



Total Extractable Petroleum Hydrocarbons (Diesel)

Case Narrative

Colorado Oil & Gas Conservation Commission

Complaint 200265825

Work Order Number: 1008116

1. This report consists of 1 soil sample. The sample was received intact by ALS on 08/11/2010. The sample was received at 15.0° Celsius.
2. The soil sample was extracted by adding methylene chloride to the soil. This mixture is shaken for 4h and the methylene chloride is removed, dried over sodium sulfate and then concentrated prior to analysis. This extraction follows the California LUFT Field Manual (October 1989 revision).
3. The extract was then analyzed using GC with a DB-5.625 capillary column and a flame ionization detector (FID) according to SOP 406 Revision 14 generally based on SW-846 Method 8000B and Method 8015B and specifically on the California LUFT Field Manual (October 1989 revision). The procedures are based on this general method because SW-846 does not have a specific method for total extractable petroleum hydrocarbons (TEPH) or diesel range organics. The only true modification from this method is that TEPH is a multicomponent mixture and is quantitated by integrating across the entire range, rather than summing areas of individual peaks. All positive results were quantitated using the responses from the initial calibration curve using the external standard technique. Also, a confirmation column is not used, because the analyte is a multicomponent mixture and the specific carbon range of the peaks detected is specified on the individual sample reporting forms.
4. All initial and continuing calibration criteria were met.
5. The method blank associated with this project was below the MDL for diesel range organics.
6. All laboratory control sample and laboratory control sample duplicate recoveries and RPDs were within the acceptance criteria.



7. Since a sample from this order number was not the selected quality control (QC) sample, matrix specific QC results are not included in this report.
8. The sample was extracted and analyzed within the established holding time.
9. All surrogate recoveries were within the acceptance criteria.
10. Manual integrations are performed when needed to provide consistent and defensible data following the guidelines in SOP 939 Revision 3.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Mindy Norton
Mindy Norton
Organics Primary Data Reviewer

9-8-10
Date

Joel Nute
Organics Final Data Reviewer

9-8-10
Date



ALS
Data Qualifier Flags
Fuels

- G:** This flag indicates that a pattern resembling gasoline was detected in this sample.
- D:** This flag indicates that a pattern resembling diesel was detected in this sample.
- M:** This flag indicates that a pattern resembling motor oil was detected in this sample.
- C:** This flag indicates that a pattern resembling crude oil was detected in this sample.
- 4:** This flag indicates that a pattern resembling JP-4 was detected in this sample.
- 5:** This flag indicates that a pattern resembling JP-5 was detected in this sample.
- H:** This flag indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest.
- L:** This flag indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest.
- Z:** This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products:
gasoline
JP-8
diesel
mineral spirits
motor oil
Stoddard solvent
bunker C

Multiple flags may be used to indicate the presence of more than one product or component.



ALS
Data Qualifier Flags
Chromatography and Mass Spectrometry

- U or ND:** This flag indicates that the compound was analyzed for but not detected.
- J:** This flag indicates an estimated value. This flag is used as follows : (1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; (2) when the mass spectral and retention time data indicate the presence of a compound that meets the volatile and semivolatile GC/MS identification criteria, and the result is less than the reporting limit (RL) but greater than the method detection limit (MDL); (3) when the data indicate the presence of a compound that meets the identification criteria, and the result is less than the RL but greater than the MDL; and (4) the reported value is estimated.
- B:** This flag is used when the analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user. This flag shall be used for a tentatively identified compound (TIC) as well as for a positively identified target compound.
- E:** This flag identifies compounds whose concentration exceeds the upper level of the calibration range.
- A:** This flag indicates that a tentatively identified compound is a suspected aldol-condensation product.
- X:** This flag indicates that the analyte was diluted below an accurate quantitation level.
- *:** This flag indicates that a spike recovery is outside the control criteria.
- +:** This flag indicates that the relative percent difference (RPD) exceeds the control criteria.

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

Paragon OrderNum: 1008116

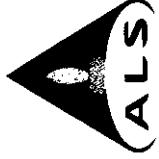
Client Name: Colorado Oil & Gas Conservation Commission

Client Project Name: Complaint 200265825

Client Project Number:

Client PO Number: OE PHA 11000000014

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
United Oil 346	1008116-1		SOIL	04-Aug-10	11:40
Rix Background	1008116-2		SOIL	04-Aug-10	11:45



ALS Laboratory Group

2225 Commerce Drive, Fort Collins, Colorado 80524
T/F: (800) 443-1511 PH: (970) 490-1511 FX: (970) 490-1522

Chain-of-Custody

EST = estuary; CST = coastal salt marsh; NST = non-salt marsh; S = soil; O = oil; W = water; L = liquid; E = extract; F = filter.

For metals or anions, please detail analytes below.

For metals

6 of 24

Preservative Key:



CONDITION OF SAMPLE UPON RECEIPT FORM

Client: COCGC

Workorder No: 1008116

Project Manager: ACW

Initials: ACW Date: 8-11-10

1. Does this project require any special handling in addition to standard Paragon procedures?	YES	NO	
2. Are custody seals on shipping containers intact?	<u>NONE</u>	<u>YES</u>	NO
3. Are Custody seals on sample containers intact?	<u>NONE</u>	<u>YES</u>	NO
4. Is there a COC (Chain-of-Custody) present or other representative documents?	<u>YES</u>	NO	
5. Are the COC and bottle labels complete and legible?	<u>YES</u>	NO	
6. Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)	<u>YES</u>	NO	
7. Were airbills / shipping documents present and/or removable?	DROP OFF	<u>YES</u>	NO
8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	<u>N/A</u>	<u>YES</u>	NO
9. Are all aqueous non-preserved samples pH 4-9?	<u>N/A</u>	<u>YES</u>	NO
10. Is there sufficient sample for the requested analyses?	<u>YES</u>	NO	
11. Were all samples placed in the proper containers for the requested analyses?	<u>YES</u>	NO	
12. Are all samples within holding times for the requested analyses?	<u>YES</u>	NO	
13. Were all sample containers received intact? (not broken or leaking, etc.)	<u>YES</u>	NO	
14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: _____ < green pea _____ > green pea	<u>N/A</u>	<u>YES</u>	NO
15. Do perchlorate LCMS-MS samples have headspace? (at least 1/3 of container required)	<u>N/A</u>	<u>YES</u>	NO
16. Were samples checked for and free from the presence of residual chlorine? (Applicable when PM has indicated samples are from a chlorinated water source; note if field preservation with sodium thiosulfate was not observed.)	<u>N/A</u>	<u>YES</u>	NO
17. Were the samples shipped on ice?	<u>YES</u>	NO	
18. Were cooler temperatures measured at 0.1-6.0°C?	IR gun used*: # <u>2</u>	# <u>4</u>	RAD ONLY YES NO
Cooler #: <u>1</u>			
Temperature (°C): <u>15</u>			
No. of custody seals on cooler: <u>1</u>			
External µR/hr reading: <u>12</u>			
Background µR/hr reading: <u>12</u>			
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? YES / NO / NA (If no, see Form 008.)			

Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXCEPT #1 AND #16

If applicable, was the client contacted? YES / NO / NA Contact: _____ Date/Time: _____

Project Manager Signature / Date: Candy 8/12/10

Total Extractable Hydrocarbons

Method SW8015MCALUFTB

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1008116

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200265825

Lab ID: EX100818-4MB

Sample Matrix: SOIL

% Moisture: N/A

Date Collected: N/A

Date Extracted: 18-Aug-10

Date Analyzed: 27-Aug-10

Prep Method: METHOD

Prep Batch: EX100818-4

QCBatchID: EX100818-4-1

Run ID: HCD100827-3A

Cleanup: NONE

Basis: N/A

File Name: F3F36959

Sample Aliquot: 20 g

Final Volume: 2.5 ml

Result Units: MG/KG

Clean DF: 1

CASNO	Target Analyte	DF	Result	Reporting Limit	Result Qualifier	EPA Qualifier
68334-30-5	DIESEL RANGE ORGANICS	1	2.5	2.5	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
84-15-1	O-TERPHENYL	9.99		12.5	80	60 - 140

Data Package ID: HCD1008116-1

Date Printed: Wednesday, September 08, 2010

ALS Environmental -- FC

LIMS Version: 6.398A

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Total Extractable Hydrocarbons

Method SW8015MCALUFTB Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1008116

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200265825

Field ID:	United Oil 346
Lab ID:	1008116-1

Sample Matrix: SOIL

% Moisture: 5.0

Date Collected: 04-Aug-10

Date Extracted: 18-Aug-10

Date Analyzed: 28-Aug-10

Prep Method: METHOD

Prep Batch: EX100818-4

QCBatchID: EX100818-4-1

Run ID: HCD100827-3A

Cleanup: NONE

Basis: Dry Weight

File Name: F3F36963

Sample Aliquot: 20.3 g

Final Volume: 2.5 ml

Result Units: MG/KG

Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
68334-30-5	DIESEL RANGE ORGANICS	1	5	2.6		

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
84-15-1	O-TERPHENYL	11.7		13	90	60 - 140

The chromatogram for DIESEL RANGE ORGANICS indicates the presence of hydrocarbons in the range of C10-C20.

Data Package ID: HCD1008116-1

Date Printed: Wednesday, September 08, 2010

ALS Environmental -- FC

LIMS Version: 6.398A

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Total Extractable Hydrocarbons

Method SW8015MCALUFTB

Laboratory Control Sample and Laboratory Control Sample Duplicate

Lab Name: ALS Environmental -- FC

Work Order Number: 1008116

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200265825

Lab ID: EX100818-4LCS	Sample Matrix: SOIL % Moisture: N/A Date Collected: N/A Date Extracted: 08/18/2010 Date Analyzed: 08/27/2010 Prep Method: METHOD	Prep Batch: EX100818-4 QCBatchID: EX100818-4-1 Run ID: HCD100827-3A Cleanup: NONE Basis: N/A File Name: F3F36960	Sample Aliquot: 20 g Final Volume: 2.5 ml Result Units: MG/KG Clean DF: 1
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CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
68334-30-5	DIESEL RANGE ORGANICS	50	43.2	2.5		86	60 - 140%

Lab ID: EX100818-4LCSD	Sample Matrix: SOIL % Moisture: N/A Date Collected: N/A Date Extracted: 08/18/2010 Date Analyzed: 08/27/2010 Prep Method: METHOD	Prep Batch: EX100818-4 QCBatchID: EX100818-4-1 Run ID: HCD100827-3A Cleanup: NONE Basis: N/A File Name: F3F36961	Sample Aliquot: 20 g Final Volume: 2.5 ml Result Units: MG/KG Clean DF: 1
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CASNO	Target Analyte	Spike Added	LCSD Result	Reporting Limit	Result Qualifier	LCSD % Rec.	RPD Limit	RPD
68334-30-5	DIESEL RANGE ORGANICS	50	41.4	2.5		83	50	4

Surrogate Recovery LCS/LCSD

CASNO	Target Analyte	Spike Added	LCS % Rec.	LCS Flag	LCSD % Rec.	LCSD Flag	Control Limits
84-15-1	O-TERPHENYL	12.5	85		83		60 - 140

Data Package ID: HCD1008116-1

Date Printed: Wednesday, September 08, 2010

ALS Environmental -- FC

LIMS Version: 6.398A

Page 1 of 1

Quantitation Report

Data File : C:\HPCHEM\5\DATA\08272010\F3F36959.D
 Acq On : 27 Aug 10 09:05 PM
 Sample : EX100818-4MB
 Misc : SOIL
 Quant Time: Sep 1 19:56 19110

Vial: 3
 Operator: EDB
 Inst : FUELS 3
 Multipllr: 1.00

Method : C:\HPCHEM\5\METHODS\CL082710.M
 Title : 8015Bmod, CALuft
 Last Update : Wed Sep 01 19:40:26 2010
 Response via : Multiple Level Calibration

Volume Inj. : 1uL
 Signal Phase : DB-5.625, 30m, 0.25mm 0.5 μ m
 Signal Info : FID

T_{9.1.10}

Compound	R.T.	Response	Conc	Units
<hr/>				
System Monitoring Compounds				
3) S o-terphenyl	13.97	503248	79.90	μ g/ml
	Recovery	=	79.90%	<i>✓</i>
<hr/>				
Target Compounds				
1) H TEPH	10.00	38445	6.67	μ g/ml <i>L</i>
2) H Motor Oil	17.00	30507	14.83	μ g/ml <i>NTC</i>

