

US ROCKIES WATTENBERG PLANNING

**WELD-NAD83-UTMFT13N
2N-68W-15 Keown Pad
KEOWN STATE 19N2-34HZ**

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 19N2-34HZ
Wellbore: Plan A
Design: Permit Rev-2

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
745.00	746.40	Fox Hills Mkr
3760.00	3827.59	Parkman
4497.00	4579.10	Sussex
7053.00	7161.86	Sharon Springs
7145.00	7284.47	Niobrara
7210.00	7389.00	Nio B
7281.00	7547.66	Nio C

WELL DETAILS: KEOWN STATE 19N2-34HZ

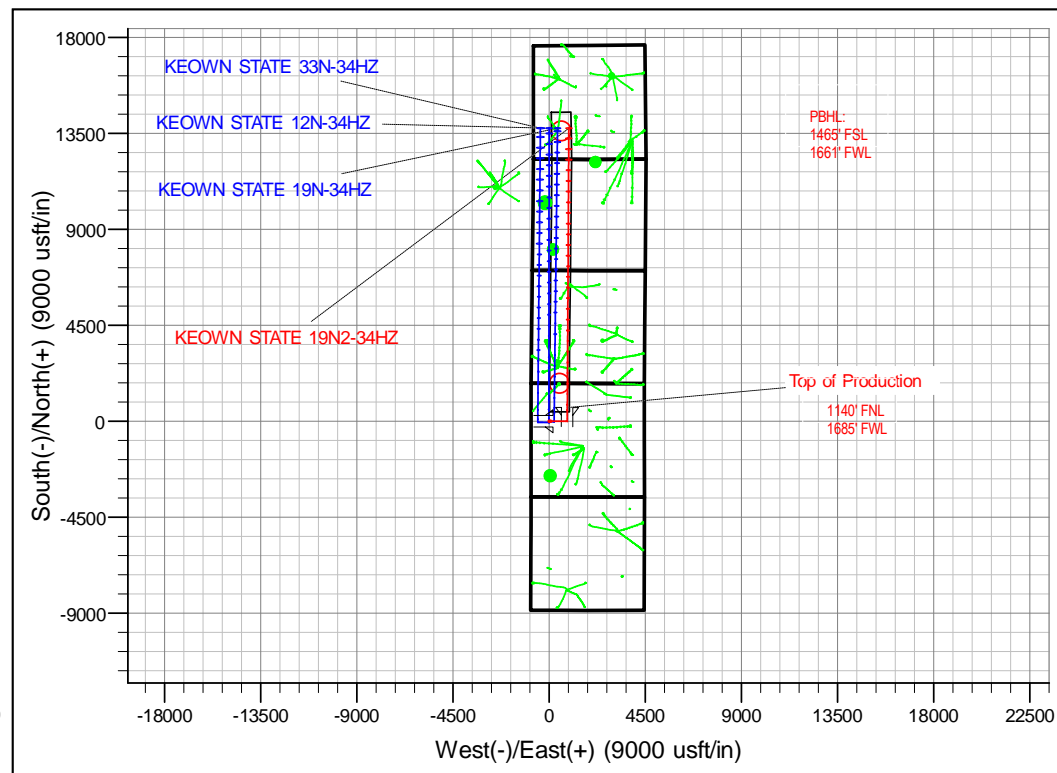
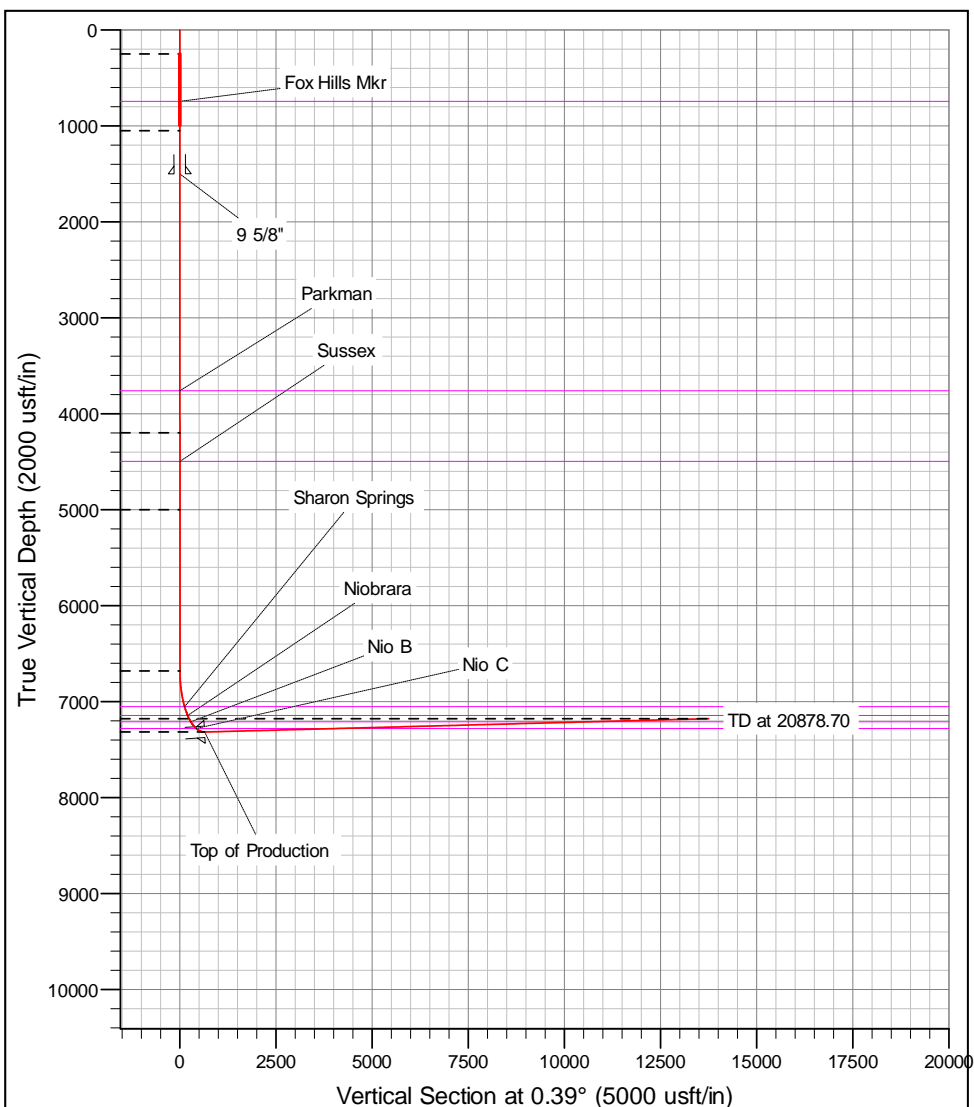
+N/-S	+E/-W	GL: 4872.00	RKB = 17' @ 4889.00usft (D Rig)	Longitude	Slot
0.00	0.00	Northing 14578159.13	Easting 1641615.89	Latitude 40.141223	

