

## Robert Romero

---

**From:** Jackie Devall  
**Sent:** Tuesday, January 03, 2017 9:45 AM  
**To:** Robert Romero  
**Cc:** Patrick Raley  
**Subject:** FW: Derbone  
**Attachments:** [NE\_LOGANSPORT-CPG-12132016-231311-1].PDF; ATT00001.txt

-----Original Message-----

**From:** David Barnhill  
**Sent:** Monday, January 02, 2017 4:44 PM  
**To:** Jackie Devall  
**Subject:** FW: Derbone

I received this gas test info on the Derbonne Relief Well from Ben Aycock. He advised the gas does not appear coming from lower and may just be methane in the area. Pressure has dropped from 75# to 20# on the 3/4" open choke. So it does appear to be bleeding down. I will visit site tomorrow if possible. David

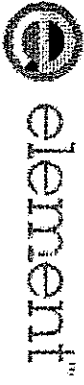
---

**From:** Ben Aycock [b.aycock@indigominerals.com]  
**Sent:** Monday, January 02, 2017 4:14 PM  
**To:** David Barnhill  
**Subject:** Derbone

---

### CONFIDENTIALITY NOTICE

This email communication may contain confidential information which also may be legally privileged and is intended only for the use of the intended recipients identified above. If you are not the intended recipient of this communication, you are hereby notified that any unauthorized review, use, dissemination, distribution, downloading, or copying of this communication is strictly prohibited. If you are not the intended recipient and have received this communication in error, please immediately notify us by reply email, delete the communication and destroy all copies.



Element Material Technology  
 2129 West Willow Street  
 Scott, LA  
 70583-5301 USA

P 337 232 3568  
 F 337 232 3621  
 T 888 786 7555  
 info.scott@element.com  
 element.com

Gas Analysis Report No: 231311      231311-1-34      Reported Date: 12/13/2016

For: INDIGO MINERALS  
 Attn: ACCOUNTS PAYABLE  
 600 TRAVIS  
 SUITE 5500  
 HOUSTON, TX 77002

Sample Identification:  
 Company: INDIGO MINERALS  
 Field: NE LOGANSSPORT  
 Lease: CPG  
 STA #: 6039

Sample Data: Date Collected: 12/13/2016      Date Received: 12/13/2016      By: C. O.  
 PSIG: 870.2      Temp: 71.3 DEG. F.

Remarks:      CYL # 10412  
 Sample Type: SPOT      Effective Date: 12/01/2016      To: 01/18/2038

Analyst: MB

Hydrocarbon Analysis - GPA 2261-13

Component Name	Mol Percent	GPM @ 15.025 PSIA
Carbon Dioxide (CO2)	2.288	
Nitrogen (N2)	0.054	
Methane (C1)	96.686	
Ethane (C2)	0.740	0.202
Propane (C3)	0.116	0.033
iso-Butane (iC4)	0.024	0.008

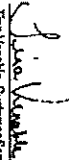
N-Butane	(NC4)	0.026	0.008
Iso-Pentane	(IC5)	0.014	0.005
N-Pentane	(NC5)	0.007	0.002
Hexanes Plus	(C6+)	0.045	0.021
<b>Total</b>		<b>100.000</b>	

Mol Weight: 16.89      Ethane + GPM: 0.279  
 BTU/LB: 22403.62      Propane + GPM: 0.077  
                                  Iso-Pentane + GPM: 0.028

Compressibility Factor: 0.9979  
 Specific Gravity @ 60 Deg. F. (Air = 1) : 0.584

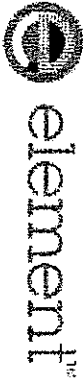
BTU/CuFt (Real) 60 Deg F	PSIA	14.650	14.696	14.730	15.025
Dry:		996.3	999.4	1001.7	1021.8
Sat:		979.2	982.3	984.6	1004.4

Reviewed By:

  
 Eric V. Kroll  
 Trail Vendor, Customer Service Representative

Data Reviewer

This document shall not be reproduced, except in full, without the written approval of Element Materials Technology  
 2129 W. Willow St. Scott, LA 70583 337-232-3568



Element Material Technology  
2129 West Willow Street  
Scott, LA  
70583-5301 USA

P 337 232 3568  
F 337 232 3621  
T 888 786 7555  
info.scott@element.com  
element.com

Gas Analysis Report No: 231311

231311-1 -31

Date: 12/13/2016

For: INDIGO MINERALS

Attn: ACCOUNTS PAYABLE  
600 TRAVIS  
SUITE 5500  
HOUSTON, TX 77032

Sample Identification:

