



August 10, 2020

Service Request No:K2006012

Darrel Frame
Naval Facilities Engineering Command Hawaii
1942 Gaffney Street, Suite 100
Bldg 1757, 2nd Floor
JBPHH, HI 96860-4549

Laboratory Results for: Red Hill Additional Testing

Dear Darrel,

Enclosed are the results of the sample(s) submitted to our laboratory July 16, 2020
For your reference, these analyses have been assigned our service request number **K2006012**.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3316. You may also contact me via email at Jeff.Christian@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Jeff Christian
Technical Services
Manager

ADDRESS 1317 S. 13th Avenue, Kelso, WA 98626
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ALS Group USA, Corp.
dba ALS Environmental



Narrative Documents

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Client: Naval Facilities Engineering Command Hawaii
Project: Red Hill Additional Testing
Sample Matrix: Water

Service Request: K2006012
Date Received: 07/16/2020

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

Sample Receipt:

One water sample and one Trip Blank were received for analysis at ALS Environmental on 07/16/2020. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

Semivolatile GC:

Method 8015C Semivolatile Range Organics by GC/FID, 07/21/2020: The lower control criterion was exceeded for O-Terphenyl and JP-8 (C8-C18) in Laboratory Control Sample (LCS) KWG2002082-001. Since the problem indicated a potential negative bias in the LCS, all associated field samples containing target analytes were re-extracted and re-analyzed one day past the recommended hold time. The LCS met control criteria for the reanalysis. The results for the field samples were comparable for both determinations, which indicated the problem with the initial analysis was restricted to the LCS. Therefore, the results from the original analysis were reported. The data was flagged to indicate the problem.

Note the control limits in place are default values of 70-130%. The recoveries observed were in the range consistent with the analysis.

Method 8015C Semivolatile Range Organics by GC/FID, 07/21/2020: Sample 20-07208 (360-011) yielded a detection above the MRL for the range of JP-8 (C8 - C18). However, the chromatographic fingerprint does not resemble a petroleum product.

Metals:

No significant anomalies were noted with this analysis.

General Chemistry:

The DOC data will come at a later date.

Volatiles by GC/MS:

No significant anomalies were noted with this analysis.

Approved by



Date

08/07/2020

SAMPLE DETECTION SUMMARY**CLIENT ID: 20-07208 (360-011)****Lab ID: K2006012-001**

Analyte	Results	Flag	MDL	MRL	Units	Method
Lead	0.051		0.006	0.020	ug/L	200.8
JP-8 (C8 - C18)	130	Z	50	50	ug/L	8015C
C10 - C25 DRO	14	J	11	50	ug/L	8015C



Sample Receipt Information

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Project: Red Hill Additional Testing

Service Request:K2006012

SAMPLE CROSS-REFERENCE

<u>SAMPLE #</u>	<u>CLIENT SAMPLE ID</u>	<u>DATE</u>	<u>TIME</u>
K2006012-001	20-07208 (360-011)	7/15/2020	0850

PC JC

Cooler Receipt and Preservation Form

Client NAVEAC HI Service Request K20 06012
 Received: 7/16/20 Opened: 7/16/20 By: [Signature] Unloaded: 7/16/20 By: [Signature]

1. Samples were received via? USPS Fed Ex UPS DHL PDX Courier Hand Delivered
 2. Samples were received in: (circle) Cooler Box Envelope Other NA
 3. Were custody seals on coolers? NA Y N If yes, how many and where? 1 Front
 If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Temp Blank	Sample 1	Sample 2	Sample 3	Sample 4	IR GUN	Cooler / COC ID	NA	Tracking Number	NA	Filed
<u>2.7</u>	<u>---</u>	<u>---</u>	<u>---</u>	<u>---</u>	<u>IR01</u>	<u>282</u>	<u>282</u>	<u>770967340756</u>		
<u>4.2</u>	<u>---</u>	<u>---</u>	<u>---</u>	<u>---</u>	<u>IR01</u>	<u>192</u>	<u>192</u>	<u>770967340572</u>		

4. Packing material: Inserts Baggies Bubble Wrap Gel Packs Wet Ice Dry Ice Sleeves
 5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
 6. Were samples received in good condition (temperature, unbroken)? Indicate in the table below. NA Y N
 If applicable, tissue samples were received: Frozen Partially Thawed Thawed
 7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
 8. Did all sample labels and tags agree with custody papers? Indicate major discrepancies in the table on page 2. NA Y N
 9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
 10. Were the pH-preserved bottles (see SMO GEN SOP) received at the appropriate pH? Indicate in the table below NA Y N
 11. Were VOA vials received without headspace? Indicate in the table below. NA Y N
 12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head- space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____



Miscellaneous Forms

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Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjllabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdwlabservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/analyte is offered by that state.

