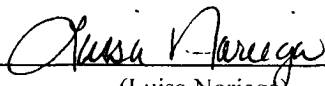


WELL NAME AND NUMBER Fir Federal No. 2 30-015-39465
LOCATION Section 25, T17S, R27E, Lot L, 2430 FSL, 990 FWL, Eddy County
OPERATOR COG Operating LLC
DRILLING CONTRACTOR United Drilling, Inc.

The undersigned hereby certifies that he is an authorized representative of the drilling contractor who drilled the above described well and had conducted deviation test and obtained the following results:

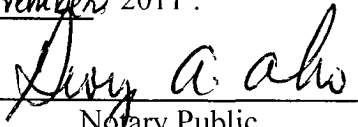
Degrees @ Depth	Degrees @ Depth	Degrees @ Depth
<u>.8° @ 165'</u>	<u>6.11° @ 1889'</u>	<u>.62° @ 3981'</u>
<u>.5° @ 257'</u>	<u>6.00° @ 1952'</u>	<u>.81° @ 4171'</u>
<u>.2° @ 334'</u>	<u>6.08° @ 2016'</u>	<u>.50° @ 4583'</u>
<u>.2° @ 587'</u>	<u>5.85° @ 2079'</u>	
<u>.5° @ 965'</u>	<u>6.07° @ 2142'</u>	
<u>.28° @ 1026'</u>	<u>5.97° @ 2356'</u>	
<u>.50° @ 1090'</u>	<u>5.92° @ 2459'</u>	
<u>.35° @ 1153'</u>	<u>5.83° @ 2523'</u>	
<u>.91° @ 1217'</u>	<u>5.73° @ 2903'</u>	
<u>2.82° @ 1280'</u>	<u>5.21° @ 2967'</u>	
<u>2.74° @ 1375'</u>	<u>3.99° @ 3030'</u>	
<u>3.43° @ 1439'</u>	<u>1.46° @ 3347'</u>	
<u>5.06° @ 1502'</u>	<u>.37° @ 3411'</u>	
<u>6.15° @ 1597'</u>	<u>.77° @ 3506'</u>	
<u>6.01° @ 1762'</u>	<u>.50° @ 3601'</u>	
<u>6.21° @ 1826'</u>	<u>.57° @ 3791'</u>	

Drilling Contractor- UNITED DRILLING, INC.

By: 
(Luisa Noriega)

Title: Asst. Office Manager

Subscribed and sworn to before me this 18th day of November, 2011.


Notary Public
Chaves NM
County State

My Commission Expires:

Exp-10-8-12



COG OPERATING LLC

Eddy County, NM (NAN27 NME)

Fir Federal #2

Fir Federal #2

OH - Job #32D11111098

Survey: MWD Survey

SDI Standard Survey Report

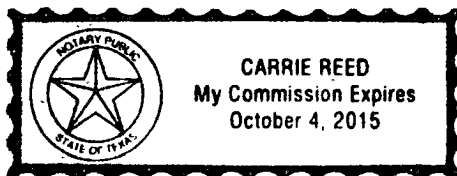
This survey is correct to the best of my knowledge and is supported by actual field data.

Robert

Notarized this date 12th of December, 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 Fir Federal #2
Project:	Eddy County, NM (NAN27 NME)	TVD Reference:	KB Elev (14') @ 3595 0usft (UDI #40)
Site:	Fir Federal #2	MD Reference:	KB Elev (14') @ 3595 0usft (UDI #40)
Well:	Fir Federal #2	North Reference:	Grid
Wellbore:	OH - Job #32D11111098	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	Fir Federal #2		
Site Position:		Northing:	656,381 80 usft
From:	Map	Easting:	529,480 30 usft
Position Uncertainty:	0 0 usft	Slot Radius:	13-3/16"
		Latitude:	32° 48' 16 005 N
		Longitude:	104° 14' 14 593 W
		Grid Convergence:	0.05 °

Well	Fir Federal #2		
Well Position	+N/-S	0 0 usft	Northing:
	+E/-W	0 0 usft	Easting:
Position Uncertainty	0 0 usft	Wellhead Elevation:	usft
		Latitude:	32° 48' 16 005 N
		Longitude:	104° 14' 14 593 W
		Ground Level:	3,581 0 usft

Wellbore	OH - Job #32D11111098		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF2010	11/13/2011	7 89
			Dip Angle
			(°)
			60 60
			Field Strength
			(nT)
			48,849

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
			(°)
			154 81

Survey Program	Date 12/27/2011		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
100 0	936 0	Gyro Survey (OH - Job #32D11111098)	Keeper
1,089 0	3,836 0	MWD Survey (OH - Job #32D11111098)	MWD
			Description
			Standard Wireline Keeper ver 1.0.2
			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 55	43 86	100 0	0 3	0 3	43 86	0 5
200 0	0 51	48 22	200 0	1 0	1 0	45 24	1 4
300 0	0 10	64 20	300 0	1 3	1 4	46 77	1 9
400 0	0 29	3 78	400 0	1 6	1 5	42 96	2 2
500 0	0 20	19 42	500 0	2 0	1 6	37 84	2 6
600 0	0 49	24 79	600 0	2 6	1 8	35 08	3 2
700 0	0 41	6 18	700 0	3 3	2 0	31 42	3 9
800 0	0 41	37 96	800 0	4 0	2 3	30 02	4 6
900 0	0 41	35 75	900 0	4 5	2 7	30 94	5 3
936 0	0 41	43 94	936 0	4 7	2 9	31 35	5 5



Scientific Drilling International, Inc.
SDI Standard Survey Report



Company:	COG OPERATING LLC	Local Co-ordinate Reference:	Site Fir Federal #2
Project:	Eddy County, NM (NAN27 NME)	TVD Reference:	KB Elev (14') @ 3595 0usft (UDI #40)
Site:	Fir Federal #2	MD Reference:	KB Elev (14') @ 3595 0usft (UDI #40)
Well:	Fir Federal #2	North Reference:	Grid
Wellbore:	OH - Job #32D11111098	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		Fir Federal #2			
Site Position:		Northing:	656,381.80 usft	Latitude:	32° 48' 16.005 N
From:	Map	Easting:	529,480.30 usft	Longitude:	104° 14' 14.593 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"	Grid Convergence:	0.05 °

Well	Fir Federal #2					
Well Position	+N/-S	0 0 usft	Northing:	656,381 80 usft	Latitude:	32° 48' 16 005 N
	+E/-W	0 0 usft	Easting:	529,480 30 usft	Longitude:	104° 14' 14 593 W
Position Uncertainty		0 0 usft	Wellhead Elevation:	usft	Ground Level:	3,581 0 usft

Wellbore		OH - Job #32D11111098			
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	IGRF2010	11/13/2011	7.89	60.60	48,849

Design:	Actual				
Audit Notes:					
Version:	1 0	Phase:	ACTUAL	Tie On Depth:	0 0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(usft)	(usft)	(usft)	(°)	
	0 0	0 0	0 0	154.81	

Survey Program		Date 12/27/2011		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	936.0	Gyro Survey (OH - Job #32D11111098)	Keeper	Standard Wireline Keeper ver 1.0.2
1,089.0	4,693.0	MWD Survey (OH - Job #32D11111098)	MWD	MWD - Standard

Survey							
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
936.0	0.41	43.94	936.0	4.7	2.9	31.35	5.5
Gyro Tie-in							
1,089.0	0.50	4.97	1,089.0	5.8	3.3	29.83	6.7
1,152.0	0.35	348.79	1,152.0	6.3	3.3	27.87	7.1
1,216.0	0.91	128.35	1,216.0	6.1	3.7	30.89	7.1
1,312.0	3.02	144.85	1,311.9	3.6	5.7	57.89	6.8
1,375.0	2.94	161.71	1,374.8	0.7	7.2	84.43	7.2
1,438.0	3.43	173.12	1,437.7	-2.7	7.9	108.85	8.4
1,534.0	5.22	173.84	1,533.5	-9.9	8.7	138.58	13.2
1,597.0	6.15	170.56	1,596.1	-16.1	9.6	149.18	18.7
1,660.0	6.35	163.39	1,658.8	-22.7	11.1	153.90	25.3



Company:	COG OPERATING LLC	Local Co-ordinate Reference:	Site Fir Federal #2
Project:	Eddy County, NM (NAN27 NME)	TVD Reference:	KB Elev (14') @ 3595.0usft (UDI #40)
Site:	Fir Federal #2	MD Reference:	KB Elev (14') @ 3595.0usft (UDI #40)
Well:	Fir Federal #2	North Reference:	Grid
Wellbore:	OH - Job #32D11111098	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)	
1,699 0	6 45	160 83	1,697 5	-26 9	12 5	155 10	29 6	
1,761 0	6 01	162 11	1,759 2	-33 3	14 6	156 27	36 3	
1,826 0	6 21	159 30	1,823 8	-39 8	16 9	156 98	43 2	
1,889 0	6 11	156 48	1,886 4	-46 0	19 4	157 10	50 0	
1,952 0	6 00	157 84	1,949 1	-52 2	22 0	157 11	56 6	
2,016 0	6 08	154 66	2,012 7	-58 3	24 7	157 02	63 4	
2,079 0	5 85	154 98	2,075 4	-64 3	27 5	156 81	69 9	
2,142 0	6 07	153 00	2,138 0	-70 1	30 4	156 57	76 4	
2,206 0	5 91	153 59	2,201 7	-76 1	33 4	156 30	83 1	
2,269 0	5 72	153 80	2,264 4	-81 8	36 2	156 12	89 5	
2,333 0	5 37	152 14	2,328 1	-87 3	39 0	155 92	95 7	
2,396 0	5 97	162 46	2,390 8	-93 1	41 4	156 02	101 9	
2,459 0	5 92	164 32	2,453 4	-99 3	43 3	156 46	108 3	
2,523 0	5 83	164 87	2,517 1	-105 6	45 0	156 92	114 8	
2,586 0	5 62	162 56	2,579 8	-111 7	46 8	157 27	121 1	
2,650 0	5 88	162 54	2,643 4	-117 8	48 7	157 54	127 4	
2,713 0	5 82	162 19	2,706 1	-123 9	50 6	157 77	133 8	
2,777 0	5 70	164 87	2,769 8	-130 1	52 5	158 03	140 2	
2,840 0	5 75	161 65	2,832 5	-136 1	54 3	158 26	146 5	
2,903 0	5 73	164 13	2,895 2	-142 1	56 1	158 45	152 8	
2,967 0	5 21	162 18	2,958 9	-147 9	57 9	158 63	158 9	
3,030 0	3 99	157 47	3,021 7	-152 7	59 6	158 68	163 9	
3,094 0	2 77	163 16	3,085 6	-156 2	60 9	158 70	167 7	
3,157 0	3 24	170 65	3,148 5	-159 4	61 6	158 87	170 9	
3,220 0	3 58	158 55	3,211 4	-163 0	62 6	158 98	174 6	
3,315 0	2 13	169 06	3,306 2	-167 5	64 1	159 07	179 3	
3,411 0	0 37	157 00	3,402 2	-169 5	64 5	159 17	181 4	
3,506 0	0 77	133 48	3,497 2	-170 3	65 1	159 08	182 3	
3,601 0	0 50	136 93	3,592 2	-171 0	65 8	158 94	183 2	
3,791 0	0 57	128 03	3,782 2	-172 2	67 2	158 69	184 8	
3,980 0	0 62	128 28	3,971 2	-173 4	68 7	158 39	186 5	
4,171 0	0 81	136 02	4,162 2	-175 0	70 4	158 07	188 7	
4,393 0	0 52	124 21	4,384 2	-176 7	72 4	157 73	191 0	
4,583 0	0 74	142 76	4,574 1	-178 2	73 8	157 49	192 9	
4,693 0	0 68	133 10	4,684 1	-179 2	74 7	157 36	194 2	
Last MWD Survey								

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
936 0	936 0	4 7	2 9	Gyro Tie-in
4,693 0	4,684 1	-179 2	74 7	Last MWD Survey