Mountain States ACCUTEST LABORATORIES

08/27/14

Technical Report for

Mull Drilling Company Inc.

W-K #1-27

Accutest Job Number: D60915

Sampling Date: 08/12/14

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: **52**

NELAP ACCREDITED TNI LABORATORY

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 Berrutti 303-425-6021

Certifications: CO (CO00049), ID, NE (CO00049), ND (R-027), NJ (CO 0007), OK (D9942), UT (NELAP CO00049), TX (T104704511)

Sections: 1 2 3 4 5 6 7 8 9 10

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# Sample Summary

Mull Drilling Company Inc.

W-K #1-27

**Job No:** D60915

| Sample Number | Collected Date | Time | By | Received | Matrix Code | Type | Client Sample ID |
|---|---|---|---|---|---|---|---|
| D60915-1 | 08/12/14 | 14:00 | CS | 08/13/14 | AQ | Water | STOCK WELL WATER RECEIPT: 0100682 PERMIT:103701 |
| D60915-1F | 08/12/14 | 14:00 | CS | 08/13/14 | AQ | Water Filtered | STOCK WELL WATER RECEIPT: 0100682 PERMIT:103701 |

# CASE NARRATIVE / CONFORMANCE SUMMARY

| | | | |
|---|---|---|---|
| **Client:** | Mull Drilling Company Inc. | **Job No** | D60915 |
| **Site:** | W-K #1-27 | **Report Date** | 8/27/2014 3:34:30 PM |

On 08/13/2014, 1 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 5.8 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D60915 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:** AQ **Batch ID:** V7V1520

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D60914-12DUP, D60914-13MS, D60914-12DUP were used as the QC samples indicated.
- The duplicate RPD(s) for Xylene (total) are outside control limits for sample D60914-12DUP. Probable cause due to sample homogeneity.
- D60914-12DUP: The pH of the sample aliquot for VOA analysis was >2 at time of analysis.
- D60914-13MS: The pH of the sample aliquot for VOA analysis was >2 at time of analysis.
- D60914-12DUP for Xylene (total): Outside control limits due to possible matrix interference.

## Volatiles by GC By Method RSK175 MOD

**Matrix:** AQ **Batch ID:** GFB550

- All samples were analyzed within the recommended method holding time.
- Sample(s) D60761-1MS, D60761-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

## Volatiles by GC By Method SW846 8015B

**Matrix:** AQ **Batch ID:** GGA1284

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D60915-1MS, D60915-1MSD were used as the QC samples indicated.

## Extractables by GC By Method SW846-8015B

**Matrix:** AQ **Batch ID:** OP10439

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) D60516-22MS, D60516-22MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

## Metals By Method EPA 200.7

**Matrix:** AQ **Batch ID:** MP13722

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D60998-2MS, D60998-2MSD were used as the QC samples for the metals analysis.

## Metals By Method EPA 200.8

**Matrix:** AQ **Batch ID:** MP13720

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D60857-1FMS, D60857-1FMSD were used as the QC samples for the metals analysis.

## Wet Chemistry By Method EPA 300.0/SW846 9056

**Matrix:** AQ **Batch ID:** GP13283

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D60963-5MS, D60963-5MSD were used as the QC samples for the Bromide, Chloride, Nitrogen, Nitrate, Nitrogen, Nitrite, Sulfate, Bromide analysis.

## Wet Chemistry By Method HACH IRB-BART

**Matrix:** AQ **Batch ID:** MB409

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

## Wet Chemistry By Method HACH SLYM-BART

**Matrix:** AQ **Batch ID:** MB410

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

## Wet Chemistry By Method HACH SRB-BART

**Matrix:** AQ **Batch ID:** MB411

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

## Wet Chemistry By Method HACH8190/SM4500P-B/E

**Matrix:** AQ **Batch ID:** GP13343

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D60943-1DUP, D60943-1MS, D60943-1MSD were used as the QC samples for the Phosphorus, Total analysis.

## Wet Chemistry By Method SM 2320B-2011

**Matrix:** AQ **Batch ID:** GN26022

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D60915-1MS, D60915-1MSD were used as the QC samples for the Alkalinity, Total as CaCO3 analysis.

**Matrix:** AQ **Batch ID:** GN26028

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

**Matrix:** AQ **Batch ID:** GN26029

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

## Wet Chemistry By Method SM 2510B-2011

**Matrix:** AQ **Batch ID:** GP13319

- Sample(s) D60922-1DUP were used as the QC samples for the Specific Conductivity analysis.

## Wet Chemistry By Method SM 2540C-2011

**Matrix:** AQ **Batch ID:** GN26047

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D60961-2DUP were used as the QC samples for the Solids, Total Dissolved analysis.

## Wet Chemistry By Method SM4500HB+-2011/9040C

**Matrix:** AQ **Batch ID:** GN26015

- The following samples were run outside of holding time for method SM4500HB+-2011/9040C: D60915-1 Analysis performed past the required 15 minutes from collection time/holding time.

AMS 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.

AMS 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 AMS indicated via signature on the report cover.

# Summary of Hits



**Job Number:** D60915
**Account:** Mull Drilling Company Inc.
**Project:** W-K #1-27
**Collected:** 08/12/14



| Lab Sample ID / Analyte | Client Sample ID | Result/ Qual | RL | MDL | Units | Method |
|---|---|---|---|---|---|---|
| **D60915-1** | **STOCK WELL WATER RECEIPT:0100682 PERMIT:103701** | | | | | |
| Alkalinity, Bicarbonate as CaCO3 | | 153 | 5.0 | | mg/l | SM 2320B-2011 |
| Alkalinity, Total as CaCO3 | | 153 | 5.0 | | mg/l | SM 2320B-2011 |
| Bromide | | 0.084 | 0.050 | | mg/l | EPA 300.0/SW846 9056 |
| Chloride | | 5.5 | 0.50 | | mg/l | EPA 300.0/SW846 9056 |
| Iron Reducing Bacteria | | 9000 | 25 | | CFU/ml | HACH IRB-BART |
| Nitrogen, Nitrate | | 3.0 | 0.10 | | mg/l | EPA 300.0/SW846 9056 |
| Phosphorus, Total | | 0.027 | 0.010 | | mg/l | HACH8190/SM4500P-B/E |
| Slime Forming Bacteria | | 66500 | 500 | | CFU/ml | HACH SLYM-BART |
| Solids, Total Dissolved | | 232 | 10 | | mg/l | SM 2540C-2011 |
| Specific Conductivity | | 268 | 1.0 | | umhos/cm | SM 2510B-2011 |
| Sulfate | | 11.4 | 0.50 | | mg/l | EPA 300.0/SW846 9056 |
| Sulfate Reducing Bacteria | | 700 | 200 | | CFU/ml | HACH SRB-BART |
| pH [a] | | 7.72 | | | su | SM4500HB+-2011/9040C |
| **D60915-1F** | **STOCK WELL WATER RECEIPT:0100682 PERMIT:103701** | | | | | |
| Barium | | 155 | 4.0 | | ug/l | EPA 200.8 |
| Boron | | 69.1 | 50 | | ug/l | EPA 200.7 |
| Calcium | | 30900 | 400 | | ug/l | EPA 200.7 |
| Iron | | 35.5 | 10 | | ug/l | EPA 200.7 |
| Magnesium | | 13200 | 200 | | ug/l | EPA 200.7 |
| Potassium | | 5130 | 1000 | | ug/l | EPA 200.7 |
| Selenium | | 1.7 | 0.80 | | ug/l | EPA 200.8 |
| Sodium | | 23100 | 400 | | ug/l | EPA 200.7 |
| Strontium | | 584 | 5.0 | | ug/l | EPA 200.7 |

