

# **US ROCKIES WATTENBERG PLANNING**

**WELD-NAD83-UTMFT13N  
1N-68W-36 LIZZY B 8-36HZ PAD  
LIZZY B NORTH 36-12HZ**

**Plan A**

**Plan: Permit Rev-1**

## **Standard Planning Report**

**08 October, 2022**

Project: WELD-NAD83-UTMFT13N  
 Site: 1N-68W-36 LIZZY B 8-36HZ PAD  
 Well: LIZZY B NORTH 36-12HZ  
 Wellbore: Plan A  
 Design: Permit Rev-1

# US ROCKIES WATTENBERG PLANNING

## CASING DETAILS

TVD	MD	Name	Size
1500.00	1525.25	9 5/8"	9-5/8
7874.00	19878.27	5.5" CSG	5-1/2



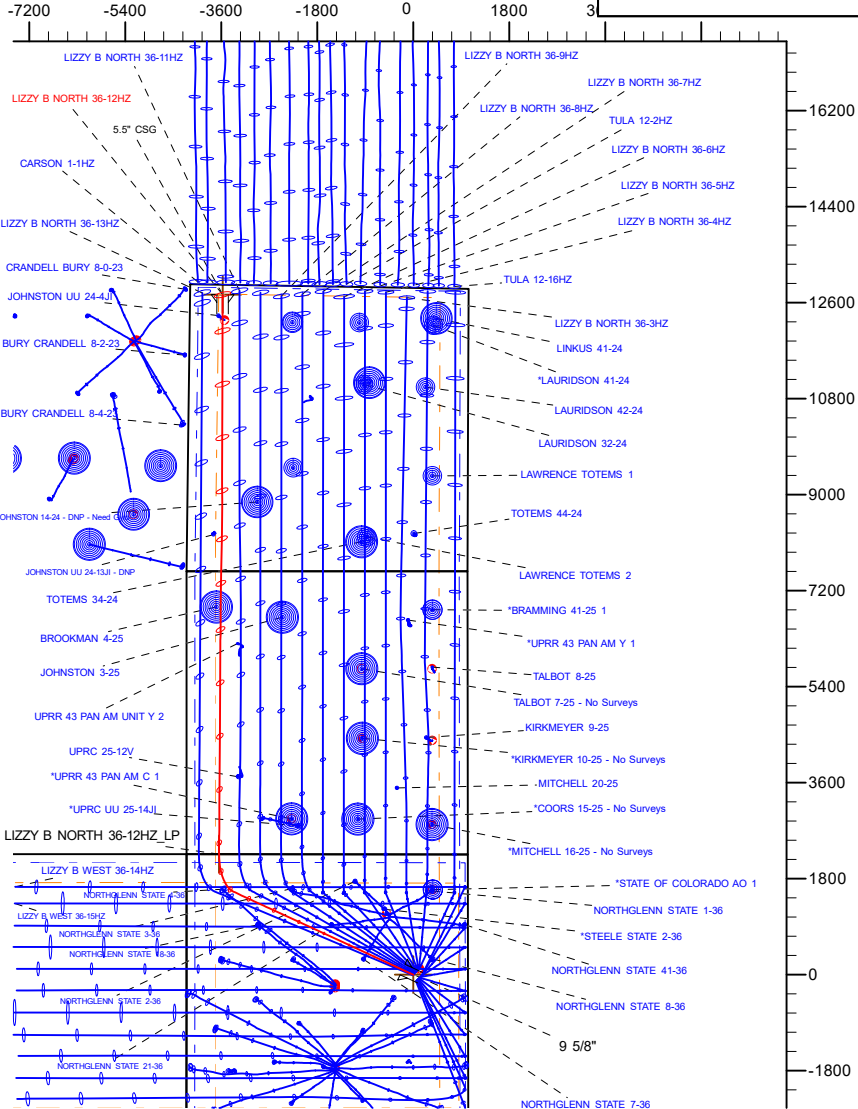
Azimuths to True North  
 Magnetic North: 7.77°

Magnetic Field  
 Strength: 51590.4nT  
 Dip Angle: 66.26°  
 Date: 10/2/2022  
 Model: IGRF2020

## SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	220.00	0.00	0.00	220.00	0.00	0.00	0.00	0.00	0.00	
3	2296.00	31.14	294.78	2195.29	230.69	-499.72	1.50	294.78	227.55	
4	8415.85	31.14	294.78	7433.31	1557.15	-3373.08	0.00	0.00	1535.93	
5	9389.61	90.28	0.36	7926.00	2261.56	-3641.27	8.00	68.63	2238.63	
6	14389.61	90.28	0.36	7901.57	7261.40	-3609.85	0.00	0.00	7238.57	
7	14465.61	90.28	1.50	7901.19	7337.39	-3608.62	1.50	90.00	7314.57	
8	15265.61	90.28	1.50	7897.28	8137.10	-3587.68	0.00	0.00	8114.40	
9	15356.80	90.29	0.13	7896.83	8228.28	-3586.38	1.50	-89.61	8205.58	
10	19878.27	90.29	0.13	7874.00	12749.68	-3575.95	0.00	0.00	12726.96	LIZZY B NORTH 36-12HZ_BHL

West(-)/East(+) (3600 usft/in)



## WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	Northing	Easting	Latitude	Longitude
LIZZY B NORTH 36-12HZ_SHL	0.00	14529901.48	1655476.64	40.008687	-104.946217
LIZZY B NORTH 36-12HZ_LP	7926.00	14532160.84	1651834.01	40.014897	-104.959222
LIZZY B NORTH 36-12HZ_BHL	7874.00	14542649.00	1651893.00	40.043700	-104.958994

