



HOBBS OCD

DEC 05 2011

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COG Operating LLC

Eddy County, NM (NAN27 NME)

Hoptoit State Com #2H

Hoptoit State Com #2H

OH

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

SHL = 1650' FSL & 330' FWL

BHL = 1650' FSL & 330' FEL

Standard Planning Report

01 December, 2011



DEC 07 2011



Scientific Drilling
Planning Report



Database:	EDM-Julio	Local Co-ordinate Reference:	Site Hoptoit State Com #2H
Company:	COG Operating LLC	TVD Reference:	GL Elev @ 4384.00usft
Project:	Eddy County, NM (NAN27 NME)	MD Reference:	GL Elev @ 4384.00usft
Site:	Hoptoit State Com #2H	North Reference:	Grid
Well:	Hoptoit State Com #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:	Hoptoit State Com #2H		
Site Position:		Northing:	727,411.10 usft
From:	Map	Easting:	663,710.30 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16"
		Grid Convergence:	0.29°

Well	Hoptoit State Com #2H		
Well Position	+N-S	0.00 usft	Northing: 727,411.10 usft
	+E-W	0.00 usft	Easting: 663,710.30 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	Ground Level: 4,384.00 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF2010	2011/12/01	7.69
			Dip Angle
			(°)
			60.85
			Field Strength
			(nT)
			49,004

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
			(°)
			89.50

Plan Sections										
Measured Depth	Inclination	Azimuth	Vertical Depth	+N-S	+E-W	Dogleg Rate	Build Rate	Turn Rate	TFO	Target
(usft)	(°)	(°)	(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	
8,362.00	0.00	0.00	8,362.00	0.00	0.00	0.00	0.00	0.00	0.00	
9,110.54	89.72	89.50	8,840.00	4.16	475.68	11.99	11.99	0.00	89.50	
13,260.67	89.72	89.50	8,860.00	40.50	4,625.60	0.00	0.00	0.00	0.00	PBHL-Hoptoit #1H



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Well:	Hoptoit State Com #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
8,362 00	0 00	0 00	8,362.00	0 00	0 00	0 00	0 00	0 00	0 00
KOP Start Build 11.99°/100'									
8,400 00	4 55	89 50	8,399.96	0 01	1 51	1 51	11 99	11 99	0 00
8,500 00	16 54	89 50	8,498 09	0 17	19 78	19 78	11 99	11 99	0 00
8,600 00	28 53	89 50	8,590 29	0 51	58.03	58 04	11 99	11 99	0 00
8,700 00	40 51	89 50	8,672.53	1 00	114 60	114 60	11 99	11 99	0 00
8,800 00	52 50	89 50	8,741 23	1 64	187 01	187 02	11 99	11 99	0 00
8,900 00	64 49	89 50	8,793 39	2 38	272 11	272 12	11 99	11 99	0 00
9,000 00	76 47	89 50	8,826 74	3.21	366 19	366 20	11 99	11 99	0 00
9,100.00	88 46	89 50	8,839.83	4 07	465 14	465 16	11 99	11 99	0 00
9,110 54	89 72	89 50	8,840.00	4 16	475 68	475 70	11 99	11.99	0 00
Land EOC hold 89.72°									
9,200 00	89 72	89 50	8,840.43	4 95	565 14	565 16	0 00	0 00	0 00
9,300 00	89 72	89 50	8,840 91	5 82	665 13	665 16	0 00	0 00	0 00
9,400 00	89 72	89 50	8,841 39	6 70	765 13	765 16	0 00	0 00	0 00
9,500 00	89.72	89 50	8,841.87	7 57	865 12	865 15	0 00	0 00	0 00
9,600 00	89 72	89 50	8,842 36	8.45	965 12	965 15	0 00	0 00	0 00
9,700 00	89.72	89 50	8,842 84	9 33	1,065 11	1,065 15	0 00	0 00	0 00
9,800 00	89 72	89 50	8,843 32	10.20	1,165 11	1,165 15	0 00	0 00	0 00
9,900 00	89 72	89 50	8,843.80	11 08	1,265 10	1,265 15	0 00	0 00	0 00
10,000 00	89 72	89 50	8,844 28	11 95	1,365 10	1,365 15	0 00	0 00	0 00
10,100 00	89 72	89 50	8,844 77	12 83	1,465 09	1,465 15	0 00	0 00	0 00
10,200 00	89 72	89 50	8,845 25	13 70	1,565 09	1,565 15	0 00	0 00	0 00
10,300 00	89 72	89 50	8,845 73	14 58	1,665 08	1,665.14	0 00	0 00	0 00
10,400 00	89 72	89 50	8,846 21	15 45	1,765 08	1,765 14	0 00	0 00	0 00
10,500 00	89 72	89 50	8,846 69	16 33	1,865 07	1,865 14	0 00	0 00	0 00
10,600 00	89 72	89 50	8,847.18	17 21	1,965.07	1,965 14	0 00	0 00	0 00
10,700 00	89 72	89 50	8,847 66	18.08	2,065 06	2,065.14	0 00	0 00	0 00
10,800.00	89 72	89 50	8,848 14	18 96	2,165 06	2,165 14	0 00	0 00	0 00
10,900 00	89 72	89 50	8,848 62	19 83	2,265 05	2,265 14	0 00	0 00	0 00
11,000 00	89 72	89 50	8,849 10	20 71	2,365 05	2,365 14	0 00	0 00	0 00
11,100 00	89 72	89 50	8,849 59	21.58	2,465.04	2,465 14	0 00	0 00	0 00
11,200 00	89 72	89 50	8,850.07	22 46	2,565 04	2,565 13	0 00	0 00	0 00
11,300 00	89 72	89 50	8,850 55	23 33	2,665.03	2,665.13	0 00	0 00	0 00
11,400 00	89 72	89 50	8,851.03	24 21	2,765 03	2,765 13	0 00	0 00	0 00
11,500.00	89 72	89 50	8,851 51	25.09	2,865 02	2,865 13	0 00	0 00	0 00
11,600 00	89 72	89 50	8,852.00	25 96	2,965.02	2,965 13	0 00	0 00	0 00
11,700 00	89 72	89 50	8,852 48	26 84	3,065 01	3,065 13	0 00	0 00	0 00
11,800 00	89 72	89 50	8,852.96	27 71	3,165.01	3,165.13	0 00	0 00	0 00
11,900 00	89 72	89 50	8,853 44	28 59	3,265.00	3,265 13	0 00	0 00	0 00
12,000 00	89.72	89 50	8,853 92	29.46	3,365.00	3,365 12	0 00	0 00	0 00
12,100.00	89 72	89 50	8,854 41	30 34	3,464 99	3,465 12	0 00	0 00	0 00
12,200 00	89 72	89 50	8,854 89	31.21	3,564 99	3,565 12	0 00	0 00	0 00
12,300 00	89 72	89 50	8,855.37	32 09	3,664 98	3,665 12	0 00	0 00	0 00
12,400 00	89 72	89 50	8,855 85	32 96	3,764.98	3,765 12	0 00	0 00	0 00
12,500 00	89 72	89 50	8,856 33	33 84	3,864.97	3,865.12	0 00	0 00	0 00
12,600 00	89 72	89 50	8,856.82	34 72	3,964 97	3,965 12	0 00	0 00	0 00
12,700 00	89 72	89 50	8,857 30	35.59	4,064.96	4,065 12	0 00	0 00	0 00
12,800 00	89 72	89 50	8,857 78	36 47	4,164.96	4,165 12	0 00	0 00	0 00
12,900 00	89.72	89 50	8,858 26	37 34	4,264 95	4,265 11	0 00	0 00	0 00
13,000.00	89.72	89 50	8,858 74	38 22	4,364.95	4,365 11	0 00	0 00	0 00
13,100 00	89 72	89 50	8,859.23	39 09	4,464 94	4,465 11	0 00	0 00	0 00
13,200.00	89 72	89 50	8,859.71	39 97	4,564 94	4,565 11	0 00	0 00	0 00



