



COG Operating LLC

Eddy County, NM (NAN27 NME)

McCoy State #16

McCoy State #16

30-015-39242

OH

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

SHL = 465' FNL & 2365' FWL

BHL = 380' FNL & 2260' FWL

Top of Paddock = 380' FNL & 2260' FWL @ 3900' TVD

Standard Planning Report

29 August, 2011





Scientific Drilling
Planning Report



Database:	EDM-Julio	Local Co-ordinate Reference:	Site McCoy State #16
Company:	COG Operating LLC	TVD Reference:	GL Elev @ 3634 00usft
Project:	Eddy County, NM (NAN27 NME)	MD Reference:	GL Elev @ 3634 00usft
Site:	McCoy State #16	North Reference:	Grid
Well:	McCoy State #16	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	McCoy State #16		
Site Position:	Map	Northing:	674,822 30 usft
From:		Easting:	572,448 50 usft
Position Uncertainty:	0 00 usft	Slot Radius:	13-3/16 "
		Grid Convergence:	0 13 °

Well	McCoy State #16		
Well Position	+N/-S	0 00 usft	Northing:
	+E/-W	0 00 usft	Easting:
Position Uncertainty	0 00 usft	Wellhead Elevation:	Ground Level:

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2011/08/29	7 85	60 67	48,916

Design	Plan #1 7-7/8" Hole		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth:
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)
	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	
950 00	0 00	0 00	950 00	0 00	0 00	0 00	0 00	0 00	0 00	
1,087 93	2 76	308 80	1,087 88	2 08	-2 59	2 00	2 00	0 00	308 80	
3,765 28	2 76	308 80	3,762 12	82 82	-103 01	0 00	0 00	0 00	0 00	
3,903 21	0 00	0 00	3,900 00	84 90	-105 60	2 00	-2 00	0 00	180 00	TG1-McCoy #16
5,403 21	0 00	0 00	5,400 00	84 90	-105 60	0 00	0 00	0 00	0 00	PBHL-McCoy #16



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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-McCoy #16 - East HL-McCoy #16									
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	308 80	1,000 00	0 27	-0 34	0 44	2 00	2 00	0 00
1,087 93	2 76	308 80	1,087 88	2 08	-2 59	3 32	2 00	2 00	0 00
EOC hold 2.76°									
1,100 00	2 76	308 80	1,099 93	2 44	-3 04	3 90	0 00	0 00	0 00
1,200 00	2 76	308 80	1,199 82	5 46	-6 79	8 71	0 00	0 00	0 00
1,300 00	2 76	308 80	1,299 70	8 48	-10 54	13 53	0 00	0 00	0 00
1,400 00	2 76	308 80	1,399 59	11 49	-14 29	18 34	0 00	0 00	0 00
1,500 00	2 76	308 80	1,499 47	14 51	-18 04	23 15	0 00	0 00	0 00
1,600 00	2 76	308 80	1,599 35	17 52	-21 79	27 97	0 00	0 00	0 00
1,700 00	2 76	308 80	1,699 24	20 54	-25 55	32 78	0 00	0 00	0 00
1,800 00	2 76	308 80	1,799 12	23 55	-29 30	37 59	0 00	0 00	0 00
1,900 00	2 76	308 80	1,899 01	26 57	-33 05	42 40	0 00	0 00	0 00
2,000 00	2 76	308 80	1,998 89	29 59	-36 80	47 22	0 00	0 00	0 00
2,100 00	2 76	308 80	2,098 77	32 60	-40 55	52 03	0 00	0 00	0 00
2,200 00	2 76	308 80	2,198 66	35 62	-44 30	56 84	0 00	0 00	0 00
2,300 00	2 76	308 80	2,298 54	38 63	-48 05	61 66	0 00	0 00	0 00
2,400 00	2 76	308 80	2,398 43	41 65	-51 80	66 47	0 00	0 00	0 00
2,500 00	2 76	308 80	2,498 31	44 66	-55 55	71 28	0 00	0 00	0 00
2,600 00	2 76	308 80	2,598 19	47 68	-59 30	76 09	0 00	0 00	0 00
2,700 00	2 76	308 80	2,698 08	50 69	-63 05	80 91	0 00	0 00	0 00
2,800 00	2 76	308 80	2,797 96	53 71	-66 81	85 72	0 00	0 00	0 00
2,900 00	2 76	308 80	2,897 85	56 73	-70 56	90 53	0 00	0 00	0 00
3,000 00	2 76	308 80	2,997 73	59 74	-74 31	95 35	0 00	0 00	0 00
3,100 00	2 76	308 80	3,097 62	62 76	-78 06	100 16	0 00	0 00	0 00
3,200 00	2 76	308 80	3,197 50	65 77	-81 81	104 97	0 00	0 00	0 00
3,300 00	2 76	308 80	3,297 38	68 79	-85 56	109 78	0 00	0 00	0 00
3,400 00	2 76	308 80	3,397 27	71 80	-89 31	114 60	0 00	0 00	0 00
3,500 00	2 76	308 80	3,497 15	74 82	-93 06	119 41	0 00	0 00	0 00
3,600 00	2 76	308 80	3,597 04	77 84	-96 81	124 22	0 00	0 00	0 00
3,700 00	2 76	308 80	3,696 92	80 85	-100 56	129 04	0 00	0 00	0 00
3,765 28	2 76	308 80	3,762 12	82 82	-103 01	132 18	0 00	0 00	0 00
Start Drop 2.00°/100'									
3,800 00	2 06	308 80	3,796 81	83 74	-104 15	133 64	2 00	-2 00	0 00
3,900 00	0 06	308 80	3,896 79	84 90	-105 60	135 49	2 00	-2 00	0 00
3,903 21	0 00	0 00	3,900 00	84 90	-105 60	135 50	2 00	-2 00	0 00
EOC hold 0.00° - Top of Paddock - TG1-McCoy #16									
5,403 21	0 00	0 00	5,400 00	84 90	-105 60	135 50	0 00	0 00	0 00
PBHL-McCoy #16									



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Project:	Eddy County, NM (NAN27 NME)	MD Reference:	GL Elev @ 3634 00usft
Site:	McCoy State #16	North Reference:	Grid
Well:	McCoy State #16	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 7-7/8" Hole		

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
North HL-McCoy #16 - plan misses target center by 145 91usft at 0 00usft MD (0 00 TVD, 0 00 N, 0 00 E) - Rectangle (sides W150 00 H0 00 D0 00)	0 00	0 01	0 00	134 90	-55 60	674,957 20	572,392 90	32° 51' 19 149 N	104° 5' 51 322 W
East HL-McCoy #16 - plan misses target center by 145 91usft at 0 00usft MD (0 00 TVD, 0 00 N, 0 00 E) - Rectangle (sides W0 00 H150 00 D0 00)	0 00	0 01	0 00	134 90	-55 60	674,957 20	572,392 90	32° 51' 19 149 N	104° 5' 51 322 W
TG1-McCoy #16 - plan hits target center - Point	0 00	0 01	3,900 00	84 90	-105 60	674,907 20	572,342 90	32° 51' 18 656 N	104° 5' 51 910 W
PBHL-McCoy #16 - plan hits target center - Circle (radius 50 00)	0 00	0 01	5,400 00	84 90	-105 60	674,907 20	572,342 90	32° 51' 18 656 N	104° 5' 51 910 W

Casing Points

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

Formations

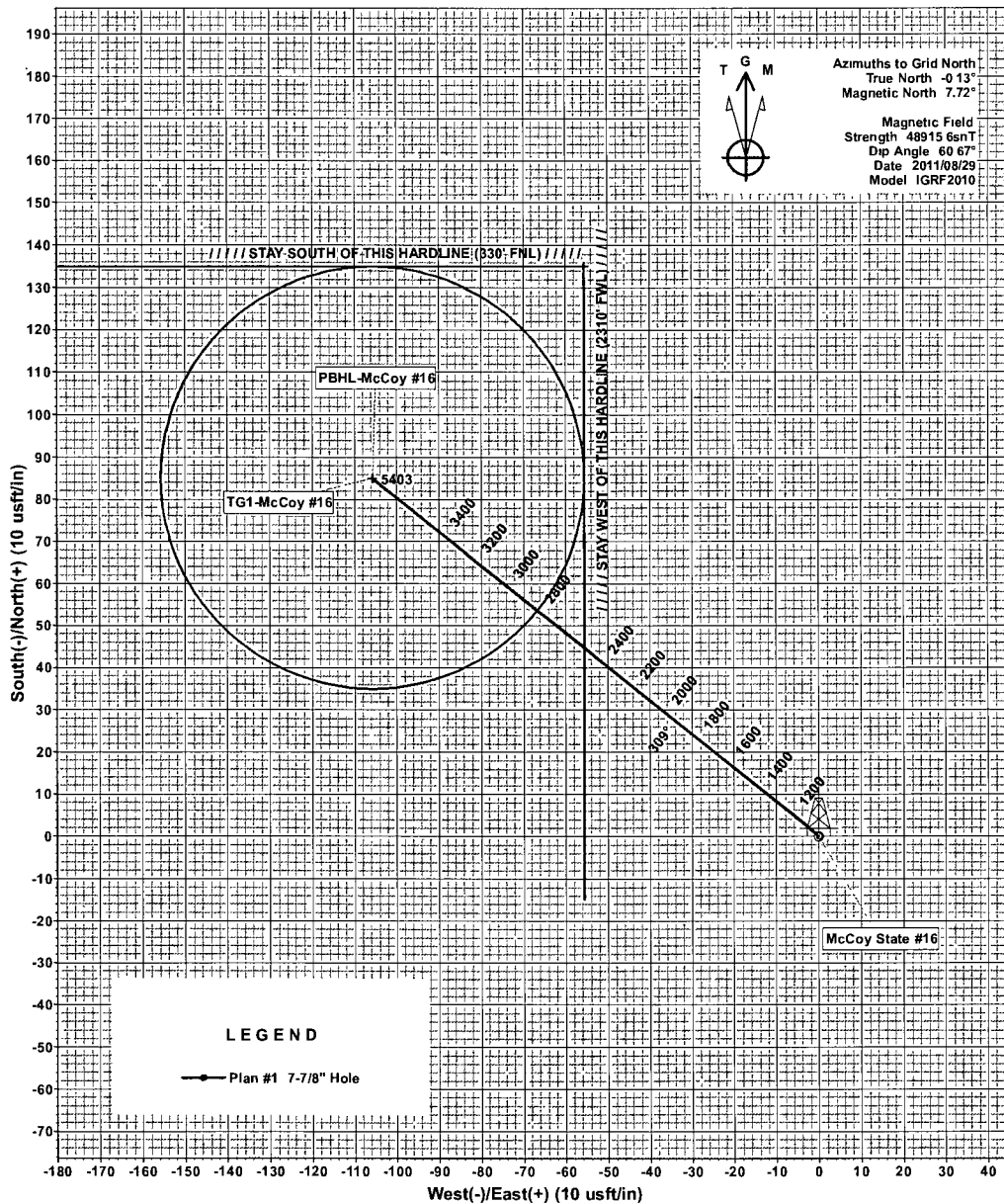
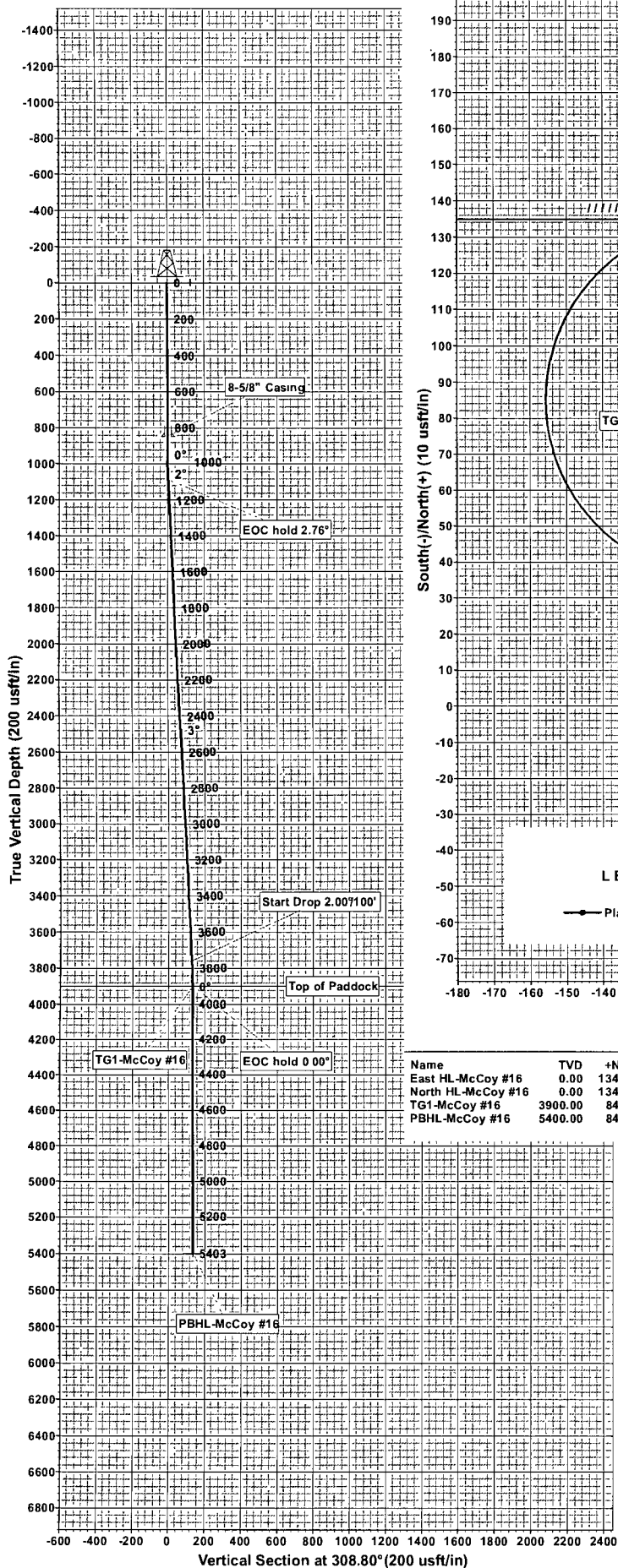
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,903 21	3,900 00	Top of Paddock		0 00	