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

ALS Group USA, Corp.

dba ALS Environmental

Analyst Summary report

Client: Naval Facilities Engineering Command Hawaii
Project: Red Hill Additional Testing/

Service Request: K2006012

Sample Name: 20-07208 (360-011)
Lab Code: K2006012-001
Sample Matrix: Water

Date Collected: 07/15/20**Date Received:** 07/16/20**Analysis Method**

200.8
524.2
8015C
SM 5310 C

Extracted/Digested By

JHINSON

KVAN

Analyzed By

EMCALLISTER

KWINSTON

TPOTTSCHMIDT

MKANALY

Sample Name: 20-07208 (360-011)
Lab Code: K2006012-001.R01
Sample Matrix: Water

Date Collected: 07/15/20**Date Received:** 07/16/20**Analysis Method**

8015C

Extracted/Digested By

SDANIELS

Analyzed By

TPOTTSCHMIDT

Sample Name: Trip Blank
Lab Code: K2006012-002
Sample Matrix: Water

Date Collected: 07/7/20**Date Received:** 07/16/20**Analysis Method**

524.2

Extracted/Digested By**Analyzed By**

KWINSTON

Sample Name: Trip Blank
Lab Code: K2006012-002.R01
Sample Matrix: Water

Date Collected: 07/7/20**Date Received:** 07/16/20**Analysis Method**

524.2

Extracted/Digested By**Analyzed By**

KWINSTON



Sample Results

ALS Environmental—Kelso Laboratory
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Volatile Organic Compounds by GC/MS

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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Naval Facilities Engineering Command Hawaii
Project: Red Hill Additional Testing
Sample Matrix: Water

Service Request: K2006012
Date Collected: 07/15/20 08:50
Date Received: 07/16/20 09:45

Sample Name: 20-07208 (360-011)
Lab Code: K2006012-001

Units: ug/L
Basis: NA

Purgeable Organic Compounds by GC/MS

Analysis Method: 524.2
Prep Method: None

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
Benzene	ND U	0.50	0.032	1	07/21/20 14:41	
Bromobenzene	ND U	0.50	0.039	1	07/21/20 14:41	
Bromochloromethane	ND U	0.50	0.038	1	07/21/20 14:41	
Bromodichloromethane	ND U	0.50	0.039	1	07/21/20 14:41	
Bromoform	ND U	0.50	0.072	1	07/21/20 14:41	
Bromomethane	ND U	0.50	0.043	1	07/21/20 14:41	
n-Butylbenzene	ND U	0.50	0.041	1	07/21/20 14:41	
sec-Butylbenzene	ND U	0.50	0.048	1	07/21/20 14:41	
tert-Butylbenzene	ND U	0.50	0.040	1	07/21/20 14:41	
Carbon Tetrachloride	ND U	0.50	0.073	1	07/21/20 14:41	
Chlorobenzene	ND U	0.50	0.020	1	07/21/20 14:41	
Chloroethane	ND U	0.50	0.15	1	07/21/20 14:41	
Chloroform	ND U	0.50	0.070	1	07/21/20 14:41	
Chloromethane	ND U	0.50	0.055	1	07/21/20 14:41	
2-Chlorotoluene	ND U	0.50	0.029	1	07/21/20 14:41	
4-Chlorotoluene	ND U	0.50	0.028	1	07/21/20 14:41	
1,2-Dibromo-3-chloropropane (DBCP)	ND U	1.0	0.21	1	07/21/20 14:41	
Dibromochloromethane	ND U	0.50	0.027	1	07/21/20 14:41	
1,2-Dibromoethane (EDB)	ND U	0.50	0.040	1	07/21/20 14:41	
Dibromomethane	ND U	0.50	0.052	1	07/21/20 14:41	
1,2-Dichlorobenzene	ND U	0.50	0.032	1	07/21/20 14:41	
1,3-Dichlorobenzene	ND U	0.50	0.021	1	07/21/20 14:41	
1,4-Dichlorobenzene	ND U	0.50	0.026	1	07/21/20 14:41	
Dichlorodifluoromethane	ND U	0.50	0.048	1	07/21/20 14:41	
1,1-Dichloroethane	ND U	0.50	0.043	1	07/21/20 14:41	
1,2-Dichloroethane	ND U	0.50	0.029	1	07/21/20 14:41	
1,1-Dichloroethene	ND U	0.50	0.066	1	07/21/20 14:41	
cis-1,2-Dichloroethene	ND U	0.50	0.032	1	07/21/20 14:41	
trans-1,2-Dichloroethene	ND U	0.50	0.032	1	07/21/20 14:41	
1,2-Dichloropropane	ND U	0.50	0.037	1	07/21/20 14:41	
1,3-Dichloropropane	ND U	0.50	0.035	1	07/21/20 14:41	
2,2-Dichloropropane	ND U	0.50	0.049	1	07/21/20 14:41	
1,1-Dichloropropene	ND U	0.50	0.050	1	07/21/20 14:41	
cis-1,3-Dichloropropene	ND U	0.50	0.033	1	07/21/20 14:41	
trans-1,3-Dichloropropene	ND U	0.50	0.025	1	07/21/20 14:41	
Ethylbenzene	ND U	0.50	0.035	1	07/21/20 14:41	
Hexachlorobutadiene	ND U	0.50	0.052	1	07/21/20 14:41	
Isopropylbenzene	ND U	0.50	0.045	1	07/21/20 14:41	
p-Isopropyltoluene	ND U	0.50	0.038	1	07/21/20 14:41	
Methylene Chloride	ND U	0.50	0.068	1	07/21/20 14:41	
Naphthalene	ND U	0.50	0.025	1	07/21/20 14:41	
n-Propylbenzene	ND U	0.50	0.029	1	07/21/20 14:41	
Styrene	ND U	0.50	0.020	1	07/21/20 14:41	

