The results set forth herein are provided by SGS North America Inc.

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Automated Report

Technical Report for

Kerr-McGee Oil & Gas Onshore LP

GWA_Pettinger_18_1HZ

FID:752918 Reg:318A.f Freq.:1SUB

SGS Job Number: DA25800

Sampling Date: 05/01/20

Report to:

Anadarko E&P Onshore LLC
112 High Street
Buffalo, WY 82834
tanya.cude@absarokasolutions.com; AnadarkoDataMmgt@ghd.com;
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ATTN: Tanya Cude

Total number of pages in report: 51

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: Carissa Cumine 303-425-6021

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

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Sample Summary

Kerr-McGee Oil & Gas Onshore LP

Job No: DA25800

GWA_Pettinger_18_1HZ
Project No: FID:752918 Reg:318A.f Freq.:1SUB

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
This report contains results reported as ND = Not detected. The following applies: Organics ND = Not detected above the MDL							
DA25800-1	05/01/20	09:20	TS	05/01/20	AQ	Ground Water	BW_PETTINGER_13007_R SWSE_18_1N_65W
DA25800-1A	05/01/20	09:20	TS	05/01/20	AQ	Ground Water	BW_PETTINGER_13007_R SWSE_18_1N_65W
DA25800-1B	05/01/20	09:20	TS	05/01/20	AQ	Ground Water	BW_PETTINGER_13007_R SWSE_18_1N_65W
DA25800-1F	05/01/20	09:20	TS	05/01/20	AQ	Groundwater Filtered	BW_PETTINGER_13007_R SWSE_18_1N_65W

CASE NARRATIVE / CONFORMANCE SUMMARY

Client:	Kerr-McGee Oil & Gas Onshore LP	**Job No:**	DA25800
Site:	GWA_Pettinger_18_1HZ	**Report Date**	5/12/2020 6:34:49 PM

On 05/01/2020, 1 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at SGS North America Inc. (SGS) at a temperature of 1.3 °C. The samples were intact and properly preserved, unless noted below. An SGS Job Number of DA25800 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.

MS Volatiles By Method SW846 8260B

Matrix: AQ **Batch ID:** V7V3352

- All samples were analyzed within the recommended method holding time.
- Sample(s) DA19336-9MS, DA19336-9MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

GC Volatiles By Method RSK175 MOD

Matrix: AQ **Batch ID:** GFK98

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA19338-9MS, DA19338-9MSD were used as the QC samples indicated.
- DA25800-1A: Sample was not preserved to a pH < 2.

GC Volatiles By Method SW846 8015B

Matrix: AQ **Batch ID:** GGA2377

- All samples were analyzed within the recommended method holding time.
- Sample(s) DA19336-4MS, DA19336-4MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

GC/LC Semi-volatiles By Method SW846-8015B

Matrix: AQ **Batch ID:** OP18995

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) DA19338-3MS, DA19338-3MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- The RPD(s) for the MS and MSD recoveries of TPH-DRO (C10-C28) are outside control limits for sample OP18995-MSD. High RPD due to possible sample nonhomogeneity.

Metals Analysis By Method EPA 200.7

Matrix: AQ **Batch ID:** MP30321

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA25805-1MS, DA25805-1MSD were used as the QC samples for the metals analysis.
- MP30321-MB1 for Sodium: All sample results < RL or > 10x MB concentration.

Metals Analysis By Method EPA 200.8

Matrix:	AQ	Batch ID:	MP30318

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA25785-1MS, DA25785-1MSD were used as the QC samples for the metals analysis.

General Chemistry By Method EPA 365.1

Matrix:	AQ	Batch ID:	GP27077

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA25688-3DUP, DA25716-1MS were used as the QC samples for the Phosphorus, Total analysis.

General Chemistry By Method EPA300.0/SW846 9056A

Matrix:	AQ	Batch ID:	GP27063

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA25701-9MS, DA25701-9MSD were used as the QC samples for the Bromide, Chloride, Fluoride, Nitrogen, Nitrate, Nitrogen, Nitrite, Sulfate analysis.
- DA25800-1 for Nitrogen, Nitrite: Elevated detection limit due to matrix interference.

Matrix:	AQ	Batch ID:	R51171

- The data for EPA300.0/SW846 9056A meets quality control requirements.
- DA25800-1 for Nitrogen, Nitrate + Nitrite: Calculated as: (Nitrogen, Nitrate) + (Nitrogen, Nitrite)

General Chemistry By Method HACH IRB-BART

Matrix:	AQ	Batch ID:	MB1318

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

General Chemistry By Method HACH SLYM-BART

Matrix:	AQ	Batch ID:	MB1319

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

General Chemistry By Method HACH SRB-BART

Matrix:	AQ	Batch ID:	MB1320

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

General Chemistry By Method SM 2320B-2011

Matrix:	AQ	Batch ID:	GN50274

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA25712-1DUP, DA25823-1MS, DA25823-1MSD were used as the QC samples for the Alkalinity, Total as CaCO3 analysis.

Matrix:	AQ	Batch ID:	GN50275

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

Matrix:	AQ	Batch ID:	GN50276

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

General Chemistry By Method SM 2510B-2011

Matrix:	AQ	Batch ID:	GP27101

- Sample(s) DA25781-1DUP were used as the QC samples for the Specific Conductivity analysis.

