | 0.71                                         | 35.50                 | 0.23                                         | 47.50                 | 0.75                                         | 59.50                 | 0.45                                         |
| 11.75                 | 0.45                                         | 23.75                 | 0.68                                         | 35.75                 | 0.23                                         | 47.75                 | 0.75                                         | 59.75                 | 0.45                                         |
| 12.00                 | 0.68                                         | 24.00                 | 0.65                                         | 36.00                 | 0.22                                         | 48.00                 | 0.75                                         | 60.00                 | NA*                                          |

HIGHEST SIX-MINUTE BLOCK AVERAGE = 1.67      AVERAGE OPACITY DURING RUN = 0.68  
 HIGHEST SIX-MINUTE ROLLING AVERAGE = 1.94

\* Due to fugitive emission obstructions, a number of readings could not be made. Running averages included the time lapses so that the net run time was shortened. NA indicates that for the time period, an average is Not Applicable.

Date: 8/20/97  
 Start Time: 1722  
 Stop Time: 1742

Baghouse Outlet  
 Run Number: O-M9-3D

| Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, |
|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|
| 0.25                  | NA                                           | 12.25                 | 0.21                                         | 24.25                 | 0.00                                         | 36.25                 | 0.00                                         | 48.25                 | 0.00                                         |
| 0.50                  | NA                                           | 12.50                 | 0.21                                         | 24.50                 | 0.00                                         | 36.50                 | 0.00                                         | 48.50                 | 0.00                                         |
| 0.75                  | NA                                           | 12.75                 | 0.21                                         | 24.75                 | 0.00                                         | 36.75                 | 0.00                                         | 48.75                 | 0.00                                         |
| 1.00                  | NA                                           | 13.00                 | 0.21                                         | 25.00                 | 0.00                                         | 37.00                 | 0.00                                         | 49.00                 | 0.00                                         |
| 1.25                  | NA                                           | 13.25                 | 0.42                                         | 25.25                 | 0.00                                         | 37.25                 | 0.00                                         | 49.25                 | 0.00                                         |
| 1.50                  | NA                                           | 13.50                 | 0.42                                         | 25.50                 | 0.00                                         | 37.50                 | 0.00                                         | 49.50                 | 0.00                                         |
| 1.75                  | NA                                           | 13.75                 | 0.42                                         | 25.75                 | 0.00                                         | 37.75                 | 0.00                                         | 49.75                 | 0.00                                         |
| 2.00                  | NA                                           | 14.00                 | 0.42                                         | 26.00                 | 0.00                                         | 38.00                 | 0.00                                         | 50.00                 | 0.00                                         |
| 2.25                  | NA                                           | 14.25                 | 0.42                                         | 26.25                 | 0.00                                         | 38.25                 | 0.00                                         | 50.25                 | 0.00                                         |
| 2.50                  | NA                                           | 14.50                 | 0.42                                         | 26.50                 | 0.00                                         | 38.50                 | 0.00                                         | 50.50                 | 0.00                                         |
| 2.75                  | NA                                           | 14.75                 | 0.42                                         | 26.75                 | 0.00                                         | 38.75                 | 0.00                                         | 50.75                 | 0.00                                         |
| 3.00                  | NA                                           | 15.00                 | 0.42                                         | 27.00                 | 0.00                                         | 39.00                 | 0.00                                         | 51.00                 | 0.00                                         |
| 3.25                  | NA                                           | 15.25                 | 0.42                                         | 27.25                 | 0.00                                         | 39.25                 | 0.00                                         | 51.25                 | 0.00                                         |
| 3.50                  | NA                                           | 15.50                 | 0.21                                         | 27.50                 | 0.00                                         | 39.50                 | 0.00                                         | 51.50                 | 0.00                                         |
| 3.75                  | NA                                           | 15.75                 | 0.21                                         | 27.75                 | 0.00                                         | 39.75                 | 0.00                                         | 51.75                 | 0.00                                         |
| 4.00                  | NA                                           | 16.00                 | 0.21                                         | 28.00                 | 0.00                                         | 40.00                 | 0.00                                         | 52.00                 | 0.00                                         |
| 4.25                  | NA                                           | 16.25                 | 0.21                                         | 28.25                 | 0.00                                         | 40.25                 | 0.00                                         | 52.25                 | 0.00                                         |
| 4.50                  | NA                                           | 16.50                 | 0.21                                         | 28.50                 | 0.00                                         | 40.50                 | 0.00                                         | 52.50                 | 0.00                                         |
| 4.75                  | NA                                           | 16.75                 | 0.21                                         | 28.75                 | 0.00                                         | 40.75                 | 0.00                                         | 52.75                 | 0.00                                         |
| 5.00                  | NA                                           | 17.00                 | 0.22                                         | 29.00                 | 0.00                                         | 41.00                 | 0.00                                         | 53.00                 | 0.00                                         |
| 5.25                  | NA                                           | 17.25                 | 0.22                                         | 29.25                 | 0.00                                         | 41.25                 | 0.00                                         | 53.25                 | 0.00                                         |
| 5.50                  | NA                                           | 17.50                 | 0.22                                         | 29.50                 | 0.00                                         | 41.50                 | 0.00                                         | 53.50                 | 0.00                                         |
| 5.75                  | NA                                           | 17.75                 | 0.22                                         | 29.75                 | 0.00                                         | 41.75                 | 0.00                                         | 53.75                 | 0.00                                         |
| 6.00                  | 0.21                                         | 18.00                 | 0.22                                         | 30.00                 | 0.00                                         | 42.00                 | 0.00                                         | 54.00                 | 0.00                                         |
| 6.25                  | 0.21                                         | 18.25                 | 0.22                                         | 30.25                 | 0.00                                         | 42.25                 | 0.00                                         | 54.25                 | 0.00                                         |
| 6.50                  | 0.21                                         | 18.50                 | 0.22                                         | 30.50                 | 0.00                                         | 42.50                 | 0.00                                         | 54.50                 | 0.00                                         |
| 6.75                  | 0.21                                         | 18.75                 | 0.22                                         | 30.75                 | 0.00                                         | 42.75                 | 0.00                                         | 54.75                 | 0.00                                         |
| 7.00                  | 0.21                                         | 19.00                 | 0.22                                         | 31.00                 | 0.00                                         | 43.00                 | 0.00                                         | 55.00                 | 0.00                                         |
| 7.25                  | 0.21                                         | 19.25                 | 0.00                                         | 31.25                 | 0.00                                         | 43.25                 | 0.00                                         | 55.25                 | 0.00                                         |
| 7.50                  | 0.21                                         | 19.50                 | 0.00                                         | 31.50                 | 0.00                                         | 43.50                 | 0.00                                         | 55.50                 | 0.00                                         |
| 7.75                  | 0.21                                         | 19.75                 | 0.00                                         | 31.75                 | 0.00                                         | 43.75                 | 0.00                                         | 55.75                 | 0.00                                         |
| 8.00                  | 0.21                                         | 20.00                 | 0.00                                         | 32.00                 | 0.00                                         | 44.00                 | 0.00                                         | 56.00                 | 0.00                                         |
| 8.25                  | 0.21                                         | 20.25                 | 0.00                                         | 32.25                 | 0.00                                         | 44.25                 | 0.00                                         | 56.25                 | 0.00                                         |
| 8.50                  | 0.21                                         | 20.50                 | 0.00                                         | 32.50                 | 0.00                                         | 44.50                 | 0.00                                         | 56.50                 | 0.00                                         |
| 8.75                  | 0.21                                         | 20.75                 | 0.00                                         | 32.75                 | 0.00                                         | 44.75                 | 0.00                                         | 56.75                 | 0.00                                         |
| 9.00                  | 0.21                                         | 21.00                 | 0.00                                         | 33.00                 | 0.00                                         | 45.00                 | 0.00                                         | 57.00                 | 0.00                                         |
| 9.25                  | 0.21                                         | 21.25                 | 0.00                                         | 33.25                 | 0.00                                         | 45.25                 | 0.00                                         | 57.25                 | 0.00                                         |
| 9.50                  | 0.42                                         | 21.50                 | 0.00                                         | 33.50                 | 0.00                                         | 45.50                 | 0.00                                         | 57.50                 | 0.00                                         |
| 9.75                  | 0.42                                         | 21.75                 | 0.00                                         | 33.75                 | 0.00                                         | 45.75                 | 0.00                                         | 57.75                 | 0.00                                         |
| 10.00                 | 0.42                                         | 22.00                 | 0.00                                         | 34.00                 | 0.00                                         | 46.00                 | 0.00                                         | 58.00                 | 0.00                                         |
| 10.25                 | 0.42                                         | 22.25                 | 0.00                                         | 34.25                 | 0.00                                         | 46.25                 | 0.00                                         | 58.25                 | 0.00                                         |
| 10.50                 | 0.42                                         | 22.50                 | 0.00                                         | 34.50                 | 0.00                                         | 46.50                 | 0.00                                         | 58.50                 | 0.00                                         |
| 10.75                 | 0.42                                         | 22.75                 | 0.00                                         | 34.75                 | 0.00                                         | 46.75                 | 0.00                                         | 58.75                 | 0.00                                         |
| 11.00                 | 0.42                                         | 23.00                 | 0.00                                         | 35.00                 | 0.00                                         | 47.00                 | 0.00                                         | 59.00                 | 0.00                                         |
| 11.25                 | 0.42                                         | 23.25                 | 0.00                                         | 35.25                 | 0.00                                         | 47.25                 | 0.00                                         | 59.25                 | 0.00                                         |
| 11.50                 | 0.42                                         | 23.50                 | 0.00                                         | 35.50                 | 0.00                                         | 47.50                 | 0.00                                         | 59.50                 | 0.00                                         |
| 11.75                 | 0.42                                         | 23.75                 | 0.00                                         | 35.75                 | 0.00                                         | 47.75                 | 0.00                                         | 59.75                 | 0.00                                         |
| 12.00                 | 0.21                                         | 24.00                 | 0.00                                         | 36.00                 | 0.00                                         | 48.00                 | 0.00                                         | 60.00                 | 0.00                                         |

HIGHEST SIX-MINUTE BLOCK AVERAGE = 0.22      AVERAGE OPACITY DURING RUN = 0.06  
 HIGHEST SIX-MINUTE ROLLING AVERAGE = 0.42

\* Due to fugitive emission obstructions, a number of readings could not be made. Running averages included the time lapses so that the net run time was shortened. NA indicates that for the time period, an average is Not Applicable.

## Visible Emission Observation Summary

### Baghouse Outlet

| Run Number                         | <u>O-M9-4A</u> | <u>O-M9-4B</u> | <u>O-M9-4C</u> | <u>O-M9-4D</u> |
|------------------------------------|----------------|----------------|----------------|----------------|
| Date                               | 8/21/97        | 8/21/97        | 8/21/97        | 8/21/97        |
| Start Time                         | 0741           | 0848           | 0953           | 1058           |
| Stop Time                          | 0841           | 0948           | 1053           | 1158           |
| Percent Opacity                    |                |                |                |                |
| Average for entire run             | 0.15           | 0.17           | 0.13           | 0.10           |
| Highest single reading             | 5              | 5              | 5              | 5              |
| Highest six-minute block average   | 0.42           | 0.42           | 0.21           | 0.21           |
| Highest six-minute rolling average | 0.42           | 0.42           | 0.42           | 0.22           |

Date: 8/21/97  
 Start Time: 0741  
 Stop Time: 0841

Baghouse Outlet  
 Run Number: O-M9-4A

| Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, |
|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|
| 0.25                  | NA                                           | 12.25                 | 0.00                                         | 24.25                 | 0.21                                         | 36.25                 | 0.21                                         | 48.25                 | 0.42                                         |
| 0.50                  | NA                                           | 12.50                 | 0.00                                         | 24.50                 | 0.21                                         | 36.50                 | 0.21                                         | 48.50                 | 0.42                                         |
| 0.75                  | NA                                           | 12.75                 | 0.00                                         | 24.75                 | 0.21                                         | 36.75                 | 0.21                                         | 48.75                 | 0.42                                         |
| 1.00                  | NA                                           | 13.00                 | 0.00                                         | 25.00                 | 0.00                                         | 37.00                 | 0.21                                         | 49.00                 | 0.42                                         |
| 1.25                  | NA                                           | 13.25                 | 0.00                                         | 25.25                 | 0.00                                         | 37.25                 | 0.21                                         | 49.25                 | 0.42                                         |
| 1.50                  | NA                                           | 13.50                 | 0.00                                         | 25.50                 | 0.00                                         | 37.50                 | 0.21                                         | 49.50                 | 0.42                                         |
| 1.75                  | NA                                           | 13.75                 | 0.00                                         | 25.75                 | 0.00                                         | 37.75                 | 0.21                                         | 49.75                 | 0.42                                         |
| 2.00                  | NA                                           | 14.00                 | 0.00                                         | 26.00                 | 0.00                                         | 38.00                 | 0.42                                         | 50.00                 | 0.42                                         |
| 2.25                  | NA                                           | 14.25                 | 0.00                                         | 26.25                 | 0.00                                         | 38.25                 | 0.42                                         | 50.25                 | 0.42                                         |
| 2.50                  | NA                                           | 14.50                 | 0.00                                         | 26.50                 | 0.00                                         | 38.50                 | 0.42                                         | 50.50                 | 0.42                                         |
| 2.75                  | NA                                           | 14.75                 | 0.00                                         | 26.75                 | 0.00                                         | 38.75                 | 0.42                                         | 50.75                 | 0.42                                         |
| 3.00                  | NA                                           | 15.00                 | 0.00                                         | 27.00                 | 0.00                                         | 39.00                 | 0.42                                         | 51.00                 | 0.42                                         |
| 3.25                  | NA                                           | 15.25                 | 0.00                                         | 27.25                 | 0.00                                         | 39.25                 | 0.42                                         | 51.25                 | 0.42                                         |
| 3.50                  | NA                                           | 15.50                 | 0.00                                         | 27.50                 | 0.00                                         | 39.50                 | 0.42                                         | 51.50                 | 0.21                                         |
| 3.75                  | NA                                           | 15.75                 | 0.00                                         | 27.75                 | 0.00                                         | 39.75                 | 0.42                                         | 51.75                 | 0.21                                         |
| 4.00                  | NA                                           | 16.00                 | 0.00                                         | 28.00                 | 0.00                                         | 40.00                 | 0.42                                         | 52.00                 | 0.21                                         |
| 4.25                  | NA                                           | 16.25                 | 0.00                                         | 28.25                 | 0.00                                         | 40.25                 | 0.42                                         | 52.25                 | 0.21                                         |
| 4.50                  | NA                                           | 16.50                 | 0.00                                         | 28.50                 | 0.00                                         | 40.50                 | 0.42                                         | 52.50                 | 0.21                                         |
| 4.75                  | NA                                           | 16.75                 | 0.00                                         | 28.75                 | 0.00                                         | 40.75                 | 0.42                                         | 52.75                 | 0.21                                         |
| 5.00                  | NA                                           | 17.00                 | 0.00                                         | 29.00                 | 0.00                                         | 41.00                 | 0.42                                         | 53.00                 | 0.21                                         |
| 5.25                  | NA                                           | 17.25                 | 0.00                                         | 29.25                 | 0.00                                         | 41.25                 | 0.42                                         | 53.25                 | 0.21                                         |
| 5.50                  | NA                                           | 17.50                 | 0.00                                         | 29.50                 | 0.00                                         | 41.50                 | 0.42                                         | 53.50                 | 0.00                                         |
| 5.75                  | NA                                           | 17.75                 | 0.00                                         | 29.75                 | 0.00                                         | 41.75                 | 0.21                                         | 53.75                 | 0.00                                         |
| 6.00                  | 0.21                                         | 18.00                 | 0.00                                         | 30.00                 | 0.00                                         | 42.00                 | 0.21                                         | 54.00                 | 0.00                                         |
| 6.25                  | 0.21                                         | 18.25                 | 0.00                                         | 30.25                 | 0.00                                         | 42.25                 | 0.21                                         | 54.25                 | 0.00                                         |
| 6.50                  | 0.21                                         | 18.50                 | 0.00                                         | 30.50                 | 0.00                                         | 42.50                 | 0.21                                         | 54.50                 | 0.00                                         |
| 6.75                  | 0.21                                         | 18.75                 | 0.00                                         | 30.75                 | 0.00                                         | 42.75                 | 0.21                                         | 54.75                 | 0.00                                         |
| 7.00                  | 0.21                                         | 19.00                 | 0.21                                         | 31.00                 | 0.00                                         | 43.00                 | 0.21                                         | 55.00                 | 0.00                                         |
| 7.25                  | 0.21                                         | 19.25                 | 0.21                                         | 31.25                 | 0.00                                         | 43.25                 | 0.21                                         | 55.25                 | 0.00                                         |
| 7.50                  | 0.21                                         | 19.50                 | 0.21                                         | 31.50                 | 0.00                                         | 43.50                 | 0.21                                         | 55.50                 | 0.00                                         |
| 7.75                  | 0.21                                         | 19.75                 | 0.21                                         | 31.75                 | 0.00                                         | 43.75                 | 0.21                                         | 55.75                 | 0.00                                         |
| 8.00                  | 0.21                                         | 20.00                 | 0.21                                         | 32.00                 | 0.00                                         | 44.00                 | 0.00                                         | 56.00                 | 0.00                                         |
| 8.25                  | 0.21                                         | 20.25                 | 0.21                                         | 32.25                 | 0.00                                         | 44.25                 | 0.00                                         | 56.25                 | 0.00                                         |
| 8.50                  | 0.21                                         | 20.50                 | 0.21                                         | 32.50                 | 0.00                                         | 44.50                 | 0.00                                         | 56.50                 | 0.00                                         |
| 8.75                  | 0.21                                         | 20.75                 | 0.21                                         | 32.75                 | 0.00                                         | 44.75                 | 0.00                                         | 56.75                 | 0.00                                         |
| 9.00                  | 0.21                                         | 21.00                 | 0.21                                         | 33.00                 | 0.00                                         | 45.00                 | 0.00                                         | 57.00                 | 0.00                                         |
| 9.25                  | 0.21                                         | 21.25                 | 0.21                                         | 33.25                 | 0.00                                         | 45.25                 | 0.00                                         | 57.25                 | 0.21                                         |
| 9.50                  | 0.22                                         | 21.50                 | 0.21                                         | 33.50                 | 0.00                                         | 45.50                 | 0.21                                         | 57.50                 | 0.21                                         |
| 9.75                  | 0.22                                         | 21.75                 | 0.21                                         | 33.75                 | 0.00                                         | 45.75                 | 0.21                                         | 57.75                 | 0.21                                         |
| 10.00                 | 0.22                                         | 22.00                 | 0.21                                         | 34.00                 | 0.00                                         | 46.00                 | 0.21                                         | 58.00                 | 0.21                                         |
| 10.25                 | 0.22                                         | 22.25                 | 0.21                                         | 34.25                 | 0.00                                         | 46.25                 | 0.21                                         | 58.25                 | 0.21                                         |
| 10.50                 | 0.22                                         | 22.50                 | 0.21                                         | 34.50                 | 0.00                                         | 46.50                 | 0.21                                         | 58.50                 | 0.21                                         |
| 10.75                 | 0.00                                         | 22.75                 | 0.21                                         | 34.75                 | 0.00                                         | 46.75                 | 0.21                                         | 58.75                 | 0.21                                         |
| 11.00                 | 0.00                                         | 23.00                 | 0.21                                         | 35.00                 | 0.00                                         | 47.00                 | 0.21                                         | 59.00                 | 0.21                                         |
| 11.25                 | 0.00                                         | 23.25                 | 0.21                                         | 35.25                 | 0.00                                         | 47.25                 | 0.21                                         | 59.25                 | 0.21                                         |
| 11.50                 | 0.00                                         | 23.50                 | 0.21                                         | 35.50                 | 0.00                                         | 47.50                 | 0.42                                         | 59.50                 | NA*                                          |
| 11.75                 | 0.00                                         | 23.75                 | 0.21                                         | 35.75                 | 0.21                                         | 47.75                 | 0.42                                         | 59.75                 | NA*                                          |
| 12.00                 | 0.00                                         | 24.00                 | 0.21                                         | 36.00                 | 0.21                                         | 48.00                 | 0.42                                         | 60.00                 | NA*                                          |

HIGHEST SIX-MINUTE BLOCK AVERAGE = 0.42  
 HIGHEST SIX-MINUTE ROLLING AVERAGE = 0.42  
 AVERAGE OPACITY DURING RUN = 0.15

\* Due to fugitive emission obstructions, a number of readings could not be made. Running averages included the time lapses so that the net run time was shortened. NA indicates that for the time period, an average is Not Applicable.



