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NMOCD ARTESIA

COG Operating LLC

Eddy County, NM (NAN27 NME)

GJ West Coop Unit #281

GJ West #281

OH

Plan: Plan #1 - 7-7/8" Hole

SHL = 2060' FNL & 2310' FWL

BHL = 2300' FNL & 2300' FWL

Top of Paddock = 2300' FNL & 2300' FWL @ 3975' TVD

Standard Planning Report

27 January, 2010





Scientific Drilling
Planning Report



Database:	EDM 5000 1 Single User Db	Local Co-ordinate Reference:	Site GJ West Coop Unit #281
Company:	COG Operating LLC	TVD Reference:	GL Elev @ 3578 00ft (Rig ?)
Project:	Eddy County, NM (NAN27 NME)	MD Reference:	GL Elev @ 3578.00ft (Rig ?)
Site:	GJ West Coop Unit #281	North Reference:	Grid
Well:	GJ West #281	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 - 7-7/8" 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:	GJ West Coop Unit #281		
Site Position:	Map	Northing:	657,411 10 ft
From:		Easting:	577,728 20 ft
Position Uncertainty:	0 00 ft	Slot Radius:	0 "
		Latitude:	32° 48' 25 403 N
		Longitude:	104° 4' 49 269 W
		Grid Convergence:	0 14 °

Well:	GJ West #281		
Well Position	+N/-S	0 00 ft	Northing:
	+E/-W	0 00 ft	Easting:
Position Uncertainty	0 00 ft	Wellhead Elevation:	Ground Level:
			3,578 00 ft

Wellbore:	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	2010/01/27	8 02	60 69	49,079

Design:	Plan #1 - 7-7/8" Hole			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0 00
Vertical Section:	Depth From (TVD)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0 00	0 00	0 00	182 22

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	
1,000 00	0 00	0 00	1,000 00	0 00	0 00	0 00	0 00	0 00	0 00	
1,251 94	5 04	182 22	1,251 61	-11 06	-0 43	2 00	2 00	0 00	182 22	
3,733 30	5 04	182 22	3,723 39	-228 84	-8 87	0 00	0 00	0 00	0 00	
3,985 24	0 00	0 00	3,975 00	-239 90	-9 30	2 00	-2 00	0 00	180 00	PP-GJ West #281
5,610 24	0 00	0 00	5,600 00	-239 90	-9 30	0 00	0 00	0 00	0 00	PBHL-GJ West #281



