

WELL DETAILS: VOGL STATE 16C-36HZ

GL 4818 & KB 17 @ 4835.00ft (ASSUMED)

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	1307671.12	3151415.66	40.1766830	-104.9581190

SECTION DETAILS

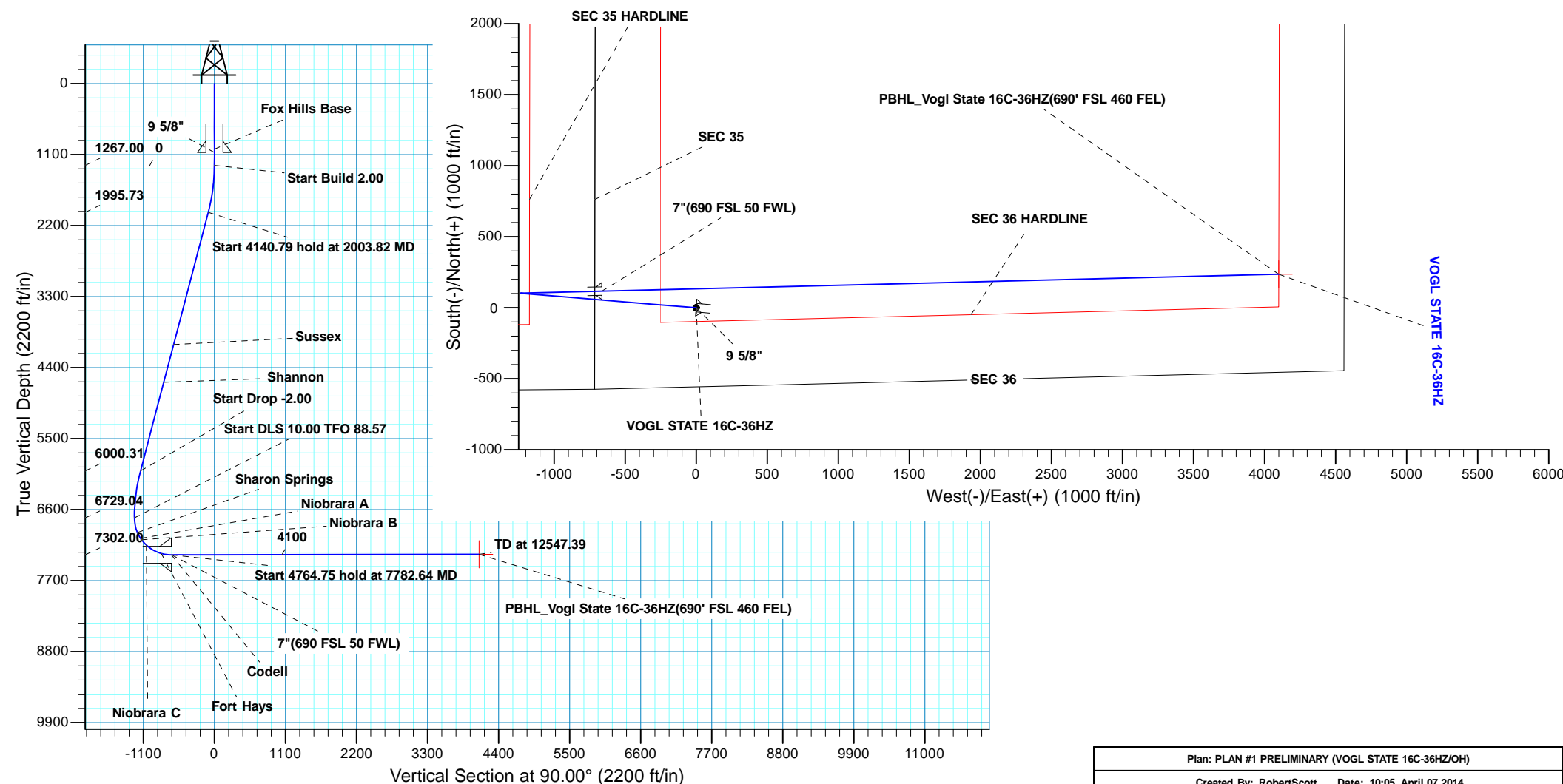
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1267.00	0.00	0.00	1267.00	0.00	0.00	0.00	0.00	0.00	
2003.82	14.74	274.76	1995.73	7.82	-93.91	2.00	274.76	-93.91	
6144.62	14.74	274.76	6000.31	95.18	-1143.59	0.00	0.00	-1143.59	
6881.44	0.00	0.00	6729.04	103.00	-1237.50	2.00	180.00	-1237.50	
7782.64	90.12	88.57	7302.00	117.35	-663.52	10.00	88.57	-663.52	
12547.39	90.12	88.57	7292.00	236.40	4099.73	0.00	0.00	4099.73	PBHL_Vogl State 16C-36HZ(690' FSL 460 FEL)

FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipDirInc
1017.00	1017.00	Fox Hills Base	
4042.00	4119.70	Sussex	14.74
4628.00	4725.63	Shannon	14.74
6955.00	7113.71	Sharon Springs	23.23
7046.00	7217.31	Niobrara A	33.59
7068.00	7244.15	Niobrara B	36.27
7150.00	7354.27	Niobrara C	47.28
7280.00	7622.16	Fort Hays	74.07
7302.00	7780.99	Codell	90.12

CASING DETAILS

TVD	MD	Name	Size
1067.00	1067.00	9 5/8"	9.625
7302.00	7782.64	7"	7.000





Scientific Drilling

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

VOGL STATE 13-36HZ PAD

VOGL STATE 16C-36HZ

OH

Plan: PLAN #1 PRELIMINARY

Standard Planning Report

07 April, 2014

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well VOGL STATE 16C-36HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 4818 & KB 17 @ 4835.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 4818 & KB 17 @ 4835.00ft (ASSUMED)
Site:	VOGL STATE 13-36HZ PAD	North Reference:	True
Well:	VOGL STATE 16C-36HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1 PRELIMINARY		

Project	COLORADO NORTHERN ZONE - 83, KERR MCGEE OIL & GAS ONSHORE LP		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site	VOGL STATE 13-36HZ PAD, SECTION 36 T3N R68W			
Site Position:		Northing:	1,307,701.38 usft	Latitude: 40.1767660
From:	Lat/Long	Easting:	3,151,417.99 usft	Longitude: -104.9581100
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence: 0.35 °

Well	VOGL STATE 16C-36HZ, 556' FSL 713' FWL			
Well Position	+N/-S	-30.24 ft	Northing:	1,307,671.12 usft
	+E/-W	-2.51 ft	Easting:	3,151,415.66 usft
Position Uncertainty	0.00 ft	Wellhead Elevation:	0.00 ft	Ground Level: 4,818.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2013	04/02/14	8.62	66.73	52,618

Design	PLAN #1 PRELIMINARY			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	90.00

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,267.00	0.00	0.00	1,267.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,003.82	14.74	274.76	1,995.73	7.82	-93.91	2.00	2.00	0.00	274.76	
6,144.62	14.74	274.76	6,000.31	95.18	-1,143.59	0.00	0.00	0.00	0.00	
6,881.44	0.00	0.00	6,729.04	103.00	-1,237.50	2.00	-2.00	0.00	180.00	
7,782.64	90.12	88.57	7,302.00	117.35	-663.52	10.00	10.00	9.83	88.57	
12,547.39	90.12	88.57	7,292.00	236.40	4,099.73	0.00	0.00	0.00	0.00	PBHL_Vogl State 16C