General Chemistry By Method SM 2540C-2011

Matrix:	AQ	Batch ID:	GN50258

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA25746-1DUP were used as the QC samples for the Solids, Total Dissolved analysis.

General Chemistry By Method SM1030E-2011

Matrix:	AQ	Batch ID:	GN50330

- The data for SM1030E-2011 meets quality control requirements.

General Chemistry By Method SM4500HB+-2011/9040C

Matrix:	AQ	Batch ID:	GN50277

- The data for SM4500HB+-2011/9040C meets quality control requirements.
- The following samples were run outside of holding time for method SM4500HB+-2011/9040C: DA25800-1
- DA25800-1 for pH: Field parameter analyzed by the laboratory upon request.

Field Data By Method FIELD

Matrix:	AQ	Batch ID:	R51167

- The data for FIELD meets quality control requirements.

SGS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting SGS'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.

SGS 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 SGS indicated via signature on the report cover.

Summary of Hits

Job Number: DA25800
Account: Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Pettinger_18_1HZ
Collected: 05/01/20

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
DA25800-1	**BW_PETTINGER_13007_R SWSE_18_1N_65W**					
Alkalinity, Bicarbonate as CaCO3		210	5.0		mg/l	SM 2320B-2011
Alkalinity, Total as CaCO3		210	5.0		mg/l	SM 2320B-2011
Bromide		0.40	0.10		mg/l	EPA300.0/SW846 9056A
Cation Anion Balance		1.26			%	SM1030E-2011
Chloride		160	5.0		mg/l	EPA300.0/SW846 9056A
Fluoride		1.4	0.20		mg/l	EPA300.0/SW846 9056A
Nitrogen, Nitrate		10.8	0.50		mg/l	EPA300.0/SW846 9056A
Nitrogen, Nitrate + Nitrite [a]		10.8	0.54		mg/l	EPA300.0/SW846 9056A
Solids, Total Dissolved		804	10		mg/l	SM 2540C-2011
Specific Conductivity		1120	1.0		umhos/cm	SM 2510B-2011
Sulfate		187	5.0		mg/l	EPA300.0/SW846 9056A
pH [b]		8.10			su	SM4500HB+-2011/9040C
pH (Field)		6.31			su	FIELD
Temperature (Field)		14.1			Deg. C	FIELD
Oxygen, Dissolved (Field)		6.2			mg/l	FIELD
Turbidity		0.02			NTU	FIELD
Redox Potential Vs H2		101.5			mv	FIELD
Specific Conductivity (Field)		1250	0.50		umhos/cm	FIELD
DA25800-1A	**BW_PETTINGER_13007_R SWSE_18_1N_65W**					
No hits reported in this sample.						
DA25800-1B	**BW_PETTINGER_13007_R SWSE_18_1N_65W**					
Iron-Related Bacteria		35000	25		CFU/ml	HACH IRB-BART
Slime Forming Bacteria		440000	500		CFU/ml	HACH SLYM-BART
Sulfate Reducing Bacteria		115000	200		CFU/ml	HACH SRB-BART
DA25800-1F	**BW_PETTINGER_13007_R SWSE_18_1N_65W**					
Barium		0.0469	0.0040		mg/l	EPA 200.8
Boron		0.297	0.050		mg/l	EPA 200.7
Calcium		94.3	0.40		mg/l	EPA 200.7
Magnesium		34.9	0.20		mg/l	EPA 200.7
Potassium		4.02	1.0		mg/l	EPA 200.7
Selenium		0.0045	0.00080		mg/l	EPA 200.8
Sodium		125	0.40		mg/l	EPA 200.7
Strontium		1.97	0.0050		mg/l	EPA 200.7

(a) Calculated as: (Nitrogen, Nitrate) + (Nitrogen, Nitrite)
(b) Field parameter analyzed by the laboratory upon request.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	BW_PETTINGER_13007_R SWSE_18_1N_65W		
Lab Sample ID:	DA25800-1	**Date Sampled:**	05/01/20
Matrix:	AQ - Ground Water	**Date Received:**	05/01/20
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	GWA_Pettinger_18_1HZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7V66715.D	1	05/04/20 12:15	DC	n/a	n/a	V7V3352
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	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.50	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	1.0	ug/l	
	m,p-Xylene	ND	1.0	0.70	ug/l	
95-47-6	o-Xylene	ND	1.0	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	110%		70-130%
17060-07-0	1,2-Dichloroethane-D4	103%		70-130%
2037-26-5	Toluene-D8	95%		70-130%
460-00-4	4-Bromofluorobenzene	104%		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:	BW_PETTINGER_13007_R SWSE_18_1N_65W		
Lab Sample ID:	DA25800-1	**Date Sampled:**	05/01/20
Matrix:	AQ - Ground Water	**Date Received:**	05/01/20
Method:	SW846 8015B	**Percent Solids:**	n/a
Project:	GWA_Pettinger_18_1HZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GA52623.D	1	05/05/20 02:12	JB	n/a	n/a	GGA2377
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	97%		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:	BW_PETTINGER_13007_R SWSE_18_1N_65W		
Lab Sample ID:	DA25800-1	**Date Sampled:**	05/01/20
Matrix:	AQ - Ground Water	**Date Received:**	05/01/20
Method:	SW846-8015B SW846 3510C	**Percent Solids:**	n/a
Project:	GWA_Pettinger_18_1HZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FH049448.D	1	05/05/20 13:16	NO	05/04/20	OP18995	GFP2034
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	0.20	0.19	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	65%		11-142%