(a) Analysis performed past the required 15 minutes from collection time/holding time.

Mountain States ACCUTEST LABORATORIES



## Sample Results

Report of Analysis

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | STOCK WELL WATER RECEIPT:0100682 PERMIT:103701 | | |
| **Lab Sample ID:** | D60915-1 | **Date Sampled:** | 08/12/14 |
| **Matrix:** | AQ - Water | **Date Received:** | 08/13/14 |
| **Method:** | SW846 8260B | **Percent Solids:** | n/a |
| **Project:** | W-K #1-27 | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | 7V27841.D | 1 | 08/14/14 | JL | n/a | n/a | V7V1520 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

**Purgeable Aromatics**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 71-43-2 | Benzene | ND | 1.0 | 0.25 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.80 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.31 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 2.0 | 0.89 | ug/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 17060-07-0 | 1,2-Dichloroethane-D4 | 94% | | 62-130% |
| 2037-26-5 | Toluene-D8 | 97% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 95% | | 69-130% |

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:** STOCK WELL WATER RECEIPT:0100682 PERMIT:103701
**Lab Sample ID:** D60915-1
**Matrix:** AQ - Water
**Method:** SW846 8015B
**Project:** W-K #1-27

**Date Sampled:** 08/12/14
**Date Received:** 08/13/14
**Percent Solids:** n/a

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | GA23015.D | 1 | 08/15/14 | EP | n/a | n/a | GGA1284 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (C6-C10) | ND | 0.050 | 0.050 | mg/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 120-82-1 | 1,2,4-Trichlorobenzene | 98% | | 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:** | STOCK WELL WATER RECEIPT:0100682 PERMIT:103701 | | |
| **Lab Sample ID:** | D60915-1 | **Date Sampled:** | 08/12/14 |
| **Matrix:** | AQ - Water | **Date Received:** | 08/13/14 |
| **Method:** | RSK175 MOD | **Percent Solids:** | n/a |
| **Project:** | W-K #1-27 | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | FB11836.D | 1 | 08/14/14 | JJ | n/a | n/a | GFB550 |
| Run #2 | | | | | | | |

| | Initial Volume | Headspace Volume | Volume Injected | Temperature |
|---|---|---|---|---|
| Run #1 | 39.0 ml | 4.0 ml | 500 ul | 19.0 Deg. C |
| Run #2 | | | | |

**Methane, Ethane and Propane**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 74-82-8 | Methane | ND | 0.00080 | 0.00040 | mg/l | |
| 74-84-0 | Ethane | ND | 0.0016 | 0.00080 | mg/l | |
| 74-98-6 | Propane | ND | 0.0022 | 0.0011 | mg/l | |

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:** STOCK WELL WATER RECEIPT:0100682 PERMIT:103701
**Lab Sample ID:** D60915-1 **Date Sampled:** 08/12/14
**Matrix:** AQ - Water **Date Received:** 08/13/14
**Method:** SW846-8015B SW846 3510C **Percent Solids:** n/a
**Project:** W-K #1-27

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | FH024633.D | 1 | 08/18/14 | JJ | 08/18/14 | OP10439 | GFH1111 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 1050 ml | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-DRO (C10-C28) | ND | 0.19 | 0.17 | mg/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 84-15-1 | o-Terphenyl | 98% | | 10-130% |

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:** STOCK WELL WATER RECEIPT:0100682 PERMIT:103701
**Lab Sample ID:** D60915-1
**Matrix:** AQ - Water
**Project:** W-K #1-27

**Date Sampled:** 08/12/14
**Date Received:** 08/13/14
**Percent Solids:** n/a

**General Chemistry**

| Analyte | Result | RL | Units | DF | Analyzed | By | Method |
|---|---|---|---|---|---|---|---|
| Alkalinity, Bicarbonate as CaC | 153 | 5.0 | mg/l | 1 | 08/15/14 | JD | SM 2320B-2011 |
| Alkalinity, Carbonate | < 5.0 | 5.0 | mg/l | 1 | 08/15/14 | JD | SM 2320B-2011 |
| Alkalinity, Total as CaCO3 | 153 | 5.0 | mg/l | 1 | 08/15/14 | JD | SM 2320B-2011 |
| Bromide | 0.084 | 0.050 | mg/l | 1 | 08/14/14 10:44 | JB | EPA 300.0/SW846 9056 |
| Chloride | 5.5 | 0.50 | mg/l | 1 | 08/14/14 10:44 | JB | EPA 300.0/SW846 9056 |
| Iron Reducing Bacteria | 9000 | 25 | CFU/ml | 1 | 08/18/14 | MM | HACH IRB-BART |
| Nitrogen, Nitrate | 3.0 | 0.10 | mg/l | 10 | 08/14/14 18:34 | JB | EPA 300.0/SW846 9056 |
| Nitrogen, Nitrite | < 0.0040 | 0.0040 | mg/l | 1 | 08/14/14 10:44 | JB | EPA 300.0/SW846 9056 |
| Phosphorus, Total | 0.027 | 0.010 | mg/l | 1 | 08/21/14 | BF | HACH8190/SM4500P-B/E |
| Slime Forming Bacteria | 66500 | 500 | CFU/ml | 1 | 08/18/14 | MM | HACH SLYM-BART |
| Solids, Total Dissolved | 232 | 10 | mg/l | 1 | 08/18/14 | BF | SM 2540C-2011 |
| Specific Conductivity | 268 | 1.0 | umhos/cm | 1 | 08/19/14 | JD | SM 2510B-2011 |
| Sulfate | 11.4 | 0.50 | mg/l | 1 | 08/14/14 10:44 | JB | EPA 300.0/SW846 9056 |
| Sulfate Reducing Bacteria | 700 | 200 | CFU/ml | 1 | 08/18/14 | MM | HACH SRB-BART |
| pH [a] | 7.72 | | su | 1 | 08/14/14 13:30 | AK | SM4500HB+-2011/9040C |

(a) Analysis performed past the required 15 minutes from collection time/holding time.

