

# **US ROCKIES WATTENBERG PLANNING**

**WELD-NAD83-UTMFT13N  
2N-68W-15 Keown Pad  
KEOWN STATE 19N-34HZ**

**Plan A**

**Plan: Permit Rev-2**

## **Standard Planning Report**

**29 September, 2016**



Azimuths to True North  
Magnetic North: 8.41°

Magnetic Field  
Strength: 52533.0snT  
Dip Angle: 66.66°  
Date: 8/12/2015  
Model: IGRF2010

SITE: 2N-68W-15 Keown Pad

Well: KEOWN STATE 19N-34HZ  
Wellbore: Plan A  
Design: Permit Rev-2

#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
745.00	745.50	Fox Hills Mkr
3760.00	3764.70	Parkman
4497.00	4502.72	Sussex
7056.00	7108.70	Sharon Springs
7148.00	7253.51	Niobrara
7214.00	7402.74	Nio B

#### WELL DETAILS: KEOWN STATE 19N-34HZ

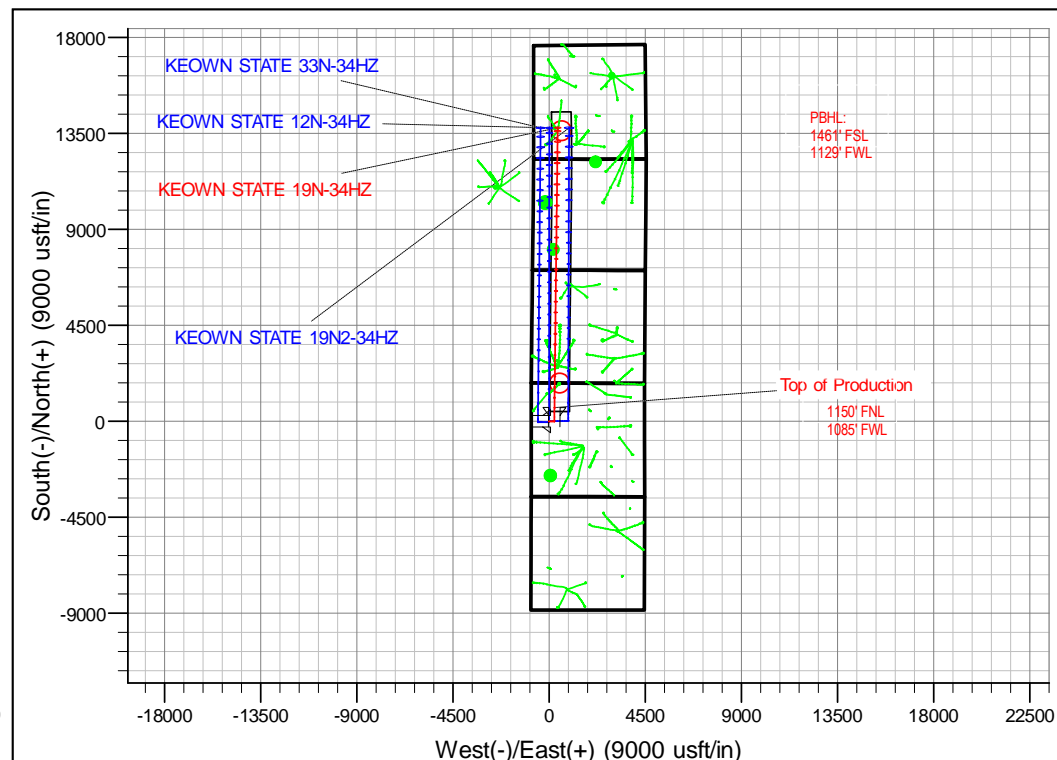
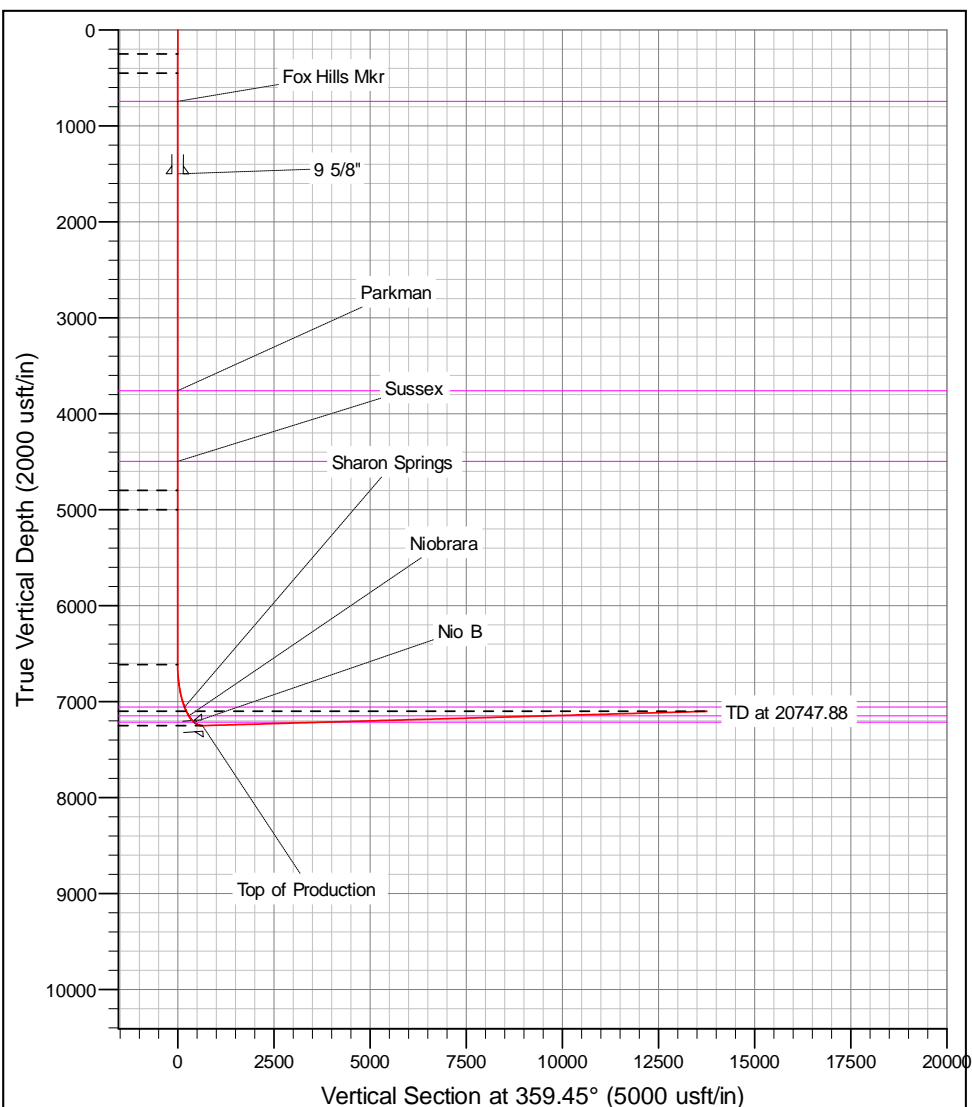
+N/-S	+E/-W	GL: 4872.00	RKB = 17' @ 4889.00usft (D Rig)		
0.00	0.00	Northing	Easting	Latitude	Longitude
		14578146.75	1641607.22	40.141189	-104.995740
					Slot

#### SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	Vsect
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
250.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00
451.36	3.02	90.00	451.26	0.00	5.31	1.50	-0.05
4804.88	3.02	90.00	4798.74	0.00	234.69	0.00	-2.25
5006.23	0.00	0.00	5000.00	0.00	240.00	1.50	-2.30
6620.50	0.00	0.00	6614.26	0.00	240.00	0.00	-2.30
7627.72	90.65	0.67	7250.84	643.80	247.48	9.00	641.39
20747.88	90.65	0.67	7102.00	13762.23	400.00	0.00	3757.76

#### DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
KEOWN STATE 19N-34HZ, PBHL	7102.00	13762.23	400.00	14591909.00	1642006.56	40.178982	-104.994308



# Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well KEOWN STATE 19N-34HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 4889.00usft (D Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 4889.00usft (D Rig)
<b>Site:</b>	2N-68W-15 Keown Pad	<b>North Reference:</b>	True
<b>Well:</b>	KEOWN STATE 19N-34HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan A		
<b>Design:</b>	Permit Rev-2		

<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)		

Site		2N-68W-15 Keown Pad			
Site Position:		Northing:	14,578,109.97 usft	Latitude:	40.141088
From:	Lat/Long	Easting:	1,641,581.51 usft	Longitude:	-104.995832
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.00 °

Well	KEOWN STATE 19N-34HZ					
Well Position	+N/-S	36.78 usft	Northing:	14,578,146.75 usft	Latitude:	40.141189
	+E/-W	25.71 usft	Easting:	1,641,607.22 usft	Longitude:	-104.995740
Position Uncertainty		3.28 usft	Wellhead Elevation:	0.00 usft	Ground Level:	4,872.00 usft

<b>Wellbore</b>	Plan A				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	8/12/2015	8.41	66.66	52,533

<b>Design</b>	Permit Rev-2			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	359.45

<b>Plan Sections</b>										
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	
250.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	0.00	
451.36	3.02	90.00	451.26	0.00	5.31	1.50	1.50	0.00	90.00	
4,804.88	3.02	90.00	4,798.74	0.00	234.69	0.00	0.00	0.00	0.00	
5,006.23	0.00	0.00	5,000.00	0.00	240.00	1.50	-1.50	0.00	180.00	
6,620.50	0.00	0.00	6,614.26	0.00	240.00	0.00	0.00	0.00	0.00	
7,627.72	90.65	0.67	7,250.84	643.80	247.48	9.00	9.00	0.00	0.67	
20,747.88	90.65	0.67	7,102.00	13,762.23	400.00	0.00	0.00	0.00	0.00	KEOWN STATE 19