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:	BW_PETTINGER_13007_R SWSE_18_1N_65W		
Lab Sample ID:	DA25800-1	**Date Sampled:**	05/01/20
Matrix:	AQ - Ground Water	**Date Received:**	05/01/20
		Percent Solids:	n/a
Project:	GWA_Pettinger_18_1HZ		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Bicarbonate as CaC	210	5.0	mg/l	1	05/05/20	JD	SM 2320B-2011
Alkalinity, Carbonate	< 5.0	5.0	mg/l	1	05/05/20	JD	SM 2320B-2011
Alkalinity, Total as CaCO3	210	5.0	mg/l	1	05/05/20	JD	SM 2320B-2011
Bromide	0.40	0.10	mg/l	2	05/01/20 15:18	JB	EPA300.0/SW846 9056A
Cation Anion Balance	1.26		%	1	05/11/20	AM	SM1030E-2011
Chloride	160	5.0	mg/l	10	05/01/20 15:31	JB	EPA300.0/SW846 9056A
Fluoride	1.4	0.20	mg/l	2	05/01/20 15:18	JB	EPA300.0/SW846 9056A
Nitrogen, Nitrate	10.8	0.50	mg/l	50	05/01/20 15:44	JB	EPA300.0/SW846 9056A
Nitrogen, Nitrate + Nitrite [a]	10.8	0.54	mg/l	1	05/01/20 15:44	JB	EPA300.0/SW846 9056A
Nitrogen, Nitrite [b]	< 0.040	0.040	mg/l	10	05/01/20 15:31	JB	EPA300.0/SW846 9056A
Phosphorus, Total	< 0.010	0.010	mg/l	1	05/06/20 16:34	AM	EPA 365.1
Solids, Total Dissolved	804	10	mg/l	1	05/04/20	AK	SM 2540C-2011
Specific Conductivity	1120	1.0	umhos/cm	1	05/11/20	JD	SM 2510B-2011
Sulfate	187	5.0	mg/l	10	05/01/20 15:31	JB	EPA300.0/SW846 9056A
pH [c]	8.10		su	1	05/05/20 11:40	JD	SM4500HB+-2011/9040C

Field Parameters

Oxygen, Dissolved (Field)	6.2		mg/l	1	05/04/20	SUB	FIELD
Redox Potential Vs H2	101.5		mv	1	05/04/20	SUB	FIELD
Specific Conductivity (Field)	1250	0.50	umhos/cm	1	05/04/20	SUB	FIELD
Temperature (Field)	14.1		Deg. C	1	05/04/20	SUB	FIELD
Turbidity	0.02		NTU	1	05/04/20	SUB	FIELD
pH (Field)	6.31		su	1	05/04/20	SUB	FIELD

(a) Calculated as: (Nitrogen, Nitrate) + (Nitrogen, Nitrite)
(b) Elevated detection limit due to matrix interference.
(c) Field parameter analyzed by the laboratory upon request.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	BW_PETTINGER_13007_R SWSE_18_1N_65W		
Lab Sample ID:	DA25800-1A	**Date Sampled:**	05/01/20
Matrix:	AQ - Ground Water	**Date Received:**	05/01/20
Method:	RSK175 MOD	**Percent Solids:**	n/a
Project:	GWA_Pettinger_18_1HZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	FK1402.D	1	05/01/20 15:44	JB	n/a	n/a	GFK98
Run #2							

	Initial Volume	Headspace Volume	Volume Injected	Temperature
Run #1	39.0 ml	4.0 ml	500 ul	20.8 Deg. C
Run #2				

Methane, Ethane and Propane

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.00080	0.00070	mg/l	
74-84-0	Ethane	ND	0.0016	0.0010	mg/l	
74-98-6	Propane	ND	0.0022	0.0017	mg/l	

(a) Sample was not preserved to a pH < 2.

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:	BW_PETTINGER_13007_R SWSE_18_1N_65W		
Lab Sample ID:	DA25800-1B	**Date Sampled:**	05/01/20
Matrix:	AQ - Ground Water	**Date Received:**	05/01/20
		Percent Solids:	n/a
Project:	GWA_Pettinger_18_1HZ		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Iron-Related Bacteria	35000	25	CFU/ml	1	05/04/20 14:25	JD	HACH IRB-BART
Slime Forming Bacteria	440000	500	CFU/ml	1	05/04/20 14:25	JD	HACH SLYM-BART
Sulfate Reducing Bacteria	115000	200	CFU/ml	1	05/04/20 14:25	JD	HACH SRB-BART