RL = Reporting Limit

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | STOCK WELL WATER RECEIPT:0100682 PERMIT:103701 | | |
| **Lab Sample ID:** | D60915-1F | **Date Sampled:** | 08/12/14 |
| **Matrix:** | AQ - Water Filtered | **Date Received:** | 08/13/14 |
| | | **Percent Solids:** | n/a |
| **Project:** | W-K #1-27 | | |

**Dissolved Metals Analysis**

| Analyte | Result | RL | Units | DF | Prep | Analyzed | By | Method | Prep Method |
|---|---|---|---|---|---|---|---|---|---|
| Barium | 155 | 4.0 | ug/l | 2 | 08/15/14 | 08/27/14 | JB | EPA 200.8 [3] | EPA 200.8 [4] |
| Boron | 69.1 | 50 | ug/l | 1 | 08/15/14 | 08/19/14 | JB | EPA 200.7 [1] | EPA 200.7 [5] |
| Calcium | 30900 | 400 | ug/l | 1 | 08/15/14 | 08/19/14 | JB | EPA 200.7 [1] | EPA 200.7 [5] |
| Iron | 35.5 | 10 | ug/l | 1 | 08/15/14 | 08/19/14 | JB | EPA 200.7 [1] | EPA 200.7 [5] |
| Magnesium | 13200 | 200 | ug/l | 1 | 08/15/14 | 08/19/14 | JB | EPA 200.7 [1] | EPA 200.7 [5] |
| Manganese | < 5.0 | 5.0 | ug/l | 1 | 08/15/14 | 08/19/14 | JB | EPA 200.7 [1] | EPA 200.7 [5] |
| Potassium | 5130 | 1000 | ug/l | 1 | 08/15/14 | 08/19/14 | JB | EPA 200.7 [1] | EPA 200.7 [5] |
| Selenium | 1.7 | 0.80 | ug/l | 2 | 08/15/14 | 08/27/14 | JB | EPA 200.8 [3] | EPA 200.8 [4] |
| Sodium | 23100 | 400 | ug/l | 1 | 08/15/14 | 08/19/14 | JB | EPA 200.7 [2] | EPA 200.7 [5] |
| Strontium | 584 | 5.0 | ug/l | 1 | 08/15/14 | 08/19/14 | JB | EPA 200.7 [1] | EPA 200.7 [5] |

(1) Instrument QC Batch: MA5126
(2) Instrument QC Batch: MA5131
(3) Instrument QC Batch: MA5168
(4) Prep QC Batch: MP13720
(5) Prep QC Batch: MP13722

RL = Reporting Limit

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## Misc. Forms

# Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

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# CHAIN OF CUSTODY

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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 #
Accutest Quote # | Accutest Job # D60915

**Client / Reporting Information**

Company Name: Mull Drilling Company Inc.
Street Address: 44047 Co. Rd T PO Box 393
City: Cheyenne Wells State: Co. Zip: 80810
Project Contact: C. Smalley E-mail: csmalley@mulldrilling.com
Phone #: 719-767-8805 Fax #: 8994
Sampler(s) Name(s): Carl Smalley Phone #: 342-1812

**Project Information**

Project Name: W-K #1-27
Street:
City:
Project#:
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)**

**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 | LAB USE ONLY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Stock Well Water | | | | | | | | | | | | | | | | 01 |
| | Receipt: 0100682 | | 8/12/14 | 1400 hrs. | CDS | | 17 | 2 | | | | | 1 | | | | 02 TB |
| | Permit: 103701-- | | | | | | | | | | | | | | | | |

SEE Attachment
Project: 609 Rule
Sampling -
COGCC

8/13/14
8/13/14

**Data Deliverable Information**

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

- 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 | Carl Smalley | 8/13/14 15:10 | 1 | 2 | | 2 |
| 3 | Relinquished by Sampler: | Date Time: | Received By: 3 | Relinquished By: 4 | Date Time: | Received By: 4 |
| 5 | Relinquished by: | Date Time: | Received By: 5 | Custody Seal # ☐ Intact ☐ Not Intact | Preserved where applicable | On Ice ✓ Cooler Temp. 8 8 |

**D60915: Chain of Custody**
**Page 1 of 1**

Mountain States ACCUTEST LABORATORIES

## GC/MS 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:** D60915
**Account:** MULLCOCW Mull Drilling Company Inc.
**Project:** W-K #1-27

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| V7V1520-MB | 7V27829.D | 1 | 08/14/14 | JL | n/a | n/a | V7V1520 |

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

D60915-1

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 71-43-2 | Benzene | ND | 1.0 | 0.25 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.31 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.80 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 2.0 | 0.89 | ug/l | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 17060-07-0 | 1,2-Dichloroethane-D4 | 93% | 62-130% |
| 2037-26-5 | Toluene-D8 | 96% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 96% | 69-130% |

# Blank Spike Summary



**Job Number:** D60915
**Account:** MULLCOCW Mull Drilling Company Inc.
**Project:** W-K #1-27

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| V7V1520-BS | 7V27830.D | 1 | 08/14/14 | JL | n/a | n/a | V7V1520 |

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

D60915-1

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | Limits |
|---|---|---|---|---|---|
| 71-43-2 | Benzene | 50 | 49.7 | 99 | 70-130 |
| 100-41-4 | Ethylbenzene | 50 | 50.0 | 100 | 70-130 |
| 108-88-3 | Toluene | 50 | 49.8 | 100 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 154 | 103 | 70-130 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 17060-07-0 | 1,2-Dichloroethane-D4 | 96% | 62-130% |
| 2037-26-5 | Toluene-D8 | 96% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 95% | 69-130% |

* = Outside of Control Limits.

# Blank Spike Summary



**Job Number:** D60915
**Account:** MULLCOCW Mull Drilling Company Inc.
**Project:** W-K #1-27

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| V7V1520-BS | 7V27831.D | 1 | 08/14/14 | JL | n/a | n/a | V7V1520 |

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

D60915-1

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | Limits |
|---|---|---|---|---|---|

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 17060-07-0 | 1,2-Dichloroethane-D4 | 92% | 62-130% |
| 2037-26-5 | Toluene-D8 | 96% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 94% | 69-130% |

* = Outside of Control Limits.

# Matrix Spike Summary



**Job Number:** D60915
**Account:** MULLCOCW Mull Drilling Company Inc.
**Project:** W-K #1-27

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| D60914-13MS [a] | 7V27833.D | 10 | 08/14/14 | JL | n/a | n/a | V7V1520 |
| D60914-13 [a] | 7V27832.D | 1 | 08/14/14 | JL | n/a | n/a | V7V1520 |
| D60914-13 [a] | 7V27835.D | 10 | 08/14/14 | JL | n/a | n/a | V7V1520 |

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

D60915-1

| CAS No. | Compound | D60914-13 ug/l | Q | Spike ug/l | MS ug/l | MS % | Limits |
|---|---|---|---|---|---|---|---|
| 71-43-2 | Benzene | 38.9 | | 500 | 502 | 94 | 62-130 |
| 100-41-4 | Ethylbenzene | 43.4 | | 500 | 532 | 102 | 63-130 |
| 108-88-3 | Toluene | 41.0 | | 500 | 505 | 94 | 60-130 |
| 1330-20-7 | Xylene (total) | 2710 [b] | | 1500 | 4210 | 100 | 67-130 |

| CAS No. | Surrogate Recoveries | MS | D60914-13 | D60914-13 | Limits |
|---|---|---|---|---|---|
| 17060-07-0 | 1,2-Dichloroethane-D4 | 95% | 93% | 93% | 62-130% |
| 2037-26-5 | Toluene-D8 | 96% | 97% | 96% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 93% | 93% | 95% | 69-130% |

(a) The pH of the sample aliquot for VOA analysis was > 2 at time of analysis.
(b) Result is from Run #2.

* = Outside of Control Limits.

# Matrix Spike Summary



**Job Number:** D60915
**Account:** MULLCOCW Mull Drilling Company Inc.
**Project:** W-K #1-27

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| D60914-13MS [a] | 7V27834.D | 10 | 08/14/14 | JL | n/a | n/a | V7V1520 |
| D60914-13 [a] | 7V27835.D | 10 | 08/14/14 | JL | n/a | n/a | V7V1520 |

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

D60915-1

| CAS No. | Compound | D60914-13 ug/l | Q | Spike ug/l | MS ug/l | MS % | Limits |
|---|---|---|---|---|---|---|---|

| CAS No. | Surrogate Recoveries | MS | D60914-13 | Limits |
|---|---|---|---|---|
| 17060-07-0 | 1,2-Dichloroethane-D4 | 93% | 93% | 62-130% |
| 2037-26-5 | Toluene-D8 | 96% | 96% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 94% | 95% | 69-130% |

(a) The pH of the sample aliquot for VOA analysis was > 2 at time of analysis.

* = Outside of Control Limits.

# Duplicate Summary



**Job Number:** D60915
**Account:** MULLCOCW Mull Drilling Company Inc.
**Project:** W-K #1-27

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| D60914-12DUP [a] | 7V27837.D | 20 | 08/14/14 | JL | n/a | n/a | V7V1520 |
| D60914-12 [a] | 7V27836.D | 20 | 08/14/14 | JL | n/a | n/a | V7V1520 |

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

D60915-1

| CAS No. | Compound | D60914-12 ug/l | Q | DUP ug/l | Q | RPD | Limits |
|---|---|---|---|---|---|---|---|
| 71-43-2 | Benzene | ND | | ND | | nc | 30 |
| 100-41-4 | Ethylbenzene | ND | | ND | | nc | 30 |
| 108-88-3 | Toluene | ND | | ND | | nc | 30 |
| 1330-20-7 | Xylene (total) | 26.3 | J | ND | | 200* [b] | 30 |

| CAS No. | Surrogate Recoveries | DUP | D60914-12 | Limits |
|---|---|---|---|---|
| 17060-07-0 | 1,2-Dichloroethane-D4 | 92% | 93% | 62-130% |
| 2037-26-5 | Toluene-D8 | 95% | 95% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 94% | 94% | 69-130% |

(a) The pH of the sample aliquot for VOA analysis was > 2 at time of analysis.
(b) Outside control limits due to possible matrix interference.

* = Outside of Control Limits.

Mountain States ACCUTEST LABORATORIES

## 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:** D60915
**Account:** MULLCOCW Mull Drilling Company Inc.
**Project:** W-K #1-27

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GGA1284-MB | GA23013.D | 1 | 08/15/14 | EP | n/a | n/a | GGA1284 |

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

D60915-1

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (C6-C10) | ND | 0.050 | 0.050 | mg/l | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 120-82-1 | 1,2,4-Trichlorobenzene | 100% | 60-140% |

# Method Blank Summary



**Job Number:** D60915
**Account:** MULLCOCW Mull Drilling Company Inc.
**Project:** W-K #1-27

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GFB550-MB | FB11825.D | 1 | 08/14/14 | JJ | n/a | n/a | GFB550 |

**The QC reported here applies to the following samples:** **Method:** RSK175 MOD

D60915-1

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 74-82-8 | Methane | ND | 0.00080 | 0.00040 | mg/l | |
| 74-84-0 | Ethane | ND | 0.0016 | 0.00080 | mg/l | |
| 74-98-6 | Propane | ND | 0.0022 | 0.0011 | mg/l | |

# Blank Spike Summary



**Job Number:** D60915
**Account:** MULLCOCW Mull Drilling Company Inc.
**Project:** W-K #1-27

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GGA1284-BS | GA23014.D | 1 | 08/15/14 | EP | n/a | n/a | GGA1284 |

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

D60915-1

| CAS No. | Compound | Spike mg/l | BSP mg/l | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH-GRO (C6-C10) | 2.2 | 2.06 | 94 | 70-130 |

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

* = Outside of Control Limits.

# Blank Spike Summary



**Job Number:** D60915
**Account:** MULLCOCW Mull Drilling Company Inc.
**Project:** W-K #1-27

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GFB550-BS | FB11826.D | 10 | 08/14/14 | JJ | n/a | n/a | GFB550 |

**The QC reported here applies to the following samples:** **Method:** RSK175 MOD

D60915-1

| CAS No. | Compound | Spike mg/l | BSP mg/l | BSP % | Limits |
|---|---|---|---|---|---|
| 74-82-8 | Methane | 0.51 | 0.603 | 118 | 70-130 |
| 74-84-0 | Ethane | 0.956 | 1.16 | 121 | 70-130 |
| 74-98-6 | Propane | 1.4 | 1.75 | 125 | 67-130 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



**Job Number:** D60915
**Account:** MULLCOCW Mull Drilling Company Inc.
**Project:** W-K #1-27

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| D60915-1MS | GA23016.D | 1 | 08/15/14 | EP | n/a | n/a | GGA1284 |
| D60915-1MSD | GA23017.D | 1 | 08/15/14 | EP | n/a | n/a | GGA1284 |
| D60915-1 | GA23015.D | 1 | 08/15/14 | EP | n/a | n/a | GGA1284 |