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
1056.98	12.10	90.00	1050.99	0.00	84.93	1.50	0.58
4276.59	12.10	90.00	4199.01	0.00	760.07	0.00	5.17
5083.56	0.00	0.00	5000.00	0.00	845.00	1.50	5.75
6764.53	0.00	0.00	6680.96	0.00	845.00	0.00	5.75
7771.30	90.61	0.33	7317.55	643.39	848.65	9.00	649.15
20878.70	90.61	0.33	7178.00	13749.83	923.00	0.00	3755.79

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
KEOWN STATE 19N2-34HZ_PBHL	7178.00	13749.83	923.00	14591909.00	1642538.22	40.178982	-104.992405



Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well KEOWN STATE 19N2-34HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4889.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4889.00usft (D Rig)
Site:	2N-68W-15 Keown Pad	North Reference:	True
Well:	KEOWN STATE 19N2-34HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-2		

Project	WELD-NAD83-UTMFT13N		
Map System:	Universal Transverse Mercator (US Survey Feet)	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	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 19N2-34HZ					
Well Position	+N/-S	49.16 usft	Northing:	14,578,159.13 usft	Latitude:	40.141223
	+E/-W	34.38 usft	Easting:	1,641,615.88 usft	Longitude:	-104.995709
Position Uncertainty		3.28 usft	Wellhead Elevation:	0.00 usft	Ground Level:	4,872.00 usft

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

Design	Permit Rev-2			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	0.39

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	
250.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,056.98	12.10	90.00	1,050.99	0.00	84.93	1.50	1.50	0.00	90.00	
4,276.59	12.10	90.00	4,199.01	0.00	760.07	0.00	0.00	0.00	0.00	
5,083.56	0.00	0.00	5,000.00	0.00	845.00	1.50	-1.50	0.00	180.00	
6,764.53	0.00	0.00	6,680.96	0.00	845.00	0.00	0.00	0.00	0.00	
7,771.30	90.61	0.33	7,317.55	643.39	848.65	9.00	9.00	0.00	0.33	
20,878.70	90.61	0.33	7,178.00	13,749.83	923.00	0.00	0.00	0.00	0.00	KEOWN STATE 19