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	+E/-W (usft)	Comment
950 00	950 00	0 00	0 00	KOP Start Build 2 00°/100'
1,087 93	1,087 88	2 08	-2 59	EOC hold 2 76°
3,765 28	3,762 12	82 82	-103.01	Start Drop 2 00°/100'
3,903 21	3,900 00	84 90	-105 60	EOC hold 0 00°



Scientific Drilling for COG Operating LLC
Site: Eddy County, NM (NAN27 NME)
Well: McCoy State #16
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		
East HL-McCoy #16	0.00	134.90	-55.60	674957.20	572392.90	32°51' 19.149 N	104°5' 51.322 W	Rectangle (Sides L 150 00 W0 00)		
North HL-McCoy #16	0.00	134.90	-55.60	674957.20	572392.90	32°51' 19.149 N	104°5' 51.322 W	Rectangle (Sides L0 00 W150 00)		
TG1-McCoy #16	3900.00	84.90	-105.60	674907.20	572342.90	32°51' 18.656 N	104°5' 51.910 W	Point		
PBHL-McCoy #16	5400.00	84.90	-105.60	674907.20	572342.90	32°51' 18.656 N	104°5' 51.910 W	Circle (Radius 50.00)		

SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	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	1087.93	2.76	308.80	1087.88	2.08	-2.59	2.00	308.80	3.32	
4	3765.28	2.76	308.80	3762.12	82.82	-103.01	0.00	0.00	132.18	
5	3903.21	0.00	0.00	3900.00	84.90	-105.60	2.00	180.00	135.50	TG1-McCoy #16
6	5403.21	0.00	0.00	5400.00	84.90	-105.60	0.00	0.00	135.50	PBHL-McCoy #16

WELL DETAILS: McCoy State #16										
				Ground Level:		3634.00				
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude					
0.00	0.00	674822.30	572448.50	32°51' 17.813 N	104°5' 5.0674 W					

PROJECT DETAILS Eddy County, NM (NAN27 NME)		Plan Plan #1 7-7/8" Hole (McCoy State #16/OH)			
Geodetic System	US State Plane 1927 (Exact solution)	Created By	Julio Pina	Date:	29-Aug-11
Datum	NAD 1927 (NADCON CONUS)	Checked:	_____	Date:	_____
Ellipsoid	Clarke 1866	Reviewed:	_____	Date:	_____
Zone	New Mexico East 3001	Approved	_____	Date:	_____
System Datum	Mean Sea Level				