ALcontrol Laboratories

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: customerservices@alcontrol.com
Website: www.alcontrol.com

AECOM
St. George's House
2nd Floor
5 St. George's Road
Wimbledon
Greater London
SW19 4DR

Attention: Tim Rolfe

CERTIFICATE OF ANALYSIS

Date:	27 September 2016
Customer:	H_URS_WIM
Sample Delivery Group (SDG):	160921-98
Your Reference:	
Location:	Shell Shoreham Airport
Report No:	379718

We received 1 sample on Wednesday September 21, 2016 and 1 of these samples were scheduled for analysis which was completed on Monday September 26, 2016. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALcontrol Laboratories Hawarden (Method codes TM) or ALcontrol Laboratories Aberdeen (Method codes S).

Approved By:



Sonia McWhan
Operations Manager

1291

CERTIFICATE OF ANALYSIS

SDG:	161215-87	**Client Reference:**	60491603	**Report Number:**	391965
Location:	SHELL SHOREHAM	**Order Number:**	60491603	**Superseded Report:**	

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP - No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals - total metals must be requested separately.

11. Results relate only to the items tested.

12. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

14. **Product analyses** - Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

21. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

24. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

Sample Deviations

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Holding time exceeded before sample received
5	Samples exceeded holding time before presevation was performed
§	Sampled on date not provided
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to sampled on date
&	Sample Holding Time exceeded - Late arrival of instructions.

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	160921-98	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	379718
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
14190435	BACKFILL			20/09/2016

Only received samples which have had analysis scheduled will be shown on the following pages.

ALcontrol Laboratories

CERTIFICATE OF ANALYSIS

Validated

SDG:	160921-98	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	379718
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

SOLID

Results Legend

X Test

N No Determination Possible

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container		
			14190435	BACKFILL			250g Amber Jar (ALE21	400g Tub (ALE214)	60g VOC (ALE215)
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 1						X	
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 1					X		
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 1					X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 1							X
Oxygenates (S)	All	NDPs: 0 Tests: 1							X
PAH by GCMS	All	NDPs: 0 Tests: 1					X		
Sample description	All	NDPs: 0 Tests: 1					X		
VOC MS (S)	All	NDPs: 0 Tests: 1							X

CERTIFICATE OF ANALYSIS

SDG:	160921-98	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	379718
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2
14190435	BACKFILL		Orange	Stone/Soil	2.00 - 60.00 mm	Stones	N/A

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	160921-98	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	379718
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			BACKFILL	-	Soil/Solid	20/09/2016	-	21/09/2016	160921-98	14190435	
Moisture Content Ratio (% of as received sample)	%	PM024	0.8								
Bromofluorobenzene**	%	TM288	127								
Ethanol	<50 µg/kg	TM288	<50								
tert Butanol	<10 µg/kg	TM288	<10								
Diisopropyl ether	<1 µg/kg	TM288	<1								
tert-butyl ethyl ether	<1 µg/kg	TM288	<1								

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	160921-98	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	379718
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

EPH CWG (Aliphatic) GC (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			BACKFILL	-	Soil/Solid	20/09/2016	-	21/09/2016	160921-98	14190435	
Aliphatics >C12-C16	<100 µg/kg	TM173	<100								
Aliphatics >C16-C21	<100 µg/kg	TM173	<100								
Aliphatics >C21-C35	<100 µg/kg	TM173	<100								
Aliphatics >C35-C44	<100 µg/kg	TM173	<100								

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	160921-98	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	379718
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

EPH CWG (Aromatic) GC (S)

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			BACKFILL	-	Soil/Solid	20/09/2016	-	21/09/2016	160921-98	14190435	
Aromatics >EC12-EC16	<100 µg/kg	TM173	<100								
Aromatics >EC16-EC21	<100 µg/kg	TM173	<100								
Aromatics >EC21-EC35	<100 µg/kg	TM173	<100								

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	160921-98	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	379718
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

GRO by GC-FID (S)

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			BACKFILL	-	Soil/Solid	20/09/2016	-	21/09/2016	160921-98	14190435	
GRO Surrogate % recovery**	%	TM089	115								
Aliphatics >C5-C6	<10 µg/kg	TM089	<10								
Aliphatics >C6-C8	<10 µg/kg	TM089	<10								
Aliphatics >C8-C10	<10 µg/kg	TM089	<10								
Aliphatics >C10-C12	<10 µg/kg	TM089	<10								
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10								
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10								
Aromatics >EC8-EC10	<10 µg/kg	TM089	<10								
Aromatics >EC10-EC12	<10 µg/kg	TM089	<10								

ALcontrol Laboratories

CERTIFICATE OF ANALYSIS

Validated

SDG:	160921-98	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	379718
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

PAH by GCMS

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			BACKFILL	-	Soil/Solid	20/09/2016	-	21/09/2016	160921-98	14190435	
Naphthalene-d8 % recovery**	%	TM218	104								
Acenaphthene-d10 % recovery**	%	TM218	101								
Phenanthrene-d10 % recovery**	%	TM218	97								
Chrysene-d12 % recovery**	%	TM218	86.1								
Perylene-d12 % recovery**	%	TM218	91.8								
Naphthalene	<9 µg/kg	TM218	<9 #								
Acenaphthylene	<12 µg/kg	TM218	<12 #								
Acenaphthene	<8 µg/kg	TM218	<8 #								
Fluorene	<10 µg/kg	TM218	<10 #								
Phenanthrene	<15 µg/kg	TM218	<15 #								
Anthracene	<16 µg/kg	TM218	<16 #								
Fluoranthene	<17 µg/kg	TM218	<17 #								
Pyrene	<15 µg/kg	TM218	<15 #								
Benz(a)anthracene	<14 µg/kg	TM218	<14 #								
Chrysene	<10 µg/kg	TM218	<10 #								
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 #								
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 #								
Benzo(a)pyrene	<15 µg/kg	TM218	<15 #								
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 #								
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 #								
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 #								
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118								

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	160921-98	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	379718
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

		Customer Sample Ref.	BACKFILL
		Depth (m)	-
		Sample Type	Soil/Solid
		Date Sampled	20/09/2016
		Sampled Time	-
		Date Received	21/09/2016
		SDG Ref	160921-98
		Lab Sample No.(s)	14190435
		AGS Reference	
Component	**LOD/Units**	**Method**	
Toluene-d8**	%	TM116	99.8
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<10 #
Benzene	<9 µg/kg	TM116	<9 #
Toluene	<7 µg/kg	TM116	<7 #
Ethylbenzene	<4 µg/kg	TM116	<4 #
p/m-Xylene	<10 µg/kg	TM116	<10 #
o-Xylene	<10 µg/kg	TM116	<10 #
Tert-amyl methyl ether	<10 µg/kg	TM116	<10 #

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	160921-98	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	379718
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

Asbestos Identification - Soil

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref.	BACKFILL	26/09/16	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	SOLID										
Sample Type	20/09/2016										
Date Sampled	00:00:00										
Date Receieved	22/09/2016										
SDG	06:31:13										
Original Sample	160921-98										
Method Number	14190435										
	TM048										

CERTIFICATE OF ANALYSIS

SDG:	160921-98	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	379718
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM218	Microwave extraction – EPA method 3546	The determination of PAH in soil samples by microwave extraction and GC-MS		
TM288		Determination of Oxygenates in Soils by Headspace/GC-MS		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

Chemical testing (unless subcontracted) performed at ALcontrol Laboratories Hawarden (Method codes TM) or ALcontrol Laboratories Aberdeen (Method codes S).

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	160921-98	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	379718
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	14190435
Customer Sample Ref.	BACKFILL
AGS Ref.	
Depth	
Type	SOLID
Asbestos ID in Solid Samples	26-Sep-2016
EPH CWG (Aliphatic) GC (S)	26-Sep-2016
EPH CWG (Aromatic) GC (S)	26-Sep-2016
GRO by GC-FID (S)	26-Sep-2016
Oxygenates (S)	26-Sep-2016
PAH by GCMS	26-Sep-2016
Sample description	22-Sep-2016
VOC MS (S)	26-Sep-2016

CERTIFICATE OF ANALYSIS

SDG:	160921-98	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	379718
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

ASSOCIATED AQC DATA

EPH CWG (Aliphatic) GC (S)

Component	Method Code	QC 1485
Total Aliphatics >C12-C35	TM173	**89.58** 62.50 : 112.50

EPH CWG (Aromatic) GC (S)

Component	Method Code	QC 1485
Total Aromatics >EC12-EC35	TM173	**79.33** 60.62 : 126.95

GRO by GC-FID (S)

Component	Method Code	QC 1473
Benzene by GC (Moisture Corrected)	TM089	**92.0** 76.23 : 120.71
Ethylbenzene by GC (Moisture Corrected)	TM089	**92.5** 73.32 : 122.02
m & p Xylene by GC (Moisture Corrected)	TM089	**94.0** 72.90 : 122.64
MTBE GC-FID (Moisture Corrected)	TM089	**94.5** 72.17 : 124.81
o Xylene by GC (Moisture Corrected)	TM089	**96.0** 71.65 : 124.40
QC	TM089	**85.98** 68.17 : 113.61
Toluene by GC (Moisture Corrected)	TM089	**92.5** 74.60 : 120.38

Oxygenates (S)

Component	Method Code	QC 1477	QC 1401
Diisopropyl ether raw	TM288	**80.75** 75.85 : 124.81	**92.25** 75.85 : 124.81
Ethanol raw	TM288	**85.9** 20.18 : 141.28	**98.6** 20.18 : 141.28
tert Butanol raw	TM288	**85.5** 27.29 : 165.57	**93.5** 27.29 : 165.57
tert-amyl methyl ether raw	TM288	**86.75** 78.96 : 124.84	**93.5** 78.96 : 124.84
tert-butyl ethyl ether raw	TM288	**88.5** 76.41 : 125.42	**92.0** 76.41 : 125.42
tert-butyl methyl ether raw	TM288	**83.25** 78.20 : 126.30	**93.25** 78.20 : 126.30

PAH by GCMS

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	160921-98	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	379718
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

PAH by GCMS

Component	Method Code	QC 1446
Acenaphthene	TM218	**100.5** 78.84 : 114.36
Acenaphthylene	TM218	**95.5** 72.95 : 108.95
Anthracene	TM218	**95.0** 75.54 : 110.88
Benz(a)anthracene	TM218	**96.5** 78.02 : 127.38
Benzo(a)pyrene	TM218	**99.5** 79.21 : 128.01
Benzo(b)fluoranthene	TM218	**99.5** 80.00 : 125.00
Benzo(ghi)perylene	TM218	**95.5** 77.90 : 118.70
Benzo(k)fluoranthene	TM218	**97.0** 78.77 : 120.72
Chrysene	TM218	**94.5** 78.77 : 118.99
Dibenzo(ah)anthracene	TM218	**97.5** 76.39 : 122.63
Fluoranthene	TM218	**101.5** 77.25 : 117.75
Fluorene	TM218	**102.5** 79.28 : 117.35
Indeno(123cd)pyrene	TM218	**98.0** 78.87 : 122.50
Naphthalene	TM218	**107.0** 74.75 : 118.25
Phenanthrene	TM218	**100.5** 78.61 : 113.98
Pyrene	TM218	**99.0** 76.15 : 115.26

VOC MS (S)

Component	Method Code	QC 1461
1,1,1,2-tetrachloroethane	TM116	**90.0** 76.60 : 121.00
1,1,1-Trichloroethane	TM116	**99.2** 77.80 : 123.40
1,1,2-Trichloroethane	TM116	**83.6** 75.40 : 119.80
1,1-Dichloroethane	TM116	**97.2** 74.46 : 129.15
1,2-Dichloroethane	TM116	**105.0** 86.62 : 136.90
1,4-Dichlorobenzene	TM116	**100.6** 72.76 : 126.34
2-Chlorotoluene	TM116	**96.4** 74.00 : 117.20
4-Chlorotoluene	TM116	**96.2** 71.20 : 113.20
Benzene	TM116	**98.6** 79.60 : 125.20

CERTIFICATE OF ANALYSIS

SDG:	160921-98	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	379718
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

VOC MS (S)

		QC 1461
Carbon Disulphide	TM116	**97.4** 74.91 : 122.14
Carbontetrachloride	TM116	**111.6** 87.07 : 120.37
Chlorobenzene	TM116	**87.4** 75.00 : 115.53
Chloroform	TM116	**98.8** 82.00 : 128.80
Chloromethane	TM116	**98.6** 68.36 : 154.01
Cis-1,2-Dichloroethene	TM116	**90.8** 57.23 : 143.96
Dibromomethane	TM116	**95.0** 73.40 : 116.60
Dichloromethane	TM116	**97.2** 86.60 : 137.00
Ethylbenzene	TM116	**97.8** 73.60 : 115.60
Hexachlorobutadiene	TM116	**121.6** 42.69 : 142.65
Isopropylbenzene	TM116	**107.4** 64.24 : 119.40
Naphthalene	TM116	**102.0** 77.06 : 119.98
o-Xylene	TM116	**81.6** 51.65 : 118.61
p/m-Xylene	TM116	**89.5** 71.30 : 112.70
Sec-Butylbenzene	TM116	**125.2** 54.99 : 144.98
Tetrachloroethene	TM116	**107.0** 83.42 : 123.69
Toluene	TM116	**91.8** 76.08 : 110.17
Trichloroethene	TM116	**94.6** 78.17 : 121.37
Trichlorofluoromethane	TM116	**101.2** 75.01 : 124.99
Vinyl Chloride	TM116	**107.0** 66.81 : 138.46

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	160921-98	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	379718
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

Chromatogram

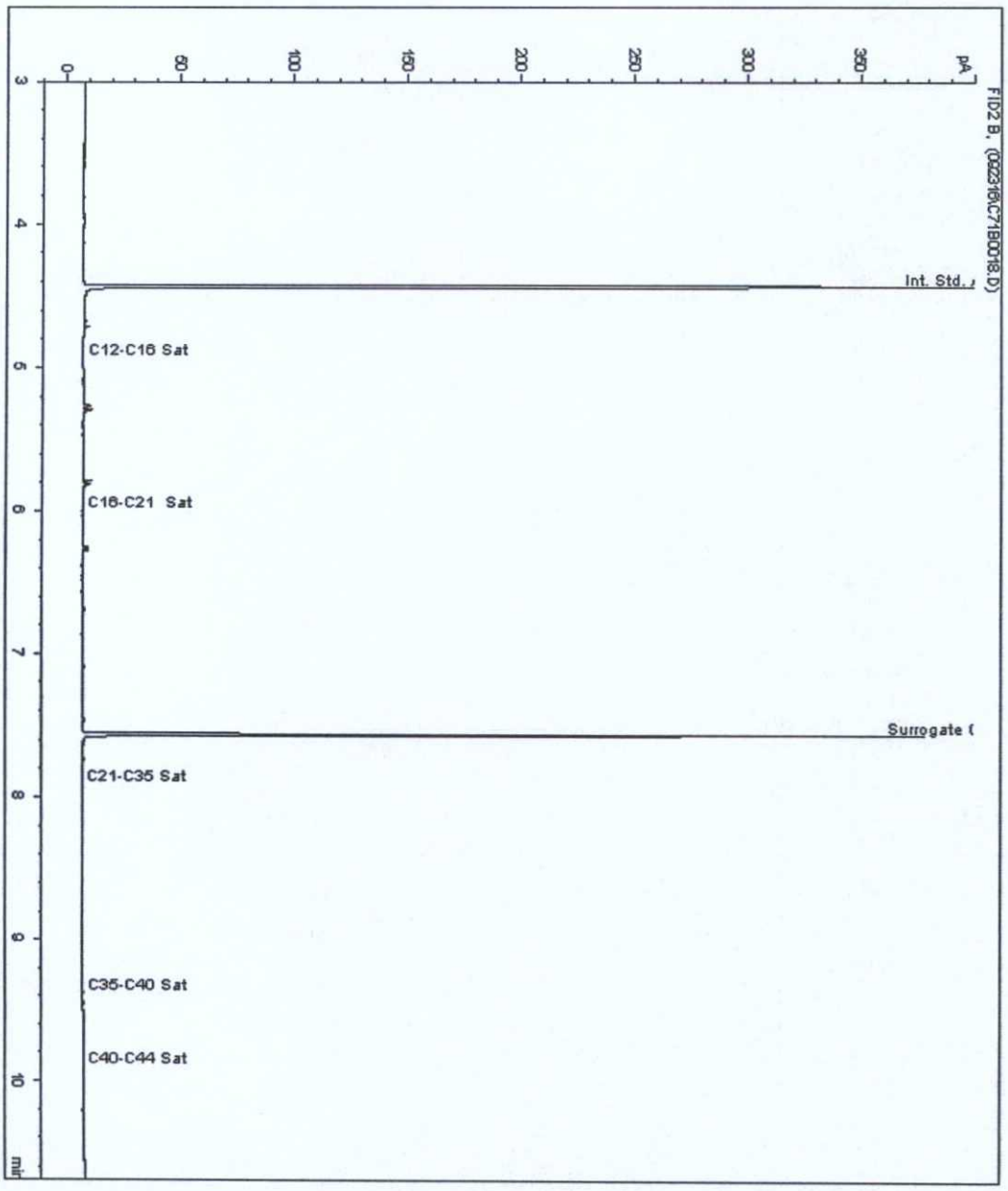
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14191450
Sample ID : BACKFILL

Depth :

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13328842-
Date Acquired : 23/09/2016 14:24:34 PM
Units : ppb
Dilution: BACKFILL[] ->



CERTIFICATE OF ANALYSIS

SDG:	160921-98	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	379718
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

Chromatogram

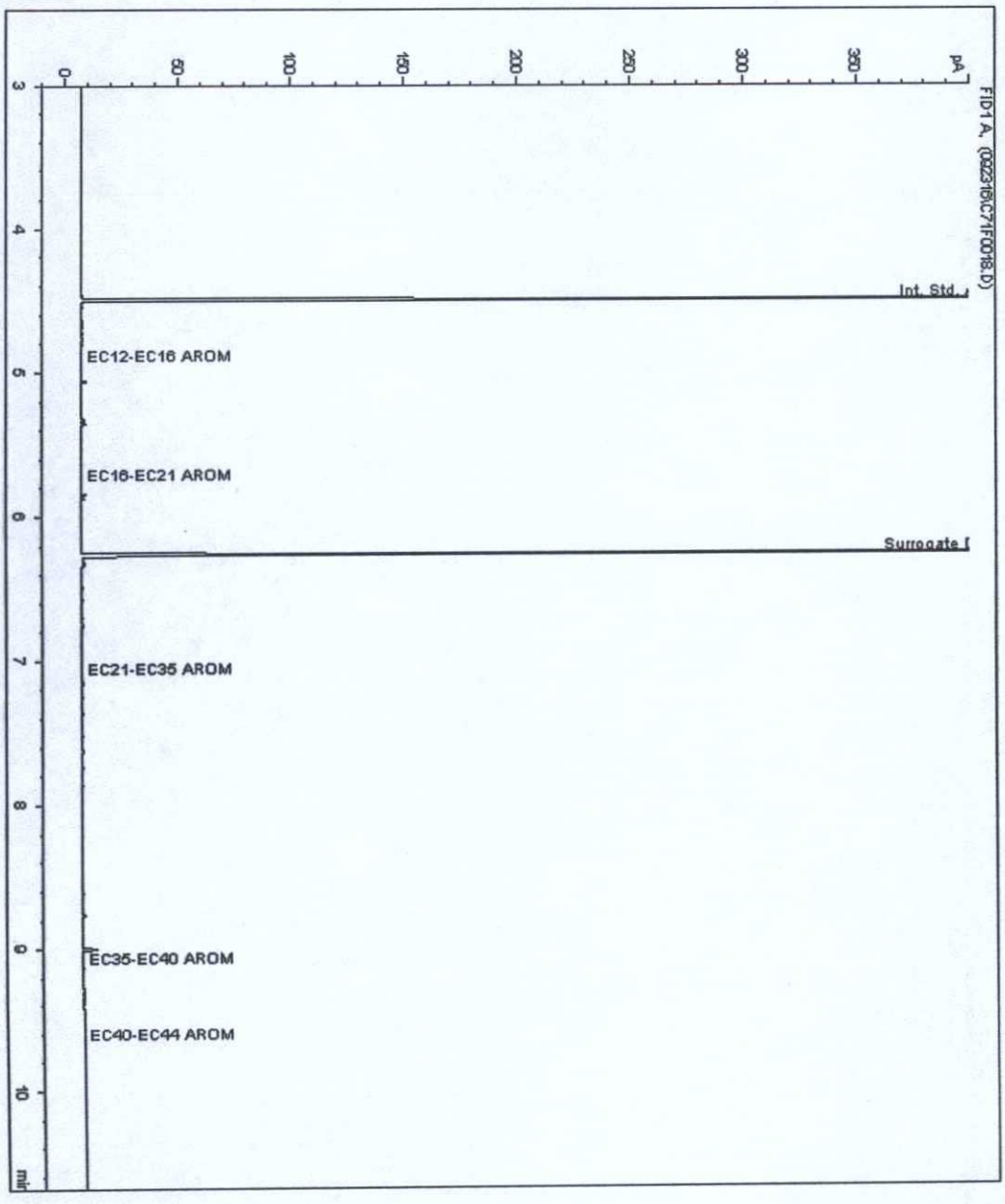
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14191450
Sample ID : BACKFILL

Depth :

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13328843-
Date Acquired : 23/09/2016 14:24:34 PM
Units : ppb
Dilution: BACKFILL[] ->



ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

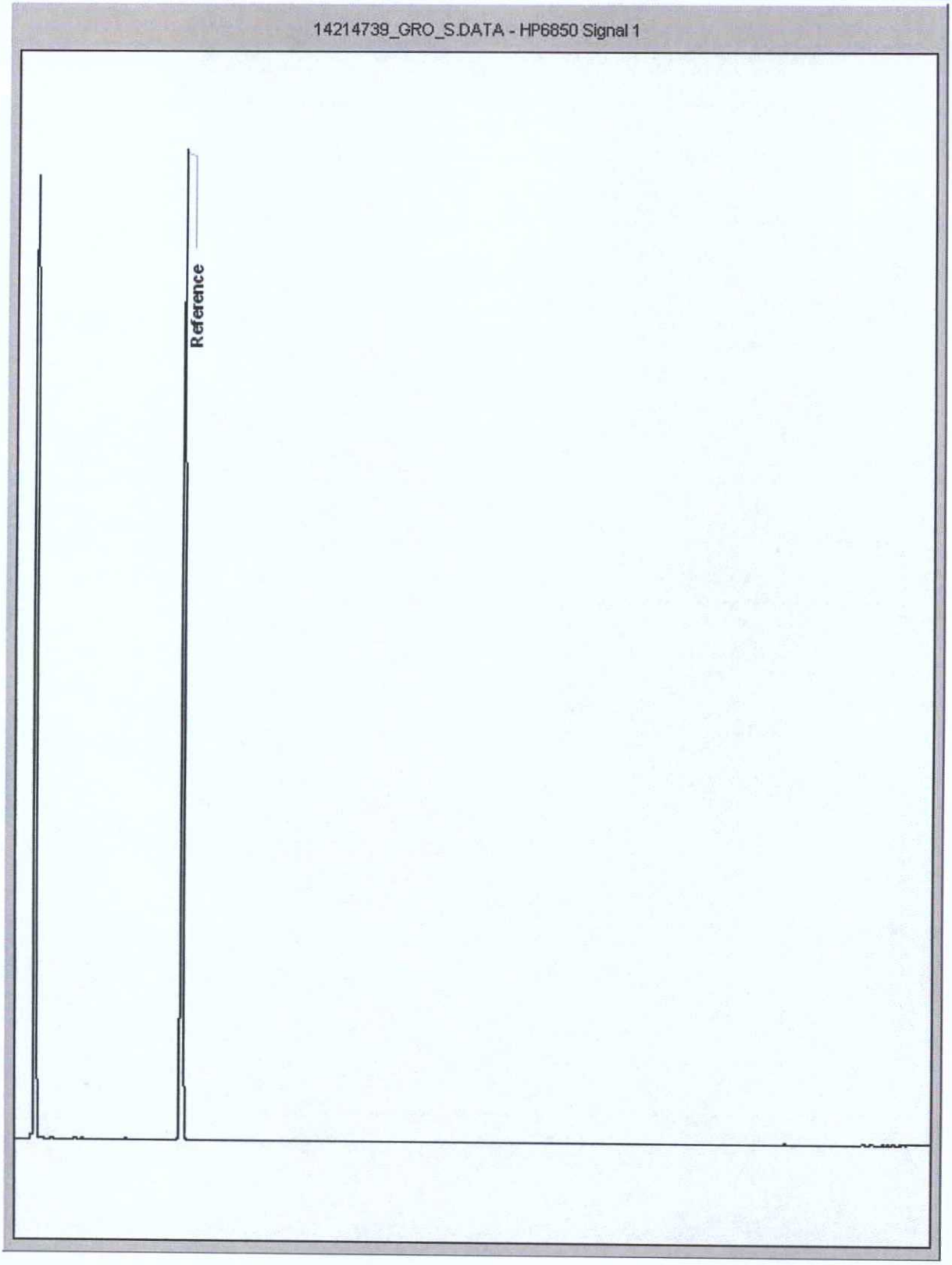
SDG:	160921-98	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	379718
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14214739
Sample ID : BACKFILL

Depth :



SDG:	160921-98	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	379718
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP - No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals - total metals must be requested separately.

11. Results relate only to the items tested.

12. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

14. **Product analyses** - Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

General

20. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

21. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

24. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

Sample Deviations

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Holding time exceeded before sample received**
5	**Samples exceeded holding time before presevation was performed**
§	**Sampled on date not provided**
•	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to sampled on date**
&	**Sample Holding Time exceeded - Late arrival of instructions.**

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: customerservices@alcontrol.com
Website: www.alsenvironmental.co.uk

Post Certification Report

AECOM
St. George's House
2nd Floor
5 St. George's Road
Wimbledon
Greater London
SW19 4DR
Attention: Tim Rolfe

Date:	14/12/2016	**Location:**	Shell Shoreham Airport
Customer:	H_URS_WIM	**No. Of Samples Received:**	10
Your Reference:		**Samples Scheduled:**	10

Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

ALS Environmental is part of ALS Life Sciences Limited. ALS Life Sciences Limited registered Office: Units 7 & 8 Hawarden Business Park, Manor Road, Hawarden, Deeside, CH5 3US. Registered in England and Wales No. 4057291.

Post Certification Report

Customer : H_URS_WIM

Client Reference :

Location : Shell Shoreham Airport

Results Legend

- X — Test
- N — No Determination Possible

			Lab Sample No(s)	14709376	14171731	14171732	14171734	14171735	14171740	14171736	14171737	14171739	14171738
			Customer Sample Reference	EXA01	EXA02	EXA03	EXA04	EXA05	EXA16	EXA17	EXA19	EXA20	EXA21
			AGS Reference										
			Depth (m)	1.70	1.70	1.70	4.00	4.00	4.00	2.00	2.50	3.50	2.30
			Container	250g Amber Jar	60g VOC (ALE215)	250g Amber Jar	60g VOC (ALE215)	250g Amber Jar	60g VOC (ALE215)	250g Amber Jar	60g VOC (ALE215)	250g Amber Jar	60g VOC (ALE215)	250g Amber Jar	60g VOC (ALE215)	250g Amber Jar	60g VOC (ALE215)	250g Amber Jar	60g VOC (ALE215)	250g Amber Jar	60g VOC (ALE215)	250g Amber Jar	60g VOC (ALE215)
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 10		X		X		X		X		X		X		X		X		X		X	
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 10		X		X		X		X		X		X		X		X		X		X	
GRO by GC-FID (S)	All	NDPs: 0 Tests: 10			X		X		X		X		X		X		X		X		X		X
Oxygenates (S)	All	NDPs: 0 Tests: 10			X		X		X		X		X		X		X		X		X		X
PAH by GCMS	All	NDPs: 0 Tests: 10		X		X		X		X		X		X		X		X		X		X	
Sample description	All	NDPs: 0 Tests: 10		X		X		X		X		X		X		X		X		X		X	
VOC MS (S)	All	NDPs: 0 Tests: 10			X		X		X		X		X		X		X		X		X		X

Post Certification Report

Customer : H_URS_WIM **Client Reference :**

Location : Shell Shoreham Airport

Results Legend		Customer Sample Ref.	EXA01	EXA02	EXA03	EXA04	EXA05	EXA16
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	subcontracted test.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.							
1-5&+§@	Sample deviation (see appendix)							
		Depth (m)	1.70	1.70	1.70	4.00	4.00	4.00
		Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
		Date Sampled	16/09/2016	16/09/2016	16/09/2016	16/09/2016	16/09/2016	16/09/2016
		Date Received	16/09/2016	16/09/2016	16/09/2016	16/09/2016	16/09/2016	16/09/2016
		SDG Ref	160917-65	160917-65	160917-65	160917-65	160917-65	160917-65
		Lab Sample No.(s)	14709376	14171731	14171732	14171734	14171735	14171740
		AGS Reference						
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	20	26	24	30	13	13
Bromofluorobenzene**	%	TM288	107	98.3	98	115	107	117
Ethanol	<50 µg/kg	TM288	<50	<50	<50	3390	186	456
tert Butanol	<10 µg/kg	TM288	<10	<10	<10	<10	<10	<10
Diisopropyl ether	<1 µg/kg	TM288	<1	<1	<1	<1	<1	<1
tert-butyl ethyl ether	<1 µg/kg	TM288	<1	<1	<1	<1	<1	<1

Post Certification Report

Customer : H_URS_WIM **Client Reference :**

Location : Shell Shoreham Airport

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	EXA17	EXA19	EXA20	EXA21		
			Depth (m)	2.00	2.50	3.50	2.30		
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid		
			Date Sampled	16/09/2016	16/09/2016	16/09/2016	16/09/2016		
			Date Received	16/09/2016	16/09/2016	16/09/2016	16/09/2016		
			SDG Ref	160917-65	160917-65	160917-65	160917-65		
			Lab Sample No.(s)	14171736	14171737	14171739	14171738		
			AGS Reference						
Moisture Content Ratio (% of as received sample)	%	PM024		20	19	15	12		
Bromofluorobenzene**	%	TM288		84.5	91	109	105		
Ethanol	<50 µg/kg	TM288		<50	71.6	184	109		
tert Butanol	<10 µg/kg	TM288		<10	<10	<10	<10		
Diisopropyl ether	<1 µg/kg	TM288		<1	<1	<1	<1		
tert-butyl ethyl ether	<1 µg/kg	TM288		<1	<1	<1	<1		

Post Certification Report

Customer : H_URS_WIM **Client Reference :**

Location : Shell Shoreham Airport

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	EXA01	EXA02	EXA03	EXA04	EXA05	EXA16
			Depth (m)	1.70	1.70	1.70	4.00	4.00	4.00
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	16/09/2016	16/09/2016	16/09/2016	16/09/2016	16/09/2016	16/09/2016
			Date Received	16/09/2016	16/09/2016	16/09/2016	16/09/2016	16/09/2016	16/09/2016
			SDG Ref	160917-65	160917-65	160917-65	160917-65	160917-65	160917-65
			Lab Sample No.(s)	14709376	14171731	14171732	14171734	14171735	14171740
			AGS Reference						
Aliphatics >C12-C16	<100 µg/kg	TM173		1300	<100	<100	<100	986	5330
Aliphatics >C16-C21	<100 µg/kg	TM173		1970	10200	<100	<100	2700	11500
Aliphatics >C21-C35	<100 µg/kg	TM173		1450	41500	2170	<100	4000	30200
Aliphatics >C35-C44	<100 µg/kg	TM173		<100	9250	<100	<100	7480	14700

Post Certification Report

Customer : H_URS_WIM **Client Reference :**

Location : Shell Shoreham Airport

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	EXA17	EXA19	EXA20	EXA21		
			Depth (m)	2.00	2.50	3.50	2.30		
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid		
			Date Sampled	16/09/2016	16/09/2016	16/09/2016	16/09/2016		
			Date Received	16/09/2016	16/09/2016	16/09/2016	16/09/2016		
			SDG Ref	160917-65	160917-65	160917-65	160917-65		
			Lab Sample No.(s)	14171736	14171737	14171739	14171738		
			AGS Reference						
Aliphatics >C12-C16	<100 µg/kg	TM173		1390	387000	23400	29600		
Aliphatics >C16-C21	<100 µg/kg	TM173		4200	524000	68700	113000		
Aliphatics >C21-C35	<100 µg/kg	TM173		14500	1210000	78600	105000		
Aliphatics >C35-C44	<100 µg/kg	TM173		6150	229000	17000	11600		

Post Certification Report

Customer : H_URS_WIM **Client Reference :**

Location : Shell Shoreham Airport

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	EXA01	EXA02	EXA03	EXA04	EXA05	EXA16
			Depth (m)	1.70	1.70	1.70	4.00	4.00	4.00
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	16/09/2016	16/09/2016	16/09/2016	16/09/2016	16/09/2016	16/09/2016
			Date Received	16/09/2016	16/09/2016	16/09/2016	16/09/2016	16/09/2016	16/09/2016
			SDG Ref	160917-65	160917-65	160917-65	160917-65	160917-65	160917-65
			Lab Sample No.(s)	14709376	14171731	14171732	14171734	14171735	14171740
			AGS Reference						
Aromatics >EC12-EC16	<100 µg/kg	TM173		424	8300	740	<100	2680	3890
Aromatics >EC16-EC21	<100 µg/kg	TM173		273	12000	5450	<100	20500	22000
Aromatics >EC21-EC35	<100 µg/kg	TM173		644	61800	25700	4570	102000	92400

Post Certification Report

Customer : H_URS_WIM **Client Reference :**

Location : Shell Shoreham Airport

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	EXA17	EXA19	EXA20	EXA21		
			Depth (m)	2.00	2.50	3.50	2.30		
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid		
			Date Sampled	16/09/2016	16/09/2016	16/09/2016	16/09/2016		
			Date Received	16/09/2016	16/09/2016	16/09/2016	16/09/2016		
			SDG Ref	160917-65	160917-65	160917-65	160917-65		
			Lab Sample No.(s)	14171736	14171737	14171739	14171738		
			AGS Reference						
Aromatics >EC12-EC16	<100 µg/kg	TM173		1780	59200	6600	9720		
Aromatics >EC16-EC21	<100 µg/kg	TM173		15400	180000	27300	40800		
Aromatics >EC21-EC35	<100 µg/kg	TM173		65900	575000	82800	88900		

Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	EXA01	EXA02	EXA03	EXA04	EXA05	EXA16
			Depth (m)	1.70	1.70	1.70	4.00	4.00	4.00
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	16/09/2016	16/09/2016	16/09/2016	16/09/2016	16/09/2016	16/09/2016
			Date Received	16/09/2016	16/09/2016	16/09/2016	16/09/2016	16/09/2016	16/09/2016
			SDG Ref	160917-65	160917-65	160917-65	160917-65	160917-65	160917-65
			Lab Sample No.(s)	14709376	14171731	14171732	14171734	14171735	14171740
			AGS Reference						
GRO Surrogate % recovery**	%	TM089		95	73	97	122	112	103
Aliphatics >C5-C6	<10 µg/kg	TM089		<10	63	145	204	215	62.7
Aliphatics >C6-C8	<10 µg/kg	TM089		<10	12500	3300	2240	3990	1300
Aliphatics >C8-C10	<10 µg/kg	TM089		<10	5560	1630	1560	2390	1010
Aliphatics >C10-C12	<10 µg/kg	TM089		<10	4020	1130	1030	1540	814
Aromatics >EC5-EC7	<10 µg/kg	TM089		<10	32.2	21	20	19.4	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089		<10	<10	<10	210	<10	104
Aromatics >EC8-EC10	<10 µg/kg	TM089		<10	3710	1110	1660	2100	885
Aromatics >EC10-EC12	<10 µg/kg	TM089		<10	2680	756	685	1020	543

Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	EXA17	EXA19	EXA20	EXA21		
			Depth (m)	2.00	2.50	3.50	2.30		
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid		
			Date Sampled	16/09/2016	16/09/2016	16/09/2016	16/09/2016		
			Date Received	16/09/2016	16/09/2016	16/09/2016	16/09/2016		
			SDG Ref	160917-65	160917-65	160917-65	160917-65		
			Lab Sample No.(s)	14171736	14171737	14171739	14171738		
			AGS Reference						
GRO Surrogate % recovery**	%	TM089		101	111	129	70		
Aliphatics >C5-C6	<10 µg/kg	TM089		<10	1410	1680	927		
Aliphatics >C6-C8	<10 µg/kg	TM089		21.3	4580	6730	2620		
Aliphatics >C8-C10	<10 µg/kg	TM089		16.3	3050	3760	1180		
Aliphatics >C10-C12	<10 µg/kg	TM089		20	2600	2310	1520		
Aromatics >EC5-EC7	<10 µg/kg	TM089		<10	44.6	42.1	<10		
Aromatics >EC7-EC8	<10 µg/kg	TM089		13.8	1730	1740	380		
Aromatics >EC8-EC10	<10 µg/kg	TM089		32.5	6310	7570	1740		
Aromatics >EC10-EC12	<10 µg/kg	TM089		13.8	1730	1540	1010		

Post Certification Report

Customer : H_URS_WIM **Client Reference :**

Location : Shell Shoreham Airport

Results Legend		Customer Sample Ref.	EXA01	EXA02	EXA03	EXA04	EXA05	EXA16
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	subcontracted test.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.							
1-5&+§@	Sample deviation (see appendix)							
		Depth (m)	1.70	1.70	1.70	4.00	4.00	4.00
		Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
		Date Sampled	16/09/2016	16/09/2016	16/09/2016	16/09/2016	16/09/2016	16/09/2016
		Date Received	16/09/2016	16/09/2016	16/09/2016	16/09/2016	16/09/2016	16/09/2016
		SDG Ref	160917-65	160917-65	160917-65	160917-65	160917-65	160917-65
		Lab Sample No.(s)	14709376	14171731	14171732	14171734	14171735	14171740
		AGS Reference						

Component	LOD/Units	Method						
Naphthalene-d8 % recovery**	%	TM218	88.3	95.7	99.6	113	91.5	99.8
Acenaphthene-d10 % recovery**	%	TM218	84	93.2	97.3	111	88.8	98.6
Phenanthrene-d10 % recovery**	%	TM218	82.9	92.6	96.5	109	88.4	97.4
Chrysene-d12 % recovery**	%	TM218	75	86.8	92.8	101	89.1	92.4
Perylene-d12 % recovery**	%	TM218	80	96.1	97.1	106	95.4	98.5
Naphthalene	<9 µg/kg	TM218	<9 M	86.9 M	63.5 M	32.5 M	103 M	63.8 M
Acenaphthylene	<12 µg/kg	TM218	<12 M	100 M	138 M	39.7 M	253 M	104 M
Acenaphthene	<8 µg/kg	TM218	<8 M	18.5 M	13.1 M	21.5 M	208 M	61.6 M
Fluorene	<10 µg/kg	TM218	<10 M	44.4 M	26.3 M	24.8 M	171 M	64 M
Phenanthrene	<15 µg/kg	TM218	<15 M	227 M	515 M	360 M	2570 M	787 M
Anthracene	<16 µg/kg	TM218	<16 M	115 M	126 M	95.4 M	779 M	242 M
Fluoranthene	<17 µg/kg	TM218	<17 M	1280 M	1400 M	784 M	6210 M	2560 M
Pyrene	<15 µg/kg	TM218	<15 M	1150 M	1160 M	702 M	5950 M	2260 M
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	634 M	519 M	326 M	3340 M	1370 M
Chrysene	<10 µg/kg	TM218	<10 M	682 M	616 M	273 M	2660 M	1120 M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	1040 M	860 M	464 M	4170 M	1990 M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	410 M	322 M	190 M	1880 M	652 M
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	896 M	706 M	423 M	4360 M	1460 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	606 M	445 M	265 M	2340 M	817 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	167 M	125 M	67.7 M	675 M	223 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	732 M	554 M	324 M	2710 M	1020 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	8190	7590	4390	38400	14800

Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	EXA17	EXA19	EXA20	EXA21		
			Depth (m)	2.00	2.50	3.50	2.30		
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid		
			Date Sampled	16/09/2016	16/09/2016	16/09/2016	16/09/2016		
			Date Received	16/09/2016	16/09/2016	16/09/2016	16/09/2016		
			SDG Ref	160917-65	160917-65	160917-65	160917-65		
			Lab Sample No.(s)	14171736	14171737	14171739	14171738		
			AGS Reference						
Naphthalene-d8 % recovery**	%	TM218		97.2	96.9	97.9	101		
Acenaphthene-d10 % recovery**	%	TM218		97.2	99.5	98.3	102		
Phenanthrene-d10 % recovery**	%	TM218		95.4	102	97.2	103		
Chrysene-d12 % recovery**	%	TM218		90	111	93.7	95.6		
Perylene-d12 % recovery**	%	TM218		93.7	123	100	105		
Naphthalene	<9 µg/kg	TM218		139 M	147 M	78.2 M	93.7 M		
Acenaphthylene	<12 µg/kg	TM218		119 M	180 M	118 M	177 M		
Acenaphthene	<8 µg/kg	TM218		43 M	118 M	70.6 M	129 M		
Fluorene	<10 µg/kg	TM218		37.4 M	232 M	86.2 M	160 M		
Phenanthrene	<15 µg/kg	TM218		1120 M	1290 M	797 M	1140 M		
Anthracene	<16 µg/kg	TM218		240 M	535 M	277 M	475 M		
Fluoranthene	<17 µg/kg	TM218		2580 M	3640 M	2610 M	2990 M		
Pyrene	<15 µg/kg	TM218		2330 M	3530 M	2320 M	2710 M		
Benz(a)anthracene	<14 µg/kg	TM218		1410 M	2240 M	1390 M	1660 M		
Chrysene	<10 µg/kg	TM218		1260 M	1730 M	1040 M	1320 M		
Benzo(b)fluoranthene	<15 µg/kg	TM218		2410 M	2580 M	1950 M	2070 M		
Benzo(k)fluoranthene	<14 µg/kg	TM218		803 M	1250 M	717 M	844 M		
Benzo(a)pyrene	<15 µg/kg	TM218		1790 M	2860 M	1520 M	1810 M		
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218		1050 M	1670 M	835 M	960 M		
Dibenzo(a,h)anthracene	<23 µg/kg	TM218		275 M	440 M	223 M	274 M		
Benzo(g,h,i)perylene	<24 µg/kg	TM218		1350 M	2090 M	1020 M	1180 M		
PAH, Total Detected USEPA 16	<118 µg/kg	TM218		17000	24500	15100	18000		

Post Certification Report

Customer : H_URS_WIM **Client Reference :**

Location : Shell Shoreham Airport

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.
1-5&+§@	Sample deviation (see appendix)

Customer Sample Ref.	EXA01	EXA02	EXA03	EXA04	EXA05	EXA16
Depth (m)	1.70	1.70	1.70	4.00	4.00	4.00
Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
Date Sampled	16/09/2016	16/09/2016	16/09/2016	16/09/2016	16/09/2016	16/09/2016
Date Received	16/09/2016	16/09/2016	16/09/2016	16/09/2016	16/09/2016	16/09/2016
SDG Ref	160917-65	160917-65	160917-65	160917-65	160917-65	160917-65
Lab Sample No.(s)	14709376	14171731	14171732	14171734	14171735	14171740
AGS Reference						

Component	LOD/Units	Method						
Toluene-d8**	%	TM116	97	89.1	92	98.9	95.9	93.9
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Benzene	<9 µg/kg	TM116	<9 M	<9 M	<9 M	23.1 M	<9 M	<9 M
Toluene	<7 µg/kg	TM116	<7 M	10.1 M	<7 M	173 M	49.2 M	27.5 M
Ethylbenzene	<4 µg/kg	TM116	<4 M	<4 M	<4 M	68 M	41.6 M	12.8 M
p/m-Xylene	<10 µg/kg	TM116	<10 #	15.5 #	<10 #	282 #	153 #	37.6 #
o-Xylene	<10 µg/kg	TM116	<10 M	<10 M	<10 M	112 M	58.7 M	23.8 M
Tert-amyl methyl ether	<10 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #

Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.
1-5&+§@	Sample deviation (see appendix)

Customer Sample Ref.	EXA17	EXA19	EXA20	EXA21		
Depth (m)	2.00	2.50	3.50	2.30		
Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid		
Date Sampled	16/09/2016	16/09/2016	16/09/2016	16/09/2016		
Date Received	16/09/2016	16/09/2016	16/09/2016	16/09/2016		
SDG Ref	160917-65	160917-65	160917-65	160917-65		
Lab Sample No.(s)	14171736	14171737	14171739	14171738		
AGS Reference						

Component	LOD/Units	Method						
Toluene-d8**	%	TM116	95.9	74.9	88.6	73.7		
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M		
Benzene	<9 µg/kg	TM116	<9 M	28.6 M	27.1 M	13.7 M		
Toluene	<7 µg/kg	TM116	10 M	1330 M	1320 M	595 M		
Ethylbenzene	<4 µg/kg	TM116	<4 M	445 M	359 M	205 M		
p/m-Xylene	<10 µg/kg	TM116	<10 #	1620 #	1380 #	684 #		
o-Xylene	<10 µg/kg	TM116	<10 M	832 M	622 M	325 M		
Tert-amyl methyl ether	<10 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #		

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

Table of Results - Appendix

REPORT KEY

Results expressed as (e.g.) 1.03E-07 is equivalent to 1.03x10-7

NDP	No Determination Possible	#	ISO 17025 Accredited	*	Subcontracted Test	M	MCERTS Accredited
NFD	No Fibres Detected	PFD	Possible Fibres Detected	»	Result previously reported (Incremental reports only)	EC	Equivalent Carbon (Aromatics C8-C35)

Note: Method detection limits are not always achievable due to various circumstances beyond our control

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
ASB_PREP				
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM218	Determination of PAH by GCMS Microwave extraction	The determination of PAH in soil samples by microwave extraction and GC-MS		
TM288		Determination of Oxygenates in Soils by Headspace/GC-MS		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

Test Completion Dates

Lab Sample No(s)	14709376	14171731	14171732	14171734	14171735	14171740	14171736	14171737	14171739	14171738
Customer Sample Ref.	EXA01	EXA02	EXA03	EXA04	EXA05	EXA16	EXA17	EXA19	EXA20	EXA21
AGS Ref.										
Depth	1.70	1.70	1.70	4.00	4.00	4.00	2.00	2.50	3.50	2.30
Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
EPH CWG (Aliphatic) GC (S)	23-Sep-2016	22-Sep-2016	23-Sep-2016	22-Sep-2016	23-Sep-2016	23-Sep-2016	23-Sep-2016	22-Sep-2016	23-Sep-2016	23-Sep-2016
EPH CWG (Aromatic) GC (S)	23-Sep-2016	22-Sep-2016	23-Sep-2016	22-Sep-2016	23-Sep-2016	22-Sep-2016	22-Sep-2016	22-Sep-2016	22-Sep-2016	23-Sep-2016
GRO by GC-FID (S)	23-Sep-2016	23-Sep-2016	23-Sep-2016	23-Sep-2016	23-Sep-2016	23-Sep-2016	23-Sep-2016	23-Sep-2016	23-Sep-2016	23-Sep-2016
Oxygenates (S)	22-Sep-2016	22-Sep-2016	22-Sep-2016	26-Sep-2016	26-Sep-2016	26-Sep-2016	22-Sep-2016	26-Sep-2016	26-Sep-2016	26-Sep-2016
PAH by GCMS	22-Sep-2016	22-Sep-2016	22-Sep-2016	22-Sep-2016	22-Sep-2016	22-Sep-2016	22-Sep-2016	22-Sep-2016	22-Sep-2016	22-Sep-2016
Sample description	19-Sep-2016	19-Sep-2016	19-Sep-2016	19-Sep-2016	19-Sep-2016	20-Sep-2016	19-Sep-2016	20-Sep-2016	20-Sep-2016	20-Sep-2016
VOC MS (S)	23-Sep-2016	23-Sep-2016	23-Sep-2016	23-Sep-2016	23-Sep-2016	23-Sep-2016	23-Sep-2016	23-Sep-2016	23-Sep-2016	23-Sep-2016

Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

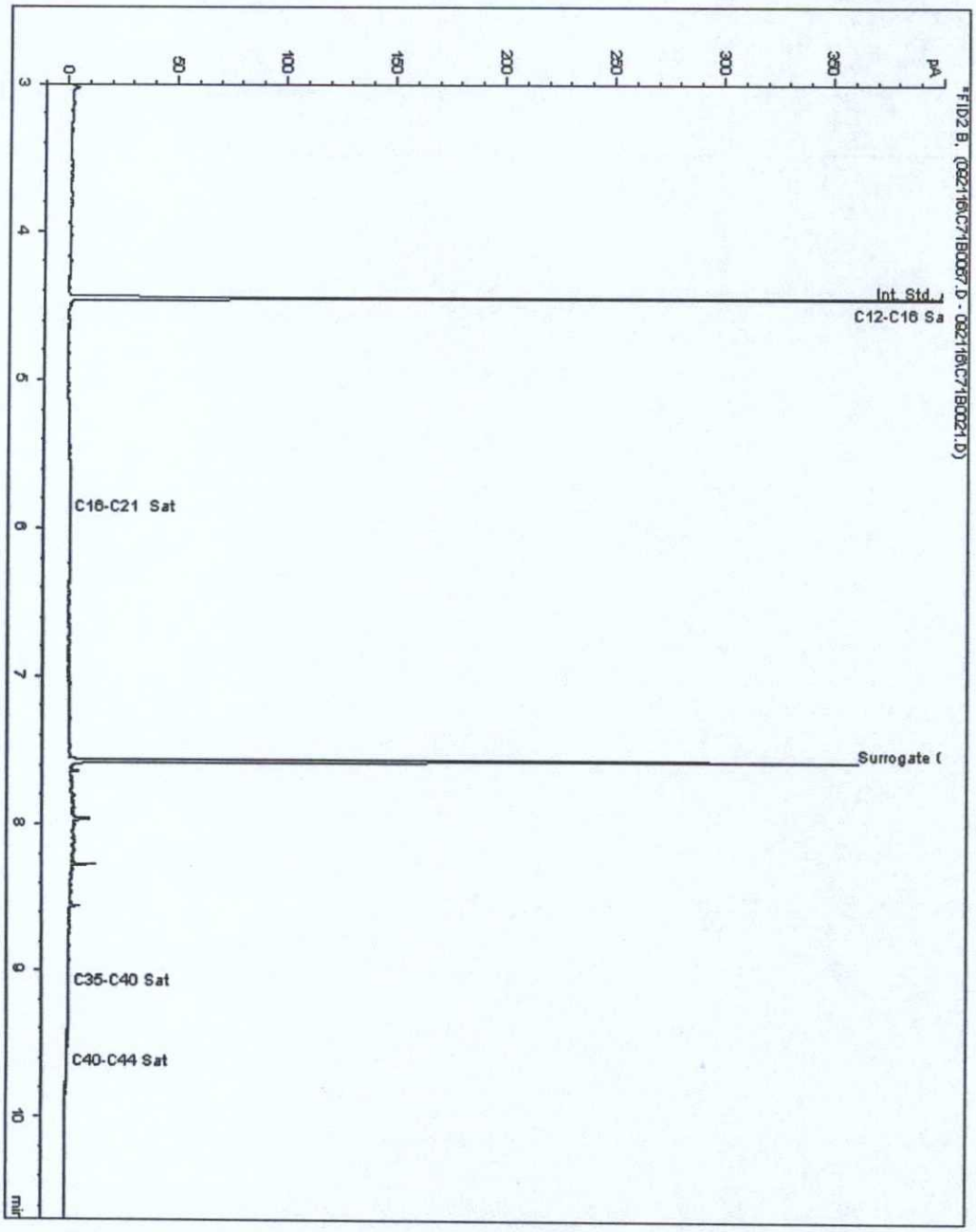
Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)
14178651

Sample No : 14,178,651 **Depth :** 1.70
Sample ID : EXA02

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13313378-
Date Acquired : 22/09/2016 05:14:31 PM
Units : ppb
Dilution: TW-S[1.70] ->



Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

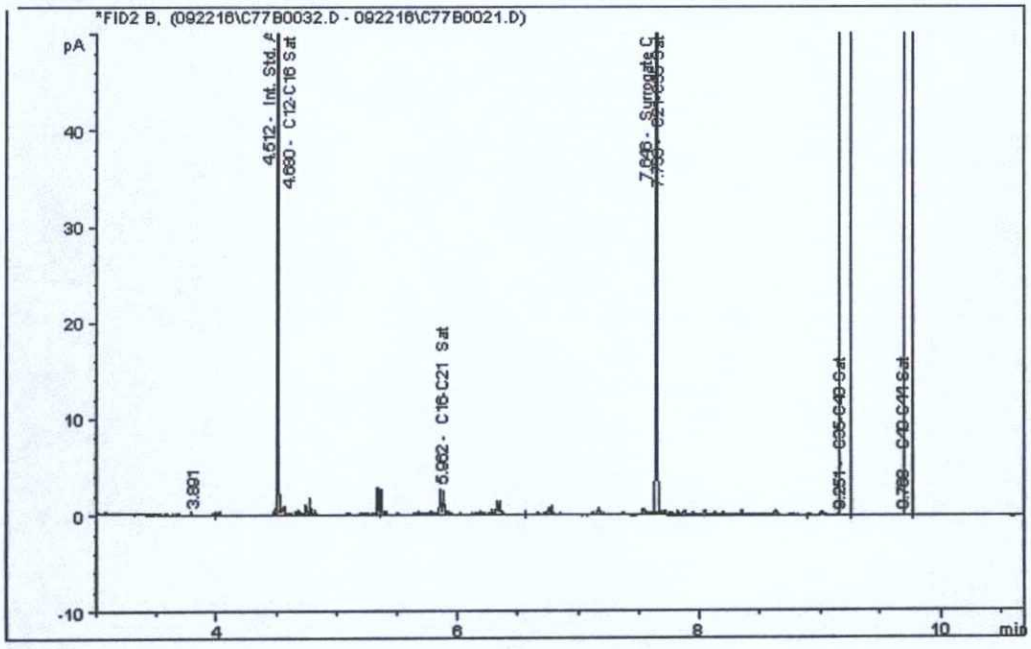
Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)
14178677

Sample No : 14,178,677 **Depth :** 1.70
Sample ID : EXA01

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13313396-
Date Acquired : 22/09/2016 17:04:15 PM
Units : ppb
Dilution:



Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

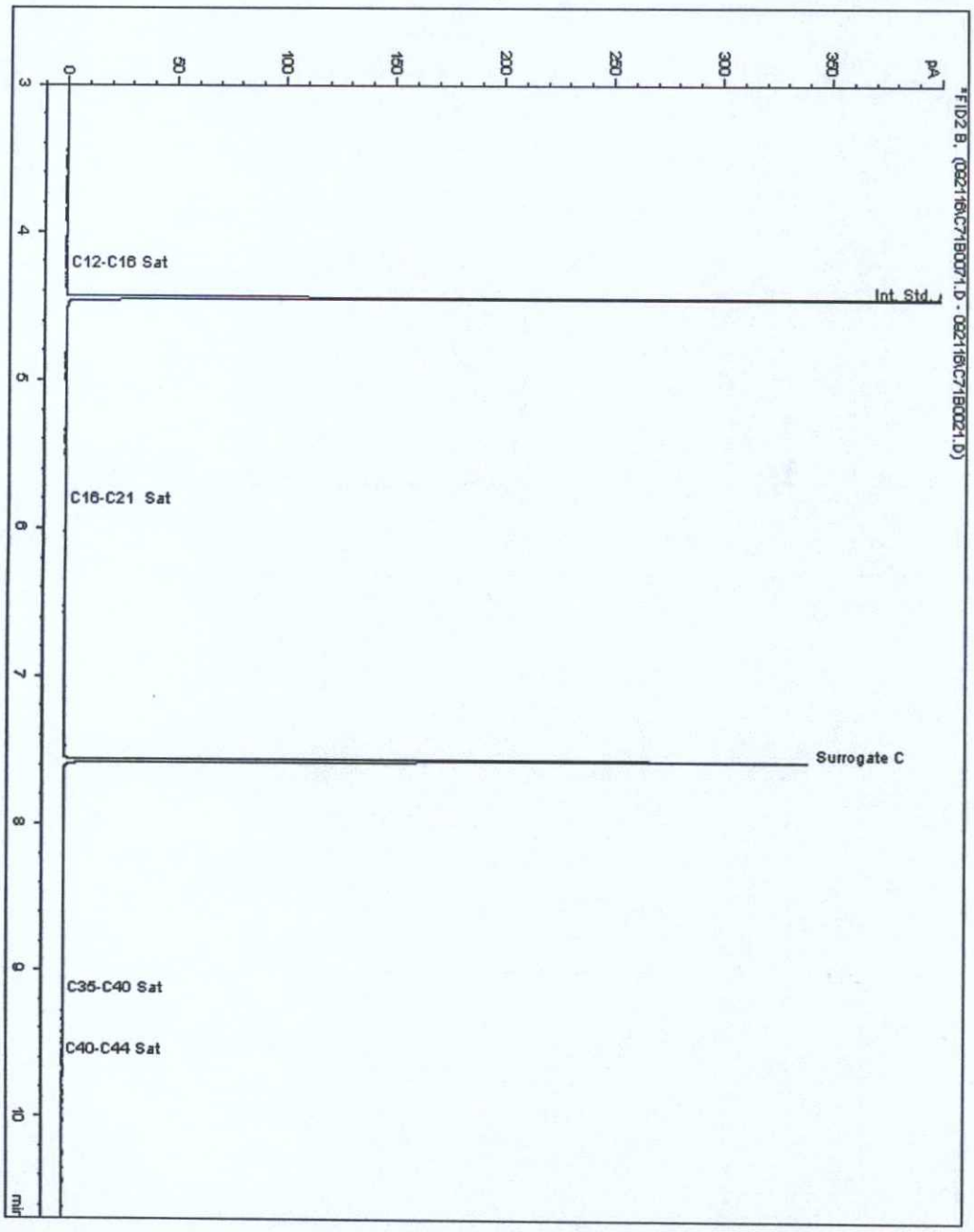
Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)
14178719

Sample No : 14,178,719 **Depth :** 4.00
Sample ID : EXA04

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13313405-
Date Acquired : 22/09/2016 06:28:01 PM
Units : ppb
Dilution: TB-L[4.00] ->



Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

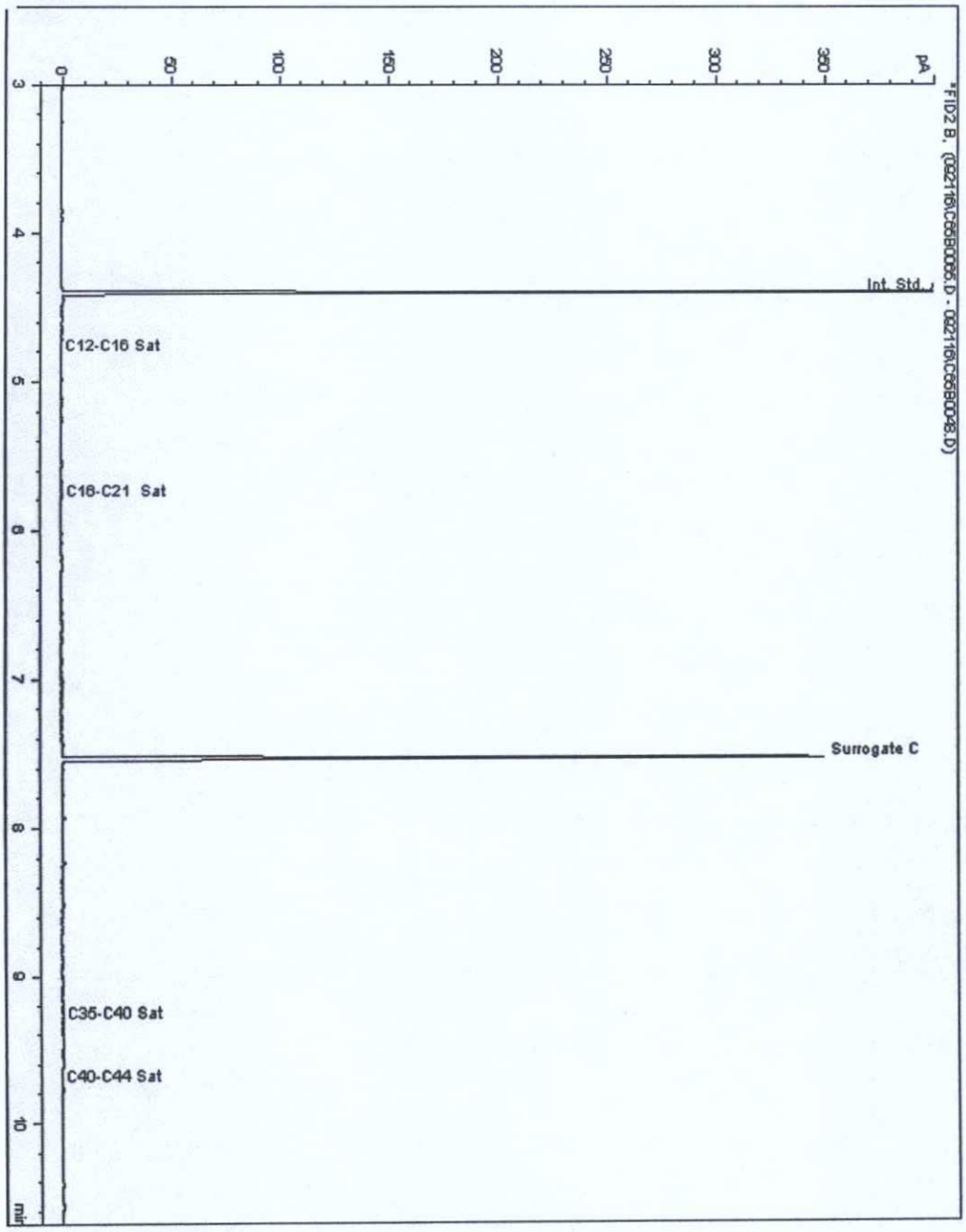
Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)
14178782

Sample No : 14,178,782 **Depth :** 1.70
Sample ID : EXA03

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13313387-
Date Acquired : 22/09/2016 05:20:12 PM
Units : ppb
Dilution: TW-SE[1.70] ->



Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

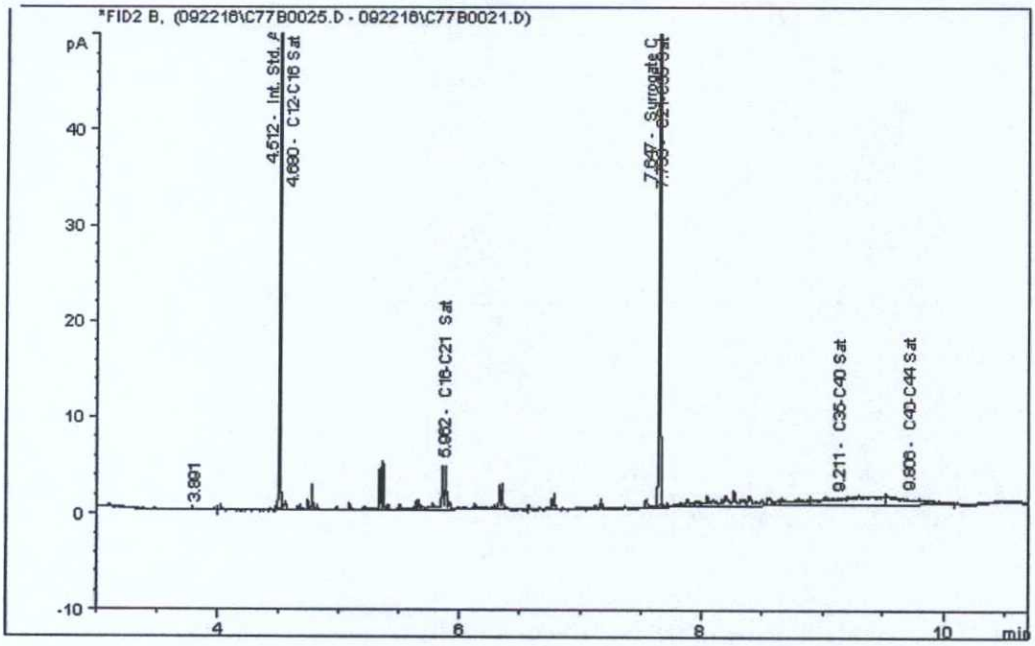
Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)
14178850

Sample No : 14,178,850 **Depth :** 4.00
Sample ID : EXA05

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13313424-
Date Acquired : 22/09/2016 15:14:48 PM
Units : ppb
Dilution:



Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

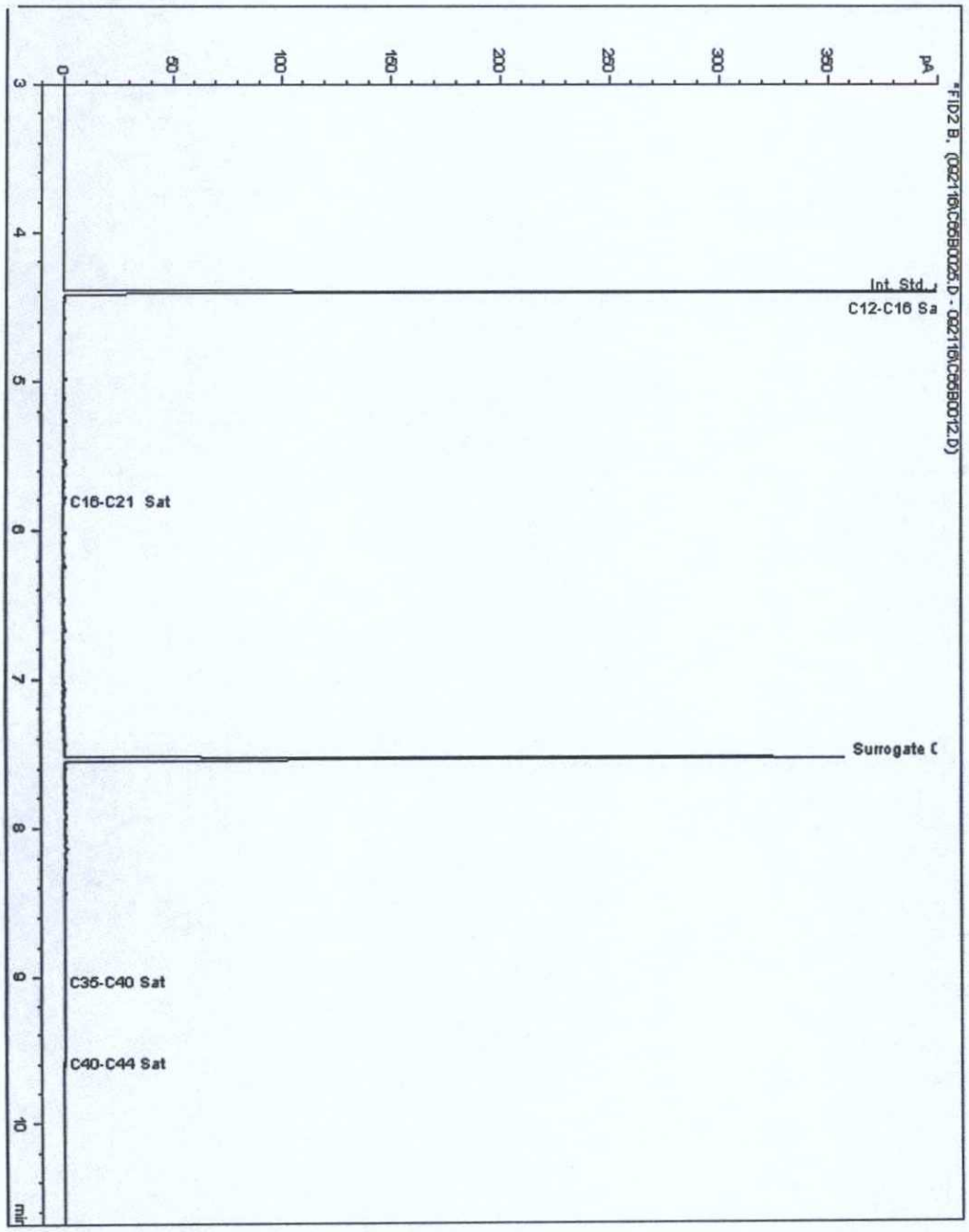
Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)
14179898

Sample No : 14,179,898 **Depth :** 2.00
Sample ID : EXA17

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13313434-
Date Acquired : 21/09/2016 17:48:28 PM
Units : ppb
Dilution: TW-NW[2.00] ->



Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

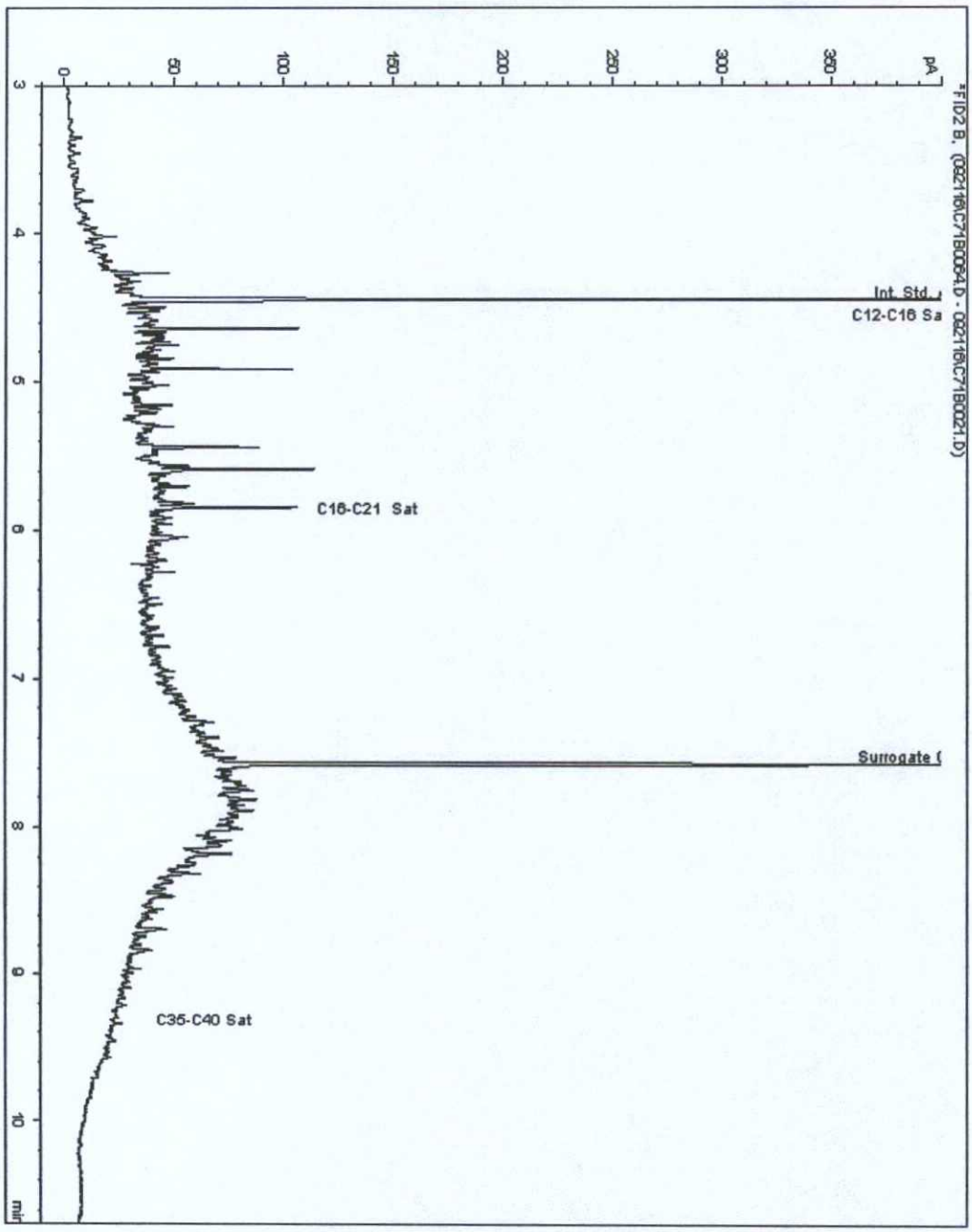
Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)
14181339

Sample No : 14,181,339 **Depth :** 2.50
Sample ID : EXA19

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13313444-
Date Acquired : 22/09/2016 04:29:59 PM
Units : ppb
Dilution: IC-WW[2.50] ->



Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

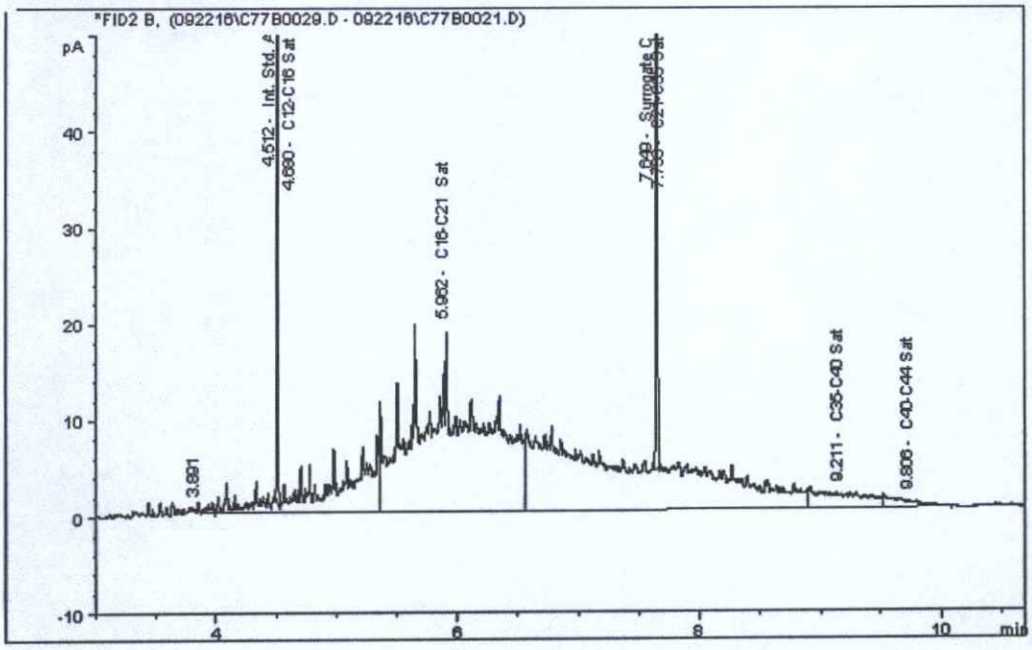
Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)
14181698

Sample No : 14,181,698 **Depth :** 2.30
Sample ID : EXA21

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13313464-
Date Acquired : 22/09/2016 16:19:54 PM
Units : ppb
Dilution:



Post Certification Report

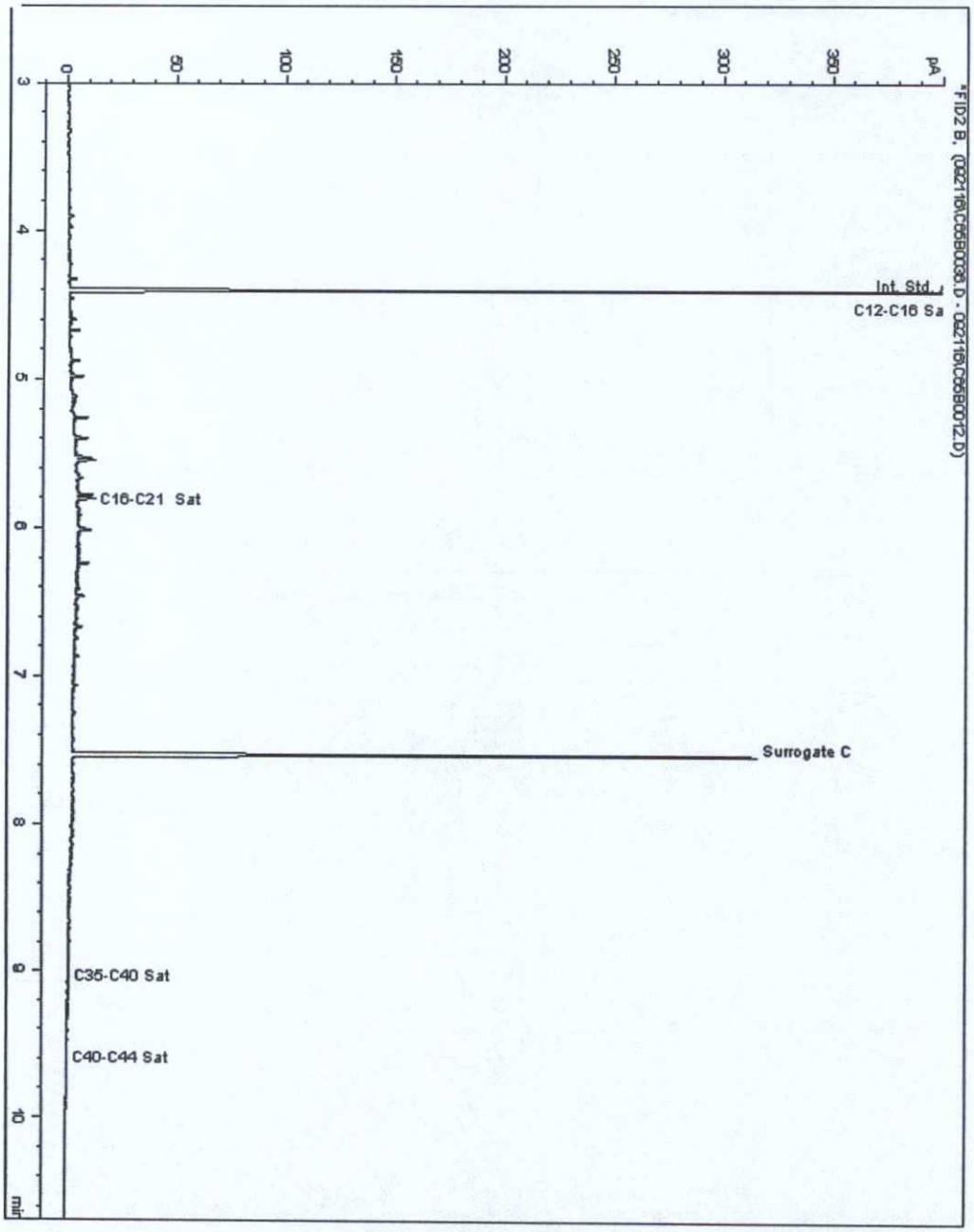
Customer : H_URS_WIM **Client Reference :**
Location : Shell Shoreham Airport

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 14,182,066 **Depth :** 3.50
14182066 **Sample ID :** EXA20

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13313473-
Date Acquired : 21/09/2016 20:51:34 PM
Units : ppb
Dilution: IC-BASE[3.50] ->



Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

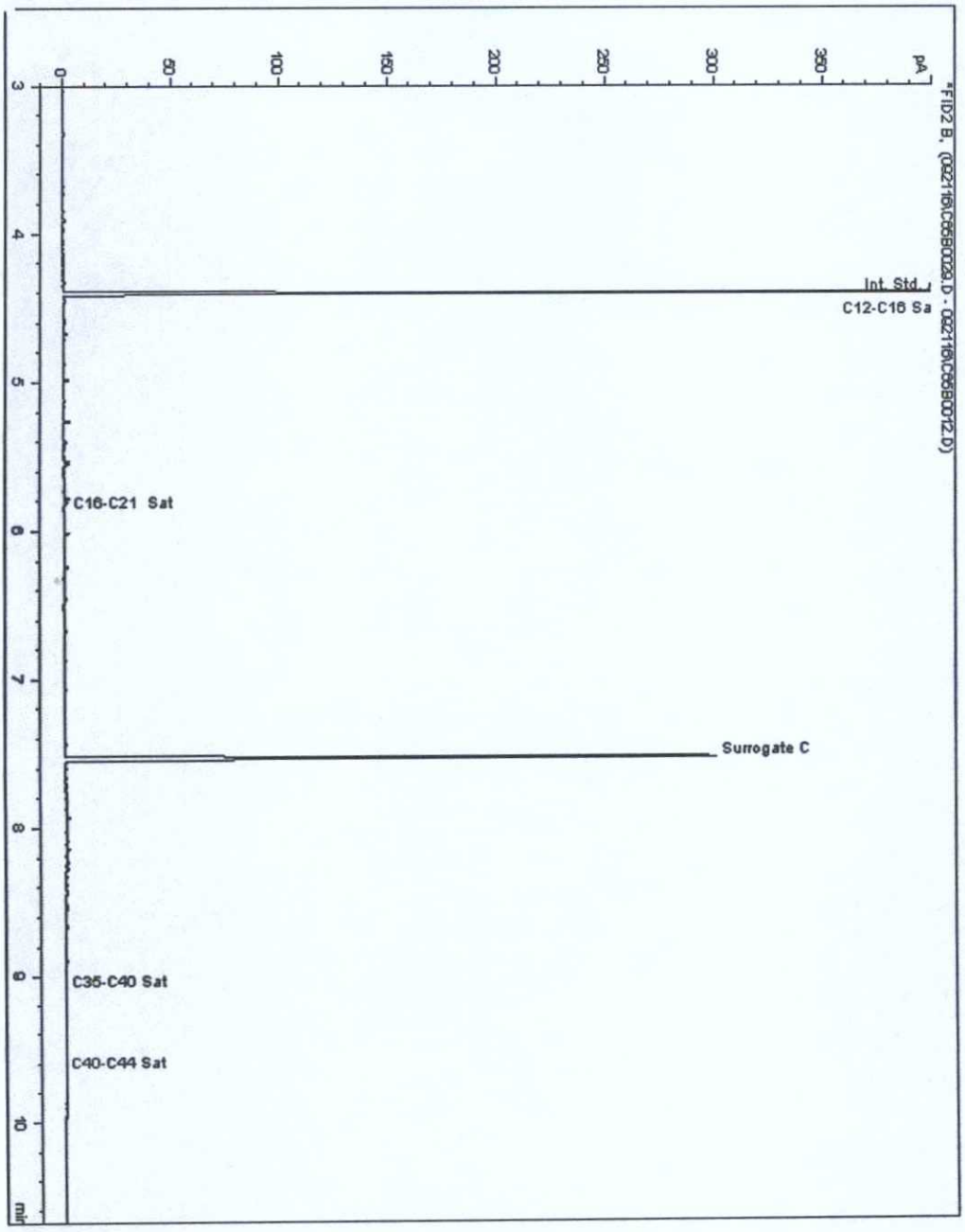
Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)
14182097

Sample No : 14,182,097 **Depth :** 4.00
Sample ID : EXA16

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13313493-
Date Acquired : 21/09/2016 18:53:30 PM
Units : ppb
Dilution: TB[4.00] ->



Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

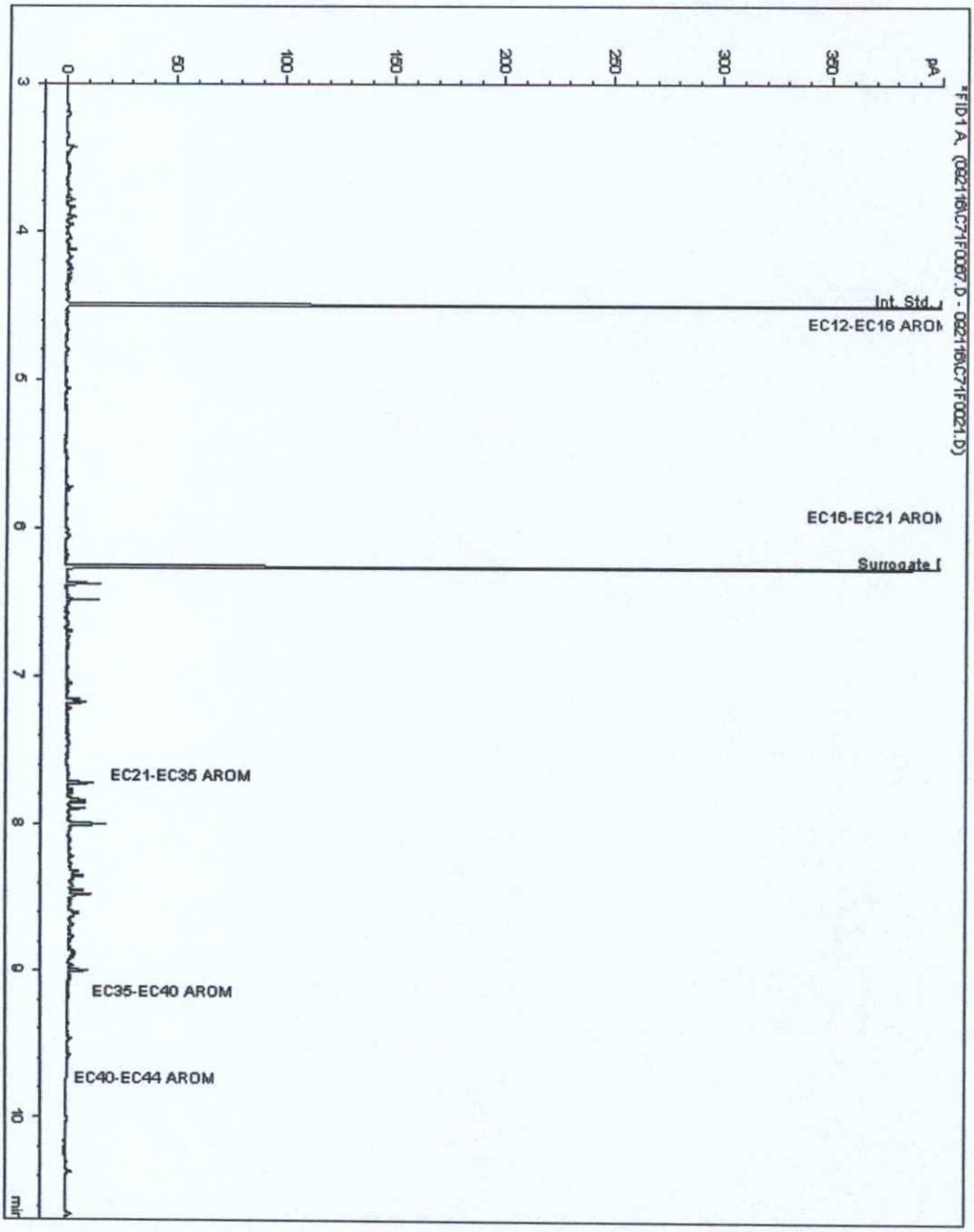
Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)
14178651

Sample No : 14,178,651 **Depth :** 1.70
Sample ID : EXA02

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13313379-
Date Acquired : 22/09/2016 05:14:31 PM
Units : ppb
Dilution: TW-S[1.70] ->



Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

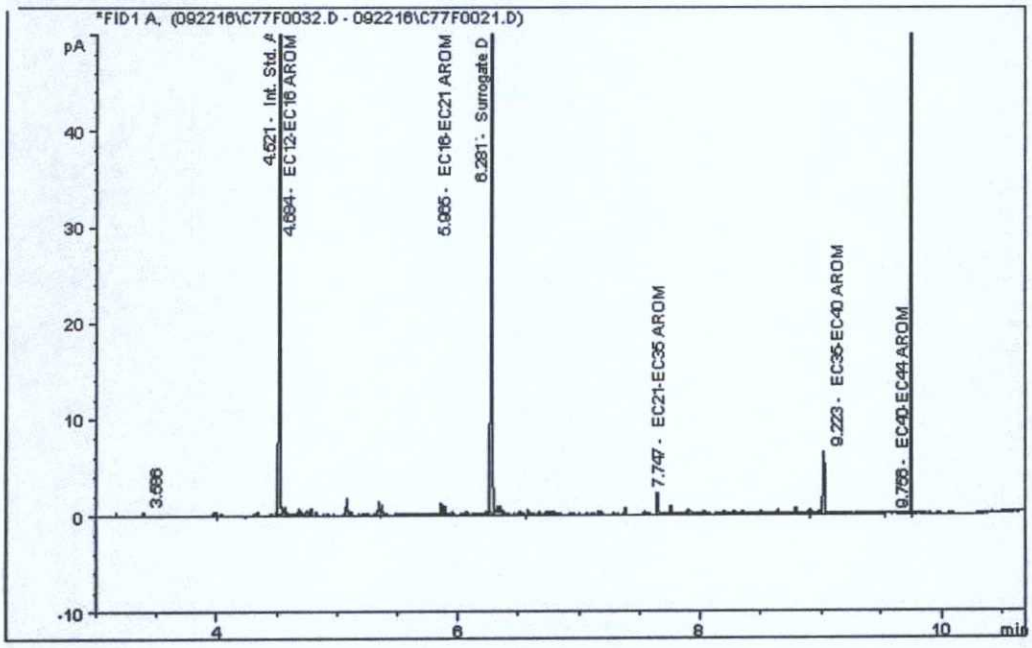
Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)
14178677

Sample No : 14,178,677 **Depth :** 1.70
Sample ID : EXA01

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13313397-
Date Acquired : 22/09/2016 17:04:15 PM
Units : ppb
Dilution:



Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

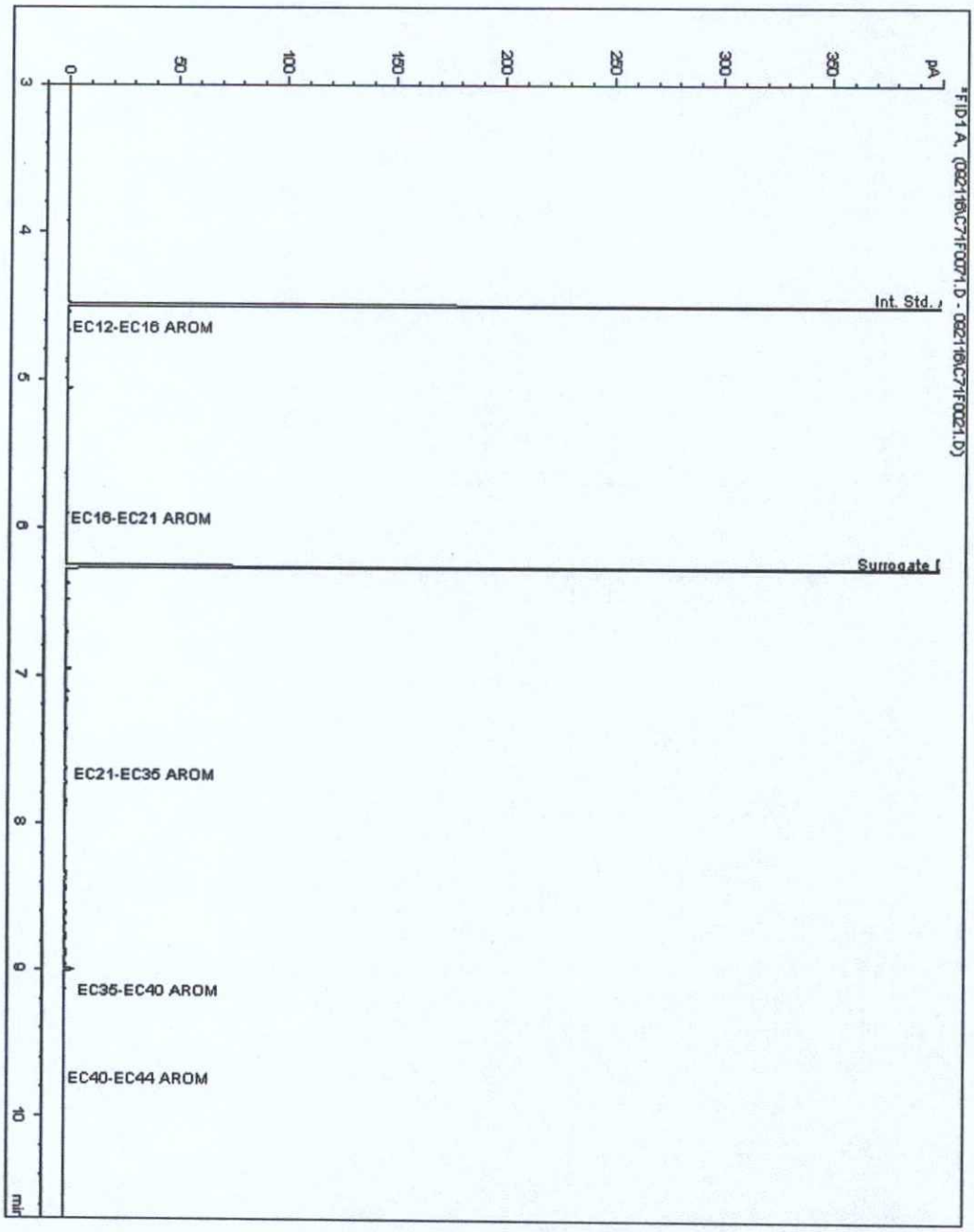
Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)
14178719

Sample No : 14,178,719 **Depth :** 4.00
Sample ID : EXA04

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13313406-
Date Acquired : 22/09/2016 06:28:00 PM
Units : ppb
Dilution: TB-L[4.00] ->



Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

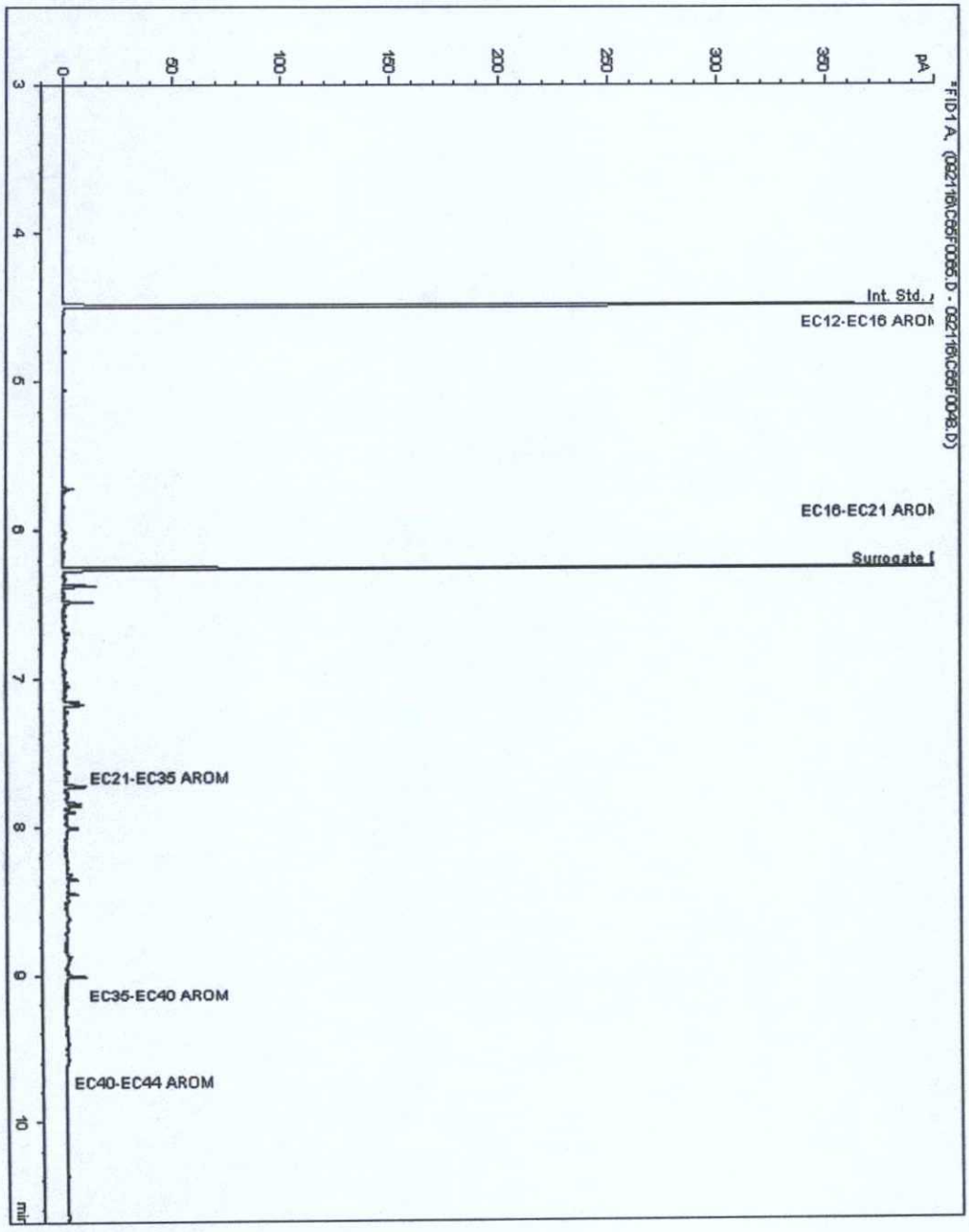
Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)
14178782

Sample No : 14,178,782 **Depth :** 1.70
Sample ID : EXA03

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13313388-
Date Acquired : 22/09/2016 05:20:12 PM
Units : ppb
Dilution: TW-SE[1.70] ->



Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

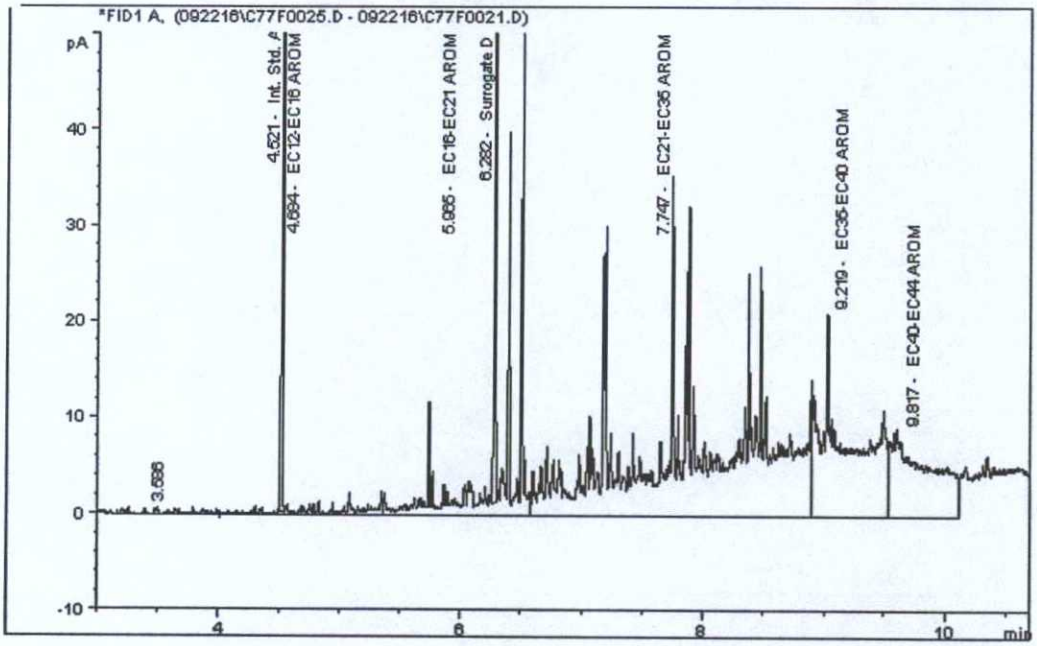
Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)
14178850

Sample No : 14,178,850 **Depth :** 4.00
Sample ID : EXA05

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13313425-
Date Acquired : 22/09/2016 15:14:47 PM
Units : ppb
Dilution:



Post Certification Report

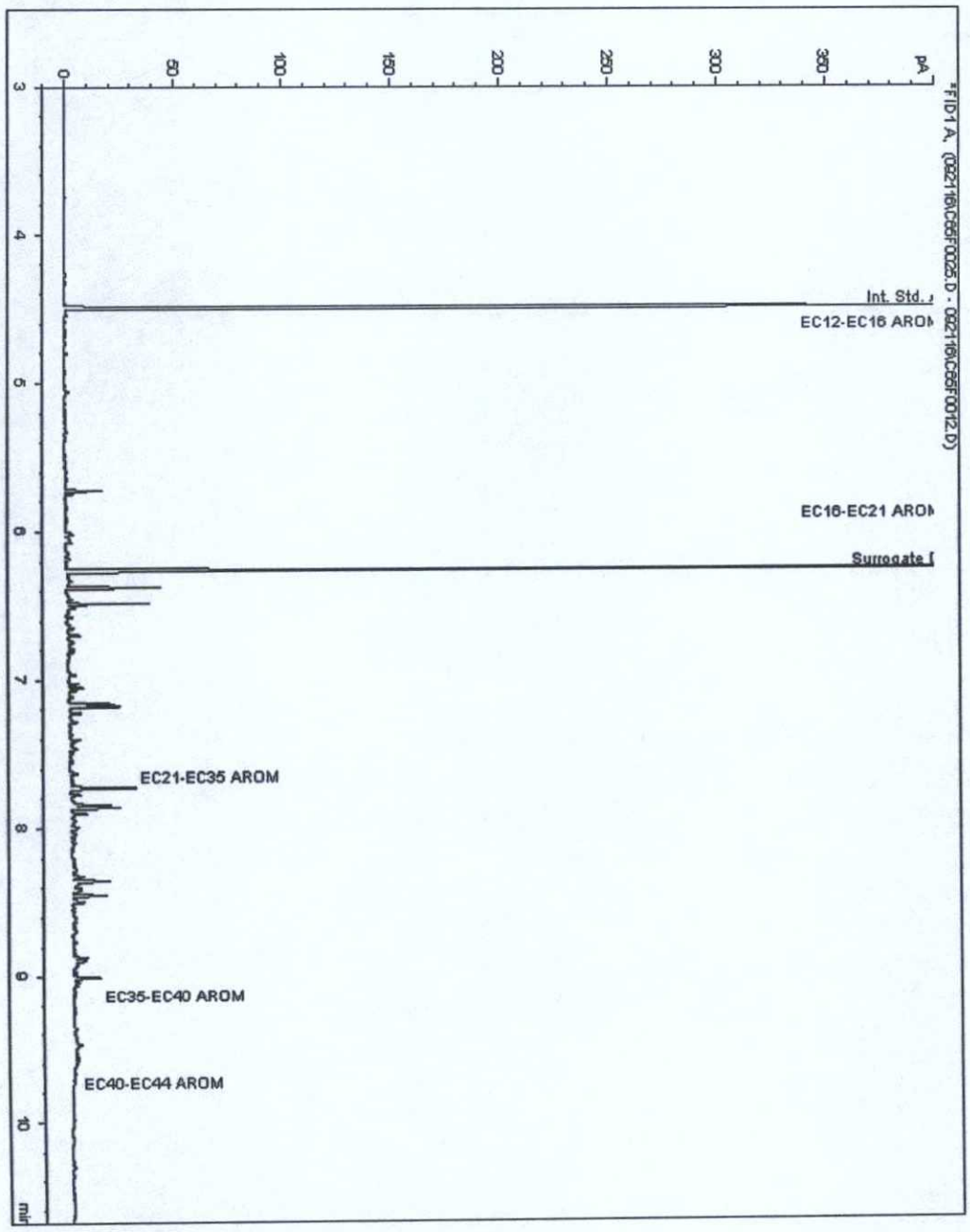
Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 14,179,898 **Depth :** 2.00
14179898 **Sample ID :** EXA17

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13313435-
Date Acquired : 21/09/2016 17:48:28 PM
Units : ppb
Dilution: TW-NW[2.00] ->



Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

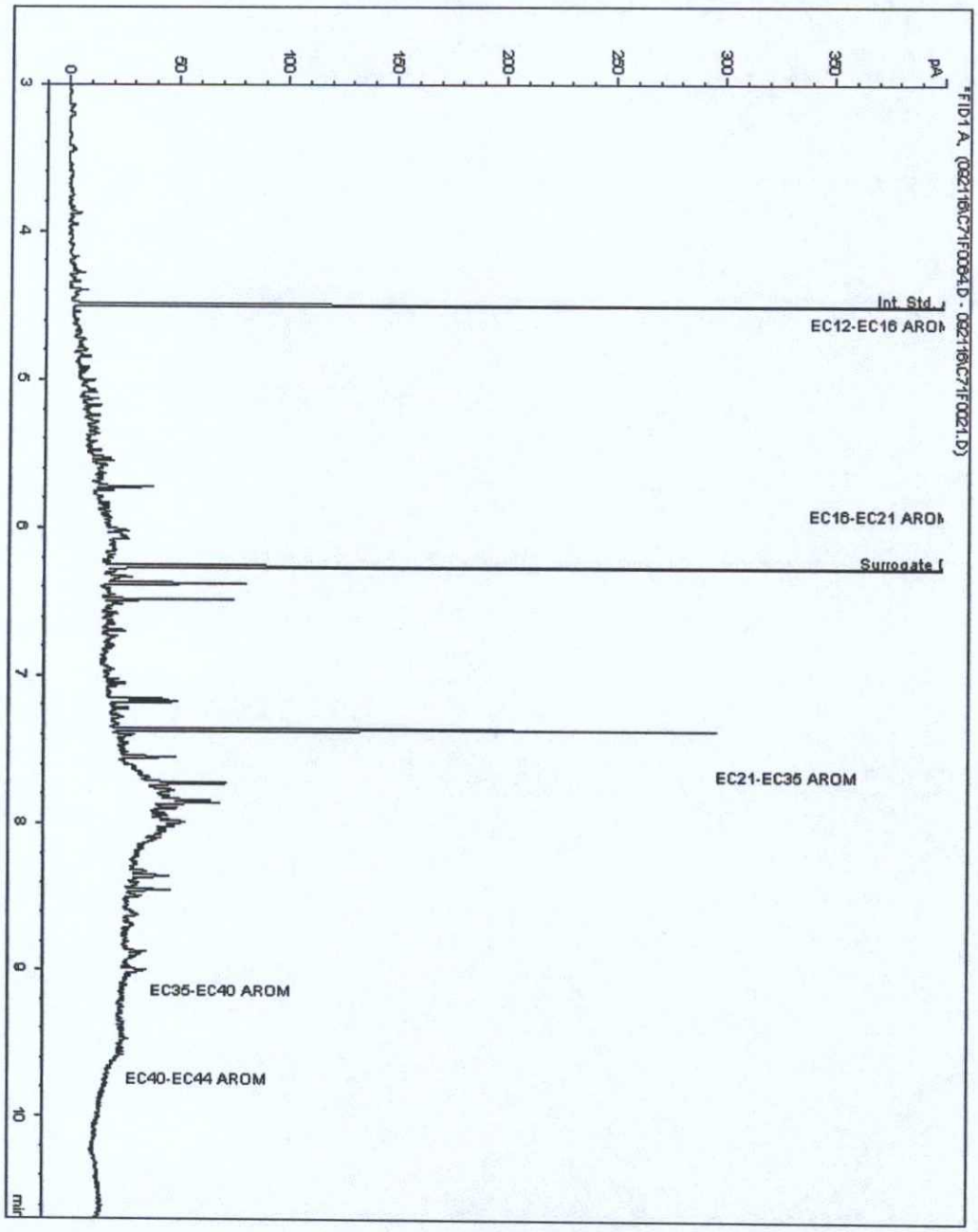
Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)
14181339

Sample No : 14,181,339 **Depth :** 2.50
Sample ID : EXA19

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13313445-
Date Acquired : 22/09/2016 04:29:59 PM
Units : ppb
Dilution: IC-WW[2.50] ->



Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

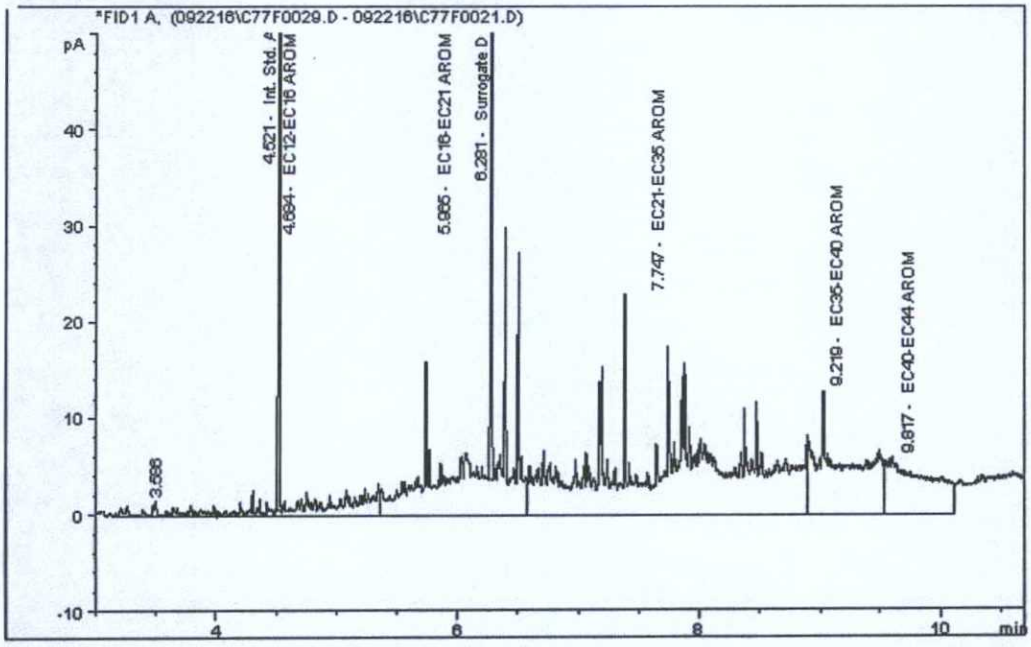
Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)
14181698

Sample No : 14,181,698 **Depth :** 2.30
Sample ID : EXA21

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13313465-
Date Acquired : 22/09/2016 16:19:53 PM
Units : ppb
Dilution:



Post Certification Report

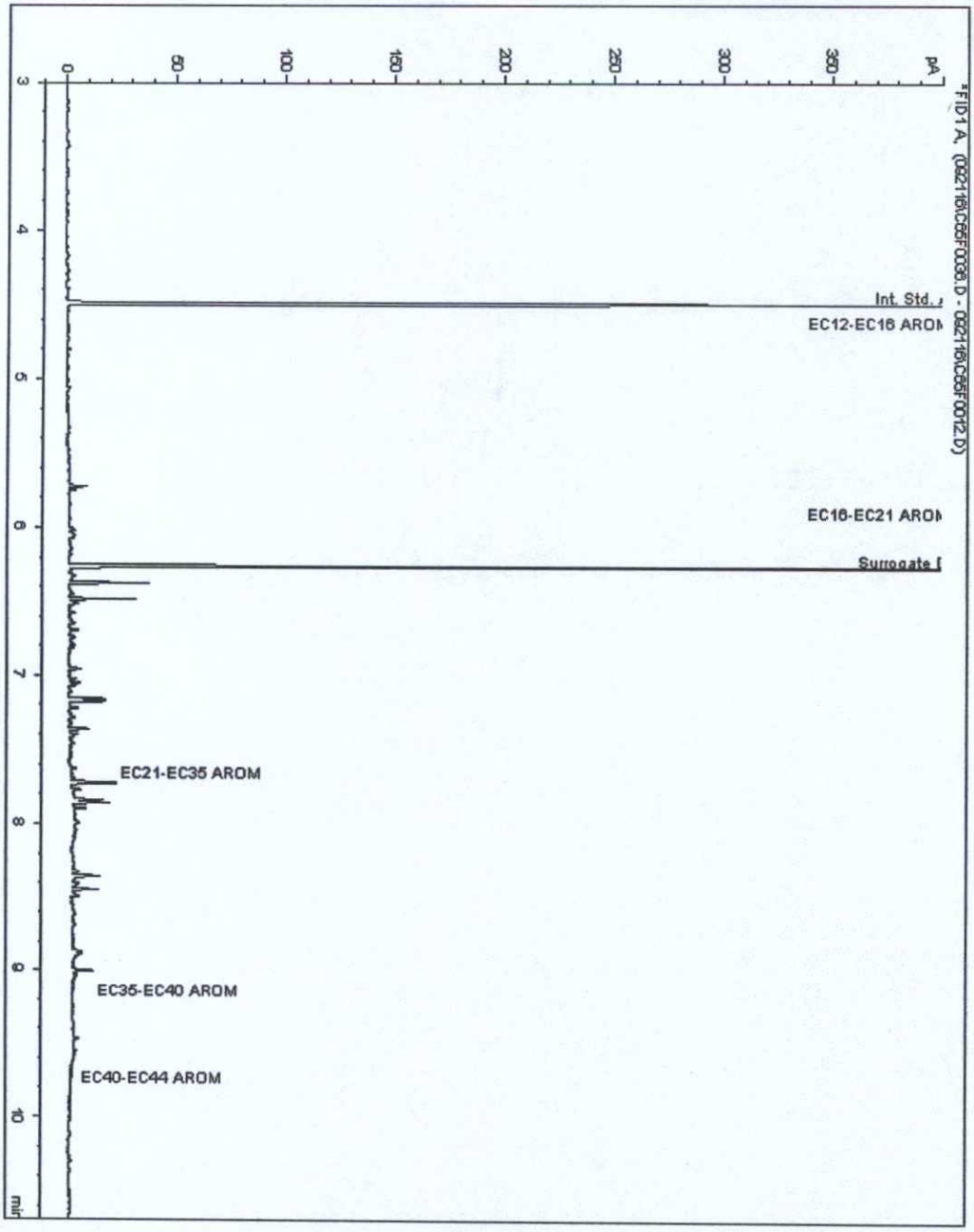
Customer : H_URS_WIM **Client Reference :**
Location : Shell Shoreham Airport

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 14,182,066 **Depth :** 3.50
14182066 **Sample ID :** EXA20

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13313474-
Date Acquired : 21/09/2016 20:51:34 PM
Units : ppb
Dilution: IC-BASE[3.50] ->



Post Certification Report

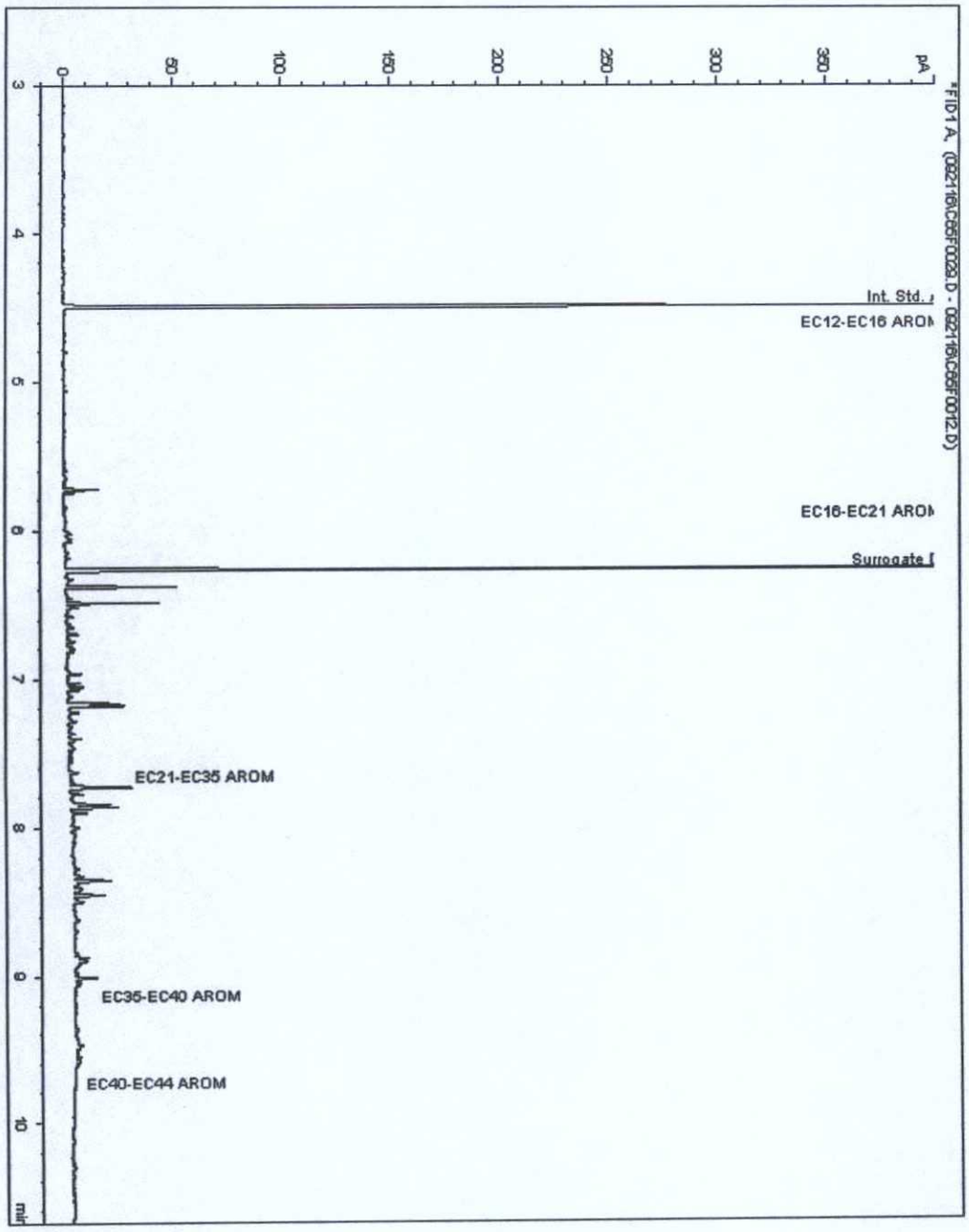
Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 14,182,097 **Depth :** 4.00
14182097 **Sample ID :** EXA16

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13313494-
Date Acquired : 21/09/2016 18:53:30 PM
Units : ppb
Dilution: TB[4.00] ->



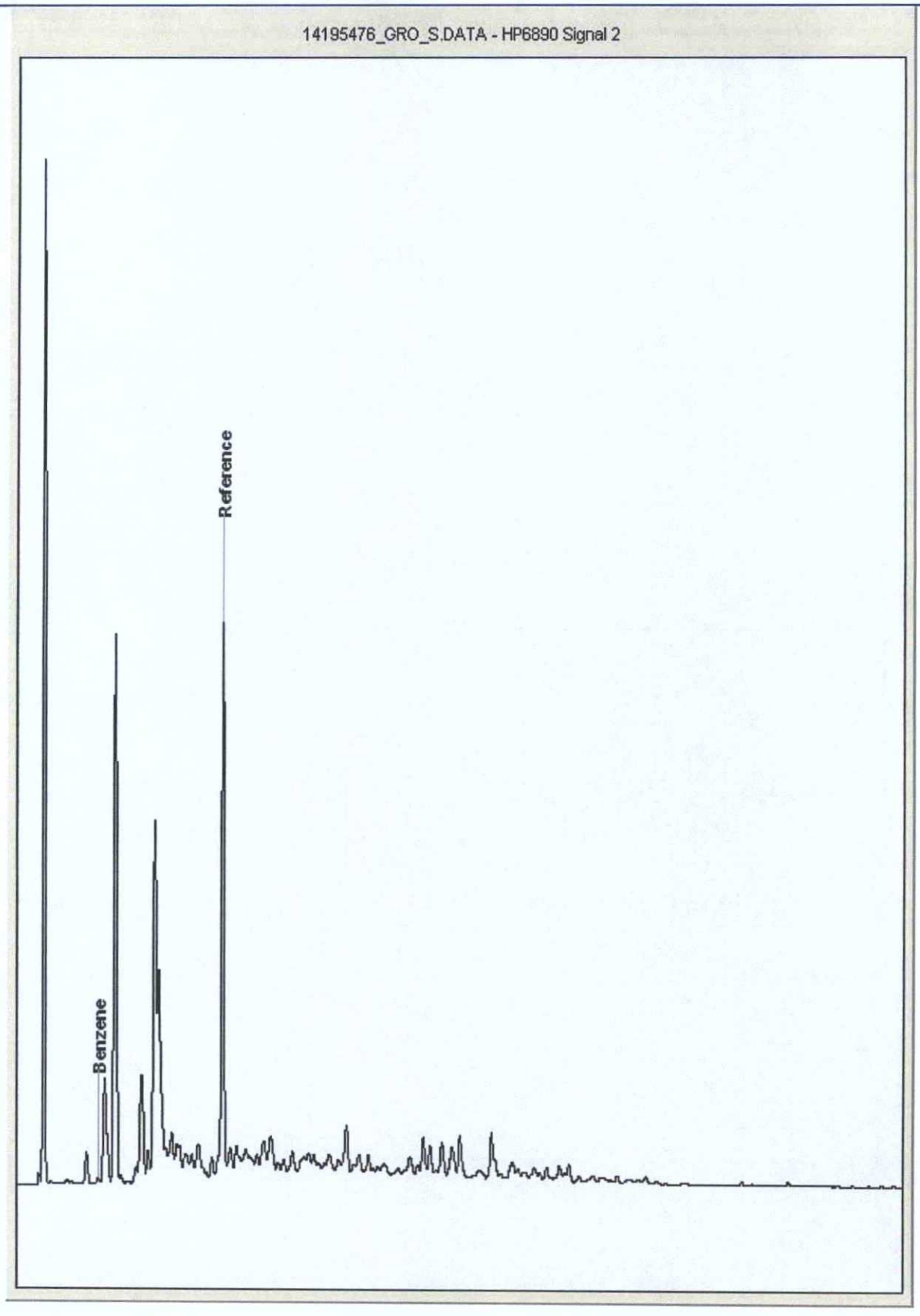
Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

Chromatogram

Analysis: GRO by GC-FID (S)
14195476

Sample No : 14,195,476 **Depth :** 1.70
Sample ID : EXA02



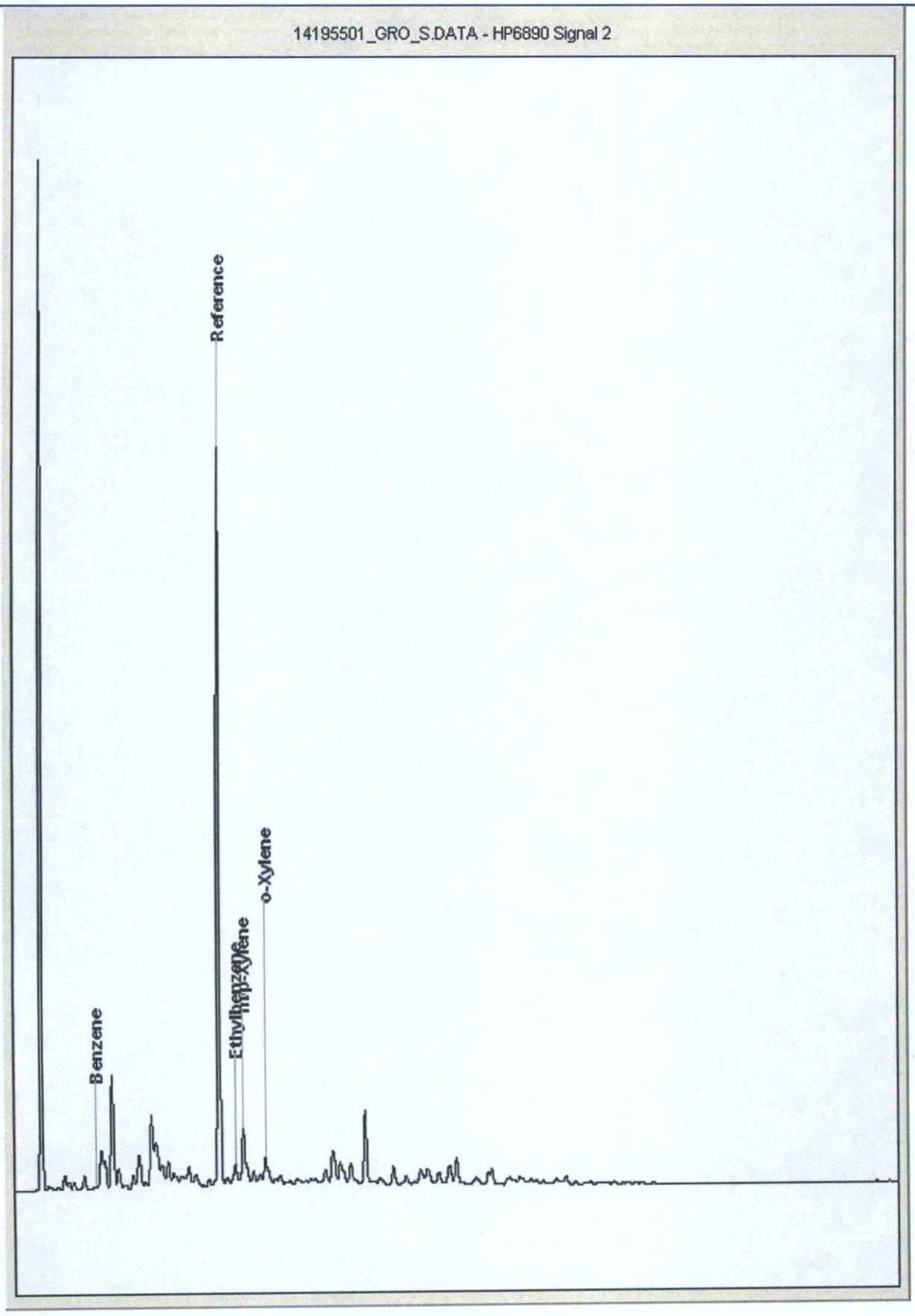
Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

Chromatogram

Analysis: GRO by GC-FID (S)
14195501

Sample No : 14,195,501 **Depth :** 4.00
Sample ID : EXA05



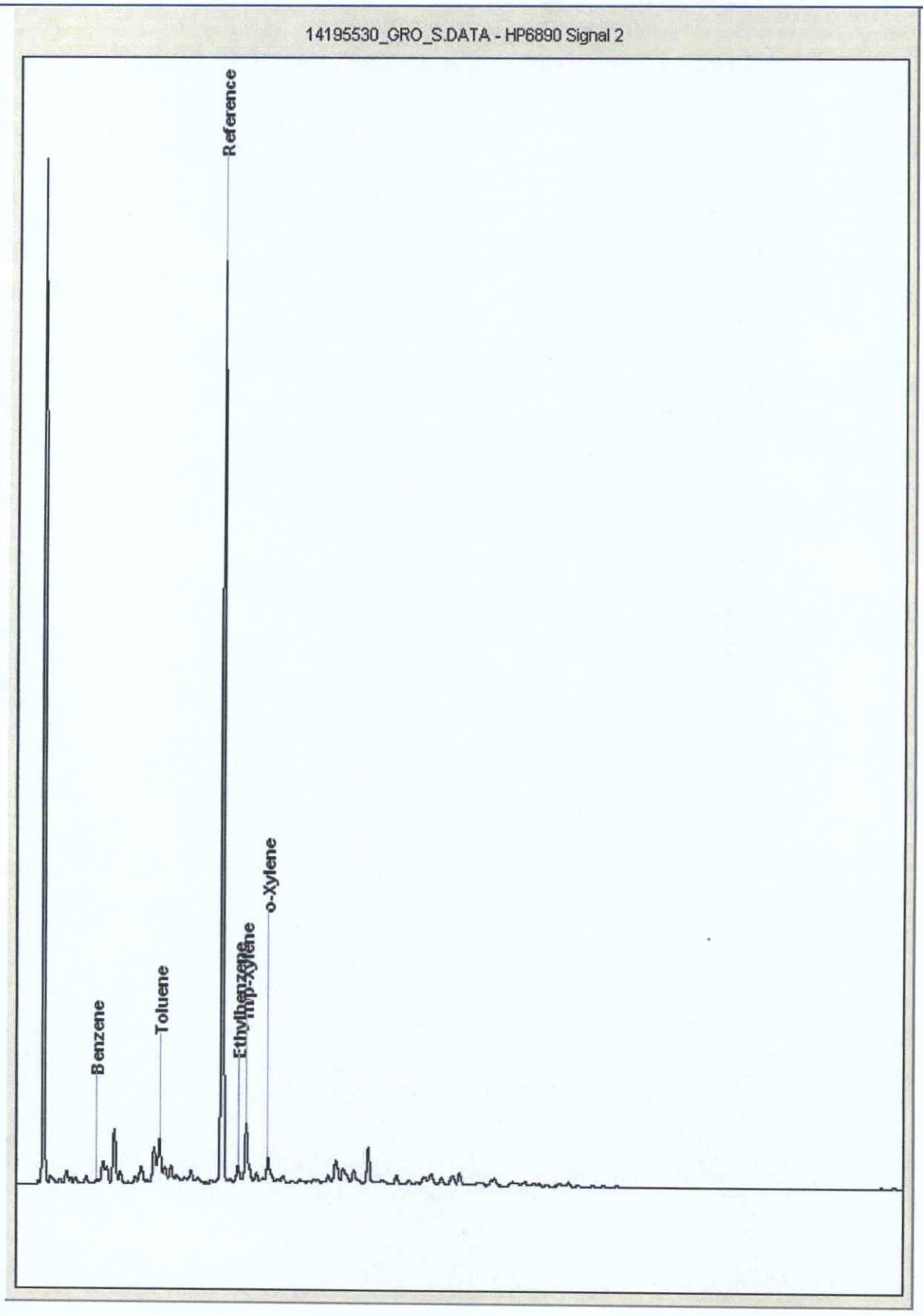
Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

Chromatogram

Analysis: GRO by GC-FID (S)
14195530

Sample No : 14,195,530 **Depth :** 4.00
Sample ID : EXA04



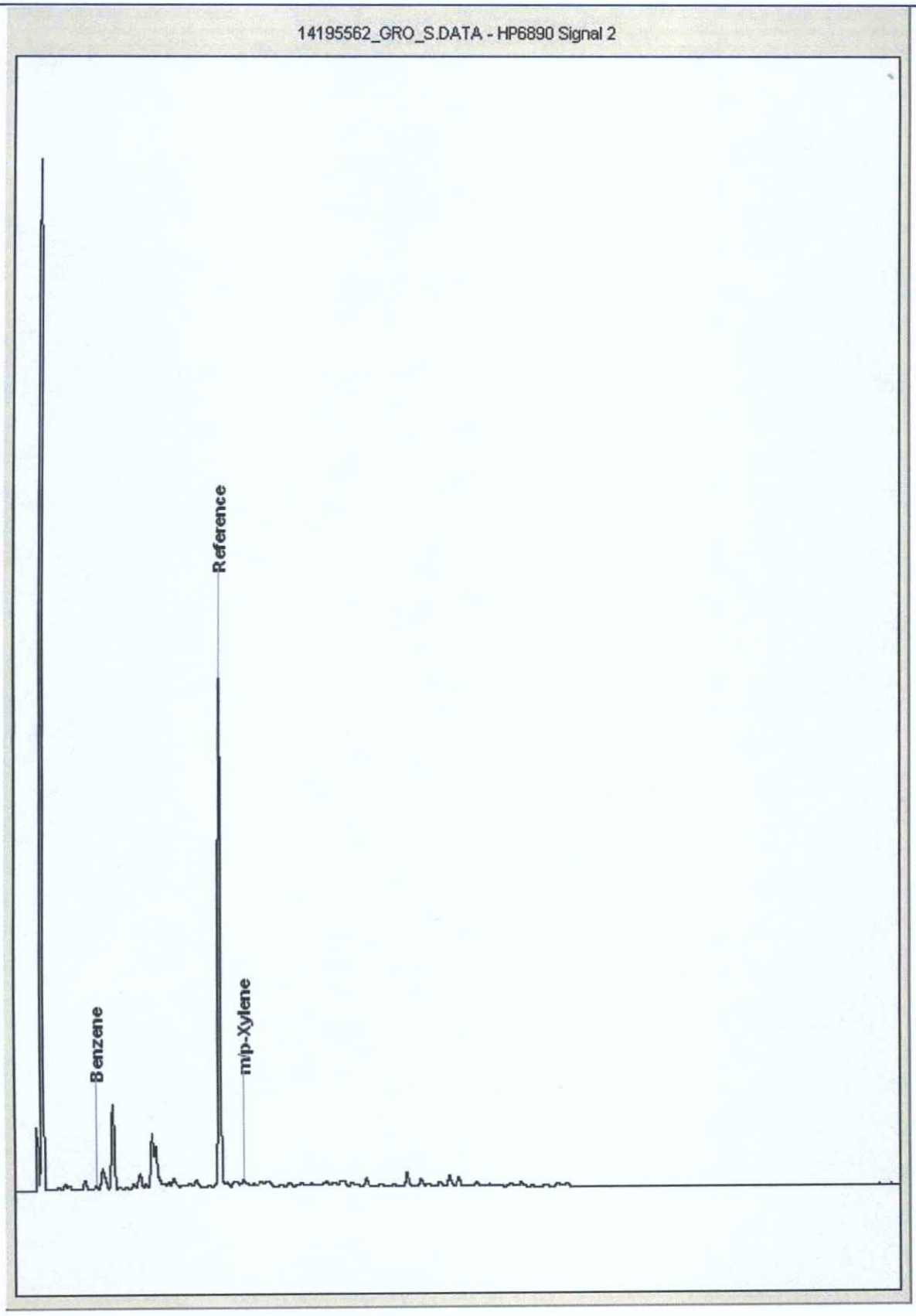
Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

Chromatogram

Analysis: GRO by GC-FID (S)
14195562

Sample No : 14,195,562 **Depth :** 1.70
Sample ID : EXA03

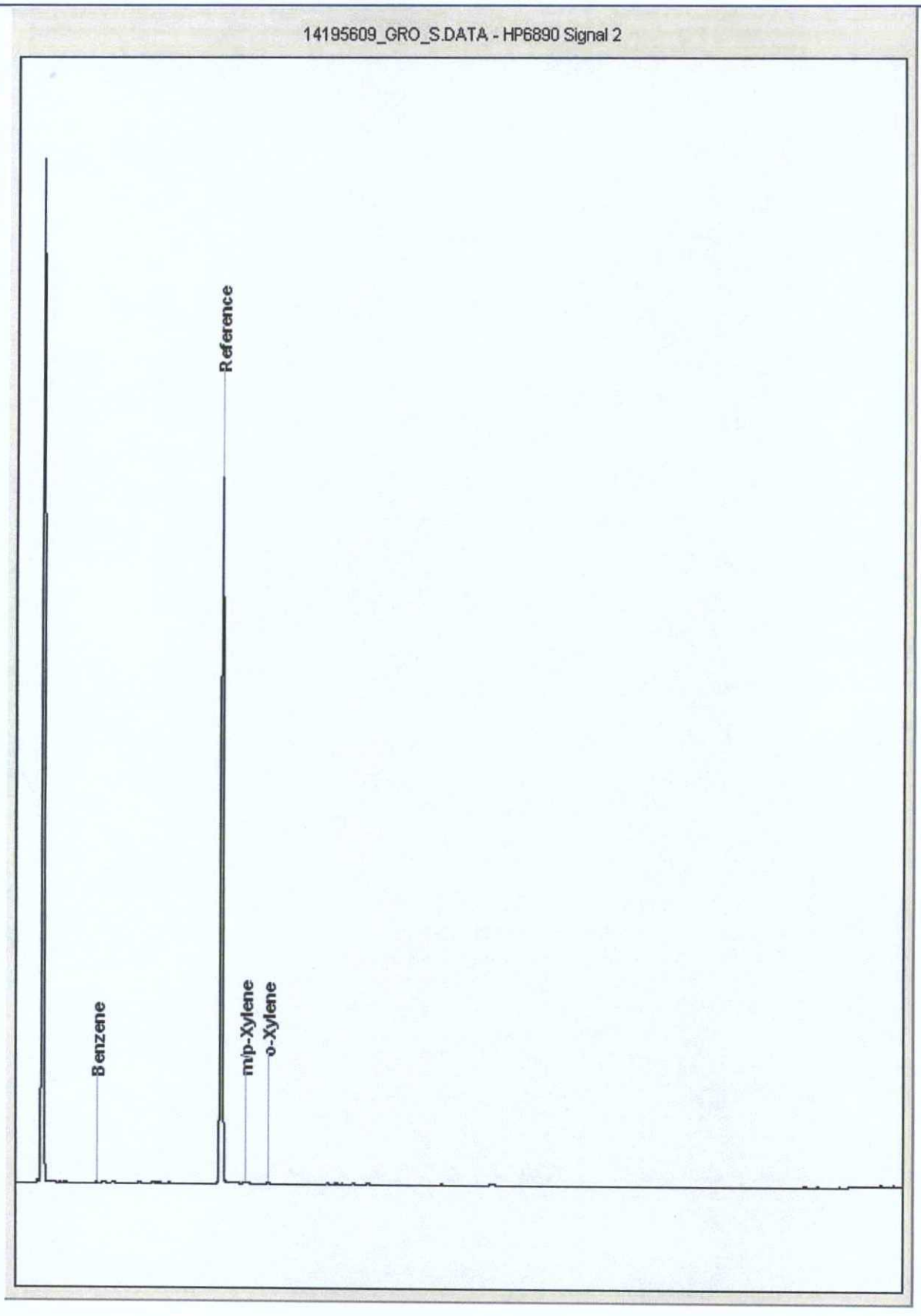


Post Certification Report

Customer : H_URS_WIM **Client Reference :**
Location : Shell Shoreham Airport

Chromatogram

Analysis: GRO by GC-FID (S) **Sample No :** 14,195,609 **Depth :** 1.70
14195609 **Sample ID :** EXA01



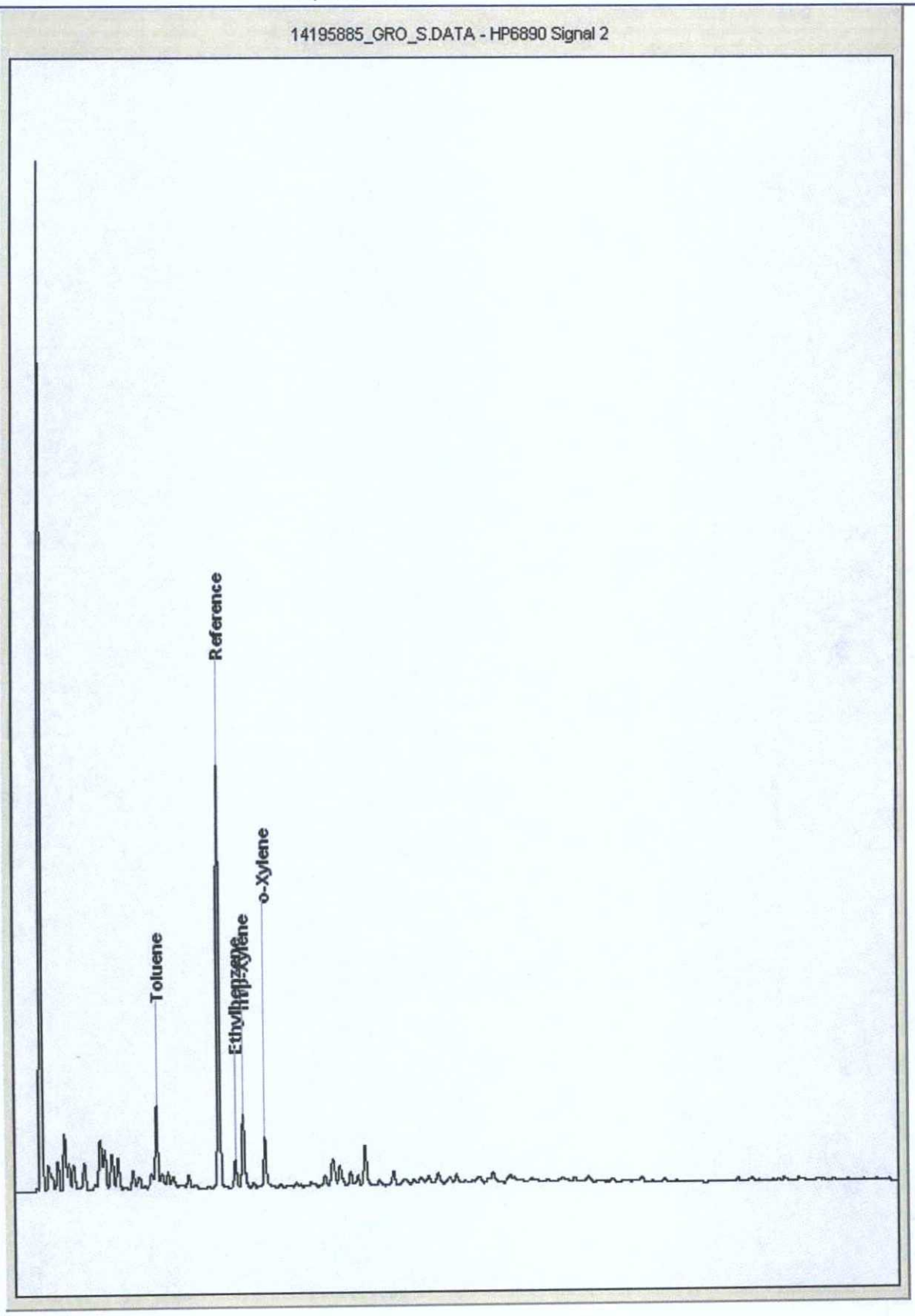
Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

Chromatogram

Analysis: GRO by GC-FID (S)
14195885

Sample No : 14,195,885 **Depth :** 2.30
Sample ID : EXA21



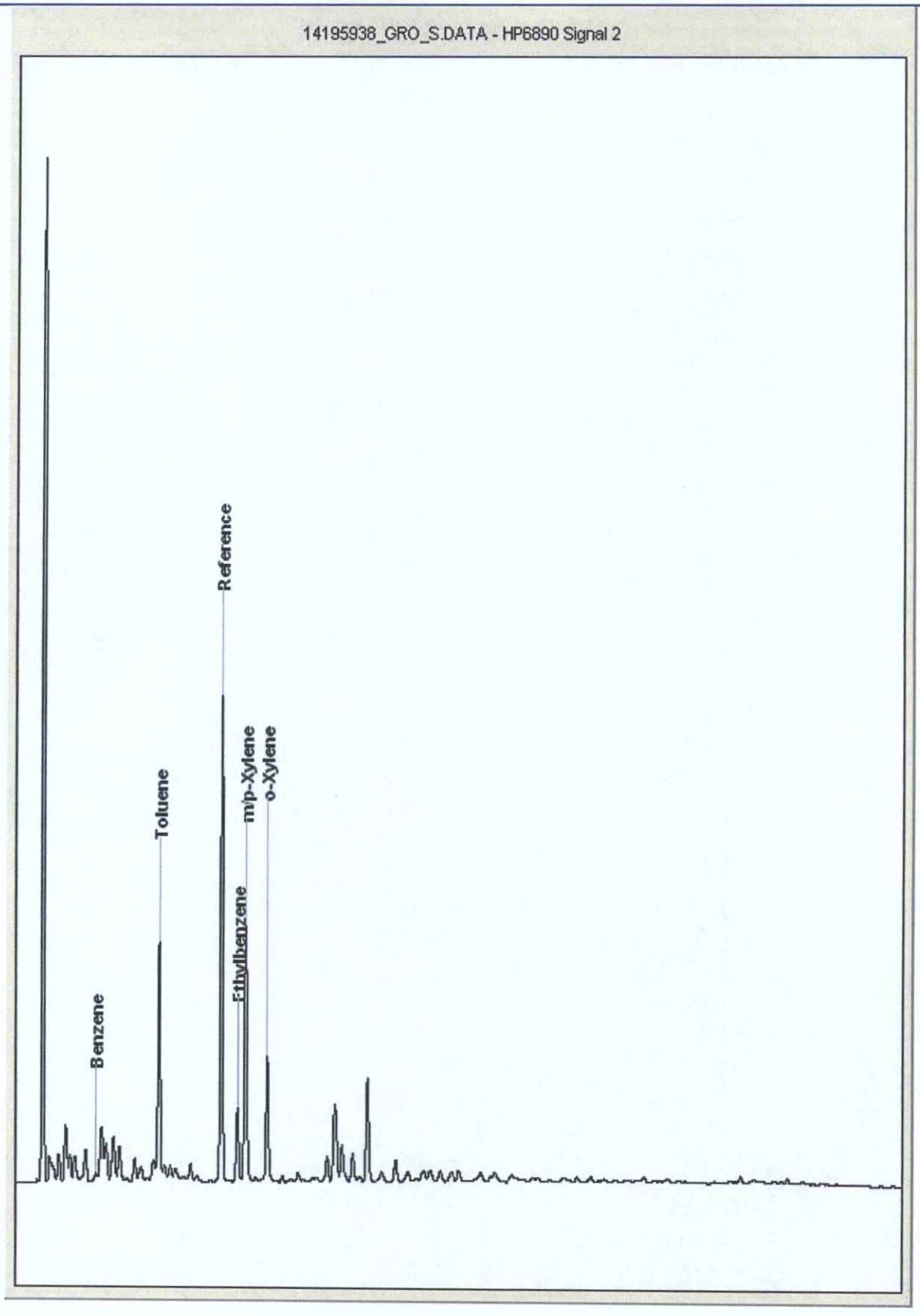
Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

Chromatogram

Analysis: GRO by GC-FID (S)
14195938

Sample No : 14,195,938 **Depth :** 2.50
Sample ID : EXA19



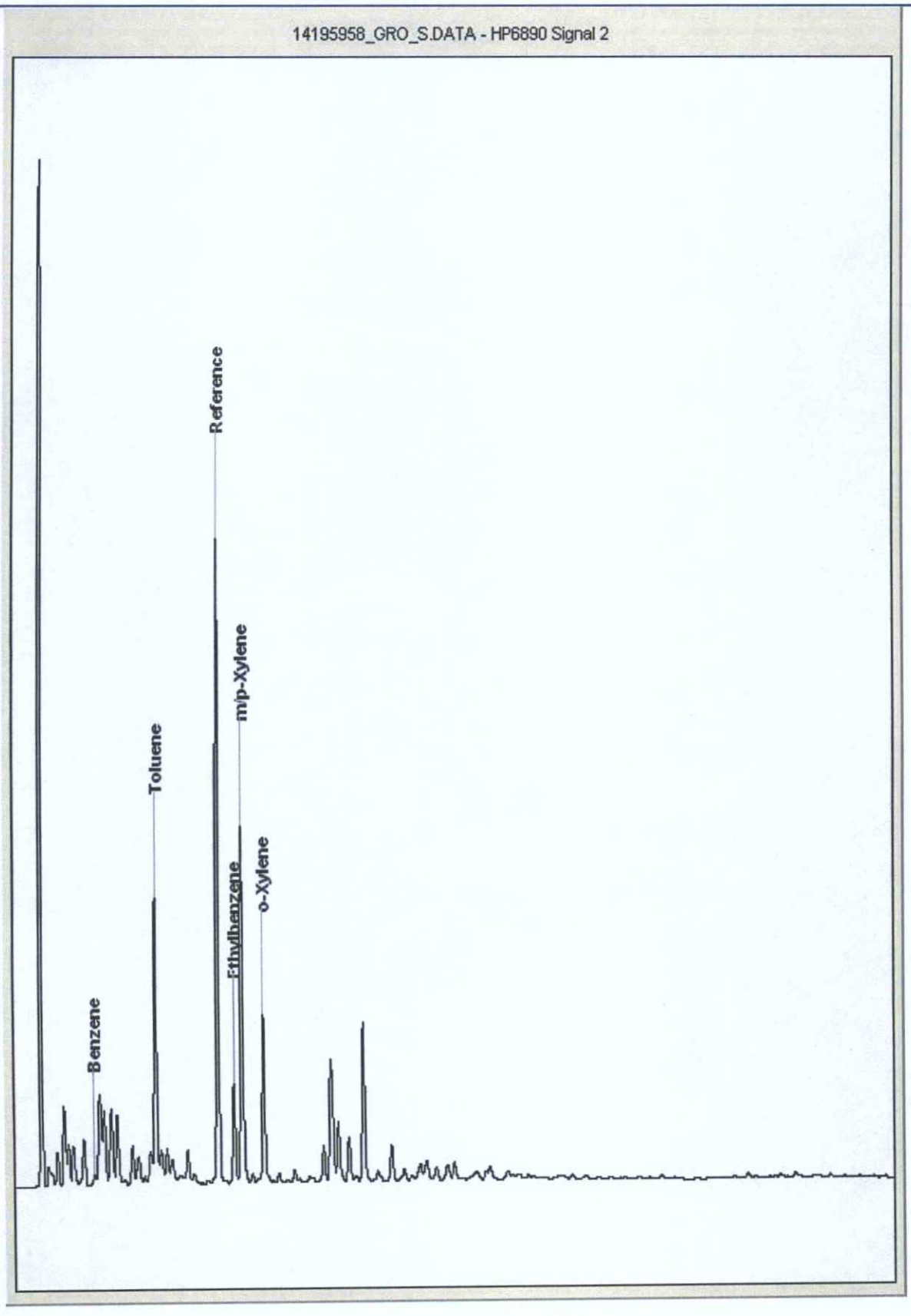
Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

Chromatogram

Analysis: GRO by GC-FID (S)
14195958

Sample No : 14,195,958 **Depth :** 3.50
Sample ID : EXA20

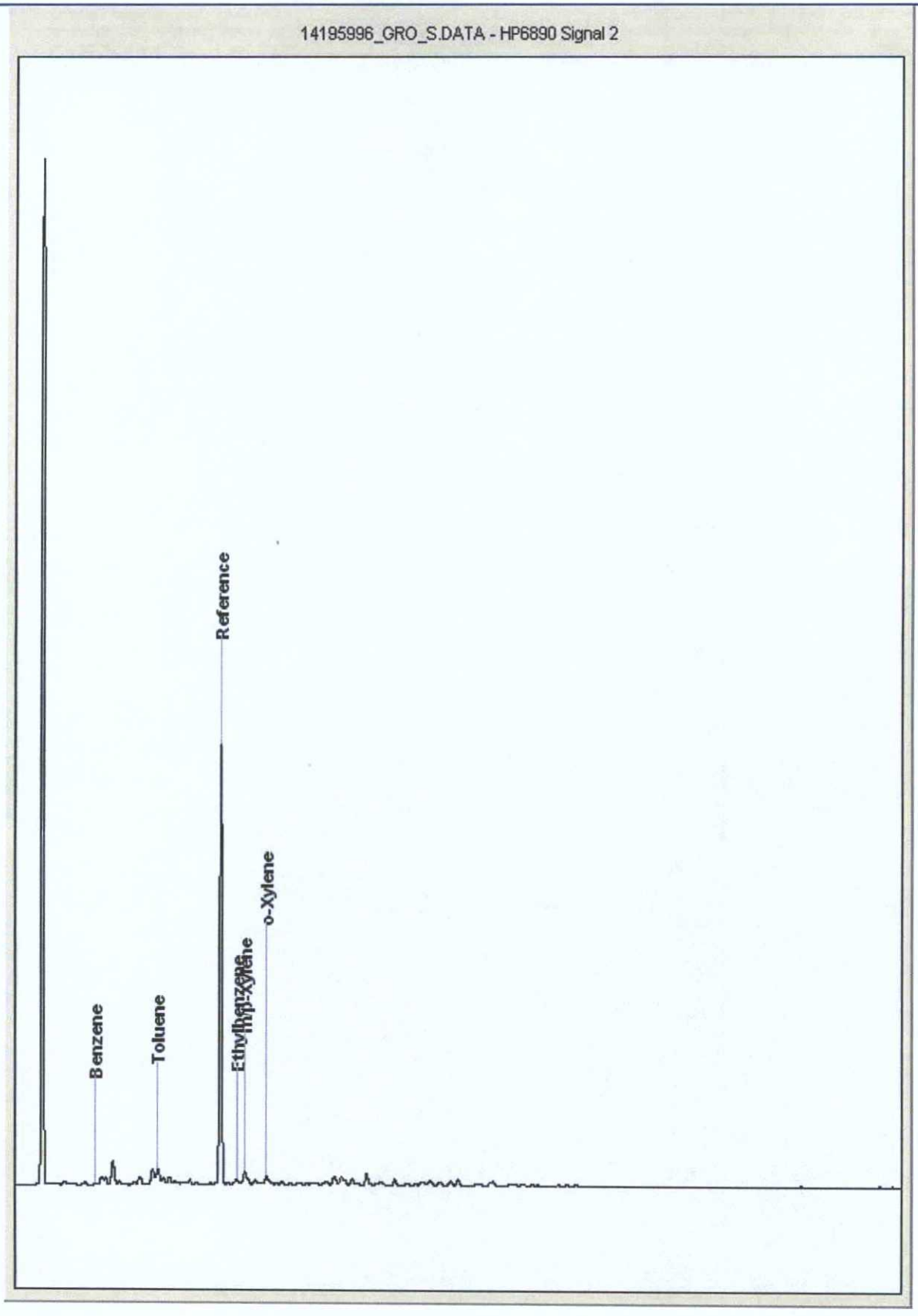


Post Certification Report

Customer : H_URS_WIM **Client Reference :**
Location : Shell Shoreham Airport

Chromatogram

Analysis: GRO by GC-FID (S) **Sample No :** 14,195,996 **Depth :** 4.00
14195996 **Sample ID :** EXA16



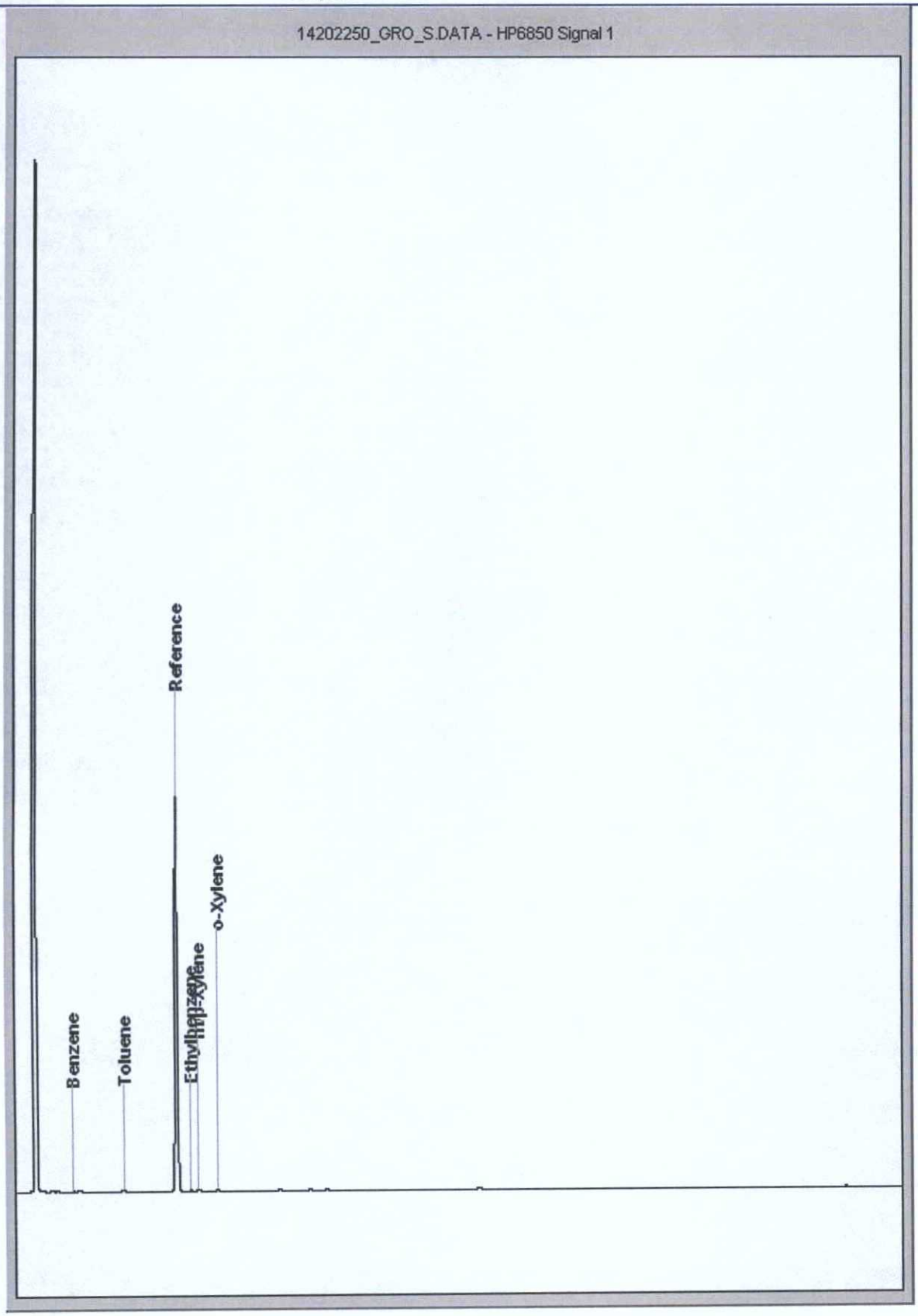
Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

Chromatogram

Analysis: GRO by GC-FID (S)
14202250

Sample No : 14,202,250 **Depth :** 2.00
Sample ID : EXA17



Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP - No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals - total metals must be requested separately.

11. Results relate only to the items tested.

12. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

14. **Product analyses** - Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

21. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

24. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of

Sample Deviations

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Holding time exceeded before sample received
5	Samples exceeded holding time before presevation was performed
§	Sampled on date not provided
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to sampled on date
&	Sample Holding Time exceeded - Late arrival of instructions.

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than:
- Trace - Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: customerservices@alcontrol.com
Website: www.alsenvironmental.co.uk

Post Certification Report

AECOM
St. George's House
2nd Floor
5 St. George's Road
Wimbledon
Greater London
SW19 4DR
Attention: Tim Rolfe

Date:	14/12/2016	**Location:**	Shell Shoreham Airport
Customer:	H_URS_WIM	**No. Of Samples Received:**	9
Your Reference:		**Samples Scheduled:**	9

Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

Post Certification Report

Customer : H_URS_WIM

Client Reference :

Location : Shell Shoreham Airport

Results Legend

X Test

N No Determination Possible

			Lab Sample No(s)	14337666	14337667	14337669	14337676	14337682	14337680	14337679	14337677	14337678
			Customer Sample Reference	EXA07	EXA08	EXA09	EXA10	EXA13	EXA14	EXA15	EXA22	EXA23
			AGS Reference									
			Depth (m)	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
			Container	250g Amber Jar	60g VOC (ALE215)	250g Amber Jar	60g VOC (ALE215)	250g Amber Jar	60g VOC (ALE215)	250g Amber Jar	60g VOC (ALE215)	250g Amber Jar	60g VOC (ALE215)	250g Amber Jar	60g VOC (ALE215)	250g Amber Jar	60g VOC (ALE215)	250g Amber Jar	60g VOC (ALE215)	250g Amber Jar	60g VOC (ALE215)
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 9		X		X		X		X		X		X		X		X		X	
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 9		X		X		X		X		X		X		X		X		X	
GRO by GC-FID (S)	All	NDPs: 0 Tests: 9			X		X		X		X		X		X		X		X		X
Oxygenates (S)	All	NDPs: 0 Tests: 9			X		X		X		X		X		X		X		X		X
PAH by GCMS	All	NDPs: 0 Tests: 9		X		X		X		X		X		X		X		X		X	
Sample description	All	NDPs: 0 Tests: 9		X		X		X		X		X		X		X		X		X	
VOC MS (S)	All	NDPs: 0 Tests: 9			X		X		X		X		X		X		X		X		X

Post Certification Report

Customer : H_URS_WIM **Client Reference :**

Location : Shell Shoreham Airport

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	EXA07	EXA08	EXA09	EXA10	EXA13	EXA14
			Depth (m)	4.50	4.50	4.50	4.50	4.50	4.50
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	13/10/2016	13/10/2016	13/10/2016	13/10/2016	13/10/2016	13/10/2016
			Date Received	15/10/2016	15/10/2016	15/10/2016	15/10/2016	15/10/2016	15/10/2016
			SDG Ref	161015-46	161015-46	161015-46	161015-46	161015-46	161015-46
			Lab Sample No.(s)	14337666	14337667	14337669	14337676	14337682	14337680
			AGS Reference						
Moisture Content Ratio (% of as received sample)	%	PM024		13	13	11	9.2	8	17
Bromofluorobenzene**	%	TM288		119	113	120	107	121	137
Ethanol	<50 µg/kg	TM288		<50	<50	<50	<50	<50	<50
tert Butanol	<10 µg/kg	TM288		<10	<10	<10	<10	<10	<10
Diisopropyl ether	<1 µg/kg	TM288		<1	<1	<1	<1	<1	<1
tert-butyl ethyl ether	<1 µg/kg	TM288		<1	<1	<1	<1	<1	<1

Post Certification Report

Customer : H_URS_WIM **Client Reference :**

Location : Shell Shoreham Airport

Results Legend		Customer Sample Ref.	EXA15	EXA22	EXA23			
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.	Depth (m)	4.50	4.50	4.50			
tot.unfilt	Total / unfiltered sample.	Sample Type	Soil/Solid	Soil/Solid	Soil/Solid			
*	subcontracted test.	Date Sampled	13/10/2016	13/10/2016	13/10/2016			
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.	Date Received	15/10/2016	15/10/2016	15/10/2016			
		SDG Ref	161015-46	161015-46	161015-46			
		Lab Sample No.(s)	14337679	14337677	14337678			
		AGS Reference						
1-5&+§@	Sample deviation (see appendix)							

Component	LOD/Units	Method						
Moisture Content Ratio (% of as received sample)	%	PM024	13	4.4	6.3			
Bromofluorobenzene**	%	TM288	128	121	137			
Ethanol	<50 µg/kg	TM288	<50	<50	<50			
tert Butanol	<10 µg/kg	TM288	<10	<10	<10			
Diisopropyl ether	<1 µg/kg	TM288	<1	<1	<1			
tert-butyl ethyl ether	<1 µg/kg	TM288	<1	<1	<1			

Post Certification Report

Customer : H_URS_WIM **Client Reference :**

Location : Shell Shoreham Airport

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.
1-5&+§@	Sample deviation (see appendix)

Customer Sample Ref.			EXA07	EXA08	EXA09	EXA10	EXA13	EXA14
Depth (m)			4.50	4.50	4.50	4.50	4.50	4.50
Sample Type			Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
Date Sampled			13/10/2016	13/10/2016	13/10/2016	13/10/2016	13/10/2016	13/10/2016
Date Received			15/10/2016	15/10/2016	15/10/2016	15/10/2016	15/10/2016	15/10/2016
SDG Ref			161015-46	161015-46	161015-46	161015-46	161015-46	161015-46
Lab Sample No.(s)			14337666	14337667	14337669	14337676	14337682	14337680
AGS Reference								
Component	**LOD/Units**	**Method**						
Aliphatics >C12-C16	<100 µg/kg	TM173	<100	1260	<100	1850	<100	<100
Aliphatics >C16-C21	<100 µg/kg	TM173	<100	1630	<100	4960	<100	<100
Aliphatics >C21-C35	<100 µg/kg	TM173	<100	5650	<100	4480	<100	<100
Aliphatics >C35-C44	<100 µg/kg	TM173	<100	911	<100	<100	<100	<100

Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

Results Legend		Customer Sample Ref.	EXA15	EXA22	EXA23			
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.	Depth (m)	4.50	4.50	4.50			
diss.filt	Dissolved / filtered sample.	Sample Type	Soil/Solid	Soil/Solid	Soil/Solid			
tot.unfilt	Total / unfiltered sample.	Date Sampled	13/10/2016	13/10/2016	13/10/2016			
*	subcontracted test.	Date Received	15/10/2016	15/10/2016	15/10/2016			
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.	SDG Ref	161015-46	161015-46	161015-46			
		Lab Sample No.(s)	14337679	14337677	14337678			
1-5&+$@	Sample deviation (see appendix)	AGS Reference						

Component	LOD/Units	Method						
Aliphatics >C12-C16	<100 µg/kg	TM173	<100	<100	427			
Aliphatics >C16-C21	<100 µg/kg	TM173	<100	<100	<100			
Aliphatics >C21-C35	<100 µg/kg	TM173	<100	<100	6720			
Aliphatics >C35-C44	<100 µg/kg	TM173	<100	<100	8030			

Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	EXA07	EXA08	EXA09	EXA10	EXA13	EXA14
			Depth (m)	4.50	4.50	4.50	4.50	4.50	4.50
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	13/10/2016	13/10/2016	13/10/2016	13/10/2016	13/10/2016	13/10/2016
			Date Received	15/10/2016	15/10/2016	15/10/2016	15/10/2016	15/10/2016	15/10/2016
			SDG Ref	161015-46	161015-46	161015-46	161015-46	161015-46	161015-46
			Lab Sample No.(s)	14337666	14337667	14337669	14337676	14337682	14337680
			AGS Reference						
Aromatics >EC12-EC16	<100 µg/kg	TM173		<100	1990	<100	482	<100	<100
Aromatics >EC16-EC21	<100 µg/kg	TM173		<100	5440	<100	4420	<100	<100
Aromatics >EC21-EC35	<100 µg/kg	TM173		<100	22200	<100	12200	<100	<100

Post Certification Report

Customer : H_URS_WIM **Client Reference :**

Location : Shell Shoreham Airport

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	EXA15	EXA22	EXA23			
			Depth (m)	4.50	4.50	4.50			
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid			
			Date Sampled	13/10/2016	13/10/2016	13/10/2016			
			Date Received	15/10/2016	15/10/2016	15/10/2016			
			SDG Ref	161015-46	161015-46	161015-46			
			Lab Sample No.(s)	14337679	14337677	14337678			
			AGS Reference						
Aromatics >EC12-EC16	<100 µg/kg	TM173		<100	<100	<100			
Aromatics >EC16-EC21	<100 µg/kg	TM173		<100	<100	434			
Aromatics >EC21-EC35	<100 µg/kg	TM173		<100	180	12600			

Post Certification Report

Customer : H_URS_WIM **Client Reference :**

Location : Shell Shoreham Airport

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.
1-5&+§@	Sample deviation (see appendix)

Customer Sample Ref.	EXA07	EXA08	EXA09	EXA10	EXA13	EXA14
Depth (m)	4.50	4.50	4.50	4.50	4.50	4.50
Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
Date Sampled	13/10/2016	13/10/2016	13/10/2016	13/10/2016	13/10/2016	13/10/2016
Date Received	15/10/2016	15/10/2016	15/10/2016	15/10/2016	15/10/2016	15/10/2016
SDG Ref	161015-46	161015-46	161015-46	161015-46	161015-46	161015-46
Lab Sample No.(s)	14337666	14337667	14337669	14337676	14337682	14337680
AGS Reference						

Component	LOD/Units	Method						
GRO Surrogate % recovery**	%	TM089	125	114	117	117	102	107
Aliphatics >C5-C6	<10 µg/kg	TM089	<10	166	<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/kg	TM089	106	6520	<10	28.6	<10	10.8
Aliphatics >C8-C10	<10 µg/kg	TM089	118	4470	<10	49.5	<10	32.4
Aliphatics >C10-C12	<10 µg/kg	TM089	130	3190	<10	74.8	14.1	118
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10	13.7	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089	79.4	2980	<10	39.6	<10	22.8
Aromatics >EC10-EC12	<10 µg/kg	TM089	86.3	2120	<10	49.5	<10	79.2

Post Certification Report

Customer : H_URS_WIM **Client Reference :**

Location : Shell Shoreham Airport

Results Legend		Customer Sample Ref.	EXA15	EXA22	EXA23			
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	subcontracted test.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.	Depth (m)	4.50	4.50	4.50			
		Sample Type	Soil/Solid	Soil/Solid	Soil/Solid			
		Date Sampled	13/10/2016	13/10/2016	13/10/2016			
		Date Received	15/10/2016	15/10/2016	15/10/2016			
		SDG Ref	161015-46	161015-46	161015-46			
		Lab Sample No.(s)	14337679	14337677	14337678			
1-5&+§@	Sample deviation (see appendix)	AGS Reference						

Component	LOD/Units	Method						
GRO Surrogate % recovery**	%	TM089	111	125	107			
Aliphatics >C5-C6	<10 µg/kg	TM089	<10	<10	<10			
Aliphatics >C6-C8	<10 µg/kg	TM089	<10	<10	<10			
Aliphatics >C8-C10	<10 µg/kg	TM089	12.7	<10	<10			
Aliphatics >C10-C12	<10 µg/kg	TM089	49.5	<10	25.6			
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10	<10	<10			
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10	<10	<10			
Aromatics >EC8-EC10	<10 µg/kg	TM089	<10	<10	<10			
Aromatics >EC10-EC12	<10 µg/kg	TM089	33.4	<10	17.1			

Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	EXA07	EXA08	EXA09	EXA10	EXA13	EXA14
			Depth (m)	4.50	4.50	4.50	4.50	4.50	4.50
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	13/10/2016	13/10/2016	13/10/2016	13/10/2016	13/10/2016	13/10/2016
			Date Received	15/10/2016	15/10/2016	15/10/2016	15/10/2016	15/10/2016	15/10/2016
			SDG Ref	161015-46	161015-46	161015-46	161015-46	161015-46	161015-46
			Lab Sample No.(s)	14337666	14337667	14337669	14337676	14337682	14337680
			AGS Reference						
Naphthalene-d8 % recovery**	%	TM218		102	100	90.3	97.6	92.2	106
Acenaphthene-d10 % recovery**	%	TM218		98.2	97.5	88.1	95.1	90.8	104
Phenanthrene-d10 % recovery**	%	TM218		93.8	95.3	86.2	94.7	89	102
Chrysene-d12 % recovery**	%	TM218		79.7	88.7	79.2	87.9	83	95.8
Perylene-d12 % recovery**	%	TM218		83.8	96.3	86.1	95.3	90.5	105
Naphthalene	<9 µg/kg	TM218		<9 M	87.5 M	<9 M	26	<9 M	<9 M
Acenaphthylene	<12 µg/kg	TM218		<12 M	22.6 M	<12 M	29.3	<12 M	<12 M
Acenaphthene	<8 µg/kg	TM218		<8 M	37.5 M	<8 M	17.8	<8 M	<8 M
Fluorene	<10 µg/kg	TM218		<10 M	57.4 M	<10 M	21.3	<10 M	<10 M
Phenanthrene	<15 µg/kg	TM218		<15 M	413 M	<15 M	202	<15 M	<15 M
Anthracene	<16 µg/kg	TM218		<16 M	109 M	<16 M	69.5	<16 M	<16 M
Fluoranthene	<17 µg/kg	TM218		19.7 M	878 M	<17 M	576	<17 M	26.9 M
Pyrene	<15 µg/kg	TM218		<15 M	795 M	<15 M	502	<15 M	27.1 M
Benz(a)anthracene	<14 µg/kg	TM218		<14 M	385 M	<14 M	298	<14 M	<14 M
Chrysene	<10 µg/kg	TM218		<10 M	325 M	<10 M	264	<10 M	13.6 M
Benzo(b)fluoranthene	<15 µg/kg	TM218		<15 M	465 M	<15 M	398	<15 M	<15 M
Benzo(k)fluoranthene	<14 µg/kg	TM218		<14 M	183 M	<14 M	170	<14 M	<14 M
Benzo(a)pyrene	<15 µg/kg	TM218		<15 M	402 M	<15 M	328	<15 M	<15 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218		<18 M	222 M	<18 M	180	<18 M	<18 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218		<23 M	60.4 M	<23 M	45.9	<23 M	<23 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218		<24 M	285 M	<24 M	235	<24 M	<24 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218		<118	4730	<118	3360	<118	<118

Post Certification Report

Customer : H_URS_WIM **Client Reference :**

Location : Shell Shoreham Airport

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	EXA15	EXA22	EXA23			
			Depth (m)	4.50	4.50	4.50			
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid			
			Date Sampled	13/10/2016	13/10/2016	13/10/2016			
			Date Received	15/10/2016	15/10/2016	15/10/2016			
			SDG Ref	161015-46	161015-46	161015-46			
			Lab Sample No.(s)	14337679	14337677	14337678			
			AGS Reference						
Naphthalene-d8 % recovery**	%	TM218		93.9	96.4	94.9			
Acenaphthene-d10 % recovery**	%	TM218		91.4	93.5	92.4			
Phenanthrene-d10 % recovery**	%	TM218		90.1	92.6	91.3			
Chrysene-d12 % recovery**	%	TM218		83.4	86.2	85.1			
Perylene-d12 % recovery**	%	TM218		91	93.1	92.5			
Naphthalene	<9 µg/kg	TM218		<9 M	<9 M	<9 M			
Acenaphthylene	<12 µg/kg	TM218		<12 M	<12 M	<12 M			
Acenaphthene	<8 µg/kg	TM218		<8 M	<8 M	<8 M			
Fluorene	<10 µg/kg	TM218		<10 M	<10 M	<10 M			
Phenanthrene	<15 µg/kg	TM218		<15 M	<15 M	<15 M			
Anthracene	<16 µg/kg	TM218		<16 M	<16 M	<16 M			
Fluoranthene	<17 µg/kg	TM218		43 M	<17 M	34.3 M			
Pyrene	<15 µg/kg	TM218		40.3 M	<15 M	30.6 M			
Benz(a)anthracene	<14 µg/kg	TM218		<14 M	<14 M	<14 M			
Chrysene	<10 µg/kg	TM218		20.7 M	<10 M	<10 M			
Benzo(b)fluoranthene	<15 µg/kg	TM218		31.9 M	<15 M	<15 M			
Benzo(k)fluoranthene	<14 µg/kg	TM218		17.5 M	<14 M	<14 M			
Benzo(a)pyrene	<15 µg/kg	TM218		28.8 M	<15 M	<15 M			
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218		<18 M	<18 M	<18 M			
Dibenzo(a,h)anthracene	<23 µg/kg	TM218		<23 M	<23 M	<23 M			
Benzo(g,h,i)perylene	<24 µg/kg	TM218		<24 M	<24 M	<24 M			
PAH, Total Detected USEPA 16	<118 µg/kg	TM218		182	<118	<118			