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well VOGL STATE 16C-36HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 4818 & KB 17 @ 4835.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 4818 & KB 17 @ 4835.00ft (ASSUMED)
Site:	VOGL STATE 13-36HZ PAD	North Reference:	True
Well:	VOGL STATE 16C-36HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1 PRELIMINARY		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
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
1,017.00	0.00	0.00	1,017.00	0.00	0.00	0.00	0.00	0.00	0.00
Fox Hills Base									
1,067.00	0.00	0.00	1,067.00	0.00	0.00	0.00	0.00	0.00	0.00
9 5/8"									
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
1,267.00	0.00	0.00	1,267.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
1,300.00	0.66	274.76	1,300.00	0.02	-0.19	-0.19	2.00	2.00	0.00
1,400.00	2.66	274.76	1,399.95	0.26	-3.08	-3.08	2.00	2.00	0.00
1,500.00	4.66	274.76	1,499.74	0.79	-9.44	-9.44	2.00	2.00	0.00
1,600.00	6.66	274.76	1,599.25	1.60	-19.27	-19.27	2.00	2.00	0.00
1,700.00	8.66	274.76	1,698.35	2.71	-32.55	-32.55	2.00	2.00	0.00
1,800.00	10.66	274.76	1,796.93	4.10	-49.27	-49.27	2.00	2.00	0.00
1,900.00	12.66	274.76	1,894.86	5.78	-69.41	-69.41	2.00	2.00	0.00
2,000.00	14.66	274.76	1,992.03	7.74	-92.94	-92.94	2.00	2.00	0.00
2,003.82	14.74	274.76	1,995.73	7.82	-93.91	-93.91	2.00	2.00	0.00
Start 4140.79 hold at 2003.82 MD									
2,100.00	14.74	274.76	2,088.74	9.85	-118.29	-118.29	0.00	0.00	0.00
2,200.00	14.74	274.76	2,185.45	11.96	-143.64	-143.64	0.00	0.00	0.00
2,300.00	14.74	274.76	2,282.16	14.07	-168.99	-168.99	0.00	0.00	0.00
2,400.00	14.74	274.76	2,378.87	16.18	-194.34	-194.34	0.00	0.00	0.00
2,500.00	14.74	274.76	2,475.58	18.29	-219.69	-219.69	0.00	0.00	0.00
2,600.00	14.74	274.76	2,572.29	20.40	-245.04	-245.04	0.00	0.00	0.00
2,700.00	14.74	274.76	2,669.00	22.51	-270.39	-270.39	0.00	0.00	0.00
2,800.00	14.74	274.76	2,765.71	24.61	-295.74	-295.74	0.00	0.00	0.00
2,900.00	14.74	274.76	2,862.42	26.72	-321.09	-321.09	0.00	0.00	0.00
3,000.00	14.74	274.76	2,959.13	28.83	-346.44	-346.44	0.00	0.00	0.00
3,100.00	14.74	274.76	3,055.85	30.94	-371.79	-371.79	0.00	0.00	0.00
3,200.00	14.74	274.76	3,152.56	33.05	-397.14	-397.14	0.00	0.00	0.00
3,300.00	14.74	274.76	3,249.27	35.16	-422.49	-422.49	0.00	0.00	0.00
3,400.00	14.74	274.76	3,345.98	37.27	-447.84	-447.84	0.00	0.00	0.00
3,500.00	14.74	274.76	3,442.69	39.38	-473.19	-473.19	0.00	0.00	0.00
3,600.00	14.74	274.76	3,539.40	41.49	-498.54	-498.54	0.00	0.00	0.00
3,700.00	14.74	274.76	3,636.11	43.60	-523.89	-523.89	0.00	0.00	0.00
3,800.00	14.74	274.76	3,732.82	45.71	-549.24	-549.24	0.00	0.00	0.00
3,900.00	14.74	274.76	3,829.53	47.82	-574.59	-574.59	0.00	0.00	0.00
4,000.00	14.74	274.76	3,926.24	49.93	-599.94	-599.94	0.00	0.00	0.00
4,100.00	14.74	274.76	4,022.95	52.04	-625.29	-625.29	0.00	0.00	0.00
4,119.70	14.74	274.76	4,042.00	52.46	-630.28	-630.28	0.00	0.00	0.00
Sussex									
4,200.00	14.74	274.76	4,119.66	54.15	-650.63	-650.63	0.00	0.00	0.00
4,300.00	14.74	274.76	4,216.37	56.26	-675.98	-675.98	0.00	0.00	0.00

