

30-015-37985

COG OPERATING LLC

Eddy County, NM (NAN27 NME)

Skelly Unit #843

Skelly Unit #843

OH

SDI Standard Survey Report

13 October, 2010

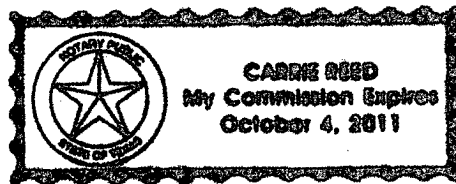
This survey is correct to the best of my knowledge and is supported by actual field data.

Robert

Notorized this date 13th of October, 2010.

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 #843
Project:	Eddy County, NM (NAN27 NME)	TVD Reference:	KB Elev (12') @ 3897.0usft (Basic #35)
Site:	Skelly Unit #843	MD Reference:	KB Elev (12') @ 3897.0usft (Basic #35)
Well:	Skelly Unit #843	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	EDM-Regulatory

Project:	Eddy County, NM (NAN27 NME)	System Datum:	Mean Sea Level
Map System:	US State Plane 1927 (Exact solution)		
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Well:	Skelly Unit #843				
Well Position	+N/-S	0.0 usft	Northing:	668,315.20 usft	Latitude: 32° 50' 10.924 N
	+E/-W	0.0 usft	Easting:	647,108.60 usft	Longitude: 103° 51' 15.787 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level: 3,885.0 usft

Wellbore:	OH
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	9/23/2010	7.84	60.74	49,056

Design:	Actual
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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	31.48

Survey Program		Date	10/13/2010		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.0	1,729.0	Gyro Survey (OH)	Keeper	Standard Wireline Keeper ver 1.0.2	
1,961.0	6,742.0	MWD Survey (OH)	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	0.61	124.90	100.0	-0.3	0.4	124.90	0.5
	200.0	0.64	118.17	200.0	-0.9	1.4	122.59	1.6
	300.0	0.61	108.53	300.0	-1.3	2.4	118.93	2.7
	400.0	0.52	117.09	400.0	-1.7	3.3	117.20	3.7
	500.0	0.58	122.72	500.0	-2.2	4.1	117.79	4.6
	600.0	0.45	121.66	600.0	-2.6	4.9	118.52	5.5
	700.0	0.48	105.12	700.0	-3.0	5.6	117.83	6.3
	800.0	0.51	101.10	800.0	-3.2	6.4	116.07	7.2
	900.0	0.48	113.33	900.0	-3.4	7.3	115.11	8.0
	1,000.0	0.60	104.40	1,000.0	-3.7	8.2	114.40	9.0
	1,100.0	0.51	92.70	1,100.0	-3.9	9.1	112.92	9.9
	1,200.0	0.84	87.14	1,199.9	-3.8	10.3	110.45	11.0
	1,300.0	0.91	71.44	1,299.9	-3.5	11.8	106.77	12.3
	1,400.0	1.19	68.41	1,399.9	-2.9	13.5	102.18	13.8
	1,500.0	1.47	87.00	1,499.9	-2.5	15.7	98.89	15.9

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Site:	Skelly Unit #843	MD Reference:	KB Elev (12') @ 3897.0usft (Basic #35)
Well:	Skelly Unit #843	North Reference:	Grid
Wellbore:	OH	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)	
1,600.0	1.56	82.15	1,599.9	-2.2	18.4	96.86	18.5	
1,700.0	1.72	87.79	1,699.8	-2.0	21.2	95.29	21.3	
1,729.0	1.49	85.99	1,728.8	-1.9	22.0	94.99	22.1	

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SDI Standard Survey Report

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Site:	Skelly Unit #843	MD Reference:	KB Elev (12') @ 3897.0usft (Basic #35)
Well:	Skelly Unit #843	North Reference:	Grid
Wellbore:	OH	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		

Well	Skelly Unit #843			
Well Position	+N/-S	0.0 usft	Northing:	668,315.20 usft
	+E/-W	0.0 usft	Easting:	647,108.60 usft
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft
			Ground Level:	3,885.0 usft

Wellbore	OH			
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	9/23/2010	7.84	60.74	49,056

Design	Actual			
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Audit Notes:				
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Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
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Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	31.48

Survey Program	Date	10/13/2010			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.0	1,729.0	Gyro Survey (OH)	Keeper	Standard Wireline Keeper ver 1.0.2	
1,961.0	6,688.0	MWD Survey (OH)	MWD	MWD - Standard	

Survey	Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
	1,729.0	1.49	85.99	1,728.8	-1.9	22.0	94.99	22.1
	1,961.0	1.28	106.86	1,960.7	-2.5	27.5	95.11	27.6
	1,992.0	1.29	105.23	1,991.7	-2.7	28.2	95.38	28.3
	2,024.0	1.39	103.69	2,023.7	-2.8	28.9	95.61	29.0
	2,056.0	1.49	93.92	2,055.7	-3.0	29.7	95.69	29.8
	2,088.0	1.56	83.70	2,087.7	-2.9	30.5	95.50	30.7
	2,119.0	1.70	68.71	2,118.7	-2.7	31.4	94.97	31.5
	2,151.0	2.07	56.68	2,150.7	-2.2	32.3	93.96	32.4
	2,183.0	2.61	46.98	2,182.6	-1.4	33.3	92.45	33.4
	2,214.0	3.10	41.57	2,213.6	-0.3	34.4	90.53	34.4
	2,246.0	3.56	39.10	2,245.6	1.1	35.6	88.23	35.6
	2,277.0	4.07	39.84	2,276.5	2.7	36.9	85.83	37.0
	2,305.0	4.68	42.41	2,304.4	4.3	38.3	83.60	38.6
	2,341.0	5.28	42.90	2,340.3	6.6	40.4	80.73	41.0
	2,373.0	5.88	41.33	2,372.1	8.9	42.5	78.17	43.4
	2,405.0	6.58	40.06	2,403.9	11.5	44.8	75.55	46.3

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Well:	Skelly Unit #843	North Reference:	Grid
Wellbore:	OH	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)	
2,437.0	7.11	38.40	2,435.7	14.5	47.2	72.92	49.4	
2,468.0	7.35	33.35	2,466.4	17.7	49.5	70.36	52.5	
2,563.0	6.93	24.49	2,560.7	27.9	55.2	63.14	61.9	
2,658.0	6.26	24.77	2,655.1	37.9	59.7	57.63	70.7	
2,754.0	6.45	26.86	2,750.5	47.4	64.4	53.62	80.0	
2,848.0	7.53	25.77	2,843.8	57.7	69.4	50.28	90.3	
2,942.0	7.09	24.62	2,937.0	68.5	74.5	47.41	101.2	
3,038.0	6.86	25.20	3,032.3	79.1	79.4	45.13	112.1	
3,069.0	6.93	25.39	3,063.1	82.4	81.0	44.50	115.6	
3,132.0	7.70	24.95	3,125.6	89.7	84.4	43.27	123.2	
3,195.0	8.00	24.40	3,188.0	97.5	88.0	42.07	131.4	
3,290.0	8.15	23.77	3,282.1	109.7	93.5	40.43	144.1	
3,385.0	8.34	23.57	3,376.1	122.2	98.9	39.00	157.2	
3,481.0	8.47	24.15	3,471.0	135.0	104.6	37.77	170.8	
3,576.0	8.57	23.58	3,565.0	147.9	110.3	36.72	184.5	
3,671.0	8.60	21.46	3,658.9	161.0	115.7	35.71	198.3	
3,766.0	9.27	21.26	3,752.8	174.7	121.1	34.73	212.6	
3,861.0	9.34	21.86	3,846.5	189.0	126.8	33.85	227.6	
3,957.0	9.22	24.03	3,941.3	203.3	132.8	33.16	242.8	
4,052.0	9.77	23.42	4,035.0	217.6	139.1	32.59	258.3	
4,147.0	9.52	27.03	4,128.6	232.0	145.9	32.16	274.1	
4,244.0	9.37	31.10	4,224.3	245.9	153.6	31.99	289.9	
4,305.0	8.69	32.70	4,284.6	254.0	158.7	31.98	299.5	
4,337.0	8.02	32.37	4,316.2	258.0	161.2	31.99	304.2	
4,369.0	7.56	32.94	4,347.9	261.6	163.5	32.00	308.5	
4,401.0	7.05	32.75	4,379.7	265.0	165.7	32.01	312.6	
4,433.0	6.54	32.88	4,411.4	268.2	167.8	32.02	316.4	
4,464.0	5.97	32.08	4,442.2	271.1	169.6	32.03	319.7	
4,496.0	5.65	27.89	4,474.1	273.9	171.2	32.01	323.0	
4,528.0	5.38	22.54	4,505.9	276.6	172.5	31.94	326.0	
4,560.0	4.95	16.94	4,537.8	279.4	173.5	31.84	328.8	
4,591.0	4.40	15.90	4,568.7	281.8	174.2	31.72	331.3	
4,621.0	3.94	16.62	4,598.6	283.9	174.8	31.62	333.4	
4,653.0	3.55	19.69	4,630.6	285.9	175.4	31.54	335.4	
4,684.0	3.04	21.16	4,661.5	287.5	176.1	31.48	337.2	
4,716.0	2.42	22.85	4,693.5	288.9	176.6	31.44	338.7	
4,810.0	1.82	24.96	4,787.4	292.1	178.0	31.36	342.1	
4,903.0	1.96	27.02	4,880.4	294.9	179.4	31.31	345.2	
4,997.0	0.77	31.05	4,974.3	296.9	180.4	31.29	347.4	
5,092.0	0.11	359.68	5,069.3	297.5	180.8	31.28	348.1	
5,188.0	0.31	30.52	5,165.3	297.8	180.9	31.28	348.4	
5,283.0	0.31	235.60	5,260.3	297.9	180.8	31.26	348.5	
5,378.0	0.36	190.40	5,355.3	297.4	180.6	31.26	348.0	
5,474.0	0.37	147.70	5,451.3	296.9	180.7	31.32	347.5	

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Site:	Skelly Unit #843	MD Reference:	KB Elev (12') @ 3897.0usft (Basic #35)
Well:	Skelly Unit #843	North Reference:	Grid
Wellbore:	OH	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)	
5,568.0	0.11	0.07	5,545.3	296.7	180.8	31.36	347.5	
5,664.0	0.12	172.10	5,641.3	296.7	180.8	31.36	347.5	
5,759.0	0.18	240.90	5,736.3	296.5	180.7	31.36	347.3	
5,853.0	0.32	23.79	5,830.3	296.7	180.7	31.34	347.4	
5,949.0	0.47	39.80	5,926.3	297.3	181.1	31.35	348.1	
6,044.0	0.30	270.51	6,021.3	297.6	181.1	31.32	348.3	
6,138.0	0.37	160.00	6,115.3	297.3	180.9	31.32	348.0	
6,234.0	0.45	101.20	6,211.3	296.9	181.4	31.42	347.9	
6,329.0	0.12	216.00	6,306.3	296.8	181.7	31.48	348.0	
6,423.0	0.19	257.60	6,400.3	296.6	181.5	31.46	347.8	
6,517.0	0.31	263.84	6,494.3	296.6	181.1	31.41	347.5	
6,613.0	0.44	143.92	6,590.3	296.3	181.0	31.43	347.2	
6,688.0	0.28	289.70	6,665.3	296.1	181.0	31.44	347.1	

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,729.0	1,728.8	-1.9	22.0	Gyro Tie-in
6,688.0	6,665.3	296.1	181.0	Last MWD Survey
6,742.0	6,719.3	296.2	180.9	Projection to Bit