

HOBBS OGD

APR 21 2016

RECEIVED



COG Operating LLC

Lea County, NM
Haas 6 Federal Com
#2H

OH

Plan: Plan #1

Standard Planning Report

19 May, 2015



APR 22 2016



TDS
Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well #2H
Company:	COG Operating LLC	TVD Reference:	KB @ 3676.9usft (McVay 6)
Project:	Lea County, NM	MD Reference:	KB @ 3676.9usft (McVay 6)
Site:	Haas 6 Federal Com	North Reference:	Grid
Well:	#2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Project:	Lea County, NM		
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:	Haas 6 Federal Com				
Site Position:	Northing:	615,643.50 usft	Latitude:	32° 41' 28.890 N	
From:	Map	Easting:	664,831.90 usft	Longitude:	103° 47' 51.190 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"	Grid Convergence:	0.29°

Well:	#2H					
Well Position	+N/-S	0.0 usft	Northing:	615,643.50 usft	Latitude:	32° 41' 28.890 N
	+E/-W	0.0 usft	Easting:	664,831.90 usft	Longitude:	103° 47' 51.190 W
Position Uncertainty	0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	3,658.9 usft	

Wellbore:	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	5/18/2015	7.24	60.48	48,478

Design:	Plan #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	265.79

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
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
8,802.6	0.00	0.00	8,802.6	0.0	0.0	0.00	0.00	0.00	0.00	
9,561.6	91.09	257.69	9,280.0	-103.7	-475.3	12.00	12.00	0.00	257.69	
10,261.6	91.09	257.69	9,266.7	-252.9	-1,159.1	0.00	0.00	0.00	0.00	
10,543.3	91.09	268.96	9,261.4	-285.6	-1,438.4	4.00	0.00	4.00	89.90	
13,782.1	91.09	268.96	9,200.0	-344.5	-4,676.0	0.00	0.00	0.00	0.00	PBHL (H6FC #2H/OH)



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Site:	Haas 6 Federal Com	North Reference:	Grid
Well:	#2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

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)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
4,500.0	0.00	0.00	4,500.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
4,600.0	0.00	0.00	4,600.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
4,700.0	0.00	0.00	4,700.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
4,800.0	0.00	0.00	4,800.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
4,900.0	0.00	0.00	4,900.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
5,000.0	0.00	0.00	5,000.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
5,100.0	0.00	0.00	5,100.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
5,200.0	0.00	0.00	5,200.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
5,300.0	0.00	0.00	5,300.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00



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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)	
5,400.0	0.00	0.00	5,400.0	0.0	0.0	0.0	0.00	0.00	0.00	
5,500.0	0.00	0.00	5,500.0	0.0	0.0	0.0	0.00	0.00	0.00	
5,600.0	0.00	0.00	5,600.0	0.0	0.0	0.0	0.00	0.00	0.00	
5,700.0	0.00	0.00	5,700.0	0.0	0.0	0.0	0.00	0.00	0.00	
5,800.0	0.00	0.00	5,800.0	0.0	0.0	0.0	0.00	0.00	0.00	
5,900.0	0.00	0.00	5,900.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,000.0	0.00	0.00	6,000.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,100.0	0.00	0.00	6,100.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,200.0	0.00	0.00	6,200.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,300.0	0.00	0.00	6,300.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,400.0	0.00	0.00	6,400.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,500.0	0.00	0.00	6,500.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,600.0	0.00	0.00	6,600.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,700.0	0.00	0.00	6,700.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,800.0	0.00	0.00	6,800.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,900.0	0.00	0.00	6,900.0	0.0	0.0	0.0	0.00	0.00	0.00	
7,000.0	0.00	0.00	7,000.0	0.0	0.0	0.0	0.00	0.00	0.00	
7,100.0	0.00	0.00	7,100.0	0.0	0.0	0.0	0.00	0.00	0.00	
7,200.0	0.00	0.00	7,200.0	0.0	0.0	0.0	0.00	0.00	0.00	
7,300.0	0.00	0.00	7,300.0	0.0	0.0	0.0	0.00	0.00	0.00	
7,400.0	0.00	0.00	7,400.0	0.0	0.0	0.0	0.00	0.00	0.00	
7,500.0	0.00	0.00	7,500.0	0.0	0.0	0.0	0.00	0.00	0.00	
7,600.0	0.00	0.00	7,600.0	0.0	0.0	0.0	0.00	0.00	0.00	
7,700.0	0.00	0.00	7,700.0	0.0	0.0	0.0	0.00	0.00	0.00	
7,800.0	0.00	0.00	7,800.0	0.0	0.0	0.0	0.00	0.00	0.00	
7,900.0	0.00	0.00	7,900.0	0.0	0.0	0.0	0.00	0.00	0.00	
8,000.0	0.00	0.00	8,000.0	0.0	0.0	0.0	0.00	0.00	0.00	
8,100.0	0.00	0.00	8,100.0	0.0	0.0	0.0	0.00	0.00	0.00	
8,200.0	0.00	0.00	8,200.0	0.0	0.0	0.0	0.00	0.00	0.00	
8,300.0	0.00	0.00	8,300.0	0.0	0.0	0.0	0.00	0.00	0.00	
8,400.0	0.00	0.00	8,400.0	0.0	0.0	0.0	0.00	0.00	0.00	
8,500.0	0.00	0.00	8,500.0	0.0	0.0	0.0	0.00	0.00	0.00	
8,600.0	0.00	0.00	8,600.0	0.0	0.0	0.0	0.00	0.00	0.00	
8,700.0	0.00	0.00	8,700.0	0.0	0.0	0.0	0.00	0.00	0.00	
8,802.6	0.00	0.00	8,802.6	0.0	0.0	0.0	0.00	0.00	0.00	
KOP - Start Build 12.00										
8,825.0	2.69	257.69	8,825.0	-0.1	-0.5	0.5	12.00	12.00	0.00	
8,850.0	5.69	257.69	8,849.9	-0.5	-2.3	2.3	12.00	12.00	0.00	
8,875.0	8.69	257.69	8,874.7	-1.2	-5.4	5.4	12.00	12.00	0.00	
8,900.0	11.69	257.69	8,899.3	-2.1	-9.7	9.8	12.00	12.00	0.00	
8,925.0	14.69	257.69	8,923.7	-3.3	-15.2	15.4	12.00	12.00	0.00	
8,950.0	17.69	257.69	8,947.7	-4.8	-22.1	22.3	12.00	12.00	0.00	
8,975.0	20.69	257.69	8,971.3	-6.6	-30.1	30.5	12.00	12.00	0.00	
9,000.0	23.69	257.69	8,994.4	-8.6	-39.3	39.8	12.00	12.00	0.00	
9,025.0	26.69	257.69	9,017.0	-10.8	-49.7	50.4	12.00	12.00	0.00	
9,050.0	29.69	257.69	9,039.1	-13.4	-61.2	62.0	12.00	12.00	0.00	
9,075.0	32.69	257.69	9,060.5	-16.1	-73.9	74.9	12.00	12.00	0.00	
9,100.0	35.69	257.69	9,081.1	-19.1	-87.6	88.8	12.00	12.00	0.00	
9,125.0	38.69	257.69	9,101.1	-22.3	-102.4	103.7	12.00	12.00	0.00	
9,150.0	41.69	257.69	9,120.1	-25.8	-118.1	119.7	12.00	12.00	0.00	
9,175.0	44.69	257.69	9,138.4	-29.4	-134.8	136.6	12.00	12.00	0.00	
9,200.0	47.69	257.69	9,155.7	-33.3	-152.5	154.5	12.00	12.00	0.00	
9,225.0	50.69	257.69	9,172.0	-37.3	-170.9	173.2	12.00	12.00	0.00	