Date: 8/21/97  
 Start Time: 0848  
 Stop Time: 0948

Baghouse Outlet  
 Run Number: O-M9-4B

| Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, |
|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|
| 0.25                  | NA                                           | 12.25                 | 0.00                                         | 24.25                 | 0.42                                         | 36.25                 | 0.21                                         | 48.25                 | 0.21                                         |
| 0.50                  | NA                                           | 12.50                 | 0.00                                         | 24.50                 | 0.42                                         | 36.50                 | 0.21                                         | 48.50                 | 0.21                                         |
| 0.75                  | NA                                           | 12.75                 | 0.00                                         | 24.75                 | 0.42                                         | 36.75                 | 0.21                                         | 48.75                 | 0.21                                         |
| 1.00                  | NA                                           | 13.00                 | 0.00                                         | 25.00                 | 0.42                                         | 37.00                 | 0.21                                         | 49.00                 | 0.21                                         |
| 1.25                  | NA                                           | 13.25                 | 0.00                                         | 25.25                 | 0.42                                         | 37.25                 | 0.00                                         | 49.25                 | 0.21                                         |
| 1.50                  | NA                                           | 13.50                 | 0.00                                         | 25.50                 | 0.42                                         | 37.50                 | 0.00                                         | 49.50                 | 0.21                                         |
| 1.75                  | NA                                           | 13.75                 | 0.00                                         | 25.75                 | 0.42                                         | 37.75                 | 0.00                                         | 49.75                 | 0.21                                         |
| 2.00                  | NA                                           | 14.00                 | 0.00                                         | 26.00                 | 0.42                                         | 38.00                 | 0.00                                         | 50.00                 | 0.21                                         |
| 2.25                  | NA                                           | 14.25                 | 0.00                                         | 26.25                 | 0.42                                         | 38.25                 | 0.00                                         | 50.25                 | 0.21                                         |
| 2.50                  | NA                                           | 14.50                 | 0.00                                         | 26.50                 | 0.42                                         | 38.50                 | 0.00                                         | 50.50                 | 0.21                                         |
| 2.75                  | NA                                           | 14.75                 | 0.00                                         | 26.75                 | 0.42                                         | 38.75                 | 0.00                                         | 50.75                 | 0.21                                         |
| 3.00                  | NA                                           | 15.00                 | 0.00                                         | 27.00                 | 0.42                                         | 39.00                 | 0.00                                         | 51.00                 | 0.21                                         |
| 3.25                  | NA                                           | 15.25                 | 0.00                                         | 27.25                 | 0.42                                         | 39.25                 | 0.00                                         | 51.25                 | 0.21                                         |
| 3.50                  | NA                                           | 15.50                 | 0.00                                         | 27.50                 | 0.42                                         | 39.50                 | 0.00                                         | 51.50                 | 0.21                                         |
| 3.75                  | NA                                           | 15.75                 | 0.00                                         | 27.75                 | 0.42                                         | 39.75                 | 0.00                                         | 51.75                 | 0.21                                         |
| 4.00                  | NA                                           | 16.00                 | 0.00                                         | 28.00                 | 0.42                                         | 40.00                 | 0.00                                         | 52.00                 | 0.42                                         |
| 4.25                  | NA                                           | 16.25                 | 0.00                                         | 28.25                 | 0.42                                         | 40.25                 | 0.00                                         | 52.25                 | 0.42                                         |
| 4.50                  | NA                                           | 16.50                 | 0.00                                         | 28.50                 | 0.21                                         | 40.50                 | 0.00                                         | 52.50                 | 0.42                                         |
| 4.75                  | NA                                           | 16.75                 | 0.00                                         | 28.75                 | 0.21                                         | 40.75                 | 0.00                                         | 52.75                 | 0.42                                         |
| 5.00                  | NA                                           | 17.00                 | 0.00                                         | 29.00                 | 0.21                                         | 41.00                 | 0.00                                         | 53.00                 | 0.21                                         |
| 5.25                  | NA                                           | 17.25                 | 0.00                                         | 29.25                 | 0.21                                         | 41.25                 | 0.00                                         | 53.25                 | 0.21                                         |
| 5.50                  | NA                                           | 17.50                 | 0.00                                         | 29.50                 | 0.21                                         | 41.50                 | 0.00                                         | 53.50                 | 0.21                                         |
| 5.75                  | NA                                           | 17.75                 | 0.00                                         | 29.75                 | 0.21                                         | 41.75                 | 0.00                                         | 53.75                 | 0.21                                         |
| 6.00                  | 0.42                                         | 18.00                 | 0.00                                         | 30.00                 | 0.00                                         | 42.00                 | 0.00                                         | 54.00                 | 0.21                                         |
| 6.25                  | 0.42                                         | 18.25                 | 0.00                                         | 30.25                 | 0.21                                         | 42.25                 | 0.00                                         | 54.25                 | 0.21                                         |
| 6.50                  | 0.42                                         | 18.50                 | 0.00                                         | 30.50                 | 0.21                                         | 42.50                 | 0.00                                         | 54.50                 | 0.21                                         |
| 6.75                  | 0.42                                         | 18.75                 | 0.00                                         | 30.75                 | 0.21                                         | 42.75                 | 0.00                                         | 54.75                 | 0.21                                         |
| 7.00                  | 0.42                                         | 19.00                 | 0.00                                         | 31.00                 | 0.21                                         | 43.00                 | 0.00                                         | 55.00                 | 0.21                                         |
| 7.25                  | 0.42                                         | 19.25                 | 0.00                                         | 31.25                 | 0.42                                         | 43.25                 | 0.00                                         | 55.25                 | 0.21                                         |
| 7.50                  | 0.42                                         | 19.50                 | 0.00                                         | 31.50                 | 0.42                                         | 43.50                 | 0.00                                         | 55.50                 | 0.21                                         |
| 7.75                  | 0.21                                         | 19.75                 | 0.00                                         | 31.75                 | 0.42                                         | 43.75                 | 0.00                                         | 55.75                 | 0.21                                         |
| 8.00                  | 0.21                                         | 20.00                 | 0.00                                         | 32.00                 | 0.42                                         | 44.00                 | 0.00                                         | 56.00                 | 0.21                                         |
| 8.25                  | 0.21                                         | 20.25                 | 0.00                                         | 32.25                 | 0.42                                         | 44.25                 | 0.00                                         | 56.25                 | 0.21                                         |
| 8.50                  | 0.21                                         | 20.50                 | 0.00                                         | 32.50                 | 0.42                                         | 44.50                 | 0.00                                         | 56.50                 | 0.21                                         |
| 8.75                  | 0.21                                         | 20.75                 | 0.00                                         | 32.75                 | 0.42                                         | 44.75                 | 0.00                                         | 56.75                 | NA*                                          |
| 9.00                  | 0.21                                         | 21.00                 | 0.00                                         | 33.00                 | 0.42                                         | 45.00                 | 0.00                                         | 57.00                 | NA*                                          |
| 9.25                  | 0.21                                         | 21.25                 | 0.00                                         | 33.25                 | 0.42                                         | 45.25                 | 0.00                                         | 57.25                 | NA*                                          |
| 9.50                  | 0.21                                         | 21.50                 | 0.00                                         | 33.50                 | 0.42                                         | 45.50                 | 0.00                                         | 57.50                 | NA*                                          |
| 9.75                  | 0.21                                         | 21.75                 | 0.00                                         | 33.75                 | 0.42                                         | 45.75                 | 0.00                                         | 57.75                 | NA*                                          |
| 10.00                 | 0.21                                         | 22.00                 | 0.00                                         | 34.00                 | 0.42                                         | 46.00                 | 0.00                                         | 58.00                 | NA*                                          |
| 10.25                 | 0.21                                         | 22.25                 | 0.00                                         | 34.25                 | 0.42                                         | 46.25                 | 0.00                                         | 58.25                 | NA*                                          |
| 10.50                 | 0.21                                         | 22.50                 | 0.21                                         | 34.50                 | 0.42                                         | 46.50                 | 0.00                                         | 58.50                 | NA*                                          |
| 10.75                 | 0.21                                         | 22.75                 | 0.21                                         | 34.75                 | 0.42                                         | 46.75                 | 0.00                                         | 58.75                 | NA*                                          |
| 11.00                 | 0.21                                         | 23.00                 | 0.21                                         | 35.00                 | 0.42                                         | 47.00                 | 0.21                                         | 59.00                 | NA*                                          |
| 11.25                 | 0.21                                         | 23.25                 | 0.21                                         | 35.25                 | 0.42                                         | 47.25                 | 0.21                                         | 59.25                 | NA*                                          |
| 11.50                 | 0.00                                         | 23.50                 | 0.21                                         | 35.50                 | 0.42                                         | 47.50                 | 0.21                                         | 59.50                 | NA*                                          |
| 11.75                 | 0.00                                         | 23.75                 | 0.21                                         | 35.75                 | 0.42                                         | 47.75                 | 0.21                                         | 59.75                 | NA*                                          |
| 12.00                 | 0.00                                         | 24.00                 | 0.42                                         | 36.00                 | 0.42                                         | 48.00                 | 0.21                                         | 60.00                 | NA*                                          |

HIGHEST SIX-MINUTE BLOCK AVERAGE = 0.42      AVERAGE OPACITY DURING RUN = 0.17  
 HIGHEST SIX-MINUTE ROLLING AVERAGE = 0.42

\* Due to fugitive emission obstructions, a number of readings could not be made. Running averages included the time lapses so that the net run time was shortened. NA indicates that for the time period, an average is Not Applicable.

Date: 8/21/97  
 Start Time: 0953  
 Stop Time: 1053

Baghouse Outlet  
 Run Number: O-M9-4C

| Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, |
|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|
| 0.25                  | NA                                           | 12.25                 | 0.21                                         | 24.25                 | 0.00                                         | 36.25                 | 0.21                                         | 48.25                 | 0.21                                         |
| 0.50                  | NA                                           | 12.50                 | 0.21                                         | 24.50                 | 0.00                                         | 36.50                 | 0.21                                         | 48.50                 | 0.21                                         |
| 0.75                  | NA                                           | 12.75                 | 0.21                                         | 24.75                 | 0.00                                         | 36.75                 | 0.21                                         | 48.75                 | 0.21                                         |
| 1.00                  | NA                                           | 13.00                 | 0.21                                         | 25.00                 | 0.00                                         | 37.00                 | 0.21                                         | 49.00                 | 0.21                                         |
| 1.25                  | NA                                           | 13.25                 | 0.21                                         | 25.25                 | 0.00                                         | 37.25                 | 0.21                                         | 49.25                 | 0.21                                         |
| 1.50                  | NA                                           | 13.50                 | 0.21                                         | 25.50                 | 0.00                                         | 37.50                 | 0.21                                         | 49.50                 | 0.21                                         |
| 1.75                  | NA                                           | 13.75                 | 0.21                                         | 25.75                 | 0.00                                         | 37.75                 | 0.21                                         | 49.75                 | 0.21                                         |
| 2.00                  | NA                                           | 14.00                 | 0.21                                         | 26.00                 | 0.00                                         | 38.00                 | 0.21                                         | 50.00                 | 0.21                                         |
| 2.25                  | NA                                           | 14.25                 | 0.21                                         | 26.25                 | 0.00                                         | 38.25                 | 0.21                                         | 50.25                 | 0.21                                         |
| 2.50                  | NA                                           | 14.50                 | 0.21                                         | 26.50                 | 0.00                                         | 38.50                 | 0.21                                         | 50.50                 | 0.21                                         |
| 2.75                  | NA                                           | 14.75                 | 0.21                                         | 26.75                 | 0.00                                         | 38.75                 | 0.21                                         | 50.75                 | 0.21                                         |
| 3.00                  | NA                                           | 15.00                 | 0.21                                         | 27.00                 | 0.00                                         | 39.00                 | 0.21                                         | 51.00                 | 0.21                                         |
| 3.25                  | NA                                           | 15.25                 | 0.21                                         | 27.25                 | 0.00                                         | 39.25                 | 0.21                                         | 51.25                 | 0.21                                         |
| 3.50                  | NA                                           | 15.50                 | 0.21                                         | 27.50                 | 0.00                                         | 39.50                 | 0.21                                         | 51.50                 | 0.21                                         |
| 3.75                  | NA                                           | 15.75                 | 0.21                                         | 27.75                 | 0.00                                         | 39.75                 | 0.21                                         | 51.75                 | 0.21                                         |
| 4.00                  | NA                                           | 16.00                 | 0.21                                         | 28.00                 | 0.00                                         | 40.00                 | 0.21                                         | 52.00                 | 0.21                                         |
| 4.25                  | NA                                           | 16.25                 | 0.21                                         | 28.25                 | 0.00                                         | 40.25                 | 0.21                                         | 52.25                 | 0.21                                         |
| 4.50                  | NA                                           | 16.50                 | 0.21                                         | 28.50                 | 0.00                                         | 40.50                 | 0.21                                         | 52.50                 | 0.21                                         |
| 4.75                  | NA                                           | 16.75                 | 0.00                                         | 28.75                 | 0.00                                         | 40.75                 | 0.42                                         | 52.75                 | 0.21                                         |
| 5.00                  | NA                                           | 17.00                 | 0.00                                         | 29.00                 | 0.00                                         | 41.00                 | 0.21                                         | 53.00                 | 0.21                                         |
| 5.25                  | NA                                           | 17.25                 | 0.00                                         | 29.25                 | 0.00                                         | 41.25                 | 0.21                                         | 53.25                 | 0.21                                         |
| 5.50                  | NA                                           | 17.50                 | 0.00                                         | 29.50                 | 0.00                                         | 41.50                 | 0.21                                         | 53.50                 | 0.00                                         |
| 5.75                  | NA                                           | 17.75                 | 0.00                                         | 29.75                 | 0.00                                         | 41.75                 | 0.21                                         | 53.75                 | 0.21                                         |
| 6.00                  | 0.21                                         | 18.00                 | 0.00                                         | 30.00                 | 0.00                                         | 42.00                 | 0.21                                         | 54.00                 | 0.21                                         |
| 6.25                  | 0.21                                         | 18.25                 | 0.00                                         | 30.25                 | 0.00                                         | 42.25                 | 0.21                                         | 54.25                 | 0.21                                         |
| 6.50                  | 0.21                                         | 18.50                 | 0.00                                         | 30.50                 | 0.00                                         | 42.50                 | 0.21                                         | 54.50                 | 0.21                                         |
| 6.75                  | 0.21                                         | 18.75                 | 0.00                                         | 30.75                 | 0.00                                         | 42.75                 | 0.21                                         | 54.75                 | 0.21                                         |
| 7.00                  | 0.21                                         | 19.00                 | 0.00                                         | 31.00                 | 0.00                                         | 43.00                 | 0.21                                         | 55.00                 | 0.21                                         |
| 7.25                  | 0.21                                         | 19.25                 | 0.00                                         | 31.25                 | 0.00                                         | 43.25                 | 0.21                                         | 55.25                 | 0.21                                         |
| 7.50                  | 0.21                                         | 19.50                 | 0.00                                         | 31.50                 | 0.00                                         | 43.50                 | 0.21                                         | 55.50                 | 0.21                                         |
| 7.75                  | 0.21                                         | 19.75                 | 0.00                                         | 31.75                 | 0.00                                         | 43.75                 | 0.21                                         | 55.75                 | 0.21                                         |
| 8.00                  | 0.00                                         | 20.00                 | 0.00                                         | 32.00                 | 0.00                                         | 44.00                 | 0.21                                         | 56.00                 | 0.21                                         |
| 8.25                  | 0.00                                         | 20.25                 | 0.00                                         | 32.25                 | 0.00                                         | 44.25                 | 0.21                                         | 56.25                 | 0.21                                         |
| 8.50                  | 0.00                                         | 20.50                 | 0.00                                         | 32.50                 | 0.00                                         | 44.50                 | 0.21                                         | 56.50                 | 0.21                                         |
| 8.75                  | 0.00                                         | 20.75                 | 0.00                                         | 32.75                 | 0.00                                         | 44.75                 | 0.21                                         | 56.75                 | 0.21                                         |
| 9.00                  | 0.00                                         | 21.00                 | 0.00                                         | 33.00                 | 0.00                                         | 45.00                 | 0.21                                         | 57.00                 | 0.21                                         |
| 9.25                  | 0.00                                         | 21.25                 | 0.00                                         | 33.25                 | 0.00                                         | 45.25                 | 0.21                                         | 57.25                 | 0.21                                         |
| 9.50                  | 0.00                                         | 21.50                 | 0.00                                         | 33.50                 | 0.00                                         | 45.50                 | 0.21                                         | 57.50                 | 0.21                                         |
| 9.75                  | 0.00                                         | 21.75                 | 0.00                                         | 33.75                 | 0.00                                         | 45.75                 | 0.21                                         | 57.75                 | 0.21                                         |
| 10.00                 | 0.00                                         | 22.00                 | 0.00                                         | 34.00                 | 0.00                                         | 46.00                 | 0.21                                         | 58.00                 | 0.21                                         |
| 10.25                 | 0.00                                         | 22.25                 | 0.00                                         | 34.25                 | 0.00                                         | 46.25                 | 0.21                                         | 58.25                 | 0.21                                         |
| 10.50                 | 0.00                                         | 22.50                 | 0.00                                         | 34.50                 | 0.00                                         | 46.50                 | 0.21                                         | 58.50                 | 0.21                                         |
| 10.75                 | 0.21                                         | 22.75                 | 0.00                                         | 34.75                 | 0.00                                         | 46.75                 | 0.00                                         | 58.75                 | 0.21                                         |
| 11.00                 | 0.21                                         | 23.00                 | 0.00                                         | 35.00                 | 0.21                                         | 47.00                 | 0.00                                         | 59.00                 | 0.21                                         |
| 11.25                 | 0.21                                         | 23.25                 | 0.00                                         | 35.25                 | 0.21                                         | 47.25                 | 0.00                                         | 59.25                 | 0.21                                         |
| 11.50                 | 0.21                                         | 23.50                 | 0.00                                         | 35.50                 | 0.21                                         | 47.50                 | 0.21                                         | 59.50                 | 0.21                                         |
| 11.75                 | 0.21                                         | 23.75                 | 0.00                                         | 35.75                 | 0.21                                         | 47.75                 | 0.21                                         | 59.75                 | 0.00                                         |
| 12.00                 | 0.21                                         | 24.00                 | 0.00                                         | 36.00                 | 0.21                                         | 48.00                 | 0.21                                         | 60.00                 | NA*                                          |

HIGHEST SIX-MINUTE BLOCK AVERAGE = 0.21      AVERAGE OPACITY DURING RUN = 0.13  
 HIGHEST SIX-MINUTE ROLLING AVERAGE = 0.42

\* Due to fugitive emission obstructions, a number of readings could not be made. Running averages included the time lapses so that the net run time was shortened. NA indicates that for the time period, an average is Not Applicable.

Date: 8/21/97  
 Start Time: 1058  
 Stop Time: 1158

Baghouse Outlet  
 Run Number: O-M9-4D

| Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, | Net Run Time, minutes | six-minute rolling averages percent opacity, |
|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|-----------------------|----------------------------------------------|
| 0.25                  | NA                                           | 12.25                 | 0.00                                         | 24.25                 | 0.21                                         | 36.25                 | 0.00                                         | 48.25                 | 0.00                                         |
| 0.50                  | NA                                           | 12.50                 | 0.00                                         | 24.50                 | 0.21                                         | 36.50                 | 0.00                                         | 48.50                 | 0.00                                         |
| 0.75                  | NA                                           | 12.75                 | 0.00                                         | 24.75                 | 0.21                                         | 36.75                 | 0.00                                         | 48.75                 | 0.00                                         |
| 1.00                  | NA                                           | 13.00                 | 0.21                                         | 25.00                 | 0.21                                         | 37.00                 | 0.00                                         | 49.00                 | 0.00                                         |
| 1.25                  | NA                                           | 13.25                 | 0.21                                         | 25.25                 | 0.21                                         | 37.25                 | 0.00                                         | 49.25                 | 0.00                                         |
| 1.50                  | NA                                           | 13.50                 | 0.21                                         | 25.50                 | 0.21                                         | 37.50                 | 0.00                                         | 49.50                 | 0.00                                         |
| 1.75                  | NA                                           | 13.75                 | 0.21                                         | 25.75                 | 0.00                                         | 37.75                 | 0.00                                         | 49.75                 | 0.00                                         |
| 2.00                  | NA                                           | 14.00                 | 0.21                                         | 26.00                 | 0.00                                         | 38.00                 | 0.00                                         | 50.00                 | 0.00                                         |
| 2.25                  | NA                                           | 14.25                 | 0.21                                         | 26.25                 | 0.00                                         | 38.25                 | 0.00                                         | 50.25                 | 0.00                                         |
| 2.50                  | NA                                           | 14.50                 | 0.21                                         | 26.50                 | 0.00                                         | 38.50                 | 0.00                                         | 50.50                 | 0.00                                         |
| 2.75                  | NA                                           | 14.75                 | 0.21                                         | 26.75                 | 0.00                                         | 38.75                 | 0.00                                         | 50.75                 | 0.00                                         |
| 3.00                  | NA                                           | 15.00                 | 0.21                                         | 27.00                 | 0.00                                         | 39.00                 | 0.00                                         | 51.00                 | 0.00                                         |
| 3.25                  | NA                                           | 15.25                 | 0.21                                         | 27.25                 | 0.00                                         | 39.25                 | 0.00                                         | 51.25                 | 0.00                                         |
| 3.50                  | NA                                           | 15.50                 | 0.21                                         | 27.50                 | 0.00                                         | 39.50                 | 0.00                                         | 51.50                 | 0.00                                         |
| 3.75                  | NA                                           | 15.75                 | 0.21                                         | 27.75                 | 0.00                                         | 39.75                 | 0.00                                         | 51.75                 | 0.00                                         |
| 4.00                  | NA                                           | 16.00                 | 0.21                                         | 28.00                 | 0.00                                         | 40.00                 | 0.00                                         | 52.00                 | 0.00                                         |
| 4.25                  | NA                                           | 16.25                 | 0.21                                         | 28.25                 | 0.00                                         | 40.25                 | 0.00                                         | 52.25                 | 0.00                                         |
| 4.50                  | NA                                           | 16.50                 | 0.21                                         | 28.50                 | 0.00                                         | 40.50                 | 0.00                                         | 52.50                 | 0.00                                         |
| 4.75                  | NA                                           | 16.75                 | 0.21                                         | 28.75                 | 0.00                                         | 40.75                 | 0.00                                         | 52.75                 | 0.00                                         |
| 5.00                  | NA                                           | 17.00                 | 0.21                                         | 29.00                 | 0.00                                         | 41.00                 | 0.00                                         | 53.00                 | 0.00                                         |
| 5.25                  | NA                                           | 17.25                 | 0.21                                         | 29.25                 | 0.00                                         | 41.25                 | 0.00                                         | 53.25                 | 0.21                                         |
| 5.50                  | NA                                           | 17.50                 | 0.21                                         | 29.50                 | 0.00                                         | 41.50                 | 0.21                                         | 53.50                 | 0.21                                         |
| 5.75                  | NA                                           | 17.75                 | 0.21                                         | 29.75                 | 0.00                                         | 41.75                 | 0.21                                         | 53.75                 | 0.21                                         |
| 6.00                  | 0.21                                         | 18.00                 | 0.21                                         | 30.00                 | 0.00                                         | 42.00                 | 0.21                                         | 54.00                 | 0.21                                         |
| 6.25                  | 0.21                                         | 18.25                 | 0.21                                         | 30.25                 | 0.00                                         | 42.25                 | 0.21                                         | 54.25                 | 0.21                                         |
| 6.50                  | 0.21                                         | 18.50                 | 0.21                                         | 30.50                 | 0.00                                         | 42.50                 | 0.21                                         | 54.50                 | 0.21                                         |
| 6.75                  | 0.21                                         | 18.75                 | 0.21                                         | 30.75                 | 0.00                                         | 42.75                 | 0.21                                         | 54.75                 | 0.21                                         |
| 7.00                  | 0.21                                         | 19.00                 | 0.00                                         | 31.00                 | 0.00                                         | 43.00                 | 0.21                                         | 55.00                 | 0.21                                         |
| 7.25                  | 0.21                                         | 19.25                 | 0.00                                         | 31.25                 | 0.00                                         | 43.25                 | 0.21                                         | 55.25                 | 0.21                                         |
| 7.50                  | 0.21                                         | 19.50                 | 0.00                                         | 31.50                 | 0.00                                         | 43.50                 | 0.21                                         | 55.50                 | 0.21                                         |
| 7.75                  | 0.21                                         | 19.75                 | 0.21                                         | 31.75                 | 0.00                                         | 43.75                 | 0.21                                         | 55.75                 | 0.21                                         |
| 8.00                  | 0.21                                         | 20.00                 | 0.21                                         | 32.00                 | 0.00                                         | 44.00                 | 0.21                                         | 56.00                 | 0.21                                         |
| 8.25                  | 0.21                                         | 20.25                 | 0.21                                         | 32.25                 | 0.00                                         | 44.25                 | 0.22                                         | 56.25                 | 0.21                                         |
| 8.50                  | 0.21                                         | 20.50                 | 0.21                                         | 32.50                 | 0.00                                         | 44.50                 | 0.22                                         | 56.50                 | 0.21                                         |
| 8.75                  | 0.21                                         | 20.75                 | 0.21                                         | 32.75                 | 0.00                                         | 44.75                 | 0.22                                         | 56.75                 | 0.21                                         |
| 9.00                  | 0.21                                         | 21.00                 | 0.21                                         | 33.00                 | 0.00                                         | 45.00                 | 0.22                                         | 57.00                 | 0.21                                         |
| 9.25                  | 0.21                                         | 21.25                 | 0.21                                         | 33.25                 | 0.00                                         | 45.25                 | 0.22                                         | 57.25                 | 0.21                                         |
| 9.50                  | 0.21                                         | 21.50                 | 0.21                                         | 33.50                 | 0.00                                         | 45.50                 | 0.22                                         | 57.50                 | 0.21                                         |
| 9.75                  | 0.00                                         | 21.75                 | 0.21                                         | 33.75                 | 0.00                                         | 45.75                 | 0.22                                         | 57.75                 | 0.21                                         |
| 10.00                 | 0.00                                         | 22.00                 | 0.21                                         | 34.00                 | 0.00                                         | 46.00                 | 0.22                                         | 58.00                 | 0.21                                         |
| 10.25                 | 0.00                                         | 22.25                 | 0.21                                         | 34.25                 | 0.00                                         | 46.25                 | 0.22                                         | 58.25                 | 0.21                                         |
| 10.50                 | 0.00                                         | 22.50                 | 0.21                                         | 34.50                 | 0.00                                         | 46.50                 | 0.22                                         | 58.50                 | 0.21                                         |
| 10.75                 | 0.00                                         | 22.75                 | 0.21                                         | 34.75                 | 0.00                                         | 46.75                 | 0.22                                         | 58.75                 | 0.21                                         |
| 11.00                 | 0.00                                         | 23.00                 | 0.21                                         | 35.00                 | 0.00                                         | 47.00                 | 0.22                                         | 59.00                 | 0.21                                         |
| 11.25                 | 0.00                                         | 23.25                 | 0.21                                         | 35.25                 | 0.00                                         | 47.25                 | 0.22                                         | 59.25                 | 0.00                                         |
| 11.50                 | 0.00                                         | 23.50                 | 0.21                                         | 35.50                 | 0.00                                         | 47.50                 | 0.00                                         | 59.50                 | 0.00                                         |
| 11.75                 | 0.00                                         | 23.75                 | 0.21                                         | 35.75                 | 0.00                                         | 47.75                 | 0.00                                         | 59.75                 | 0.00                                         |
| 12.00                 | 0.00                                         | 24.00                 | 0.21                                         | 36.00                 | 0.00                                         | 48.00                 | 0.00                                         | 60.00                 | 0.00                                         |

HIGHEST SIX-MINUTE BLOCK AVERAGE = 0.21      AVERAGE OPACITY DURING RUN = 0.10  
 HIGHEST SIX-MINUTE ROLLING AVERAGE = 0.22

\* Due to fugitive emission obstructions, a number of readings could not be made. Running averages included the time lapses so that the net run time was shortened. NA indicates that for the time period, an average is Not Applicable.