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Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 4818 & KB 17 @ 4835.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 4818 & KB 17 @ 4835.00ft (ASSUMED)
Site:	VOGL STATE 13-36HZ PAD	North Reference:	True
Well:	VOGL STATE 16C-36HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1 PRELIMINARY		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,400.00	14.74	274.76	4,313.08	58.37	-701.33	-701.33	0.00	0.00	0.00
4,500.00	14.74	274.76	4,409.79	60.48	-726.68	-726.68	0.00	0.00	0.00
4,600.00	14.74	274.76	4,506.50	62.59	-752.03	-752.03	0.00	0.00	0.00
4,700.00	14.74	274.76	4,603.21	64.70	-777.38	-777.38	0.00	0.00	0.00
4,725.63	14.74	274.76	4,628.00	65.24	-783.88	-783.88	0.00	0.00	0.00
Shannon									
4,800.00	14.74	274.76	4,699.93	66.81	-802.73	-802.73	0.00	0.00	0.00
4,900.00	14.74	274.76	4,796.64	68.92	-828.08	-828.08	0.00	0.00	0.00
5,000.00	14.74	274.76	4,893.35	71.03	-853.43	-853.43	0.00	0.00	0.00
5,100.00	14.74	274.76	4,990.06	73.14	-878.78	-878.78	0.00	0.00	0.00
5,200.00	14.74	274.76	5,086.77	75.25	-904.13	-904.13	0.00	0.00	0.00
5,300.00	14.74	274.76	5,183.48	77.36	-929.48	-929.48	0.00	0.00	0.00
5,400.00	14.74	274.76	5,280.19	79.47	-954.83	-954.83	0.00	0.00	0.00
5,500.00	14.74	274.76	5,376.90	81.58	-980.18	-980.18	0.00	0.00	0.00
5,600.00	14.74	274.76	5,473.61	83.69	-1,005.53	-1,005.53	0.00	0.00	0.00
5,700.00	14.74	274.76	5,570.32	85.80	-1,030.88	-1,030.88	0.00	0.00	0.00
5,800.00	14.74	274.76	5,667.03	87.91	-1,056.23	-1,056.23	0.00	0.00	0.00
5,900.00	14.74	274.76	5,763.74	90.02	-1,081.58	-1,081.58	0.00	0.00	0.00
6,000.00	14.74	274.76	5,860.45	92.13	-1,106.93	-1,106.93	0.00	0.00	0.00
6,100.00	14.74	274.76	5,957.16	94.24	-1,132.28	-1,132.28	0.00	0.00	0.00
6,144.62	14.74	274.76	6,000.31	95.18	-1,143.59	-1,143.59	0.00	0.00	0.00
Start Drop -2.00									
6,200.00	13.63	274.76	6,054.01	96.31	-1,157.11	-1,157.11	2.00	-2.00	0.00
6,300.00	11.63	274.76	6,151.58	98.12	-1,178.90	-1,178.90	2.00	-2.00	0.00
6,400.00	9.63	274.76	6,249.86	99.65	-1,197.28	-1,197.28	2.00	-2.00	0.00
6,500.00	7.63	274.76	6,348.72	100.90	-1,212.23	-1,212.23	2.00	-2.00	0.00
6,600.00	5.63	274.76	6,448.05	101.85	-1,223.73	-1,223.73	2.00	-2.00	0.00
6,700.00	3.63	274.76	6,547.72	102.52	-1,231.78	-1,231.78	2.00	-2.00	0.00
6,800.00	1.63	274.76	6,647.61	102.90	-1,236.35	-1,236.35	2.00	-2.00	0.00
6,881.44	0.00	0.00	6,729.04	103.00	-1,237.50	-1,237.50	2.00	-2.00	0.00
Start DLS 10.00 TFO 88.57									
6,900.00	1.86	88.57	6,747.60	103.01	-1,237.20	-1,237.20	10.00	10.00	0.00
7,000.00	11.86	88.57	6,846.75	103.31	-1,225.28	-1,225.28	10.00	10.00	0.00
7,100.00	21.86	88.57	6,942.34	104.03	-1,196.33	-1,196.33	10.00	10.00	0.00
7,113.71	23.23	88.57	6,955.00	104.16	-1,191.08	-1,191.08	10.00	10.00	0.00
Sharon Springs									
7,200.00	31.86	88.57	7,031.44	105.16	-1,151.23	-1,151.23	10.00	10.00	0.00
7,217.31	33.59	88.57	7,046.00	105.39	-1,141.87	-1,141.87	10.00	10.00	0.00
Niobrara A									
7,244.15	36.27	88.57	7,068.00	105.77	-1,126.51	-1,126.51	10.00	10.00	0.00
Niobrara B									
7,300.00	41.86	88.57	7,111.35	106.65	-1,091.34	-1,091.34	10.00	10.00	0.00
7,354.27	47.28	88.57	7,150.00	107.60	-1,053.28	-1,053.28	10.00	10.00	0.00
Niobrara C									
7,400.00	51.86	88.57	7,179.65	108.47	-1,018.49	-1,018.49	10.00	10.00	0.00
7,500.00	61.86	88.57	7,234.25	110.56	-934.90	-934.90	10.00	10.00	0.00
7,600.00	71.86	88.57	7,273.51	112.86	-843.09	-843.09	10.00	10.00	0.00
7,622.16	74.07	88.57	7,280.00	113.39	-821.91	-821.91	10.00	10.00	0.00
Fort Hays									
7,700.00	81.86	88.57	7,296.22	115.29	-745.86	-745.86	10.00	10.00	0.00
7,780.99	90.12	88.57	7,302.00	117.31	-665.17	-665.17	10.20	10.20	0.00
Codell									
7,782.64	90.12	88.57	7,302.00	117.35	-663.52	-663.52	0.02	-0.02	0.00