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<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 4889.00usft (D Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 4889.00usft (D Rig)
<b>Site:</b>	2N-68W-15 Keown Pad	<b>North Reference:</b>	True
<b>Well:</b>	KEOWN STATE 19N-34HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan A		
<b>Design:</b>	Permit Rev-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
<b>Keown State 14N-3HZ_Landing Zone2</b>									
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
250.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.75	90.00	300.00	0.00	0.33	0.00	1.50	1.50	0.00
400.00	2.25	90.00	399.96	0.00	2.94	-0.03	1.50	1.50	0.00
451.36	3.02	90.00	451.26	0.00	5.31	-0.05	1.50	1.50	0.00
500.00	3.02	90.00	499.84	0.00	7.87	-0.08	0.00	0.00	0.00
600.00	3.02	90.00	599.70	0.00	13.14	-0.13	0.00	0.00	0.00
700.00	3.02	90.00	699.56	0.00	18.41	-0.18	0.00	0.00	0.00
745.50	3.02	90.00	745.00	0.00	20.80	-0.20	0.00	0.00	0.00
<b>Fox Hills Mkr</b>									
800.00	3.02	90.00	799.42	0.00	23.68	-0.23	0.00	0.00	0.00
900.00	3.02	90.00	899.28	0.00	28.95	-0.28	0.00	0.00	0.00
1,000.00	3.02	90.00	999.14	0.00	34.21	-0.33	0.00	0.00	0.00
1,100.00	3.02	90.00	1,099.01	0.00	39.48	-0.38	0.00	0.00	0.00
1,200.00	3.02	90.00	1,198.87	0.00	44.75	-0.43	0.00	0.00	0.00
1,300.00	3.02	90.00	1,298.73	0.00	50.02	-0.48	0.00	0.00	0.00
1,400.00	3.02	90.00	1,398.59	0.00	55.29	-0.53	0.00	0.00	0.00
1,500.00	3.02	90.00	1,498.45	0.00	60.56	-0.58	0.00	0.00	0.00
1,501.55	3.02	90.00	1,500.00	0.00	60.64	-0.58	0.00	0.00	0.00
<b>9 5/8"</b>									
1,600.00	3.02	90.00	1,598.31	0.00	65.83	-0.63	0.00	0.00	0.00
1,700.00	3.02	90.00	1,698.17	0.00	71.10	-0.68	0.00	0.00	0.00
1,800.00	3.02	90.00	1,798.03	0.00	76.37	-0.73	0.00	0.00	0.00
1,900.00	3.02	90.00	1,897.89	0.00	81.64	-0.78	0.00	0.00	0.00
2,000.00	3.02	90.00	1,997.76	0.00	86.90	-0.83	0.00	0.00	0.00
2,100.00	3.02	90.00	2,097.62	0.00	92.17	-0.88	0.00	0.00	0.00
2,200.00	3.02	90.00	2,197.48	0.00	97.44	-0.94	0.00	0.00	0.00
2,300.00	3.02	90.00	2,297.34	0.00	102.71	-0.99	0.00	0.00	0.00
2,400.00	3.02	90.00	2,397.20	0.00	107.98	-1.04	0.00	0.00	0.00
2,500.00	3.02	90.00	2,497.06	0.00	113.25	-1.09	0.00	0.00	0.00
2,600.00	3.02	90.00	2,596.92	0.00	118.52	-1.14	0.00	0.00	0.00
2,700.00	3.02	90.00	2,696.78	0.00	123.79	-1.19	0.00	0.00	0.00
2,800.00	3.02	90.00	2,796.64	0.00	129.06	-1.24	0.00	0.00	0.00
2,900.00	3.02	90.00	2,896.51	0.00	134.33	-1.29	0.00	0.00	0.00
3,000.00	3.02	90.00	2,996.37	0.00	139.59	-1.34	0.00	0.00	0.00
3,100.00	3.02	90.00	3,096.23	0.00	144.86	-1.39	0.00	0.00	0.00
3,200.00	3.02	90.00	3,196.09	0.00	150.13	-1.44	0.00	0.00	0.00
3,300.00	3.02	90.00	3,295.95	0.00	155.40	-1.49	0.00	0.00	0.00
3,400.00	3.02	90.00	3,395.81	0.00	160.67	-1.54	0.00	0.00	0.00
3,500.00	3.02	90.00	3,495.67	0.00	165.94	-1.59	0.00	0.00	0.00
3,600.00	3.02	90.00	3,595.53	0.00	171.21	-1.64	0.00	0.00	0.00
3,700.00	3.02	90.00	3,695.39	0.00	176.48	-1.69	0.00	0.00	0.00
3,764.70	3.02	90.00	3,760.00	0.00	179.89	-1.73	0.00	0.00	0.00
<b>Parkman</b>									
3,800.00	3.02	90.00	3,795.26	0.00	181.75	-1.74	0.00	0.00	0.00
3,900.00	3.02	90.00	3,895.12	0.00	187.02	-1.80	0.00	0.00	0.00
4,000.00	3.02	90.00	3,994.98	0.00	192.28	-1.85	0.00	0.00	0.00
4,100.00	3.02	90.00	4,094.84	0.00	197.55	-1.90	0.00	0.00	0.00
4,200.00	3.02	90.00	4,194.70	0.00	202.82	-1.95	0.00	0.00	0.00
4,300.00	3.02	90.00	4,294.56	0.00	208.09	-2.00	0.00	0.00	0.00
4,400.00	3.02	90.00	4,394.42	0.00	213.36	-2.05	0.00	0.00	0.00

