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## Technical Report for

**Patara Oil and Gas**

**POAGCORV**

**Wray Mesa 36-34**

**Accutest Job Number: D22280**

**Sampling Date: 03/30/11**

### Report to:

Patara Oil and Gas  
741 County Rd U29E  
Redville, CO 81431  
dwhite@pataraog.com

**ATTN: Danny White**

**Total number of pages in report: 85**



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

A handwritten signature in black ink, appearing to read 'John Hamilton'.

**John Hamilton**  
**Laboratory Director**

**Client Service contact: Shea Greiner 303-425-6021**

Certifications: CO, ID, NE, NM, ND (R-027) (PW) UT (NELAP CO00049)

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Test results relate only to samples analyzed.

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Sample Summary

Patara Oil and Gas

Job No: D22280

POAGCORV  
Project No: Wray Mesa 36-34

Sample Number	Collected		Time By	Received	Matrix		Client Sample ID
	Date				Code	Type	
D22280-1	03/30/11	11:10	DW	04/01/11	SO	Soil	WRAY MESA 36-34 PERIMETER
D22280-1A	03/30/11	11:10	DW	04/01/11	SO	Soil	WRAY MESA 36-34 PERIMETER
D22280-2	03/30/11	11:20	DW	04/01/11	SO	Soil	WRAY MESA 36-34 PIT CONTENTS
D22280-2A	03/30/11	11:20	DW	04/01/11	SO	Soil	WRAY MESA 36-34 PIT CONTENTS

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

## CASE NARRATIVE / CONFORMANCE SUMMARY

**Client:** Patara Oil and Gas**Job No** D22280**Site:** POAGCORV**Report Dat** 4/15/2011 1:29:31 PM

On 04/01/2011, two (2) samples, 0 Trip Blanks, and 0 Field Blanks were received at Accutest Mountain States (AMS) at a temperature of 5.9°C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D22280 was assigned to the project. The lab sample IDs, client sample IDs, and dates of sample collection are detailed in the report's Results Summary.

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

### Volatiles by GCMS By Method SW846 8260B

**Matrix** SO**Batch ID:** V5V870

- All samples were analyzed within the recommended method holding time.
- Samples D22273-4MS and D22273-4MSD were used as the QC samples indicated.
- The method blank for this batch meets method specific criteria.

### Extractables by GCMS By Method SW846 8270C BY SIM

**Matrix** SO**Batch ID:** OP3436

- All samples were extracted and analyzed within the recommended method holding time.
- Samples D22239-2MS and D22239-2MSD were used as the QC samples indicated.
- The method blank for this batch meets method specific criteria.

### Volatiles by GC By Method SW846 8015B

**Matrix** SO**Batch ID:** GGB558

- All samples were analyzed within the recommended method holding time.
- The method blank for this batch meets method specific criteria.
- Samples D22257-1MS and D22257-1MSD were used as the QC samples indicated.

### Extractables by GC By Method SW846-8015B

**Matrix** SO**Batch ID:** OP3426

- All samples were extracted and analyzed within the recommended method holding time.
- The method blank for this batch meets method specific criteria.
- Samples D22273-1MS and D22273-1MSD were used as the QC samples indicated.
- The matrix spike (MS) recovery of TPH-DRO (C10-C28) is outside control limits. The spike recovery indicates possible matrix interference and/or sample nonhomogeneity. Refer to the lab control or spike blank for recovery information.

**Matrix** SO**Batch ID:** OP3458

- All samples were extracted and analyzed within the recommended method holding time.
- The method blank for this batch meets method specific criteria.
- Samples D22280-1MS and D22280-1MSD were used as the QC samples indicated.

## Metals By Method SW846 6010B

**Matrix** AQ

**Batch ID:** MP4407

- All samples were digested and analyzed within the recommended method holding time.
- The method blank for this batch meets method specific criteria.
- Samples D22301-1AMS and D22301-1AMSD were used as the QC samples for the metals analysis.

**Matrix** SO

**Batch ID:** MP4419

- All samples were digested and analyzed within the recommended method holding time.
- The method blank for this batch meets method specific criteria.
- Samples D22280-1MS, D22280-1MSD, and D22280-1SDL were used as the QC samples for the metals analysis.
- The serial dilution RPDs for Cadmium, Chromium, Copper, Lead, Silver, and Zinc are outside control limits for sample MP4419-SD1. The percent difference is acceptable for Cadmium and Silver due to low initial sample concentration (< 50 times IDL).
- MP4419-SD1 for Chromium, Copper, Lead, and Zinc: Serial dilution indicates possible matrix interference.

## Metals By Method SW846 6020

**Matrix** SO

**Batch ID:** MP4420

- All samples were digested and analyzed within the recommended method holding time.
- The method blank for this batch meets method specific criteria.
- Samples D22280-1MS, D22280-1MSD, and D22280-1SDL were used as the QC samples for the metals analysis.

## Metals By Method SW846 7471A

**Matrix** SO

**Batch ID:** MP4421

- All samples were digested and analyzed within the recommended method holding time.
- The method blank for this batch meets method specific criteria.
- Samples D22273-1MS and D22273-1MSD were used as the QC samples for the Mercury analysis.

## Wet Chemistry By Method ASTM D1498-76M

**Matrix** SO

**Batch ID:** GN8952

- Sample D22280-1DUP was used as the QC sample for the Redox Potential Vs H2 analysis.

## Wet Chemistry By Method DEPT.OF AG, BOOK N9

**Matrix** SO

**Batch ID:** GP4160

- All samples were prepared and analyzed within the recommended method holding time.
- The method blank for this batch meets method specific criteria.

## Wet Chemistry By Method LADNR29B

**Matrix** SO

**Batch ID:** MP4407

- Sodium Adsorption Ratio: Calculated as:  $(\text{Na meq/L}) / \sqrt{[(\text{Ca meq/L}) + (\text{Mg meq/L})/2]}$

## Wet Chemistry By Method SM19 2540B M

**Matrix** SO

**Batch ID:** GN8957

- The data for SM19 2540B M meets quality control requirements.

**Wet Chemistry By Method SW846 3060/7196A M****Matrix** SO**Batch ID:** R7001

- The data for SW846 3060/7196A M meets quality control requirements.
- Trivalent Chromium: Calculated as: (Chromium) - (Hexavalent Chromium)

**Wet Chemistry By Method SW846 3060A/7196A****Matrix** SO**Batch ID:** M:GP12810

- The data for SW846 3060A/7196A meets quality control requirements.
- Hexavalent Chromium: Analysis performed at Accutest Laboratories, Marlborough, MA.

**Wet Chemistry By Method SW846 9045C****Matrix** SO**Batch ID:** GN8948

- The following samples were run outside of holding time for method SW846 9045C: D22280-1 and D22280-2.

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.

## SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** Accutest Mountain States**Job No** D22280**Site:** POAGCORV: POAGCORV**Report Date** 4/12/2011 10:11:09 AM

2 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were collected on 03/30/2011 and were received at Accutest on 04/01/2011 properly preserved, at 1.5 Deg. C and intact. These Samples received an Accutest job number of D22280. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

### Wet Chemistry By Method SW846 3060A/7196A

**Matrix** SO**Batch ID:** GP12810

- All samples were distilled within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D22116-6DUP, D22116-6MS were used as the QC samples for Chromium, Hexavalent.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety. The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(D22280).

