



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

30-015-39265

November 14, 2011

COG, LLC
Fasken Center, Tower II
550 West Texas Ave, Suite 1300
Midland, TX 79701

RE: Crypt 30 State #2H
150' FNL & 1700' FWL
Sec. 30, T19S, R26E
Eddy County, New Mexico

Dear Sir,

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

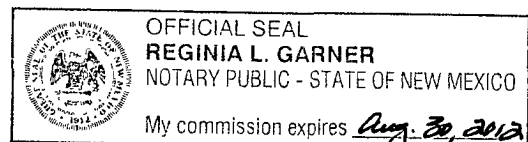
Very truly yours,

A handwritten signature in cursive script, appearing to read "Chris Graham".

Chris Graham
Drilling Superintendent

State of New Mexico }
County of Eddy }

The foregoing was acknowledged before me this 14th day of November, 2011.

A handwritten signature in cursive script, appearing to read "Regina L. Garner".
Notary Public

Crypt 30 State #2H

Date	Depth	Deviation	Direction
10/13/2011	254	0.90	
10/13/2011	374	2.00	
10/13/2011	462	2.50	
10/13/2011	550	2.40	
10/13/2011	639	2.20	
10/13/2011	728	2.20	
10/13/2011	789	2.00	
10/15/2011	980	1.70	
10/15/2011	1233	1.60	
10/15/2011	1483	1.70	
10/15/2011	1736	1.20	
10/15/2011	1989	1.00	
10/16/2011	2280	0.70	
10/16/2011	2333	0.60	316.00
10/17/2011	2395	5.00	177.10
10/17/2011	2489	15.00	175.90
10/17/2011	2583	26.40	183.30
10/17/2011	2614	29.50	183.40
10/17/2011	2645	33.10	184.90
10/17/2011	2676	36.60	183.10
10/17/2011	2707	39.80	182.40
10/17/2011	2739	42.80	182.40
10/17/2011	2770	45.80	182.20
10/17/2011	2801	48.70	180.80
10/17/2011	2864	54.70	179.20
10/18/2011	2926	61.70	176.80
10/18/2011	2957	65.00	177.80
10/18/2011	2989	67.40	179.60
10/18/2011	3019	70.50	180.80
10/18/2011	3000	73.90	181.20
10/18/2011	3082	77.10	182.70
10/18/2011	3113	80.80	182.70
10/18/2011	3144	83.60	182.20
10/19/2011	3232	90.80	181.30
10/19/2011	3326	90.80	181.20
10/19/2011	3419	92.20	181.00
10/19/2011	3514	91.70	178.90
10/19/2011	3607	89.60	179.80
10/19/2011	3701	89.90	179.60
10/19/2011	3795	90.10	179.60
10/19/2011	3888	90.10	179.20
10/20/2011	3982	89.90	179.40
10/20/2011	4075	90.30	179.10
10/20/2011	4169	89.90	179.10
10/20/2011	4262	89.70	179.60
10/20/2011	4356	89.90	179.60
10/20/2011	4450	89.70	179.40
10/20/2011	4543	89.90	179.40
10/20/2011	4637	90.40	179.20
10/20/2011	4731	89.60	178.70
10/21/2011	5042	87.80	178.50

Date	Depth	Deviation	Direction
10/21/2011	5105	88.00	178.40
10/21/2011	5199	87.60	179.90
10/21/2011	5293	88.00	179.80
10/21/2011	5386	88.20	179.80
10/21/2011	5480	88.20	179.90
10/21/2011	5573	88.30	179.80
10/29/2011	2891	52.30	184.10
10/29/2011	2922	54.90	186.80
10/29/2011	2953	58.10	186.40
10/29/2011	2984	60.90	182.60
10/29/2011	3015	64.20	178.50
10/29/2011	3056	66.70	175.00
10/29/2011	3078	69.60	173.90
10/29/2011	3109	72.20	173.80
10/30/2011	3140	73.90	175.90
10/30/2011	3172	74.90	177.80
10/30/2011	3203	76.90	176.90
10/30/2011	3234	80.00	175.70
10/30/2011	3328	88.50	176.80
10/30/2011	3421	89.90	177.10
10/30/2011	3515	91.10	176.90
10/31/2011	3609	91.50	178.20
10/31/2011	3702	90.80	180.10
10/31/2011	3796	89.70	181.20
10/31/2011	3889	90.60	181.20
10/31/2011	3983	89.60	180.30
10/31/2011	4076	90.60	180.30
10/31/2011	4170	89.00	180.50
10/31/2011	4263	90.10	180.60
10/31/2011	4357	89.20	181.20
11/1/2011	4481	89.90	180.00
11/1/2011	4544	90.80	181.30
11/1/2011	4638	90.10	180.60
11/1/2011	4731	88.30	179.20
11/1/2011	4825	89.20	179.40
11/1/2011	4919	90.10	179.40
11/1/2011	5013	91.00	179.90
11/1/2011	5106	89.40	179.20
11/1/2011	5200	89.90	179.20
11/2/2011	5293	90.80	179.40
11/2/2011	5386	89.90	179.20
11/2/2011	5480	88.30	179.70
11/2/2011	5573	89.20	810.30
11/2/2011	5667	89.70	179.90
11/2/2011	5761	90.30	180.50
11/2/2011	5854	89.40	179.70
11/2/2011	5947	90.10	179.90
11/2/2011	6041	91.00	180.10
11/2/2011	6134	91.10	179.20
11/3/2011	6228	90.80	179.00
11/3/2011	6322	90.10	180.30
11/3/2011	6415	89.70	180.60
11/3/2011	6509	90.40	180.80

Date	Depth	Deviation	Direction
11/3/2011	6602	89.60	181.00
11/3/2011	6696	89.70	181.30
11/3/2011	6789	90.40	181.70
11/4/2011	6883	89.60	181.90
11/4/2011	6977	90.30	182.40
11/4/2011	7070	88.90	82.20
11/4/2011	7164	89.60	182.40
11/4/2011	7258	90.40	182.00
11/4/2011	7351	91.10	181.90
11/4/2011	7393	91.50	182.20

COG Operating LLC

Eddy County, NM

Crypt 30 State #2H

Crypt 30 State #2H

Sidetrack

Survey: ST Surveys

Standard Survey Report

07 November, 2011

Crescent Directional Drilling

Survey Report

Company:	COG Operating LLC	Local Co-ordinate Reference:	Site Crypt 30 State #2H
Project:	Eddy County NM	TVD Reference:	WELL 2 @ 3411' 00ft (Silver Oak #8)
Site:	Crypt 30 State #2H	MD Reference:	WELL 2 @ 3411' 00ft (Silver Oak #8)
Well:	Crypt 30 State #2H	North Reference:	Grid
Wellbore:	Sidetrack	Survey Calculation Method:	Minimum Curvature
Design:	Sidetrack	Database:	Compass R5000 DB Server

Project	Eddy County - NM		
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						Crypt 30 State #2H											
Site Position:			Northing:			595,855 10 ft			Latitude:			32° 38' 17 06 N					
From:			Map			Easting:			472,197 40 ft			Longitude:			104° 25' 25 16 W		
Position Uncertainty:			0 00 ft			Slot Radius:			13 200 in			Grid Convergence:			-0 05 °		

Well: Crypt 30 State #2H						
Well Position	+N/-S	0 00 ft	Northing:	595,855 10 ft	Latitude:	32° 38' 17 06 N
	+E/-W	0 00 ft	Easting:	472,197 40 ft	Longitude:	104° 25' 25 16 W
Position Uncertainty		0 00 ft	Wellhead Elevation:	ft	Ground Level:	3,394 00 ft

Wellbore : Sidetrack					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/26/2011	7 96	60 41	48,733

Design					Sidetrack						
Audit Notes:											
Version:		1 0		Phase:		ACTUAL		Tie On Depth:		2,863 00	
Vertical Section:		Depth From (TVD)		+N/-S		+E/-W		Direction			
		(ft)		(ft)		(ft)		(°)			
		0 00		0 00		0 00		180 26			

Survey Program		Date	11/7/2011		
From	To	Survey (Wellbore)	Tool Name	Description	
(ft)	(ft)				
100 00	2,292 00	Gyro Surveys (Wellbore #1)	Good__mag	Good Magnetic	
2,333 00	2,863 00	MWD Surveys (Wellbore #1)	Good__mag	Good Magnetic	
2,891 00	7,441 00	ST Surveys (Sidetrack)	Good__mag	Good Magnetic	

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
2,863 00	54 70	179 20	2,783 57	-187 72	-32 19	187 87	0 00	0 00	0 00	
2,891 00	52 30	184 10	2,800 23	-210 21	-32 83	210 36	16 47	-8 57	17 50	
2,922 00	54 90	186 80	2,818 63	-235 04	-35 20	235 20	10 93	8 39	8 71	
2,953 00	58 10	186 40	2,835 74	-260 72	-38 17	260 89	10 38	10 32	-1 29	
2,984 00	60 90	182 60	2,851 47	-287 34	-40 26	287 52	13 90	9 03	-12 26	
3,015 00	64 20	178 50	2,865 77	-314 83	-40 50	315 01	15 84	10 65	-13 23	
3,046 00	66 70	175 00	2,878 65	-342 98	-38 90	343 15	13 06	8 06	-11 29	
3,078 00	69 60	173 90	2,890 56	-372 54	-36 02	372 70	9 61	9 06	-3 44	
3,109 00	72 20	173 80	2,900 70	-401 66	-32 89	401 80	8 39	8 39	-0 32	

Crescent Directional Drilling

Survey Report

Company:	COG Operating, LLC	Local Co-ordinate Reference:	Site: Crypt 30, State #2H
Project:	Eddy County, NM	TVD Reference:	WELL 2 @ 3411.00ft (Silver Oak #8)
Site:	Crypt 30 State #2H	MDI Reference:	WELL 2 @ 3411.00ft (Silver Oak #8)
Well:	Crypt 30 State #2H	North Reference:	Grid
Wellbore:	Sidetrack	Survey Calculation Method:	Minimum Curvature
Design:	Sidetrack	Database:	Compass R5000, DB Server

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
3,140.00	73.90	175.90	2,909.74	-431.19	-30.23	431.32	8.49	5.48	6.77
3,172.00	74.90	177.80	2,918.35	-461.96	-28.53	462.09	6.52	3.13	5.94
3,203.00	76.90	176.90	2,925.90	-491.99	-27.14	492.11	7.04	6.45	-2.90
3,234.00	80.00	175.70	2,932.10	-522.30	-25.18	522.41	10.69	10.00	-3.87
3,265.00	83.60	175.40	2,936.53	-552.88	-22.80	552.98	11.65	11.61	-0.97
3,359.00	89.00	176.80	2,942.59	-646.43	-16.43	646.50	5.93	5.74	1.49
3,421.00	89.90	177.10	2,943.18	-708.34	-13.13	708.39	1.53	1.45	0.48
3,515.00	91.10	176.90	2,942.36	-802.21	-8.21	802.24	1.29	1.28	-0.21
3,609.00	91.50	178.20	2,940.23	-896.10	-4.19	896.11	1.45	0.43	1.38
3,702.00	90.80	180.10	2,938.36	-989.06	-2.81	989.06	2.18	-0.75	2.04
3,796.00	89.70	181.20	2,937.95	-1,083.05	-3.88	1,083.06	1.65	-1.17	1.17
3,889.00	90.60	181.20	2,937.71	-1,176.03	-5.83	1,176.04	0.97	0.97	0.00
3,983.00	89.60	180.30	2,937.55	-1,270.02	-7.06	1,270.04	1.43	-1.06	-0.96
4,076.00	90.60	180.30	2,937.38	-1,363.02	-7.54	1,363.04	1.08	1.08	0.00
4,170.00	89.00	180.50	2,937.71	-1,457.01	-8.20	1,457.03	1.72	-1.70	0.21
4,263.00	90.10	180.60	2,938.44	-1,550.00	-9.09	1,550.03	1.19	1.18	0.11
4,357.00	89.20	181.20	2,939.02	-1,643.99	-10.57	1,644.02	1.15	-0.96	0.64
4,450.00	90.10	180.60	2,939.59	-1,736.97	-12.03	1,737.01	1.16	0.97	-0.65
4,544.00	90.80	181.30	2,938.85	-1,830.96	-13.59	1,831.00	1.05	0.74	0.74
4,638.00	90.10	180.60	2,938.11	-1,924.94	-15.15	1,924.99	1.05	-0.74	-0.74
4,731.00	88.30	179.20	2,939.41	-2,017.92	-14.98	2,017.97	2.45	-1.94	-1.51
4,825.00	89.20	179.40	2,941.46	-2,111.89	-13.84	2,111.93	0.98	0.96	0.21
4,919.00	90.10	179.40	2,942.03	-2,205.89	-12.85	2,205.92	0.96	0.96	0.00
5,013.00	91.00	179.90	2,941.13	-2,299.88	-12.28	2,299.91	1.10	0.96	0.53
5,106.00	89.40	179.20	2,940.81	-2,392.87	-11.55	2,392.90	1.88	-1.72	-0.75
5,200.00	89.90	179.20	2,941.38	-2,486.86	-10.23	2,486.88	0.53	0.53	0.00
5,293.00	90.80	179.40	2,940.81	-2,579.85	-9.10	2,579.87	0.99	0.97	0.22
5,384.00	89.90	179.20	2,940.26	-2,670.84	-7.99	2,670.85	1.01	-0.99	-0.22
5,480.00	88.30	179.70	2,941.76	-2,766.82	-7.07	2,766.83	1.75	-1.67	0.52
5,573.00	89.20	180.30	2,943.79	-2,859.80	-7.07	2,859.80	1.16	0.97	0.65
5,667.00	89.70	179.90	2,944.69	-2,953.79	-7.23	2,953.80	0.68	0.53	-0.43
5,761.00	90.30	180.50	2,944.69	-3,047.79	-7.56	3,047.79	0.90	0.64	0.64
5,854.00	89.40	179.70	2,944.94	-3,140.79	-7.72	3,140.79	1.29	-0.97	-0.86
5,947.00	90.10	179.90	2,945.34	-3,233.79	-7.40	3,233.79	0.78	0.75	0.22
6,041.00	91.00	180.10	2,944.44	-3,327.78	-7.40	3,327.78	0.98	0.96	0.21
6,134.00	91.10	179.20	2,942.74	-3,420.76	-6.83	3,420.76	0.97	0.11	-0.97
6,228.00	90.80	179.00	2,941.18	-3,514.74	-5.35	3,514.73	0.38	-0.32	-0.21
6,322.00	90.10	180.30	2,940.44	-3,608.73	-4.78	3,608.72	1.57	-0.74	1.38
6,415.00	89.70	180.60	2,940.60	-3,701.73	-5.51	3,701.72	0.54	-0.43	0.32
6,509.00	90.40	180.80	2,940.52	-3,795.72	-6.66	3,795.71	0.77	0.74	0.21
6,602.00	89.60	181.00	2,940.52	-3,888.71	-8.12	3,888.71	0.89	-0.86	0.22
6,696.00	89.70	181.30	2,941.09	-3,982.69	-10.00	3,982.69	0.34	0.11	0.32
6,789.00	90.40	181.70	2,941.01	-4,075.66	-12.44	4,075.67	0.87	0.75	0.43

Crescent Directional Drilling

Survey Report

Company:	COG Operating LLC	Local Co-ordinate Reference:	Site Crypt 30 State #2H
Project:	Eddy County, NM	TVD Reference:	WELL 2 @ 3411.00ft (Silver Oak #8)
Site:	Crypt 30 State #2H	MD Reference:	WELL 2 @ 3411.00ft (Silver Oak #8)
Well:	Crypt 30 State #2H	North Reference:	Grid
Wellbore:	Sidetrack	Survey Calculation Method:	Minimum Curvature
Design:	Sidetrack	Database:	Compass R5000 DB Server

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
6,883.00	89.60	181.90	2,941.01	-4,169.61	-15.39	4,169.63	0.88	-0.85	0.21
6,977.00	90.30	182.40	2,941.10	-4,263.54	-18.92	4,263.58	0.92	0.74	0.53
7,070.00	88.90	182.20	2,941.74	-4,356.46	-22.65	4,356.52	1.52	-1.51	-0.22
7,164.00	89.60	182.40	2,942.98	-4,450.38	-26.42	4,450.45	0.77	0.74	0.21
7,258.00	90.40	182.00	2,942.98	-4,544.31	-30.03	4,544.40	0.95	0.85	-0.43
7,351.00	91.10	181.90	2,941.76	-4,637.24	-33.19	4,637.35	0.76	0.75	-0.11
7,393.00	91.50	182.20	2,940.81	-4,679.21	-34.70	4,679.32	1.19	0.95	0.71
Last Survey @ 7393.00 MD, 2940.81 TVD, 91.50 INC, 182.20 AZ									
7,441.00	91.50	182.20	2,939.55	-4,727.15	-36.54	4,727.27	0.00	0.00	0.00
Straight line Projection to TD @ 7441.00' MD, 2939.55' TVD									

Survey Annotations				
Measured Depth (ft)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Comment
7,393.00	2,940.81	-4,679.21	-34.70	Last Survey @ 7393.00 MD, 2940.81 TVD, 91.50 INC, 182.20 AZ
7,441.00	2,939.55	-4,727.15	-36.54	Straight line Projection to TD @ 7441.00' MD, 2939.55' TVD

Checked By: _____	Approved By: _____	Date: _____
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