## WELL DETAILS: LIZZY B NORTH 36-12HZ

GL = 5110'

RKB = 17' @ 5127.00usft (RIG)

Plan: Permit Rev-1 (LIZZY B NORTH 36-12HZ/Plan A)

Date: 10/9/2022

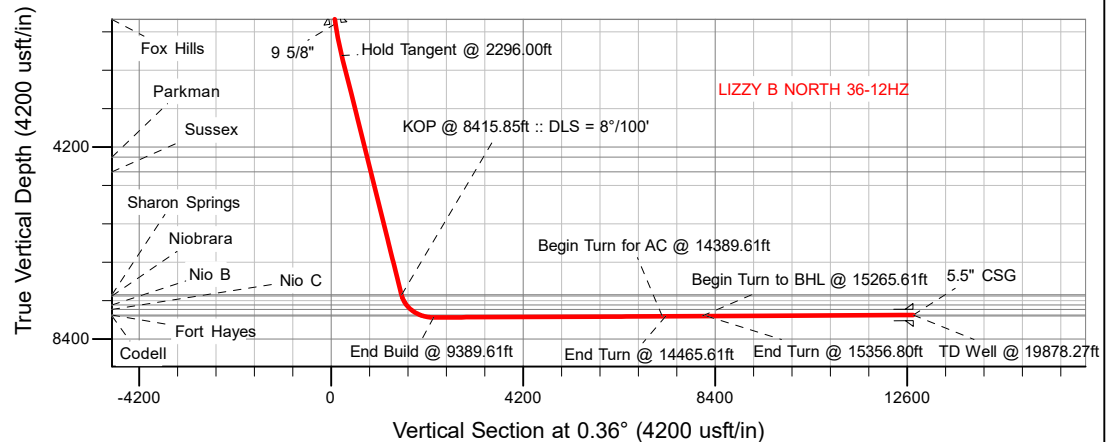
## FORMATION TOP DETAILS

TVDPPath	MDPath	Formation
1412.00	1432.25	Fox Hills
4418.00	4892.90	Parkman
4742.00	5271.45	Sussex
7428.00	8409.64	Sharon Springs
7460.00	8447.19	Niobrara
7653.00	8690.69	Nio B
7751.00	8837.52	Nio C
7874.00	9092.01	Fort Hayes
7896.00	9163.26	Codell

**SHL**  
2256' FNL  
1025' FEL

**LP**  
1' FSL  
610' FWL

**BHL**  
185' FNL  
610' FWL



## Planning Report

<b>Database:</b>	EDM 5000.16 Single User Db	<b>Local Co-ordinate Reference:</b>	Well LIZZY B NORTH 36-12HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 5127.00usft (RIG)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 5127.00usft (RIG)
<b>Site:</b>	1N-68W-36 LIZZY B 8-36HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	LIZZY B NORTH 36-12HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan A		
<b>Design:</b>	Permit Rev-1		

<b>Project</b> WELD-NAD83-UTMFT13N			
<b>Map System:</b>	Universal Transverse Mercator (US Survey Feet)	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Zone 13N (108 W to 102 W)		

<b>Site</b> 1N-68W-36 LIZZY B 8-36HZ PAD			
<b>Site Position:</b>		<b>Northing:</b>	14,530,017.45 usft
<b>From:</b>	Map	<b>Easting:</b>	1,655,593.92 usft
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13-3/16 "
		<b>Latitude:</b>	40.009006
		<b>Longitude:</b>	-104.945799

<b>Well</b> LIZZY B NORTH 36-12HZ			
<b>Well Position</b>	<b>+N/-S</b>	0.00 usft	<b>Northing:</b> 14,529,901.48 usft
	<b>+E/-W</b>	0.00 usft	<b>Easting:</b> 1,655,476.64 usft
<b>Position Uncertainty</b>		3.28 usft	<b>Wellhead Elevation:</b> usft
<b>Grid Convergence:</b>		0.03 °	<b>Ground Level:</b> 5,110.00 usft
			<b>Latitude:</b> 40.008688
			<b>Longitude:</b> -104.946218

<b>Wellbore</b> Plan A					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF202013	10/2/2022	7.77	66.26	51,590.42049333

<b>Design</b> Permit Rev-1				
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	0.36

Plan Survey Tool Program		Date	10/3/2022		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	1,500.00 Permit Rev-1 (Plan A)	APC_ISCWSA REV 2 MWD+I	Fixed:v2:crustal field declinatio	
2	1,500.00	19,878.27 Permit Rev-1 (Plan A)	APC_ISCWSA REV 2 MWD+I	Fixed:v2:Rockies, crustal dec +	

## Planning Report

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<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 5127.00usft (RIG)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 5127.00usft (RIG)
<b>Site:</b>	1N-68W-36 LIZZY B 8-36HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	LIZZY B NORTH 36-12HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan A		
<b>Design:</b>	Permit Rev-1		

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	
220.00	0.00	0.00	220.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,296.00	31.14	294.78	2,195.29	230.69	-499.72	1.50	1.50	0.00	294.78	
8,415.85	31.14	294.78	7,433.31	1,557.15	-3,373.08	0.00	0.00	0.00	0.00	
9,389.61	90.28	0.36	7,926.00	2,261.56	-3,641.27	8.00	6.07	6.73	68.63	
14,389.61	90.28	0.36	7,901.57	7,261.40	-3,609.85	0.00	0.00	0.00	0.00	
14,465.61	90.28	1.50	7,901.19	7,337.39	-3,608.62	1.50	0.00	1.50	90.00	
15,265.61	90.28	1.50	7,897.28	8,137.10	-3,587.68	0.00	0.00	0.00	0.00	
15,356.80	90.29	0.13	7,896.83	8,228.28	-3,586.38	1.50	0.01	-1.50	-89.61	
19,878.27	90.29	0.13	7,874.00	12,749.68	-3,575.95	0.00	0.00	0.00	0.00	LIZZY B NORTH 36-1

