

February 4, 2015



Mr. Glenn Bailey  
INSPECTORATE AMERICA  
101 Widgeon Drive  
St. Rose, LA 70087

Subject: Determination of Polycyclic Aromatic Hydrocarbons in Oil  
Bureau Veritas Work Order No. 16020065

Dear Mr. Bailey:

We are pleased to present our report on the determination of polycyclic aromatic hydrocarbons (PAH) in two oil samples submitted to us on February 2, 2015.

The samples were prepared in duplicate. Two 100  $\mu$ L aliquots of each oil were diluted to 1 mL with acetone and analyzed for PAHs by high performance liquid chromatography (HPLC) using the attached analytical parameters.

A 5-point calibration curve containing 17 PAHs, ranging from 0.05  $\mu$ g/mL – 10  $\mu$ g/mL, was used to quantitate the total PAH results. All compounds eluting between naphthalene through Indeno(1,2,3-cd)pyrene were added together to quantitate the final result. The results presented in the table below are based on the response of phenanthrene.

Sample Identification	PAH Concentration ( $\mu$ g/mL)		
	Trial 1	Trial 2	Average
003-1500416 Inventory Running Olefin Product	2.0	2.0	2.0
003-1500598 Inventory Running Olefin Product	2.3	2.7	2.5

#### Quality Control

A laboratory control spike (LCS) was prepared by spiking 5  $\mu$ L of a 2,000  $\mu$ g/mL solution of 17 PAH compounds into 2 mL of acetone for a final target of 5  $\mu$ g/mL. The recovery of the laboratory control spike was 103%.

It was a pleasure to be of assistance to Inspectorate America on this important project.

Sincerely,

Robert Lockfield, Jr., CIH  
Vice President  
Division Director, HSE Laboratory Service

Bureau Veritas North America, Inc.  
14001 Veritas Lane, Suite 100  
Dallas, Texas 75244  
Phone: 972.483.1100

File No. 2014-04-1776  
Date: 04-04-2015  
www.bureauveritas.com



**Analytical Run Parameters  
for  
INSPECTORATE AMERICA**

**Bureau Veritas Work Order No. 16020065**

**Analytical Run Parameters**

Instrument: Waters 2690 Separations Module

Column: Agilent Eclipse PAH, 5  $\mu$ m column: 250 mm x 2.1 mm

Column Flow Rate: 0.35 mL/min

Column Temperature: 30 °C

Injection Volume: 5  $\mu$ L

Detector 1: Waters 486 UV detector

Detection Wavelength: 254 nm

Run Time: 35 minutes

Mobile Phase, using the following gradient

0 min- 60% acetonitrile/ 40% water

16.5 min- 100% acetonitrile

25.0 min- 100% acetonitrile

27.5 min- 60% acetonitrile/ 40% water

40.0 min- 60% acetonitrile/ 40% water

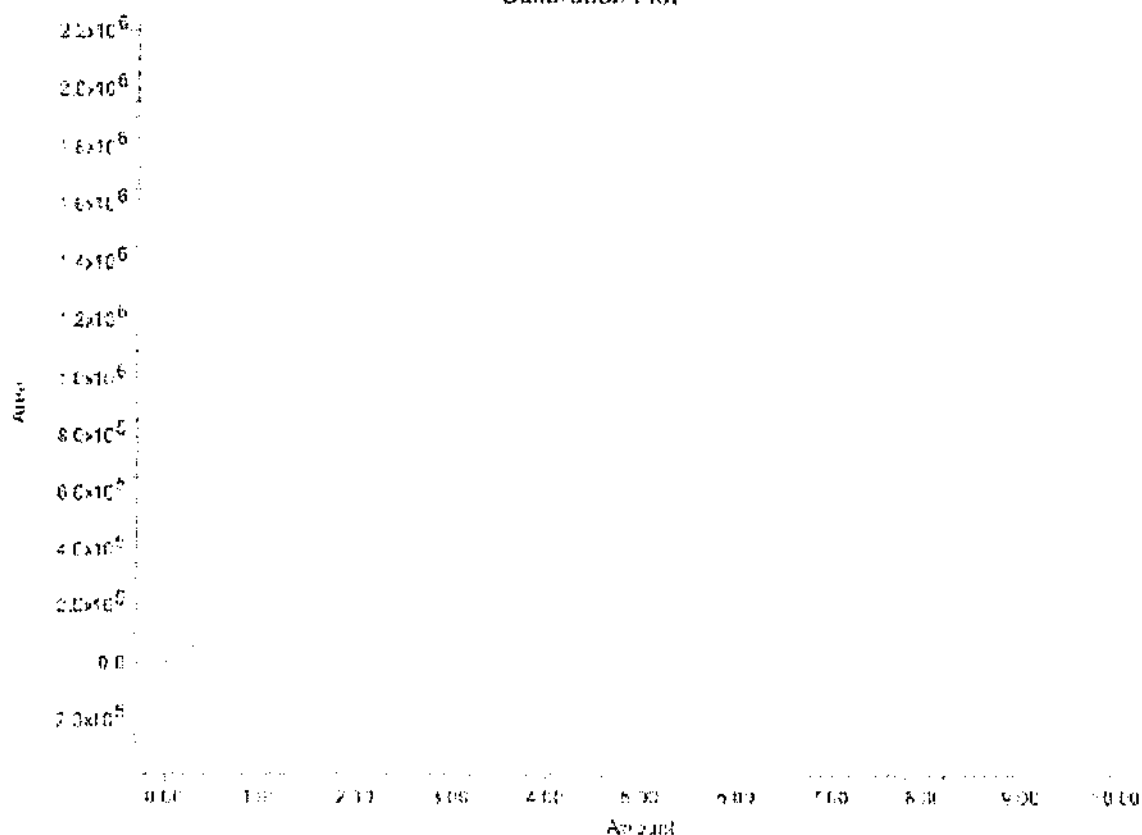
Reported by User: System

Project Name: LC2B\_15\_01

Processing Method:	PNA Eclipse	Project Name:	LC2B_15_01
Processing Method ID:	67720	System:	LGWA2B
Calibration ID:	67721	Channel:	486
Date Calibrated:	2/3/2015 7:15:28 PM	Prog. Chn. Descr:	***

A -3.162525e-002  
 B 1.832540e+005  
 C 0.000000e+000  
 D 0.000000e+000  
 R^2 0.999915

Calibration Plot



Peak Properties						
Name	Level	X value	Response	Cal. Value	% Deviation	Manual Integrate
1. Phenanthrene		0.060000	9718.500000	0.052166	4.355	No
2. Phenanthrene		0.100000	17575.700000	0.087652	2.047	No

Reported by User System

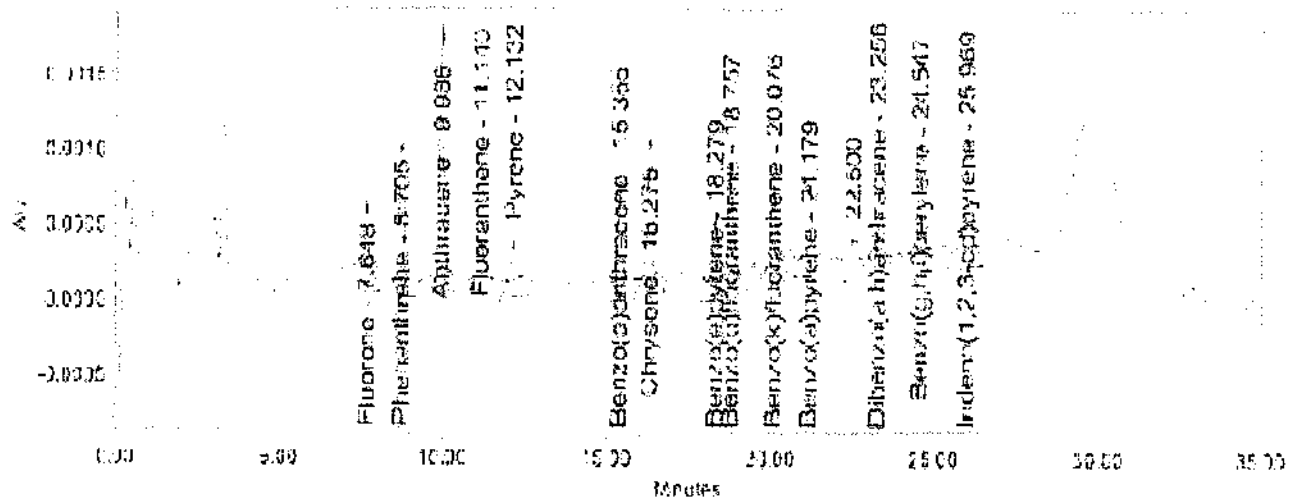
Project Name LC2B 15 01

Name	Level	X Value	Peak Prioritization				
			Response	Calc. Value	% Deviation	Manual	Ignore
3 Phorbazine		0.500000	884115.000000	6.461571	3.486	No	No
4 Phorbazine		1.000000	164508.000000	1.009433	0.944	No	No
5 Phorbazine		5.000000	223653.850645	5.042051	0.841	No	No
6 Phorbazine		10.000000	1826015.272094	9.866092	40.629	No	No

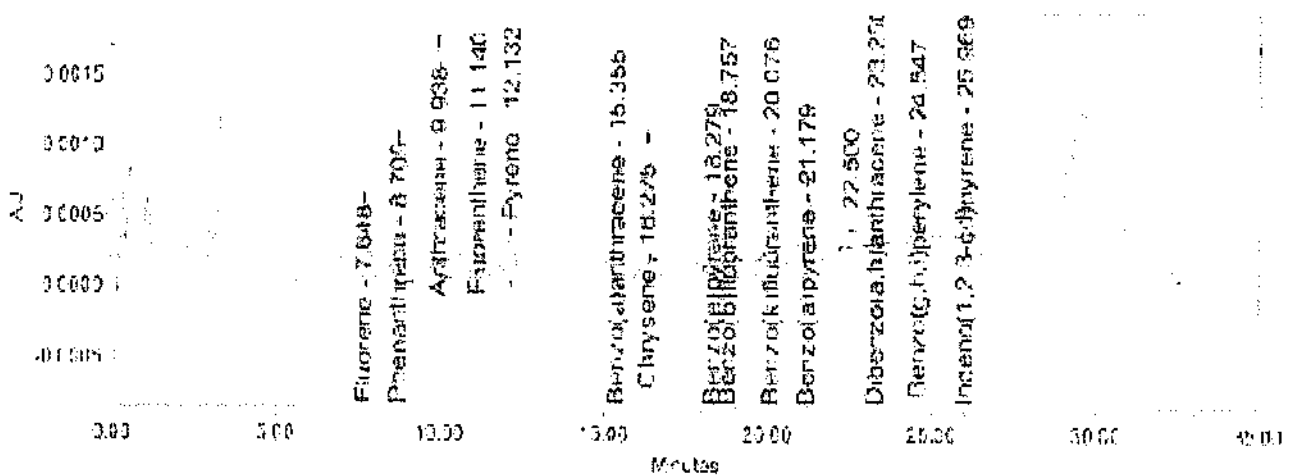
## Sample Information

SampleName: 0.05 ppm	Date Acquired: 2/2/2015 11:44:23 PM
Sample_Type:	Acq Method Set: PNA 17
Sample Type: Standard	Processing Method: PNA Eclipse
Vial: 45	Date Processed: 2/3/2015 7:43:50 PM
Injection: 1	Channel Name: 486
Injection Volume: 5.00 ul	Run Time: 35.0 Minutes

Auto-Scaled Chromatogram



Auto-Scaled Chromatogram



Compound Name	RT	Area	Height	Raw Amount (ug/L)	Extracted Volume (uL)	Raw Amount (ug)	Target Recovery (ug)	Recovery (%)	Offset	Conc D
Anthracene	9.938	15583	1006	0.0500	2.000	0.1000			1.00	67727
Benzo(a)anthracene	15.355	5509	572	0.0500	2.000	0.1000			1.00	67733
Benzo(a)pyrene	21.179	6193	493	0.0500	2.000	0.1000			1.00	67735
Benzo(b)fluoranthene	18.757	7007	620	0.0500	2.000	0.1000			1.00	67734
Benzo(k)fluoranthene	18.279	4647	305	0.0500	2.000	0.1000			1.00	67732

SampleName 0.05 ppm

System Name LCW42B

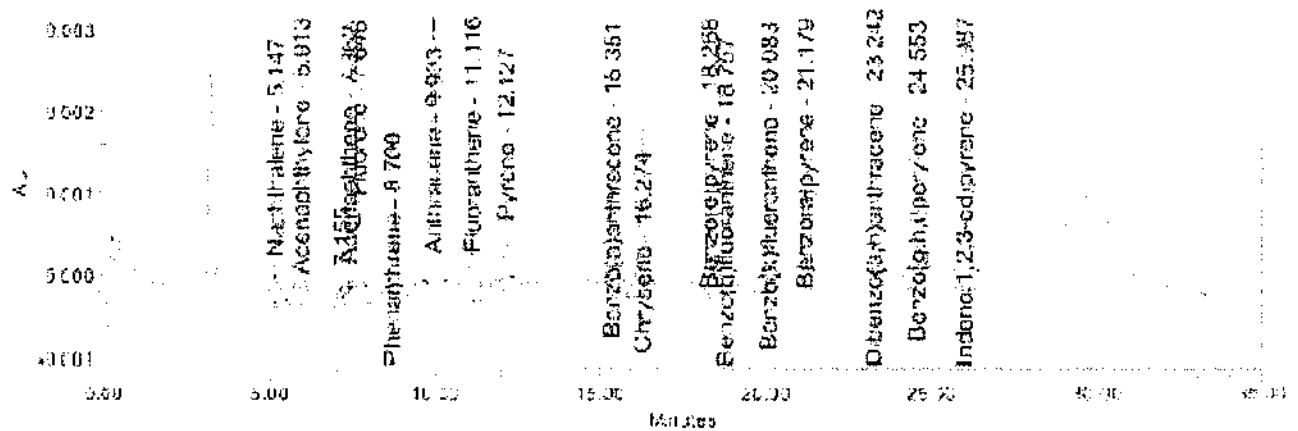
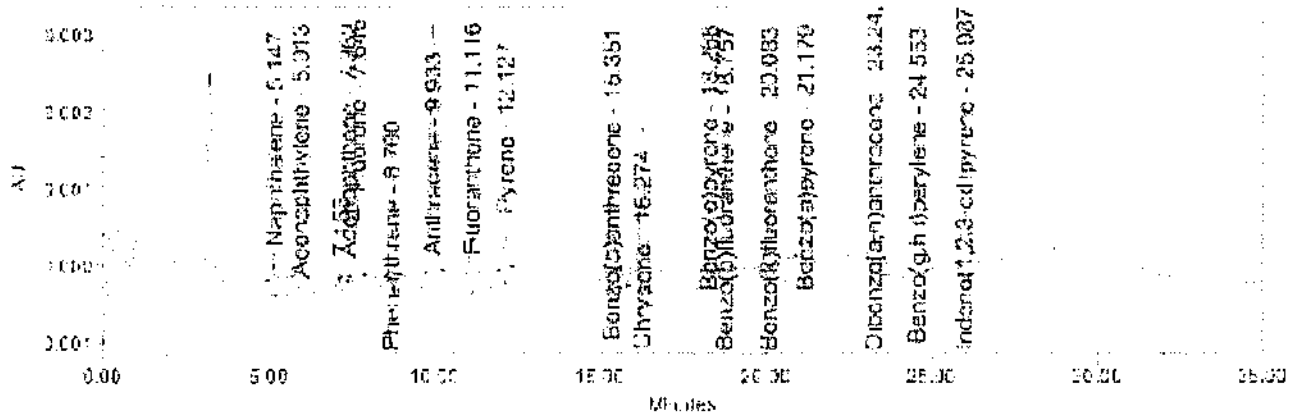
Sample Set Name N1601005\_PNA17

	Component Name	RT	Area	Height	Peak Amount (ug/mL)	Extraction Volume (mL)	Final Amount (ug)	Target Recovery (ug)	Recovery (%)	Duration	CLWD ID
3	Benz[a]anthracene	24.547	2397	144	0.3500	2.000	0.1000			1.00	37737
4	Benz[a]fluoranthene	20.070	5500	435	0.3500	2.000	0.1000			1.00	37734
5	Chrysene	16.275	10117	950	0.3500	2.000	0.1000			1.00	37735
7	Dibenz[a,h]perylene	23.256	2179	127	0.3500	2.000	0.1000			1.00	37736
8	Fluoranthene	11.140	2190	225	0.3500	2.000	0.1000			1.00	37720
1	Fluorene	7.648	3356	430	0.3500	2.000	0.1000			1.00	37725
2	Indeno[1,2,3-cd]pyrene	25.989	4274	270	0.3500	2.000	0.1000			1.00	37738
3	Phenanthrene	8.705	3249	952	0.3500	2.000	0.1000			1.00	37726
4	Pyrene	12.132	2040	270	0.3500	2.000	0.1000			1.00	37729
5	Total PAH	7.648	93157	7650		2.000				1.00	
6		22.500	3759	122		2.000				1.00	

System Name: LCWA2B

**Sample Information**

SampleName	0.1 ppm	Date Acquired	2/3/2016 12:20:52 AM
Sample_Type		Acq Method Set	PNA 17
Sample Type	Standard	Processing Method	PNA Eclipse
Var	47	Date Processed	2/3/2016 7:39:52 PM
Injection	1	Channel Name	486
Injection Volume	5.00 µl	Run Time	35.0 Minutes

**Auto-Scaled Chromatogram****Auto-Scaled Chromatogram**

Component Name	R	Area	Height	Raw Amount (ug/mL)	Calculated Volume (mL)	Final Amount (ug)	Target Recovery (ug)	Recovery (%)	Caliban	Curve ID
Acenaphthene	7.362	584	68	0.1000	2.000	0.2000			1.00	67721
Acenaphthylene	5.913	416	719	0.1000	2.000	0.2000			1.00	67722
Anthracene	9.933	31956	5247	0.1000	2.000	0.2000			1.00	67727
Benzo[a]anthracene	15.351	12326	175	0.1000	2.000	0.2000			1.00	67728
Benzo[a]pyrene	21.179	12164	861	0.1000	2.000	0.2000			1.00	67729

Sample Name 0.1 ppm

System Name LCWAZB

Sample Set Name N1601028\_PNA17

	Component Name	RT	Area	Height	Raw Amount (ug/mL)	Extraction Volume (uL)	Final Amount (ug)	Target Recovery (ug)	Recovery (%)	Concen	Curve 1
1	Benzofluoranthene	16.737	13323	1219	0.1000	2.000	0.2000			1.00	67753
2	Benzo[a]pyrene	16.830	7211	653	0.1000	2.000	0.2000			1.00	67752
3	Benzo[ghi]perylene	21.553	3642	243	0.1000	2.000	0.2000			1.00	67727
4	Benzo[fluoranthene]	20.083	6627	541	0.1000	2.000	0.2000			1.00	67756
5	Chrysene	16.274	21919	1993	0.1000	2.000	0.2000			1.00	67751
6	Dibenz[ah]anthracene	23.242	4406	251	0.1000	2.000	0.2000			1.00	67726
7	Fluoranthene	11.176	4856	479	0.1000	2.000	0.2000			1.00	67726
8	Pyrene	7.646	8290	809	0.1000	2.000	0.2000			1.00	67725
9	Indene[1,2,3-c]pyrene	25.097	9325	538	0.1000	2.000	0.2000			1.00	67738
10	Naphthalene	5.147	1563	143	0.1000	2.000	0.2000			1.00	67722
11	Phenanthrene	8.700	15475	1825	0.1000	2.000	0.2000			1.00	67726
12	Pyrene	12.121	4377	471	0.1000	2.000	0.2000			1.00	67729
13	Total PAH	5.147	166204	15105		2.000				1.00	
14		7.155	206	32		2.000				1.00	

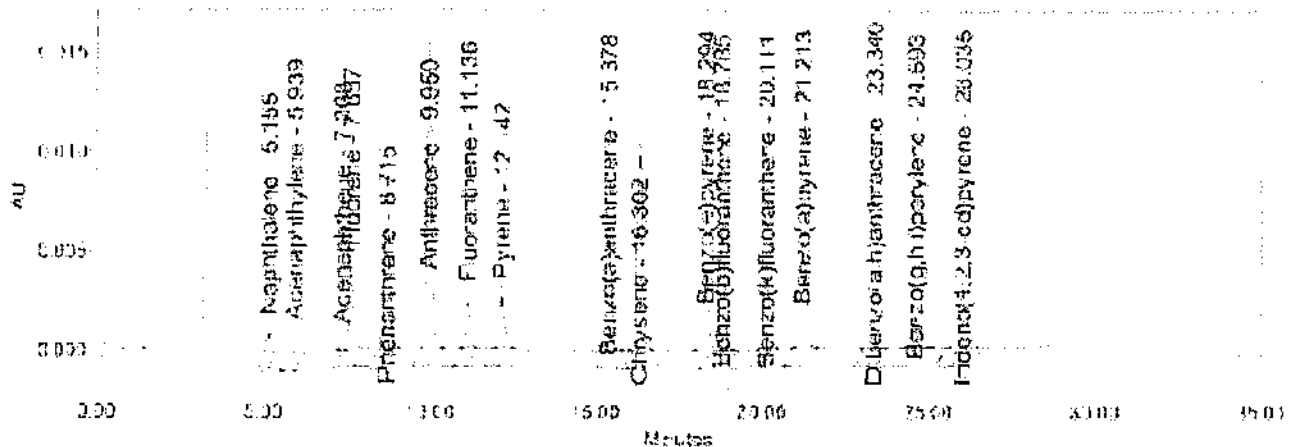


System Name LCW02B

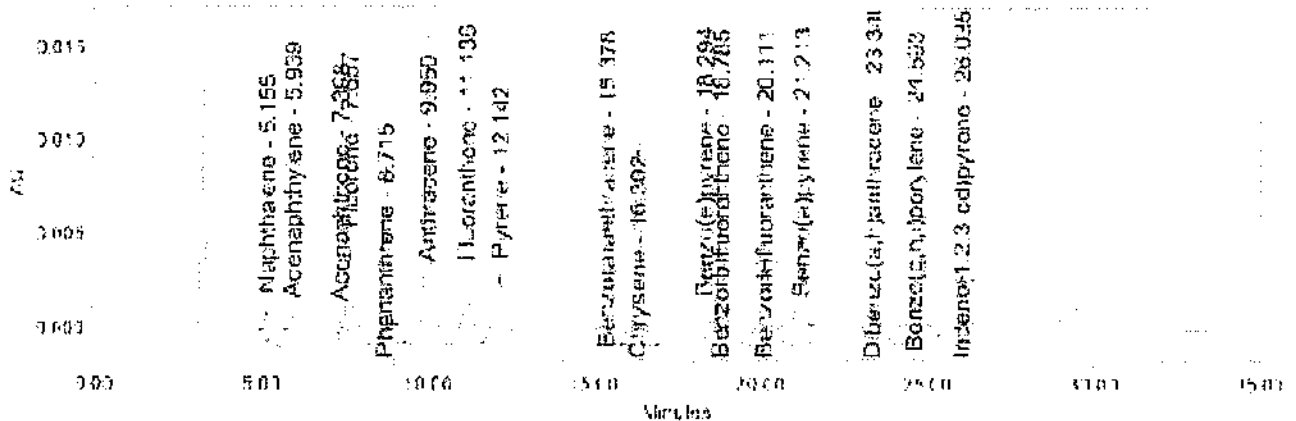
Sample Information

Sample Name	0.5 ppm	Date Acquired	2/3/2015 12:57:21 AM
Sample Type		Acq Method Set	PNA 17
Sample Type	Standard	Processing Method	PNA Eclipse
Vial	48	Date Processed	2/3/2015 7:38:04 PM
Injection	1	Channel Name	485
Injection Volume	500 µl	Run Time	35.0 Minutes

Auto-Scaled Chromatogram



Auto-Scaled Chromatogram



Component Name	RT	Area	Height	Raw Area (Counts)	Extraction Volume (µl)	Conc. (µg/ml)	Target Relative Ret	Recovery (%)	Offset	Conc. (µg/ml)
Acenaphthylene	7.367	3367	387	0.5033	2.000	0.000			1.00	67724
Acenaphthylene	5.939	6973	663	0.5033	2.000	0.000			1.00	67723
Anthracene	9.950	160237	16169	0.5033	2.000	0.000			1.00	67727
Benzo(a)anthracene	15.378	63453	5813	0.5033	2.000	0.000			1.00	67730
Benzo(a)pyrene	21.213	61443	4091	0.5033	2.000	0.000			1.00	67735

Sample Name 0.5 ppm

System Name LCWA2B

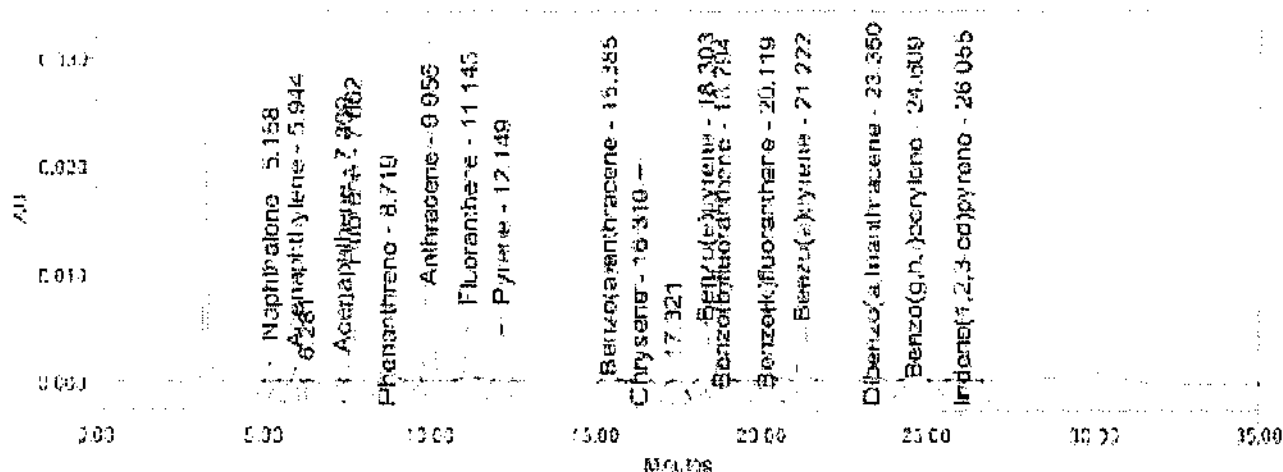
Sample Set Name N1601056\_PNA17

	Component Name	RT	Area	Height	Raw Amount (ug/mL)	Extraction Volume (L)	Find Amount (ug)	Target Recovery (ug)	Recovery (%)	Detector	Curve ID
1	Benzobifluoranthene	16.735	76293	6033	0.5000	2.000	1.0000			1.00	67730
2	Benzocyclopenta	18.234	36653	3267	0.5000	2.000	1.0000			1.00	67732
3	Benzofluoranthene	24.533	26473	5076	0.5000	2.000	1.000			1.00	67733
4	Benzokifluoranthene	20.111	42615	3039	0.5000	2.000	1.0000			1.00	67734
5	Chrysene	16.332	109399	5882	0.5000	2.000	1.0000			1.00	67731
6	Dibenzo(1,2,3-cd)anthracene	23.340	18783	7091	0.5000	2.000	1.0000			1.00	67735
7	Fluoranthene	17.135	23899	2409	0.5000	2.000	1.0000			1.00	67728
8	Furane	7.007	40903	4275	0.5000	2.000	1.0000			1.00	67720
9	Indeno(1,2,3-cd)pyrene	26.035	54354	2592	0.5000	2.000	1.0000			1.00	67738
10	Naphthalene	5.155	8342	931	0.5000	2.000	1.0000			1.00	67722
11	Phenanthrene	8.719	55717	6663	0.5000	2.000	1.0000			1.00	67726
12	Pyrene	12.142	25535	2074	0.5000	2.000	1.0000			1.00	67729
13	Total PAH	5.155	945967	74730		2.000				1.00	

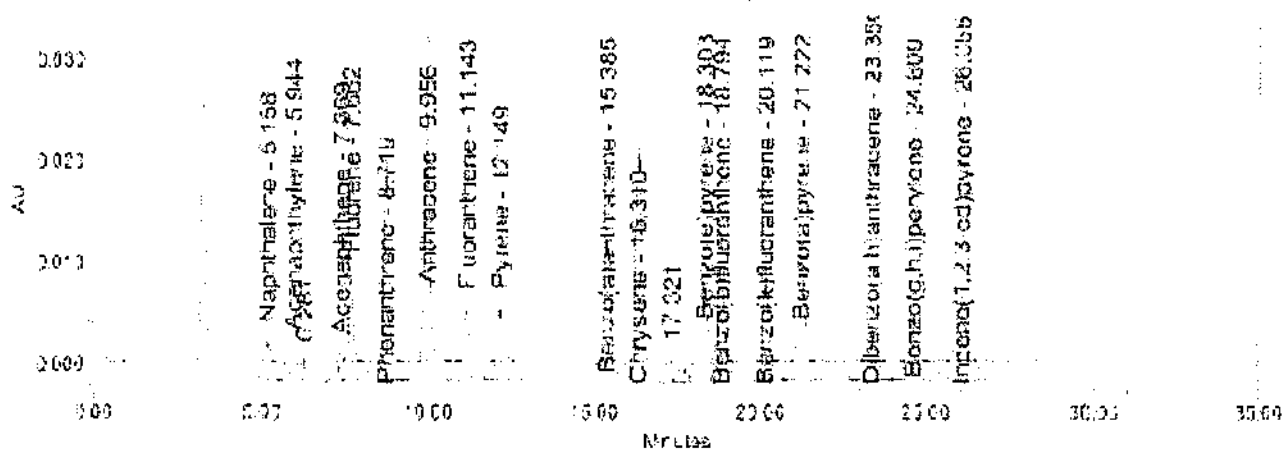
## Sample Information

Sample Name	1 ppm	Date Acquired	2/3/2015 1:34:11 AM
Sample_Type		Acq Method Set	PNA 17
Sample Type	Standard	Processing Method	PNA Eclipse
Vial	49	Date Processed	2/3/2015 7:38:05 PM
Injection	1	Channel Name	480
Injection volume	5.00 µl	Run Time	35.0 Minutes

Auto-Scaled Chromatogram



Auto-Scaled Chromatogram



Component Name	RT	Area	Height	Raw Amount (ug/mL)	Extraction volume (µL)	Final Amount (ug)	Target Recovery (ug)	Recovery (%)	Dilution	Curve ID
Acenaphthylene	7.339	6832	733	1.0000	2.000	2.0000			1.00	67724
Acenaphthylene	5.141	12802	1271	1.0000	2.000	2.0000			1.00	67723
Anthracene	9.955	540841	52687	1.0000	2.000	2.0000			1.00	67727
Benzofluoranthene	15.385	130791	11913	1.0000	2.000	2.0000			1.00	67730
Benzo(a)pyrene	21.222	127013	9543	1.0000	2.000	2.0000			1.00	67735

Sample Name f.ppr

System Name LCW12B

Sample Set Name N1601008\_PNA17

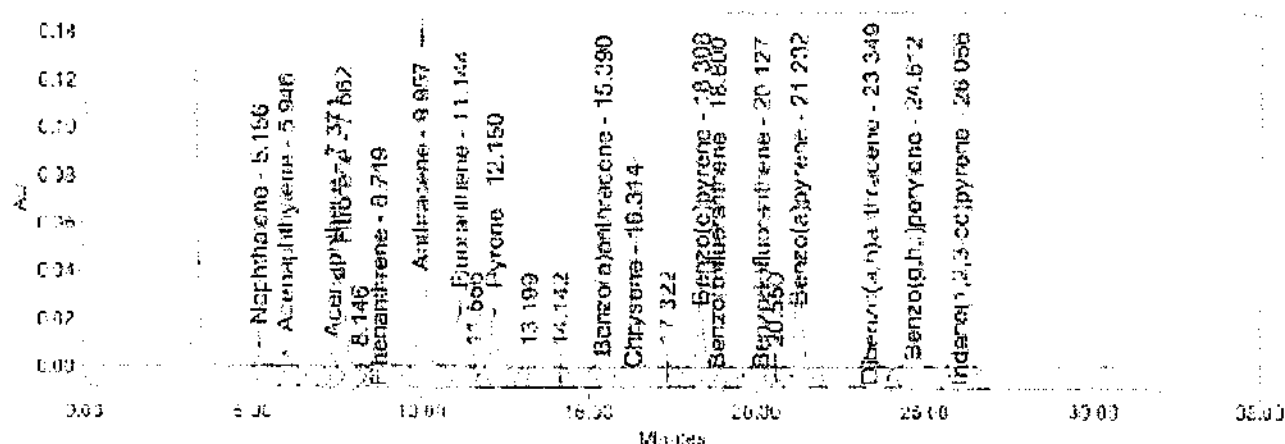
Component Name	RT	Area	Height	Raw Amount (ug/mL)	Extraction volume (mL)	Final Amount (ug)	Target Recovery (ug)	Recovery (%)	Crabton	Curve ID
1 Benzo(b)fluoranthene	16.734	141421	12351	1.0000	2.000	2.0033			1.00	67732
1 Benzo(c)pyrene	16.300	17786	6644	1.0000	2.000	2.0033			1.00	67732
1 Benzo(g,h)perylene	24.636	51341	2458	1.0000	2.000	2.0033			1.00	67737
1 Benzo(k)fluoranthene	20.119	86447	7451	1.0000	2.000	2.0033			1.00	67734
0 Chrysene	16.310	226824	20333	1.0000	2.000	2.0033			1.00	67731
1 Dibenzo(a,h)anthracene	25.350	36060	2265	1.0000	2.000	2.0033			1.00	67736
2 Fluoranthene	11.113	54421	5371	1.0000	2.000	2.0033			1.00	67729
3 Fluoride	7.672	85641	8839	1.0000	2.000	2.0033			1.00	67725
4 Indeno(1,2,3-cd)pyrene	26.058	111300	5267	1.0000	2.000	2.0033			1.00	67738
5 Naphthalene	5.158	17342	1311	1.0000	2.000	2.0033			1.00	67722
6 Phenanthrene	8.715	18460	18437	1.0000	2.000	2.0033			1.00	67726
7 Pyrene	12.148	60079	5171	1.0000	2.000	2.0033			1.00	67720
9 Total PAH	0.150	1761307	153212		2.000				1.00	
9	17.321	2766	746		2.000				1.00	
0	6.281	2576	123		2.000				1.00	

System Name LCW42B

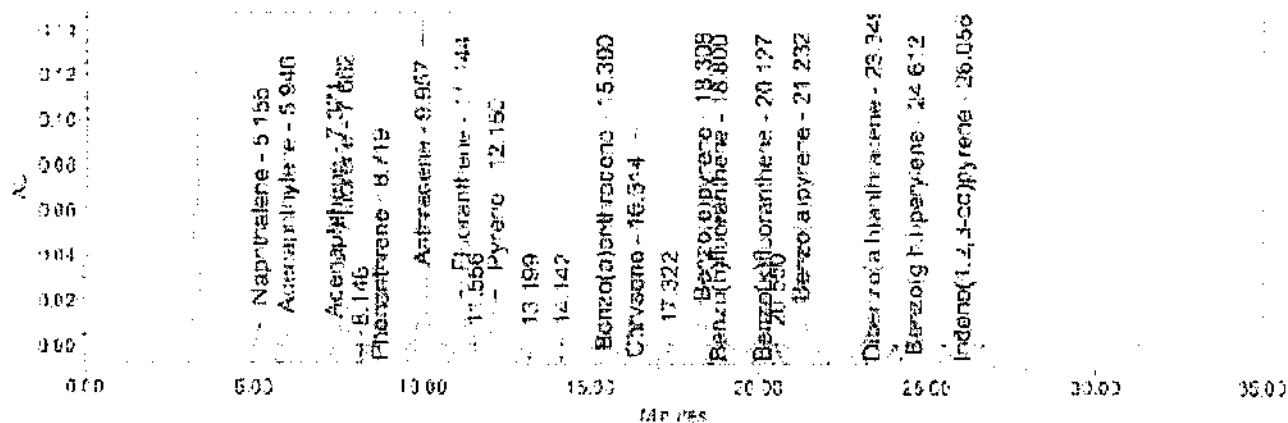
**Sample Information**

SampleName	5 cpm	Date Acquired	2/3/2015 2:10:39 AM
Sample_Type		App Method Set	PNA 17
Sample Type	Standard	Processing Method	PNA Eclipse
Via	50	Date Processed	2/3/2015 7:38:05 PM
Injection	1	Channel Name	486
Injection Volume	5.07 ul	Run Time	35.0 Minutes

Auto-Scaled Chromatogram



Auto-Scaled Chromatogram



Component Name	RT	Area	Height	Raw Amount (Counts)	Extraction Volume (ul)	Final Amount (ng)	Target Recovery (ug)	Recovery (%)	Detector	Curve ID
Acenaphthene	7.371	37038	4015	5.0300	2.000	10.0000			1.00	67724
Acenaphthylene	5.946	62360	6224	5.0300	2.000	10.0000			1.00	67723
Anthracene	9.957	1546677	141533	5.0300	2.000	10.0000			1.00	67727
Benzo(a)anthracene	15.390	605901	57651	5.0300	2.000	10.0000			1.00	67730
Benzo(a)pyrene	21.232	631861	18091	5.0300	2.000	10.0000			1.00	67735

Sample Name: 5 ppm

System Name: LC77A2B

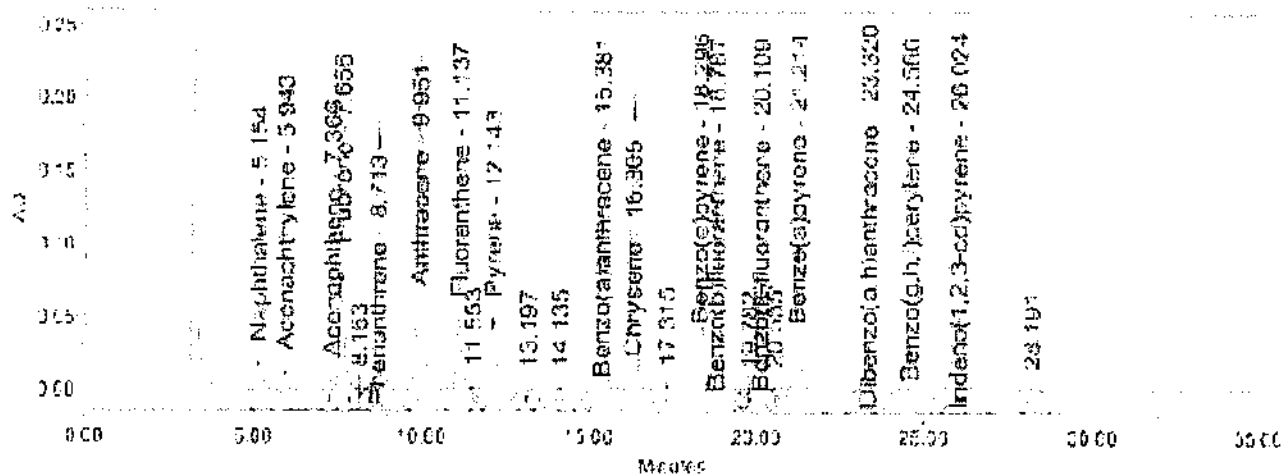
Sample Set Name: NI601008\_PNA17

	Compound Name	RT	Area	Height	Raw Amount (ug/mL)	Extraction Volume (mL)	Final Amount (ug)	Target Recovery (ug)	Recovery (%)	Detector	Conc (ug/L)
1	Benz(a)anthracene	18.800	982453	54873	5.0000	2.000	10.0000			1.00	67733
2	Benz(a)pyrene	18.906	376766	31989	5.0000	2.000	10.0000			1.00	67732
3	Benz(g,h)perylene	24.612	275125	10664	5.0000	2.000	10.0000			1.00	67737
4	Benz(k)fluoranthene	20.127	447748	16212	5.0000	2.000	10.0000			1.00	67734
5	Chrysene	18.214	110269	98184	5.0000	2.000	10.0000			1.00	67731
6	Dibenz(a,h)anthracene	23.349	193346	10875	5.0000	2.000	10.0000			1.00	67730
7	Fluoranthene	17.144	271568	24738	5.0000	2.000	10.0000			1.00	67728
8	Fluorene	17.612	438600	43166	5.0000	2.000	10.0000			1.00	67725
9	Indeno(1,2,3-cd)pyrene	26.655	639593	25529	5.0000	2.000	10.0000			1.00	67736
10	Naphthalene	5.155	93602	9508	5.0000	2.000	10.0000			1.00	67722
11	Phenanthrene	6.719	923663	89058	5.0000	2.000	10.0000			1.00	67726
12	Pyrene	12.156	247419	24959	5.0000	2.000	10.0000			1.00	67729
13	Total PAH	5.155	6587247	729547		2.000				1.00	
14		11.506	3160	700		2.000				1.00	
15		17.325	1266	1138		2.000				1.00	
16		20.550	9517	510		2.000				1.00	
17		10.188	2377	215		2.000				1.00	
18		14.142	4573	475		2.000				1.00	
19		8.146	6569	502		2.000				1.00	

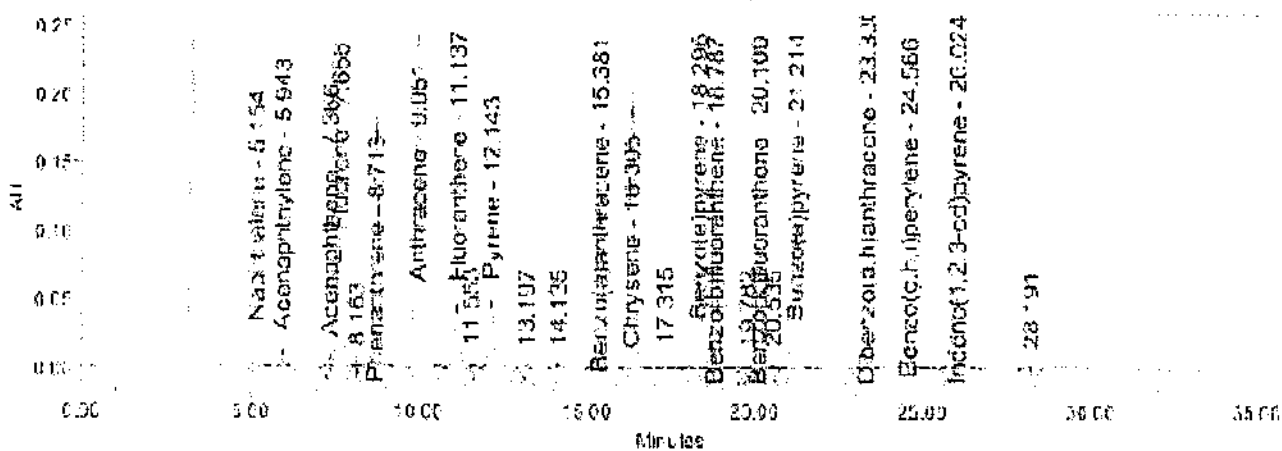
## Sample Information

Sample Name	10 ppm	Date Acquired	2/3/2015 2:47:31 AM
Sample Type		Acq Method Set	PNA 17
Sample Type	Standard	Processing Method	PNA Eclipse
Val	44	Date Processed	2/3/2015 7:38:05 PM
Injection	1	Channel Name	486
Injection Volume	5.00 µl	Run Time	35.0 Minutes

Auto-Scaled Chromatogram



Auto-Scaled Chromatogram



Component Name	RT	Area	Height	Raw Amount (pg)	Extracted Volume (µl)	Final Amount (pg)	Target Recovery (pg)	Recovery (%)	Dilution
Acenaphthene	7.006	74331	19.72	10.0000	2.000	20.0000			1.00
Acenaphthylene	6.943	118203	12227	10.0000	2.000	20.0000			1.00
Anthracene	9.951	2406913	246643	10.0000	2.000	20.0000			1.00
Benzo(a)anthracene	15.381	1276069	116213	10.0000	2.000	20.0000			1.00
Benzo(a)pyrene	21.214	1300223	66172	10.0000	2.000	20.0000			1.00

SampleName 10 ppm

System Name LCWA2B

Sample Set Name N1601008\_PNA17

	Component Name	RT	Area	Height	Raw Amount (ug/mL)	Extraction Volume (mL)	Final Amount (ug)	Target Recovery (ug)	Recovery (%)	Dilution
3	Benzo(b)fluoranthene	16.767	1375725	120465	10.0000	2.000	20.0000			1.00
7	Benzo(e)pyrene	16.266	760677	64444	10.0000	2.000	20.0000			1.00
1	Benzo(g,h)perylene	24.586	648903	28262	10.0000	2.000	20.0000			1.00
1	Benzo(k)fluoranthene	20.109	654676	72660	10.0000	2.000	20.0000			1.00
0	Chrysene	16.305	2203568	195557	10.0000	2.000	20.0000			1.00
1	Dibenz(a,h)anthracene	23.320	363628	21610	10.0000	2.000	20.0000			1.00
2	Fluoranthene	11.137	641972	49520	10.0000	2.000	20.0000			1.00
3	Fluorene	7.556	877906	85393	10.0000	2.000	20.0000			1.00
4	Indeno(1,2,3-cd)pyrene	26.024	1070442	51067	10.0000	2.000	20.0000			1.00
5	Naphthalene	5.154	195646	18020	10.0000	2.000	20.0000			1.00
6	Phenanthrene	8.713	1826015	175436	10.0000	2.000	20.0000			1.00
7	Pyrene	12.143	595424	49612	10.0000	2.000	20.0000			1.00
8	Total PAH	5.154	16909799	1424170		2.000				1.00
9		11.553	19081	1592		2.000				1.00
0		13.197	4868	427		2.000				1.00
1		20.536	11932	1033		2.000				1.00
2		17.316	32360	2514		2.000				1.00
3		19.782	4011	421		2.000				1.00
4		26.191	2666	124		2.000				1.00
5		14.136	9000	917		2.000				1.00
6		8.163	13361	1123		2.000				1.00

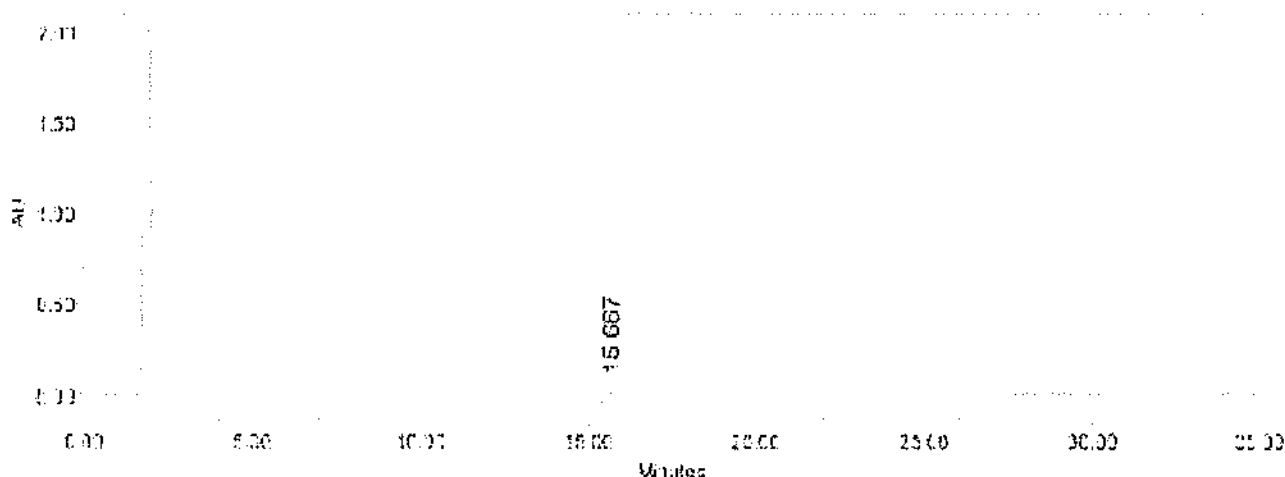
Curve ID	Curve ID
67724	18
67723	19
67727	20
67730	21
67735	22
67733	23
67732	24
67737	25
67734	26
67731	
67736	
67726	
67725	
67738	
67722	
67726	
67729	



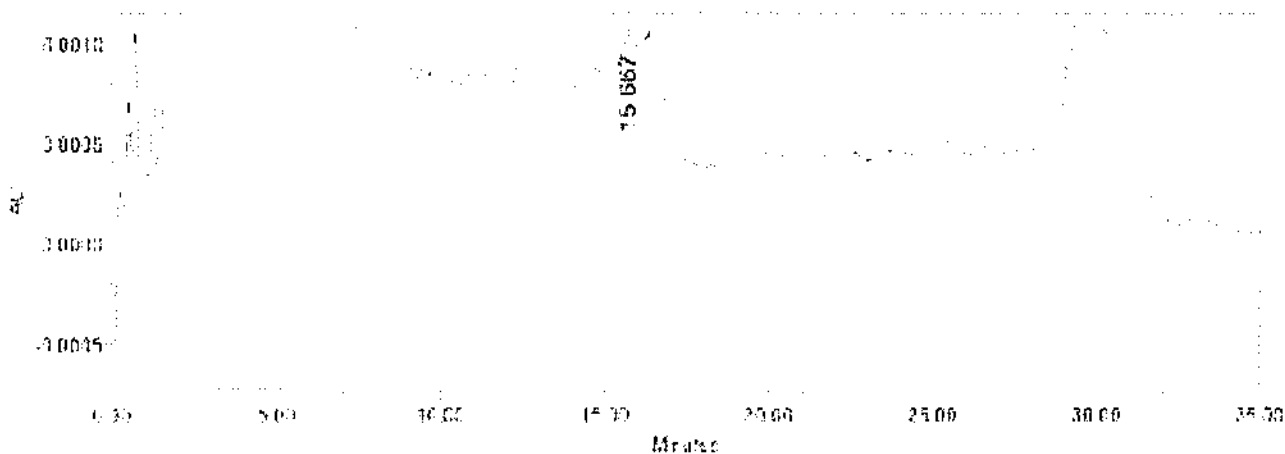
## Sample Information

SampleName	Acetone solvent blank	Date Acquired	2/3/2015 4:50:25 AM
Sample Type	RB-scotone	Acq Method Set	PNA 17
Sample Type	Unknown	Processing Method	PNA Eclipse
Vial	51	Date Processed	2/3/2015 7:46:23 PM
Injection	1	Channel Name	486
Injection Volume	5.00 µl	Run Time	35.0 Minutes

### Auto-Scaled Chromatogram



### Auto-Scaled Chromatogram

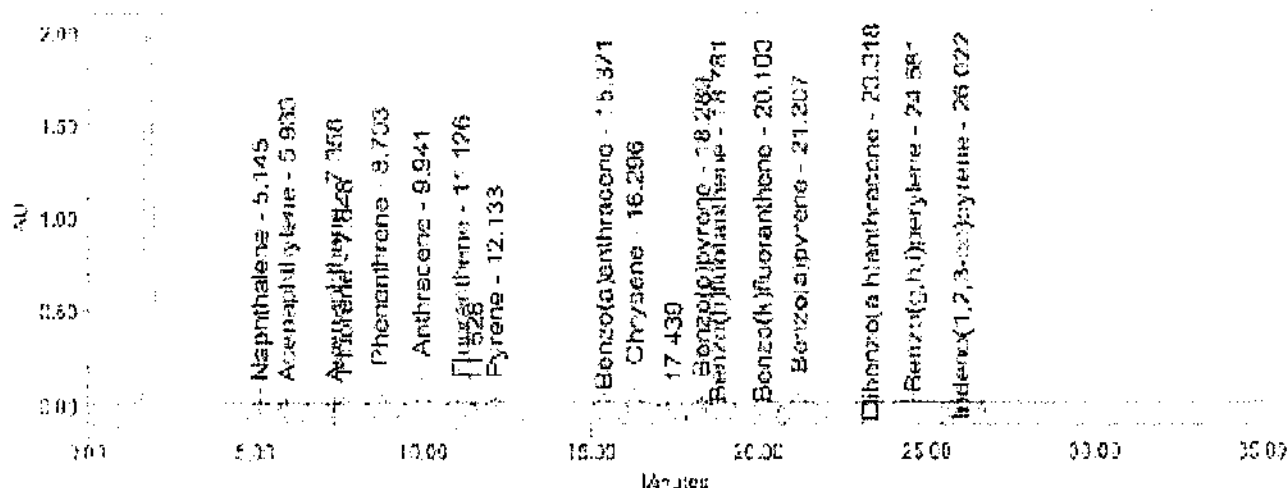


Component Name	RT	Area	Height	Raw Amount (ug/mL)	Extraction volume (mL)	Final Amount (ug)	Target Recovery (ug)	Recovery (%)	Dilution	Conc ID
10H-PAR	15.667	5695	118	0.5222	2.000	0.0404			1.00	67726
	15.667	5632	119		2.000				1.00	

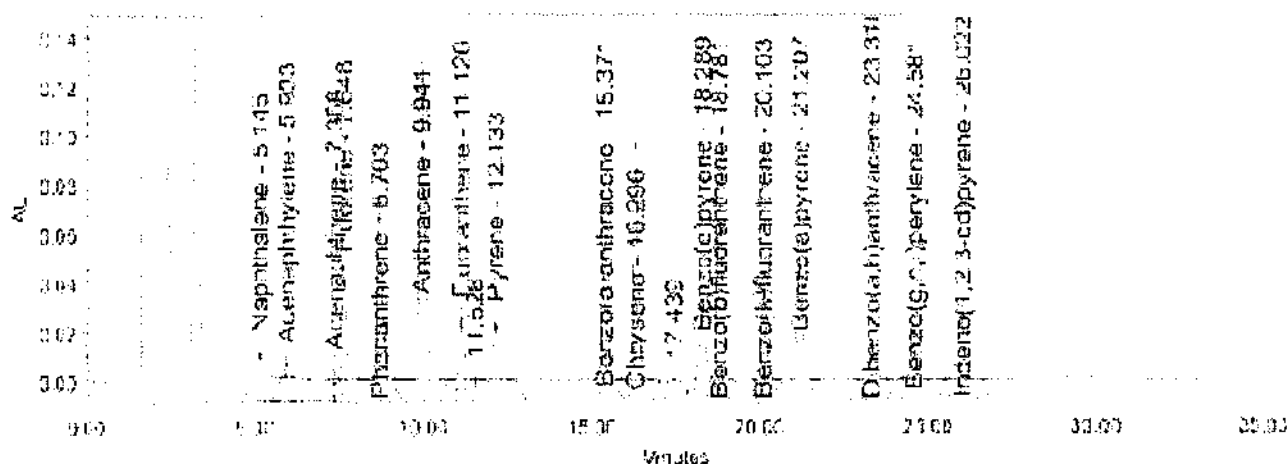
## Sample Information

SampleName	LCS acetone	Date Acquired	7/3/2015 4:36:56 AM
Sample_Type		Acq Method Set	PNA17
Sample Type	Unknown	Processing Method	PNA Eclipse
Vial	52	Date Processed	7/3/2015 7:36:23 PM
Injection	1	Channel Name	486
Injection Volume	5.00 µl	Run Time	35.0 Minutes

Auto-Scaled Chromatogram



Auto-Scaled Chromatogram



Component Name	RT	Area	Height	Raw Amount (ug/ml)	Extraction Volume (ml)	Final Amount (ug)	Target Recovery (%)	Recovery (%)	Crutcher	Curve ID
Acenaphthene	7.458	15908	3332	4.3645	2.000	8.7299	100.000	97.30	1.00	67124
Acenaphthylene	5.930	80922	5304	0.0420	2.000	10.0647	100.000	100.85	1.00	67123
Anthracene	9.941	166094	14194	4.6151	2.000	9.2301	100.000	99.31	1.00	67127
Benzo(a)anthracene	15.371	66380	5955	5.1380	2.000	10.3959	100.000	100.95	1.00	67126
Benzo(a)pyrene	21.207	640102	48938	0.0112	2.000	10.0925	100.000	100.22	1.00	67125

SampleName:LOS acetone

System Name: CWA2B

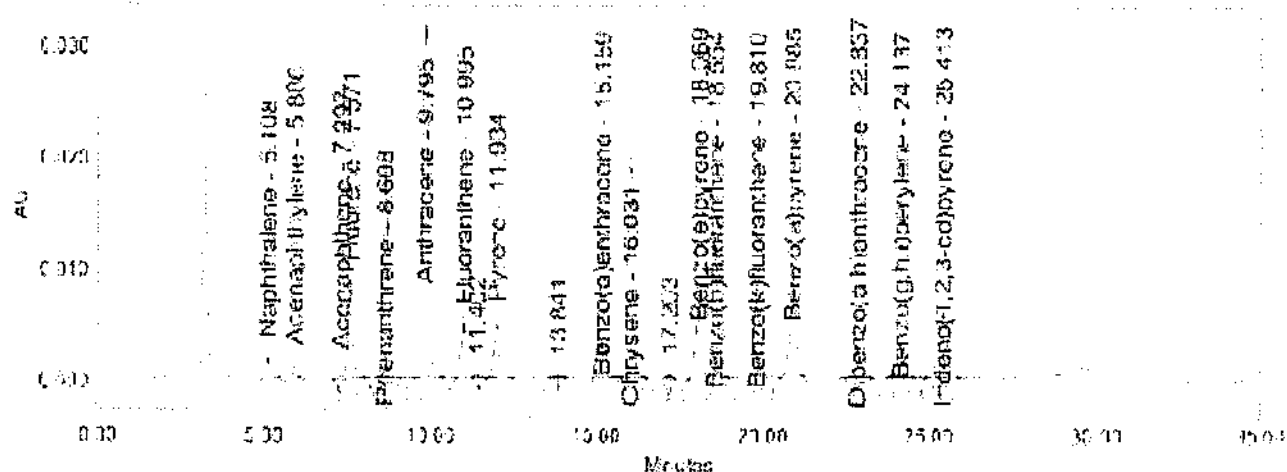
Sample Set Name: N1601008\_PNA17

Component Name	RT	Area	Height	Raw Amount (ug/ml)	Extraction Volume (ml)	Final Amount (ug)	Target Recovery (ug)	Recovery (%)	Detector	Curve ID
Benzofluoranthene	18.791	234157	64824	5.3518	2.000	10.6032	10.0000	105.63	1.00	67730
Benzo(a)pyrene	18.799	265037	23857	5.0732	2.000	10.1403	10.0000	101.40	1.00	67732
Benzo(b)fluoranthene	24.531	278556	14235	5.0761	2.000	10.1521	10.0000	101.52	1.00	67731
Benzo(k)fluoranthene	26.133	460386	38319	5.3322	2.000	10.6649	10.0000	106.64	1.00	67734
Chrysene	16.226	1121585	100157	5.1077	2.000	10.2134	10.0000	102.13	1.00	67731
Dibenz(a,h)anthracene	23.316	179349	10753	4.0337	2.000	8.0773	10.0000	90.77	1.00	67736
Fluoranthene	11.126	269736	24641	4.0866	2.000	8.1731	10.0000	91.73	1.00	67728
Fluorene	7.548	268153	43147	5.1216	2.000	10.2431	10.0000	102.43	1.00	67720
Indeno(1,2,3-cd)pyrene	28.922	552054	28192	5.1057	2.000	10.2115	10.0000	102.11	1.00	67736
Naphthalene	5.145	100279	9489	5.1458	2.000	10.2917	10.0000	102.91	1.00	67722
Phenanthrene	8.703	040073	80611	5.1356	2.000	10.2710	10.0000	102.71	1.00	67726
Pyrene	15.113	281834	23636	4.7540	2.000	9.5079	10.0000	95.08	1.00	67729
Total PAH	5.145	6734153	739373	47.0633	2.000	95.3261	10.0000	953.26	1.00	67726
	11.520	5300	552		2.000		10.0000		1.00	
	17.430	2454	238		2.000		10.0000		1.00	

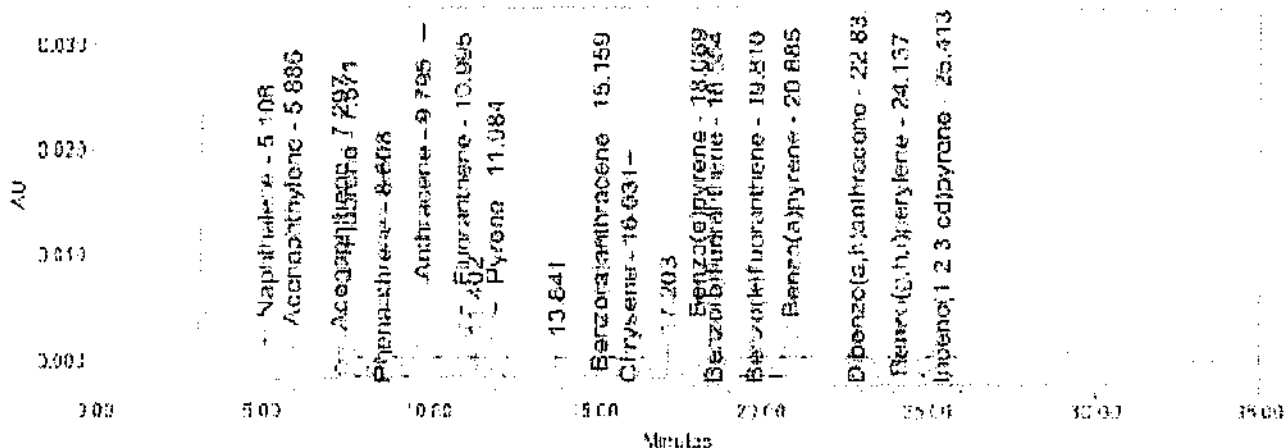
## Sample Information

SampleName	1 open env	Date Acquired	2/3/2015 7:39:16 AM
Sample Type		Acq Method Set	PNA 17
Sample Type	Unknown	Processing Method	PNA Eclipse
Vial	49	Data Processed	2/3/2015 7:46:23 PM
Injection	1	Channel Name	486
Injection Volume	5.00 ul	Run Time	35.0 Minutes

Auto-Scaled Chromatogram



Auto-Scaled Chromatogram



Component Name	RT	Area	Height	Raw Amount (ng/mL)	Extraction Volume (L)	Final Amount (ng)	Target Recovery (ng)	Recovery (%)	Conc'n	Conc'n ID
Acenaphthene	7.247	1253	812	1.0130	2.000	2.0200	2.0000	101.00	1.00	67724
Acenaphthylene	5.885	11636	1242	0.8333	2.000	1.6671	2.0000	83.36	1.00	67723
Anthracene	9.795	124926	17863	14797	2.000	1.5874	2.0000	97.87	1.00	67727
Benzo(a)anthracene	15.159	128374	17573	1.0066	2.000	2.0150	2.0000	100.66	1.00	67730
Benzo(a)pyrene	20.885	124047	5689	0.9653	2.000	1.9311	2.0000	96.55	1.00	67735

SampleName : ppm cov

System Name LCWA2B

Sample Set Name H1601003\_PNA\*7

Component Name	RT	Area	Height	Raw Amount (ug/ml)	Extraction Volume (ml)	Final Amount (ug)	Target Recovery (ug)	Recovery (%)	Dilution	Case ID
Benzodibenzanthracene	13.554	137515	12629	0.9682	2.000	1.9965	2.0000	99.82	1.00	67733
Benzofluorene	13.669	26729	6441	1.0112	2.000	2.0220	2.0000	101.12	1.00	67732
Benzofluoranthene	24.101	55965	2495	1.0443	2.000	2.0886	2.0000	104.43	1.00	67737
Benzoketofluoranthene	10.610	34489	7019	0.9717	2.000	1.9435	2.0000	97.17	1.00	67734
Chrysene	16.001	221015	19711	1.0056	2.000	2.0081	2.0000	100.36	1.00	67731
Indeno(1,2,3-cd)pyrene	22.811	50863	2304	1.0038	2.000	2.0077	2.0000	100.38	1.00	67709
Fluoranthene	10.695	37061	4614	0.9784	2.000	1.9527	2.0000	97.64	1.00	67728
Fluorene	7.571	35474	5070	0.9025	2.000	1.8051	2.0000	90.25	1.00	67725
Indeno(1,2,3-cd)pyrene	25.413	109035	5424	1.0236	2.000	2.0400	2.0000	102.36	1.00	67736
Naphthalene	6.108	14826	1932	1.0007	2.000	2.0074	2.0000	100.37	1.00	67722
Phenanthrene	6.605	181068	17957	0.8697	2.000	1.7390	2.0000	86.97	1.00	67726
Pyrene	11.854	33309	3041	1.0105	2.000	2.0215	2.0000	101.08	1.00	67729
Total PAH	6.108	1726042	150505	6.4364	2.000	12.8727	2.0000	643.64	1.00	67720
	11.402	2875	208		2.000		2.0000		1.00	
	12.841	2165	106		2.000		2.0000		1.00	
	17.260	3360	284		2.000		2.0000		1.00	

Sample Type Unknown

Processing Method PMA Eclipse

Via 49

Date Processed 2/4/2015 10:01:17 AM

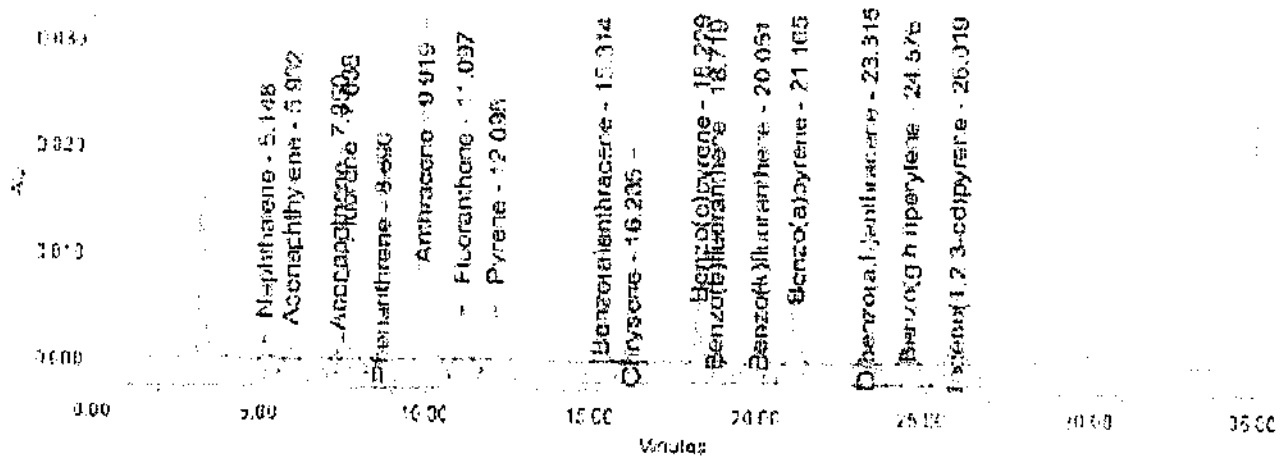
Injection 1

Channel Name 186

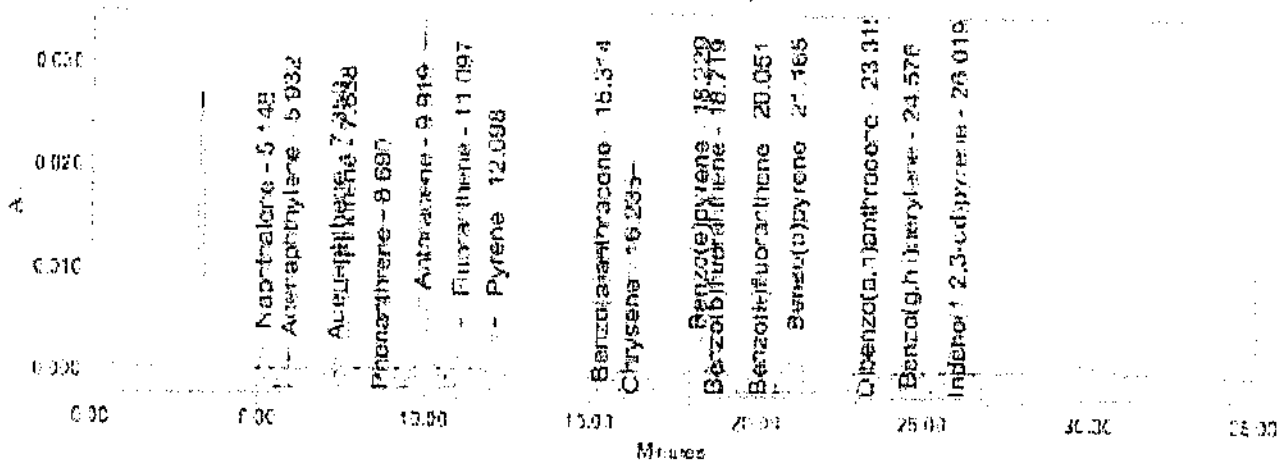
Injection Volume 5.00 ul

Run Time 35.0 Minutes

## Auto-Scaled Chromatogram



## Auto-Scaled Chromatogram



Component Name	RT	Area	Height	Raw Amount (ug)	Extraction Volume (ml)	Final Amount (ug)	Target Recovery (ug)	Recovery (%)	Concentration	Conc (ug/L)
Acenaphthene	7.150	7726	352	1.0761	2.000	2.1552	2.0000	107.81	1.03	67726
Acenaphthylene	8.452	11715	1249	0.8364	2.000	1.7727	2.0000	88.64	1.00	67726
Anthracene	9.919	336346	33024	1.9992	2.000	1.0083	2.0000	93.92	1.00	67727
Benzo(a)anthracene	15.314	129442	11957	1.0150	2.000	2.0299	2.0000	101.50	1.00	67732
Benzo(a)pyrene	21.165	127131	9493	0.0399	2.000	1.9797	2.0000	98.98	1.00	67735

Sample Name: 1 ppm.csv

System Name: ICWA2B

Sample Set Name: N1501008\_PNA17

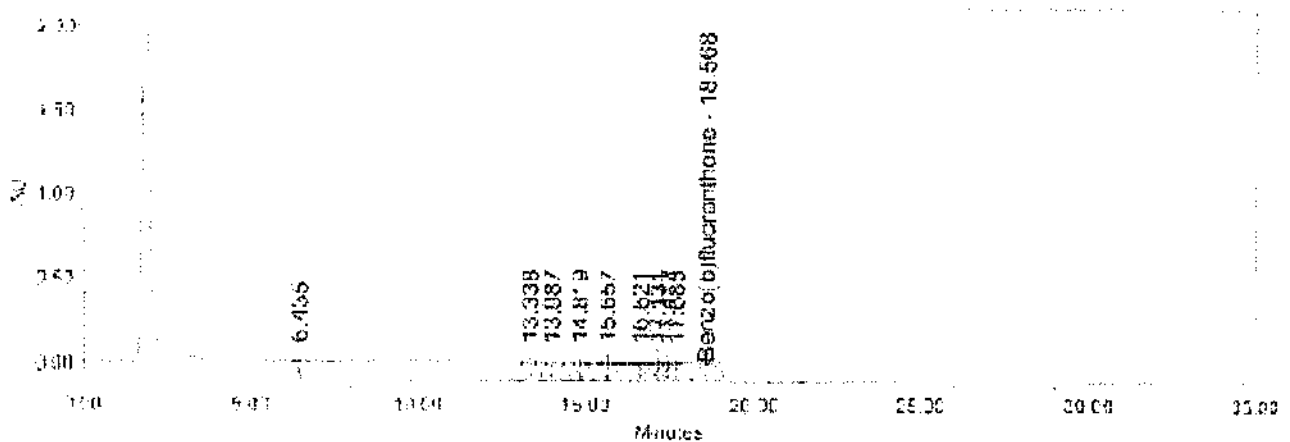
	Component Name	RT	Area	Height	Raw Amount (ug/mL)	Extraction Volume (mL)	Final Amount (ug)	Target Recovery (ug)	Recovery (%)	Dilution	Comp ID
5	Benzo(b)fluoranthene	16.719	143561	12243	1.3076	2.000	2.6135	2.0000	130.68	1.00	57733
7	Benzo(a)pyrene	16.229	135607	9540	0.9572	2.000	1.9144	2.0000	95.72	1.00	57732
1	Benzo(a,h)perylene	24.578	54406	2861	1.0160	2.000	2.0320	2.0000	101.60	1.00	57737
8	Benzo(k)fluoranthene	20.051	38199	7155	1.0149	2.000	2.0298	2.0000	101.49	1.00	57734
6	Chrysene	16.239	326708	21177	1.0286	2.000	2.0570	2.0000	102.86	1.00	57731
1	Dibenz(a,h)anthracene	24.310	30591	2207	0.9625	2.000	1.9250	2.0000	96.25	1.00	57736
2	Fluoranthene	11.007	54406	5160	1.0197	2.000	2.0393	2.0000	101.97	1.00	57728
3	Fluorene	7.538	38551	2040	1.0197	2.000	2.0393	2.0000	101.97	1.00	57725
4	Benzo(1,2,3-cd)pyrene	26.019	110594	3277	1.0565	2.000	2.0509	2.0000	105.05	1.00	57738
5	Naphthalene	5.148	17429	1920	0.9217	2.000	1.8434	2.0000	92.17	1.00	57722
6	Phenanthrene	8.600	187582	18732	1.0253	2.000	2.0507	2.0000	102.53	1.00	57726
7	Pyrene	12.059	59058	5192	1.0127	2.000	2.0255	2.0000	101.27	1.00	57729
8	Total PAH	5.148	749265	53774	9.5511	2.000	19.1022	2.0000	955.11	1.00	57720

System Name ICWA23

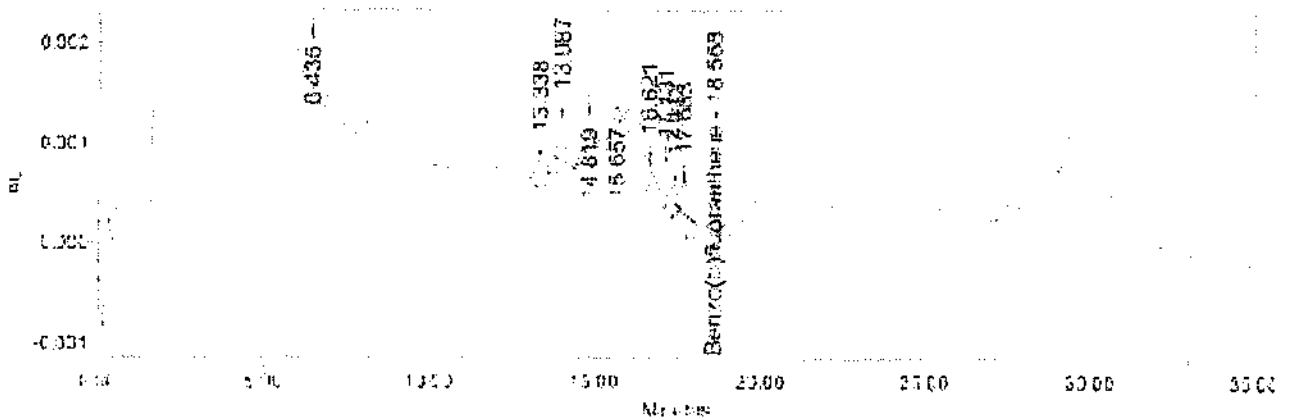
Sample Information

SampleName	16020065-1-2	Date Acquired	2/4/2015 7:24:43 AM
Sample_Type		Acq Method Set	PNA 17
Sample Type	Unknown	Processing Method	PNA Eclipse
Vial	54	Data Processed	2/4/2015 10:04:38 AM
Injection	1	Channel Name	486
Injection Volume	5.00 $\mu$ l	Run Time	35.0 Minutes

Auto-Scaled Chromatogram



Auto-Scaled Chromatogram



Component Name	RT	Area	Height	Peak Area (ug/mL)	Extracted Concentration (ug/mL)	Final Amount (ug/mL)	Target Recovery (ug)	Recovery (%)	Dilution	Conc (ug/mL)
Benzodibenzofuranone - 18.563	18.563	4114	303	0.0282	10.000	0.2880			100	07733
Total PAH	0.435	35545	3502	0.1947	10.000	0.9589			100	07726
	17.412	2610	303		10.000				100	
	13.338	2143	221		10.000				100	
	6.435	5819	603		10.000				100	



SampleName 16020065\_12

System Name LCWA2B

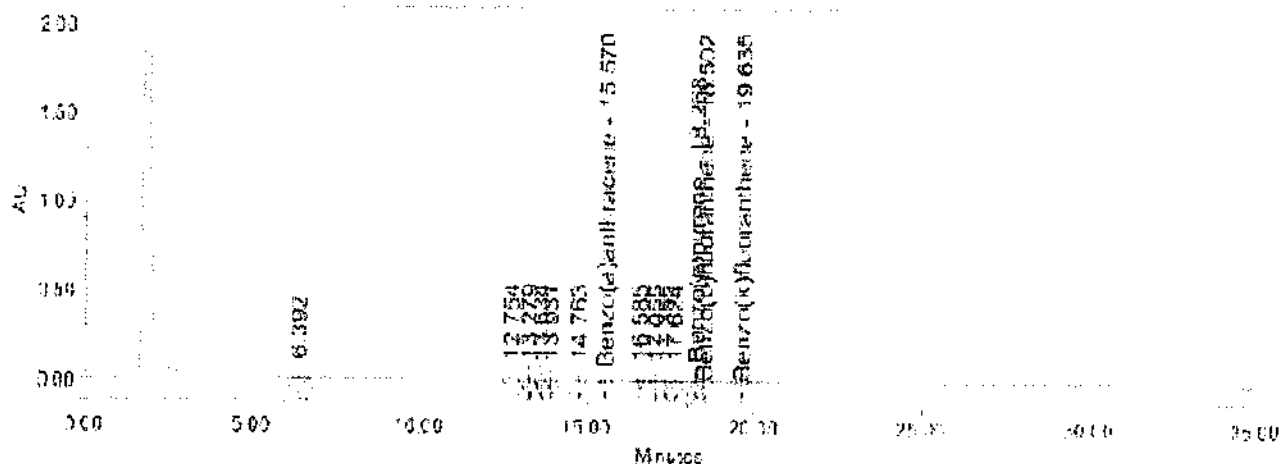
Sample Set Name N1602006\_PNA17

Component Name	RT	Area	Height	Raw Amount (ng/ml)	Extraction Volume (ml)	Final Amount (ng)	Target Recovery (ng)	Recovery (%)	Dilution	Curve ID
1	14.619	3680	300		10.000				1.00	
2	13.987	5140	500		10.000				1.00	
3	16.621	770	118		10.000				1.00	
4	17.131	4940	380		10.000				1.00	
5	17.063	3900	400		10.000				1.00	
6	15.657	1690	180		10.000				1.00	

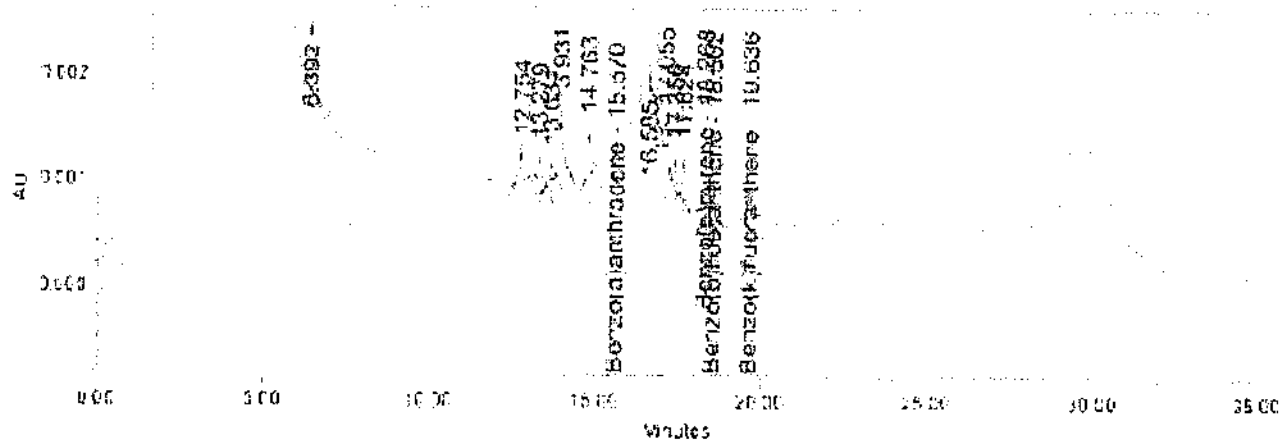
## Sample Information

Sample Name: 16020055-1-1	Date Acquired: 2/4/2015 8:01:11 AM
Sample Type: Unknown	Acq Method Set: PNA 17
Vial: 53	Processing Method: PNA Eclipse
Injection: 1	Date Processed: 2/4/2015 10:03:53 AM
Injection Volume: 5.00 µl	Channel Name: 485
	Run Time: 35.0 Minutes

Auto-Scaled Chromatogram



Auto-Scaled Chromatogram



Dilution

	Component Name	RT	Area	Height	Raw Amount (pg/ml)	Injection Volume (µl)	Final Amount (pg/ml)	Total Recovery (pg)	Recovery (%)	Yield (%)	Yield (µg)
1	Benzofluoranthene	15.570	941	121	0.0031	10.000	0.1905			100	0.7731
2	Benzofluoranthene	18.502	2593	295	0.0175	10.000	0.1751			100	0.7733
3	Benz(a)pyrene	18.262	621	101	0.0131	10.000	0.1012			100	0.7732
4	Benz(a)fluoranthene	19.636	824	207	0.0134	10.000	0.1352			100	0.7734
5	Total PAH	6.392	36979	3676	0.1930	10.000	1.9804			100	0.7728

SampleName 16020055-1-1

System Name LCWA2B

Sample Set Name N1601008\_PNA17

Component Name	RT	Area	Height	Raw Area (ug/mL)	Extraction Volume (mL)	Final Amount (ug)	Target Recovery (ug)	Recovery (%)	Dilution	Curve ID
1	6.592	3225	327		10.000				1.00	
	17.624	3462	442		10.000				1.00	
	16.586	514	34		10.000				1.00	
	17.055	3185	275		10.000				1.00	
3	17.056	1942	235		10.000				1.00	
1	12.754	3530	215		10.000				1.00	
2	13.279	1673	135		10.000				1.00	
3	13.034	1217	142		10.000				1.00	
1	10.024	4349	475		10.000				1.00	
5	14.763	3538	423		10.000				1.00	

## Sample Information

SampleName 1 ppm ccv

Date Acquired 2/4/2015 8:37:41 AM

Sample\_Type

Acq Method Set PNA 17

Sample Type Unknown

Processing Method PNA Eclipse

Vial 49

Date Processed 2/4/2015 10:01:18 AM

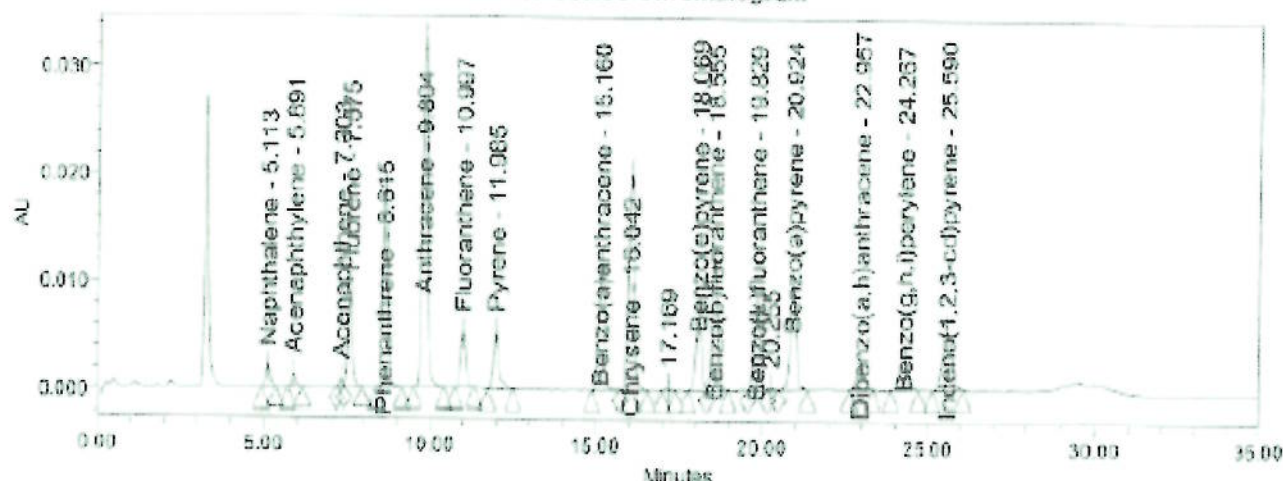
Injection 1

Channel Name 466

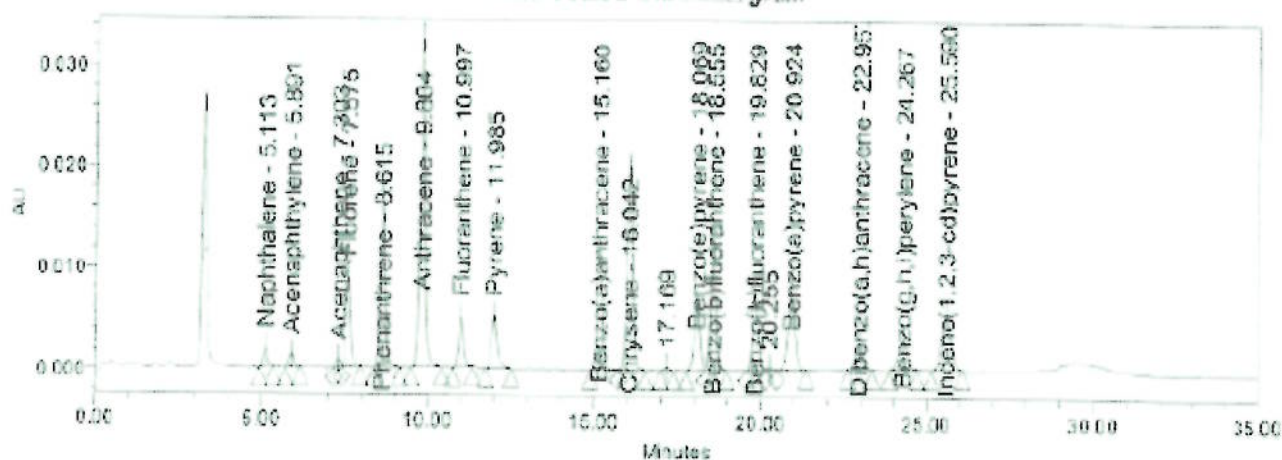
Injection Volume 5.00 ul

Run Time 35.0 Minutes

Auto-Scaled Chromatogram



Auto-Scaled Chromatogram



	Component Name	RT	Area	Height	Raw Amount (ug/mL)	Extraction Volume (mL)	Final Amount (ug)	Target Recovery (ug)	Recovery (%)	Dilution	Curve ID
1	Acenaphthene	7.303	8867	911	0.0094	2.000	1.9186	2.0000	95.94	1.00	67724
2	Acenaphthylene	5.891	12006	1296	0.0108	2.000	1.8212	2.0000	91.06	1.00	67723
3	Anthracene	9.804	332046	32541	0.0067	2.000	1.9734	2.0000	98.67	1.00	67727
4	Benzo(a)anthracene	15.160	129327	11811	1.0160	2.000	2.0360	2.0000	101.80	1.00	67730
5	Benzo(a)pyrene	20.924	128236	9608	0.0080	2.000	1.9900	2.0000	99.50	1.00	67735

SampleName 1 ppm cov

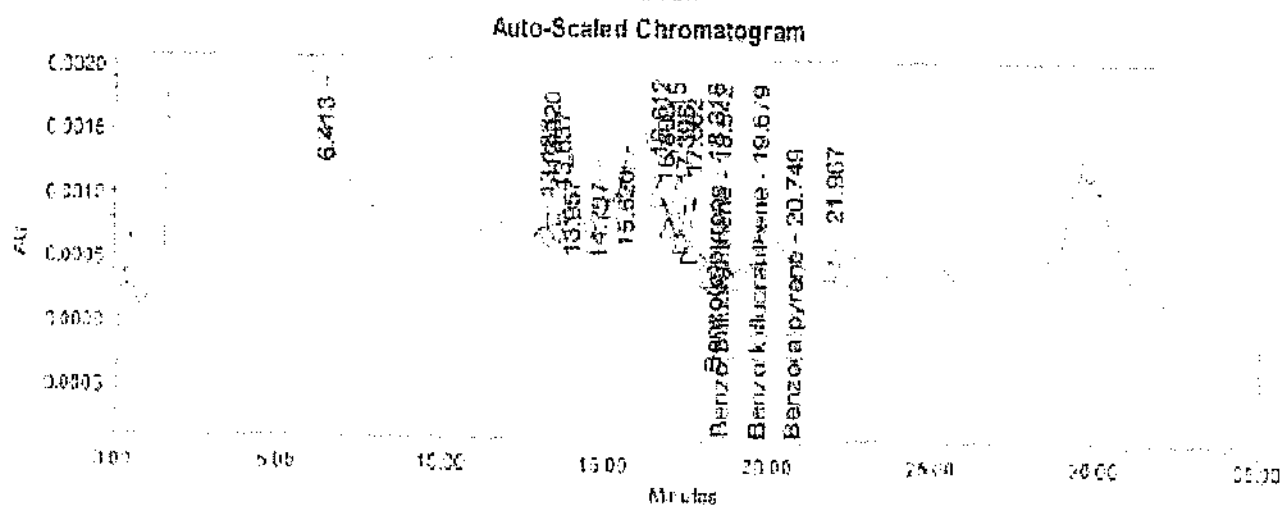
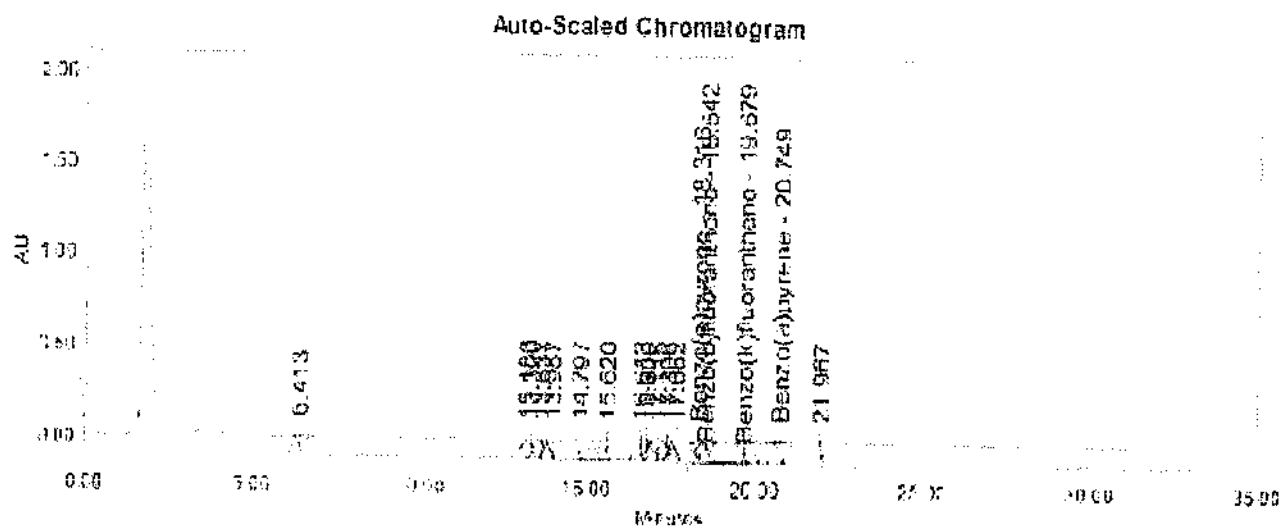
System Name LGWA2B

Sample Set Name N1601008\_PNA17

	Component Name	RT	Area	Height	Raw Amount (ugm)	Extraction Volume (uL)	Conc. Amount (ug)	Target Recovery (ug)	Recovery (%)	Dilution	Case ID
5	Benzobifluoranthene	13.855	140322	12266	1.0162	2.000	2.0364	2.0000	101.82	1.00	67733
6	Benzo[a]pyrene	18.666	19365	6577	1.0519	2.000	2.0535	2.0000	102.69	1.00	67733
7	Benzo[b]fluoranthene	24.217	52287	2347	0.3885	2.000	1.9776	2.0000	98.88	1.00	67727
8	Benzo[k]fluoranthene	19.829	39966	7453	1.0247	2.000	2.0492	2.0000	102.41	1.00	67734
9	Chrysene	16.042	226264	20225	1.3258	2.000	2.6535	2.0000	132.68	1.00	67737
1	Dibenz[a,h]anthracene	22.481	16353	2263	0.9366	2.000	1.8735	2.0000	93.68	1.00	67736
2	Fluoranthene	10.437	51205	5091	0.3705	2.000	1.9410	2.0000	97.05	1.00	67728
3	Fluorene	7.575	66006	8944	0.4442	2.000	1.9734	2.0000	98.67	1.00	67725
4	Indeno[1,2,3-cd]pyrene	26.530	167147	6333	1.0005	2.000	2.0013	2.0000	100.05	1.00	67738
5	Naphthalene	5.113	16705	1008	0.8547	2.000	1.7695	2.0000	88.47	1.00	67722
6	Phenanthrene	8.615	185344	18701	1.0133	2.000	2.0267	2.0000	101.33	1.00	67726
7	Pyrene	11.933	61345	6268	1.0552	2.000	2.1124	2.0000	105.62	1.00	67729
8	Triphenyl	5.113	1746957	120761	9.5347	2.000	19.6695	2.0000	953.47	1.00	67726
9		20.255	2486	161		2.000		2.0000		1.00	
0		17.169	2787	212		2.000		2.0000		1.00	

# Sample Information

Sample Name	16020065-2-2	Date Acquired	2/4/2015 10:28:15 AM
Sample Type		Acq Method Set	PNA 17
Sample Type	Unknown	Processing Method	PNA Eclipse
Vial	56	Date Processed	2/4/2015 2:04:07 PM
Injection	1	Channel Name	486
Injection Volume	5.00 uL	Run Time	35.0 Minutes



Component Name	RT	Area	Height	Raw Amount (ug/mL)	Extracted Volume (mL)	Final Amount (ug/mL)	Target Recovery (%)	Recovery (%)	Location	Comment
Benzofluoranthene	20.749	1825	180	0.519	10.000	0.1415			1.00	67736
Benzofluoranthene	18.542	3352	382	0.924	10.000	0.2500			1.00	67733
Benzofluoranthene	16.543	345	116	0.3156	10.000	0.1413			1.00	67732
Benzofluoranthene	19.679	1306	210	0.3131	10.000	0.1413			1.00	67734
Total PAH	6.413	42700	4332	0.2320	10.000	2.5201			1.00	67726

Sample Name 10020065-2-2

System Name LC//A2B

Sample Set Name N160100d PN417

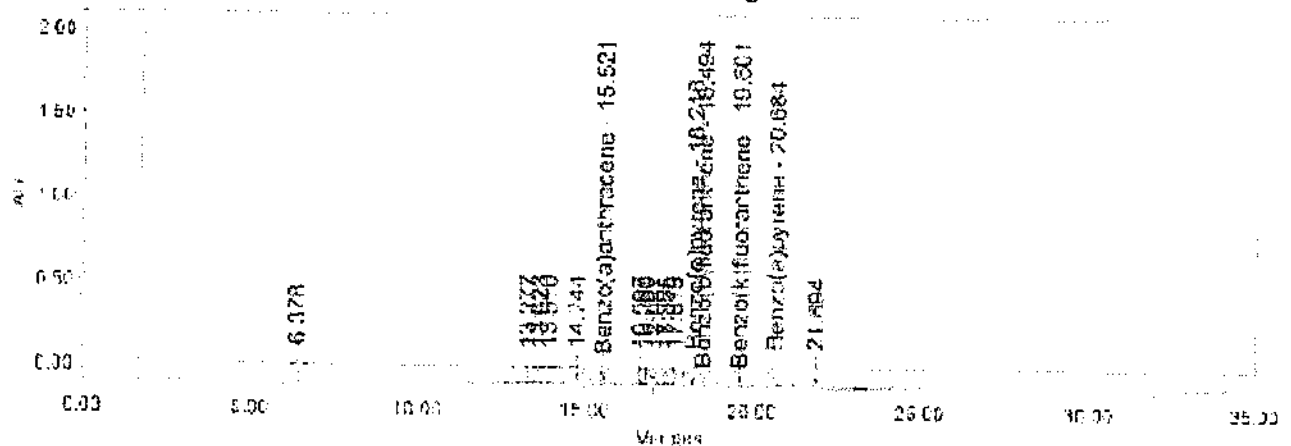
	Component Name	RT	Area	Height	Raw Amount (ug/mL)	Injection Volume (uL)	Final Amount (ug)	Target Recovery (ug)	Recovery (%)	Duration	Curve ID
1		16.612	1373	131		10.000				1.00	
2		16.900	387	64		10.000				1.00	
3		17.032	2692	403		10.000				1.00	
4		17.395	1881	265		10.000				1.00	
5		21.957	1469	149		10.000				1.00	
6		3.410	434	460		10.000				1.00	
7		13.133	649	74		10.000				1.00	
8		13.320	3564	263		10.000				1.00	
9		13.957	4832	517		10.000				1.00	
10		15.020	1216	150		10.000				1.30	
11		17.707	5490	318		10.000				1.00	
12		13.637	1012	115		10.000				1.30	
13		17.115	4035	361		10.000				1.30	

System Name LCW42B

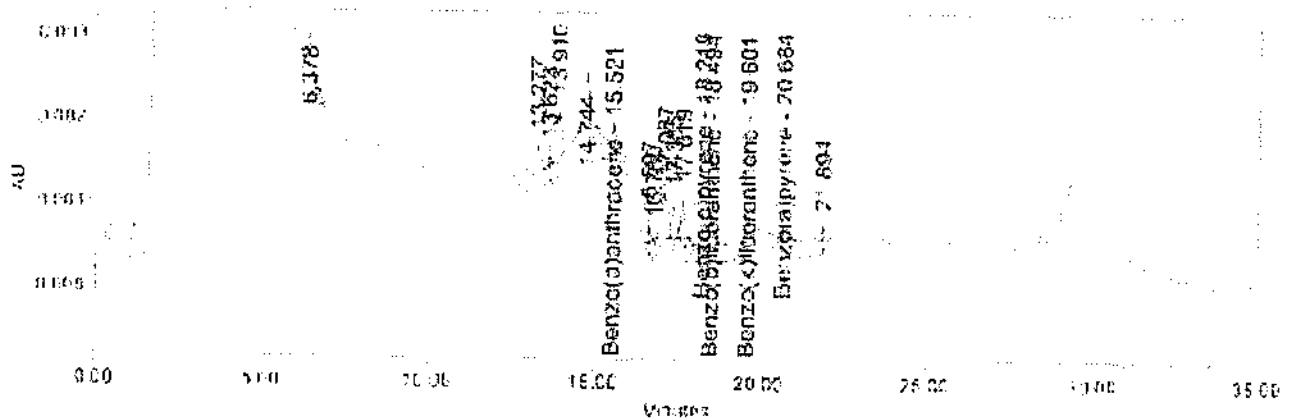
**Sample Information**

SampleName	16070055-2-1	Date Acquired	2/4/2015 11:04:45 AM
Sample_Type		Acq Method Set	PNA 17
Sample Type	Unknown	Processing Method	PNA Eclipse
Vial	55	Date Processed	2/4/2016 12:35:05 PM
Injection	1	Channel Name	485
Injection Volume	5.00 µl	Run Time	25.0 Minutes

Auto-Scaled Chromatogram



Auto-Scaled Chromatogram



Component Name	RT	Area	Height	Raw Amount (ug/AL)	Normalized Amount (ug/L)	Final Amount (ug/L)	Target Recovery (%)	Recovery (%)	Dilution	Conc (ug/L)
Benz[a]anthracene	15.521	1313	145	10.122	10.330	0.1220			100	67730
Benz[a]pyrene	20.684	1705	129	10.114	10.330	0.1744			100	67735
Benz[b]fluoranthene	18.219	3782	105	0.0263	10.330	0.2587			100	67733
Benz[e]pyrene	18.219	1278	135	0.0178	10.330	0.1782			100	67732
Benz[k]fluoranthene	19.601	1851	210	0.0136	10.330	0.1381			100	67734



SampleName 16020065-2-1

System Name LC//A2B

Sample Set Name N1601008\_PNA17

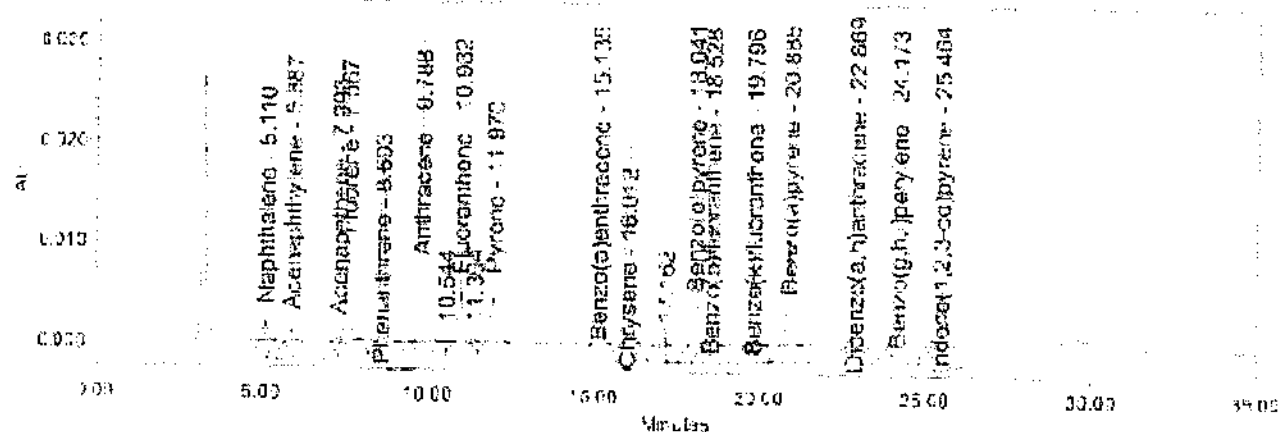
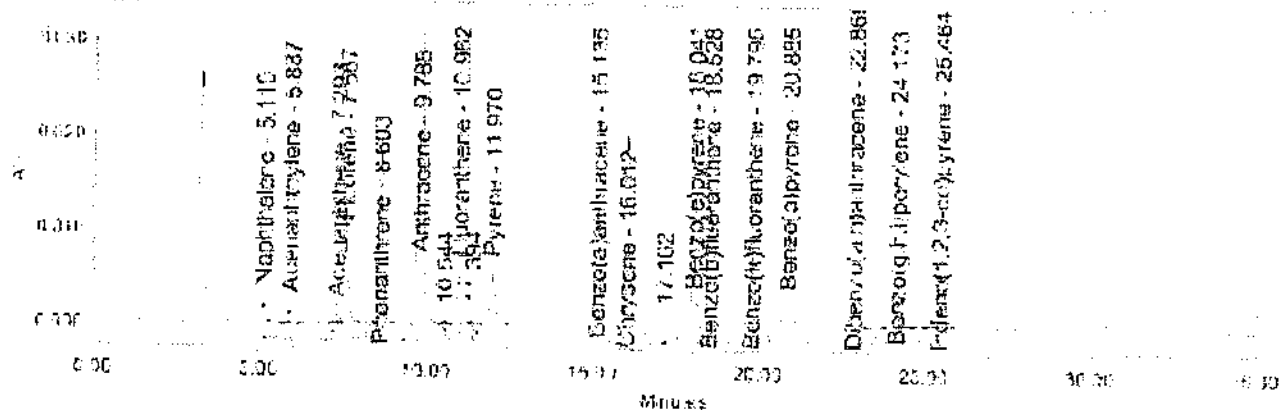
Dilution

	Component Name	RT	Area	Height	Raw Amount (cps)	Detector Volume (L)	Final Amount (cps/L)	Target Recovery (%)	Recovery (%)	Dilution	Conc (M)
1	Total PAH	6.378	48263	4735	0.2051	10.000	2.0512			1.00	8772R
2		15.697	389	107		10.000				1.00	
3		21.894	1093	112		10.000				1.00	
4		6.378	4854	528		10.000				1.00	
5		13.277	4210	297		10.000				1.00	
6		18.160	251	44		10.000				1.00	
7		17.087	6046	511		10.000				1.00	
8		17.555	3947	437		10.000				1.00	
9		17.619	1134	457		10.000				1.00	
10		13.623	641	36		10.000				1.00	
11		13.910	4726	525		10.000				1.00	
12		14.744	6552	683		10.000				1.00	

System Name: LGW928

**Sample Information**

Sample Name	1 ppm Lev	Date Acquired	7/4/2015 11:41:12 AM
Sample Type		Acq Method: Set	PNA 17
Sample Type	Unknown	Processing Method	PNA Eclipse
Vial	49	Date Processed	2/4/2016 12:31:32 PM
Injection	1	Channel Name	486
Injection Volume	5.00 µl	Run Time	35.0 Minutes

**Auto-Scaled Chromatogram****Auto-Scaled Chromatogram**

Compound Name	RT	Area	Height	Raw Amount (ng/mL)	Extraction Volume (mL)	Final Amount (ng)	Target Recovery (ng)	Recovery (%)	StdDev	Conc (µg/L)
Acenaphthene	7.232	7335	815	1.9110	2.000	2.0025	2.0000	101.60	1.00	67724
Acenaphthylene	5.837	12236	1233	2.3345	2.000	2.6697	2.0000	93.45	1.00	67723
Anthracene	9.743	24428	2453	3.9538	2.000	1.9650	2.0000	98.58	1.00	67727
Benzo(a)anthracene	15.105	125147	11693	1.6935	2.000	2.0007	2.0000	100.08	1.00	67730
Benzo(a)pyrene	20.885	100574	9537	3.9613	2.000	1.9238	2.0000	96.19	1.00	67735

Sample Name : prn cov

System Name LCWAZB

Sample Set Name N1601006\_PNA17

	Component Name	RT	Area	Height	Raw Amount (ug/ml)	Extraction Volume (ml)	Final Amount (ug)	Target Recovery (ug)	Recovery (%)	Dilution	Curve ID
1	Benzo(b)fluoranthene	28.533	138185	12108	1.0027	2.000	2.0062	2.0000	100.31	1.00	67733
2	Benzo(a)pyrene	30.041	78206	6474	1.0043	2.000	2.0088	2.0000	100.44	1.00	67732
3	Benzo(g,h)perylene	34.173	53730	2478	1.0038	2.000	2.0075	2.0000	100.38	1.00	67737
4	Benzo(i)fluoranthene	39.756	85864	7402	0.9957	2.000	1.9911	2.0000	99.57	1.00	67734
5	Chrysene	40.912	219776	19352	0.9974	2.000	1.9939	2.0000	99.74	1.00	67735
6	Dibenz(a,h)anthracene	22.308	35821	2781	0.9751	2.000	1.9501	2.0000	97.51	1.00	37736
7	Fluoranthene	10.930	50400	5634	1.0017	2.000	2.0033	2.0000	100.17	1.00	67728
8	Fluorene	7.567	64354	6653	0.9772	2.000	1.9544	2.0000	97.72	1.00	67735
9	Indeno(1,2,3-cd)pyrene	25.464	109157	5388	1.0163	2.000	2.0325	2.0000	101.63	1.00	67734
10	Naphthalene	5.113	17241	1919	0.9121	2.000	1.8242	2.0000	91.21	1.00	67722
11	Phenanthrene	8.603	194621	18417	1.0092	2.000	2.0184	2.0000	100.92	1.00	67726
12	Pyrene	11.970	59419	5112	1.0020	2.000	2.0040	2.0000	100.20	1.00	67729
13	Total PAH	6.110	172762	152766	9.4208	2.000	18.8577	2.0000	942.36	1.00	67724
14		17.102	2714	777		2.000		2.0000		1.35	
15		17.394	2750	290		2.000		2.0000		1.00	
16		18.546	2154	140		2.000		2.0000		1.00	