RL = Reporting Limit

Report of Analysis

Client Sample ID:	BW_PETTINGER_13007_R SWSE_18_1N_65W		
Lab Sample ID:	DA25800-1F	**Date Sampled:**	05/01/20
Matrix:	AQ - Groundwater Filtered	**Date Received:**	05/01/20
		Percent Solids:	n/a
Project:	GWA_Pettinger_18_1HZ		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Barium	0.0469	0.0040	mg/l	2	05/04/20	05/06/20	JD	EPA 200.8 [3]	EPA 200.8 [5]
Boron	0.297	0.050	mg/l	1	05/05/20	05/05/20	JD	EPA 200.7 [2]	EPA 200.7 [6]
Calcium	94.3	0.40	mg/l	1	05/05/20	05/05/20	JD	EPA 200.7 [2]	EPA 200.7 [6]
Iron	< 0.010	0.010	mg/l	1	05/05/20	05/05/20	JD	EPA 200.7 [2]	EPA 200.7 [6]
Magnesium	34.9	0.20	mg/l	1	05/05/20	05/08/20	JM	EPA 200.7 [4]	EPA 200.7 [6]
Manganese	< 0.0050	0.0050	mg/l	1	05/05/20	05/05/20	JD	EPA 200.7 [2]	EPA 200.7 [6]
Potassium	4.02	1.0	mg/l	1	05/05/20	05/05/20	JD	EPA 200.7 [2]	EPA 200.7 [6]
Selenium	0.0045	0.00080	mg/l	2	05/04/20	05/06/20	JM	EPA 200.8 [1]	EPA 200.8 [5]
Sodium	125	0.40	mg/l	1	05/05/20	05/08/20	JM	EPA 200.7 [4]	EPA 200.7 [6]
Strontium	1.97	0.0050	mg/l	1	05/05/20	05/05/20	JD	EPA 200.7 [2]	EPA 200.7 [6]

(1) Instrument QC Batch: MA12615
(2) Instrument QC Batch: MA12617
(3) Instrument QC Batch: MA12619
(4) Instrument QC Batch: MA12628
(5) Prep QC Batch: MP30318
(6) Prep QC Batch: MP30321

RL = Reporting Limit

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

CHAIN OF CUSTODY

4036 Youngfield Street, Wheat Ridge, CO 80033
TEL: 303-425-6021 FAX: 303-425-6854
www.accutest.com

Bottle Order Control #:
FED-EX Tracking #:
SGS Quote #:
SGS Job #: DA25800

Client / Reporting Information

Company: (Report to) **Absaroka Solutions**
Street: 112 High Street
City, State: Buffalo, WY 82834
Project Contact: Tanya Cude
Phone: 352-318-4034
Email: Tanya.Cude@Absarokasolutions.com
Sampler(s) Name(s): Tyler Scherden

Project Information

Project Name: GWA_Pettinger_18_1HZ
Frequency: 1SUB
Regulation: 318A.f
Facility ID: 752918
EQuIS Facility Code: 0089019-AN-GWABWQ
Client Purchase Order #: 2142317.PDE
Project Manager: Joel Mason

Billing Information (if different from Report to)

Company: Occidental Petroleum Corporation (OXY)
Street Address: 1099 18th Street, Suite 1800
City, State ZIP: Denver, CO 80202-1918
Attention: Erik Mickelson User ID: fvv451

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

Field ID / Point of Collection	Collection: Date	Time	Sampled by	Matrix	# of bottles	Number of preserved Bottles: NONE	HCl	NaOH	HNO3	H2SO4	DI Water	MEOH	ENCORE	Na2S2O4	Other	PH, SCON, TDS	XCARBICALK	BRO, CHL, F, NO2, XNO3O, NO32, SO4	TPO4	Dissolved Metals - Lab Filtered*	VRSK175DGMEP	V8260BTX	B8015DRO	V8015GRO	IRBAC, SFBAC, SO4RBAC	CABAL	LAB USE ONLY
BW_Pettinger_13007_R	5/1/2020	0920	TS	GW	17	9	6			1					1	X	X	X	X	X	X	X	X	X	X	X	OI
SWSE_18_1N_65W																											
Temperature, field	14.1	°C																									
pH, field	6.34	s.u.																									
Specific Conductivity, field	1250	uS/cm																									
Oxidation Reduction Potential, field	101.5	mV																									
Dissolved Oxygen, field	6.20	mg/L																									
Turbidity, field	0.02	NTU																									

Turnaround Time (Business days)

- [x] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day Emergency
- [ ] 2 Day Emergency
- [ ] 1 Day Emergency

Emergency & Rush T/A data available VIA LabLink. RUSH TAT approval needed.

Special Reporting Instructions:
- [ ] Report in PPB
- [ ] Report in PPM
- [ ] Report MDLs

Data Deliverable Information

- [ ] Commercial "A" (Level 1, Results Only)
- [ ] Commercial "B" (Level 2, Results + QC Summary)
- [ ] COMMBN (Results/QC/Narrative)
- [ ] COMMBN+ (Results/QC/Narrative (+ chromatograms))
- [ ] REDT2
- [ ] FULT1
- [x] EDD Format: COGCC Compatible

Comments / Special Instructions

*Dissolved Metals (200.7/200.8): BaMS, B, Ca, Fe,Mg, Mn, K, SeMS, Na, Sr

Please also send reports to Joel.Mason@Absarokasolutions.com and Max.Moran@Absarokasolutions.com

Bubbles / SF

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

Relinquished by Sampler: 1	Date/Time: 5/1/20 1100	Received By:	Relinquished By: 2	Date/Time: 5/1/2020 1200	Received By: 2
Relinquished by Sampler: 3	Date/Time:	Received By: 3	Relinquished By: 4	Date/Time:	Received By: 4

Custody Seal #: 110235 Intact [x] Not Intact [ ] Absent [ ]
Preserved where applicable [ ]
Cooler Temp. °C: 1.3 Therm. ID: TC#3
On Ice [x]