## Sample Results

## Report of Analysis



## Report of Analysis

<b>Client Sample ID: WRAY MESA 36-34 PERIMETER</b>			
<b>Lab Sample ID:</b>	<b>D22280-1</b>	<b>Date Sampled:</b>	<b>03/30/11</b>
<b>Matrix:</b>	<b>SO - Soil</b>	<b>Date Received:</b>	<b>04/01/11</b>
<b>Method:</b>	<b>SW846 8260B</b>	<b>Percent Solids:</b>	<b>95.9</b>
<b>Project:</b>	<b>POAGCORV</b>		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5V14816.D	1	04/10/11	DC	n/a	n/a	V5V870
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.05 g	5.0 ml	100 ul
Run #2			

## Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	54	16	ug/kg	
108-88-3	Toluene	ND	110	54	ug/kg	
100-41-4	Ethylbenzene	ND	110	21	ug/kg	
1330-20-7	Xylene (total)	ND	110	38	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	96%		70-130%
460-00-4	4-Bromofluorobenzene	93%		70-130%
17060-07-0	1,2-Dichloroethane-D4	105%		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:	WRAY MESA 36-34 PERIMETER			
Lab Sample ID:	D22280-1	Date Sampled:	03/30/11	
Matrix:	SO - Soil	Date Received:	04/01/11	
Method:	SW846 8270C BY SIM	Percent Solids:	95.9	
Project:	POAGCORV			

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3G03579.D	1	04/07/11	TMB	04/06/11	OP3436	E3G131
Run #2							

Run #	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

## BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	6.9	5.6	ug/kg	
208-96-8	Acenaphthylene	ND	6.9	6.3	ug/kg	
120-12-7	Anthracene	ND	6.9	6.3	ug/kg	
56-55-3	Benzo(a)anthracene	ND	17	9.0	ug/kg	
50-32-8	Benzo(a)pyrene	ND	17	13	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	17	13	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	17	11	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	17	7.6	ug/kg	
218-01-9	Chrysene	ND	17	7.6	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	17	13	ug/kg	
206-44-0	Fluoranthene	ND	6.9	6.9	ug/kg	
86-73-7	Fluorene	ND	6.9	5.9	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	21	19	ug/kg	
90-12-0	1-Methylnaphthalene	ND	6.9	5.2	ug/kg	
91-57-6	2-Methylnaphthalene	ND	6.9	5.9	ug/kg	
91-20-3	Naphthalene	ND	6.9	6.6	ug/kg	
85-01-8	Phenanthrene	ND	6.9	4.9	ug/kg	
129-00-0	Pyrene	ND	6.9	6.6	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	57%		10-193%
321-60-8	2-Fluorobiphenyl	55%		20-138%
1718-51-0	Terphenyl-d14	95%		17-174%

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:	WRAY MESA 36-34 PERIMETER		
Lab Sample ID:	D22280-1	Date Sampled:	03/30/11
Matrix:	SO - Soil	Date Received:	04/01/11
Method:	SW846 8015B	Percent Solids:	95.9
Project:	POAGCORV		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB0296.D	1	04/02/11	BR	n/a	n/a	GGB558
Run #2							

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

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	5.55	11	5.4	mg/kg	J
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	82%		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:	WRAY MESA 36-34 PERIMETER					Date Sampled:	03/30/11
Lab Sample ID:	D22280-1					Date Received:	04/01/11
Matrix:	SO - Soil					Percent Solids:	95.9
Method:	SW846-8015B SW846 3546						
Project:	POAGCORV						

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI1509.D	1	04/08/11	EH	04/07/11	OP3458	GFI106
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	21.7	14	9.0	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	89%		63-130%		

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: WRAY MESA 36-34 PERIMETER

Lab Sample ID: D22280-1

Date Sampled: 03/30/11

Matrix: SO - Soil

Date Received: 04/01/11

Percent Solids: 95.9

Project: POAGCORV

## Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	4.9	0.43	mg/kg	5	04/07/11	04/11/11 JM	SW846 6020 <sup>3</sup>	SW846 3050B <sup>5</sup>
Barium	59.6	1.1	mg/kg	1	04/07/11	04/07/11 JB	SW846 6010B <sup>1</sup>	SW846 3050B <sup>4</sup>
Cadmium	< 1.1	1.1	mg/kg	1	04/07/11	04/07/11 JB	SW846 6010B <sup>1</sup>	SW846 3050B <sup>4</sup>
Chromium	1.2	1.1	mg/kg	1	04/07/11	04/07/11 JB	SW846 6010B <sup>1</sup>	SW846 3050B <sup>4</sup>
Copper	5.0	1.1	mg/kg	1	04/07/11	04/07/11 JB	SW846 6010B <sup>1</sup>	SW846 3050B <sup>4</sup>
Lead	12.7	5.3	mg/kg	1	04/07/11	04/07/11 JB	SW846 6010B <sup>1</sup>	SW846 3050B <sup>4</sup>
Mercury	< 0.091	0.091	mg/kg	1	04/08/11	04/08/11 JB	SW846 7471A <sup>2</sup>	SW846 7471A <sup>6</sup>
Nickel	< 3.2	3.2	mg/kg	1	04/07/11	04/07/11 JB	SW846 6010B <sup>1</sup>	SW846 3050B <sup>4</sup>
Selenium	< 5.3	5.3	mg/kg	1	04/07/11	04/07/11 JB	SW846 6010B <sup>1</sup>	SW846 3050B <sup>4</sup>
Silver	< 3.2	3.2	mg/kg	1	04/07/11	04/07/11 JB	SW846 6010B <sup>1</sup>	SW846 3050B <sup>4</sup>
Zinc	18.1	3.2	mg/kg	1	04/07/11	04/07/11 JB	SW846 6010B <sup>1</sup>	SW846 3050B <sup>4</sup>

(1) Instrument QC Batch: MA1440

(2) Instrument QC Batch: MA1442

(3) Instrument QC Batch: MA1446

(4) Prep QC Batch: MP4419

(5) Prep QC Batch: MP4420

(6) Prep QC Batch: MP4421

RL = Reporting Limit

## Report of Analysis

Client Sample ID: WRAY MESA 36-34 PERIMETER

Lab Sample ID: D22280-1

Date Sampled: 03/30/11

Matrix: SO - Soil

Date Received: 04/01/11

Percent Solids: 95.9

Project: POAGCORV

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent <sup>a</sup>	< 0.41	0.41	mg/kg	1	04/07/11 16:00	AMA	SW846 3060A/7196A
Chromium, Trivalent <sup>b</sup>	< 1.5	1.5	mg/kg	1	04/07/11 16:48	JB	SW846 3060/7196A M
Redox Potential Vs H2	238		mv	1	04/01/11 14:15	JK	ASTM D1498-76M
Solids, Percent	95.9		%	1	04/04/11	JK	SM19 2540B M
Specific Conductivity	796	1.0	umhos/cm	1	04/07/11	JK	DEPT.OF AG, BOOK N9
pH	9.00		su	1	04/01/11 14:15	JK	SW846 9045C

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Calculated as: (Chromium) - (Chromium, Hexavalent)

RL = Reporting Limit

## Report of Analysis

Client Sample ID: WRAY MESA 36-34 PERIMETER

Lab Sample ID: D22280-1A

Date Sampled: 03/30/11

Matrix: SO - Soil

Date Received: 04/01/11

Percent Solids: 95.9

Project: POAGCORV

## SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	30.1	2.0	mg/l	1	04/06/11	04/06/11 JM	SW846 6010B <sup>1</sup>	EPA 200.7 <sup>2</sup>
Magnesium	6.96	1.0	mg/l	1	04/06/11	04/06/11 JM	SW846 6010B <sup>1</sup>	EPA 200.7 <sup>2</sup>
Sodium	141	2.0	mg/l	1	04/06/11	04/06/11 JM	SW846 6010B <sup>1</sup>	EPA 200.7 <sup>2</sup>

(1) Instrument QC Batch: MA1436

(2) Prep QC Batch: MP4407

RL = Reporting Limit

Report of Analysis

Client Sample ID:	WRAY MESA 36-34 PERIMETER			Date Sampled:	03/30/11
Lab Sample ID:	D22280-1A			Date Received:	04/01/11
Matrix:	SO - Soil			Percent Solids:	95.9
Project:	POAGCORV				

