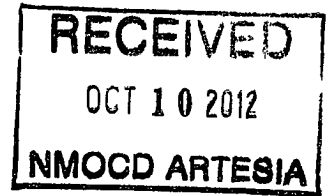




PO Box 1370
Artesia, NM 88211-1370
(575) 748-1288



30-015-40271

June 29, 2012

COG, LLC
Fasken Center, Tower II
550 West Texas Ave, Suite 1300
Midland, TX 79701

RE: Burch Keely Unit #581
1180' FSL & 1675' FWL
Sec. 18, T17S, R30E
Eddy County, New Mexico

Dear Sir,

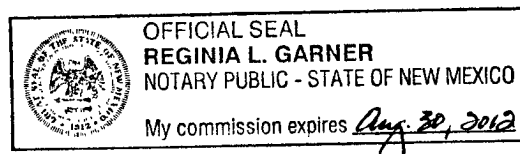
The attached is the Deviation Survey for the above captioned well.

Very truly yours,

Chris Graham
Drilling Superintendent

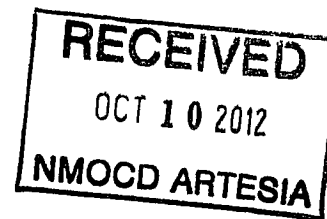
State of New Mexico }
County of Eddy }

The foregoing was acknowledged before me this 29th day of June, 2012.



Burch Keely Unit #581

Date	Depth	Dev/Inc	Dir/AZ	TVD
6/21/2012	161	0.20		
6/22/2012	258	0.40		
6/23/2012	374	0.30		
6/23/2012	624	0.40		
6/23/2012	1032	1.30		
6/24/2012	1259	1.13	59.26	
6/24/2012	1387	2.64	65.99	
6/24/2012	1514	3.43	57.46	
6/24/2012	1578	3.80	67.85	
6/25/2012	1928	6.77	68.00	
6/25/2012	2233	6.90	68.48	
6/25/2012	3469	7.65	65.64	
6/25/2012	2756	7.88	62.19	
6/25/2012	2756	7.88	62.19	
6/25/2012	2852	7.39	65.37	
6/25/2012	2947	7.47	63.61	
6/26/2012	3234	7.47	70.21	
6/26/2012	3521	7.74	73.72	
6/26/2012	3712	7.74	73.99	
6/26/2012	3934	5.45	51.45	
6/26/2012	3999	5.02	49.77	
6/26/2012	4095	3.43	41.77	
6/27/2012	4282	1.76	48.06	
6/27/2012	4349	1.93	63.88	
6/27/2012	4413	1.76	77.13	
6/27/2012	4540	1.32	16.43	
6/27/2012	4604	0.62	18.97	
6/27/2012	4636	0.62	18.97	



COG Operating LLC

Eddy County, NM (NAD27 NME)
Burch Keely Unit #581 / As-Drilled
Burch Keely Unit #581
OH

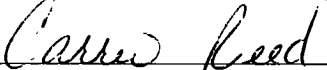
Design: Actual

SDI Standard Survey Report

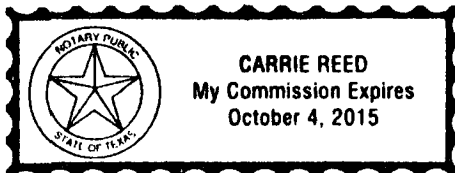
This survey is correct to the best of my knowledge and is supported by actual field data.



Notarized this date 10/17 of July, 2012.



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 Burch Keely Unit #581 / As-Drilled
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RF @ 3654.00usft (SO #4)
Site:	Burch Keely Unit #581 / As-Drilled	MD Reference:	RF @ 3654.00usft (SO #4)
Well:	Burch Keely Unit #581	North Reference:	Grid
Wellbore:	OH	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 #581 / As-Drilled		
Site Position:		Northing:	665,962.60 usft
From:	Map	Easting:	598,179.80 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16"
		Latitude:	32° 49' 49.474 N
		Longitude:	104° 0' 49.340 W
		Grid Convergence:	0.17 °

Well	Burch Keely Unit #581		
Well Position	+N/-S	0.00 usft	Northing:
	+E/-W	0.00 usft	Easting:
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft
		Latitude:	32° 49' 49.474 N
		Longitude:	104° 0' 49.340 W
		Ground Level:	3,636.00 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF2010	02/24/12	7.75
			Dip Angle
			(°)
			60.65
			Field Strength
			(nT)
			48,861

Design	Actual		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.00	0.00	0.00
			Direction
			(°)
			66.72

Survey Program	Date	06/28/12		
From	To	Survey (Wellbore)	Tool Name	Description
(usft)	(usft)			
100.00	1,000.00	Gyro (OH)	Keeper	Standard Wireline Keeper ver 1.0.2
1,100.00	4,684.00	MWD (OH)	MWD	MWD - Standard

Survey								
Measured Depth	Inclination	Azimuth	True Vertical	North/South	East/West	Closure Azimuth	Closure Distance	
(usft)	(°)	(°)	Depth	(usft)	(usft)	(°)	(usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.22	283.48	100.00	0.04	-0.19	283.48	0.19	
200.00	0.12	234.41	200.00	0.03	-0.46	273.56	0.46	
300.00	0.17	244.66	300.00	-0.10	-0.68	261.95	0.68	
400.00	0.21	232.54	400.00	-0.27	-0.96	254.20	0.99	
500.00	0.64	188.69	500.00	-0.93	-1.19	231.80	1.51	
600.00	0.45	149.38	599.99	-1.82	-1.07	210.43	2.12	
700.00	0.52	86.03	699.99	-2.13	-0.42	191.12	2.17	
800.00	1.43	57.60	799.97	-1.43	1.09	142.77	1.80	
900.00	1.68	53.01	899.94	0.12	3.31	87.93	3.31	



Scientific Drilling International, Inc.
SDI Standard Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Site Burch Keely Unit #581 / As-Drilled
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RF @ 3654 00usft (SO #4)
Site:	Burch Keely Unit #581 / As-Drilled	MD Reference:	RF @ 3654 00usft (SO #4)
Well:	Burch Keely Unit #581	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)
1,000 00	1 55	57 42	999 90	1 73	5 62	72 90	5 88
Gyro Tie-in							
1,100 00	1 48	70 66	1,099 86	2 89	7 98	70 12	8 49
1,195 00	1 06	66 07	1,194 84	3 65	9 94	69 85	10 59
1,259 00	1 13	59 26	1,258 83	4 21	11 02	69 09	11 80
1,323 00	1 41	61 77	1,322 81	4 91	12 26	68 19	13 21
1,387 00	2 64	65 99	1,386 77	5 88	14 30	67 65	15 46
1,450 00	3 61	57 81	1,449 68	7 53	17 31	66 50	18 87
1,514 00	3 43	57 46	1,513 56	9 63	20 62	64 97	22 76
1,578 00	3 80	67 85	1,577 43	11 46	24 20	64 67	26 78
1,641 00	4 31	71 61	1,640 27	12 99	28 38	65 40	31 21
1,737 00	4 48	70 56	1,735 99	15 38	35 34	66 48	38 54
1,800 00	5 10	67 83	1,798 77	17 25	40 25	66 80	43 80
1,864 00	5 86	66 39	1,862 48	19 64	45 88	66 83	49 91
1,928 00	6 77	68 10	1,926 09	22 35	52 38	66 89	56 95
1,991 00	7 74	67 57	1,988 58	25 36	59 74	67 00	64 90
2,087 00	7 51	67 51	2,083 73	30 22	71 52	67 09	77 64
2,183 00	6 92	68 48	2,178 97	34 74	82 69	67 21	89 69
2,278 00	7 65	65 81	2,273 20	39 43	93 78	67 19	101 74
2,374 00	7 21	66 78	2,368 40	44 43	105 15	67 10	114 15
2,469 00	7 65	65 64	2,462 60	49 39	116 39	67 01	126 43
2,565 00	7 88	66 89	2,557 72	54 60	128 26	66 94	139 40
2,661 00	7 56	65 20	2,652 85	59 84	140 05	66 87	152 29
2,756 00	7 88	62 19	2,746 99	65 50	151 48	66 62	165 03
2,852 00	7 39	65 37	2,842 14	71 14	162 91	66 41	177 77
2,997 00	7 47	63 61	2,985 92	79 21	179 83	66 23	196 51
3,043 00	7 12	68 89	3,031 55	81 57	185 17	66 23	202 34
3,138 00	7 12	71 09	3,125 82	85 60	196 23	66 43	214 09
3,234 00	7 47	70 21	3,221 04	89 64	207 73	66 66	226 25
3,329 00	7 65	70 56	3,315 21	93 83	219 51	66 85	238 72
3,425 00	7 56	73 28	3,410 37	97 78	231 58	67 11	251 38
3,521 00	7 74	73 72	3,505 52	101 41	243 83	67 42	264 08
3,616 00	7 74	75 74	3,599 65	104 78	256 18	67 76	276 77
3,712 00	7 74	73 99	3,694 78	108 15	268 65	68 07	289 61
3,776 00	7 06	69 68	3,758 24	110 71	276 49	68 18	297 83
3,840 00	6 23	66 98	3,821 81	113 43	283 37	68 18	305 23
3,936 00	5 45	51 49	3,917 32	118 31	291 73	67 93	314 81
3,999 00	5 02	49 77	3,980 06	121 95	296 18	67 62	320 30
4,095 00	3 43	41 99	4,075 79	126 80	301 31	67 18	326 90
4,159 00	2 46	33 47	4,139 71	129 37	303 34	66 90	329 78
4,222 00	2 73	35 84	4,202 64	131 71	304 97	66 64	332 19
4,237 32	2 49	37 89	4,217 95	132 27	305 39	66 58	332 80
TG1-BKU #581							
4,286 00	1 76	48 06	4,266 59	133 60	306 59	66 45	334 44
4,349 00	1 93	63 88	4,329 56	134 72	308 26	66 39	336 42



Scientific Drilling International, Inc.
SDI Standard Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Site Burch Keely Unit #581 / As-Drilled
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RF @ 3654 00usft (SO #4)
Site:	Burch Keely Unit #581 / As-Drilled	MD Reference:	RF @ 3654 00usft (SO #4)
Well:	Burch Keely Unit #581	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	EDM-Regulatory

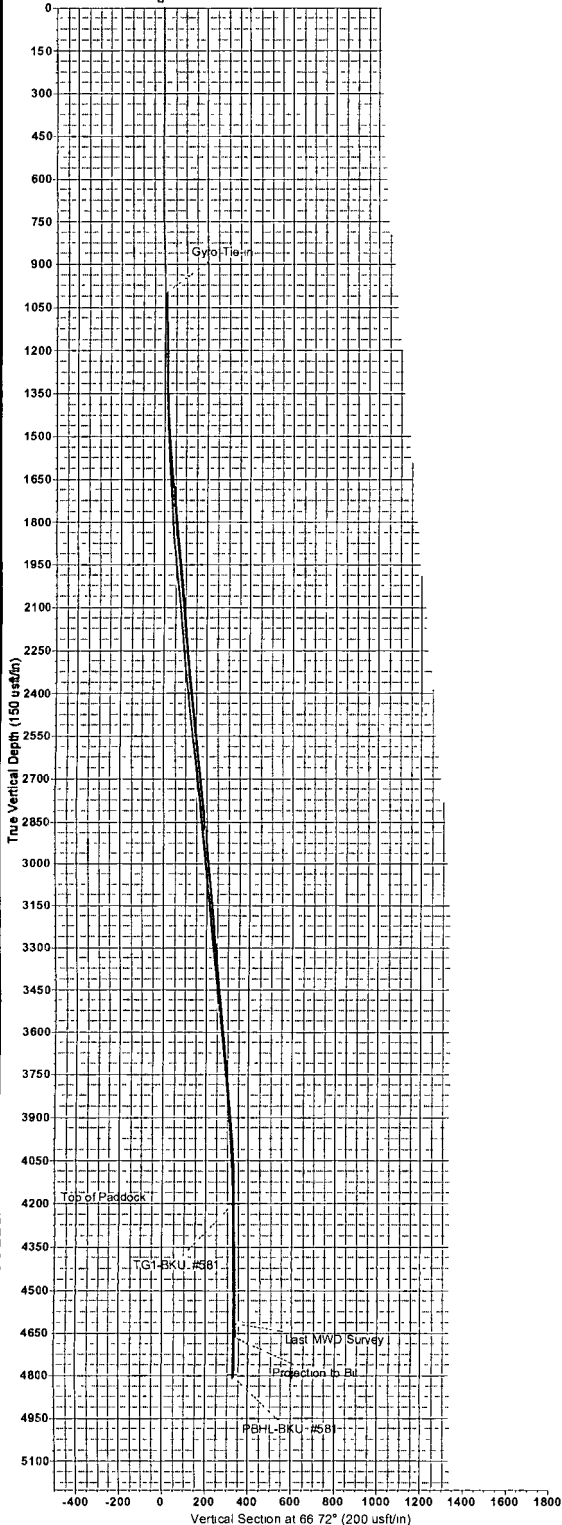
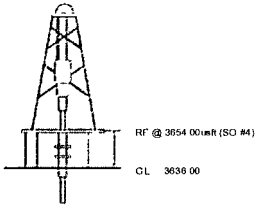
Survey							
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
4,413 00	1 76	77 13	4,393 53	135 41	310 19	66 42	338 46
4,477 00	1 14	103 34	4,457 51	135 48	311 77	66 51	339 93
4,540 00	1 32	164 25	4,520 50	134 64	312 57	66 70	340 34
4,636 00	0 70	20 64	4,616 49	134 12	313 08	66.81	340 60
Last MWD Survey							
4,684 00	0 70	20 64	4,664 49	134 67	313 29	66 74	341 01
Projection to Bit - PBHL-BKU #581							