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dba ALS Environmental

Analytical Report

Client: Naval Facilities Engineering Command Hawaii
Project: Red Hill Additional Testing
Sample Matrix: Water

Service Request: K2006012
Date Collected: 07/15/20 08:50
Date Received: 07/16/20 09:45

Sample Name: 20-07208 (360-011)
Lab Code: K2006012-001

Units: ug/L
Basis: NA

Purgeable Organic Compounds by GC/MS

Analysis Method: 524.2
Prep Method: None

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
1,1,1,2-Tetrachloroethane	ND U	0.50	0.029	1	07/21/20 14:41	
1,1,2,2-Tetrachloroethane	ND U	0.50	0.038	1	07/21/20 14:41	
Tetrachloroethene	ND U	0.50	0.058	1	07/21/20 14:41	
Toluene	ND U	0.50	0.034	1	07/21/20 14:41	
1,2,3-Trichlorobenzene	ND U	0.50	0.035	1	07/21/20 14:41	
1,2,4-Trichlorobenzene	ND U	0.50	0.025	1	07/21/20 14:41	
1,1,1-Trichloroethane	ND U	0.50	0.039	1	07/21/20 14:41	
1,1,2-Trichloroethane	ND U	0.50	0.060	1	07/21/20 14:41	
Trichloroethene	ND U	0.50	0.049	1	07/21/20 14:41	
Trichlorofluoromethane	ND U	0.50	0.070	1	07/21/20 14:41	
1,2,3-Trichloropropane	ND U	0.50	0.13	1	07/21/20 14:41	
1,2,4-Trimethylbenzene	ND U	0.50	0.032	1	07/21/20 14:41	
1,3,5-Trimethylbenzene	ND U	0.50	0.023	1	07/21/20 14:41	
Vinyl Chloride	ND U	0.50	0.056	1	07/21/20 14:41	
o-Xylene	ND U	0.50	0.025	1	07/21/20 14:41	
m,p-Xylenes	ND U	0.50	-	1	07/21/20 14:41	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	89	70 - 130	07/21/20 14:41	
1,2-Dichlorobenzene-d4	108	70 - 130	07/21/20 14:41	



Semivolatile Organic Compounds by GC

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Sample Name: 20-07208 (360-011)
Lab Code: K2006012-001

Units: ug/L
Basis: NA

Semivolatile Range Organics by GC/FID

Analysis Method: 8015C
Prep Method: EPA 3510C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
JP-8 (C8 - C18)	130 Z	50	50	1	07/22/20 00:16	7/20/20	*
C10 - C25 DRO	14 J	50	11	1	07/22/20 03:52	7/20/20	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
o-Terphenyl	47	55 - 133	07/22/20 00:16	*



Metals

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Analytical Report

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Sample Matrix: Water
Sample Name: 20-07208 (360-011)
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Date Collected: 07/15/20 08:50
Date Received: 07/16/20 09:45
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Lead	200.8	0.051	ug/L	0.020	0.006	1	07/23/20 13:59	07/17/20	



General Chemistry

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Date Collected: 07/15/20 08:50
Date Received: 07/16/20 09:45
Basis: NA

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Carbon, Dissolved Organic (DOC)	SM 5310 C	ND U	mg/L	0.50	0.07	1	08/07/20 12:00	



QC Summary Forms

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Volatile Organic Compounds by GC/MS

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dba ALS Environmental

QA/QC Report

Client: Naval Facilities Engineering Command Hawaii
Project: Red Hill Additional Testing
Sample Matrix: Water

Service Request: K2006012

SURROGATE RECOVERY SUMMARY
Purgeable Organic Compounds by GC/MS

Analysis Method: 524.2

Extraction Method: None

Sample Name	Lab Code	4-Bromofluorobenzene	1,2-Dichlorobenzene-d4
		70-130	70-130
20-07208 (360-011)	K2006012-001	89	108
Method Blank	KQ2009688-05	90	107
Lab Control Sample	KQ2009688-03	101	95
Duplicate Lab Control Sample	KQ2009688-04	104	98

ALS Group USA, Corp.
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Analytical Report

Client: Naval Facilities Engineering Command Hawaii
Project: Red Hill Additional Testing
Sample Matrix: Water

Service Request: K2006012
Date Collected: NA
Date Received: NA

Sample Name: Method Blank
Lab Code: KQ2009688-05

Units: ug/L
Basis: NA

Purgeable Organic Compounds by GC/MS

Analysis Method: 524.2
Prep Method: None

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
Benzene	ND U	0.50	0.032	1	07/21/20 12:41	
Bromobenzene	ND U	0.50	0.039	1	07/21/20 12:41	
Bromochloromethane	ND U	0.50	0.038	1	07/21/20 12:41	
Bromodichloromethane	ND U	0.50	0.039	1	07/21/20 12:41	
Bromoform	ND U	0.50	0.072	1	07/21/20 12:41	
Bromomethane	0.080 J	0.50	0.043	1	07/21/20 12:41	
n-Butylbenzene	ND U	0.50	0.041	1	07/21/20 12:41	
sec-Butylbenzene	ND U	0.50	0.048	1	07/21/20 12:41	
tert-Butylbenzene	ND U	0.50	0.040	1	07/21/20 12:41	
Carbon Tetrachloride	ND U	0.50	0.073	1	07/21/20 12:41	
Chlorobenzene	ND U	0.50	0.020	1	07/21/20 12:41	
Chloroethane	ND U	0.50	0.15	1	07/21/20 12:41	
Chloroform	ND U	0.50	0.070	1	07/21/20 12:41	
Chloromethane	0.060 J	0.50	0.055	1	07/21/20 12:41	
2-Chlorotoluene	ND U	0.50	0.029	1	07/21/20 12:41	
4-Chlorotoluene	ND U	0.50	0.028	1	07/21/20 12:41	
1,2-Dibromo-3-chloropropane (DBCP)	ND U	1.0	0.21	1	07/21/20 12:41	
Dibromochloromethane	ND U	0.50	0.027	1	07/21/20 12:41	
1,2-Dibromoethane (EDB)	ND U	0.50	0.040	1	07/21/20 12:41	
Dibromomethane	ND U	0.50	0.052	1	07/21/20 12:41	
1,2-Dichlorobenzene	ND U	0.50	0.032	1	07/21/20 12:41	
1,3-Dichlorobenzene	ND U	0.50	0.021	1	07/21/20 12:41	
1,4-Dichlorobenzene	ND U	0.50	0.026	1	07/21/20 12:41	
Dichlorodifluoromethane	ND U	0.50	0.048	1	07/21/20 12:41	
1,1-Dichloroethane	ND U	0.50	0.043	1	07/21/20 12:41	
1,2-Dichloroethane	ND U	0.50	0.029	1	07/21/20 12:41	
1,1-Dichloroethene	ND U	0.50	0.066	1	07/21/20 12:41	
cis-1,2-Dichloroethene	ND U	0.50	0.032	1	07/21/20 12:41	
trans-1,2-Dichloroethene	ND U	0.50	0.032	1	07/21/20 12:41	
1,2-Dichloropropane	ND U	0.50	0.037	1	07/21/20 12:41	
1,3-Dichloropropane	ND U	0.50	0.035	1	07/21/20 12:41	
2,2-Dichloropropane	ND U	0.50	0.049	1	07/21/20 12:41	
1,1-Dichloropropene	ND U	0.50	0.050	1	07/21/20 12:41	
cis-1,3-Dichloropropene	ND U	0.50	0.033	1	07/21/20 12:41	
trans-1,3-Dichloropropene	ND U	0.50	0.025	1	07/21/20 12:41	
Ethylbenzene	ND U	0.50	0.035	1	07/21/20 12:41	
Hexachlorobutadiene	ND U	0.50	0.052	1	07/21/20 12:41	
Isopropylbenzene	ND U	0.50	0.045	1	07/21/20 12:41	
p-Isopropyltoluene	ND U	0.50	0.038	1	07/21/20 12:41	
Methylene Chloride	ND U	0.50	0.068	1	07/21/20 12:41	
Naphthalene	0.14 J	0.50	0.025	1	07/21/20 12:41	
n-Propylbenzene	ND U	0.50	0.029	1	07/21/20 12:41	
Styrene	ND U	0.50	0.020	1	07/21/20 12:41	

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Analytical Report

Client: Naval Facilities Engineering Command Hawaii
Project: Red Hill Additional Testing
Sample Matrix: Water

Service Request: K2006012
Date Collected: NA
Date Received: NA

Sample Name: Method Blank
Lab Code: KQ2009688-05

Units: ug/L
Basis: NA

Purgeable Organic Compounds by GC/MS

Analysis Method: 524.2
Prep Method: None

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
1,1,1,2-Tetrachloroethane	ND U	0.50	0.029	1	07/21/20 12:41	
1,1,2,2-Tetrachloroethane	ND U	0.50	0.038	1	07/21/20 12:41	
Tetrachloroethene	ND U	0.50	0.058	1	07/21/20 12:41	
Toluene	ND U	0.50	0.034	1	07/21/20 12:41	
1,2,3-Trichlorobenzene	0.070 J	0.50	0.035	1	07/21/20 12:41	
1,2,4-Trichlorobenzene	0.060 J	0.50	0.025	1	07/21/20 12:41	
1,1,1-Trichloroethane	ND U	0.50	0.039	1	07/21/20 12:41	
1,1,2-Trichloroethane	ND U	0.50	0.060	1	07/21/20 12:41	
Trichloroethene	ND U	0.50	0.049	1	07/21/20 12:41	
Trichlorofluoromethane	ND U	0.50	0.070	1	07/21/20 12:41	
1,2,3-Trichloropropane	ND U	0.50	0.13	1	07/21/20 12:41	
1,2,4-Trimethylbenzene	ND U	0.50	0.032	1	07/21/20 12:41	
1,3,5-Trimethylbenzene	ND U	0.50	0.023	1	07/21/20 12:41	
Vinyl Chloride	ND U	0.50	0.056	1	07/21/20 12:41	
o-Xylene	ND U	0.50	0.025	1	07/21/20 12:41	
m,p-Xylenes	ND U	0.50	0.052	1	07/21/20 12:41	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	90	70 - 130	07/21/20 12:41	
1,2-Dichlorobenzene-d4	107	70 - 130	07/21/20 12:41	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Naval Facilities Engineering Command Hawaii
Project: Red Hill Additional Testing
Sample Matrix: Water