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio <sup>a</sup>	6.02		ratio	1	04/06/11 16:47	JM	LADNR29B

(a) Calculated as: (Na meq/L) / sqrt [(Ca meq/L)+ (Mg meq/L)/2]

RL = Reporting Limit



## Report of Analysis

<b>Client Sample ID:</b> WRAY MESA 36-34 PIT CONTENTS			
<b>Lab Sample ID:</b>	D22280-2	<b>Date Sampled:</b>	03/30/11
<b>Matrix:</b>	SO - Soil	<b>Date Received:</b>	04/01/11
<b>Method:</b>	SW846 8260B	<b>Percent Solids:</b>	81.9
<b>Project:</b>	POAGCORV		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5V14817.D	1	04/10/11	DC	n/a	n/a	V5V870
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.03 g	5.0 ml	100 ul
Run #2			

## Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	31.4	72	22	ug/kg	J
108-88-3	Toluene	175	140	72	ug/kg	
100-41-4	Ethylbenzene	193	140	29	ug/kg	
1330-20-7	Xylene (total)	978	140	50	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	102%		70-130%
460-00-4	4-Bromofluorobenzene	96%		70-130%
17060-07-0	1,2-Dichloroethane-D4	112%		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:	WRAY MESA 36-34 PIT CONTENTS				
Lab Sample ID:	D22280-2		Date Sampled:	03/30/11	
Matrix:	SO - Soil		Date Received:	04/01/11	
Method:	SW846 8270C BY SIM SW846 3540C		Percent Solids:	81.9	
Project:	POAGCORV				

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3G03590.D	2	04/08/11	TMB	04/06/11	OP3436	E3G132
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

## BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	16	13	ug/kg	
208-96-8	Acenaphthylene	ND	16	15	ug/kg	
120-12-7	Anthracene	ND	16	15	ug/kg	
56-55-3	Benzo(a)anthracene	ND	41	21	ug/kg	
50-32-8	Benzo(a)pyrene	ND	41	29	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	41	30	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	41	25	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	41	18	ug/kg	
218-01-9	Chrysene	ND	41	18	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	41	30	ug/kg	
206-44-0	Fluoranthene	ND	16	16	ug/kg	
86-73-7	Fluorene	ND	16	14	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	49	45	ug/kg	
90-12-0	1-Methylnaphthalene	ND	16	12	ug/kg	
91-57-6	2-Methylnaphthalene	ND	16	14	ug/kg	
91-20-3	Naphthalene	ND	16	15	ug/kg	
85-01-8	Phenanthrene	ND	16	11	ug/kg	
129-00-0	Pyrene	ND	16	15	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	35%		10-193%
321-60-8	2-Fluorobiphenyl	42%		20-138%
1718-51-0	Terphenyl-d14	92%		17-174%

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

<b>Client Sample ID:</b>	WRAY MESA 36-34 PIT CONTENTS			<b>Date Sampled:</b>	03/30/11
<b>Lab Sample ID:</b>	D22280-2			<b>Date Received:</b>	04/01/11
<b>Matrix:</b>	SO - Soil			<b>Percent Solids:</b>	81.9
<b>Method:</b>	SW846 8015B				
<b>Project:</b>	POAGCORV				

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB0297.D	1	04/02/11	BR	n/a	n/a	GGB558
Run #2							

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

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	12.8	14	7.2	mg/kg	J
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	77%		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: WRAY MESA 36-34 PIT CONTENTS

Lab Sample ID: D22280-2

Date Sampled: 03/30/11

Matrix: SO - Soil

Date Received: 04/01/11

Method: SW846-8015B SW846 3550B

Percent Solids: 81.9

Project: POAGCORV

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD6150.D	1	04/06/11	JB	04/03/11	OP3426	GFD268
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	317	16	11	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	80%		63-130%		

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: WRAY MESA 36-34 PIT CONTENTS

Lab Sample ID: D22280-2

Date Sampled: 03/30/11

Matrix: SO - Soil

Date Received: 04/01/11

Percent Solids: 81.9

Project: POAGCORV

## Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	2.9	0.49	mg/kg	5	04/07/11	04/11/11 JM	SW846 6020 <sup>3</sup>	SW846 3050B <sup>5</sup>
Barium	2120	1.2	mg/kg	1	04/07/11	04/07/11 JB	SW846 6010B <sup>1</sup>	SW846 3050B <sup>4</sup>
Cadmium	< 1.2	1.2	mg/kg	1	04/07/11	04/07/11 JB	SW846 6010B <sup>1</sup>	SW846 3050B <sup>4</sup>
Chromium	18.4	1.2	mg/kg	1	04/07/11	04/07/11 JB	SW846 6010B <sup>1</sup>	SW846 3050B <sup>4</sup>
Copper	73.0	1.2	mg/kg	1	04/07/11	04/07/11 JB	SW846 6010B <sup>1</sup>	SW846 3050B <sup>4</sup>
Lead	119	6.2	mg/kg	1	04/07/11	04/07/11 JB	SW846 6010B <sup>1</sup>	SW846 3050B <sup>4</sup>
Mercury	< 0.12	0.12	mg/kg	1	04/08/11	04/08/11 JB	SW846 7471A <sup>2</sup>	SW846 7471A <sup>6</sup>
Nickel	9.6	3.7	mg/kg	1	04/07/11	04/07/11 JB	SW846 6010B <sup>1</sup>	SW846 3050B <sup>4</sup>
Selenium	< 6.2	6.2	mg/kg	1	04/07/11	04/07/11 JB	SW846 6010B <sup>1</sup>	SW846 3050B <sup>4</sup>
Silver	< 3.7	3.7	mg/kg	1	04/07/11	04/07/11 JB	SW846 6010B <sup>1</sup>	SW846 3050B <sup>4</sup>
Zinc	64.2	3.7	mg/kg	1	04/07/11	04/07/11 JB	SW846 6010B <sup>1</sup>	SW846 3050B <sup>4</sup>

(1) Instrument QC Batch: MA1440

(2) Instrument QC Batch: MA1442

(3) Instrument QC Batch: MA1446

(4) Prep QC Batch: MP4419

(5) Prep QC Batch: MP4420

(6) Prep QC Batch: MP4421

RL = Reporting Limit

## Report of Analysis

Client Sample ID: WRAY MESA 36-34 PIT CONTENTS

Lab Sample ID: D22280-2

Date Sampled: 03/30/11

Matrix: SO - Soil

Date Received: 04/01/11

Percent Solids: 81.9

Project: POAGCORV

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent <sup>a</sup>	< 0.48	0.48	mg/kg	1	04/07/11 16:00	AMA	SW846 3060A/7196A
Chromium, Trivalent <sup>b</sup>	18.0	1.7	mg/kg	1	04/07/11 17:12	JB	SW846 3060/7196A M
Redox Potential Vs H2	237		mv	1	04/01/11 14:15	JK	ASTM D1498-76M
Solids, Percent	81.9		%	1	04/04/11	JK	SM19 2540B M
Specific Conductivity	4940	1.0	umhos/cm	1	04/07/11	JK	DEPT.OF AG, BOOK N9
pH	9.40		su	1	04/01/11 14:15	JK	SW846 9045C

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Calculated as: (Chromium) - (Chromium, Hexavalent)

RL = Reporting Limit

## Report of Analysis

Client Sample ID: WRAY MESA 36-34 PIT CONTENTS

Lab Sample ID: D22280-2A

Date Sampled: 03/30/11

Matrix: SO - Soil

Date Received: 04/01/11

Percent Solids: 81.9

Project: POAGCORV

## SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	31.0	2.0	mg/l	1	04/06/11	04/06/11 JM	SW846 6010B <sup>1</sup>	EPA 200.7 <sup>2</sup>
Magnesium	< 1.0	1.0	mg/l	1	04/06/11	04/06/11 JM	SW846 6010B <sup>1</sup>	EPA 200.7 <sup>2</sup>
Sodium	1130	2.0	mg/l	1	04/06/11	04/06/11 JM	SW846 6010B <sup>1</sup>	EPA 200.7 <sup>2</sup>

(1) Instrument QC Batch: MA1436

(2) Prep QC Batch: MP4407

RL = Reporting Limit

Report of Analysis

Client Sample ID:	WRAY MESA 36-34 PIT CONTENTS			Date Sampled:	03/30/11
Lab Sample ID:	D22280-2A			Date Received:	04/01/11
Matrix:	SO - Soil			Percent Solids:	81.9
Project:	POAGCORV				

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio <sup>a</sup>	55.0		ratio	1	04/06/11 16:53	JM	LADNR29B

(a) Calculated as: (Na meq/L) / sqrt [(Ca meq/L)+ (Mg meq/L)/2]

RL = Reporting Limit



## Misc. Forms

### Custody Documents and Other Forms

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**Includes the following where applicable:**

- Chain of Custody



FED-EX Tracking #	Bottle Order Control #
Accutest Quote #	Accutest Job # <b>D22280</b>

## 4.1

# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D22280

Client: PATARA OIL&GAS

Immediate Client Services Action Required: No

Date / Time Received: 4/1/2011 10:00:00 AM

No. Coolers: 1

Client Service Action Required at Login: No

Project: WRAY MESA 36-34

Airbill #'s: UPS

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/>		<input type="checkbox"/>

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Cooler temp verification:			Infrared gun
3. Cooler media:			Ice (bag)

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	<input type="checkbox"/>		<input type="checkbox"/>	
2. Trip Blank listed on COC:	<input type="checkbox"/>		<input type="checkbox"/>	
3. Samples preserved properly:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. VOCs headspace free:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>		<input type="checkbox"/>

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Condition of sample:			Intact

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>		<input checked="" type="checkbox"/>	
3. Sufficient volume rec'd for analysis:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Comments

Accutest Laboratories  
V:(303) 425-6021

4036 Youngfield Street  
F: (303) 425-6854

Wheat Ridge, CO  
www.accutest.com

**Job Change Order: D22280\_4/5/2011**

<b>Requested Date:</b>	4/5/2011	<b>Received Date:</b>	4/1/2011
<b>Account Name:</b>	Patara Oil and Gas	<b>Due Date:</b>	4/15/2011
<b>Project Description:</b>	POAGCORV	<b>Deliverable:</b>	COMMBN
<b>CSR:</b>	SG	<b>TAT (Days):</b>	14
<b>Sample #:</b>	D22280-1 and 2	<b>Change:</b>	Add B8270SIMPAAH, SAR, Table 910 metals, (ASMS 6020, BAACD, CR, CU, PB, NI, SE, AG, ZN and HG and CR3). Due date remains at 4/15.

<b>Above Changes</b>	Danny White	<b>Date:</b>	4/5/2011
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To Client: This Change Order is confirmation of the revisions, previously discussed with the Accutest Client Service

Page 1 of 1

**D22280: Chain of Custody**  
**Page 3 of 3**

## GC/MS Volatiles

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## QC Data Summaries

Includes the following where applicable:

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

## Method Blank Summary

Page 1 of 1

Job Number: D22280  
Account: POAGCORV Patara Oil and Gas  
Project: POAGCORV

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V870-MB1	5V14799.D	1	04/10/11	DC	n/a	n/a	V5V870

The QC reported here applies to the following samples:

Method: SW846 8260B

D22280-1, D22280-2

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	50	15	ug/kg	
100-41-4	Ethylbenzene	ND	100	20	ug/kg	
108-88-3	Toluene	ND	100	50	ug/kg	
1330-20-7	Xylene (total)	36.2	100	35	ug/kg	J

CAS No.	Surrogate Recoveries	Limits
2037-26-5	Toluene-D8	86% 70-130%
460-00-4	4-Bromofluorobenzene	84% 70-130%
17060-07-0	1,2-Dichloroethane-D4	87% 70-130%

## Blank Spike Summary

Page 1 of 1

Job Number: D22280  
Account: POAGCORV Patara Oil and Gas  
Project: POAGCORV

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V870-BS1	5V14800.D	1	04/10/11	DC	n/a	n/a	V5V870

The QC reported here applies to the following samples:

Method: SW846 8260B

D22280-1, D22280-2

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	42.8	86	68-130
100-41-4	Ethylbenzene	50	43.6	87	70-130
108-88-3	Toluene	50	40.8	82	70-130
1330-20-7	Xylene (total)	100	79.1	79	60-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	95%	70-130%
460-00-4	4-Bromofluorobenzene	98%	70-130%
17060-07-0	1,2-Dichloroethane-D4	94%	70-130%

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D22280

Account: POAGCORV Patara Oil and Gas

Project: POAGCORV

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D22273-4MS	5V14803.D	1	04/10/11	DC	n/a	n/a	V5V870
D22273-4MSD	5V14804.D	1	04/10/11	DC	n/a	n/a	V5V870
D22273-4	5V14805.D	1	04/10/11	DC	n/a	n/a	V5V870

The QC reported here applies to the following samples:

Method: SW846 8260B

D22280-1, D22280-2

CAS No.	Compound	D22273-4 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		3310	3440	104	3720	113	8	55-140/30
100-41-4	Ethylbenzene	ND		3310	3550	107	3850	116	8	56-139/30
108-88-3	Toluene	ND		3310	3340	101	3580	108	7	57-144/30
1330-20-7	Xylene (total)	54.2	J	6610	6490	97	7000	105	8	51-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D22273-4	Limits
2037-26-5	Toluene-D8	79%	85%	93%	70-130%
460-00-4	4-Bromofluorobenzene	87%	94%	89%	70-130%
17060-07-0	1,2-Dichloroethane-D4	88%	94%	101%	70-130%



## GC/MS Semi-volatiles

### QC Data Summaries

Includes the following where applicable:

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

## Method Blank Summary

Page 1 of 1

Job Number: D22280  
Account: POAGCORV Patara Oil and Gas  
Project: POAGCORV

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP3436-MB	3G03568.D	1	04/07/11	TMB	04/06/11	OP3436	E3G131

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D22280-1, D22280-2

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	6.7	5.3	ug/kg	
208-96-8	Acenaphthylene	ND	6.7	6.0	ug/kg	
120-12-7	Anthracene	ND	6.7	6.0	ug/kg	
56-55-3	Benzo(a)anthracene	ND	17	8.7	ug/kg	
50-32-8	Benzo(a)pyrene	ND	17	12	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	17	12	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	17	10	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	17	7.3	ug/kg	
218-01-9	Chrysene	ND	17	7.3	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	17	12	ug/kg	
206-44-0	Fluoranthene	ND	6.7	6.7	ug/kg	
86-73-7	Fluorene	ND	6.7	5.7	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	20	18	ug/kg	
90-12-0	1-Methylnaphthalene	ND	6.7	5.0	ug/kg	
91-57-6	2-Methylnaphthalene	ND	6.7	5.7	ug/kg	
91-20-3	Naphthalene	ND	6.7	6.3	ug/kg	
85-01-8	Phenanthrene	ND	6.7	4.7	ug/kg	
129-00-0	Pyrene	ND	6.7	6.3	ug/kg	

CAS No.	Surrogate Recoveries	Limits
4165-60-0	Nitrobenzene-d5	89% 10-193%
321-60-8	2-Fluorobiphenyl	73% 20-138%
1718-51-0	Terphenyl-d14	87% 17-174%