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Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 4818 & KB 17 @ 4835.00ft (ASSUMED)
Site:	VOGL STATE 13-36HZ PAD	North Reference:	True
Well:	VOGL STATE 16C-36HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1 PRELIMINARY		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
Start 4764.75 hold at 7782.64 MD - 7"(690 FSL 50 FWL)									
7,800.00	90.12	88.57	7,301.96	117.78	-646.17	-646.17	0.00	0.00	0.00
7,900.00	90.12	88.57	7,301.75	120.28	-546.20	-546.20	0.00	0.00	0.00
8,000.00	90.12	88.57	7,301.54	122.78	-446.23	-446.23	0.00	0.00	0.00
8,100.00	90.12	88.57	7,301.33	125.28	-346.26	-346.26	0.00	0.00	0.00
8,200.00	90.12	88.57	7,301.12	127.77	-246.29	-246.29	0.00	0.00	0.00
8,300.00	90.12	88.57	7,300.91	130.27	-146.33	-146.33	0.00	0.00	0.00
8,400.00	90.12	88.57	7,300.70	132.77	-46.36	-46.36	0.00	0.00	0.00
8,500.00	90.12	88.57	7,300.49	135.27	53.61	53.61	0.00	0.00	0.00
8,600.00	90.12	88.57	7,300.28	137.77	153.58	153.58	0.00	0.00	0.00
8,700.00	90.12	88.57	7,300.07	140.27	253.55	253.55	0.00	0.00	0.00
8,800.00	90.12	88.57	7,299.86	142.77	353.52	353.52	0.00	0.00	0.00
8,900.00	90.12	88.57	7,299.65	145.27	453.49	453.49	0.00	0.00	0.00
9,000.00	90.12	88.57	7,299.44	147.76	553.45	553.45	0.00	0.00	0.00
9,100.00	90.12	88.57	7,299.23	150.26	653.42	653.42	0.00	0.00	0.00
9,200.00	90.12	88.57	7,299.02	152.76	753.39	753.39	0.00	0.00	0.00
9,300.00	90.12	88.57	7,298.81	155.26	853.36	853.36	0.00	0.00	0.00
9,400.00	90.12	88.57	7,298.60	157.76	953.33	953.33	0.00	0.00	0.00
9,500.00	90.12	88.57	7,298.39	160.26	1,053.30	1,053.30	0.00	0.00	0.00
9,600.00	90.12	88.57	7,298.18	162.76	1,153.27	1,153.27	0.00	0.00	0.00
9,700.00	90.12	88.57	7,297.97	165.26	1,253.23	1,253.23	0.00	0.00	0.00
9,800.00	90.12	88.57	7,297.76	167.75	1,353.20	1,353.20	0.00	0.00	0.00
9,900.00	90.12	88.57	7,297.55	170.25	1,453.17	1,453.17	0.00	0.00	0.00
10,000.00	90.12	88.57	7,297.34	172.75	1,553.14	1,553.14	0.00	0.00	0.00
10,100.00	90.12	88.57	7,297.13	175.25	1,653.11	1,653.11	0.00	0.00	0.00
10,200.00	90.12	88.57	7,296.93	177.75	1,753.08	1,753.08	0.00	0.00	0.00
10,300.00	90.12	88.57	7,296.72	180.25	1,853.05	1,853.05	0.00	0.00	0.00
10,400.00	90.12	88.57	7,296.51	182.75	1,953.01	1,953.01	0.00	0.00	0.00
10,500.00	90.12	88.57	7,296.30	185.24	2,052.98	2,052.98	0.00	0.00	0.00
10,600.00	90.12	88.57	7,296.09	187.74	2,152.95	2,152.95	0.00	0.00	0.00
10,700.00	90.12	88.57	7,295.88	190.24	2,252.92	2,252.92	0.00	0.00	0.00
10,800.00	90.12	88.57	7,295.67	192.74	2,352.89	2,352.89	0.00	0.00	0.00
10,900.00	90.12	88.57	7,295.46	195.24	2,452.86	2,452.86	0.00	0.00	0.00
11,000.00	90.12	88.57	7,295.25	197.74	2,552.83	2,552.83	0.00	0.00	0.00
11,100.00	90.12	88.57	7,295.04	200.24	2,652.79	2,652.79	0.00	0.00	0.00
11,200.00	90.12	88.57	7,294.83	202.74	2,752.76	2,752.76	0.00	0.00	0.00
11,300.00	90.12	88.57	7,294.62	205.23	2,852.73	2,852.73	0.00	0.00	0.00
11,400.00	90.12	88.57	7,294.41	207.73	2,952.70	2,952.70	0.00	0.00	0.00
11,500.00	90.12	88.57	7,294.20	210.23	3,052.67	3,052.67	0.00	0.00	0.00
11,600.00	90.12	88.57	7,293.99	212.73	3,152.64	3,152.64	0.00	0.00	0.00
11,700.00	90.12	88.57	7,293.78	215.23	3,252.61	3,252.61	0.00	0.00	0.00
11,800.00	90.12	88.57	7,293.57	217.73	3,352.57	3,352.57	0.00	0.00	0.00
11,900.00	90.12	88.57	7,293.36	220.23	3,452.54	3,452.54	0.00	0.00	0.00
12,000.00	90.12	88.57	7,293.15	222.72	3,552.51	3,552.51	0.00	0.00	0.00
12,100.00	90.12	88.57	7,292.94	225.22	3,652.48	3,652.48	0.00	0.00	0.00
12,200.00	90.12	88.57	7,292.73	227.72	3,752.45	3,752.45	0.00	0.00	0.00
12,300.00	90.12	88.57	7,292.52	230.22	3,852.42	3,852.42	0.00	0.00	0.00
12,400.00	90.12	88.57	7,292.31	232.72	3,952.39	3,952.39	0.00	0.00	0.00
12,500.00	90.12	88.57	7,292.10	235.22	4,052.35	4,052.35	0.00	0.00	0.00
12,547.39	90.12	88.57	7,292.00	236.40	4,099.73	4,099.73	0.00	0.00	0.00
TD at 12547.39 - PBHL_Vogl State 16C-36HZ(690' FSL 460 FEL)									