Planning Report

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<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 5127.00usft (RIG)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 5127.00usft (RIG)
<b>Site:</b>	1N-68W-36 LIZZY B 8-36HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	LIZZY B NORTH 36-12HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan A		
<b>Design:</b>	Permit Rev-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)	
0.00	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	
220.00	0.00	0.00	220.00	0.00	0.00	0.00	0.00	0.00	0.00	
<b>Begin Nudge @ 220.00ft</b>										
300.00	1.20	294.78	299.99	0.35	-0.76	0.35	1.50	1.50	0.00	
400.00	2.70	294.78	399.93	1.78	-3.85	1.75	1.50	1.50	0.00	
500.00	4.20	294.78	499.75	4.30	-9.31	4.24	1.50	1.50	0.00	
600.00	5.70	294.78	599.37	7.92	-17.15	7.81	1.50	1.50	0.00	
700.00	7.20	294.78	698.74	12.62	-27.35	12.45	1.50	1.50	0.00	
800.00	8.70	294.78	797.77	18.42	-39.90	18.17	1.50	1.50	0.00	
900.00	10.20	294.78	896.41	25.30	-54.81	24.96	1.50	1.50	0.00	
1,000.00	11.70	294.78	994.59	33.26	-72.06	32.81	1.50	1.50	0.00	
1,100.00	13.20	294.78	1,092.24	42.30	-91.63	41.72	1.50	1.50	0.00	
1,200.00	14.70	294.78	1,189.28	52.40	-113.52	51.69	1.50	1.50	0.00	
1,300.00	16.20	294.78	1,285.67	63.57	-137.70	62.70	1.50	1.50	0.00	
1,400.00	17.70	294.78	1,381.32	75.79	-164.17	74.75	1.50	1.50	0.00	
1,432.25	18.18	294.78	1,412.00	79.95	-173.19	78.86	1.50	1.50	0.00	
<b>Fox Hills</b>										
1,500.00	19.20	294.78	1,476.18	89.05	-192.90	87.84	1.50	1.50	0.00	
1,525.25	19.58	294.78	1,500.00	92.57	-200.52	91.30	1.50	1.50	0.00	
<b>9 5/8"</b>										
1,600.00	20.70	294.78	1,570.17	103.35	-223.88	101.94	1.50	1.50	0.00	
1,700.00	22.20	294.78	1,663.25	118.68	-257.08	117.06	1.50	1.50	0.00	
1,800.00	23.70	294.78	1,755.33	135.02	-292.48	133.18	1.50	1.50	0.00	
1,900.00	25.20	294.78	1,846.36	152.37	-330.06	150.29	1.50	1.50	0.00	
2,000.00	26.70	294.78	1,936.27	170.71	-369.79	168.38	1.50	1.50	0.00	
2,100.00	28.20	294.78	2,025.01	190.03	-411.64	187.44	1.50	1.50	0.00	
2,200.00	29.70	294.78	2,112.51	210.32	-455.59	207.45	1.50	1.50	0.00	
2,296.00	31.14	294.78	2,195.29	230.69	-499.72	227.55	1.50	1.50	0.00	
<b>Hold Tangent @ 2296.00ft</b>										
2,300.00	31.14	294.78	2,198.72	231.56	-501.60	228.40	0.00	0.00	0.00	
2,400.00	31.14	294.78	2,284.31	253.23	-548.55	249.78	0.00	0.00	0.00	
2,500.00	31.14	294.78	2,369.90	274.91	-595.50	271.16	0.00	0.00	0.00	
2,600.00	31.14	294.78	2,455.49	296.58	-642.45	292.54	0.00	0.00	0.00	
2,700.00	31.14	294.78	2,541.08	318.26	-689.40	313.92	0.00	0.00	0.00	
2,800.00	31.14	294.78	2,626.67	339.93	-736.35	335.30	0.00	0.00	0.00	
2,900.00	31.14	294.78	2,712.26	361.61	-783.31	356.68	0.00	0.00	0.00	
3,000.00	31.14	294.78	2,797.85	383.28	-830.26	378.06	0.00	0.00	0.00	
3,100.00	31.14	294.78	2,883.44	404.96	-877.21	399.44	0.00	0.00	0.00	
3,200.00	31.14	294.78	2,969.03	426.63	-924.16	420.82	0.00	0.00	0.00	
3,300.00	31.14	294.78	3,054.62	448.31	-971.11	442.20	0.00	0.00	0.00	
3,400.00	31.14	294.78	3,140.22	469.98	-1,018.06	463.57	0.00	0.00	0.00	
3,500.00	31.14	294.78	3,225.81	491.66	-1,065.02	484.95	0.00	0.00	0.00	
3,600.00	31.14	294.78	3,311.40	513.33	-1,111.97	506.33	0.00	0.00	0.00	
3,700.00	31.14	294.78	3,396.99	535.00	-1,158.92	527.71	0.00	0.00	0.00	
3,800.00	31.14	294.78	3,482.58	556.68	-1,205.87	549.09	0.00	0.00	0.00	
3,900.00	31.14	294.78	3,568.17	578.35	-1,252.82	570.47	0.00	0.00	0.00	
4,000.00	31.14	294.78	3,653.76	600.03	-1,299.77	591.85	0.00	0.00	0.00	
4,100.00	31.14	294.78	3,739.35	621.70	-1,346.73	613.23	0.00	0.00	0.00	
4,200.00	31.14	294.78	3,824.94	643.38	-1,393.68	634.61	0.00	0.00	0.00	
4,300.00	31.14	294.78	3,910.53	665.05	-1,440.63	655.99	0.00	0.00	0.00	
4,400.00	31.14	294.78	3,996.12	686.73	-1,487.58	677.37	0.00	0.00	0.00	
4,500.00	31.14	294.78	4,081.71	708.40	-1,534.53	698.75	0.00	0.00	0.00	

## Planning Report

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<b>Well:</b>	LIZZY B NORTH 36-12HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan A		
<b>Design:</b>	Permit Rev-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)
4,600.00	31.14	294.78	4,167.30	730.08	-1,581.48	720.13	0.00	0.00	0.00
4,700.00	31.14	294.78	4,252.89	751.75	-1,628.43	741.51	0.00	0.00	0.00
4,800.00	31.14	294.78	4,338.48	773.43	-1,675.39	762.89	0.00	0.00	0.00
4,892.90	31.14	294.78	4,418.00	793.56	-1,719.01	782.75	0.00	0.00	0.00
<b>Parkman</b>									
4,900.00	31.14	294.78	4,424.07	795.10	-1,722.34	784.26	0.00	0.00	0.00
5,000.00	31.14	294.78	4,509.67	816.78	-1,769.29	805.64	0.00	0.00	0.00
5,100.00	31.14	294.78	4,595.26	838.45	-1,816.24	827.02	0.00	0.00	0.00
5,200.00	31.14	294.78	4,680.85	860.13	-1,863.19	848.40	0.00	0.00	0.00
5,271.45	31.14	294.78	4,742.00	875.61	-1,896.74	863.68	0.00	0.00	0.00
<b>Sussex</b>									
5,300.00	31.14	294.78	4,766.44	881.80	-1,910.14	869.78	0.00	0.00	0.00
5,400.00	31.14	294.78	4,852.03	903.48	-1,957.10	891.16	0.00	0.00	0.00
5,500.00	31.14	294.78	4,937.62	925.15	-2,004.05	912.54	0.00	0.00	0.00
5,600.00	31.14	294.78	5,023.21	946.83	-2,051.00	933.92	0.00	0.00	0.00
5,700.00	31.14	294.78	5,108.80	968.50	-2,097.95	955.30	0.00	0.00	0.00
5,800.00	31.14	294.78	5,194.39	990.18	-2,144.90	976.68	0.00	0.00	0.00
5,900.00	31.14	294.78	5,279.98	1,011.85	-2,191.85	998.06	0.00	0.00	0.00
6,000.00	31.14	294.78	5,365.57	1,033.52	-2,238.80	1,019.44	0.00	0.00	0.00
6,100.00	31.14	294.78	5,451.16	1,055.20	-2,285.76	1,040.82	0.00	0.00	0.00
6,200.00	31.14	294.78	5,536.75	1,076.87	-2,332.71	1,062.20	0.00	0.00	0.00
6,300.00	31.14	294.78	5,622.34	1,098.55	-2,379.66	1,083.58	0.00	0.00	0.00
6,400.00	31.14	294.78	5,707.93	1,120.22	-2,426.61	1,104.96	0.00	0.00	0.00
6,500.00	31.14	294.78	5,793.52	1,141.90	-2,473.56	1,126.33	0.00	0.00	0.00
6,600.00	31.14	294.78	5,879.12	1,163.57	-2,520.51	1,147.71	0.00	0.00	0.00
6,700.00	31.14	294.78	5,964.71	1,185.25	-2,567.47	1,169.09	0.00	0.00	0.00
6,800.00	31.14	294.78	6,050.30	1,206.92	-2,614.42	1,190.47	0.00	0.00	0.00
6,900.00	31.14	294.78	6,135.89	1,228.60	-2,661.37	1,211.85	0.00	0.00	0.00
7,000.00	31.14	294.78	6,221.48	1,250.27	-2,708.32	1,233.23	0.00	0.00	0.00
7,100.00	31.14	294.78	6,307.07	1,271.95	-2,755.27	1,254.61	0.00	0.00	0.00
7,200.00	31.14	294.78	6,392.66	1,293.62	-2,802.22	1,275.99	0.00	0.00	0.00
7,300.00	31.14	294.78	6,478.25	1,315.30	-2,849.17	1,297.37	0.00	0.00	0.00
7,400.00	31.14	294.78	6,563.84	1,336.97	-2,896.13	1,318.75	0.00	0.00	0.00
7,500.00	31.14	294.78	6,649.43	1,358.65	-2,943.08	1,340.13	0.00	0.00	0.00
7,600.00	31.14	294.78	6,735.02	1,380.32	-2,990.03	1,361.51	0.00	0.00	0.00
7,700.00	31.14	294.78	6,820.61	1,402.00	-3,036.98	1,382.89	0.00	0.00	0.00
7,800.00	31.14	294.78	6,906.20	1,423.67	-3,083.93	1,404.27	0.00	0.00	0.00
7,900.00	31.14	294.78	6,991.79	1,445.35	-3,130.88	1,425.65	0.00	0.00	0.00
8,000.00	31.14	294.78	7,077.38	1,467.02	-3,177.84	1,447.02	0.00	0.00	0.00
8,100.00	31.14	294.78	7,162.98	1,488.70	-3,224.79	1,468.40	0.00	0.00	0.00
8,200.00	31.14	294.78	7,248.57	1,510.37	-3,271.74	1,489.78	0.00	0.00	0.00
8,300.00	31.14	294.78	7,334.16	1,532.04	-3,318.69	1,511.16	0.00	0.00	0.00
8,400.00	31.14	294.78	7,419.75	1,553.72	-3,365.64	1,532.54	0.00	0.00	0.00
8,409.64	31.14	294.78	7,428.00	1,555.81	-3,370.17	1,534.60	0.00	0.00	0.00
<b>Sharon Springs</b>									
8,415.85	31.14	294.78	7,433.31	1,557.15	-3,373.08	1,535.93	0.00	0.00	0.00
<b>KOP @ 8415.85ft :: DLS = 8°/100'</b>									
8,447.19	32.13	299.17	7,460.00	1,564.62	-3,387.72	1,543.30	8.00	3.16	14.02
<b>Niobrara</b>									
8,450.00	32.23	299.55	7,462.38	1,565.35	-3,389.02	1,544.02	8.00	3.42	13.58
8,500.00	34.12	306.00	7,504.24	1,580.17	-3,411.97	1,558.70	8.00	3.78	12.90
8,550.00	36.31	311.81	7,545.10	1,598.29	-3,434.36	1,576.68	8.00	4.39	11.61
8,600.00	38.75	317.01	7,584.76	1,619.62	-3,456.07	1,597.87	8.00	4.89	10.40

Planning Report

<b>Database:</b>	EDM 5000.16 Single User Db	<b>Local Co-ordinate Reference:</b>	Well LIZZY B NORTH 36-12HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 5127.00usft (RIG)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 5127.00usft (RIG)
<b>Site:</b>	1N-68W-36 LIZZY B 8-36HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	LIZZY B NORTH 36-12HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan A		
<b>Design:</b>	Permit Rev-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)	
8,650.00	41.41	321.66	7,623.02	1,644.04	-3,477.01	1,622.16	8.00	5.30	9.31	
8,690.69	43.69	325.09	7,653.00	1,666.13	-3,493.40	1,644.14	8.00	5.61	8.43	
<b>Nio B</b>										
8,700.00	44.23	325.84	7,659.70	1,671.45	-3,497.07	1,649.44	8.00	5.76	8.00	
8,750.00	47.18	329.60	7,694.62	1,701.71	-3,516.15	1,679.58	8.00	5.92	7.53	
8,800.00	50.25	333.02	7,727.61	1,734.67	-3,534.15	1,712.43	8.00	6.14	6.83	
8,837.52	52.62	335.38	7,751.00	1,761.08	-3,546.91	1,738.76	8.00	6.30	6.30	
<b>Nio C</b>										
8,850.00	53.41	336.14	7,758.51	1,770.17	-3,551.00	1,747.83	8.00	6.38	6.04	
8,900.00	56.65	339.01	7,787.17	1,808.04	-3,566.61	1,785.60	8.00	6.47	5.74	
8,950.00	59.95	341.67	7,813.44	1,848.10	-3,580.91	1,825.56	8.00	6.59	5.33	
9,000.00	63.29	344.16	7,837.21	1,890.14	-3,593.81	1,867.52	8.00	6.69	4.98	
9,050.00	66.68	346.51	7,858.34	1,933.97	-3,605.27	1,911.28	8.00	6.78	4.69	
9,092.01	69.56	348.39	7,874.00	1,972.01	-3,613.74	1,949.27	8.00	6.84	4.48	
<b>Fort Hayes</b>										
9,100.00	70.10	348.74	7,876.76	1,979.36	-3,615.22	1,956.61	8.00	6.87	4.37	
9,150.00	73.55	350.87	7,892.35	2,026.11	-3,623.62	2,003.30	8.00	6.90	4.27	
9,163.26	74.47	351.42	7,896.00	2,038.70	-3,625.58	2,015.88	8.00	6.92	4.17	
<b>Codell</b>										
9,200.00	77.02	352.93	7,905.05	2,073.98	-3,630.43	2,051.13	8.00	6.94	4.10	
9,250.00	80.51	354.93	7,914.79	2,122.74	-3,635.61	2,099.85	8.00	6.97	4.01	
9,300.00	84.00	356.90	7,921.53	2,172.15	-3,639.13	2,149.24	8.00	6.99	3.93	
9,350.00	87.50	358.83	7,925.23	2,221.96	-3,640.99	2,199.04	8.00	7.01	3.87	
9,389.61	90.28	0.36	7,926.00	2,261.56	-3,641.27	2,238.63	8.00	7.01	3.85	
<b>End Build @ 9389.61ft</b>										
9,400.00	90.28	0.36	7,925.95	2,271.95	-3,641.20	2,249.03	0.00	0.00	0.00	
9,500.00	90.28	0.36	7,925.46	2,371.95	-3,640.57	2,349.03	0.00	0.00	0.00	
9,600.00	90.28	0.36	7,924.97	2,471.94	-3,639.94	2,449.02	0.00	0.00	0.00	
9,700.00	90.28	0.36	7,924.48	2,571.94	-3,639.32	2,549.02	0.00	0.00	0.00	
9,800.00	90.28	0.36	7,923.99	2,671.94	-3,638.69	2,649.02	0.00	0.00	0.00	
9,900.00	90.28	0.36	7,923.51	2,771.93	-3,638.06	2,749.02	0.00	0.00	0.00	
10,000.00	90.28	0.36	7,923.02	2,871.93	-3,637.43	2,849.02	0.00	0.00	0.00	
10,100.00	90.28	0.36	7,922.53	2,971.93	-3,636.80	2,949.02	0.00	0.00	0.00	
10,200.00	90.28	0.36	7,922.04	3,071.92	-3,636.17	3,049.02	0.00	0.00	0.00	
10,300.00	90.28	0.36	7,921.55	3,171.92	-3,635.55	3,149.02	0.00	0.00	0.00	
10,400.00	90.28	0.36	7,921.06	3,271.92	-3,634.92	3,249.01	0.00	0.00	0.00	
10,500.00	90.28	0.36	7,920.57	3,371.91	-3,634.29	3,349.01	0.00	0.00	0.00	
10,600.00	90.28	0.36	7,920.08	3,471.91	-3,633.66	3,449.01	0.00	0.00	0.00	
10,700.00	90.28	0.36	7,919.60	3,571.91	-3,633.03	3,549.01	0.00	0.00	0.00	
10,800.00	90.28	0.36	7,919.11	3,671.91	-3,632.40	3,649.01	0.00	0.00	0.00	
10,900.00	90.28	0.36	7,918.62	3,771.90	-3,631.78	3,749.01	0.00	0.00	0.00	
11,000.00	90.28	0.36	7,918.13	3,871.90	-3,631.15	3,849.01	0.00	0.00	0.00	
11,100.00	90.28	0.36	7,917.64	3,971.90	-3,630.52	3,949.01	0.00	0.00	0.00	
11,200.00	90.28	0.36	7,917.15	4,071.89	-3,629.89	4,049.00	0.00	0.00	0.00	
11,300.00	90.28	0.36	7,916.66	4,171.89	-3,629.26	4,149.00	0.00	0.00	0.00	
11,400.00	90.28	0.36	7,916.18	4,271.89	-3,628.63	4,249.00	0.00	0.00	0.00	
11,500.00	90.28	0.36	7,915.69	4,371.88	-3,628.01	4,349.00	0.00	0.00	0.00	
11,600.00	90.28	0.36	7,915.20	4,471.88	-3,627.38	4,449.00	0.00	0.00	0.00	
11,700.00	90.28	0.36	7,914.71	4,571.88	-3,626.75	4,549.00	0.00	0.00	0.00	
11,800.00	90.28	0.36	7,914.22	4,671.87	-3,626.12	4,649.00	0.00	0.00	0.00	
11,900.00	90.28	0.36	7,913.73	4,771.87	-3,625.49	4,749.00	0.00	0.00	0.00	
12,000.00	90.28	0.36	7,913.24	4,871.87	-3,624.87	4,849.00	0.00	0.00	0.00	
12,100.00	90.28	0.36	7,912.75	4,971.86	-3,624.24	4,948.99	0.00	0.00	0.00	

## Planning Report

<b>Database:</b>	EDM 5000.16 Single User Db	<b>Local Co-ordinate Reference:</b>	Well LIZZY B NORTH 36-12HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 5127.00usft (RIG)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 5127.00usft (RIG)
<b>Site:</b>	1N-68W-36 LIZZY B 8-36HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	LIZZY B NORTH 36-12HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan A		
<b>Design:</b>	Permit Rev-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)	
12,200.00	90.28	0.36	7,912.27	5,071.86	-3,623.61	5,048.99	0.00	0.00	0.00	
12,300.00	90.28	0.36	7,911.78	5,171.86	-3,622.98	5,148.99	0.00	0.00	0.00	
12,400.00	90.28	0.36	7,911.29	5,271.85	-3,622.35	5,248.99	0.00	0.00	0.00	
12,500.00	90.28	0.36	7,910.80	5,371.85	-3,621.72	5,348.99	0.00	0.00	0.00	
12,600.00	90.28	0.36	7,910.31	5,471.85	-3,621.10	5,448.99	0.00	0.00	0.00	
12,700.00	90.28	0.36	7,909.82	5,571.84	-3,620.47	5,548.99	0.00	0.00	0.00	
12,800.00	90.28	0.36	7,909.33	5,671.84	-3,619.84	5,648.99	0.00	0.00	0.00	
12,900.00	90.28	0.36	7,908.84	5,771.84	-3,619.21	5,748.98	0.00	0.00	0.00	
13,000.00	90.28	0.36	7,908.36	5,871.84	-3,618.58	5,848.98	0.00	0.00	0.00	
13,100.00	90.28	0.36	7,907.87	5,971.83	-3,617.95	5,948.98	0.00	0.00	0.00	
13,200.00	90.28	0.36	7,907.38	6,071.83	-3,617.33	6,048.98	0.00	0.00	0.00	
13,300.00	90.28	0.36	7,906.89	6,171.83	-3,616.70	6,148.98	0.00	0.00	0.00	
13,400.00	90.28	0.36	7,906.40	6,271.82	-3,616.07	6,248.98	0.00	0.00	0.00	
13,500.00	90.28	0.36	7,905.91	6,371.82	-3,615.44	6,348.98	0.00	0.00	0.00	
13,600.00	90.28	0.36	7,905.42	6,471.82	-3,614.81	6,448.98	0.00	0.00	0.00	
13,700.00	90.28	0.36	7,904.94	6,571.81	-3,614.18	6,548.98	0.00	0.00	0.00	
13,800.00	90.28	0.36	7,904.45	6,671.81	-3,613.56	6,648.97	0.00	0.00	0.00	
13,900.00	90.28	0.36	7,903.96	6,771.81	-3,612.93	6,748.97	0.00	0.00	0.00	
14,000.00	90.28	0.36	7,903.47	6,871.80	-3,612.30	6,848.97	0.00	0.00	0.00	
14,100.00	90.28	0.36	7,902.98	6,971.80	-3,611.67	6,948.97	0.00	0.00	0.00	
14,200.00	90.28	0.36	7,902.49	7,071.80	-3,611.04	7,048.97	0.00	0.00	0.00	
14,300.00	90.28	0.36	7,902.00	7,171.79	-3,610.41	7,148.97	0.00	0.00	0.00	
14,389.61	90.28	0.36	7,901.57	7,261.40	-3,609.85	7,238.57	0.00	0.00	0.00	
<b>Begin Turn for AC @ 14389.61ft</b>										
14,400.00	90.28	0.52	7,901.51	7,271.79	-3,609.77	7,248.97	1.50	0.00	1.50	
14,465.61	90.28	1.50	7,901.19	7,337.39	-3,608.62	7,314.57	1.50	0.00	1.50	
<b>End Turn @ 14465.61ft</b>										
14,500.00	90.28	1.50	7,901.03	7,371.77	-3,607.72	7,348.95	0.00	0.00	0.00	
14,600.00	90.28	1.50	7,900.54	7,471.73	-3,605.10	7,448.93	0.00	0.00	0.00	
14,700.00	90.28	1.50	7,900.05	7,571.70	-3,602.48	7,548.91	0.00	0.00	0.00	
14,800.00	90.28	1.50	7,899.56	7,671.66	-3,599.86	7,648.89	0.00	0.00	0.00	
14,900.00	90.28	1.50	7,899.07	7,771.63	-3,597.25	7,748.87	0.00	0.00	0.00	
15,000.00	90.28	1.50	7,898.58	7,871.59	-3,594.63	7,848.85	0.00	0.00	0.00	
15,100.00	90.28	1.50	7,898.09	7,971.55	-3,592.01	7,948.83	0.00	0.00	0.00	
15,200.00	90.28	1.50	7,897.61	8,071.52	-3,589.39	8,048.81	0.00	0.00	0.00	
15,265.61	90.28	1.50	7,897.28	8,137.10	-3,587.68	8,114.40	0.00	0.00	0.00	
<b>Begin Turn to BHL @ 15265.61ft</b>										
15,300.00	90.28	0.98	7,897.12	8,171.49	-3,586.93	8,148.79	1.50	0.01	-1.50	
15,356.80	90.29	0.13	7,896.83	8,228.28	-3,586.38	8,205.58	1.50	0.01	-1.50	
<b>End Turn @ 15356.80ft</b>										
15,400.00	90.29	0.13	7,896.61	8,271.48	-3,586.28	8,248.79	0.00	0.00	0.00	
15,500.00	90.29	0.13	7,896.11	8,371.48	-3,586.05	8,348.78	0.00	0.00	0.00	
15,600.00	90.29	0.13	7,895.60	8,471.48	-3,585.82	8,448.78	0.00	0.00	0.00	
15,700.00	90.29	0.13	7,895.10	8,571.48	-3,585.59	8,548.78	0.00	0.00	0.00	
15,800.00	90.29	0.13	7,894.59	8,671.48	-3,585.36	8,648.78	0.00	0.00	0.00	
15,900.00	90.29	0.13	7,894.09	8,771.47	-3,585.12	8,748.78	0.00	0.00	0.00	
16,000.00	90.29	0.13	7,893.58	8,871.47	-3,584.89	8,848.77	0.00	0.00	0.00	
16,100.00	90.29	0.13	7,893.08	8,971.47	-3,584.66	8,948.77	0.00	0.00	0.00	
16,200.00	90.29	0.13	7,892.57	9,071.47	-3,584.43	9,048.77	0.00	0.00	0.00	
16,300.00	90.29	0.13	7,892.07	9,171.47	-3,584.20	9,148.77	0.00	0.00	0.00	
16,400.00	90.29	0.13	7,891.56	9,271.47	-3,583.97	9,248.77	0.00	0.00	0.00	
16,500.00	90.29	0.13	7,891.06	9,371.47	-3,583.74	9,348.76	0.00	0.00	0.00	
16,600.00	90.29	0.13	7,890.55	9,471.46	-3,583.51	9,448.76	0.00	0.00	0.00	

## Planning Report

<b>Database:</b>	EDM 5000.16 Single User Db	<b>Local Co-ordinate Reference:</b>	Well LIZZY B NORTH 36-12HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 5127.00usft (RIG)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 5127.00usft (RIG)
<b>Site:</b>	1N-68W-36 LIZZY B 8-36HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	LIZZY B NORTH 36-12HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan A		
<b>Design:</b>	Permit Rev-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)	
16,700.00	90.29	0.13	7,890.05	9,571.46	-3,583.28	9,548.76	0.00	0.00	0.00	
16,800.00	90.29	0.13	7,889.54	9,671.46	-3,583.05	9,648.76	0.00	0.00	0.00	
16,900.00	90.29	0.13	7,889.04	9,771.46	-3,582.82	9,748.76	0.00	0.00	0.00	
17,000.00	90.29	0.13	7,888.53	9,871.46	-3,582.59	9,848.75	0.00	0.00	0.00	
17,100.00	90.29	0.13	7,888.03	9,971.46	-3,582.36	9,948.75	0.00	0.00	0.00	
17,200.00	90.29	0.13	7,887.52	10,071.45	-3,582.13	10,048.75	0.00	0.00	0.00	
17,300.00	90.29	0.13	7,887.02	10,171.45	-3,581.89	10,148.75	0.00	0.00	0.00	
17,400.00	90.29	0.13	7,886.51	10,271.45	-3,581.66	10,248.74	0.00	0.00	0.00	
17,500.00	90.29	0.13	7,886.01	10,371.45	-3,581.43	10,348.74	0.00	0.00	0.00	
17,600.00	90.29	0.13	7,885.50	10,471.45	-3,581.20	10,448.74	0.00	0.00	0.00	
17,700.00	90.29	0.13	7,885.00	10,571.45	-3,580.97	10,548.74	0.00	0.00	0.00	
17,800.00	90.29	0.13	7,884.49	10,671.45	-3,580.74	10,648.74	0.00	0.00	0.00	
17,900.00	90.29	0.13	7,883.99	10,771.44	-3,580.51	10,748.73	0.00	0.00	0.00	
18,000.00	90.29	0.13	7,883.48	10,871.44	-3,580.28	10,848.73	0.00	0.00	0.00	
18,100.00	90.29	0.13	7,882.98	10,971.44	-3,580.05	10,948.73	0.00	0.00	0.00	
18,200.00	90.29	0.13	7,882.47	11,071.44	-3,579.82	11,048.73	0.00	0.00	0.00	
18,300.00	90.29	0.13	7,881.97	11,171.44	-3,579.59	11,148.73	0.00	0.00	0.00	
18,400.00	90.29	0.13	7,881.46	11,271.44	-3,579.36	11,248.72	0.00	0.00	0.00	
18,500.00	90.29	0.13	7,880.96	11,371.43	-3,579.13	11,348.72	0.00	0.00	0.00	
18,600.00	90.29	0.13	7,880.45	11,471.43	-3,578.90	11,448.72	0.00	0.00	0.00	
18,700.00	90.29	0.13	7,879.95	11,571.43	-3,578.66	11,548.72	0.00	0.00	0.00	
18,800.00	90.29	0.13	7,879.44	11,671.43	-3,578.43	11,648.72	0.00	0.00	0.00	
18,900.00	90.29	0.13	7,878.94	11,771.43	-3,578.20	11,748.71	0.00	0.00	0.00	
19,000.00	90.29	0.13	7,878.43	11,871.43	-3,577.97	11,848.71	0.00	0.00	0.00	
19,100.00	90.29	0.13	7,877.93	11,971.43	-3,577.74	11,948.71	0.00	0.00	0.00	
19,200.00	90.29	0.13	7,877.43	12,071.42	-3,577.51	12,048.71	0.00	0.00	0.00	
19,300.00	90.29	0.13	7,876.92	12,171.42	-3,577.28	12,148.71	0.00	0.00	0.00	
19,400.00	90.29	0.13	7,876.42	12,271.42	-3,577.05	12,248.70	0.00	0.00	0.00	
19,500.00	90.29	0.13	7,875.91	12,371.42	-3,576.82	12,348.70	0.00	0.00	0.00	
19,600.00	90.29	0.13	7,875.41	12,471.42	-3,576.59	12,448.70	0.00	0.00	0.00	
19,700.00	90.29	0.13	7,874.90	12,571.42	-3,576.36	12,548.70	0.00	0.00	0.00	
19,800.00	90.29	0.13	7,874.40	12,671.41	-3,576.13	12,648.70	0.00	0.00	0.00	
19,878.27	90.29	0.13	7,874.00	12,749.68	-3,575.95	12,726.96	0.00	0.00	0.00	
TD Well @ 19878.27ft										

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,525.25	1,500.00	9 5/8"	9-5/8	13-1/2	
19,878.27	7,874.00	5.5" CSG	5-1/2	7-7/8	

## Planning Report

<b>Database:</b>	EDM 5000.16 Single User Db	<b>Local Co-ordinate Reference:</b>	Well LIZZY B NORTH 36-12HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 5127.00usft (RIG)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 5127.00usft (RIG)
<b>Site:</b>	1N-68W-36 LIZZY B 8-36HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	LIZZY B NORTH 36-12HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan A		
<b>Design:</b>	Permit Rev-1		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,432.25	1,412.00	Fox Hills				
4,892.90	4,418.00	Parkman				
5,271.45	4,742.00	Sussex				
8,409.64	7,428.00	Sharon Springs				
8,447.19	7,460.00	Niobrara				
8,690.69	7,653.00	Nio B				
8,837.52	7,751.00	Nio C				
9,092.01	7,874.00	Fort Hayes				
9,163.26	7,896.00	Codell				

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			Comment
		+N/-S (usft)	+E/-W (usft)		
220.00	220.00	0.00	0.00		Begin Nudge @ 220.00ft
2,296.00	2,195.29	230.69	-499.72		Hold Tangent @ 2296.00ft
8,415.85	7,433.31	1,557.15	-3,373.08		KOP @ 8415.85ft :: DLS = 8°/100'
9,389.61	7,926.00	2,261.56	-3,641.27		End Build @ 9389.61ft
14,389.61	7,901.57	7,261.40	-3,609.85		Begin Turn for AC @ 14389.61ft
14,465.61	7,901.19	7,337.39	-3,608.62		End Turn @ 14465.61ft
15,265.61	7,897.28	8,137.10	-3,587.68		Begin Turn to BHL @ 15265.61ft
15,356.80	7,896.83	8,228.28	-3,586.38		End Turn @ 15356.80ft
19,878.27	7,874.00	12,749.68	-3,575.95		TD Well @ 19878.27ft