

COG OPERATING LLC

Eddy County, NM (NAN27 NME)

Folk Federal #41

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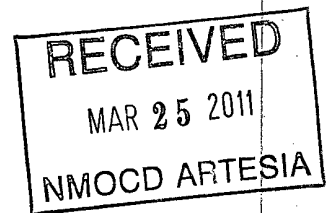
DH - Job #32D12101026

30-015-37413

Survey: MWD Survey

SDI Standard Survey Report

03 February, 2011



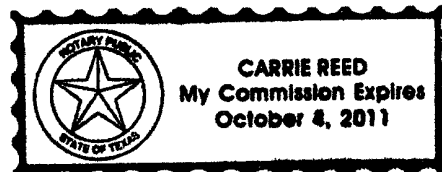
This survey is correct to the best of my knowledge and is supported by actual field data.

Richard

Notarized this date 3rd of February 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 Folk Federal #41
Project:	Eddy County, NM (NAN27 NME)	TVD Reference:	KB Elev (12') @ 3672.0usft (Silver Oak #4)
Site:	Folk Federal #41	MD Reference:	KB Elev (12') @ 3672.0usft (Silver Oak #4)
Well:	Folk Federal #41	North Reference:	Grid
Wellbore:	DH - Job #32D12101026	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	Folk Federal #41		
Site Position:		Northing:	667,258.90 usft
From:	Map	Easting:	570,505.50 usft
Position Uncertainty:	0.0 usft	Slot Radius:	0"
		Latitude:	32° 50' 3.013 N
		Longitude:	104° 6' 13.645 W
		Grid Convergence:	0.12 °

Well	Folk Federal #41		
Well Position	+N/-S	0.0 usft	Northing: 667,258.90 usft
	+E/-W	0.0 usft	Easting: 570,505.50 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft
		Latitude:	32° 50' 3.013 N
		Longitude:	104° 6' 13.645 W
		Ground Level:	3,660.0 usft

Wellbore	DH - Job #32D12101026				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	12/30/2010	7.93	60.67	48,968

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	185.07

Survey Program	Date	2/3/2011			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.0	846.0	Gyro Survey (DH - Job #32D12101026)	Keeper	Standard Wireline Keeper ver 1.0.2	
866.0	4,080.0	MWD Survey (DH - Job #32D12101026)	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	0.26	180.79	100.0	-0.2	0.0	180.79	0.2	
200.0	1.54	243.07	200.0	-1.1	-1.2	228.58	1.6	
300.0	1.54	231.99	300.0	-2.5	-3.5	234.18	4.3	
400.0	1.40	224.50	399.9	-4.2	-5.4	232.02	6.8	
500.0	1.07	214.86	499.9	-5.8	-6.8	229.23	8.9	
600.0	0.93	215.67	599.9	-7.3	-7.8	226.95	10.6	
700.0	0.84	211.09	699.9	-8.5	-8.6	225.26	12.1	
800.0	0.62	219.75	799.9	-9.6	-9.3	224.27	13.4	
846.0	0.77	222.45	845.9	-10.0	-9.7	224.15	14.0	

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Well:	Folk Federal #41	North Reference:	Grid
Wellbore:	DH - Job #32D12101026	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		Folk Federal #41			
Site Position:		Northing:	667,258.90 usft	Latitude:	32° 50' 3.013 N
From:	Map	Easting:	570,505.50 usft	Longitude:	104° 6' 13.645 W
Position Uncertainty:	0.0 usft	Slot Radius:	0"	Grid Convergence:	0.12 °

Well	Folk Federal #41					
Well Position	+N/-S	0.0 usft	Northing:	667,258.90 usft	Latitude:	32° 50' 3.013 N
	+E/-W	0.0 usft	Easting:	570,505.50 usft	Longitude:	104° 6' 13.645 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	3,660.0 usft

Wellbore	DH - Job #32D12101026				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	12/30/2010	7.93	60.67	48,968

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	185.07

Survey Program	Date	2/3/2011			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.0	846.0	Gyro Survey (DH - Job #32D12101026)	Keeper	Standard Wireline Keeper ver 1.0.2	
866.0	4,527.0	MWD Survey (DH - Job #32D12101026)	MWD	MWD - Standard	

Survey							
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
846.0	0.77	222.45	845.9	-10.0	-9.7	224.15	14.0
866.0	0.79	222.36	865.9	-10.2	-9.9	224.11	14.2
930.0	0.87	222.30	929.8	-10.9	-10.5	224.01	15.1
993.0	2.53	198.90	992.8	-12.6	-11.3	221.96	16.9
1,057.0	4.77	195.40	1,056.7	-16.5	-12.5	217.11	20.7
1,120.0	4.60	183.20	1,119.5	-21.5	-13.3	211.72	25.3
1,184.0	4.44	184.70	1,183.3	-26.5	-13.6	207.20	29.8
1,248.0	4.24	183.50	1,247.1	-31.4	-14.0	204.03	34.4
1,311.0	4.82	184.80	1,309.9	-36.3	-14.4	201.56	39.1
1,375.0	5.27	172.00	1,373.6	-41.9	-14.2	198.67	44.3
1,439.0	5.27	171.30	1,437.4	-47.7	-13.3	195.59	49.6

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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)
1,503.0	4.93	172.50	1,501.1	-53.4	-12.5	193.19	54.8
1,566.0	4.79	168.10	1,563.9	-58.6	-11.6	191.21	59.8
1,630.0	5.08	178.00	1,627.7	-64.1	-11.0	189.71	65.0
1,693.0	4.58	178.70	1,690.4	-69.4	-10.8	188.86	70.2
1,757.0	4.38	177.10	1,754.2	-74.4	-10.6	188.14	75.1
1,820.0	4.37	177.10	1,817.1	-79.2	-10.4	187.48	79.9
1,884.0	4.10	177.20	1,880.9	-83.9	-10.2	186.90	84.5
1,948.0	2.96	177.71	1,944.8	-87.8	-10.0	186.48	88.4
2,012.0	4.77	180.70	2,008.6	-92.1	-9.9	186.16	92.7
2,075.0	4.58	179.40	2,071.4	-97.3	-9.9	185.84	97.8
2,139.0	3.68	179.10	2,135.2	-101.9	-9.9	185.54	102.4
2,202.0	3.97	177.70	2,198.1	-106.1	-9.8	185.26	106.5
2,266.0	3.73	175.90	2,262.0	-110.4	-9.5	184.94	110.8
2,330.0	3.62	179.20	2,325.8	-114.5	-9.4	184.67	114.9
2,393.0	3.67	176.90	2,388.7	-118.5	-9.2	184.45	118.8
2,457.0	3.24	171.50	2,452.6	-122.3	-8.8	184.13	122.6
2,521.0	3.12	169.10	2,516.5	-125.8	-8.2	183.75	126.1
2,584.0	3.93	184.50	2,579.4	-129.7	-8.1	183.57	129.9
2,648.0	4.63	189.60	2,643.2	-134.4	-8.7	183.70	134.7
2,711.0	4.57	194.90	2,706.0	-139.3	-9.8	184.01	139.7
2,775.0	4.74	195.90	2,769.8	-144.3	-11.1	184.41	144.8
2,839.0	5.05	196.30	2,833.5	-149.6	-12.7	184.84	150.1
2,902.0	4.99	198.30	2,896.3	-154.8	-14.3	185.27	155.5
2,966.0	4.88	196.20	2,960.1	-160.1	-15.9	185.68	160.9
3,030.0	5.12	181.40	3,023.8	-165.6	-16.8	185.78	166.4
3,094.0	4.95	179.90	3,087.6	-171.2	-16.8	185.61	172.0
3,157.0	4.93	178.90	3,150.3	-176.6	-16.8	185.42	177.4
3,221.0	5.03	181.30	3,214.1	-182.2	-16.8	185.26	182.9
3,284.0	4.90	182.80	3,276.9	-187.6	-17.0	185.17	188.4
3,380.0	4.91	184.80	3,372.5	-195.8	-17.5	185.11	196.6
3,476.0	4.92	185.20	3,468.2	-204.0	-18.2	185.11	204.8
3,571.0	3.81	187.40	3,562.9	-211.2	-19.0	185.14	212.0
3,667.0	3.36	187.80	3,658.7	-217.1	-19.8	185.21	218.0
3,762.0	1.87	199.10	3,753.6	-221.3	-20.7	185.34	222.3
3,858.0	1.06	213.80	3,849.6	-223.6	-21.7	185.54	224.6
3,954.0	0.29	94.03	3,945.5	-224.3	-21.9	185.59	225.4
4,049.0	0.97	0.33	4,040.5	-223.5	-21.7	185.54	224.6
4,145.0	1.07	359.80	4,136.5	-221.8	-21.7	185.59	222.9
4,240.0	1.09	354.00	4,231.5	-220.0	-21.8	185.66	221.1
4,336.0	1.13	3.05	4,327.5	-218.2	-21.8	185.72	219.3
4,432.0	0.30	33.20	4,423.5	-217.0	-21.7	185.70	218.1
4,527.0	0.28	99.18	4,518.5	-216.9	-21.3	185.61	217.9

