



02055794

Page 1

FORM
4
Rev 12/05

State of Colorado

Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 Phone: (303)894-2100 Fax: (303)894-2109



SUNDRY NOTICE

Submit original plus one copy. This form is to be used for general, technical and environmental sundry information. For proposed or completed operations, describe in full on Technical Information Page (Page 2 of this form.) Identify well or other facility by API Number or by OGCC Facility ID. Operator shall send an informational copy of all sundry notices for wells located in High Density Areas to the Local Government Designee (Rule 603b.)

1. OGCC Operator Number: 100200	4. Contact Name: Steven Shute	Complete the Attachment Checklist OP OGCC
2. Name of Operator: Lone Pine Gas, Inc.	Phone: 303-761-5225	
3. Address: 4505 S Broadway City: Englewood State: CO Zip: 80113	Fax: 303-781-5916	
5. API Number: 05-51375	OGCC Facility ID Number: 115241-324634	Survey Plat
6. Well/Facility Name: Spaulding A Battery	7. Well/Facility Number:	Directional Survey
8. Location (Qtr/Qtr, Sec, Twp, Rng, Meridian): SWSE 28-9N-81W		Surface Eqpt Diagram
9. County: Jackson	10. Field Name: Spaulding	Technical Info Page
11. Federal, Indian or State Lease Number:		Other

RECEIVED

FEB 14 2013

COGCC

General Notice

<input type="checkbox"/> CHANGE OF LOCATION: Attach New Survey Plat	(a change of surface qtr/qtr is substantive and requires a new permit)																
Change of Surface Footage from Exterior Section Lines:	<table border="1"> <tr> <td></td> <td>FML/FSL</td> <td></td> <td>FEL/FWL</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table>		FML/FSL		FEL/FWL												
	FML/FSL		FEL/FWL														
Change of Surface Footage to Exterior Section Lines:																	
Change of Bottomhole Footage from Exterior Section Lines:																	
Change of Bottomhole Footage to Exterior Section Lines:																	
Bottomhole location Qtr/Qtr, Sec, Twp, Rng, Mer:																	
Latitude:	Distance to nearest property line																
Longitude:	Distance to nearest lease line																
Ground Elevation:	Distance to nearest well same formation																
	Distance to nearest bldg, public rd, utility or RR																
	Is location in a High Density Area (rule 603b)? Yes/No																
	Surface owner consultation date:																
GPS DATA:																	
Date of Measurement:	PDOP Reading:																
Instrument Operator's Name:																	
<input type="checkbox"/> CHANGE SPACING UNIT	<input type="checkbox"/> Remove from surface bond																
Formation: Formation Code: Spacing order number: Unit Acreage: Unit configuration:	Signed surface use agreement attached:																
<input type="checkbox"/> CHANGE OF OPERATOR (prior to drilling):	<input type="checkbox"/> CHANGE WELL NAME																
Effective Date:	From:																
Plugging Bond: <input type="checkbox"/> Blanket <input type="checkbox"/> Individual	To:																
	Effective Date:																
<input type="checkbox"/> ABANDONED LOCATION:	<input type="checkbox"/> NOTICE OF CONTINUED SHUT IN STATUS																
Was location ever built? <input type="checkbox"/> Yes <input type="checkbox"/> No	Date well shut in or temporarily abandoned:																
Is site ready for inspection? <input type="checkbox"/> Yes <input type="checkbox"/> No	Has Production Equipment been removed from site? <input type="checkbox"/> Yes <input type="checkbox"/> No																
Date Ready for Inspection:	MIT required if shut in longer than two years. Date of last MIT:																
<input type="checkbox"/> SPUD DATE:	<input type="checkbox"/> REQUEST FOR CONFIDENTIAL STATUS (6 mos from date casing set)																
<input type="checkbox"/> SUBSEQUENT REPORT OF STAGE, SQUEEZE OR REMEDIAL CEMENT WORK																	
*submit cbl and cement job summaries																	
Method used: Cementing tool setting/perm depth: Cement volume: Cement top: Cement bottom: Date:																	
<input type="checkbox"/> RECLAMATION: Attach technical page describing final reclamation procedures per Rule 1004.																	
Final reclamation will commence on approximately: <input type="checkbox"/> Final reclamation is completed and site is ready for inspection.																	

Technical Engineering/Environmental Notice

<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Report of Work Done
Approximate Start Date: 2/10/2013	Date Work Completed:
Details of work must be described in full on Technical Information Page (Page 2 must be submitted.)	
<input type="checkbox"/> Intent to Recomplete (submit form 2)	<input checked="" type="checkbox"/> Request to Vent or Flare
<input type="checkbox"/> Change Drilling Plans	<input type="checkbox"/> Repair Well
<input type="checkbox"/> Gross Interval Changed?	<input type="checkbox"/> Rule 502 variance requested
<input type="checkbox"/> Casing/Cementing Program Change	<input type="checkbox"/> Other:
	E&P Waste Disposal
	Beneficial Reuse of E&P Waste
	Status Update/Change of Remediation Plans for Spills and Releases

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct and complete.

Signed: Vernetta Mickey Date: 2/10/13 Email: pipeline@rof.net
Print Name: Vernetta Mickey Title: President

COGCC Approved: Title: Date:

CONDITIONS OF APPROVAL, IF ANY:

Not Approved.
ARF

*
Facility ID
427281
Location ID
324634



STATE OF
COLORADO

Fischer - DNR, Alex <alex.fischer@state.co.us>

Fwd: Spaulding A Battery Production Gas Venting

1 message

Andrews - DNR, David <david.andrews@state.co.us>

Wed, May 14, 2014 at 2:25 PM

To: Alex Fischer - DNR <alex.fischer@state.co.us>, Peter Gowen - DNR <peter.gowen@state.co.us>

----- Forwarded message -----

From: **Steven Shute** <pipeline@rof.net>

Date: Wed, Jun 19, 2013 at 2:27 PM

Subject: Spaulding A Battery Production Gas Venting

To: "Andrews - DNR, David" <david.andrews@state.co.us>

Cc: Alex Fischer - DNR <alex.fischer@state.co.us>, Kris Neidel - DNR <Kris.Neidel@state.co.us>, Jennifer Mattox - CDPHE <jennifer.mattox@state.co.us>

Thanks, Dave.

Wasn't certain of jurisdiction between agencies.

Jennifer referred this to Peter Armington at CDPHE, who gave me some direction, which I'll pass on to the new operator.

Thanks for your help,

Steve Shute

970-928-9208

From: Andrews - DNR, David

Sent: Wednesday, June 19, 2013 2:07 PM

To: Steven Shute

Cc: Alex Fischer - DNR ; Kris Neidel - DNR ; Stuart Ellsworth - DNR ; Greg Deranleau - DNR ; Diana Burn - DNR ; Jennifer Mattox - CDPHE ; Shaun Kellerby - DNR

Subject: Re: Spaulding A Battery Production Gas Venting

Steve,

I was just informed by our Denver office staff that COGCC cannot approve this flaring request because it is CDPHE's jurisdiction. That is because the flaring is occurring at a battery, rather than an individual wellhead. I apologize for the confusion, as I was not aware of the jurisdictional issue until now. I am copying the appropriate CDPHE contact (Jennifer Maddox) on this email to provide some historical perspective for her review. I am also attaching the original Sundry Notice (Doc. No. 2055794) and backup that we have accumulated to date. Please check with Jennifer to see if there is anything additional that either you or the new operator needs to submit to CDPHE.

I am hereby advising Kris Neidel to resolve open COGCC enforcement matters (if any) related to this matter because of the interagency referral.

Thanks,

Dave

On Tue, Jun 18, 2013 at 4:23 PM, Andrews - DNR, David <david.andrews@state.co.us> wrote:

Steve,

You submitted everything that you need to. I requested data entry of the form by our Denver office staff on May 30 (per our new internal eForm procedure), the day before I left for vacation. I just called our Denver office staff today. They have been holding off on data entry, unsure of which Facility or Location Number to use, but they promised me that it would be taken care of tomorrow. I will approve the Sundry Notice when it's in process.

Thanks,

David D. Andrews, P.E., P.G.
Engineering Supervisor - Western Colorado

State of Colorado
Oil and Gas Conservation Commission
NEW ADDRESS, EFFECTIVE 1/3/2013:
796 Megan Avenue, Suite 201
Rifle, Colorado 81650
Office Phone: (970) 625-2497 Ext. 1
Cell Phone: (970) 456-5262
Fax: (970) 625-5682
E-mail: David.Andrews@state.co.us
Website: <http://www.colorado.gov/cogcc>

On Tue, Jun 4, 2013 at 9:25 AM, Steven Shute <pipeline@rof.net> wrote:

Dave,

What next on this?

We rigged up a simple flare and are burning the ~2.5 mcf/d since May 13. Alex was out there and has seen it.

Lone Pine has an agreement to sell the field to another producer, and plan to transfer operations next week.

New producer plans to run a generator and will burn all gas from the oil separation process. But this will take a few months, Lone Pine filed the Sundry Notice and I'd like to run this as far as I can.

Do you need anything else for COGCC, and

Is there an additional process with CDPHE?

Steve Shute
970-928-9208

From: Andrews - DNR, David
Sent: Thursday, May 30, 2013 10:16 AM
To: Steven Shute
Cc: Kris Neidel - DNR ; Alex Fischer - DNR ; Vernetta Mickey
Subject: Re: Spaulding A Battery Production Gas Venting

Thanks,

David D. Andrews, P.E., P.G.
Engineering Supervisor - Western Colorado

State of Colorado
Oil and Gas Conservation Commission
NEW ADDRESS, EFFECTIVE 1/3/2013:
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Fax: (970) 625-5682
E-mail: David.Andrews@state.co.us
Website: <http://www.colorado.gov/cogcc>

On Mon, May 6, 2013 at 12:06 PM, Steven Shute <pipeline@rof.net> wrote:

Dave,

Here are the test data for gas vented from the Lone Pine / Spaulding tank battery near Walden.

- 1) Attached gas analysis is about as expected: 700 BTU gas, 40% inerts CO₂+N₂ (incl Helium!), some NGLs and very high SG 0.983. This gas is on the lower end of flammability, but it will run the treater.
- 2) All of the collective gas production from the plant was measured for several days in April. This is a small quantity of gas, enough that a gas utility house meter can be used for measurement. The American AC-250 meter (250 cfh max capacity) was piped into the collected gas outlet from the knockouts and treater. Gas flow averaged 2.6 mcf/d over a 14-day period.
- 3) H₂S was checked using a Ray stain tube tester. There was zero indication on the

2.5 to 60 ppm tube.

4) These wells produce through gathering lines into this central tank battery, API 05-057-060...

Spaulding #1	06009
Spaulding #2	06011
Spaulding #3	06012
Spaulding #4	06031
Spaulding #5	06057
Spaulding #7	06069
Spaulding #8	06070
Spaulding #9	06080
Spaulding #10-A	06097
Spaulding #11	06093
Spaulding #12-A	06095
Spaulding #13	06100
Spaulding #14	06108
Spaulding #15	06112
Spaulding #16	06115
Spaulding #18	06127

We are working on a suitable location for a flare stack with adequate clearance from wells and the treater.

What other information do you need?

Steven Shute
970-928-9208

From: Andrews - DNR, David
Sent: Monday, February 25, 2013 9:45 AM
To: Steven Shute
Cc: Kris Neidel - DNR ; Alex Fischer - DNR ; Vernetta Mickey ; Stuart Ellsworth - DNR ; Greg Deranleau - DNR
Subject: Re: Spaulding A Battery Production Gas Venting

Steve,

Please proceed with collecting a single gas sample at the battery to represent all of the wells that are tied into the battery. Analyze for composition and hydrogen sulfide. When you have the results, email me the lab data sheets and a list of all wells connected to the battery, including API Numbers for each well. A single Sundry

Notice (the one you already submitted) will suffice.

Thanks,

Dave

On Wed, Feb 20, 2013 at 8:29 PM, Andrews - DNR, David <david.andrews@state.co.us> wrote:

Steve,

Thanks for clarifying. I would like to discuss this with my manager first, but I am leaning towards a single new sample, as you suggested. I still need a separate Sundry Notice for each well involved, or I could consider one Sundry Notice (your current submittal) with a supplemental list of the associated wells and API numbers.

Thanks,

Dave

On Wed, Feb 20, 2013 at 6:29 PM, Steven Shute <pipeline@rof.net> wrote:

David,

All production water-oil-gas from all wells is piped to the central facility.

There is no separation equipment nor venting at any wellhead, all production goes into a pipeline. We have no way of determining which well(s) make gas (or oil), if any. Most of the wells give no indication that there is any gas, it seems to be entirely dissolved or entrained in oily water. There are a couple of wells that occasionally give a "burp" that indicates gas.

In the plant, gas comes off the various knockouts and treater into a central gas header, off which the fuel comes to run the treater. The rest of the gas is flared.

We recently measured the residual gas flow with a small utility gas meter (eg the same as your house). The volume was 3.5 mcf/d, measured over a couple of days.

There is no H₂S nor hint of sulfur smell. The only gas analysis we have ca 2001 shows aprx 40% inerts, but the gas is hot enough to sustain a flame and keep the treater or generator running.

- 1) We will get a fresh gas analysis from the common gas header.
- 2) Central facility; we cannot sample gas from any particular well.
- 3) No H₂S.
- 4) Extremely low volume.

5) These parameters seem a little different than your interpretation, but I haven't done this before. What next do you suggest?

Steve Shute
970-928-9208
Glenwood Springs

From: Andrews - DNR, David
Sent: Wednesday, February 20, 2013 4:24 PM
To: pipeline@rof.net
Cc: Kris Neidel - DNR ; Alex Fischer - DNR ; Stuart Ellsworth - DNR
Subject: Spaulding A Battery Production Gas Venting

Steven or Vernetta,

As-is, the attached Sundry Notice cannot be approved. one Sundry Notice to cover "up to a dozen" unidentified wells is not acceptable. Please submit a separate Sundry Notice for each well that Lone Pine is venting production gas. Each Sundry Notice must be accompanied by a laboratory analytical data sheet from a sample of the production gas being vented at the well (**gas composition plus hydrogen sulfide**). The intent of the analytical data is to accomplish two things: substantiate Lone Pine's contention of low quality gas using the compositional analysis provided on the data sheet, and determine whether hydrogen sulfide is present in the gas at any detectable concentration. Pending my review of the gas analyses, I would be willing to approve the Sundry Notices based on the rationale presented on Page 2 of the attached file. Flaring may be required, pending the results of the hydrogen sulfide analyses. Please submit the Sundry Notices and gas analyses directly to my attention at the Rifle office (see below) within 30 days. Email or hard copy submittals would be acceptable (choose one method, not both).

Thanks,

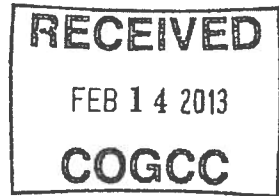
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2055794.pdf

300K



COGCC Form 4 to Request to Vent or Flare

Lone Pine Gas, Inc. operator 100200

Spaulding field ~~APL 05-51375~~ Location ID ~~324~~ 324634

Supplemental Information

Lone Pine Gas, Inc. has operated the Spaulding field in Jackson County since August 2002.

In December 2011 the COGCC issued a NOAV alleging that Lone Pine was "Venting... gas without approval via Form 4". This is the first written mention of gas venting that Lone Pine is aware of. Lone Pine has responded to the NOAV and now submits a Form 4 to formally request permission to vent gas from the process.

Lone Pine produces up to a dozen wells in the Lakota-Dakota zones. The wells primarily make water, with about 15 BOPD and a small amount of associated natural gas.

Gas volume fluctuates widely but is currently estimated at 0 to 20 mcf/d.

The gas is very low quality, with almost 40% inerts N_2 and CO_2 . It has barely enough BTUs of heating value to fire the treater or an onsite generator when tuned properly.

The nearest gas pipeline (and only gas line in Jackson County) serves the Town of Walden municipal gas system with pipeline quality gas from Colorado Interstate at Laramie. A pipeline connection to Walden would be about 15.5 miles and cost at least \$1.3 million.

The Lone Pine gas would not be compatible with that distributed by Walden Gas. With a "Wobbe" gas quality index of about 800, the Lone Pine gas is far below the aprx 1300 index required for Walden. Below that index, every flame and appliance in Walden would have to be re-tuned to the Lone Pine Wobbe index. The Lone Pine field cannot supply enough gas for Walden's peak day requirements, so the only way to utilize the gas would be a low-percentage blend. This would be somewhat risky, with the high possibility of interrupted service to the community if the gas mix changes.

Because of low quality, low volume and high cost of connection, it's highly unlikely the Lone Pine gas will ever be feasible for utility use. The only likely uses are onsite for process heat as currently used, and possibly for electrical generation, for which the Lak-Dak zones may not supply adequate volume.



STATE OF
COLORADO

Andrews - DNR David <david.andrews@state.co.us>

Spaulding A Battery Production Gas Venting

Steven Shute <pipeline@rof.net>

Wed, Feb 20, 2013 at 6:29 PM

To: "Andrews - DNR, David" <david.andrews@state.co.us>

Cc: Kris Neidel - DNR <Kris.Neidel@state.co.us>, Alex Fischer - DNR <alex.fischer@state.co.us>, Vernetta Mickey <vernetta.mickey@gmail.com>

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970-928-9208
Glenwood Springs



STATE OF
COLORADO

Andrew W. DNR David <david.andrews@state.co.us>

Spaulding A Battery Production Gas Venting

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Mon, Feb 25, 2013 at 9:45 AM

To: Steven Shute <pipeline@rof.net>

Cc: Kris Neidel - DNR <Kris.Neidel@state.co.us>, Alex Fischer - DNR <alex.fischer@state.co.us>, Vernetta Mickey <vernetta.mickey@gmail.com>, Stuart Ellsworth - DNR <Stuart.Ellsworth@state.co.us>, Greg Deranleau - DNR <greg.deranleau@state.co.us>

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[Quoted text hidden]



STATE OF
COLORADO

Andrews - DNR, David <david.andrews@state.co.us>

Spaulding A Battery Production Gas Venting

Steven Shute <pipeline@rof.net>

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Spaulding #8	06070
Spaulding #9	06080
Spaulding #10-A	06097
Spaulding #11	06093
Spaulding #12-A	06095
Spaulding #13	06100

5/30/13

State.co.us Executive Branch Mail - Spaulding A Battery Production Gas Venting

Spaulding #14	06108
Spaulding #15	06112
Spaulding #16	06115
Spaulding #18	06127

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To: Steven Shute

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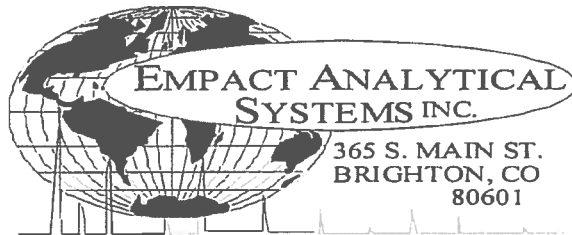
Subject: Re: Spaulding A Battery Production Gas Venting

[Quoted text hidden]



Gas analysis Trtr Mar13.pdf

116K



303-637-0150

EXTENDED NATURAL GAS ANALYSIS ("DHA")

MAIN PAGE

PROJECT NO. :	201303140	ANALYSIS NO. :	01
COMPANY NAME :	LONE PINE GAS	ANALYSIS DATE:	MARCH 21, 2013
ACCOUNT NO. :		SAMPLE DATE :	MARCH 18, 2013
PRODUCER :	WALDEN, CO	CYLINDER NO. :	1054
LEASE NO. :		SAMPLED BY :	JOHN MOSER - EMPACT
NAME/DESCRIP :	TREATER FUEL GAS @ 11:15 SPAULDING LEASE		
FIELD DATA		SAMPLE TEMP. :	151
SAMPLE PRES. :	14	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE; LENGTH OF H2S STAIN @ 200.0 PPM @ 11:25 FROM TREATER FUEL GAS		

COMPONENT	MOLE %	MASS %	GPM @ 14.650	GPM @ 14.730
ALCOHOLS	0.0001	0.0002		
GLYCOLS	0.0035	0.0185		
HELIUM	0.23	0.03	---	---
OXYGEN/ARGON	0.15	0.17	---	---
NITROGEN	8.45	8.31	---	---
CARBON DIOXIDE	31.12	48.07	---	---
METHANE	54.78420	30.84510	---	---
ETHANE	0.2373	0.2504	0.0630	0.0633
PROPANE	0.7960	1.2319	0.2189	0.2201
I-BUTANE	0.3797	0.7746	0.1240	0.1246
N-BUTANE	1.0353	2.1119	0.3259	0.3277
I-PENTANE	0.7119	1.7986	0.2559	0.2573
N-PENTANE	0.6537	1.6553	0.2359	0.2372
HEXANES PLUS	1.4483	4.7335	0.5970	0.5997
TOTALS	100.00000	100.00000	1.8206	1.8299

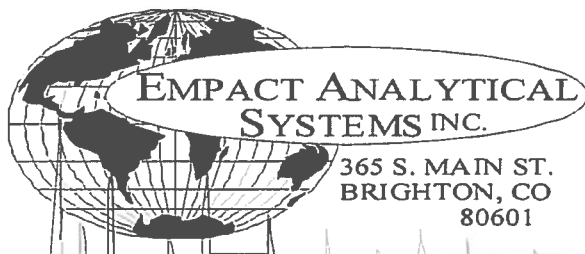
BTEX COMPONENTS	MOLE%	WT%	BTU @ 14.650	BTU @ 14.730
BENZENE	0.0031	0.0085	680.6 /scf	684.3 /scf
TOLUENE	0.0023	0.0074	668.7 /scf	672.4 /scf
ETHYLBENZENE	0.0016	0.0060	750.5 /scf	754.6 /scf
XYLENES	0.0031	0.0116	737.4 /scf	741.4 /scf
TOTAL BTEX	0.0101	0.0335	9098.3 /lb	9148.0 /lb
			10032.6 /lb	10087.4 /lb

(CALC: GPA STD 2145 & TP-17 @14.696 & 60 F)

*DETAILED HYDROCARBON ANALYSIS NJ 1993) : ASTM D6730

THIS DATA HAS BEEN ACQUIRED THROUGH APPLICATION OF CURRENT STATE-OF-THE-ART ANALYTICAL TECHNIQUES.
THE USE OF THIS INFORMATION IS THE RESPONSIBILITY OF THE USER. EMPACT ANALYTICAL SYSTEMS ASSUMES NO
RESPONSIBILITY FOR ACCURACY OF THE REPORTED INFORMATION NOR ANY CONSEQUENCES OF ITS APPLICATION.

RELATIVE DENSITY (AIR=1): 0.9831
COMPRESSIBILITY FACTOR : 0.99720



303-637-0150

EXTENDED NATURAL GAS ANALYSIS (*DHA)

GLYCALC INFORMATION

PROJECT NO. :	201303140	ANALYSIS NO. :	01
COMPANY NAME :	LONE PINE GAS	ANALYSIS DATE:	MARCH 21, 2013
ACCOUNT NO. :		SAMPLE DATE :	MARCH 18, 2013
PRODUCER :	WALDEN, CO	CYLINDER NO. :	1054
LEASE NO. :		SAMPLED BY :	JOHN MOSER - EMPACT
NAME/DESCRIP :	TREATER FUEL GAS @ 11:15 SPAULDING LEASE		
FIELD DATA		SAMPLE TEMP. :	151
SAMPLE PRES. :	14	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE; LENGTH OF H2S STAIN @ 200.0 PPM @ 11:25 FROM TREATER FUEL GAS		