Form MSQA 064-01, RV 6/19/17
http://www.sgs.com/terms-and-conditions

DA25800: Chain of Custody
Page 1 of 2

SGS Accutest Sample Receipt Summary

Job Number: DA25800 **Client:** ABSAROKA **Project:** GWA

Date / Time Received: 5/1/2020 12:00:00 PM **Delivery Method:** **Airbill #'s:** CO

Cooler Temps (Initial/Adjusted): #1: (1.3/1.3);

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:	IR Gun;		
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:	☐		☐	☑

MS Volatiles

6

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Job Number: DA25800
Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Pettinger_18_1HZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V7V3352-MB	7V66711.D	1	05/04/20	DC	n/a	n/a	V7V3352

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

DA25800-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.50	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.50	ug/l	
	m,p-Xylene	ND	1.0	0.70	ug/l	
95-47-6	o-Xylene	ND	1.0	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	1.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	112%	70-130%
17060-07-0	1,2-Dichloroethane-D4	107%	70-130%
2037-26-5	Toluene-D8	96%	70-130%
460-00-4	4-Bromofluorobenzene	100%	70-130%

Blank Spike Summary

Job Number: DA25800
Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Pettinger_18_1HZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V7V3352-BS	7V66708.D	1	05/04/20	DC	n/a	n/a	V7V3352

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

DA25800-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	50	51.9	104	70-130
100-41-4	Ethylbenzene	50	55.7	111	69-130
108-88-3	Toluene	50	52.2	104	70-130
	m,p-Xylene	100	114	114	70-130
95-47-6	o-Xylene	50	53.3	107	70-130
1330-20-7	Xylene (total)	150	167	111	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	103%	70-130%
17060-07-0	1,2-Dichloroethane-D4	100%	70-130%
2037-26-5	Toluene-D8	99%	70-130%
460-00-4	4-Bromofluorobenzene	99%	70-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: DA25800
Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Pettinger_18_1HZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
DA19336-9MS	7V66712.D	1	05/04/20	DC	n/a	n/a	V7V3352
DA19336-9MSD	7V66713.D	1	05/04/20	DC	n/a	n/a	V7V3352
DA19336-9	7V66714.D	1	05/04/20	DC	n/a	n/a	V7V3352

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

DA25800-1

CAS No.	Compound	DA19336-9 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		50	51.5	103	50	55.5	111	7	67-130/30
100-41-4	Ethylbenzene	ND		50	55.4	111	50	55.9	112	1	69-130/30
108-88-3	Toluene	ND		50	52.4	105	50	53.5	107	2	70-130/30
	m,p-Xylene	ND		100	114	114	100	115	115	1	70-130/30
95-47-6	o-Xylene	ND		50	53.3	107	50	53.6	107	1	70-130/30
1330-20-7	Xylene (total)	ND		150	168	112	150	168	112	0	67-130/30

CAS No.	Surrogate Recoveries	MS	MSD	DA19336-9	Limits
1868-53-7	Dibromofluoromethane	99%	98%	107%	70-130%
17060-07-0	1,2-Dichloroethane-D4	99%	101%	105%	70-130%
2037-26-5	Toluene-D8	101%	100%	94%	70-130%
460-00-4	4-Bromofluorobenzene	93%	101%	94%	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: DA25800
Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Pettinger_18_1HZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGA2377-MB	GA52612.D	1	05/04/20	JB	n/a	n/a	GGA2377

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

DA25800-1

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	105%	60-140%

Method Blank Summary

Job Number: DA25800
Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Pettinger_18_1HZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GFK98-MB	FK1391.D	1	05/01/20	JB	n/a	n/a	GFK98

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

DA25800-1A

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.00080	0.00070	mg/l	
74-84-0	Ethane	ND	0.0016	0.0010	mg/l	
74-98-6	Propane	ND	0.0022	0.0017	mg/l	

Blank Spike Summary

Job Number: DA25800
Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Pettinger_18_1HZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGA2377-BS	GA52611.D	1	05/04/20	JB	n/a	n/a	GGA2377

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

DA25800-1

CAS No.	Compound	Spike mg/l	BSP mg/l	BSP %	Limits
	TPH-GRO (C6-C10)	2.2	1.82	83	51-130

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	105%	60-140%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: DA25800
Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Pettinger_18_1HZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GFK98-BS	FK1390.D	10	05/01/20	JB	n/a	n/a	GFK98

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

DA25800-1A

CAS No.	Compound	Spike mg/l	BSP mg/l	BSP %	Limits
74-82-8	Methane	0.512	0.576	113	70-130
74-84-0	Ethane	0.923	1.13	122	70-142
74-98-6	Propane	1.38	1.61	117	70-137

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: DA25800
Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Pettinger_18_1HZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
DA19336-4MS	GA52614.D	1	05/04/20	JB	n/a	n/a	GGA2377
DA19336-4MSD	GA52615.D	1	05/04/20	JB	n/a	n/a	GGA2377
DA19336-4	GA52613.D	1	05/04/20	JB	n/a	n/a	GGA2377

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

DA25800-1

CAS No.	Compound	DA19336-4 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	1.80	82	2.2	1.79	81	1	40-132/30