# Corporate Planning Report

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<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 4889.00usft (D Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 4889.00usft (D Rig)
<b>Site:</b>	2N-68W-15 Keown Pad	<b>North Reference:</b>	True
<b>Well:</b>	KEOWN STATE 19N-34HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan A		
<b>Design:</b>	Permit Rev-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)
4,500.00	3.02	90.00	4,494.28	0.00	218.63	-2.10	0.00	0.00	0.00
4,502.72	3.02	90.00	4,497.00	0.00	218.77	-2.10	0.00	0.00	0.00
<b>Sussex</b>									
4,600.00	3.02	90.00	4,594.14	0.00	223.90	-2.15	0.00	0.00	0.00
4,700.00	3.02	90.00	4,694.01	0.00	229.17	-2.20	0.00	0.00	0.00
4,800.00	3.02	90.00	4,793.87	0.00	234.44	-2.25	0.00	0.00	0.00
4,804.88	3.02	90.00	4,798.74	0.00	234.69	-2.25	0.00	0.00	0.00
4,900.00	1.59	90.00	4,893.78	0.00	238.52	-2.29	1.50	-1.50	0.00
5,000.00	0.09	90.00	4,993.77	0.00	239.99	-2.30	1.50	-1.50	0.00
5,006.23	0.00	0.00	5,000.00	0.00	240.00	-2.30	1.50	-1.50	0.00
5,100.00	0.00	0.00	5,093.77	0.00	240.00	-2.30	0.00	0.00	0.00
5,200.00	0.00	0.00	5,193.77	0.00	240.00	-2.30	0.00	0.00	0.00
5,300.00	0.00	0.00	5,293.77	0.00	240.00	-2.30	0.00	0.00	0.00
5,400.00	0.00	0.00	5,393.77	0.00	240.00	-2.30	0.00	0.00	0.00
5,500.00	0.00	0.00	5,493.77	0.00	240.00	-2.30	0.00	0.00	0.00
5,600.00	0.00	0.00	5,593.77	0.00	240.00	-2.30	0.00	0.00	0.00
5,700.00	0.00	0.00	5,693.77	0.00	240.00	-2.30	0.00	0.00	0.00
5,800.00	0.00	0.00	5,793.77	0.00	240.00	-2.30	0.00	0.00	0.00
5,900.00	0.00	0.00	5,893.77	0.00	240.00	-2.30	0.00	0.00	0.00
6,000.00	0.00	0.00	5,993.77	0.00	240.00	-2.30	0.00	0.00	0.00
6,100.00	0.00	0.00	6,093.77	0.00	240.00	-2.30	0.00	0.00	0.00
6,200.00	0.00	0.00	6,193.77	0.00	240.00	-2.30	0.00	0.00	0.00
6,300.00	0.00	0.00	6,293.77	0.00	240.00	-2.30	0.00	0.00	0.00
6,400.00	0.00	0.00	6,393.77	0.00	240.00	-2.30	0.00	0.00	0.00
6,500.00	0.00	0.00	6,493.77	0.00	240.00	-2.30	0.00	0.00	0.00
6,600.00	0.00	0.00	6,593.77	0.00	240.00	-2.30	0.00	0.00	0.00
6,620.50	0.00	0.00	6,614.26	0.00	240.00	-2.30	0.00	0.00	0.00
6,700.00	7.16	0.67	6,693.56	4.96	240.06	2.65	9.00	9.00	0.00
6,800.00	16.16	0.67	6,791.40	25.14	240.29	22.83	9.00	9.00	0.00
6,900.00	25.16	0.67	6,884.87	60.37	240.70	58.06	9.00	9.00	0.00
7,000.00	34.16	0.67	6,971.69	109.80	241.28	107.48	9.00	9.00	0.00
7,100.00	43.16	0.67	7,049.70	172.19	242.00	169.86	9.00	9.00	0.00
7,108.70	43.94	0.67	7,056.00	178.18	242.07	175.85	9.00	9.00	0.00
<b>Sharon Springs</b>									
7,200.00	52.16	0.67	7,116.99	246.02	242.86	243.68	9.00	9.00	0.00
7,253.51	56.97	0.67	7,148.00	289.60	243.37	287.25	9.00	9.00	0.00
<b>Niobrara</b>									
7,300.00	61.16	0.67	7,171.90	329.47	243.83	327.11	9.00	9.00	0.00
7,400.00	70.16	0.67	7,213.08	420.48	244.89	418.11	9.00	9.00	0.00
7,402.74	70.40	0.67	7,214.00	423.05	244.92	420.68	9.00	9.00	0.00
<b>Nio B</b>									
7,500.00	79.16	0.67	7,239.51	516.81	246.01	514.42	9.00	9.00	0.00
7,600.00	88.16	0.67	7,250.55	616.09	247.16	613.69	9.00	9.00	0.00
7,627.72	90.65	0.67	7,250.84	643.80	247.48	641.40	9.00	9.00	0.00
<b>Top of Production - KEOWN STATE 19N-34HZ_PHL</b>									
7,700.00	90.65	0.67	7,250.02	716.07	248.33	713.65	0.00	0.00	0.00
7,800.00	90.65	0.67	7,248.89	816.06	249.49	813.63	0.00	0.00	0.00
7,900.00	90.65	0.67	7,247.75	916.04	250.65	913.60	0.00	0.00	0.00
8,000.00	90.65	0.67	7,246.62	1,016.03	251.81	1,013.57	0.00	0.00	0.00
8,100.00	90.65	0.67	7,245.48	1,116.02	252.97	1,113.54	0.00	0.00	0.00
8,200.00	90.65	0.67	7,244.35	1,216.01	254.14	1,213.51	0.00	0.00	0.00
8,300.00	90.65	0.67	7,243.21	1,315.99	255.30	1,313.48	0.00	0.00	0.00
8,400.00	90.65	0.67	7,242.08	1,415.98	256.46	1,413.45	0.00	0.00	0.00