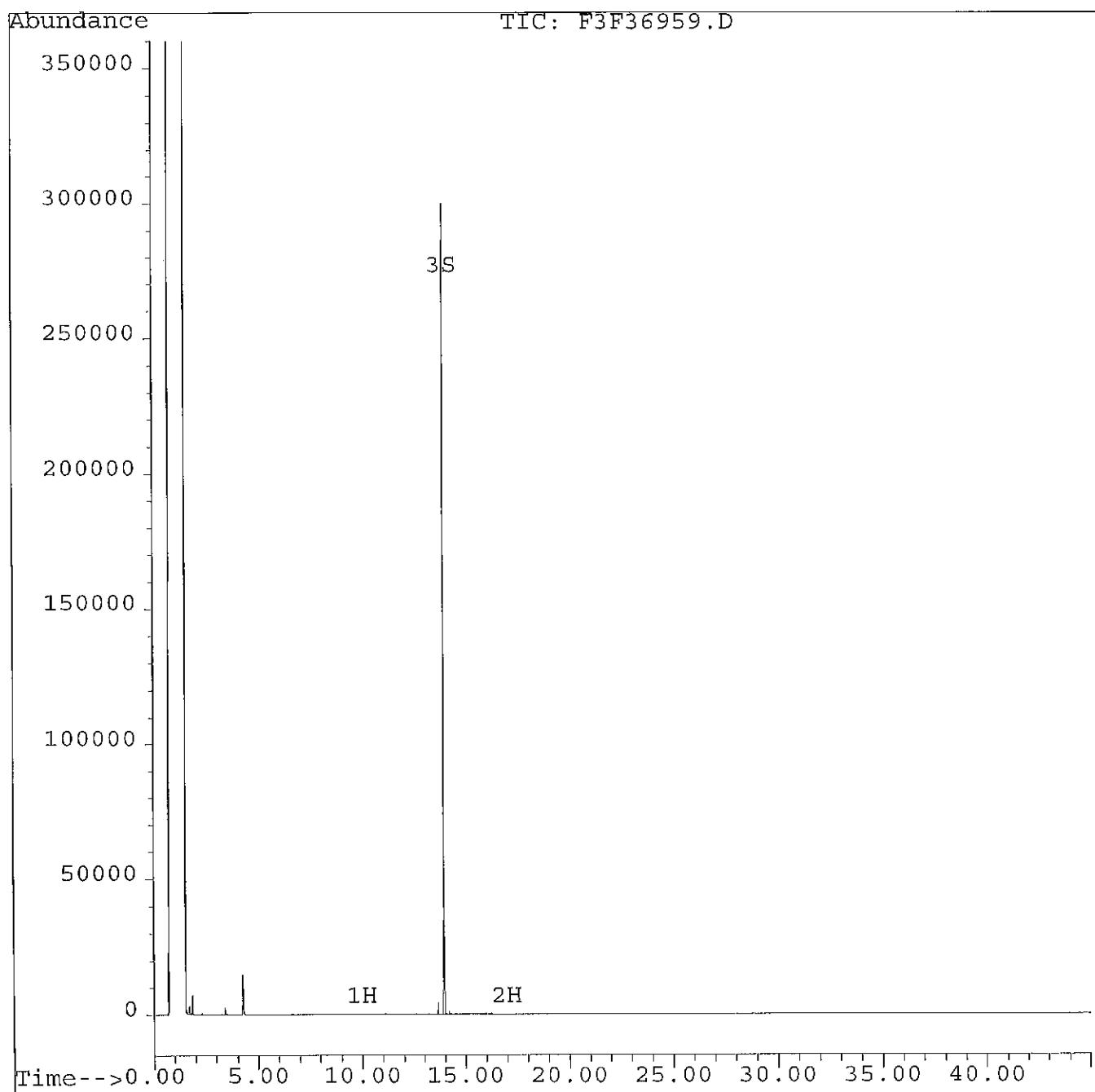
Quantitation Report

Data File : C:\HPCHEM\5\DATA\08272010\F3F36959.D
Acq On : 27 Aug 10 09:05 PM
Sample : EX100818-4MB
Misc : SOIL
Quant Time: Sep 1 19:56 19110

Vial: 3
Operator: EDB
Inst : FUELS 3
Multipllr: 1.00

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Last Update : Wed Sep 01 19:40:26 2010
Response via : Multiple Level Calibration

Volume Inj. : 1uL
Signal Phase : DB-5.625, 30m, 0.25mm 0.5 μ m
Signal Info : FID



Quantitation Report

Data File : C:\HPCHEM\5\DATA\08272010\F3F36963.D
 Acq On : 28 Aug 10 00:41 AM
 Sample : 1008116-1
 Misc : SOIL
 Quant Time: Sep 1 20:03 19110

Vial: 7
 Operator: EDB
 Inst : FUELS 3
 Multiplr: 1.00

Method : C:\HPCHEM\5\METHODS\CL082710.M
 Title : 8015Bmod, CALuft
 Last Update : Wed Sep 01 19:40:26 2010
 Response via : Multiple Level Calibration

Volume Inj. : 1uL
 Signal Phase : DB-5.625, 30m, 0.25mm 0.5 μ m
 Signal Info : FID

7/11/10

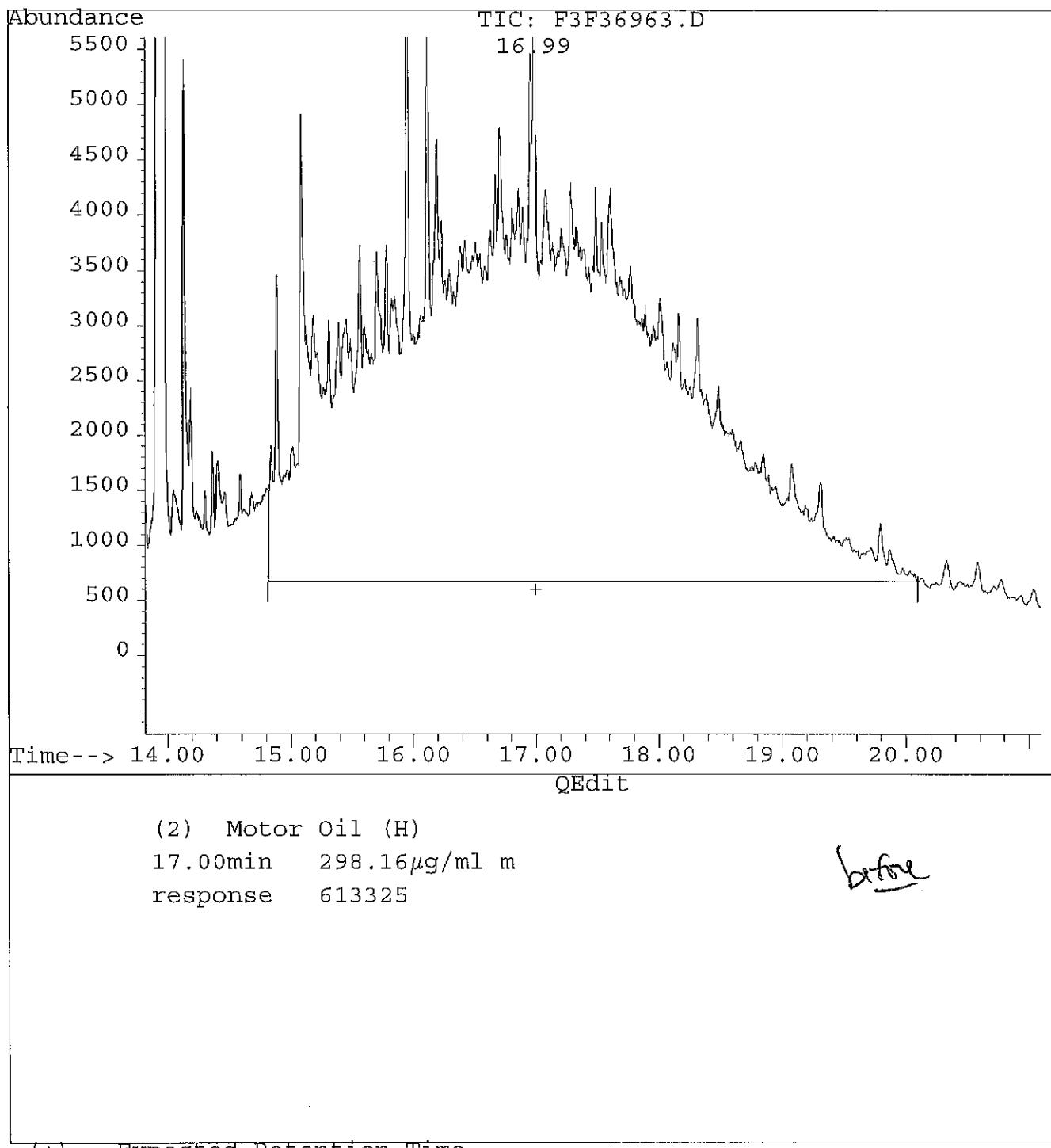
Compound	R.T.	Response	Conc	Units
<hr/>				
System Monitoring Compounds				
3) S o-terphenyl	13.97	566783	89.99	μ g/ml
		Recovery	=	89.99%
<hr/>				
Target Compounds				
1) H TEPH	10.00	222649	38.65	μ g/ml
2) H Motor Oil	17.00	682686	331.88	331.88 μ g/ml NTC