CAS No.	Surrogate Recoveries	MS	MSD	DA19336-4	Limits
120-82-1	1,2,4-Trichlorobenzene	113%	105%	94%	60-140%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: DA25800
Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Pettinger_18_1HZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
DA19338-9MS	FK1393.D	10	05/01/20	JB	n/a	n/a	GFK98
DA19338-9MSD	FK1394.D	10	05/01/20	JB	n/a	n/a	GFK98
DA19338-9	FK1392.D	1	05/01/20	JB	n/a	n/a	GFK98

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

DA25800-1A

CAS No.	Compound	DA19338-9 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	0.0013		0.512	0.543	106	0.512	0.562	110	3	15-200/30
74-84-0	Ethane	ND		0.923	1.07	116	0.923	1.10	119	3	64-147/30
74-98-6	Propane	ND		1.38	1.52	110	1.38	1.57	114	3	63-139/30

* = 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: DA25800
Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Pettinger_18_1HZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP18995-MB	FH049437.D	1	05/05/20	NO	05/04/20	OP18995	GFH2035

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

DA25800-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	0.20	0.19	mg/l	

CAS No.	Surrogate Recoveries		Limits
84-15-1	o-Terphenyl	34%	11-142%

Blank Spike Summary

Job Number: DA25800
Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Pettinger_18_1HZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP18995-BS	FH049439.D	1	05/05/20	NO	05/04/20	OP18995	GFH2035

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

DA25800-1

CAS No.	Compound	Spike mg/l	BSP mg/l	BSP %	Limits
	TPH-DRO (C10-C28)	5	2.11	42	22-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	43%	11-142%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: DA25800
Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Pettinger_18_1HZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP18995-MS	FH049441.D	1	05/05/20	NO	05/04/20	OP18995	GFH2035
OP18995-MSD	FH049443.D	1	05/05/20	NO	05/04/20	OP18995	GFH2035
DA19338-3	FH049445.D	1	05/05/20	NO	05/04/20	OP18995	GFH2035

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

DA25800-1

CAS No.	Compound	DA19338-3 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	3.87	77	5	2.84	57	31* [a]	22-130/30

CAS No.	Surrogate Recoveries	MS	MSD	DA19338-3	Limits
84-15-1	o-Terphenyl	81%	64%	77%	11-142%

(a) High RPD due to possible sample nonhomogeneity.

* = Outside of Control Limits.

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: DA25800
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Pettinger_18_1HZ

QC Batch ID: MP30318
Matrix Type: AQUEOUS

Methods: EPA 200.8
Units: ug/l

Prep Date: 05/04/20

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	1.1	18		
Antimony	0.40	.0022	.07		
Arsenic	0.20	.017	.07		
Barium	2.0	.016	.27	0.055	<2.0
Beryllium	0.30	.016	.21		
Boron	40	.49	14		
Cadmium	0.15	.036	.11		
Calcium	400	5.6	78		
Chromium	2.0	.053	.72		
Cobalt	0.20	.0049	.024		
Copper	2.0	.06	.31		
Iron	10	3.5	7.8		
Lead	0.50	.0079	.027		
Magnesium	100	1.3	16		
Manganese	1.0	.12	.15		
Molybdenum	1.0	.049	.54		
Nickel	2.0	.0088	.29		
Phosphorus	60	2.6	40		
Potassium	200	2.9	43		
Selenium	0.40	.06	.34	-0.0060	<0.40
Silver	0.10	.0019	.016		
Sodium	500	4.9	61		
Strontium	20	.01	1.3		
Thallium	0.20	.0024	.013		
Tin	10	.063	1.4		
Titanium	2.0	.059	.23		
Uranium	0.20	.0017	.12		
Vanadium	20	.037	5		
Zinc	10	.21	2		

Associated samples MP30318: DA25800-1F

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: DA25800
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Pettinger_18_1HZ

QC Batch ID: MP30318
Matrix Type: AQUEOUS

Methods: EPA 200.8
Units: ug/l

Prep Date: 05/04/20

Metal	DA25785-1 Original	MS	Spikelot ICPALL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	anr				
Barium	94.9	505	400	102.5	70-130
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Magnesium					
Manganese	anr				
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium	4.2	197	200	96.4	70-130
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium	anr				
Vanadium					
Zinc					

Associated samples MP30318: DA25800-1F

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: DA25800
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Pettinger_18_1HZ

QC Batch ID: MP30318 Methods: EPA 200.8
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 05/04/20

Metal	DA25785-1 Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	anr					
Barium	94.9	482	400	96.8	4.7	20
Beryllium						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium						
Manganese	anr					
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium	4.2	205	200	100.4	4.0	20
Silver						
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium	anr					
Vanadium						
Zinc						

Associated samples MP30318: DA25800-1F

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: DA25800
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Pettinger_18_1HZ

QC Batch ID: MP30318
Matrix Type: AQUEOUS

Methods: EPA 200.8
Units: ug/l

Prep Date: 05/04/20

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium	413	400	103.3	85-115
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese	anr			
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium	195	200	97.5	85-115
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium	anr			
Vanadium				
Zinc				

Associated samples MP30318: DA25800-1F

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: DA25800
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Pettinger_18_1HZ

QC Batch ID: MP30321
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date: 05/05/20