Scientific Drilling
Planning Report



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Company:	COG Operating LLC	TVD Reference:	GL Elev @ 4384.00usft
Project:	Eddy County, NM (NAN27 NME)	MD Reference:	GL Elev @ 4384.00usft
Site:	Hoptoit State Com #2H	North Reference:	Grid
Well:	Hoptoit State Com #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)
13,260.67	89.72	89.50	8,860.00	40.50	4,625.60	4,625.78	0.00	0.00	0.00
PBHL-Hoptoit #1H									

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									
PBHL-Hoptoit #1H	0.00	0.00	8,860.00	40.50	4,625.60	727,451.60	668,335.90	32° 59' 55.048 N	103° 47' 3.388 W
- plan hits target center									
- Point									

Plan Annotations:				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
8,362.00	8,362.00	0.00	0.00	KOP Start Build 11 99°/100'
9,110.54	8,840.00	4.16	475.68	Land EOC hold 89.72°



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



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	8362.00	0.00	0.00	8362.00	0.00	0.00	0.00	0.00	0.00	
3	9110.54	89.72	89.50	8840.00	4.16	475.68	11.99	89.50	475.70	
4	13260.67	89.72	89.50	8860.00	40.50	4625.60	0.00	0.00	4625.78	PBHL-Hoptoit #1H

WELL DETAILS: Hoptoit State Com #2H

+N/-S	+E/-W	Ground Level	4384.00
0.00	0.00	Northings	Eastings
0.00	0.00	727411.10	663710.30
		Latitude	Longitude
		32°59'54.883 N	103°47'57.703 W

LEGEND

Plan #1 8-3/4" Hole

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northings	Eastings	Latitude	Longitude	Shape
PBHL-Hoptoit #1H	8860.00	40.50	4625.60	727451.60	668335.90	32°59'55.048 N	103°47'3.388 W	Point

Plan Plan #1 8-3/4" Hole (Hoptoit State Com #2H/OH)

Created By: Julio Pina Date: 01-Dec-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