Service Request: K2006012
Date Analyzed: 07/21/20
Date Extracted: NA

Duplicate Lab Control Sample Summary
Purgeable Organic Compounds by GC/MS

Analysis Method: 524.2
Prep Method: None

Units: ug/L
Basis: NA
Analysis Lot: 687650

Analyte Name	Lab Control Sample KQ2009688-03			Duplicate Lab Control Sample KQ2009688-04					
	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
1,1,1,2-Tetrachloroethane	4.62	5.00	92	5.07	5.00	101	70-130	9	30
1,1,1-Trichloroethane	4.40	5.00	88	5.11	5.00	102	70-130	15	30
1,1,2,2-Tetrachloroethane	3.96	5.00	79	4.91	5.00	98	70-130	21	30
1,1,2-Trichloroethane	4.39	5.00	88	5.03	5.00	101	70-130	14	30
1,1-Dichloroethane	4.31	5.00	86	4.90	5.00	98	70-130	13	30
1,1-Dichloroethene	4.51	5.00	90	5.21	5.00	104	70-130	14	30
1,1-Dichloropropene	4.24	5.00	85	4.97	5.00	99	70-130	16	30
1,2,3-Trichlorobenzene	4.16	5.00	83	4.67	5.00	93	70-130	12	30
1,2,3-Trichloropropane	4.34	5.00	87	4.87	5.00	97	30-130	12	30
1,2,4-Trichlorobenzene	4.15	5.00	83	4.74	5.00	95	70-130	13	30
1,2,4-Trimethylbenzene	5.10	5.00	102	5.43	5.00	109	70-130	6	30
1,2-Dibromo-3-chloropropane (DBCP)	4.10	5.00	82	4.94	5.00	99	70-130	19	30
1,2-Dibromoethane (EDB)	4.19	5.00	84	4.99	5.00	100	70-130	17	30
1,2-Dichlorobenzene	4.57	5.00	91	5.02	5.00	100	70-130	9	30
1,2-Dichloroethane	4.36	5.00	87	5.01	5.00	100	70-130	14	30
1,2-Dichloropropane	4.25	5.00	85	4.95	5.00	99	70-130	15	30
1,3,5-Trimethylbenzene	5.06	5.00	101	5.37	5.00	107	70-130	6	30
1,3-Dichlorobenzene	4.76	5.00	95	5.12	5.00	102	70-130	7	30
1,3-Dichloropropane	4.21	5.00	84	4.96	5.00	99	70-130	16	30
1,4-Dichlorobenzene	4.64	5.00	93	5.08	5.00	102	70-130	9	30
2,2-Dichloropropane	4.62	5.00	92	5.06	5.00	101	70-130	9	30
2-Chlorotoluene	4.88	5.00	98	5.19	5.00	104	70-130	6	30
4-Chlorotoluene	5.09	5.00	102	5.37	5.00	107	70-130	5	30
Benzene	4.44	5.00	89	5.10	5.00	102	70-130	14	30
Bromobenzene	4.51	5.00	90	4.96	5.00	99	70-130	10	30
Bromochloromethane	4.37	5.00	87	5.06	5.00	101	70-130	15	30
Bromodichloromethane	4.32	5.00	86	5.03	5.00	101	70-130	15	30
Bromoform	4.28	5.00	86	4.97	5.00	99	70-130	15	30
Bromomethane	4.77	5.00	95	5.31	5.00	106	70-130	11	30
Carbon Tetrachloride	4.43	5.00	89	5.14	5.00	103	70-130	15	30
Chlorobenzene	4.75	5.00	95	5.17	5.00	103	70-130	8	30
Chloroethane	4.67	5.00	93	5.16	5.00	103	70-130	10	30
Chloroform	4.36	5.00	87	4.94	5.00	99	70-130	12	30
Chloromethane	5.08	5.00	102	5.15	5.00	103	70-130	1	30
cis-1,2-Dichloroethene	4.27	5.00	85	4.81	5.00	96	70-130	12	30
cis-1,3-Dichloropropene	4.13	5.00	83	4.88	5.00	98	70-130	17	30
Dibromochloromethane	4.38	5.00	88	4.96	5.00	99	70-130	12	30
Dibromomethane	4.31	5.00	86	5.07	5.00	101	70-130	16	30
Dichlorodifluoromethane	4.64	5.00	93	5.32	5.00	106	70-130	14	30
Ethylbenzene	4.62	5.00	92	5.01	5.00	100	70-130	8	30
Hexachlorobutadiene	4.81	5.00	96	4.81	5.00	96	70-130	<1	30

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Naval Facilities Engineering Command Hawaii
Project: Red Hill Additional Testing
Sample Matrix: Water

Service Request: K2006012
Date Analyzed: 07/21/20
Date Extracted: NA

Duplicate Lab Control Sample Summary
Purgeable Organic Compounds by GC/MS

Analysis Method: 524.2
Prep Method: None

Units: ug/L
Basis: NA
Analysis Lot: 687650

Analyte Name	Lab Control Sample KQ2009688-03			Duplicate Lab Control Sample KQ2009688-04			% Rec Limits	RPD	RPD Limit
	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec			
Isopropylbenzene	4.89	5.00	98	5.37	5.00	107	70-130	9	30
m,p-Xylenes	10.0	10.0	100	11.0	10.0	110	70-130	9	30
Methylene Chloride	4.50	5.00	90	5.11	5.00	102	70-130	13	30
Naphthalene	3.82	5.00	76	4.53	5.00	91	70-130	17	30
n-Butylbenzene	4.87	5.00	97	5.02	5.00	100	70-130	3	30
n-Propylbenzene	4.94	5.00	99	5.25	5.00	105	70-130	6	30
o-Xylene	4.79	5.00	96	5.34	5.00	107	70-130	11	30
p-Isopropyltoluene	5.20	5.00	104	5.44	5.00	109	70-130	5	30
sec-Butylbenzene	5.11	5.00	102	5.42	5.00	108	70-130	6	30
Styrene	4.82	5.00	96	5.24	5.00	105	70-130	8	30
tert-Butylbenzene	4.85	5.00	97	5.17	5.00	103	70-130	6	30
Tetrachloroethene	4.69	5.00	94	5.08	5.00	102	70-130	8	30
Toluene	4.40	5.00	88	5.07	5.00	101	70-130	14	30
trans-1,2-Dichloroethene	4.63	5.00	93	5.18	5.00	104	70-130	11	30
trans-1,3-Dichloropropene	4.19	5.00	84	4.82	5.00	96	70-130	14	30
Trichloroethene	4.51	5.00	90	5.09	5.00	102	70-130	12	30
Trichlorofluoromethane	4.45	5.00	89	5.20	5.00	104	70-130	16	30
Vinyl Chloride	4.59	5.00	92	5.28	5.00	106	70-130	14	30



Semivolatile Organic Compounds by GC

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
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dba ALS Environmental

