

COG Operating LLC

Lea County, NM

Airbonita 12 Federal

#4H

OH

Plan: Plan #1

Standard Planning Report

05 March, 2015



FEB 11 2016



TDS
Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well #4H
Company:	COG Operating LLC	TVD Reference:	KB @ 3708.3usft
Project:	Lea County NM	MD Reference:	KB @ 3708.3usft
Site:	Airbonita 12 Federal	North Reference:	Grid
Well:	#4H	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:		Airbonita 12 Federal			
Site Position:		Northing:	509,618.50 usft	Latitude:	32° 23' 56.826 N
From:	Map	Easting:	715,682.90 usft	Longitude:	103° 38' 4.321 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.37

Well:	#4H					
Well Position	+N-S	0.0 usft	Northing:	509,618.50 usft	Latitude:	32° 23' 56.826 N
	+E-W	0.0 usft	Easting:	715,682.90 usft	Longitude:	103° 38' 4.321 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	3,677.2 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	3/3/2015	7.17	60.24	48,341

Design:	Plan #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/S	+E/W	Direction
	(usft)	(usft)	(usft)	(°)
	0.0	0.0	0.0	357.12

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	
11,382.5	0.00	0.00	11,382.5	0.0	0.0	0.00	0.00	0.00	0.00	
12,134.7	90.26	357.12	11,860.0	479.0	-24.1	12.00	12.00	-0.38	357.12	
16,544.0	90.26	357.12	11,840.0	4,882.7	-245.7	0.00	0.00	0.00	0.00	PBHL (A12F #4H/OH)



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Site:	Airbonita 12 Federal	North Reference:	Grid
Well:	#4H	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
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
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
5,300.0	0.00	0.00	5,300.0	0.0	0.0	0.0	0.00	0.00	0.00



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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)
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
8,800.0	0.00	0.00	8,800.0	0.0	0.0	0.0	0.00	0.00	0.00
8,900.0	0.00	0.00	8,900.0	0.0	0.0	0.0	0.00	0.00	0.00
9,000.0	0.00	0.00	9,000.0	0.0	0.0	0.0	0.00	0.00	0.00
9,100.0	0.00	0.00	9,100.0	0.0	0.0	0.0	0.00	0.00	0.00
9,200.0	0.00	0.00	9,200.0	0.0	0.0	0.0	0.00	0.00	0.00
9,300.0	0.00	0.00	9,300.0	0.0	0.0	0.0	0.00	0.00	0.00
9,400.0	0.00	0.00	9,400.0	0.0	0.0	0.0	0.00	0.00	0.00
9,500.0	0.00	0.00	9,500.0	0.0	0.0	0.0	0.00	0.00	0.00
9,600.0	0.00	0.00	9,600.0	0.0	0.0	0.0	0.00	0.00	0.00
9,700.0	0.00	0.00	9,700.0	0.0	0.0	0.0	0.00	0.00	0.00
9,800.0	0.00	0.00	9,800.0	0.0	0.0	0.0	0.00	0.00	0.00
9,900.0	0.00	0.00	9,900.0	0.0	0.0	0.0	0.00	0.00	0.00
10,000.0	0.00	0.00	10,000.0	0.0	0.0	0.0	0.00	0.00	0.00
10,100.0	0.00	0.00	10,100.0	0.0	0.0	0.0	0.00	0.00	0.00
10,200.0	0.00	0.00	10,200.0	0.0	0.0	0.0	0.00	0.00	0.00
10,300.0	0.00	0.00	10,300.0	0.0	0.0	0.0	0.00	0.00	0.00
10,400.0	0.00	0.00	10,400.0	0.0	0.0	0.0	0.00	0.00	0.00
10,500.0	0.00	0.00	10,500.0	0.0	0.0	0.0	0.00	0.00	0.00
10,600.0	0.00	0.00	10,600.0	0.0	0.0	0.0	0.00	0.00	0.00
10,700.0	0.00	0.00	10,700.0	0.0	0.0	0.0	0.00	0.00	0.00



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Company:	COG Operating LLC	TVD Reference:	KB @ 3708.3usft
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Site:	Airbonia 12 Federal	North Reference:	Grid
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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)
10,800.0	0.00	0.00	10,800.0	0.0	0.0	0.0	0.00	0.00	0.00
10,900.0	0.00	0.00	10,900.0	0.0	0.0	0.0	0.00	0.00	0.00
11,000.0	0.00	0.00	11,000.0	0.0	0.0	0.0	0.00	0.00	0.00
11,100.0	0.00	0.00	11,100.0	0.0	0.0	0.0	0.00	0.00	0.00
11,200.0	0.00	0.00	11,200.0	0.0	0.0	0.0	0.00	0.00	0.00
11,300.0	0.00	0.00	11,300.0	0.0	0.0	0.0	0.00	0.00	0.00
11,382.5	0.00	0.00	11,382.5	0.0	0.0	0.0	0.00	0.00	0.00
KOP Start DLS 12.00 TFO 357.12									
11,400.0	2.10	357.12	11,400.0	0.3	0.0	0.3	12.00	12.00	0.00
11,425.0	5.10	357.12	11,424.9	1.9	-0.1	1.9	12.00	12.00	0.00
11,450.0	8.10	357.12	11,449.8	4.8	-0.2	4.8	12.00	12.00	0.00
11,475.0	11.10	357.12	11,474.4	8.9	-0.4	8.9	12.00	12.00	0.00
11,500.0	14.10	357.12	11,498.8	14.4	-0.7	14.4	12.00	12.00	0.00
11,525.0	17.10	357.12	11,522.9	21.1	-1.1	21.1	12.00	12.00	0.00
11,550.0	20.10	357.12	11,546.6	29.0	-1.5	29.1	12.00	12.00	0.00
11,575.0	23.10	357.12	11,569.8	38.2	-1.9	38.3	12.00	12.00	0.00
11,600.0	26.10	357.12	11,592.6	48.6	-2.4	48.7	12.00	12.00	0.00
11,625.0	29.10	357.12	11,614.7	60.2	-3.0	60.3	12.00	12.00	0.00
11,650.0	32.10	357.12	11,636.2	72.9	-3.7	73.0	12.00	12.00	0.00
11,675.0	35.10	357.12	11,657.0	86.7	-4.4	86.8	12.00	12.00	0.00
11,700.0	38.10	357.12	11,677.1	101.6	-5.1	101.7	12.00	12.00	0.00
11,725.0	41.10	357.12	11,696.4	117.5	-5.9	117.7	12.00	12.00	0.00
11,750.0	44.10	357.12	11,714.8	134.4	-6.8	134.6	12.00	12.00	0.00
11,775.0	47.10	357.12	11,732.3	152.3	-7.7	152.4	12.00	12.00	0.00
11,800.0	50.10	357.12	11,748.8	171.0	-8.6	171.2	12.00	12.00	0.00
11,825.0	53.10	357.12	11,764.3	190.5	-9.6	190.8	12.00	12.00	0.00
11,850.0	56.10	357.12	11,778.8	210.9	-10.6	211.2	12.00	12.00	0.00
11,875.0	59.10	357.12	11,792.2	232.0	-11.7	232.3	12.00	12.00	0.00
11,900.0	62.10	357.12	11,804.5	253.7	-12.8	254.0	12.00	12.00	0.00
11,925.0	65.10	357.12	11,815.6	276.1	-13.9	276.4	12.00	12.00	0.00
11,950.0	68.10	357.12	11,825.5	299.0	-15.0	299.4	12.00	12.00	0.00
11,975.0	71.10	357.12	11,834.2	322.4	-16.2	322.8	12.00	12.00	0.00
12,000.0	74.10	357.12	11,841.7	346.2	-17.4	346.7	12.00	12.00	0.00
12,025.0	77.10	357.12	11,847.9	370.4	-18.6	370.9	12.00	12.00	0.00
12,050.0	80.10	357.12	11,852.9	394.9	-19.9	395.4	12.00	12.00	0.00
12,075.0	83.10	357.12	11,856.5	419.6	-21.1	420.1	12.00	12.00	0.00
12,100.0	86.10	357.12	11,858.9	444.4	-22.4	445.0	12.00	12.00	0.00
12,125.0	89.10	357.12	11,859.9	469.4	-23.6	470.0	12.00	12.00	0.00
12,134.7	90.26	357.12	11,860.0	479.0	-24.1	479.6	12.00	12.00	0.00
EOC Start 4409.3 hold at 12134.7 MD									
12,200.0	90.26	357.12	11,859.7	544.3	-27.4	545.0	0.00	0.00	0.00
12,300.0	90.26	357.12	11,859.2	644.1	-32.4	645.0	0.00	0.00	0.00
12,400.0	90.26	357.12	11,858.8	744.0	-37.4	745.0	0.00	0.00	0.00
12,500.0	90.26	357.12	11,858.3	843.9	-42.5	845.0	0.00	0.00	0.00
12,600.0	90.26	357.12	11,857.9	943.8	-47.5	945.0	0.00	0.00	0.00
12,700.0	90.26	357.12	11,857.4	1,043.6	-52.5	1,045.0	0.00	0.00	0.00
12,800.0	90.26	357.12	11,856.9	1,143.5	-57.5	1,145.0	0.00	0.00	0.00
12,900.0	90.26	357.12	11,856.5	1,243.4	-62.6	1,245.0	0.00	0.00	0.00
13,000.0	90.26	357.12	11,856.0	1,343.3	-67.6	1,345.0	0.00	0.00	0.00
13,100.0	90.26	357.12	11,855.6	1,443.1	-72.6	1,445.0	0.00	0.00	0.00
13,200.0	90.26	357.12	11,855.1	1,543.0	-77.6	1,545.0	0.00	0.00	0.00
13,300.0	90.26	357.12	11,854.7	1,642.9	-82.7	1,645.0	0.00	0.00	0.00
13,400.0	90.26	357.12	11,854.2	1,742.7	-87.7	1,745.0	0.00	0.00	0.00
13,500.0	90.26	357.12	11,853.8	1,842.6	-92.7	1,845.0	0.00	0.00	0.00



