TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Nashville
2960 Foster Creighton Road
Nashville, TN 37204
Tel: 800-765-0980

TestAmerica Job ID: NUJ3836
Client Project/Site: PASUS-Dimock-Amec-102011
Client Project Description: PASUS - VARIOUS SITES

For:
Cabot Oil
Five Penn Center West, Suite 4101
Pittsburg, PA 1527641

Attn: Phillip Levasseur

Authorized for release by:
11/4/2011 5:32:39 PM

Ryan Fitzwater
Project Manager
Ryan.Fitzwater@testamericainc.com

LINKS

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Cover Page 1
Table of Contents 2
Sample Summary 3
Case Narrative 4
Definitions 5
Client Sample Results 6
QC Sample Results 7
QC Association 9
Chronicle 10
Method Summary 11
Certification Summary 12
Chain of Custody 13

Sample Summary

Client: Cabot Oil
Project/Site: PASUS-Dimock-Amec-102011

TestAmerica Job ID: NUJ3836

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
NUJ3836-01	Well 1	Water	10/27/11 10:50	10/28/11 08:40

Case Narrative

Client: Cabot Oil
Project/Site: PASUS-Dimock-Amec-102011

TestAmerica Job ID: NUJ3836

Job ID: NUJ3836

Laboratory: TestAmerica Nashville

Narrative

WELL 1 10/27/11 1050 Ex. 6 - Personal Privacy 200.00-1,032.00,000.

All samples were received in good condition, properly preserved, and properly labeled. All analyses were completed within holding times. There were no relevant protocol specific QC and/or performance standard non-conformances to report with the following exceptions:

The RSK175 Methane recoveries in the matrix spike (-56%) and matrix spike duplicate (-70%) are outside QC limits (46-142%) due to sample matrix interference. See blank spike.

Definitions/Glossary

Client: Cabot Oil
Project/Site: PASUS-Dimock-Amec-102011

TestAmerica Job ID: NUJ3836

Qualifiers

Pesticides

Qualifier	Qualifier Description
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
M8	The MS and/or MSD were below the acceptance limits. See Blank Spike (LCS).

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Client Sample Results

Client: Cabot Oil
Project/Site: PASUS-Dimock-Amec-102011

TestAmerica Job ID: NUJ3836

Client Sample ID: Well 1

Date Collected: 10/27/11 10:50
Date Received: 10/28/11 08:40

Lab Sample ID: NUJ3836-01

Matrix: Water

Method: RSK 175 - Methane, Ethane, and Ethene by GC - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	20.3		5.00		ug/L		11/02/11 16:11	11/02/11 16:49	1.00
Propane	ND		5.00		ug/L		11/02/11 16:11	11/02/11 16:49	1.00
Isobutane	ND		10.0		ug/L		11/02/11 16:11	11/02/11 16:49	1.00
n-Butane	ND		5.00		ug/L		11/02/11 16:11	11/02/11 16:49	1.00

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Acetylene	*87*		*62 - 124*	*11/02/11 16:11*	*11/02/11 16:49*	*1.00*

Method: RSK 175 - Methane, Ethane, and Ethene by GC - Dissolved - RE1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	1850		25.0		ug/L		11/02/11 16:11	11/02/11 16:55	5.00

QC Sample Results

Client: Cabot Oil
Project/Site: PASUS-Dimock-Amec-102011

TestAmerica Job ID: NUJ3836

Method: RSK 175 - Methane, Ethane, and Ethene by GC

Lab Sample ID: 11K0294-BLK1 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Dissolved**
Analysis Batch: U019303 — **Prep Batch: 11K0294_P**

Analyte	Blank Result	Blank Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	ND		5.00		ug/L		11/02/11 16:11	11/02/11 16:23	1.00
Ethane	ND		5.00		ug/L		11/02/11 16:11	11/02/11 16:23	1.00
Propane	ND		5.00		ug/L		11/02/11 16:11	11/02/11 16:23	1.00
Isobutane	ND		10.0		ug/L		11/02/11 16:11	11/02/11 16:23	1.00
n-Butane	ND		5.00		ug/L		11/02/11 16:11	11/02/11 16:23	1.00

Surrogate	*Blank %Recovery*	*Blank Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Acetylene	*99*		*62 - 124*	*11/02/11 16:11*	*11/02/11 16:23*	*1.00*