## Blank Spike Summary

Page 1 of 1

Job Number: D22280  
Account: POAGCORV Patara Oil and Gas  
Project: POAGCORV

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP3436-BS	3G03569.D	1	04/07/11	TMB	04/06/11	OP3436	E3G131

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D22280-1, D22280-2

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
83-32-9	Acenaphthene	83.3	41.0	49	40-136
208-96-8	Acenaphthylene	83.3	40.0	48	42-139
120-12-7	Anthracene	83.3	48.1	58	40-141
56-55-3	Benzo(a)anthracene	83.3	62.5	75	38-143
50-32-8	Benzo(a)pyrene	83.3	60.7	73	39-145
205-99-2	Benzo(b)fluoranthene	83.3	60.9	73	38-151
191-24-2	Benzo(g,h,i)perylene	83.3	60.0	72	35-136
207-08-9	Benzo(k)fluoranthene	83.3	69.3	83	38-147
218-01-9	Chrysene	83.3	63.2	76	39-137
53-70-3	Dibenzo(a,h)anthracene	83.3	61.1	73	35-139
206-44-0	Fluoranthene	83.3	53.0	64	34-132
86-73-7	Fluorene	83.3	42.0	50	41-136
193-39-5	Indeno(1,2,3-cd)pyrene	83.3	61.1	73	31-144
90-12-0	1-Methylnaphthalene	83.3	39.9	48	36-130
91-57-6	2-Methylnaphthalene	83.3	39.4	47	40-131
91-20-3	Naphthalene	83.3	42.3	51	36-130
85-01-8	Phenanthrene	83.3	43.5	52	40-135
129-00-0	Pyrene	83.3	56.0	67	29-157

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	54%	10-193%
321-60-8	2-Fluorobiphenyl	46%	20-138%
1718-51-0	Terphenyl-d14	73%	17-174%

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D22280  
Account: POAGCORV Patara Oil and Gas  
Project: POAGCORV

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP3436-MS	3G03577.D	1	04/07/11	TMB	04/06/11	OP3436	E3G131
OP3436-MSD	3G03578.D	1	04/07/11	TMB	04/06/11	OP3436	E3G131
D22239-2	3G03576.D	1	04/07/11	TMB	04/06/11	OP3436	E3G131

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D22280-1, D22280-2

CAS No.	Compound	D22239-2 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	ND		87.7	49.4	56	49.2	56	0	20-151/30
208-96-8	Acenaphthylene	ND		87.7	50.3	57	52.0	59	3	23-156/30
120-12-7	Anthracene	ND		87.7	62.4	71	58.7	67	6	25-149/30
56-55-3	Benzo(a)anthracene	ND		87.7	77.0	88	77.3	88	0	22-157/30
50-32-8	Benzo(a)pyrene	ND		87.7	75.1	86	72.0	82	4	23-153/30
205-99-2	Benzo(b)fluoranthene	ND		87.7	76.9	88	76.8	88	0	22-161/30
191-24-2	Benzo(g,h,i)perylene	ND		87.7	64.4	73	67.6	77	5	20-158/30
207-08-9	Benzo(k)fluoranthene	ND		87.7	80.9	92	81.8	93	1	17-161/30
218-01-9	Chrysene	ND		87.7	69.8	80	70.8	81	1	16-159/30
53-70-3	Dibenzo(a,h)anthracene	ND		87.7	67.1	77	70.0	80	4	21-154/30
206-44-0	Fluoranthene	ND		87.7	75.4	86	67.6	77	11	16-140/30
86-73-7	Fluorene	ND		87.7	55.3	63	53.5	61	3	15-153/30
193-39-5	Indeno(1,2,3-cd)pyrene	ND		87.7	70.0	80	65.8	75	6	21-159/30
90-12-0	1-Methylnaphthalene	ND		87.7	46.0	52	50.6	58	10	10-148/30
91-57-6	2-Methylnaphthalene	ND		87.7	44.3	51	50.9	58	14	10-181/30
91-20-3	Naphthalene	ND		87.7	45.4	52	47.3	54	4	10-176/30
85-01-8	Phenanthrene	ND		87.7	57.9	66	55.2	63	5	22-152/30
129-00-0	Pyrene	ND		87.7	68.9	79	69.5	79	1	10-200/30

CAS No.	Surrogate Recoveries	MS	MSD	D22239-2	Limits
4165-60-0	Nitrobenzene-d5	58%	62%	81%	10-193%
321-60-8	2-Fluorobiphenyl	49%	53%	63%	20-138%
1718-51-0	Terphenyl-d14	71%	77%	77%	17-174%

## GC Volatiles

## QC Data Summaries

Includes the following where applicable:

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

## Method Blank Summary

Page 1 of 1

Job Number: D22280  
Account: POAGCORV Patara Oil and Gas  
Project: POAGCORV

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB558-MB	GB0278.D	1	04/02/11	BR	n/a	n/a	GGB558

The QC reported here applies to the following samples:

Method: SW846 8015B

D22280-1, D22280-2

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

CAS No.	Surrogate Recoveries	Limits
120-82-1	1,2,4-Trichlorobenzene	84% 60-140%

Blank Spike Summary

Job Number: D22280  
Account: POAGCORV Patara Oil and Gas  
Project: POAGCORV

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB558-BS	GB0279.D	1	04/02/11	BR	n/a	n/a	GGB558

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

D22280-1, D22280-2

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

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	89%	60-140%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D22280  
Account: POAGCORV Patara Oil and Gas  
Project: POAGCORV

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D22257-1MS	GB0281.D	1	04/02/11	BR	n/a	n/a	GGB558
D22257-1MSD	GB0282.D	1	04/02/11	BR	n/a	n/a	GGB558
D22257-1	GB0280.D	1	04/02/11	BR	n/a	n/a	GGB558

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

D22280-1, D22280-2

CAS No.	Compound	D22257-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	ND		170	195	115	188	110	4	62-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D22257-1	Limits
120-82-1	1,2,4-Trichlorobenzene	87%	85%	84%	60-140%



## GC Semi-volatiles

### QC Data Summaries

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**Includes the following where applicable:**

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

## Method Blank Summary

Page 1 of 1

Job Number: D22280  
Account: POAGCORV Patara Oil and Gas  
Project: POAGCORV

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP3426-MB	FD6133.D	1	04/05/11	JB	04/03/11	OP3426	GFD268

The QC reported here applies to the following samples:

Method: SW846-8015B

D22280-2

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	13	8.7	mg/kg	

CAS No.	Surrogate Recoveries	Limits
84-15-1	o-Terphenyl	104% 63-130%

8.1.1

8

## Method Blank Summary

Page 1 of 1

Job Number: D22280  
Account: POAGCORV Patara Oil and Gas  
Project: POAGCORV

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP3458-MB	FI1505.D	1	04/08/11	EH	04/07/11	OP3458	GFI106

The QC reported here applies to the following samples:

Method: SW846-8015B

D22280-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	13	8.7	mg/kg	

CAS No.	Surrogate Recoveries	Limits
84-15-1	o-Terphenyl	99% 63-130%

8.1.2

8

## Blank Spike Summary

Page 1 of 1

Job Number: D22280

Account: POAGCORV Patara Oil and Gas

Project: POAGCORV

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP3426-BS	FD6134.D	1	04/05/11	JB	04/03/11	OP3426	GFD268

The QC reported here applies to the following samples:

Method: SW846-8015B

D22280-2

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	667	572	86	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	98%	63-130%

8.2.1

8

## Blank Spike Summary

Page 1 of 1

Job Number: D22280  
Account: POAGCORV Patara Oil and Gas  
Project: POAGCORV

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP3458-BS	FI1506.D	1	04/08/11	EH	04/07/11	OP3458	GFI106

The QC reported here applies to the following samples:

Method: SW846-8015B

D22280-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	667	552	83	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	97%	63-130%