Company: INDIGO MINERALS  
Field: NE LOGANSFORT  
Lease: CPG  
STA # : 6039

231311-1  
CAPILLARY ANALYSIS - METHOD GPA 2286-95  
COMPONENT AS % OF TOTAL SAMPLE

COMPONENT NAME	MOL %	WEIGHT %
METHANE	0.0000	0.0000
ETHANE	0.0000	0.0000
PROPANE	0.0000	0.0000
ISO-BUTANE	0.0000	0.0000
N-BUTANE	0.0000	0.0000
2,2-DIMETHYLPROPANE (NEOPENTANE)	0.0000	0.0000

ISOPENTANE	0.0000	0.0000
N-PENTANE	0.0000	0.0000
2,2-DIMETHYLBUTANE (NEO-EXANE)	0.0012	0.0061
2,3-DIMETHYLBUTANE	0.0015	0.0066
CYCLOPENTANE	0.0041	0.0197
2-METHYLPENTANE	0.0024	0.0117
3-METHYLPENTANE	0.0037	0.0183
N-HEXANE	0.0004	0.0023
2,2-DIMETHYLPENTANE	0.0004	0.0023
METHYLCYCLOPENTANE	0.0013	0.0064
2,4-DIMETHYLPENTANE	0.0004	0.0022
2,2,3-TRIMETHYLBUTANE	0.0001	0.0007
BENZENE	0.0020	0.0087
3,3-DIMETHYLPENTANE	0.0002	0.0012
CYCLOHEXANE	0.0017	0.0079
2-METHYLHEXANE	0.0018	0.0100
2,3-DIMETHYLPENTANE	0.0005	0.0029
1,1-DIMETHYLCYCLOPENTANE	0.0019	0.0106
3-METHYLHEXANE		
1,3-DIMETHYLCYCLOPENTANE	0.0002	0.0010

231311-1

CAPILLARY ANALYSIS - METHOD GPA 2286-95  
COMPONENT AS % OF TOTAL SAMPLE

COMPONENT NAME	MOL %	WEIGHT %
1,3-DIMETHYLCYCLOPENTANE	0.0003	0.0016
3-ETHYLPENTANE		
1,2-DIMETHYLCYCLOPENTANE	0.0003	0.0015
2,2,4-TRIMETHYLPENTANE		
N-HEPTANE	0.0024	0.0139
METHYLCYCLOHEXANE		
1,1,3-TRIMETHYLCYCLOPENTANE	0.0027	0.0151
2,2-DIMETHYLHEXANE		
1,2-DIMETHYLCYCLOPENTANE	0.0000	0.0000
2,5-DIMETHYLHEXANE	0.0002	0.0016
2,4-DIMETHYLHEXANE		
2,2,3-TRIMETHYLPENTANE	0.0004	0.0024
ETHYLCYCLOPENTANE		
1,2,4-TRIMETHYLCYCLOPENTANE	0.0002	0.0011
3,3-DIMETHYLHEXANE	0.0000	0.0002
1,1,2,3-TRIMETHYLCYCLOPENTANE	0.0000	0.0000
1,1,2,3-TRIMETHYLCYCLOPENTANE	0.0037	0.0192
2,3,4-TRIMETHYLPENTANE		
TOLUENE	0.0002	0.0011
2,3-DIMETHYLHEXANE	0.0000	0.0002
1,1,2-TRIMETHYLCYCLOPENTANE	0.0010	0.0062
2-METHYLHEPTANE		
4-METHYLHEPTANE	0.0004	0.0023

3,4-DIMETHYLHEXANE	0.0001	0.0004
3-METHYLHEPTANE	0.0011	0.0068
3-ETHYLHEXANE	0.0003	0.0021
1,3-DIMETHYLCYCLOHEXANE	0.0001	0.0009
1,2,13-TRIMETHYLCYCLOPENTANE	0.0000	0.0003
1,2,14-TRIMETHYLCYCLOPENTANE	0.0001	0.0007
1,14-DIMETHYLCYCLOHEXANE	0.0001	0.0003
2,2,5-TRIMETHYLHEXANE	0.0000	0.0000
1,1-DIMETHYLCYCLOHEXANE	0.0001	0.0007
1-methyl-3-ETHYLCYCLOPENTANE	0.0015	0.0095
1-methyl-2-ETHYLCYCLOPENTANE	0.0001	0.0007
2,2,4-TRIMETHYLHEXANE	0.0000	0.0002
1-methyl-1-ETHYLCYCLOPENTANE	0.0001	0.0006
CYCLOHEPTANE	0.0000	0.0000
N-OCTANE	0.0000	0.0000
1,12-DIMETHYLCYCLOHEXANE	0.0000	0.0002
UNKNOWN	0.0000	0.0000
1,13-DIMETHYLCYCLOHEXANE	0.0000	0.0002
1,14-DIMETHYLCYCLOHEXANE	0.0000	0.0000
1,2,2,13-TRIMETHYLCYCLOPENTANE	0.0000	0.0000
2,4,4-TRIMETHYLHEXANE	0.0000	0.0000
ISOPROPYLCYCLOPENTANE	0.0000	0.0000
UNKNOWN	0.0000	0.0000

231311-1

CAPILLARY ANALYSIS - METHOD GPA 2286-95  
COMPONENT AS % OF TOTAL SAMPLE

COMPONENT NAME	MOL %	WEIGHT %
2,2-DIMETHYLHEPTANE	0.0001	0.0008
2,4-DIMETHYLHEPTANE	0.0001	0.0006
1-methyl-2-ETHYLCYCLOPENTANE	0.0000	0.0000
2,2,3-TRIMETHYLHEXANE	0.0000	0.0000
1,6,2-DIMETHYLCYCLOHEXANE	0.0001	0.0007
2,6-DIMETHYLHEPTANE	0.0000	0.0003
N-PROPYLCYCLOPENTANE	0.0000	0.0003
1,6,3,6,5-TRIMETHYLCYCLOHEXANE	0.0004	0.0023
2,5-DIMETHYLHEPTANE		
3,5-DIMETHYLHEPTANE		
ETHYLCYCLOHEXANE	0.0001	0.0004
1,1,3-TRIMETHYLCYCLOHEXANE		
2,3,3-TRIMETHYLHEXANE	0.0000	0.0003
3,3-DIMETHYLHEPTANE	0.0000	0.0001
1,1,4-TRIMETHYLCYCLOHEXANE	0.0000	0.0003
UNKNOWN	0.0002	0.0010
2,3,4-TRIMETHYLHEXANE	0.0000	0.0003
ETHYLBENZENE	0.0001	0.0007
1,1,2,4-TRIMETHYLCYCLOHEXANE		
1,1,3,1,5-TRIMETHYLCYCLOPENTANE		
2,3-DIMETHYLHEPTANE		
M-XYLENE	0.0011	0.0065
P-XYLENE		
3,4-DIMETHYLHEPTANE		
2-METHYLOCTANE	0.0005	0.0039



4-METHYLOCTANE	0.0000	0.0000
UNKNOWN	0.0002	0.0017
3-METHYLOCTANE	0.0000	0.0001
UNKNOWN	0.0000	0.0001
1,12,63-TRIMETHYLCYCLOHEXANE	0.0002	0.0015
1,12,64-TRIMETHYLCYCLOHEXANE	0.0001	0.0005
O-XYLENE	0.0000	0.0000
1,1,2-TRIMETHYLCYCLOHEXANE	0.0000	0.0002
UNKNOWN	0.0000	0.0000
ISOBUTYLCYCLOPENTANE	0.0003	0.0023
N-NONANE	0.0000	0.0000
UNKNOWN	0.0001	0.0006
1,62,63-TRIMETHYLCYCLOHEXANE	0.0000	0.0000
1,62,13-TRIMETHYLCYCLOHEXANE	0.0001	0.0008
UNKNOWN	0.0000	0.0001
ISOPROPYLBENZENE	0.0000	0.0001
2,2-DIMETHYLOCTANE	0.0000	0.0002
ISOPROPYLCYCLOHEXANE	0.0000	0.0000
CYCLOOCTANE	0.0000	0.0000
UNKNOWN	0.0000	0.0002
N-BUTYLCYCLOPENTANE		
N-PROPYLCYCLOHEXANE		

231311-1

CAPILLARY ANALYSIS - METHOD GPA 2286-95  
COMPONENT AS % OF TOTAL SAMPLE

COMPONENT NAME	MOL %	WEIGHT %
3,3-DIMETHYLOCTANE	0.0001	0.0006
UNKNOWN	0.0001	0.0004
N-PROPYLBENZENE	0.0000	0.0001
UNKNOWN	0.0000	0.0003
M-ETHYLTOLUENE	0.0001	0.0009
P-ETHYLTOLUENE	0.0000	0.0002
2,3-DIMETHYLOCTANE	0.0000	0.0002
4-METHYLNONANE	0.0000	0.0002
5-METHYLNONANE		
1,3,5-TRIMETHYLBENZENE		
2-METHYLNONANE	0.0001	0.0009
3-ETHYLOCTANE	0.0000	0.0001
O-ETHYLTOLUENE	0.0000	0.0003
3-METHYLNONANE	0.0000	0.0001
UNKNOWN	0.0000	0.0001
1,2,4-TRIMETHYLBENZENE	0.0000	0.0003
t-BUTYLBENZENE	0.0000	0.0002
METHYLCYCLOOCTANE	0.0000	0.0002
tert-BUTYLCYCLOHEXANE	0.0000	0.0003
ISO-BUTYLCYCLOHEXANE	0.0000	0.0002
N-DECANE	0.0001	0.0007

ISOBUTYL BENZENE	0.0000	0.0001
sec-BUTYL BENZENE	0.0000	0.0001
UNKNOWN	0.0000	0.0003
1-METHYL-3-ISOPROPYL BENZENE	0.0000	0.0002
1,2,3-TRIMETHYL BENZENE	0.0000	0.0002
1-METHYL-4-ISOPROPYL BENZENE	0.0000	0.0001
UNKNOWN	0.0000	0.0001
1-METHYL-2-ISOPROPYL BENZENE	0.0001	0.0005
UNKNOWN	0.0000	0.0002
N-BUTYL CYCLOHEXANE	0.0000	0.0001
UNKNOWN	0.0000	0.0000
1,3-DIETHYL BENZENE	0.0000	0.0003
1-METHYL-3-PROPYL BENZENE	0.0000	0.0002
1,2-DIETHYL BENZENE	0.0000	0.0002
N-BUTYL BENZENE		
1-METHYL-4-PROPYL BENZENE		
1,4-DIETHYL BENZENE	0.0000	0.0002
1-METHYL-2-PROPYL BENZENE	0.0000	0.0001
1,4-DIMETHYL-2-ETHYL BENZENE	0.0000	0.0003
UNKNOWN	0.0000	0.0002
1,2-DIMETHYL-4-ETHYL BENZENE	0.0000	0.0001

231311-1

CAPILLARY ANALYSIS - METHOD GPA 2286-95  
COMPONENT AS % OF TOTAL SAMPLE

COMPONENT NAME	MOL %	WEIGHT %
1,3-DIMETHYL-2-ETHYLBENZENE	0.0000	0.0001
UNKNOWN	0.0000	0.0000
1,2-DIMETHYL-3-ETHYLBENZENE	0.0001	0.0004
UNKNOWN	0.0000	0.0000
N-UNDECANE	0.0001	0.0005
UNKNOWN	0.0000	0.0001
1,2,4,5-TETRAMETHYLBENZENE	0.0001	0.0005
1,2,3,5-TETRAMETHYLBENZENE	0.0001	0.0005
UNKNOWN	0.0000	0.0003
1,2,3,4-TETRAMETHYLBENZENE CYCLODECANE	0.0000	0.0002
UNKNOWN	0.0000	0.0002
NAPHTHALENE	0.0000	0.0001
N-DODECANE	0.0000	0.0004
ISOTRIDECANES PLUS	0.0008	0.0101
<b>Total:</b>	<b>0.0450</b>	<b>0.2537</b>

TOTAL HEXANES  
TOTAL HEPTANES  
TOTAL OCTANES  
TOTAL NONANES  
TOTAL DECANES PLUS

0.0131  
0.0134  
0.0121  
0.0038  
0.0026

0.0624  
0.0709  
0.0711  
0.0254  
0.0239

**BTX COMPONENTS**

N-HEXANE  
BENZENE  
TOLUENE  
ETHYLBENZENE  
XYLENE

0.0037  
0.0020  
0.0037  
0.0002  
0.0013

0.0183  
0.0087  
0.0192  
0.0010  
0.0080



Element Material Technology  
2129 West Willow Street  
Scott, LA  
70583-5301 USA

P 337 232 3568  
F 337 232 3621  
T 888 786 7555  
info.scott@element.com  
element.com

231311-1

CAPILLARY ANALYSIS - METHOD GPA 2286-95  
HEAVY END FRACTION

COMPONENT NAME	MOL %	WEIGHT %
METHANE	0.000	0.000
ETHANE	0.000	0.000
PROPANE	0.000	0.000
ISO-BUTANE	0.000	0.000
N-BUTANE	0.000	0.000
2,2-DIMETHYLPROPANE (NEOPENTANE)	0.000	0.000
ISOPENTANE	0.000	0.000
N-PENTANE	0.000	0.000
2,2-DIMETHYLBUTANE (NEOHEXANE)	2.769	2.391
2,3-DIMETHYLBUTANE	3.342	2.617
CYCLOPENTANE		
2-METHYLPENTANE	9.010	7.780

3-METHYLPENTANE	5.328	4.601
N-HEXANE	8.332	7.195
2,2-DIMETHYLPENTANE	0.899	0.903
METHYLCYCLOPENTANE	2.995	2.526
2,4-DIMETHYLPENTANE	0.860	0.863
2,2,3-TRIMETHYLBUTANE	0.290	0.291
BENZENE	4.365	3.417
3,3-DIMETHYLPENTANE	0.463	0.465
CYCLOHEXANE	3.679	3.103
2-METHYLHEXANE	3.930	3.946
2,3-DIMETHYLPENTANE	1.128	1.133
1,1-DIMETHYLCYCLOPENTANE	4.186	4.194
3-METHYLHEXANE	0.418	0.412
1,1,3-DIMETHYLCYCLOPENTANE	0.642	0.633
1,3-DIMETHYLCYCLOPENTANE	0.588	0.588
3-ETHYLPENTANE	5.444	5.466
1,2-DIMETHYLCYCLOPENTANE	5.444	5.466
2,2,4-TRIMETHYLPENTANE	5.444	5.466
N-HEPTANE	5.947	5.938
METHYLCYCLOHEXANE	5.947	5.938
1,1,3-TRIMETHYLCYCLOPENTANE	5.947	5.938

231311-1  
CAPILLARY ANALYSIS - METHOD GPA 2286-95  
HEAVY END FRACTION

COMPONENT NAME	MOL %	WEIGHT %
2,2-DIMETHYLHEXANE	0.010	0.010
1,02-DIMETHYLCYCLOPENTANE	0.535	0.612
2,5-DIMETHYLHEXANE	0.921	0.950
2,4-DIMETHYLHEXANE		
2,2,3-TRIMETHYLPENTANE		
ETHYLCYCLOPENTANE		
1,12,04-TRIMETHYLCYCLOPENTANE	0.385	0.433
3,3-DIMETHYLHEXANE	0.087	0.098
1,12,03-TRIMETHYLCYCLOPENTANE	0.000	0.000
2,3,4-TRIMETHYLPENTANE	8.191	7.563
TOLUENE	0.385	0.440
2,3-DIMETHYLHEXANE	0.056	0.062
1,1,2-TRIMETHYLCYCLOPENTANE	2.150	2.461
2-METHYLLHEPTANE	0.794	0.909
4-METHYLLHEPTANE	0.122	0.139
3,4-DIMETHYLHEXANE	2.355	2.695
3-METHYLLHEPTANE		
3-ETHYLHEXANE	0.723	0.813
1,03-DIMETHYLCYCLOHEXANE		
1,02,13-TRIMETHYLCYCLOPENTANE		
1,02,14-TRIMETHYLCYCLOPENTANE		



1,4-DIMETHYLCYCLOHEXANE	0.307	0.345
2,2,5-TRIMETHYLHEXANE	0.102	0.131
1,1-DIMETHYLCYCLOHEXANE	0.229	0.258
1,methyl-1,3-ETHYLCYCLOPENTANE	0.117	0.131
1-methyl-1,3-ETHYLCYCLOPENTANE	0.011	0.013
2,2,4-TRIMETHYLHEXANE	3.273	3.747
1-methyl-1-ETHYLCYCLOPENTANE		
CYCLOHEPTANE		
N-OCTANE		
1,12-DIMETHYLCYCLOHEXANE	0.260	0.292
UNKNOWN	0.057	0.073
1,1,3-DIMETHYLCYCLOHEXANE	0.219	0.247
1,1,4-DIMETHYLCYCLOHEXANE		
1,1,2,3-TRIMETHYLCYCLOPENTANE	0.061	0.078
2,4,4-TRIMETHYLHEXANE	0.012	0.013
ISOPROPYLCYCLOPENTANE	0.000	0.000
UNKNOWN	0.000	0.000
2,2-DIMETHYLHEPTANE	0.257	0.331
2,4-DIMETHYLHEPTANE	0.203	0.245
1-methyl-1,2-ETHYLCYCLOPENTANE		
2,2,3-TRIMETHYLHEXANE	0.000	0.000



3-METHYLOCTANE	U.332	U.384
UNKNOWN	0.021	0.030
1,12,13-TRIMETHYLCYCLOHEXANE	0.029	0.037
1,12,14-TRIMETHYLCYCLOHEXANE		
O-XYLENE	0.547	0.582
1,1,2-TRIMETHYLCYCLOHEXANE	0.159	0.202
UNKNOWN	0.000	0.000
ISOBUTYLCYCLOPENTANE	0.047	0.059
N-NONANE	0.716	0.921
UNKNOWN	0.000	0.000
1,1,2,13-TRIMETHYLCYCLOHEXANE	0.188	0.238
1,1,2,13-TRIMETHYLCYCLOHEXANE		
UNKNOWN	0.000	0.000
ISOPROPYLBENZENE	0.256	0.308
2,2-DIMETHYLOCTANE	0.037	0.052
ISOPROPYLCYCLOHEXANE	0.069	0.082
CYCLOOCTANE		
UNKNOWN	0.000	0.000
N-BUTYLCYCLOPENTANE	0.049	0.062
N-PROPYLCYCLOHEXANE		
3,3-DIMETHYLOCTANE	0.154	0.219

231311-1  
CAPILLARY ANALYSIS - METHOD GPA 2286-95  
HEAVY END FRACTION

COMPONENT NAME	MOL %	WEIGHT %
UNKNOWN	0.116	0.157
N-PROPYLBENZENE	0.037	0.044
UNKNOWN	0.096	0.129
M-ETHYLTOLUENE	0.301	0.362
P-ETHYLTOLUENE	0.064	0.077
2,3-DIMETHYLOCTANE		
4-METHYLNONANE	0.069	0.089
5-METHYLNONANE		
1,3,5-TRIMETHYLBENZENE		
2-METHYLNONANE	0.249	0.355
3-ETHYLOCTANE	0.033	0.047
O-ETHYLTOLUENE	0.100	0.131
3-METHYLNONANE		
UNKNOWN	0.018	0.024
1,2,4-TRIMETHYLBENZENE	0.031	0.039
t-BUTYLBENZENE		
METHYLCYCLOOCTANE		
tert-BUTYLCYCLOHEXANE	0.095	0.134
ISO-BUTYLCYCLOHEXANE	0.069	0.097
N-DECANE	0.187	0.266
UNKNOWN		
UNKNOWN		

ISOBUTYL BENZENE	0.019	0.040
sec-BUTYL BENZENE	0.033	0.044
UNKNOWN	0.082	0.128
1-METHYL-3-ISOPROPYL BENZENE	0.061	0.082
1,2,3-TRIMETHYL BENZENE	0.073	0.091
1-METHYL-4-ISOPROPYL BENZENE	0.017	0.027
UNKNOWN	0.133	0.179
1-METHYL-2-ISOPROPYL BENZENE	0.068	0.090
UNKNOWN	0.018	0.026
N-BUTYL CYCLOHEXANE	0.000	0.000
UNKNOWN	0.097	0.130
1,3-DIETHYL BENZENE	0.050	0.068
1-METHYL-3-PROPYL BENZENE	0.062	0.083
1,2-DIETHYL BENZENE	0.039	0.052
N-BUTYL BENZENE	0.082	0.111
1-METHYL-4-PROPYL BENZENE	0.047	0.074
1,4-DIETHYL BENZENE	0.034	0.046
1-METHYL-2-PROPYL BENZENE		
1,4-DIMETHYL-2-ETHYL BENZENE		
UNKNOWN		
1,2-DIMETHYL-4-ETHYL BENZENE		

231311-1  
 CAPILLARY ANALYSIS - METHOD GPA 2286-95  
 HEAVY END FRACTION

COMPONENT NAME	MOL %	WEIGHT %
1,3-DIMETHYL-2-ETHYLBENZENE	0.028	0.038
UNKNOWN	0.000	0.000
1,2-DIMETHYL-3-ETHYLBENZENE	0.122	0.164
UNKNOWN	0.003	0.005
N-UNDECANE	0.118	0.185
UNKNOWN	0.032	0.055
1,2,4,5-TETRAMETHYLBENZENE	0.153	0.206
1,2,3,5-TETRAMETHYLBENZENE	0.151	0.203
UNKNOWN	0.065	0.111
1,2,3,4-TETRAMETHYLBENZENE	0.045	0.062
CYCLODECANE		
UNKNOWN	0.053	0.091
NAPHTHALENE	0.016	0.020
N-DODECANE	0.091	0.156
ISOTRIDECANES PLUS	1.866	3.971
Total:	100.000	100.000

Specific Gravity @ 60 Deg. F. (Air = 1)

3.4320

molecular weight Compressibility Factor Summation Factor Cu. Ft. Vapor/Gal @ 14,696 & 60 Deg. F. Cu. Ft. Vapor/Gal @ 14,730 & 60 Deg. F. Cu. Ft. Vapor/Gal @ 14,650 & 60 Deg. F. Btu/cu. Ft. @ 14,696 PSIA, Dry Btu/cu. Ft. @ 14,730 PSIA, Dry BTU/LB	99.88 0.8433 0.1033 24.146 24.090 24.222 5335.34 5347.68 20287
---	--

Well Number / Incident Number	Date	Operator	( 60005 )
DERBONNE 27-34 RELIEF WELL	12/29/16	INDIGO MINERALS, LLC	
Well Name	Address		
DERBONNE 27-34 RELIEF WATER WELL	400 TEXAS STREET, SITE 600		
Location (Sec, Twp, Rng / Parish)	SHREVEPORT, LA 71101		
022, 13N, 15W / DESOTO			
Field	Phone		
BETHANY LONGSTREET	( 1454 )	( 318 )	429 - 2277
	Contact	ADYONYA DRYDEN	

## R E M A R K S

OBSERVATIONS ON RELIEF WELL TO VENT GAS AT 310' SAND SEEN IN WATER WELL & SN 249866 SURFACE.

12/21/16 VISIT WELL SITE, DRILLING RELIEF WELL TO 260' +/- TO SET SURFACE CASING. PILOT 8 3/4" HOLE DRILLED TO 260', REAMING TO 15" @ 60' AT TIME OF VISIT. PICTURES ATTACHED

12/27/2016 VISIT WELL SITE, SURFACE CASING SET & CEMENTED, HOLE TD'D @ 340'+, 11 # MUD IN HOLE AND NO GAS HAS BEEN SEEN, RIGGED UP COIL TUBING UNIT TO DISPLACE 11 # MUD WITH FRESH WATER. SDFN, PICTURES ATTACHED

12/28/16 VISIT WELL SITE, GO IN HOLE W/ COIL DISPLACING MUD W/ FRESH WATER TO TD 340'+, GAS TO SURFACE FLOWING GAS AND WATER. RIG DOWN COIL TUBING UNIT AND MOVE OFF WELL. WELL FLOWING ON 3/4" CHOKE WITH 75# ON CHOKE TO RESERVE PIT. APPEARS CLEAR WATER. PICTURES ATTACHED

12/29/2016 VISIT WELL SITE, WELL CONTINUES TO FLOW, PRESSURE HAS DROPPED TO 61# AND CONTINUES TO FLOW ON THE 3/4" CHOKE. WELL IS BEING MONITORED 24 HRS / DAY. WELL FLOWING INTO RESERVE PIT

DAVID BARNHILL, CES-3



## Robert Romero

---

**From:** David Wilkinson <dcwcgs@bellsouth.net>  
**Sent:** Tuesday, December 20, 2016 3:11 PM  
**To:** Robert Romero  
**Cc:** Gary Snellgrove; 'Keatchie Water System'  
**Subject:** RE: Keatchie Water System Water Well near Indigo Minerals Gas Well Site - LA 3015  
**Attachments:** KWS 11.jpg

Hi Bob,

The DOTD GW-1 form you sent is from an active well the Keatchie WS uses. It is located 8000 LF west of the booster station on LA 3015.

The coordinates are  
32 D 5.635°N  
93 D 55.120°W

If you need any more information, please advise.

David

David C. Wilkinson P.E.  
Cothren, Graff, Smoak Engineering, Inc.  
6305 Westport Avenue  
Shreveport, LA 71129  
318-687-3732 Office



**From:** Robert Romero [mailto:Robert.Romero@LA.GOV]  
**Sent:** Tuesday, December 20, 2016 12:59 PM  
**To:** 'David Wilkinson' <dcwcgs@bellsouth.net>  
**Cc:** Gary Snellgrove <Gary.Snellgrove@LA.GOV>  
**Subject:** RE: Keatchie Water System Water Well near Indigo Minerals Gas Well Site - LA 3015

David, find attached PDF file of the registration for the 3015 well we discussed earlier. As soon as we have information on the subject relief well we will forward that to you and Keatchie water system.  
bob

**From:** David Wilkinson [mailto:dcwcgs@bellsouth.net]  
**Sent:** Tuesday, December 20, 2016 12:09 PM

**To:** Robert Romero  
**Cc:** 'Keatchie Water System'  
**Subject:** Keatchie Water System Water Well near Indigo Minerals Gas Well Site - LA 3015

Hello Bob,

I checked with the Keatchie Water System, and they do not have a water well located at their water booster station on LA3015.

The water for this station is from a well approximately 8000 LF west of the there.

Can you please provide me with the information about the water well that needs to have a P/A report?

Is there a copy of any correspondence between Indigo Minerals and the DNR I can have to share with the Keatchie Water System?

The water system has asked me to look into the gas discovered in the Wilcox aquifer issue at the new gas well site 500 feet north of their booster station.

Any news of the progress of the relief well is greatly appreciated.

Thank you,

David

David C. Wilkinson P.E.  
Cothren, Graff, Smoak Engineering, Inc.  
6305 Westport Avenue  
Shreveport, LA 71129  
318-687-3732 Office



---

**CONFIDENTIALITY NOTICE**

This email communication may contain confidential information which also may be legally privileged and is intended only for the use of the intended recipients identified above. If you are not the intended recipient of this communication, you are hereby notified that any unauthorized review, use, dissemination, distribution, downloading, or copying of this communication is strictly prohibited. If you are not the intended recipient and have received this communication in error, please immediately notify us by reply email, delete the communication and destroy all copies.

**COMPUTER SYSTEM USE/CONSENT NOTICE**

This message was sent from a computer system which is the property of the State of Louisiana and the Department of Natural Resources (DNR). It is for authorized business use only. Users (authorized or unauthorized) have no explicit or implicit expectation of privacy. Any or all uses of this system and all files on this system may be intercepted, monitored, recorded, copied, audited, inspected, and disclosed to Department of Natural Resources and law enforcement personnel. By using this system the user consents to such interception, monitoring, recording, copying, auditing, inspection, and disclosure at the discretion of DNR.

MAIL ORIGINAL TO:  
 Louisiana Dept. of Natural Resources  
 Attn: Ground Water Resources  
 P.O. Box 94275  
 Baton Rouge, LA 70804-9275  
 (225) 342-8244 Ph.  
 (225) 242-3505 Fax

**LOUISIANA DEPARTMENT OF NATURAL RESOURCES  
 OFFICE OF CONSERVATION, ENVIRONMENTAL DIVISION  
 WATER WELL REGISTRATION SHORT FORM (DNR-GW-IS)**

ONLINE ACCESS:  
 1) Go to <http://soparis.com/>  
 2) Click on Data Access in the left hand panel.  
 3) Under the section labeled Conservation, click on Ground Water Information.

- USE OF WELL (Check appropriate box):  
 Domestic  Rig Supply  Monitoring  
 Piezometer  Heat Pump Hole  Heat Pump Supply  
 Recovery  Relief  Abandoned Pilot Hole  
 Other (please specify) \_\_\_\_\_
- WELL OWNER: \_\_\_\_\_  
 Phone: \_\_\_\_\_
- WELL OWNER'S ADDRESS: \_\_\_\_\_
- OWNER'S WELL NUMBER OR NAME: \_\_\_\_\_

- Serial Number (Rig Supply Only): \_\_\_\_\_  
 WELL INFORMATION:  
 Date completed: \_\_\_\_\_ ft. below ground surface  
 Depth of Hole: \_\_\_\_\_ ft. below ground surface  
 Depth of Well: \_\_\_\_\_ ft.  
 Static water level: \_\_\_\_\_ ft. below ground surface  
 Date Measured: \_\_\_\_\_  
 Casing: \_\_\_\_\_ in.  Metal  Plastic  Other \_\_\_\_\_ ft.  
 Screen: \_\_\_\_\_ in.  Metal  Plastic  Other \_\_\_\_\_ in.  
 Length: \_\_\_\_\_ ft. Cemented from: \_\_\_\_\_ ft. to ground surface  
 Usage:  Pump down Method  Gravity Method
- LOCATION OF WELL:  
 Latitude: \_\_\_\_\_ " \_\_\_\_\_ " \_\_\_\_\_ " \_\_\_\_\_ " \_\_\_\_\_ "  
 Parish: \_\_\_\_\_  
 Physical Address: \_\_\_\_\_  
 Well is Near, \_\_\_\_\_ Approximately \_\_\_\_\_ miles from  
 (Crossroads, Railroad, any Landmark, etc.) \_\_\_\_\_

(Attach a map or sketch or registered plat if Rig Supply to registration)

SECTION	TOWNSHIP	RANGE	ELEVATION	QUAD NO.

FOR MONITOR/PIEZO/RECOVERY WELLS ONLY

7. REMARKS: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

8. DRILLER'S LOG:  
 (Description and color of cuttings, such as shale, sand, etc. in feet below ground surface)

FROM	TO	DESCRIPTION
0	20	Clay / Sand / Shale
20	80	Shale
80	120	Shale / Sand Stripping
120	220	Shale
220	280	Shale / Sand
280	310	Shale
310	360	Sand

Office of Conservation

9. FOR HEAT PUMP ONLY: Avg. Depth: \_\_\_\_\_ ft. # of Holes: \_\_\_\_\_  
 10. DOES THE NEW WELL REPLACE AN EXISTING WELL?  Yes  No  
 If yes, has owner been informed of state regulations requiring plugging of abandoned wells?  Yes  No

11. NAME OF PERSON WHO DRILLED THE WELL: \_\_\_\_\_  
 I certify that this work was done and completed in accordance with Rules and Regulations of the State of Louisiana, including Chapter XII of Title 51, Public Health - Sanitary Code, if applicable, on: \_\_\_\_\_ (Date)  
 by: \_\_\_\_\_ (Name of Water Well Contractor),  
 License No. WWC- \_\_\_\_\_  
 Authorized Signature: \_\_\_\_\_ Date: \_\_\_\_\_

OCT 30 2017  
 Environmental Division

FOR OFFICE USE ONLY

PARISH	WEL. NO.	GEOLOGIC UNIT
LATITUDE	LONGITUDE	SECTION
TOWNSHIP	RANGE	ELEVATION
		QUAD NO.

REGISTERED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 INSPECTED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 REMARKS: \_\_\_\_\_