

Results of Directional Survey

API number:	30-025-40656	DD
OGRID:	Operator:	CONOCOPHILLIPS COMPANY
	Property:	EMERALD FEDERAL # 1

surface	ULSTR:	P	17	T 17S	R 32E
				730 FSL	140 FEL

BH Loc	ULSTR:	P	17	T 17S	R 32E
7072	MD	7037.4	TVD	194 FSL	359 FEL

Top Perf/OH	ULSTR:	P	17	T 17S	R 32E
5590	MD	5567.3	TVD	365 FSL	283 FEL

Bot Perf/OH	ULSTR:	P	17	T 17S	R 32E
6860	MD	6827.0	TVD	218 FSL	349 FEL

	MD	N/S	E/W	VD
	5511	-355.56	-139.87	5488.87
TOP PERFS/OH	5590	-364.65	-143.44	5567.26
	5605	-366.38	-144.12	5582.15
	6770	-501.15	-203.86	6737.77
BOT PERFS/OH	6860	-511.96	-208.64	6826.99
	6860	-511.96	-208.64	6826.99

NEXT TO LAST	7029	-531.40	-217.16	6994.65
LAST READING	7072	-536.06	-219.20	7037.35
TD	7072	-536.06	-219.20	7037.35

Surface Location	730 FS	140 FE
Projected BHL	194 FS	359 FE
Location of		
Top Perfs/OH	365 FS	283 FE
Bottom Perfs/OH	218 FS	349 FE

SUMMARY of Subsurface Locations

Surface Location	P-17-17S-32E	730 FS	140 FE	Vert. Depth
Top Perfs/OH	P-17-17S-32E	365 FS	283 FE	5567.26
Bottom Perfs/OH	P-17-17S-32E	218 FS	349 FE	6826.99
Projected TD	P-17-17S-32E	194 FS	359 FE	7037.35

AUG 11 2011

PGS Job #: LNM5102013
MWD Operator: Jeremy Roberts
Directional Driller: Jose Perez
Date of First Survey: January 12, 2013
Date of Last Survey: January 18, 2013



Total Correction: 7.35 East Grid

Vertical Section Plane: 202.34

Nominal Dip Angle: 60.63

Magnetic Field Strength: 0.488

[illegible]

SURVEYS

Customer: Conoco/Phillips
Well: Emerald Federal 1
Field/Block: Yeso
Co./Parish: Lea County
State: NM

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Measured		Coordinates		Closure		Vib/Shk									
Depth	Inc.	Azm.	T.V.D.	Ver. Sect.	+N / -S	+E / -W	Dist.	Angle	DLS	Temp (°F)	Color	Date	Time	Flow Rate	
Survey's are tied into:										Date Received:					
Company:															
0	0	0.00	0.00	0.00	0.00	0.00	0.00								
1	856.00	1.0	174.4	855.96	6.60	-7.43	0.73	7.47	174.40	0.12					
2	945.00	1.0	178.3	944.94	7.99	-8.98	0.83	9.02	174.74	0.08					
3	1,034.00	1.0	186.2	1,033.93	9.45	-10.53	0.77	10.56	175.84	0.15					
4	1,124.00	1.0	189.9	1,123.92	10.97	-12.09	0.55	12.10	177.41	0.07					
5	1,214.00	0.9	194.2	1,213.90	12.44	-13.55	0.24	13.55	178.99	0.14					
6	1,303.00	0.8	164.2	1,302.89	13.62	-14.82	0.24	14.82	179.09	0.51					
7	1,393.00	1.1	155.2	1,392.88	14.70	-16.21	0.77	16.23	177.28	0.37					
8	1,483.00	0.9	129.8	1,482.87	15.50	-17.45	1.68	17.53	174.52	0.53					
9	1,573.00	1.2	109.3	1,572.85	15.66	-18.21	3.11	18.47	170.32	0.53					
10	1,662.00	1.3	92.6	1,661.83	15.27	-18.56	5.00	19.22	164.94	0.42					
11	1,752.00	0.7	91.9	1,751.82	14.73	-18.63	6.57	19.75	160.59	0.67					
12	1,842.00	0.6	8.9	1,841.81	14.08	-18.18	7.19	19.55	158.43	0.96					
13	1,931.00	0.8	33.9	1,930.81	13.02	-17.20	7.61	18.81	156.15	0.41					
14	2,021.00	0.4	36.7	2,020.80	12.10	-16.43	8.14	18.34	153.63	0.45					
15	2,111.00	0.7	255.7	2,110.80	12.13	-16.32	7.80	18.08	154.45	1.16					
16	2,200.00	1.7	230.7	2,199.78	13.61	-17.29	6.25	18.38	160.12	1.24					
17	2,290.00	2.5	225.0	2,289.72	16.60	-19.52	3.83	19.89	168.90	0.92					
18	2,379.00	3.5	226.1	2,378.60	20.88	-22.78	0.50	22.78	178.74	1.13					
19	2,469.00	3.9	221.8	2,468.41	26.28	-26.96	-3.52	27.19	187.44	0.54					
20	2,559.00	5.0	215.9	2,558.14	32.98	-32.42	-7.86	33.36	193.63	1.32					
21	2,648.00	4.9	213.5	2,646.80	40.47	-38.73	-12.23	40.62	197.53	0.26					
22	2,738.00	5.1	209.6	2,736.46	48.21	-45.42	-16.33	48.26	199.78	0.44					
23	2,828.00	5.8	206.2	2,826.06	56.72	-52.97	-20.31	56.74	200.98	0.86					
24	2,917.00	6.1	204.0	2,914.58	65.93	-61.33	-24.22	65.94	201.55	0.42					
25	3,007.00	5.4	203.6	3,004.12	74.95	-69.58	-27.86	74.95	201.82	0.78					
26	3,106.00	5.0	203.6	3,102.71	83.92	-77.80	-31.45	83.92	202.01	0.40					

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	Measured Depth	Inc.	Azm.	T.V.D.	Ver. Sect.	Coordinates		Closure		DLS	Temp (°F)	Vib/Shk Color	Date	Time	Flow Rate
						+N/-S	+E/-W	Dist.	Angle						
27	3,195.00	4.8	203.2	3,191.39	91.52	-84.78	-34.47	91.52	202.13	0.23					
28	3,285.00	5.0	205.2	3,281.06	99.20	-91.79	-37.63	99.20	202.29	0.29					
29	3,375.00	5.7	205.8	3,370.67	107.58	-99.36	-41.24	107.58	202.54	0.78					
30	3,464.00	6.1	204.9	3,459.20	116.71	-107.63	-45.16	116.72	202.76	0.46					
31	3,544.00	7.2	200.8	3,538.66	125.97	-116.17	-48.73	125.98	202.76	1.50					
32	3,629.00	7.3	200.8	3,622.98	136.70	-126.20	-52.54	136.70	202.60	0.12					
33	3,718.00	7.2	199.8	3,711.27	147.92	-136.73	-56.43	147.92	202.43	0.18					
34	3,808.00	7.0	199.6	3,800.58	159.03	-147.21	-60.18	159.03	202.24	0.22					
35	3,897.00	8.1	201.4	3,888.80	170.72	-158.15	-64.29	170.72	202.12	1.26					
36	3,987.00	8.1	200.3	3,977.91	183.40	-170.00	-68.80	183.40	202.03	0.17					
37	4,077.00	7.9	200.6	4,067.03	195.91	-181.74	-73.18	195.92	201.93	0.23					
38	4,166.00	7.6	200.1	4,155.22	207.91	-192.99	-77.35	207.92	201.84	0.35					
39	4,256.00	7.7	199.3	4,244.42	219.88	-204.27	-81.39	219.89	201.73	0.16					
40	4,345.00	7.7	198.4	4,332.61	231.78	-215.56	-85.25	231.80	201.58	0.14					
41	4,435.00	7.8	199.1	4,421.79	243.89	-227.05	-89.15	243.92	201.44	0.15					
42	4,525.00	7.6	198.8	4,510.98	255.93	-238.45	-93.06	255.97	201.32	0.23					
43	4,614.00	7.5	197.4	4,599.21	267.59	-249.57	-96.70	267.64	201.18	0.24					
44	4,704.00	7.4	198.0	4,688.45	279.22	-260.68	-100.24	279.29	201.03	0.14					
45	4,793.00	7.4	203.1	4,776.71	290.67	-271.41	-104.26	290.74	201.01	0.74					
46	4,883.00	7.4	202.6	4,865.96	302.26	-282.09	-108.77	302.33	201.09	0.07					
47	4,973.00	7.5	202.5	4,955.20	313.93	-292.87	-113.24	314.00	201.14	0.11					
48	5,062.00	7.3	202.9	5,043.46	325.39	-303.44	-117.66	325.45	201.19	0.23					
49	5,152.00	7.3	202.4	5,132.73	336.83	-313.99	-122.07	336.89	201.24	0.07					
50	5,242.00	7.2	202.6	5,222.01	348.18	-324.49	-126.41	348.24	201.28	0.11					
51	5,331.00	7.3	203.8	5,310.30	359.41	-334.81	-130.84	359.47	201.34	0.20					
52	5,421.00	7.2	204.1	5,399.58	370.77	-345.19	-135.45	370.81	201.42	0.12					
53	5,511.00	7.2	202.1	5,488.87	382.04	-355.56	-139.87	382.09	201.47	0.28					
54	5,605.00	7.0	200.8	5,582.15	393.66	-366.38	-144.12	393.71	201.47	0.27					
55	5,695.00	7.4	201.1	5,671.44	404.94	-376.91	-148.16	404.98	201.46	0.45					