Metal	RL	IDL	MDL	MB raw	final
Aluminum	100	46	30		
Antimony	30	14	10		
Arsenic	25	22	7		
Barium	10	.3	2		
Beryllium	10	1	1.3		
Boron	50	3.3	7.4	0.80	<50
Cadmium	10	1.9	1.6		
Calcium	400	6.6	53	12.4	<400
Chromium	10	1.1	1.7		
Cobalt	5.0	2.7	2.3		
Copper	10	4.6	2.3		
Iron	10	8.9	3.1	2.6	<10
Lead	50	13	6.3		
Lithium	5.0	.6	4		
Magnesium	200	50	31	-12	<200
Manganese	5.0	.5	1.1	0.10	<5.0
Molybdenum	10	8.5	4.3		
Nickel	30	6.2	6.1		
Phosphorus	100	91	24		
Potassium	1000	84	250	18.8	<1000
Selenium	50	30	21		
Silicon	50	41	45		
Silver	30	.6	4		
Sodium	400	13	51	488	* (a)
Strontium	5.0	.1	.6	0.10	<5.0
Thallium	10	17	7.5		
Tin	60	41	51		
Titanium	10	.5	1.9		
Uranium	50	3.9	8.5		
Vanadium	10	.9	.7		
Zinc	30	9	3.8		

Associated samples MP30321: DA25800-1F

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: DA25800
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Pettinger_18_1HZ

QC Batch ID: MP30321 Methods: EPA 200.7
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 05/05/20

Metal	RL	IDL	MDL	MB raw	final

(anr) Analyte not requested
(a) All sample results < RL or > 10x MB concentration.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA25800
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Pettinger_18_1HZ

QC Batch ID: MP30321
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date: 05/05/20

Metal	DA25805-1 Original	MS	Spikelot ICPALL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	anr				
Barium	anr				
Beryllium					
Boron	19.6	1090	1000	106.9	70-130
Cadmium	anr				
Calcium	33300	58600	25000	97.2	70-130
Chromium	anr				
Cobalt					
Copper					
Iron	9.9	5190	5000	103.6	70-130
Lead	anr				
Lithium					
Magnesium	5950	29400	25000	93.8	70-130
Manganese	0.0	499	500	99.8	70-130
Molybdenum					
Nickel					
Phosphorus					
Potassium	1850	27700	25000	103.8	70-130
Selenium	anr				
Silicon					
Silver	anr				
Sodium	14300	40600	25000	105.2	70-130
Strontium	247	752	500	101.0	70-130
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP30321: DA25800-1F

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA25800
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Pettinger_18_1HZ

QC Batch ID: MP30321 Methods: EPA 200.7
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 05/05/20

Metal	DA25805-1 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: DA25800
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Pettinger_18_1HZ

QC Batch ID: MP30321 Methods: EPA 200.7
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 05/05/20

Metal	DA25805-1 Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	anr					
Barium	anr					
Beryllium						
Boron	19.6	1120	1000	109.9	2.7	20
Cadmium	anr					
Calcium	33300	58700	25000	97.6	0.2	20
Chromium	anr					
Cobalt						
Copper						
Iron	9.9	5220	5000	104.2	0.6	20
Lead	anr					
Lithium						
Magnesium	5950	29400	25000	93.8	0.0	20
Manganese	0.0	510	500	102.0	2.2	20
Molybdenum						
Nickel						
Phosphorus						
Potassium	1850	27600	25000	103.4	0.4	20
Selenium	anr					
Silicon						
Silver	anr					
Sodium	14300	40700	25000	105.6	0.2	20
Strontium	247	745	500	99.6	0.9	20
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP30321: DA25800-1F

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA25800
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Pettinger_18_1HZ

QC Batch ID: MP30321 Methods: EPA 200.7
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 05/05/20

Metal	DA25805-1 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: DA25800
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Pettinger_18_1HZ

QC Batch ID: MP30321
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date: 05/05/20

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium	anr			
Beryllium				
Boron	1060	1000	106.0	85-115
Cadmium	anr			
Calcium	25300	25000	101.2	85-115
Chromium	anr			
Cobalt				
Copper				
Iron	5120	5000	102.4	85-115
Lead	anr			
Lithium				
Magnesium	23600	25000	94.4	85-115
Manganese	508	500	101.6	85-115
Molybdenum				
Nickel				
Phosphorus				
Potassium	25400	25000	101.6	85-115
Selenium	anr			
Silicon				
Silver	anr			
Sodium	26500	25000	106.0	85-115
Strontium	500	500	100.0	85-115
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP30321: DA25800-1F

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: DA25800
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Pettinger_18_1HZ

QC Batch ID: MP30321
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date: 05/05/20

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits

(anr) Analyte not requested

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: DA25800
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Pettinger_18_1HZ