Post Certification Report

Customer : H_URS_WIM **Client Reference :**

Location : Shell Shoreham Airport

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.
1-5&+§@	Sample deviation (see appendix)

Customer Sample Ref.	EXA07	EXA08	EXA09	EXA10	EXA13	EXA14
Depth (m)	4.50	4.50	4.50	4.50	4.50	4.50
Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
Date Sampled	13/10/2016	13/10/2016	13/10/2016	13/10/2016	13/10/2016	13/10/2016
Date Received	15/10/2016	15/10/2016	15/10/2016	15/10/2016	15/10/2016	15/10/2016
SDG Ref	161015-46	161015-46	161015-46	161015-46	161015-46	161015-46
Lab Sample No.(s)	14337666	14337667	14337669	14337676	14337682	14337680
AGS Reference						

Component	LOD/Units	Method						
Toluene-d8**	%	TM116	98.8	98.6	101	99.4	100	100
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 #	<10 M	<10 M
Benzene	<9 µg/kg	TM116	<9 M	<9 M	<9 M	<9 #	<9 M	<9 M
Toluene	<7 µg/kg	TM116	<7 M	<7 M	<7 M	<7 #	<7 M	<7 M
Ethylbenzene	<4 µg/kg	TM116	<4 M	8.05 M	<4 M	<4 #	<4 M	<4 M
p/m-Xylene	<10 µg/kg	TM116	<10 #	17.3 #	<10 #	<10 #	<10 #	<10 #
o-Xylene	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 #	<10 M	<10 M
Tert-amyl methyl ether	<10 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #

Post Certification Report

Customer : H_URS_WIM **Client Reference :**

Location : Shell Shoreham Airport

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	EXA15	EXA22	EXA23			
			Depth (m)	4.50	4.50	4.50			
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid			
			Date Sampled	13/10/2016	13/10/2016	13/10/2016			
			Date Received	15/10/2016	15/10/2016	15/10/2016			
			SDG Ref	161015-46	161015-46	161015-46			
			Lab Sample No.(s)	14337679	14337677	14337678			
			AGS Reference						
Toluene-d8**	%	TM116		99.6	99.8	100			
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116		<10 M	<10 M	<10 M			
Benzene	<9 µg/kg	TM116		<9 M	<9 M	<9 M			
Toluene	<7 µg/kg	TM116		<7 M	<7 M	<7 M			
Ethylbenzene	<4 µg/kg	TM116		<4 M	<4 M	<4 M			
p/m-Xylene	<10 µg/kg	TM116		<10 #	<10 #	<10 #			
o-Xylene	<10 µg/kg	TM116		<10 M	<10 M	<10 M			
Tert-amyl methyl ether	<10 µg/kg	TM116		<10 #	<10 #	<10 #			

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

Table of Results - Appendix

REPORT KEY

Results expressed as (e.g.) 1.03E-07 is equivalent to 1.03x10-7

NDP	No Determination Possible	#	ISO 17025 Accredited	*	Subcontracted Test	M	MCERTS Accredited
NFD	No Fibres Detected	PFD	Possible Fibres Detected	»	Result previously reported (Incremental reports only)	EC	Equivalent Carbon (Aromatics C8-C35)

Note: Method detection limits are not always achievable due to various circumstances beyond our control

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM218	Determination of PAH by GCMS Microwave extraction	The determination of PAH in soil samples by microwave extraction and GC-MS		
TM288		Determination of Oxygenates in Soils by Headspace/GC-MS		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

Test Completion Dates

Lab Sample No(s)	14337666	14337667	14337669	14337676	14337682	14337680	14337679	14337677	14337678
Customer Sample Ref.	EXA07	EXA08	EXA09	EXA10	EXA13	EXA14	EXA15	EXA22	EXA23
AGS Ref.									
Depth	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
EPH CWG (Aliphatic) GC (S)	20-Oct-2016	20-Oct-2016	20-Oct-2016	20-Oct-2016	20-Oct-2016	20-Oct-2016	20-Oct-2016	20-Oct-2016	20-Oct-2016
EPH CWG (Aromatic) GC (S)	20-Oct-2016	20-Oct-2016	20-Oct-2016	20-Oct-2016	20-Oct-2016	20-Oct-2016	20-Oct-2016	20-Oct-2016	20-Oct-2016
GRO by GC-FID (S)	21-Oct-2016	20-Oct-2016	20-Oct-2016	21-Oct-2016	19-Oct-2016	19-Oct-2016	19-Oct-2016	19-Oct-2016	19-Oct-2016
Oxygenates (S)	19-Oct-2016	19-Oct-2016	19-Oct-2016	19-Oct-2016	21-Oct-2016	19-Oct-2016	19-Oct-2016	19-Oct-2016	19-Oct-2016
PAH by GCMS	21-Oct-2016	21-Oct-2016	21-Oct-2016	21-Oct-2016	21-Oct-2016	21-Oct-2016	21-Oct-2016	21-Oct-2016	21-Oct-2016
Sample description	18-Oct-2016	18-Oct-2016	18-Oct-2016	18-Oct-2016	18-Oct-2016	18-Oct-2016	18-Oct-2016	18-Oct-2016	18-Oct-2016
VOC MS (S)	20-Oct-2016	20-Oct-2016	20-Oct-2016	20-Oct-2016	20-Oct-2016	20-Oct-2016	20-Oct-2016	20-Oct-2016	20-Oct-2016

Post Certification Report

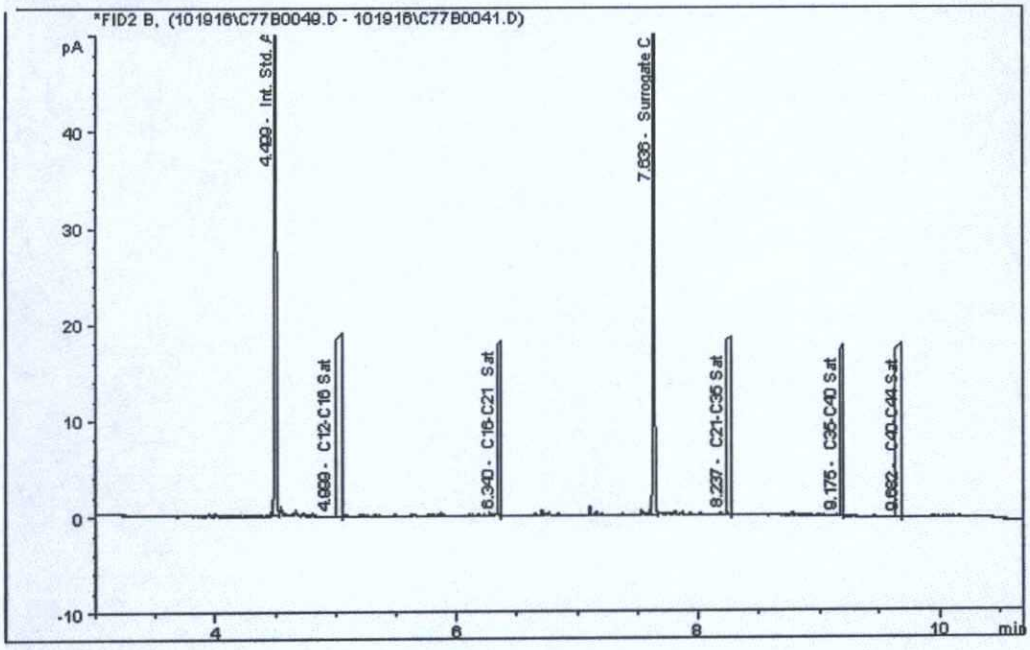
Customer : H_URS_WIM **Client Reference :**
Location : Shell Shoreham Airport

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 14,354,854 **Depth :** 4.50
14354854 **Sample ID :** EXA14

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13465568-
Date Acquired : 20/10/2016 03:42:36 PM
Units : ppb
Dilution:



Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

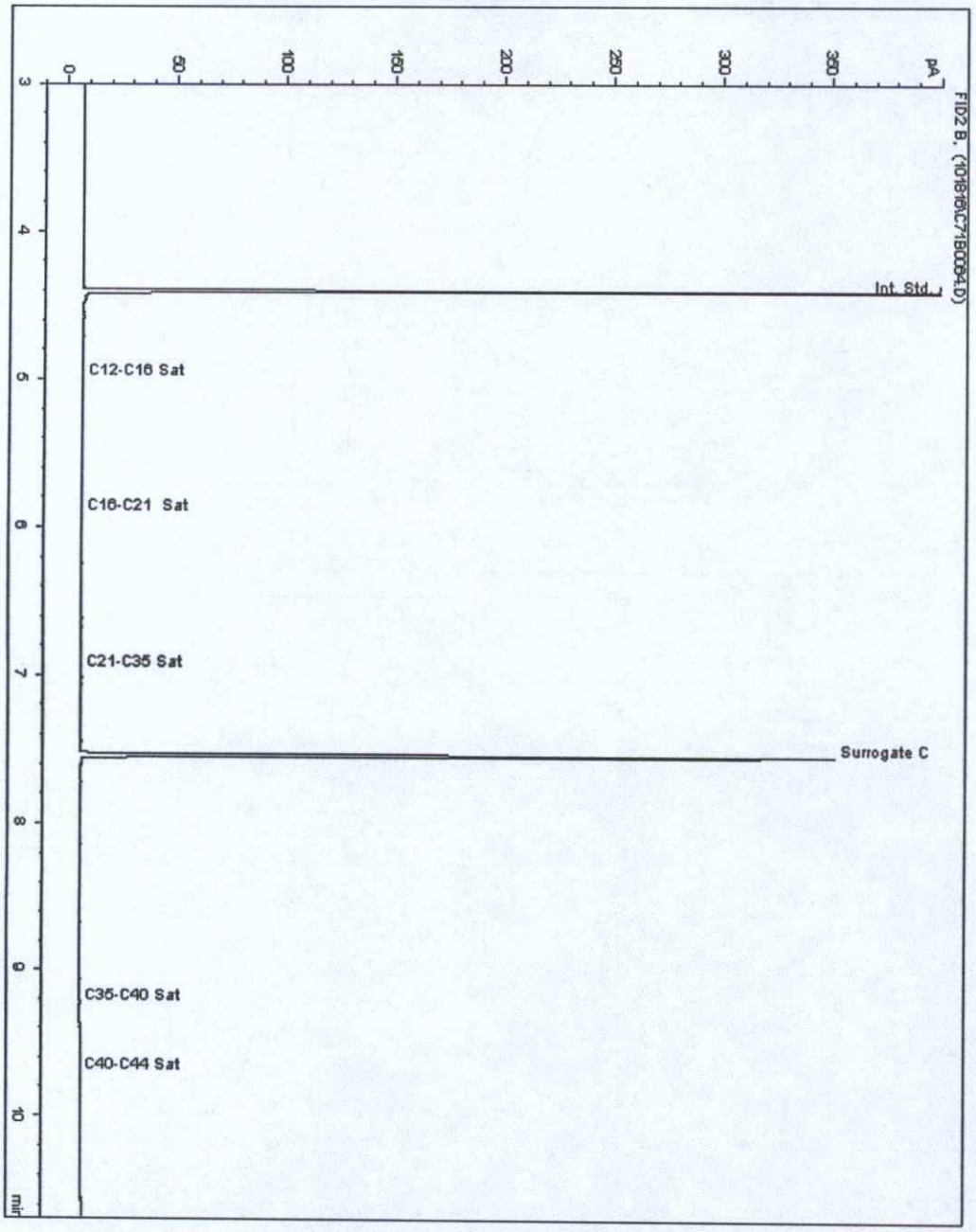
Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)
14354916

Sample No : 14,354,916 **Depth :** 4.50
Sample ID : EXA07

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13465505-
Date Acquired : 19/10/2016 22:25:18 PM
Units : ppb
Dilution: EXA-B03[4.50] ->



Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

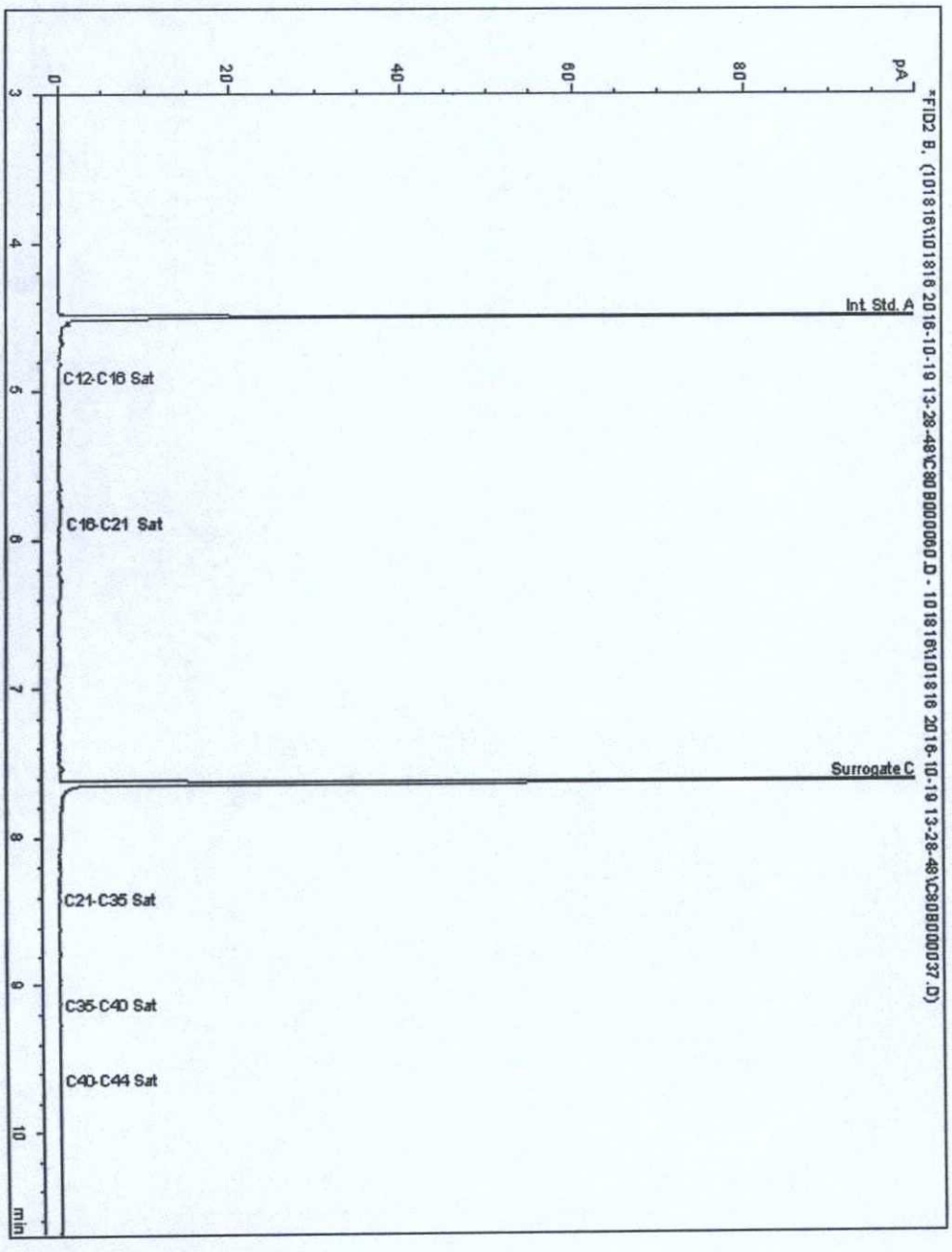
Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)
14354987

Sample No : 14,354,987 **Depth :** 4.50
Sample ID : EXA22

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13465541-
Date Acquired : 19/10/16 20:53:07
Units : ppb
Dilution :
CF : 1
Multiplier : 0.957



Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

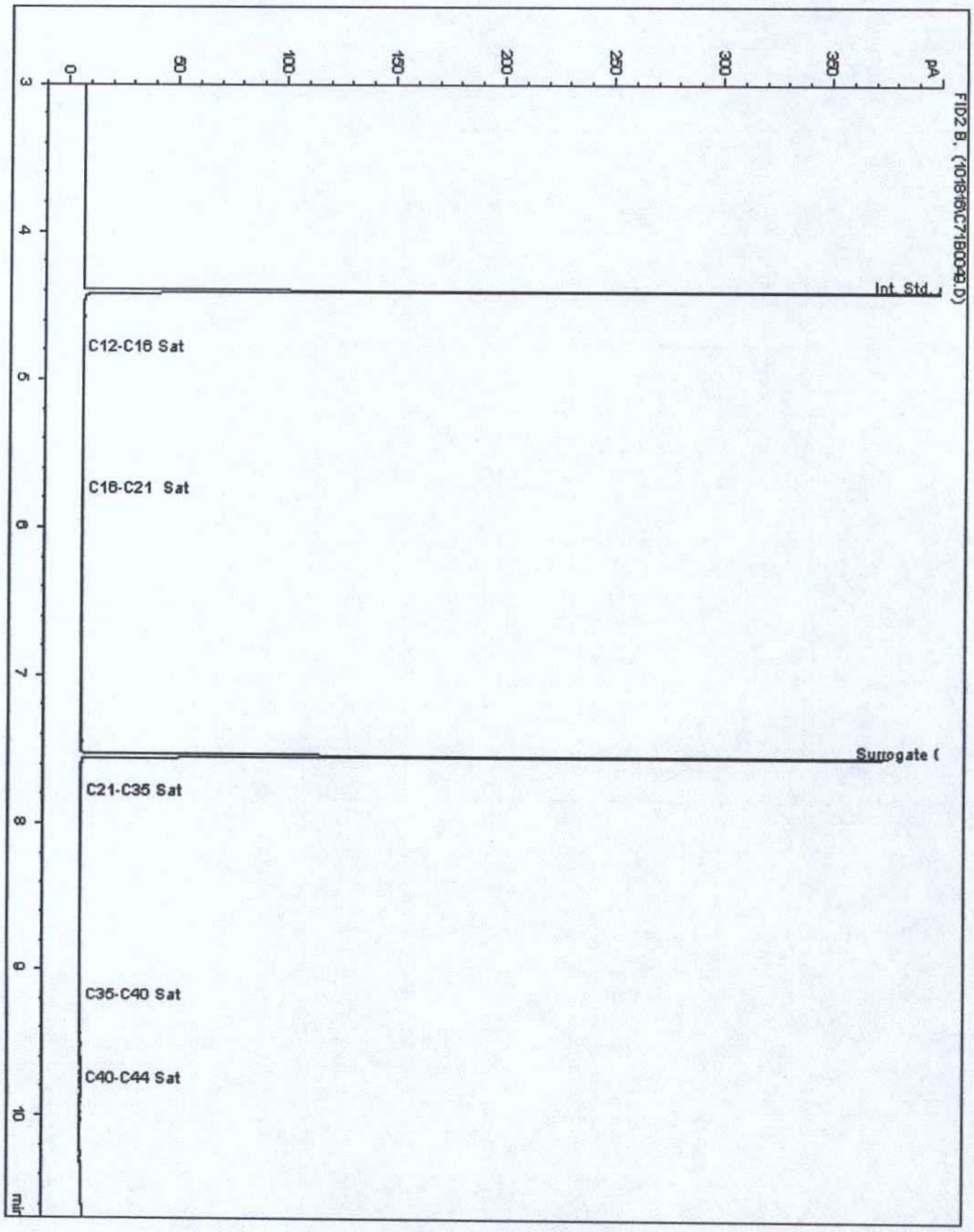
Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)
14355069

Sample No : 14,355,069 **Depth :** 4.50
Sample ID : EXA13

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13465577-
Date Acquired : 19/10/2016 17:38:07 PM
Units : ppb
Dilution: EXA-B11[4.50] ->



Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

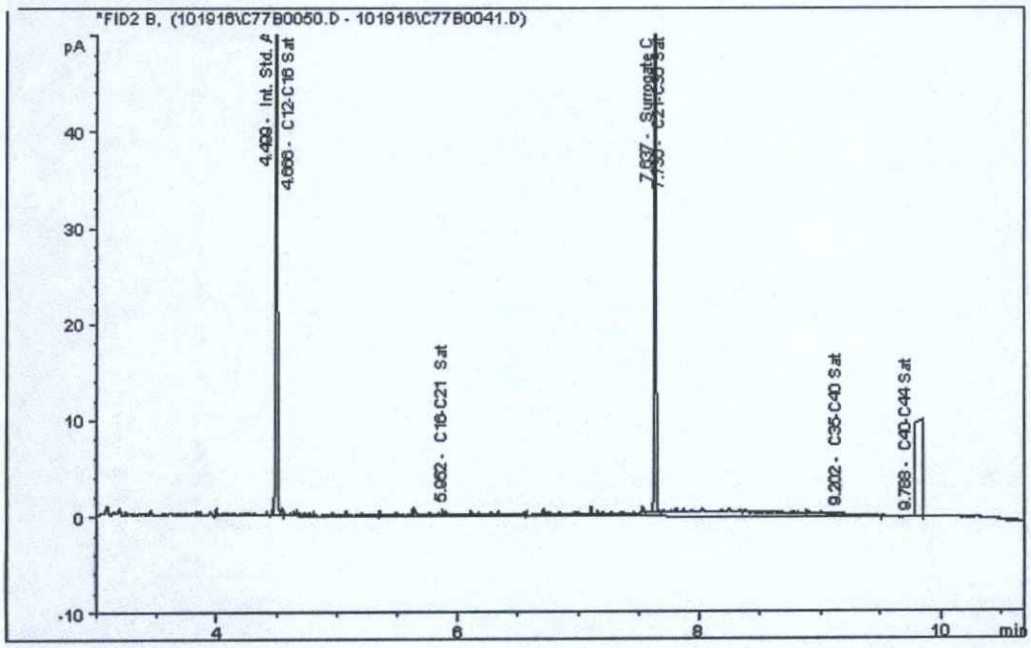
Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)
14355189

Sample No : 14,355,189 **Depth :** 4.50
Sample ID : EXA08

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13465514-
Date Acquired : 20/10/2016 04:02:48 PM
Units : ppb
Dilution:



Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

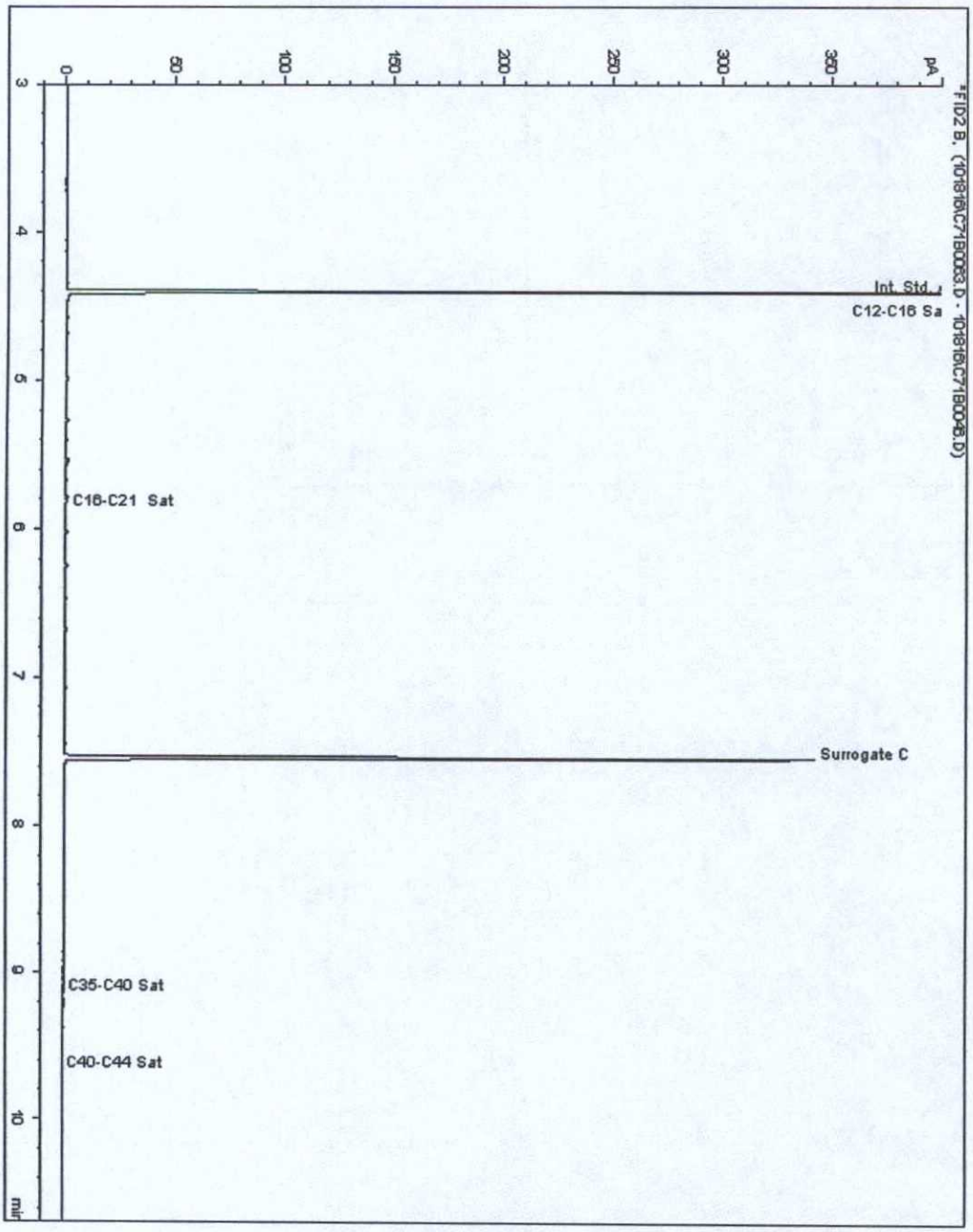
Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)
14355233

Sample No : 14,355,233 **Depth :** 4.50
Sample ID : EXA10

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13465532-
Date Acquired : 19/10/2016 22:05:09 PM
Units : ppb
Dilution: EXA-B06[4.50] ->



Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

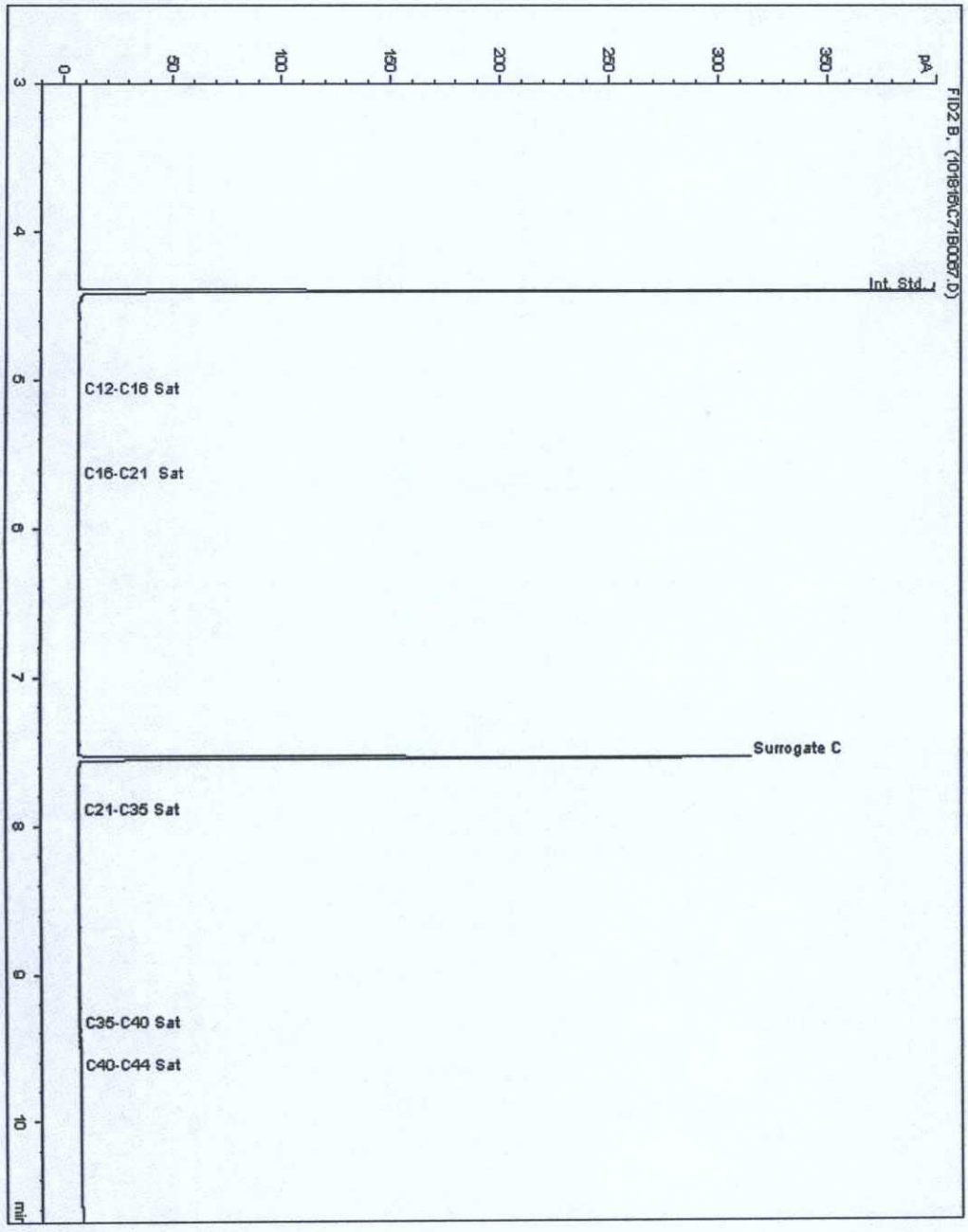
Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)
14355284

Sample No : 14,355,284 **Depth :** 4.50
Sample ID : EXA09

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13465523-
Date Acquired : 19/10/2016 23:25:54 PM
Units : ppb
Dilution: EXA-B05[4.50] ->



Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

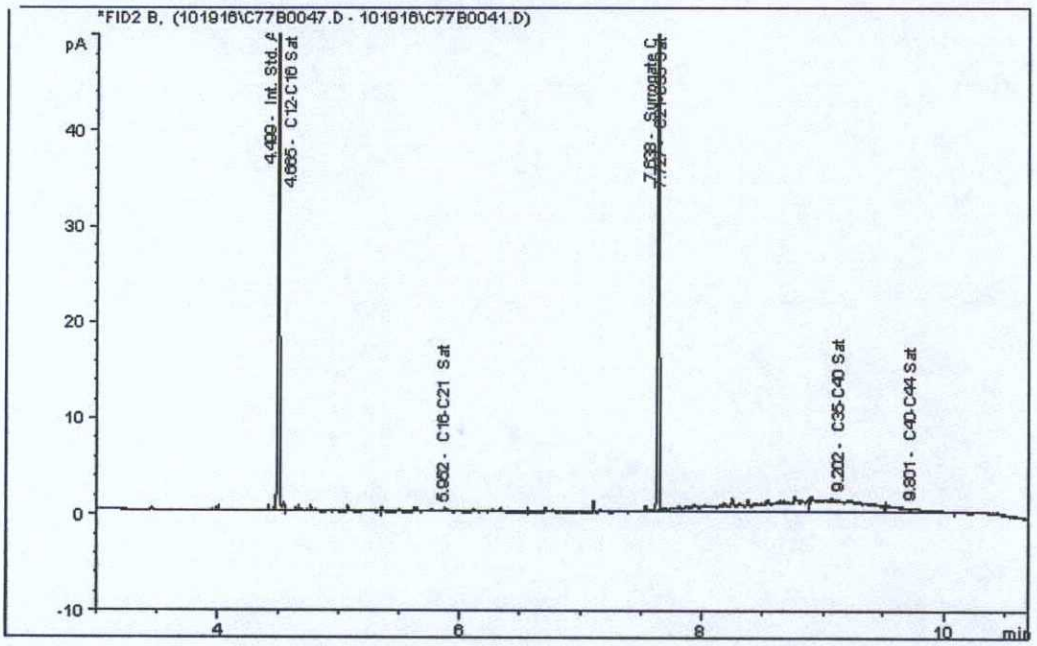
Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)
14355331

Sample No : 14,355,331 **Depth :** 4.50
Sample ID : EXA23

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13465550-
Date Acquired : 20/10/2016 03:02:36 PM
Units : ppb
Dilution:



Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

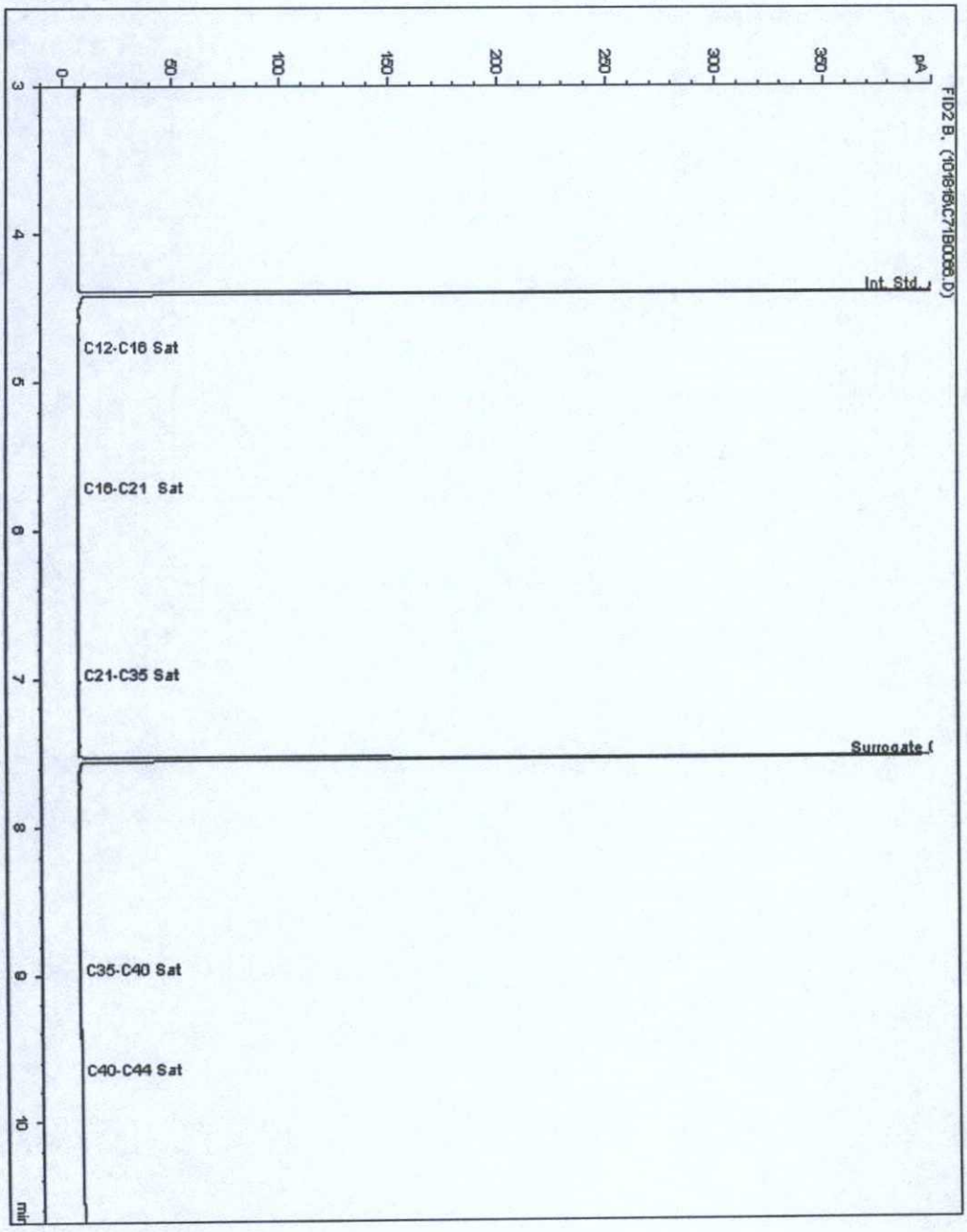
Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)
14355374

Sample No : 14,355,374 **Depth :** 4.50
Sample ID : EXA15

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13465559-
Date Acquired : 19/10/2016 23:05:48 PM
Units : ppb
Dilution: EXA-B09[4.50] ->



Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

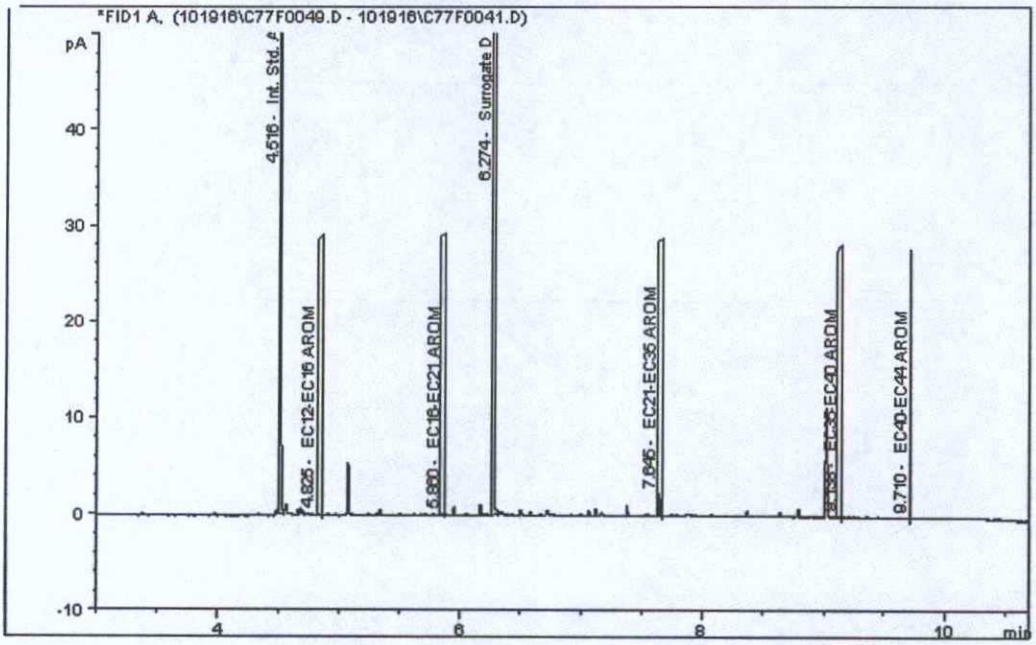
Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)
14354854

Sample No : 14,354,854 **Depth :** 4.50
Sample ID : EXA14

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13465569-
Date Acquired : 20/10/2016 03:42:36 PM
Units : ppb
Dilution:



Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

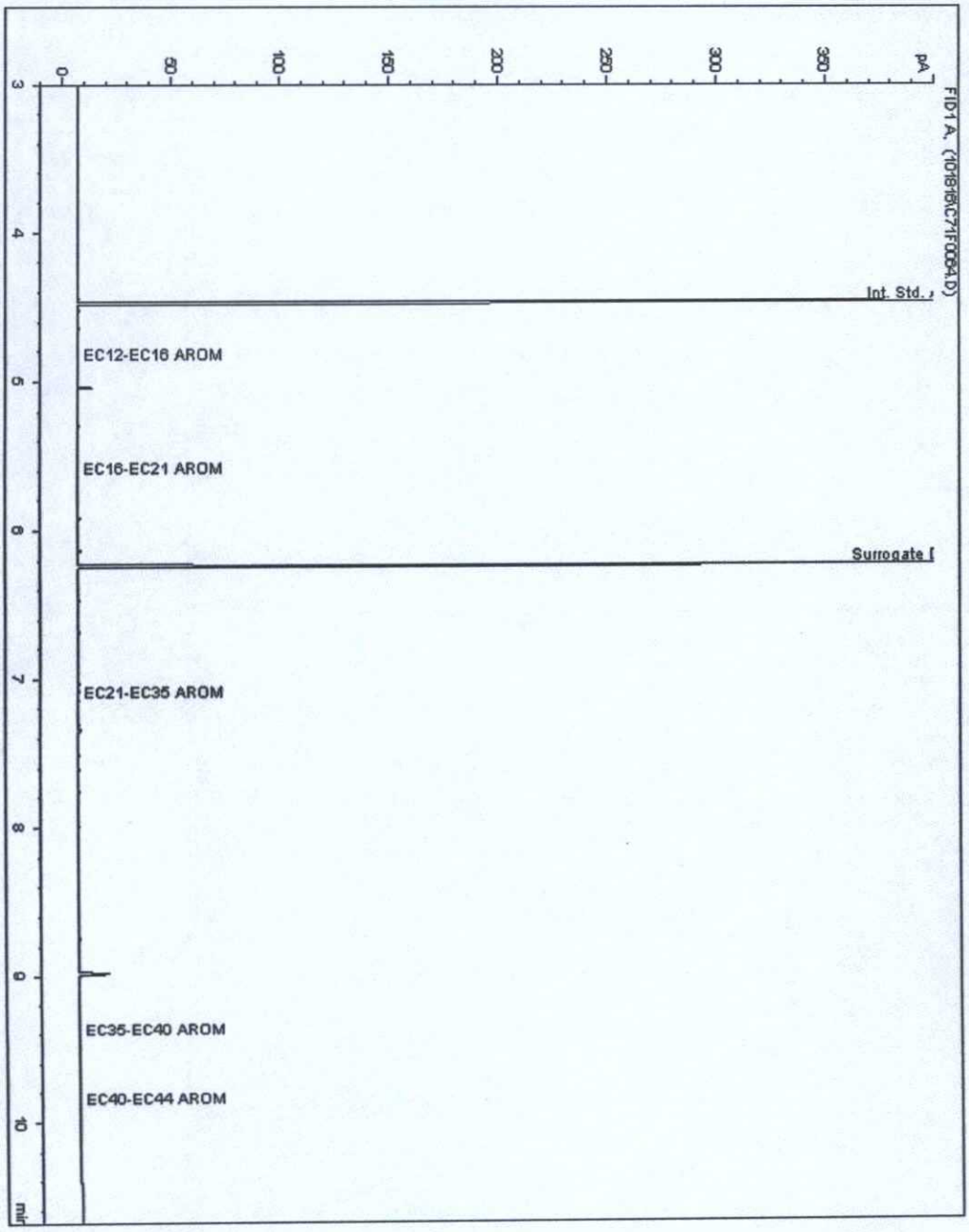
Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)
14354916

Sample No : 14,354,916 **Depth :** 4.50
Sample ID : EXA07

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13465506-
Date Acquired : 19/10/2016 22:25:18 PM
Units : ppb
Dilution: EXA-B03[4.50] ->



Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

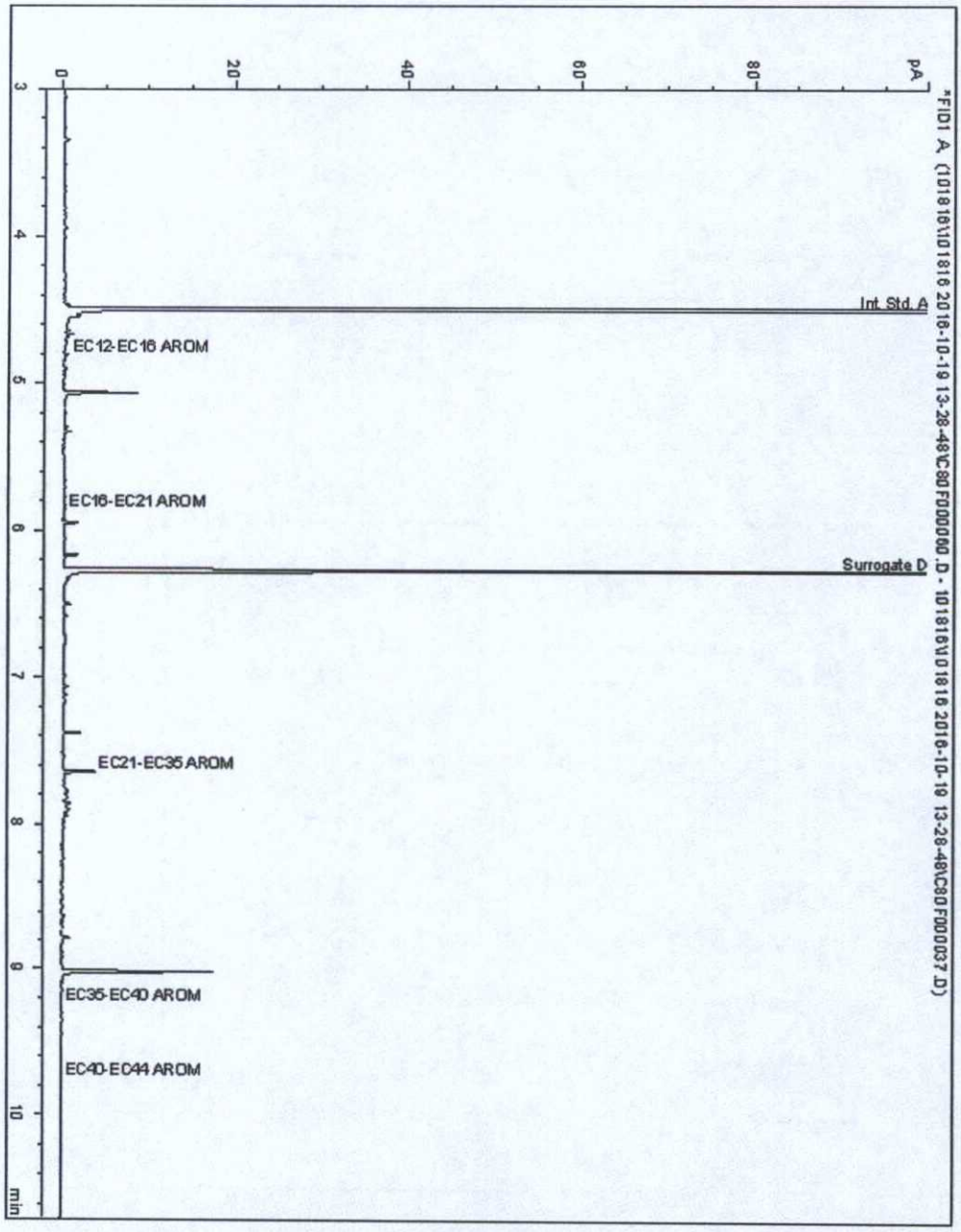
Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)
14354987

Sample No : 14,354,987 **Depth :** 4.50
Sample ID : EXA22

Alcontrol/Geochem Analytical Services
Speciated TPH - AROMS (C12 - C44)

Sample Identity: 13465542-
Date Acquired : 19/10/16 20:53:07
Units : ppb
Dilution :
CF : 1
Multiplier : 0.957



Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

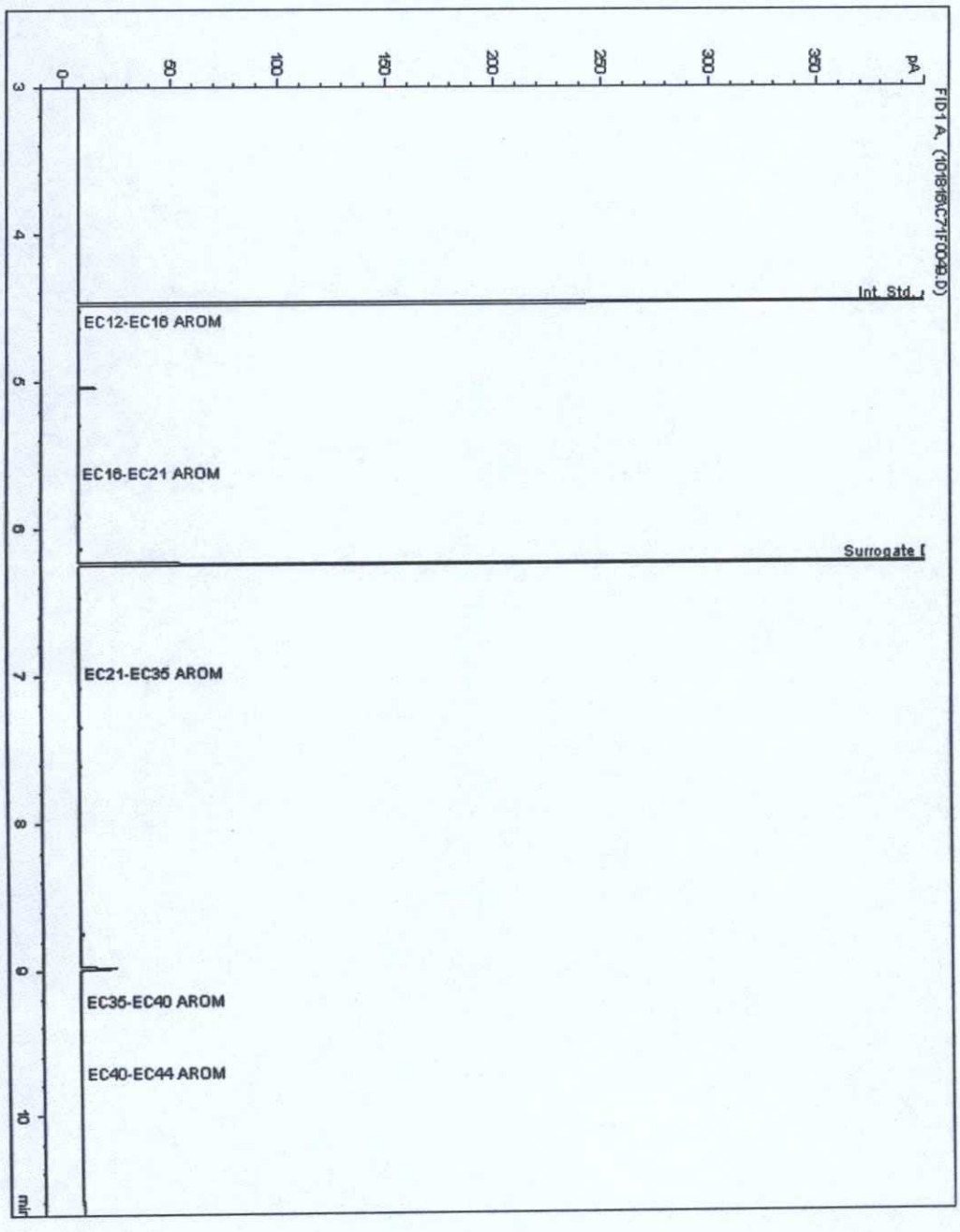
Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)
14355069

Sample No : 14,355,069 **Depth :** 4.50
Sample ID : EXA13

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13465578-
Date Acquired : 19/10/2016 17:38:07 PM
Units : ppb
Dilution: EXA-B11[4.50] ->



Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

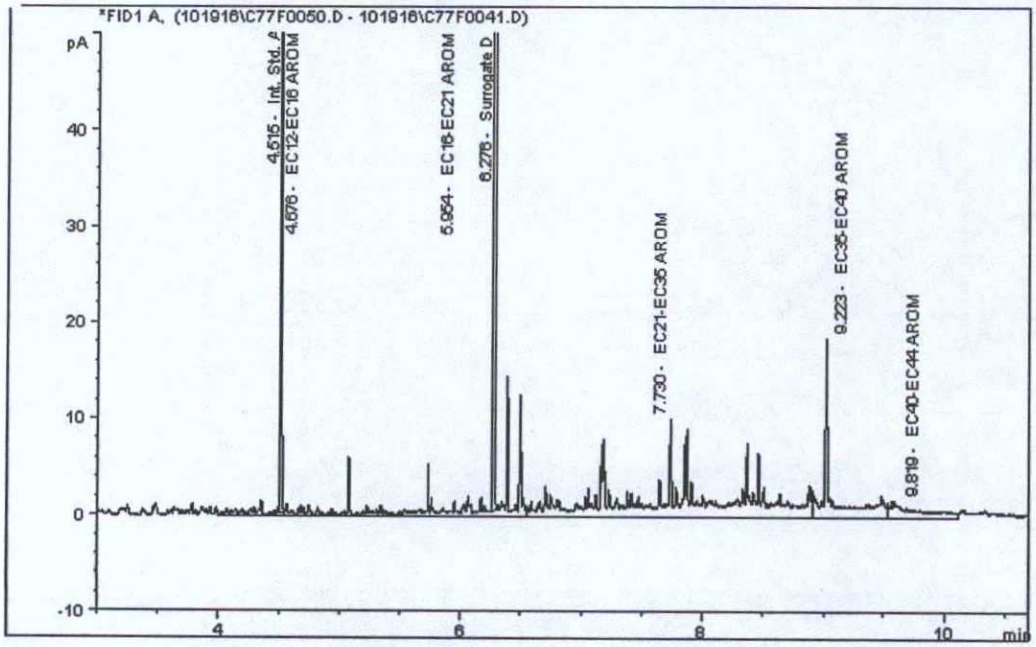
Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)
14355189

Sample No : 14,355,189 **Depth :** 4.50
Sample ID : EXA08

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13465515-
Date Acquired : 20/10/2016 04:02:48 PM
Units : ppb
Dilution:



Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

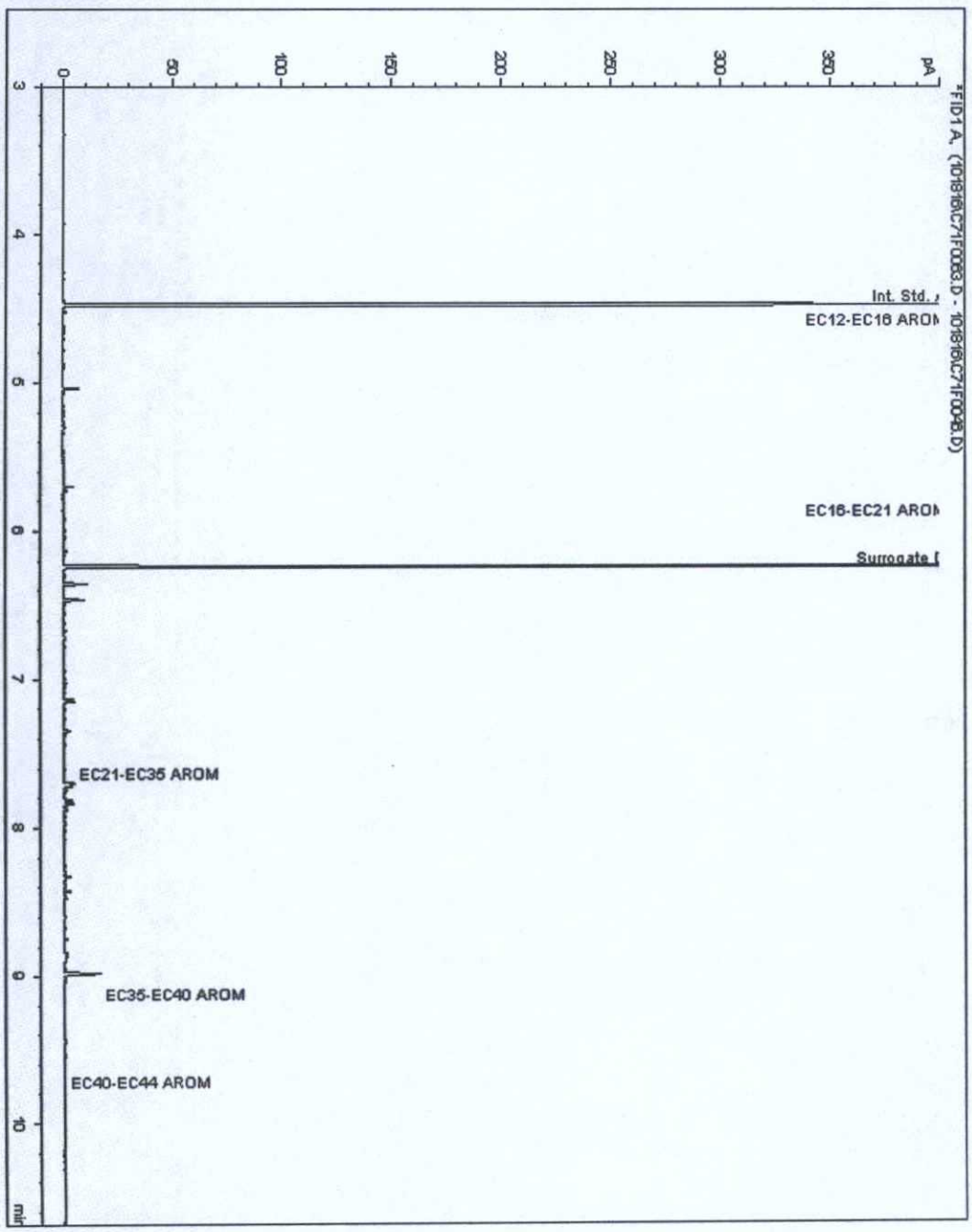
Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)
14355233

Sample No : 14,355,233 **Depth :** 4.50
Sample ID : EXA10

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13465533-
Date Acquired : 19/10/2016 22:05:09 PM
Units : ppb
Dilution: EXA-B06[4.50] ->



Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

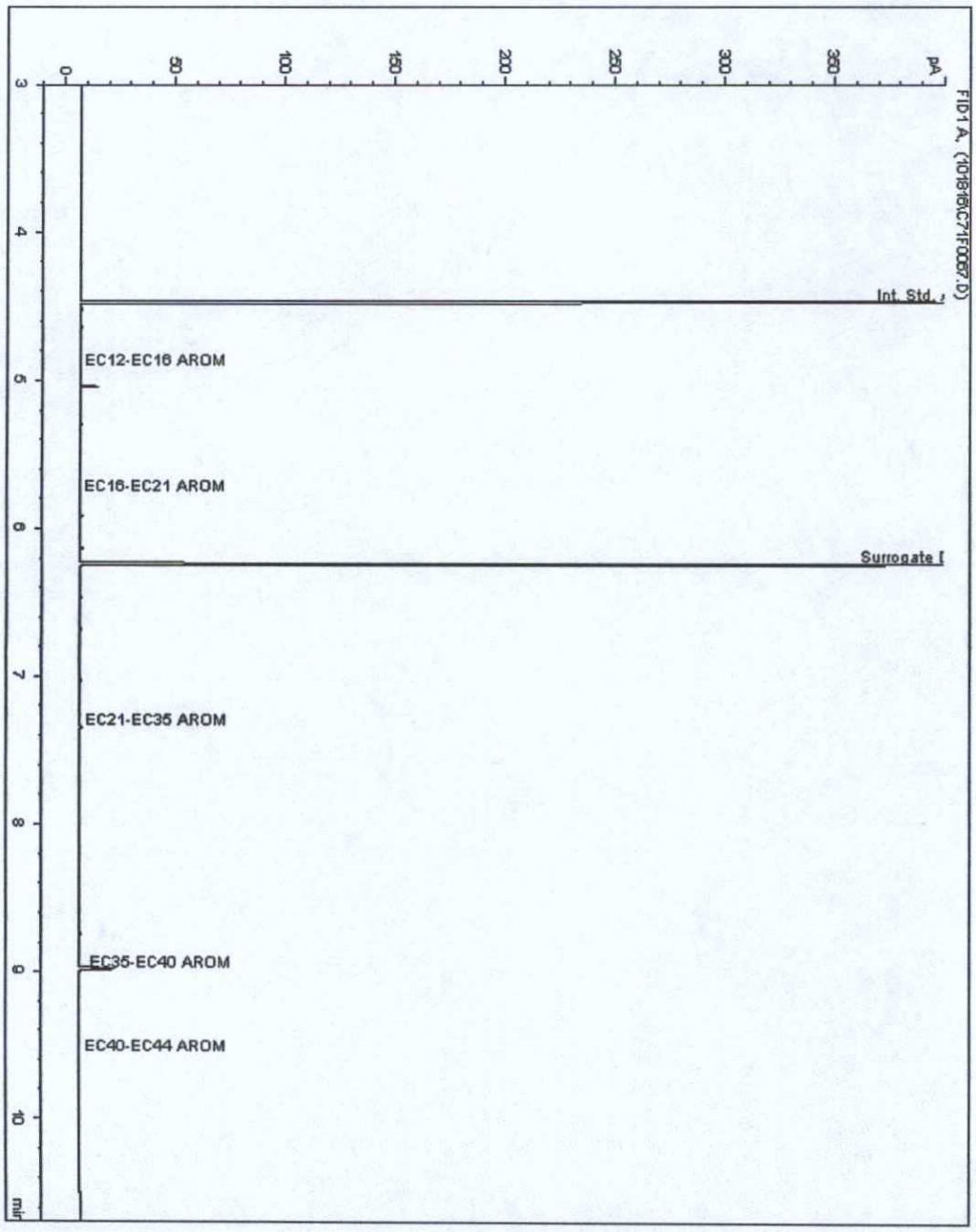
Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)
14355284

Sample No : 14,355,284 **Depth :** 4.50
Sample ID : EXA09

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13465524-
Date Acquired : 19/10/2016 23:25:54 PM
Units : ppb
Dilution: EXA-B05[4.50] ->



Post Certification Report

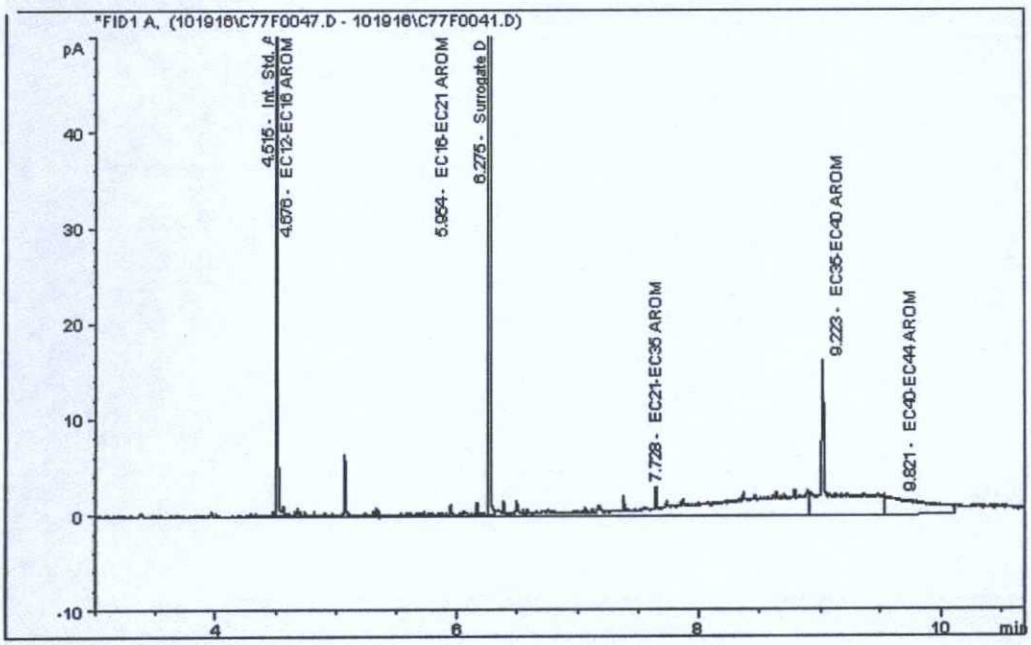
Customer : H_URS_WIM **Client Reference :**
Location : Shell Shoreham Airport

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 14,355,331 **Depth :** 4.50
14355331 **Sample ID :** EXA23

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13465551-
Date Acquired : 20/10/2016 03:02:36 PM
Units : ppb
Dilution:



Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

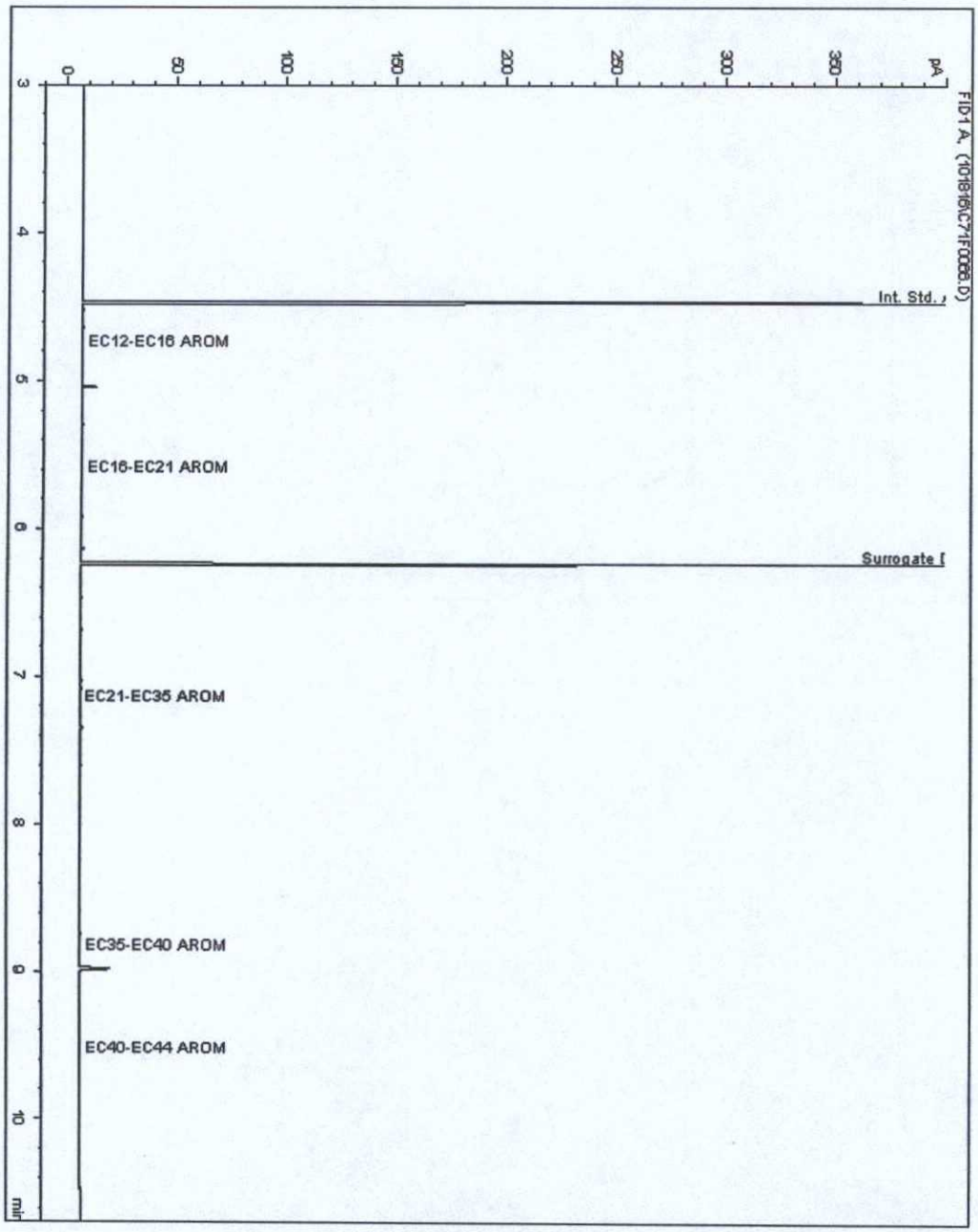
Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)
14355374

Sample No : 14,355,374 **Depth :** 4.50
Sample ID : EXA15

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13465560-
Date Acquired : 19/10/2016 23:05:48 PM
Units : ppb
Dilution: EXA-B09[4.50] ->