QA/QC Report

Client: Naval Facilities Engineering Command Haw
Project: Red Hill Additional Testing/
Sample Matrix: Water

Service Request: K2006012

SURROGATE RECOVERY SUMMARY
Semivolatile Range Organics by GC/FID

Analysis Method: 8015C
Extraction Method: EPA 3510C

Sample Name	Lab Code	o-Terphenyl
		55 - 133
20-07208 (360-011)	K2006012-001	47 * *
Lab Control Sample	KWG2002082-1	51 *
Duplicate Lab Control Sample	KWG2002082-2	61
Method Blank	KWG2002082-3	55 * *

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Analytical Report

Client: Naval Facilities Engineering Command Haw
Project: Red Hill Additional Testing/
Sample Matrix: Water

Service Request: K2006012
Date Collected: NA
Date Received: NA

Sample Name: Method Blank
Lab Code: KWG2002082-3

Units: ug/L
Basis: NA

Semivolatile Range Organics by GC/FID

Analysis Method: 8015C
Prep Method: EPA 3510C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
JP-8 (C8 - C18)	ND U	50	50	1	07/21/20 23:33	7/20/20	*
C10 - C25 DRO	ND U	50	11	1	07/22/20 03:09	7/20/20	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
o-Terphenyl	55	55 - 133	07/22/20 03:09	*

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QA/QC Report

Client: Naval Facilities Engineering Command Haw
Project: Red Hill Additional Testing/
Sample Matrix: Water

Service Request: K2006012
Date Analyzed: 07/21/20
Date Extracted: 07/20/20

Duplicate Lab Control Sample Summary
Semivolatile Range Organics by GC/FID

Analysis Method: 8015C
Prep Method: EPA 3510C

Units: ug/L
Basis: NA
Analysis Lot: KWG2002323

Lab Control Sample
KWG2002082-1

Duplicate Lab Control Sample
KWG2002082-2

Analyte Name	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
JP-8 (C8 - C18)	2000	3200	62 *	2460	3200	77	70-130	21	30



Metals

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Analytical Report

Client: Naval Facilities Engineering Command Hawaii
Project: Red Hill Additional Testing
Sample Matrix: Water
Sample Name: Method Blank
Lab Code: KQ2009600-01

Service Request: K2006012
Date Collected: NA
Date Received: NA
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Lead	200.8	ND U	ug/L	0.020	0.006	1	07/23/20 12:05	07/17/20	

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QA/QC Report

Client: Naval Facilities Engineering Command Hawaii
Project: Red Hill Additional Testing
Sample Matrix: Water

Service Request: K2006012**Date Analyzed:** 07/23/20**Lab Control Sample Summary****Total Metals****Units:**ug/L**Basis:**NA**Lab Control Sample**

KQ2009600-02

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Lead	200.8	49.2	50.0	98	85-115



General Chemistry

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Analytical Report

Client: Naval Facilities Engineering Command Hawaii
Project: Red Hill Additional Testing
Sample Matrix: Water
Sample Name: Method Blank
Lab Code: K2006012-MB

Service Request: K2006012
Date Collected: NA
Date Received: NA
Basis: NA

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Carbon, Dissolved Organic (DOC)	SM 5310 C	ND U	mg/L	0.50	0.07	1	08/07/20 12:00	

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dba ALS Environmental

QA/QC Report

Client: Naval Facilities Engineering Command Hawaii
Project: Red Hill Additional Testing
Sample Matrix: Water

Service Request: K2006012
Date Analyzed: 08/07/20
Date Extracted: NA

Duplicate Lab Control Sample Summary
General Chemistry Parameters

Analysis Method: SM 5310 C
Prep Method: None

Units: mg/L
Basis: NA
Analysis Lot: 690002

Lab Control Sample
K2006012-LCS

Duplicate Lab Control Sample
K2006012-DLCS

Analyte Name	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
Carbon, Dissolved Organic (DOC)	2.48	2.50	99	2.41	2.50	96	83-117	3	10



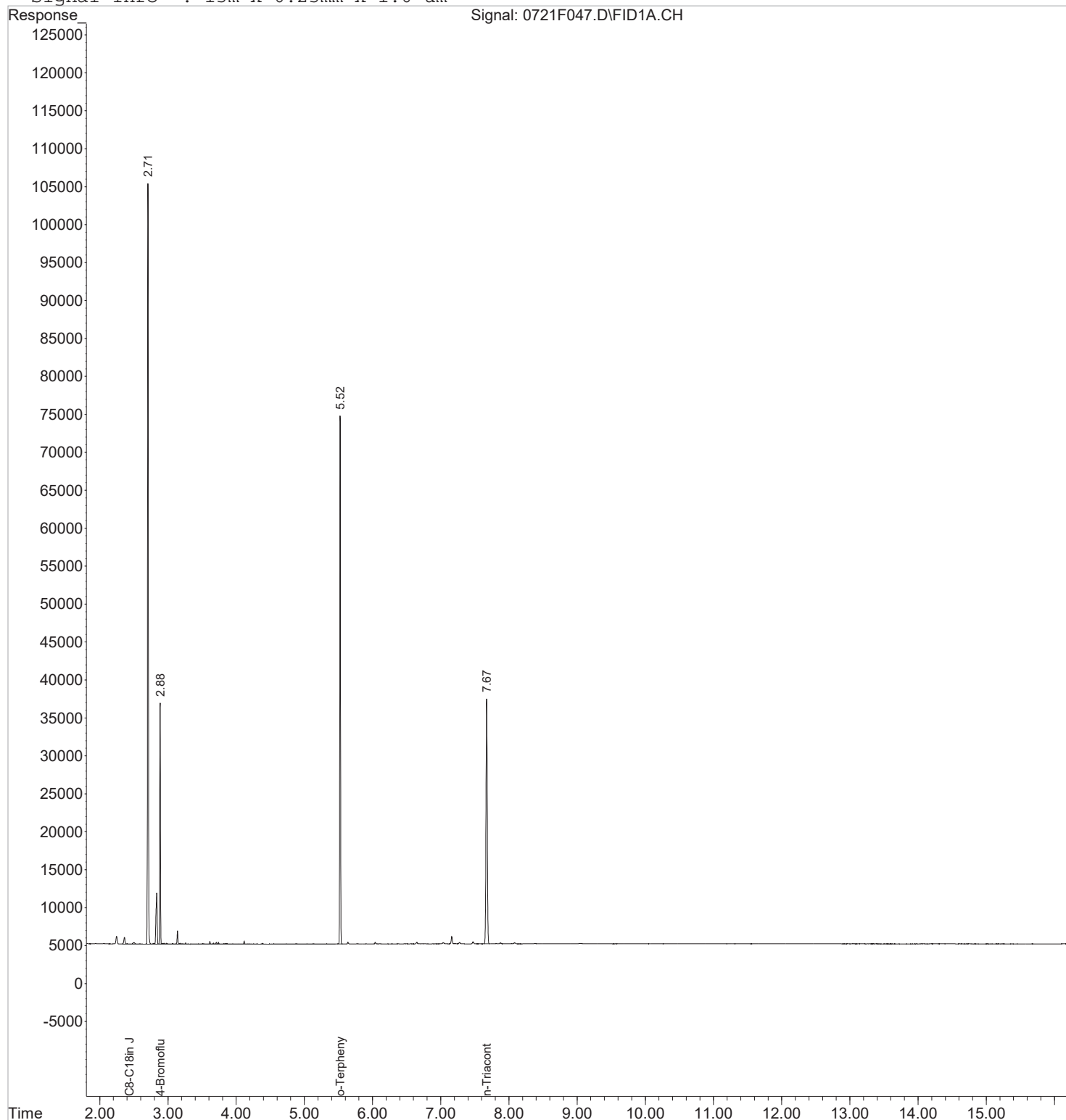
Method 8015 Chromatograms

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Data File : J:\GC35\DATA\072120F\0721F047.D Vial: 23
Acq On : 22 Jul 2020 12:16 am Operator: TAP
Sample : K2006012-001 Inst : GC35
Misc : Multiplr: 1.00
IntFile : rteint.p
Quant Time: Jul 22 8:56 2020 Quant Results File: 070920FJP8.RES

Quant Method : J:\GC35\METHODS\070920FJP8.M (RTE Integrator)
Title : JP-8 by GC/FID CAL16330
Last Update : Wed Jul 15 08:25:33 2020
Response via : Single Level Calibration
DataAcq Meth : SVF_F.M

Volume Inj. : 1 uL
Signal Phase : ZB-1
Signal Info : 15m x 0.25mm x 1.0 um



Data File : J:\GC35\DATA\072120F\0721F043.D Vial: 19
Acq On : 21 Jul 2020 10:50 pm Operator: TAP
Sample : KWG2002051-001 LCS Inst : GC35
Misc : Multiplr: 1.00
IntFile : rteint.p
Quant Time: Jul 22 8:55 2020 Quant Results File: 070920FJP8.RES

Quant Method : J:\GC35\METHODS\070920FJP8.M (RTE Integrator)
Title : JP-8 by GC/FID CAL16330
Last Update : Wed Jul 15 08:25:33 2020
Response via : Single Level Calibration
DataAcq Meth : SVF_F.M

Volume Inj. : 1 uL
Signal Phase : ZB-1
Signal Info : 15m x 0.25mm x 1.0 um

