



COG Operating LLC

Eddy County, NM (NAN27 NME)

Crypt 30 State #2H

Crypt 30 State #2H

30-015-39245

OH

Plan: Plan #1 8-3/4" Hole

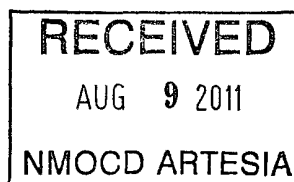
SHL = 150' FNL & 1700' FWL

PP = 330' FNL & 1700' FWL

BHL = 330' FSL & 1700' FWL

Standard Planning Report

02 August, 2011



Scientific Drilling
Directional Drilling Operations



Scientific Drilling
Planning Report



Database:	EDM-Julio	Local Co-ordinate Reference:	Site Crypt State #2H
Company:	COG Operating LLC	TVD Reference:	GL Elev @ 3394 00usft
Project:	Eddy County, NM (NAN27 NME)	MD Reference:	GL Elev @ 3394 00usft
Site:	Crypt State #2H	North Reference:	Grid
Well:	Crypt State #2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 8-3/4" Hole		

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	Crypt State #2H		
Site Position:		Northing:	595,855 10 usft
From:	Map	Easting:	472,197 40 usft
Position Uncertainty:	0 00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 38' 17 073 N
		Longitude:	104° 25' 25 146 W
		Grid Convergence:	-0 05 °

Well	Crypt State #2H		
Well Position	+N/-S	0 00 usft	Northing:
	+E/-W	0 00 usft	Easting:
Position Uncertainty	0 00 usft	Wellhead Elevation:	Ground Level:

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF2010	2011/08/01	7 99
			Dip Angle
			(°)
			60 42
			Field Strength
			(nT)
			48,757

Design	Plan #1 8-3/4" Hole		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth:
			0 00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0 00	0 00	0 00
			Direction
			(°)
			180 26

Plan Sections										
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Dogleg	Build	Turn	TFO	Target
Depth	(°)	(°)	Depth	(usft)	(usft)	Rate	Rate	Rate	(°)	
(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	
2,297 54	0 00	0 00	2,297 54	0 00	0 00	0 00	0 00	0 00	0 00	
3,047 54	90 00	180 26	2,775 00	-477 46	-2 15	12 00	12 00	0 00	180 26	
7,307 62	90 00	180 26	2,775 00	-4,737 50	-21 30	0 00	0 00	0 00	0 00	PBHL-Crypt State #2H



Scientific Drilling
Planning Report



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Project:	Eddy County, NM (NAN27 NME)	MD Reference:	GL Elev @ 3394 00usft
Site:	Crypt State #2H	North Reference:	Grid
Well:	Crypt State #2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 8-3/4" Hole		