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Wellbore:	OH		
Design:	Plan #1 - 7-7/8" Hole		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
West HL-GJ West #281 - North HL-GJ West #281									
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
8-5/8" Casing									
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
KOP Start Build 2.00°/100'									
1,100.00	2.00	182.22	1,099.98	-1.74	-0.07	1.75	2.00	2.00	0.00
1,200.00	4.00	182.22	1,199.84	-6.97	-0.27	6.98	2.00	2.00	0.00
1,251.94	5.04	182.22	1,251.61	-11.06	-0.43	11.07	2.00	2.00	0.00
EOC hold 5.04°									
1,300.00	5.04	182.22	1,299.49	-15.28	-0.59	15.29	0.00	0.00	0.00
1,400.00	5.04	182.22	1,399.10	-24.06	-0.93	24.08	0.00	0.00	0.00
1,500.00	5.04	182.22	1,498.72	-32.83	-1.27	32.86	0.00	0.00	0.00
1,600.00	5.04	182.22	1,598.33	-41.61	-1.61	41.64	0.00	0.00	0.00
1,700.00	5.04	182.22	1,697.94	-50.39	-1.95	50.42	0.00	0.00	0.00
1,800.00	5.04	182.22	1,797.56	-59.16	-2.29	59.21	0.00	0.00	0.00
1,900.00	5.04	182.22	1,897.17	-67.94	-2.63	67.99	0.00	0.00	0.00
2,000.00	5.04	182.22	1,996.78	-76.72	-2.97	76.77	0.00	0.00	0.00
2,100.00	5.04	182.22	2,096.40	-85.49	-3.31	85.56	0.00	0.00	0.00
2,200.00	5.04	182.22	2,196.01	-94.27	-3.65	94.34	0.00	0.00	0.00
2,300.00	5.04	182.22	2,295.63	-103.04	-3.99	103.12	0.00	0.00	0.00
2,400.00	5.04	182.22	2,395.24	-111.82	-4.33	111.91	0.00	0.00	0.00
2,500.00	5.04	182.22	2,494.85	-120.60	-4.68	120.69	0.00	0.00	0.00
2,600.00	5.04	182.22	2,594.47	-129.37	-5.02	129.47	0.00	0.00	0.00
2,700.00	5.04	182.22	2,694.08	-138.15	-5.36	138.25	0.00	0.00	0.00
2,800.00	5.04	182.22	2,793.69	-146.93	-5.70	147.04	0.00	0.00	0.00
2,900.00	5.04	182.22	2,893.31	-155.70	-6.04	155.82	0.00	0.00	0.00
3,000.00	5.04	182.22	2,992.92	-164.48	-6.38	164.60	0.00	0.00	0.00
3,100.00	5.04	182.22	3,092.53	-173.26	-6.72	173.39	0.00	0.00	0.00
3,200.00	5.04	182.22	3,192.15	-182.03	-7.06	182.17	0.00	0.00	0.00
3,300.00	5.04	182.22	3,291.76	-190.81	-7.40	190.95	0.00	0.00	0.00
3,400.00	5.04	182.22	3,391.37	-199.59	-7.74	199.74	0.00	0.00	0.00
3,500.00	5.04	182.22	3,490.99	-208.36	-8.08	208.52	0.00	0.00	0.00
3,600.00	5.04	182.22	3,590.60	-217.14	-8.42	217.30	0.00	0.00	0.00
3,700.00	5.04	182.22	3,690.21	-225.91	-8.76	226.08	0.00	0.00	0.00
3,733.30	5.04	182.22	3,723.39	-228.84	-8.87	229.01	0.00	0.00	0.00
Start Drop 2.00°/100'									
3,800.00	3.70	182.22	3,789.89	-233.92	-9.07	234.09	2.00	-2.00	0.00
3,900.00	1.70	182.22	3,889.77	-238.63	-9.25	238.81	2.00	-2.00	0.00
3,985.24	0.00	0.00	3,975.00	-239.90	-9.30	240.08	2.00	-2.00	0.00
EOC hold 0.00° - PP-GJ West #281									
5,610.24	0.00	0.00	5,600.00	-239.90	-9.30	240.08	0.00	0.00	0.00
PBHL-GJ West #281									



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Site:	GJ West Coop Unit #281	North Reference:	Grid
Well:	GJ West #281	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 - 7-7/8" Hole		

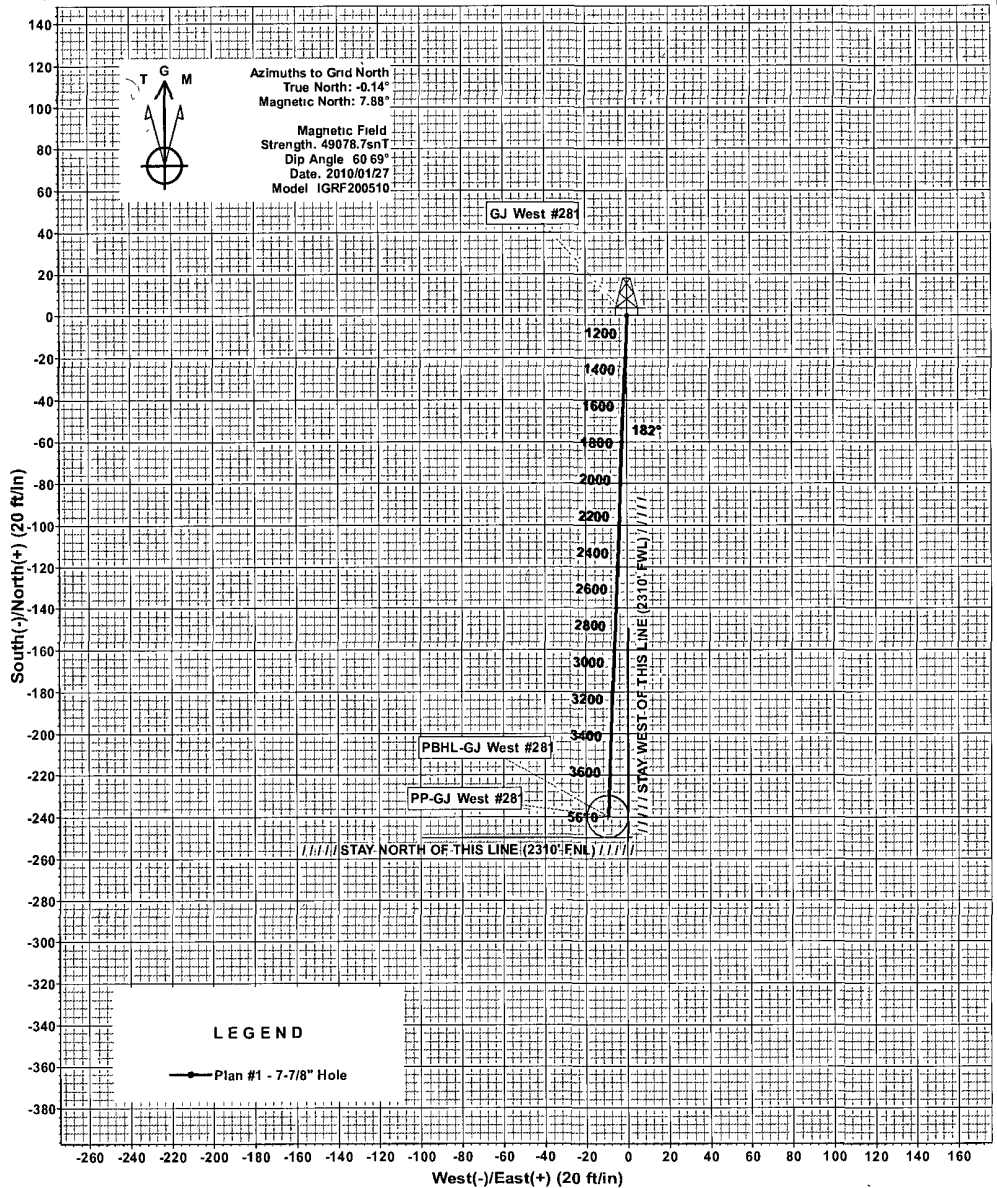
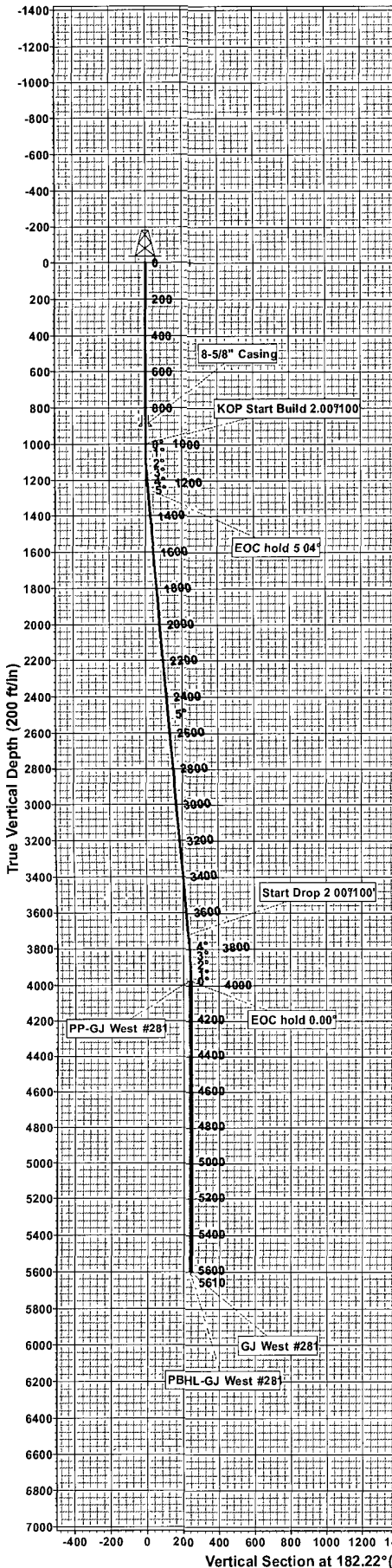
Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
- Shape									
West HL-GJ West #281	0 00	0 00	0 00	-249 90	0 70	657,161 20	577,728 90	32° 48' 22 930 N	104° 4' 49 267 W
- plan misses target center by 249 90ft at 0 00ft MD (0 00 TVD, 0 00 N, 0 00 E)									
- Rectangle (sides W0 00 H100 00 D0 00)									
North HL-GJ West #281	0 00	0 00	0 00	-249 90	0 70	657,161 20	577,728 90	32° 48' 22 930 N	104° 4' 49 267 W
- plan misses target center by 249 90ft at 0 00ft MD (0 00 TVD, 0 00 N, 0 00 E)									
- Rectangle (sides W100 00 H0 00 D0 00)									
PP-GJ West #281	0 00	0 00	3,975 00	-239 90	-9 30	657,171 20	577,718 90	32° 48' 23 029 N	104° 4' 49 384 W
- plan hits target center									
- Circle (radius 10 00)									
PBHL-GJ West #281	0 00	0 00	5,600 00	-239 90	-9 30	657,171 20	577,718 90	32° 48' 23 029 N	104° 4' 49 384 W
- plan hits target center									
- Circle (radius 10 00)									