**Summary of Stack Gas Parameters and Test Results**  
**US EPA EMC Asphalt Concrete Emissions Testing - ASPHALT PLANT "A"**  
**US EPA Test Method 23 - PCDD / PCDF**  
**Baghouse Outlet**  
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|                        | <i>RUN NUMBER</i>                                                      | <i>S-M23-O-1</i> | <i>S-M23-O-2</i> | <i>S-M23-O-3</i> | <i>Average</i> |
|------------------------|------------------------------------------------------------------------|------------------|------------------|------------------|----------------|
|                        | <i>RUN DATE</i>                                                        | <i>8/19/97</i>   | <i>8/20/97</i>   | <i>8/20/97</i>   |                |
|                        | <i>RUN TIME</i>                                                        | <i>0915-1456</i> | <i>0822-1240</i> | <i>1405-1730</i> |                |
| <b>MEASURED DATA</b>   |                                                                        |                  |                  |                  |                |
| $\gamma$               | Meter Box Correction Factor                                            | 0.987            | 0.987            | 0.987            | 0.987          |
| $\Delta H$             | Avg Meter Orifice Pressure, in. H <sub>2</sub> O                       | 1.29             | 2.82             | 2.50             | 2.20           |
| $P_{bar}$              | Barometric Pressure, inches Hg                                         | 29.90            | 29.80            | 29.80            | 30.40          |
| $V_m$                  | Sample Volume, ft <sup>3</sup>                                         | 138.502          | 199.873          | 162.107          | 166.827        |
| $T_m$                  | Average Meter Temperature, °F                                          | 115              | 102              | 109              | 109            |
| $P_{static}$           | Stack Static Pressure, inches H <sub>2</sub> O                         | -0.22            | -0.25            | -0.25            | -0.24          |
| $T_s$                  | Average Stack Temperature, °F                                          | 185              | 223              | 209              | 206            |
| $V_{ic}$               | Condensate Collected, ml                                               | 601.6            | 1253.1           | 912.4            | 922.4          |
| CO <sub>2</sub>        | Carbon Dioxide content, % by volume                                    | 5.3              | 5.5              | 5.1              | 5.3            |
| O <sub>2</sub>         | Oxygen content, % by volume                                            | 13.1             | 13.1             | 13.1             | 13.1           |
| N <sub>2</sub>         | Nitrogen content, % by volume                                          | 81.6             | 81.4             | 81.8             | 81.6           |
| $C_p$                  | Pitot Tube Coefficient                                                 | 0.84             | 0.84             | 0.84             | 0.84           |
| $\Delta p^{1/2}$       | Average Square Root $\Delta p$ , (in. H <sub>2</sub> O) <sup>1/2</sup> | 0.6897           | 0.9039           | 0.8429           | 0.8122         |
| $\Theta$               | Sample Run Duration, minutes                                           | 240              | 240              | 200              | 227            |
| $D_n$                  | Nozzle Diameter, inches                                                | 0.240            | 0.251            | 0.251            | 0.247          |
| <b>CALCULATED DATA</b> |                                                                        |                  |                  |                  |                |
| $A_n$                  | Nozzle Area, ft <sup>2</sup>                                           | 0.00031          | 0.00034          | 0.00034          | 0.00033        |
| $V_{m(std)}$           | Standard Meter Volume, dscf                                            | 125.786          | 185.768          | 148.617          | 153.390        |
| $V_{m(std)}$           | Standard Meter Volume, dscm                                            | 3.562            | 5.260            | 4.208            | 4.344          |
| $P_s$                  | Stack Pressure, inches Hg                                              | 29.88            | 29.78            | 29.78            | 29.82          |
| $B_{ws}$               | Moisture, % by volume                                                  | 18.4             | 24.1             | 22.4             | 21.6           |
| $B_{ws(sat)}$          | Moisture (at saturation), % by volume                                  | 56.9             | NA               | 93.9             | 75.4           |
| $V_{wstd}$             | Standard Water Vapor Volume, ft <sup>3</sup>                           | 28.317           | 58.983           | 42.947           | 43.416         |
| $1-B_{ws}$             | Dry Mole Fraction                                                      | 0.816            | 0.759            | 0.776            | 0.784          |
| $M_d$                  | Molecular Weight (d.b.), lb/lb-mole                                    | 29.37            | 29.40            | 29.34            | 29.37          |
| $M_s$                  | Molecular Weight (w.b.), lb/lb-mole                                    | 27.28            | 26.66            | 26.80            | 26.91          |
| $V_s$                  | Stack Gas Velocity, ft/s                                               | 44.1             | 60.2             | 55.4             | 53.2           |
| $A$                    | Stack Area, ft <sup>2</sup>                                            | 11.46            | 11.46            | 11.46            | 11.46          |
| $Q_a$                  | Stack Gas Volumetric flow, acfm                                        | 30,291           | 41,402           | 38,097           | 36,596         |
| $Q_s$                  | Stack Gas Volumetric flow, dscfm                                       | 20,210           | 24,166           | 23,222           | 22,533         |
| $Q_{s(omm)}$           | Stack Gas Volumetric flow, dscmm                                       | 572.3            | 684.3            | 657.6            | 638.1          |
| $I$                    | Isokinetic Sampling Ratio, %                                           | 94.6             | 106.8            | 106.7            | 102.7          |

**Summary of Stack Gas Parameters and Test Results**

*ASPHALT PLANT "A"*

**US EPA Test Method 23 - PCDD / PCDF**

**Baghouse Outlet**

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| <b>RUN NUMBER</b>          | <b>S-M23-O-1</b>                    | <b>S-M23-O-2</b> | <b>S-M23-O-3</b> |                |            |
|----------------------------|-------------------------------------|------------------|------------------|----------------|------------|
| <b>RUN DATE</b>            | 8/19/97                             | 8/20/97          | 8/20/97          | <b>Average</b> |            |
| <b>RUN TIME</b>            | 0915-1456                           | 0822-1240        | 1405-1730        |                |            |
| <b>EMISSIONS DATA</b>      |                                     |                  |                  |                |            |
| <b>DIOXINS:</b>            |                                     |                  |                  |                |            |
| <b><u>2378 TCDD</u></b>    |                                     |                  |                  |                |            |
| (ng)                       | Catch, ng                           | ND               | ND               | {0.003}        | {0.00100}  |
| (ng/dscm)                  | Concentration, ng/dscm, as measured | ND               | ND               | {0.000713}     | {0.000238} |
| (µg/hr)                    | Emission Rate, µg/hr                | ND               | ND               | {0.0281}       | {0.00938}  |
| <b><u>Total TCDD</u></b>   |                                     |                  |                  |                |            |
| (ng)                       | Catch, ng                           | 0.007            | 0.02             | 0.01           | 0.0123     |
| (ng/dscm)                  | Concentration, ng/dscm, as measured | 0.00197          | 0.00380          | 0.00238        | 0.00271    |
| (µg/hr)                    | Emission Rate, µg/hr                | 0.0675           | 0.156            | 0.0938         | 0.106      |
| <b><u>12378 PeCDD</u></b>  |                                     |                  |                  |                |            |
| (ng)                       | Catch, ng                           | ND               | ND               | 0.005          | 0.00167    |
| (ng/dscm)                  | Concentration, ng/dscm, as measured | ND               | ND               | 0.00119        | 0.000396   |
| (µg/hr)                    | Emission Rate, µg/hr                | ND               | ND               | 0.0469         | 0.0156     |
| <b><u>Total PeCDD</u></b>  |                                     |                  |                  |                |            |
| (ng)                       | Catch, ng                           | {0.040}          | 0.030            | 0.030          | {0.0333}   |
| (ng/dscm)                  | Concentration, ng/dscm, as measured | {0.0112}         | 0.00570          | 0.00713        | {0.00802}  |
| (µg/hr)                    | Emission Rate, µg/hr                | {0.386}          | 0.234            | 0.281          | {0.300}    |
| <b><u>123478 HxCDD</u></b> |                                     |                  |                  |                |            |
| (ng)                       | Catch, ng                           | ND               | ND               | 0.008          | 0.00267    |
| (ng/dscm)                  | Concentration, ng/dscm, as measured | ND               | ND               | 0.00190        | 0.000634   |
| (µg/hr)                    | Emission Rate, µg/hr                | ND               | ND               | 0.0750         | 0.0250     |
| <b><u>123678 HxCDD</u></b> |                                     |                  |                  |                |            |
| (ng)                       | Catch, ng                           | 0.010            | {0.020}          | 0.020          | {0.0167}   |
| (ng/dscm)                  | Concentration, ng/dscm, as measured | 0.00281          | {0.00380}        | 0.00475        | {0.00379}  |
| (µg/hr)                    | Emission Rate, µg/hr                | 0.0964           | {0.156}          | 0.188          | {0.147}    |

( ) Not Detected. Value shown is the detection limit for that sample.

{ } Estimated Maximum Possible Concentration.

**Summary of Stack Gas Parameters and Test Results**

*ASPHALT PLANT "A"*

**US EPA Test Method 23 - PCDD / PCDF**

**Baghouse Outlet**

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| <i>RUN NUMBER</i>                | <i>S-M23-O-1</i>                    | <i>S-M23-O-2</i> | <i>S-M23-O-3</i> |                |           |
|----------------------------------|-------------------------------------|------------------|------------------|----------------|-----------|
| <i>RUN DATE</i>                  | <i>8/19/97</i>                      | <i>8/20/97</i>   | <i>8/20/97</i>   | <i>Average</i> |           |
| <i>RUN TIME</i>                  | <i>0915-1456</i>                    | <i>0822-1240</i> | <i>1405-1730</i> |                |           |
| <b>EMISSIONS DATA -Continued</b> |                                     |                  |                  |                |           |
| <b>DIOXINS - Continued</b>       |                                     |                  |                  |                |           |
| <u>123789 HxCDD</u>              |                                     |                  |                  |                |           |
| (ng)                             | Catch, ng                           | 0.020            | ND               | {0.010}        | {0.0100}  |
| (ng/dscm)                        | Concentration, ng/dscm, as measured | 0.00562          | ND               | {0.00238}      | {0.00266} |
| (µg/hr)                          | Emission Rate, µg/hr                | 0.193            | ND               | {0.0938}       | {0.0955}  |
| <u>Total HxCDD</u>               |                                     |                  |                  |                |           |
| (ng)                             | Catch, ng                           | 0.120            | 0.080            | 0.150          | 0.117     |
| (ng/dscm)                        | Concentration, ng/dscm, as measured | 0.0337           | 0.0152           | 0.0356         | 0.0282    |
| (µg/hr)                          | Emission Rate, µg/hr                | 1.16             | 0.624            | 1.41           | 1.06      |
| <u>1234678 HpCDD</u>             |                                     |                  |                  |                |           |
| (ng)                             | Catch, ng                           | 0.060            | {0.040}          | 0.060          | {0.0533}  |
| (ng/dscm)                        | Concentration, ng/dscm, as measured | 0.0168           | {0.00760}        | 0.0143         | {0.0129}  |
| (µg/hr)                          | Emission Rate, µg/hr                | 0.578            | {0.312}          | 0.563          | {0.484}   |
| <u>Total HpCDD</u>               |                                     |                  |                  |                |           |
| (ng)                             | Catch, ng                           | 0.100            | 0.040            | 0.060          | 0.0667    |
| (ng/dscm)                        | Concentration, ng/dscm, as measured | 0.0281           | 0.00760          | 0.0143         | 0.0166    |
| (µg/hr)                          | Emission Rate, µg/hr                | 0.964            | 0.312            | 0.563          | 0.613     |
| <u>12346789 OCDD</u>             |                                     |                  |                  |                |           |
| (ng)                             | Catch, ng                           | 0.530            | 0.190            | 0.130          | 0.283     |
| (ng/dscm)                        | Concentration, ng/dscm, as measured | 0.149            | 0.0361           | 0.0309         | 0.0719    |
| (µg/hr)                          | Emission Rate, µg/hr                | 5.11             | 1.48             | 1.22           | 2.60      |
| <u>Total PCDD</u>                |                                     |                  |                  |                |           |
| (ng)                             | Catch, ng                           | {0.797}          | 0.360            | 0.380          | {0.512}   |
| (ng/dscm)                        | Concentration, ng/dscm, as measured | {0.224}          | 0.0684           | 0.0903         | {0.127}   |
| (µg/hr)                          | Emission Rate, µg/hr                | {7.68}           | 2.81             | 3.56           | {4.69}    |

( ) Not Detected. Value shown is the detection limit for that sample.

{ } Estimated Maximum Possible Concentration.

**Summary of Stack Gas Parameters and Test Results**

*ASPHALT PLANT "A"*

**US EPA Test Method 23 - PCDD / PCDF**

**Baghouse Outlet**

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| <i>RUN NUMBER</i>                 | <i>S-M23-O-1</i>                    | <i>S-M23-O-2</i> | <i>S-M23-O-3</i> |                   |
|-----------------------------------|-------------------------------------|------------------|------------------|-------------------|
| <i>RUN DATE</i>                   | <i>8/19/97</i>                      | <i>8/20/97</i>   | <i>8/20/97</i>   | <i>Average</i>    |
| <i>RUN TIME</i>                   | <i>0915-1456</i>                    | <i>0822-1240</i> | <i>1405-1730</i> |                   |
| <b>EMISSIONS DATA - Continued</b> |                                     |                  |                  |                   |
| <b>FURANS</b>                     |                                     |                  |                  |                   |
| <b><u>2378 TCDF</u></b>           |                                     |                  |                  |                   |
| (ng)                              | Catch, ng                           | {0.008}          | ND               | 0.020 {0.00933}   |
| (ng/dscm)                         | Concentration, ng/dscm, as measured | {0.00225}        | ND               | 0.00475 {0.00233} |
| (µg/hr)                           | Emission Rate, µg/hr                | {0.0771}         | ND               | 0.188 {0.0882}    |
| <b><u>Total TCDF</u></b>          |                                     |                  |                  |                   |
| (ng)                              | Catch, ng                           | 0.030            | 0.040            | 0.030 0.0333      |
| (ng/dscm)                         | Concentration, ng/dscm, as measured | 0.00842          | 0.00760          | 0.00713 0.00772   |
| (µg/hr)                           | Emission Rate, µg/hr                | 0.289            | 0.312            | 0.281 0.294       |
| <b><u>12378 PeCDF</u></b>         |                                     |                  |                  |                   |
| (ng)                              | Catch, ng                           | {0.006}          | ND               | 0.007 {0.00433}   |
| (ng/dscm)                         | Concentration, ng/dscm, as measured | {0.00168}        | ND               | 0.00166 {0.00112} |
| (µg/hr)                           | Emission Rate, µg/hr                | {0.0578}         | ND               | 0.0656 {0.0412}   |
| <b><u>23478 PeCDF</u></b>         |                                     |                  |                  |                   |
| (ng)                              | Catch, ng                           | {0.010}          | ND               | 0.010 {0.00667}   |
| (ng/dscm)                         | Concentration, ng/dscm, as measured | {0.00281}        | ND               | 0.00238 {0.00173} |
| (µg/hr)                           | Emission Rate, µg/hr                | {0.0964}         | ND               | 0.0938 {0.0634}   |
| <b><u>Total PeCDF</u></b>         |                                     |                  |                  |                   |
| (ng)                              | Catch, ng                           | 0.050            | ND               | 0.060 0.0367      |
| (ng/dscm)                         | Concentration, ng/dscm, as measured | 0.0140           | ND               | 0.0143 0.00943    |
| (µg/hr)                           | Emission Rate, µg/hr                | 0.482            | ND               | 0.563 0.348       |
| <b><u>123478 HxCDF</u></b>        |                                     |                  |                  |                   |
| (ng)                              | Catch, ng                           | 0.040            | 0.040            | 0.060 0.0467      |
| (ng/dscm)                         | Concentration, ng/dscm, as measured | 0.0112           | 0.00760          | 0.0143 0.0110     |
| (µg/hr)                           | Emission Rate, µg/hr                | 0.386            | 0.312            | 0.563 0.420       |

( ) Not Detected. Value shown is the detection limit for that sample.

{ } Estimated Maximum Possible Concentration.

**Summary of Stack Gas Parameters and Test Results**

*ASPHALT PLANT "A"*

**US EPA Test Method 23 - PCDD / PCDF**

**Baghouse Outlet**

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| <b>RUN NUMBER</b>                 | <b>S-M23-O-1</b>                    | <b>S-M23-O-2</b> | <b>S-M23-O-3</b> |                |           |
|-----------------------------------|-------------------------------------|------------------|------------------|----------------|-----------|
| <b>RUN DATE</b>                   | <b>8/19/97</b>                      | <b>8/20/97</b>   | <b>8/20/97</b>   | <b>Average</b> |           |
| <b>RUN TIME</b>                   | <b>0915-1456</b>                    | <b>0822-1240</b> | <b>1405-1730</b> |                |           |
| <b>EMISSIONS DATA - Continued</b> |                                     |                  |                  |                |           |
| <b>Furans - Continued</b>         |                                     |                  |                  |                |           |
| <u>123678 HxCDF</u>               |                                     |                  |                  |                |           |
| (ng)                              | Catch, ng                           | 0.010            | 0.010            | 0.020          | 0.0133    |
| (ng/dscm)                         | Concentration, ng/dscm, as measured | 0.00281          | 0.00190          | 0.00475        | 0.00315   |
| (µg/hr)                           | Emission Rate, µg/hr                | 0.0964           | 0.0781           | 0.188          | 0.121     |
| <u>234678 HxCDF</u>               |                                     |                  |                  |                |           |
| (ng)                              | Catch, ng                           | 0.020            | 0.020            | 0.020          | 0.0200    |
| (ng/dscm)                         | Concentration, ng/dscm, as measured | 0.00562          | 0.00380          | 0.00475        | 0.00472   |
| (µg/hr)                           | Emission Rate, µg/hr                | 0.193            | 0.156            | 0.188          | 0.179     |
| <u>123789 HxCDF</u>               |                                     |                  |                  |                |           |
| (ng)                              | Catch, ng                           | ND               | ND               | ND             | 0.0       |
| (ng/dscm)                         | Concentration, ng/dscm, as measured | ND               | ND               | ND             | 0.0       |
| (µg/hr)                           | Emission Rate, µg/hr                | ND               | ND               | ND             | 0.0       |
| <u>Total HxCDF</u>                |                                     |                  |                  |                |           |
| (ng)                              | Catch, ng                           | 0.120            | 0.110            | 0.170          | 0.133     |
| (ng/dscm)                         | Concentration, ng/dscm, as measured | 0.0337           | 0.0209           | 0.0404         | 0.0317    |
| (µg/hr)                           | Emission Rate, µg/hr                | 1.16             | 0.859            | 1.59           | 1.20      |
| <u>1234678 HpCDF</u>              |                                     |                  |                  |                |           |
| (ng)                              | Catch, ng                           | {0.070}          | 0.070            | 0.090          | {0.0767}  |
| (ng/dscm)                         | Concentration, ng/dscm, as measured | {0.0197}         | 0.0133           | 0.0214         | {0.0181}  |
| (µg/hr)                           | Emission Rate, µg/hr                | {0.675}          | 0.546            | 0.844          | {0.688}   |
| <u>1234789 HpCDF</u>              |                                     |                  |                  |                |           |
| (ng)                              | Catch, ng                           | 0.040            | 0.020            | {0.030}        | {0.0300}  |
| (ng/dscm)                         | Concentration, ng/dscm, as measured | 0.0112           | 0.00380          | {0.00713}      | {0.00739} |
| (µg/hr)                           | Emission Rate, µg/hr                | 0.386            | 0.156            | {0.281}        | {0.274}   |

( ) Not Detected. Value shown is the detection limit for that sample.

{ } Estimated Maximum Possible Concentration.



**Summary of Stack Gas Parameters and Test Results**

*ASPHALT PLANT "A"*

**US EPA Test Method 23 - PCDD / PCDF**

**Baghouse Outlet**

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| <i>RUN NUMBER</i>                 | <i>S-M23-O-1</i>                    | <i>S-M23-O-2</i> | <i>S-M23-O-3</i> |                |         |
|-----------------------------------|-------------------------------------|------------------|------------------|----------------|---------|
| <i>RUN DATE</i>                   | <i>8/19/97</i>                      | <i>8/20/97</i>   | <i>8/20/97</i>   | <i>Average</i> |         |
| <i>RUN TIME</i>                   | <i>0915-1456</i>                    | <i>0822-1240</i> | <i>1405-1730</i> |                |         |
| <b>EMISSIONS DATA - Continued</b> |                                     |                  |                  |                |         |
| <b>Furans - Continued</b>         |                                     |                  |                  |                |         |
| <u>Total HpCDF</u>                |                                     |                  |                  |                |         |
| (ng)                              | Catch, ng                           | 0.040            | 0.120            | 0.090          | 0.0833  |
| (ng/dscm)                         | Concentration, ng/dscm, as measured | 0.0112           | 0.0228           | 0.0214         | 0.0185  |
| (µg/hr)                           | Emission Rate, µg/hr                | 0.386            | 0.937            | 0.844          | 0.722   |
| <u>12346789 OCDF</u>              |                                     |                  |                  |                |         |
| (ng)                              | Catch, ng                           | 0.040            | 0.060            | 0.060          | 0.0533  |
| (ng/dscm)                         | Concentration, ng/dscm, as measured | 0.0112           | 0.0114           | 0.0143         | 0.0123  |
| (µg/hr)                           | Emission Rate, µg/hr                | 0.386            | 0.468            | 0.563          | 0.472   |
| <u>Total PCDF</u>                 |                                     |                  |                  |                |         |
| (ng)                              | Catch, ng                           | 0.280            | 0.330            | 0.410          | 0.340   |
| (ng/dscm)                         | Concentration, ng/dscm, as measured | 0.0786           | 0.0627           | 0.0974         | 0.0796  |
| (µg/hr)                           | Emission Rate, µg/hr                | 2.70             | 2.58             | 3.84           | 3.04    |
| <u>Total PCDD + PCDF</u>          |                                     |                  |                  |                |         |
| (ng)                              | Catch, ng                           | {1.08}           | 0.690            | 0.790          | {0.852} |
| (ng/dscm)                         | Concentration, ng/dscm, as measured | {0.302}          | 0.131            | 0.188          | {0.207} |
| (µg/hr)                           | Emission Rate, µg/hr                | {10.4}           | 5.39             | 7.41           | {7.72}  |

( ) Not Detected. Value shown is the detection limit for that sample.

{ } Estimated Maximum Possible Concentration.