Planned 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
2,297 54	0 00	0 00	2,297 54	0.00	0 00	0 00	0 00	0.00	0 00
KOP Start Build 12.00°/100'									
2,300 00	0 30	180 26	2,300 00	-0 01	0 00	0 01	12 02	12 02	0 00
2,400 00	12 30	180 26	2,399 22	-10 95	-0 05	10 95	12 00	12 00	0 00
2,500 00	24 30	180 26	2,493 99	-42 29	-0 19	42 29	12 00	12 00	0 00
2,600 00	36 30	180 26	2,580 17	-92 64	-0 42	92 64	12 00	12 00	0 00
2,700 00	48 30	180 26	2,654.01	-159 81	-0.72	159 81	12 00	12 00	0 00
2,726 37	51 46	180 26	2,671 00	-179 98	-0 81	179.98	12 00	12 00	0 00
PP=330' FNL, CP #2H									
2,800 00	60 30	180 26	2,712 26	-240 87	-1 08	240 87	12 00	12 00	0 00
2,900 00	72 30	180 26	2,752 39	-332 26	-1 49	332 27	12 00	12 00	0 00
3,000 00	84 30	180 26	2,772 64	-430 00	-1 93	430 01	12 00	12 00	0 00
3,047 54	90 00	180 26	2,775 00	-477 46	-2 15	477 47	12 00	12 00	0 00
Land EOC hold 90.00°									
3,100 00	90 00	180 26	2,775 00	-529 92	-2 38	529 93	0 00	0 00	0 00
3,200 00	90 00	180 26	2,775 00	-629 92	-2 83	629 93	0 00	0 00	0 00
3,300 00	90 00	180 26	2,775 00	-729 92	-3 28	729 93	0 00	0 00	0 00
3,400 00	90 00	180 26	2,775 00	-829 92	-3 73	829 93	0 00	0 00	0 00
3,500 00	90 00	180 26	2,775 00	-929 92	-4 18	929 93	0 00	0 00	0 00
3,600 00	90 00	180 26	2,775 00	-1,029 92	-4 63	1,029 93	0 00	0 00	0 00
3,700 00	90 00	180 26	2,775 00	-1,129.92	-5 08	1,129 93	0 00	0 00	0 00
3,800 00	90 00	180 26	2,775 00	-1,229 92	-5 53	1,229 93	0 00	0 00	0 00
3,900 00	90 00	180 26	2,775 00	-1,329 92	-5 98	1,329 93	0.00	0 00	0 00
4,000 00	90 00	180 26	2,775 00	-1,429 92	-6 43	1,429 93	0.00	0 00	0 00
4,100 00	90 00	180.26	2,775 00	-1,529 91	-6 88	1,529 93	0.00	0 00	0 00
4,200 00	90 00	180 26	2,775 00	-1,629 91	-7.33	1,629 93	0.00	0 00	0 00
4,300 00	90.00	180 26	2,775 00	-1,729 91	-7 78	1,729 93	0 00	0 00	0 00
4,400 00	90.00	180 26	2,775 00	-1,829 91	-8 23	1,829 93	0 00	0.00	0 00
4,500 00	90 00	180 26	2,775 00	-1,929 91	-8 68	1,929 93	0 00	0 00	0 00
4,600 00	90 00	180 26	2,775 00	-2,029 91	-9.13	2,029 93	0 00	0 00	0 00
4,700 00	90 00	180 26	2,775 00	-2,129 91	-9 58	2,129 93	0 00	0 00	0 00
4,800 00	90 00	180 26	2,775 00	-2,229 91	-10 03	2,229 93	0 00	0 00	0 00
4,900 00	90 00	180.26	2,775 00	-2,329 91	-10 48	2,329 93	0 00	0 00	0 00
5,000 00	90 00	180 26	2,775 00	-2,429 91	-10 92	2,429 93	0 00	0 00	0 00
5,100 00	90 00	180 26	2,775 00	-2,529 90	-11 37	2,529 93	0 00	0 00	0 00
5,200 00	90 00	180 26	2,775.00	-2,629 90	-11 82	2,629 93	0 00	0 00	0 00
5,300 00	90 00	180 26	2,775 00	-2,729 90	-12 27	2,729 93	0 00	0 00	0 00
5,400 00	90 00	180 26	2,775 00	-2,829 90	-12 72	2,829 93	0 00	0 00	0 00
5,500 00	90 00	180 26	2,775 00	-2,929 90	-13 17	2,929 93	0 00	0 00	0 00
5,600 00	90 00	180 26	2,775 00	-3,029 90	-13 62	3,029 93	0 00	0 00	0 00
5,700 00	90 00	180 26	2,775 00	-3,129 90	-14.07	3,129 93	0 00	0 00	0 00
5,800 00	90 00	180 26	2,775 00	-3,229 90	-14 52	3,229.93	0 00	0 00	0 00
5,900 00	90 00	180 26	2,775 00	-3,329 90	-14 97	3,329 93	0 00	0 00	0 00
6,000 00	90 00	180 26	2,775 00	-3,429 90	-15 42	3,429 93	0 00	0 00	0 00
6,100 00	90 00	180 26	2,775 00	-3,529 89	-15 87	3,529 93	0 00	0 00	0 00
6,200 00	90 00	180 26	2,775 00	-3,629 89	-16 32	3,629 93	0 00	0 00	0 00
6,300 00	90 00	180 26	2,775 00	-3,729 89	-16 77	3,729 93	0 00	0 00	0 00
6,400 00	90 00	180 26	2,775 00	-3,829 89	-17 22	3,829 93	0 00	0 00	0.00
6,500 00	90 00	180 26	2,775 00	-3,929.89	-17 67	3,929 93	0 00	0 00	0 00
6,600 00	90 00	180 26	2,775 00	-4,029 89	-18 12	4,029 93	0 00	0 00	0 00
6,700 00	90 00	180 26	2,775 00	-4,129 89	-18 57	4,129 93	0 00	0 00	0 00
6,800 00	90 00	180 26	2,775 00	-4,229 89	-19 02	4,229 93	0 00	0.00	0 00