8.2.2

8

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D22280  
Account: POAGCORV Patara Oil and Gas  
Project: POAGCORV

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP3426-MS	FD6135.D	1	04/05/11	JB	04/03/11	OP3426	GFD268
OP3426-MSD	FD6136.D	1	04/05/11	JB	04/03/11	OP3426	GFD268
D22273-1	FD6137.D	1	04/05/11	JB	04/03/11	OP3426	GFD268

The QC reported here applies to the following samples:

Method: SW846-8015B

D22280-2

CAS No.	Compound	D22273-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	127		758	652	69* a	744	81	13	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D22273-1	Limits
84-15-1	o-Terphenyl	88%	89%	92%	63-130%

(a) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D22280  
Account: POAGCORV Patara Oil and Gas  
Project: POAGCORV

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP3458-MS	FI1507.D	1	04/08/11	EH	04/07/11	OP3458	GFI106
OP3458-MSD	FI1508.D	1	04/08/11	EH	04/07/11	OP3458	GFI106
D22280-1	FI1509.D	1	04/08/11	EH	04/07/11	OP3458	GFI106

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

D22280-1

CAS No.	Compound	D22280-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	21.7		694	563	78	623	86	10	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D22280-1	Limits
84-15-1	o-Terphenyl	89%	96%	89%	63-130%

## 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: D22280  
Account: POAGCORV - Patara Oil and Gas  
Project: POAGCORV

QC Batch ID: MP4407  
Matrix Type: AQUEOUS

Methods: LADNR29B, SW846 6010B  
Units: ug/l

Prep Date: 04/06/11

Metal	RL	IDL	MDL	MB raw	final
Aluminum	500	30	250		
Antimony	150	16	65		
Arsenic	130	30	33		
Barium	50	5.5	12		
Beryllium	50	2.2	22		
Boron	250	24	93		
Cadmium	50	1.4	6		
Calcium	2000	48	46	239	<2000
Chromium	50	.9	8		
Cobalt	25	1.8	1.5		
Copper	50	4.3	14		
Iron	350	17	50		
Lead	250	8	16		
Lithium	10	1.4	8		
Magnesium	1000	29	62	33.0	<1000
Manganese	25	.27	3.5		
Molybdenum	50	2.3	6		
Nickel	150	2.2	3		
Phosphorus	500	55	270		
Potassium	5000	280	2700		
Selenium	250	19	36		
Silicon	250	19	100		
Silver	150	.9	1.5		
Sodium	2000	570	110	36.0	<2000
Strontium	25		17		
Thallium	50	15	11		
Tin	250	28	22		
Titanium	50	.55	3.5		
Uranium	250	7.5	20		
Vanadium	50	.8	1.5		
Zinc	150	1.4	8.5		

Associated samples MP4407: D22280-1A, D22280-2A

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

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D22280  
Account: POAGCORV - Patara Oil and Gas  
Project: POAGCORV

QC Batch ID: MP4407  
Matrix Type: AQUEOUS

Methods: LADNR29B, SW846 6010B  
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D22280  
Account: POAGCORV - Patara Oil and Gas  
Project: POAGCORV

QC Batch ID: MP4407  
Matrix Type: AQUEOUS

Methods: LADNR29B, SW846 6010B  
Units: ug/l

Prep Date: 04/06/11

Metal	D22301-1A Original MS		Spikelot MPICPALL % Rec		QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium	99100	216000	125000	93.5	75-125
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Lithium					
Magnesium	27500	148000	125000	96.4	75-125
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Sodium	205000	306000	125000	80.8	75-125
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP4407: D22280-1A, D22280-2A

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D22280  
Account: POAGCORV - Patara Oil and Gas  
Project: POAGCORV

QC Batch ID: MP4407  
Matrix Type: AQUEOUS

Methods: LADNR29B, SW846 6010B  
Units: ug/l

Prep Date:

Metal

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D22280  
Account: POAGCORV - Patara Oil and Gas  
Project: POAGCORV

QC Batch ID: MP4407  
Matrix Type: AQUEOUS

Methods: LADNR29B, SW846 6010B  
Units: ug/l

Prep Date: 04/06/11

Metal	D22301-1A Original MSD	Spikelot MPICPAL % Rec	MSD RPD	QC Limit
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	99100	222000	125000	98.3
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	27500	157000	125000	103.6
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	205000	337000	125000	105.6
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP4407: D22280-1A, D22280-2A

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D22280  
Account: POAGCORV - Patara Oil and Gas  
Project: POAGCORV

QC Batch ID: MP4407  
Matrix Type: AQUEOUS

Methods: LADNR29B, SW846 6010B  
Units: ug/l

Prep Date:

Metal

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

## SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D22280

Account: POAGCORV - Patara Oil and Gas

Project: POAGCORV

QC Batch ID: MP4407

Methods: LADNR29B, SW846 6010B

Matrix Type: AQUEOUS

Units: ug/l

Prep Date:

04/06/11

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	127000	125000	101.6	80-120
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	121000	125000	96.8	80-120
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	124000	125000	99.2	80-120
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP4407: D22280-1A, D22280-2A

Results &lt; IDL are shown as zero for calculation purposes

(\*) Outside of QC limits

9.1.3

9

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D22280  
Account: POAGCORV - Patara Oil and Gas  
Project: POAGCORV

QC Batch ID: MP4407  
Matrix Type: AQUEOUS

Methods: LADNR29B, SW846 6010B  
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested



BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D22280  
Account: POAGCORV - Patara Oil and Gas  
Project: POAGCORV

QC Batch ID: MP4419  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: mg/kg

Prep Date: 04/07/11

Metal	RL	IDL	MDL	MB raw	final
Aluminum	10	.59	.59		
Antimony	3.0	.31	.31		
Arsenic	2.5	.59	.59		
Barium	1.0	.11	.11	0.14	<1.0
Beryllium	1.0	.044	.1		
Boron	5.0	.48	.48		
Cadmium	1.0	.027	.27	0.020	<1.0
Calcium	40	.96	1.1		
Chromium	1.0	.018	.031	0.030	<1.0
Cobalt	0.50	.035	.035		
Copper	1.0	.085	.16	-0.060	<1.0
Iron	7.0	.34	2		
Lead	5.0	.16	.21	-0.11	<5.0
Lithium	0.20	.028	.031		
Magnesium	20	.58	1.4		
Manganese	0.50	.0053	.012		
Molybdenum	1.0	.045	.054		
Nickel	3.0	.043	.099	-0.010	<3.0
Phosphorus	10	1.1	1.2		
Potassium	200	5.5	9.2		
Selenium	5.0	.38	.5	-0.14	<5.0
Silicon	5.0	.38	.51		
Silver	3.0	.018	.051	0.0	<3.0
Sodium	40	11	11		
Strontium	5.0		.017		
Thallium	1.0	.29	.34		
Tin	5.0	.55	1.3		
Titanium	1.0	.011	.1		
Uranium	5.0	.15	.2		
Vanadium	1.0	.016	.025		
Zinc	3.0	.028	.06	0.21	<3.0

Associated samples MP4419: D22280-1, D22280-2

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

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D22280  
Account: POAGCORV - Patara Oil and Gas  
Project: POAGCORV

QC Batch ID: MP4419  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D22280  
Account: POAGCORV - Patara Oil and Gas  
Project: POAGCORV

QC Batch ID: MP4419  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: mg/kg

