

COG OPERATING LLC

30-015-38016

Eddy County, NM (NAN27 NME)

Skelly Unit #788

Skelly Unit #788

DH - Job #32D1110823

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SDI Standard Survey Report

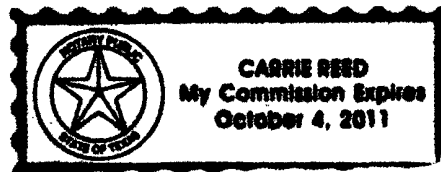
This survey is correct to the best of my knowledge and is supported by actual field data.

Robert

Notarized this date 10th of January, 2011.

Carrie Reed

Notary Signature
County of Midland
State of Texas



Scientific Drilling International, Inc.
SDI Standard Survey Report

Company:	COG OPERATING LLC	Local Co-ordinate Reference:	Site Skelly Unit #788
Project:	Eddy County, NM (NAN27 NME)	TVD Reference:	KB Elev (12') @ 3879.0usft (Basic #35)
Site:	Skelly Unit #788	MD Reference:	KB Elev (12') @ 3879.0usft (Basic #35)
Well:	Skelly Unit #788	North Reference:	Grid
Wellbore:	DH - Job #32D1110823	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	EDM-Regulatory

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 #788		
Site Position:		Northing:	661,064.50 usft
From:	Map	Easting:	652,985.30 usft
Position Uncertainty:	0.0 usft	Slot Radius:	0"
		Latitude:	32° 48' 58.909 N
		Longitude:	103° 50' 7.311 W
		Grid Convergence:	0.27 °

Well	Skelly Unit #788		
Well Position	+N/-S	0.0 usft	Northing: 661,064.50 usft
	+E/-W	0.0 usft	Easting: 652,985.30 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft
		Ground Level:	3,867.0 usft

Wellbore	DH - Job #32D1110823				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/30/2010	7.82	60.70	48,995

Design	Actual			
Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth: 0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	136.91

Survey Program	Date	1/8/2011			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.0	1,768.0	Gyro Survey (DH - Job #32D1110823)	Keeper	Standard Wireline Keeper ver 1.0.2	
1,880.0	7,080.0	MWD Survey (DH - Job #32D1110823)	MWD	MWD - Standard	

Survey								
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)	
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.0	
100.0	0.16	359.75	100.0	0.1	0.0	359.75	0.1	
200.0	0.09	6.53	200.0	0.4	0.0	1.24	0.4	
300.0	0.11	207.60	300.0	0.4	0.0	355.46	0.4	
400.0	0.19	234.47	400.0	0.2	-0.2	309.17	0.3	
500.0	0.31	246.41	500.0	0.0	-0.6	266.53	0.6	
600.0	0.29	244.19	600.0	-0.3	-1.1	256.58	1.1	
700.0	0.43	252.81	700.0	-0.5	-1.7	253.95	1.7	
800.0	0.32	226.28	800.0	-0.8	-2.2	250.60	2.3	
900.0	0.12	137.38	900.0	-1.0	-2.3	245.88	2.6	
1,000.0	0.09	123.11	1,000.0	-1.2	-2.2	242.08	2.5	

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Well:	Skelly Unit #788	North Reference:	Grid
Wellbore:	DH - Job #32D1110823	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	EDM-Regulatory

Survey							
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
1,100.0	0.19	128.77	1,100.0	-1.3	-2.0	236.81	2.4
1,200.0	0.24	87.86	1,200.0	-1.4	-1.7	229.84	2.2
1,300.0	0.27	65.87	1,300.0	-1.3	-1.2	223.67	1.8
1,400.0	0.59	54.08	1,400.0	-0.9	-0.6	214.14	1.1
1,500.0	0.99	58.68	1,500.0	-0.2	0.5	106.39	0.6
1,600.0	1.68	64.66	1,599.9	0.9	2.6	70.56	2.8
1,700.0	1.98	71.02	1,699.9	2.1	5.6	69.24	5.9
1,768.0	1.82	69.70	1,767.9	2.9	7.7	69.56	8.2

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Wellbore:	DH - Job #32D1110823	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	EDM-Regulatory

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Version:	1.0	Phase:	ACTUAL	Tie On Depth: 0.0
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From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
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1,880.0	6,986.0	MWD Survey (DH - Job #32D1110823)	MWD	MWD - Standard	

Survey								
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)	
1,768.0	1.82	69.70	1,767.9	2.9	7.7	69.56	8.2	
1,880.0	1.56	71.73	1,879.8	4.0	10.8	69.87	11.5	
1,912.0	1.64	67.98	1,911.8	4.3	11.6	69.86	12.4	
1,976.0	1.62	70.22	1,975.8	4.9	13.3	69.76	14.2	
2,039.0	1.62	111.09	2,038.8	4.9	15.0	71.92	15.8	
2,103.0	2.71	111.63	2,102.7	4.0	17.3	76.90	17.7	
2,168.0	4.45	111.97	2,167.6	2.5	21.0	83.21	21.2	
2,230.0	5.11	118.48	2,229.4	0.3	25.7	89.36	25.7	
2,294.0	6.04	125.18	2,293.1	-3.0	30.9	95.56	31.1	
2,357.0	6.50	134.08	2,355.7	-7.4	36.2	101.55	37.0	
2,419.0	7.09	138.79	2,417.2	-12.7	41.3	107.14	43.2	

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Well:	Skelly Unit #788	North Reference:	Grid
Wellbore:	DH - Job #32D1110823	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	EDM-Regulatory

Survey							
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
2,482.0	6.87	141.52	2,479.8	-18.6	46.2	111.94	49.8
2,546.0	6.32	142.00	2,543.4	-24.4	50.7	115.67	56.3
2,609.0	6.51	142.18	2,606.0	-29.9	55.0	118.53	62.6
2,673.0	6.86	142.05	2,669.5	-35.8	59.6	120.99	69.5
2,768.0	6.52	133.08	2,763.9	-44.0	67.0	123.26	80.2
2,832.0	6.98	141.30	2,827.4	-49.5	72.1	124.45	87.5
2,894.0	7.42	143.87	2,889.0	-55.7	76.8	125.91	94.9
2,958.0	7.00	146.08	2,952.4	-62.2	81.5	127.38	102.5
3,022.0	7.05	142.01	3,016.0	-68.6	86.0	128.55	110.0
3,086.0	6.70	142.80	3,079.5	-74.6	90.7	129.44	117.5
3,149.0	7.03	138.60	3,142.1	-80.4	95.5	130.11	124.9
3,212.0	7.00	135.98	3,204.6	-86.1	100.7	130.53	132.5
3,276.0	7.19	140.77	3,268.1	-92.0	106.0	130.97	140.3
3,340.0	7.00	141.89	3,331.6	-98.2	110.9	131.52	148.1
3,434.0	6.54	140.48	3,424.9	-106.8	117.8	132.19	159.0
3,498.0	5.56	138.12	3,488.6	-111.9	122.2	132.48	165.7
3,561.0	6.03	151.86	3,551.3	-117.1	125.8	132.95	171.9
3,625.0	7.40	152.14	3,614.8	-123.7	129.3	133.73	179.0
3,689.0	7.98	146.40	3,678.3	-131.1	133.7	134.43	187.2
3,816.0	8.10	135.81	3,804.0	-144.8	144.8	135.00	204.8
3,879.0	8.20	134.45	3,866.4	-151.2	151.1	135.01	213.8
3,942.0	8.36	132.62	3,928.7	-157.4	157.7	134.95	222.8
4,006.0	7.90	132.79	3,992.1	-163.5	164.4	134.86	231.9
4,070.0	7.29	143.91	4,055.5	-169.8	170.0	134.97	240.3
4,133.0	7.32	144.83	4,118.0	-176.3	174.6	135.27	248.2
4,197.0	6.99	144.85	4,181.5	-182.8	179.2	135.57	256.0
4,261.0	7.07	138.18	4,245.0	-189.0	184.1	135.75	263.8
4,324.0	6.42	137.69	4,307.6	-194.5	189.1	135.81	271.2
4,387.0	6.31	139.04	4,370.2	-199.7	193.7	135.87	278.2
4,449.0	6.37	139.09	4,431.8	-204.8	198.2	135.95	285.0
4,513.0	5.81	137.83	4,495.5	-209.9	202.7	136.01	291.8
4,576.0	6.62	137.85	4,558.1	-215.0	207.3	136.05	298.6
4,639.0	6.84	139.90	4,620.7	-220.6	212.1	136.12	306.0
4,702.0	6.89	140.78	4,683.2	-226.3	216.9	136.22	313.5
4,765.0	7.06	139.01	4,745.7	-232.2	221.9	136.30	321.1
4,829.0	6.56	134.44	4,809.3	-237.7	227.0	136.32	328.7
4,893.0	5.74	132.34	4,872.9	-242.4	232.0	136.26	335.6
4,957.0	4.74	137.93	4,936.7	-246.6	236.2	136.23	341.4
5,020.0	5.29	149.30	4,999.4	-251.0	239.4	136.36	346.8
5,084.0	4.61	140.04	5,063.2	-255.5	242.5	136.49	352.3
5,148.0	3.20	136.95	5,127.0	-258.8	245.4	136.52	356.6
5,211.0	2.03	146.33	5,190.0	-261.0	247.2	136.55	359.5
5,275.0	2.13	145.13	5,253.9	-262.9	248.5	136.61	361.8
5,338.0	2.29	147.06	5,316.9	-264.9	249.9	136.67	364.2

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Company:	COG OPERATING LLC	Local Co-ordinate Reference:	Site Skelly Unit #788
Project:	Eddy County, NM (NAN27 NME)	TVD Reference:	KB Elev (12') @ 3879.0usft (Basic #35)
Site:	Skelly Unit #788	MD Reference:	KB Elev (12') @ 3879.0usft (Basic #35)
Well:	Skelly Unit #788	North Reference:	Grid
Wellbore:	DH - Job #32D1110823	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	EDM-Regulatory

Survey							
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
5,402.0	2.36	144.64	5,380.8	-267.1	251.4	136.74	366.8
5,466.0	2.13	148.17	5,444.8	-269.2	252.7	136.80	369.2
5,531.0	3.31	124.48	5,509.7	-271.2	254.9	136.78	372.2
5,592.0	3.76	127.65	5,570.6	-273.5	258.0	136.67	375.9
5,656.0	2.38	122.45	5,634.5	-275.5	260.7	136.57	379.3
5,719.0	2.08	125.82	5,697.4	-276.8	262.8	136.49	381.7
5,782.0	2.02	125.42	5,760.4	-278.1	264.6	136.43	383.9
5,845.0	3.05	138.92	5,823.3	-280.1	266.6	136.41	386.7
5,940.0	2.96	145.40	5,918.2	-284.0	269.7	136.48	391.6
6,002.0	2.81	147.56	5,980.1	-286.6	271.4	136.56	394.7
6,065.0	2.56	146.44	6,043.1	-289.1	273.0	136.64	397.6
6,129.0	2.21	141.47	6,107.0	-291.2	274.6	136.69	400.2
6,192.0	1.98	132.72	6,170.0	-292.9	276.1	136.69	402.5
6,224.0	2.13	128.04	6,201.9	-293.6	277.0	136.67	403.7
6,288.0	2.52	125.67	6,265.9	-295.2	279.1	136.61	406.2
6,351.0	2.49	121.74	6,328.8	-296.7	281.4	136.52	408.9
6,415.0	2.64	128.04	6,392.8	-298.4	283.7	136.44	411.7
6,478.0	2.97	142.19	6,455.7	-300.5	285.8	136.44	414.8
6,541.0	3.06	147.87	6,518.6	-303.3	287.7	136.50	418.0
6,605.0	3.07	146.38	6,582.5	-306.1	289.6	136.59	421.4
6,668.0	3.01	146.26	6,645.4	-308.9	291.4	136.67	424.7
6,732.0	2.93	145.46	6,709.3	-311.7	293.3	136.74	428.0
6,796.0	3.04	141.80	6,773.2	-314.3	295.3	136.79	431.3
6,891.0	2.94	137.79	6,868.1	-318.1	298.5	136.82	436.2
6,986.0	2.94	138.25	6,963.0	-321.7	301.7	136.84	441.1

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,768.0	1,767.9	2.9	7.7	Gyro Tie-in
6,986.0	6,963.0	-321.7	301.7	Last MWD Survey
7,080.0	7,056.9	-325.3	305.0	Projection to Bit



Project: Eddy County, NM (NAN27 NME)
 Site: Skelly Unit #788
 Well: Skelly Unit #788
 Wellbore: DH - Job #32D1110823
 Design: Plan #2 - 7-7/8" Hole

