



COG Operating LLC

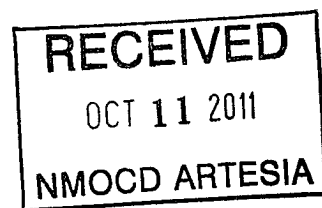
Eddy County, NM (NAN27 NME)

Moncrief State #3

Moncrief State #3

30-015-39493

OH



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

SHL = 2330' FSL & 730' FWL

BHL = 2260' FSL & 940' FWL

Top of Paddock = 2260' FSL & 940' FWL @ 3600' TVD

Standard Planning Report

26 September, 2011





Scientific Drilling
Planning Report



Database:	EDM-Julio	Local Co-ordinate Reference:	Site Moncrief State #3
Company:	COG Operating LLC	TVD Reference:	GL Elev @ 3600 00usft
Project:	Eddy County, NM (NAN27 NME)	MD Reference:	GL Elev @ 3600 00usft
Site:	Moncrief State #3	North Reference:	Grid
Well:	Moncrief State #3	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	Moncrief State #3		
Site Position:		Northing:	661,811 80 usft
From:	Map	Easting:	555,660 40 usft
Position Uncertainty:	0 00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 49' 9 398 N
		Longitude:	104° 9' 7 744 W
		Grid Convergence:	0 10 °

Well	Moncrief State #3		
Well Position	+N/-S	0 00 usft	Northing:
	+E/-W	0 00 usft	Easting:
Position Uncertainty	0 00 usft	Wellhead Elevation:	
		Latitude:	32° 49' 9 398 N
		Longitude:	104° 9' 7 744 W
		Ground Level:	3,600 00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2011/09/26	7 86	60 63	48,880

Design	Plan #1 7-7/8" 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	103 39

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	
950 00	0 00	0 00	950 00	0 00	0 00	0 00	0 00	0 00	0 00	
1,207 97	5 16	103 39	1,207 62	-2 69	11 29	2 00	2 00	0 00	103 39	
3,351 41	5 16	103 39	3,342 38	-47 31	198 81	0 00	0 00	0 00	0 00	
3,609 38	0 00	0 00	3,600 00	-50 00	210 10	2 00	-2 00	0 00	180 00	TG1-Moncrief #3
5,259 38	0 00	0 00	5,250 00	-50 00	210 10	0 00	0 00	0 00	0 00	PBHL-Moncrief #3



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Site:	Moncrief State #3	North Reference:	Grid
Well:	Moncrief State #3	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 7-7/8" 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
North HL-Moncrief #3 - East HL-Moncrief #3									
850 00	0 00	0 00	850 00	0 00	0 00	0 00	0 00	0 00	0 00
8-5/8" Casing									
950 00	0 00	0 00	950 00	0 00	0 00	0 00	0 00	0 00	0 00
KOP Start Build 2.00°/100'									
1,000 00	1 00	103.39	1,000 00	-0 10	0 42	0 44	2 00	2 00	0 00
1,100 00	3 00	103.39	1,099 93	-0 91	3 82	3 93	2 00	2 00	0 00
1,200 00	5 00	103.39	1,199 68	-2 52	10 61	10 90	2 00	2 00	0 00
1,207 97	5 16	103.39	1,207 62	-2 69	11 29	11 61	2 00	2 00	0 00
EOC hold 5.16°									
1,300 00	5 16	103.39	1,299.28	-4 60	19 34	19 88	0 00	0 00	0 00
1,400 00	5 16	103.39	1,398 87	-6.69	28 09	28 88	0 00	0 00	0 00
1,500 00	5 16	103.39	1,498 47	-8 77	36 84	37 87	0 00	0 00	0 00
1,600 00	5 16	103.39	1,598 06	-10 85	45 59	46 86	0 00	0 00	0 00
1,700 00	5 16	103.39	1,697 66	-12 93	54 34	55 85	0 00	0 00	0 00
1,800 00	5 16	103.39	1,797.25	-15 01	63 08	64 85	0 00	0 00	0 00
1,900 00	5 16	103.39	1,896 85	-17 09	71 83	73 84	0 00	0 00	0 00
2,000 00	5 16	103.39	1,996 44	-19 18	80 58	82 83	0 00	0 00	0 00
2,100.00	5 16	103.39	2,096 04	-21 26	89 33	91 82	0 00	0 00	0 00
2,200 00	5 16	103.39	2,195.63	-23 34	98 08	100 82	0 00	0 00	0 00
2,300 00	5 16	103.39	2,295 23	-25 42	106 83	109.81	0 00	0 00	0 00
2,400 00	5 16	103.39	2,394 82	-27 50	115 58	118 80	0 00	0 00	0 00
2,500 00	5 16	103.39	2,494 42	-29 59	124 32	127.80	0 00	0 00	0 00
2,600 00	5 16	103.39	2,594 01	-31 67	133 07	136 79	0 00	0 00	0 00
2,700 00	5 16	103.39	2,693 61	-33 75	141 82	145 78	0 00	0 00	0 00
2,800 00	5.16	103.39	2,793 20	-35.83	150 57	154 77	0 00	0 00	0 00
2,900 00	5 16	103.39	2,892 80	-37 91	159.32	163.77	0 00	0 00	0 00
3,000.00	5 16	103.39	2,992 39	-40 00	168 07	172 76	0 00	0 00	0 00
3,100 00	5 16	103.39	3,091 99	-42 08	176 81	181 75	0 00	0 00	0 00
3,200 00	5 16	103.39	3,191 58	-44 16	185 56	190 74	0 00	0 00	0 00
3,300 00	5 16	103.39	3,291 18	-46 24	194 31	199.74	0 00	0 00	0 00
3,351 41	5 16	103.39	3,342 38	-47 31	198 81	204 36	0 00	0 00	0 00
Start Drop 2.00°/100'									
3,400 00	4 19	103.39	3,390 80	-48 23	202.66	208 32	2 00	-2 00	0 00
3,500 00	2 19	103.39	3,490 65	-49 52	208.07	213.88	2 00	-2 00	0 00
3,600 00	0 19	103.39	3,590 62	-50 00	210.09	215.95	2 00	-2 00	0 00
3,609 38	0 00	0 00	3,600.00	-50 00	210 10	215 97	2 00	-2 00	0 00
EOC hold 0.00° - Top of Paddock - TG1-Moncrief #3									
5,259 38	0 00	0 00	5,250 00	-50 00	210 10	215 97	0 00	0 00	0 00
PBHL-Moncrief #3									



