

OPERATOR COG
WELL/LEASE Burch Keely Unit 607
COUNTY Eddy

STATE OF NEW MEXICO
DEVIATION REPORT

15-40320

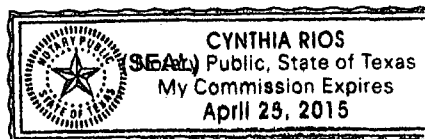
141	0.93
237	0.66
518	1.37
933	1.72
1017	1.23
1145	1.14
1239	1.71
1365	2.46
1490	2.46
1554	3.68
1966	7.28
2158	6.71
2251	7.74
2441	7.39
2536	7.03
2727	7.03
2822	6.68
2917	6.68
3298	6.71
3582	6.95
3677	6.95
3773	6.95
3962	6.60
4152	6.07
4247	6.77
4342	6.50
4437	7.55
4531	7.74
4627	7.56
4727	7.56
4769	7.56

SIGNED BY:


CHOYR GILBERT, OPERATIONS MANAGER

STATE OF TEXAS
COUNTY OF MIDLAND

ON THIS 14th DAY OF August, 2012, BEFORE ME, C RIOS, A NOTARY
PUBLIC, PERSONALLY APPEARED CHOYR GILBERT, WHO ACKNOWLEDGED AND EXECUTED
THIS DOCUMENT. WITNESS MY HAND AND OFFICIAL SEAL.




NOTARY PUBLIC



COG Operating LLC

Eddy County, NM (NAD27 NME)

Burch Keely Unit

#607

OH - Job #32D0812969

RECEIVED

JAN 18 2013

NMOCD ARTESIA

Design: Actual

SDI Standard Survey Report

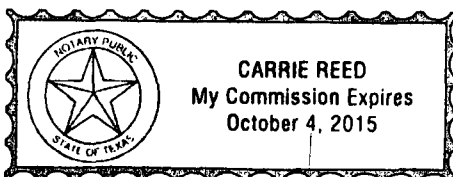
This survey is correct to the best of my knowledge and is supported by actual field data.

Robert

Notarized this date 31st of August, 2012.

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:	Well #607
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RF @ 3600.00usft (Basic #35)
Site:	Burch Keely Unit	MD Reference:	RF @ 3600.00usft (Basic #35)
Well:	#607	North Reference:	Grid
Wellbore:	OH - Job #32D0812969	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	EDM-Regulatory

Project	Eddy County, NM (NAD27 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		Burch Keely Unit			
Site Position:		Northing:	661,490.10 usft	Latitude:	32° 49' 5.462 N
From:	Map	Easting:	589,648.00 usft	Longitude:	104° 2' 29.475 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16"	Grid Convergence:	0.16 °

Well	#607					
Well Position	+N/-S	0.00 usft	Northing:	661,490.10 usft	Latitude:	32° 49' 5.462 N
	+E/-W	0.00 usft	Easting:	589,648.00 usft	Longitude:	104° 2' 29.475 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	3,588.00 usft

Wellbore		OH - Job #32D0812969			
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	03/09/12	7.76	60.64	48,847

Design		Actual			
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(usft)	(usft)	(usft)	(°)	
	0.00	0.00	0.00	266.41	

Survey Program		Date	08/10/12		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.00	930.00	Gyro (OH - Job #32D0812969)	Keeper	Standard Wireline Keeper ver 1.0.2	
1,017.00	4,819.00	MWD (OH - Job #32D0812969)	MWD	MWD - Standard	

Survey							
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	°North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.20	150.11	100.00	-0.15	0.09	150.11	0.17
200.00	0.54	157.28	200.00	-0.74	0.36	154.23	0.82
300.00	1.55	176.00	299.98	-2.52	0.63	165.92	2.60
400.00	1.49	179.58	399.94	-5.17	0.74	171.90	5.22
500.00	1.62	173.62	499.91	-7.88	0.90	173.46	7.93
600.00	1.06	149.48	599.88	-10.08	1.53	171.37	10.19
700.00	1.34	132.59	699.86	-11.67	2.86	166.22	12.01
800.00	1.51	112.03	799.83	-12.95	4.94	159.11	13.86
900.00	1.52	128.13	899.79	-14.26	7.21	153.19	15.98
930.00	1.42	124.58	929.78	-14.72	7.83	152.00	16.67