Lab Sample ID: 11K0294-BS1 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Dissolved**
Analysis Batch: U019303 — **Prep Batch: 11K0294_P**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methane	273	240		ug/L		88	80 - 120
Ethane	512	450		ug/L		88	80 - 120
Propane	762	646		ug/L		85	80 - 120
Isobutane	993	854		ug/L		86	80 - 120
n-Butane	993	852		ug/L		86	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Acetylene	*89*		*62 - 124*

Lab Sample ID: 11K0294-MS1 — **Client Sample ID: Well 1**
Matrix: Water — **Prep Type: Dissolved**
Analysis Batch: U019303 — **Prep Batch: 11K0294_P**

Analyte	Sample Result	Sample Qualifier	Spike Added	Matrix Spike Result	Matrix Spike Qualifier	Unit	D	%Rec	%Rec. Limits
Methane	1680		273	1530	E M8	ug/L		-56	46 - 142
Ethane	20.3		512	463		ug/L		86	71 - 120
Propane	ND		762	625		ug/L		82	70 - 130
Isobutane	ND		993	824		ug/L		83	70 - 130
n-Butane	ND		993	821		ug/L		83	70 - 130

Surrogate	*Matrix Spike %Recovery*	*Matrix Spike Qualifier*	*Limits*
Acetylene	*89*		*62 - 124*

Lab Sample ID: 11K0294-MSD1 — **Client Sample ID: Well 1**
Matrix: Water — **Prep Type: Dissolved**
Analysis Batch: U019303 — **Prep Batch: 11K0294_P**

Analyte	Sample Result	Sample Qualifier	Spike Added	Matrix Spike Dup Result	Matrix Spike Dup Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methane	1680		273	1490	E M8	ug/L		-70	46 - 142	2	33
Ethane	20.3		512	443		ug/L		82	71 - 120	5	30
Propane	ND		762	598		ug/L		78	70 - 130	4	30
Isobutane	ND		993	797		ug/L		80	70 - 130	3	30
n-Butane	ND		993	791		ug/L		80	70 - 130	4	30

Method: RSK 175 - Methane, Ethane, and Ethene by GC (Continued)

Lab Sample ID: 11K0294-MSD1
Matrix: Water
Analysis Batch: U019303

Client Sample ID: Well 1
Prep Type: Dissolved
Prep Batch: 11K0294_P

Surrogate	*Matrix Spike Dup %Recovery*	*Matrix Spike Dup Qualifier*	*Limits*
Acetylene	*79*		*62 - 124*

QC Association Summary

Client: Cabot Oil
Project/Site: PASUS-Dimock-Amec-102011

TestAmerica Job ID: NUJ3836

Pesticides

Analysis Batch: U019303

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
11K0294-BLK1	Method Blank	Dissolved	Water	RSK 175	11K0294_P
11K0294-BS1	Lab Control Sample	Dissolved	Water	RSK 175	11K0294_P
11K0294-MS1	Well 1	Dissolved	Water	RSK 175	11K0294_P
11K0294-MSD1	Well 1	Dissolved	Water	RSK 175	11K0294_P
NUJ3836-01	Well 1	Dissolved	Water	RSK 175	11K0294_P
NUJ3836-01 - RE1	Well 1	Dissolved	Water	RSK 175	11K0294_P

Prep Batch: 11K0294_P

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
11K0294-BLK1	Method Blank	Dissolved	Water	RSK 175/3810	
11K0294-BS1	Lab Control Sample	Dissolved	Water	RSK 175/3810	
11K0294-MS1	Well 1	Dissolved	Water	RSK 175/3810	
11K0294-MSD1	Well 1	Dissolved	Water	RSK 175/3810	
NUJ3836-01	Well 1	Dissolved	Water	RSK 175/3810	
NUJ3836-01 - RE1	Well 1	Dissolved	Water	RSK 175/3810	

Lab Chronicle

Client: Cabot Oil
Project/Site: PASUS-Dimock-Amec-102011

TestAmerica Job ID: NUJ3836

Client Sample ID: Well 1

Date Collected: 10/27/11 10:50
Date Received: 10/28/11 08:40

Lab Sample ID: NUJ3836-01

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	RSK 175/3810		1.00	11K0294_P	11/02/11 16:11	JLS2	TAL NSH
Dissolved	Analysis	RSK 175		1.00	U019303	11/02/11 16:49	JLS2	TAL NSH
Dissolved	Prep	RSK 175/3810	RE1	1.00	11K0294_P	11/02/11 16:11	JLS2	TAL NSH
Dissolved	Analysis	RSK 175	RE1	5.00	U019303	11/02/11 16:55	JLS2	TAL NSH

Laboratory References:

TAL NSH = TestAmerica Nashville, 2960 Foster Creighton Road, Nashville, TN 37204, TEL 800-765-0980

Method Summary

Client: Cabot Oil
Project/Site: PASUS-Dimock-Amec-102011

TestAmerica Job ID: NUJ3836

Method	Method Description	Protocol	Laboratory
RSK 175	Methane, Ethane, and Ethene by GC		TAL NSH

Protocol References:

Laboratory References:

TAL NSH = TestAmerica Nashville, 2960 Foster Creighton Road, Nashville, TN 37204, TEL 800-765-0980

Certification Summary

Client: Cabot Oil
Project/Site: PASUS-Dimock-Amec-102011

TestAmerica Job ID: NUJ3836

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica Nashville		ACIL		393
TestAmerica Nashville	A2LA	ISO/IEC 17025		0453.07
TestAmerica Nashville	A2LA	WY UST		453.07
TestAmerica Nashville	AIHA - LAP	IHLAP		100790
TestAmerica Nashville	Alabama	State Program	4	41150
TestAmerica Nashville	Alaska	Alaska UST	10	UST-087
TestAmerica Nashville	Arizona	State Program	9	AZ0473
TestAmerica Nashville	Arkansas	State Program	6	88-0737
TestAmerica Nashville	CALA	CALA		3744
TestAmerica Nashville	California	NELAC	9	1168CA
TestAmerica Nashville	Colorado	State Program	8	N/A
TestAmerica Nashville	Connecticut	State Program	1	PH-0220
TestAmerica Nashville	Florida	NELAC	4	E87358
TestAmerica Nashville	Illinois	NELAC	5	200010
TestAmerica Nashville	Iowa	State Program	7	131
TestAmerica Nashville	Kansas	NELAC	7	E-10229
TestAmerica Nashville	Kentucky	Kentucky UST	4	19
TestAmerica Nashville	Kentucky	State Program	4	90038
TestAmerica Nashville	Louisiana	NELAC	6	30613
TestAmerica Nashville	Louisiana	NELAC	6	LA100011
TestAmerica Nashville	Maryland	State Program	3	316
TestAmerica Nashville	Massachusetts	State Program	1	M-TN032
TestAmerica Nashville	Minnesota	NELAC	5	047-999-345
TestAmerica Nashville	Mississippi	State Program	4	N/A
TestAmerica Nashville	Montana	MT DEQ UST	8	NA
TestAmerica Nashville	New Hampshire	NELAC	1	2963
TestAmerica Nashville	New Jersey	NELAC	2	TN965
TestAmerica Nashville	New York	NELAC	2	11342
TestAmerica Nashville	North Carolina	North Carolina DENR	4	387
TestAmerica Nashville	North Dakota	State Program	8	R-146
TestAmerica Nashville	Ohio	OVAP	5	CL0033
TestAmerica Nashville	Oklahoma	State Program	6	9412
TestAmerica Nashville	Oregon	NELAC	10	TN200001
TestAmerica Nashville	Pennsylvania	NELAC	3	68-00585
TestAmerica Nashville	Rhode Island	State Program	1	LAO00268
TestAmerica Nashville	South Carolina	State Program	4	84009
TestAmerica Nashville	South Carolina	State Program	4	84009
TestAmerica Nashville	Tennessee	State Program	4	2008
TestAmerica Nashville	Texas	NELAC	6	T104704077-09-TX
TestAmerica Nashville	USDA	USDA		S-48469
TestAmerica Nashville	Utah	NELAC	8	TAN
TestAmerica Nashville	Virginia	NELAC Secondary AB	3	460152
TestAmerica Nashville	Virginia	State Program	3	00323
TestAmerica Nashville	Washington	State Program	10	C789
TestAmerica Nashville	West Virginia	West Virginia DEP	3	219

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
Nashville, TN

COOLER RECEIP

NUJ3836

Cooler Received/Opened On 10/28/2011 @ 0840

1. Tracking # 3945 (last 4 digits, FedEx)

Courier: FedEx IR Gun ID 97460373

2. Temperature of rep. sample or temp blank when opened: 2.9 *Degrees Celsius*

3. If Item #2 temperature is 0°C or less, was the representative sample or temp blank frozen? YES NO...NA

4. Were custody seals on outside of cooler? YES...NO...NA

If yes, how many and where: 1 (front)

5. Were the seals intact, signed, and dated correctly? YES...NO...NA

6. Were custody papers inside cooler? YES...NO...NA

I certify that I opened the cooler and answered questions 1-6 (intial) _____

7. Were custody seals on containers: YES NO and Intact YES...NO...NA

Were these signed and dated correctly? YES...NO...NA

8. Packing mat'l used? Bubblewrap Plastic bag Peanuts Vermiculite Foam Insert Paper Other None

9. Cooling process: Ice Ice-pack Ice (direct contact) Dry ice Other None

10. Did all containers arrive in good condition (unbroken)? YES...NO...NA

11. Were all container labels complete (#, date, signed, pres., etc)? YES...NO...NA

12. Did all container labels and tags agree with custody papers? YES...NO...NA

13a Were VOA vials received? YES...NO...NA

b Was there any observable headspace present in any VOA vial? YES...NO...NA

14. Was there a Trip Blank in this cooler? YES...NO...NA If multiple coolers, sequence #_____

I certify that I unloaded the cooler and answered questions 7-14 (intial) _____ (ω)

15a. On pres'd bottles, did pH test strips suggest preservation reached the correct pH level? YES...NO...NA

b. Did the bottle labels indicate that the correct preservatives were used YES...NO...NA

16. Was residual chlorine present? YES...NO...NA

I certify that I checked for chlorine and pH as per SOP and answered questions 15-16 (intial) _____ (ω)

17. Were custody papers properly filled out (ink, signed, etc)? YES...NO...NA

18. Did you sign the custody papers in the appropriate place? YES...NO...NA

19. Were correct containers used for the analysis requested? YES...NO...NA

20. Was sufficient amount of sample sent in each container? YES...NO...NA

I certify that I entered this project into LIMS and answered questions 17-20 (intial) _____ (ω)

I certify that I attached a label with the unique LIMS number to each container (intial) _____ (ω)

21. Were there Non-Conformance issues at login? YES...NO Was a PIPE generated? YES...NO...#_____

BIS = Broken in shipment
Cooler Receipt Form.doc

End of Form

Revised 6/24/09 11/4/2011

1 2 3 4 5 6 7 8 9 10 11 12

NUJ3836

11/08/11 23 59

Chain of Custody Record

TestAmerica

11/4/2011

DIM0067185

AMEC Switzer

TestAmerica Laboratory location: Pittsburgh --- 301 Alpha Drive / Pittsburgh, PA 15238 / 412-963-7058

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☑ Other

TestAmerica Laboratories, Inc.

Client Contact			
Company Name: Cabot Oil & Gas Corporation	Client Project Manager: Phillip Levasseur	Site Contact: Chris Husted	Lab Contact: Ryan Hall / Ryan Fitzwater
Address: 5 Penn Center West	Telephone: 412-249-3921	Telephone: 610-828-8100	Telephone: 412-352-3836 / 615-301-5757
City/State/Zip: Pittsburgh, PA 15276	Email: phillip.levasseur@cabotog.com		
Phone: 412-249-3921			
Project Name (PAD): PASUS-Dimock-Amec-102011			
TAX MAP ID: 200.00-1,032.00,000	Method of Shipment/Carrier: FedEx		
PO #	Shipping/Tracking No:		

COC No: 1 of 1 COCs

For lab use only: Walk-in client; Lab sampling; Job/SDG No:

Analysis Turnaround Time: TAT if different from below ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	200.8 Metals & 245.1 Mercury	1664A HEM, Oil & Grease	8015B Ethylene Glycols	8260B, Voas BTEX Plus (TCE)	MBAS	RSK 175 Methane, Ethane & Propane	Cl, SO4, Bromide, ALK, TDS, TSS, Turbidity, Nitrate and Hardness	Sulfide			Sample Specific Notes / Special Instructions:
Well 1	10/27/11	1050		x						X					N	G						3					NUJ3836-01

Page 14 of 14

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Landowner=

EDD Lab Report / Level II Data Package sent to Phillip Levasseur, Cabot Oil & Gas Corporation, 5 Penn Center West, Pittsburgh, PA 15276, (412) 249-3921 and Doug Newton, AMEC Environment & Infrastructure, 502 West Germantown Pike, Plymouth Meeting, PA 19462, (610) 828-8100

Relinquished by:	Company:	Date Time:	Received by:	Company:	Date Time:
[signature]	AMEC	10/27/11 1730			
Relinquished by:	Company:	Date Time:	Received by:	Company:	Date Time:
Relinquished by:	Company:	Date Time:	Received in Laboratory by: [signature]	Company: TA-NASH	Date/Time: 10-28-11 @ 0840

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