Scientific Drilling
Planning Report



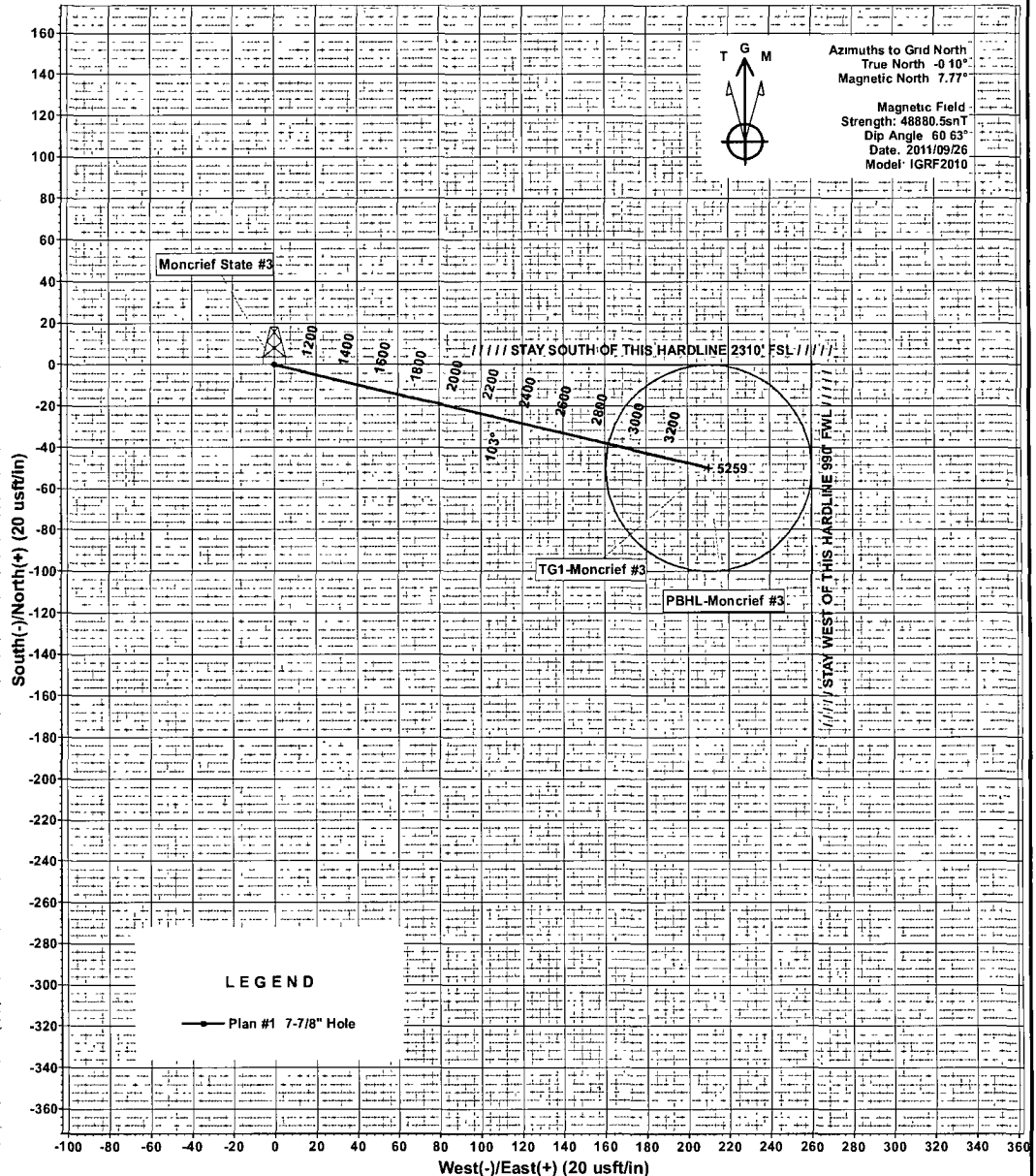
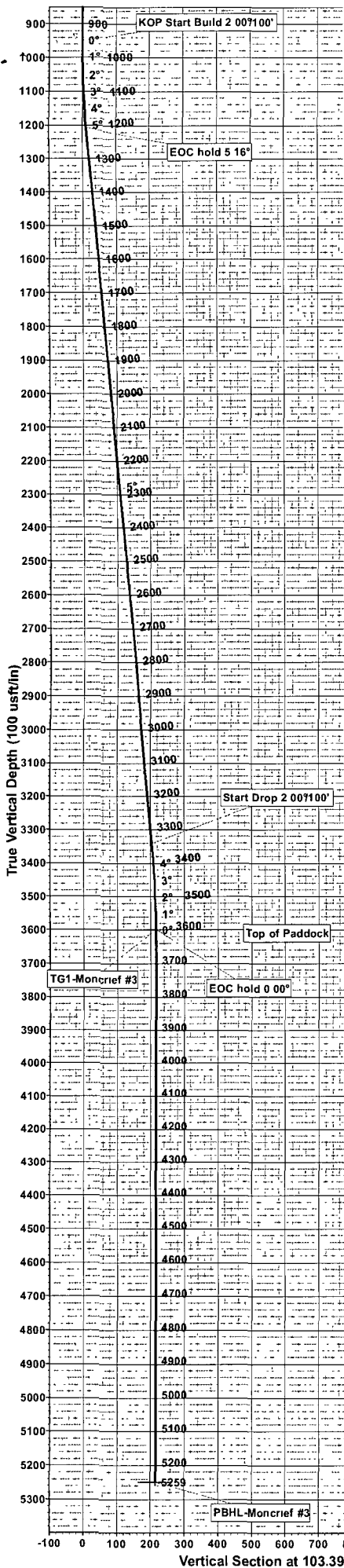
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Project:	Eddy County, NM (NAN27 NME)	MD Reference:	GL Elev @ 3600 00usft
Site:	Moncrief State #3	North Reference:	Grid
Well:	Moncrief State #3	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 7-7/8" Hole		

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
- Shape									
North HL-Moncrief #3	0 00	0 00	0 00	0 00	260 10	661,811 80	555,920 50	32° 49' 9 393 N	104° 9' 4 696 W
- plan misses target center by 260 10usft at 0 00usft MD (0 00 TVD, 0 00 N, 0 00 E)									
- Rectangle (sides W200 00 H0 00 D0 00)									
East HL-Moncrief #3	0 00	0 00	0 00	0 00	260 10	661,811 80	555,920 50	32° 49' 9 393 N	104° 9' 4 696 W
- plan misses target center by 260 10usft at 0 00usft MD (0 00 TVD, 0 00 N, 0 00 E)									
- Rectangle (sides W0 00 H200 00 D0 00)									
TG1-Moncrief #3	0 00	0 01	3,600 00	-50 00	210 10	661,761 80	555,870 50	32° 49' 8 899 N	104° 9' 5 283 W
- plan hits target center									
- Point									
PBHL-Moncrief #3	0 00	0 01	5,250 00	-50 00	210 10	661,761 80	555,870 50	32° 49' 8 899 N	104° 9' 5 283 W
- plan hits target center									
- Circle (radius 50 00)									

Casing Points					
Measured Depth	Vertical Depth	Name		Casing Diameter	Hole Diameter
(usft)	(usft)			(")	(")
850 00	850 00	8-5/8" Casing		8-5/8	12-1/4

Formations					
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction
(usft)	(usft)			(°)	(°)
3,609 38	3,600 00	Top of Paddock		0 00	

Plan Annotations					
Measured Depth	Vertical Depth	Local Coordinates		Comment	
(usft)	(usft)	+N/-S	+E/-W		
(usft)	(usft)	(usft)	(usft)		
950 00	950 00	0 00	0 00	KOP Start Build 2 00°/100'	
1,207 97	1,207 62	-2 69	11 29	EOC hold 5 16°	
3,351 41	3,342 38	-47 31	198 81	Start Drop 2 00°/100'	
3,609 38	3,600 00	-50 00	210 10	EOC hold 0 00°	



LEGEND

Plan #1 7-7/8" Hole

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
East HL-Moncrief #3	0.00	0.00	260.10	661811.80	555920.50	32° 49' 9.393 N	104° 9' 4.696 W	Rectangle (Sides L20 0 00 W0 00)
North HL-Moncrief #3	0.00	0.00	260.10	661811.80	555920.50	32° 49' 9.393 N	104° 9' 4.696 W	Rectangle (Sides L0 00 W200.00)
TG1-Moncrief #3	3600.00	-50.00	210.10	661761.80	555870.50	32° 49' 8.899 N	104° 9' 5.283 W	Point
PBHL-Moncrief #3	5250.00	-50.00	210.10	661761.80	555870.50	32° 49' 8.899 N	104° 9' 5.283 W	Circle (Radius 50 00)

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	950.00	0.00	0.00	950.00	0.00	0.00	0.00	0.00	0.00	
3	1207.97	5.16	103.39	1207.62	-2.69	11.29	2.00	103.39	11.61	
4	4335.41	5.16	103.39	3342.38	-47.31	198.81	0.00	0.00	204.36	
5	3609.38	0.00	0.00	3600.00	-50.00	210.10	2.00	180.00	215.97	TG1-Moncrief #3
6	5259.38	0.00	0.00	5250.00	-50.00	210.10	0.00	0.00	215.97	PBHL-Moncrief #3

WELL DETAILS: Moncrief State #3

Ground Level: 3600.00			
+N/-S	+E/-W	Northing	Easting
0.00	0.00	661811.80	555660.40
Latitude 32° 49' 9.398 N Longitude 104° 9' 7.744 W			

PROJECT DETAILS: Eddy County, NM (NAN27 NME)

Plan, Plan #1 7-7/8" Hole (Moncrief State #3/OH)

Geodetic System: US State Plane 1927 (Exact solution)	Created By: Julio Pina	Date: 26-Sep-11
Datum: NAD 1927 (NADCON CONUS)		
Ellipsoid: Clarke 1866	Checked: _____	Date: _____
Zone: New Mexico East 3001		
System Datum: Mean Sea Level	Reviewed: _____	Date: _____
	Approved: _____	Date: _____