



10/20/2010

Noble Energy Inc.

Todd Cullum

804 Grand Avenue

Platteville

CO

80651

Project Name- Lilli Unit Battery C-9

Project Number- [none]

Attached are your analytical results for Lilli Unit Battery C-9 received by Origins Laboratory, Inc. October 14, 2010 10:30 am. This project is associated with Origins project number X010108-01 .

The analytical results in the following report were analyzed under the guidelines of EPA Methods specified in SW-846. The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.

303.433.1322

o-squad@oelabinc.com



Noble Energy Inc.
804 Grand Avenue
Platteville CO 80651

Todd Cullum
Project Number: [none]
Project: Lilli Unit Battery C-9

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Sampled	Date Received
SS-1	X010108-01	Soil	10/13/2010 1:30:00PM	10/14/2010 10:30
SS-2	X010108-02	Soil	10/13/2010 1:50:00PM	10/14/2010 10:30
SS-3	X010108-03	Soil	10/13/2010 2:05:00PM	10/14/2010 10:30
SS-4	X010108-04	Soil	10/13/2010 2:15:00PM	10/14/2010 10:30

Origins Laboratory, Inc.



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Noelle E Doyle,

Noble Energy Inc.
804 Grand Avenue
Platteville CO 80651

Todd Cullum
Project Number: [none]
Project: Lilli Unit Battery C-9

SS-1

10/13/2010 1:30:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X010108-01 (Soil)

BTEX by EPA 8260B

Benzene	ND	0.00400	mg/kg	1	OJ14003	10/14/2010	10/15/2010	
Toluene	ND	0.00400	"	"	"	"	"	
Ethylbenzene	ND	0.00400	"	"	"	"	"	
m,p-Xylene	ND	0.00800	"	"	"	"	"	
o-Xylene	ND	0.00400	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	110 %	77.6-134			"	"	"	
Surrogate: Toluene-d8	104 %	81.4-121			"	"	"	
Surrogate: 4-Bromofluorobenzene	100 %	74.7-123			"	"	"	

Conductivity by E120.1

Conductivity	582	2	US/CM	1	828286	10/20/2010	10/20/2010	
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Percent Moisture by AD2216A

Percent Moisture	11.9	1	%	1	827905	10/18/2010	10/18/2010	
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pH by SW9045C

pH	8.05	0	SU	1	827733	10/15/2010	10/15/2010	
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Sodium Absorption Ratio (SAR) by S29B08

Origins Laboratory, Inc.



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Noelle E Doyle,

Noble Energy Inc.
804 Grand Avenue
Platteville CO 80651

Todd Cullum
Project Number: [none]
Project: Lilli Unit Battery C-9

SS-1

10/13/2010 1:30:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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XENCO

X010108-01 (Soil)

Sodium Absorption Ratio (SAR) by S29B08

Sodium absorption ratio	0.164			1	828348	10/20/2010	10/20/2010
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TPH-Carbon Chain by EPA Method 8015M

Gasoline (C6-C10)	ND	50.0	mg/kg	1	0J14004	10/14/2010	10/15/2010
Diesel (C10-C28)	ND	50.0	"	"	"	"	"
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"
TPH - Carbon Chain Total	ND	50.0	"	"	"	"	"

Surrogate: o-Terphenyl	84.8 %	65-140	"	"	"
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Origins Laboratory, Inc.



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Noelle E Doyle,

Noble Energy Inc.
804 Grand Avenue
Platteville CO 80651

Todd Cullum
Project Number: [none]
Project: Lilli Unit Battery C-9

SS-2

10/13/2010 1:50:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X010108-02 (Soil)

BTEX by EPA 8260B

Benzene	ND	0.00400	mg/kg	1	OJ14003	10/14/2010	10/15/2010	
Toluene	ND	0.00400	"	"	"	"	"	
Ethylbenzene	ND	0.00400	"	"	"	"	"	
m,p-Xylene	ND	0.00800	"	"	"	"	"	
o-Xylene	ND	0.00400	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	110 %	77.6-134			"	"	"	
Surrogate: Toluene-d8	104 %	81.4-121			"	"	"	
Surrogate: 4-Bromofluorobenzene	102 %	74.7-123			"	"	"	

