

30-015-37983

COG Operating LLC

New Mexico

Eddy County, New Mexico

Skelly Unit #829

SL: 1434' FNL 913' FEL Sec. 15, T17S, R31E Unit H

Survey: Survey #1

Standard Survey Report

30 October, 2011

Gyrodatta Survey Report

Company:	COG Operating LLC	Local Co-ordinate Reference:	Site Eddy County, New Mexico
Project:	New Mexico	TVD Reference:	WELL @ 0.0ft (Original Well Elev)
Site:	Eddy County, New Mexico	MD Reference:	WELL @ 0.0ft (Original Well Elev)
Well:	Skelly Unit #829	North Reference:	Grid
Wellbore:	SL 1434' FNL 913' FEL Sec. 15, T17S, R31E Unit H	Survey Calculation Method:	Minimum Curvature
Design:	SL: 1434' FNL 913' FEL Sec. 15, T17S, R31E Unit H	Database:	EDM 5000.1 Single User Db

Project	New Mexico		
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		Eddy County, New Mexico			
Site Position:		Northing:	668,845.90 ft	Latitude:	32° 50' 16.134 N
From:	Map	Easting:	648,037.50 ft	Longitude:	103° 51' 4.872 W
Position Uncertainty:	0.0 ft	Slot Radius:	0 "	Grid Convergence:	0.26 °

Well	Skelly Unit #829, Top of Paddock 5000' TVD					
Well Position	+N/-S	0.0 ft	Northing:	668,845.90 ft	Latitude:	32° 50' 16.134 N
	+E/-W	0.0 ft	Easting:	648,037.50 ft	Longitude:	103° 51' 4.872 W
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	0.0 ft

Wellbore	SL 1434' FNL 913' FEL Sec. 15, T17S, R31E Unit H				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	2011/10/14	7.71	60.72	48,985

Design	SL: 1434' FNL 913' FEL Sec. 15, T17S, R31E Unit H				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.0	0.0	0.0	351.28	

Survey Program	Date 2011/10/30				
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
100.0	7,045.0	Survey #1 (SL 1434' FNL 913' FEL Sec. 1 MWD		MWD	

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)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
100.0	0.33	172.52	100.0	-0.3	0.0	-0.3	0.33	0.33	0.00	
200.0	0.53	160.83	200.0	-1.0	0.2	-1.0	0.22	0.20	-11.69	
300.0	0.49	136.11	300.0	-1.8	0.7	-1.8	0.22	-0.04	-24.72	
400.0	0.55	171.64	400.0	-2.5	1.0	-2.7	0.32	0.06	35.53	
500.0	0.83	161.99	500.0	-3.7	1.3	-3.9	0.30	0.28	-9.65	
600.0	0.81	158.22	600.0	-5.0	1.8	-5.3	0.06	-0.02	-3.77	
700.0	0.86	156.00	700.0	-6.4	2.4	-6.7	0.06	0.05	-2.22	
800.0	0.58	155.88	800.0	-7.5	2.9	-7.9	0.28	-0.28	-0.12	

Gyrodata Survey Report

Company:	COG Operating LLC	Local Co-ordinate Reference:	Site Eddy County, New Mexico
Project:	New Mexico	TVD Reference:	WELL @ 0.0ft (Original Well Elev)
Site:	Eddy County, New Mexico	MD Reference:	WELL @ 0.0ft (Original Well Elev)
Well:	Skelly Unit #829	North Reference:	Grid
Wellbore:	SL 1434' FNL 913' FEL Sec. 15, T17S, R31E Unit H	Survey Calculation Method:	Minimum Curvature
Design:	SL 1434' FNL 913' FEL Sec. 15, T17S, R31E Unit H	Database:	EDM 5000.1 Single User Db

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)
900.0	0.60	163.15	899.9	-8.5	3.3	-8.9	0.08	0.02	7.27
1,000.0	0.63	143.31	999.9	-9.4	3.7	-9.9	0.21	0.03	-19.84
1,100.0	0.70	145.28	1,099.9	-10.4	4.4	-10.9	0.07	0.07	1.97
1,200.0	0.76	158.31	1,199.9	-11.5	5.0	-12.1	0.18	0.06	13.03
1,300.0	0.94	100.87	1,299.9	-12.3	6.1	-13.0	0.83	0.18	-57.44
1,400.0	1.29	88.88	1,399.9	-12.4	8.0	-13.5	0.42	0.35	-11.99
1,500.0	1.37	71.27	1,499.9	-12.0	10.2	-13.4	0.41	0.08	-17.61
1,600.0	1.35	78.90	1,599.8	-11.4	12.5	-13.2	0.18	-0.02	7.63
1,700.0	1.41	73.99	1,699.8	-10.8	14.9	-13.0	0.13	0.06	-4.91
1,800.0	1.29	79.18	1,799.8	-10.3	17.2	-12.8	0.17	-0.12	5.19
1,900.0	1.20	79.75	1,899.8	-9.9	19.3	-12.7	0.09	-0.09	0.57
1,920.0	1.75	77.59	1,919.8	-9.8	19.8	-12.7	2.76	2.75	-10.80
VES Gyro Tie-In 1920' MD									
2,022.0	1.20	85.90	2,021.7	-9.4	22.4	-12.6	0.58	-0.54	8.15
2,085.0	1.20	74.80	2,084.7	-9.1	23.7	-12.6	0.37	0.00	-17.62
2,148.0	1.10	46.60	2,147.7	-8.6	24.8	-12.2	0.90	-0.16	-44.76
2,210.0	1.30	17.00	2,209.7	-7.5	25.4	-11.2	1.04	0.32	-47.74
2,273.0	1.80	359.00	2,272.7	-5.8	25.6	-9.6	1.10	0.79	-28.57
2,335.0	2.50	346.40	2,334.6	-3.5	25.3	-7.3	1.36	1.13	-20.32
2,398.0	3.20	346.00	2,397.5	-0.5	24.5	-4.2	1.11	1.11	-0.63
2,461.0	3.80	343.40	2,460.4	3.2	23.5	-0.4	0.98	0.95	-4.13
2,523.0	4.50	341.70	2,522.3	7.5	22.1	4.1	1.15	1.13	-2.74
2,586.0	5.10	343.10	2,585.0	12.5	20.5	9.3	0.97	0.95	2.22
2,648.0	5.60	344.20	2,646.8	18.1	18.9	15.0	0.82	0.81	1.77
2,711.0	5.60	343.50	2,709.5	24.0	17.2	21.1	0.11	0.00	-1.11
2,806.0	6.20	344.70	2,804.0	33.4	14.5	30.8	0.64	0.63	1.26
2,900.0	6.30	347.10	2,897.4	43.3	12.0	41.0	0.30	0.11	2.55
2,994.0	6.20	349.50	2,990.8	53.3	10.0	51.2	0.30	-0.11	2.55
3,088.0	6.30	350.20	3,084.3	63.4	8.2	61.4	0.13	0.11	0.74
3,181.0	6.20	349.40	3,176.7	73.4	6.4	71.6	0.14	-0.11	-0.86
3,275.0	6.50	349.30	3,270.2	83.6	4.5	81.9	0.32	0.32	-0.11
3,338.0	6.90	349.50	3,332.7	90.8	3.1	89.3	0.64	0.63	0.32
3,463.0	6.20	349.99	3,456.9	104.8	0.6	103.5	0.56	-0.56	0.39
3,564.0	6.10	350.50	3,557.3	115.5	-1.3	114.4	0.11	-0.10	0.50
3,657.0	5.80	349.50	3,649.8	125.0	-2.9	124.0	0.34	-0.32	-1.08
3,751.0	6.10	351.00	3,743.3	134.6	-4.6	133.7	0.36	0.32	1.60
3,845.0	5.80	349.60	3,836.8	144.2	-6.2	143.5	0.35	-0.32	-1.49
3,939.0	6.10	350.10	3,930.3	153.8	-7.9	153.2	0.32	0.32	0.53
4,033.0	5.90	347.90	4,023.8	163.4	-9.8	163.0	0.32	-0.21	-2.34
4,128.0	5.50	350.30	4,118.3	172.7	-11.6	172.5	0.49	-0.42	2.53
4,222.0	5.50	346.60	4,211.9	181.5	-13.4	181.5	0.38	0.00	-3.94
4,317.0	5.50	347.60	4,306.5	190.4	-15.4	190.5	0.10	0.00	1.05



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

November 1, 2011

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

RE: Skelly Unit #829
1434' FNL & 913' FEL
Sec. 15, T17S, R31E
Eddy County, New Mexico

Dear Sir,

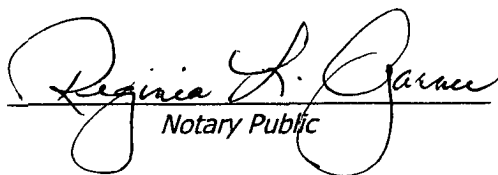
The attached is the Deviation Survey for the above captioned well.

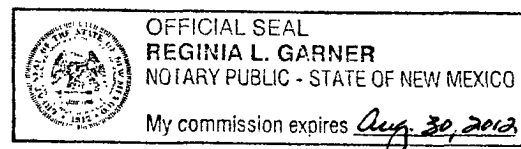
Very truly yours,


Eddie C. LaRue
Operations Manager

State of New Mexico }
County of Eddy }

The foregoing was acknowledged before me this 1st day of November, 2011.


Notary Public



Gyrodata Survey Report

Company:	COG Operating LLC	Local Co-ordinate Reference:	Site Eddy County, New Mexico
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Survey										
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4,411.0	5.80	348.60	4,400.0	199.5	-17.3	199.8	0.34	0.32	1.06	
4,504.0	5.70	350.00	4,492.5	208.6	-19.1	209.1	0.19	-0.11	1.51	
4,598.0	5.70	349.70	4,586.1	217.8	-20.7	218.4	0.03	0.00	-0.32	
4,692.0	5.10	349.50	4,679.6	226.5	-22.3	227.3	0.64	-0.64	-0.21	
4,786.0	5.40	351.30	4,773.3	235.0	-23.8	235.9	0.36	0.32	1.91	
4,880.0	5.50	351.30	4,866.8	243.8	-25.1	244.8	0.11	0.11	0.00	
4,973.0	5.90	352.50	4,959.4	253.0	-26.4	254.0	0.45	0.43	1.29	
5,067.0	5.80	351.90	5,052.9	262.4	-27.7	263.6	0.12	-0.11	-0.64	
5,161.0	5.60	351.20	5,146.4	271.7	-29.1	272.9	0.23	-0.21	-0.74	
5,255.0	5.50	349.20	5,240.0	280.6	-30.6	282.0	0.23	-0.11	-2.13	
5,349.0	5.40	347.60	5,333.5	289.4	-32.4	291.0	0.19	-0.11	-1.70	
5,442.0	5.50	348.10	5,426.1	298.0	-34.3	299.8	0.12	0.11	0.54	
5,536.0	5.60	346.20	5,519.7	306.9	-36.3	308.8	0.22	0.11	-2.02	
5,630.0	5.80	347.50	5,613.2	316.0	-38.4	318.1	0.25	0.21	1.38	
5,724.0	5.80	346.00	5,706.7	325.2	-40.6	327.6	0.16	0.00	-1.60	
5,817.0	6.10	344.40	5,799.2	334.5	-43.1	337.2	0.37	0.32	-1.72	
5,911.0	6.20	350.40	5,892.7	344.3	-45.2	347.2	0.69	0.11	6.38	
6,005.0	6.00	350.10	5,986.2	354.2	-46.9	357.2	0.22	-0.21	-0.32	
6,099.0	5.30	351.30	6,079.7	363.3	-48.4	366.5	0.76	-0.74	1.28	
6,193.0	5.40	351.30	6,173.3	372.0	-49.8	375.2	0.11	0.11	0.00	
6,287.0	5.40	344.60	6,266.9	380.6	-51.6	384.0	0.67	0.00	-7.13	
6,382.0	5.50	342.70	6,361.5	389.3	-54.1	393.0	0.22	0.11	-2.00	
6,475.0	5.80	346.00	6,454.0	398.1	-56.6	402.1	0.48	0.32	3.55	
6,569.0	5.80	348.80	6,547.5	407.4	-58.7	411.6	0.30	0.00	2.98	
6,664.0	5.50	348.20	6,642.1	416.5	-60.5	420.9	0.32	-0.32	-0.63	
6,731.0	5.30	347.50	6,708.8	422.7	-61.9	427.2	0.31	-0.30	-1.04	
6,820.0	5.50	348.90	6,797.4	430.9	-63.6	435.6	0.27	0.22	1.57	
6,913.0	5.80	352.70	6,889.9	439.9	-65.0	444.7	0.52	0.32	4.09	
7,006.0	6.00	354.20	6,982.4	449.4	-66.1	454.3	0.27	0.22	1.61	
7,045.0	6.00	354.20	7,021.2	453.5	-66.5	458.3	0.00	0.00	0.00	
Projected BHL 7045' MD										

Survey Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,920.0	1,919.8	-9.8	19.8	VES Gyro Tie-In 1920' MD
7,045.0	7,021.2	453.5	-66.5	Projected BHL 7045' MD

Pason DataHub Deviation Survey
Well Dossier 1319053860 - SKELLY UNIT 829
#

#	Date	Depth	Dev/Inc	Dir/AZ
	10/21/2011	111	0.70	0.00
	10/21/2011	196	0.60	0.00
	10/21/2011	283	0.50	0.00
	10/22/2011	372	0.40	0.00
	10/22/2011	458	0.70	0.00
	10/22/2011	530	0.10	0.00
	10/23/2011	785	0.80	0.00
	10/24/2011	1256	0.50	0.00
	10/24/2011	1757	0.90	0.00
	10/24/2011	1925	0.50	0.00
	10/25/2011	2022	1.20	85.90
	10/25/2011	2085	1.20	74.80
	10/26/2011	2148	1.10	466.00
	10/26/2011	2210	1.30	17.00
	10/26/2011	2273	1.30	359.10
	10/26/2011	2335	2.50	346.40
	10/26/2011	2398	3.20	346.00
	10/26/2011	2461	3.80	343.40
	10/26/2011	2523	4.50	341.70
	10/26/2011	2595	5.10	343.10
	10/26/2011	2648	5.60	344.20
	10/26/2011	2711	5.60	343.50
	10/26/2011	2806	6.20	344.70
	10/26/2011	2900	6.30	347.10
	10/26/2011	2900	6.20	349.50
	10/26/2011	3088	6.30	350.20
	10/26/2011	3181	6.20	349.40
	10/26/2011	3275	6.50	349.30
	10/26/2011	3338	6.90	349.50
	10/26/2011	3463	6.20	349.90
	10/27/2011	3470	6.20	349.60
	10/27/2011	3564	6.10	350.50
	10/27/2011	3657	5.80	349.50
	10/27/2011	3751	6.10	351.00
	10/27/2011	3845	5.80	349.60
	10/27/2011	3939	6.10	350.10
	10/27/2011	4033	5.90	347.90
	10/27/2011	4128	5.50	350.30
	10/27/2011	4222	5.50	346.60
	10/27/2011	4316	5.50	347.60
	10/27/2011	4411	5.80	348.60
	10/27/2011	4504	5.70	350.00
	10/27/2011	4598	5.70	349.70
	10/28/2011	4692	5.10	349.50
	10/28/2011	4786	5.40	351.30
	10/28/2011	4880	5.50	351.30
	10/28/2011	4973	5.90	352.50
	10/28/2011	5067	5.80	351.90
	10/28/2011	5161	5.60	351.20

Well Dossier 1319053860 - SKELLY UNIT 829
#

#	Date	Depth	Dev/Inc	Dir/AZ
	10/28/2011	5255	5.50	349.20
	10/28/2011	5349	5.50	347.60
	10/28/2011	5442	5.50	348.10
	10/28/2011	5536	5.60	346.20
	10/28/2011	5630	5.80	347.50
	10/28/2011	5724	5.80	346.00
	10/29/2011	5817	6.10	344.40
	10/29/2011	5911	6.20	350.40
	10/29/2011	6005	6.00	350.10
	10/29/2011	6099	5.30	351.30
	10/29/2011	6193	5.40	350.90
	10/29/2011	6387	5.40	344.60
	10/29/2011	6382	5.40	342.70
	10/29/2011	6475	5.80	346.00
	10/29/2011	6569	5.80	348.88
	10/29/2011	6664	5.50	348.20
	10/29/2011	6731	5.30	347.50
	10/30/2011	6820	5.50	348.90
	10/30/2011	6907	5.80	352.70
	10/30/2011	7006	6.00	354.20

EOF