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,000 00	999 90	1 73	5 62	Gyro Tie-in
4,636 00	4,616 49	134 12	313 08	Last MWD Survey
4,684 00	4,664 49	134 67	313 29	Projection to Bit



Azimuth to Grid North
True North -0.17°
Magnetic North -7.58°
Magnetic Field
Strength: 48861.2nT
Dip Angle: 60.65°
Date: 02/24/2012
Model: IGRF2010

Burch Keely Unit #581
Eddy County, NM (NAN27 NME)
Northing: (Y) 665962.60
Easting: (X) 598179.80
Plan #2 - 7-7/8" Hole



WELL DETAILS Burch Keely Unit #581

+N/S	+E/W	Northing	Ground Level	Easting	Latitude	Longitude	Spot
0.00	0.00	665962.60	3036.00	598179.80	32° 49' 49.474 N	104° 0' 45.340 W	

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/S	+E/W	Dleg	TFace	Vsect	Target
1	1000.00	1.55	57.42	999.90	1.73	5.82	0.00	0.00	5.85	
2	1350.00	1.55	57.42	1349.77	0.63	13.00	0.00	0.00	15.10	
3	1975.44	7.03	66.99	1824.33	15.43	32.27	2.00	12.24	35.74	
4	3867.29	7.03	66.99	3849.32	122.66	284.87	0.00	0.00	310.16	
5	4218.85	0.00	0.01	4230.00	131.10	304.70	2.00	180.00	331.71	TGI-BKU-#581
6	4818.85	0.00	0.01	4800.00	131.10	304.70	0.00	0.01	331.71	PBHL-BKU-#581

DESIGN TARGET DETAILS

Name	TVD	+N/S	+E/W	Northing	Easting	Latitude	Longitude	Shape
TGI-BKU-#581	4200.00	131.10	304.70	665962.60	598179.80	32° 49' 50.783 N	104° 0' 45.764 W	Point
PBHL-BKU-#581	4800.00	131.10	304.70	665962.60	598179.80	32° 49' 50.783 N	104° 0' 45.764 W	Circle (Radius: 10.00)

SITE DETAILS Burch Keely Unit #581

Site Centre Northing: 665962.60
Easting: 598179.80
Positional Uncertainty: 0.00
Convergence: 0.17
Local North Grid

PROJECT DETAILS Eddy County, NM (NAN27 NME)

Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
System Datum: Mean Sea Level

FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
4200.00	4218.85	Top of Paddock	0.00	

CASING DETAILS

TVD	MD	Name	Size
1250.00		8-5/8" Casing	8-5/8"

