



COG Operating LLC

Eddy County, NM (NAN27 NME)

Yale State #18

Yale State #18

OH

30-015-38491

Plan: Plan #2 8-3/4" Hole

SHL = 2625' FNL & 930' FWL

BHL = 2300' FSL & 980' FWL

Top of Paddock = 224' S of Surface & 33' E of Surface @ 4500' TVD

Standard Planning Report

21 October, 2011





Scientific Drilling
Planning Report



Database:	EDM-Julio	Local Co-ordinate Reference:	Site Yale State #18
Company:	COG Operating LLC	TVD Reference:	GL Elev @ 3755 00usft
Project:	Eddy County, NM (NAN27 NME)	MD Reference:	GL Elev @ 3755 00usft
Site:	Yale State #18	North Reference:	Grid
Well:	Yale State #18	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2 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	Yale State #18		
Site Position:		Northing:	678,044 40 usft
From:	Map	Easting:	618,432 10 usft
Position Uncertainty:	0 00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 51' 48 357 N
		Longitude:	103° 56' 51 471 W
		Grid Convergence:	0 21 °

Well	Yale State #18		
Well Position	+N-S	0 00 usft	Northing:
	+E-W	0 00 usft	Easting:
Position Uncertainty	0 00 usft	Wellhead Elevation:	Ground Level:
			3,755 00 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF2010	2011/10/21	7 77
			Dip Angle
			(°)
			60 70
			Field Strength
			(nT)
			48,922

Design	Plan #2 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
			(°)
			171 72

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	
1,450 00	0 00	0 00	1,450 00	0 00	0 00	0 00	0 00	0 00	0 00	
1,670 52	4 41	171 72	1,670 30	-8 39	1 22	2 00	2 00	77 87	171 72	
6,163 52	4 41	171 72	6,150 00	-350 30	51 00	0 00	0 00	0 00	0 00	PBHL-Yale State #18



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Wellbore:	OH		
Design:	Plan #2 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
South HL-Yale State #18 - West HL-Yale State #18									
1,050 00	0 00	0 00	1,050 00	0 00	0 00	0 00	0 00	0 00	0 00
8-5/8" Casing									
1,450 00	0 00	0 00	1,450 00	0 00	0 00	0 00	0 00	0 00	0 00
KOP Start DLS 2.00°/100'									
1,500 00	1 00	171 72	1,500 00	-0 43	0 06	0 44	2 00	2 00	0 00
1,600 00	3 00	171 72	1,599 93	-3 89	0 57	3 93	2 00	2 00	0 00
1,670 52	4 41	171 72	1,670 30	-8 39	1 22	8 48	2 00	2 00	0 00
EOC hold 4.41°									
1,700 00	4 41	171 72	1,699 70	-10 64	1 55	10 75	0 00	0 00	0 00
1,800 00	4 41	171 72	1,799 40	-18 25	2 66	18 44	0 00	0 00	0 00
1,900 00	4 41	171 72	1,899 10	-25 86	3 76	26 13	0 00	0 00	0 00
2,000 00	4 41	171 72	1,998 81	-33 47	4 87	33 82	0 00	0 00	0 00
2,100 00	4 41	171 72	2,098 51	-41 08	5 98	41 51	0 00	0 00	0 00
2,200 00	4 41	171 72	2,198 21	-48 69	7 09	49 20	0 00	0 00	0 00
2,300 00	4 41	171 72	2,297 92	-56 30	8 20	56 89	0 00	0 00	0 00
2,400 00	4 41	171 72	2,397 62	-63 91	9 30	64 58	0 00	0 00	0 00
2,500 00	4 41	171 72	2,497 33	-71 52	10 41	72 27	0 00	0 00	0 00
2,600 00	4 41	171 72	2,597 03	-79 13	11 52	79 96	0 00	0 00	0 00
2,700 00	4 41	171 72	2,696 73	-86 74	12 63	87 65	0 00	0 00	0 00
2,800 00	4 41	171 72	2,796 44	-94 35	13 74	95 34	0 00	0 00	0 00
2,900 00	4 41	171 72	2,896 14	-101 95	14 84	103 03	0 00	0 00	0 00
3,000 00	4 41	171 72	2,995 85	-109 56	15 95	110 72	0 00	0 00	0 00
3,100 00	4 41	171 72	3,095 55	-117 17	17 06	118 41	0 00	0 00	0 00
3,200 00	4 41	171 72	3,195 25	-124 78	18 17	126 10	0 00	0 00	0 00
3,300 00	4 41	171 72	3,294 96	-132 39	19 28	133 79	0 00	0 00	0 00
3,400 00	4 41	171 72	3,394 66	-140 00	20 38	141 48	0 00	0 00	0 00
3,500 00	4 41	171 72	3,494 36	-147 61	21 49	149 17	0 00	0 00	0 00
3,600 00	4 41	171 72	3,594 07	-155 22	22 60	156 86	0 00	0 00	0 00
3,700 00	4 41	171 72	3,693 77	-162 83	23 71	164 55	0 00	0 00	0 00
3,800 00	4 41	171 72	3,793 48	-170 44	24 81	172 24	0 00	0 00	0 00
3,900 00	4 41	171 72	3,893 18	-178 05	25 92	179 93	0 00	0 00	0 00
4,000 00	4 41	171 72	3,992 88	-185 66	27 03	187 62	0 00	0 00	0 00
4,100 00	4 41	171 72	4,092 59	-193 27	28 14	195 31	0 00	0 00	0 00
4,200 00	4 41	171 72	4,192 29	-200 88	29 25	203 00	0 00	0 00	0 00
4,300 00	4 41	171 72	4,292 00	-208 49	30 35	210 69	0 00	0 00	0 00
4,400 00	4 41	171 72	4,391 70	-216 10	31 46	218 38	0 00	0 00	0 00
4,500 00	4 41	171 72	4,491 40	-223 71	32 57	226 07	0 00	0 00	0 00
4,508 62	4 41	171 72	4,500 00	-224 37	32 67	226 73	0 00	0 00	0 00
Top of Paddock									
4,518 41	4 41	171 72	4,509 76	-225 11	32 77	227 48	0 00	0 00	0 00
TG1-Yale State #18									
4,600 00	4 41	171 72	4,591 11	-231 32	33 68	233 76	0 00	0 00	0 00
4,700 00	4 41	171 72	4,690 81	-238 93	34 79	241 45	0 00	0 00	0 00
4,800 00	4 41	171 72	4,790 52	-246 54	35 89	249 14	0 00	0 00	0 00
4,900 00	4 41	171 72	4,890 22	-254 15	37 00	256 83	0 00	0 00	0 00
5,000 00	4 41	171 72	4,989 92	-261 76	38 11	264 52	0 00	0 00	0 00
5,100 00	4 41	171 72	5,089 63	-269 37	39 22	272 21	0 00	0 00	0 00
5,200 00	4 41	171 72	5,189 33	-276 98	40 33	279 90	0 00	0 00	0 00
5,300 00	4 41	171 72	5,289 03	-284 59	41 43	287 59	0 00	0 00	0 00
5,400 00	4 41	171 72	5,388 74	-292 20	42 54	295 28	0 00	0 00	0 00
5,500 00	4 41	171 72	5,488 44	-299 81	43 65	302 97	0 00	0 00	0 00



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Planning Report



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Company:	COG Operating LLC	TVD Reference:	GL Elev @ 3755 00usft
Project:	Eddy County, NM (NAN27 NME)	MD Reference:	GL Elev @ 3755 00usft
Site:	Yale State #18	North Reference:	Grid
Well:	Yale State #18	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2 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)
5,600 00	4 41	171 72	5,588 15	-307 42	44 76	310 66	0 00	0 00	0 00
5,700 00	4 41	171 72	5,687 85	-315 03	45 86	318 35	0 00	0 00	0 00
5,800 00	4 41	171 72	5,787 55	-322 64	46 97	326 04	0 00	0 00	0 00
5,900 00	4 41	171 72	5,887 26	-330 25	48 08	333 73	0 00	0 00	0 00
6,000 00	4 41	171 72	5,986 96	-337 86	49 19	341 42	0 00	0 00	0 00
6,100 00	4 41	171 72	6,086 67	-345 47	50 30	349 11	0 00	0 00	0 00
6,163 52	4 41	171 72	6,150 00	-350 30	51 00	353 99	0 00	0 00	0 00

PBHL-Yale State #18

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
South HL-Yale State #18 - plan misses target center by 345 72usft at 0 00usft MD (0 00 TVD, 0 00 N, 0 00 E) - Rectangle (sides W100 00 H0 00 D0 00)	0 00	0 00	0 00	-340 30	61 00	677,704 10	618,493 10	32° 51' 44 988 N	103° 56' 50 771 W
West HL-Yale State #18 - plan misses target center by 345 72usft at 0 00usft MD (0 00 TVD, 0 00 N, 0 00 E) - Rectangle (sides W0 00 H100 00 D0 00)	0 00	0 00	0 00	-340 30	61 00	677,704 10	618,493 10	32° 51' 44 988 N	103° 56' 50 771 W
PBHL-Yale State #18 - plan hits target center - Circle (radius 10 00)	0 00	0 00	6,150 00	-350 30	51 00	677,694 10	618,483 10	32° 51' 44 889 N	103° 56' 50 888 W

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,050 00	1,050 00	8-5/8" Casing	8-5/8	12-1/4

Formations

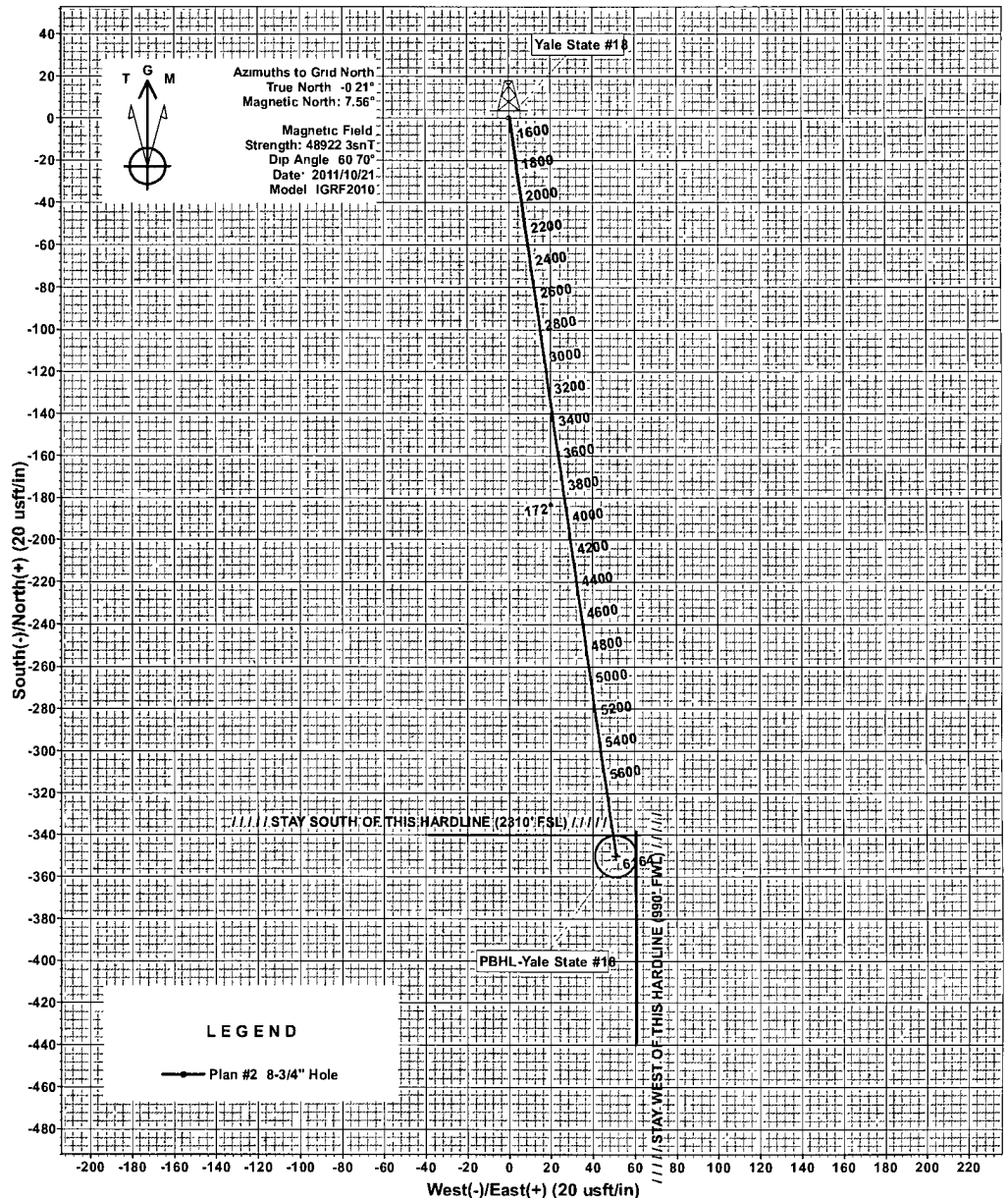
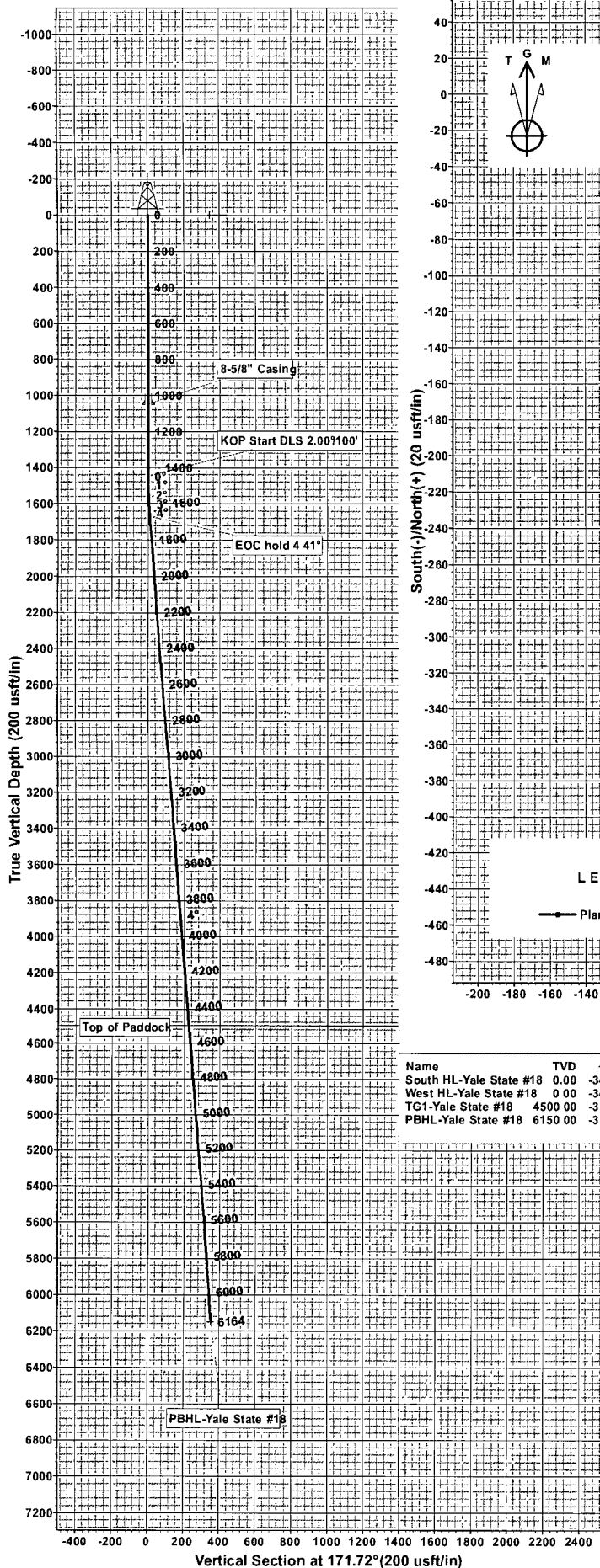
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,508 62	4,500 00	Top of Paddock		0 00	

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft) +E/-W (usft)	Comment
1,450 00	1,450 00	0 00	KOP Start DLS 2 00°/100'
1,670 52	1,670 30	-8 39	EOC hold 4 41°



Scientific Drilling for COG Operating LLC
Site: Eddy County, NM (NAN27 NME)
Well: Yale State #18
Wellbore: OH
Design: Plan #2 8-3/4" Hole



WELLBORE TARGET DETAILS (MAP CO-ORDINATES)									
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape	
South HL-Yale State #18	0.00	-340.30	61.00	677704.10	618493.10	32°51'44.988 N	103°56'50.771 W	Rectangle (Sides L0.00 W100.00)	
West HL-Yale State #18	0.00	-340.30	61.00	677704.10	618493.10	32°51'44.988 N	103°56'50.771 W	Rectangle (Sides L100.00 W0.00)	
TG1-Yale State #18	4500.00	-350.30	51.00	677694.10	618483.10	32°51'44.889 N	103°56'50.888 W	Point	
PBHL-Yale State #18	6150.00	-350.30	51.00	677694.10	618483.10	32°51'44.889 N	103°56'50.888 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	1450.00	0.00	0.00	1450.00	0.00	0.00	0.00	0.00	0.00
3	1670.52	4.41	171.72	1670.30	-8.39	1.22	2.00	171.72	8.48
4	6163.52	4.41	171.72	6150.00	-350.30	51.00	0.00	0.00	353.99
									PBHL-Yale State #18

WELL DETAILS: Yale State #18

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	678044.40	618432.10	32°51'48.357 N	103°56'51.471 W	

PROJECT DETAILS: Eddy County, NM (NAN27 NME)			Plan: Plan #2 8-3/4" Hole (Yale State #18/OH)		
Geodetic System	US State Plane 1927 (Exact solution)	Created By	Julio Pina	Date	21-Oct-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				