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

D60915-1



| CAS No. | Compound | D60915-1 mg/l | Q | Spike mg/l | MS mg/l | MS % | Spike mg/l | MSD mg/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | TPH-GRO (C6-C10) | ND | | 2.2 | 2.07 | 94 | 2.2 | 2.05 | 93 | 1 | 70-130/30 |

| CAS No. | Surrogate Recoveries | MS | MSD | D60915-1 | Limits |
|---|---|---|---|---|---|
| 120-82-1 | 1,2,4-Trichlorobenzene | | 106% | | 60-140% |
| 120-82-1 | 1,2,4-Trichlorobenzene | 104% | 106% | 98% | 60-140% |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



**Job Number:** D60915
**Account:** MULLCOCW Mull Drilling Company Inc.
**Project:** W-K #1-27

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| D60761-1MS | FB11828.D | 10 | 08/14/14 | JJ | n/a | n/a | GFB550 |
| D60761-1MSD | FB11829.D | 10 | 08/14/14 | JJ | n/a | n/a | GFB550 |
| D60761-1 | FB11827.D | 1 | 08/14/14 | JJ | n/a | n/a | GFB550 |

**The QC reported here applies to the following samples:** **Method:** RSK175 MOD

D60915-1



| CAS No. | Compound | D60761-1 mg/l | Q | Spike mg/l | MS mg/l | MS % | Spike mg/l | MSD mg/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 74-82-8 | Methane | ND | | 0.51 | 0.529 | 104 | 0.51 | 0.552 | 108 | 4 | 51-155/30 |
| 74-84-0 | Ethane | ND | | 0.956 | 1.02 | 107 | 0.956 | 1.07 | 112 | 5 | 58-130/30 |
| 74-98-6 | Propane | ND | | 1.4 | 1.51 | 108 | 1.4 | 1.61 | 115 | 6 | 46-130/30 |

* = Outside of Control Limits.

Mountain States ACCUTEST LABORATORIES

## GC 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:** D60915
**Account:** MULLCOCW Mull Drilling Company Inc.
**Project:** W-K #1-27

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP10439-MB | FH024622.D | 1 | 08/18/14 | JJ | 08/18/14 | OP10439 | GFH1112 |

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

D60915-1

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-DRO (C10-C28) | ND | 0.20 | 0.18 | mg/l | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 84-15-1 | o-Terphenyl | 65% | 10-130% |

# Blank Spike Summary



**Job Number:** D60915
**Account:** MULLCOCW Mull Drilling Company Inc.
**Project:** W-K #1-27

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP10439-BS | FH024624.D | 1 | 08/18/14 | JJ | 08/18/14 | OP10439 | GFH1112 |

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

D60915-1

| CAS No. | Compound | Spike mg/l | BSP mg/l | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH-DRO (C10-C28) | 5 | 2.61 | 52 | 33-130 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 84-15-1 | o-Terphenyl | 72% | 10-130% |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



**Job Number:** D60915
**Account:** MULLCOCW Mull Drilling Company Inc.
**Project:** W-K #1-27

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP10439-MS | FH024626.D | 1 | 08/18/14 | JJ | 08/18/14 | OP10439 | GFH1112 |
| OP10439-MSD | FH024628.D | 1 | 08/18/14 | JJ | 08/18/14 | OP10439 | GFH1112 |
| D60516-22 | FH024630.D | 1 | 08/18/14 | JJ | 08/18/14 | OP10439 | GFH1112 |

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

D60915-1

| CAS No. | Compound | D60516-22 mg/l | Q | Spike mg/l | MS mg/l | MS % | Spike mg/l | MSD mg/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | TPH-DRO (C10-C28) | ND | | 5 | 2.52 | 50 | 5 | 2.17 | 43 | 15 | 33-130/30 |

| CAS No. | Surrogate Recoveries | MS | MSD | D60516-22 | Limits |
|---|---|---|---|---|---|
| 84-15-1 | o-Terphenyl | 68% | 58% | 69% | 10-130% |

* = Outside of Control Limits.

Mountain States ACCUTEST LABORATORIES

## Metals Analysis

# QC Data Summaries



Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D60915
Account: MULLCOCW - Mull Drilling Company Inc.
Project: W-K #1-27

QC Batch ID: MP13720
Matrix Type: AQUEOUS

Methods: EPA 200.8
Units: ug/l

Prep Date: 08/15/14

| Metal | RL | IDL | MDL | MB raw | final |
|---|---|---|---|---|---|
| Aluminum | 50 | 1.1 | 2 | | |
| Antimony | 0.40 | .0022 | .011 | | |
| Arsenic | 0.20 | .017 | .044 | | |
| Barium | 2.0 | .016 | .079 | 0.12 | <2.0 |
| Beryllium | 0.20 | .016 | .069 | | |
| Boron | 40 | .49 | 2.1 | | |
| Cadmium | 0.10 | .036 | .042 | | |
| Calcium | 400 | 5.6 | 12 | | |
| Chromium | 2.0 | .053 | .053 | | |
| Cobalt | 0.20 | .0049 | .015 | | |
| Copper | 2.0 | .06 | .13 | | |
| Iron | 10 | 3.5 | 4.6 | | |
| Lead | 0.50 | .0079 | .008 | | |
| Magnesium | 100 | 1.3 | 1.3 | | |
| Manganese | 1.0 | .12 | .13 | | |
| Molybdenum | 1.0 | .049 | .029 | | |
| Nickel | 2.0 | .0088 | .027 | | |
| Phosphorus | 60 | 2.6 | 4.3 | | |
| Potassium | 200 | 2.9 | 2.9 | | |
| Selenium | 0.40 | .06 | .21 | -0.066 | <0.40 |
| Silver | 0.10 | .0019 | .008 | | |
| Sodium | 500 | 4.9 | 4.9 | | |
| Strontium | 20 | .01 | .015 | | |
| Thallium | 0.20 | .0024 | .005 | | |
| Tin | 10 | .063 | 1.3 | | |
| Titanium | 2.0 | .059 | .092 | | |
| Uranium | 0.20 | .0017 | .002 | | |
| Vanadium | 1.0 | .037 | .2 | | |
| Zinc | 10 | .21 | .96 | | |

Associated samples MP13720: D60915-1F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D60915
Account: MULLCOCW - Mull Drilling Company Inc.
Project: W-K #1-27

QC Batch ID: MP13720
Matrix Type: AQUEOUS

Methods: EPA 200.8
Units: ug/l

Prep Date: 08/15/14

| Metal | D60857-1F Original | MS | Spikelot ICPALL2 | % Rec | QC Limits |
|---|---|---|---|---|---|
| Aluminum | | | | | |
| Antimony | anr | | | | |
| Arsenic | anr | | | | |
| Barium | 34.8 | 429 | 400 | 98.6 | 70-130 |
| Beryllium | anr | | | | |
| Boron | | | | | |
| Cadmium | anr | | | | |
| Calcium | | | | | |
| Chromium | anr | | | | |
| Cobalt | | | | | |
| Copper | anr | | | | |
| Iron | anr | | | | |
| Lead | anr | | | | |
| Magnesium | | | | | |
| Manganese | | | | | |
| Molybdenum | anr | | | | |
| Nickel | anr | | | | |
| Phosphorus | | | | | |
| Potassium | | | | | |
| Selenium | 0.75 | 196 | 200 | 97.6 | 70-130 |
| Silver | anr | | | | |
| Sodium | | | | | |
| Strontium | | | | | |
| Thallium | | | | | |
| Tin | | | | | |
| Titanium | | | | | |
| Uranium | | | | | |
| Vanadium | | | | | |
| Zinc | anr | | | | |

Associated samples MP13720: D60915-1F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D60915
Account: MULLCOCW - Mull Drilling Company Inc.
Project: W-K #1-27

QC Batch ID: MP13720 Methods: EPA 200.8
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 08/15/14

| Metal | D60857-1F Original | MSD | Spikelot ICPALL2 | % Rec | MSD RPD | QC Limit |
|---|---|---|---|---|---|---|
| Aluminum | | | | | | |
| Antimony | anr | | | | | |
| Arsenic | anr | | | | | |
| Barium | 34.8 | 429 | 400 | 98.6 | 0.0 | 20 |
| Beryllium | anr | | | | | |
| Boron | | | | | | |
| Cadmium | anr | | | | | |
| Calcium | | | | | | |
| Chromium | anr | | | | | |
| Cobalt | | | | | | |
| Copper | anr | | | | | |
| Iron | anr | | | | | |
| Lead | anr | | | | | |
| Magnesium | | | | | | |
| Manganese | | | | | | |
| Molybdenum | anr | | | | | |
| Nickel | anr | | | | | |
| Phosphorus | | | | | | |
| Potassium | | | | | | |
| Selenium | 0.75 | 194 | 200 | 96.6 | 1.0 | 20 |
| Silver | anr | | | | | |
| Sodium | | | | | | |
| Strontium | | | | | | |
| Thallium | | | | | | |
| Tin | | | | | | |
| Titanium | | | | | | |
| Uranium | | | | | | |
| Vanadium | | | | | | |
| Zinc | anr | | | | | |

Associated samples MP13720: D60915-1F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D60915
Account: MULLCOCW - Mull Drilling Company Inc.
Project: W-K #1-27

QC Batch ID: MP13720
Matrix Type: AQUEOUS

Methods: EPA 200.8
Units: ug/l

Prep Date: 08/15/14

| Metal | BSP Result | Spikelot ICPALL2 | % Rec | QC Limits |
|---|---|---|---|---|
| Aluminum | | | | |
| Antimony | anr | | | |
| Arsenic | anr | | | |
| Barium | 383 | 400 | 95.8 | 85-115 |
| Beryllium | anr | | | |
| Boron | | | | |
| Cadmium | anr | | | |
| Calcium | | | | |
| Chromium | anr | | | |
| Cobalt | | | | |
| Copper | anr | | | |
| Iron | anr | | | |
| Lead | anr | | | |
| Magnesium | | | | |
| Manganese | | | | |
| Molybdenum | anr | | | |
| Nickel | anr | | | |
| Phosphorus | | | | |
| Potassium | | | | |
| Selenium | 203 | 200 | 101.5 | 85-115 |
| Silver | anr | | | |
| Sodium | | | | |
| Strontium | | | | |
| Thallium | | | | |
| Tin | | | | |
| Titanium | | | | |
| Uranium | | | | |
| Vanadium | | | | |
| Zinc | anr | | | |

Associated samples MP13720: D60915-1F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D60915
Account: MULLCOCW - Mull Drilling Company Inc.
Project: W-K #1-27

QC Batch ID: MP13722
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date: 08/15/14

| Metal | RL | IDL | MDL | MB raw | final |
|---|---|---|---|---|---|
| Aluminum | 100 | 8.6 | 11 | | |
| Antimony | 30 | 3.2 | 21 | | |
| Arsenic | 25 | 5.2 | 9 | | |
| Barium | 10 | 1.4 | 1.4 | | |
| Beryllium | 10 | .8 | 1.7 | | |
| Boron | 50 | 6.7 | 6.6 | 4.3 | <50 |
| Cadmium | 10 | .4 | .36 | | |
| Calcium | 400 | 2.2 | 66 | 5.8 | <400 |
| Chromium | 10 | .4 | 1.4 | | |
| Cobalt | 5.0 | .4 | .51 | | |
| Copper | 10 | 1.2 | 1.5 | | |
| Iron | 10 | 2.2 | 3.2 | 1.0 | <10 |
| Lead | 50 | 3.6 | 4.1 | | |
| Lithium | 5.0 | 1.9 | 1.9 | | |
| Magnesium | 200 | 14 | 29 | 6.1 | <200 |
| Manganese | 5.0 | .01 | .29 | 0.70 | <5.0 |
| Molybdenum | 10 | .8 | 1.1 | | |
| Nickel | 30 | .9 | .87 | | |
| Phosphorus | 100 | 15 | 24 | | |
| Potassium | 1000 | 130 | 230 | 10.8 | <1000 |
| Selenium | 50 | 8.8 | 9.3 | | |
| Silicon | 50 | 5.2 | 5.6 | | |
| Silver | 30 | .4 | .4 | | |
| Sodium | 400 | 4.9 | 36 | 6.8 | <400 |
| Strontium | 5.0 | .01 | .12 | 0.0 | <5.0 |
| Thallium | 10 | 2.9 | 4.9 | | |
| Tin | 50 | 13 | 13 | | |
| Titanium | 10 | .15 | .43 | | |
| Uranium | 50 | 3.7 | 3.9 | | |
| Vanadium | 10 | .4 | .39 | | |
| Zinc | 30 | .6 | 1.9 | | |

Associated samples MP13722: D60915-1F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D60915
Account: MULLCOCW - Mull Drilling Company Inc.
Project: W-K #1-27

QC Batch ID: MP13722
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date: 08/15/14

| Metal | RL | IDL | MDL | MB raw | final |
|---|---|---|---|---|---|

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D60915
Account: MULLCOCW - Mull Drilling Company Inc.
Project: W-K #1-27

QC Batch ID: MP13722
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date: 08/15/14

| Metal | D60998-2 Original | MS | Spikelot ICPALL2 | % Rec | QC Limits |
|---|---|---|---|---|---|
| Aluminum | | | | | |
| Antimony | | | | | |
| Arsenic | anr | | | | |
| Barium | | | | | |
| Beryllium | | | | | |
| Boron | 225 | 1290 | 1000 | 106.5 | 70-130 |
| Cadmium | anr | | | | |
| Calcium | 23900 | 48500 | 25000 | 98.4 | 70-130 |
| Chromium | anr | | | | |
| Cobalt | anr | | | | |
| Copper | anr | | | | |
| Iron | 78.2 | 4780 | 5000 | 94.0 | 70-130 |
| Lead | anr | | | | |
| Lithium | | | | | |
| Magnesium | 1530 | 26500 | 25000 | 99.9 | 70-130 |
| Manganese | 3.9 | 480 | 500 | 95.2 | 70-130 |
| Molybdenum | anr | | | | |
| Nickel | anr | | | | |
| Phosphorus | | | | | |
| Potassium | 227000 | 253000 | 25000 | 104.0 | 70-130 |
| Selenium | anr | | | | |
| Silicon | | | | | |
| Silver | anr | | | | |
| Sodium | 96200 | 119000 | 25000 | 91.2 | 70-130 |
| Strontium | 66.6 | 568 | 500 | 100.3 | 70-130 |
| Thallium | | | | | |
| Tin | anr | | | | |
| Titanium | | | | | |
| Uranium | | | | | |
| Vanadium | | | | | |
| Zinc | anr | | | | |

Associated samples MP13722: D60915-1F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D60915
Account: MULLCOCW - Mull Drilling Company Inc.
Project: W-K #1-27

QC Batch ID: MP13722
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date: 08/15/14

| Metal | D60998-2 Original MS | Spikelot ICPALL2 | % Rec | QC Limits |
|---|---|---|---|---|

(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D60915
Account: MULLCOCW - Mull Drilling Company Inc.
Project: W-K #1-27

QC Batch ID: MP13722
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date: 08/15/14

| Metal | D60998-2 Original | MSD | Spikelot ICPALL2 | % Rec | MSD RPD | QC Limit |
|---|---|---|---|---|---|---|
| Aluminum | | | | | | |
| Antimony | | | | | | |
| Arsenic | anr | | | | | |
| Barium | | | | | | |
| Beryllium | | | | | | |
| Boron | 225 | 1320 | 1000 | 109.5 | 2.3 | 20 |
| Cadmium | anr | | | | | |
| Calcium | 23900 | 49300 | 25000 | 101.6 | 1.6 | 20 |
| Chromium | anr | | | | | |
| Cobalt | anr | | | | | |
| Copper | anr | | | | | |
| Iron | 78.2 | 4830 | 5000 | 95.0 | 1.0 | 20 |
| Lead | anr | | | | | |
| Lithium | | | | | | |
| Magnesium | 1530 | 26800 | 25000 | 101.1 | 1.1 | 20 |
| Manganese | 3.9 | 492 | 500 | 97.6 | 2.5 | 20 |
| Molybdenum | anr | | | | | |
| Nickel | anr | | | | | |
| Phosphorus | | | | | | |
| Potassium | 227000 | 258000 | 25000 | 124.0 | 2.0 | 20 |
| Selenium | anr | | | | | |
| Silicon | | | | | | |
| Silver | anr | | | | | |
| Sodium | 96200 | 122000 | 25000 | 103.2 | 2.5 | 20 |
| Strontium | 66.6 | 576 | 500 | 101.9 | 1.4 | 20 |
| Thallium | | | | | | |
| Tin | anr | | | | | |
| Titanium | | | | | | |
| Uranium | | | | | | |
| Vanadium | | | | | | |
| Zinc | anr | | | | | |

Associated samples MP13722: D60915-1F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D60915
Account: MULLCOCW - Mull Drilling Company Inc.
Project: W-K #1-27

QC Batch ID: MP13722 Methods: EPA 200.7
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 08/15/14

| Metal | D60998-2 Original MSD | Spikelot ICPALL2 % Rec | MSD RPD | QC Limit |
|---|---|---|---|---|

(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D60915
Account: MULLCOCW - Mull Drilling Company Inc.
Project: W-K #1-27

QC Batch ID: MP13722
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date: 08/15/14

| Metal | BSP Result | Spikelot ICPALL2 | % Rec | QC Limits |
|---|---|---|---|---|
| Aluminum | | | | |
| Antimony | | | | |
| Arsenic | anr | | | |
| Barium | | | | |
| Beryllium | | | | |
| Boron | 999 | 1000 | 99.9 | 85-115 |
| Cadmium | anr | | | |
| Calcium | 24200 | 25000 | 96.8 | 85-115 |
| Chromium | anr | | | |
| Cobalt | anr | | | |
| Copper | anr | | | |
| Iron | 4710 | 5000 | 94.2 | 85-115 |
| Lead | anr | | | |
| Lithium | | | | |
| Magnesium | 24500 | 25000 | 98.0 | 85-115 |
| Manganese | 478 | 500 | 95.6 | 85-115 |
| Molybdenum | anr | | | |
| Nickel | anr | | | |
| Phosphorus | | | | |
| Potassium | 25700 | 25000 | 102.8 | 85-115 |
| Selenium | anr | | | |
| Silicon | | | | |
| Silver | anr | | | |
| Sodium | 24200 | 25000 | 96.8 | 85-115 |
| Strontium | 489 | 500 | 97.8 | 85-115 |
| Thallium | | | | |
| Tin | anr | | | |
| Titanium | | | | |
| Uranium | | | | |
| Vanadium | | | | |
| Zinc | anr | | | |

Associated samples MP13722: D60915-1F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D60915
Account: MULLCOCW - Mull Drilling Company Inc.
Project: W-K #1-27

QC Batch ID: MP13722
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date: 08/15/14

| Metal | BSP Result | Spikelot ICPALL2 | % Rec | QC Limits |
|---|---|---|---|---|

(anr) Analyte not requested

Mountain States ACCUTEST LABORATORIES

General Chemistry

# QC Data Summaries

Includes the following where applicable:

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

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D60915
Account: MULLCOCW - Mull Drilling Company Inc.
Project: W-K #1-27

| Analyte | Batch ID | RL | MB Result | Units | Spike Amount | BSP Result | BSP %Recov | QC Limits |
|---|---|---|---|---|---|---|---|---|
| Alkalinity, Bicarbonate as CaC | GN26028 | 5.0 | 0.0 | mg/l | 100 | 98.4 | 98.4 | 90-110% |
| Alkalinity, Carbonate | GN26029 | 5.0 | 0.0 | mg/l | 100 | 98.4 | 98.4 | 80-120% |
| Alkalinity, Total as CaCO3 | GN26022 | 5.0 | 0.0 | mg/l | 100 | 98.4 | 98.4 | 90-110% |
| Bromide | GP13283/GN26017 | 0.050 | 0.0 | mg/l | 0.5 | 0.515 | 103.0 | 90-110% |
| Chloride | GP13283/GN26017 | 0.50 | 0.0 | mg/l | 5 | 4.83 | 96.6 | 90-110% |
| Fluoride | GP13283/GN26017 | 0.10 | 0.0 | mg/l | 1 | 1.01 | 101.0 | 90-110% |
| Iron Reducing Bacteria | MB409 | 25 | <25 | CFU/ml | | | | |
| Nitrogen, Nitrate | GP13283/GN26017 | 0.010 | 0.0 | mg/l | 0.1 | 0.101 | 101.0 | 90-110% |
| Nitrogen, Nitrite | GP13283/GN26017 | 0.0040 | 0.0 | mg/l | 0.05 | 0.0475 | 95.0 | 90-110% |
| Phosphorus, Total | GP13343/GN26128 | 0.010 | 0.0 | mg/l | 0.38 | 0.40 | 105.5 | 80-120% |
| Slime Forming Bacteria | MB410 | 500 | <500 | CFU/ml | | | | |
| Solids, Total Dissolved | GN26047 | 10 | 0.0 | mg/l | 400 | 394 | 98.5 | 90-110% |
| Specific Conductivity | GP13319/GN26084 | | | umhos/cm | 98.1 | 101 | 102.9 | 90-110% |
| Sulfate | GP13283/GN26017 | 0.50 | 0.0 | mg/l | 5 | 5.02 | 100.4 | 90-110% |
| Sulfate Reducing Bacteria | MB411 | 200 | <200 | CFU/ml | | | | |
| pH | GN26015 | | | su | 8.00 | 7.96 | 99.5 | 99.1-100.9% |

Associated Samples:
Batch MB409: D60915-1
Batch MB410: D60915-1
Batch MB411: D60915-1
Batch GN26015: D60915-1
Batch GN26022: D60915-1
Batch GN26028: D60915-1
Batch GN26029: D60915-1
Batch GN26047: D60915-1
Batch GP13283: D60915-1
Batch GP13319: D60915-1
Batch GP13343: D60915-1
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D60915
Account: MULLCOCW - Mull Drilling Company Inc.
Project: W-K #1-27

| Analyte | Batch ID | QC Sample | Units | Original Result | DUP Result | RPD | QC Limits |
|---|---|---|---|---|---|---|---|
| Phosphorus, Total | GP13343/GN26128 | D60943-1 | mg/l | 0.14 | 0.15 | 6.9 | 0-20% |
| Solids, Total Dissolved | GN26047 | D60961-2 | mg/l | 967 | 967 | 0.0 | 0-20% |
| Specific Conductivity | GP13319/GN26084 | D60922-1 | umhos/cm | 252 | 255 | 1.2 | 0-20% |

Associated Samples:
Batch GN26022: D60915-1
Batch GN26047: D60915-1
Batch GP13319: D60915-1
Batch GP13343: D60915-1
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D60915
Account: MULLCOCW - Mull Drilling Company Inc.
Project: W-K #1-27

| Analyte | Batch ID | QC Sample | Units | Original Result | Spike Amount | MS Result | %Rec | QC Limits |
|---|---|---|---|---|---|---|---|---|
| Alkalinity, Total as CaCO3 | GN26022 | D60915-1 | mg/l | 153 | 100 | 259 | 106.8 | 80-120% |
| Bromide | GP13283/GN26017 | D60963-5 | mg/l | 0.0 | 0.5 | 0.51 | 102.0 | 80-120% |
| Chloride | GP13283/GN26017 | D60963-5 | mg/l | 3.4 | 5 | 8.3 | 98.0 | 80-120% |
| Fluoride | GP13283/GN26017 | D60963-5 | mg/l | 0.29 | 1 | 1.3 | 101.0 | 80-120% |
| Nitrogen, Nitrate | GP13283/GN26017 | D60963-5 | mg/l | 0.011 | 0.1 | 0.11 | 99.0 | 80-120% |
| Nitrogen, Nitrite | GP13283/GN26017 | D60963-5 | mg/l | 0.0 | 0.05 | 0.049 | 98.0 | 80-120% |
| Phosphorus, Total | GP13343/GN26128 | D60943-1 | mg/l | 0.14 | 0.40 | 0.55 | 102.5 | 80-120% |
| Sulfate | GP13283/GN26017 | D60963-5 | mg/l | 4.1 | 5 | 9.0 | 98.0 | 80-120% |

Associated Samples:
Batch GN26022: D60915-1
Batch GP13283: D60915-1
Batch GP13343: D60915-1
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D60915
Account: MULLCOCW - Mull Drilling Company Inc.
Project: W-K #1-27

| Analyte | Batch ID | QC Sample | Units | Original Result | Spike Amount | MSD Result | RPD | QC Limit |
|---|---|---|---|---|---|---|---|---|
| Alkalinity, Total as CaCO3 | GN26022 | D60915-1 | mg/l | 153 | 100 | 242 | 7.0 | 20% |
| Bromide | GP13283/GN26017 | D60963-5 | mg/l | 0.0 | 0.5 | 0.52 | 1.9 | 20% |
| Chloride | GP13283/GN26017 | D60963-5 | mg/l | 3.4 | 5 | 8.5 | 2.4 | 20% |
| Fluoride | GP13283/GN26017 | D60963-5 | mg/l | 0.29 | 1 | 1.3 | 0.0 | 20% |
| Nitrogen, Nitrate | GP13283/GN26017 | D60963-5 | mg/l | 0.011 | 0.1 | 0.11 | 0.0 | 20% |
| Nitrogen, Nitrite | GP13283/GN26017 | D60963-5 | mg/l | 0.0 | 0.05 | 0.051 | 4.0 | 20% |
| Phosphorus, Total | GP13343/GN26128 | D60943-1 | mg/l | 0.14 | 0.40 | 0.52 | 5.6 | 20% |
| Sulfate | GP13283/GN26017 | D60963-5 | mg/l | 4.1 | 5 | 9.1 | 1.1 | 20% |

Associated Samples:
Batch GN26022: D60915-1
Batch GP13283: D60915-1
Batch GP13343: D60915-1
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits