



Azimuths to Grid North
True North: -0.31°
Magnetic North: 6.87°

Magnetic Field
Strength: 48395.1snT
Dip Angle: 60.60°
Date: 08/05/2016
Model: IGRF2015

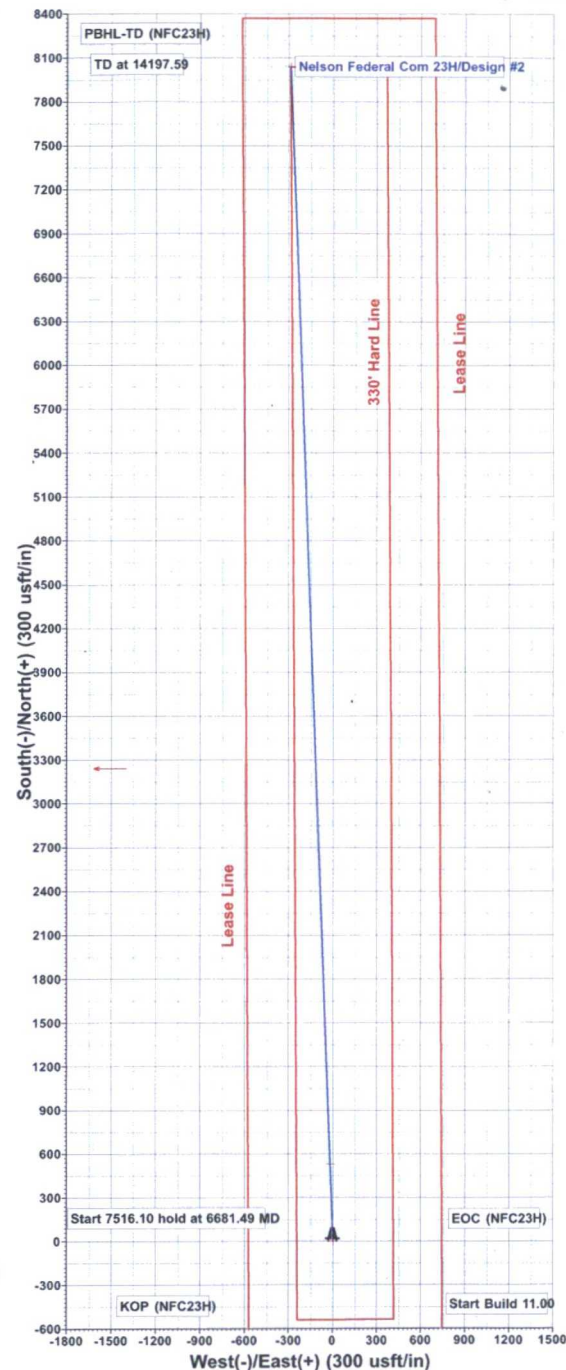
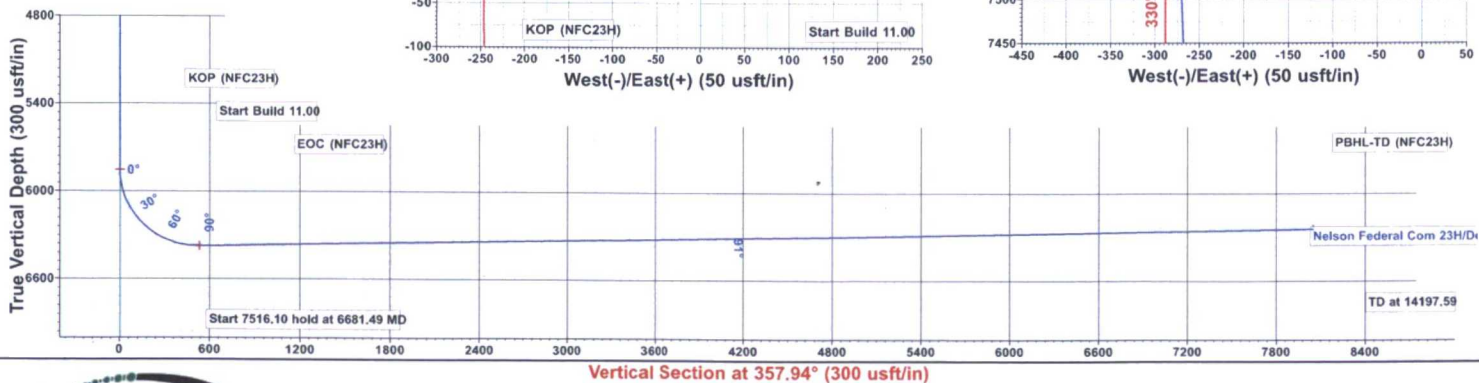
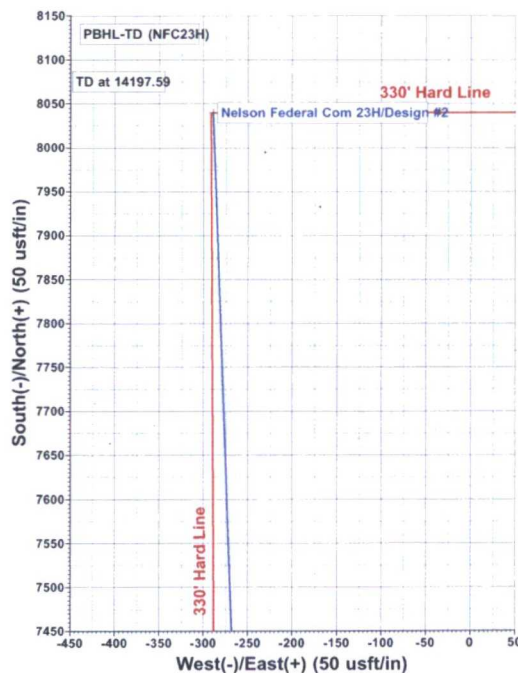
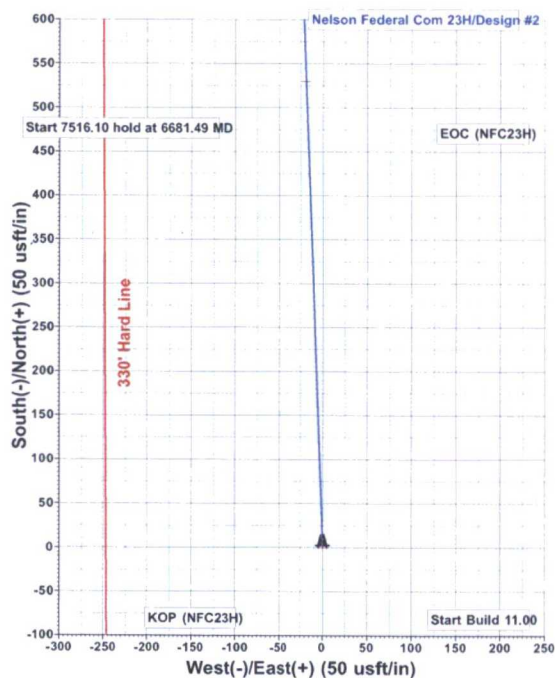
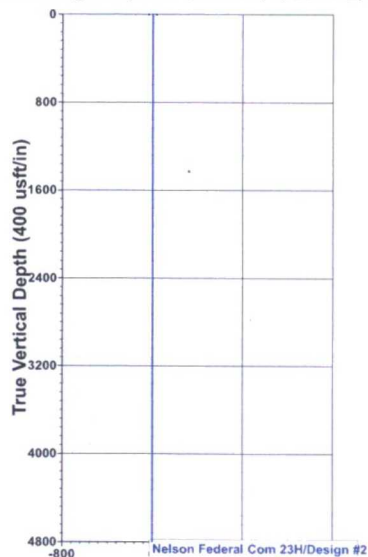
Section Details

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	5854.21	0.00	0.00	5854.21	0.00	0.00	0.00	0.00	0.00	
3	6681.49	91.00	357.94	6375.00	529.62	-19.08	11.00	357.94	529.96	
4	14197.59	91.00	357.94	6243.83	8039.70	-289.70	0.00	0.00	8044.92	PBHL-TD (NFC23H)

Ground Elevation::
RKB Elevation: Mean Sea Level (System)

COG Operating LLC
Project: Lea County, NM (NAD-83 2015)
Site: Nelson Federal Com 23H
Well: SHL: 2,188'FSL, 1,895'FWL, Sec 15, T-17S, R-32E, Unit K
Wellbore: BHL: 330;FNL, 1,650'FWL, Sec 10, T-17S, R-32E, Unit C

Plan: Design #2 (SHL: 2,188'FSL, 1,895'FWL, Sec 15, T-17S, R-32E, Unit K/BHL: 330;FNL, 1,650'FWL, Sec 10, T-17S, R-32E, Unit C)



Terra Directional Services LLC
3705 South County Road 1210, Midland, TX 79706
Phone: 432.618.1210

PROJECT DETAILS: Lea County, NM (NAD-83 2015)
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone
System Datum: Mean Sea Level
Local North: Grid



COG Operating LLC

Lea County, NM (NAD-83 2015)

Nelson Federal Com 23H

SHL: 2,188'FSL, 1,895'FWL, Sec 15, T-17S, R-32E, Unit K

BHL: 330;FNL, 1,650'FWL, Sec 10, T-17S, R-32E, Unit C

Plan: Design #2

Standard Planning Report

05 August, 2016

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Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well SHL: 2,188'FSL, 1,895'FWL, Sec 15, T-17S, R-32E, Unit K
Company:	COG Operating LLC	TVD Reference:	Mean Sea Level (System)
Project:	Lea County, NM (NAD-83 2015)	MD Reference:	Mean Sea Level (System)
Site:	Nelson Federal Com 23H	North Reference:	Grid
Well:	SHL: 2,188'FSL, 1,895'FWL, Sec 15, T-17S, R-32E, Unit K	Survey Calculation Method:	Minimum Curvature
Wellbore:	BHL: 330;FNL, 1,650'FWL, Sec 10, T-17S, R-32E, Unit C		
Design:	Design #2		

Project	Lea County, NM (NAD-83 2015)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Nelson Federal Com 23H, Sec 15, T-17S, R-32E			
Site Position:		Northing:	667,394.60 usft	Latitude: 32° 50' 0.116 N
From: Map		Easting:	718,457.50 usft	Longitude: 103° 45' 24.062 W
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence: 0.31 °

Well	SHL: 2,188'FSL, 1,895'FWL, Sec 15, T-17S, R-32E, Unit K			
Well Position	+N/-S	0.00 usft	Northing:	667,394.60 usft
	+E/-W	0.00 usft	Easting:	718,457.50 usft
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft
			Ground Level:	0.00 usft

Wellbore	BHL: 330;FNL, 1,650'FWL, Sec 10, T-17S, R-32E, Unit C				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	08/05/2016	7.18	60.60	48,395

Design	Design #2			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	357.94

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	
5,854.21	0.00	0.00	5,854.21	0.00	0.00	0.00	0.00	0.00	0.00	
6,681.49	91.00	357.94	6,375.00	529.62	-19.08	11.00	11.00	0.00	357.94	
14,197.59	91.00	357.94	6,243.83	8,039.70	-289.70	0.00	0.00	0.00	0.00	PBHL-TD (NFC23H)

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well SHL: 2,188'FSL, 1,895'FWL, Sec 15, T-17S, R-32E, Unit K
Company:	COG Operating LLC	TVD Reference:	Mean Sea Level (System)
Project:	Lea County, NM (NAD-83 2015)	MD Reference:	Mean Sea Level (System)
Site:	Nelson Federal Com 23H	North Reference:	Grid
Well:	SHL: 2,188'FSL, 1,895'FWL, Sec 15, T-17S, R-32E, Unit K	Survey Calculation Method:	Minimum Curvature
Wellbore:	BHL: 330;FNL, 1,650'FWL, Sec 10, T-17S, R-32E, Unit C		
Design:	Design #2		

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
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00
4,600.00	0.00	0.00	4,600.00	0.00	0.00	0.00	0.00	0.00	0.00
4,700.00	0.00	0.00	4,700.00	0.00	0.00	0.00	0.00	0.00	0.00
4,800.00	0.00	0.00	4,800.00	0.00	0.00	0.00	0.00	0.00	0.00
4,900.00	0.00	0.00	4,900.00	0.00	0.00	0.00	0.00	0.00	0.00
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well SHL: 2,188'FSL, 1,895'FWL, Sec 15, T-17S, R-32E, Unit K
Company:	COG Operating LLC	TVD Reference:	Mean Sea Level (System)
Project:	Lea County, NM (NAD-83 2015)	MD Reference:	Mean Sea Level (System)
Site:	Nelson Federal Com 23H	North Reference:	Grid
Well:	SHL: 2,188'FSL, 1,895'FWL, Sec 15, T-17S, R-32E, Unit K	Survey Calculation Method:	Minimum Curvature
Wellbore:	BHL: 330;FNL, 1,650'FWL, Sec 10, T-17S, R-32E, Unit C		
Design:	Design #2		

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)
5,100.00	0.00	0.00	5,100.00	0.00	0.00	0.00	0.00	0.00	0.00
5,200.00	0.00	0.00	5,200.00	0.00	0.00	0.00	0.00	0.00	0.00
5,300.00	0.00	0.00	5,300.00	0.00	0.00	0.00	0.00	0.00	0.00
5,400.00	0.00	0.00	5,400.00	0.00	0.00	0.00	0.00	0.00	0.00
5,500.00	0.00	0.00	5,500.00	0.00	0.00	0.00	0.00	0.00	0.00
5,600.00	0.00	0.00	5,600.00	0.00	0.00	0.00	0.00	0.00	0.00
5,700.00	0.00	0.00	5,700.00	0.00	0.00	0.00	0.00	0.00	0.00
5,800.00	0.00	0.00	5,800.00	0.00	0.00	0.00	0.00	0.00	0.00
5,854.21	0.00	0.00	5,854.21	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 11.00 - KOP (NFC23H)									
5,900.00	5.04	357.94	5,899.94	2.01	-0.07	2.01	11.00	11.00	0.00
5,950.00	10.54	357.94	5,949.46	8.78	-0.32	8.78	11.00	11.00	0.00
6,000.00	16.04	357.94	5,998.10	20.26	-0.73	20.27	11.00	11.00	0.00
6,050.00	21.54	357.94	6,045.42	36.34	-1.31	36.37	11.00	11.00	0.00
6,100.00	27.04	357.94	6,090.98	56.89	-2.05	56.92	11.00	11.00	0.00
6,150.00	32.54	357.94	6,134.36	81.70	-2.94	81.75	11.00	11.00	0.00
6,200.00	38.04	357.94	6,175.16	110.55	-3.98	110.62	11.00	11.00	0.00
6,250.00	43.54	357.94	6,213.00	143.18	-5.16	143.27	11.00	11.00	0.00
6,300.00	49.04	357.94	6,247.54	179.28	-6.46	179.40	11.00	11.00	0.00
6,350.00	54.54	357.94	6,278.45	218.53	-7.87	218.67	11.00	11.00	0.00
6,400.00	60.04	357.94	6,305.47	260.55	-9.39	260.72	11.00	11.00	0.00
6,450.00	65.54	357.94	6,328.32	304.97	-10.99	305.17	11.00	11.00	0.00
6,500.00	71.04	357.94	6,346.81	351.38	-12.66	351.61	11.00	11.00	0.00
6,550.00	76.54	357.94	6,360.77	399.34	-14.39	399.60	11.00	11.00	0.00
6,600.00	82.04	357.94	6,370.06	448.42	-16.16	448.71	11.00	11.00	0.00
6,650.00	87.54	357.94	6,374.60	498.16	-17.95	498.48	11.00	11.00	0.00
6,681.49	91.00	357.94	6,375.00	529.62	-19.08	529.96	11.00	11.00	0.00
Start 7516.10 hold at 6681.49 MD - EOC (NFC23H)									
6,700.00	91.00	357.94	6,374.68	548.12	-19.75	548.47	0.00	0.00	0.00
6,800.00	91.00	357.94	6,372.94	648.04	-23.35	648.46	0.00	0.00	0.00
6,900.00	91.00	357.94	6,371.19	747.96	-26.95	748.44	0.00	0.00	0.00
7,000.00	91.00	357.94	6,369.45	847.88	-30.55	848.43	0.00	0.00	0.00
7,100.00	91.00	357.94	6,367.70	947.80	-34.15	948.41	0.00	0.00	0.00
7,200.00	91.00	357.94	6,365.95	1,047.72	-37.75	1,048.40	0.00	0.00	0.00
7,300.00	91.00	357.94	6,364.21	1,147.64	-41.35	1,148.38	0.00	0.00	0.00
7,400.00	91.00	357.94	6,362.46	1,247.56	-44.95	1,248.37	0.00	0.00	0.00
7,500.00	91.00	357.94	6,360.72	1,347.48	-48.55	1,348.35	0.00	0.00	0.00
7,600.00	91.00	357.94	6,358.97	1,447.40	-52.16	1,448.34	0.00	0.00	0.00
7,700.00	91.00	357.94	6,357.23	1,547.32	-55.76	1,548.32	0.00	0.00	0.00
7,800.00	91.00	357.94	6,355.48	1,647.24	-59.36	1,648.31	0.00	0.00	0.00
7,900.00	91.00	357.94	6,353.74	1,747.16	-62.96	1,748.29	0.00	0.00	0.00
8,000.00	91.00	357.94	6,351.99	1,847.08	-66.56	1,848.28	0.00	0.00	0.00
8,100.00	91.00	357.94	6,350.25	1,947.00	-70.16	1,948.26	0.00	0.00	0.00
8,200.00	91.00	357.94	6,348.50	2,046.92	-73.76	2,048.24	0.00	0.00	0.00
8,300.00	91.00	357.94	6,346.76	2,146.84	-77.36	2,148.23	0.00	0.00	0.00
8,400.00	91.00	357.94	6,345.01	2,246.76	-80.96	2,248.21	0.00	0.00	0.00
8,500.00	91.00	357.94	6,343.27	2,346.68	-84.56	2,348.20	0.00	0.00	0.00
8,600.00	91.00	357.94	6,341.52	2,446.60	-88.16	2,448.18	0.00	0.00	0.00
8,700.00	91.00	357.94	6,339.78	2,546.52	-91.76	2,548.17	0.00	0.00	0.00
8,800.00	91.00	357.94	6,338.03	2,646.44	-95.36	2,648.15	0.00	0.00	0.00
8,900.00	91.00	357.94	6,336.29	2,746.36	-98.96	2,748.14	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well SHL: 2,188'FSL, 1,895'FWL, Sec 15, T-17S, R-32E, Unit K
Company:	COG Operating LLC	TVD Reference:	Mean Sea Level (System)
Project:	Lea County, NM (NAD-83 2015)	MD Reference:	Mean Sea Level (System)
Site:	Nelson Federal Com 23H	North Reference:	Grid
Well:	SHL: 2,188'FSL, 1,895'FWL, Sec 15, T-17S, R-32E, Unit K	Survey Calculation Method:	Minimum Curvature
Wellbore:	BHL: 330;FNL, 1,650'FWL, Sec 10, T-17S, R-32E, Unit C		
Design:	Design #2		

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)
9,000.00	91.00	357.94	6,334.54	2,846.28	-102.56	2,848.12	0.00	0.00	0.00
9,100.00	91.00	357.94	6,332.80	2,946.20	-106.16	2,948.11	0.00	0.00	0.00
9,200.00	91.00	357.94	6,331.05	3,046.12	-109.76	3,048.09	0.00	0.00	0.00
9,300.00	91.00	357.94	6,329.30	3,146.04	-113.36	3,148.08	0.00	0.00	0.00
9,400.00	91.00	357.94	6,327.56	3,245.96	-116.96	3,248.06	0.00	0.00	0.00
9,500.00	91.00	357.94	6,325.81	3,345.88	-120.56	3,348.05	0.00	0.00	0.00
9,600.00	91.00	357.94	6,324.07	3,445.80	-124.16	3,448.03	0.00	0.00	0.00
9,700.00	91.00	357.94	6,322.32	3,545.71	-127.77	3,548.02	0.00	0.00	0.00
9,800.00	91.00	357.94	6,320.58	3,645.63	-131.37	3,648.00	0.00	0.00	0.00
9,900.00	91.00	357.94	6,318.83	3,745.55	-134.97	3,747.99	0.00	0.00	0.00
10,000.00	91.00	357.94	6,317.09	3,845.47	-138.57	3,847.97	0.00	0.00	0.00
10,100.00	91.00	357.94	6,315.34	3,945.39	-142.17	3,947.96	0.00	0.00	0.00
10,200.00	91.00	357.94	6,313.60	4,045.31	-145.77	4,047.94	0.00	0.00	0.00
10,300.00	91.00	357.94	6,311.85	4,145.23	-149.37	4,147.92	0.00	0.00	0.00
10,400.00	91.00	357.94	6,310.11	4,245.15	-152.97	4,247.91	0.00	0.00	0.00
10,500.00	91.00	357.94	6,308.36	4,345.07	-156.57	4,347.89	0.00	0.00	0.00
10,600.00	91.00	357.94	6,306.62	4,444.99	-160.17	4,447.88	0.00	0.00	0.00
10,700.00	91.00	357.94	6,304.87	4,544.91	-163.77	4,547.86	0.00	0.00	0.00
10,800.00	91.00	357.94	6,303.13	4,644.83	-167.37	4,647.85	0.00	0.00	0.00
10,900.00	91.00	357.94	6,301.38	4,744.75	-170.97	4,747.83	0.00	0.00	0.00
11,000.00	91.00	357.94	6,299.64	4,844.67	-174.57	4,847.82	0.00	0.00	0.00
11,100.00	91.00	357.94	6,297.89	4,944.59	-178.17	4,947.80	0.00	0.00	0.00
11,200.00	91.00	357.94	6,296.15	5,044.51	-181.77	5,047.79	0.00	0.00	0.00
11,300.00	91.00	357.94	6,294.40	5,144.43	-185.37	5,147.77	0.00	0.00	0.00
11,400.00	91.00	357.94	6,292.65	5,244.35	-188.97	5,247.76	0.00	0.00	0.00
11,500.00	91.00	357.94	6,290.91	5,344.27	-192.57	5,347.74	0.00	0.00	0.00
11,600.00	91.00	357.94	6,289.16	5,444.19	-196.17	5,447.73	0.00	0.00	0.00
11,700.00	91.00	357.94	6,287.42	5,544.11	-199.77	5,547.71	0.00	0.00	0.00
11,800.00	91.00	357.94	6,285.67	5,644.03	-203.38	5,647.70	0.00	0.00	0.00
11,900.00	91.00	357.94	6,283.93	5,743.95	-206.98	5,747.68	0.00	0.00	0.00
12,000.00	91.00	357.94	6,282.18	5,843.87	-210.58	5,847.67	0.00	0.00	0.00
12,100.00	91.00	357.94	6,280.44	5,943.79	-214.18	5,947.65	0.00	0.00	0.00
12,200.00	91.00	357.94	6,278.69	6,043.71	-217.78	6,047.64	0.00	0.00	0.00
12,300.00	91.00	357.94	6,276.95	6,143.63	-221.38	6,147.62	0.00	0.00	0.00
12,400.00	91.00	357.94	6,275.20	6,243.55	-224.98	6,247.60	0.00	0.00	0.00
12,500.00	91.00	357.94	6,273.46	6,343.47	-228.58	6,347.59	0.00	0.00	0.00
12,600.00	91.00	357.94	6,271.71	6,443.39	-232.18	6,447.57	0.00	0.00	0.00
12,700.00	91.00	357.94	6,269.97	6,543.31	-235.78	6,547.56	0.00	0.00	0.00
12,800.00	91.00	357.94	6,268.22	6,643.23	-239.38	6,647.54	0.00	0.00	0.00
12,900.00	91.00	357.94	6,266.48	6,743.15	-242.98	6,747.53	0.00	0.00	0.00
13,000.00	91.00	357.94	6,264.73	6,843.07	-246.58	6,847.51	0.00	0.00	0.00
13,100.00	91.00	357.94	6,262.99	6,942.99	-250.18	6,947.50	0.00	0.00	0.00
13,200.00	91.00	357.94	6,261.24	7,042.91	-253.78	7,047.48	0.00	0.00	0.00
13,300.00	91.00	357.94	6,259.50	7,142.83	-257.38	7,147.47	0.00	0.00	0.00
13,400.00	91.00	357.94	6,257.75	7,242.75	-260.98	7,247.45	0.00	0.00	0.00
13,500.00	91.00	357.94	6,256.00	7,342.67	-264.58	7,347.44	0.00	0.00	0.00
13,600.00	91.00	357.94	6,254.26	7,442.59	-268.18	7,447.42	0.00	0.00	0.00
13,700.00	91.00	357.94	6,252.51	7,542.51	-271.78	7,547.41	0.00	0.00	0.00
13,800.00	91.00	357.94	6,250.77	7,642.43	-275.38	7,647.39	0.00	0.00	0.00
13,900.00	91.00	357.94	6,249.02	7,742.35	-278.99	7,747.38	0.00	0.00	0.00
14,000.00	91.00	357.94	6,247.28	7,842.27	-282.59	7,847.36	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well SHL: 2,188'FSL, 1,895'FWL, Sec 15, T-17S, R-32E, Unit K
Company:	COG Operating LLC	TVD Reference:	Mean Sea Level (System)
Project:	Lea County, NM (NAD-83 2015)	MD Reference:	Mean Sea Level (System)
Site:	Nelson Federal Com 23H	North Reference:	Grid
Well:	SHL: 2,188'FSL, 1,895'FWL, Sec 15, T-17S, R-32E, Unit K	Survey Calculation Method:	Minimum Curvature
Wellbore:	BHL: 330;FNL, 1,650'FWL, Sec 10, T-17S, R-32E, Unit C		
Design:	Design #2		

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)
14,100.00	91.00	357.94	6,245.53	7,942.19	-286.19	7,947.35	0.00	0.00	0.00
14,197.59	91.00	357.94	6,243.83	8,039.70	-289.70	8,044.92	0.00	0.00	0.00
TD at 14197.59 - PBHL-TD (NFC23H)									

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
KOP (NFC23H) - plan hits target center - Point	0.00	0.00	5,854.21	0.00	0.00	667,394.60	718,457.50	32° 50' 0.116 N	103° 45' 24.062 W
PBHL-TD (NFC23H) - plan hits target center - Point	0.00	0.00	6,243.83	8,039.70	-289.70	675,434.30	718,167.80	32° 51' 19.681 N	103° 45' 26.944 W
EOC (NFC23H) - plan misses target center by 0.01usft at 6681.49usft MD (6375.00 TVD, 529.62 N, -19.08 E) - Point	0.00	0.00	6,375.00	529.62	-19.08	667,924.22	718,438.42	32° 50' 5.357 N	103° 45' 24.252 W

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
5,854.21	5,854.21	0.00	0.00	Start Build 11.00
6,681.49	6,375.00	529.62	-19.08	Start 7516.10 hold at 6681.49 MD
14,197.59	6,243.83	8,039.70	-289.70	TD at 14197.59