

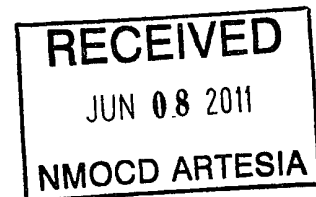


COG OPERATING LLC

Eddy County, NM (NAN27 NME)
Skelly Unit #832
Skelly Unit #832
OH

SUR: D-15-17s-31e, 764/N & 866/W
BHL: D-15-17s-31e, 979/N & 982/W
API # 30-015-37984

Survey: MWD Survey



SDI Standard Survey Report

21 February, 2011

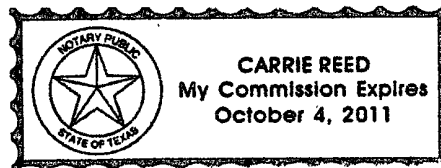
This survey is correct to the best of my knowledge and is supported by actual field data.

[Signature]

Notarized this date 21st of February, 2011.

Carrie Reed

Notary Signature
County of Midland
State of Texas



Scientific Drilling
Directional Drilling Operations



Scientific Drilling International, Inc.
SDI Standard Survey Report



Company:	COG OPERATING LLC	Local Co-ordinate Reference:	Site Skelly Unit #832
Project:	Eddy County, NM (NAN27 NME)	TVD Reference:	KB Elev (12') @ 3898.0usft (Silver Oak #1)
Site:	Skelly Unit #832	MD Reference:	KB Elev (12') @ 3898.0usft (Silver Oak #1)
Well:	Skelly Unit #832	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		

Site	Skelly Unit #832		
Site Position:	Map	Northing:	669,489.10 usft
From:		Easting:	644,532.20 usft
Position Uncertainty:	0.0 usft	Slot Radius:	0"
		Latitude:	32° 50' 22.655 N
		Longitude:	103° 51' 45.922 W
		Grid Convergence:	0.26 °

Well	Skelly Unit #832		
Well Position	+N/-S	0.0 usft	Northing:
	+E/-W	0.0 usft	Easting:
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft
		Latitude:	32° 50' 22.655 N
		Longitude:	103° 51' 45.922 W
		Ground Level:	3,886.0 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination
	IGRF2010	1/21/2011	(°)
			7.82
			Dip Angle
			(°)
			60.72
			Field Strength
			(nT)
			48,992

Design	Actual		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.0	0.0	0.0
			Direction
			(°)
			151.79

Survey Program	Date: 2/21/2011		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
100.0	1,799.0	Gyro Survey (OH)	Keeper
1,905.0	5,178.0	MWD Survey (OH)	MWD
			Description
			Standard Wireline Keeper ver 1.0.2
			MWD - Standard

Survey	Measured Depth	Inclination	Azimuth	True Vertical	North/South	East/West	Closure Azimuth	Closure Distance
	(usft)	(°)	(°)	Depth	(usft)	(usft)	(°)	(usft)
	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.0
	100.0	0.04	171.31	100.0	0.0	0.0	171.31	0.0
	200.0	0.11	221.11	200.0	-0.1	-0.1	200.40	0.2
	300.0	0.12	168.53	300.0	-0.3	-0.1	196.69	0.3
	400.0	0.10	155.44	400.0	-0.5	0.0	184.33	0.5
	500.0	0.07	200.41	500.0	-0.6	0.0	182.06	0.6
	600.0	0.26	197.86	600.0	-0.9	-0.1	187.14	0.9
	700.0	0.33	206.23	700.0	-1.4	-0.3	192.66	1.4
	800.0	0.31	197.54	800.0	-1.9	-0.5	195.30	2.0
	900.0	0.41	206.07	900.0	-2.5	-0.8	197.01	2.6
	1,000.0	0.54	212.79	1,000.0	-3.2	-1.2	200.12	3.4