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Wellbore:	OH - Job #32D0812969	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)
1,017.00	1.23	115.35	1,016.76	-15.73	9.56	148.72	18.41
1,081.00	1.25	116.85	1,080.75	-16.34	10.80	146.54	19.59
1,145.00	1.14	171.43	1,144.73	-17.29	11.52	146.32	20.77
1,239.00	1.76	211.77	1,238.71	-19.44	10.90	150.72	22.28
1,303.00	2.46	220.12	1,302.66	-21.32	9.50	156.00	23.34
1,365.00	2.46	230.93	1,364.61	-23.18	7.61	161.84	24.40
1,428.00	3.08	233.04	1,427.53	-25.05	5.20	168.27	25.58
1,490.00	3.43	239.19	1,489.43	-27.00	2.28	175.18	27.10
1,554.00	3.68	248.54	1,553.31	-28.73	-1.28	182.54	28.76
1,617.00	4.57	254.31	1,616.15	-30.15	-5.57	190.48	30.66
1,681.00	5.10	264.86	1,679.92	-31.10	-10.86	199.26	32.94
1,744.00	5.63	268.37	1,742.64	-31.44	-16.74	208.04	35.61
1,808.00	6.28	271.72	1,806.30	-31.42	-23.38	216.65	39.16
1,871.00	7.28	274.38	1,868.86	-31.01	-30.80	224.81	43.71
1,966.00	7.28	274.12	1,963.09	-30.12	-42.81	234.87	52.34
2,060.00	6.55	273.36	2,056.41	-29.38	-54.10	241.50	61.56
2,156.00	6.71	269.79	2,151.76	-29.08	-65.17	245.96	71.37
2,251.00	7.74	274.17	2,246.01	-28.63	-77.11	249.63	82.25
2,346.00	7.91	273.12	2,340.12	-27.81	-90.01	252.83	94.21
2,441.00	7.39	270.13	2,434.28	-27.44	-102.65	255.03	106.25
2,536.00	7.03	270.39	2,528.53	-27.39	-114.57	256.56	117.80
2,631.00	6.86	268.55	2,622.83	-27.49	-126.06	257.70	129.02
2,727.00	7.03	269.25	2,718.13	-27.71	-137.66	258.62	140.42
2,822.00	6.68	268.11	2,812.45	-27.97	-149.00	259.37	151.60
2,917.00	6.68	266.17	2,906.80	-28.52	-160.03	259.89	162.56
3,012.00	6.77	267.40	3,001.15	-29.15	-171.14	260.33	173.60
3,108.00	6.62	268.34	3,096.49	-29.56	-182.32	260.79	184.71
3,203.00	6.83	267.22	3,190.84	-30.00	-193.44	261.19	195.75
3,298.00	6.71	266.61	3,285.18	-30.60	-204.62	261.50	206.90
3,393.00	7.38	270.84	3,379.46	-30.84	-216.26	261.89	218.45
3,489.00	7.29	274.11	3,474.68	-30.31	-228.50	262.44	230.51
3,582.00	6.95	274.70	3,566.96	-29.43	-240.00	263.01	241.79
3,677.00	6.95	274.61	3,661.26	-28.49	-251.45	263.54	253.06
3,773.00	6.95	274.52	3,756.56	-27.57	-263.03	264.02	264.48
3,867.00	6.90	275.51	3,849.87	-26.58	-274.32	264.47	275.61
3,962.00	6.60	271.27	3,944.21	-25.91	-285.46	264.81	286.64
4,058.00	6.33	268.72	4,039.60	-25.91	-296.27	265.00	297.40
4,152.00	6.07	268.90	4,133.05	-26.12	-306.42	265.13	307.53
4,247.00	6.77	264.86	4,227.46	-26.71	-317.02	265.18	318.14
4,342.00	6.50	264.58	4,321.82	-27.72	-327.95	265.17	329.12
4,437.00	7.55	271.54	4,416.11	-28.06	-339.54	265.28	340.70
4,531.00	7.74	269.87	4,509.27	-27.91	-352.04	265.47	353.15
4,627.00	7.56	269.34	4,604.42	-28.00	-364.82	265.61	365.90
4,723.00	7.65	268.99	4,699.57	-28.19	-377.53	265.73	378.58



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Survey							
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
4,769.00	7.56	268.64	4,745.17	-28.31	-383.61	265.78	384.66
Last MWD Survey							
4,819.00	7.56	268.64	4,794.73	-28.47	-390.19	265.83	391.23
Projection to Bit - PBHL-BKU #607							

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
4,769.00	4,745.17	-28.31	-383.61	Last MWD Survey
4,819.00	4,794.73	-28.47	-390.19	Projection to Bit

Checked By: _____ Approved By: _____ Date: _____