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Automated Report

Technical Report for

Mull Drilling Company Inc.

NWAU #27 Flowline Crude Oil Spill

SGS Accutest Job Number: D97453

Sampling Date: 08/29/17

Report to:

Mull Drilling Company Inc.
PO Box 393
Cheyenne Wells, CO 80810
csmalley@mulldrilling.com

ATTN: Carl D. Smalley

Total number of pages in report: **28**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Scott Heideman
Laboratory Director

Client Service contact: Cristina Araujo 303-425-6021

Certifications: CO (CO00049), ID (CO00049), NE (NE-OS-06-04), ND (R-027), NJ (CO007), OK (D9942) UT (NELAP CO00049), LA (LA150028), TX (T104704511), WY (8TMS-L)

Sections: 1 2 3 4 5 6 7 8

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Sample Summary

Mull Drilling Company Inc.

Job No: D97453

NWAU #27 Flowline Crude Oil Spill

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
D97453-1	08/29/17	08:00	CS	08/30/17	SO	Soil	NWAU #2 SITE
D97453-2	08/29/17	08:00	CS	08/30/17	SO	Soil	NWAU #3 SITE

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

CASE NARRATIVE / CONFORMANCE SUMMARY

Client:	Mull Drilling Company Inc.	**Job No**	D97453
Site:	NWAU #27 Flowline Crude Oil Spill	**Report Date**	9/12/2017 10:35:23 A

On 08/30/2017, 2 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at SGS Accutest Mountain States (SAMS) at a temperature of 4.9 °C. The samples were intact and properly preserved, unless noted below. An SAMS Job Number of D97453 was assigned to the project. The lab sample ID, client sample ID, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix: SO **Batch ID:** V3V2293

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D97453-2MS, D97453-2MSD were used as the QC samples indicated.

Volatiles by GC By Method SW846 8015B

Matrix: SO **Batch ID:** GGA1913

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D97453-1MS, D97453-1MSD were used as the QC samples indicated.

Extractables by GC By Method SW846-8015B

Matrix: SO **Batch ID:** OP15460

- All samples were extracted and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D97453-1MS, D97453-1MSD were used as the QC samples indicated.
- The RPD(s) for the MS and MSD recoveries of TPH-DRO (C10-C28) are outside control limits for sample OP15460-MSD. High RPD due to possible sample nonhomogeneity.

Wet Chemistry By Method SM2540G-2011 M

Matrix: SO **Batch ID:** GN40070

- Sample(s) D97489-11DUP were used as the QC samples for the Solids, Percent analysis.

SAMS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting AMS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

SAMS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by SAMS indicated via signature on the report cover.

Summary of Hits

Job Number: D97453
Account: Mull Drilling Company Inc.
Project: NWAU #27 Flowline Crude Oil Spill
Collected: 08/29/17

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
D97453-1	**NWAU #2 SITE**					
No hits reported in this sample.						
D97453-2	**NWAU #3 SITE**					
No hits reported in this sample.						

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	NWAU #2 SITE		
Lab Sample ID:	D97453-1	**Date Sampled:**	08/29/17
Matrix:	SO - Soil	**Date Received:**	08/30/17
Method:	SW846 8260B	**Percent Solids:**	81.7
Project:	NWAU #27 Flowline Crude Oil Spill		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3V41016.D	1	09/08/17 14:44	TL	n/a	n/a	V3V2293
Run #2							

	Initial Weight	Final Volume
Run #1	5.09 g	5.0 ml
Run #2		

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.2	0.60	ug/kg	
108-88-3	Toluene	ND	2.4	1.2	ug/kg	
100-41-4	Ethylbenzene	ND	2.4	0.60	ug/kg	
1330-20-7	Xylene (total)	ND	2.6	1.2	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%		70-130%
2037-26-5	Toluene-D8	95%		70-130%
460-00-4	4-Bromofluorobenzene	98%		65-142%
17060-07-0	1,2-Dichloroethane-D4	106%		70-130%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	NWAU #2 SITE		
Lab Sample ID:	D97453-1	**Date Sampled:**	08/29/17
Matrix:	SO - Soil	**Date Received:**	08/30/17
Method:	SW846 8015B	**Percent Solids:**	81.7
Project:	NWAU #27 Flowline Crude Oil Spill		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GA39625.D	1	09/06/17 10:59	MB	n/a	n/a	GGA1913
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.1 g	5.0 ml	100 ul
Run #2			

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	14	7.1	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
120-82-1	1,2,4-Trichlorobenzene	103%		60-140%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	NWAU #2 SITE		
Lab Sample ID:	D97453-1	**Date Sampled:**	08/29/17
Matrix:	SO - Soil	**Date Received:**	08/30/17
Method:	SW846-8015B SW846 3546	**Percent Solids:**	81.7
Project:	NWAU #27 Flowline Crude Oil Spill		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI57496.D	1	09/06/17 20:08	RB	09/06/17	OP15460	GFI2406
Run #2							

	Initial Weight	Final Volume
Run #1	20.2 g	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	12	11	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	94%		41-134%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	NWAU #3 SITE		
Lab Sample ID:	D97453-2	**Date Sampled:**	08/29/17
Matrix:	SO - Soil	**Date Received:**	08/30/17
Method:	SW846 8260B	**Percent Solids:**	83.8
Project:	NWAU #27 Flowline Crude Oil Spill		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3V41017.D	1	09/08/17 15:08	TL	n/a	n/a	V3V2293
Run #2							

	Initial Weight	Final Volume
Run #1	5.09 g	5.0 ml
Run #2		

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.2	0.59	ug/kg	
108-88-3	Toluene	ND	2.3	1.2	ug/kg	
100-41-4	Ethylbenzene	ND	2.3	0.59	ug/kg	
1330-20-7	Xylene (total)	ND	2.6	1.2	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		70-130%
2037-26-5	Toluene-D8	95%		70-130%
460-00-4	4-Bromofluorobenzene	98%		65-142%
17060-07-0	1,2-Dichloroethane-D4	113%		70-130%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	NWAU #3 SITE		
Lab Sample ID:	D97453-2	**Date Sampled:**	08/29/17
Matrix:	SO - Soil	**Date Received:**	08/30/17
Method:	SW846 8015B	**Percent Solids:**	83.8
Project:	NWAU #27 Flowline Crude Oil Spill		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GA39628.D	1	09/06/17 12:45	MB	n/a	n/a	GGA1913
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.0 g	5.0 ml	100 ul
Run #2			

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	14	6.9	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
120-82-1	1,2,4-Trichlorobenzene	106%		60-140%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	NWAU #3 SITE		
Lab Sample ID:	D97453-2	**Date Sampled:**	08/29/17
Matrix:	SO - Soil	**Date Received:**	08/30/17
Method:	SW846-8015B SW846 3546	**Percent Solids:**	83.8
Project:	NWAU #27 Flowline Crude Oil Spill		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI57502.D	1	09/06/17 22:09	RB	09/06/17	OP15460	GFI2406
Run #2							

	Initial Weight	Final Volume
Run #1	20.4 g	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	12	11	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	63%		41-134%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

ACCUTEST LABORATORIES

CHAIN OF CUSTODY

D97453 mg PAGE 1 OF 1

Accutest Laboratories Mountain States
4036 Youngfield Street Wheat Ridge, Co 80033
TEL. 303-425-6021 877-737-4521
FAX 303-425-6021

FED-EX Tracking # | Bottle Order Control # D97453 OK mg 8/30
Accutest Quote # | Accutest Job # D97453 mg 8/30

Client / Reporting Information

Company Name: Mull Drilling Company Inc
Street Address: 14047 CR 17 PO Box 343
City State Zip: Cheyenne Wells Colo 80810
Project Contact: C Smalley E-mail: csmalley@mulldrilling.com
Phone #: 719-342-1812 Fax #: 767-8994
Sampler(s) Name(s): C.R. Smalley Phone #: 342-1812

Project Information

Project Name: NWAU #27 Flowline Crude Oil Spill
Street:
City:
Client PO#
Project Manager

Billing Information (If different from Report to)

Company Name
Street Address
City State Zip
Attention: PO#

Requested Analysis (see TEST CODE sheet)

TPH | DRO | GRO | BTEX

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB- Equipment Blank
RB- Rinse Blank
TB-Trip Blank

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	Bisulfate	TPH	DRO	GRO	BTEX	LAB USE ONLY
2	NWAU #2 Site		8/29/17	0800	CS	SO	1										✓	✓	✓	✓	01
3	NWAU #3 Site		8/29/17	0800	CS	SO	1										✓	✓	✓	✓	02

LAB USE ONLY: mg

Turnaround Time (Business days)

Approved By (Accutest PM): / Date:

- ☐ Std. 10 Business Days
- ☐ Std. 5 Business Days (By Contract only)
- ☐ 5 Day RUSH
- ☐ 3 Day EMERGENCY
- ☐ 2 Day EMERGENCY
- ☐ 1 Day EMERGENCY

Emergency & Rush T/A data available VIA Lablink

Data Deliverable Information

- ☐ Commercial "A" (Level 1)
- ☐ Commercial "B" (Level 2)
- ☐ Commercial "B" +Narrative
- ☐ FULLT1 (Level 3+4)
- ☐ State Forms
- ☐ EDD Format
- ☐ PDF

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary

Comments / Special Instructions

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1		1 8-30-17 1008	2		2
3		3	4		4 TMG
5		5	Custody Seal # UPT ☑ Intact ☐ Not intact	Preserved where applicable ☑	On Ice ☐ Cooler Temp: 4.9

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D97453: Chain of Custody
Page 1 of 2

SGS Accutest Sample Receipt Summary

Job Number: D97453 **Client:** MULL DRILLING CO INC **Project:** NWAU #27 FLOUSLINE CRUDE OIL SPILL

Date / Time Received: 8/30/2017 10:00:00 AM **Delivery Method:** **Airbill #'s:** ups

Cooler Temps (Initial/Adjusted): #1: (4.9/4.9);

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Cooler temp verification:	Bar Therm;		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	1		

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	☐		☐	☑
2. Trip Blank listed on COC:	☐		☐	☑
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☐		☐	☑

Comments

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

D97453: Chain of Custody
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MS Volatiles

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QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: D97453
Account: MULLCOCW Mull Drilling Company Inc.
Project: NWAU #27 Flowline Crude Oil Spill

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V2293-MB	3V41014.D	1	09/08/17	TL	n/a	n/a	V3V2293

The QC reported here applies to the following samples: **Method:** SW846 8260B

D97453-1, D97453-2

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.50	ug/kg	
100-41-4	Ethylbenzene	ND	2.0	0.50	ug/kg	
108-88-3	Toluene	ND	2.0	1.0	ug/kg	
1330-20-7	Xylene (total)	ND	2.2	1.0	ug/kg	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	94%	70-130%
2037-26-5	Toluene-D8	99%	70-130%
460-00-4	4-Bromofluorobenzene	98%	65-142%
17060-07-0	1,2-Dichloroethane-D4	93%	70-130%

Method Blank Summary

Job Number: D97453
Account: MULLCOCW Mull Drilling Company Inc.
Project: NWAU #27 Flowline Crude Oil Spill

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V2293-MB	3V41015.D	1	09/08/17	TL	n/a	n/a	V3V2293

The QC reported here applies to the following samples: **Method:** SW846 8260B

D97453-1, D97453-2

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.50	ug/kg	
100-41-4	Ethylbenzene	ND	2.0	0.50	ug/kg	
108-88-3	Toluene	ND	2.0	1.0	ug/kg	
1330-20-7	Xylene (total)	ND	2.2	1.0	ug/kg	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	102%	70-130%
2037-26-5	Toluene-D8	98%	70-130%
460-00-4	4-Bromofluorobenzene	98%	65-142%
17060-07-0	1,2-Dichloroethane-D4	105%	70-130%

Blank Spike Summary

Job Number: D97453
Account: MULLCOCW Mull Drilling Company Inc.
Project: NWAU #27 Flowline Crude Oil Spill

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V2293-BS	3V41012.D	1	09/08/17	TL	n/a	n/a	V3V2293

The QC reported here applies to the following samples: **Method:** SW846 8260B

D97453-1, D97453-2

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	49.6	99	70-130
100-41-4	Ethylbenzene	50	49.9	100	70-130
108-88-3	Toluene	50	49.0	98	70-130
1330-20-7	Xylene (total)	150	151	101	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	98%	70-130%
2037-26-5	Toluene-D8	101%	70-130%
460-00-4	4-Bromofluorobenzene	100%	65-142%
17060-07-0	1,2-Dichloroethane-D4	97%	70-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D97453
Account: MULLCOCW Mull Drilling Company Inc.
Project: NWAU #27 Flowline Crude Oil Spill

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D97453-2MS	3V41018.D	1	09/08/17	TL	n/a	n/a	V3V2293
D97453-2MSD	3V41019.D	1	09/08/17	TL	n/a	n/a	V3V2293
D97453-2	3V41017.D	1	09/08/17	TL	n/a	n/a	V3V2293

