



COG Operating LLC

Eddy County, NM (NAN27 NME)

Grant 2 Fee #3H

Grant 2 Fee #3H

30-015-39587

OH

Plan: Plan #1 8 3/4 Hole

SHL = 150' FSL & 1910' FEL

BHL = 330' FNL & 2260' FEL

Standard Planning Report

20 October, 2011





Scientific Drilling
Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Grant 2 Fee #3H
Company:	COG Operating LLC	TVD Reference:	GL Elev @ 3282.0usft
Project:	Eddy County, NM (NAN27 NME)	MD Reference:	GL Elev @ 3282.0usft
Site:	Grant 2 Fee #3H	North Reference:	Grid
Well:	Grant 2 Fee #3H	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	Grant 2 Fee #3H		
Site Position:		Northing:	612,106.00 usft
From:	Map	Easting:	494,974.60 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 40' 58.000 N
		Longitude:	104° 20' 58.800 W
		Grid Convergence:	-0.01 °

Well	Grant 2 Fee #3H		
Well Position	+N/-S	0.0 usft	Northing:
	+E/-W	0.0 usft	Easting:
Position Uncertainty	0.0 usft	Wellhead Elevation:	Ground Level:
			3,282.0 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF2010	10/20/11	7.93
			Dip Angle
			(°)
			60.47
			Field Strength
			(nT)
			48,771

Design	Plan #1 8 3/4 Hole		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth:
			0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.0	0.0	0.0
			Direction
			(°)
			355.64

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)		
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,272.5	0.00	0.00	2,272.5	0.0	0.0	0.00	0.00	0.00	0.00	
3,022.5	90.00	355.64	2,750.0	476.1	-36.3	12.00	12.00	0.00	355.64	
7,353.6	90.00	355.64	2,750.0	4,794.6	-365.3	0.00	0.00	0.00	0.00	PBHL- Grant 2 Fee 3H



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Well:	Grant 2 Fee #3H	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 0	0 00	0 00	0 0	0 0	0 0	0 0	0 00	0 00	0 00
2,272 5	0 00	0 00	2,272 5	0 0	0 0	0 0	0 00	0 00	0 00
KOP Start Build 12.00°/100									
2,300 0	3 30	355 64	2,300 0	0 8	-0 1	0 8	12 00	12 00	0 00
2,400 0	15 30	355 64	2,398 5	16 9	-1 3	16 9	12 00	12 00	0 00
2,500 0	27 30	355 64	2,491 5	53 0	-4 0	53 2	12 00	12 00	0 00
2,600 0	39 30	355 64	2,574 9	107 6	-8 2	108 0	12 00	12 00	0 00
2,700 0	51 30	355 64	2,645 1	178 4	-13 6	178 9	12 00	12 00	0 00
2,703 0	51 65	355 64	2,647 0	180 7	-13 8	181 2	12 00	12 00	0 00
PP - Grant 2 Fee #3H 330° FSL									
2,800 0	63 30	355 64	2,699 1	262 1	-20 0	262 9	12 00	12 00	0 00
2,900 0	75 30	355 64	2,734 4	355 2	-27 1	356 3	12 00	12 00	0 00
3,000 0	87 30	355 64	2,749 5	453 6	-34 6	454 9	12 00	12 00	0 00
3,022 5	90 00	355 64	2,750 0	476 1	-36 3	477 5	12 00	12 00	0 00
Land EOC Hold 90°									
3,100 0	90 00	355 64	2,750 0	553 3	-42 2	554 9	0 00	0 00	0 00
3,200 0	90 00	355 64	2,750 0	653 0	-49 8	654 9	0 00	0 00	0 00
3,300 0	90 00	355 64	2,750 0	752 7	-57 4	754 9	0 00	0 00	0 00
3,400 0	90 00	355 64	2,750 0	852 5	-64 9	854 9	0 00	0 00	0 00
3,500 0	90 00	355 64	2,750 0	952 2	-72 5	954 9	0 00	0 00	0 00
3,600 0	90 00	355 64	2,750 0	1,051 9	-80 1	1,054 9	0 00	0 00	0 00
3,700 0	90 00	355 64	2,750 0	1,151 6	-87 7	1,154 9	0 00	0 00	0 00
3,800 0	90 00	355 64	2,750 0	1,251 3	-95 3	1,254 9	0 00	0 00	0 00
3,900 0	90 00	355 64	2,750 0	1,351 0	-102 9	1,354 9	0 00	0 00	0 00
4,000 0	90 00	355 64	2,750 0	1,450 7	-110 5	1,454 9	0 00	0 00	0 00
4,100 0	90 00	355 64	2,750 0	1,550 4	-118 1	1,554 9	0 00	0 00	0 00
4,200 0	90 00	355 64	2,750 0	1,650 1	-125 7	1,654 9	0 00	0 00	0 00
4,300 0	90 00	355 64	2,750 0	1,749 9	-133 3	1,754 9	0 00	0 00	0 00
4,400 0	90 00	355 64	2,750 0	1,849 6	-140 9	1,854 9	0 00	0 00	0 00
4,500 0	90 00	355 64	2,750 0	1,949 3	-148 5	1,954 9	0 00	0 00	0 00
4,600 0	90 00	355 64	2,750 0	2,049 0	-156 1	2,054 9	0 00	0 00	0 00
4,700 0	90 00	355 64	2,750 0	2,148 7	-163 7	2,154 9	0 00	0 00	0 00
4,800 0	90 00	355 64	2,750 0	2,248 4	-171 3	2,254 9	0 00	0 00	0 00
4,900 0	90 00	355 64	2,750 0	2,348 1	-178 9	2,354 9	0 00	0 00	0 00
5,000 0	90 00	355 64	2,750 0	2,447 8	-186 5	2,454 9	0 00	0 00	0 00
5,100 0	90 00	355 64	2,750 0	2,547 5	-194 1	2,554 9	0 00	0 00	0 00
5,200 0	90 00	355 64	2,750 0	2,647 3	-201 7	2,654 9	0 00	0 00	0 00
5,300 0	90 00	355 64	2,750 0	2,747 0	-209 3	2,754 9	0 00	0 00	0 00
5,400 0	90 00	355 64	2,750 0	2,846 7	-216 9	2,854 9	0 00	0 00	0 00
5,500 0	90 00	355 64	2,750 0	2,946 4	-224 5	2,954 9	0 00	0 00	0 00
5,600 0	90 00	355 64	2,750 0	3,046 1	-232 1	3,054 9	0 00	0 00	0 00
5,700 0	90 00	355 64	2,750 0	3,145 8	-239 7	3,154 9	0 00	0 00	0 00
5,800 0	90 00	355 64	2,750 0	3,245 5	-247 3	3,254 9	0 00	0 00	0 00
5,900 0	90 00	355 64	2,750 0	3,345 2	-254 9	3,354 9	0 00	0 00	0 00
6,000 0	90 00	355 64	2,750 0	3,444 9	-262 5	3,454 9	0 00	0 00	0 00
6,100 0	90 00	355 64	2,750 0	3,544 7	-270 1	3,554 9	0 00	0 00	0 00
6,200 0	90 00	355 64	2,750 0	3,644 4	-277 7	3,654 9	0 00	0 00	0 00
6,300 0	90 00	355 64	2,750 0	3,744 1	-285 3	3,754 9	0 00	0 00	0 00
6,400 0	90 00	355 64	2,750 0	3,843 8	-292 9	3,854 9	0 00	0 00	0 00
6,500 0	90 00	355 64	2,750 0	3,943 5	-300 5	3,954 9	0 00	0 00	0 00
6,600 0	90 00	355 64	2,750 0	4,043 2	-308 1	4,054 9	0 00	0 00	0 00
6,700 0	90 00	355 64	2,750 0	4,142 9	-315 6	4,154 9	0 00	0 00	0 00
6,800 0	90 00	355 64	2,750 0	4,242 6	-323 2	4,254 9	0 00	0 00	0 00



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Project:	Eddy County, NM (NAN27 NME)	MD Reference:	GL Elev @ 3282 0usft
Site:	Grant 2 Fee #3H	North Reference:	Grid
Well:	Grant 2 Fee #3H	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 0	90 00	355 64	2,750 0	4,342 3	-330 8	4,354 9	0 00	0 00	0 00
7,000 0	90 00	355 64	2,750 0	4,442 1	-338 4	4,454 9	0 00	0 00	0 00
7,100 0	90 00	355 64	2,750 0	4,541 8	-346 0	4,554 9	0 00	0 00	0 00
7,200 0	90 00	355 64	2,750 0	4,641 5	-353 6	4,654 9	0 00	0 00	0 00
7,300 0	90 00	355 64	2,750 0	4,741 2	-361 2	4,754 9	0 00	0 00	0 00
7,353 6	90 00	355 64	2,750 0	4,794 6	-365 3	4,808 5	0 00	0 00	0 00
PBHL- Grant 2 Fee 3H									

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 - Grant 2 Fee #3H 3K	0 00	0 00	2,647 0	180 7	-13 8	612,286 73	494,960 83	32° 40' 59 788 N	104° 20' 58 962 W
- plan hits target center									
- Point									
PBHL- Grant 2 Fee 3H	0 00	360 00	2,750 0	4,794 6	-365 3	616,900 60	494,609 30	32° 41' 45 445 N	104° 21' 3 084 W
- plan hits target center									
- Point									

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,272 5	2,272 5	0 0	0 0	KOP Start Build 12 00°/100
3,022 5	2,750 0	476 1	-36 3	Land EOC Hold 90°



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



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	2272.5	0.00	0.00	2272.5	0.0	0.0	0.00	0.00	0.0	
3	3022.5	90.00	355.64	2750.0	476.1	-36.3	12.00	355.64	477.5	
4	7353.6	90.00	355.64	2750.0	4794.6	-365.3	0.00	0.00	4808.5	PBHL- Grant 2 Fee 3H

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PP - Grant 2 Fee #3H 330' FSL	180.7	180.7	-13.8	612286.73	494960.83	32°40' 59.788 N	104°20' 58.962 W	Point
PBHL- Grant 2 Fee 3H	2750.0	4794.6	-365.3	616900.60	494609.30	32°41' 45.445 N	104°21' 3.084 W	Point

WELL DETAILS Grant 2 Fee #3H

	Ground Level:	3282.0
+N/-S	Northing	612106.00
+E/-W	Easting	494974.60
	Latitude	32°40' 58.000 N
	Longitude	104°20' 58.800 W
	Slot	

Grant 2 Fee #3H

Created By: Julio Pina Date: 20-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 PLOTTING
To convert a Magnetic Direction to a Grid Direction, Add 7.94°
To convert a True Direction to a Grid Direction, Add 0.01°