Target: C₁₆ - C₂₀

Quantitation Report

Data File : C:\HPCHEM\5\DATA\08272010\F3F36963.D Vial: 7
Acq On : 28 Aug 10 00:41 AM Operator: EDB
Sample : 1008116-1 Inst : FUELS 3
Misc : SOIL Multipllr: 1.00
Quant Time: Sep 1 20:02 19110

Method : C:\HPCHEM\5\METHODS\CL082710.M
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Last Update : Wed Sep 01 19:40:26 2010
Response via : Multiple Level Calibration

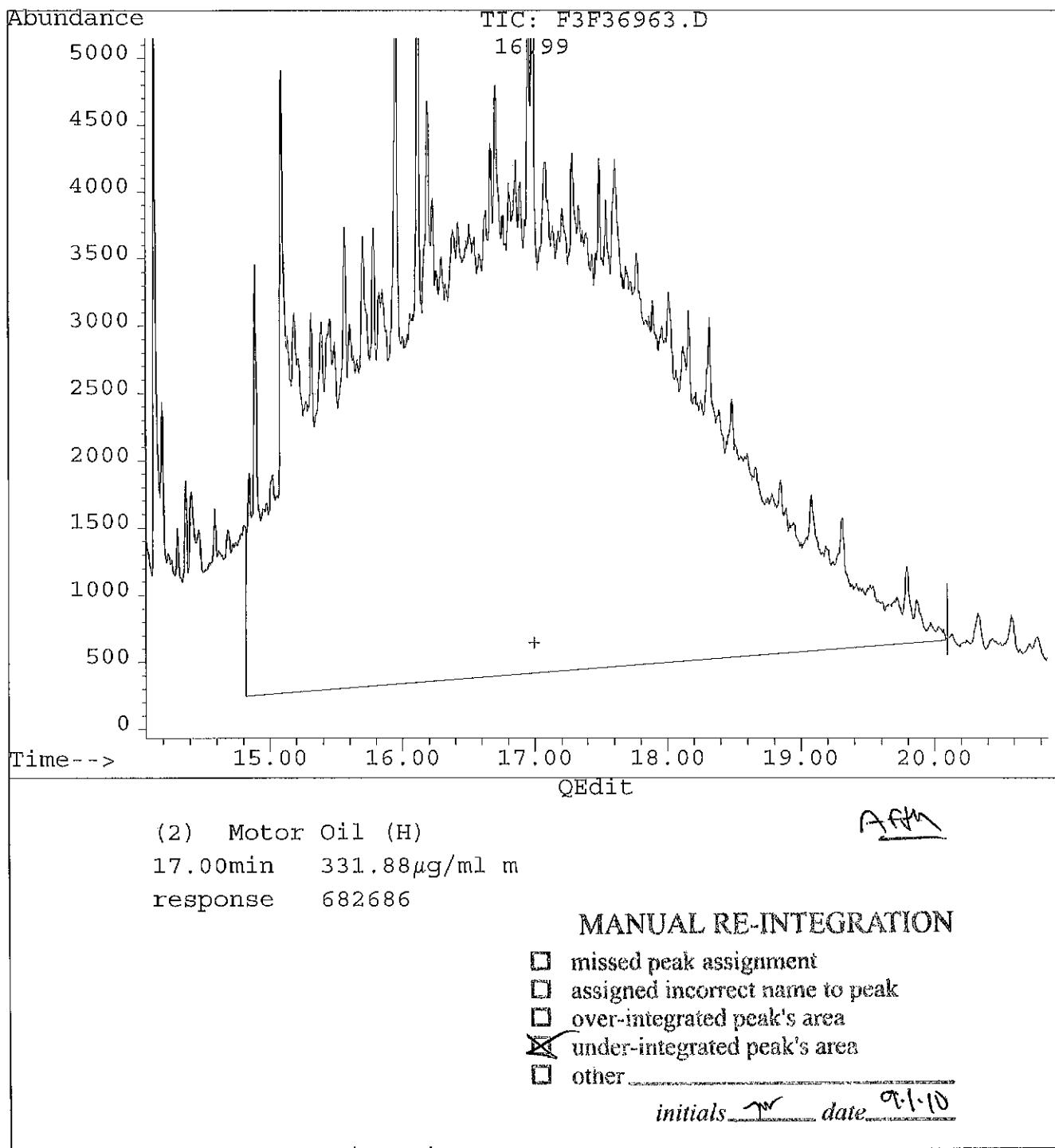


Quantitation Report

Data File : C:\HPCHEM\5\DATA\08272010\F3F36963.D
 Acq On : 28 Aug 10 00:41 AM
 Sample : 1008116-1
 Misc : SOIL
 Quant Time: Sep 1 20:03 19110

Vial: 7
 Operator: EDB
 Inst : FUELS 3
 Multipllr: 1.00

Method : C:\HPCHEM\5\METHODS\CL082710.M
 Title : 8015Bmod, CALuft
 Last Update : Wed Sep 01 19:40:26 2010
 Response via : Multiple Level Calibration