The QC reported here applies to the following samples: **Method:** SW846 8260B

D97453-1, D97453-2

CAS No.	Compound	D97453-2 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		59.3	45.2	76	58.8	48.9	83	8	43-135/30
100-41-4	Ethylbenzene	ND		59.3	43.2	73	58.8	46.8	80	8	30-144/30
108-88-3	Toluene	ND		59.3	43.8	74	58.8	47.1	80	7	27-144/30
1330-20-7	Xylene (total)	ND		178	131	74	177	140	79	7	13-154/30

CAS No.	Surrogate Recoveries	MS	MSD	D97453-2	Limits
1868-53-7	Dibromofluoromethane	106%	106%	106%	70-130%
2037-26-5	Toluene-D8	99%	99%	95%	70-130%
460-00-4	4-Bromofluorobenzene	101%	101%	98%	65-142%
17060-07-0	1,2-Dichloroethane-D4	106%	108%	113%	70-130%

* = Outside of Control Limits.

GC Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: D97453
Account: MULLCOCW Mull Drilling Company Inc.
Project: NWAU #27 Flowline Crude Oil Spill

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGA1913-MB	GA39624.D	1	09/06/17	MB	n/a	n/a	GGA1913

The QC reported here applies to the following samples: **Method:** SW846 8015B

D97453-1, D97453-2

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	10	5.0	mg/kg	

CAS No.	Surrogate Recoveries		Limits
120-82-1	1,2,4-Trichlorobenzene	107%	60-140%

Blank Spike Summary

Job Number: D97453
Account: MULLCOCW Mull Drilling Company Inc.
Project: NWAU #27 Flowline Crude Oil Spill

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGA1913-BS	GA39623.D	1	09/06/17	MB	n/a	n/a	GGA1913

The QC reported here applies to the following samples: **Method:** SW846 8015B

D97453-1, D97453-2

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-GRO (C6-C10)	110	121	110	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	117%	60-140%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D97453
Account: MULLCOCW Mull Drilling Company Inc.
Project: NWAU #27 Flowline Crude Oil Spill

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D97453-1MS	GA39626.D	1	09/06/17	MB	n/a	n/a	GGA1913
D97453-1MSD	GA39627.D	1	09/06/17	MB	n/a	n/a	GGA1913
D97453-1	GA39625.D	1	09/06/17	MB	n/a	n/a	GGA1913

The QC reported here applies to the following samples: **Method:** SW846 8015B

D97453-1, D97453-2

CAS No.	Compound	D97453-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	Spike mg/kg	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	ND		157	174	111	157	169	108	3	70-131/30

CAS No.	Surrogate Recoveries	MS	MSD	D97453-1	Limits
120-82-1	1,2,4-Trichlorobenzene	112%	115%	103%	60-140%

* = Outside of Control Limits.

GC/LC Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: D97453
Account: MULLCOCW Mull Drilling Company Inc.
Project: NWAU #27 Flowline Crude Oil Spill

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP15460-MB	FI57488.D	1	09/06/17	RB	09/06/17	OP15460	GFI2406

The QC reported here applies to the following samples: **Method:** SW846-8015B

D97453-1, D97453-2

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	10	9.0	mg/kg	

CAS No.	Surrogate Recoveries		Limits
84-15-1	o-Terphenyl	102%	41-134%

Blank Spike Summary

Job Number: D97453
Account: MULLCOCW Mull Drilling Company Inc.
Project: NWAU #27 Flowline Crude Oil Spill

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP15460-BS	FI57490.D	1	09/06/17	RB	09/06/17	OP15460	GFI2406

The QC reported here applies to the following samples: **Method:** SW846-8015B

D97453-1, D97453-2

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	250	189	76	35-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	100%	41-134%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D97453
Account: MULLCOCW Mull Drilling Company Inc.
Project: NWAU #27 Flowline Crude Oil Spill

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP15460-MS	FI57492.D	1	09/06/17	RB	09/06/17	OP15460	GFI2406
OP15460-MSD	FI57494.D	1	09/06/17	RB	09/06/17	OP15460	GFI2406
D97453-1	FI57496.D	1	09/06/17	RB	09/06/17	OP15460	GFI2406

The QC reported here applies to the following samples: **Method:** SW846-8015B

D97453-1, D97453-2

CAS No.	Compound	D97453-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	Spike mg/kg	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	ND		297	178	60	304	119	39	40* [a]	10-171/30

CAS No.	Surrogate Recoveries	MS	MSD	D97453-1	Limits
84-15-1	o-Terphenyl	81%	65%	94%	41-134%

(a) High RPD due to possible sample nonhomogeneity.

* = Outside of Control Limits.