

Results of Directional Survey

API number:	30-025-41158		
OGRID:		Operator:	COG PRODUCTION, LLC
		Property:	AZORES FEDERAL # 3H

surface	ULSTR:	N	29	T	24S	R	32E
				190	FSL	1980	FWL

BH Loc	ULSTR:	C	29	T	24S	R	32E
15098	MD	10576.7	TVD	353	FNL	1921	FWL
				4927	FSL		

Top Perf/OH	ULSTR:	N	29	T	24S	R	32E
10703	MD	10535.1	TVD	535	FSL	1894	FWL

Bot Perf/OH	ULSTR:	C	29	T	24S	R	32E
14977	MD	10574.5	TVD	474	FNL	1920	FWL
				4806	FSL		

	MD	N/S	E/W	VD
	10671	313.80	-87.50	10526.6
TOP PERFS/OH	10703	344.60	-86.20	10535.10
	10703	344.60	-86.20	10535.10
	14909	4547.70	-60.00	10572.70
BOT PERFS/OH	14977	4615.70	-59.71	10574.49
	15004	4642.70	-59.60	10575.20

NEXT TO LAST	15049	4687.70	-59.30	10576.00
LAST READING	15098	4736.60	-58.90	10576.70
TD	15098	4736.60	-58.90	10576.70

Surface Location	190	FS	1980	FW
Projected BHL	4927	FS	1921	FW
Location of				
Top Perfs/OH	535	FS	1894	FW
Bottom Perfs/OH	4806	FS	1920	FW

SUMMARY of Subsurface Locations

Surface Location	N-29-24S-32E	190	FS	1980	FW	Vert. Depth
Top Perfs/OH	N-29-24S-32E	535	FS	1894	FW	10535.10
Bottom Perfs/OH	C-29-24S-32E	4806	FS	1920	FW	10574.49
Projected TD	C-29-24S-32E	4927	FS	1921	FW	10576.70

JAN 23 2014



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

HOBBS OCD

JAN 13 2014

RECEIVED

October 31, 2013

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

RE: Azores Federal #3H
190' FSL & 1980' FWL
Sec. 29, T24S, R32E
Lea County, New Mexico

Dear Sir,

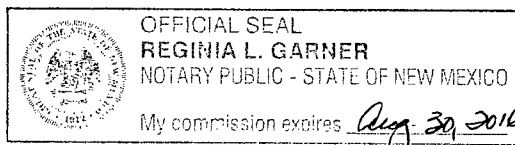
The attached is the Deviation Survey for the above captioned well.

Very truly yours,

Chris Graham
Drilling Superintendent

State of New Mexico }
County of Eddy }

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

Notary Public

Azores Federal #3H

Date	Depth	Deviation	Direction	TVD	Horiz Disp
10/1/2013	274	0.30	0.00	0.00	0.00
10/1/2013	665	1.40	0.00	0.00	0.00
10/1/2013	833	1.70	0.00	0.00	0.00
10/3/2013	965	2.02	0.00	0.00	0.00
10/3/2013	155	2.10	0.00	0.00	0.00
10/3/2013	1345	1.40	0.00	0.00	0.00
10/3/2013	1536	1.80	0.00	0.00	0.00
10/3/2013	1725	1.80	0.00	0.00	0.00
10/4/2013	1915	1.36	0.00	0.00	0.00
10/4/2013	2010	1.58	0.00	0.00	0.00
10/4/2013	2105	1.89	0.00	0.00	0.00
10/4/2013	2200	2.10	0.00	0.00	0.00
10/4/2013	2421	0.92	0.00	0.00	0.00
10/4/2013	2611	1.14	0.00	0.00	0.00
10/4/2013	2706	0.97	0.00	0.00	0.00
10/4/2013	2801	0.70	0.00	0.00	0.00
10/5/2013	2896	0.79	0.00	0.00	0.00
10/5/2013	2991	1.45	0.00	0.00	0.00
10/5/2013	3086	1.67	0.00	0.00	0.00
10/5/2013	3276	1.98	0.00	0.00	0.00
10/5/2013	3371	1.70	0.00	0.00	0.00
10/5/2013	3466	1.60	0.00	0.00	0.00
10/5/2013	3561	1.70	0.00	0.00	0.00
10/6/2013	3656	2.11	280.08	0.00	0.00
10/6/2013	3751	2.55	273.40	0.00	0.00
10/6/2013	3846	2.07	273.40	0.00	0.00
10/6/2013	3941	1.76	0.00	0.00	0.00
10/6/2013	4036	2.15	0.00	0.00	0.00
10/6/2013	4321	1.89	0.00	0.00	0.00
10/6/2013	4415	1.70	0.00	0.00	0.00
10/6/2013	4512	1.30	0.00	0.00	0.00
10/8/2013	4618	1.00	0.00	0.00	0.00
10/8/2013	4871	0.90	0.00	0.00	0.00
10/8/2013	5378	1.60	0.00	0.00	0.00
10/8/2013	5631	0.50	0.00	0.00	0.00
10/8/2013	6043	0.80	0.00	0.00	0.00
10/9/2013	6486	1.00	0.00	0.00	0.00
10/9/2013	6920	0.80	0.00	0.00	0.00
10/9/2013	7341	1.40	0.00	0.00	0.00
10/9/2013	7594	0.30	0.00	0.00	0.00
10/10/2013	8004	0.70	0.00	0.00	0.00
10/10/2013	8454	1.50	0.00	0.00	0.00
10/10/2013	8859	1.00	0.00	0.00	0.00

Date	Depth	Deviation	Direction	TVD	Horiz Disp
10/11/2013	9270	1.20	0.00	0.00	0.00
10/11/2013	9686	1.30	0.00	0.00	0.00
10/12/2013	10101	1.40	0.00	0.00	0.00
10/12/2013	10572	0.80	0.00	0.00	0.00
10/13/2013	10952	1.60	0.00	0.00	0.00
10/17/2013	9973	1.80	192.50	0.00	0.00
10/18/2013	10037	5.19	352.61	0.00	0.00
10/18/2013	10069	11.61	358.41	0.00	0.00
10/18/2013	10101	17.23	3.33	0.00	0.00
10/18/2013	10164	23.40	5.60	0.00	0.00
10/18/2013	10196	26.50	4.20	0.00	0.00
10/18/2013	10227	30.20	2.10	0.00	0.00
10/20/2013	10100	1.10	169.10	0.00	0.00
10/21/2013	10133	0.60	143.80	0.00	0.00
10/21/2013	10228	13.20	14.60	0.00	0.00
10/21/2013	10259	18.90	15.30	0.00	0.00
10/21/2013	10291	22.70	14.80	0.00	0.00
10/22/2013	10354	31.10	15.10	0.00	0.00
10/22/2013	10386	36.40	14.20	0.00	0.00
10/22/2013	10418	41.90	13.90	0.00	0.00
10/22/2013	10449	46.60	12.30	0.00	0.00
10/22/2013	10481	49.90	10.70	0.00	0.00
10/22/2013	10544	57.40	5.40	0.00	0.00
10/22/2013	10608	64.70	3.00	0.00	0.00
10/22/2013	10671	73.30	2.30	0.00	0.00
10/22/2013	10703	75.90	2.40	0.00	0.00
10/22/2013	10734	77.90	2.30	0.00	0.00
10/23/2013	10798	85.00	1.60	0.00	0.00
10/23/2013	10830	86.40	0.70	0.00	0.00
10/23/2013	11019	90.40	359.50	0.00	0.00
10/23/2013	11112	88.40	359.30	0.00	0.00
10/23/2013	11206	88.50	358.90	0.00	0.00
10/24/2013	11396	88.10	358.60	0.00	0.00
10/24/2013	11491	88.10	357.70	0.00	0.00
10/24/2013	11586	89.20	358.60	0.00	0.00
10/24/2013	11776	89.90	359.80	10573.00	1415.99
10/24/2013	12063	90.50	359.10	10571.00	1702.30
10/24/2013	12251	90.40	359.80	0.00	0.00
10/24/2013	12440	89.00	1.00	0.00	0.00
10/24/2013	12630	89.90	1.70	0.00	0.00
10/25/2013	12725	89.40	1.20	0.00	0.00
10/25/2013	12820	90.50	1.70	0.00	0.00
10/25/2013	12915	90.50	1.70	0.00	0.00
10/25/2013	13010	90.40	1.70	0.00	0.00
10/25/2013	13104	90.50	1.40	0.00	0.00

Date	Depth	Deviation	Direction	TVD	Horiz Disp
10/25/2013	13294	89.20	0.70	10573.31	2933.02
10/25/2013	13484	90.20	1.00	10573.37	3123.43
10/25/2013	13579	90.10	0.90	10573.12	3218.40
10/25/2013	13674	90.10	1.20	10572.95	3313.38
10/25/2013	13864	89.30	0.50	0.00	0.00
10/25/2013	14054	89.60	1.20	0.00	0.00
10/25/2013	14149	89.70	1.40	0.00	0.00
10/26/2013	14244	90.80	1.40	0.00	0.00
10/26/2013	14339	91.80	1.40	0.00	0.00
10/26/2013	14434	90.30	1.10	0.00	0.00
10/26/2013	14529	90.50	0.30	0.00	0.00
10/26/2013	14529	89.00	359.60	10570.00	4453.00
10/26/2013	14624	91.00	359.80	0.00	0.00
10/26/2013	14719	90.20	359.80	10569.00	4358.02
10/26/2013	14909	88.10	0.30	10572.00	4547.00



A GYRO TECHNOLOGIES INC. COMPANY

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

October 17, 2013

Concho Resources, Inc.
One Concho Center
600 W. Illinois Avenue
Midland, Texas 79701

HOBBS OCD

JAN 13 2014

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Attn: Kanicia Castillo

RE: **Azores Federal No.003H**

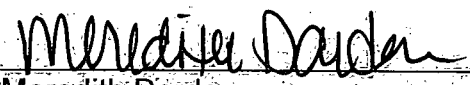
Please find enclosed a copy of the survey from 0.00' to 10500.00' ran on the above referenced well.

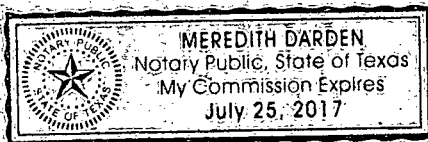
Sincerely,


Keith Havelka
Operations

STATE OF TEXAS §
COUNTY OF NUECES §

This instrument was acknowledged before me on the 17 day of October, A.D. 2013, by Keith Havelka.


Meredith Darden
Notary Public, State of Texas



Company: COG Operating, LLC
Lease/Well: Azores Federal/No. 003H



Rig Name: Silver Oak 12
State/County: New Mexico/Lea
Latitude: 32.19, Longitude: -103.70
GRID North is 0.34 Degrees East of True North
VS-Azi: 0.00 Degrees



Depth Reference : RKB = 18 ft

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: azores fed #3h gyro survey.ut

Minimum Curvature Method

Report Date/Time: 10/17/2013 / 09:45

Vaughn Energy Services

Midland, TX

432-563-5444

Surveyor: Stephen Allen

Azores Federal No.003H / API 30-025-41158

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JAN 13 2014

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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	0.26	207.34	100.00	-0.20	-0.10	-0.20	0.22	207.34	0.26
200.00	0.15	287.64	200.00	-0.36	-0.33	-0.36	0.48	222.40	0.27
300.00	0.84	321.38	300.00	0.25	-0.90	0.25	0.94	285.58	0.72
400.00	0.99	328.99	399.98	1.56	-1.80	1.56	2.39	310.92	0.20
500.00	1.14	338.19	499.97	3.23	-2.62	3.23	4.15	320.94	0.22
600.00	1.27	339.33	599.94	5.18	-3.38	5.18	6.18	326.90	0.13
700.00	1.40	336.70	699.92	7.33	-4.25	7.33	8.47	329.91	0.14
800.00	1.71	345.67	799.88	9.89	-5.10	9.89	11.13	332.74	0.39
900.00	1.87	354.34	899.83	12.96	-5.63	12.96	14.13	336.53	0.32
1000.00	2.05	338.90	999.77	16.25	-6.43	16.25	17.48	338.41	0.56
1100.00	2.11	331.63	1099.71	19.54	-7.95	19.54	21.10	337.86	0.27
1200.00	1.81	315.60	1199.65	22.29	-9.93	22.29	24.40	335.99	0.63
1300.00	1.30	312.51	1299.61	24.19	-11.87	24.19	26.94	333.86	0.51
1400.00	1.32	308.29	1399.59	25.67	-13.62	25.67	29.06	332.05	0.10
1500.00	1.58	298.70	1499.55	27.05	-15.73	27.05	31.29	329.81	0.35
1600.00	1.60	310.03	1599.52	28.61	-18.01	28.61	33.81	327.81	0.31
1700.00	1.88	297.93	1699.47	30.28	-20.53	30.28	36.58	325.86	0.46
1800.00	1.80	311.89	1799.42	32.09	-23.15	32.09	39.58	324.19	0.46

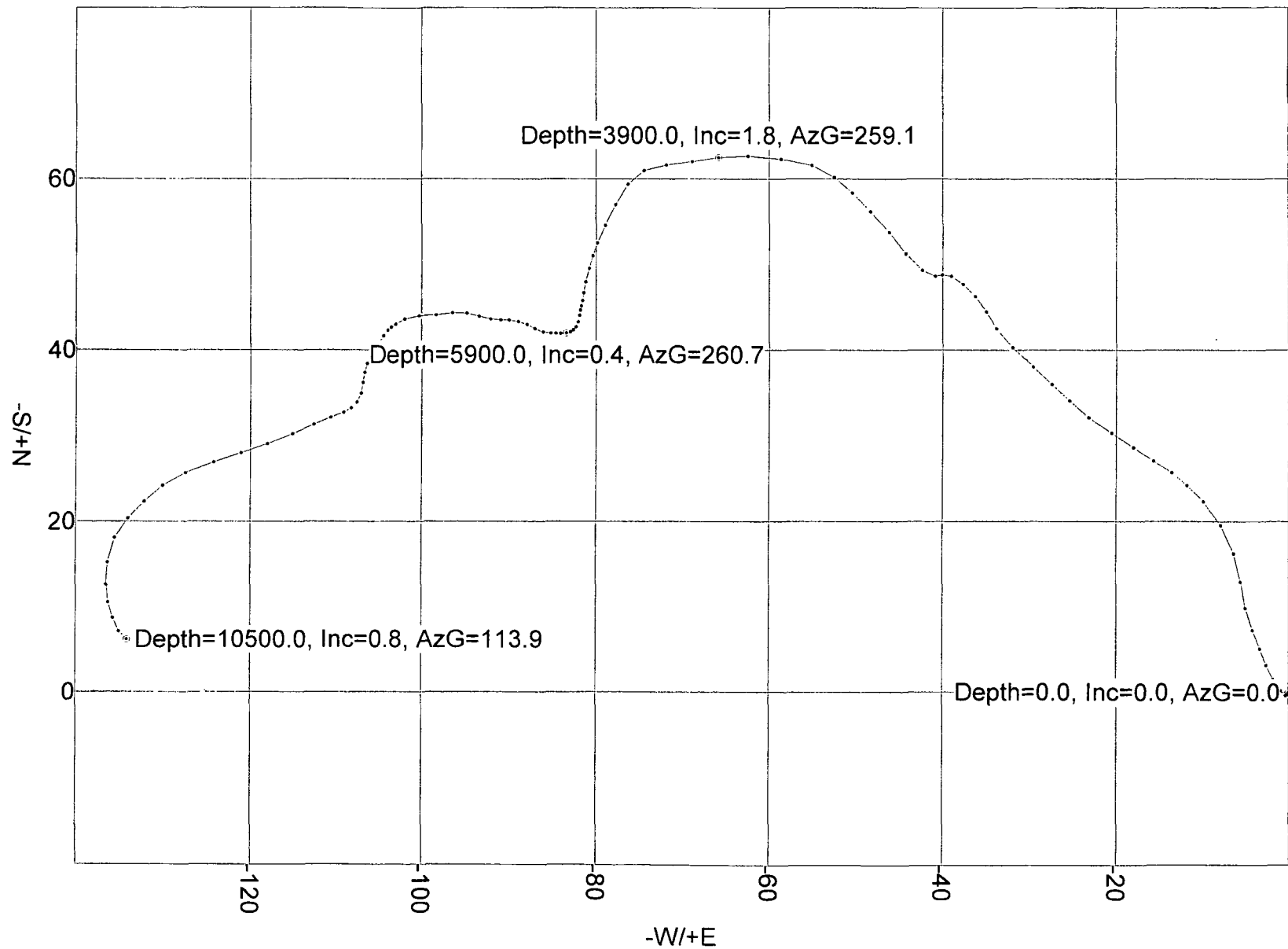
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
1900.00	1.58	312.13	1899.38	34.07	-25.34	34.07	42.46	323.35	0.23
2000.00	1.61	314.75	1999.34	35.98	-27.36	35.98	45.20	322.75	0.08
2100.00	1.83	311.85	2099.29	38.04	-29.55	38.04	48.17	322.15	0.23
2200.00	1.93	315.04	2199.24	40.30	-31.93	40.30	51.42	321.60	0.15
2300.00	1.34	327.11	2299.20	42.47	-33.76	42.47	54.25	321.52	0.69
2400.00	1.30	330.86	2399.17	44.44	-34.94	44.44	56.53	321.82	0.09
2500.00	1.25	317.51	2499.15	46.23	-36.23	46.23	58.74	321.91	0.30
2600.00	1.06	312.79	2599.13	47.66	-37.65	47.66	60.74	321.70	0.21
2700.00	0.85	296.99	2699.11	48.63	-39.00	48.63	62.34	321.28	0.34
2800.00	0.52	243.15	2799.10	48.77	-40.07	48.77	63.12	320.59	0.69
2900.00	0.45	278.66	2899.10	48.62	-40.86	48.62	63.51	319.95	0.30
3000.00	1.44	300.61	2999.09	49.32	-42.34	49.32	65.00	319.36	1.04
3100.00	1.78	326.44	3099.05	51.26	-44.28	51.26	67.74	319.18	0.79
3200.00	1.85	318.78	3199.00	53.76	-46.20	53.76	70.89	319.33	0.25
3300.00	1.89	318.64	3298.95	56.21	-48.35	56.21	74.14	319.30	0.04
3400.00	1.58	312.17	3398.90	58.37	-50.46	58.37	77.16	319.16	0.36
3500.00	1.54	310.01	3498.86	60.16	-52.51	60.16	79.85	318.88	0.07
3600.00	1.88	288.73	3598.82	61.55	-55.10	61.55	82.61	318.17	0.72
3700.00	2.26	276.71	3698.75	62.31	-58.61	62.31	85.55	316.75	0.57
3800.00	2.16	273.53	3798.68	62.66	-62.45	62.66	88.47	315.09	0.16
3900.00	1.75	259.15	3898.62	62.49	-65.83	62.49	90.77	313.51	0.63
4000.00	1.76	262.65	3998.57	62.00	-68.85	62.00	92.66	312.00	0.11
4100.00	1.71	261.50	4098.53	61.58	-71.86	61.58	94.64	310.60	0.06
4200.00	1.36	249.59	4198.49	60.95	-74.44	60.95	96.21	309.31	0.48
4300.00	1.54	213.60	4298.46	59.42	-76.30	59.42	96.71	307.91	0.91
4400.00	1.69	207.86	4398.42	56.99	-77.73	56.99	96.39	306.25	0.22
4500.00	1.44	205.83	4498.39	54.56	-78.97	54.56	95.98	304.64	0.26
4600.00	1.12	200.68	4598.36	52.51	-79.86	52.51	95.58	303.33	0.34
4700.00	0.72	196.68	4698.35	50.99	-80.39	50.99	95.20	302.39	0.40
4800.00	1.03	195.43	4798.34	49.53	-80.81	49.53	94.78	301.50	0.30
4900.00	0.84	191.88	4898.32	47.94	-81.20	47.94	94.29	300.56	0.19
5000.00	0.67	186.91	4998.31	46.64	-81.42	46.64	93.83	299.81	0.18
5100.00	0.39	190.08	5098.31	45.72	-81.55	45.72	93.49	299.28	0.29
5200.00	0.32	195.50	5198.31	45.12	-81.68	45.12	93.31	298.92	0.08
5300.00	0.25	190.17	5298.31	44.64	-81.79	44.64	93.18	298.62	0.07
5400.00	0.47	184.78	5398.30	44.02	-81.87	44.02	92.95	298.26	0.22
5500.00	0.46	200.28	5498.30	43.23	-82.04	43.23	92.73	297.79	0.13
5600.00	0.27	210.51	5598.30	42.65	-82.30	42.65	92.69	297.39	0.20
5700.00	0.24	229.75	5698.30	42.31	-82.58	42.31	92.79	297.13	0.09

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	0.21	244.52	5798.30	42.09	-82.91	42.09	92.98	296.92	0.07
5900.00	0.38	260.67	5898.30	41.96	-83.40	41.96	93.36	296.71	0.19
6000.00	0.36	270.58	5998.29	41.91	-84.03	41.91	93.90	296.51	0.07
6100.00	0.28	269.79	6098.29	41.91	-84.59	41.91	94.40	296.36	0.08
6200.00	0.37	277.45	6198.29	41.95	-85.15	41.95	94.92	296.23	0.11
6300.00	0.64	279.45	6298.29	42.09	-86.02	42.09	95.77	296.07	0.27
6400.00	0.57	304.45	6398.28	42.46	-86.98	42.46	96.79	296.02	0.27
6500.00	0.59	293.23	6498.28	42.95	-87.87	42.95	97.80	296.05	0.12
6600.00	0.62	283.53	6598.27	43.28	-88.87	43.28	98.84	295.97	0.11
6700.00	0.65	275.45	6698.26	43.46	-89.96	43.46	99.90	295.78	0.10
6800.00	0.46	265.34	6798.26	43.48	-90.93	43.48	100.79	295.56	0.21
6900.00	0.85	280.29	6898.25	43.58	-92.06	43.58	101.85	295.33	0.42
7000.00	0.72	287.40	6998.24	43.90	-93.39	43.90	103.19	295.18	0.16
7100.00	0.95	282.49	7098.23	44.27	-94.80	44.27	104.63	295.03	0.24
7200.00	0.98	260.99	7198.22	44.31	-96.46	44.31	106.15	294.67	0.36
7300.00	1.17	263.25	7298.20	44.06	-98.32	44.06	107.74	294.14	0.20
7400.00	1.08	271.09	7398.18	43.96	-100.28	43.96	109.49	293.67	0.18
7500.00	0.94	240.91	7498.17	43.58	-101.94	43.58	110.86	293.15	0.54
7600.00	0.42	238.83	7598.16	42.99	-102.97	42.99	111.58	292.66	0.52
7700.00	0.30	229.34	7698.16	42.62	-103.49	42.62	111.92	292.39	0.14
7800.00	0.37	232.77	7798.16	42.26	-103.94	42.26	112.20	292.12	0.08
7900.00	0.59	212.58	7898.15	41.62	-104.48	41.62	112.47	291.72	0.28
8000.00	0.70	213.38	7998.15	40.67	-105.10	40.67	112.69	291.16	0.11
8100.00	0.88	213.15	8098.14	39.52	-105.85	39.52	112.99	290.47	0.18
8200.00	0.58	198.10	8198.13	38.40	-106.43	38.40	113.15	289.84	0.36
8300.00	0.64	194.10	8298.12	37.39	-106.72	37.39	113.08	289.31	0.07
8400.00	0.77	185.31	8398.12	36.18	-106.92	36.18	112.87	288.70	0.17
8500.00	0.68	191.41	8498.11	34.94	-107.10	34.94	112.65	288.07	0.12
8600.00	0.68	218.89	8598.10	33.90	-107.59	33.90	112.80	287.49	0.32
8700.00	0.46	232.03	8698.10	33.19	-108.27	33.19	113.25	287.04	0.26
8800.00	0.74	246.24	8798.09	32.69	-109.17	32.69	113.96	286.67	0.32
8900.00	1.11	250.21	8898.08	32.10	-110.68	32.10	115.24	286.17	0.38
9000.00	1.30	245.53	8998.05	31.30	-112.63	31.30	116.90	285.53	0.21
9100.00	1.78	246.06	9098.02	30.20	-115.08	30.20	118.98	284.70	0.48
9200.00	1.87	250.24	9197.97	29.02	-118.03	29.02	121.55	283.81	0.16
9300.00	1.82	252.06	9297.92	27.98	-121.08	27.98	124.27	283.01	0.07
9400.00	2.02	250.39	9397.86	26.90	-124.25	26.90	127.13	282.21	0.20
9500.00	1.95	246.77	9497.80	25.64	-127.46	25.64	130.02	281.37	0.14
9600.00	1.52	232.10	9597.75	24.15	-130.07	24.15	132.30	280.52	0.61

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	1.67	225.52	9697.72	22.32	-132.16	22.32	134.03	279.58	0.23
9800.00	1.44	221.88	9797.68	20.36	-134.03	20.36	135.57	278.64	0.25
9900.00	1.68	206.88	9897.64	18.13	-135.53	18.13	136.74	277.62	0.47
10000.00	1.81	185.52	9997.60	15.25	-136.34	15.25	137.19	276.38	0.66
10100.00	1.21	180.24	10097.56	12.63	-136.50	12.63	137.08	275.28	0.61
10200.00	1.16	168.68	10197.54	10.58	-136.31	10.58	136.71	274.44	0.24
10300.00	1.08	157.19	10297.52	8.71	-135.74	8.71	136.02	273.67	0.24
10400.00	0.85	155.56	10397.51	7.16	-135.06	7.16	135.25	273.04	0.23
10500.00	0.78	113.88	10497.50	6.21	-134.14	6.21	134.28	272.65	0.58



Vaughn Energy Services
Midland, TX
432-563-5444
Surveyor: Stephen Allen
Azores Federal No.003H / API 30-025-41158



VES Survey Date: 10/13/2013



COG Operating LLC

Lea County, NM (NAD27 NME)

Azores Fed Com

3H

OH

Design: OH

Survey Report - Geographic

28 October, 2013

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NEXUS
DIRECTIONAL SOLUTIONS, L.P.



Nexus Directional Solutions L.P.
Survey Report - Geographic



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 3H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	WELL @ 3511.8usft (Original Well Elev)
Site:	Azores Fed Com	MD Reference:	WELL @ 3511.8usft (Original Well Elev)
Well:	3H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Project	Lea County, NM (NAD27 NME)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	Azores Fed Com		
Site Position:	Map	Northings:	430,351.90 usft
From:		Easting:	696,455.20 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 10' 53.618 N
		Longitude:	103° 41' 54.050 W
		Grid Convergence:	0.34 °

Well	3H		
Well Position	+N/-S	0.0 usft	Northings:
	+E/-W	0.0 usft	Easting:
Position Uncertainty	0.0 usft	Wellhead Elevation:	3,511.8 usft
		Latitude:	32° 10' 53.618 N
		Longitude:	103° 41' 54.050 W
		Ground Level:	3,493.8 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination
	IGRF2010	09/20/13	(°)
			7.36
			Dip Angle
			(°)
			60.07
			Field Strength
			(nT)
			48,350

Design	OH		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.0	0.0	0.0
			Direction
			(°)
			272.65

Survey Program	Date 10/28/13		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
100.0	9,900.0	Gyro Survey (OH)	MWD
10,100.0	15,098.0	Survey #6 (OH)	MWD
			Description
			MWD - Standard
			MWD - Standard

Survey									
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Map	Map	Latitude	Longitude
Depth	(°)	(°)	Depth	(usft)	(usft)	Northings	Easting		
(usft)			(usft)			(usft)	(usft)		
0.0	0.00	0.00	0.0	0.0	0.0	430,351.90	696,455.20	32° 10' 53.618 N	103° 41' 54.050 W
100.0	0.26	207.34	100.0	-0.2	-0.1	430,351.70	696,455.09	32° 10' 53.616 N	103° 41' 54.051 W
200.0	0.15	287.64	200.0	-0.4	-0.3	430,351.54	696,454.86	32° 10' 53.614 N	103° 41' 54.054 W
300.0	0.84	321.38	300.0	0.2	-0.9	430,352.15	696,454.28	32° 10' 53.620 N	103° 41' 54.061 W
400.0	0.99	328.99	400.0	1.6	-1.8	430,353.46	696,453.38	32° 10' 53.633 N	103° 41' 54.071 W
500.0	1.14	338.19	500.0	3.2	-2.6	430,355.13	696,452.56	32° 10' 53.650 N	103° 41' 54.081 W
600.0	1.27	339.33	599.9	5.2	-3.4	430,357.09	696,451.80	32° 10' 53.669 N	103° 41' 54.089 W
700.0	1.40	336.70	699.9	7.3	-4.3	430,359.24	696,450.93	32° 10' 53.691 N	103° 41' 54.099 W
800.0	1.71	345.67	799.9	9.9	-5.1	430,361.81	696,450.08	32° 10' 53.716 N	103° 41' 54.109 W
900.0	1.87	354.34	899.8	13.0	-5.7	430,364.88	696,449.55	32° 10' 53.747 N	103° 41' 54.115 W
1,000.0	2.05	338.90	999.8	16.3	-6.5	430,368.17	696,448.74	32° 10' 53.779 N	103° 41' 54.124 W



Nexus Directional Solutions L.P.

Survey Report - Geographic



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 3H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	WELL @ 3511.8usft (Original Well Elev)
Site:	Azores Fed Com	MD Reference:	WELL @ 3511.8usft (Original Well Elev)
Well:	3H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
1,100.0	2.11	331.63	1,099.7	19.6	-8.0	430,371.46	696,447.22	32° 10' 53.812 N	103° 41' 54.142 W	
1,200.0	1.81	315.60	1,199.6	22.3	-10.0	430,374.21	696,445.24	32° 10' 53.839 N	103° 41' 54.164 W	
1,300.0	1.30	312.51	1,299.6	24.2	-11.9	430,376.11	696,443.30	32° 10' 53.858 N	103° 41' 54.187 W	
1,400.0	1.32	308.29	1,399.6	25.7	-13.6	430,377.59	696,441.56	32° 10' 53.873 N	103° 41' 54.207 W	
1,500.0	1.58	298.70	1,499.6	27.1	-15.7	430,378.96	696,439.45	32° 10' 53.886 N	103° 41' 54.232 W	
1,600.0	1.60	310.03	1,599.5	28.6	-18.0	430,380.52	696,437.17	32° 10' 53.902 N	103° 41' 54.258 W	
1,700.0	1.88	297.93	1,699.5	30.3	-20.5	430,382.19	696,434.65	32° 10' 53.919 N	103° 41' 54.287 W	
1,800.0	1.80	311.89	1,799.4	32.1	-23.2	430,384.00	696,432.03	32° 10' 53.937 N	103° 41' 54.317 W	
1,900.0	1.58	312.13	1,899.4	34.1	-25.4	430,385.98	696,429.84	32° 10' 53.956 N	103° 41' 54.343 W	
2,000.0	1.61	314.75	1,999.3	36.0	-27.4	430,387.89	696,427.82	32° 10' 53.975 N	103° 41' 54.366 W	
2,100.0	1.83	311.85	2,099.3	38.0	-29.6	430,389.95	696,425.63	32° 10' 53.996 N	103° 41' 54.392 W	
2,200.0	1.93	315.04	2,199.2	40.3	-31.9	430,392.20	696,423.25	32° 10' 54.018 N	103° 41' 54.419 W	
2,300.0	1.34	327.11	2,299.2	42.5	-33.8	430,394.38	696,421.43	32° 10' 54.040 N	103° 41' 54.440 W	
2,400.0	1.30	330.86	2,399.2	44.4	-35.0	430,396.35	696,420.24	32° 10' 54.060 N	103° 41' 54.454 W	
2,500.0	1.25	317.51	2,499.1	46.2	-36.2	430,398.14	696,418.95	32° 10' 54.077 N	103° 41' 54.469 W	
2,600.0	1.06	312.79	2,599.1	47.7	-37.7	430,399.58	696,417.54	32° 10' 54.092 N	103° 41' 54.485 W	
2,700.0	0.85	296.99	2,699.1	48.6	-39.0	430,400.54	696,416.20	32° 10' 54.101 N	103° 41' 54.501 W	
2,800.0	0.52	243.15	2,799.1	48.8	-40.1	430,400.67	696,415.13	32° 10' 54.103 N	103° 41' 54.513 W	
2,900.0	0.45	278.66	2,899.1	48.6	-40.9	430,400.53	696,414.34	32° 10' 54.101 N	103° 41' 54.522 W	
3,000.0	1.44	300.61	2,999.1	49.3	-42.3	430,401.23	696,412.87	32° 10' 54.108 N	103° 41' 54.539 W	
3,100.0	1.78	326.44	3,099.0	51.3	-44.3	430,403.16	696,410.93	32° 10' 54.128 N	103° 41' 54.562 W	
3,200.0	1.85	318.78	3,199.0	53.8	-46.2	430,405.67	696,409.01	32° 10' 54.152 N	103° 41' 54.584 W	
3,300.0	1.89	318.64	3,298.9	56.2	-48.3	430,408.12	696,406.85	32° 10' 54.177 N	103° 41' 54.609 W	
3,400.0	1.58	312.17	3,398.9	58.4	-50.5	430,410.28	696,404.74	32° 10' 54.198 N	103° 41' 54.633 W	
3,500.0	1.54	310.01	3,498.9	60.2	-52.5	430,412.07	696,402.69	32° 10' 54.216 N	103° 41' 54.657 W	
3,600.0	1.88	288.73	3,598.8	61.6	-55.1	430,413.46	696,400.11	32° 10' 54.230 N	103° 41' 54.687 W	
3,700.0	2.26	276.71	3,698.8	62.3	-58.6	430,414.22	696,396.60	32° 10' 54.238 N	103° 41' 54.728 W	
3,800.0	2.16	273.53	3,798.7	62.7	-62.4	430,414.57	696,392.76	32° 10' 54.242 N	103° 41' 54.772 W	
3,900.0	1.75	259.15	3,898.6	62.5	-65.8	430,414.40	696,389.38	32° 10' 54.240 N	103° 41' 54.812 W	
4,000.0	1.76	262.65	3,998.6	62.0	-68.8	430,413.91	696,386.35	32° 10' 54.235 N	103° 41' 54.847 W	
4,100.0	1.71	261.50	4,098.5	61.6	-71.8	430,413.50	696,383.36	32° 10' 54.231 N	103° 41' 54.882 W	
4,200.0	1.36	249.59	4,198.5	61.0	-74.4	430,412.86	696,380.77	32° 10' 54.225 N	103° 41' 54.912 W	
4,300.0	1.54	213.60	4,298.5	59.4	-76.3	430,411.33	696,378.91	32° 10' 54.210 N	103° 41' 54.934 W	
4,400.0	1.69	207.86	4,398.4	57.0	-77.7	430,408.91	696,377.48	32° 10' 54.186 N	103° 41' 54.950 W	
4,500.0	1.44	205.83	4,498.4	54.6	-79.0	430,406.47	696,376.24	32° 10' 54.162 N	103° 41' 54.965 W	
4,600.0	1.12	200.68	4,598.4	52.5	-79.8	430,404.43	696,375.35	32° 10' 54.142 N	103° 41' 54.976 W	
4,700.0	0.72	196.68	4,698.3	51.0	-80.4	430,402.91	696,374.82	32° 10' 54.127 N	103° 41' 54.982 W	
4,800.0	1.03	195.43	4,798.3	49.5	-80.8	430,401.44	696,374.41	32° 10' 54.113 N	103° 41' 54.987 W	
4,900.0	0.84	191.88	4,898.3	48.0	-81.2	430,399.86	696,374.02	32° 10' 54.097 N	103° 41' 54.991 W	
5,000.0	0.67	186.91	4,998.3	46.7	-81.4	430,398.56	696,373.79	32° 10' 54.084 N	103° 41' 54.994 W	
5,100.0	0.39	190.08	5,098.3	45.7	-81.5	430,397.64	696,373.66	32° 10' 54.075 N	103° 41' 54.996 W	
5,200.0	0.32	195.50	5,198.3	45.1	-81.7	430,397.04	696,373.53	32° 10' 54.069 N	103° 41' 54.997 W	
5,300.0	0.25	190.17	5,298.3	44.7	-81.8	430,396.56	696,373.42	32° 10' 54.064 N	103° 41' 54.999 W	
5,400.0	0.47	184.78	5,398.3	44.0	-81.9	430,395.93	696,373.34	32° 10' 54.058 N	103° 41' 55.000 W	
5,500.0	0.46	200.28	5,498.3	43.2	-82.0	430,395.15	696,373.17	32° 10' 54.050 N	103° 41' 55.002 W	
5,600.0	0.27	210.51	5,598.3	42.7	-82.3	430,394.57	696,372.91	32° 10' 54.045 N	103° 41' 55.005 W	
5,700.0	0.24	229.75	5,698.3	42.3	-82.6	430,394.23	696,372.63	32° 10' 54.041 N	103° 41' 55.008 W	
5,800.0	0.21	244.52	5,798.3	42.1	-82.9	430,394.02	696,372.31	32° 10' 54.039 N	103° 41' 55.012 W	
5,900.0	0.38	260.67	5,898.3	42.0	-83.4	430,393.88	696,371.81	32° 10' 54.038 N	103° 41' 55.017 W	
6,000.0	0.36	270.58	5,998.3	41.9	-84.0	430,393.83	696,371.17	32° 10' 54.038 N	103° 41' 55.025 W	
6,100.0	0.28	269.79	6,098.3	41.9	-84.6	430,393.83	696,370.61	32° 10' 54.038 N	103° 41' 55.031 W	
6,200.0	0.37	277.45	6,198.3	42.0	-85.1	430,393.88	696,370.05	32° 10' 54.038 N	103° 41' 55.038 W	
6,300.0	0.64	279.45	6,298.3	42.1	-86.0	430,394.01	696,369.18	32° 10' 54.039 N	103° 41' 55.048 W	
6,400.0	0.57	304.45	6,398.3	42.5	-87.0	430,394.38	696,368.22	32° 10' 54.043 N	103° 41' 55.059 W	
6,500.0	0.59	293.23	6,498.3	43.0	-87.9	430,394.87	696,367.33	32° 10' 54.048 N	103° 41' 55.070 W	



Nexus Directional Solutions L.P.
Survey Report - Geographic



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 3H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	WELL @ 3511.8usft (Original Well Elev)
Site:	Azores Fed Com	MD Reference:	WELL @ 3511.8usft (Original Well Elev)
Well:	3H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
6,600.0	0.62	283.53	6,598.3	43.3	-88.9	430,395.20	696,366.34	32° 10' 54.051 N	103° 41' 55.081 W
6,700.0	0.65	275.45	6,698.3	43.5	-90.0	430,395.38	696,365.24	32° 10' 54.053 N	103° 41' 55.094 W
6,800.0	0.46	265.34	6,798.3	43.5	-90.9	430,395.40	696,364.28	32° 10' 54.053 N	103° 41' 55.105 W
6,900.0	0.85	280.29	6,898.3	43.6	-92.0	430,395.50	696,363.15	32° 10' 54.055 N	103° 41' 55.118 W
7,000.0	0.72	287.40	6,998.2	43.9	-93.4	430,395.82	696,361.82	32° 10' 54.058 N	103° 41' 55.134 W
7,100.0	0.95	282.49	7,098.2	44.3	-94.8	430,396.19	696,360.41	32° 10' 54.061 N	103° 41' 55.150 W
7,200.0	0.98	260.99	7,198.2	44.3	-96.4	430,396.23	696,358.76	32° 10' 54.062 N	103° 41' 55.169 W
7,300.0	1.17	263.25	7,298.2	44.1	-98.3	430,395.98	696,356.90	32° 10' 54.060 N	103° 41' 55.191 W
7,400.0	1.08	271.09	7,398.2	44.0	-100.3	430,395.87	696,354.94	32° 10' 54.059 N	103° 41' 55.214 W
7,500.0	0.94	240.91	7,498.2	43.6	-101.9	430,395.49	696,353.28	32° 10' 54.055 N	103° 41' 55.233 W
7,600.0	0.42	238.83	7,598.2	43.0	-102.9	430,394.91	696,352.25	32° 10' 54.049 N	103° 41' 55.245 W
7,700.0	0.30	229.34	7,698.2	42.6	-103.5	430,394.54	696,351.74	32° 10' 54.046 N	103° 41' 55.251 W
7,800.0	0.37	232.77	7,798.2	42.3	-103.9	430,394.18	696,351.29	32° 10' 54.042 N	103° 41' 55.256 W
7,900.0	0.59	212.58	7,898.2	41.7	-104.4	430,393.55	696,350.75	32° 10' 54.036 N	103° 41' 55.263 W
8,000.0	0.70	213.38	7,998.1	40.7	-105.1	430,392.61	696,350.14	32° 10' 54.027 N	103° 41' 55.270 W
8,100.0	0.88	213.15	8,098.1	39.6	-105.8	430,391.45	696,349.38	32° 10' 54.015 N	103° 41' 55.279 W
8,200.0	0.58	198.10	8,198.1	38.4	-106.4	430,390.33	696,348.81	32° 10' 54.004 N	103° 41' 55.285 W
8,300.0	0.64	194.10	8,298.1	37.4	-106.7	430,389.31	696,348.51	32° 10' 53.994 N	103° 41' 55.289 W
8,400.0	0.77	185.31	8,398.1	36.2	-106.9	430,388.10	696,348.31	32° 10' 53.982 N	103° 41' 55.291 W
8,500.0	0.68	191.41	8,498.1	34.9	-107.1	430,386.84	696,348.13	32° 10' 53.970 N	103° 41' 55.293 W
8,600.0	0.68	218.89	8,598.1	33.9	-107.6	430,385.80	696,347.64	32° 10' 53.959 N	103° 41' 55.299 W
8,700.0	0.46	232.03	8,698.1	33.2	-108.2	430,385.09	696,346.95	32° 10' 53.952 N	103° 41' 55.307 W
8,800.0	0.74	246.24	8,798.1	32.7	-109.1	430,384.59	696,346.05	32° 10' 53.948 N	103° 41' 55.318 W
8,900.0	1.11	250.21	8,898.1	32.1	-110.7	430,384.00	696,344.55	32° 10' 53.942 N	103° 41' 55.335 W
9,000.0	1.30	245.53	8,998.1	31.3	-112.6	430,383.20	696,342.60	32° 10' 53.934 N	103° 41' 55.358 W
9,100.0	1.78	246.06	9,098.0	30.2	-115.0	430,382.10	696,340.15	32° 10' 53.923 N	103° 41' 55.387 W
9,200.0	1.87	250.24	9,198.0	29.0	-118.0	430,380.92	696,337.19	32° 10' 53.912 N	103° 41' 55.421 W
9,300.0	1.82	252.06	9,297.9	28.0	-121.0	430,379.88	696,334.15	32° 10' 53.902 N	103° 41' 55.457 W
9,400.0	2.02	250.39	9,397.9	26.9	-124.2	430,378.80	696,330.98	32° 10' 53.891 N	103° 41' 55.494 W
9,500.0	1.95	246.77	9,497.8	25.6	-127.4	430,377.53	696,327.75	32° 10' 53.879 N	103° 41' 55.531 W
9,600.0	1.52	232.10	9,597.8	24.1	-130.1	430,376.05	696,325.14	32° 10' 53.864 N	103° 41' 55.562 W
9,700.0	1.67	225.52	9,697.7	22.3	-132.1	430,374.21	696,323.06	32° 10' 53.846 N	103° 41' 55.586 W
9,800.0	1.44	221.88	9,797.7	20.4	-134.0	430,372.26	696,321.18	32° 10' 53.827 N	103° 41' 55.608 W
9,900.0	1.68	206.88	9,897.6	18.1	-135.5	430,370.01	696,319.68	32° 10' 53.805 N	103° 41' 55.626 W
10,100.0	1.10	169.10	10,097.6	13.6	-136.5	430,365.51	696,318.71	32° 10' 53.760 N	103° 41' 55.637 W
10,133.0	0.60	143.80	10,130.6	13.2	-136.3	430,365.06	696,318.88	32° 10' 53.756 N	103° 41' 55.635 W
10,164.0	2.80	34.40	10,161.6	13.7	-135.8	430,365.56	696,319.40	32° 10' 53.761 N	103° 41' 55.629 W
10,196.0	7.30	25.80	10,193.4	16.1	-134.5	430,368.03	696,320.73	32° 10' 53.785 N	103° 41' 55.614 W
10,228.0	13.20	14.60	10,224.9	21.5	-132.7	430,373.40	696,322.53	32° 10' 53.838 N	103° 41' 55.592 W
10,259.0	18.90	15.30	10,254.7	29.8	-130.4	430,381.68	696,324.75	32° 10' 53.920 N	103° 41' 55.566 W
10,291.0	22.70	14.80	10,284.6	40.8	-127.5	430,392.65	696,327.70	32° 10' 54.028 N	103° 41' 55.531 W
10,323.0	26.30	16.30	10,313.7	53.5	-123.9	430,405.43	696,331.27	32° 10' 54.155 N	103° 41' 55.488 W
10,354.0	31.10	15.10	10,340.9	67.9	-119.9	430,419.76	696,335.28	32° 10' 54.296 N	103° 41' 55.441 W
10,386.0	36.40	14.20	10,367.5	85.1	-115.4	430,436.95	696,339.77	32° 10' 54.466 N	103° 41' 55.387 W
10,418.0	41.90	13.90	10,392.3	104.6	-110.5	430,456.55	696,344.67	32° 10' 54.660 N	103° 41' 55.329 W
10,449.0	46.60	12.30	10,414.5	125.7	-105.6	430,477.61	696,349.56	32° 10' 54.868 N	103° 41' 55.271 W
10,481.0	49.90	10.70	10,435.8	149.1	-100.9	430,501.00	696,354.31	32° 10' 55.099 N	103° 41' 55.214 W
10,513.0	53.50	8.10	10,455.6	173.9	-96.8	430,525.77	696,358.39	32° 10' 55.344 N	103° 41' 55.165 W
10,544.0	57.40	5.40	10,473.2	199.2	-93.8	430,551.12	696,361.38	32° 10' 55.595 N	103° 41' 55.128 W
10,576.0	61.30	3.50	10,489.5	226.7	-91.7	430,578.56	696,363.51	32° 10' 55.866 N	103° 41' 55.101 W
10,608.0	64.70	3.00	10,504.1	255.1	-90.1	430,607.02	696,365.12	32° 10' 56.148 N	103° 41' 55.081 W
10,639.0	68.90	2.40	10,516.3	283.6	-88.7	430,635.48	696,366.46	32° 10' 56.429 N	103° 41' 55.063 W
10,671.0	73.30	2.30	10,526.6	313.8	-87.5	430,665.72	696,367.70	32° 10' 56.728 N	103° 41' 55.047 W
10,703.0	75.90	2.40	10,535.1	344.6	-86.2	430,696.54	696,368.97	32° 10' 57.033 N	103° 41' 55.030 W
10,734.0	77.90	2.30	10,542.2	374.8	-85.0	430,726.71	696,370.20	32° 10' 57.332 N	103° 41' 55.013 W



Nexus Directional Solutions L.P.

Survey Report - Geographic



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 3H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	WELL @ 3511.8usft (Original Well Elev)
Site:	Azores Fed Com	MD Reference:	WELL @ 3511.8usft (Original Well Elev)
Well:	3H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Datbase:	EDM 5000.1 Single User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
10,766.0	81.40	1.90	10,547.9	406.3	-83.8	430,758.16	696,371.36	32° 10' 57.643 N	103° 41' 54.998 W
10,798.0	85.00	1.60	10,551.7	438.0	-82.9	430,789.92	696,372.33	32° 10' 57.957 N	103° 41' 54.984 W
10,830.0	86.40	0.70	10,554.1	469.9	-82.2	430,821.82	696,372.97	32° 10' 58.273 N	103° 41' 54.975 W
10,892.0	90.40	0.30	10,555.8	531.9	-81.7	430,883.78	696,373.51	32° 10' 58.886 N	103° 41' 54.964 W
10,924.0	90.30	359.80	10,555.6	563.9	-81.7	430,915.78	696,373.53	32° 10' 59.203 N	103° 41' 54.962 W
11,019.0	90.40	359.50	10,555.0	658.9	-82.2	431,010.78	696,372.95	32° 11' 0.143 N	103° 41' 54.962 W
11,112.0	88.40	359.30	10,556.0	751.9	-83.2	431,103.76	696,371.98	32° 11' 1.063 N	103° 41' 54.967 W
11,206.0	88.50	358.90	10,558.6	845.8	-84.7	431,197.72	696,370.50	32° 11' 1.993 N	103° 41' 54.977 W
11,301.0	88.10	358.20	10,561.4	940.7	-87.1	431,292.64	696,368.10	32° 11' 2.932 N	103° 41' 54.999 W
11,396.0	88.10	358.60	10,564.5	1,035.7	-89.7	431,387.55	696,365.45	32° 11' 3.872 N	103° 41' 55.023 W
11,491.0	88.10	357.70	10,567.7	1,130.6	-92.8	431,482.45	696,362.39	32° 11' 4.811 N	103° 41' 55.052 W
11,586.0	88.20	358.60	10,570.7	1,225.5	-95.9	431,577.35	696,359.32	32° 11' 5.750 N	103° 41' 55.082 W
11,681.0	89.10	0.00	10,573.0	1,320.4	-97.0	431,672.31	696,358.16	32° 11' 6.690 N	103° 41' 55.089 W
11,776.0	89.90	359.80	10,573.8	1,415.4	-97.2	431,767.31	696,357.99	32° 11' 7.630 N	103° 41' 55.084 W
11,871.0	90.40	359.60	10,573.6	1,510.4	-97.7	431,862.31	696,357.50	32° 11' 8.570 N	103° 41' 55.083 W
11,966.0	90.60	359.50	10,572.7	1,605.4	-98.4	431,957.30	696,356.75	32° 11' 9.510 N	103° 41' 55.085 W
12,061.0	90.50	359.10	10,571.8	1,700.4	-99.6	432,052.29	696,355.59	32° 11' 10.450 N	103° 41' 55.092 W
12,156.0	90.80	359.10	10,570.7	1,795.4	-101.1	432,147.27	696,354.10	32° 11' 11.390 N	103° 41' 55.103 W
12,251.0	90.40	359.80	10,569.8	1,890.4	-102.0	432,242.26	696,353.19	32° 11' 12.330 N	103° 41' 55.107 W
12,345.0	89.30	359.80	10,570.0	1,984.4	-102.3	432,336.26	696,352.86	32° 11' 13.261 N	103° 41' 55.105 W
12,440.0	89.00	1.00	10,571.4	2,079.3	-101.7	432,431.24	696,353.52	32° 11' 14.200 N	103° 41' 55.090 W
12,535.0	89.30	1.40	10,572.8	2,174.3	-99.7	432,526.21	696,355.51	32° 11' 15.140 N	103° 41' 55.061 W
12,630.0	89.90	1.70	10,573.5	2,269.3	-97.1	432,621.17	696,358.08	32° 11' 16.080 N	103° 41' 55.024 W
12,725.0	89.40	1.20	10,574.1	2,364.2	-94.7	432,716.14	696,360.48	32° 11' 17.019 N	103° 41' 54.990 W
12,820.0	90.50	1.70	10,574.1	2,459.2	-92.3	432,811.11	696,362.89	32° 11' 17.959 N	103° 41' 54.955 W
12,915.0	90.50	1.70	10,573.3	2,554.2	-89.5	432,906.06	696,365.71	32° 11' 18.899 N	103° 41' 54.916 W
13,010.0	90.40	1.70	10,572.6	2,649.1	-86.7	433,001.02	696,368.52	32° 11' 19.838 N	103° 41' 54.877 W
13,104.0	90.50	1.40	10,571.8	2,743.1	-84.1	433,094.98	696,371.07	32° 11' 20.768 N	103° 41' 54.841 W
13,199.0	90.20	1.40	10,571.3	2,838.1	-81.8	433,189.95	696,373.39	32° 11' 21.707 N	103° 41' 54.807 W
13,294.0	89.20	0.70	10,571.7	2,933.0	-80.1	433,284.93	696,375.13	32° 11' 22.647 N	103° 41' 54.780 W
13,389.0	89.30	0.70	10,573.0	3,028.0	-78.9	433,379.92	696,376.29	32° 11' 23.587 N	103° 41' 54.760 W
13,484.0	90.20	1.00	10,573.4	3,123.0	-77.5	433,474.90	696,377.70	32° 11' 24.527 N	103° 41' 54.737 W
13,579.0	90.10	0.90	10,573.2	3,218.0	-75.9	433,569.89	696,379.27	32° 11' 25.467 N	103° 41' 54.713 W
13,674.0	90.10	1.00	10,573.0	3,313.0	-74.3	433,664.88	696,380.85	32° 11' 26.407 N	103° 41' 54.688 W
13,769.0	89.90	0.30	10,573.0	3,408.0	-73.3	433,759.87	696,381.93	32° 11' 27.347 N	103° 41' 54.669 W
13,864.0	89.30	0.50	10,573.7	3,503.0	-72.6	433,854.87	696,382.59	32° 11' 28.287 N	103° 41' 54.654 W
13,959.0	89.00	1.20	10,575.1	3,597.9	-71.2	433,949.84	696,384.00	32° 11' 29.227 N	103° 41' 54.631 W
14,054.0	89.60	1.20	10,576.2	3,692.9	-69.2	434,044.82	696,385.99	32° 11' 30.166 N	103° 41' 54.602 W
14,149.0	89.70	1.40	10,576.8	3,787.9	-67.1	434,139.79	696,388.14	32° 11' 31.106 N	103° 41' 54.570 W
14,244.0	90.80	1.40	10,576.4	3,882.9	-64.7	434,234.76	696,390.46	32° 11' 32.046 N	103° 41' 54.537 W
14,339.0	91.80	1.40	10,574.2	3,977.8	-62.4	434,329.70	696,392.79	32° 11' 32.985 N	103° 41' 54.503 W
14,434.0	90.30	1.10	10,572.5	4,072.8	-60.3	434,424.66	696,394.86	32° 11' 33.925 N	103° 41' 54.472 W
14,529.0	90.50	0.30	10,571.8	4,167.8	-59.2	434,519.65	696,396.02	32° 11' 34.865 N	103° 41' 54.452 W
14,624.0	91.00	359.80	10,570.6	4,262.7	-59.1	434,614.64	696,396.10	32° 11' 35.805 N	103° 41' 54.445 W
14,719.0	90.20	359.80	10,569.6	4,357.7	-59.4	434,709.64	696,395.77	32° 11' 36.745 N	103° 41' 54.442 W
14,814.0	89.00	359.60	10,570.3	4,452.7	-59.9	434,804.63	696,395.27	32° 11' 37.685 N	103° 41' 54.442 W
14,909.0	88.10	0.30	10,572.7	4,547.7	-60.0	434,899.60	696,395.19	32° 11' 38.624 N	103° 41' 54.436 W
15,004.0	88.80	0.20	10,575.2	4,642.7	-59.6	434,994.56	696,395.60	32° 11' 39.564 N	103° 41' 54.425 W
15,049.0	89.20	0.50	10,576.0	4,687.7	-59.3	435,039.56	696,395.88	32° 11' 40.009 N	103° 41' 54.418 W
15,098.0	89.20	0.50	10,576.7	4,736.6	-58.9	435,088.55	696,396.31	32° 11' 40.494 N	103° 41' 54.410 W
PBHL 3H									



Nexus Directional Solutions L.P.
Survey Report - Geographic



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 3H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	WELL @ 3511.8usft (Original Well Elev)
Site:	Azores Fed Com	MD Reference:	WELL @ 3511.8usft (Original Well Elev)
Well:	3H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Checked By: _____ Approved By: _____ Date: _____