



COG Operating LLC

Eddy County, NM (NAN27 NME)

Hearse State #4H

Hearse State #4H

30-015-39264

OH

Plan: Plan #2 8-3/4" Hole

SHL = 330' FSL & 1700' FEL

BHL = 330' FNL & 1700' FEL

Standard Planning Report

12 October, 2011



Scientific Drilling
Directional Drilling Operations



Scientific Drilling
Planning Report



Database:	EDM-Julio	Local Co-ordinate Reference:	Site Hearse State #4H
Company:	COG Operating LLC	TVD Reference:	GL Elev @ 3401 00usft
Project:	Eddy County, NM (NAN27 NME)	MD Reference:	GL Elev @ 3401 00usft
Site:	Hearse State #4H	North Reference:	Grid
Well:	Hearse State #4H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2 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:	Hearse State #4H		
Site Position:	From: Map	Northing: 585,861 50 usft	Latitude: 32° 36' 38 148 N
		Easting: 468,775 50 usft	Longitude: 104° 26' 5 053 W
Position Uncertainty:	0 00 usft	Slot Radius: 13-3/16 "	Grid Convergence: -0 05 °

Well	Hearse State #4H		
Well Position	+N/-S 0 00 usft	Northing: 585,861 50 usft	Latitude: 32° 36' 38 148 N
	+E/-W 0 00 usft	Easting: 468,775 50 usft	Longitude: 104° 26' 5 053 W
Position Uncertainty	0 00 usft	Wellhead Elevation:	Ground Level: 3,401 00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2011/10/12	7 97	60 39	48,719

Design	Plan #2 8-3/4" Hole			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0 00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0 00	0 00	0 00	0 00

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
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	0 00	2,775 00	477 46	0 00	12 00	12 00	0 00	0 00	
7,172 97	90 00	0 00	2,775 00	4,602 90	0 00	0 00	0 00	0 00	0 00	PBHL-Hearse State #