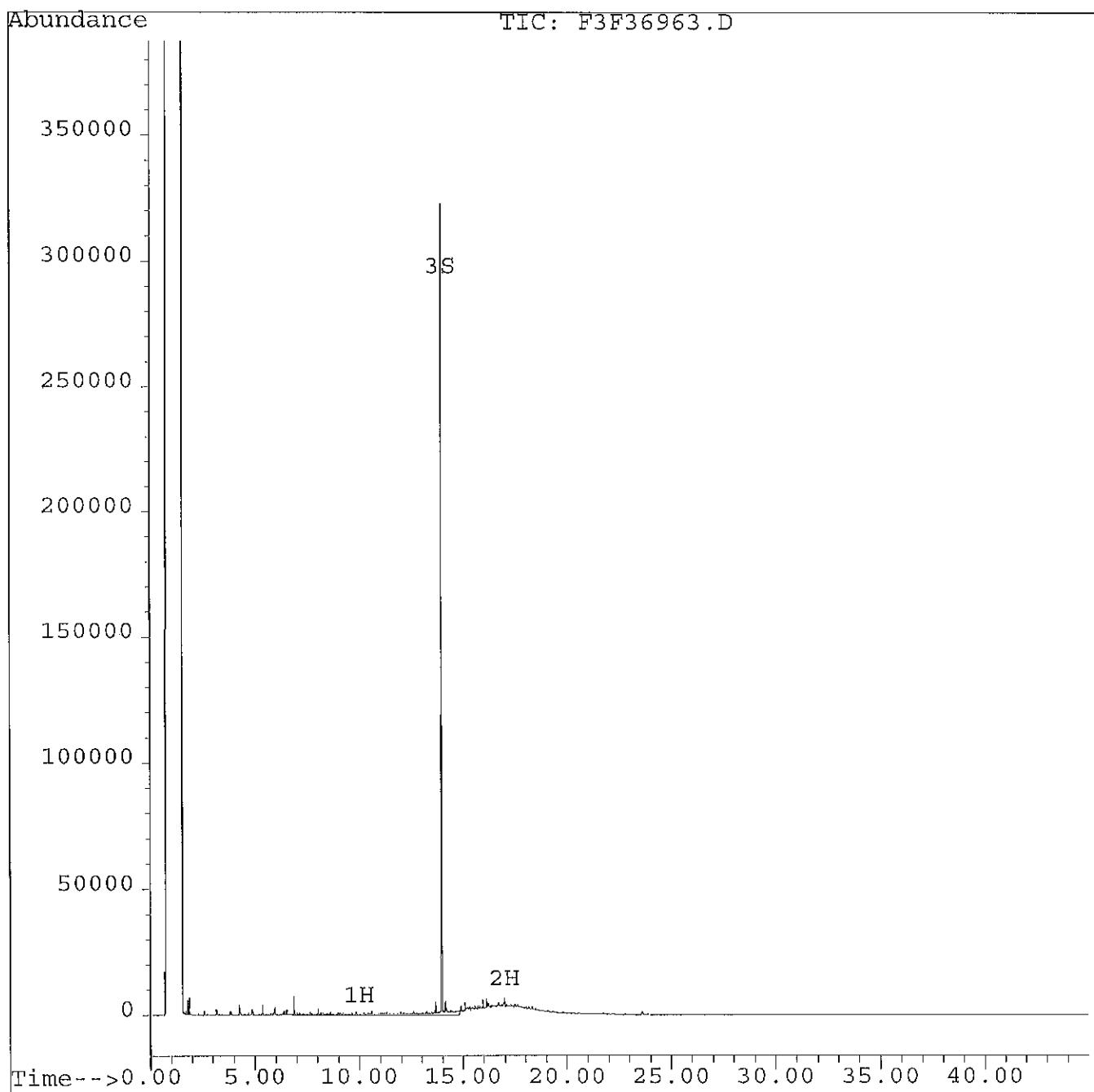


Quantitation Report

Data File : C:\HPCHEM\5\DATA\08272010\F3F36963.D Vial: 7
Acq On : 28 Aug 10 00:41 AM Operator: EDB
Sample : 1008116-1 Inst : FUELS 3
Misc : SOIL Multipllr: 1.00
Quant Time: Sep 1 20:03 19110

Method : C:\HPCHEM\5\METHODS\CL082710.M
Title : 8015Bmod, CALuft
Last Update : Wed Sep 01 19:40:26 2010
Response via : Multiple Level Calibration

Volume Inj. : 1uL
Signal Phase : DB-5.625, 30m, 0.25mm 0.5 μ m
Signal Info : FID



Quantitation Report

Data File : C:\HPCHEM\5\DATA\08272010\F3F36960.D
 Accq On : 27 Aug 10 09:59 PM
 Sample : EX100818-4LCS
 Misc : SOIL
 Quant Time: Sep 1 19:57 19110

Vial: 4
 Operator: EDB
 Inst : FUELS 3
 Multipllr: 1.00

Method : C:\HPCHEM\5\METHODS\CL082710.M
 Title : 8015Bmod, CALuft
 Last Update : Wed Sep 01 19:40:26 2010
 Response via : Multiple Level Calibration

Volume Inj. : 1uL
 Signal Phase : DB-5.625, 30m, 0.25mm 0.5 μ m
 Signal Info : FID

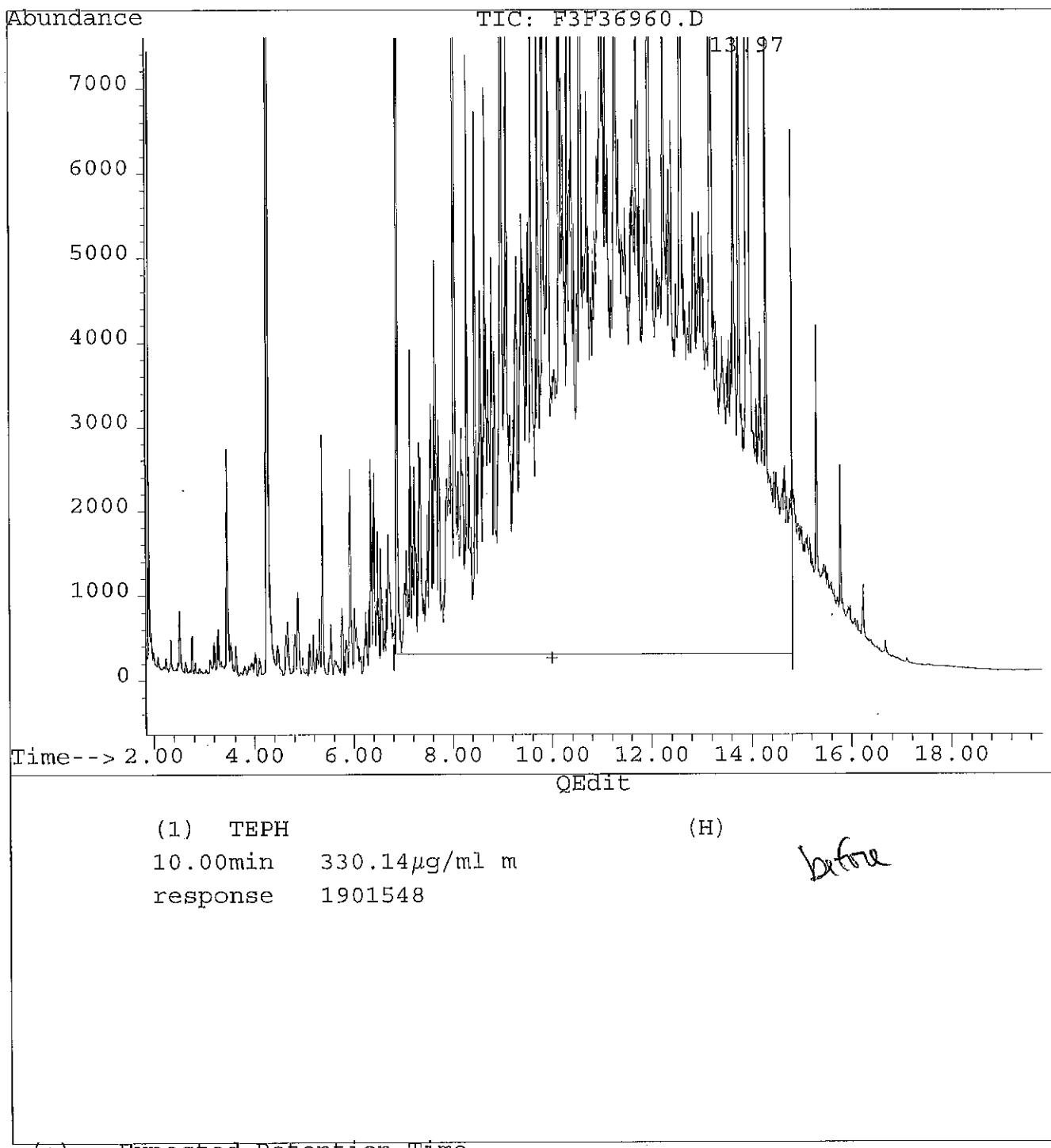
Compound	R.T.	Response	Conc	Units
<hr/>				
System Monitoring Compounds				
3) S o-terphenyl	13.97	535933	85.09	μ g/ml
	Recovery		=	85.09%
<hr/>				
Target Compounds				
1) H TEPH	10.00	1992699	345.96	μ g/ml 96%
2) H Motor Oil	17.00	116388	56.58	μ g/ml NTC