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Well:	#2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

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)
9,250.0	53.69	257.69	9,187.3	-41.5	-190.2	192.8	12.00	12.00	0.00
9,275.0	56.69	257.69	9,201.6	-45.9	-210.3	213.1	12.00	12.00	0.00
9,300.0	59.69	257.69	9,214.8	-50.4	-231.0	234.1	12.00	12.00	0.00
9,325.0	62.69	257.69	9,226.8	-55.1	-252.4	255.8	12.00	12.00	0.00
9,350.0	65.69	257.69	9,237.7	-59.9	-274.4	278.1	12.00	12.00	0.00
9,375.0	68.69	257.69	9,247.4	-64.8	-296.9	300.9	12.00	12.00	0.00
9,400.0	71.69	257.69	9,255.9	-69.8	-319.9	324.2	12.00	12.00	0.00
9,425.0	74.69	257.69	9,263.1	-74.9	-343.3	347.9	12.00	12.00	0.00
9,450.0	77.69	257.69	9,269.1	-80.1	-367.0	371.9	12.00	12.00	0.00
9,475.0	80.69	257.69	9,273.8	-85.3	-391.0	396.2	12.00	12.00	0.00
9,500.0	83.69	257.69	9,277.2	-90.6	-415.2	420.7	12.00	12.00	0.00
9,525.0	86.69	257.69	9,279.3	-95.9	-439.5	445.4	12.00	12.00	0.00
9,550.0	89.69	257.69	9,280.1	-101.2	-463.9	470.1	12.00	12.00	0.00
9,561.6	91.09	257.69	9,280.0	-103.7	-475.3	481.7	12.00	12.00	0.00
EOC - Start 700.0 hold at 9561.6 MD									
9,600.0	91.09	257.69	9,279.3	-111.9	-512.8	519.6	0.00	0.00	0.00
9,700.0	91.09	257.69	9,277.4	-133.2	-610.5	618.6	0.00	0.00	0.00
9,800.0	91.09	257.69	9,275.5	-154.5	-708.2	717.6	0.00	0.00	0.00
9,900.0	91.09	257.69	9,273.6	-175.8	-805.8	816.6	0.00	0.00	0.00
10,000.0	91.09	257.69	9,271.7	-197.2	-903.5	915.6	0.00	0.00	0.00
10,100.0	91.09	257.69	9,269.8	-218.5	-1,001.2	1,014.6	0.00	0.00	0.00
10,200.0	91.09	257.69	9,267.9	-239.8	-1,098.9	1,113.5	0.00	0.00	0.00
10,261.6	91.09	257.69	9,266.7	-252.9	-1,159.1	1,174.6	0.00	0.00	0.00
TURN - Start DLS 4.00 TFO 89.90									
10,300.0	91.09	259.22	9,266.0	-260.6	-1,196.7	1,212.6	4.00	0.01	4.00
10,400.0	91.09	263.23	9,264.1	-275.9	-1,295.5	1,312.2	4.00	0.00	4.00
10,500.0	91.09	267.23	9,262.2	-284.2	-1,395.1	1,412.2	4.00	0.00	4.00
10,543.3	91.09	268.96	9,261.4	-285.6	-1,438.4	1,455.4	4.00	-0.01	4.00
END TURN - Start 3238.8 hold at 10543.3 MD									
10,600.0	91.09	268.96	9,260.3	-286.7	-1,495.0	1,512.1	0.00	0.00	0.00
10,700.0	91.09	268.96	9,258.4	-288.5	-1,595.0	1,611.9	0.00	0.00	0.00
10,800.0	91.09	268.96	9,256.5	-290.3	-1,695.0	1,711.7	0.00	0.00	0.00
10,900.0	91.09	268.96	9,254.6	-292.1	-1,794.9	1,811.5	0.00	0.00	0.00
11,000.0	91.09	268.96	9,252.7	-293.9	-1,894.9	1,911.4	0.00	0.00	0.00
11,100.0	91.09	268.96	9,250.8	-295.7	-1,994.9	2,011.2	0.00	0.00	0.00
11,200.0	91.09	268.96	9,248.9	-297.6	-2,094.8	2,111.0	0.00	0.00	0.00
11,300.0	91.09	268.96	9,247.0	-299.4	-2,194.8	2,210.9	0.00	0.00	0.00
11,400.0	91.09	268.96	9,245.1	-301.2	-2,294.8	2,310.7	0.00	0.00	0.00
11,500.0	91.09	268.96	9,243.2	-303.0	-2,394.7	2,410.5	0.00	0.00	0.00
11,600.0	91.09	268.96	9,241.3	-304.8	-2,494.7	2,510.3	0.00	0.00	0.00
11,700.0	91.09	268.96	9,239.4	-306.7	-2,594.7	2,610.2	0.00	0.00	0.00
11,800.0	91.09	268.96	9,237.5	-308.5	-2,694.6	2,710.0	0.00	0.00	0.00
11,900.0	91.09	268.96	9,235.7	-310.3	-2,794.6	2,809.8	0.00	0.00	0.00
12,000.0	91.09	268.96	9,233.8	-312.1	-2,894.5	2,909.7	0.00	0.00	0.00
12,100.0	91.09	268.96	9,231.9	-313.9	-2,994.5	3,009.5	0.00	0.00	0.00
12,200.0	91.09	268.96	9,230.0	-315.7	-3,094.5	3,109.3	0.00	0.00	0.00
12,300.0	91.09	268.96	9,228.1	-317.6	-3,194.4	3,209.1	0.00	0.00	0.00
12,400.0	91.09	268.96	9,226.2	-319.4	-3,294.4	3,309.0	0.00	0.00	0.00
12,500.0	91.09	268.96	9,224.3	-321.2	-3,394.4	3,408.8	0.00	0.00	0.00
12,600.0	91.09	268.96	9,222.4	-323.0	-3,494.3	3,508.6	0.00	0.00	0.00
12,700.0	91.09	268.96	9,220.5	-324.8	-3,594.3	3,608.5	0.00	0.00	0.00
12,800.0	91.09	268.96	9,218.6	-326.7	-3,694.3	3,708.3	0.00	0.00	0.00
12,900.0	91.09	268.96	9,216.7	-328.5	-3,794.2	3,808.1	0.00	0.00	0.00



TDS
Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well #2H
Company:	COG Operating LLC	TVD Reference:	KB @ 3676.9usft (McVay 6)
Project:	Lea County, NM	MD Reference:	KB @ 3676.9usft (McVay 6)
Site:	Haas 6 Federal Com	North Reference:	Grid
Well:	#2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

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)	
13,000.0	91.09	268.96	9,214.8	-330.3	-3,894.2	3,907.9	0.00	0.00	0.00	
13,100.0	91.09	268.96	9,212.9	-332.1	-3,994.2	4,007.8	0.00	0.00	0.00	
13,200.0	91.09	268.96	9,211.0	-333.9	-4,094.1	4,107.6	0.00	0.00	0.00	
13,300.0	91.09	268.96	9,209.1	-335.7	-4,194.1	4,207.4	0.00	0.00	0.00	
13,400.0	91.09	268.96	9,207.2	-337.6	-4,294.1	4,307.3	0.00	0.00	0.00	
13,500.0	91.09	268.96	9,205.3	-339.4	-4,394.0	4,407.1	0.00	0.00	0.00	
13,600.0	91.09	268.96	9,203.4	-341.2	-4,494.0	4,506.9	0.00	0.00	0.00	
13,700.0	91.09	268.96	9,201.6	-343.0	-4,594.0	4,606.7	0.00	0.00	0.00	
13,782.1	91.09	268.96	9,200.0	-344.5	-4,676.0	4,688.7	0.00	0.00	0.00	
TD at 13782.1										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
PBHL (H6FC #2H/OH) - plan hits target center - Point	0.00	0.00	9,200.0	-344.5	-4,676.0	615,298.99	660,155.87	32° 41' 25.712 N	103° 48' 45.925 W	
B-1 Radius of Uncertainl - plan misses target center by 255.3usft at 12126.4usft MD (9231.4 TVD, -314.4 N, -3021.0 E) - Circle (radius 225.0)	-1.09	268.96	9,232.2	-59.1	-3,025.6	615,584.39	661,806.29	32° 41' 28.455 N	103° 48' 26.596 W	
A-1 Radius of Uncertainl - plan misses target center by 225.2usft at 10425.8usft MD (9263.6 TVD, -278.7 N, -1321.1 E) - Circle (radius 225.0)	-1.09	257.69	9,263.7	-54.3	-1,339.8	615,589.21	663,492.09	32° 41' 28.420 N	103° 48' 6.870 W	
EOC (H6FC #2H/OH Plc - plan hits target center - Point	0.00	0.00	9,280.0	-103.7	-475.3	615,539.79	664,356.63	32° 41' 27.888 N	103° 47' 56.757 W	

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Comment	
8,802.6	8,802.6	0.0	0.0	KOP - Start Build 12.00	
9,561.6	9,280.0	-103.7	-475.3	EOC - Start 700.0 hold at 9561.6 MD	
10,261.6	9,266.7	-252.9	-1,159.1	TURN - Start DLS 4.00 TFO 89.90	
10,543.3	9,261.4	-285.6	-1,438.4	END TURN - Start 3238.8 hold at 10543.3 MD	
13,782.1	9,200.0	-344.5	-4,676.0	TD at 13782.1	



COG Operating LLC
 Project: Lea County, NM
 Site: Haas 6 Federal Com
 Well: #2H
 Wellbore: OH
 Plan: Plan #1 (#2H/OH)

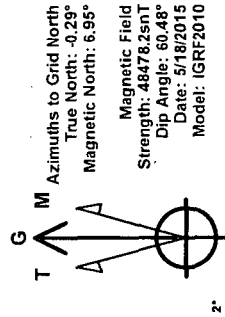
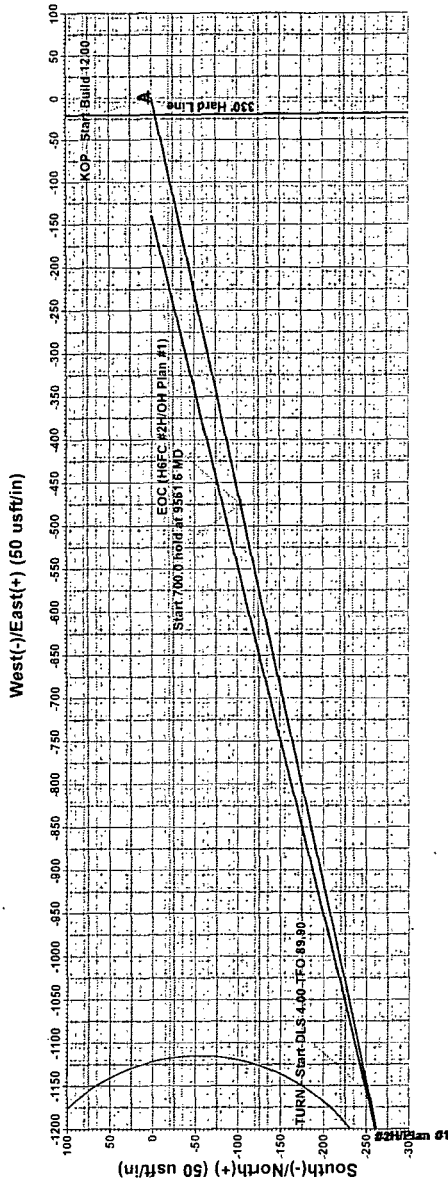
Section Details

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	0.0
2	8802.6	0.00	0.00	8802.6	0.0	0.0	0.00	0.00	0.0	0.0
3	9561.6	91.09	257.69	9280.0	-103.7	-475.3	12.00	257.69	481.7	
4	10261.6	91.09	257.69	9266.7	-252.9	-1159.1	0.00	0.00	1174.6	
5	10543.3	91.09	268.96	9261.4	-285.6	-1438.4	4.00	89.90	1455.4	
6	13782.1	91.09	268.96	9200.0	-344.5	-4676.0	0.00	0.00	4688.7	PBHL (H6FC #2H/OH)

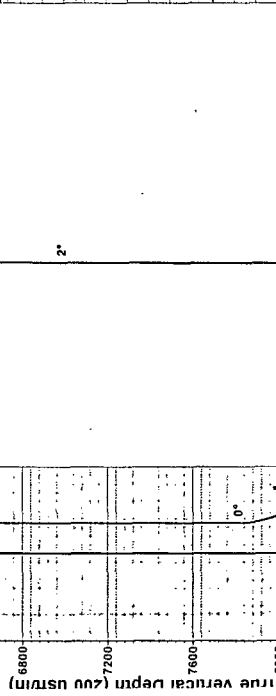
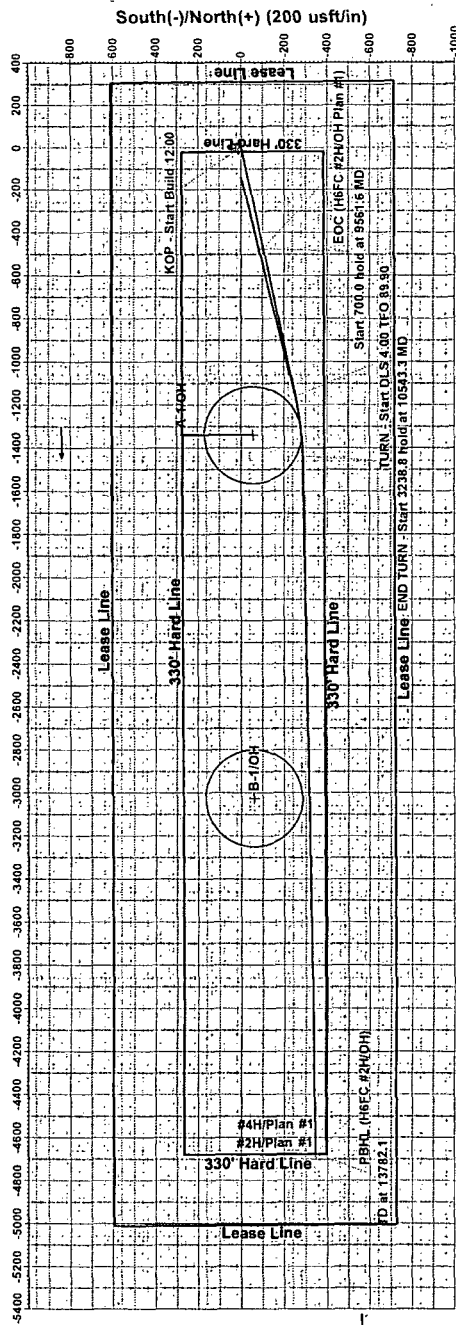
Ground Elevation:: 3658.9
 RKB Elevation: KB @ 3676.9usft (McVay 6)

Northing 615643.50 Easting 664831.90
 Latitude 32° 41' 28.890 N Longitude 103° 47' 51.190 W

West(-)/East(+)
 (50 usft/in)



West(-)/East(+) (200 usft/in)



PROJECT DETAILS: Lea County, NM
 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
 Local North: Grid

Vertical Section at 265.79° (200 usft/in)
 Terra Directional Services LLC
 322 Spring Hill Drive, Suite A300, Spring, Tx 77386
 Phone: 432-425-7532

