



COG Operating LLC

Eddy County, NM (NAN27 NME)

Burch Keely Unit #608

Burch Keely Unit #608

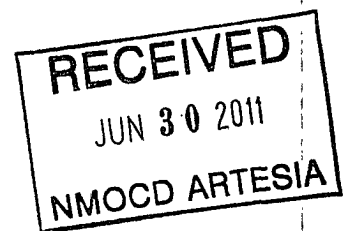
30-015-38571

OH

Design: Actial

Standard Survey Report

12 May, 2011



Accepted for record - NMOCD

DD





Scientific Drilling
Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Site Burch Keely Unit #608
Project:	Eddy County, NM (NAN27 NME)	TVD Reference:	KB Elev (13') @ 3603 00usft (Calaloz #3)
Site:	Burch Keely Unit #608	MD Reference:	KB Elev (13') @ 3603 00usft (Calaloz #3)
Well:	Burch Keely Unit #608	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	EDM-Julio

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	Burch Keely Unit #608		
Site Position:	Map	Northing:	661,678 20 usft
From:	Map	Easting:	591,105 30 usft
Position Uncertainty:	0 00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 49' 7 283 N
		Longitude:	104° 2' 12 392 W
		Grid Convergence:	0 16 °

Well	Burch Keely Unit #608		
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' 7 283 N
		Longitude:	104° 2' 12 392 W
		Ground Level:	3,590 00 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF2010	2011/05/06	7 86
			Dip Angle
			(°)
			Field Strength
			(nT)
			60 66
			48,933

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
			(°)
			152 26

Survey Program	Date 2011/05/12		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
100 00	890 00	Gyro Survey (OH)	Keeper
1,058 00	4,583 00	MWD Survey (OH)	MWD
			Description
			Standard Wireline Keeper ver 1 0 2
			MWD - Standard

Survey	Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Vertical	Dogleg	Build	Turn
	Depth	(°)	(°)	Depth	(usft)	(usft)	Section	Rate	Rate	Rate
	(usft)			(usft)			(usft)	(°/100usft)	(°/100usft)	(°/100usft)
	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
	100 00	0 45	42 11	100 00	0 29	0 26	-0 14	0 45	0 45	0 00
	200 00	0 83	73 58	199 99	0 79	1 22	-0 13	0 50	0 38	31 47
	300 00	0 83	79 97	299 98	1 12	2 63	0 23	0 09	0 00	6 39
	400 00	1 29	66 02	399 97	1 70	4 37	0 53	0 52	0 46	-13 95
	500 00	1 71	52 05	499 93	3 08	6 58	0 34	0 55	0 42	-13 97
	600 00	2 07	56 62	599 88	4 99	9 26	-0 10	0 39	0 36	4 57
	700 00	2 72	54 80	699 79	7 35	12 71	-0 59	0 65	0 65	-1 82
	800 00	2 55	51 49	799 68	10 10	16 39	-1 31	0 23	-0 17	-3 31
	890 00	2 27	53 19	889 60	12 42	19 38	-1 97	0 32	-0 31	1 89



Scientific Drilling

Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Site Burch Keely Unit #608
Project:	Eddy County, NM (NAN27 NME)	TVD Reference:	KB Elev (13') @ 3603 00usft (Calaloz #3)
Site:	Burch Keely Unit #608	MD Reference:	KB Elev (13') @ 3603 00usft (Calaloz #3)
Well:	Burch Keely Unit #608	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	EDM-Julio

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
Gyro Tie-in									
1,058 00	1 98	56 98	1,057 49	15 99	24 48	-2 76	0 19	-0 17	2 26
1,120 00	1 83	62 07	1,119 45	17 04	26 25	-2 86	0 36	-0 24	8 21
1,183 00	1 55	86 72	1,182 43	17 56	27 99	-2 51	1 22	-0 44	39 13
1,245 00	2 15	129 27	1,244 40	16 87	29 73	-1 09	2 35	0 97	68 63
1,308 00	2 91	135 76	1,307 34	14 98	31 76	1 53	1 29	1 21	10 30
1,371 00	3 59	146 70	1,370 23	12 18	33 96	5 02	1 46	1 08	17 37
1,434 00	4 19	162 07	1,433 09	8 34	35 75	9 25	1 90	0 95	24 40
1,496 00	4 66	163 64	1,494 91	3 77	37 16	13 95	0 78	0 76	2 53
1,591 00	4 26	160 33	1,589 62	-3 25	39 43	21 23	0 50	-0 42	-3 48
1,685 00	4 97	160 26	1,683 31	-10 37	41 98	28 72	0 76	0 76	-0 07
1,780 00	5 11	173 42	1,777 95	-18 45	43 86	36 74	1 22	0 15	13 85
1,874 00	5 56	163 71	1,871 54	-26 98	45 61	45 11	1 07	0 48	-10 33
1,969 00	5 28	164 70	1,966 12	-35 61	48 06	53 89	0 31	-0 29	1 04
2,063 00	4 63	165 72	2,059 77	-43 46	50 13	61 80	0 70	-0 69	1 09
2,158 00	5 65	162 83	2,154 38	-51 64	52 46	70 13	1 11	1 07	-3 04
2,252 00	5 33	156 67	2,247 95	-60 07	55 56	79 03	0 71	-0 34	-6 55
2,346 00	6 53	154 84	2,341 45	-68 92	59 56	88 72	1 29	1 28	-1 95
2,440 00	6 30	154 84	2,434 86	-78 43	64 02	99 21	0 24	-0 24	0 00
2,534 00	6 44	154 91	2,528 28	-87 87	68 45	109 63	0 15	0 15	0 07
2,629 00	6 34	154 57	2,622 69	-97 43	72 96	120 20	0 11	-0 11	-0 36
2,723 00	6 09	155 05	2,716 14	-106 64	77 29	130 36	0 27	-0 27	0 51
2,818 00	5 79	157 27	2,810 63	-115 63	81 27	140 17	0 40	-0 32	2 34
2,912 00	5 66	159 17	2,904 16	-124 34	84 75	149 49	0 24	-0 14	2 02
3,007 00	5 36	163 85	2,998 72	-132 98	87 65	158 49	0 57	-0 32	4 93
3,101 00	4 87	161 81	3,092 34	-140 98	90 12	166 73	0 56	-0 52	-2 17
3,195 00	4 97	161 50	3,186 00	-148 64	92 66	174 68	0 11	0 11	-0 33
3,289 00	5 41	173 82	3,279 62	-156 90	94 42	182 82	1 27	0 47	13 11
3,384 00	5 86	175 13	3,374 16	-166 19	95 32	191 45	0 49	0 47	1 38
3,478 00	5 74	176 45	3,467 67	-175 66	96 02	200 16	0 19	-0 13	1 40
3,573 00	6 11	165 49	3,562 17	-185 30	97 58	209 42	1 25	0 39	-11 54
3,674 00	5 57	161 00	3,662 65	-195 14	100 52	219 50	0 70	-0 53	-4 45
3,767 00	4 99	156 76	3,755 25	-203 12	103 59	227 99	0 75	-0 62	-4 56
3,830 00	4 50	151 86	3,818 04	-207 82	105 83	233 19	1 01	-0 78	-7 78
3,893 00	3 64	148 45	3,880 88	-211 70	108 04	237 66	1 42	-1 37	-5 41
3,956 00	2 47	142 56	3,943 79	-214 48	109 92	240 99	1 92	-1 86	-9 35
4,019 00	1 64	123 96	4,006 75	-216 06	111.49	243 13	1 67	-1 32	-29 52
4,081 00	0 26	107 66	4,068 74	-216 60	112 36	244 01	2 25	-2 23	-26 29
4,144 00	0 30	6 13	4,131 73	-216 48	112 51	243 97	0 69	0 06	-161 16
4,238 00	0 34	38 04	4,225 73	-216 02	112 71	243 65	0 19	0 04	33.95
4,333 00	0 37	36 39	4,320 73	-215 55	113 07	243 40	0 03	0 03	-1 74
4,428.00	0 47	39 80	4,415 73	-215 00	113 50	243 12	0 11	0 11	3 59
4,533 00	0 59	24 90	4,520 72	-214 18	114 00	242 63	0 17	0 11	-14 19



Scientific Drilling

Survey Report



Company: COG Operating LLC
Project: Eddy County, NM (NAN27 NME)
Site: Burch Keely Unit #608
Well: Burch Keely Unit #608
Wellbore: OH
Design: Actual

Local Co-ordinate Reference: Site Burch Keely Unit #608
TVD Reference: KB Elev (13') @ 3603 00usft (Calaloz #3)
MD Reference: KB Elev (13') @ 3603 00usft (Calaloz #3)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM-Julio

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
Last MWD Survey									
4,583 00	0 59	17 80	4,570 72	-213 70	114 19	242 29	0 15	0 00	-14 20
Projection to Bit									

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
890 00	889 60	12 42	19 38	Gyro Tie-in
4,533 00	4,520 72	-214 18	114 00	Last MWD Survey
4,583 00	4,570 72	-213 70	114 19	Projection to Bit

Checked By: _____ Approved By: _____ Date: _____



Scientific Drilling for COG Operating LLC
Site: Eddy County, NM (NAN27 NME)
Well: Burch Keely Unit #608
Wellbore: OH
Design: Plan #3 vs Actual 7-7/8" Hole