Casing Points				
Measured Depth	Vertical Depth	Name	Casing Diameter	Hole Diameter
(ft)	(ft)		(")	(")
900 00	900 00	8-5/8" Casing	8-5/8	12-1/4

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(ft)	(ft)	+N/-S (ft)	+E/-W (ft)	
1,000 00	1,000 00	0 00	0 00	KOP Start Build 2 00°/100'
1,251 94	1,251 61	-11 06	-0 43	EOC hold 5 04°
3,733 30	3,723 39	-228 84	-8 87	Start Drop 2 00°/100'
3,985 24	3,975 00	-239 90	-9 30	EOC hold 0.00°



Scientific Drilling for COG Operating LLC
Site: Eddy County, NM (NAN27 NME)
Well: GJ West #281
Wellbore: OH
Design: Plan #1 - 7-7/8" Hole



WELLBORE TARGET DETAILS (MAP CO-ORDINATES)									
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape	
North HL-GJ West #281	0.00	-249.90	0.70	657161.20	577728.90	32°48' 22.930 N	104°4' 49.267 W	Rectangle (Sides: L0.00 W100.00)	
West HL-GJ West #281	0.00	-249.90	0.70	657161.20	577728.90	32°48' 22.930 N	104°4' 49.267 W	Rectangle (Sides: L100.00 W0.00)	
PP-GJ West #281	3975.00	-239.90	-9.30	657171.20	577718.90	32°48' 23.029 N	104°4' 49.384 W	Circle (Radius: 10.00)	
PBHL-GJ West #281	5600.00	-239.90	-9.30	657171.20	577718.90	32°48' 23.029 N	104°4' 49.384 W	Circle (Radius: 10.00)	

SECTION DETAILS									
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	1000.00	0.00	0.00	1000.00	0.00	0.00	0.00	0.00	0.00
3	1251.94	5.04	182.22	1251.61	-11.06	-0.43	2.00	182.22	11.07
4	3733.30	5.04	182.22	3723.39	-228.64	-8.87	0.00	0.00	229.01
5	3985.24	0.00	0.00	3975.00	-239.90	-9.30	2.00	180.00	240.08
6	5610.24	0.00	0.00	5600.00	-239.90	-9.30	0.00	0.00	240.08

WELL DETAILS: GJ West #281

Ground Level: 3578.00			
+N/-S	+E/-W	Northing	Latitude
0.00	0.00	657411.10	32°48' 25.403 N
Longitude Slot			
104°4' 49.269 W			

PROJECT DETAILS: Eddy County, NM (NAN27 NME) Plan: Plan #1 - 7-7/8" Hole (GJ West #281/OH)

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
Created By: Julio Pina
Checked: _____
Reviewed: _____
Approved: _____
Date: 27-Jan-10
Date: _____
Date: _____