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well VOGL STATE 16C-36HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 4818 & KB 17 @ 4835.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 4818 & KB 17 @ 4835.00ft (ASSUMED)
Site:	VOGL STATE 13-36HZ PAD	North Reference:	True
Well:	VOGL STATE 16C-36HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1 PRELIMINARY		

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
PBHL_Vogl State 16C-3	0.00	0.00	7,292.00	236.40	4,099.73	1,307,932.57	3,155,513.86	40.1773310	-104.9434470
- plan hits target center									
- Point									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,067.00	1,067.00	9 5/8"	9.625	12.250	
7,782.64	7,302.00	7"(690 FSL 50 FWL)	7.000	7.500	

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,017.00	1,017.00	Fox Hills Base				
4,119.70	4,042.00	Sussex				
4,725.63	4,628.00	Shannon				
7,113.71	6,955.00	Sharon Springs				
7,217.31	7,046.00	Niobrara A				
7,244.15	7,068.00	Niobrara B				
7,354.27	7,150.00	Niobrara C				
7,622.16	7,280.00	Fort Hays				
7,780.99	7,302.00	Codell				

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,267.00	1,267.00	0.00	0.00	Start Build 2.00
2,003.82	1,995.73	7.82	-93.91	Start 4140.79 hold at 2003.82 MD
6,144.62	6,000.31	95.18	-1,143.59	Start Drop -2.00
6,881.44	6,729.04	103.00	-1,237.50	Start DLS 10.00 TFO 88.57
7,782.64	7,302.00	117.35	-663.52	Start 4764.75 hold at 7782.64 MD
12,547.39	7,292.00	236.40	4,099.73	TD at 12547.39