Prep Date: 04/07/11

Metal	D22280-1 Original MS		SpikeLot MPICPALL % Rec		QC Limits
Aluminum					
Antimony	anr				
Arsenic	anr				
Barium	59.6	252	215	89.5	75-125
Beryllium	anr				
Boron					
Cadmium	0.18	48.3	53.8	89.5	75-125
Calcium					
Chromium	1.2	50.6	53.8	91.9	75-125
Cobalt	anr				
Copper	5.0	56.7	53.8	96.2	75-125
Iron					
Lead	12.7	110	108	90.5	75-125
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel	2.9	49.7	53.8	87.1	75-125
Phosphorus					
Potassium					
Selenium	0.0	96.5	108	89.8	75-125
Silicon					
Silver	0.064	20.4	21.5	94.6	75-125
Sodium					
Strontium					
Thallium	anr				
Tin	anr				
Titanium					
Uranium					
Vanadium	anr				
Zinc	18.1	62.4	53.8	82.4	75-125

Associated samples MP4419: D22280-1, D22280-2

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D22280  
Account: POAGCORV - Patara Oil and Gas  
Project: POAGCORV

QC Batch ID: MP4419  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: mg/kg

Prep Date:

Metal

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D22280  
Account: POAGCORV - Patara Oil and Gas  
Project: POAGCORV

QC Batch ID: MP4419  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: mg/kg

Prep Date: 04/07/11

Metal	D22280-1 Original	MSD	Spikelot MPICPAL	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony	anr					
Arsenic	anr					
Barium	59.6	252	217	88.6	0.0	20
Beryllium	anr					
Boron						
Cadmium	0.18	48.8	54.3	89.5	1.0	20
Calcium						
Chromium	1.2	51.1	54.3	91.9	1.0	20
Cobalt	anr					
Copper	5.0	57.3	54.3	96.3	1.1	20
Iron						
Lead	12.7	111	109	90.5	0.9	20
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel	2.9	50.6	54.3	87.8	1.8	20
Phosphorus						
Potassium						
Selenium	0.0	97.0	109	89.3	0.5	20
Silicon						
Silver	0.064	20.6	21.7	94.5	1.0	20
Sodium						
Strontium						
Thallium	anr					
Tin	anr					
Titanium						
Uranium						
Vanadium	anr					
Zinc	18.1	63.8	54.3	84.1	2.2	20

Associated samples MP4419: D22280-1, D22280-2

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D22280  
Account: POAGCORV - Patara Oil and Gas  
Project: POAGCORV

QC Batch ID: MP4419  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: mg/kg

Prep Date:

Metal

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D22280  
Account: POAGCORV - Patara Oil and Gas  
Project: POAGCORV

QC Batch ID: MP4419  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: mg/kg

Prep Date: 04/07/11

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum				
Antimony	anr			
Arsenic	anr			
Barium	193	200	96.5	80-120
Beryllium	anr			
Boron				
Cadmium	47.9	50	95.8	80-120
Calcium				
Chromium	49.2	50	98.4	80-120
Cobalt	anr			
Copper	48.7	50	97.4	80-120
Iron				
Lead	97.3	100	97.3	80-120
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	47.8	50	95.6	80-120
Phosphorus				
Potassium				
Selenium	96.2	100	96.2	80-120
Silicon				
Silver	19.8	20	99.0	80-120
Sodium				
Strontium				
Thallium	anr			
Tin	anr			
Titanium				
Uranium				
Vanadium	anr			
Zinc	46.1	50	92.2	80-120

Associated samples MP4419: D22280-1, D22280-2

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D22280  
Account: POAGCORV - Patara Oil and Gas  
Project: POAGCORV

QC Batch ID: MP4419  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested



SERIAL DILUTION RESULTS SUMMARY

Login Number: D22280  
Account: POAGCORV - Patara Oil and Gas  
Project: POAGCORV

QC Batch ID: MP4419  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: ug/l

Prep Date: 04/07/11

Metal		D22280-1 Original SDL 1:5		%DIF	QC Limits
Aluminum					
Antimony	anr				
Arsenic	anr				
Barium	561	572	2.1	0-10	
Beryllium	anr				
Boron					
Cadmium	1.70	0.00	100.0(a)	0-10	
Calcium					
Chromium	11.3	9.50	15.9*(b)	0-10	
Cobalt	anr				
Copper	47.2	31.5	33.3*(b)	0-10	
Iron					
Lead	119	105	12.0*(b)	0-10	
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel	27.5	28.5	3.6	0-10	
Phosphorus					
Potassium					
Selenium	0.00	0.00	NC	0-10	
Silicon					
Silver	0.600	3.00	400.0(a)	0-10	
Sodium					
Strontium					
Thallium	anr				
Tin	anr				
Titanium					
Uranium					
Vanadium	anr				
Zinc	170	206	20.6*(b)	0-10	

Associated samples MP4419: D22280-1, D22280-2

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

SERIAL DILUTION RESULTS SUMMARY

Login Number: D22280  
Account: POAGCORV - Patara Oil and Gas  
Project: POAGCORV

QC Batch ID: MP4419  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested

(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

(b) Serial dilution indicates possible matrix interference.

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D22280  
Account: POAGCORV - Patara Oil and Gas  
Project: POAGCORV

QC Batch ID: MP4420  
Matrix Type: SOLID

Methods: SW846 6020  
Units: mg/kg

Prep Date: 04/07/11

Metal	RL	IDL	MDL	MB raw	final
Aluminum	25	.14	1.2		
Antimony	0.20	.001	.0095		
Arsenic	0.40	.049	.22	-0.044	<0.40
Barium	1.0	.0035	.1		
Beryllium	0.10	.0075	.014		
Boron	20	.97	1		
Cadmium	0.050	.023	.048		
Calcium	200	1.8	8.2		
Chromium	1.0	.021	.24		
Cobalt	0.10	.0033	.003		
Copper	1.0	.011	.063		
Iron	20	.81	3.7		
Lead	0.25	.0012	.015		
Magnesium	50	.067	2.6		
Manganese	0.50	.007	.029		
Molybdenum	0.50	.0044	.023		
Nickel	1.0	.0029	.031		
Phosphorus	30	1.8	3.5		
Potassium	100	2	3.2		
Selenium	0.20	.075	.19		
Silver	0.050	.0008	.002		
Sodium	250	.8	4.4		
Strontium	10	.004	.04		
Thallium	0.10	.015	.02		
Tin	5.0	.006	.028		
Titanium	1.0	.035	.062		
Uranium	0.25	.00038	.0009		
Vanadium	2.0	.052	.29		
Zinc	5.0	.039	.12		

Associated samples MP4420: D22280-1, D22280-2

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: D22280  
Account: POAGCORV - Patara Oil and Gas  
Project: POAGCORV

QC Batch ID: MP4420  
Matrix Type: SOLID

Methods: SW846 6020  
Units: mg/kg

Prep Date: 04/07/11

Metal	D22280-1 Original MS		SpikeLot MPICPALL % Rec		QC Limits
Aluminum					
Antimony					
Arsenic	4.9	119	108	106.1	60-119
Barium					
Beryllium					
Boron					
Cadmium	anr				
Calcium					
Chromium					
Cobalt					
Copper	anr				
Iron					
Lead	anr				
Magnesium					
Manganese					
Molybdenum	anr				
Nickel	anr				
Phosphorus					
Potassium					
Selenium	anr				
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc	anr				

Associated samples MP4420: D22280-1, D22280-2

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: D22280  
Account: POAGCORV - Patara Oil and Gas  
Project: POAGCORV

QC Batch ID: MP4420  
Matrix Type: SOLID

Methods: SW846 6020  
Units: mg/kg

Prep Date: 04/07/11

Metal	D22280-1 Original	MSD	SpikeLot MPICPAL	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	4.9	119	109	105.0	0.0	20
Barium						
Beryllium						
Boron						
Cadmium	anr					
Calcium						
Chromium						
Cobalt						
Copper	anr					
Iron						
Lead	anr					
Magnesium						
Manganese						
Molybdenum	anr					
Nickel	anr					
Phosphorus						
Potassium						
Selenium	anr					
Silver						
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc	anr					

Associated samples MP4420: D22280-1, D22280-2

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: D22280

Account: POAGCORV - Patara Oil and Gas

Project: POAGCORV

QC Batch ID: MP4420

Methods: SW846 6020

Matrix Type: SOLID

Units: mg/kg

Prep Date:

04/07/11

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	106	100	106.0	80-120
Barium				
Beryllium				
Boron				
Cadmium	anr			
Calcium				
Chromium				
Cobalt				
Copper	anr			
Iron				
Lead	anr			
Magnesium				
Manganese				
Molybdenum	anr			
Nickel	anr			
Phosphorus				
Potassium				
Selenium	anr			
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	anr			

Associated samples MP4420: D22280-1, D22280-2

Results &lt; IDL are shown as zero for calculation purposes

(\*) Outside of QC limits

(anr) Analyte not requested

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# SERIAL DILUTION RESULTS SUMMARY

Login Number: D22280  
Account: POAGCORV - Patara Oil and Gas  
Project: POAGCORV

QC Batch ID: MP4420  
Matrix Type: SOLID

Methods: SW846 6020  
Units: ug/l

Prep Date: 04/07/11

Metal	D22280-1 Original	SDL	5:25 %DIF	QC Limits
Aluminum				
Antimony				
Arsenic	44.5	44.2	4.0	0-10
Barium				
Beryllium				
Boron				
Cadmium	anr			
Calcium				
Chromium				
Cobalt				
Copper	anr			
Iron				
Lead	anr			
Magnesium				
Manganese				
Molybdenum	anr			
Nickel	anr			
Phosphorus				
Potassium				
Selenium	anr			
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	anr			

Associated samples MP4420: D22280-1, D22280-2

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: D22280  
Account: POAGCORV - Patara Oil and Gas  
Project: POAGCORV

QC Batch ID: MP4421  
Matrix Type: SOLID

Methods: SW846 7471A  
Units: mg/kg

Prep Date: 04/08/11

Metal	RL	IDL	MDL	MB	
				raw	final
Mercury	0.10	.0011	.013	0.0059	<0.10

Associated samples MP4421: D22280-1, D22280-2

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: D22280  
 Account: POAGCORV - Patara Oil and Gas  
 Project: POAGCORV

QC Batch ID: MP4421  
 Matrix Type: SOLID

Methods: SW846 7471A  
 Units: mg/kg

Prep Date: 04/08/11

Metal	D22273-1 Original MS	Spikelot HGWSR1	% Rec	QC Limits
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Mercury	0.012	0.43	0.448	93.4	85-115
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Associated samples MP4421: D22280-1, D22280-2

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: D22280  
 Account: POAGCORV - Patara Oil and Gas  
 Project: POAGCORV

QC Batch ID: MP4421  
 Matrix Type: SOLID

Methods: SW846 7471A  
 Units: mg/kg

Prep Date: 04/08/11

Metal	D22273-1 Original	MSD	Spikelot HGWSR1	% Rec	MSD RPD	QC Limit
Mercury	0.012	0.41	0.448	88.9	4.8	20

Associated samples MP4421: D22280-1, D22280-2

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: D22280  
 Account: POAGCORV - Patara Oil and Gas  
 Project: POAGCORV

QC Batch ID: MP4421  
 Matrix Type: SOLID

Methods: SW846 7471A  
 Units: mg/kg

Prep Date: 04/08/11

Metal	BSP Result	Spikelot HGWSR1	% Rec	QC Limits
Mercury	0.32	0.4	80.0	80-120

Associated samples MP4421: D22280-1, D22280-2

Results < IDL are shown as zero for calculation purposes  
 (\*) Outside of 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: D22280  
Account: POAGCORV - Patara Oil and Gas  
Project: POAGCORV

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Specific Conductivity	GP4160/GN9023	1.0	<1.0	umhos/cm	9985	9980	99.9	90-110%
pH	GN8948			su	8.00	8.02	100.3	99.3-100.7%

Associated Samples:  
Batch GN8948: D22280-1, D22280-2  
Batch GP4160: D22280-1, D22280-2  
(\*) Outside of QC limits

DUPLICATE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D22280  
Account: POAGCORV - Patara Oil and Gas  
Project: POAGCORV

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Redox Potential Vs H2	GN8952	D22280-1	mv	238	234	1.7	0-20%

Associated Samples:  
Batch GN8952: D22280-1, D22280-2  
(\*) Outside of QC limits

## Misc. Forms

### Custody Documents and Other Forms

(Accutest Labs of New England, Inc.)

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Includes the following where applicable:

- Chain of Custody





# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D22280

Client: AMS

Immediate Client Services Action Required: No

Date / Time Received: 4/2/2011

Delivery Method:

Client Service Action Required at Login: No

Project: XCRA

No. Coolers: 1

Airbill #'s: N/A

## Cooler Security

Y or N

Y or N

- |                           |                                     |                          |                       |                                     |                          |
|---------------------------|-------------------------------------|--------------------------|-----------------------|-------------------------------------|--------------------------|
| 1. Custody Seals Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3. COC Present:       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Custody Seals Intact:  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 4. Smpl Dates/Time OK | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

## Cooler Temperature

Y or N

- |                              |                                     |                          |
|------------------------------|-------------------------------------|--------------------------|
| 1. Temp criteria achieved:   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Cooler temp verification: | Infrared gun                        |                          |
| 3. Cooler media:             | Ice (bag)                           |                          |

## Quality Control Preservation

Y or N

N/A

- |                                 |                                     |                          |                                     |
|---------------------------------|-------------------------------------|--------------------------|-------------------------------------|
| 1. Trip Blank present / cooler: | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2. Trip Blank listed on COC:    | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. Samples preserved properly:  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |                                     |
| 4. VOCs headspace free:         | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

## Sample Integrity - Documentation

Y or N

- |  |                                     |                          |
|--|-------------------------------------|--------------------------|
| 1. Sample labels present on bottles:   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Container labeling complete:        | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Sample container label / COC agree: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

## Sample Integrity - Condition

Y or N

- |                                  |                                     |                          |
|----------------------------------|-------------------------------------|--------------------------|
| 1. Sample recvd within HT:       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. All containers accounted for: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Condition of sample:          | Intact                              |                          |

## Sample Integrity - Instructions

Y or N N/A

- |   |                                     |                                     |                                     |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Analysis requested is clear:           | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |                                     |
| 2. Bottles received for unspecified tests | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |                                     |
| 3. Sufficient volume recvd for analysis:  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |                                     |
| 4. Compositing instructions clear:        | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 5. Filtering instructions clear:          | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

Comments

## General Chemistry

### QC Data Summaries

(Accutest Labs of New England, Inc.)

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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: D22280  
Account: ALMS - Accutest Mountain States  
Project: POAGCORV: POAGCORV

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chromium, Hexavalent	GP12810/GN34567	0.40	0.0	mg/kg	12	11.2	93.3	80-120%
Chromium, Hexavalent	GP12810/GN34567			mg/kg	1288	1470	114.1	80-120%

Associated Samples:  
Batch GP12810: D22280-1, D22280-2  
(\*) Outside of QC limits

DUPLICATE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D22280  
Account: ALMS - Accutest Mountain States  
Project: POAGCORV: POAGCORV

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chromium, Hexavalent	GP12810/GN34567	D22116-6	mg/kg	0.20	0.24	18.2	0-20%

Associated Samples:  
Batch GP12810: D22280-1, D22280-2  
(\*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D22280  
Account: ALMS - Accutest Mountain States  
Project: POAGCORV: POAGCORV

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chromium, Hexavalent	GP12810/GN34567	D22116-6	mg/kg	0.20	12	11.2	93.0	75-125%
Chromium, Hexavalent	GP12810/GN34567	D22116-6	mg/kg	0.20	943	998	105.8	75-125%

Associated Samples:

Batch GP12810: D22280-1, D22280-2

(\*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

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