

30-015-39135



COG Operating LLC

Eddy County, NM (NAN27 NME)

Continental State #6

Continental State #6

OH

Design: Actual

Standard Survey Report

10 October, 2011





Scientific Drilling
Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Site Continental State #6
Project:	Eddy County, NM (NAN27 NME)	TVD Reference:	KB Elev (18') @ 3581 00usft (SO #4)
Site:	Continental State #6	MD Reference:	KB Elev (18') @ 3581 00usft (SO #4)
Well:	Continental State #6	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	Continental State #6		
Site Position:		Northing:	669,243.30 usft
From:	Map	Easting:	581,443.60 usft
Position Uncertainty:	0 00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 50' 22.396 N
		Longitude:	104° 4' 5.388 W
		Grid Convergence:	0 14 °

Well	Continental State #6		
Well Position	+N/-S	0 00 usft	Northing: 669,243.30 usft
	+E/-W	0.00 usft	Easting: 581,443.60 usft
Position Uncertainty	0 00 usft	Wellhead Elevation:	usft
		Latitude:	32° 50' 22.396 N
		Longitude:	104° 4' 5.388 W
		Ground Level:	3,563.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2011/10/06	7 82	60 66	48,900

Design	Actual			
Audit Notes:				
Version:	1 0	Phase:	ACTUAL	Tie On Depth: 0 00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0 00	0 00	0 00	135.24

Survey Program	Date 2011/10/10			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.00	826.00	Gyro Survey (OH)	Keeper	Standard Wireline Keeper ver 1 0 2
870.00	4,685.00	MWD Survey (OH)	MWD	MWD - Standard

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)	
0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	
100 00	0 18	65 96	100.00	0 06	0.14	0.06	0 18	0 18	0 00	
200 00	0 30	122 16	200 00	-0 01	0.51	0 37	0 25	0 12	56 20	
300.00	0 58	146 54	300 00	-0 57	1.01	1 12	0 33	0 28	24 38	
400 00	0 47	72 29	399 99	-0 87	1.68	1 80	0 64	-0 11	-74 25	
500.00	1 08	60 04	499 98	-0 28	2 89	2 23	0 63	0 61	-12 25	
600 00	1 29	56.64	599 96	0 81	4 64	2 69	0 22	0 21	-3 40	
700 00	1 48	54 67	699 93	2 18	6.64	3.12	0 20	0.19	-1 97	
800 00	1 59	58 81	799 90	3 65	8 88	3 66	0 16	0 11	4 14	
826.00	1 72	58 67	825 89	4 04	9 52	3 84	0 50	0.50	-0 54	



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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									
870 00	1 65	62 99	869 87	4 67	10 65	4 18	0 33	-0 16	9 82
934 00	1 50	63 04	933 84	5 46	12 21	4 72	0 23	-0 23	0 08
998 00	1 23	69 30	997 82	6 09	13 60	5 26	0 48	-0 42	9 78
1,061 00	0 91	64 13	1,060.81	6 54	14 69	5 69	0 53	-0 51	-8 21
1,132 00	1 24	92 04	1,131.80	6.76	15.96	6 44	0 86	0 46	39 31
1,196 00	1 76	138 20	1,195 78	6 01	17 31	7 92	1 98	0 81	72 13
1,259.00	2 69	139 37	1,258 73	4 16	18 92	10 36	1 48	1 48	1 86
1,324 00	3 96	143 71	1,323 62	1 20	21 24	14 11	1 99	1 95	6 68
1,387 00	4 65	137 66	1,386 44	-2 45	24 25	18 81	1 31	1 10	-9 60
1,451 00	4 90	135 48	1,450 22	-6.31	27 91	24 13	0 48	0 39	-3.41
1,514 00	5 18	140 71	1,512.98	-10 43	31 60	29 66	0 85	0 44	8 30
1,578 00	5 45	142 42	1,576 70	-15.08	35 28	35 55	0 49	0 42	2 67
1,641 00	5 79	137 75	1,639 40	-19 80	39 24	41 69	0 90	0 54	-7 41
1,737 00	5 15	133 37	1,734 96	-26 34	45 63	50 83	0 80	-0 67	-4 56
1,833 00	4 84	135 04	1,830 60	-32 17	51 62	59 19	0 36	-0 32	1.74
1,928 00	5 47	134 88	1,925.21	-38 20	57 66	67 73	0 66	0 66	-0 17
2,024 00	4 79	131 15	2,020 83	-44 06	63 92	76 30	0 79	-0 71	-3 89
2,119 00	4 85	134 27	2,115.49	-49 48	69 79	84 27	0 28	0 06	3 28
2,214 00	4 45	131 86	2,210 18	-54 74	75.41	91 97	0 47	-0 42	-2 54
2,344 00	5 19	137 85	2,339.72	-62 47	83.11	102 87	0 69	0 57	4 61
2,438 00	5 52	142 47	2,433.31	-69 20	88 72	111 61	0 58	0 35	4 91
2,533 00	5 70	141 76	2,527 86	-76 53	94 42	120 83	0 20	0 19	-0.75
2,628 00	6 88	139 38	2,622 28	-84 56	101 04	131 19	1 27	1 24	-2 51
2,724 00	6 93	138 15	2,717 59	-93 23	108 65	142 71	0 16	0 05	-1 28
2,851 00	6 40	139 27	2,843.73	-104 31	118 38	157 42	0 43	-0 42	0 88
2,947 00	6 60	141 89	2,939 11	-112 70	125 28	168 24	0 37	0 21	2 73
3,043 00	6 34	141 11	3,034 50	-121 17	132.01	178 99	0 29	-0 27	-0 81
3,138 00	6 51	141 01	3,128 90	-129 44	138.69	189 57	0 18	0 18	-0 11
3,234 00	6 51	141 10	3,224 28	-137 90	145 53	200 40	0 01	0 00	0 09
3,329 00	5 88	141 83	3,318 73	-145 92	151 92	210 59	0 67	-0 66	0 77
3,425 00	6 33	142 51	3,414.18	-153 98	158 18	220 72	0 47	0 47	0.71
3,521 00	5 98	139 61	3,509 63	-161 99	164 65	230 96	0 49	-0 36	-3 02
3,617 00	5 63	144 62	3,605 14	-169 64	170 61	240 59	0 64	-0 36	5 22
3,680 00	5 10	141 45	3,667.86	-174 35	174 15	246 42	0.96	-0 84	-5 03
3,776 00	3 73	137 10	3,763 58	-179 97	178 93	253 79	1 47	-1 43	-4 53
3,840 00	4 04	133 89	3,827 43	-183 06	181 97	258 12	0 59	0 48	-5 02
3,903 00	3 69	129 94	3,890 29	-185 90	185 13	262 36	0 70	-0 56	-6.27
3,999 00	2 02	139 26	3,986 16	-189 17	188 60	267 12	1.80	-1 74	9 71
4,063 00	1 85	143 47	4,050 13	-190 85	189 95	269.27	0 35	-0 27	6 58
4,126 00	0 83	147 08	4,113 11	-192 05	190 80	270 72	1 62	-1 62	5 73
4,195 00	0 53	332 09	4,182 11	-192 19	190 93	270 91	1 97	-0.43	-253 61
4,251 00	0 44	338 33	4,238 11	-191 76	190 73	270 46	0 19	-0 16	11.14



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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)
4,318 00	0 62	310 64	4,305 10	-191 29	190 36	269 86	0 46	0 27	-41 33
4,413 00	0 39	264 58	4,400 10	-190 98	189 64	269 14	0 47	-0 24	-48 48
4,509 00	0 00	7 68	4,496 10	-191 01	189 32	268 94	0 41	-0 41	0 00
4,604 00	0 44	356 26	4,591 10	-190 65	189 29	268 66	0 46	0 46	0 00
4,636 00	0 44	351 69	4,623 10	-190 40	189 27	268 47	0 11	0 00	-14 28
Last MWD Survey									
4,685 00	0 44	351 69	4,672 10	-190 03	189 21	268 17	0 00	0 00	-0 00
Projection to Bit									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
826 00	825 89	4 04	9 52	Gyro Tie-in
4,636 00	4,623 10	-190 40	189 27	Last MWD Survey
4,685 00	4,672 10	-190 03	189 21	Projection to Bit

Checked By: _____	Approved By: _____	Date: _____
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