Scientific Drilling
Planning Report



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Company:	COG Operating LLC	TVD Reference:	GL Elev @ 3394 00usft
Project:	Eddy County, NM (NAN27 NME)	MD Reference:	GL Elev @ 3394 00usft
Site:	Crypt State #2H	North Reference:	Grid
Well:	Crypt State #2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 8-3/4" Hole		

Planned 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)
6,900 00	90 00	180 26	2,775 00	-4,329 89	-19 47	4,329 93	0 00	0 00	0 00
7,000 00	90 00	180 26	2,775 00	-4,429 88	-19 92	4,429 93	0 00	0 00	0 00
7,100 00	90 00	180 26	2,775 00	-4,529 88	-20 37	4,529 93	0 00	0 00	0 00
7,200 00	90 00	180 26	2,775 00	-4,629 88	-20 82	4,629 93	0 00	0 00	0 00
7,300 00	90 00	180 26	2,775 00	-4,729 88	-21 27	4,729 93	0 00	0 00	0 00
7,307 62	90 00	180 26	2,775 00	-4,737 50	-21 30	4,737 55	0 00	0 00	0 00
PBHL-Crypt State #2H									

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
PP=330' FNL, CP #2H	0 00	0 00	2,671 02	-180 00	-0 81	595,675 10	472,196 59	32° 38' 15 292 N	104° 25' 25 154 W
- plan hits target center									
- Point									
PBHL-Crypt State #2H	0 00	0 00	2,775 00	-4,737 50	-21 30	591,117 60	472,176 10	32° 37' 30 192 N	104° 25' 25 348 W
- plan hits target center									
- Point									

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,297 54	2,297 54	0 00	0 00	KOP Start Build 12 00°/100'
3,047 54	2,775 00	-477 46	-2 15	Land EOC hold 90 00°



Scientific Drilling for COG Operating LLC
Site: Eddy County, NM (NAN27 NME)
Well: Crypt State #2H
Wellbore: OH
Design: Plan #1 8-3/4" Hole



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSeet	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	2297.54	0.00	0.00	2297.54	0.00	0.00	0.00	0.00	0.00	
3	3047.54	90.00	180.26	2775.00	-477.46	-2.15	12.00	180.26	477.46	
4	7307.62	90.00	180.26	2775.00	-4737.50	-21.30	0.00	0.00	4737.55	PBHL-Crypt State #2H

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PP=330' FNL, CP #2H	2671.02	-180.00	-0.81	595675.10	472196.59	32°38' 15.292 N	104°25' 25.154 W	Point
PBHL-Crypt State #2H	2775.00	-4737.50	-21.30	591117.60	472176.10	32°37' 30.192 N	104°25' 25.348 W	Point

WELL DETAILS: Crypt State #2H

Ground Level:	3394.00
+N/-S	0.00
+E/-W	0.00
Northing	595855.10
Easting	472197.40
Latitude	32°38' 17.073 N
Longitude	104°25' 25.146 W

Crypt State #2H

Created By Julio Pina Date 01-Aug-11
Checked: Date:
Reviewed: Date:

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

AZIMUTH CORRECTIONS

ALL AZIMUTHS MUST BE CORRECTED TO GRID
GRID CORRECTIONS MUST BE APPLIED BEFORE PLOTTING
To convert a Magnetic Direction to a Grid Direction, Add 8.04°
To convert a True Direction to a Grid Direction, Add 0.05°