TDS
Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well #4H
Company:	COG Operating LLC	TVD Reference:	KB @ 3708 3usft
Project:	Lea County, NM	MD Reference:	KB @ 3708 3usft
Site:	Airbonita 12 Federal	North Reference:	Grid
Well:	#4H	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)
13,600.0	90.26	357.12	11,853.3	1,942.5	-97.7	1,944.9	0.00	0.00	0.00
13,700.0	90.26	357.12	11,852.9	2,042.4	-102.8	2,044.9	0.00	0.00	0.00
13,800.0	90.26	357.12	11,852.4	2,142.2	-107.8	2,144.9	0.00	0.00	0.00
13,900.0	90.26	357.12	11,852.0	2,242.1	-112.8	2,244.9	0.00	0.00	0.00
14,000.0	90.26	357.12	11,851.5	2,342.0	-117.8	2,344.9	0.00	0.00	0.00
14,100.0	90.26	357.12	11,851.1	2,441.9	-122.9	2,444.9	0.00	0.00	0.00
14,200.0	90.26	357.12	11,850.6	2,541.7	-127.9	2,544.9	0.00	0.00	0.00
14,300.0	90.26	357.12	11,850.2	2,641.6	-132.9	2,644.9	0.00	0.00	0.00
14,400.0	90.26	357.12	11,849.7	2,741.5	-138.0	2,744.9	0.00	0.00	0.00
14,500.0	90.26	357.12	11,849.3	2,841.3	-143.0	2,844.9	0.00	0.00	0.00
14,600.0	90.26	357.12	11,848.8	2,941.2	-148.0	2,944.9	0.00	0.00	0.00
14,700.0	90.26	357.12	11,848.3	3,041.1	-153.0	3,044.9	0.00	0.00	0.00
14,800.0	90.26	357.12	11,847.9	3,141.0	-158.1	3,144.9	0.00	0.00	0.00
14,900.0	90.26	357.12	11,847.4	3,240.8	-163.1	3,244.9	0.00	0.00	0.00
15,000.0	90.26	357.12	11,847.0	3,340.7	-168.1	3,344.9	0.00	0.00	0.00
15,100.0	90.26	357.12	11,846.5	3,440.6	-173.1	3,444.9	0.00	0.00	0.00
15,200.0	90.26	357.12	11,846.1	3,540.5	-178.2	3,544.9	0.00	0.00	0.00
15,300.0	90.26	357.12	11,845.6	3,640.3	-183.2	3,644.9	0.00	0.00	0.00
15,400.0	90.26	357.12	11,845.2	3,740.2	-188.2	3,744.9	0.00	0.00	0.00
15,500.0	90.26	357.12	11,844.7	3,840.1	-193.2	3,844.9	0.00	0.00	0.00
15,600.0	90.26	357.12	11,844.3	3,939.9	-198.3	3,944.9	0.00	0.00	0.00
15,700.0	90.26	357.12	11,843.8	4,039.8	-203.3	4,044.9	0.00	0.00	0.00
15,800.0	90.26	357.12	11,843.4	4,139.7	-208.3	4,144.9	0.00	0.00	0.00
15,900.0	90.26	357.12	11,842.9	4,239.6	-213.3	4,244.9	0.00	0.00	0.00
16,000.0	90.26	357.12	11,842.5	4,339.4	-218.4	4,344.9	0.00	0.00	0.00
16,100.0	90.26	357.12	11,842.0	4,439.3	-223.4	4,444.9	0.00	0.00	0.00
16,200.0	90.26	357.12	11,841.6	4,539.2	-228.4	4,544.9	0.00	0.00	0.00
16,300.0	90.26	357.12	11,841.1	4,639.1	-233.4	4,644.9	0.00	0.00	0.00
16,400.0	90.26	357.12	11,840.7	4,738.9	-238.5	4,744.9	0.00	0.00	0.00
16,500.0	90.26	357.12	11,840.2	4,838.8	-243.5	4,844.9	0.00	0.00	0.00
16,544.0	90.26	357.12	11,840.0	4,882.7	-245.7	4,888.9	0.00	0.00	0.00
TD at 16544.0									



TDS
Planning Report



Database:	EDM:5000.1 Single User Db	Local Co-ordinate Reference:	Well #4H
Company:	COG Operating LLC	TVD Reference:	KB @ 3708.3usft
Project:	Lea County, NM	MD Reference:	KB @ 3708.3usft
Site:	Airbonita 12 Federal	North Reference:	Grid
Well:	#4H	Survey/Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Design Targets									
Target Name	Hit/Miss Target	Dip Angle (°)	Dip Dir (°)	TVD (usft)	+N/S (usft)	+E/W (usft)	Northing (usft)	Easting (usft)	Latitude Longitude
Prohibition Federal Unit		0.00	0.00	0.0	3,235.2	-13.5	512,853.73	715,669.36	32° 24' 28.840 N 103° 38' 4.232 W
- plan misses target center by 3235.3usft at 0.0usft MD (0.0 TVD, 0.0 N, 0.0 E)									
- Circle (radius 353.3)									
Prohibition Federal Unit		0.00	0.00	0.0	3,235.2	-13.5	512,853.73	715,669.36	32° 24' 28.840 N 103° 38' 4.232 W
- plan misses target center by 3235.3usft at 0.0usft MD (0.0 TVD, 0.0 N, 0.0 E)									
- Circle (radius 334.9)									
Prohibition Federal Unit		-0.00	0.00	0.0	3,235.2	-13.5	512,853.73	715,669.36	32° 24' 28.840 N 103° 38' 4.232 W
- plan misses target center by 3235.3usft at 0.0usft MD (0.0 TVD, 0.0 N, 0.0 E)									
- Circle (radius 328.0)									
PBHL (A12F #4H/OH)		0.00	0.00	11,840.0	4,882.7	-245.7	514,501.20	715,437.20	32° 24' 45.157 N 103° 38' 6.815 W
- plan hits target center									
- Point									
EOC (A12F #4H/OH Pla		-0.00	-0.00	11,860.0	479.1	-24.1	510,097.56	715,658.79	32° 24' 1.568 N 103° 38' 4.566 W
- plan hits target center									
- Point									
Drilling Window (A12F #		-0.26	357.12	11,860.0	479.1	-24.1	510,097.56	715,658.79	32° 24' 1.568 N 103° 38' 4.566 W
- plan hits target center									
- Rectangle (sides W100.0 H4,409.3 D0.0)									

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/S (usft)	+E/W (usft)	Comment
11,382.5	11,382.5	0.0	0.0	KOP - Start DLS 12.00 TFO 357.12
12,134.7	11,860.0	479.0	-24.1	EOC - Start 4409.3 hold at 12134.7 MD
16,544.0	11,840.0	4,882.7	-245.7	TD at 16544.0



COG Operating LLC
Project: Lea County, NM
Site: Airbonita 12 Federal
Well: #4H
Plan: Plan #1 (#4H/OH)

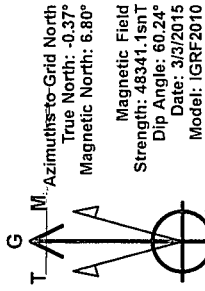
Section Details

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	VFace	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0
2	11382.5	0.00	0.00	11382.5	0.0	0.0	0.00	0.00	0.0
3	12134.7	90.26	357.12	11860.0	479.0	-24.1	12.00	357.12	479.6
4	16544.0	90.26	357.12	11840.0	4882.7	-245.7	0.00	0.00	4888.9

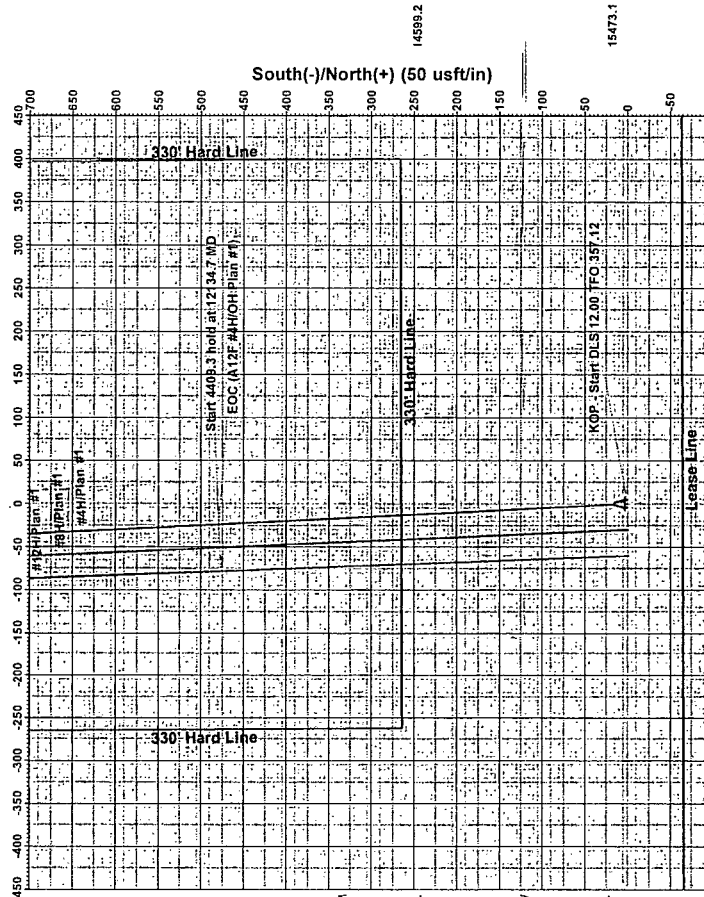
WELL DETAILS: #4H

Ground Elevation: 3677.2
RKB Elevation: KB @ 3708.3usft
Rig Name:

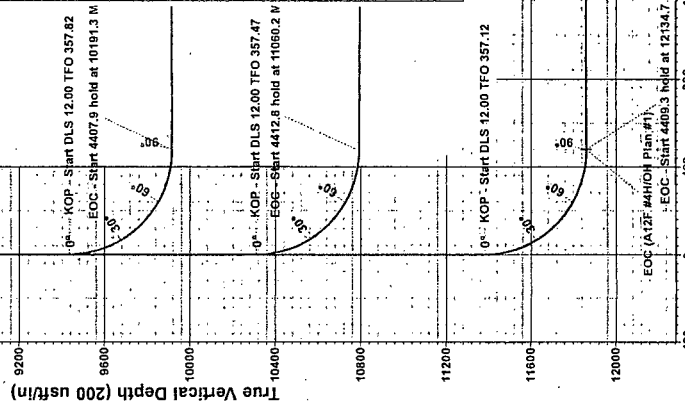
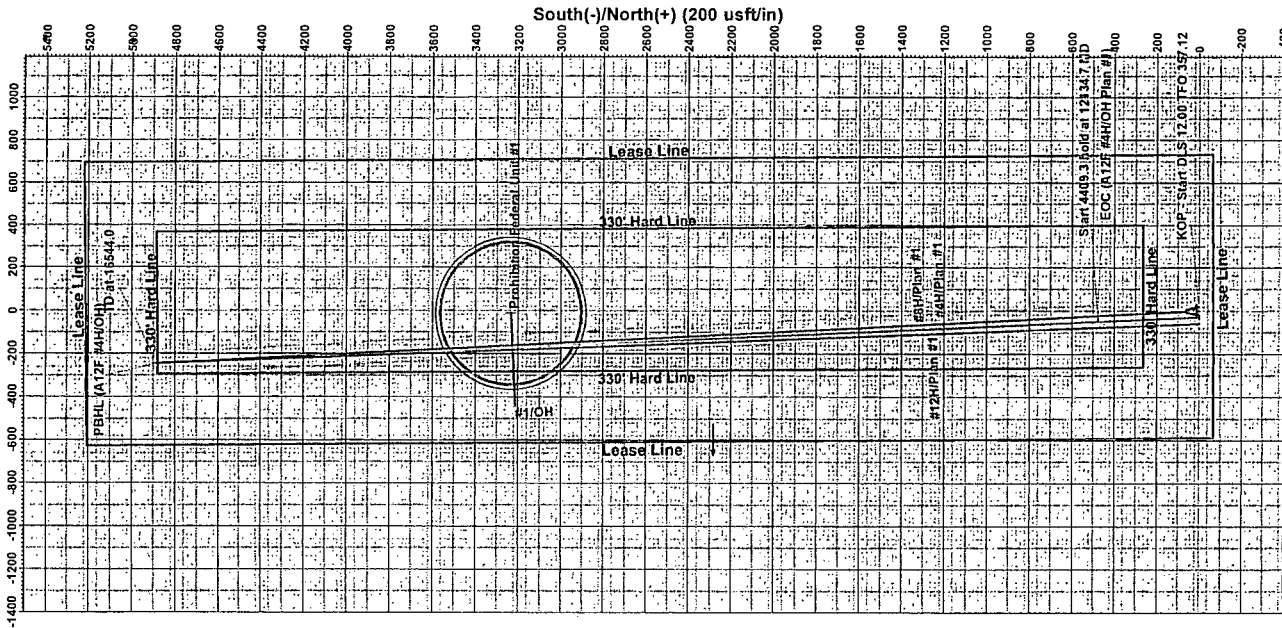
Northing 509618.50
Easting 715682.90
Latitude 32° 23' 56.826 N
Longitude 103° 38' 4.321 W



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



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



Vertical Section at 357.12° (200 usft/in)



Terra Directional Services LLC
322 Spring Hill Drive, Suite A300, Spring, Tx 77386
Phone: 432-425-7532

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



New Mexico Office of the State Engineer

Water Column/Average Depth to Water

(A CLW##### in the
POD suffix indicates the
POD has been replaced
& no longer serves a
water right file.)

(R=POD has
been replaced,
O=orphaned,
C=the file is
closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are smallest to largest) (NAD83 UTM in meters)

(In feet)

POD Number	POD Sub	Code	basin	County	Q	Q	Q	Sec	Tws	Rng	X	Y	Depth Well	Depth Water	Water Column
C 02096				ED	2	3	14	22S	32E		627204	3584464*	435	360	75
C 02821		C	LE		2	2	3	14	22S	32E	627303	3584563*	540	340	200
C 02939		C	LE		3	3	1	19	22S	32E	620234	3583042*	280		

Average Depth to Water: 350 feet

Minimum Depth: 340 feet

Maximum Depth: 360 feet

Record Count: 3

PLSS Search:

Township: 22S

Range: 32E

*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.



New Mexico Office of the State Engineer

Water Column/Average Depth to Water

No records found.

PLSS Search:

Section(s): 12

Township: 22S

Range: 32E

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

5/1/15 12:12 PM

Page 1 of 1

WATER COLUMN/ AVERAGE
DEPTH TO WATER