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Alkalinity, Bicarbonate as CaC	GN50275	5.0	0.0	mg/l	100	96.2	96.1	90-110%
Alkalinity, Carbonate	GN50276	5.0	0.0	mg/l	100	96.2	96.1	80-120%
Alkalinity, Total as CaCO3	GN50274	5.0	0.0	mg/l	100	96.2	96.1	90-110%
Bromide	GP27063/GN50255	0.050	0.0	mg/l	0.5	0.521	104.2	90-110%
Chloride	GP27063/GN50255	0.50	0.0	mg/l	5	5.22	104.4	90-110%
Fluoride	GP27063/GN50255	0.10	0.0	mg/l	1	1.02	102.0	90-110%
Iron-Related Bacteria	MB1318	25	<25	CFU/ml				
Nitrogen, Nitrate	GP27063/GN50255	0.010	0.0	mg/l	0.1	0.103	103.0	90-110%
Nitrogen, Nitrite	GP27063/GN50255	0.0040	0.0	mg/l	0.05	0.0491	98.2	90-110%
Phosphorus, Total	GP27077/GN50287	0.010	0.00	mg/l	0.2	0.187	93.5	90-110%
Phosphorus, Total	GP27077/GN50287	0.010	0.00	mg/l	0.2	0.190	95.0	90-110%
Slime Forming Bacteria	MB1319	500	<500	CFU/ml				
Solids, Total Dissolved	GN50258	10	0.0	mg/l	250	233	93.2	90-110%
Specific Conductivity	GP27101/GN50327			umhos/cm	1013	1020	101.8	90-110%
Sulfate	GP27063/GN50255	0.50	0.0	mg/l	5	5.19	103.8	90-110%
Sulfate Reducing Bacteria	MB1320	200	<200	CFU/ml				

Associated Samples:
Batch MB1318: DA25800-1B
Batch MB1319: DA25800-1B
Batch MB1320: DA25800-1B
Batch GN50258: DA25800-1
Batch GN50274: DA25800-1
Batch GN50275: DA25800-1
Batch GN50276: DA25800-1
Batch GP27063: DA25800-1
Batch GP27077: DA25800-1
Batch GP27101: DA25800-1
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: DA25800
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Pettinger_18_1HZ

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Alkalinity, Total as CaCO3	GN50274	DA25712-1	mg/l	27.6	26.2	5.2	0-20%
Phosphorus, Total	GP27077/GN50287	DA25688-3	mg/l	1.2	1.21	0.0	0-20%
Solids, Total Dissolved	GN50258	DA25746-1	mg/l	695	693	0.2	0-5%
Specific Conductivity	GP27101/GN50327	DA25781-1	umhos/cm	833	842	1.1	0-20%

Associated Samples:
Batch GN50258: DA25800-1
Batch GN50274: DA25800-1
Batch GP27077: DA25800-1
Batch GP27101: DA25800-1
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: DA25800
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Pettinger_18_1HZ

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Alkalinity, Total as CaCO3	GN50274	DA25823-1	mg/l	152	100	246	93.2	80-120%
Bromide	GP27063/GN50255	DA25701-9	mg/l	1.1	250	251	100.4	80-120%
Chloride	GP27063/GN50255	DA25701-9	mg/l	473	2500	3010	101.5	80-120%
Fluoride	GP27063/GN50255	DA25701-9	mg/l	0.0	500	492	98.4	80-120%
Fluoride	GP27063/GN50255	DA25701-9	mg/l	0.0	500	492	98.4	80-120%
Nitrogen, Nitrate	GP27063/GN50255	DA25701-9	mg/l	0.0	50	49.5	99.0	80-120%
Nitrogen, Nitrate	GP27063/GN50255	DA25701-9	mg/l	0.0	50	49.5	99.0	80-120%
Nitrogen, Nitrite	GP27063/GN50255	DA25701-9	mg/l	0.0	25	24.7	98.8	80-120%
Nitrogen, Nitrite	GP27063/GN50255	DA25701-9	mg/l	0.0	25	24.7	98.8	80-120%
Phosphorus, Total	GP27077/GN50287	DA25716-1	mg/l	0.0	0.2	0.198	99.0	90-110%
Sulfate	GP27063/GN50255	DA25701-9	mg/l	583	2500	3120	99.1	80-120%
Sulfate	GP27063/GN50255	DA25701-9	mg/l	642	2500	3120	99.1	80-120%

Associated Samples:
Batch GN50274: DA25800-1
Batch GP27063: DA25800-1
Batch GP27077: DA25800-1
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: DA25800
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Pettinger_18_1HZ

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Alkalinity, Total as CaCO3	GN50274	DA25823-1	mg/l	152	100	254	3.5	20%
Bromide	GP27063/GN50255	DA25701-9	mg/l	1.1	250	250	0.4	20%
Chloride	GP27063/GN50255	DA25701-9	mg/l	473	2500	3000	0.3	20%
Fluoride	GP27063/GN50255	DA25701-9	mg/l	0.0	500	492	0.0	20%
Fluoride	GP27063/GN50255	DA25701-9	mg/l	0.0	500	492	0.0	20%
Nitrogen, Nitrate	GP27063/GN50255	DA25701-9	mg/l	0.0	50	49.5	0.0	20%
Nitrogen, Nitrate	GP27063/GN50255	DA25701-9	mg/l	0.0	50	49.5	0.0	20%
Nitrogen, Nitrite	GP27063/GN50255	DA25701-9	mg/l	0.0	25	24.7	0.0	20%
Nitrogen, Nitrite	GP27063/GN50255	DA25701-9	mg/l	0.0	25	24.7	0.0	20%
Sulfate	GP27063/GN50255	DA25701-9	mg/l	583	2500	3130	0.3	20%
Sulfate	GP27063/GN50255	DA25701-9	mg/l	642	2500	3130	0.3	20%

Associated Samples:
Batch GN50274: DA25800-1
Batch GP27063: DA25800-1
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits