

Results of Directional Survey

API number:	30-025-41099		
OGRID:		Operator:	COG OPERATING LLC
		Property:	ROY BATTY FEDERAL COM # 1H

surface	ULSTR:	M	11	T 24S	R 33E
				330 FSL	660 FWL

BH Loc	ULSTR:	D	11	T 24S	R 33E
15477	MD	10699.5	TVD	360 FNL	368 FWL
				4920 FSL	

Top Perf/OH	ULSTR:	M	11	T 24S	R 33E
11257	MD	11084.2	TVD	716 FSL	700 FWL

Bot Perf/OH	ULSTR:	D	11	T 24S	R 33E
15420	MD	11069.0	TVD	417 FNL	370 FWL
				4863 FSL	

	MD	N/S	E/W	VD
	11226	356.33	41.87	11075.00
TOP PERFS/OH	11257	385.88	39.89	11084.16
	11257	385.88	39.89	11084.16
	15332	4445.23	-286.45	11069.80
BOT PERFS/OH	15420	4533.16	-289.77	11069.03
	15435	4548.15	-290.34	11068.90

NEXT TO LAST	15435	4548.15	-290.34	11068.90
LAST READING	15477	4590.13	-291.80	11068.82
TD	15477	4590.13	-291.80	11068.82

Surface Location	330	FS	660	FW
Projected BHL	4920	FS	368	FW
Location of				
Top Perfs/OH	716	FS	700	FW
Bottom Perfs/OH	4863	FS	370	FW

SUMMARY of Subsurface Locations

Surface Location	M-11-24S-33E	330	FS	660	FW	Vert. Depth
Top Perfs/OH	M-11-24S-33E	716	FS	700	FW	11084.16
Bottom Perfs/OH	D-11-24S-33E	4863	FS	370	FW	11069.03
Projected TD	D-11-24S-33E	4920	FS	368	FW	11068.82

NOV 25 2013



PO Box 1370
Artesia, NM 88211-1370
(575) 748-1288

HOEBS OCD

OCT 23 2013

RECEIVED

July 31, 2013

COG, LLC
One Concho Center
600 W. Illinois Ave.
Midland, TX 79701

RE: Roy Batty Federal Com #1H
330' FSL & 660' FWL
Sec. 11, T24S, R33E
Lea County, New Mexico

Dear Sir,

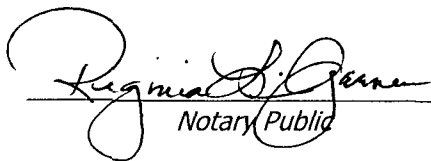
The attached is the Deviation Survey for the above captioned well.

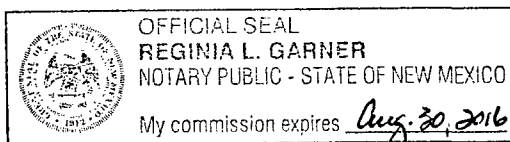
Very truly yours,


Eddie LaRue
Operations Manager

State of New Mexico }
County of Eddy }

The foregoing was acknowledged before me this 31st day of July, 2013.


Regina L. Garner
Notary Public



Roy Batty Federal Com #1H

Date	Depth	Dev	Dir	TVD	Horiz Disp
6/25/2013	255	0.00		304.00	
6/25/2013	500	0.40		549.00	
6/25/2013	783	0.30			
6/25/2013	1038	0.80			
6/26/2013	1230	0.40			
6/26/2013	1279	0.40			
6/28/2013	1477	0.80			
6/28/2013	1572	0.80			
6/28/2013	1667	0.90			
6/28/2013	1762	1.10			
6/28/2013	1856	1.20			
6/28/2013	1951	1.30			
6/28/2013	2046	1.50			
6/28/2013	2235	1.50			
6/28/2013	2329	1.50			
6/28/2013	2424	1.50			
6/28/2013	2519	1.50			
6/28/2013	2614	1.50			
6/29/2013	2709	1.50			
6/29/2013	1804	1.20			
6/29/2013	2898	1.30			
6/29/2013	2993	1.30			
6/29/2013	3088	1.40			
6/29/2013	3287	1.30			
6/29/2013	3373	1.20			
6/29/2013	3562	1.10			
6/29/2013	3656	1.00			
6/29/2013	3751	1.10			
6/29/2013	3845	0.70			
6/30/2013	3941	0.50			
6/30/2013	4035	0.60			
6/30/2013	4130	0.50			
6/30/2013	4225	0.40	1.00		
6/30/2013	4320	0.40			
6/30/2013	4414	0.50			
6/30/2013	4509	1.10			
6/30/2013	4604	1.10			
6/30/2013	4699	1.20			
7/1/2013	4794	1.80	126.20		
7/1/2013	4889	2.70	127.70		
7/1/2013	4984	2.70	123.80		
7/1/2013	5078	2.20			
7/3/2013	5349	1.30			

Date	Depth	Dev	Dir	TVD	Horiz Disp
7/3/2013	5638	1.40			
7/3/2013	6146	1.20			
7/3/2013	6400	1.10			
7/4/2013	6683	0.40			
7/4/2013	6902	0.40			
7/4/2013	7155	1.40			
7/4/2013	7313	0.50			
7/4/2013	7645	0.80			
7/4/2013	7928	1.20			
7/5/2013	8420	0.40			
7/5/2013	8592	0.50			
7/6/2013	8892	0.50			
7/6/2013	9160	0.80			
7/6/2013	9446	0.50			
7/6/2013	9745	1.10			
7/6/2013	9997	2.00			
7/7/2013	10250	0.80			
7/7/2013	10456	0.80			
7/7/2013	10709	2.20			
7/9/2013	11000	2.90			
7/9/2013	11220	1.70			
7/9/2013	11504	1.90			
7/9/2013	11553	1.40			
7/10/2013	11885	1.30		11927.00	
7/10/2013	12138	1.00		12180.00	
7/10/2013	12400	1.10			
7/16/2013	10625	2.29	22.97		
7/16/2013	10657	7.30	354.85		
7/16/2013	10689	11.10	354.80		
7/16/2013	10720	14.30	354.60		
7/16/2013	10752	18.00	353.50		
7/16/2013	10783	21.44	353.71		
7/16/2013	10815	23.87	354.54		
7/16/2013	10847	2734.00	345.23		
7/16/2013	10941	38.20	353.60		
7/16/2013	10973	41.60	353.10		
7/16/2013	11005	45.10	353.30		
7/17/2013	11036	48.90	354.10		
7/17/2013	11068	52.90	355.10		
7/17/2013	11099	57.00	355.90		
7/17/2013	11494	67.96	355.99		
7/17/2013	11257	74.77	355.99		
7/17/2013	11289	78.77	355.11		
7/18/2013	11323	82.95	355.64		
7/18/2013	11386	89.37	355.29		

Date	Depth	Dev	Dir	TVD	Horiz Disp
7/18/2013	11417	91.82	354.00		
7/18/2013	11637	91.30	355.30		
7/18/2013	11730	90.20	355.20		
7/18/2013	11826	90.60	355.20		
7/19/2013	11922	90.30	354.80		
7/19/2013	12017	90.70	354.70		
7/19/2013	12111	91.30	354.30		
7/19/2013	12031	89.80	354.32		
7/19/2013	12585	88.60	353.00		
7/19/2013	12680	90.30	353.10		
7/19/2013	12775	91.00	354.60		
7/19/2013	12870	91.90	354.44		
7/20/2013	13059	89.85	355.99		
7/20/2013	13249	90.42	355.73		
7/20/2013	13479	91.43	354.94	11083.06	2560.95
7/20/2013	13532	89.80	354.85	11082.25	2654.91
7/20/2013	13627	90.51	354.85	11081.79	2749.89
7/20/2013	13721	90.20	356.00		
7/21/2013	13816	90.20	355.90	11080.87	2938.88
7/21/2013	13911	89.36	355.29	11081.24	3033.87
7/21/2013	14005	89.93	354.94	11081.82	3127.85
7/21/2013	14107	90.20	354.50		
7/21/2013	14196	90.30	354.00		
7/22/2013	14385	90.00	355.70		
7/22/2013	14479	90.10	356.60		
7/22/2013	14573	90.90	356.20		
7/22/2013	14668	90.60	356.70		
7/22/2013	14764	90.90	356.40	11078.00	3886.00
7/22/2013	14858	90.86	356.96	11076.00	3980.60
7/22/2013	15048	91.60	357.20		
7/22/2013	15142	89.70	358.30		
7/22/2013	15237	90.50	358.20		
7/23/2013	15332	90.90	357.70		
7/23/2013	15435	90.10	358.00		



A GYRO TECHNOLOGIES INC. COMPANY

PO Box 261021
Corpus Christi, Texas 78426
(361) 767-0602 • (800) 606-GYRO • Fax (361) 767-0612

July 12, 2013

COG Operating LLC (Concho)
One Concho Center
600 W. Illinois Avenue
Midland, TX 79701

HOESS OGD

OCT 23 2013

RECEIVED

Attn: Kanicia Castillo

Re: **Roy Batty Federal Com No 001H**

Please find enclosed a copy of the survey from 0' to 11,000' ran on the above referenced well.

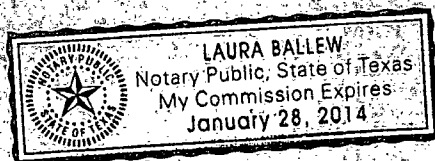
If I can be of any further service, please do not hesitate to call me at 800-606-4976.

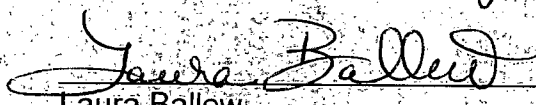
Sincerely,


Keith Havelka
Operations

STATE OF TEXAS §
 §
COUNTY OF NUECES §

This instrument was acknowledged before me on the 12th day of July, A.D., 2013, by Keith Havelka




Laura Ballew
Notary Public, State of Texas

Company: COG Operating LLC-Concho
Lease/Well: Roy Batty Federal Com/No 001H



Rig Name: Silver Oak #12
State/County: New Mexico/Lea
Latitude: 32.23, Longitude: -103.55
GRID North is 0.42 Degrees East of True North
VS-Azi: 0.00 Degrees



HOESS OCD

Depth Reference : RKB = 18 Feet

OCT 23 2013

DRILLOG HA GYRO SURVEY CALCULATIONS
Filename: roy batty fed com #1h_01.ut
Minimum Curvature Method
Report Date/Time: 7/12/2013 / 12:45

RECEIVED

Vaughn Energy Services
Ft.Worth, TX
817-741-3610
Surveyor: Kenny Gabel
Roy Batty Federal Com No 001H / API 30-025-41099

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	****
100.00	0.12	84.12	100.00	0.01	0.10	0.01	0.10	84.12	0.12
200.00	0.49	96.16	200.00	-0.02	0.63	-0.02	0.63	92.22	0.37
300.00	0.20	83.88	300.00	-0.05	1.22	-0.05	1.22	92.41	0.30
400.00	0.43	116.23	399.99	-0.20	1.73	-0.20	1.74	96.61	0.29
500.00	0.32	102.91	499.99	-0.43	2.35	-0.43	2.39	100.42	0.14
600.00	0.29	118.22	599.99	-0.61	2.84	-0.61	2.91	102.19	0.09
700.00	0.48	102.36	699.99	-0.82	3.48	-0.82	3.58	103.34	0.22
800.00	0.22	121.23	799.99	-1.01	4.05	-1.01	4.18	104.05	0.28
900.00	0.36	59.95	899.99	-0.96	4.49	-0.96	4.59	102.01	0.32
1000.00	0.27	31.04	999.98	-0.59	4.89	-0.59	4.92	96.93	0.18
1100.00	0.54	14.11	1099.98	0.06	5.12	0.06	5.12	89.30	0.29
1200.00	0.49	335.64	1199.98	0.90	5.06	0.90	5.14	79.87	0.34
1300.00	0.44	323.68	1299.98	1.60	4.66	1.60	4.93	71.05	0.11
1400.00	0.76	334.80	1399.97	2.51	4.15	2.51	4.85	58.90	0.34
1500.00	0.97	326.76	1499.96	3.81	3.41	3.81	5.11	41.83	0.24
1600.00	0.64	333.98	1599.95	5.01	2.70	5.01	5.70	28.35	0.34
1700.00	1.03	326.80	1699.94	6.26	1.97	6.26	6.56	17.48	0.40
1800.00	1.29	338.64	1799.92	8.06	1.07	8.06	8.13	7.56	0.36

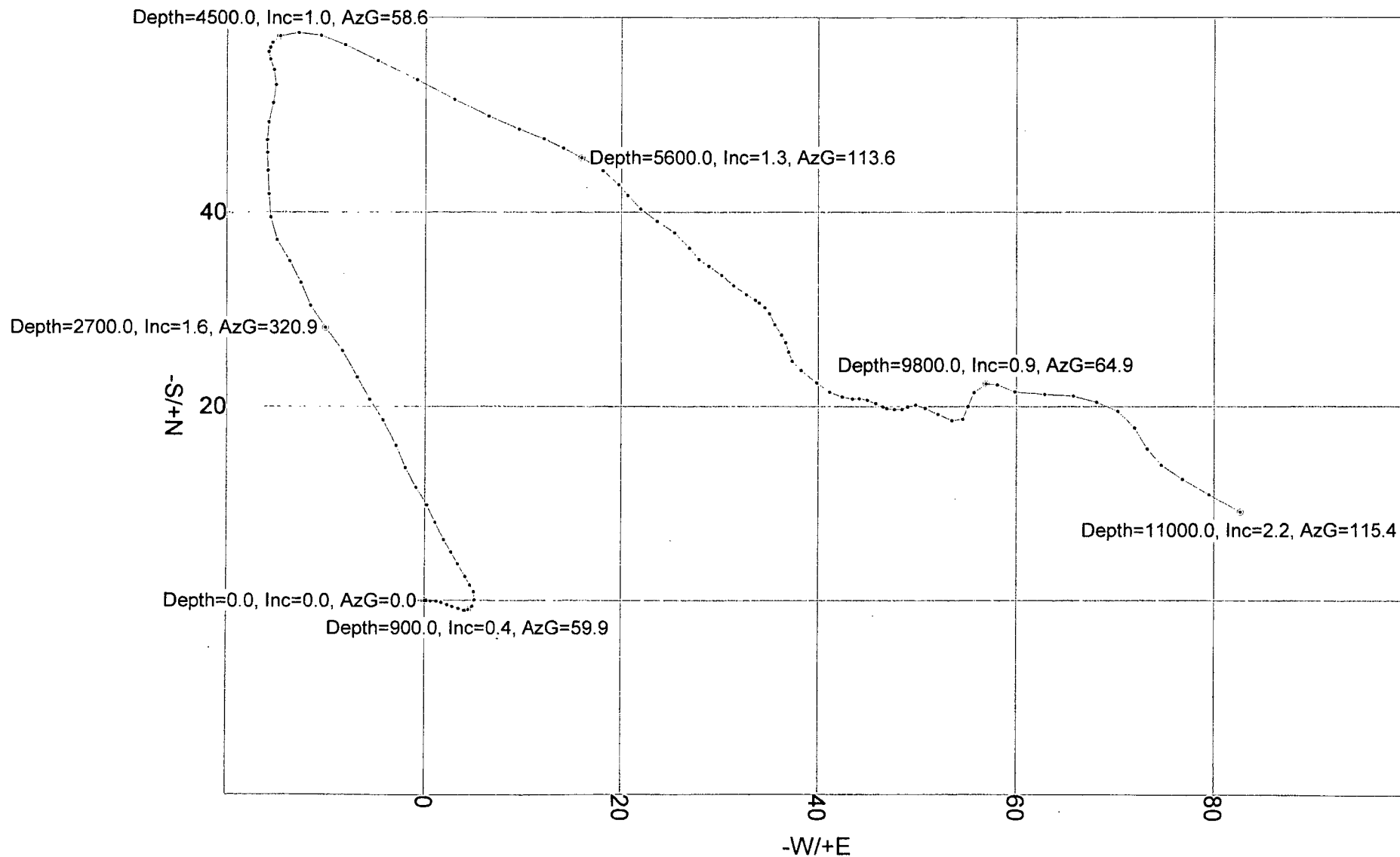
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
1900.00	0.98	328.62	1899.90	9.85	0.21	9.85	9.85	1.23	0.37
2000.00	1.46	327.83	1999.87	11.66	-0.91	11.66	11.69	355.52	0.48
2100.00	1.16	336.16	2099.85	13.66	-2.00	13.66	13.81	351.66	0.36
2200.00	1.70	338.11	2199.82	15.97	-2.96	15.97	16.24	349.48	0.54
2300.00	1.69	327.97	2299.77	18.59	-4.30	18.59	19.09	346.98	0.30
2400.00	1.21	326.06	2399.74	20.72	-5.67	20.72	21.48	344.69	0.49
2500.00	1.77	335.03	2499.71	23.00	-6.91	23.00	24.01	343.27	0.61
2600.00	1.76	327.30	2599.66	25.69	-8.40	25.69	27.03	341.90	0.24
2700.00	1.62	320.94	2699.62	28.08	-10.12	28.08	29.85	340.19	0.23
2800.00	1.51	332.32	2799.58	30.35	-11.62	30.35	32.50	339.05	0.33
2900.00	1.43	343.36	2899.55	32.72	-12.59	32.72	35.06	338.95	0.30
3000.00	1.45	323.29	2999.51	34.93	-13.71	34.93	37.52	338.57	0.50
3100.00	1.49	336.12	3099.48	37.14	-14.99	37.14	40.05	338.01	0.33
3200.00	1.31	354.26	3199.45	39.47	-15.63	39.47	42.45	338.39	0.48
3300.00	1.42	356.47	3299.42	41.85	-15.83	41.85	44.74	339.28	0.12
3400.00	1.37	359.16	3399.39	44.28	-15.92	44.28	47.06	340.23	0.08
3500.00	0.75	355.49	3499.38	46.13	-15.99	46.13	48.82	340.88	0.62
3600.00	0.73	2.53	3599.37	47.42	-16.01	47.42	50.05	341.34	0.09
3700.00	1.34	6.84	3699.35	49.22	-15.84	49.22	51.71	342.16	0.61
3800.00	1.00	19.14	3799.33	51.21	-15.42	51.21	53.48	343.24	0.42
3900.00	1.21	359.75	3899.31	53.08	-15.14	53.08	55.20	344.08	0.42
4000.00	0.62	338.41	3999.30	54.63	-15.34	54.63	56.75	344.32	0.67
4100.00	0.72	343.24	4099.29	55.73	-15.72	55.73	57.91	344.25	0.12
4200.00	0.20	11.73	4199.29	56.50	-15.86	56.50	58.68	344.32	0.55
4300.00	0.34	23.79	4299.29	56.94	-15.71	56.94	59.07	344.58	0.15
4400.00	0.27	20.25	4399.29	57.44	-15.50	57.44	59.50	344.90	0.07
4500.00	0.96	58.55	4499.28	58.10	-14.71	58.10	59.93	345.80	0.76
4600.00	1.32	94.46	4599.26	58.45	-12.85	58.45	59.84	347.60	0.78
4700.00	1.29	100.85	4699.24	58.15	-10.59	58.15	59.10	349.68	0.15
4800.00	1.71	119.09	4799.20	57.21	-8.18	57.21	57.79	351.86	0.63
4900.00	2.49	114.59	4899.13	55.58	-4.90	55.58	55.80	354.96	0.80
5000.00	2.65	117.62	4999.03	53.60	-0.88	53.60	53.61	359.06	0.21
5100.00	2.33	118.09	5098.94	51.58	2.96	51.58	51.66	3.29	0.33
5200.00	2.19	114.34	5198.86	49.83	6.49	49.83	50.25	7.43	0.20
5300.00	1.68	111.04	5298.80	48.52	9.60	48.52	49.46	11.19	0.52
5400.00	1.48	110.23	5398.77	47.55	12.18	47.55	49.08	14.37	0.20
5500.00	1.08	124.64	5498.74	46.57	14.17	46.57	48.67	16.92	0.51
5600.00	1.33	113.64	5598.72	45.57	16.00	45.57	48.30	19.35	0.34
5700.00	1.59	127.90	5698.69	44.25	18.16	44.25	47.83	22.31	0.44

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
5800.00	0.85	140.29	5798.66	42.83	19.73	42.83	47.15	24.73	0.78
5900.00	0.80	140.38	5898.65	41.72	20.65	41.72	46.55	26.33	0.05
6000.00	1.38	135.10	5998.64	40.33	21.94	40.33	45.91	28.55	0.58
6100.00	1.07	116.98	6098.61	39.05	23.62	39.05	45.64	31.17	0.49
6200.00	1.35	129.41	6198.59	37.88	25.37	37.88	45.59	33.81	0.39
6300.00	1.18	143.82	6298.57	36.30	26.89	36.30	45.17	36.53	0.36
6400.00	0.56	135.16	6398.55	35.12	27.84	35.12	44.81	38.41	0.63
6500.00	0.87	118.57	6498.55	34.41	28.85	34.41	44.90	39.98	0.37
6600.00	0.97	131.77	6598.53	33.48	30.15	33.48	45.05	42.00	0.24
6700.00	0.89	131.68	6698.52	32.40	31.37	32.40	45.09	44.07	0.08
6800.00	0.95	120.52	6798.51	31.46	32.66	31.46	45.35	46.08	0.19
6900.00	0.26	123.80	6898.50	30.91	33.57	30.91	45.63	47.36	0.69
7000.00	0.29	128.30	6998.50	30.62	33.96	30.62	45.73	47.96	0.04
7100.00	0.56	131.67	7098.50	30.14	34.52	30.14	45.83	48.88	0.26
7200.00	0.38	161.01	7198.49	29.50	34.99	29.50	45.77	49.87	0.29
7300.00	1.05	150.67	7298.49	28.39	35.55	28.39	45.50	51.39	0.68
7400.00	0.43	139.53	7398.48	27.30	36.25	27.30	45.38	53.01	0.64
7500.00	0.58	161.98	7498.47	26.54	36.65	26.54	45.25	54.09	0.24
7600.00	0.60	161.25	7598.47	25.56	36.97	25.56	44.95	55.34	0.03
7700.00	0.53	157.36	7698.46	24.64	37.32	24.64	44.72	56.57	0.08
7800.00	1.05	124.60	7798.45	23.69	38.25	23.69	44.99	58.23	0.67
7900.00	1.25	133.01	7898.43	22.42	39.81	22.42	45.69	60.61	0.26
8000.00	0.66	112.43	7998.42	21.45	41.14	21.45	46.40	62.46	0.68
8100.00	0.89	109.34	8098.41	20.98	42.41	20.98	47.31	63.68	0.23
8200.00	0.35	80.84	8198.40	20.77	43.44	20.77	48.15	64.44	0.60
8300.00	0.44	92.36	8298.40	20.80	44.12	20.80	48.78	64.76	0.12
8400.00	0.53	108.22	8398.40	20.64	44.95	20.64	49.46	65.33	0.16
8500.00	0.52	115.17	8498.39	20.30	45.80	20.30	50.10	66.09	0.07
8600.00	0.35	117.03	8598.39	19.97	46.48	19.97	50.59	66.75	0.17
8700.00	0.18	103.81	8698.39	19.80	46.90	19.80	50.91	67.12	0.18
8800.00	0.72	96.56	8798.39	19.69	47.67	19.69	51.58	67.56	0.55
8900.00	0.17	62.36	8898.38	19.68	48.43	19.68	52.28	67.88	0.59
9000.00	0.57	63.05	8998.38	19.98	49.00	19.98	52.92	67.82	0.41
9100.00	0.42	94.70	9098.38	20.17	49.81	20.17	53.74	67.95	0.31
9200.00	0.77	117.32	9198.37	19.84	50.77	19.84	54.51	68.66	0.41
9300.00	0.90	115.94	9298.36	19.19	52.06	19.19	55.49	69.77	0.13
9400.00	0.87	113.28	9398.35	18.55	53.47	18.55	56.59	70.87	0.05
9500.00	0.69	42.98	9498.34	18.68	54.57	18.68	57.68	71.10	0.91
9600.00	0.99	6.36	9598.33	19.98	55.08	19.98	58.59	70.06	0.60

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
9700.00	0.89	41.87	9698.32	21.42	55.69	21.42	59.67	68.96	0.58
9800.00	0.87	64.93	9798.31	22.32	56.90	22.32	61.12	68.58	0.35
9900.00	0.73	133.55	9898.30	22.20	58.05	22.20	62.15	69.07	0.91
10000.00	1.53	101.42	9998.28	21.50	59.83	21.50	63.57	70.23	0.99
10100.00	1.98	89.57	10098.23	21.25	62.86	21.25	66.35	71.32	0.57
10200.00	1.39	99.39	10198.19	21.06	65.78	21.06	69.07	72.25	0.65
10300.00	1.40	110.62	10298.16	20.43	68.13	20.43	71.12	73.30	0.27
10400.00	1.28	115.70	10398.13	19.52	70.27	19.52	72.93	74.48	0.17
10500.00	1.60	150.96	10498.10	17.81	71.96	17.81	74.13	76.10	0.93
10600.00	1.30	148.21	10598.07	15.62	73.24	15.62	74.88	77.96	0.31
10700.00	1.27	129.89	10698.05	13.95	74.68	13.95	75.97	79.42	0.41
10800.00	1.67	118.62	10798.01	12.54	76.81	12.54	77.83	80.73	0.49
10900.00	1.92	123.07	10897.96	10.93	79.50	10.93	80.24	82.17	0.29
11000.00	2.22	115.42	10997.90	9.18	82.65	9.18	83.16	83.66	0.40



Vaughn Energy Services
Ft. Worth, TX
817-741-3610
Surveyor: Kenny Gabel
Roy Batty Federal Com No 001H / API 30-025-41099



NEXUS

DIRECTIONAL SOLUTIONS, L.P.

Survey Sheet

Company:	COG	Job Number:	13-0001
Well:	Roy Batty Fed Com #1H	Mag Decl.:	7.33
Location:	Lea County, New Mexico	Dir Driller:	Tinsley/Stroud
Rig:	Silver Oak 12	MWD Eng:	Jared Addy
Leg:	Curve / Lateral	MWD Eng:	Steven Trulove

Calculation Method:	Minimum Curvature
Proposed Azimuth	356.15
Depth Reference	Rig
Tie Into:	Gyro

Survey Number	Survey Depth (ft)	Inclination (deg)	Azimuth (deg)	Course Length (ft)	True Vertical Depth (ft)	Vertical Section (ft)	Coordinates		Closure		Dogleg Severity (ft/100')	Build Rate (d/100')	Walk Rate (d/100')
							N/S (ft)	E/W (ft)	Distance (ft)	Direction Azimuth			
Tie In	10500	1.60	150.96		10498.10	17.81	17.80 N	71.90 E	74.13	76.10	0.93		
1	10598	0.62	93.11	98	10596.08	11.63	16.58 N	73.09 E	74.95	77.22	1.40	-1.00	-59.03
2	10625	2.29	22.97	27	10623.07	12.09	17.06 N	73.45 E	75.41	76.92	8.00	6.19	-259.78
3	10657	7.30	354.85	32	10654.96	14.70	19.68 N	73.52 E	76.11	75.01	16.84	15.66	1037.13
4	10689	11.08	354.76	32	10686.54	19.81	24.77 N	73.05 E	77.14	71.27	11.81	11.81	-0.28
5	10720	14.29	354.59	31	10716.78	26.61	31.54 N	72.42 E	78.99	66.46	10.36	10.35	-0.55
6	10752	18.02	353.53	32	10747.51	35.51	40.40 N	71.49 E	82.11	60.53	11.69	11.66	-3.31
7	10783	21.49	353.71	31	10776.68	45.97	50.81 N	70.33 E	86.76	54.15	11.20	11.19	0.58
8	10815	23.87	354.59	32	10806.20	58.30	63.08 N	69.07 E	93.55	47.60	7.51	7.44	2.75
9	10847	27.34	354.23	32	10835.06	72.12	76.84 N	67.73 E	102.43	41.39	10.85	10.84	-1.12
10	10878	30.95	353.62	31	10862.13	87.21	91.85 N	66.12 E	113.18	35.75	11.68	11.65	-1.97
11	10910	34.55	354.15	32	10889.04	104.50	109.06 N	64.28 E	126.60	30.52	11.29	11.25	1.66
12	10941	38.24	353.62	31	10913.99	122.88	127.35 N	62.32 E	141.78	26.08	11.95	11.90	-1.71
13	10973	41.58	353.09	32	10938.53	143.38	147.74 N	59.94 E	159.44	22.08	10.49	10.44	-1.66
14	11005	45.10	353.27	32	10961.80	165.31	169.54 N	57.34 E	178.97	18.68	11.01	11.00	0.56
15	11036	48.92	354.06	31	10982.93	187.96	192.08 N	54.84 E	199.75	15.93	12.46	12.32	2.55
16	11068	52.88	355.11	32	11003.11	212.78	216.79 N	52.50 E	223.06	13.61	12.63	12.38	3.28
17	11099	57.01	355.90	31	11020.91	238.15	242.09 N	50.52 E	247.30	11.79	13.48	13.32	2.55
18	11131	61.54	355.90	32	11037.26	265.65	269.52 N	48.55 E	273.86	10.21	14.16	14.16	0.00
19	11163	65.54	355.29	32	11051.51	294.29	298.07 N	46.35 E	301.66	8.84	12.62	12.50	-1.91
20	11194	67.96	355.38	31	11063.75	322.77	326.46 N	44.03 E	329.42	7.68	7.81	7.81	0.29
21	11226	70.86	356.34	32	11075.00	352.72	356.33 N	41.87 E	358.79	6.70	9.49	9.06	3.00
22	11257	74.77	355.99	31	11084.16	382.33	385.88 N	39.89 E	387.93	5.90	12.66	12.61	-1.13
23	11289	78.77	355.11	32	11091.48	413.47	416.93 N	37.47 E	418.61	5.14	12.78	12.50	-2.75
24	11323	82.95	355.64	34	11096.88	447.03	450.38 N	34.77 E	451.72	4.41	12.39	12.29	1.56
25	11354	86.11	355.55	31	11099.83	477.88	481.14 N	32.40 E	482.23	3.85	10.20	10.19	-0.29
26	11386	89.32	355.29	32	11101.11	509.85	513.01 N	29.85 E	513.88	3.33	10.06	10.03	-0.81
27	11417	91.82	354.59	31	11100.80	540.84	543.89 N	27.11 E	544.56	2.85	8.37	8.06	-2.26
28	11544	90.37	355.55	127	11098.38	667.79	670.39 N	16.20 E	670.58	1.38	1.37	-1.14	0.76
29	11638	91.30	355.29	94	11097.01	761.77	764.08 N	8.69 E	764.13	0.65	1.03	0.99	-0.28
30	11733	90.24	355.20	95	11095.73	856.75	858.74 N	0.82 E	858.74	0.05	1.12	-1.12	-0.09
31	11828	90.59	355.20	95	11095.04	951.73	953.41 N	7.13 W	953.43	359.57	0.37	0.37	0.00

Calculation Method:		Minimum Curvature
Proposed Azimuth		356.15
Depth Reference		Rig
Tie Into:		Gyro

Survey Number	Survey Depth (ft)	Inclination (deg)	Azimuth (deg)	Course Length (ft)	True Vertical Depth (ft)	Vertical Section (ft)	Coordinates				Closure		Dogleg Severity (ft/100')	Build Rate (d/100')	Walk Rate (d/100')
							N/S (ft)	E/W (ft)			Distance (ft)	Direction Azimuth			
32	11922	90.33	354.85	94	11094.29	1045.71	1047.05	N	15.28	W	1047.16	359.16	0.46	-0.28	-0.37
33	12017	90.73	354.76	95	11093.41	1140.68	1141.65	N	23.88	W	1141.90	358.80	0.43	0.42	-0.09
34	12111	91.30	354.32	94	11091.74	1234.63	1235.21	N	32.82	W	1235.65	358.48	0.77	0.61	-0.47
35	12206	89.80	354.67	95	11090.83	1329.58	1329.77	N	41.94	W	1330.43	358.19	1.62	-1.58	0.37
36	12301	89.80	354.32	95	11091.16	1424.54	1424.33	N	51.05	W	1425.24	357.95	0.37	0.00	-0.31
37	12396	90.11	354.32	95	11091.24	1519.49	1518.86	N	60.45	W	1520.06	357.72	0.33	0.33	0.00
38	12491	90.11	354.32	95	11091.05	1614.44	1613.39	N	69.86	W	1614.91	357.52	0.00	0.00	0.00
39	12585	88.66	353.27	94	11092.06	1708.35	1706.83	N	80.01	W	1708.71	357.32	1.90	-1.54	-1.12
40	12680	90.33	353.09	95	11092.90	1803.22	1801.16	N	91.29	W	1803.47	357.10	1.77	1.76	-0.19
41	12775	91.03	354.59	95	11091.77	1898.13	1895.60	N	101.49	W	1898.31	356.94	1.74	0.74	1.58
42	12870	91.87	354.41	95	11089.37	1993.06	1990.13	N	110.59	W	1993.20	356.82	0.90	0.88	-0.19
43	12964	91.12	355.20	94	11086.92	2087.00	2083.71	N	119.10	W	2087.11	356.73	1.16	-0.80	0.84
44	13059	89.85	355.99	95	11086.11	2181.99	2178.42	N	126.39	W	2182.09	356.68	1.57	-1.34	0.83
45	13154	89.93	355.82	95	11086.29	2276.99	2273.18	N	133.18	W	2277.08	356.65	0.20	0.08	-0.18
46	13249	90.42	355.73	95	11086.00	2371.99	2367.92	N	140.18	W	2372.07	356.61	0.52	0.52	-0.09
47	13343	90.86	355.46	94	11084.95	2465.98	2461.64	N	147.40	W	2466.05	356.57	0.55	0.47	-0.29
48	13438	91.43	354.94	95	11083.06	2560.95	2556.28	N	155.34	W	2561.00	356.52	0.81	0.60	-0.55
49	13532	89.80	354.85	94	11082.05	2654.91	2649.90	N	163.71	W	2654.95	356.46	1.74	-1.73	-0.10
50	13627	90.51	354.85	95	11081.79	2749.89	2744.52	N	172.24	W	2749.92	356.41	0.75	0.75	0.00
51	13722	90.20	355.99	95	11081.20	2844.88	2839.21	N	179.82	W	2844.90	356.38	1.24	-0.33	1.20
52	13816	90.20	355.90	94	11080.87	2938.88	2932.97	N	186.47	W	2938.90	356.36	0.10	0.00	-0.10
53	13911	89.36	355.29	95	11081.24	3033.87	3027.69	N	193.76	W	3033.89	356.34	1.09	-0.88	-0.64
54	14005	89.93	354.94	94	11081.82	3127.85	3121.35	N	201.77	W	3127.86	356.30	0.71	0.61	-0.37
55	14100	90.24	354.50	95	11081.68	3222.82	3215.94	N	210.51	W	3222.83	356.25	0.57	0.33	-0.46
56	14195	90.29	353.97	95	11081.24	3317.77	3310.46	N	220.05	W	3317.77	356.20	0.56	0.05	-0.56
57	14290	89.63	354.94	95	11081.31	3412.72	3405.02	N	229.23	W	3412.72	356.15	1.23	-0.69	1.02
58	14385	90.02	355.73	95	11081.60	3507.71	3499.70	N	236.96	W	3507.71	356.13	0.93	0.41	0.83
59	14479	90.07	356.61	94	11081.52	3601.71	3593.49	N	243.24	W	3601.71	356.13	0.94	0.05	0.94
60	14574	90.95	356.17	95	11080.68	3696.71	3688.30	N	249.22	W	3696.71	356.13	1.04	0.93	-0.46
61	14669	90.64	356.70	95	11079.36	3791.70	3783.10	N	255.13	W	3791.70	356.14	0.65	-0.33	0.56
62	14764	90.99	356.43	95	11078.01	3886.68	3877.92	N	260.82	W	3886.68	356.15	0.47	0.37	-0.28
63	14858	90.86	356.96	94	11076.49	3980.67	3971.75	N	266.24	W	3980.67	356.17	0.58	-0.14	0.56
64	14953	91.38	356.78	95	11074.63	4075.64	4066.59	N	271.42	W	4075.64	356.18	0.58	0.55	-0.19
65	15048	91.60	357.22	95	11072.16	4170.60	4161.43	N	276.39	W	4170.60	356.20	0.52	0.23	0.46
66	15142	89.67	358.28	94	11071.12	4264.55	4255.35	N	280.08	W	4264.55	356.23	2.34	-2.05	1.13
67	15237	90.51	358.19	95	11070.97	4359.49	4350.30	N	283.01	W	4359.50	356.28	0.89	0.88	-0.09
68	15332	90.90	357.66	95	11069.80	4454.43	4445.23	N	286.45	W	4454.45	356.31	0.69	0.41	-0.56
69	15435	90.11	358.01	103	11068.90	4557.38	4548.15	N	290.34	W	4557.41	356.35	0.84	-0.77	0.34
70	15477	90.11	358.01	42	11068.82	4599.36	4590.13	N	291.80	W	4599.39	356.36	0.00	0.00	0.00
71															