**PCDD/PCDF Corrected Stack Gas Concentrations and 2378 TCDD Toxic Equivalent Concentrations**  
*ASPHALT PLANT "A"* - Garner, North Carolina  
**US EPA Test Method 23 - PCDD/PCDF**  
**Baghouse Outlet**

| RUN NUMBER<br>RUN DATE<br>RUN TIME | CONCENTRATION<br>(ng/dscmm, adjusted to 7% O <sub>2</sub> ) |           |           |            | 2378-TCDD<br>Toxic<br>Equivalent<br>Factor | 2378 TOXIC EQUIVALENCIES<br>(ng/dscmm, adjusted to 7% O <sub>2</sub> ) |                      |                      |             |
|------------------------------------|-------------------------------------------------------------|-----------|-----------|------------|--------------------------------------------|------------------------------------------------------------------------|----------------------|----------------------|-------------|
|                                    | S-M23-O-1                                                   | S-M23-O-2 | S-M23-O-3 | Average    |                                            | S-M23-O-1<br>8/19/97                                                   | S-M23-O-2<br>8/20/97 | S-M23-O-3<br>8/20/97 | Average     |
|                                    | 0915-1456                                                   | 0822-1240 | 1405-1730 |            |                                            | 0915-1456                                                              | 0822-1240            | 1405-1730            |             |
| <b>DIOXINS:</b>                    |                                                             |           |           |            |                                            |                                                                        |                      |                      |             |
| 2378 TCDD                          | ND                                                          | ND        | {0.00127} | {0.000423} | 1.000                                      | ND                                                                     | ND                   | {0.00127}            | {0.000423}  |
| Total TCDD                         | 0.00350                                                     | 0.00678   | 0.00423   | 0.00484    |                                            |                                                                        |                      |                      |             |
| 12378 PeCDD                        | ND                                                          | ND        | 0.00212   | 0.000706   | 0.500                                      | ND                                                                     | ND                   | 0.00106              | 0.000353    |
| Total PeCDD                        | {0.0200}                                                    | 0.0102    | 0.0127    | {0.0143}   |                                            |                                                                        |                      |                      |             |
| 123478 HxCDD                       | ND                                                          | ND        | 0.00339   | 0.00113    | 0.100                                      | ND                                                                     | ND                   | 0.000339             | 0.000113    |
| 123678 HxCDD                       | 0.00500                                                     | {0.00678} | 0.00847   | {0.00675}  | 0.100                                      | 0.000500                                                               | {0.000678}           | 0.000847             | {0.000675}  |
| 123789 HxCDD                       | 0.0100                                                      | ND        | {0.00423} | {0.00475}  | 0.100                                      | 0.00100                                                                | ND                   | {0.000423}           | {0.000475}  |
| Total HxCDD                        | 0.0600                                                      | 0.0271    | 0.0635    | 0.0502     |                                            |                                                                        |                      |                      |             |
| 1234678 HpCDD                      | 0.0300                                                      | {0.0136}  | 0.0254    | {0.0230}   | 0.010                                      | 0.000300                                                               | {0.000136}           | 0.000254             | {0.000230}  |
| Total HpCDD                        | 0.0500                                                      | 0.0136    | 0.0254    | 0.0297     |                                            |                                                                        |                      |                      |             |
| 12346789 OCDD                      | 0.265                                                       | 0.0644    | 0.0550    | 0.128      | 0.001                                      | 0.000265                                                               | 0.0000644            | 0.0000550            | 0.000128    |
| Total PCDD                         | {0.399}                                                     | 0.122     | 0.161     | {0.227}    |                                            | 0.00207                                                                | {0.000877}           | {0.00425}            | {0.00240}   |
| <b>FURANS:</b>                     |                                                             |           |           |            |                                            |                                                                        |                      |                      |             |
| 2378 TCDF                          | {0.00400}                                                   | ND        | 0.00847   | {0.00416}  | 0.100                                      | {0.000400}                                                             | ND                   | 0.000847             | {0.000416}  |
| Total TCDF                         | 0.0150                                                      | 0.0136    | 0.0127    | 0.0138     |                                            |                                                                        |                      |                      |             |
| 12378 PeCDF                        | {0.00300}                                                   | ND        | 0.00296   | {0.00199}  | 0.050                                      | {0.000150}                                                             | ND                   | 0.000148             | {0.0000994} |
| 23478 PeCDF                        | {0.00500}                                                   | ND        | 0.00423   | {0.00308}  | 0.500                                      | {0.00250}                                                              | ND                   | 0.00212              | {0.00154}   |
| Total PeCDF                        | 0.0250                                                      | ND        | 0.0254    | 0.0168     |                                            |                                                                        |                      |                      |             |
| 123478 HxCDF                       | 0.0200                                                      | 0.0136    | 0.0254    | 0.0197     | 0.100                                      | 0.00200                                                                | 0.00136              | 0.00254              | 0.001966    |
| 123678 HxCDF                       | 0.00500                                                     | 0.00339   | 0.00847   | 0.00562    | 0.100                                      | 0.000500                                                               | 0.000339             | 0.000847             | 0.000562    |
| 234678 HxCDF                       | 0.0100                                                      | 0.00678   | 0.00847   | 0.00842    | 0.100                                      | 0.00100                                                                | 0.000678             | 0.000847             | 0.000842    |
| 123789 HxCDF                       | ND                                                          | ND        | ND        | 0.0        | 0.100                                      | ND                                                                     | ND                   | ND                   | 0.00        |
| Total HxCDF                        | 0.0600                                                      | 0.0373    | 0.0720    | 0.0564     |                                            |                                                                        |                      |                      |             |
| 1234678 HpCDF                      | {0.0350}                                                    | 0.0237    | 0.0381    | {0.0323}   | 0.010                                      | {0.000350}                                                             | 0.000237             | 0.000381             | {0.000323}  |
| 1234789 HpCDF                      | 0.0200                                                      | 0.00678   | {0.0127}  | {0.0132}   | 0.010                                      | 0.000200                                                               | 0.0000678            | {0.000127}           | {0.000132}  |
| Total HpCDF                        | 0.0200                                                      | 0.0407    | 0.0381    | 0.0329     |                                            |                                                                        |                      |                      |             |
| 12346789 OCDF                      | 0.0200                                                      | 0.0203    | 0.0254    | 0.0219     | 0.001                                      | 0.0000200                                                              | 0.0000203            | 0.0000254            | 0.0000219   |
| Total PCDF                         | 0.140                                                       | 0.112     | 0.174     | 0.142      |                                            | {0.00712}                                                              | 0.00270              | {0.00788}            | {0.00590}   |
| Total PCDD + PCDF                  | {0.539}                                                     | 0.234     | 0.335     | {0.369}    |                                            | {0.00919}                                                              | {0.00357}            | {0.0121}             | {0.00830}   |

## Summary of Stack Gas Parameters and Test Results

*ASPHALT PLANT "A"*

US EPA Test Method 23 - PCDD / PCDF

Baghouse Outlet

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**RUN NUMBER**

**S-M23-O-4**

**RUN DATE**

**8/21/97**

**RUN TIME**

**0741-1148**

### MEASURED DATA

|                  |                                                                        |         |
|------------------|------------------------------------------------------------------------|---------|
| $\gamma$         | Meter Box Correction Factor                                            | 0.987   |
| $\Delta H$       | Avg Meter Orifice Pressure, in. H <sub>2</sub> O                       | 2.37    |
| $P_{bar}$        | Barometric Pressure, inches Hg                                         | 29.70   |
| $V_m$            | Sample Volume, ft <sup>3</sup>                                         | 179.969 |
| $T_m$            | Average Meter Temperature, °F                                          | 105     |
| $P_{static}$     | Stack Static Pressure, inches H <sub>2</sub> O                         | -0.25   |
| $T_s$            | Average Stack Temperature, °F                                          | 180     |
| $V_{lc}$         | Condensate Collected, ml                                               | 819.1   |
| CO <sub>2</sub>  | Carbon Dioxide content, % by volume                                    | 3.2     |
| O <sub>2</sub>   | Oxygen content, % by volume                                            | 10.8    |
| N <sub>2</sub>   | Nitrogen content, % by volume                                          | 86.0    |
| $C_p$            | Pitot Tube Coefficient                                                 | 0.84    |
| $\Delta p^{1/2}$ | Average Square Root $\Delta p$ , (in. H <sub>2</sub> O) <sup>1/2</sup> | 0.8374  |
| $\Theta$         | Sample Run Duration, minutes                                           | 240     |
| $D_n$            | Nozzle Diameter, inches                                                | 0.251   |

### CALCULATED DATA

|               |                                              |          |
|---------------|----------------------------------------------|----------|
| $A_n$         | Nozzle Area, ft <sup>2</sup>                 | 0.000344 |
| $V_{m(std)}$  | Standard Meter Volume, dscf                  | 165.621  |
| $V_{m(std)}$  | Standard Meter Volume, dscm                  | 4.690    |
| $P_s$         | Stack Pressure, inches Hg                    | 29.68    |
| $B_{ws}$      | Moisture, % by volume                        | 18.9     |
| $B_{ws(sat)}$ | Moisture (at saturation), % by volume        | 51.1     |
| $V_{wstd}$    | Standard Water Vapor Volume, ft <sup>3</sup> | 38.555   |
| $1-B_{ws}$    | Dry Mole Fraction                            | 0.811    |
| $M_d$         | Molecular Weight (d.b.), lb/lb-mole          | 28.94    |
| $M_s$         | Molecular Weight (w.b.), lb/lb-mole          | 26.88    |
| $V_s$         | Stack Gas Velocity, ft/s                     | 53.8     |
| $A$           | Stack Area, ft <sup>2</sup>                  | 11.46    |
| $Q_s$         | Stack Gas Volumetric flow, acfm              | 37,027   |
| $Q_s$         | Stack Gas Volumetric flow, dscfm             | 24,580   |
| $Q_{s(cmm)}$  | Stack Gas Volumetric flow, dscmm             | 696.0    |
| $I$           | Isokinetic Sampling Ratio, %                 | 93.7     |

**Summary of Stack Gas Parameters and Test Results**

*ASPHALT PLANT "A"*

**US EPA Test Method 23 - PCDD / PCDF**

**Baghouse Outlet**

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|                   |                  |
|-------------------|------------------|
| <b>RUN NUMBER</b> | <b>O-M23-4</b>   |
| <b>RUN DATE</b>   | <b>8/21/97</b>   |
| <b>RUN TIME</b>   | <b>0741-1148</b> |

**EMISSIONS DATA**

**DIOXINS:**

**2378 TCDD**

|           |                                     |    |
|-----------|-------------------------------------|----|
| (ng)      | Catch, ng                           | ND |
| (ng/dscm) | Concentration, ng/dscm, as measured | ND |
| (µg/hr)   | Emission Rate, µg/hr                | ND |

**Total TCDD**

|           |                                     |           |
|-----------|-------------------------------------|-----------|
| (ng)      | Catch, ng                           | {0.007}   |
| (ng/dscm) | Concentration, ng/dscm, as measured | {0.00149} |
| (µg/hr)   | Emission Rate, µg/hr                | {0.0623}  |

**12378 PeCDD**

|           |                                     |    |
|-----------|-------------------------------------|----|
| (ng)      | Catch, ng                           | ND |
| (ng/dscm) | Concentration, ng/dscm, as measured | ND |
| (µg/hr)   | Emission Rate, µg/hr                | ND |

**Total PeCDD**

|           |                                     |         |
|-----------|-------------------------------------|---------|
| (ng)      | Catch, ng                           | 0.010   |
| (ng/dscm) | Concentration, ng/dscm, as measured | 0.00213 |
| (µg/hr)   | Emission Rate, µg/hr                | 0.0890  |

**123478 HxCDD**

|           |                                     |    |
|-----------|-------------------------------------|----|
| (ng)      | Catch, ng                           | ND |
| (ng/dscm) | Concentration, ng/dscm, as measured | ND |
| (µg/hr)   | Emission Rate, µg/hr                | ND |

**123678 HxCDD**

|           |                                     |         |
|-----------|-------------------------------------|---------|
| (ng)      | Catch, ng                           | 0.010   |
| (ng/dscm) | Concentration, ng/dscm, as measured | 0.00213 |
| (µg/hr)   | Emission Rate, µg/hr                | 0.0890  |

( ) Not Detected. Value shown is the detection limit for that sample.

{ } Estimated Maximum Possible Concentration.

**Summary of Stack Gas Parameters and Test Results**

*ASPHALT PLANT "A"*

**US EPA Test Method 23 - PCDD / PCDF**

**Baghouse Outlet**

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|                                  |                                     |           |
|----------------------------------|-------------------------------------|-----------|
| <b>RUN NUMBER</b>                | <b>O-M23-4</b>                      |           |
| <b>RUN DATE</b>                  | <b>8/21/97</b>                      |           |
| <b>RUN TIME</b>                  | <b>0741-1148</b>                    |           |
| <b>EMISSIONS DATA -Continued</b> |                                     |           |
| <b>DIOXINS - Continued</b>       |                                     |           |
| <b><u>123789 HxCDD</u></b>       |                                     |           |
| (ng)                             | Catch, ng                           | ND        |
| (ng/dscm)                        | Concentration, ng/dscm, as measured | ND        |
| (µg/hr)                          | Emission Rate, µg/hr                | ND        |
| <b><u>Total HxCDD</u></b>        |                                     |           |
| (ng)                             | Catch, ng                           | 0.070     |
| (ng/dscm)                        | Concentration, ng/dscm, as measured | 0.0149    |
| (µg/hr)                          | Emission Rate, µg/hr                | 0.623     |
| <b><u>1234678 HpCDD</u></b>      |                                     |           |
| (ng)                             | Catch, ng                           | {0.040}   |
| (ng/dscm)                        | Concentration, ng/dscm, as measured | {0.00853} |
| (µg/hr)                          | Emission Rate, µg/hr                | {0.356}   |
| <b><u>Total HpCDD</u></b>        |                                     |           |
| (ng)                             | Catch, ng                           | {0.070}   |
| (ng/dscm)                        | Concentration, ng/dscm, as measured | {0.0149}  |
| (µg/hr)                          | Emission Rate, µg/hr                | {0.623}   |
| <b><u>12346789 OCDD</u></b>      |                                     |           |
| (ng)                             | Catch, ng                           | 0.090     |
| (ng/dscm)                        | Concentration, ng/dscm, as measured | 0.0192    |
| (µg/hr)                          | Emission Rate, µg/hr                | 0.801     |
| <b><u>Total PCDD</u></b>         |                                     |           |
| (ng)                             | Catch, ng                           | {0.247}   |
| (ng/dscm)                        | Concentration, ng/dscm, as measured | {0.0527}  |
| (µg/hr)                          | Emission Rate, µg/hr                | {2.20}    |

( ) Not Detected. Value shown is the detection limit for that sample.

{ } Estimated Maximum Possible Concentration.

**Summary of Stack Gas Parameters and Test Results**

*ASPHALT PLANT "A"*

**US EPA Test Method 23 - PCDD / PCDF**

**Baghouse Outlet**

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|                   |                  |
|-------------------|------------------|
| <b>RUN NUMBER</b> | <b>O-M23-4</b>   |
| <b>RUN DATE</b>   | <b>8/21/97</b>   |
| <b>RUN TIME</b>   | <b>0741-1148</b> |

EMISSIONS DATA - Continued

FURANS

2378 TCDF

|           |                                     |    |
|-----------|-------------------------------------|----|
| (ng)      | Catch, ng                           | ND |
| (ng/dscm) | Concentration, ng/dscm, as measured | ND |
| (µg/hr)   | Emission Rate, µg/hr                | ND |

Total TCDF

|           |                                     |         |
|-----------|-------------------------------------|---------|
| (ng)      | Catch, ng                           | 0.030   |
| (ng/dscm) | Concentration, ng/dscm, as measured | 0.00640 |
| (µg/hr)   | Emission Rate, µg/hr                | 0.267   |

12378 PeCDF

|           |                                     |    |
|-----------|-------------------------------------|----|
| (ng)      | Catch, ng                           | ND |
| (ng/dscm) | Concentration, ng/dscm, as measured | ND |
| (µg/hr)   | Emission Rate, µg/hr                | ND |

23478 PeCDF

|           |                                     |           |
|-----------|-------------------------------------|-----------|
| (ng)      | Catch, ng                           | {0.010}   |
| (ng/dscm) | Concentration, ng/dscm, as measured | {0.00213} |
| (µg/hr)   | Emission Rate, µg/hr                | {0.0890}  |

Total PeCDF

|           |                                     |         |
|-----------|-------------------------------------|---------|
| (ng)      | Catch, ng                           | 0.010   |
| (ng/dscm) | Concentration, ng/dscm, as measured | 0.00213 |
| (µg/hr)   | Emission Rate, µg/hr                | 0.0890  |

123478 HxCDF

|           |                                     |         |
|-----------|-------------------------------------|---------|
| (ng)      | Catch, ng                           | 0.030   |
| (ng/dscm) | Concentration, ng/dscm, as measured | 0.00640 |
| (µg/hr)   | Emission Rate, µg/hr                | 0.267   |

( ) Not Detected. Value shown is the detection limit for that sample.

{ } Estimated Maximum Possible Concentration.

**Summary of Stack Gas Parameters and Test Results**

*ASPHALT PLANT "A"*

**US EPA Test Method 23 - PCDD / PCDF**

**Baghouse Outlet**

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|                   |                  |
|-------------------|------------------|
| <b>RUN NUMBER</b> | <b>O-M23-4</b>   |
| <b>RUN DATE</b>   | <b>8/21/97</b>   |
| <b>RUN TIME</b>   | <b>0741-1148</b> |

EMISSIONS DATA - Continued

Furans - Continued

123678 HxCDF

|           |                                     |         |
|-----------|-------------------------------------|---------|
| (ng)      | Catch, ng                           | 0.010   |
| (ng/dscm) | Concentration, ng/dscm, as measured | 0.00213 |
| (µg/hr)   | Emission Rate, µg/hr                | 0.0890  |

234678 HxCDF

|           |                                     |         |
|-----------|-------------------------------------|---------|
| (ng)      | Catch, ng                           | 0.020   |
| (ng/dscm) | Concentration, ng/dscm, as measured | 0.00426 |
| (µg/hr)   | Emission Rate, µg/hr                | 0.178   |

123789 HxCDF

|           |                                     |    |
|-----------|-------------------------------------|----|
| (ng)      | Catch, ng                           | ND |
| (ng/dscm) | Concentration, ng/dscm, as measured | ND |
| (µg/hr)   | Emission Rate, µg/hr                | ND |

Total HxCDF

|           |                                     |        |
|-----------|-------------------------------------|--------|
| (ng)      | Catch, ng                           | 0.090  |
| (ng/dscm) | Concentration, ng/dscm, as measured | 0.0192 |
| (µg/hr)   | Emission Rate, µg/hr                | 0.801  |

1234678 HpCDF

|           |                                     |        |
|-----------|-------------------------------------|--------|
| (ng)      | Catch, ng                           | 0.050  |
| (ng/dscm) | Concentration, ng/dscm, as measured | 0.0107 |
| (µg/hr)   | Emission Rate, µg/hr                | 0.445  |

1234789 HpCDF

|           |                                     |         |
|-----------|-------------------------------------|---------|
| (ng)      | Catch, ng                           | 0.020   |
| (ng/dscm) | Concentration, ng/dscm, as measured | 0.00426 |
| (µg/hr)   | Emission Rate, µg/hr                | 0.178   |

( ) Not Detected. Value shown is the detection limit for that sample.

{ } Estimated Maximum Possible Concentration.

**Summary of Stack Gas Parameters and Test Results**

*ASPHALT PLANT "A"*

**US EPA Test Method 23 - PCDD / PCDF**

**Baghouse Outlet**

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|                   |                  |
|-------------------|------------------|
| <b>RUN NUMBER</b> | <b>O-M23-4</b>   |
| <b>RUN DATE</b>   | <b>8/21/97</b>   |
| <b>RUN TIME</b>   | <b>0741-1148</b> |

**EMISSIONS DATA - Continued**

**Furans - Continued**

**Total HpCDE**

|           |                                     |        |
|-----------|-------------------------------------|--------|
| (ng)      | Catch, ng                           | 0.090  |
| (ng/dscm) | Concentration, ng/dscm, as measured | 0.0192 |
| (µg/hr)   | Emission Rate, µg/hr                | 0.801  |

**12346789 OCDE**

|           |                                     |        |
|-----------|-------------------------------------|--------|
| (ng)      | Catch, ng                           | 0.050  |
| (ng/dscm) | Concentration, ng/dscm, as measured | 0.0107 |
| (µg/hr)   | Emission Rate, µg/hr                | 0.445  |

**Total PCDF**

|           |                                     |        |
|-----------|-------------------------------------|--------|
| (ng)      | Catch, ng                           | 0.270  |
| (ng/dscm) | Concentration, ng/dscm, as measured | 0.0576 |
| (µg/hr)   | Emission Rate, µg/hr                | 2.40   |

**Total PCDD + PCDF**

|           |                                     |         |
|-----------|-------------------------------------|---------|
| (ng)      | Catch, ng                           | {0.517} |
| (ng/dscm) | Concentration, ng/dscm, as measured | {0.110} |
| (µg/hr)   | Emission Rate, µg/hr                | {4.60}  |

( ) Not Detected. Value shown is the detection limit for that sample.

{ } Estimated Maximum Possible Concentration.



