



COG Operating LLC

Lea County, NM

Sneed 9 Federal Com #13H

SHL: 1513' FNL, 229' FWL, Sec 9, T17S, R32E, Unit E

PP: 1650' FNL, 741' FWL, Sec 9, T17S, R32E, Unit E

BHL: 1650' FNL, 988' FWL, Sec 10, T17S, R32E, Unit E

Plan: Plan #1

Standard Planning Report

29 May, 2015

HOBBS OCD

JUN 06 2016

RECEIVED





TDS
Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well SHL: 1513' FNL, 229' FWL, Sec 9, T17S, R32E, Unit E
Company:	COG Operating LLC	TVD Reference:	KB @ 4088.0usft (United 43)
Project:	Lea County, NM	MD Reference:	KB @ 4088.0usft (United 43)
Site:	Sneed 9 Federal Com #13H	North Reference:	Grid
Well:	SHL: 1513' FNL, 229' FWL, Sec 9, T17S, R32E, Unit E	Survey Calculation Method:	Minimum Curvature
Wellbore:	BHL: 1650' FNL, 988' FWL, Sec 10, T17S, R32E, Unit E		
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	Sneed 9 Federal Com #13H			
Site Position:		Northing:	674,165.50 usft	Latitude: 32° 51' 7.691 N
From:	Map	Easting:	670,296.10 usft	Longitude: 103° 46' 43.664 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence: 0.30 °

Well	SHL: 1513' FNL, 229' FWL, Sec 9, T17S, R32E, Unit E			
Well Position	+N/-S	0.0 usft	Northing:	674,165.50 usft
	+E/-W	0.0 usft	Easting:	670,296.10 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level: 4,076.0 usft

Wellbore	BHL: 1650' FNL, 988' FWL, Sec 10, T17S, R32E, Unit E				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	5/29/2015	7.24	60.63	48,570

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	91.10

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
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
5,229.2	0.00	0.00	5,229.2	0.0	0.0	0.00	0.00	0.00	0.00	
6,056.5	91.00	104.78	5,750.0	-135.2	512.4	11.00	11.00	0.00	104.78	
6,580.4	91.00	89.06	5,740.8	-198.1	1,030.8	3.00	0.00	-3.00	-89.88	
11,590.1	91.00	89.06	5,653.8	-115.9	6,039.1	0.00	0.00	0.00	0.00	PBHL (S9FC #13H/OI)



TDS
Planning Report



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Company:	COG Operating LLC	TVD Reference:	KB @ 4088.0usft (United 43)
Project:	Lea County, NM	MD Reference:	KB @ 4088.0usft (United 43)
Site:	Sneed 9 Federal Com #13H	North Reference:	Grid
Well:	SHL: 1513' FNL, 229' FWL, Sec 9, T17S, R32E, Unit E	Survey Calculation Method:	Minimum Curvature
Wellbore:	BHL: 1650' FNL, 988' FWL, Sec 10, T17S, R32E, Unit E		
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
100.0	0.00	0.00	100.0	0.0	0.0	0.0	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
300.0	0.00	0.00	300.0	0.0	0.0	0.0	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
500.0	0.00	0.00	500.0	0.0	0.0	0.0	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
700.0	0.00	0.00	700.0	0.0	0.0	0.0	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
900.0	0.00	0.00	900.0	0.0	0.0	0.0	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
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	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
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	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
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	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
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	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
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	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
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	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
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	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
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	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
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	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
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	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
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	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
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	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
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	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
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	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
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	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
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	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
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	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
4,500.0	0.00	0.00	4,500.0	0.0	0.0	0.0	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
4,700.0	0.00	0.00	4,700.0	0.0	0.0	0.0	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
4,900.0	0.00	0.00	4,900.0	0.0	0.0	0.0	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



