

15-37517



COG Operating LLC

Eddy County, NM (NAN27 NME)

Skelly Unit #849

Skelly Unit #849

OH

Design: Actual

Standard Survey Report

09 July, 2010

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Scientific Drilling
Directional Drilling Operations



Scientific Drilling Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Site Skelly Unit #849
Project:	Eddy County, NM (NAN27 NME)	TVD Reference:	RKB Elev (12) @ 3874 00usft (Silver Oak #1)
Site:	Skelly Unit #849	MD Reference:	RKB Elev (12) @ 3874 00usft (Silver Oak #1)
Well:	Skelly Unit #849	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	EDM-Julio

Project:	Eddy County, NM (NAN27 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	Skelly Unit #849				
Site Position:		Northing:	666,498 00 usft	Latitude:	32° 49' 52.950 N
From:	Map	Easting:	646,944 10 usft	Longitude:	103° 51' 17.811 W
Position Uncertainty:	0 00 usft	Slot Radius:	0 "	Grid Convergence:	0.26 °

Well:	Skelly Unit #849					
Well Position	+N/-S	0.00 usft	Northings:	666,498.00 usft	Latitude:	32° 49' 52.950 N
	+E/-W	0.00 usft	Easting:	646,944.10 usft	Longitude:	103° 51' 17.811 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	3,862.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	2009/07/07	7 98	60 76	49,171

Design:	Actual				
Audit Notes:					
Version:	10	Phase:	ACTUAL	Tie On Depth:	0 00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(usft)	(usft)	(usft)	(°)	
	0 00	0 00	0 00	299 32	

Survey Program		Date	2010/07/09		
From	To				
(usft)	(usft)	Survey (Wellbore)	Tool Name	Description	
100 00	1,750 00	Gyro Survey (OH)	Keeper	Standard Wireline Keeper ver 1 0 2	
1,832 00	5,296 00	MWD Survey (OH)	MWD	MWD - Standard	

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)
0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
100 00	0 09	354 30	100 00	0 08	-0 01	0 05	0 09	0 09	0 00
200 00	0 10	123 30	200 00	0 11	0 06	0 00	0 17	0 01	129 00
300 00	0 24	106 03	300 00	0 00	0 33	-0 29	0 15	0 14	17 27
400 00	0 21	129 47	400 00	-0 17	0 67	-0 67	0 10	-0 03	23.44
500 00	0 17	156 05	500 00	-0 42	0 88	-0 97	0 10	-0 04	26 58
600 00	0 19	172 84	600 00	-0 72	0 96	-1 19	0 06	0 02	16 79
700 00	0 12	201 83	700 00	-0 99	0 94	-1 30	0 10	-0 07	28.99
800 00	0 14	100 89	800 00	-1 11	1.02	-1 43	0 20	0 02	-100 94
900 00	0 22	115 54	900 00	-1 21	1 31	-1 74	0 09	0 08	14 65



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Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	EDM-Julio

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)
1,000.00	0.32	161.04	1,000.00	-1.56	1.58	-2.14	0.23	0.10	45.50
1,100.00	0.17	80.25	1,099.99	-1.80	1.81	-2.46	0.34	-0.15	-80.79
1,200.00	0.73	113.39	1,199.99	-2.03	2.54	-3.21	0.59	0.56	33.14
1,300.00	0.73	88.65	1,299.98	-2.26	3.77	-4.39	0.31	0.00	-24.74
1,400.00	0.48	59.91	1,399.98	-2.04	4.77	-5.15	0.39	-0.25	-28.74
1,500.00	0.81	62.31	1,499.97	-1.50	5.75	-5.75	0.33	0.33	2.40
1,600.00	1.27	72.91	1,599.96	-0.85	7.44	-6.90	0.50	0.46	10.60
1,700.00	1.16	64.44	1,699.93	-0.08	9.41	-8.25	0.21	-0.11	-8.47
1,750.00	1.19	78.97	1,749.92	0.23	10.38	-8.93	0.60	0.06	29.06
1,832.00	0.82	79.61	1,831.91	0.50	11.79	-10.03	0.45	-0.45	0.78
1,894.00	0.73	71.05	1,893.90	0.71	12.60	-10.64	0.24	-0.15	-13.81
1,958.00	0.64	290.62	1,957.90	0.97	12.65	-10.56	2.01	-0.14	-219.42
2,020.00	2.55	281.18	2,019.88	1.36	10.97	-8.90	3.10	3.08	-15.23
2,083.00	3.51	288.86	2,082.79	2.25	7.77	-5.67	1.65	1.52	12.19
2,146.00	5.35	296.89	2,145.60	4.21	3.33	-0.84	3.08	2.92	12.75
2,208.00	6.27	298.40	2,207.28	7.12	-2.23	5.43	1.50	1.48	2.44
2,333.00	7.92	297.80	2,331.32	14.39	-15.85	20.87	1.32	1.32	-0.48
2,490.00	6.67	295.05	2,487.04	23.29	-33.68	40.77	0.83	-0.80	-1.75
2,678.00	5.99	293.67	2,673.90	31.85	-52.55	61.42	0.37	-0.36	-0.73
2,866.00	4.61	294.17	2,861.09	38.89	-68.43	78.71	0.73	-0.73	0.27
2,928.00	4.88	288.47	2,922.87	40.74	-73.21	83.78	0.88	0.44	-9.19
2,991.00	5.30	288.43	2,985.63	42.51	-78.51	89.27	0.67	0.67	-0.06
3,053.00	5.71	295.54	3,047.34	44.75	-84.01	95.16	1.28	0.66	11.47
3,117.00	5.73	294.09	3,111.02	47.42	-89.80	101.52	0.23	0.03	-2.27
3,180.00	7.42	292.93	3,173.61	50.29	-96.42	108.69	2.69	2.68	-1.84
3,242.00	7.61	292.51	3,235.07	53.42	-103.90	116.75	0.32	0.31	-0.68
3,305.00	7.41	294.10	3,297.53	56.68	-111.46	124.93	0.46	-0.32	2.52
3,367.00	7.17	299.34	3,359.03	60.21	-118.48	132.79	1.14	-0.39	8.45
3,461.00	7.38	300.16	3,452.28	66.11	-128.81	144.69	0.25	0.22	0.87
3,621.00	6.74	300.88	3,611.06	76.10	-145.76	164.35	0.40	-0.40	0.45
3,774.00	6.51	298.77	3,763.04	84.88	-161.07	182.00	0.22	-0.15	-1.38
3,931.00	6.26	296.97	3,919.07	93.04	-176.50	199.45	0.20	-0.16	-1.15
3,994.00	6.88	302.04	3,981.65	96.60	-182.76	206.65	1.35	0.98	8.05
4,150.00	6.43	304.78	4,136.60	106.54	-197.85	224.68	0.35	-0.29	1.76
4,306.00	6.66	303.28	4,291.58	116.49	-212.59	242.40	0.18	0.15	-0.96
4,463.00	6.28	300.24	4,447.59	125.81	-227.62	260.07	0.33	-0.24	-1.94
4,619.00	5.81	300.49	4,602.72	134.11	-241.79	276.49	0.30	-0.30	0.16
4,807.00	5.27	297.44	4,789.84	142.92	-257.66	294.64	0.33	-0.29	-1.62
4,870.00	5.22	301.30	4,852.58	145.74	-262.67	300.39	0.57	-0.08	6.13
4,932.00	4.78	307.57	4,914.34	148.78	-267.13	305.77	1.13	-0.71	10.11
4,995.00	4.09	312.97	4,977.15	151.92	-270.85	310.55	1.28	-1.10	8.57
5,057.00	2.62	308.69	5,039.04	154.31	-273.58	314.09	2.40	-2.37	-6.90
5,120.00	1.28	308.62	5,102.01	155.65	-275.25	316.21	2.13	-2.13	-0.11



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Survey Report



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Project: Eddy County, NM (NAN27 NME)
Site: Skelly Unit #849
Well: Skelly Unit #849
Wellbore: OH
Design: Actual

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North Reference: Grid
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Database: EDM-Julio

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5,183 00	0.44	222 93	5,165 00	155 91	-275 97	316 96	2 10	-1 33	-136 02
5,243 00	0 57	190 23	5,225 00	155 45	-276 18	316 92	0 52	0 22	-54 50
5,296 00	0 57	190 23	5,277 99	154 93	-276 27	316 75	0 00	0.00	0 00
MWD Survey									

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates	
+N-S (usft)	+E-W (usft)	Comment	
5,296 00	5,277.99	154.93	-276 27 MWD Survey

Checked By: _____ Approved By: _____ Date: _____