**PCDD/PCDF Corrected Stack Gas Concentrations and 2378 TCDD Toxic Equivalent Concentrations**  
**ASPHALT PLANT "A" - Garner, North Carolina**  
**US EPA Test Method 23 - PCDD/PCDF**  
**Baghouse Outlet**

|                   | CONCENTRATION<br>(ng/dscmm, adjusted to 7% O <sub>2</sub> ) | 2378-TCDD<br>Toxic<br>Equivalent<br>Factor | 2378 TOXIC EQUIVALENCIES<br>(ng/dscmm, adjusted to 7% O <sub>2</sub> ) |
|-------------------|-------------------------------------------------------------|--------------------------------------------|------------------------------------------------------------------------|
| RUN NUMBER        | S-M23-O-4                                                   |                                            | S-M23-O-4                                                              |
| RUN DATE          | 08/21/97                                                    |                                            | 8/21/97                                                                |
| RUN TIME          | 0741-1148                                                   |                                            | 0741-1148                                                              |
| <b>DIOXINS:</b>   |                                                             |                                            |                                                                        |
| 2378 TCDD         | ND                                                          | 1.000                                      | ND                                                                     |
| Total TCDD        | {0.00205}                                                   |                                            |                                                                        |
| 12378 PeCDD       | ND                                                          | 0.500                                      | ND                                                                     |
| Total PeCDD       | 0.00293                                                     |                                            |                                                                        |
| 123478 HxCDD      | ND                                                          | 0.100                                      | ND                                                                     |
| 123678 HxCDD      | 0.00293                                                     | 0.100                                      | 0.000293                                                               |
| 123789 HxCDD      | ND                                                          | 0.100                                      | ND                                                                     |
| Total HxCDD       | 0.0205                                                      |                                            |                                                                        |
| 1234678 HpCDD     | {0.0117}                                                    | 0.010                                      | {0.000117}                                                             |
| Total HpCDD       | {0.0205}                                                    |                                            |                                                                        |
| 12346789 OCDD     | 0.0264                                                      | 0.001                                      | 0.0000264                                                              |
| Total PCDD        | {0.0725}                                                    |                                            | {0.000437}                                                             |
| <b>FURANS:</b>    |                                                             |                                            |                                                                        |
| 2378 TCDF         | ND                                                          | 0.100                                      | ND                                                                     |
| Total TCDF        | 0.00880                                                     |                                            |                                                                        |
| 12378 PeCDF       | ND                                                          | 0.050                                      | ND                                                                     |
| 23478 PeCDF       | {0.00293}                                                   | 0.500                                      | {0.00147}                                                              |
| Total PeCDF       | 0.00293                                                     |                                            |                                                                        |
| 123478 HxCDF      | 0.00880                                                     | 0.100                                      | 0.000880                                                               |
| 123678 HxCDF      | 0.00293                                                     | 0.100                                      | 0.000293                                                               |
| 234678 HxCDF      | 0.00587                                                     | 0.100                                      | 0.000587                                                               |
| 123789 HxCDF      | ND                                                          | 0.100                                      | ND                                                                     |
| Total HxCDF       | 0.0264                                                      |                                            |                                                                        |
| 1234678 HpCDF     | 0.0147                                                      | 0.010                                      | 0.000147                                                               |
| 1234789 HpCDF     | 0.00587                                                     | 0.010                                      | 0.0000587                                                              |
| Total HpCDF       | 0.0264                                                      |                                            |                                                                        |
| 12346789 OCDF     | 0.0147                                                      | 0.001                                      | 0.0000147                                                              |
| Total PCDF        | 0.0792                                                      |                                            | {0.00345}                                                              |
| Total PCDD + PCDF | {0.152}                                                     |                                            | {0.00389}                                                              |

**Summary of Stack Gas Parameters and Test Results**  
**US EPA EMC Asphalt Concrete Emissions Testing - ASPHALT PLANT "A"**  
**US EPA Test Method 29 - Multiple Metals**

Baghouse Outlet

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| <i>RUN NUMBER</i>      |                                                                        | <i>S-M29-O-1</i> | <i>S-M29-O-2</i> | <i>S-M29-O-3</i> |                |
|------------------------|------------------------------------------------------------------------|------------------|------------------|------------------|----------------|
| <i>RUN DATE</i>        |                                                                        | <i>8/19/97</i>   | <i>8/20/97</i>   | <i>8/20/97</i>   | <i>Average</i> |
| <i>RUN TIME</i>        |                                                                        | <i>0915-1454</i> | <i>0822-1240</i> | <i>1405-1735</i> |                |
| <b>MEASURED DATA</b>   |                                                                        |                  |                  |                  |                |
| $\gamma$               | Meter Box Correction Factor                                            | 0.965            | 0.965            | 0.965            | 0.965          |
| $\Delta H$             | Avg Meter Orifice Pressure, in. H <sub>2</sub> O                       | 1.76             | 2.57             | 2.05             | 2.13           |
| $P_{bar}$              | Barometric Pressure, inches Hg                                         | 29.90            | 29.80            | 29.80            | 29.83          |
| $V_m$                  | Sample Volume, ft <sup>3</sup>                                         | 170.576          | 216.899          | 159.831          | 182.435        |
| $T_m$                  | Average Meter Temperature, °F                                          | 104              | 96               | 104              | 101            |
| $P_{static}$           | Stack Static Pressure, inches H <sub>2</sub> O                         | -0.25            | -0.25            | -0.25            | -0.25          |
| $T_s$                  | Average Stack Temperature, °F                                          | 179              | 222              | 207              | 203            |
| $V_{lc}$               | Condensate Collected, ml                                               | 691.0            | 993.1            | 978.8            | 887.6          |
| CO <sub>2</sub>        | Carbon Dioxide content, % by volume                                    | 5.3              | 5.5              | 5.1              | 5.3            |
| O <sub>2</sub>         | Oxygen content, % by volume                                            | 13.1             | 13.1             | 13.1             | 13.1           |
| N <sub>2</sub>         | Nitrogen content, % by volume                                          | 81.6             | 81.4             | 81.8             | 81.6           |
| $C_p$                  | Pitot Tube Coefficient                                                 | 0.84             | 0.84             | 0.84             | 0.84           |
| $\Delta p^{1/2}$       | Average Square Root $\Delta p$ , (in. H <sub>2</sub> O) <sup>1/2</sup> | 0.7558           | 0.9285           | 0.8233           | 0.8359         |
| $\Theta$               | Sample Run Duration, minutes                                           | 240              | 240              | 200              | 227            |
| $D_n$                  | Nozzle Diameter, inches                                                | 0.251            | 0.253            | 0.253            | 0.252          |
| <b>CALCULATED DATA</b> |                                                                        |                  |                  |                  |                |
| $A_n$                  | Nozzle Area, ft <sup>2</sup>                                           | 0.000344         | 0.000349         | 0.000349         | 0.000347       |
| $V_{m(std) cf}$        | Standard Meter Volume, ft <sup>3</sup>                                 | 154.579          | 199.270          | 144.561          | 166.137        |
| $V_{m(std) cm^3}$      | Standard Meter Volume, m <sup>3</sup>                                  | 4.377            | 5.643            | 4.094            | 4.704          |
| $Q_m$                  | Average Sampling Rate, dscfm                                           | 0.644            | 0.830            | 0.723            | 0.732          |
| $P_s$                  | Stack Pressure, inches Hg                                              | 29.88            | 29.78            | 29.78            | 29.81          |
| $B_{ws}$               | Moisture, % by volume                                                  | 17.4             | 19.0             | 24.2             | 20.2           |
| $B_{ws(sat)}$          | Moisture (at saturation), % by volume                                  | 49.5             | 122.4            | 91.1             | 87.7           |
| $V_{wstd}$             | Standard Water Vapor Volume, ft <sup>3</sup>                           | 32.525           | 46.745           | 46.072           | 41.781         |
| $1-B_{ws}$             | Dry Mole Fraction                                                      | 0.826            | 0.810            | 0.758            | 0.798          |
| $M_d$                  | Molecular Weight (d.b.), lb/lb-mole                                    | 29.37            | 29.40            | 29.34            | 29.37          |
| $M_s$                  | Molecular Weight (w.b.), lb/lb-mole                                    | 27.40            | 27.24            | 26.60            | 27.08          |
| $V_s$                  | Stack Gas Velocity, ft/s                                               | 47.9             | 61.1             | 54.3             | 54.4           |
| $A$                    | Stack Area, ft <sup>2</sup>                                            | 11.46            | 11.46            | 11.46            | 11.46          |
| $Q_a$                  | Stack Gas Volumetric flow, acfm                                        | 32,964           | 42,043           | 37,305           | 37,437         |
| $Q_s cfm$              | Stack Gas Volumetric flow, dscfm                                       | 22,478           | 26,229           | 22,276           | 23,661         |
| $Q_s cmm$              | Stack Gas Volumetric flow, dscmm                                       | 637              | 743              | 631              | 670            |
| $I$                    | Isokinetic Sampling Ratio, %                                           | 95.6             | 103.9            | 106.5            | 102.0          |

**Summary of Stack Gas Parameters and Test Results**  
**US EPA EMC Asphalt Concrete Emissions Testing - ASPHALT PLANT "A"**  
**US EPA Test Method 29 - Multiple Metals**

Baghouse Outlet

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|                           | <i>RUN NUMBER</i>               | <i>S-M29-O-1</i> | <i>S-M29-O-2</i> | <i>S-M29-O-3</i> |                |
|---------------------------|---------------------------------|------------------|------------------|------------------|----------------|
|                           | <i>RUN DATE</i>                 | <i>8/19/97</i>   | <i>8/20/97</i>   | <i>8/20/97</i>   | <i>Average</i> |
|                           | <i>RUN TIME</i>                 | <i>0915-1454</i> | <i>0822-1240</i> | <i>1405-1735</i> |                |
| <b>EMISSIONS DATA</b>     |                                 |                  |                  |                  |                |
| <u>Particulate Matter</u> |                                 |                  |                  |                  |                |
| g                         | Target Catch, g                 | 0.4499           | 0.0622           | 0.0274           | 0.1798         |
| gr/dscf                   | Concentration, gr/dscf          | 0.0449           | 0.00482          | 0.00292          | 0.0176         |
| gr/dscf at 7%             | Concentration, gr/dscf at 7% O2 | 0.0800           | 0.00858          | 0.00521          | 0.0313         |
| g/dscm                    | Concentration, g/dscm           | 0.103            | 0.0110           | 0.00669          | 0.0402         |
| g/dscm at 7%              | Concentration, g/dscm at 7% O2  | 0.183            | 0.0196           | 0.0119           | 0.0716         |
| lb/hr                     | Emission Rate, lb/hr            | 8.65             | 1.08             | 0.558            | 3.43           |
| kg/hr                     | Emission Rate, kg/hr            | 3.93             | 0.491            | 0.253            | 1.56           |
| <u>Antimony</u>           |                                 |                  |                  |                  |                |
| µg                        | Target Catch, µg                | 0.280            | 0.0300           | 0.0              | 0.103          |
| µg/dscm                   | Concentration, µg/dscm          | 0.0640           | 0.00532          | 0.0              | 0.0231         |
| µg/dscm at 7%             | Concentration, µg/dscm at 7% O2 | 0.114            | 0.00947          | 0.0              | 0.0412         |
| g/hr                      | Emission Rate, g/hr             | 0.00244          | 0.000237         | 0.0              | 0.000893       |
| <u>Arsenic</u>            |                                 |                  |                  |                  |                |
| µg                        | Target Catch, µg                | 2.66             | 0.750            | 0.770            | 1.39           |
| µg/dscm                   | Concentration, µg/dscm          | 0.608            | 0.133            | 0.188            | 0.310          |
| µg/dscm at 7%             | Concentration, µg/dscm at 7% O2 | 1.08             | 0.237            | 0.335            | 0.552          |
| g/hr                      | Emission Rate, g/hr             | 0.0232           | 0.00592          | 0.00712          | 0.0121         |
| <u>Barium</u>             |                                 |                  |                  |                  |                |
| µg                        | Target Catch, µg                | 219              | 47.2             | 18.0             | 94.6           |
| µg/dscm                   | Concentration, µg/dscm          | 49.9             | 8.37             | 4.39             | 20.9           |
| µg/dscm at 7%             | Concentration, µg/dscm at 7% O2 | 89.0             | 14.9             | 7.82             | 37.2           |
| g/hr                      | Emission Rate, g/hr             | 1.91             | 0.373            | 0.166            | 0.815          |
| <u>Beryllium</u>          |                                 |                  |                  |                  |                |
| µg                        | Target Catch, µg                | ND               | ND               | ND               | ND             |
| µg/dscm                   | Concentration, µg/dscm          | ND               | ND               | ND               | ND             |
| µg/dscm at 7%             | Concentration, µg/dscm at 7% O2 | ND               | ND               | ND               | ND             |
| g/hr                      | Emission Rate, g/hr             | ND               | ND               | ND               | ND             |
| <u>Cadmium</u>            |                                 |                  |                  |                  |                |
| µg                        | Target Catch, µg                | 0.870            | 2.23             | 1.80             | 1.63           |
| µg/dscm                   | Concentration, µg/dscm          | 0.199            | 0.395            | 0.440            | 0.345          |
| µg/dscm at 7%             | Concentration, µg/dscm at 7% O2 | 0.354            | 0.704            | 0.784            | 0.614          |
| g/hr                      | Emission Rate, g/hr             | 0.00759          | 0.0176           | 0.0166           | 0.0139         |

**Summary of Stack Gas Parameters and Test Results**  
**US EPA EMC Asphalt Concrete Emissions Testing - ASPHALT PLANT "A"**  
**US EPA Test Method 29 - Multiple Metals**  
**Baghouse Outlet**  
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| <i>RUN NUMBER</i>                 | <i>S-M29-O-1</i>                | <i>S-M29-O-2</i> | <i>S-M29-O-3</i> |                |         |
|-----------------------------------|---------------------------------|------------------|------------------|----------------|---------|
| <i>RUN DATE</i>                   | <i>8/19/97</i>                  | <i>8/20/97</i>   | <i>8/20/97</i>   | <i>Average</i> |         |
| <i>RUN TIME</i>                   | <i>0915-1454</i>                | <i>0822-1240</i> | <i>1405-1735</i> |                |         |
| <b>EMISSIONS DATA - Continued</b> |                                 |                  |                  |                |         |
| <b><u>Chromium</u></b>            |                                 |                  |                  |                |         |
| µg                                | Target Catch, µg                | 6.42             | 0.910            | 0.510          | 2.61    |
| µg/dscm                           | Concentration, µg/dscm          | 1.47             | 0.161            | 0.125          | 0.584   |
| µg/dscm at 7%                     | Concentration, µg/dscm at 7% O2 | 2.61             | 0.287            | 0.222          | 1.04    |
| g/hr                              | Emission Rate, g/hr             | 0.0560           | 0.00719          | 0.00472        | 0.0226  |
| <b><u>Cobalt</u></b>              |                                 |                  |                  |                |         |
| µg                                | Target Catch, µg                | 1.82             | ND               | ND             | 0.607   |
| µg/dscm                           | Concentration, µg/dscm          | 0.416            | ND               | ND             | 0.139   |
| µg/dscm at 7%                     | Concentration, µg/dscm at 7% O2 | 0.741            | ND               | ND             | 0.247   |
| g/hr                              | Emission Rate, g/hr             | 0.0159           | ND               | ND             | 0.00529 |
| <b><u>Copper</u></b>              |                                 |                  |                  |                |         |
| µg                                | Target Catch, µg                | 17.7             | 4.33             | 6.87           | 9.6     |
| µg/dscm                           | Concentration, µg/dscm          | 4.05             | 0.77             | 1.68           | 2.16    |
| µg/dscm at 7%                     | Concentration, µg/dscm at 7% O2 | 7.21             | 1.37             | 2.99           | 3.86    |
| g/hr                              | Emission Rate, g/hr             | 0.155            | 0.0342           | 0.0635         | 0.0841  |
| <b><u>Lead</u></b>                |                                 |                  |                  |                |         |
| µg                                | Target Catch, µg                | 26.6             | 7.95             | 109            | 47.8    |
| µg/dscm                           | Concentration, µg/dscm          | 6.07             | 1.41             | 26.6           | 11.4    |
| µg/dscm at 7%                     | Concentration, µg/dscm at 7% O2 | 10.8             | 2.51             | 47.4           | 20.2    |
| g/hr                              | Emission Rate, g/hr             | 0.232            | 0.0628           | 1.01           | 0.434   |
| <b><u>Manganese</u></b>           |                                 |                  |                  |                |         |
| µg                                | Target Catch, µg                | 206              | 33.2             | 14.2           | 84.5    |
| µg/dscm                           | Concentration, µg/dscm          | 47.1             | 5.88             | 3.46           | 18.8    |
| µg/dscm at 7%                     | Concentration, µg/dscm at 7% O2 | 83.9             | 10.5             | 6.17           | 33.5    |
| g/hr                              | Emission Rate, g/hr             | 1.80             | 0.262            | 0.131          | 0.731   |
| <b><u>Mercury</u></b>             |                                 |                  |                  |                |         |
| µg                                | Target Catch, µg                | 2.19             | 2.43             | 15.5           | 6.70    |
| µg/dscm                           | Concentration, µg/dscm          | 0.500            | 0.431            | 3.78           | 1.57    |
| µg/dscm at 7%                     | Concentration, µg/dscm at 7% O2 | 0.892            | 0.767            | 6.74           | 2.80    |
| g/hr                              | Emission Rate, g/hr             | 0.0191           | 0.0192           | 0.143          | 0.0605  |

**Summary of Stack Gas Parameters and Test Results**  
**US EPA EMC Asphalt Concrete Emissions Testing - ASPHALT PLANT "A"**

**US EPA Test Method 29 - Multiple Metals**

**Baghouse Outlet**

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| <b>RUN NUMBER</b>                 | <b>S-M29-O-1</b>                | <b>S-M29-O-2</b> | <b>S-M29-O-3</b> |                |         |
|-----------------------------------|---------------------------------|------------------|------------------|----------------|---------|
| <b>RUN DATE</b>                   | 8/19/97                         | 8/20/97          | 8/20/97          | <b>Average</b> |         |
| <b>RUN TIME</b>                   | 0915-1454                       | 0822-1240        | 1405-1735        |                |         |
| <b>EMISSIONS DATA - Continued</b> |                                 |                  |                  |                |         |
| <u><b>Nickel</b></u>              |                                 |                  |                  |                |         |
| µg                                | Target Catch, µg                | 3.80             | 1.68             | 3.21           | 2.90    |
| µg/dscm                           | Concentration, µg/dscm          | 0.868            | 0.298            | 0.784          | 0.650   |
| µg/dscm at 7%                     | Concentration, µg/dscm at 7% O2 | 1.55             | 0.53             | 1.40           | 1.16    |
| g/hr                              | Emission Rate, g/hr             | 0.0332           | 0.0133           | 0.0297         | 0.0254  |
| <u><b>Phosphorus</b></u>          |                                 |                  |                  |                |         |
| µg                                | Target Catch, µg                | 398              | 115              | 104            | 206     |
| µg/dscm                           | Concentration, µg/dscm          | 90.9             | 20.4             | 25.3           | 45.5    |
| µg/dscm at 7%                     | Concentration, µg/dscm at 7% O2 | 162              | 36.3             | 45.1           | 81.2    |
| g/hr                              | Emission Rate, g/hr             | 3.47             | 0.909            | 0.959          | 1.78    |
| <u><b>Silver</b></u>              |                                 |                  |                  |                |         |
| µg                                | Target Catch, µg                | ND               | ND               | 0.620          | 0.207   |
| µg/dscm                           | Concentration, µg/dscm          | ND               | ND               | 0.151          | 0.0505  |
| µg/dscm at 7%                     | Concentration, µg/dscm at 7% O2 | ND               | ND               | 0.270          | 0.0900  |
| g/hr                              | Emission Rate, g/hr             | ND               | ND               | 0.00573        | 0.00191 |
| <u><b>Selenium</b></u>            |                                 |                  |                  |                |         |
| µg                                | Target Catch, µg                | 0.610            | 0.340            | 9.49           | 3.48    |
| µg/dscm                           | Concentration, µg/dscm          | 0.139            | 0.0603           | 2.32           | 0.84    |
| µg/dscm at 7%                     | Concentration, µg/dscm at 7% O2 | 0.248            | 0.107            | 4.13           | 1.50    |
| g/hr                              | Emission Rate, g/hr             | 0.00532          | 0.00269          | 0.0877         | 0.0319  |
| <u><b>Thallium</b></u>            |                                 |                  |                  |                |         |
| µg                                | Target Catch, µg                | ND               | 0.21             | 0.23           | 0.147   |
| µg/dscm                           | Concentration, µg/dscm          | ND               | 0.0372           | 0.0562         | 0.0311  |
| µg/dscm at 7%                     | Concentration, µg/dscm at 7% O2 | ND               | 0.0663           | 0.100          | 0.0555  |
| g/hr                              | Emission Rate, g/hr             | ND               | 0.00166          | 0.00213        | 0.00126 |
| <u><b>Zinc</b></u>                |                                 |                  |                  |                |         |
| µg                                | Target Catch, µg                | 141              | 58.8             | 37.8           | 79.2    |
| µg/dscm                           | Concentration, µg/dscm          | 32.3             | 10.4             | 9.22           | 17.3    |
| µg/dscm at 7%                     | Concentration, µg/dscm at 7% O2 | 57.5             | 18.6             | 16.4           | 30.8    |
| g/hr                              | Emission Rate, g/hr             | 1.23             | 0.464            | 0.349          | 0.682   |

**Summary of Stack Gas Parameters and Test Results**  
**US EPA EMC Asphalt Concrete Emissions Testing**    *ASPHALT PLANT "A"*  
**US EPA Test Method 29 - Multiple Metals**  
**Baghouse Outlet**  
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|                   |                  |
|-------------------|------------------|
| <b>RUN NUMBER</b> | <b>S-M29-O-4</b> |
| <b>RUN DATE</b>   | <b>8/21/97</b>   |
| <b>RUN TIME</b>   | <b>0741-1153</b> |

**MEASURED DATA**

|                  |                                                                        |         |
|------------------|------------------------------------------------------------------------|---------|
| $\gamma$         | Meter Box Correction Factor                                            | 0.965   |
| $\Delta H$       | Avg Meter Orifice Pressure, in. H <sub>2</sub> O                       | 2.00    |
| $P_{bar}$        | Barometric Pressure, inches Hg                                         | 29.70   |
| $V_m$            | Sample Volume, ft <sup>3</sup>                                         | 186.221 |
| $T_m$            | Average Meter Temperature, °F                                          | 102     |
| $P_{static}$     | Stack Static Pressure, inches H <sub>2</sub> O                         | -0.25   |
| $T_s$            | Average Stack Temperature, °F                                          | 180     |
| $V_{ic}$         | Condensate Collected, ml                                               | 821.4   |
| CO <sub>2</sub>  | Carbon Dioxide content, % by volume                                    | 3.2     |
| O <sub>2</sub>   | Oxygen content, % by volume                                            | 10.8    |
| N <sub>2</sub>   | Nitrogen content, % by volume                                          | 86.0    |
| $C_p$            | Pitot Tube Coefficient                                                 | 0.84    |
| $\Delta p^{1/2}$ | Average Square Root $\Delta p$ , (in. H <sub>2</sub> O) <sup>1/2</sup> | 0.8239  |
| $\Theta$         | Sample Run Duration, minutes                                           | 240     |
| $D_n$            | Nozzle Diameter, inches                                                | 0.253   |

**CALCULATED DATA**

|                 |                                              |          |
|-----------------|----------------------------------------------|----------|
| $A_n$           | Nozzle Area, ft <sup>2</sup>                 | 0.000349 |
| $V_{m(std) cf}$ | Standard Meter Volume, ft <sup>3</sup>       | 168.390  |
| $V_{m(std) cm}$ | Standard Meter Volume, m <sup>3</sup>        | 4.768    |
| $Q_m$           | Average Sampling Rate, dscfm                 | 0.702    |
| $P_s$           | Stack Pressure, inches Hg                    | 29.68    |
| $B_{ws}$        | Moisture, % by volume                        | 18.7     |
| $B_{ws(sat)}$   | Moisture (at saturation), % by volume        | 51.1     |
| $V_{wsid}$      | Standard Water Vapor Volume, ft <sup>3</sup> | 38.663   |
| $1-B_{ws}$      | Dry Mole Fraction                            | 0.813    |
| $M_d$           | Molecular Weight (d.b.), lb/lb-mole          | 28.94    |
| $M_s$           | Molecular Weight (w.b.), lb/lb-mole          | 26.90    |
| $V_s$           | Stack Gas Velocity, ft/s                     | 53.0     |
| $A$             | Stack Area, ft <sup>2</sup>                  | 11.46    |
| $Q_s$           | Stack Gas Volumetric flow, acfm              | 36,415   |
| $Q_s cfm$       | Stack Gas Volumetric flow, dscfm             | 24,240   |
| $Q_s cmh$       | Stack Gas Volumetric flow, dscmh             | 686      |
| $I$             | Isokinetic Sampling Ratio, %                 | 95.0     |

**Summary of Stack Gas Parameters and Test Results**  
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|                           |                                         |
|---------------------------|-----------------------------------------|
| <b>RUN NUMBER</b>         | <b>S-M29-O-4</b>                        |
| <b>RUN DATE</b>           | <b>8/21/97</b>                          |
| <b>RUN TIME</b>           | <b>0741-1153</b>                        |
| <b>EMISSIONS DATA</b>     |                                         |
| <u>Particulate Matter</u> |                                         |
| g                         | Target Catch, g 0.0133                  |
| gr/dscf                   | Concentration, gr/dscf 0.00122          |
| gr/dscf at 7%             | Concentration, gr/dscf at 7% O2 0.00168 |
| g/dscm                    | Concentration, g/dscm 0.00279           |
| g/dscm at 7%              | Concentration, g/dscm at 7% O2 0.00384  |
| lb/hr                     | Emission Rate, lb/hr 0.253              |
| kg/hr                     | Emission Rate, kg/hr 0.115              |
| <u>Antimony</u>           |                                         |
| µg                        | Target Catch, µg 0.0                    |
| µg/dscm                   | Concentration, µg/dscm 0.0              |
| µg/dscm at 7%             | Concentration, µg/dscm at 7% O2 0.0     |
| g/hr                      | Emission Rate, g/hr 0.0                 |
| <u>Arsenic</u>            |                                         |
| µg                        | Target Catch, µg ND                     |
| µg/dscm                   | Concentration, µg/dscm ND               |
| µg/dscm at 7%             | Concentration, µg/dscm at 7% O2 ND      |
| g/hr                      | Emission Rate, g/hr ND                  |
| <u>Barium</u>             |                                         |
| µg                        | Target Catch, µg 9.83                   |
| µg/dscm                   | Concentration, µg/dscm 2.06             |
| µg/dscm at 7%             | Concentration, µg/dscm at 7% O2 2.84    |
| g/hr                      | Emission Rate, g/hr 0.0849              |
| <u>Beryllium</u>          |                                         |
| µg                        | Target Catch, µg ND                     |
| µg/dscm                   | Concentration, µg/dscm ND               |
| µg/dscm at 7%             | Concentration, µg/dscm at 7% O2 ND      |
| g/hr                      | Emission Rate, g/hr ND                  |
| <u>Cadmium</u>            |                                         |
| µg                        | Target Catch, µg ND                     |
| µg/dscm                   | Concentration, µg/dscm ND               |
| µg/dscm at 7%             | Concentration, µg/dscm at 7% O2 ND      |
| g/hr                      | Emission Rate, g/hr ND                  |