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<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 4889.00usft (D Rig)
<b>Site:</b>	2N-68W-15 Keown Pad	<b>North Reference:</b>	True
<b>Well:</b>	KEOWN STATE 19N-34HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan A		
<b>Design:</b>	Permit Rev-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)
8,500.00	90.65	0.67	7,240.94	1,515.97	257.62	1,513.42	0.00	0.00	0.00
8,600.00	90.65	0.67	7,239.81	1,615.95	258.79	1,613.39	0.00	0.00	0.00
8,700.00	90.65	0.67	7,238.68	1,715.94	259.95	1,713.36	0.00	0.00	0.00
8,800.00	90.65	0.67	7,237.54	1,815.93	261.11	1,813.34	0.00	0.00	0.00
8,900.00	90.65	0.67	7,236.41	1,915.91	262.27	1,913.31	0.00	0.00	0.00
9,000.00	90.65	0.67	7,235.27	2,015.90	263.44	2,013.28	0.00	0.00	0.00
9,100.00	90.65	0.67	7,234.14	2,115.89	264.60	2,113.25	0.00	0.00	0.00
9,200.00	90.65	0.67	7,233.00	2,215.87	265.76	2,213.22	0.00	0.00	0.00
9,300.00	90.65	0.67	7,231.87	2,315.86	266.92	2,313.19	0.00	0.00	0.00
9,400.00	90.65	0.67	7,230.74	2,415.85	268.09	2,413.16	0.00	0.00	0.00
9,500.00	90.65	0.67	7,229.60	2,515.83	269.25	2,513.13	0.00	0.00	0.00
9,600.00	90.65	0.67	7,228.47	2,615.82	270.41	2,613.10	0.00	0.00	0.00
9,700.00	90.65	0.67	7,227.33	2,715.81	271.57	2,713.08	0.00	0.00	0.00
9,800.00	90.65	0.67	7,226.20	2,815.79	272.74	2,813.05	0.00	0.00	0.00
9,900.00	90.65	0.67	7,225.06	2,915.78	273.90	2,913.02	0.00	0.00	0.00
10,000.00	90.65	0.67	7,223.93	3,015.77	275.06	3,012.99	0.00	0.00	0.00
10,100.00	90.65	0.67	7,222.79	3,115.75	276.22	3,112.96	0.00	0.00	0.00
10,200.00	90.65	0.67	7,221.66	3,215.74	277.39	3,212.93	0.00	0.00	0.00
10,300.00	90.65	0.67	7,220.53	3,315.73	278.55	3,312.90	0.00	0.00	0.00
10,400.00	90.65	0.67	7,219.39	3,415.71	279.71	3,412.87	0.00	0.00	0.00
10,500.00	90.65	0.67	7,218.26	3,515.70	280.87	3,512.84	0.00	0.00	0.00
10,600.00	90.65	0.67	7,217.12	3,615.69	282.04	3,612.81	0.00	0.00	0.00
10,700.00	90.65	0.67	7,215.99	3,715.68	283.20	3,712.79	0.00	0.00	0.00
10,800.00	90.65	0.67	7,214.85	3,815.66	284.36	3,812.76	0.00	0.00	0.00
10,900.00	90.65	0.67	7,213.72	3,915.65	285.52	3,912.73	0.00	0.00	0.00
11,000.00	90.65	0.67	7,212.58	4,015.64	286.69	4,012.70	0.00	0.00	0.00
11,100.00	90.65	0.67	7,211.45	4,115.62	287.85	4,112.67	0.00	0.00	0.00
11,200.00	90.65	0.67	7,210.32	4,215.61	289.01	4,212.64	0.00	0.00	0.00
11,300.00	90.65	0.67	7,209.18	4,315.60	290.17	4,312.61	0.00	0.00	0.00
11,400.00	90.65	0.67	7,208.05	4,415.58	291.34	4,412.58	0.00	0.00	0.00
11,500.00	90.65	0.67	7,206.91	4,515.57	292.50	4,512.55	0.00	0.00	0.00
11,600.00	90.65	0.67	7,205.78	4,615.56	293.66	4,612.53	0.00	0.00	0.00
11,700.00	90.65	0.67	7,204.64	4,715.54	294.82	4,712.50	0.00	0.00	0.00
11,800.00	90.65	0.67	7,203.51	4,815.53	295.99	4,812.47	0.00	0.00	0.00
11,900.00	90.65	0.67	7,202.37	4,915.52	297.15	4,912.44	0.00	0.00	0.00
12,000.00	90.65	0.67	7,201.24	5,015.50	298.31	5,012.41	0.00	0.00	0.00
12,100.00	90.65	0.67	7,200.11	5,115.49	299.47	5,112.38	0.00	0.00	0.00
12,200.00	90.65	0.67	7,198.97	5,215.48	300.64	5,212.35	0.00	0.00	0.00
12,300.00	90.65	0.67	7,197.84	5,315.46	301.80	5,312.32	0.00	0.00	0.00
12,400.00	90.65	0.67	7,196.70	5,415.45	302.96	5,412.29	0.00	0.00	0.00
12,500.00	90.65	0.67	7,195.57	5,515.44	304.12	5,512.26	0.00	0.00	0.00
12,600.00	90.65	0.67	7,194.43	5,615.42	305.29	5,612.24	0.00	0.00	0.00
12,700.00	90.65	0.67	7,193.30	5,715.41	306.45	5,712.21	0.00	0.00	0.00
12,800.00	90.65	0.67	7,192.16	5,815.40	307.61	5,812.18	0.00	0.00	0.00
12,900.00	90.65	0.67	7,191.03	5,915.39	308.77	5,912.15	0.00	0.00	0.00
13,000.00	90.65	0.67	7,189.90	6,015.37	309.93	6,012.12	0.00	0.00	0.00
13,100.00	90.65	0.67	7,188.76	6,115.36	311.10	6,112.09	0.00	0.00	0.00
13,200.00	90.65	0.67	7,187.63	6,215.35	312.26	6,212.06	0.00	0.00	0.00
13,300.00	90.65	0.67	7,186.49	6,315.33	313.42	6,312.03	0.00	0.00	0.00
13,400.00	90.65	0.67	7,185.36	6,415.32	314.58	6,412.00	0.00	0.00	0.00
13,500.00	90.65	0.67	7,184.22	6,515.31	315.75	6,511.98	0.00	0.00	0.00
13,600.00	90.65	0.67	7,183.09	6,615.29	316.91	6,611.95	0.00	0.00	0.00
13,700.00	90.65	0.67	7,181.95	6,715.28	318.07	6,711.92	0.00	0.00	0.00
13,800.00	90.65	0.67	7,180.82	6,815.27	319.23	6,811.89	0.00	0.00	0.00

# Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well KEOWN STATE 19N-34HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 4889.00usft (D Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 4889.00usft (D Rig)
<b>Site:</b>	2N-68W-15 Keown Pad	<b>North Reference:</b>	True
<b>Well:</b>	KEOWN STATE 19N-34HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan A		
<b>Design:</b>	Permit Rev-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)
13,900.00	90.65	0.67	7,179.69	6,915.25	320.40	6,911.86	0.00	0.00	0.00
14,000.00	90.65	0.67	7,178.55	7,015.24	321.56	7,011.83	0.00	0.00	0.00
14,100.00	90.65	0.67	7,177.42	7,115.23	322.72	7,111.80	0.00	0.00	0.00
14,200.00	90.65	0.67	7,176.28	7,215.21	323.88	7,211.77	0.00	0.00	0.00
14,300.00	90.65	0.67	7,175.15	7,315.20	325.05	7,311.74	0.00	0.00	0.00
14,400.00	90.65	0.67	7,174.01	7,415.19	326.21	7,411.71	0.00	0.00	0.00
14,500.00	90.65	0.67	7,172.88	7,515.17	327.37	7,511.69	0.00	0.00	0.00
14,600.00	90.65	0.67	7,171.74	7,615.16	328.53	7,611.66	0.00	0.00	0.00
14,700.00	90.65	0.67	7,170.61	7,715.15	329.70	7,711.63	0.00	0.00	0.00
14,800.00	90.65	0.67	7,169.48	7,815.13	330.86	7,811.60	0.00	0.00	0.00
14,900.00	90.65	0.67	7,168.34	7,915.12	332.02	7,911.57	0.00	0.00	0.00
15,000.00	90.65	0.67	7,167.21	8,015.11	333.18	8,011.54	0.00	0.00	0.00
15,100.00	90.65	0.67	7,166.07	8,115.10	334.35	8,111.51	0.00	0.00	0.00
15,200.00	90.65	0.67	7,164.94	8,215.08	335.51	8,211.48	0.00	0.00	0.00
15,300.00	90.65	0.67	7,163.80	8,315.07	336.67	8,311.45	0.00	0.00	0.00
15,400.00	90.65	0.67	7,162.67	8,415.06	337.83	8,411.42	0.00	0.00	0.00
15,500.00	90.65	0.67	7,161.53	8,515.04	339.00	8,511.40	0.00	0.00	0.00
15,600.00	90.65	0.67	7,160.40	8,615.03	340.16	8,611.37	0.00	0.00	0.00
15,700.00	90.65	0.67	7,159.27	8,715.02	341.32	8,711.34	0.00	0.00	0.00
15,800.00	90.65	0.67	7,158.13	8,815.00	342.48	8,811.31	0.00	0.00	0.00
15,900.00	90.65	0.67	7,157.00	8,914.99	343.65	8,911.28	0.00	0.00	0.00
16,000.00	90.65	0.67	7,155.86	9,014.98	344.81	9,011.25	0.00	0.00	0.00
16,100.00	90.65	0.67	7,154.73	9,114.96	345.97	9,111.22	0.00	0.00	0.00
16,200.00	90.65	0.67	7,153.59	9,214.95	347.13	9,211.19	0.00	0.00	0.00
16,300.00	90.65	0.67	7,152.46	9,314.94	348.30	9,311.16	0.00	0.00	0.00
16,400.00	90.65	0.67	7,151.32	9,414.92	349.46	9,411.14	0.00	0.00	0.00
16,500.00	90.65	0.67	7,150.19	9,514.91	350.62	9,511.11	0.00	0.00	0.00
16,600.00	90.65	0.67	7,149.06	9,614.90	351.78	9,611.08	0.00	0.00	0.00
16,700.00	90.65	0.67	7,147.92	9,714.88	352.95	9,711.05	0.00	0.00	0.00
16,800.00	90.65	0.67	7,146.79	9,814.87	354.11	9,811.02	0.00	0.00	0.00
16,900.00	90.65	0.67	7,145.65	9,914.86	355.27	9,910.99	0.00	0.00	0.00
17,000.00	90.65	0.67	7,144.52	10,014.84	356.43	10,010.96	0.00	0.00	0.00
17,100.00	90.65	0.67	7,143.38	10,114.83	357.60	10,110.93	0.00	0.00	0.00
17,200.00	90.65	0.67	7,142.25	10,214.82	358.76	10,210.90	0.00	0.00	0.00
17,300.00	90.65	0.67	7,141.11	10,314.80	359.92	10,310.87	0.00	0.00	0.00
17,400.00	90.65	0.67	7,139.98	10,414.79	361.08	10,410.85	0.00	0.00	0.00
17,500.00	90.65	0.67	7,138.85	10,514.78	362.25	10,510.82	0.00	0.00	0.00
17,600.00	90.65	0.67	7,137.71	10,614.77	363.41	10,610.79	0.00	0.00	0.00
17,700.00	90.65	0.67	7,136.58	10,714.75	364.57	10,710.76	0.00	0.00	0.00
17,800.00	90.65	0.67	7,135.44	10,814.74	365.73	10,810.73	0.00	0.00	0.00
17,900.00	90.65	0.67	7,134.31	10,914.73	366.89	10,910.70	0.00	0.00	0.00
18,000.00	90.65	0.67	7,133.17	11,014.71	368.06	11,010.67	0.00	0.00	0.00
18,100.00	90.65	0.67	7,132.04	11,114.70	369.22	11,110.64	0.00	0.00	0.00
18,200.00	90.65	0.67	7,130.90	11,214.69	370.38	11,210.61	0.00	0.00	0.00
18,300.00	90.65	0.67	7,129.77	11,314.67	371.54	11,310.59	0.00	0.00	0.00
18,400.00	90.65	0.67	7,128.64	11,414.66	372.71	11,410.56	0.00	0.00	0.00
18,500.00	90.65	0.67	7,127.50	11,514.65	373.87	11,510.53	0.00	0.00	0.00
18,600.00	90.65	0.67	7,126.37	11,614.63	375.03	11,610.50	0.00	0.00	0.00
18,700.00	90.65	0.67	7,125.23	11,714.62	376.19	11,710.47	0.00	0.00	0.00
18,800.00	90.65	0.67	7,124.10	11,814.61	377.36	11,810.44	0.00	0.00	0.00
18,900.00	90.65	0.67	7,122.96	11,914.59	378.52	11,910.41	0.00	0.00	0.00
19,000.00	90.65	0.67	7,121.83	12,014.58	379.68	12,010.38	0.00	0.00	0.00
19,100.00	90.65	0.67	7,120.69	12,114.57	380.84	12,110.35	0.00	0.00	0.00
19,200.00	90.65	0.67	7,119.56	12,214.55	382.01	12,210.32	0.00	0.00	0.00

# Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well KEOWN STATE 19N-34HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 4889.00usft (D Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 4889.00usft (D Rig)
<b>Site:</b>	2N-68W-15 Keown Pad	<b>North Reference:</b>	True
<b>Well:</b>	KEOWN STATE 19N-34HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan A		
<b>Design:</b>	Permit Rev-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)
19,300.00	90.65	0.67	7,118.43	12,314.54	383.17	12,310.30	0.00	0.00	0.00
19,400.00	90.65	0.67	7,117.29	12,414.53	384.33	12,410.27	0.00	0.00	0.00
19,500.00	90.65	0.67	7,116.16	12,514.51	385.49	12,510.24	0.00	0.00	0.00
19,600.00	90.65	0.67	7,115.02	12,614.50	386.66	12,610.21	0.00	0.00	0.00
19,700.00	90.65	0.67	7,113.89	12,714.49	387.82	12,710.18	0.00	0.00	0.00
19,800.00	90.65	0.67	7,112.75	12,814.48	388.98	12,810.15	0.00	0.00	0.00
19,900.00	90.65	0.67	7,111.62	12,914.46	390.14	12,910.12	0.00	0.00	0.00
20,000.00	90.65	0.67	7,110.48	13,014.45	391.31	13,010.09	0.00	0.00	0.00
20,100.00	90.65	0.67	7,109.35	13,114.44	392.47	13,110.06	0.00	0.00	0.00
20,200.00	90.65	0.67	7,108.22	13,214.42	393.63	13,210.04	0.00	0.00	0.00
20,300.00	90.65	0.67	7,107.08	13,314.41	394.79	13,310.01	0.00	0.00	0.00
20,400.00	90.65	0.67	7,105.95	13,414.40	395.96	13,409.98	0.00	0.00	0.00
20,500.00	90.65	0.67	7,104.81	13,514.38	397.12	13,509.95	0.00	0.00	0.00
20,600.00	90.65	0.67	7,103.68	13,614.37	398.28	13,609.92	0.00	0.00	0.00
20,700.00	90.65	0.67	7,102.54	13,714.36	399.44	13,709.89	0.00	0.00	0.00
20,747.88	90.65	0.67	7,102.00	13,762.23	400.00	13,757.76	0.00	0.00	0.00
KEOWN STATE 19N-34HZ_PBHL									