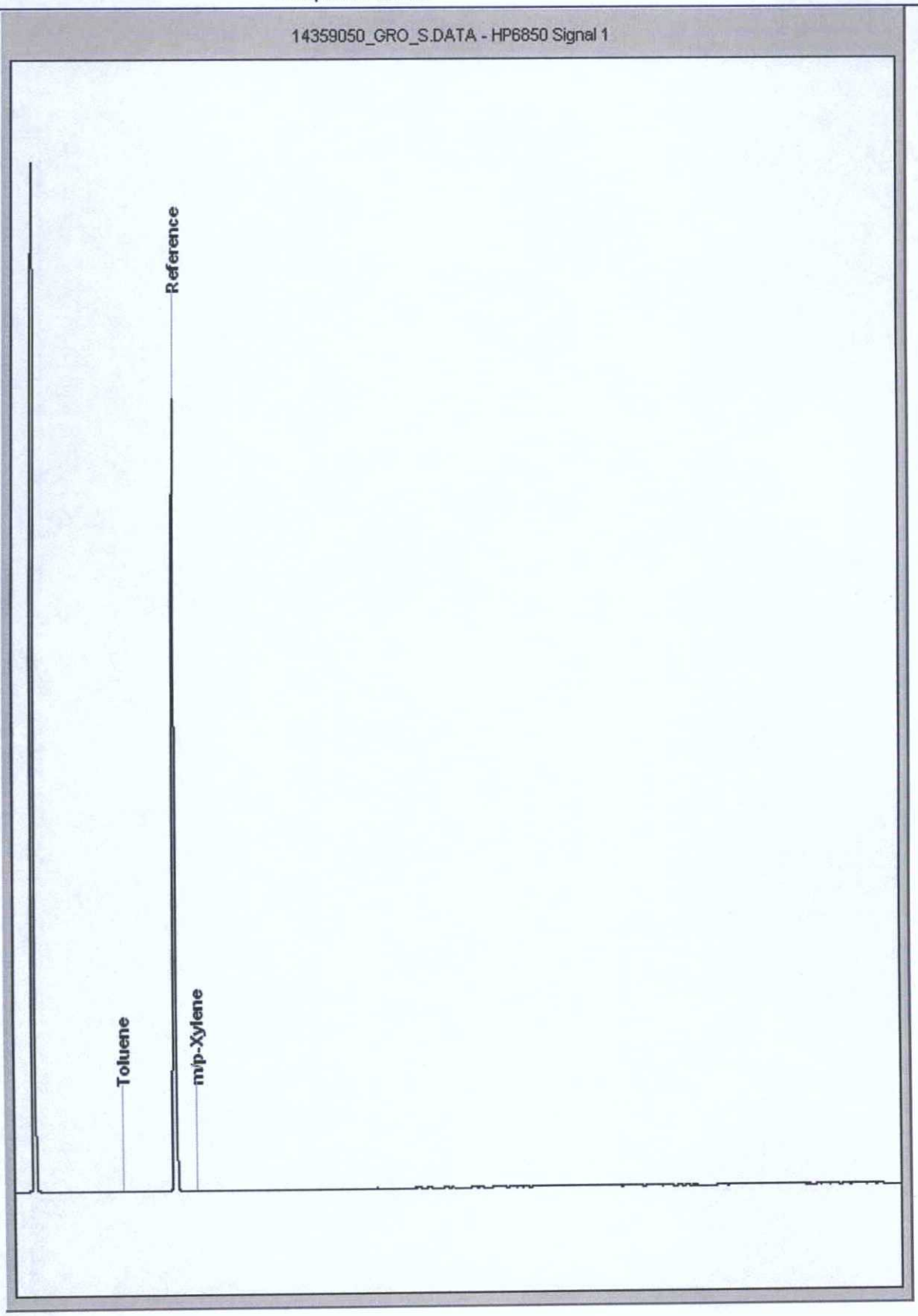
Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

Chromatogram

Analysis: GRO by GC-FID (S)
14359050

Sample No : 14,359,050 **Depth :** 4.50
Sample ID : EXA23



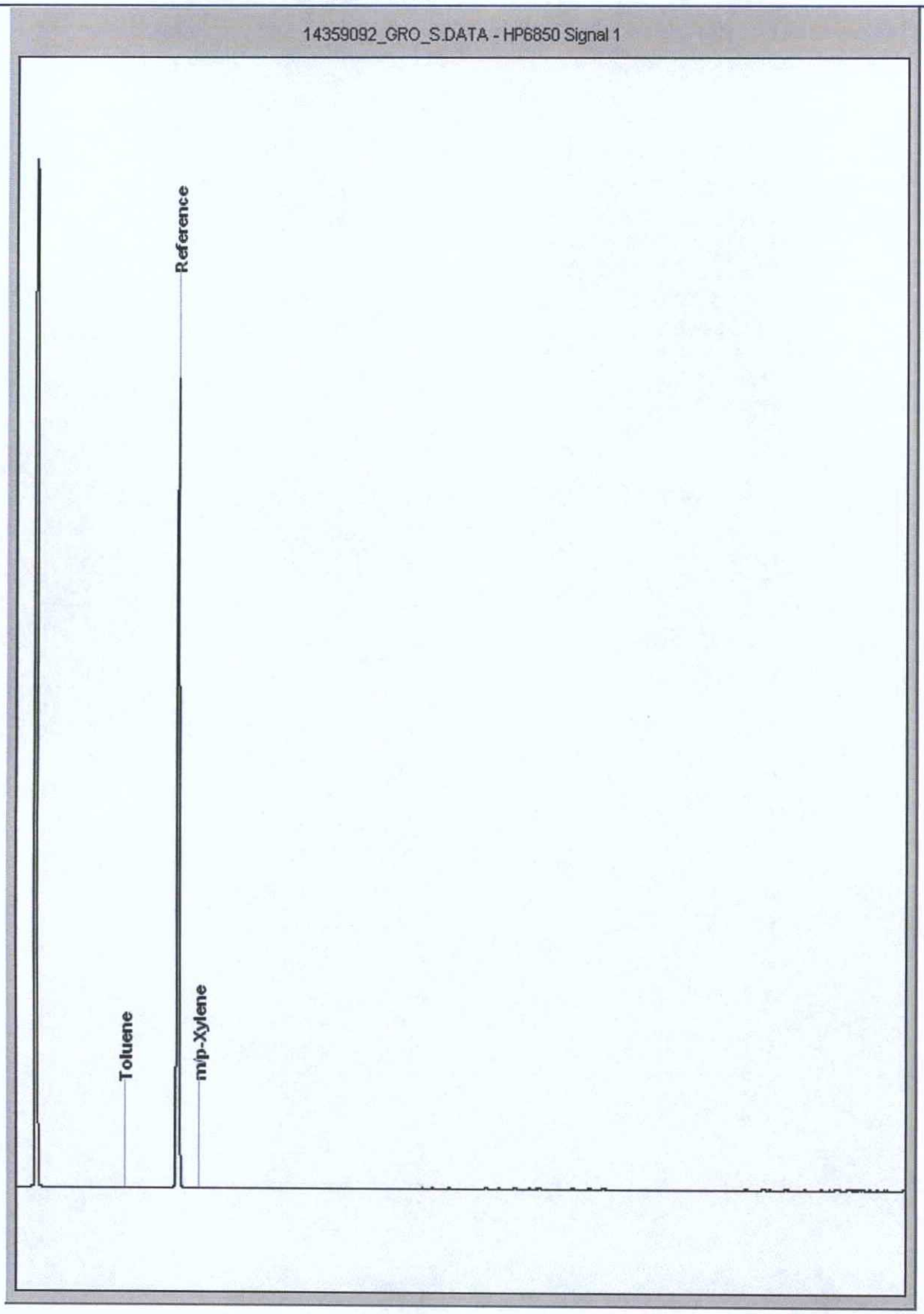
Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

Chromatogram

Analysis: GRO by GC-FID (S)
14359092

Sample No : 14,359,092 **Depth :** 4.50
Sample ID : EXA13



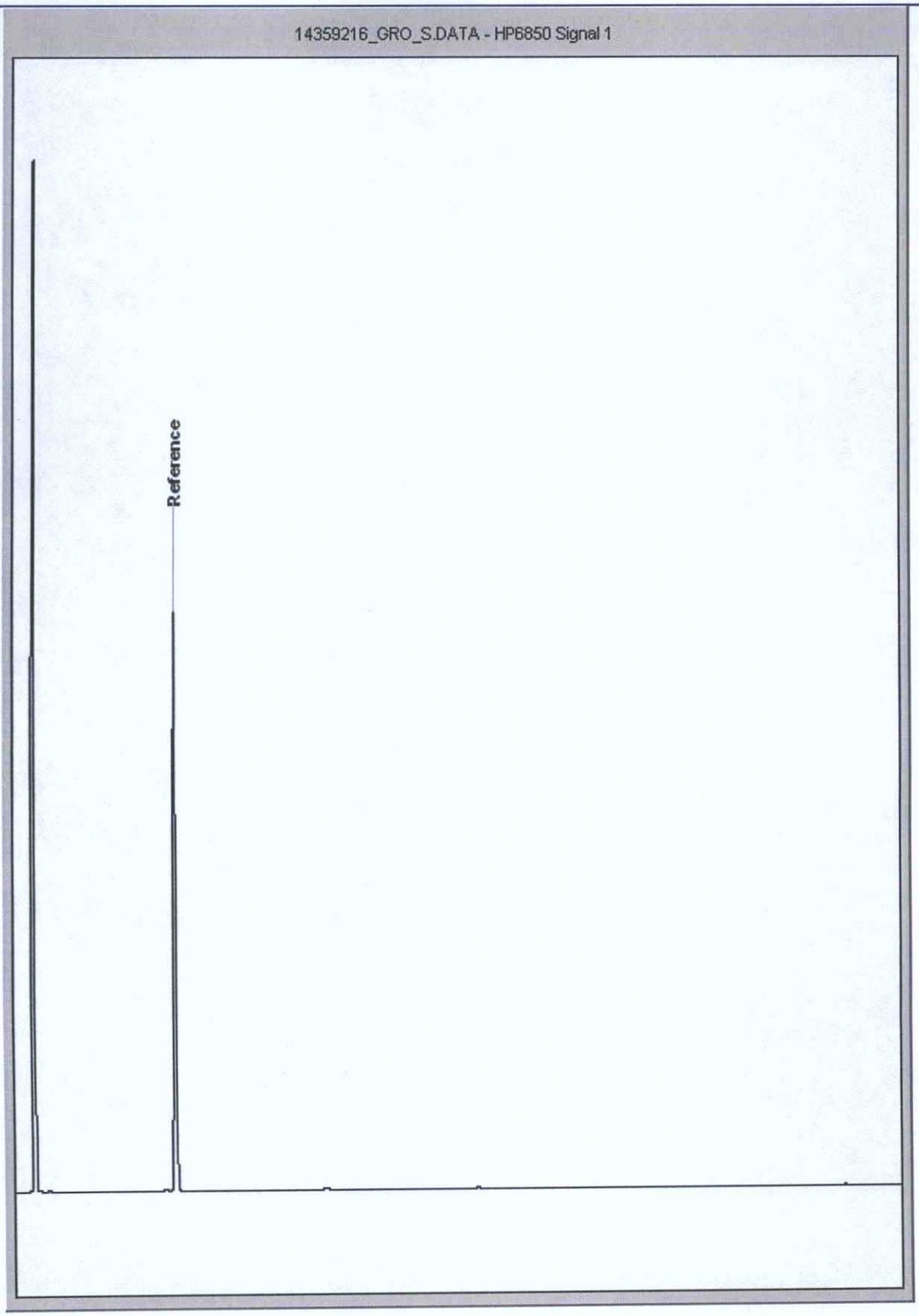
Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

Chromatogram

Analysis: GRO by GC-FID (S)
14359216

Sample No : 14,359,216 **Depth :** 4.50
Sample ID : EXA22



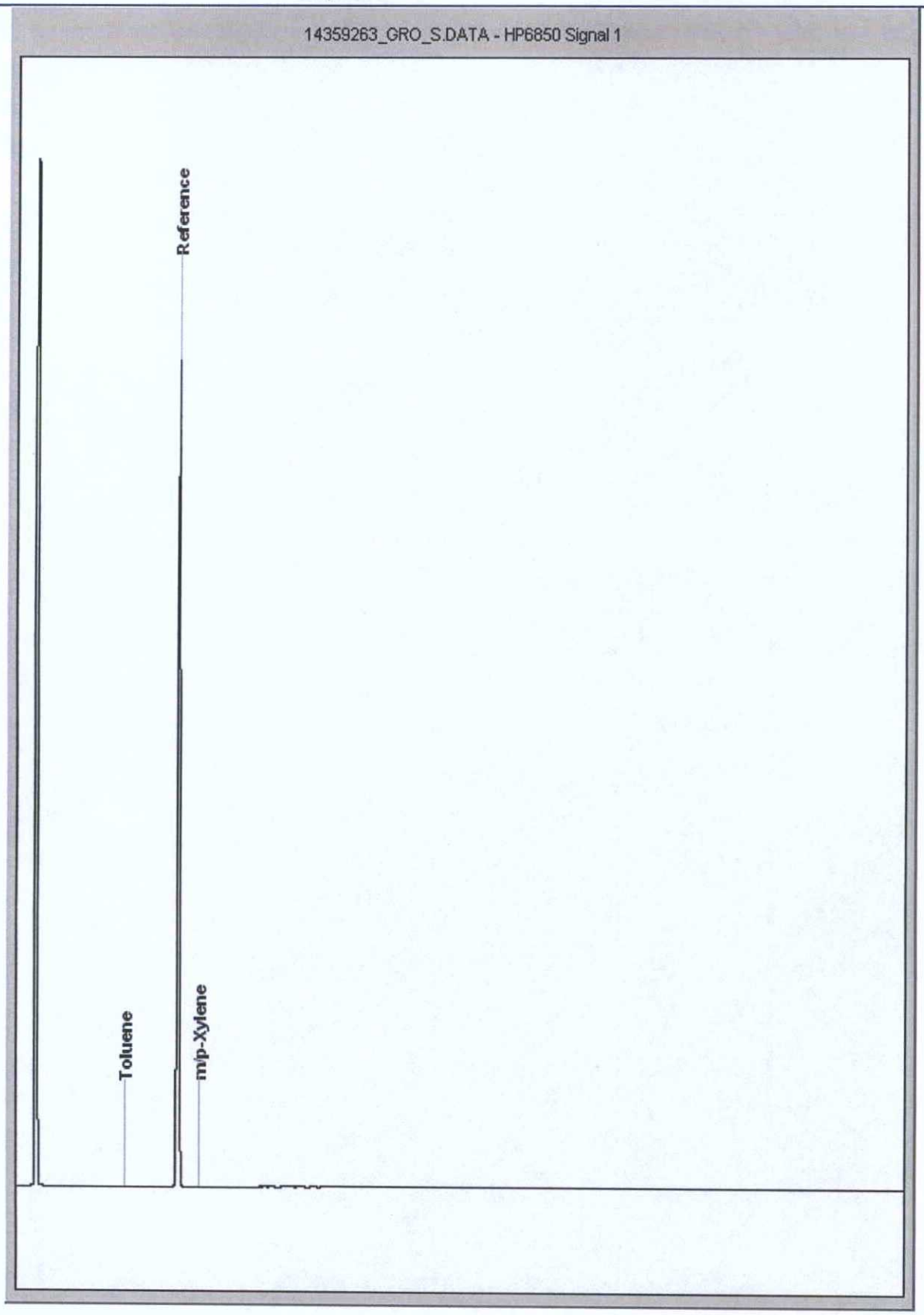
Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

Chromatogram

Analysis: GRO by GC-FID (S)
14359263

Sample No : 14,359,263 **Depth :** 4.50
Sample ID : EXA14



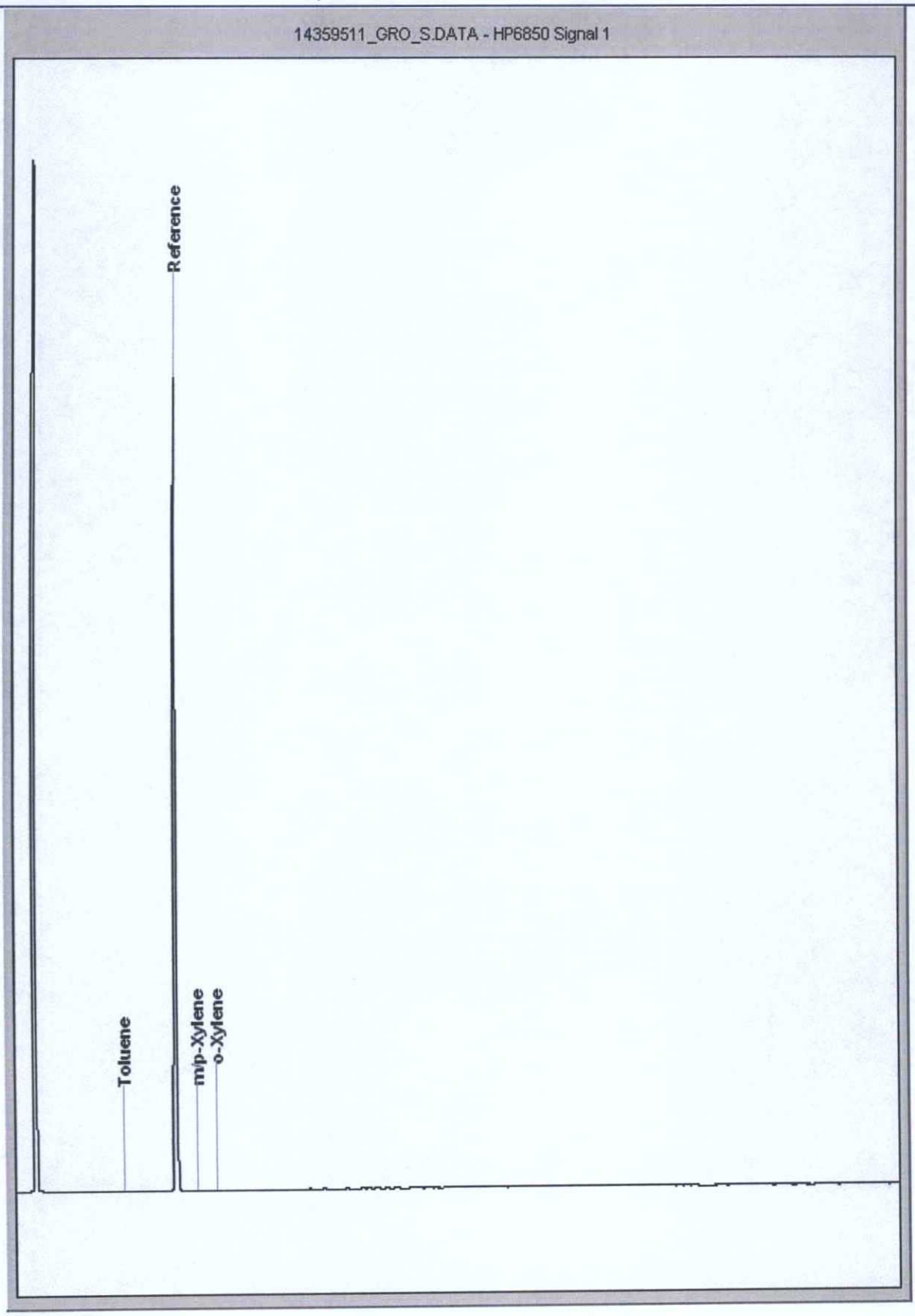
Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

Chromatogram

Analysis: GRO by GC-FID (S)
14359511

Sample No : 14,359,511 **Depth :** 4.50
Sample ID : EXA15



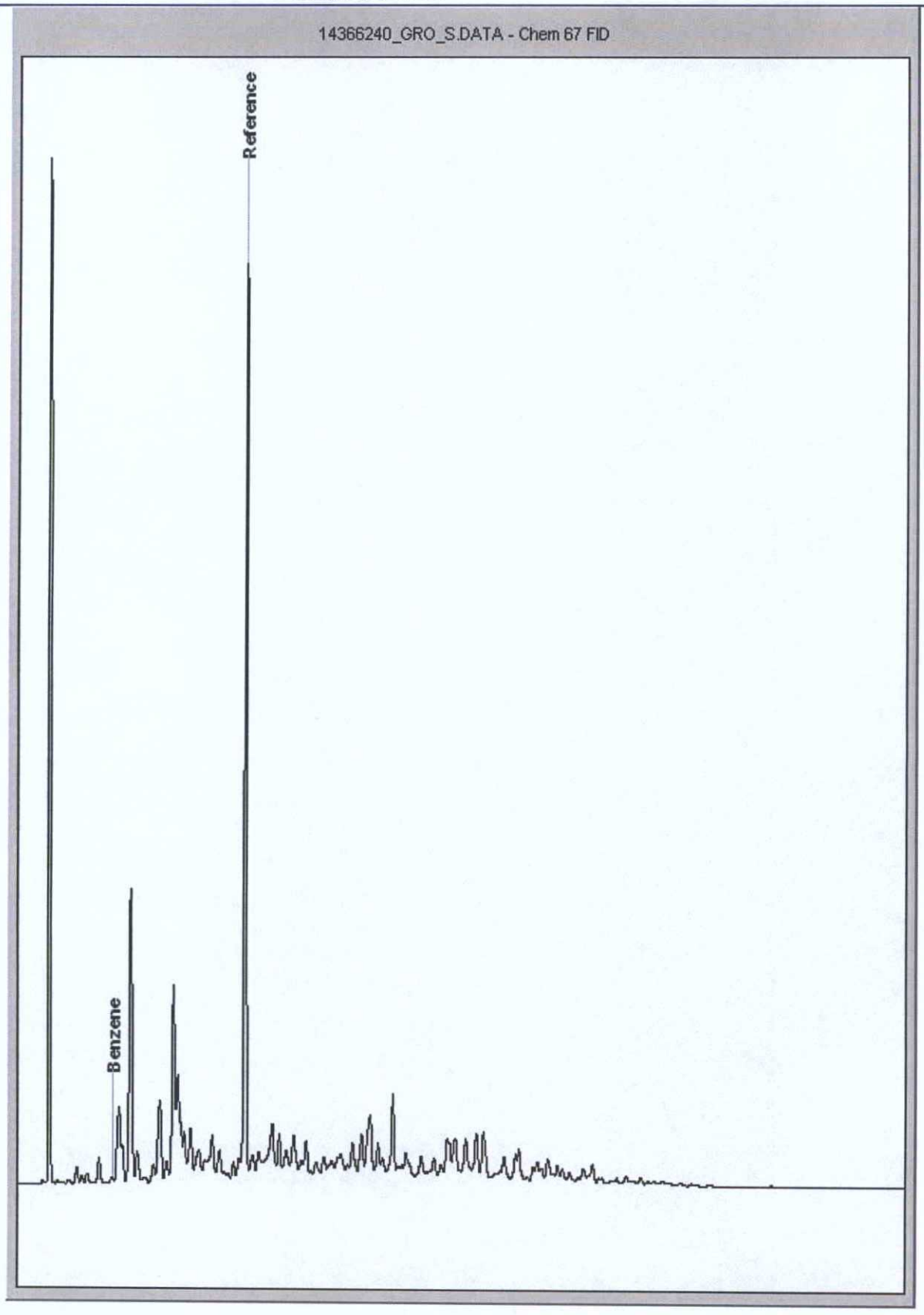
Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

Chromatogram

Analysis: GRO by GC-FID (S)
14366240

Sample No : 14,366,240 **Depth :** 4.50
Sample ID : EXA08



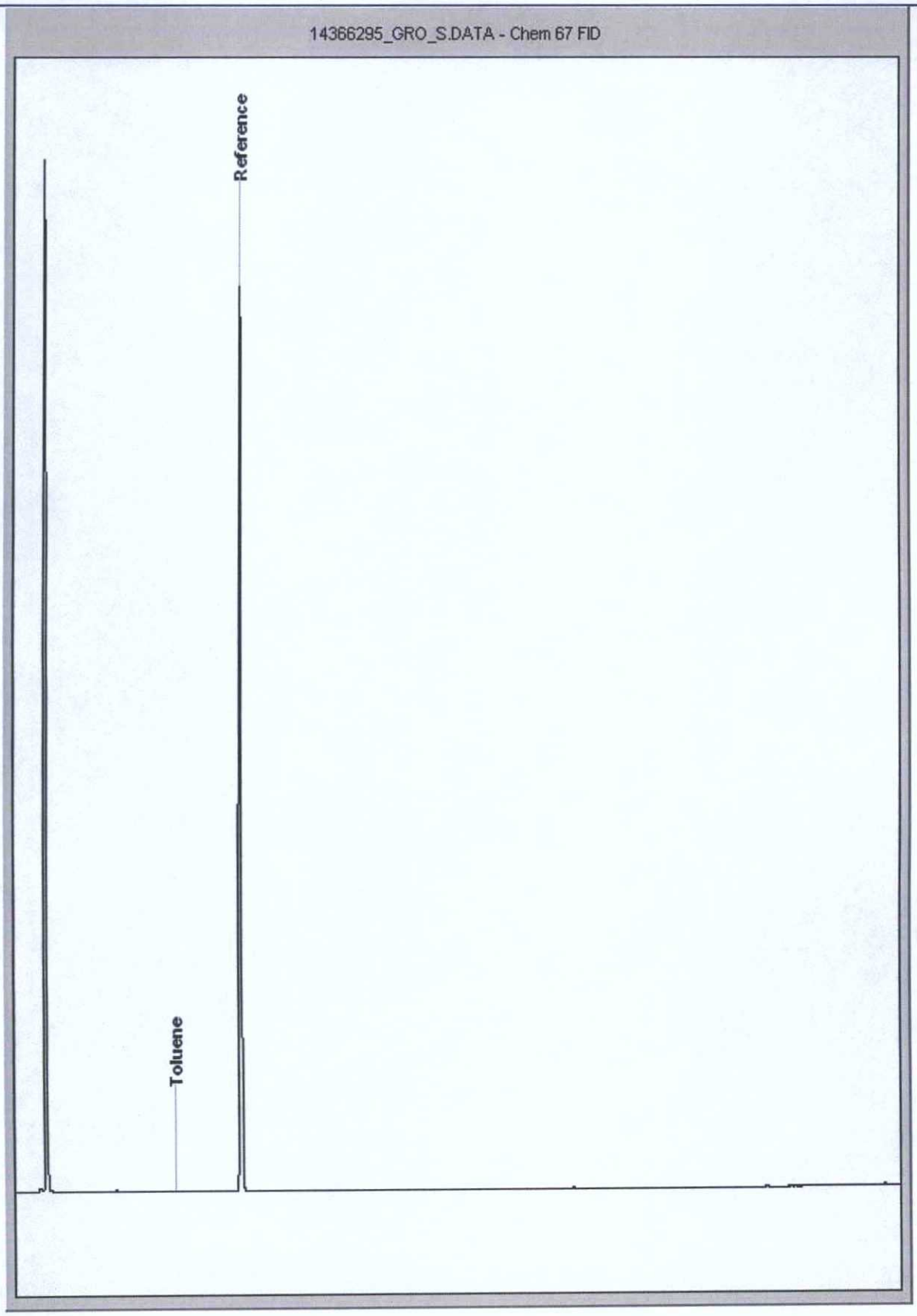
Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

Chromatogram

Analysis: GRO by GC-FID (S)
14366295

Sample No : 14,366,295 **Depth :** 4.50
Sample ID : EXA09



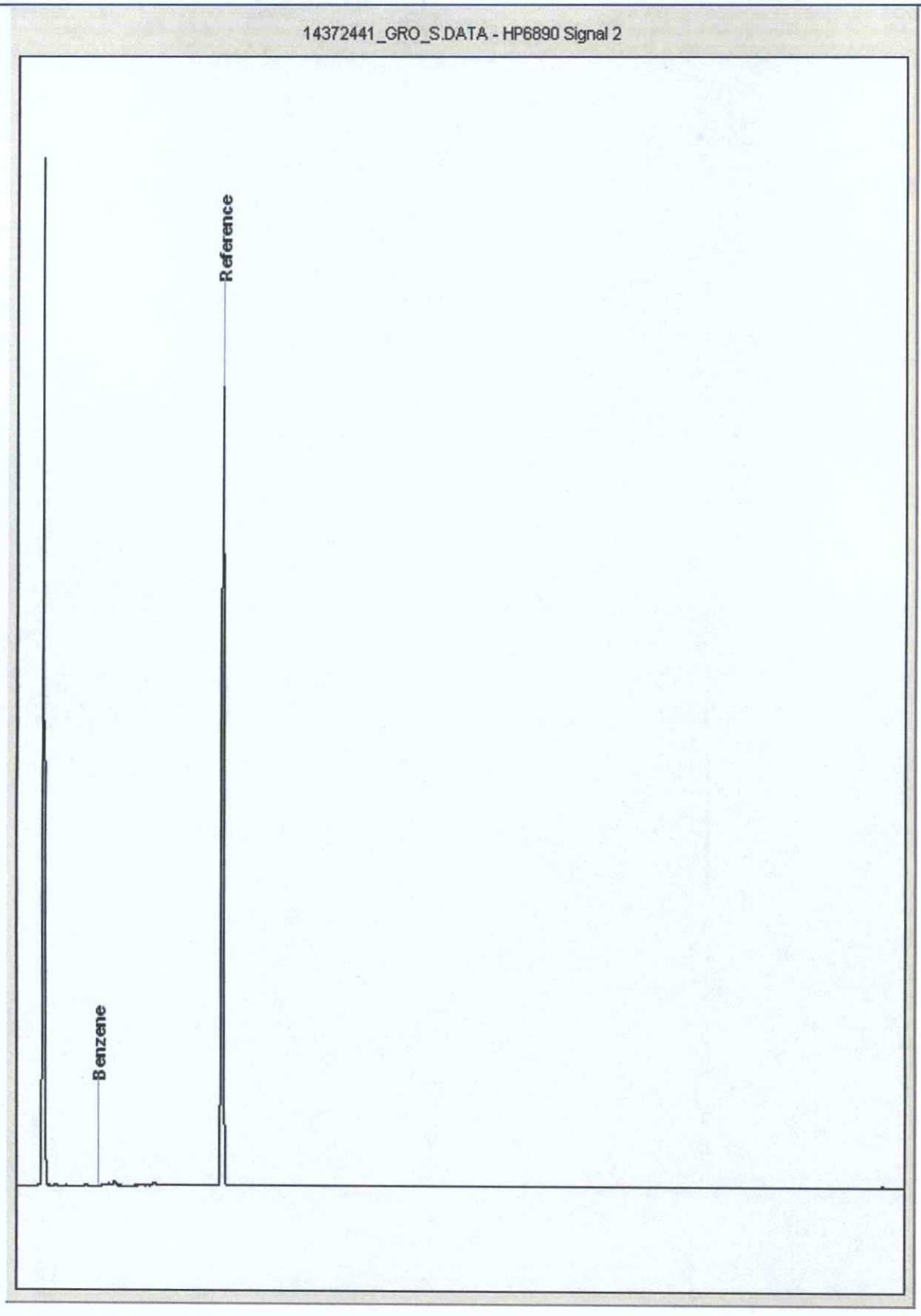
Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

Chromatogram

Analysis: GRO by GC-FID (S)
14372441

Sample No : 14,372,441 **Depth :** 4.50
Sample ID : EXA07



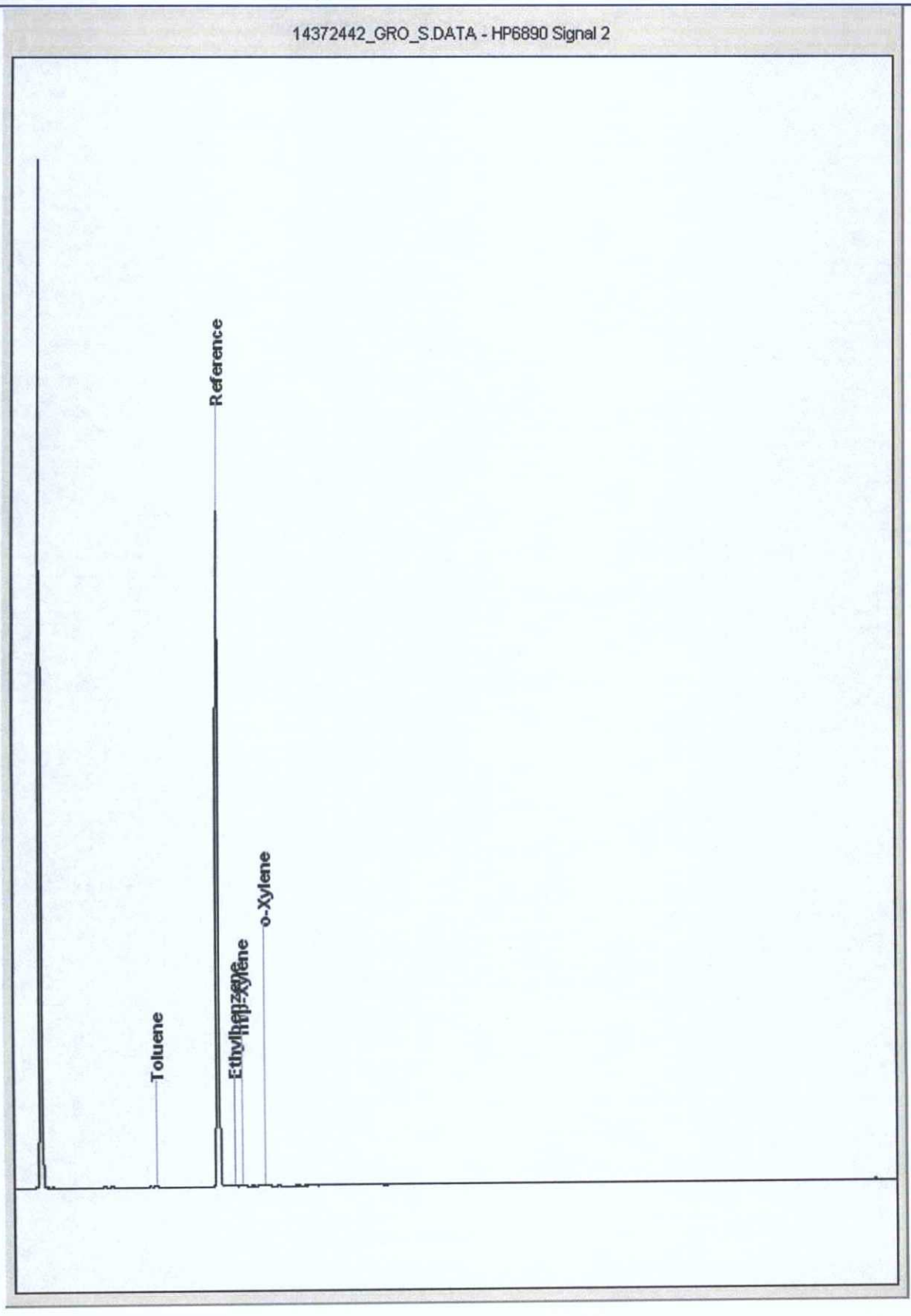
Post Certification Report

Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

Chromatogram

Analysis: GRO by GC-FID (S)
14372442

Sample No : 14,372,442 **Depth :** 4.50
Sample ID : EXA10



Customer : H_URS_WIM
Client Reference :
Location : Shell Shoreham Airport

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP - No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals - total metals must be requested separately.

11. Results relate only to the items tested.

12. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

14. **Product analyses** - Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

21. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

24. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of

Sample Deviations

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Holding time exceeded before sample received
5	Samples exceeded holding time before presevation was performed
§	Sampled on date not provided
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to sampled on date
&	Sample Holding Time exceeded - Late arrival of instructions.

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than:
- Trace - Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.