

30-015-39814



COG Operating LLC

Eddy County, NM (NAN27 NME)

Patton 5 Fee #1H

Patton 5 Fee #1H

OH

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

SHL = 380' FNL & 330' FWL

BHL = 380' FNL & 330' FEL

Standard Planning Report

22 December, 2011





Database:	EDM 5000 1 Single User Db	Local Co-ordinate Reference:	Site Patton 5 Fee #1H
Company:	COG Operating LLC	TVD Reference:	GL Elev @ 3381 00usft
Project:	Eddy County, NM (NAN27 NME)	MD Reference:	GL Elev @ 3381 00usft
Site:	Patton 5 Fee #1H	North Reference:	Grid
Well:	Patton 5 Fee #1H	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	Patton 5 Fee #1H		
Site Position:	Northing:	616,822 20 usft	Latitude: 32° 41' 44.586 N
From: Map	Easting:	476,026 50 usft	Longitude: 104° 24' 40.546 W
Position Uncertainty:	0 00 usft	Slot Radius: 13-3/16 "	Grid Convergence: -0 04 °

Well	Patton 5 Fee #1H		
Well Position	+N/-S	0 00 usft	Northing: 616,822 20 usft
	+E/-W	0 00 usft	Easting: 476,026 50 usft
Position Uncertainty	0 00 usft	Wellhead Elevation:	Ground Level: 3,381 00 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF2010	2011/12/22	7 94
			Dip Angle (°)
			60 46
			Field Strength (nT)
			48,754

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 64

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	
2,272 54	0.00	0 00	2,272 54	0 00	0 00	0.00	0 00	0.00	0 00	
3,022 54	90 00	89 64	2,750 00	2 98	477 46	12 00	12 00	0 00	89 64	
7,164 16	90.00	89 64	2,750 00	28 80	4,619 00	0 00	0 00	0 00	0 00	PBHL-Patton 5 Fee #



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Patton 5 Fee #1H
Company:	COG Operating LLC	TVD Reference:	GL Elev @ 3381.00usft
Project:	Eddy County, NM (NAN27 NME)	MD Reference:	GL Elev @ 3381.00usft
Site:	Patton 5 Fee #1H	North Reference:	Grid
Well:	Patton 5 Fee #1H	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
2,272 54	0 00	0 00	2,272 54	0 00	0 00	0 00	0 00	0 00	0 00
KOP Start Build 12.00/100'									
2,300 00	3 30	89 64	2,299 98	0 00	0 79	0.79	12.00	12.00	0 00
2,400 00	15 30	89 64	2,398 49	0.11	16.91	16.91	12.00	12.00	0 00
2,500 00	27 30	89.64	2,491 49	0.33	53 16	53 17	12.00	12.00	0 00
2,600 00	39 30	89 64	2,574 93	0 67	107 96	107.96	12.00	12.00	0 00
2,700 00	51 30	89 64	2,645 14	1.12	178 90	178 91	12.00	12.00	0 00
2,800 00	63 30	89 64	2,699 07	1 64	262 89	262 90	12.00	12.00	0 00
2,900 00	75 30	89 64	2,734 36	2 22	356 26	356.27	12.00	12.00	0 00
3,000 00	87 30	89 64	2,749 47	2 84	454 93	454 94	12.00	12.00	0 00
3,022 54	90 00	89 64	2,750 00	2.98	477 46	477 47	12.00	12.00	0 00
Land EOC hold 90.00°									
3,100 00	90 00	89 64	2,750 00	3 46	554 92	554.93	0 00	0 00	0 00
3,200 00	90 00	89 64	2,750 00	4 08	654 92	654.93	0 00	0 00	0 00
3,300 00	90 00	89 64	2,750 00	4.71	754 91	754 93	0 00	0 00	0 00
3,400 00	90 00	89 64	2,750 00	5 33	854 91	854.93	0 00	0 00	0 00
3,500 00	90 00	89 64	2,750 00	5.95	954 91	954 93	0 00	0.00	0 00
3,600 00	90 00	89 64	2,750 00	6 58	1,054 91	1,054 93	0 00	0 00	0 00
3,700 00	90 00	89 64	2,750 00	7 20	1,154 91	1,154 93	0 00	0.00	0 00
3,800 00	90 00	89 64	2,750 00	7.82	1,254 91	1,254 93	0 00	0.00	0 00
3,900 00	90 00	89 64	2,750 00	8 45	1,354 90	1,354.93	0 00	0.00	0 00
4,000 00	90 00	89.64	2,750 00	9 07	1,454 90	1,454 93	0 00	0.00	0 00
4,100 00	90.00	89 64	2,750 00	9 69	1,554 90	1,554 93	0 00	0.00	0 00
4,200 00	90 00	89 64	2,750 00	10 32	1,654 90	1,654 93	0 00	0.00	0 00
4,300 00	90 00	89 64	2,750 00	10 94	1,754 90	1,754.93	0 00	0.00	0 00
4,400 00	90 00	89 64	2,750 00	11 57	1,854 89	1,854 93	0 00	0.00	0 00
4,500 00	90 00	89.64	2,750.00	12.19	1,954.89	1,954 93	0 00	0.00	0 00
4,600 00	90 00	89 64	2,750 00	12 81	2,054 89	2,054 93	0 00	0.00	0 00
4,700 00	90 00	89 64	2,750 00	13.44	2,154 89	2,154 93	0 00	0.00	0 00
4,800 00	90.00	89 64	2,750 00	14 06	2,254 89	2,254 93	0 00	0.00	0 00
4,900 00	90 00	89 64	2,750 00	14.68	2,354 88	2,354 93	0 00	0.00	0 00
5,000 00	90 00	89 64	2,750 00	15.31	2,454 88	2,454 93	0 00	0.00	0 00
5,100 00	90 00	89 64	2,750 00	15 93	2,554 88	2,554.93	0 00	0.00	0 00
5,200 00	90 00	89 64	2,750 00	16.55	2,654.88	2,654.93	0 00	0.00	0 00
5,300 00	90 00	89 64	2,750 00	17 18	2,754 88	2,754.93	0 00	0.00	0 00
5,400 00	90 00	89 64	2,750 00	17.80	2,854 87	2,854.93	0 00	0.00	0 00
5,500 00	90 00	89 64	2,750 00	18 42	2,954 87	2,954 93	0 00	0.00	0 00
5,600 00	90.00	89.64	2,750 00	19 05	3,054 87	3,054.93	0 00	0.00	0 00
5,700 00	90 00	89.64	2,750 00	19 67	3,154 87	3,154 93	0 00	0.00	0 00
5,800 00	90 00	89 64	2,750 00	20 29	3,254 87	3,254 93	0 00	0.00	0 00
5,900 00	90 00	89 64	2,750 00	20 92	3,354 86	3,354 93	0 00	0.00	0 00
6,000 00	90 00	89 64	2,750 00	21.54	3,454 86	3,454.93	0 00	0.00	0 00
6,100 00	90 00	89 64	2,750 00	22 16	3,554 86	3,554 93	0 00	0.00	0 00
6,200 00	90 00	89 64	2,750 00	22 79	3,654 86	3,654.93	0 00	0.00	0 00
6,300 00	90 00	89 64	2,750 00	23 41	3,754 86	3,754 93	0 00	0.00	0 00
6,400 00	90 00	89 64	2,750 00	24 04	3,854.85	3,854 93	0 00	0.00	0 00
6,500 00	90 00	89 64	2,750 00	24 66	3,954.85	3,954 93	0 00	0.00	0 00
6,600 00	90 00	89 64	2,750 00	25 28	4,054 85	4,054.93	0 00	0.00	0 00
6,700 00	90 00	89 64	2,750 00	25 91	4,154 85	4,154 93	0 00	0.00	0 00
6,800 00	90 00	89 64	2,750.00	26.53	4,254 85	4,254 93	0 00	0.00	0 00
6,900 00	90 00	89 64	2,750.00	27.15	4,354 85	4,354 93	0 00	0.00	0 00
7,000 00	90 00	89 64	2,750 00	27.78	4,454 84	4,454 93	0 00	0.00	0 00
7,100 00	90 00	89 64	2,750 00	28 40	4,554 84	4,554 93	0 00	0.00	0 00



SDI
Planning Report

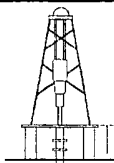


Database:	EDM 5000 1 Single User Db	Local Co-ordinate Reference:	Site Patton 5 Fee #1H
Company:	COG Operating LLC	TVD Reference:	GL Elev @ 3381 00usft
Project:	Eddy County, NM (NAN27 NME)	MD Reference:	GL Elev @ 3381 00usft
Site:	Patton 5 Fee #1H	North Reference:	Grid
Well:	Patton 5 Fee #1H	Survey Calculation 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)
7,164 16	90 00	89 64	2,750 00	28 80	4,619 00	4,619 09	0 00	0 00	0 00
PBHL-Patton 5 Fee #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-Patton 5 Fee #1H	0 00	0 00	2,750 00	28 80	4,619 00	616,851 00	480,645 50	32° 41' 44 902 N	104° 23' 46 493 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 54	2,272 54	0 00	0 00	KOP Start Build 12 00/100'
3,022 54	2,750 00	-177 28	443 34	Land EOC hold 90 00°

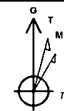


GL Elev @ 3381.00usft

Ground Elev 3381.00



Patton 5 Fee #1H
Eddy County, NM (NAN27 NME)
Northing: (Y) 616822.20
Easting: (X) 476026.50
Plan #1 8-3/4" Hole



To convert a Magnetic Direction to a Grid Direction Add 7.98°
To convert a True Direction to a Grid Direction Add 0.04°

Azimuths to Grid North
True North 0.04°
Magnetic North 7.98°
Magnetic Field
Strength 48754.1nT
Dip Angle 60.46°
Date 2011/12/22
Model IGRF2010



WELL DETAILS Patton 5 Fee #1H

	North	East	Lat	Long	Slat
Ground Level	3381.00				
Easting	476026.50				
Latitude	32° 41' 44.588 N				
Longitude	104° 24' 40.548 W				

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

SITE DETAILS Patton 5 Fee #1H

See Centre Northing 616822.20
Easting 476026.50
Positional Uncertainty 0.00
Convergence -0.04
Local North Grid

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	TFace	VFace	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	2272.54	0.00	0.00	2272.54	0.00	0.00	0.00	0.00	0.00	
3	3022.54	90.00	89.64	2750.00	2.98	477.46	12.00	89.64	477.46	
4	7164.16	90.00	89.64	2750.00	28.80	4619.09	0.00	0.00	4619.09	PBHL-Patton 5 Fee #1H

Map System US State Plane 1927 (Exact solution)
Datum NAD 1927 (NADCON CONUS)
Ellipsoid Clarke 1866
Zone Name New Mexico East 3001

Local Origin See Patton 5 Fee #1H Grid North

Latitude 32 41 44.588 N
Longitude 104 24 40.548 W

Grid East 476026.50
Grid North 616822.20
Scale Factor 1.000

Geomagnetic Model IGRF2010
Sample Date 22-Dec-11
Magnetic Declination 7.94
Dip Angle from Horizontal 60.46
Magnetic Field Strength 48754

To convert a Magnetic Direction to a Grid Direction Add 7.98°
To convert a Magnetic Direction to a True Direction Add 7.94° East
To convert a True Direction to a Grid Direction Add 0.04°

FORMATION TOP DETAILS

No formation data is available

DESIGN TARGET DETAILS

Name	TVD	+N-S	+E-W	North	East	Latitude	Longitude	Shape
PBHL-Patton 5 Fee #1H - plan hits target center	2750.00	28.80	4619.09	616851.00	480645.50	32° 41' 44.902 N	104° 23' 46.493 W	Point

CASING DETAILS

No casing data is available

LEGEND

Plan #1 8-3/4" Hole