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Company:	COG OPERATING LLC	Local Co-ordinate Reference:	Site Skelly Unit #832
Project:	Eddy County, NM (NAN27 NME)	TVD Reference:	KB Elev (12') @ 3898.0usft (Silver Oak #1)
Site:	Skelly Unit #832	MD Reference:	KB Elev (12') @ 3898.0usft (Silver Oak #1)
Well:	Skelly Unit #832	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)
1,100.0	0.47	220.20	1,100.0	-3.9	-1.7	203.41	4.3
1,200.0	0.21	160.58	1,200.0	-4.4	-1.9	203.34	4.8
1,300.0	0.41	81.36	1,300.0	-4.5	-1.5	198.16	4.7
1,400.0	0.59	83.70	1,400.0	-4.4	-0.6	187.95	4.4
1,500.0	0.72	90.26	1,500.0	-4.3	0.5	173.10	4.4
1,600.0	1.01	85.63	1,600.0	-4.3	2.0	154.60	4.7
1,700.0	0.97	91.42	1,699.9	-4.2	3.8	138.42	5.7
1,799.0	0.86	90.24	1,798.9	-4.3	5.3	128.59	6.8



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SDI Standard Survey Report



Company:	COG OPERATING LLC	Local Co-ordinate Reference:	Site Skelly Unit #832
Project:	Eddy County, NM (NAN27 NME)	TVD Reference:	KB Elev (12') @ 3898.0usft (Silver Oak #1)
Site:	Skelly Unit #832	MD Reference:	KB Elev (12') @ 3898.0usft (Silver Oak #1)
Well:	Skelly Unit #832	North Reference:	Gnd
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		

Site:	Skelly Unit #832		
Site Position:		Northing:	669,489 10 usft
From:	Map	Easting:	644,532 20 usft
Position Uncertainty:	0 0 usft	Slot Radius:	0"
		Latitude:	32° 50' 22.655 N
		Longitude:	103° 51' 45 922 W
		Grid Convergence:	0 26 °

Well:	Skelly Unit #832		
Well Position	+N/-S	0 0 usft	Northing:
	+E/-W	0 0 usft	Easting:
Position Uncertainty	0 0 usft	Wellhead Elevation:	usft
		Latitude:	32° 50' 22 655 N
		Longitude:	103° 51' 45 922 W
		Ground Level:	3,886 0 usft

Wellbore:	OH		
Magnetics	Model Name	Sample Date	Declination
	IGRF2010	1/21/2011	(°)
			7 82
			Dip Angle
			(°)
			60 72
			Field Strength
			(nT)
			48,992

Design:	Actual		
Audit Notes:			
Version:	1 0	Phase:	ACTUAL
		Tie On Depth:	0 0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.0	0.0	0 0
			Direction
			(°)
			151 79

Survey Program	Date 2/21/2011		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
100.0	1,799 0	Gyro Survey (OH)	Keeper
1,905.0	5,130 0	MWD Survey (OH)	MWD
			Description
			Standard Wireline Keeper ver 1 0 2
			MWD - Standard

Survey							
Measured Depth	Inclination	Azimuth	True Vertical	North/South	East/West	Closure Azimuth	Closure Distance
(usft)	(°)	(°)	Depth	(usft)	(usft)	(°)	(usft)
1,799 0	0.86	90 24	1,798.9	-4.3	5 3	128 59	6 8
1,905 0	0.56	90.58	1,904.9	-4.3	6.7	122.69	7.9
1,999 0	1.05	154 84	1,998.9	-5 1	7 5	124.05	9 0
2,094.0	2 59	174 56	2,093 9	-8.0	8 1	134 74	11 3
2,188 0	4 23	168 22	2,187 7	-13 5	9 0	146 40	16 2
2,282 0	5 25	157.39	2,281.4	-20 8	11 3	151 50	23 7
2,376.0	4 60	155 71	2,375.0	-28.3	14.5	152.79	31 8
2,470 0	4 24	156 08	2,468.8	-34.9	17.5	153 37	39 0
2,564 0	5 06	147 41	2,562 4	-41 5	21 1	153.04	46 6
2,658 0	4.56	143 88	2,656.1	-48 0	25.6	151 99	54 4
2,751.0	4 01	143 32	2,748.9	-53.6	29 7	151 04	61 3



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SDI Standard Survey Report



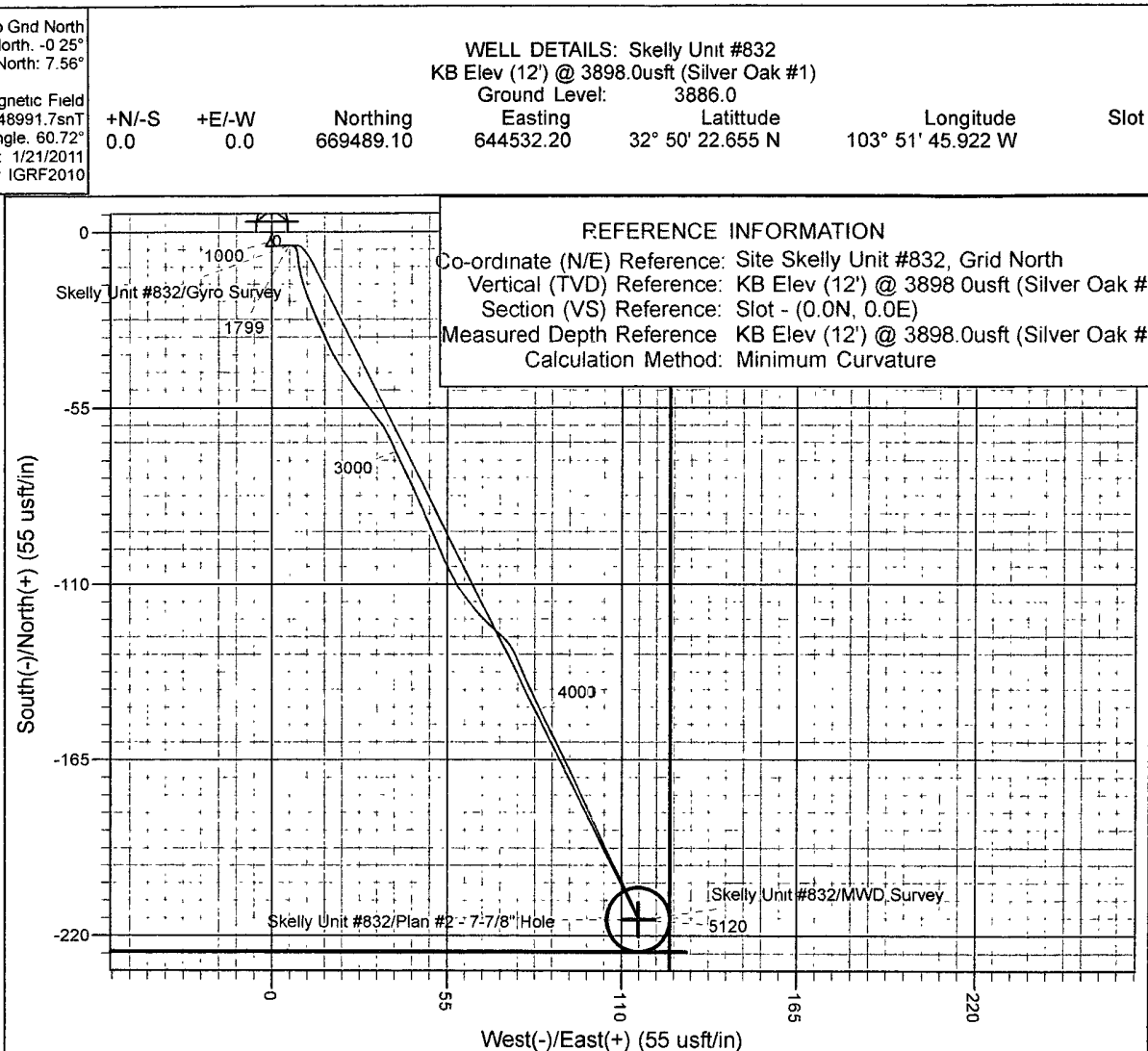
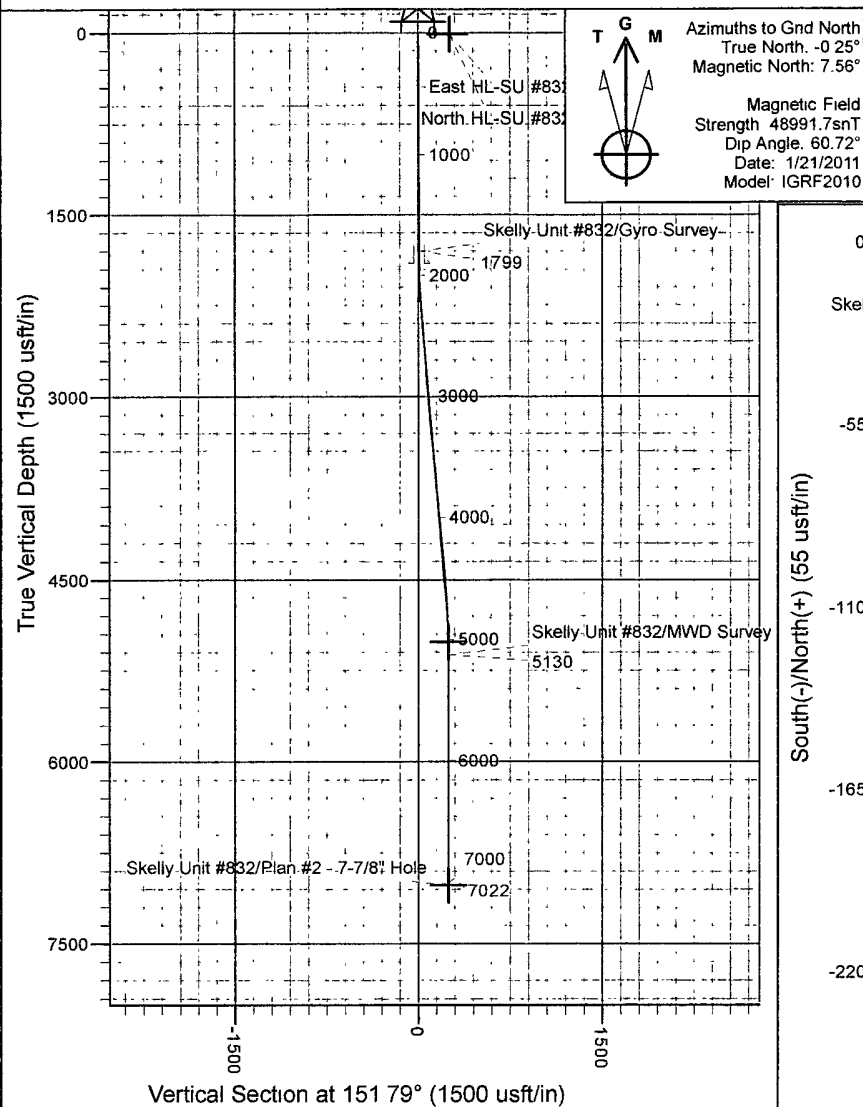
Company:	COG OPERATING LLC	Local Co-ordinate Reference:	Site Skelly Unit #832
Project:	Eddy County, NM (NAN27 NME)	TVD Reference:	KB Elev (12') @ 3898.0usft (Silver Oak #1)
Site:	Skelly Unit #832	MD Reference:	KB Elev (12') @ 3898.0usft (Silver Oak #1)
Well:	Skelly Unit #832	North Reference:	Grid
Wellbore:	OH	Survey/Calculation Method:	Minimum Curvature
Design:	Actual	Database:	EDM-Regulatory

Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
2,845.0	3.46	142.30	2,842.7	-58.5	33.4	150.30	67.4
2,939.0	4.36	154.42	2,936.4	-64.0	36.7	150.19	73.7
3,032.0	5.22	154.76	3,029.1	-71.0	40.0	150.61	81.5
3,126.0	4.81	154.24	3,122.7	-78.4	43.5	150.97	89.7
3,220.0	5.72	155.71	3,216.3	-86.2	47.2	151.33	98.3
3,314.0	5.63	156.96	3,309.9	-94.8	50.9	151.76	107.6
3,408.0	5.36	157.28	3,403.5	-103.0	54.4	152.17	116.5
3,501.0	5.56	147.69	3,496.0	-110.9	58.5	152.19	125.3
3,595.0	5.80	140.14	3,589.6	-118.4	64.0	151.61	134.5
3,688.0	5.60	129.21	3,682.1	-124.8	70.5	150.55	143.4
3,783.0	5.01	155.71	3,776.7	-131.5	75.8	150.05	151.8
3,878.0	4.89	154.16	3,871.4	-139.0	79.3	150.30	160.0
3,972.0	5.12	155.32	3,965.0	-146.4	82.8	150.52	168.2
4,066.0	5.08	154.30	4,058.6	-153.9	86.3	150.72	176.5
4,160.0	5.16	152.22	4,152.3	-161.4	90.1	150.84	184.9
4,254.0	5.07	154.94	4,245.9	-168.9	93.8	150.96	193.2
4,347.0	5.10	154.89	4,338.5	-176.4	97.3	151.12	201.5
4,442.0	5.03	155.30	4,433.2	-184.0	100.8	151.28	209.8
4,535.0	4.89	154.36	4,525.8	-191.3	104.3	151.41	217.9
4,629.0	4.84	154.31	4,619.5	-198.5	107.7	151.51	225.8
4,723.0	3.45	151.04	4,713.2	-204.5	110.8	151.55	232.6
4,817.0	2.92	158.00	4,807.1	-209.2	113.1	151.61	237.8
4,910.0	0.84	150.20	4,900.0	-212.0	114.3	151.67	240.9
5,006.0	0.91	149.30	4,996.0	-213.3	115.0	151.66	242.3
5,099.0	1.01	149.33	5,089.0	-214.6	115.8	151.64	243.9
5,130.0	0.96	152.40	5,120.0	-215.1	116.1	151.64	244.4

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,799.0	1,798.9	-4.3	5.3	Gyro Tie-in
5,130.0	5,120.0	-215.1	116.1	Last MWD Survey
5,178.0	5,168.0	-215.8	116.5	Projection to Bit



Project: Eddy County, NM (NAN27 NME)
 Site: Skelly Unit #832
 Well: Skelly Unit #832
 Wellbore: OH
 Design: Plan #2 - 7-7/8" Hole



WELL DETAILS: Skelly Unit #832
 KB Elev (12') @ 3898.0usft (Silver Oak #1)
 Ground Level: 3886.0
 Easting: 644532.20
 Latitude: 32° 50' 22.655 N
 Longitude: 103° 51' 45.922 W
 Slot

REFERENCE INFORMATION
 Co-ordinate (N/E) Reference: Site Skelly Unit #832, Grid North
 Vertical (TVD) Reference: KB Elev (12') @ 3898.0usft (Silver Oak #1)
 Section (VS) Reference: Slot - (0.0N, 0.0E)
 Measured Depth Reference: KB Elev (12') @ 3898.0usft (Silver Oak #1)
 Calculation Method: Minimum Curvature

COMPANY DETAILS: COG OPERATING LLC
 223032
 Calculation Method: Minimum Curvature
 Error System: ISCWSA
 Scan Method: Closest Approach 3D
 Error Surface: Elliptical Conic
 Warning Method: Error Ratio

PROJECT DETAILS: Eddy County, NM (NAN27 NME)
 Geodetic System: State Plane 1927 (Exact solution)
 Datum: NAD 1927 (NADCON CONUS)
 Ellipsoid: Clarke 1866
 Zone: New Mexico East 3001
 System Datum: Mean Sea Level

SITE DETAILS: Skelly Unit #832
 Site Centre Latitude: 32° 50' 22.655 N
 Longitude: 103° 51' 45.922 W
 Positional Uncertainty: 0.0
 Convergence: 0.26
 Local North: Grid