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Well:	Hearse State #4H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2 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	0 00	2,300 00	0 01	0 00	0 01	12 02	12 02	0 00
2,400 00	12 30	0 00	2,399 22	10 95	0 00	10 95	12 00	12 00	0 00
2,500 00	24 30	0 00	2,493 99	42 29	0 00	42 29	12 00	12 00	0 00
2,600 00	36 30	0 00	2,580 17	92 64	0 00	92 64	12 00	12 00	0 00
2,700 00	48 30	0 00	2,654 01	159 81	0 00	159 81	12 00	12 00	0 00
2,800 00	60 30	0 00	2,712 26	240 87	0 00	240 87	12 00	12 00	0 00
2,900 00	72 30	0 00	2,752 39	332 27	0 00	332 27	12 00	12 00	0 00
3,000 00	84 30	0 00	2,772 64	430 01	0 00	430 01	12 00	12 00	0 00
3,047 54	90 00	0 00	2,775 00	477 47	0 00	477 47	12 00	12 00	0 00
Land EOC hold 90.00°									
3,100 00	90 00	0 00	2,775 00	529 93	0 00	529 93	0 00	0 00	0 00
3,200 00	90 00	0 00	2,775 00	629 93	0 00	629 93	0 00	0 00	0 00
3,300 00	90 00	0 00	2,775 00	729 93	0 00	729 93	0 00	0 00	0 00
3,400 00	90 00	0 00	2,775 00	829 93	0 00	829 93	0 00	0 00	0 00
3,500 00	90 00	0 00	2,775 00	929 93	0 00	929 93	0 00	0 00	0 00
3,600 00	90 00	0 00	2,775 00	1,029 93	0 00	1,029 93	0 00	0 00	0 00
3,700 00	90 00	0 00	2,775 00	1,129 93	0 00	1,129 93	0 00	0 00	0 00
3,800 00	90 00	0 00	2,775 00	1,229 93	0 00	1,229 93	0 00	0 00	0 00
3,900 00	90 00	0 00	2,775 00	1,329 93	0 00	1,329 93	0 00	0 00	0 00
4,000 00	90 00	0 00	2,775 00	1,429 93	0 00	1,429 93	0 00	0 00	0 00
4,100 00	90 00	0 00	2,775 00	1,529 93	0 00	1,529 93	0 00	0 00	0 00
4,200 00	90 00	0 00	2,775 00	1,629 93	0 00	1,629 93	0 00	0 00	0 00
4,300 00	90 00	0 00	2,775 00	1,729 93	0 00	1,729 93	0 00	0 00	0 00
4,400 00	90 00	0 00	2,775 00	1,829 93	0 00	1,829 93	0 00	0 00	0 00
4,500 00	90 00	0 00	2,775 00	1,929 93	0 00	1,929 93	0 00	0 00	0 00
4,600 00	90 00	0 00	2,775 00	2,029 93	0 00	2,029 93	0 00	0 00	0 00
4,700 00	90 00	0 00	2,775 00	2,129 93	0 00	2,129 93	0 00	0 00	0 00
4,800 00	90 00	0 00	2,775 00	2,229 93	0 00	2,229 93	0 00	0 00	0 00
4,900 00	90 00	0 00	2,775 00	2,329 93	0 00	2,329 93	0 00	0 00	0 00
5,000 00	90 00	0 00	2,775 00	2,429 93	0 00	2,429 93	0 00	0 00	0 00
5,100 00	90 00	0 00	2,775 00	2,529 93	0 00	2,529 93	0 00	0 00	0 00
5,200 00	90 00	0 00	2,775 00	2,629 93	0 00	2,629 93	0 00	0 00	0 00
5,300 00	90 00	0 00	2,775 00	2,729 93	0 00	2,729 93	0 00	0 00	0 00
5,400 00	90 00	0 00	2,775 00	2,829 93	0 00	2,829 93	0 00	0 00	0 00
5,500 00	90 00	0 00	2,775 00	2,929 93	0 00	2,929 93	0 00	0 00	0 00
5,600 00	90 00	0 00	2,775 00	3,029 93	0 00	3,029 93	0 00	0 00	0 00
5,700 00	90 00	0 00	2,775 00	3,129 93	0 00	3,129 93	0 00	0 00	0 00
5,800 00	90 00	0 00	2,775 00	3,229 93	0 00	3,229 93	0 00	0 00	0 00
5,900 00	90 00	0 00	2,775 00	3,329 93	0 00	3,329 93	0 00	0 00	0 00
6,000 00	90 00	0 00	2,775 00	3,429 93	0 00	3,429 93	0 00	0 00	0 00
6,100 00	90 00	0 00	2,775 00	3,529 93	0 00	3,529 93	0 00	0 00	0 00
6,200 00	90 00	0 00	2,775 00	3,629 93	0 00	3,629 93	0 00	0 00	0 00
6,300 00	90 00	0 00	2,775 00	3,729 93	0 00	3,729 93	0 00	0 00	0 00
6,400 00	90 00	0 00	2,775 00	3,829 93	0 00	3,829 93	0 00	0 00	0 00
6,500 00	90 00	0 00	2,775 00	3,929 93	0 00	3,929 93	0 00	0 00	0 00
6,600 00	90 00	0 00	2,775 00	4,029 93	0 00	4,029 93	0 00	0 00	0 00
6,700 00	90 00	0 00	2,775 00	4,129 93	0 00	4,129 93	0 00	0 00	0 00
6,800 00	90 00	0 00	2,775 00	4,229 93	0 00	4,229 93	0 00	0 00	0 00
6,900 00	90 00	0 00	2,775 00	4,329 93	0 00	4,329 93	0 00	0 00	0 00
7,000 00	90 00	0 00	2,775 00	4,429 93	0 00	4,429 93	0 00	0 00	0 00
7,100 00	90 00	0 00	2,775 00	4,529 93	0 00	4,529 93	0 00	0 00	0 00



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Planning Report



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Company:	COG Operating LLC	TYD Reference:	GL Elev @ 3401.00usft
Project:	Eddy County, NM (NAN27 NME)	MD Reference:	GL Elev @ 3401.00usft
Site:	Hearse State #4H	North Reference:	Grid
Well:	Hearse State #4H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2 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)
7,172.97	90.00	0.00	2,775.00	4,602.90	0.00	4,602.90	0.00	0.00	0.00
PBHL-Hearse State #4H									

Design Targets									
Target Name									
- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- Shape									
PBHL-Hearse State #4H	0.00	0.00	2,775.00	4,602.90	0.00	590,464.40	468,775.50	32° 37' 23.697 N	104° 26' 5.104 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	272.84	0.00	Land EOC hold 90.00°



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



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dieg	TFace	V Sect	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	0 00	2775.00	477.46	0 00	12 00	0 00	477.46	
4	7172.97	90 00	0 00	2775.00	4602.90	0 00	0 00	0 00	4602.90	PBHL-Hearse State #4H

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PBHL-Hearse State #4H	2775.00	4602.90	0 00	590464.40	468775.50	32°37' 23.697 N	104°26' 5.104 W	Point

WELL DETAILS: Hearse State #4H

+N/-S	+E/-W	Northing	Ground Level:	Easting	Latitude	Longitude	Slot
0 00	0 00	585861.50	3401.00	468775.50	32°36' 38.148 N	104°26' 5.053 W	

Hearse State #4H

Created By: Julio Pina Date: 12-Oct-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 PLOTING
To convert a Magnetic Direction to a Grid Direction, Add 8.02°
To convert a True Direction to a Grid Direction, Add 0.05°