Conductivity by E120.1

Conductivity	1020	2	US/CM	1	828286	10/20/2010	10/20/2010	
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Percent Moisture by AD2216A

Percent Moisture	9.78	1	%	1	827905	10/18/2010	10/18/2010	
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pH by SW9045C

pH	7.89	0	SU	1	827733	10/15/2010	10/15/2010	
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Sodium Absorption Ratio (SAR) by S29B08

Origins Laboratory, Inc.



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Noble Energy Inc.
804 Grand Avenue
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Todd Cullum
Project Number: [none]
Project: Lilli Unit Battery C-9

SS-2

10/13/2010 1:50:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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XENCO

X010108-02 (Soil)

Sodium Absorption Ratio (SAR) by S29B08

Sodium absorption ratio	0.47			1	828348	10/20/2010	10/20/2010
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TPH-Carbon Chain by EPA Method 8015M

Gasoline (C6-C10)	ND	50.0	mg/kg	1	0J14004	10/14/2010	10/15/2010
Diesel (C10-C28)	ND	50.0	"	"	"	"	"
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"
TPH - Carbon Chain Total	ND	50.0	"	"	"	"	"

Surrogate: o-Terphenyl	86.5 %	65-140	"	"	"
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Origins Laboratory, Inc.



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Noelle E Doyle,

Noble Energy Inc.
804 Grand Avenue
Platteville CO 80651

Todd Cullum
Project Number: [none]
Project: Lilli Unit Battery C-9

SS-3

10/13/2010 2:05:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X010108-03 (Soil)

BTEX by EPA 8260B

Benzene	ND	0.00400	mg/kg	1	0J14003	10/14/2010	10/15/2010	
Toluene	ND	0.00400	"	"	"	"	"	
Ethylbenzene	ND	0.00400	"	"	"	"	"	
m,p-Xylene	ND	0.00800	"	"	"	"	"	
o-Xylene	ND	0.00400	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	111 %	77.6-134			"	"	"	
Surrogate: Toluene-d8	104 %	81.4-121			"	"	"	
Surrogate: 4-Bromofluorobenzene	104 %	74.7-123			"	"	"	

Conductivity by E120.1

Conductivity	922	2	US/CM	1	828286	10/20/2010	10/20/2010	
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Percent Moisture by AD2216A

Percent Moisture	9.74	1	%	1	827905	10/18/2010	10/18/2010	
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pH by SW9045C

pH	7.89	0	SU	1	827733	10/15/2010	10/15/2010	
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Sodium Absorption Ratio (SAR) by S29B08

Origins Laboratory, Inc.



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Noelle E Doyle,

Noble Energy Inc.
804 Grand Avenue
Platteville CO 80651

Todd Cullum
Project Number: [none]
Project: Lilli Unit Battery C-9

SS-3

10/13/2010 2:05:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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XENCO

X010108-03 (Soil)

Sodium Absorption Ratio (SAR) by S29B08

Sodium absorption ratio	0.362			1	828348	10/20/2010	10/20/2010
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TPH-Carbon Chain by EPA Method 8015M

Gasoline (C6-C10)	ND	50.0	mg/kg	1	0J14004	10/14/2010	10/15/2010
Diesel (C10-C28)	ND	50.0	"	"	"	"	"
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"
TPH - Carbon Chain Total	ND	50.0	"	"	"	"	"

Surrogate: o-Terphenyl	90.6 %	65-140			"	"	"
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Origins Laboratory, Inc.



Noelle E Doyle,

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Noble Energy Inc.
804 Grand Avenue
Platteville CO 80651

Todd Cullum
Project Number: [none]
Project: Lilli Unit Battery C-9

SS-4

10/13/2010 2:15:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X010108-04 (Soil)

BTEX by EPA 8260B

Benzene	ND	0.00400	mg/kg	1	OJ14003	10/14/2010	10/15/2010	
Toluene	ND	0.00400	"	"	"	"	"	
Ethylbenzene	ND	0.00400	"	"	"	"	"	
m,p-Xylene	ND	0.00800	"	"	"	"	"	
o-Xylene	ND	0.00400	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	109 %	77.6-134			"	"	"	
Surrogate: Toluene-d8	104 %	81.4-121			"	"	"	
Surrogate: 4-Bromofluorobenzene	103 %	74.7-123			"	"	"	

Conductivity by E120.1

Conductivity	1050	2	US/CM	1	828286	10/20/2010	10/20/2010	
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Percent Moisture by AD2216A

Percent Moisture	8.7	1	%	1	827905	10/18/2010	10/18/2010	
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pH by SW9045C

pH	7.99	0	SU	1	827733	10/15/2010	10/15/2010	
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Sodium Absorption Ratio (SAR) by S29B08

Origins Laboratory, Inc.



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Noelle E Doyle,

Noble Energy Inc.
804 Grand Avenue
Platteville CO 80651

Todd Cullum
Project Number: [none]
Project: Lilli Unit Battery C-9

SS-4

10/13/2010 2:15:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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XENCO

X010108-04 (Soil)

Sodium Absorption Ratio (SAR) by S29B08

Sodium absorption ratio	0.477			1	828348	10/20/2010	10/20/2010
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TPH-Carbon Chain by EPA Method 8015M

Gasoline (C6-C10)	ND	50.0	mg/kg	1	0J14004	10/14/2010	10/15/2010
Diesel (C10-C28)	ND	50.0	"	"	"	"	"
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"
TPH - Carbon Chain Total	ND	50.0	"	"	"	"	"

Surrogate: o-Terphenyl	89.6 %	65-140	"	"	"
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804 Grand Avenue
Platteville CO 80651

Todd Cullum
Project Number: [none]
Project: Lilli Unit Battery C-9

Extractable Petroleum Hydrocarbons by 8015M - Quality Control Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch OJ14004 - Default Prep GC-Semi										
Blank (OJ14004-BLK1)					Prepared: 10/14/2010 Analyzed: 10/15/2010					
Gasoline (C6-C10)	ND	50.0	mg/kg							
Diesel (C10-C28)	ND	50.0	"							
Residual Range Organics (C28-C36)	ND	200	"							
TPH - Carbon Chain Total	ND	50.0	"							
<i>Surrogate: o-Terphenyl</i>	<i>41.0</i>		<i>g</i>	<i>50.0</i>		<i>82.0</i>	<i>65-140</i>			
LCS (OJ14004-BS1)					Prepared: 10/14/2010 Analyzed: 10/15/2010					
Gasoline (C6-C10)	33.4	50.0	mg/kg				65-140			
Diesel (C10-C28)	435	50.0	"	500		87.1	60-140			
<i>Surrogate: o-Terphenyl</i>	<i>43.2</i>		<i>g</i>	<i>50.0</i>		<i>86.4</i>	<i>65-140</i>			
Matrix Spike (OJ14004-MS1)					Source: X010112-01	Prepared: 10/14/2010 Analyzed: 10/15/2010				
Gasoline (C6-C10)	35.6	50.0	mg/kg		ND		65-130			
Diesel (C10-C28)	469	50.0	"	500	ND	93.8	60-140			
<i>Surrogate: o-Terphenyl</i>	<i>48.3</i>		<i>g</i>	<i>50.0</i>		<i>96.5</i>	<i>65-140</i>			
Matrix Spike Dup (OJ14004-MSD1)					Source: X010112-01	Prepared: 10/14/2010 Analyzed: 10/15/2010				
Gasoline (C6-C10)	31.4	50.0	mg/kg		ND		65-130	12.7	20	
Diesel (C10-C28)	418	50.0	"	500	ND	83.7	60-140	11.5	25	
<i>Surrogate: o-Terphenyl</i>	<i>42.4</i>		<i>g</i>	<i>50.0</i>		<i>84.9</i>	<i>65-140</i>			

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804 Grand Avenue
Platteville CO 80651

Todd Cullum
Project Number: [none]
Project: Lilli Unit Battery C-9

Volatile Organic Compounds by EPA Method 8260B - Quality Control Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch OJ14003 - EPA 5030B

Blank (OJ14003-BLK1)

Prepared: 10/14/2010 Analyzed: 10/14/2010

Benzene	ND	0.004	mg/kg
Toluene	ND	0.004	"
Ethylbenzene	ND	0.004	"
m,p-Xylene	ND	0.008	"
o-Xylene	ND	0.004	"

Surrogate: 1,2-Dichloroethane-d4	73.0	ug/L	62.5	117	77.6-134
Surrogate: Toluene-d8	65.2	"	62.5	104	81.4-121
Surrogate: 4-Bromofluorobenzene	50.3	"	62.5	80.5	74.7-123

LCS (OJ14003-BS1)

Prepared: 10/14/2010 Analyzed: 10/14/2010

Benzene	0.24	0.004	mg/kg	0.200	120	75.2-128
Toluene	0.23	0.004	"	0.200	116	76.3-130

Surrogate: 1,2-Dichloroethane-d4	70.7	ug/L	62.5	113	77.6-134
Surrogate: Toluene-d8	65.1	"	62.5	104	81.4-121
Surrogate: 4-Bromofluorobenzene	54.3	"	62.5	86.8	74.7-123

Matrix Spike (OJ14003-MS1)

Source: X010112-01

Prepared: 10/14/2010 Analyzed: 10/14/2010

Benzene	0.24	0.004	mg/kg	0.200	ND	121	77.6-132
Toluene	0.23	0.004	"	0.200	ND	115	74-136

Surrogate: 1,2-Dichloroethane-d4	71.8	ug/L	62.5	115	77.6-134
Surrogate: Toluene-d8	64.8	"	62.5	104	81.4-121
Surrogate: 4-Bromofluorobenzene	52.0	"	62.5	83.1	74.7-123

Matrix Spike Dup (OJ14003-MSD1)

Source: X010112-01

Prepared: 10/14/2010 Analyzed: 10/14/2010

Benzene	0.24	0.004	mg/kg	0.200	ND	122	77.6-132	0.908	13.1
Toluene	0.23	0.004	"	0.200	ND	116	74-136	0.589	20.9

Surrogate: 1,2-Dichloroethane-d4	73.7	ug/L	62.5	118	77.6-134
Surrogate: Toluene-d8	65.7	"	62.5	105	81.4-121
Surrogate: 4-Bromofluorobenzene	53.0	"	62.5	84.8	74.7-123

Origins Laboratory, Inc.



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Noble Energy Inc.
804 Grand Avenue
Platteville CO 80651

Todd Cullum
Project Number: [none]
Project: Lilli Unit Battery C-9

Conductivity by E120.1 - Quality Control XENCO

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 828286 - NONE										
LCS (828286-1-BKS)		Source: 828286-1-BKS			Prepared: 10/20/2010 Analyzed: 10/20/2010					
Conductivity	1370	2	US/CM	1410	±1.00	97	80-120	0	20	
BLANK (828286-1-BLK)		Source: 828286-1-BLK			Prepared: 10/20/2010 Analyzed: 10/20/2010					
Conductivity	ND	2	US/CM	0.00			-	0	20	

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Noble Energy Inc.
804 Grand Avenue
Platteville CO 80651

Todd Cullum
Project Number: [none]
Project: Lilli Unit Battery C-9

Percent Moisture by AD2216A - Quality Control XENCO

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 827905 - NONE

BLANK (827905-1-BLK)

Source: 827905-1-BLK

Prepared: 10/18/2010 Analyzed: 10/18/2010

Percent Moisture	ND	1	%	0.00	-	0	20
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Noble Energy Inc.
804 Grand Avenue
Platteville CO 80651

Todd Cullum
Project Number: [none]
Project: Lilli Unit Battery C-9

Notes and Definitions

IV [Undefined]

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

Origins Laboratory, Inc.



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