**Summary of Stack Gas Parameters and Test Results**  
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|                            |                                 |          |
|----------------------------|---------------------------------|----------|
| <b>RUN NUMBER</b>          | <b>S-M29-O-4</b>                |          |
| <b>RUN DATE</b>            | <b>8/21/97</b>                  |          |
| <b>RUN TIME</b>            | <b>0741-1153</b>                |          |
| EMISSIONS DATA - Continued |                                 |          |
| <u>Chromium</u>            |                                 |          |
| µg                         | Target Catch, µg                | 0.0420   |
| µg/dscm                    | Concentration, µg/dscm          | 0.00881  |
| µg/dscm at 7%              | Concentration, µg/dscm at 7% O2 | 0.0121   |
| g/hr                       | Emission Rate, g/hr             | 0.000363 |
| <u>Cobalt</u>              |                                 |          |
| µg                         | Target Catch, µg                | ND       |
| µg/dscm                    | Concentration, µg/dscm          | ND       |
| µg/dscm at 7%              | Concentration, µg/dscm at 7% O2 | ND       |
| g/hr                       | Emission Rate, g/hr             | ND       |
| <u>Copper</u>              |                                 |          |
| µg                         | Target Catch, µg                | 1.32     |
| µg/dscm                    | Concentration, µg/dscm          | 0.277    |
| µg/dscm at 7%              | Concentration, µg/dscm at 7% O2 | 0.381    |
| g/hr                       | Emission Rate, g/hr             | 0.0114   |
| <u>Lead</u>                |                                 |          |
| µg                         | Target Catch, µg                | 1.77     |
| µg/dscm                    | Concentration, µg/dscm          | 0.371    |
| µg/dscm at 7%              | Concentration, µg/dscm at 7% O2 | 0.511    |
| g/hr                       | Emission Rate, g/hr             | 0.0153   |
| <u>Manganese</u>           |                                 |          |
| µg                         | Target Catch, µg                | 70.79    |
| µg/dscm                    | Concentration, µg/dscm          | 14.8     |
| µg/dscm at 7%              | Concentration, µg/dscm at 7% O2 | 20.4     |
| g/hr                       | Emission Rate, g/hr             | 0.611    |
| <u>Mercury</u>             |                                 |          |
| µg                         | Target Catch, µg                | 2.09     |
| µg/dscm                    | Concentration, µg/dscm          | 0.438    |
| µg/dscm at 7%              | Concentration, µg/dscm at 7% O2 | 0.603    |
| g/hr                       | Emission Rate, g/hr             | 0.0181   |



**Summary of Stack Gas Parameters and Test Results**  
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|                            |                                       |
|----------------------------|---------------------------------------|
| <b>RUN NUMBER</b>          | <b>S-M29-O-4</b>                      |
| <b>RUN DATE</b>            | <b>8/21/97</b>                        |
| <b>RUN TIME</b>            | <b>0741-1153</b>                      |
| EMISSIONS DATA - Continued |                                       |
| <u>Nickel</u>              |                                       |
| µg                         | Target Catch, µg 0.371                |
| µg/dscm                    | Concentration, µg/dscm 0.0778         |
| µg/dscm at 7%              | Concentration, µg/dscm at 7% O2 0.107 |
| g/hr                       | Emission Rate, g/hr 0.00320           |
| <u>Phosphorus</u>          |                                       |
| µg                         | Target Catch, µg 72.25                |
| µg/dscm                    | Concentration, µg/dscm 15.2           |
| µg/dscm at 7%              | Concentration, µg/dscm at 7% O2 20.9  |
| g/hr                       | Emission Rate, g/hr 0.624             |
| <u>Silver</u>              |                                       |
| µg                         | Target Catch, µg 0.0                  |
| µg/dscm                    | Concentration, µg/dscm 0.0            |
| µg/dscm at 7%              | Concentration, µg/dscm at 7% O2 0.0   |
| g/hr                       | Emission Rate, g/hr 0.0               |
| <u>Selenium</u>            |                                       |
| µg                         | Target Catch, µg 0.0                  |
| µg/dscm                    | Concentration, µg/dscm 0.0            |
| µg/dscm at 7%              | Concentration, µg/dscm at 7% O2 0.0   |
| g/hr                       | Emission Rate, g/hr 0.0               |
| <u>Thallium</u>            |                                       |
| µg                         | Target Catch, µg ND                   |
| µg/dscm                    | Concentration, µg/dscm ND             |
| µg/dscm at 7%              | Concentration, µg/dscm at 7% O2 ND    |
| g/hr                       | Emission Rate, g/hr ND                |
| <u>Zinc</u>                |                                       |
| µg                         | Target Catch, µg 22.9                 |
| µg/dscm                    | Concentration, µg/dscm 4.80           |
| µg/dscm at 7%              | Concentration, µg/dscm at 7% O2 6.61  |
| g/hr                       | Emission Rate, g/hr 0.198             |

Method 29 Analytical Results (ug) and Blank Corrections

ST Wooten  
Outlet

|                | Front H |       | Back H |       | O-M29-1 |        | Blank Adjusted |        | Front H |        | Back H  |        | O-M29-2 A |        | Blank Adjusted |        | Front H |        | Back H  |        | O-M29-3 |        | Blank Adjusted |        | Front H |        | Back H  |         | O-M29-3 |        |
|----------------|---------|-------|--------|-------|---------|--------|----------------|--------|---------|--------|---------|--------|-----------|--------|----------------|--------|---------|--------|---------|--------|---------|--------|----------------|--------|---------|--------|---------|---------|---------|--------|
|                | RB      | Blank | Mfbb   | Mbhb  | Mfbb    | Mbhb   | Mfbb           | Mbhb   | Front H | Back H | Front H | Back H | Front H   | Back H | Front H        | Back H | Front H | Back H | Front H | Back H | Front H | Back H | Front H        | Back H | Front H | Back H | Front H | Back H  | Front H | Back H |
|                | Blank   | Blank | Mfbb   | Mbhb  | Mfbb    | Mbhb   | Mfbb           | Mbhb   | Mfbb    | Mbhb   | Mfbb    | Mbhb   | Mfbb      | Mbhb   | Mfbb           | Mbhb   | Mfbb    | Mbhb   | Mfbb    | Mbhb   | Mfbb    | Mbhb   | Mfbb           | Mbhb   | Mfbb    | Mbhb   | Mfbb    | Mbhb    | Mfbb    | Mbhb   |
| Antimony (Sb)  | 4.18    | <.4   | 4.46   | 0     | 0.28    | 0.000  | 0.28           | 0.000  | 4.205   | 0      | 0.03    | 0.000  | 0.03      | 0.000  | 0.03           | 0.000  | 4.205   | 0      | 0.03    | 0.000  | 0.03    | 0.000  | 0.03           | 0.000  | 3.35    | 0      | (0.83)  | 0.000   | 0.000   | 0.00   |
| Arsenic (As)   | <0.5    | <0.5  | 2.66   | 0     | 2.66    | 0.000  | 0.000          | 0.000  | 0.7525  | 0      | 0.75    | 0.000  | 0.75      | 0.000  | 0.75           | 0.000  | 0.7525  | 0      | 0.75    | 0.000  | 0.75    | 0.000  | 0.75           | 0.000  | 0.768   | 0      | 0.77    | 0.000   | 0.77    | 0.000  |
| Barium (Ba)    | 4.33    | 0.326 | 221    | 2.29  | 216.67  | 1.964  | 218.63         | 1.964  | 50.95   | 0.9145 | 46.62   | 0.589  | 47.21     | 0.589  | 47.21          | 0.589  | 50.95   | 0.9145 | 46.62   | 0.589  | 47.21   | 0.589  | 47.21          | 0.589  | 21.4    | 1.23   | 17.07   | 0.904   | 17.97   | 0.904  |
| Beryllium (Be) | <.1     | <0.1  | 0      | 0     | 0.00    | 0.000  | ND             | 0.000  | 0       | 0      | 0.00    | 0.000  | ND        | 0.000  | ND             | 0.000  | 0       | 0      | 0.00    | 0.000  | ND      | 0.000  | ND             | 0.000  | 0       | 0      | 0.00    | 0.000   | ND      | 1.80   |
| Cadmium (Cd)   | <.1     | <0.1  | 0.218  | 0.653 | 1.27    | 1.048  | 0.87           | 0.653  | 10.035  | 0.431  | 0.71    | 0.209  | 0.91      | 0.209  | 0.91           | 0.209  | 10.035  | 0.431  | 0.71    | 0.209  | 0.91    | 0.209  | 0.91           | 0.209  | 7.85    | 0.733  | (1.48)  | 0.511   | 0.51    |        |
| Chromium (Cr)  | 9.33    | 0.222 | 14.7   | 1.82  | 13.87   | 1.048  | 1.82           | 1.048  | 0       | 0      | 0.00    | 0.000  | ND        | 0.000  | ND             | 0.000  | 0       | 0      | 0.00    | 0.000  | ND      | 0.000  | ND             | 0      | 0       | 0.00   | 0.000   | ND      | 6.87    |        |
| Cobalt (Co)    | <.1     | <0.1  | 1.82   | 0     | 1.82    | 0.000  | 1.82           | 0.000  | 4.4     | 1.985  | 3.34    | 0.985  | 4.33      | 0.985  | 4.33           | 0.985  | 4.4     | 1.985  | 3.34    | 0.985  | 4.33    | 0.985  | 4.33           | 0.985  | 3.22    | 5.71   | 2.16    | 4.710   | 6.87    |        |
| Copper (Cu)    | 1.06    | 1.44  | 17.3   | 2.47  | 16.24   | 1.470  | 17.71          | 1.470  | 5.69    | 2.525  | 5.69    | 2.260  | 7.95      | 2.260  | 7.95           | 2.260  | 5.69    | 2.525  | 5.69    | 2.260  | 7.95    | 2.260  | 7.95           | 2.260  | 3.1     | 106    | 3.10    | 105.735 | 108.84  |        |
| Lead (Pb)      | <.2     | 0.265 | 19.7   | 7.13  | 19.70   | 6.865  | 26.57          | 6.865  | 33.4    | 1.7    | 32.49   | 0.700  | 33.19     | 0.700  | 33.19          | 0.700  | 33.4    | 1.7    | 32.49   | 0.700  | 33.19   | 0.700  | 33.19          | 0.700  | 14.2    | 1.89   | 13.29   | 0.890   | 14.18   |        |
| Manganese (Mn) | 0.911   | 34.7  | 203    | 5.04  | 202.09  | 4.040  | 206.13         | 4.040  | 0       | 2.43   | 0       | 2.43   | 2.43      | 0      | 2.43           | 2.43   | 0       | 2.43   | 0       | 2.43   | 2.43    | 2.43   | 2.43           | 2.43   | 0       | 15.49  |         |         | 15.49   |        |
| Mercury (Hg)   | <0.4    | <1.2  | 0      | 2.19  | 2.19    | 1.224  | 3.80           | 1.224  | 6.12    | 0.8495 | 1.44    | 0.244  | 1.68      | 0.244  | 1.68           | 0.244  | 6.12    | 0.8495 | 1.44    | 0.244  | 1.68    | 0.244  | 1.68           | 0.244  | 4.32    | 3.82   | (0.36)  | 3.214   | 3.21    |        |
| Nickel (Ni)    | 4.68    | 0.606 | 7.26   | 1.83  | 2.58    | 1.224  | 3.80           | 1.224  | 59.95   | 58     | 59.95   | 55.100 | 115.05    | 55.100 | 115.05         | 55.100 | 59.95   | 58     | 59.95   | 55.100 | 115.05  | 55.100 | 115.05         | 55.100 | 25.8    | 82     | 25.80   | 77.900  | 103.70  |        |
| Phosphorus (P) | <.3     | 55.3  | 332    | 69.4  | 332.00  | 65.930 | 397.93         | 65.930 | 4.01    | 0.336  | (0.34)  | 0.336  | 0.34      | 0.336  | 0.34           | 0.336  | 4.01    | 0.336  | (0.34)  | 0.336  | 0.34    | 0.336  | 0.34           | 0.336  | 3.01    | 9.49   | (1.34)  | 9.490   | 9.49    |        |
| Selenium (Se)  | 4.35    | <0.3  | 4.39   | 0.573 | 0.04    | 0.573  | 0.61           | 0.573  | 0.1805  | 0      | (0.09)  | 0.000  | 0.00      | 0.000  | 0.00           | 0.000  | 0.1805  | 0      | (0.09)  | 0.000  | 0.00    | 0.000  | 0.00           | 0.000  | 0.892   | 0      | 0.62    | 0.000   | 0.62    |        |
| Silver (Ag)    | 0.27    | <.1   | 0      | 0     | (0.27)  | 0.000  | ND             | 0.000  | 0.21    | 0      | 0.21    | 0.000  | 0.21      | 0.000  | 0.21           | 0.000  | 0.21    | 0      | 0.21    | 0.000  | 0.21    | 0.000  | 0.21           | 0.000  | 0.23    | 0      | 0.23    | 0.000   | 0.23    |        |
| Thallium (Tl)  | <0.2    | <0.2  | 0      | 0     | 0.00    | 0.000  | ND             | 0.000  | 46.7    | 15.65  | 44.10   | 14.650 | 58.75     | 14.650 | 58.75          | 14.650 | 46.7    | 15.65  | 44.10   | 14.650 | 58.75   | 14.650 | 58.75          | 14.650 | 20.3    | 21.1   | 17.70   | 20.045  | 37.75   |        |
| Zinc (Zn)      | 2.6     | 2.03  | 114    | 31.4  | 111.40  | 29.830 | 141.23         | 29.830 |         |        |         |        |           |        |                |        |         |        |         |        |         |        |                |        |         |        |         |         |         |        |

Front Half Blank to be used:

If Mfbb < A, use Mfbb = Mfbb  
 If Mfbb > A, use Mfbb = A if A is > the lesser of Mfbb or 5% of Mfbb  
 If A is not (is <), use Mfbb = the lesser of Mfbb or 5% of Mfbb

Back Half Blank to be used:

If Mbhb < 1, use Mbhb = Mbhb  
 If Mbhb > 1, use Mbhb = 1 if 1 is > the lesser of Mbhb or 5% of Mbhb  
 If 1 is not (is <), use Mbhb = the lesser of Mbhb or 5% of Mbhb

Total Catch = Mt = (Mfbb - Mbhb) + (Mbhb - Mbhb) Note that if Mfbb or Mbhb is > catch, a 0 is used (no negative catches allowed)

Mercury:

If (Hgfb + Hgbb) <= 0.6, use (Hgfb + Hgbb)  
 If (Hgfb + Hgbb) > 0.6, use (Hgfb + Hgbb) = 0.6 if 0.6 is > the lesser of (Hgfb+Hgbb) or 5% of (Hgfb+Hgbb)  
 If 0.6 is not (is <), use (Hgfb+Hgbb) = the lesser of (Hgfb+Hgbb) or 5% of (Hgfb+Hgbb)

Total Hg Catch = Hgt = (Hgfb - Hgbb) + (Hgbh - Hgbbh)

Method 29 Analytical Results (ug) and Blank Corrections  
Outlet & Inlet

Filter Diameter, in<sup>2</sup> 3

|              | Front H |       | Back H  |       | Front H |       | Back H  |       | Catch Values Used |        | Catch Values Used |         |
|--------------|---------|-------|---------|-------|---------|-------|---------|-------|-------------------|--------|-------------------|---------|
|              | RBblank | Mfbh  | RBblank | Mbhb  | O-M29-4 | Mfbh  | I-M29-1 | Mbhb  | Front H           | Back H | Front H           | Back H  |
| Antimony     | 4.18    | <.4   | 2.73    | 0     | 2.73    | 0     | 0       | 0     | 0                 | 0      | 0                 | 0.00    |
| Arsenic      | <0.5    | <0.5  | 0       | 0     | 0       | 0     | 15.2    | 0     | 15.2              | 0      | 15.2              | 15.20   |
| Barium       | 4.33    | 0.326 | 13.9    | 0.588 | 13.9    | 0.588 | 617     | 0.604 | 617               | 0.604  | 617               | 617.60  |
| Beryllium    | <.1     | <0.1  | 0       | 0     | 0       | 0     | 0       | 0     | 0                 | 0      | 0                 | 0.00    |
| Cadmium      | <.1     | <0.1  | 0       | 0     | 0       | 0     | 6       | 0.686 | 6                 | 0.686  | 6                 | 6.69    |
| Chromium     | 9.33    | 0.222 | 6.44    | 0.264 | 6.44    | 0.264 | 35.9    | 0.878 | 35.9              | 0.878  | 35.9              | 36.78   |
| Cobalt       | <.1     | <0.1  | 0       | 0     | 0       | 0     | 26.5    | 0     | 26.5              | 0      | 26.5              | 26.50   |
| Copper       | 1.06    | 1.44  | 2.14    | 1.24  | 2.14    | 1.24  | 125     | 0.938 | 125               | 0.938  | 125               | 125.94  |
| Lead         | <.2     | 0.265 | 0.666   | 1.37  | 0.666   | 1.37  | 45.1    | 5.54  | 45.1              | 5.54   | 45.1              | 50.64   |
| Manganese    | 0.911   | 34.7  | 20.4    | 54    | 20.4    | 54    | 1160    | 14.2  | 1160              | 14.2   | 1160              | 1174.20 |
| Mercury      | <0.4    | <1.2  | 0       | 2.09  | 0       | 2.09  | 0       | <1.74 | 0                 | 0      | 0                 | 0.00    |
| Nickel       | 4.68    | 0.606 | 2.89    | 0.977 | 2.89    | 0.977 | 16.1    | 1.01  | 16.1              | 1.01   | 16.1              | 17.11   |
| Phosphorus<3 | 55.3    | 55.3  | 14.2    | 61.1  | 14.2    | 61.1  | 3490    | 58.1  | 3490              | 58.1   | 3490              | 3548.10 |
| Selenium     | 4.35    | <0.3  | 2.44    | 0     | 2.44    | 0     | 0       | 0.969 | 0                 | 0.969  | 0                 | 0.97    |
| Silver       | 0.27    | <.1   | 0.208   | 0     | 0.208   | 0     | 0       | 0     | 0                 | 0      | 0                 | 0.00    |
| Thallium     | <0.2    | <0.2  | 0       | 0     | 0       | 0     | 2.9     | 0     | 2.9               | 0      | 2.9               | 2.90    |
| Zinc         | 2.6     | 2.03  | 16.1    | 10.4  | 16.1    | 10.4  | 503     | 21.2  | 503               | 21.2   | 503               | 524.20  |

APPENDIX E  
QA/QC DATA AND CERTIFICATIONS



## TEMPERATURE SENSOR CALIBRATION FORM

Temperature Sensor No. S14-4      Sensor Type K-T/C      Length 6" - Coaxial  
 Ambient Temp. °F 72      Barometric Pressure, "Hg 29.98  
 Reference Temp. Sensor: ASTM 3F

| Date     | Ref. Point No. | Temp. Source | Temp. °F    |             | Temp. Diff. % | Within Limits Y/N | Calibrated By |
|----------|----------------|--------------|-------------|-------------|---------------|-------------------|---------------|
|          |                |              | Ref. Sensor | Test Sensor |               |                   |               |
| 10/21/97 | 1              | Ice water    | (497) 37    | (496) 36    | 0.20          | Y                 | MDM           |
| 10/21/97 | 2              | Amb. air     | (52) 72     | (535) 75    | -0.56         | Y                 | MDM           |
| 10/21/97 | 3              | D. water     | (679) 210   | (669) 209   | 0.15          | Y                 | MDM           |
|          | 1              |              |             |             |               |                   |               |
|          | 2              |              |             |             |               |                   |               |
|          | 3              |              |             |             |               |                   |               |
|          | 1              |              |             |             |               |                   |               |
|          | 2              |              |             |             |               |                   |               |
|          | 3              |              |             |             |               |                   |               |
|          | 1              |              |             |             |               |                   |               |
|          | 2              |              |             |             |               |                   |               |
|          | 3              |              |             |             |               |                   |               |
|          | 1              |              |             |             |               |                   |               |
|          | 2              |              |             |             |               |                   |               |
|          | 3              |              |             |             |               |                   |               |
|          | 1              |              |             |             |               |                   |               |
|          | 2              |              |             |             |               |                   |               |
|          | 3              |              |             |             |               |                   |               |

$$\% \text{ Temp. Diff} = \frac{(\text{Ref. Temp} + 460) - (\text{Test Temp.} + 460)}{(\text{Ref. Temp.} + 460)} \times 100 \leq 1.5 \%$$

**TEMPERATURE SENSOR CALIBRATION FORM**

Temperature Sensor No. RT-11      Sensor Type K T/C      Length 6" (Gossard)  
 Ambient Temp. °F 72      Barometric Pressure, "Hg 29.98  
 Reference Temp. Sensor: ASTM 3F

| Date     | Ref. Point No. | Temp. Source  | Temp. °F    |             | Temp. Diff. % | Within Limits Y/N | Calibrated By |
|----------|----------------|---------------|-------------|-------------|---------------|-------------------|---------------|
|          |                |               | Ref. Sensor | Test Sensor |               |                   |               |
| 10/21/97 | 1              | ice water     | 36          | 35          |               |                   |               |
| 10/21/97 | 2              | amb. air      | 72          | 74          |               |                   |               |
| 10/21/97 | 3              | boiling water | 210         | 210         |               |                   |               |
|          | 1              |               |             |             |               |                   |               |
|          | 2              |               |             |             |               |                   |               |
|          | 3              |               |             |             |               |                   |               |
|          | 1              |               |             |             |               |                   |               |
|          | 2              |               |             |             |               |                   |               |
|          | 3              |               |             |             |               |                   |               |
|          | 1              |               |             |             |               |                   |               |
|          | 2              |               |             |             |               |                   |               |
|          | 3              |               |             |             |               |                   |               |
|          | 1              |               |             |             |               |                   |               |
|          | 2              |               |             |             |               |                   |               |
|          | 3              |               |             |             |               |                   |               |
|          | 1              |               |             |             |               |                   |               |
|          | 2              |               |             |             |               |                   |               |
|          | 3              |               |             |             |               |                   |               |

$$\% \text{ Temp. Diff} = \frac{(\text{Ref. Temp} + 460) - (\text{Test Temp.} + 460)}{(\text{Ref. Temp.} + 460)} \times 100 \leq 1.5 \%$$