Componet	Mole %	Wt %
Helium	0.23	0.03
Carbon Dioxide	31.12	48.07
Nitrogen	8.45	8.31
Methane	54.78420	30.84510
Ethane	0.2373	0.2504
Propane	0.7960	1.2319
Isobutane	0.3797	0.7746
n-Butane	1.0353	2.1119
Isopentane	0.6551	1.6588
n-Pentane	0.6537	1.6553
Cyclopentane	0.0568	0.1398
n-Hexane	0.1980	0.5989
Cyclohexane	0.1064	0.3143
Other Hexanes	0.5316	1.5947
Heptanes	0.3092	1.0762
Methycyclohexane	0.1241	0.4277
2,2,4 Trimethylpentane	0.0005	0.0020
Benzene	0.0031	0.0085
Toluene	0.0023	0.0074
Ethylbenzene	0.0016	0.0060
Xylenes	0.0031	0.0116
C8+ Heavies	0.1684	0.6862
<u>Subtotal</u>	<u>99.84640</u>	<u>99.81130</u>
Oxygen/Argon	0.15	0.17
Alcohols	0.0001	0.0002
Glycols	0.0035	0.0185
<u>Total</u>	<u>100.00000</u>	<u>100.00000</u>

THE DATA PRESENTED HEREIN HAS BEEN ACQUIRED THROUGH JUDICIOUS APPLICATION OF CURRENT STATE-OF-THE ART ANALYTICAL TECHNIQUES. THE APPLICATIONS OF THIS INFORMATION IS THE RESPONSIBILITY OF THE USER. EMPACT ANALYTICAL SYSTEMS, INC. ASSUMES NO RESPONSIBILITY FOR ACCURACY OF THE REPORTED INFORMATION NOR ANY CONSEQUENCES OF ITS APPLICATION.



**EXTENDED NATURAL GAS ANALYSIS (*DHA)
DHA COMPONENT LIST**

PROJECT NO. :	201303140	ANALYSIS NO. :	01
COMPANY NAME :	LONE PINE GAS	ANALYSIS DATE:	MARCH 21, 2013
ACCOUNT NO. :		SAMPLE DATE :	MARCH 18, 2013
PRODUCER :	WALDEN, CO	CYLINDER NO. :	1054
LEASE NO. :		SAMPLED BY :	JOHN MOSER - EMPACT
NAME/DESCRIP :	TREATER FUEL GAS @ 11:15 SPAULDING LEASE		
FIELD DATA		SAMPLE TEMP. :	151
SAMPLE PRES. :	14	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE; LENGTH OF H2S STAIN @ 200.0 PPM @ 11:25 FROM TREATER FUEL GAS		

COMPONENT	PIANO #	MOLE %	MASS %	GPM @ 14.650	GPM @ 14.730
Helium	---	0.23	0.03	---	---
Oxygen/Argon	---	0.15	0.17	---	---
Nitrogen	---	8.45	8.31	---	---
Carbon Dioxide	---	31.12	48.07	---	---
Methane	P1	54.78420	30.84510	---	---
Ethane	P2	0.2373	0.2504	0.063	0.063
Propane	P3	0.7960	1.2319	0.219	0.220
i-Butane	I4	0.3797	0.7746	0.124	0.125
n-Butane	P4	1.0353	2.1119	0.326	0.328
2,2-Dimethylpropane	I5	0.0034	0.0086	0.001	0.001
i-Pentane	I5	0.6517	1.6502	0.238	0.239
n-Pentane	P5	0.6537	1.6553	0.236	0.237
t-Butanol	X4	0.0001	0.0002	0.000	0.000
2,2-Dimethylbutane	I6	0.0064	0.0194	0.003	0.003
Cyclopentane	N5	0.0568	0.1398	0.017	0.017
2,3-Dimethylbutane	I6	0.0344	0.1040	0.014	0.014
2-Methylpentane	I6	0.1879	0.5683	0.078	0.078
3-Methylpentane	I6	0.1176	0.3557	0.048	0.048
n-Hexane	P6	0.1980	0.5989	0.081	0.081
2,2-Dimethylpentane	I7	0.0035	0.0123	0.002	0.002
Methylcyclopentane	N6	0.1851	0.5467	0.065	0.065
2,4-Dimethylpentane	I7	0.0143	0.0503	0.007	0.007
2,2,3-Trimethylbutane	I7	0.0008	0.0028	0.000	0.000
Benzene	A6	0.0031	0.0085	0.001	0.001
3,3-Dimethylpentane	I7	0.0014	0.0049	0.001	0.001
Cyclohexane	N6	0.1064	0.3143	0.036	0.036
2-Methylhexane	I7	0.0321	0.1129	0.015	0.015
2,3-Dimethylpentane	I7	0.0224	0.0788	0.010	0.010
1,1-Dimethylcyclopentane	N7	0.0188	0.0648	0.008	0.008
3-Methylhexane	I7	0.0392	0.1379	0.018	0.018
1c,3-Dimethylcyclopentane	N7	0.0383	0.1320	0.018	0.018
1t,3-Dimethylcyclopentane	N7	0.0348	0.1199	0.016	0.016
3-Ethylpentane	I7	0.0045	0.0158	0.002	0.002
1t,2-Dimethylcyclopentane	N7	0.0550	0.1895	0.025	0.025
2,2,4-Trimethylpentane	I8	0.0005	0.0020	0.000	0.000

UnknownC6s	U6	0.0002	0.0006	0.000	0.000
n-Heptane	P7	0.0323	0.1136	0.015	0.015
1c,2-Dimethylcyclopentane	N7	0.0047	0.0162	0.002	0.002
Methylcyclohexane	N7	0.1241	0.4277	0.050	0.050
2,2-Dimethylhexane	I8	0.0176	0.0705	0.008	0.008
Ethylcyclopentane	N7	0.0071	0.0245	0.003	0.003
2,5-Dimethylhexane	I8	0.0027	0.0108	0.001	0.001
2,2,3-Trimethylpentane	I8	0.0004	0.0016	0.000	0.000
2,4-Dimethylhexane	I8	0.0045	0.0180	0.002	0.002
1c,2t,4-Trimethylcyclopentane	N8	0.0115	0.0453	0.005	0.005
3,3-Dimethylhexane	I8	0.0007	0.0028	0.000	0.000
1t,2c,4-Trimethylcyclopentane	N8	0.0119	0.0469	0.005	0.005
2,3,4-Trimethylpentane	I8	0.0012	0.0048	0.001	0.001
2,3,3-Trimethylpentane	I8	0.0002	0.0008	0.000	0.000
Toluene	A7	0.0023	0.0074	0.001	0.001
2,3-Dimethylhexane	I8	0.0052	0.0208	0.003	0.003
2-Methyl-3-ethylpentane	I8	0.0011	0.0044	0.001	0.001
2-Methylheptane	I8	0.0080	0.0321	0.004	0.004
4-Methylheptane	I8	0.0032	0.0128	0.002	0.002
3-Methyl-3-ethylpentane	I8	0.0005	0.0020	0.000	0.000
3,4-Dimethylhexane	I8	0.0007	0.0028	0.000	0.000
1c,2c,4-Trimethylcyclopentane	N8	0.0006	0.0023	0.000	0.000
1c,3-Dimethylcyclohexane	N8	0.0005	0.0020	0.000	0.000
3-Methylheptane	I8	0.0042	0.0168	0.002	0.002
1c,2t,3-Trimethylcyclopentane	N8	0.0192	0.0756	0.010	0.010
3-Ethylhexane	I8	0.0022	0.0088	0.001	0.001
1t,4-Dimethylcyclohexane	N8	0.0078	0.0307	0.004	0.004
1,1-Dimethylcyclohexane	N8	0.0022	0.0087	0.001	0.001
3c-Ethylmethylcyclopentane	N8	0.0001	0.0004	0.000	0.000
3t-Ethylmethylcyclopentane	N8	0.0016	0.0063	0.001	0.001
2t-Ethylmethylcyclopentane	N8	0.0014	0.0055	0.001	0.001
1,1-Methylethylcyclopentane	N8	0.0035	0.0138	0.002	0.002
2,2,4-Trimethylhexane	I9	0.0005	0.0022	0.000	0.000
1t,2-Dimethylcyclohexane	N8	0.0088	0.0346	0.004	0.004
1t,3-Dimethylcyclohexane	N8	0.0001	0.0004	0.000	0.000
n-Octane	P8	0.0021	0.0084	0.001	0.001
1c,4-Dimethylcyclohexane	N8	0.0050	0.0197	0.003	0.003
i-Propylcyclopentane	I8	0.0006	0.0023	0.000	0.000
2,4,4-Trimethylhexane	I9	0.0003	0.0013	0.000	0.000
2,3,5-Trimethylhexane	I9	0.0006	0.0027	0.000	0.000
2,2,3,4-Tetramethylpentane	I9	0.0002	0.0009	0.000	0.000
2,3,4-Trimethylhexane	I9	0.0003	0.0013	0.000	0.000
1c,2-Dimethylcyclohexane	N8	0.0010	0.0039	0.001	0.001
2,2-Dimethylheptane	I9	0.0001	0.0005	0.000	0.000
1,1,4-Trimethylcyclohexane	N9	0.0068	0.0301	0.003	0.003
2,2,3-Trimethylhexane	I9	0.0014	0.0063	0.001	0.001
2,4-Dimethylheptane	I9	0.0001	0.0005	0.000	0.000
4,4-Dimethylheptane	I9	0.0002	0.0009	0.000	0.000
Ethylcyclohexane	N8	0.0036	0.0142	0.002	0.002
n-Propylcyclopentane	N8	0.0011	0.0043	0.000	0.000
1c,3c,5-Trimethylcyclohexane	N9	0.0002	0.0009	0.000	0.000
2,5-Dimethylheptane	I9	0.0003	0.0013	0.000	0.000
3,3-Dimethylheptane	I9	0.0005	0.0022	0.000	0.000
3,5-Dimethylheptane	I9	0.0002	0.0009	0.000	0.000
2,6-Dimethylheptane	I9	0.0002	0.0009	0.000	0.000
1,1,3-Trimethylcyclohexane	N9	0.0001	0.0005	0.000	0.000
Ethylbenzene	I8	0.0016	0.0060	0.001	0.001
1c,2t,4t-Trimethylcyclohexane	N9	0.0017	0.0075	0.001	0.001
1,3-Dimethylbenzene (m-Xylene)	A8	0.0019	0.0071	0.001	0.001
1,4-Dimethylbenzene (p-Xylene)	A8	0.0003	0.0011	0.000	0.000
3,4-Dimethylheptane	I9	0.0015	0.0067	0.001	0.001

3,4-Dimethylheptane (2)	I9	0.0007	0.0032	0.000	0.000
4-Ethylheptane	I9	0.0001	0.0005	0.000	0.000
4-Methyloctane	I9	0.0006	0.0027	0.000	0.000
2-Methyloctane	I9	0.0005	0.0022	0.000	0.000
1c,2t,3-Trimethylcyclohexane	N9	0.0001	0.0005	0.000	0.000
3-Ethylheptane	I9	0.0002	0.0009	0.000	0.000
3-Methyloctane	I9	0.0007	0.0032	0.000	0.000
1,1,2-Trimethylcyclohexane	N9	0.0002	0.0009	0.000	0.000
3,3-Diethylpentane	I9	0.0003	0.0013	0.000	0.000
1,2-Dimethylbenzene (o-Xylene)	A8	0.0009	0.0034	0.000	0.000
i-Butylcyclopentane	N9	0.0010	0.0044	0.001	0.001
n-Nonane	P9	0.0006	0.0027	0.000	0.000
1,1-Methylethylcyclohexane	N9	0.0001	0.0005	0.000	0.000
i-Propylbenzene	A9	0.0007	0.0029	0.000	0.000
i-Propylcyclohexane	N9	0.0002	0.0009	0.000	0.000
2,2-Dimethyloctane	I10	0.0001	0.0005	0.000	0.000
2,4-Dimethyloctane	I10	0.0002	0.0010	0.000	0.000
2,5-Dimethyloctane	I10	0.0001	0.0005	0.000	0.000
n-Butylcyclopentane	N9	0.0008	0.0035	0.000	0.000
3,3-Dimethyloctane	I10	0.0001	0.0005	0.000	0.000
n-Propylbenzene	A9	0.0004	0.0017	0.000	0.000
3,6-Dimethyloctane	I10	0.0001	0.0005	0.000	0.000
3-Methyl-5-ethylheptane	I10	0.0002	0.0010	0.000	0.000
1,3-Methylethylbenzene	A9	0.0002	0.0008	0.000	0.000
1,4-Methylethylbenzene	A9	0.0001	0.0004	0.000	0.000
1,3,5-Trimethylbenzene	A9	0.0002	0.0008	0.000	0.000
2,3-Dimethyloctane	I10	0.0001	0.0005	0.000	0.000
5-Methylnonane	I10	0.0001	0.0005	0.000	0.000
1,2-Methylethylbenzene	A9	0.0001	0.0004	0.000	0.000
3-Ethylcane	I10	0.0001	0.0005	0.000	0.000
3-Methylnonane	I10	0.0001	0.0005	0.000	0.000
t-Butylbenzene	A10	0.0003	0.0014	0.000	0.000
i-Butylcyclohexane	N10	0.0001	0.0005	0.000	0.000
i-Butylbenzene	A10	0.0001	0.0005	0.000	0.000
UnknownC9s	U9	0.0057	0.0257	0.003	0.003
1,2,3-Trimethylbenzene	A9	0.0001	0.0004	0.000	0.000
1,4-Methyl-i-propylbenzene	A10	0.0001	0.0005	0.000	0.000
Sec-Butylcyclohexane	A10	0.0001	0.0005	0.000	0.000
1,2-Methyl-i-propylbenzene	A10	0.0001	0.0005	0.000	0.000
1,2-Diethylbenzene	A10	0.0001	0.0005	0.000	0.000
UnknownC10s	U10	0.0023	0.0115	0.001	0.001
Triethylene Glycol	GL6	0.0035	0.0185	0.003	0.003
UnknownC11s	U11	0.0002	0.0011	0.000	0.000
TOTAL		100.00000	100.00000	1.8236	1.8329

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0031	0.0085
TOLUENE	0.0023	0.0074
ETHYLBENZENE	0.0016	0.0060
XYLENES	0.0031	0.0116
TOTAL BTEX	0.0101	0.0335

BTU @	14.650	14.730
LOW NET DRY REAL :	680.6 /scf	684.3 /scf
NET WET REAL :	668.7 /scf	672.4 /scf
HIGH GROSS DRY REAL :	750.5 /scf	754.6 /scf
GROSS WET REAL :	737.4 /scf	741.4 /scf
NET DRY REAL :	9098.3 /lb	9148.0 /lb
GROSS DRY REAL :	10032.6 /lb	10087.4 /lb

RELATIVE DENSITY (AIR=1): 0.9831
COMPRESSIBILITY FACTOR : 0.99720

(CALC. GPA STD 2145 & TP-17 @ 14.696 & 60 F)

*(DETAILED HYDROCARBON ANALYSIS-NJ 1993) : ASTM D6730

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