TDS
Planning Report



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Site:	Sneed 9 Federal Com #13H	North Reference:	Grid
Well:	SHL: 1513' FNL, 229' FWL, Sec 9, T17S, R32E, Unit E	Survey Calculation Method:	Minimum Curvature
Wellbore:	BHL: 1650' FNL, 988' FWL, Sec 10, T17S, R32E, Unit E		
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)
5,100.0	0.00	0.00	5,100.0	0.0	0.0	0.0	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
5,229.2	0.00	0.00	5,229.2	0.0	0.0	0.0	0.00	0.00	0.00
KOP - Start Build 11.00									
5,250.0	2.29	104.78	5,250.0	-0.1	0.4	0.4	11.00	11.00	0.00
5,300.0	7.79	104.78	5,299.8	-1.2	4.6	4.7	11.00	11.00	0.00
5,350.0	13.29	104.78	5,348.9	-3.6	13.5	13.5	11.00	11.00	0.00
5,400.0	18.79	104.78	5,397.0	-7.1	26.8	27.0	11.00	11.00	0.00
5,450.0	24.29	104.78	5,443.4	-11.8	44.6	44.8	11.00	11.00	0.00
5,500.0	29.79	104.78	5,488.0	-17.6	66.5	66.9	11.00	11.00	0.00
5,550.0	35.29	104.78	5,530.1	-24.4	92.5	93.0	11.00	11.00	0.00
5,600.0	40.79	104.78	5,569.5	-32.3	122.3	122.9	11.00	11.00	0.00
5,650.0	46.29	104.78	5,605.7	-41.1	155.6	156.4	11.00	11.00	0.00
5,700.0	51.79	104.78	5,638.5	-50.7	192.1	193.0	11.00	11.00	0.00
5,750.0	57.29	104.78	5,667.5	-61.1	231.5	232.6	11.00	11.00	0.00
5,800.0	62.79	104.78	5,692.4	-72.1	273.3	274.7	11.00	11.00	0.00
5,850.0	68.29	104.78	5,713.1	-83.7	317.3	318.9	11.00	11.00	0.00
5,900.0	73.79	104.78	5,729.4	-95.8	363.0	364.8	11.00	11.00	0.00
5,950.0	79.29	104.78	5,741.0	-108.2	410.0	412.0	11.00	11.00	0.00
6,000.0	84.79	104.78	5,747.9	-120.8	457.9	460.1	11.00	11.00	0.00
6,050.0	90.29	104.78	5,750.1	-133.5	506.2	508.6	11.00	11.00	0.00
6,056.5	91.00	104.78	5,750.0	-135.2	512.4	514.9	11.00	11.00	0.00
EOC/TURN - Start DLS 3.00 TFO -89.88									
6,100.0	91.00	103.47	5,749.2	-145.8	554.6	557.3	3.00	0.01	-3.00
6,200.0	91.01	100.47	5,747.5	-166.6	652.4	655.5	3.00	0.00	-3.00
6,300.0	91.01	97.47	5,745.7	-182.2	751.2	754.5	3.00	0.00	-3.00
6,400.0	91.01	94.47	5,744.0	-192.6	850.6	854.1	3.00	0.00	-3.00
6,500.0	91.00	91.47	5,742.2	-197.7	950.4	954.1	3.00	0.00	-3.00
6,580.4	91.00	89.06	5,740.8	-198.1	1,030.8	1,034.4	3.00	-0.01	-3.00
END TURN - Start 5009.7 hold at 6580.4 MD									
6,600.0	91.00	89.06	5,740.5	-197.8	1,050.4	1,054.0	0.00	0.00	0.00
6,700.0	91.00	89.06	5,738.7	-196.2	1,150.4	1,153.9	0.00	0.00	0.00
6,800.0	91.00	89.06	5,737.0	-194.5	1,250.4	1,253.9	0.00	0.00	0.00
6,900.0	91.00	89.06	5,735.3	-192.9	1,350.3	1,353.8	0.00	0.00	0.00
7,000.0	91.00	89.06	5,733.5	-191.2	1,450.3	1,453.7	0.00	0.00	0.00
7,100.0	91.00	89.06	5,731.8	-189.6	1,550.3	1,553.6	0.00	0.00	0.00
7,200.0	91.00	89.06	5,730.1	-187.9	1,650.3	1,653.6	0.00	0.00	0.00
7,300.0	91.00	89.06	5,728.3	-186.3	1,750.2	1,753.5	0.00	0.00	0.00
7,400.0	91.00	89.06	5,726.6	-184.7	1,850.2	1,853.4	0.00	0.00	0.00
7,500.0	91.00	89.06	5,724.8	-183.0	1,950.2	1,953.3	0.00	0.00	0.00
7,600.0	91.00	89.06	5,723.1	-181.4	2,050.1	2,053.2	0.00	0.00	0.00
7,700.0	91.00	89.06	5,721.4	-179.7	2,150.1	2,153.2	0.00	0.00	0.00
7,800.0	91.00	89.06	5,719.6	-178.1	2,250.1	2,253.1	0.00	0.00	0.00
7,900.0	91.00	89.06	5,717.9	-176.5	2,350.1	2,353.0	0.00	0.00	0.00
8,000.0	91.00	89.06	5,716.2	-174.8	2,450.0	2,452.9	0.00	0.00	0.00
8,100.0	91.00	89.06	5,714.4	-173.2	2,550.0	2,552.8	0.00	0.00	0.00
8,200.0	91.00	89.06	5,712.7	-171.5	2,650.0	2,652.8	0.00	0.00	0.00
8,300.0	91.00	89.06	5,710.9	-169.9	2,749.9	2,752.7	0.00	0.00	0.00
8,400.0	91.00	89.06	5,709.2	-168.3	2,849.9	2,852.6	0.00	0.00	0.00
8,500.0	91.00	89.06	5,707.5	-166.6	2,949.9	2,952.5	0.00	0.00	0.00
8,600.0	91.00	89.06	5,705.7	-165.0	3,049.9	3,052.5	0.00	0.00	0.00



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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)
8,700.0	91.00	89.06	5,704.0	-163.3	3,149.8	3,152.4	0.00	0.00	0.00
8,800.0	91.00	89.06	5,702.3	-161.7	3,249.8	3,252.3	0.00	0.00	0.00
8,900.0	91.00	89.06	5,700.5	-160.0	3,349.8	3,352.2	0.00	0.00	0.00
9,000.0	91.00	89.06	5,698.8	-158.4	3,449.7	3,452.1	0.00	0.00	0.00
9,100.0	91.00	89.06	5,697.0	-156.8	3,549.7	3,552.1	0.00	0.00	0.00
9,200.0	91.00	89.06	5,695.3	-155.1	3,649.7	3,652.0	0.00	0.00	0.00
9,300.0	91.00	89.06	5,693.6	-153.5	3,749.7	3,751.9	0.00	0.00	0.00
9,400.0	91.00	89.06	5,691.8	-151.8	3,849.6	3,851.8	0.00	0.00	0.00
9,500.0	91.00	89.06	5,690.1	-150.2	3,949.6	3,951.7	0.00	0.00	0.00
9,600.0	91.00	89.06	5,688.4	-148.6	4,049.6	4,051.7	0.00	0.00	0.00
9,700.0	91.00	89.06	5,686.6	-146.9	4,149.5	4,151.6	0.00	0.00	0.00
9,800.0	91.00	89.06	5,684.9	-145.3	4,249.5	4,251.5	0.00	0.00	0.00
9,900.0	91.00	89.06	5,683.2	-143.6	4,349.5	4,351.4	0.00	0.00	0.00
10,000.0	91.00	89.06	5,681.4	-142.0	4,449.5	4,451.4	0.00	0.00	0.00
10,100.0	91.00	89.06	5,679.7	-140.4	4,549.4	4,551.3	0.00	0.00	0.00
10,200.0	91.00	89.06	5,677.9	-138.7	4,649.4	4,651.2	0.00	0.00	0.00
10,300.0	91.00	89.06	5,676.2	-137.1	4,749.4	4,751.1	0.00	0.00	0.00
10,400.0	91.00	89.06	5,674.5	-135.4	4,849.3	4,851.0	0.00	0.00	0.00
10,500.0	91.00	89.06	5,672.7	-133.8	4,949.3	4,951.0	0.00	0.00	0.00
10,600.0	91.00	89.06	5,671.0	-132.1	5,049.3	5,050.9	0.00	0.00	0.00
10,700.0	91.00	89.06	5,669.3	-130.5	5,149.3	5,150.8	0.00	0.00	0.00
10,800.0	91.00	89.06	5,667.5	-128.9	5,249.2	5,250.7	0.00	0.00	0.00
10,900.0	91.00	89.06	5,665.8	-127.2	5,349.2	5,350.7	0.00	0.00	0.00
11,000.0	91.00	89.06	5,664.0	-125.6	5,449.2	5,450.6	0.00	0.00	0.00
11,100.0	91.00	89.06	5,662.3	-123.9	5,549.1	5,550.5	0.00	0.00	0.00
11,200.0	91.00	89.06	5,660.6	-122.3	5,649.1	5,650.4	0.00	0.00	0.00
11,300.0	91.00	89.06	5,658.8	-120.7	5,749.1	5,750.3	0.00	0.00	0.00
11,400.0	91.00	89.06	5,657.1	-119.0	5,849.1	5,850.3	0.00	0.00	0.00
11,500.0	91.00	89.06	5,655.4	-117.4	5,949.0	5,950.2	0.00	0.00	0.00
11,590.1	91.00	89.06	5,653.8	-115.9	6,039.1	6,040.2	0.00	0.00	0.00
TD at 11590.1									

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
PBHL (S9FC #13H/OH F - plan hits target center - Point	0.00	0.00	5,653.8	-115.9	6,039.1	674,049.60	676,335.20	32° 51' 6.225 N	103° 45' 32.880 W
EOC/PP (S9FC #13H/OI - plan hits target center - Point	0.00	0.00	5,750.0	-135.2	512.5	674,030.29	670,808.56	32° 51' 6.326 N	103° 46' 37.665 W



TDS
Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well SHL: 1513' FNL, 229' FWL, Sec 9, T17S, R32E, Unit E
Company:	COG Operating LLC	TVD Reference:	KB @ 4088.0usft (United 43)
Project:	Lea County, NM	MD Reference:	KB @ 4088.0usft (United 43)
Site:	Sneed 9 Federal Com #13H	North Reference:	Grid
Well:	SHL: 1513' FNL, 229' FWL, Sec 9, T17S, R32E, Unit E	Survey Calculation Method:	Minimum Curvature
Wellbore:	BHL: 1650' FNL, 988' FWL, Sec 10, T17S, R32E, Unit E		
Design:	Plan #1		

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
5,229.2	5,229.2	0.0	0.0	KOP - Start Build 11.00
6,056.5	5,750.0	-135.2	512.4	EOC/TURN - Start DLS 3.00 TFO -89.88
6,580.4	5,740.8	-198.1	1,030.8	END TURN - Start 5009.7 hold at 6580.4 MD
11,590.1	5,653.8	-115.9	6,039.1	TD at 11590.1



Section Details

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	0.0
2	5229.2	0.00	0.00	5229.2	0.0	0.0	0.00	0.00	0.0	0.0
3	6056.5	91.00	104.78	5750.0	-135.2	512.4	11.00	104.78	514.9	514.9
4	6580.4	91.00	89.06	5740.8	-198.1	1030.8	3.00	-89.88	1034.4	1034.4
5	11590.1	91.00	89.06	5653.8	-115.9	6039.1	0.00	0.00	6040.2	6040.2

COG Operating LLC

Project: Lea County, NM

Site: Sneed 9 Federal Com #13H

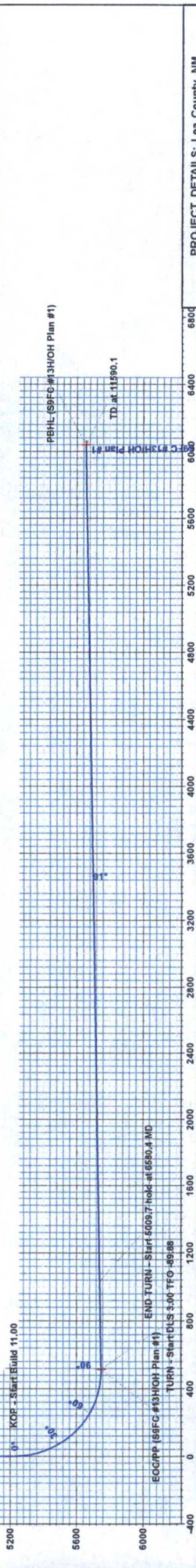
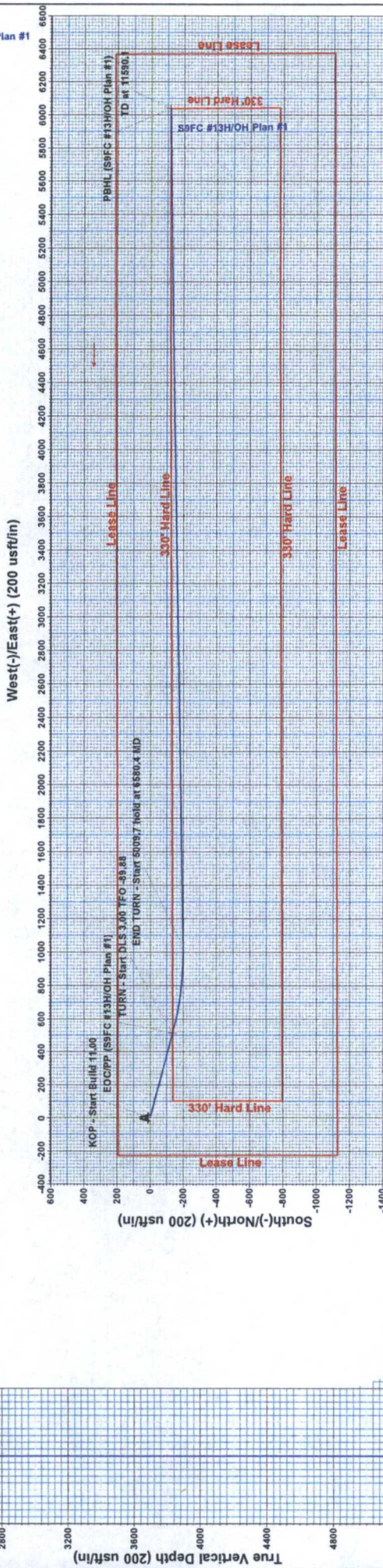
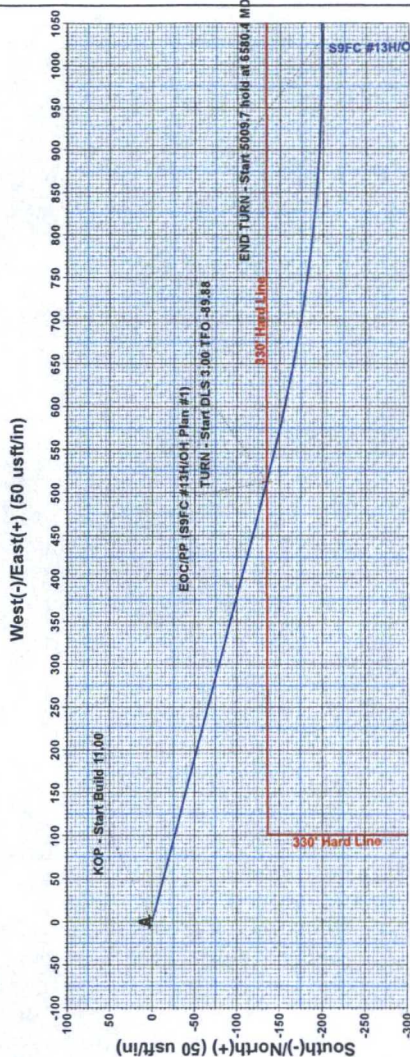
Well: SHL: 1513' FNL, 229' FWL, Sec 9, T17S, R32E, Unit E

Wellbore: BHL: 1650' FNL, 988' FWL, Sec 10, T17S, R32E, Unit E

an: Plan #1 (SHL: 1513' FNL, 229' FWL, Sec 9, T17S, R32E, Unit E/BHL: 1650' FNL, 988' FWL, Sec 10, T17S, R32E, Unit E)

Ground Elevation: 4076.0
RKB Elevation: KB @ 4088.0usft (United 43)

Northing 674165.50
Easting 670296.10
Latitude 32° 51' 7.691 N
Longitude 103° 46' 43.664 W



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 91.10° (200 usft/in)
Terra Directional Services LLC
322 Spring Hill Drive, Suite A300, Spring, Tx 77386
Phone: 432-425-7532



Closed Loop Operation & Maintenance Procedure

All drilling fluid circulated over shaker(s) with cuttings discharged into roll off container.

Fluid and fines below shaker(s) are circulated with transfer pump through centrifuge(s) or solids separator with cuttings and fines discharged into roll off container.

Fluid is continuously re-circulated through equipment with polymer added to aid separation of cutting fines.

Roll off containers are lined and de-watered with fluids re-circulated into system.

Additional tank is used to capture unused drilling fluid or cement returns from casing jobs.

This equipment will be maintained 24 hrs./day by solids control personnel and or rig crews that stay on location.

Cuttings will be hauled to either:

CRI (permit number R9166)

or

GMI (permit number 711-019-001)

dependent upon which rig is available to drill this well.

COG Operating LLC Closed Loop Equipment Diagram