## TEMPERATURE SENSOR CALIBRATION FORM

Temperature Sensor No. RT-20      Sensor Type K 7/c      Length 4'  
 Ambient Temp. °F 72°      Barometric Pressure, "Hg 24.98  
 Reference Temp. Sensor: PSM-3F

| Date     | Ref. Point No. | Temp. Source | Temp. °F    |             | Temp. Diff. % | Within Limits Y/N | Calibrated By |
|----------|----------------|--------------|-------------|-------------|---------------|-------------------|---------------|
|          |                |              | Ref. Sensor | Test Sensor |               |                   |               |
| 10/21/97 | 1              | Ice Water    | (492) 32    | (493) 33    | -0.20         | Y                 | mm            |
| 10/21/97 | 2              | CiWi. temp   | (534) 74    | (532) 72    | 0.37          | Y                 | mm            |
| 10/21/97 | 3              | b. water     | (673) 212   | (672) 211   | 0.15          | Y                 | mm            |
|          | 1              |              |             |             |               |                   |               |
|          | 2              |              |             |             |               |                   |               |
|          | 3              |              |             |             |               |                   |               |
|          | 1              |              |             |             |               |                   |               |
|          | 2              |              |             |             |               |                   |               |
|          | 3              |              |             |             |               |                   |               |
|          | 1              |              |             |             |               |                   |               |
|          | 2              |              |             |             |               |                   |               |
|          | 3              |              |             |             |               |                   |               |
|          | 1              |              |             |             |               |                   |               |
|          | 2              |              |             |             |               |                   |               |
|          | 3              |              |             |             |               |                   |               |

$$\% \text{ Temp. Diff} = \frac{(\text{Ref. Temp} + 460) - (\text{Test Temp.} + 460)}{(\text{Ref. Temp.} + 460)} \times 100 \leq 1.5 \%$$



### TEMPERATURE SENSOR CALIBRATION FORM

Temperature Sensor No. RT-3      Sensor Type K-T/C      Length 4'  
 Ambient Temp. °F 70      Barometric Pressure, "Hg 30.04  
 Reference Temp. Sensor: ASTM-3F

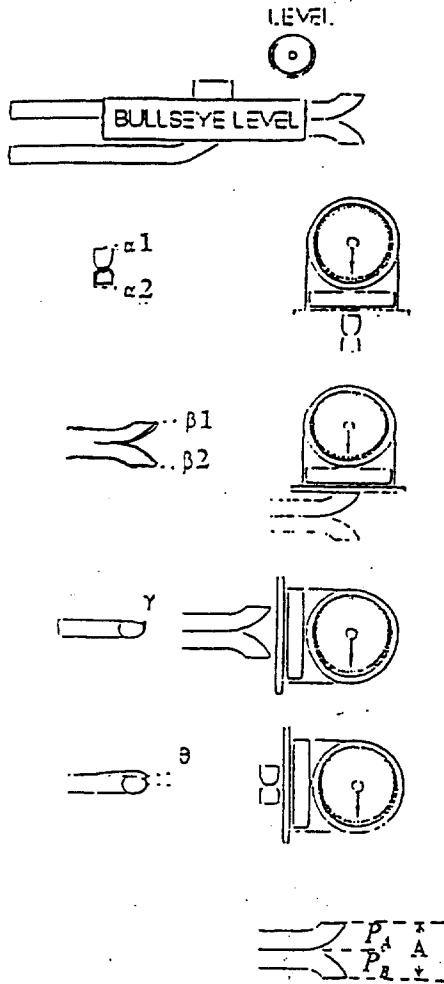
| Date    | Ref. Point No. | Temp. Source | Temp. °F    |             | Temp. Diff. % | Within Limits Y/N | Calibrated By |
|---------|----------------|--------------|-------------|-------------|---------------|-------------------|---------------|
|         |                |              | Ref. Sensor | Test Sensor |               |                   |               |
| 9/18/92 | 1              | ice bath     | 41          | 41          | 0             | Y                 | MMN           |
| 9/18/92 | 2              | w bath       | 72          | 72          | 0             | Y                 | MMN           |
| 9/18/92 | 3              | h. water     | 210         | 212         | -0.30         | Y                 | MMN           |
|         | 1              |              |             |             |               |                   |               |
|         | 2              |              |             |             |               |                   |               |
|         | 3              |              |             |             |               |                   |               |
|         | 1              |              |             |             |               |                   |               |
|         | 2              |              |             |             |               |                   |               |
|         | 3              |              |             |             |               |                   |               |
|         | 1              |              |             |             |               |                   |               |
|         | 2              |              |             |             |               |                   |               |
|         | 3              |              |             |             |               |                   |               |
|         | 1              |              |             |             |               |                   |               |
|         | 2              |              |             |             |               |                   |               |
|         | 3              |              |             |             |               |                   |               |
|         | 1              |              |             |             |               |                   |               |
|         | 2              |              |             |             |               |                   |               |
|         | 3              |              |             |             |               |                   |               |

$$\% \text{ Temp. Diff} = \frac{(\text{Ref. Temp} + 460) - (\text{Test Temp.} + 460)}{(\text{Ref. Temp.} + 460)} \times 100 \leq 1.5 \%$$



Probe or Pitot No. Deeco 5B

Pitot Tube Inspection



|                                               |                   |
|-----------------------------------------------|-------------------|
| Date                                          | 8/16/97           |
| Tube Assembly Level?                          | ✓<br>ics          |
| Ports Damaged?                                | N/A               |
| $-10^\circ < \alpha_1 < +10^\circ$            | 2°                |
| $-10^\circ < \alpha_2 < +10^\circ$            | -1°               |
| $-5^\circ < \beta_1 < +5^\circ$               | 2                 |
| $-5^\circ < \beta_2 < +5^\circ$               | 0                 |
| $\gamma$                                      | -1°               |
| $\theta$                                      | .5°               |
| A                                             | .990              |
| $Z = A \sin \gamma \leq 0.125''$              | -.017             |
| $W = A \sin \theta \leq 0.031''$              | .009              |
| $P_A =$                                       | .49               |
| $P_B =$                                       | .50               |
| Tube Diameter ( $D_T$ ) =                     | .383              |
| $P_A = P_B \pm (0.063)$                       | .49 + .01 = .50   |
| $1.05 \times D_T \leq P \leq 1.50 \times D_T$ | .402 ≤ .50 ≤ .579 |

Thermocouple Calibration

Type of Reference Thermometer Mercury in Glass  
 Barometric Pressure 29.88 inHg

Date 8/16/97  
 Ambient Temperature 93 °F

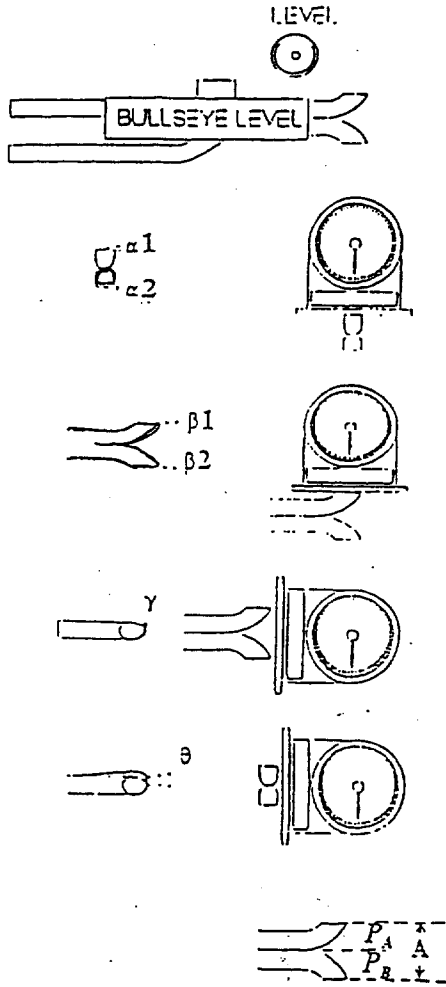
| Source    | Reference Temperature | Thermocouple Temperature | Absolute Temperature Difference <sup>1</sup> |
|-----------|-----------------------|--------------------------|----------------------------------------------|
| Ambient   | 93                    | 99                       | -.011                                        |
| Ice bath  | 36                    | 39                       | -.006                                        |
| Hot Water | 136                   | 136                      | 0                                            |

<sup>1</sup> (Ref. Temp., °F + 460) - (Thermocouple Temp., °F + 460)  
 (Ref. Temp., °F + 460)



Probe or Pitot No. Deeco 5C

Pitot Tube Inspection



|                                               |                           |
|-----------------------------------------------|---------------------------|
| Date                                          | 8/16/97                   |
| Tube Assembly Level?                          | Yes                       |
| Ports Damaged?                                | No                        |
| $-10^\circ < \alpha 1 < +10^\circ$            | $2\frac{1}{2}^\circ$      |
| $-10^\circ < \alpha 2 < +10^\circ$            | $-2\frac{1}{2}^\circ$     |
| $-5^\circ < \beta 1 < +5^\circ$               | $1^\circ$                 |
| $-5^\circ < \beta 2 < +5^\circ$               | $-1^\circ$                |
| $\gamma$                                      | $2\frac{1}{2}^\circ$      |
| $\theta$                                      | $0^\circ$                 |
| A                                             | 1.013                     |
| $Z = A \sin \gamma \leq 0.125''$              | .044                      |
| $W = A \sin \theta \leq 0.031''$              | 0                         |
| $P_A =$                                       | .55                       |
| $P_B =$                                       | .58                       |
| Tube Diameter ( $D_T$ ) =                     | .370                      |
| $P_A = P_B \pm (0.063)$                       | $.55 \pm .02 = .58$       |
| $1.05 \times D_T \leq P \leq 1.50 \times D_T$ | $.385 \leq .55 \leq .555$ |

Thermocouple Calibration

Type of Reference Thermometer Mercury in Glass  
 Barometric Pressure 29.88 inHg

Date 8/16/97  
 Ambient Temperature 102 °F

| Source    | Reference Temperature | Thermocouple Temperature | Absolute Temperature Difference <sup>1</sup> |
|-----------|-----------------------|--------------------------|----------------------------------------------|
| Hot Water | 168                   | 169                      | -.002                                        |
| Ambient   | 102                   | 101                      | .002                                         |
| Ice Water | 38                    | 38                       | 0                                            |

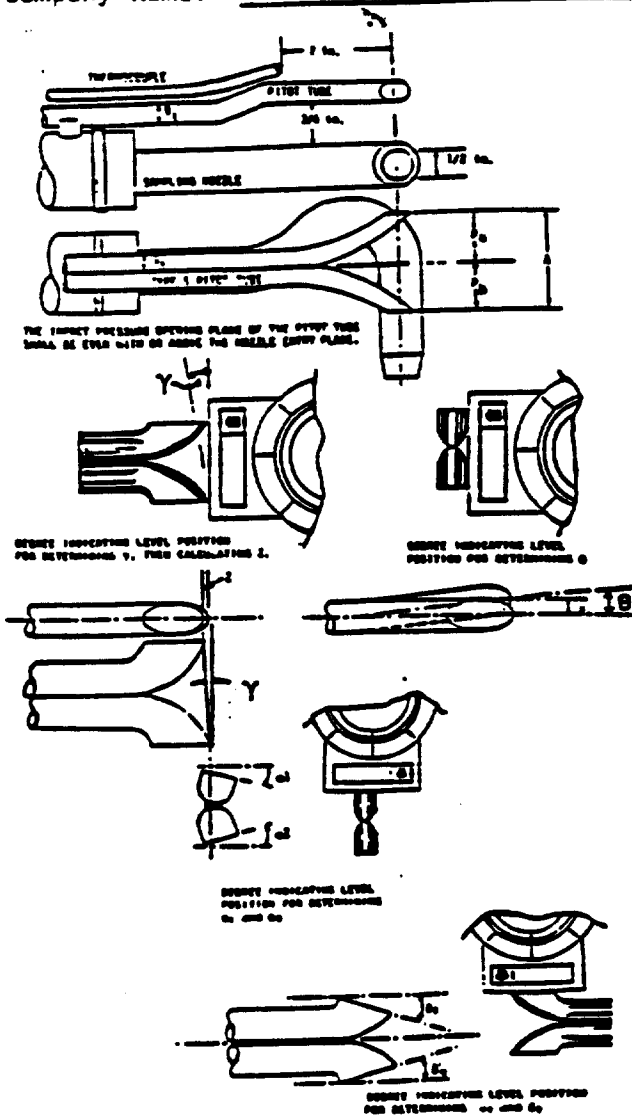
<sup>1</sup> (Ref. Temp., °F + 460) - (Thermocouple Temp., °F + 460)  
 (Ref. Temp. °F - 460)

# EXAMPLE OF C-TYPE PITOT TUBE Inspection Data Sheet

Company Name: PES

Pre-sample  
Date \_\_\_\_\_

Post Sample  
Date 10-13-97



|  |                                    |        |
|--|------------------------------------|--------|
|  | level?                             | YES    |
|  | obstructions?                      | NO     |
|  | damaged?                           | NO     |
|  | $-10^\circ < \alpha_1 < +10^\circ$ | 2°     |
|  | $-10^\circ < \alpha_2 < +10^\circ$ | 1°     |
|  | $-5^\circ < \beta_1 < +5^\circ$    | 0°     |
|  | $-5^\circ < \beta_2 < +5^\circ$    | 1°     |
|  | $\gamma$                           | .5     |
|  | $\theta$                           | 0      |
|  | A                                  | 1.0065 |
|  | $1.05 D_t < P_a < 1.5 D_t$         | YES    |
|  | $1.05 D_t < P_b < 1.5 D_t$         | YES    |
|  | $3/16" \leq D_t \leq 3/8"$         | YES    |
|  | $A \tan \gamma < 0.125"$           | .00872 |
|  | $A \tan \theta < 0.03125"$         | .0     |
|  | $P_a = P_b \pm 0.063"$             | YES    |

Comments: \_\_\_\_\_

Pitot tube/probe number RP-20 meets or exceeds all specifications criteria and/or applicable design features\* and is hereby assigned a pitot tube calibration factor of 0.84.

Signature Michael J. [Signature]  
Date 10-13-97

\*See 40 CFR 60. Vol. 32, No. 160, Method 2. Verify the minimum 2 inch setback of the thermocouple and the minimum 3/4 inch separation between the pitot tube and the nozzle as shown at the top of this page.

Date 05-Aug-97 Meter Box Number M5-4  
 Calibrated By B Palm Initials *B Palm*  
 Number of Runs 5

REFERENCE TEST METER

| Meter Y   | 1.016   |         |         |         |         |       |
|-----------|---------|---------|---------|---------|---------|-------|
|           | RUN 1   | RUN 2   | RUN 3   | RUN 4   | RUN 5   | RUN 6 |
| Vw, init  | 907.127 | 912.875 | 918.894 | 924.597 | 930.307 | 0     |
| Vw, fin   | 912.513 | 918.262 | 924.06  | 929.999 | 936.958 | 0     |
| Vw, total | 5.386   | 5.387   | 5.366   | 5.402   | 6.651   | 0     |
| Pb        | 29.80   | 29.80   | 29.80   | 29.80   | 29.80   | 29.80 |
| tw        | 84      | 84      | 84      | 84      | 85      | 0     |
| Tw+460    | 544     | 544     | 544     | 544     | 545     | 460   |

DRY GAS METER

| Previous Y | 1.024   |         |         |         |         |      |
|------------|---------|---------|---------|---------|---------|------|
| Vm, init   | 653.019 | 658.758 | 664.577 | 670.486 | 676.205 | 0    |
| Vm, fin    | 658.402 | 664.147 | 669.948 | 675.901 | 682.864 | 0    |
| Vm, total  | 5.383   | 5.389   | 5.371   | 5.415   | 6.659   | 0    |
| Tdil       | 85      | 88      | 89      | 92      | 93      | 0    |
| TdH        | 89      | 93      | 97      | 100     | 104     | 0    |
| TdOI       | 82      | 84      | 86      | 88      | 88      | 0    |
| TdOF       | 84      | 86      | 87      | 88      | 89      | 0    |
| Td,avg     | 85      | 87.75   | 89.75   | 92      | 93.5    | 0    |
| Td+460     | 545     | 547.75  | 549.75  | 552     | 553.5   | 460  |
| Time, min  | 13      | 9       | 8       | 7       | 7       | 0    |
| Time, sec  | 30      | 30      | 0       | 0       | 0       | 0    |
| Time Total | 13.50   | 9.50    | 8.00    | 7.00    | 7.00    | 0.00 |
| dH         | 0.50    | 1.00    | 1.50    | 2.00    | 3.00    | 4.00 |

CALIBRATION RESULTS

|                          |       |       |       |       |       |       |
|--------------------------|-------|-------|-------|-------|-------|-------|
| Y                        | 1.017 | 1.020 | 1.022 | 1.023 | 1.023 | 0.000 |
| dH@                      | 1.764 | 1.740 | 1.861 | 1.869 | 1.854 | 0.000 |
| Y tolerance from avg *   | 0.00  | 0.00  | -0.00 | -0.00 | -0.00 | 1.02  |
| dH@ tol. from avg **     | 0.05  | 0.08  | -0.04 | -0.05 | -0.04 | 1.82  |
| AVERAGE Y                | 1.021 |       |       |       |       |       |
| AVERAGE dH@              | 1.818 |       |       |       |       |       |
| Y error (vs prior Y) *** | -0.3% |       |       |       |       |       |

\* must be no greater than +/- 0.02  
 \*\* must be no greater than +/- 0.20  
 \*\*\* must be no greater than +/- 5%

Date 31-Oct-97  
 Calibrated By Richard  
 Number of Runs 3

Meter Box Number M5-4  
 Initials *RWD*

----- REFERENCE TEST METER -----

| Meter Y   | 1.016   |         |         |       |       |
|-----------|---------|---------|---------|-------|-------|
|           | RUN 1   | RUN 2   | RUN 3   | RUN 4 | RUN 5 |
| Vw, init  | 643.779 | 652.614 | 662.945 | 0     | 0     |
| Vw, fin   | 652.1   | 662.322 | 670.381 | 0     | 0     |
| Vw, total | 8.321   | 9.708   | 7.436   | 0     | 0     |
| Pb        | 29.87   | 29.87   | 29.87   | 29.87 | 29.87 |
| tw        | 61      | 62      | 62      | 0     | 0     |
| Tw+460    | 521     | 522     | 522     | 460   | 460   |

----- DRY GAS METER -----

| Previous Y | 1.021   |         |         |      |      |
|------------|---------|---------|---------|------|------|
| Vm, init   | 790.367 | 799.004 | 809.171 | 0    | 0    |
| Vm, fin    | 798.501 | 808.556 | 816.506 | 0    | 0    |
| Vm, total  | 8.134   | 9.552   | 7.335   | 0    | 0    |
| Tdli       | 63      | 70      | 75      | 0    | 0    |
| Tdif       | 76      | 84      | 85      | 0    | 0    |
| Tdol       | 61      | 64      | 67      | 0    | 0    |
| Tdof       | 64      | 67      | 69      | 0    | 0    |
| Td,avg     | 66      | 71.25   | 74      | 0    | 0    |
| Td+460     | 526     | 531.25  | 534     | 460  | 460  |
| Time, min  | 12      | 12      | 8       | 0    | 0    |
| Time, sec  | 20      | 7       | 31      | 0    | 0    |
| Time Total | 12.33   | 12.12   | 8.52    | 0.00 | 0.00 |
| dH         | 1.50    | 2.00    | 2.50    | 2.00 | 3.00 |

----- CALIBRATION RESULTS -----

|                          |       |       |       |       |       |
|--------------------------|-------|-------|-------|-------|-------|
| Y                        | 1.045 | 1.046 | 1.047 | 0.000 | 0.000 |
| dH@                      | 1.760 | 1.861 | 1.740 | 0.000 | 0.000 |
| Y tolerance from avg *   | 0.00  | 0.00  | -0.00 | 1.05  | 1.05  |
| dH@ tol. from avg **     | -0.04 | 0.06  | -0.02 | 1.72  | 1.72  |
| AVERAGE Y                | 1.046 |       |       |       |       |
| AVERAGE dH@              | 1.720 |       |       |       |       |
| Y error (vs prior Y) *** | 2.5%  |       |       |       |       |

\* must be no greater than +/- 0.02  
 \*\* must be no greater than +/- 0.20  
 \*\*\* must be no greater than +/- 5%

Orifice:  
 front leak check Y  
 back leak check Y

Date 05-Aug-97 Meter Box Number M5-9  
 Calibrated By B Palm Initials BP  
 Number of Runs 5

REFERENCE TEST METER

| Meter Y   | 1.016   |         |         |         |         |       |
|-----------|---------|---------|---------|---------|---------|-------|
|           | RUN 1   | RUN 2   | RUN 3   | RUN 4   | RUN 5   | RUN 6 |
| Vw, init  | 873.304 | 878.537 | 883.95  | 891.057 | 899.221 | 0     |
| Vw, fin   | 878.349 | 883.6   | 890.707 | 897.317 | 905.513 | 0     |
| Vw, total | 5.045   | 5.063   | 6.757   | 6.26    | 6.292   | 0     |
| Pb        | 29.80   | 29.80   | 29.80   | 29.80   | 29.80   | 29.80 |
| tw        | 79.5    | 80.5    | 81      | 81.5    | 82      | 0     |
| Tw+460    | 539.5   | 540.5   | 541     | 541.5   | 542     | 460   |

DRY GAS METER

| Previous Y | 0.996   |         |         |         |         |      |
|------------|---------|---------|---------|---------|---------|------|
| Vm, init   | 717.968 | 723.215 | 728.655 | 735.791 | 743.976 | 0    |
| Vm, fin    | 723.025 | 728.297 | 735.436 | 742.073 | 750.282 | 0    |
| Vm, total  | 5.057   | 5.082   | 6.781   | 6.282   | 6.306   | 0    |
| Tdil       | 79      | 82      | 85      | 87      | 88      | 0    |
| Tdif       | 84      | 87      | 89      | 91      | 92      | 0    |
| Tdoi       | 78      | 81      | 83      | 84      | 85      | 0    |
| Tdof       | 80      | 82      | 84      | 85      | 86      | 0    |
| Td,avg     | 80.25   | 83      | 85.25   | 86.75   | 87.75   | 0    |
| Td+460     | 540.25  | 543     | 545.25  | 546.75  | 547.75  | 460  |
| Time, min  | 12      | 9       | 10      | 8       | 6       | 0    |
| Time, sec  | 30      | 0       | 0       | 0       | 30      | 0    |
| Time Total | 12.50   | 9.00    | 10.00   | 8.00    | 6.50    | 0.00 |
| dH         | 0.50    | 1.00    | 1.50    | 2.00    | 3.00    | 4.00 |

CALIBRATION RESULTS

|                          |       |       |       |       |       |       |
|--------------------------|-------|-------|-------|-------|-------|-------|
| Y                        | 1.014 | 1.014 | 1.017 | 1.017 | 1.017 | 0.000 |
| dH@                      | 1.708 | 1.757 | 1.823 | 1.813 | 1.777 | 0.000 |
| Y tolerance from avg *   | 0.00  | 0.00  | -0.00 | -0.00 | -0.00 | 0.00  |
| dH@ tol. from avg **     | 0.07  | 0.02  | -0.05 | -0.04 | -0.00 | 0.00  |
| AVERAGE Y                | 1.016 |       |       |       |       |       |
| AVERAGE dH@              | 1.776 |       |       |       |       |       |
| Y error (vs prior Y) *** | 2.0%  |       |       |       |       |       |

\* must be no greater than +/- 0.02  
 \*\* must be no greater than +/- 0.20  
 \*\*\* must be no greater than +/- 5%

Office:  
 front leak check X  
 back leak check X



Date  
Calibrated By  
Number of Runs

03-Sep-07  
M MILBOURNE  
3

Meter Box Number  
Initials  
MS-0  
HJM

REFERENCE TEST METER

| Meter Y   | 1.016   |         |         |       |       |
|-----------|---------|---------|---------|-------|-------|
|           | RUN 1   | RUN 2   | RUN 3   | RUN 4 | RUN 5 |
| Vw, init  | 368.4   | 373.864 | 379.247 | 0     | 0     |
| Vw, fin   | 373.864 | 379.247 | 384.348 | 0     | 0     |
| Vw, total | 5.464   | 5.383   | 5.099   | 0     | 0     |
| Pb        | 29.77   | 29.77   | 29.77   | 29.77 | 29.77 |
| tw        | 84      | 83.5    | 83      | 0     | 0     |
| Tw+460    | 544     | 543.5   | 543     | 460   | 460   |

DRY GAS METER

| Previous Y | 1.016   |         |        |      |      |
|------------|---------|---------|--------|------|------|
| Vm, init   | 335.123 | 340.601 | 346    | 0    | 0    |
| Vm, fin    | 340.601 | 346     | 351.11 | 0    | 0    |
| Vm, total  | 5.478   | 5.399   | 5.11   | 0    | 0    |
| Tdil       | 86      | 86      | 85     | 0    | 0    |
| Tdif       | 86      | 85      | 85     | 0    | 0    |
| Tdoi       | 86      | 86      | 85     | 0    | 0    |
| Tdof       | 86      | 85      | 85     | 0    | 0    |
| Td,avg     | 86      | 85.5    | 85     | 0    | 0    |
| Td+460     | 546     | 545.5   | 545    | 460  | 460  |
| Time, min  | 15      | 14      | 14     | 0    | 0    |
| Time, sec  | 0       | 48      | 0      | 0    | 0    |
| Time Total | 15.00   | 14.80   | 14.00  | 0.00 | 0.00 |
| dH         | 0.40    | 0.40    | 0.40   | 2.00 | 3.00 |

CALIBRATION RESULTS

|                        |       |       |       |       |       |
|------------------------|-------|-------|-------|-------|-------|
| Y                      | 1.016 | 1.016 | 1.017 | 0.000 | 0.000 |
| dH@                    | 1.685 | 1.689 | 1.683 | 0.000 | 0.000 |
| Y tolerance from avg * | 0.00  | 0.00  | -0.00 | 1.02  | 1.02  |
| dH@ tol. from avg **   | 0.00  | -0.00 | 0.00  | 1.69  | 1.69  |

AVERAGE Y 1.016  
AVERAGE dH@ 1.686

Y error (vs prior Y) \*\*\* 0.0%

\* must be no greater than +/- 0.02

\*\* must be no greater than +/- 0.20

\*\*\* must be no greater than +/- 5%

Orifice:

front leak check Y  
back leak check Y



DRY GAS METER AND ORIFICE CALIBRATION

-----

CONTROL BOX NO MB-10                      BAROMETRIC PRESS.    29.50    IN. HG.