Quantitation Report

Data File : C:\HPCHEM\5\DATA\08272010\F3F36960.D
Acq On : 27 Aug 10 09:59 PM
Sample : EX100818-4LCS
Misc : SOIL
Quant Time: Sep 1 19:57 19110

Vial: 4
Operator: EDB
Inst : FUELS 3
Multiplr: 1.00

Method : C:\HPCHEM\5\METHODS\CL082710.M
Title : 8015Bmod, CALuft
Last Update : Wed Sep 01 19:40:26 2010
Response via : Multiple Level Calibration

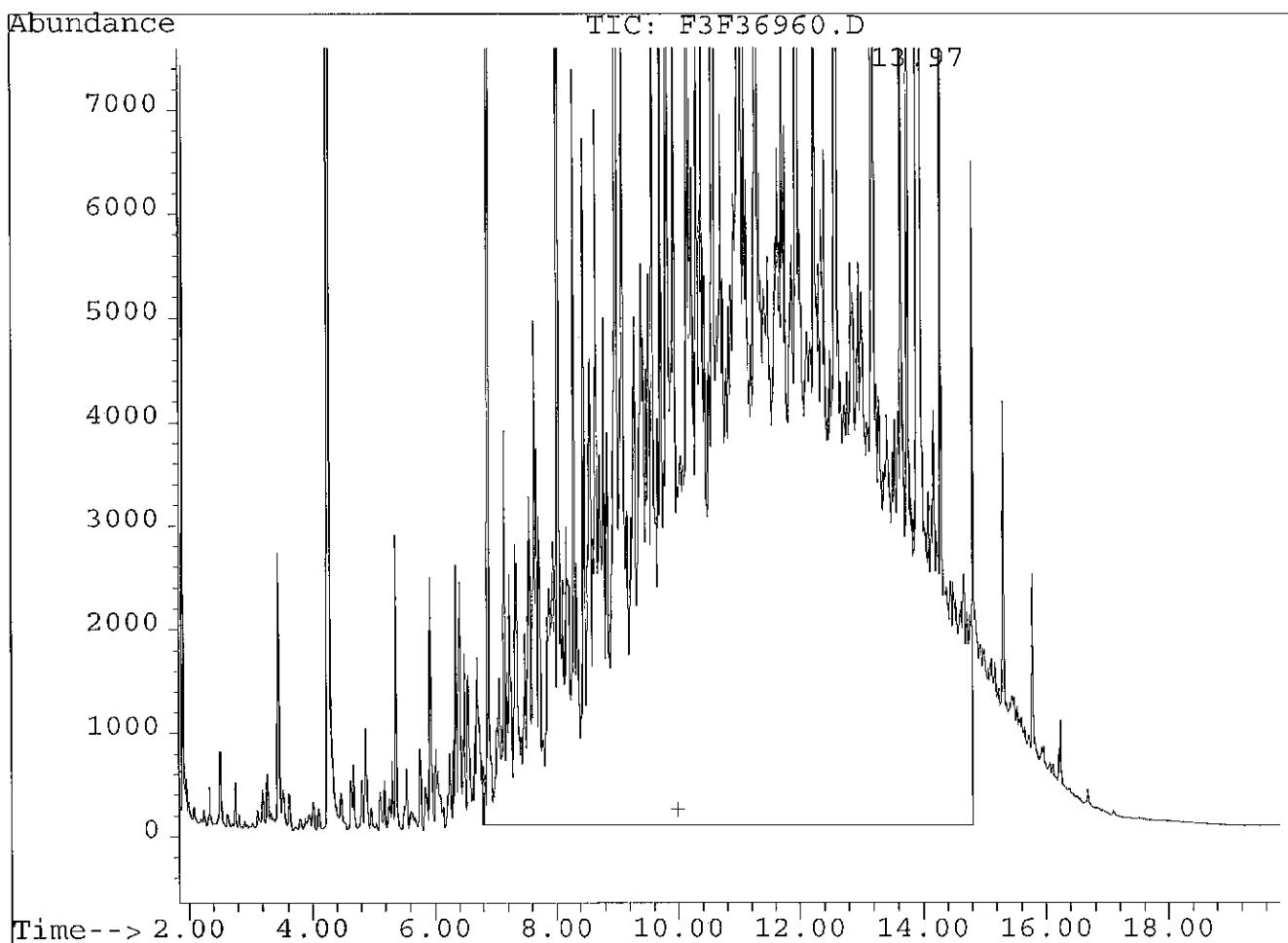


Quantitation Report

Data File : C:\HPCHEM\5\DATA\08272010\F3F36960.D
 Accq On : 27 Aug 10 09:59 PM
 Sample : EX100818-4LCS
 Misc : SOIL
 Quant Time: Sep 1 19:57 19110

Vial: 4
 Operator: EDB
 Inst : FUELS 3
 Multipllr: 1.00

Method : C:\HPCHEM\5\METHODS\CL082710.M
 Title : 8015Bmod, CALuft
 Last Update : Wed Sep 01 19:40:26 2010
 Response via : Multiple Level Calibration



QEdit

(1) TEPH	(H)	<i>AFM</i>
10.00min	345.96 μ g/ml m	
response	1992699	

MANUAL RE-INTEGRATION

missed peak assignment
 assigned incorrect name to peak
 over-integrated peak's area
 under-integrated peak's area
 other

initials *M* *date* *9.1.10*

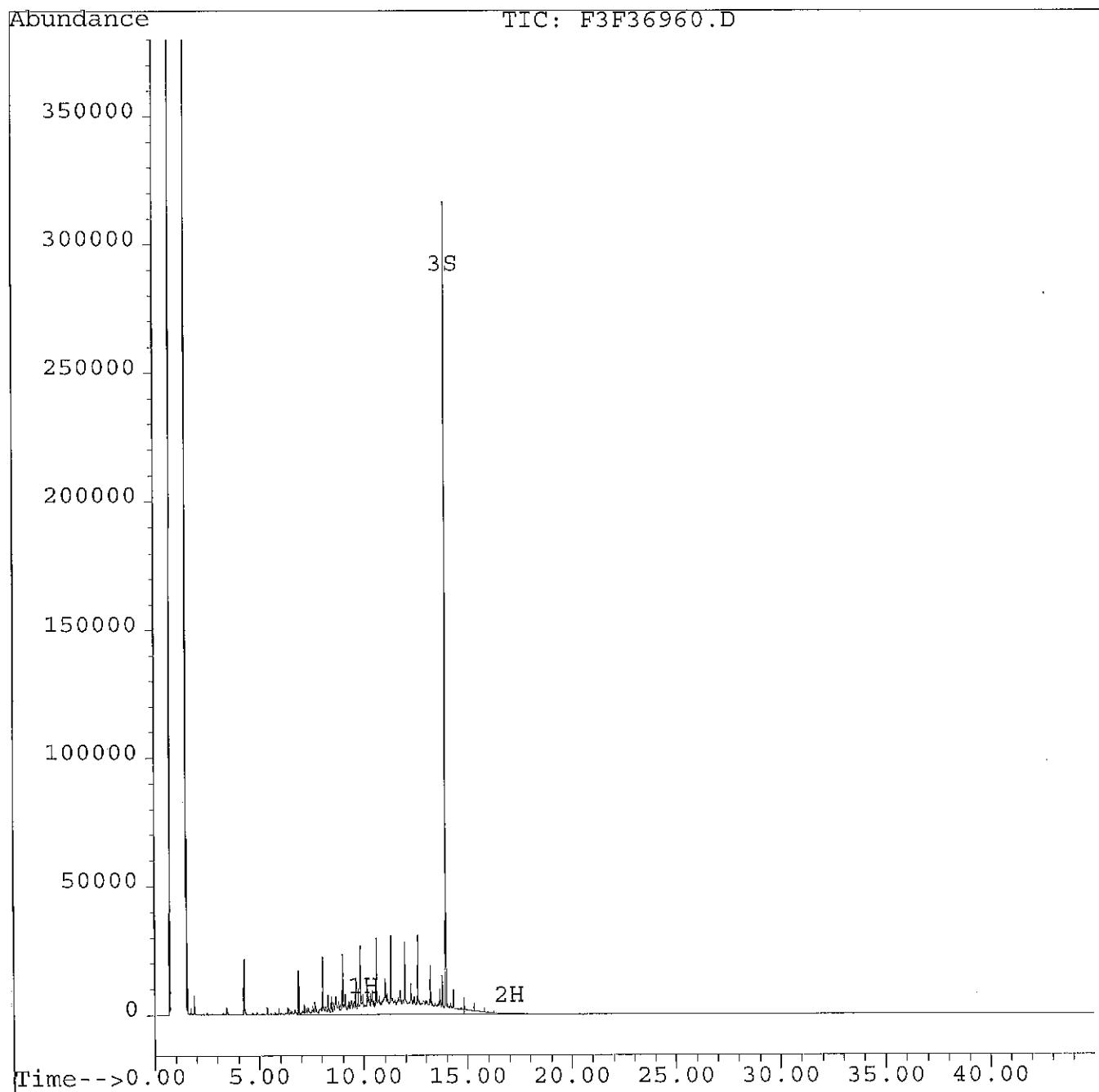
(+) = Expected Retention Time

Quantitation Report

Data File : C:\HPCHEM\5\DATA\08272010\F3F36960.D Vial: 4
Accq On : 27 Aug 10 09:59 PM Operator: EDB
Sample : EX100818-4LCS Inst : FUELS 3
Misc : SOIL Multipllr: 1.00
Quant Time: Sep 1 19:57 19110

Method : C:\HPCHEM\5\METHODS\CL082710.M
Title : 8015Bmod, CALuft
Last Update : Wed Sep 01 19:40:26 2010
Response via : Multiple Level Calibration

Volume Inj. : 1uL
Signal Phase : DB-5.625, 30m, 0.25mm 0.5μm
Signal Info : FID



Quantitation Report

Data File : C:\HPCHEM\5\DATA\08272010\F3F36961.D
 Acq On : 27 Aug 10 10:53 PM
 Sample : EX100818-4LCSD
 Misc : SOIL
 Quant Time: Sep 1 19:59 19110

Vial: 5
 Operator: EDB
 Inst : FUELS 3
 Multipllr: 1.00

Method : C:\HPCHEM\5\METHODS\CL082710.M
 Title : 8015Bmod, CALuft
 Last Update : Wed Sep 01 19:40:26 2010
 Response via : Multiple Level Calibration

Volume Inj. : 1uL
 Signal Phase : DB-5.625, 30m, 0.25mm 0.5 μ m
 Signal Info : FID

7/9/10

Compound	R.T.	Response	Conc	Units
<hr/>				
System Monitoring Compounds				
3) S o-terphenyl	13.97	525516	83.44	μ g/ml ✓
		Recovery	=	83.44%
<hr/>				
Target Compounds				
1) H TEPH	10.00	1909525	331.52	μ g/ml 83%
2) H Motor Oil	17.00	126819	61.65	μ g/ml NA(%)

(f)=RT Delta > 1/2 Window

F3F36961.D CL082710.M

Wed Sep 01 19:59:50 2010

(m)=manual int.

Page 1

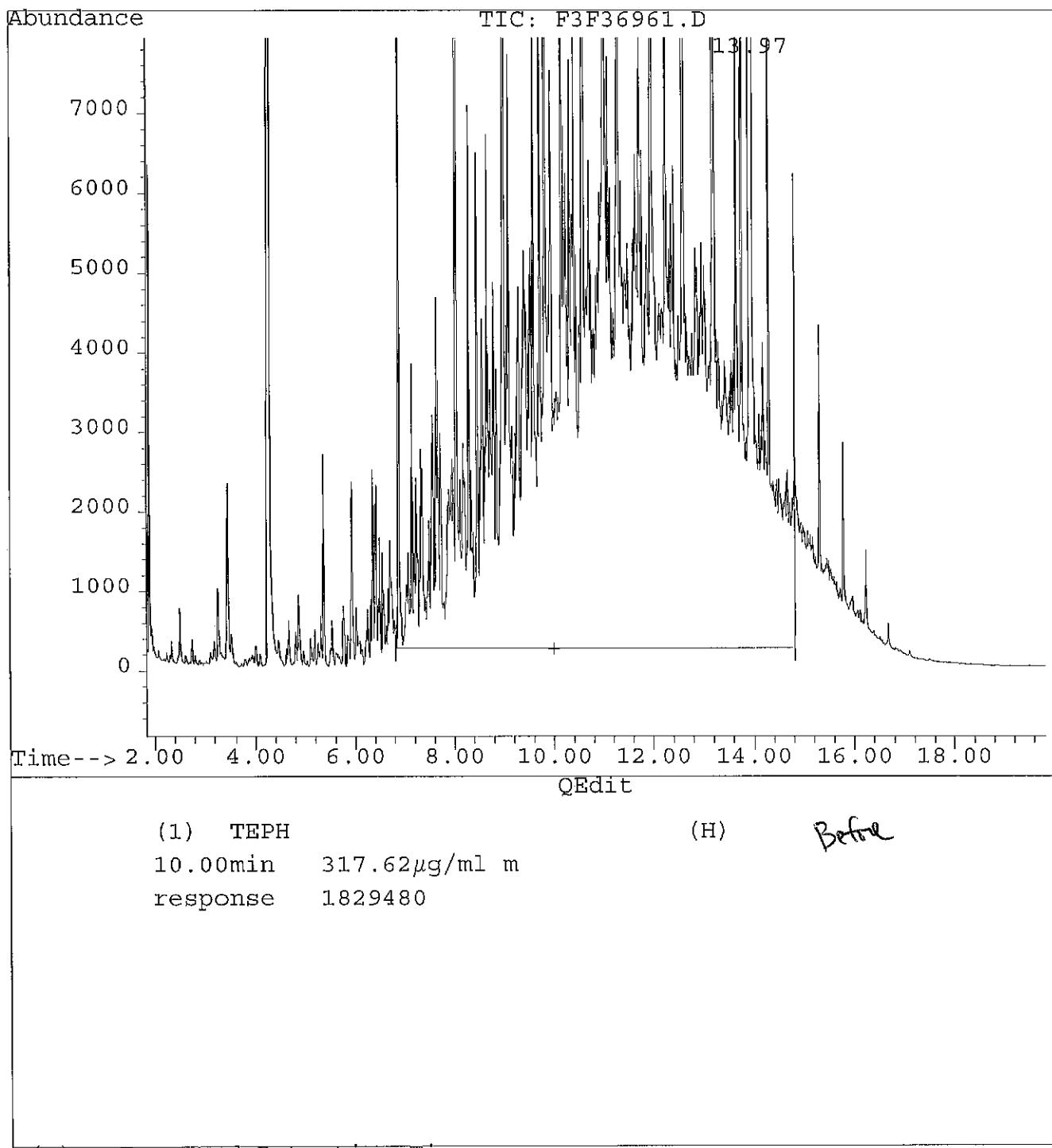
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Quantitation Report

Data File : C:\HPCHEM\5\DATA\08272010\F3F36961.D
Acq On : 27 Aug 10 10:53 PM
Sample : EX100818-4LCSD
Misc : SOIL
Quant Time: Sep 1 19:58 19110

Vial: 5
Operator: EDB
Inst : FUELS 3
Multipllr: 1.00

Method : C:\HPCHEM\5\METHODS\CL082710.M
Title : 8015Bmod, CALuft
Last Update : Wed Sep 01 19:40:26 2010
Response via : Multiple Level Calibration

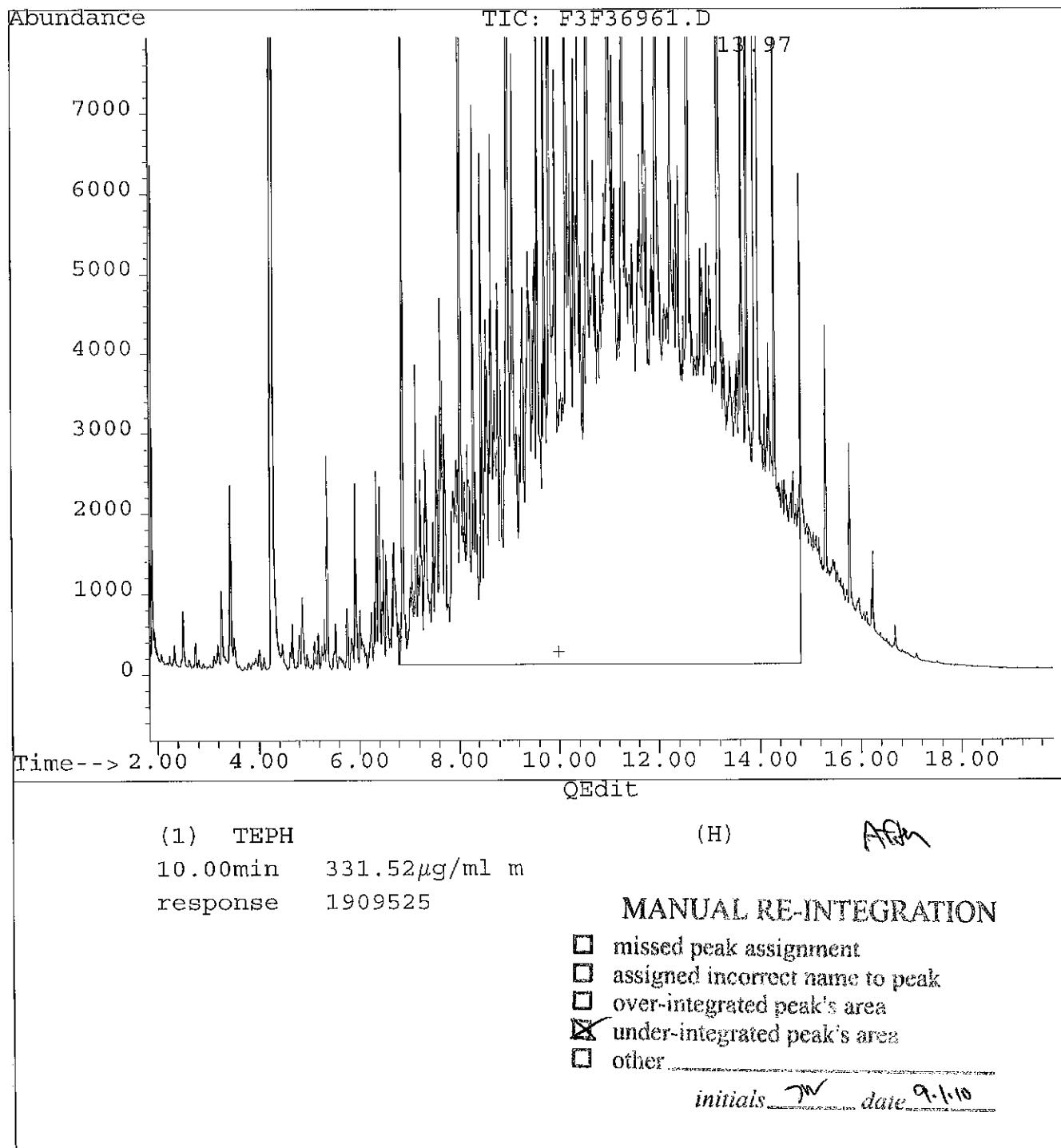


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Vial: 5
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 Multipllr: 1.00

Method : C:\HPCHEM\5\METHODS\CL082710.M
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Signal Info : FID