Design Targets									
Target Name	- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	
	- Shape								Latitude Longitude
KEOWN STATE 19N-	- plan hits target center	0.00	0.00	7,102.00	13,762.23	400.00	14,591,909.00	1,642,006.56	40.178982 -104.994308
	- Point								
KEOWN STATE 19N-	- plan hits target center	0.00	0.00	7,250.84	643.80	247.48	14,578,790.56	1,641,854.67	40.142957 -104.994855
	- Point								

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,501.55	1,500.00	9 5/8"	9-5/8	13-1/2	
7,627.72	7,250.84	Top of Production	5-1/2	8-1/2	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
745.50	745.00	Fox Hills Mkr				
3,764.70	3,760.00	Parkman				
4,502.72	4,497.00	Sussex				
7,108.70	7,056.00	Sharon Springs				
7,253.51	7,148.00	Niobrara				
7,402.74	7,214.00	Nio B				



## Corporate Planning Report

**Database:** PLANNING  
**Company:** US ROCKIES WATTENBERG PLANNING  
**Project:** WELD-NAD83-UTMFT13N  
**Site:** 2N-68W-15 Keown Pad  
**Well:** KEOWN STATE 19N-34HZ  
**Wellbore:** Plan A  
**Design:** Permit Rev-2

**Local Co-ordinate Reference:** Well KEOWN STATE 19N-34HZ  
**TVD Reference:** RKB = 17' @ 4889.00usft (D Rig)  
**MD Reference:** RKB = 17' @ 4889.00usft (D Rig)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature