Results of Directional Survey

API number:	30-025-40407			
OGRID:		Operator:	COG OPERATING LLC	
		Property:	AIRCUDA 31 FEDERAL	# 2H

surface	ULSTR:	B	31	T	25S	R	33E
				330	FNL	1980	FEL
BH Loc	ULSTR:	O	31	T	25S	R	33E
14130 MD		9841.9 TVD		330	FSL	1890	FEL
				4950	FNL		
Top Perf/OH	ULSTR:	B	31	T	25S	R	33E
9976 MD		9809.9 TVD		802	FNL	1866	FEL
Bot Perf/OH	ULSTR:	O	31	T	25S	R	33E
14060 MD		9843.1 TVD		399	FNL	1895	FEL
				4881	FNL		

	MD	N/S	E/W	VD
	9944	-441.40	108.70	9801.3
TOP PERFS/OH	**9976**	-471.80	113.90	9809.90
	9976	-471.80	113.90	9809.90
	13977	-4467.80	79.30	9844.70
BOT PERFS/OH	**14060**	-4550.64	84.83	9843.12
	14082	-4572.60	86.30	9842.70

NEXT TO LAST	14082	-4572.60	86.30	9842.70
LAST READING	14130	-4620.40	89.80	9841.90
TD	**14130**	-4620.40	89.80	9841.90

Surface Location	330	FN	1980	FE
Projected BHL	4950	FN	1890	FE
Location of				
Top Perfs/OH	802	FN	1866	FE
Bottom Perfs/OH	4881	FN	1895	FE

SUMMARY of Subsurface Locations

Surface Location	B-31-25S-33E	330	FN	1980	FE	Vert. Depth
Top Perfs/OH	B-31-25S-33E	802	FN	1866	FE	9809.90
Bottom Perfs/OH	O-31-25S-33E	4881	FN	1895	FE	9843.12
Projected TD	O-31-25S-33E	4950	FN	1890	FE	9841.90

MAY 02 2019

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

FEB 14 2013

ARTESIA

January 9, 2013

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

SUR: B-31-25s-33e, 330/N & 1980/E
BHL: O-31-25s-33e, 4950/N & 1890/E
API # 30-025-40407

RE: Airacuda 31 Federal #2H
330' FNL & 1980' FEL
Sec. 31, T25S, 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 9th day of January, 2013.

Notary Public

OFFICIAL SEAL
REGINIA L. GARNER
NOTARY PUBLIC - STATE OF NEW MEXICO
My commission expires Aug. 30, 2016

Pason DataHub Deviation Survey
Well Dossier 1355273830 - Airacuda 31 Fed # 2H

# Date	Depth	Deviation	Direction	TVD
12/14/2012	270	0.30	0.00	0.00
12/14/2012	580	0.80	0.00	0.00
12/14/2012	890	3.00	0.00	0.00
12/16/2012	999	3.00	194.90	998.99
12/16/2012	1095	2.10	189.80	1094.86
12/16/2012	1190	1.20	153.80	1189.82
12/16/2012	1285	1.30	134.70	1284.80
12/16/2012	1381	1.80	131.00	1380.76
12/16/2012	1572	1.40	0.00	0.00
12/16/2012	1763	0.40	0.00	0.00
12/16/2012	1953	0.40	0.00	0.00
12/16/2012	2048	0.50	29.10	2047.00
12/16/2012	2143	0.80	41.60	2142.00
12/16/2012	2239	1.10	50.20	2238.00
12/16/2012	2334	1.50	55.50	2383.00
12/17/2012	2525	1.10	72.20	2524.00
12/17/2012	2621	1.40	66.40	2620.00
12/17/2012	2716	1.10	56.90	2715.00
12/17/2012	2812	1.80	51.40	2811.00
12/17/2012	2907	1.20	0.00	0.00
12/17/2012	3002	0.50	0.00	0.00
12/17/2012	3193	0.50	0.00	0.00
12/17/2012	3288	1.10	72.70	3287.00
12/17/2012	3383	2.30	59.80	3382.00
12/18/2012	3478	2.10	66.20	3477.00
12/18/2012	3573	1.60	68.20	3572.00
12/18/2012	3668	0.60	126.60	3667.00
12/18/2012	3764	0.60	157.80	3763.00
12/18/2012	3859	0.70	0.00	0.00
12/18/2012	3955	0.80	0.00	0.00
12/18/2012	4050	0.80	0.00	0.00
12/18/2012	4145	0.90	143.60	4144.00
12/18/2012	4241	1.70	131.70	4240.00
12/18/2012	4336	1.80	145.70	4335.00
12/19/2012	4431	1.90	170.00	4430.00
12/19/2012	4527	1.80	183.70	4586.00
12/19/2012	4622	2.00	176.00	4620.00
12/19/2012	4717	2.60	170.90	0.00
12/21/2012	4885	2.30	0.00	0.00
12/21/2012	5043	1.90	0.00	0.00
12/21/2012	5369	1.60	0.00	5419.00
12/21/2012	5874	1.10	0.00	5926.00

# Date	Depth	Deviation	Direction	TVD
12/22/2012	6382	0.60	0.00	0.00
12/22/2012	6880	0.50	0.00	0.00
12/22/2012	7365	0.60	0.00	7414.00
12/23/2012	7865	1.40	0.00	0.00
12/23/2012	8361	0.80	0.00	8411.00
12/24/2012	8858	1.10	0.00	0.00
12/26/2012	9356	0.50	0.00	9400.00
12/27/2012	9850	1.40	0.00	0.00
12/27/2012	10170	1.10	0.00	0.00
12/31/2012	9370	1.90	186.30	0.00
12/31/2012	9402	7.90	181.90	0.00
1/1/2013	9465	17.20	184.00	9460.91
1/1/2013	9493	14.00	179.60	9431.61
1/1/2013	9497	22.40	183.00	9491.30
1/1/2013	9529	26.00	184.20	9520.48
1/1/2013	9561	30.20	181.20	0.00
1/1/2013	9593	33.60	182.10	0.00
1/1/2013	9625	33.90	184.40	0.00
1/1/2013	9657	35.60	176.50	0.00
1/1/2013	9688	374.70	172.40	0.00
1/1/2013	9720	41.40	169.10	0.00
1/2/2013	9752	45.50	168.20	0.00
1/2/2013	9784	49.60	167.50	0.00
1/2/2013	9816	53.60	167.50	0.00
1/2/2013	9879	62.40	169.80	9776.17
1/2/2013	9911	67.20	170.70	0.00
1/2/2013	9944	72.00	169.80	0.00
1/2/2013	9976	76.80	170.70	0.00
1/3/2013	10088	80.00	0.00	0.00
1/3/2013	10164	86.80	181.80	0.00
1/3/2013	10228	89.80	183.50	9836.00
1/3/2013	10323	89.00	182.30	9837.00
1/3/2013	10418	88.10	182.50	9839.00
1/3/2013	10514	89.60	183.20	9841.00
1/3/2013	10642	89.70	180.20	9842.00
1/4/2013	10737	91.40	179.80	9841.71
1/4/2013	10832	91.90	179.60	9838.00
1/4/2013	10928	90.80	180.40	9836.71
1/4/2013	11102	90.80	178.90	9855.00
1/4/2013	11214	91.60	181.40	0.00
1/4/2013	11309	90.50	181.90	9831.14
1/4/2013	11404	89.80	182.50	9830.89
1/4/2013	11500	88.90	183.30	9831.00
1/4/2013	11595	89.20	183.20	9833.00
1/4/2013	11693	89.30	183.20	9834.00

# Date	Depth	Deviation	Direction	TVD
1/4/2013	11788	89.60	183.30	9835.00
1/4/2013	11883	89.50	182.50	9836.00
1/5/2013	11978	89.40	182.30	9851.41
1/5/2013	12073	89.80	181.90	9838.07
1/5/2013	12169	88.20	181.20	9839.75
1/5/2013	12264	88.60	181.10	9842.40
1/5/2013	12360	89.30	181.70	
1/5/2013	12458	89.30	180.00	
1/5/2013	12642	90.40	180.80	
1/5/2013	12739	90.90	180.90	9844.00
1/5/2013	12834	90.70	180.40	9843.00
1/5/2013	12929	90.20	180.50	9842.00
1/5/2013	13024	89.60	179.60	9843.00
1/5/2013	13119	89.40	179.10	9843.00
1/6/2013	12643	89.40	177.40	
1/6/2013	13215	90.00	179.30	9844.38
1/6/2013	13309	89.40	179.10	9844.88
1/6/2013	13405	90.00	178.80	9845.38
1/6/2013	13596	89.40	177.40	9850.05
1/6/2013	13641	90.30	177.90	
1/6/2013	13786	91.50	177.40	9848.00
1/6/2013	13881	91.10	176.80	9846.00
1/6/2013	14082	91.00	175.80	9842.00

EOF

VAUGHN ENERGY SERVICES

A GYRO TECHNOLOGIES INC. COMPANY

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

January 4, 2013

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

Attn: Kanicia Castillo

SUR: B-31-25s-33e, 330/N & 1980/E
BHL: O-31-25s-33e, 4950/N & 1890/E
API # 30-025-40407

Re: **Airacuda Federal No 002H**

Please find enclosed a copy of the survey from 0' to 10,135' 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 4th day of January A.D., 2013, by Keith Havelka.

Laura Ballew
Notary Public, State of Texas

LAURA BALLEW
Notary Public, State of Texas
My Commission Expires
January 28, 2014

Company: COG Operating LLC (Concho)
Lease/Well: Airacuda Federal/No 002H
Location: S31 T25s R33e
Rig Name: Silver Oak 12
State/County: New Mexico/Lea
Latitude: 32.09, Longitude: -103.61
GRID North is 0.38 Degrees East of True North
VS-Azi: 0.00 Degrees

RKB : 18 Feet

DRILLOG HA GYRO SURVEY CALCULATIONS
Filename: ...da federal #2h gyro survey.ut
Minimum Curvature Method
Report Date/Time: 1/4/2013 / 13:08

Vaughn Energy Services
(432) 563-5444
Gardendale, TX
Surveyor: Dustin Wedel
Airacuda Federal No 002H / API 30-025-40407

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W 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	****
100.00	0.19	255.78	100.00	-0.04	-0.16	0.17	255.78	0.19
200.00	0.41	190.19	200.00	-0.43	-0.39	0.58	222.09	0.37
300.00	0.50	179.91	300.00	-1.22	-0.45	1.30	200.33	0.13
400.00	0.60	169.63	399.99	-2.18	-0.36	2.20	189.32	0.14
500.00	0.89	163.44	499.98	-3.44	-0.04	3.44	180.69	0.30
600.00	1.18	165.25	599.97	-5.18	0.44	5.20	175.11	0.29
700.00	1.67	172.04	699.93	-7.61	0.91	7.67	173.21	0.51
800.00	2.15	178.83	799.88	-10.93	1.15	10.99	174.01	0.54
900.00	2.48	185.72	899.80	-14.96	0.97	14.99	176.29	0.43
1000.00	2.80	192.62	999.69	-19.50	0.22	19.50	179.35	0.45
1100.00	2.05	187.36	1099.60	-23.66	-0.54	23.66	181.31	0.78
1200.00	1.28	166.14	1199.56	-26.51	-0.51	26.52	181.09	0.98
1300.00	1.41	145.44	1299.53	-28.60	0.46	28.61	179.08	0.50
1400.00	1.84	128.84	1399.49	-30.62	2.41	30.72	175.51	0.64
1500.00	1.87	133.23	1499.44	-32.75	4.85	33.11	171.58	0.14
1600.00	1.37	116.22	1599.40	-34.40	7.11	35.12	168.32	0.69
1700.00	0.28	93.61	1699.39	-34.94	8.42	35.94	166.45	1.12
1800.00	0.28	37.83	1799.39	-34.76	8.81	35.86	165.77	0.26

VES Survey Date: 12/27/2012

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
1900.00	0.38	31.13	1899.39	-34.28	9.13	35.48	165.08	0.11
2000.00	0.44	8.12	1999.38	-33.62	9.36	34.89	164.44	0.17
2100.00	0.58	30.69	2099.38	-32.80	9.67	34.20	163.57	0.24
2200.00	0.89	47.75	2199.37	-31.85	10.50	33.53	161.75	0.37
2300.00	1.19	51.51	2299.35	-30.68	11.89	32.90	158.82	0.31
2400.00	1.10	61.52	2399.34	-29.58	13.54	32.53	155.39	0.22
2500.00	1.19	74.17	2499.32	-28.84	15.39	32.68	151.92	0.27
2600.00	1.28	70.85	2599.29	-28.19	17.44	33.14	148.26	0.11
2700.00	1.23	66.28	2699.27	-27.39	19.47	33.61	144.59	0.11
2800.00	1.50	61.34	2799.24	-26.33	21.60	34.06	140.63	0.30
2900.00	1.45	63.41	2899.21	-25.13	23.89	34.67	136.46	0.07
3000.00	0.47	73.70	2999.19	-24.45	25.42	35.27	133.89	0.99
3100.00	0.53	130.12	3099.19	-24.63	26.17	35.94	133.26	0.48
3200.00	0.42	111.53	3199.18	-25.07	26.87	36.74	133.01	0.19
3300.00	0.96	71.65	3299.18	-24.94	28.00	37.49	131.69	0.69
3400.00	2.21	58.89	3399.14	-23.68	30.44	38.57	127.87	1.30
3500.00	2.17	65.33	3499.06	-21.89	33.82	40.29	122.91	0.25
3600.00	1.58	75.94	3599.01	-20.76	36.88	42.32	119.38	0.69
3700.00	0.53	146.57	3699.00	-20.81	38.47	43.74	118.42	1.49
3800.00	0.73	145.67	3798.99	-21.72	39.08	44.71	119.07	0.20
3900.00	0.71	151.33	3898.98	-22.79	39.74	45.81	119.84	0.07
4000.00	0.82	134.72	3998.97	-23.83	40.54	47.03	120.45	0.24
4100.00	0.70	139.78	4098.96	-24.80	41.44	48.30	120.90	0.13
4200.00	1.06	138.89	4198.95	-25.97	42.45	49.76	121.46	0.36
4300.00	1.85	140.80	4298.92	-27.92	44.07	52.17	122.35	0.79
4400.00	1.82	154.03	4398.87	-30.59	45.79	55.07	123.75	0.42
4500.00	1.96	176.86	4498.81	-33.73	46.58	57.51	125.91	0.76
4600.00	1.90	173.60	4598.76	-37.08	46.86	59.75	128.36	0.12
4700.00	2.40	169.98	4698.69	-40.79	47.40	62.54	130.71	0.52
4800.00	2.48	168.60	4798.60	-44.98	48.20	65.92	133.02	0.10
4900.00	2.36	166.37	4898.51	-49.10	49.11	69.44	134.99	0.15
5000.00	2.11	167.80	4998.43	-52.90	49.98	72.78	136.62	0.25
5100.00	2.05	167.34	5098.37	-56.45	50.77	75.92	138.03	0.06
5200.00	1.82	168.63	5198.31	-59.76	51.47	78.87	139.26	0.23
5300.00	1.76	165.42	5298.26	-62.80	52.17	81.64	140.28	0.12
5400.00	1.79	165.13	5398.21	-65.79	52.96	84.46	141.17	0.03
5500.00	1.42	167.50	5498.17	-68.50	53.63	87.00	141.95	0.38
5600.00	1.44	163.67	5598.14	-70.92	54.25	89.29	142.59	0.10
5700.00	1.47	168.94	5698.11	-73.39	54.85	91.62	143.23	0.14

VES Survey Date: 12/27/2012

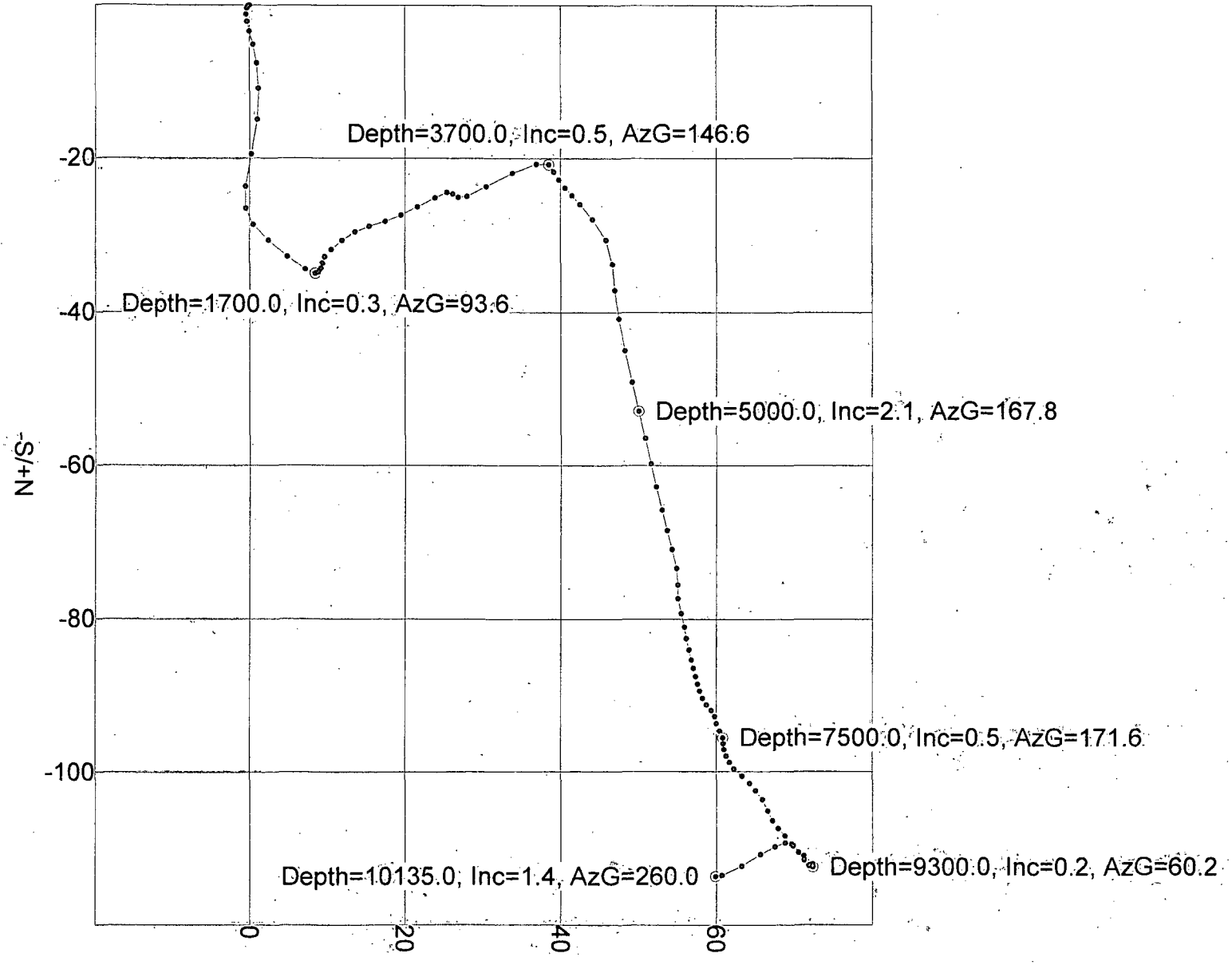
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
5800.00	1.04	186.41	5798.08	-75.56	54.99	93.45	143.95	0.57
5900.00	0.99	170.75	5898.07	-77.31	55.03	94.90	144.56	0.28
6000.00	1.28	165.70	5998.05	-79.25	55.45	96.72	145.02	0.30
6100.00	0.85	169.55	6098.03	-81.05	55.86	98.44	145.43	0.43
6200.00	0.87	171.28	6198.02	-82.54	56.11	99.80	145.79	0.03
6300.00	0.87	162.90	6298.01	-84.02	56.44	101.22	146.11	0.13
6400.00	0.66	169.71	6398.00	-85.31	56.77	102.48	146.36	0.23
6500.00	0.64	164.68	6497.99	-86.42	57.02	103.54	146.58	0.06
6600.00	0.64	164.57	6597.99	-87.50	57.32	104.60	146.77	0.01
6700.00	0.55	165.99	6697.98	-88.50	57.58	105.58	146.95	0.09
6800.00	0.57	160.27	6797.98	-89.43	57.87	106.52	147.09	0.06
6900.00	0.57	158.72	6897.97	-90.36	58.22	107.49	147.21	0.02
7000.00	0.56	140.78	6997.97	-91.21	58.71	108.47	147.23	0.18
7100.00	0.57	140.61	7097.96	-91.97	59.33	109.45	147.17	0.01
7200.00	0.50	162.95	7197.96	-92.78	59.78	110.37	147.21	0.22
7300.00	0.56	170.98	7297.95	-93.68	59.98	111.24	147.37	0.09
7400.00	0.70	143.97	7397.95	-94.65	60.42	112.29	147.45	0.32
7500.00	0.50	171.56	7497.94	-95.57	60.84	113.29	147.52	0.34
7600.00	0.37	180.00	7597.94	-96.32	60.90	113.96	147.70	0.14
7700.00	0.54	167.94	7697.94	-97.11	61.00	114.68	147.86	0.20
7800.00	0.50	154.37	7797.93	-97.96	61.29	115.56	147.97	0.13
7900.00	0.55	152.66	7897.93	-98.78	61.70	116.47	148.01	0.06
8000.00	0.66	142.79	7997.92	-99.67	62.27	117.52	148.01	0.15
8100.00	0.95	121.97	8097.91	-100.57	63.32	118.84	147.81	0.40
8200.00	0.66	160.00	8197.90	-101.55	64.21	120.15	147.69	0.59
8300.00	0.82	126.08	8297.90	-102.51	64.99	121.38	147.63	0.46
8400.00	0.90	156.33	8397.89	-103.65	65.88	122.82	147.56	0.46
8500.00	0.94	155.72	8497.87	-105.13	66.54	124.41	147.67	0.04
8600.00	0.68	151.31	8597.86	-106.39	67.16	125.82	147.74	0.27
8700.00	0.81	139.11	8697.85	-107.44	67.90	127.10	147.71	0.20
8800.00	0.72	138.14	8797.85	-108.45	68.78	128.42	147.61	0.09
8900.00	0.84	143.91	8897.84	-109.51	69.64	129.77	147.55	0.14
9000.00	0.77	138.37	8997.83	-110.60	70.52	131.17	147.48	0.10
9100.00	0.63	152.63	9097.82	-111.59	71.22	132.38	147.46	0.23
9200.00	0.51	123.77	9197.81	-112.33	71.84	133.33	147.40	0.30
9300.00	0.20	60.18	9297.81	-112.49	72.36	133.75	147.25	0.46
9400.00	0.38	327.99	9397.81	-112.12	72.33	133.43	147.17	0.43
9500.00	1.45	310.60	9497.80	-111.02	71.20	131.89	147.33	1.09
9600.00	0.73	318.45	9597.78	-109.72	69.81	130.04	147.53	0.73

VES Survey Date: 12/27/2012

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
9700.00	0.68	258.72	9697.77	-109.35	68.81	129.20	147.82	0.70
9800.00	0.98	243.08	9797.76	-109.85	67.47	128.92	148.44	0.37
9900.00	1.41	240.87	9897.74	-110.84	65.63	128.81	149.37	0.43
10000.00	1.86	235.63	9997.70	-112.35	63.22	128.92	150.63	0.48
10100.00	1.39	257.25	10097.66	-113.53	60.70	128.74	151.87	0.77
10135.00	1.37	260.03	10132.65	-113.70	59.88	128.50	152.23	0.20

VES Survey Date: 12/27/2012

Vaughn Energy Services
(432) 563-5444
Gardendale, TX
Surveyor: Dustin Wedel
Airacuda Federal No 002H / API 30-025-40407



VES Survey Date: 12/27/2012

COG Operating LLC

Lea County, NM (NAD 83)
Airacuda Federal
#2H

OH

SUR: B-31-25s-33e, 330/N & 1980/E
BHL: O-31-25s-33e, 4950/N & 1890/E
API # 30-025-40407

Survey: Survey #2 - Crescent1

Standard Survey Report

09 January, 2013

Survey Report

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well #2H
Project:	Lea County, NM (NAD 83)	**TVD Reference:**	WELL @ 3419.7usft (Silver Oak #12 - 18' KB)
Site:	Airacuda Federal	**MD Reference:**	WELL @ 3419.7usft (Silver Oak #12 - 18' KB)
Well:	#2H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	OH	**Database:**	Houston R5000 Database

Project Lea County, NM (NAD 83)

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site Airacuda Federal

Site Position:		**Northing:**	398,414.06 usft	**Latitude:**	32° 5' 35.700 N
From:	Map	**Easting:**	765,583.91 usft	**Longitude:**	103° 36' 33.137 W
Position Uncertainty:	2.0 usft	**Slot Radius:**	8-3/4 "	**Grid Convergence:**	0.38 °

Well #2H

Well Position	**+N/-S**	0.0 usft	**Northing:**	398,414.06 usft	**Latitude:**	32° 5' 35.700 N
	+E/-W	0.0 usft	**Easting:**	765,583.91 usft	**Longitude:**	103° 36' 33.137 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	usft	**Ground Level:**	3,401.7 usft

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	11/20/2012	7.41	60.05	48,433

Design OH

Audit Notes:

Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	9,300.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	179.63

Survey Program **Date** 1/9/2013

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	9,300.0	Survey #1 - VES1 (Pilot)	CB-GYRO-MS	Camera based gyro multishot
9,370.0	14,130.0	Survey #2 - Crescent1 (OH)	MWD	MWD - Standard

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,300.0	0.20	60.18	9,297.8	-112.5	72.4	112.9	0.00	0.00	0.00
9,370.0	1.90	186.30	9,367.8	-113.6	72.4	114.0	2.89	2.43	180.17
9,402.0	7.90	181.90	9,399.7	-116.3	72.2	116.8	18.77	18.75	-13.75
9,434.0	14.00	179.60	9,431.1	-122.4	72.2	122.8	19.11	19.06	-7.19
9,465.0	17.20	184.00	9,460.9	-130.7	71.9	131.2	11.00	10.32	14.19
9,497.0	22.40	183.00	9,491.0	-141.5	71.2	142.0	16.28	16.25	-3.13
9,529.0	26.00	184.20	9,520.2	-154.6	70.4	155.1	11.35	11.25	3.75
9,561.0	30.20	181.20	9,548.4	-169.7	69.7	170.1	13.84	13.13	-9.38
9,593.0	33.60	182.10	9,575.6	-186.6	69.2	187.0	10.73	10.63	2.81
9,625.0	33.90	184.40	9,602.2	-204.3	68.2	204.7	4.10	0.94	7.19

Survey Report

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well #2H
Project:	Lea County NM (NAD 83)	**TVD Reference:**	WELL @ 3419.7usft (Silver Oak #12 - 18' KB)
Site:	Airacuda Federal	**MD Reference:**	WELL @ 3419.7usft (Silver Oak #12 - 18' KB)
Well:	#2H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	OH	**Database:**	Houston R5000 Database

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,657.0	35.60	176.50	9,628.5	-222.5	68.1	222.9	15.03	5.31	-24.69
9,688.0	37.70	172.40	9,653.4	-240.9	69.9	241.4	10.40	6.77	-13.23
9,720.0	41.40	169.10	9,678.1	-261.0	73.2	261.5	13.29	11.56	-10.31
9,752.0	45.50	168.20	9,701.3	-282.6	77.5	283.1	12.96	12.81	-2.81
9,784.0	49.60	167.50	9,722.9	-305.7	82.5	306.2	12.91	12.81	-2.19
9,816.0	53.60	167.50	9,742.7	-330.1	87.9	330.7	12.50	12.50	0.00
9,848.0	57.90	168.40	9,760.8	-356.0	93.5	356.6	13.64	13.44	2.81
9,879.0	62.40	169.80	9,776.2	-382.4	98.5	383.0	15.03	14.52	4.52
9,911.0	67.20	170.70	9,789.8	-410.9	103.4	411.6	15.21	15.00	2.81
9,944.0	72.00	169.80	9,801.3	-441.4	108.7	442.1	14.77	14.55	-2.73
9,976.0	76.80	170.70	9,809.9	-471.8	113.9	472.5	15.24	15.00	2.81
10,008.0	80.00	174.40	9,816.3	-502.8	117.9	503.6	15.11	10.00	11.56
10,038.0	81.90	176.80	9,821.1	-532.4	120.2	533.1	10.13	6.33	8.00
10,070.0	82.70	178.60	9,825.3	-564.1	121.5	564.8	6.11	2.50	5.63
10,101.0	83.40	179.30	9,829.1	-594.8	122.0	595.6	3.18	2.26	2.26
10,132.0	84.80	179.80	9,832.3	-625.7	122.3	626.4	4.79	4.52	1.61
10,164.0	86.80	181.80	9,834.6	-657.6	121.8	658.3	8.83	6.25	6.25
10,228.0	89.80	183.50	9,836.5	-721.5	118.9	722.2	5.39	4.69	2.66
10,323.0	89.00	182.30	9,837.5	-816.3	114.1	817.0	1.52	-0.84	-1.26
10,418.0	88.10	182.50	9,839.9	-911.2	110.1	911.9	0.97	-0.95	0.21
10,514.0	89.60	183.20	9,841.9	-1,007.1	105.3	1,007.7	1.72	1.56	0.73
10,642.0	89.70	180.20	9,842.6	-1,135.0	101.5	1,135.6	2.35	0.08	-2.34
10,737.0	91.40	179.80	9,841.7	-1,230.0	101.5	1,230.6	1.84	1.79	-0.42
10,832.0	91.90	179.60	9,839.0	-1,324.9	102.0	1,325.6	0.57	0.53	-0.21
10,928.0	90.80	180.40	9,836.7	-1,420.9	102.0	1,421.5	1.42	-1.15	0.83
11,023.0	90.80	178.90	9,835.4	-1,515.9	102.6	1,516.5	1.58	0.00	-1.58
11,118.0	90.30	181.40	9,834.5	-1,610.9	102.4	1,611.5	2.68	-0.53	2.63
11,214.0	91.60	181.40	9,832.9	-1,706.8	100.0	1,707.4	1.35	1.35	0.00
11,309.0	90.50	181.90	9,831.2	-1,801.8	97.3	1,802.4	1.27	-1.16	0.53
11,404.0	89.80	182.50	9,830.9	-1,896.7	93.6	1,897.3	0.97	-0.74	0.63
11,500.0	88.90	183.30	9,832.0	-1,992.6	88.8	1,993.1	1.25	-0.94	0.83
11,595.0	89.20	183.20	9,833.6	-2,087.4	83.4	2,087.9	0.33	0.32	-0.11
11,693.0	89.30	183.20	9,834.9	-2,185.2	77.9	2,185.7	0.10	0.10	0.00
11,788.0	89.60	183.30	9,835.8	-2,280.1	72.5	2,280.5	0.33	0.32	0.11
11,883.0	89.50	182.50	9,836.5	-2,375.0	67.7	2,375.3	0.85	-0.11	-0.84
11,978.0	89.40	182.30	9,837.4	-2,469.9	63.7	2,470.2	0.24	-0.11	-0.21
12,073.0	89.80	181.90	9,838.1	-2,564.8	60.3	2,565.1	0.60	0.42	-0.42
12,169.0	88.20	181.20	9,839.8	-2,660.7	57.7	2,661.1	1.82	-1.67	-0.73
12,264.0	88.60	181.10	9,842.4	-2,755.7	55.8	2,756.0	0.43	0.42	-0.11
12,360.0	89.30	181.20	9,844.2	-2,851.7	53.8	2,851.9	0.74	0.73	0.10
12,453.0	89.70	180.70	9,845.0	-2,944.6	52.3	2,944.9	0.69	0.43	-0.54
12,548.0	89.30	180.00	9,845.8	-3,039.6	51.7	3,039.9	0.85	-0.42	-0.74
12,643.0	90.40	180.50	9,846.1	-3,134.6	51.3	3,134.9	1.27	1.16	0.53

Survey Report

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well #2H
Project:	Lea County, NM (NAD 83)	**TVD Reference:**	WELL @ 3419.7usft (Silver Oak #12 - 18' KB)
Site:	Airacuda Federal	**MD Reference:**	WELL @ 3419.7usft (Silver Oak #12 - 18' KB)
Well:	#2H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	OH	**Database:**	Houston R5000 Database

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
12,739.0	90.90	180.90	9,845.0	-3,230.6	50.1	3,230.9	0.67	0.52	0.42
12,834.0	90.70	180.40	9,843.6	-3,325.6	49.1	3,325.8	0.57	-0.21	-0.53
12,929.0	90.20	180.50	9,842.9	-3,420.6	48.3	3,420.8	0.54	-0.53	0.11
13,024.0	89.60	179.60	9,843.1	-3,515.6	48.2	3,515.8	1.14	-0.63	-0.95
13,119.0	89.40	179.10	9,843.9	-3,610.6	49.3	3,610.8	0.57	-0.21	-0.53
13,215.0	90.00	179.30	9,844.4	-3,706.6	50.6	3,706.8	0.66	0.63	0.21
13,309.0	89.40	179.10	9,844.9	-3,800.6	52.0	3,800.8	0.67	-0.64	-0.21
13,405.0	90.00	178.80	9,845.4	-3,896.5	53.7	3,896.8	0.70	0.63	-0.31
13,500.0	87.50	177.50	9,847.5	-3,991.5	56.8	3,991.7	2.97	-2.63	-1.37
13,596.0	89.40	177.40	9,850.1	-4,087.3	61.0	4,087.6	1.98	1.98	-0.10
13,691.0	90.30	177.90	9,850.3	-4,182.2	64.9	4,182.6	1.08	0.95	0.53
13,786.0	91.50	177.40	9,848.8	-4,277.1	68.8	4,277.5	1.37	1.26	-0.53
13,881.0	91.10	176.80	9,846.7	-4,372.0	73.6	4,372.4	0.76	-0.42	-0.63
13,977.0	91.20	176.50	9,844.7	-4,467.8	79.3	4,468.2	0.33	0.10	-0.31
14,082.0	91.00	175.80	9,842.7	-4,572.6	86.3	4,573.1	0.69	-0.19	-0.67
Last Survey @ 14082.0' MD, 9842.7' TVD, 91.00° INC, 175.80° AZ									
14,130.0	91.00	175.80	9,841.9	-4,620.4	89.8	4,620.9	0.00	0.00	0.00
Straight line Projection to TD @ 14130.0' MD, 9841.9' TVD.									

Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
14,082.0	9,842.7	-4,572.6	86.3	Last Survey @ 14082.0' MD, 9842.7' TVD, 91.00° INC, 175.80° AZ
14,130.0	9,841.9	-4,620.4	89.8	Straight line Projection to TD @ 14130.0' MD, 9841.9' TVD.

Checked By: _____ Approved By: _____ Date: _____

COG Operating LLC
Project: Lea County, NM (NAD 83)
Site: Airacuda Federal
Well: #2H
Wellbore: OH
Plan: Plan #2 (#2H/OH)

CONCHO

Azimuths to Grid North
True North: -0.39°
Magnetic North: 7.03°

Magnetic Field
Strength: 48432.5snT
Dip Angle: 60.05°
Date: 11/20/2012
Model: IGRF200510

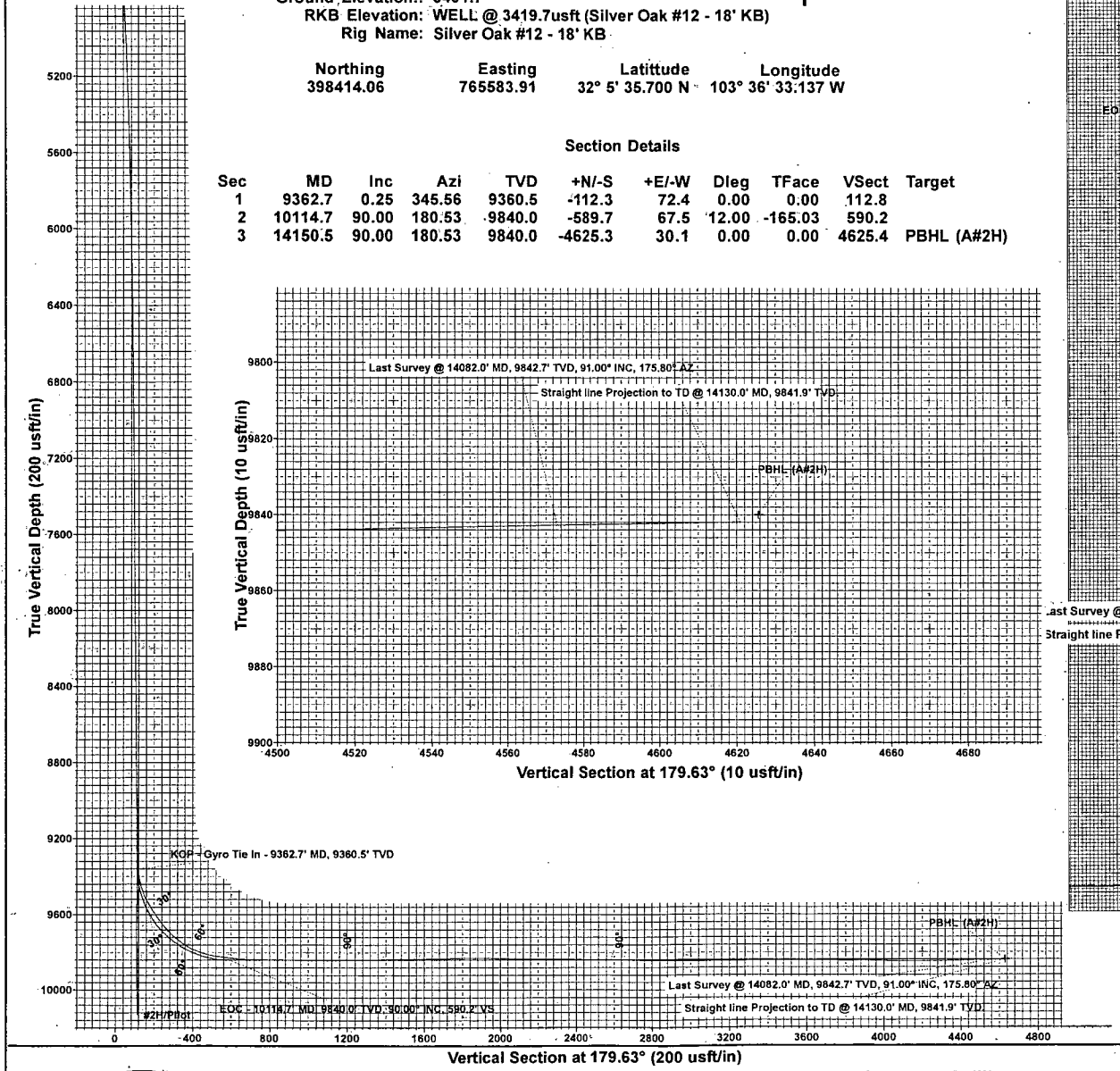
WELL DETAILS: #2H

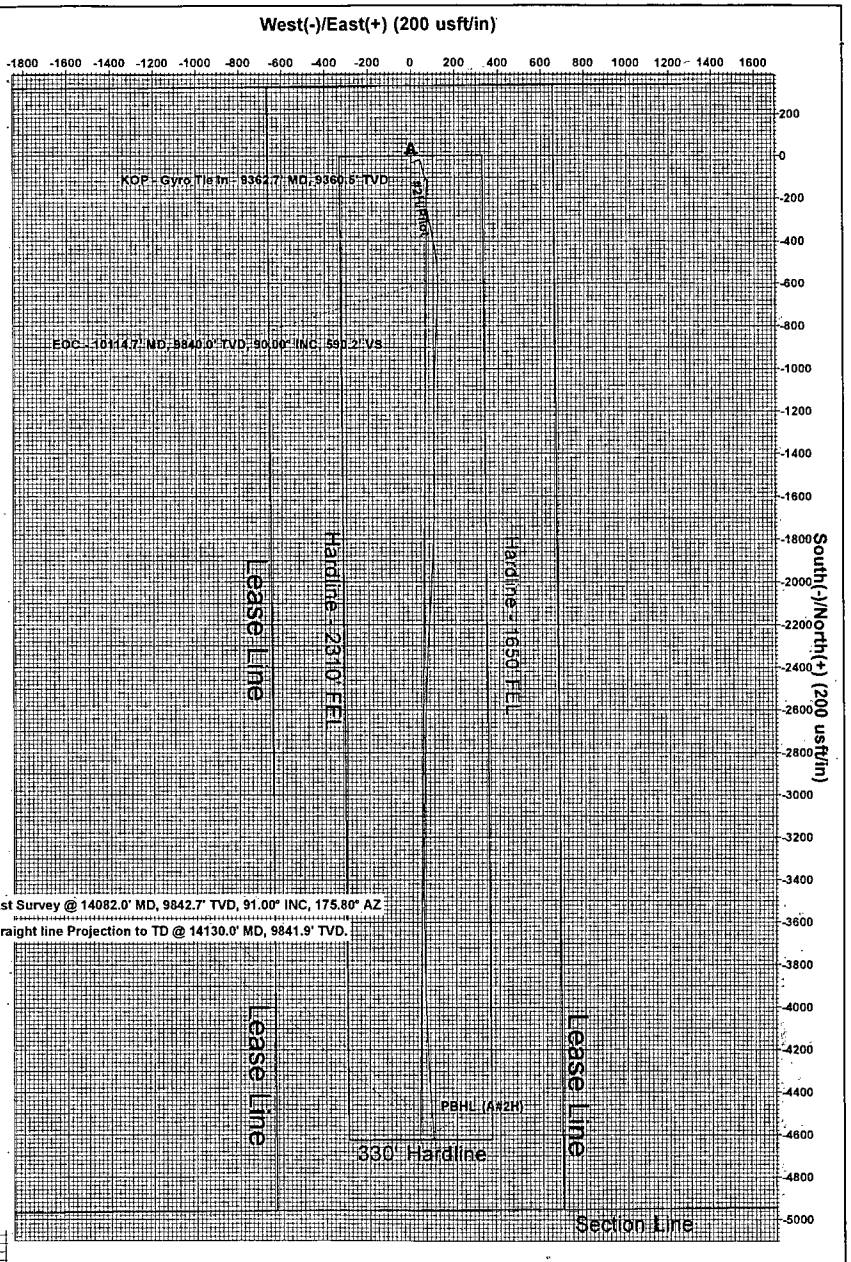
Ground Elevation:: 3401.7
RKB Elevation: WELL @ 3419.7usft (Silver Oak #12 - 18' KB)
Rig Name: Silver Oak #12 - 18' KB

Northing	Easting	Latitude	Longitude
398414.06	765583.91	32° 5' 35.700 N	103° 36' 33.137 W

Section Details

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	9362.7	0.25	345.56	9360.5	-112.3	72.4	0.00	0.00	112.8	
2	10114.7	90.00	180.53	9840.0	-589.7	67.5	12.00	-165.03	590.2	
3	14150.5	90.00	180.53	9840.0	-4625.3	30.1	0.00	0.00	4625.4	PBHL (A#2H)





PROJECT DETAILS: Lea County, NM (NAD 83)
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone
System Datum: Mean Sea Level
Local North: Grid

CRESCENT DIRECTIONAL DRILLING

Crescent Directional Drilling
7715 West Industrial Ave. Midland, Tx 79706
Phone: 432-618-1135

Plan: Plan #2 (#2H/OH)
Created By: Matt Higgins Date: 15:24, January 09 2013