DATE:                      12MAR97                      PERFORMED BY :    R. GEPHART

|                  | RUN 1   | RUN 2   | RUN 3   | RUN 4   | RUN 5   | RUN 6   |
|------------------|---------|---------|---------|---------|---------|---------|
| Hd ("H2O)        | 0.50    | 0.75    | 1.00    | 1.50    | 2.00    | 4.00    |
| INITIAL WTM      | 744.467 | 758.780 | 770.733 | 783.592 | 795.766 | 809.495 |
| FINAL WTM        | 757.734 | 770.224 | 782.364 | 795.014 | 807.315 | 822.785 |
| INITIAL DGM      | 653.193 | 668.257 | 680.852 | 694.428 | 707.301 | 721.813 |
| FINAL DGM        | 667.139 | 680.310 | 693.138 | 706.511 | 719.509 | 735.856 |
| TEMP. WTM (F)    | 73.0    | 74.0    | 74.0    | 74.0    | 74.0    | 74.0    |
| TEMP. DGM (F)    | 81.0    | 84.0    | 86.0    | 87.0    | 88.0    | 89.0    |
| TEST TIME (MIN.) | 32.4    | 23.1    | 20.5    | 16.5    | 14.5    | 12.0    |

\*\*\*\*\*

|               |        |        |        |        |        |        |
|---------------|--------|--------|--------|--------|--------|--------|
| NET VOLUME WT | 13.267 | 11.444 | 11.631 | 11.422 | 11.549 | 13.290 |
| NET VOLUME DG | 13.946 | 12.053 | 12.286 | 12.083 | 12.208 | 14.043 |
| Y             | 0.964  | 0.965  | 0.966  | 0.965  | 0.966  | 0.963  |
| H@            | 1.683  | 1.721  | 1.743  | 1.754  | 1.763  | 1.820  |

\*\*\*\*\*

AVERAGE Y =                      0.965

ACCEPTABLE Y RANGE =                      0.945    TO                      0.985

AVERAGE H@ =                      1.747

ACCEPTABLE dH@ RANGE =                      1.547    TO                      1.947

$$Y = (V_w \times P_b \times (T_d + 460)) / (V_d (P_b + (dH_d / 13.6)) \times (T_w + 460))$$

$$H@ = 0.0317 \times H_d / (P_b (T_d + 460)) \times ((T_w + 460) \times \text{time}) / (V_w)^2$$



Central Park West  
 5001 South Miami Boulevard, P.O. Box 12077  
 Research Triangle Park, North Carolina 27709-2077  
 (919) 941-0333 FAX: (919) 941-0234

**Posttest Dry Gas Meter Calibration Form (English Units)**

Pretest Calibration Factor 0.965  
 System Vacuum Setting, (in Hg) 6  
 Reference Meter Correction Factor 1.004

Date: 8/22/97 P<sub>bar</sub>, in Hg 29.90 Calibrator: GG Meter Box No. MB-10

$\Delta H = 1.9$

| Trial | Duration (min) | Dry Gas Meter              |                          |                        |                     |                   |                 |                      |                    |                  |
|-------|----------------|----------------------------|--------------------------|------------------------|---------------------|-------------------|-----------------|----------------------|--------------------|------------------|
|       |                | Initial (ft <sup>3</sup> ) | Final (ft <sup>3</sup> ) | Net (ft <sup>3</sup> ) | Initial, Inlet (°F) | Final, Inlet (°F) | Avg. Inlet (°F) | Initial, Outlet (°F) | Final, Outlet (°F) | Avg. Outlet (°F) |
| 1     | 15             | 168.592                    | 180.101                  | 11.509                 | 90                  | 90                | 90              | 90                   | 90                 | 90               |
| 2     | 15             | 181.101                    | 191.728                  | 10.627                 | 90                  | 90                | 90              | 90                   | 90                 | 90               |
| 3     | 15             | 191.728                    | 203.498                  | 11.77                  | 90                  | 90                | 90              | 90                   | 90                 | 90               |

| Trial | Reference Meter            |                          |                        | Meter Temperature |            |           | Reference Orifice Press $\Delta H_{\text{or}}$ (in. H <sub>2</sub> O) |
|-------|----------------------------|--------------------------|------------------------|-------------------|------------|-----------|-----------------------------------------------------------------------|
|       | Gas Volume                 |                          | Net (ft <sup>3</sup> ) | Meter Temperature |            | Avg. (°F) |                                                                       |
|       | Initial (ft <sup>3</sup> ) | Final (ft <sup>3</sup> ) |                        | Initial (°F)      | Final (°F) |           |                                                                       |
| 1     | 347.479                    | 358.341                  | 10.862                 | 80                | 80         | 80        | 2.04                                                                  |
| 2     | 358.341                    | 369.176                  | 10.835                 | 80                | 80         | 80        | 2.05                                                                  |
| 3     | 369.176                    | 380.031                  | 10.855                 | 80                | 80         | 80        | 2.05                                                                  |





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### Initial Dry Gas Meter Calibration Form (English Units)

Date: 8/19/97 P<sub>bar</sub> in Hg 30.20 Calibrator: T. McDonald Meter Box No. RMB-11

$\Delta H = 0.5$  Dry Gas Meter

| Trial | Trial Duration (min) | Gas Volume                 |                          |                        | Meter Temperatures  |                   |                 |                      |                   |                  |
|-------|----------------------|----------------------------|--------------------------|------------------------|---------------------|-------------------|-----------------|----------------------|-------------------|------------------|
|       |                      | Initial (ft <sup>3</sup> ) | Final (ft <sup>3</sup> ) | Net (ft <sup>3</sup> ) | Initial, Inlet (°F) | Final, Inlet (°F) | Avg. Inlet (°F) | Initial, Outlet (°F) | inal, Outlet (°F) | Avg. Outlet (°F) |
| 1     | 15                   | 231.840                    | 237.828                  | 5.988                  | 81                  | 81                | 81              | 78                   | 78                | 78               |
| 2     | 15                   | 237.828                    | 243.880                  | 6.052                  | 82                  | 79                | 80.5            | 80                   | 78                | 79               |
| 3     | 15                   |                            |                          | 0.000                  |                     |                   | #DIV/0!         |                      |                   | #DIV/0!          |

| Trial | Reference Meter            |                          |                        |                   |            |           | Meter Box Correction Factor $\gamma$ | Reference Orifice Press $\Delta H_{\oplus}$ (in. H <sub>2</sub> O) |
|-------|----------------------------|--------------------------|------------------------|-------------------|------------|-----------|--------------------------------------|--------------------------------------------------------------------|
|       | Gas Volume                 |                          |                        | Meter Temperature |            |           |                                      |                                                                    |
|       | Initial (ft <sup>3</sup> ) | Final (ft <sup>3</sup> ) | Net (ft <sup>3</sup> ) | Initial (°F)      | Final (°F) | Avg. (°F) |                                      |                                                                    |
| 1     | 257.881                    | 263.67                   | 5.789                  | 78                | 79         | 78.5      | 0.967                                | 1.91                                                               |
| 2     | 263.670                    | 269.541                  | 5.871                  | 76                | 76         | 76        | 0.976                                | 1.84                                                               |
| 3     |                            |                          | 0.000                  |                   |            | #DIV/0!   | #DIV/0!                              | #DIV/0!                                                            |

$\Delta H = 1.8$  Dry Gas Meter

| Trial | Trial Duration (min) | Gas Volume                 |                          |                        | Meter Temperatures  |                   |                 |                      |                   |                  |
|-------|----------------------|----------------------------|--------------------------|------------------------|---------------------|-------------------|-----------------|----------------------|-------------------|------------------|
|       |                      | Initial (ft <sup>3</sup> ) | Final (ft <sup>3</sup> ) | Net (ft <sup>3</sup> ) | Initial, Inlet (°F) | Final, Inlet (°F) | Avg. Inlet (°F) | Initial, Outlet (°F) | inal, Outlet (°F) | Avg. Outlet (°F) |
| 1     | 10                   | 244.055                    | 251.377                  | 7.322                  | 85                  | 80                | 82.5            | 79                   | 79                | 79               |
| 2     | 10                   | 251.377                    | 258.770                  | 7.393                  | 84                  | 84                | 84              | 79                   | 79                | 79               |
| 3     |                      |                            |                          | 0.000                  |                     |                   | #DIV/0!         |                      |                   | #DIV/0!          |

| Trial | Reference Meter            |                          |                        |                   |            |           | Meter Box Correction Factor $\gamma$ | Reference Orifice Press $\Delta H_{\oplus}$ (in. H <sub>2</sub> O) |
|-------|----------------------------|--------------------------|------------------------|-------------------|------------|-----------|--------------------------------------|--------------------------------------------------------------------|
|       | Gas Volume                 |                          |                        | Meter Temperature |            |           |                                      |                                                                    |
|       | Initial (ft <sup>3</sup> ) | Final (ft <sup>3</sup> ) | Net (ft <sup>3</sup> ) | Initial (°F)      | Final (°F) | Avg. (°F) |                                      |                                                                    |
| 1     | 269.71                     | 276.902                  | 7.192                  | 76                | 76         | 76        | 0.987                                | 1.96                                                               |
| 2     | 276.902                    | 284.146                  | 7.244                  | 76                | 76         | 76        | 0.986                                | 1.93                                                               |
| 3     |                            |                          | 0.000                  |                   |            | #DIV/0!   | #DIV/0!                              | #DIV/0!                                                            |

$\Delta H = 3.0$  Dry Gas Meter

| Trial | Trial Duration (min) | Gas Volume                 |                          |                        | Meter Temperatures  |                   |                 |                      |                   |                  |
|-------|----------------------|----------------------------|--------------------------|------------------------|---------------------|-------------------|-----------------|----------------------|-------------------|------------------|
|       |                      | Initial (ft <sup>3</sup> ) | Final (ft <sup>3</sup> ) | Net (ft <sup>3</sup> ) | Initial, Inlet (°F) | Final, Inlet (°F) | Avg. Inlet (°F) | Initial, Outlet (°F) | inal, Outlet (°F) | Avg. Outlet (°F) |
| 1     | 10                   | 258.770                    | 268.038                  | 9.268                  | 88                  | 83                | 85.5            | 80                   | 79                | 79.5             |
| 2     | 10                   | 268.038                    | 277.350                  | 9.312                  | 90                  | 86                | 88              | 81                   | 80                | 80.5             |
| 3     |                      |                            |                          | 0.000                  |                     |                   | #DIV/0!         |                      |                   | #DIV/0!          |





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**Posttest Dry Gas Meter Calibration Form (English Units)**

Meter Box No. MB-11  
 Dry Gas Meter No. 2.5  
 Orifice Manometer Setting, dH (in w.c.) 2.5  
 System Vacuum Setting, (in Hg) 2.5

Date: 10/13/97  
 Calibrated by: MAD  
 Barometric Pressure, in. Hg 29.83  
 Pretest Calibration Factor 0.987

| Trial | Duration (min) | Gas Volume                 |                          |                        | Meter Temperatures  |                   |                 |                      |                    |                  |
|-------|----------------|----------------------------|--------------------------|------------------------|---------------------|-------------------|-----------------|----------------------|--------------------|------------------|
|       |                | Initial (ft <sup>3</sup> ) | Final (ft <sup>3</sup> ) | Net (ft <sup>3</sup> ) | Initial, Inlet (°F) | Final, Inlet (°F) | Avg. Inlet (°F) | Initial, Outlet (°F) | Final, Outlet (°F) | Avg. Outlet (°F) |
| 1     | 6.5            | 56.145                     | 61.57                    | 5.425                  | 75                  | 78                | 76.5            | 74                   | 79                 | 75               |
| 2     | 7.5            | 61.57                      | 67.712                   | 6.142                  | 78                  | 78                | 78              | 76                   | 78                 | 77               |
| 3     | 6              | 67.712                     | 72.705                   | 4.993                  | 83                  | 87                | 85              | 77                   | 75                 | 76               |

| Trial | Reference Meter            |                          |                        |                   |            |           | Meter Box Correction Factor $\gamma$ | Reference Orifice Press Delta-H@ (in. H <sub>2</sub> O) |
|-------|----------------------------|--------------------------|------------------------|-------------------|------------|-----------|--------------------------------------|---------------------------------------------------------|
|       | Gas Volume                 |                          |                        | Meter Temperature |            |           |                                      |                                                         |
|       | Initial (ft <sup>3</sup> ) | Final (ft <sup>3</sup> ) | Net (ft <sup>3</sup> ) | Initial (°F)      | Final (°F) | Avg. (°F) |                                      |                                                         |
| 1     | 45.604                     | 51.088                   | 5.484                  | 78                | 79         | 78.5      | 1.007                                | 2.01                                                    |
| 2     | 51.088                     | 57.3                     | 6.212                  | 79                | 79         | 79        | 1.010                                | 2.09                                                    |
| 3     | 57.3                       | 62.309                   | 5.009                  | 79                | 80         | 79.5      | 1.007                                | 2.05                                                    |

AVERAGE: 1.0080 2.049  
 % Change: 2.13%



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**Posttest Dry Gas Meter Calibration Form (English Units)**

Reference Meter Calibration Factor 1.004  
 System Vacuum Setting, (in Hg) 7  
 Pretest Calibration Factor 0.987

Date: 8/22/97, P<sub>bar</sub>, in Hg 29.90 Calibrator: GG Meter Box No. RMB-11

$\Delta H = 1.9$  Dry Gas Meter

| Trial | Duration (min) | Initial            |                    |                    | Final              |                    |                    | Net (ft <sup>3</sup> ) | Initial, Inlet     |      |      | Final, Inlet |      |      | Initial, Outlet |      |      | Final, Outlet |      |    | Avg. Outlet (°F) |
|-------|----------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|------------------------|--------------------|------|------|--------------|------|------|-----------------|------|------|---------------|------|----|------------------|
|       |                | (ft <sup>3</sup> ) | (ft <sup>3</sup> ) | (ft <sup>3</sup> ) | (ft <sup>3</sup> ) | (ft <sup>3</sup> ) | (ft <sup>3</sup> ) |                        | (ft <sup>3</sup> ) | (°F) | (°F) | (°F)         | (°F) | (°F) | (°F)            | (°F) | (°F) | (°F)          | (°F) |    |                  |
| 1     | 15             | 993.836            | 1005.384           | 11.548             | 92                 | 92                 | 92                 | 92                     | 92                 | 92   | 92   | 92           | 92   | 92   | 92              | 92   | 92   | 92            | 92   | 92 |                  |
| 2     | 15             | 1005.384           | 1016.948           | 11.564             | 92                 | 92                 | 92                 | 92                     | 92                 | 92   | 92   | 92           | 92   | 92   | 92              | 92   | 92   | 92            | 92   | 92 |                  |
| 3     | 15             | 1016.948           | 1028.471           | 11.523             | 94                 | 94                 | 94                 | 94                     | 94                 | 94   | 94   | 94           | 94   | 94   | 94              | 94   | 94   | 94            | 94   | 94 |                  |

| Trial | Reference Meter            |                          |                        |                   |            |           | Meter Temperature                    |                                                    |  | Reference Orifice Press $\Delta H_{\phi}$ (in. H <sub>2</sub> O) |
|-------|----------------------------|--------------------------|------------------------|-------------------|------------|-----------|--------------------------------------|----------------------------------------------------|--|------------------------------------------------------------------|
|       | Gas Volume                 |                          |                        | Meter Temperature |            |           | Meter Box Correction Factor $\gamma$ | Reference $\Delta H_{\phi}$ (in. H <sub>2</sub> O) |  |                                                                  |
|       | Initial (ft <sup>3</sup> ) | Final (ft <sup>3</sup> ) | Net (ft <sup>3</sup> ) | Initial (°F)      | Final (°F) | Avg. (°F) |                                      |                                                    |  |                                                                  |
| 1     | 409.91                     | 420.904                  | 10.994                 | 80                | 80         | 80        | 0.973                                | 1.99                                               |  |                                                                  |
| 2     | 420.904                    | 431.874                  | 10.97                  | 80                | 80         | 80        | 0.969                                | 2.00                                               |  |                                                                  |
| 3     | 431.874                    | 442.814                  | 10.94                  | 80                | 80         | 80        | 0.973                                | 2.00                                               |  |                                                                  |



# VISIBLE EMISSIONS EVALUATOR

*This is to certify that*

*David Goshaw*

*met the specifications of Federal Reference Method 9 and qualified as a visible emissions evaluator. Maximum deviation on white and black smoke did not exceed 7.5% opacity and no single error exceeding 1.5% opacity was incurred during the certification test conducted by Eastern Technical Associates of Raleigh, North Carolina. This certificate is valid for six months from date of issue.*

*Thermon Davis*  
President

*Will Savage, Jr.*  
Vice President

*David B. Savage, Jr.*  
Program Manager

257158

Certificate Number

Raleigh, North Carolina

Location

March 12, 1997

Date of Issue

**APPENDIX F**  
**FIELD TESTING PARTICIPANTS**





## FIELD TESTING PARTICIPANTS

| Name             | Affiliation                          | Responsibility               |
|------------------|--------------------------------------|------------------------------|
| Michael Toney    | USEPA, Emission Measurement Center   | Work Assignment Manager      |
| Mike Maret       | Pacific Environmental Services, Inc. | Project Manager              |
| Troy Abernathy   | Pacific Environmental Services, Inc. | Sample Recovery              |
| Gary Gay         | Pacific Environmental Services, Inc. | Site Leader/Console Operator |
| Marc Hamilton    | DEECO                                | Site Leader/Console Operator |
| Arthur Daughtery | DEECO <sup>a</sup>                   | Console Operator             |
| Allen Bass       | DEECO <sup>a</sup>                   | Console Operator             |
| Barry Rayfield   | DEECO <sup>a</sup>                   | Sample Recovery              |
| David Goshaw     | DEECO                                | Visible Emissions Observer   |
| Tom McDonald     | Atlantic Technical Services, Inc.    | Console Operator             |
| Mike Dickerson   | Atlantic Technical Services, Inc.    | Console Operator             |

<sup>a</sup> Subcontractor to Pacific Environmental Services, Inc.



## TECHNICAL REPORT DATA

Please read instructions on the reverse before completing

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                           |                                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|------------------------------------------------|
| 1. REPORT NO.<br>EPA-454/R- [REDACTED] 00-021b                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 2.                                                        | 3. RECIPIENT'S ACCESSION NO.                   |
| 4. TITLE AND SUBTITLE<br>Final Report - Volume II of II, Emissions Test at an Asphalt Concrete Production Plant:<br>Asphalt Plant "A" - Clayton, North Carolina                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                           | 5. REPORT DATE<br>[REDACTED] April 2000        |
| 7. AUTHOR(S)<br>Michael D. Maret<br>Franklin Meadows                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                           | 6. PERFORMING ORGANIZATION CODE                |
| 9. PERFORMING ORGANIZATION NAME AND ADDRESS<br>Pacific Environmental Services, Inc.<br>Post Office Box 12077<br>Research Triangle Park, North Carolina 27709-2077                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                           | 8. PERFORMING ORGANIZATION REPORT NO.          |
| 12. SPONSORING AGENCY NAME AND ADDRESS<br>U.S. Environmental Protection Agency<br>Office of Air Quality Planning and Standards<br>Emissions, Monitoring and Analysis Division<br>Research Triangle Park, North Carolina 27711                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                           | 10. PROGRAM ELEMENT NO.                        |
| 15. SUPPLEMENTARY NOTES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                           | 11. CONTRACT/GRANT NO.<br>68-D-70069           |
| 16. ABSTRACT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                           | 13. TYPE OF REPORT AND PERIOD COVERED<br>Final |
| <p>The United States Environmental Protection Agency (EPA) is investigating the asphalt concrete production source category to identify and quantify emissions of hazardous air pollutants (HAPs) from rotary aggregate dryers. There are two types of rotary drum dryers in use at asphalt concrete production plants; parallel flow, wherein the direction of travel of the drying aggregate is in the same direction of travel of the burner exhaust gases, and counter flow, wherein the aggregate and exhaust gas flows are opposite to each other. Plant "A", Clayton, North Carolina was identified and selected by EPA as the host facility at which to obtain data on air emissions from a counter flow continuous drum mix process that utilized a baghouse for control of air emissions.</p> <p>The primary objective of the testing program was to obtain data on controlled and uncontrolled emissions of polychlorinated dibenzo-<i>p</i>-dioxins (PCDDs or "dioxins") and polychlorinated dibenzofurans (PCDFs or "furans"), particulate matter (PM), and metallic HAP and non-HAP compounds. Testing of uncontrolled emissions was deleted from the scope of work because the high particulate grain loading at the inlet to the baghouse exceeded the sampling capacity of the Method 23 and Method 29 sampling trains. A secondary objective was to observe and record plume opacity from the baghouse. The data will be used by the EPA's Emission Standards Division to determine whether HAPs are emitted at levels that would justify regulation under the Maximum Achievable Control Technology (MACT) program.</p> <p>During the testing program another EPA contractor monitored and recorded process and emission control system operating parameters, and prepared Section 3.0, Process Description, of this report.</p> <p>This volume (Volume II) is comprised of 704 pages and consists of Appendices: C (Analytical Data), D (Computer Summaries), E (QA/QC Data and Certifications), and F (Field Testing Participants).</p> |                                                           | 14. SPONSORING AGENCY CODE<br>EPA/200/04       |
| 17. KEY WORDS AND DOCUMENT ANALYSIS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                           |                                                |
| a. DESCRIPTIONS<br><br>Baghouse<br>Dioxins/Furans<br>Emission Measurements<br>Hazardous Air Pollutants<br>Metals<br>Particulate Matter<br>Volatile Organic Hazardous Air Pollutants                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | b. IDENTIFIERS/OPEN ENDED TERMS                           | c. COASTI Field/Group                          |
| 18. DISTRIBUTION STATEMENT<br><br>Unlimited                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 19. SECURITY CLASS ( <i>This Report</i> )<br>Unclassified | 21. NO. OF PAGES<br>870                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 20. SECURITY CLASS ( <i>This page</i> )<br>Unclassified   | 22. PRICE                                      |