Corporate Planning Report

Database: PLANNING
Company: US ROCKIES WATTENBERG PLANNING
Project: WELD-NAD83-UTMFT13N
Site: 2N-68W-15 Keown Pad
Well: KEOWN STATE 19N2-34HZ
Wellbore: Plan A
Design: Permit Rev-2

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:

Well KEOWN STATE 19N2-34HZ
 RKB = 17' @ 4889.00usft (D Rig)
 RKB = 17' @ 4889.00usft (D Rig)
 True
 Minimum Curvature

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
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	0.02	1.50	1.50	0.00
500.00	3.75	90.00	499.82	0.00	8.18	0.06	1.50	1.50	0.00
600.00	5.25	90.00	599.51	0.00	16.02	0.11	1.50	1.50	0.00
700.00	6.75	90.00	698.96	0.00	26.48	0.18	1.50	1.50	0.00
746.40	7.45	90.00	745.00	0.00	32.21	0.22	1.50	1.50	0.00
Fox Hills Mkr									
800.00	8.25	90.00	798.10	0.00	39.53	0.27	1.50	1.50	0.00
900.00	9.75	90.00	896.87	0.00	55.17	0.38	1.50	1.50	0.00
1,000.00	11.25	90.00	995.19	0.00	73.39	0.50	1.50	1.50	0.00
1,056.98	12.10	90.00	1,050.99	0.00	84.93	0.58	1.50	1.50	0.00
1,100.00	12.10	90.00	1,093.05	0.00	93.95	0.64	0.00	0.00	0.00
1,200.00	12.10	90.00	1,190.83	0.00	114.92	0.78	0.00	0.00	0.00
1,300.00	12.10	90.00	1,288.61	0.00	135.89	0.92	0.00	0.00	0.00
1,400.00	12.10	90.00	1,386.38	0.00	156.86	1.07	0.00	0.00	0.00
1,500.00	12.10	90.00	1,484.16	0.00	177.83	1.21	0.00	0.00	0.00
1,516.20	12.10	90.00	1,500.00	0.00	181.23	1.23	0.00	0.00	0.00
9 5/8"									
1,600.00	12.10	90.00	1,581.94	0.00	198.80	1.35	0.00	0.00	0.00
1,700.00	12.10	90.00	1,679.71	0.00	219.77	1.50	0.00	0.00	0.00
1,800.00	12.10	90.00	1,777.49	0.00	240.74	1.64	0.00	0.00	0.00
1,900.00	12.10	90.00	1,875.27	0.00	261.71	1.78	0.00	0.00	0.00
2,000.00	12.10	90.00	1,973.04	0.00	282.68	1.92	0.00	0.00	0.00
2,100.00	12.10	90.00	2,070.82	0.00	303.65	2.07	0.00	0.00	0.00
2,200.00	12.10	90.00	2,168.60	0.00	324.62	2.21	0.00	0.00	0.00
2,300.00	12.10	90.00	2,266.37	0.00	345.59	2.35	0.00	0.00	0.00
2,400.00	12.10	90.00	2,364.15	0.00	366.56	2.50	0.00	0.00	0.00
2,500.00	12.10	90.00	2,461.93	0.00	387.53	2.64	0.00	0.00	0.00
2,600.00	12.10	90.00	2,559.70	0.00	408.50	2.78	0.00	0.00	0.00
2,700.00	12.10	90.00	2,657.48	0.00	429.47	2.92	0.00	0.00	0.00
2,800.00	12.10	90.00	2,755.26	0.00	450.44	3.07	0.00	0.00	0.00
2,900.00	12.10	90.00	2,853.03	0.00	471.41	3.21	0.00	0.00	0.00
3,000.00	12.10	90.00	2,950.81	0.00	492.38	3.35	0.00	0.00	0.00
3,100.00	12.10	90.00	3,048.59	0.00	513.35	3.49	0.00	0.00	0.00
3,200.00	12.10	90.00	3,146.36	0.00	534.31	3.64	0.00	0.00	0.00
3,300.00	12.10	90.00	3,244.14	0.00	555.28	3.78	0.00	0.00	0.00
3,400.00	12.10	90.00	3,341.92	0.00	576.25	3.92	0.00	0.00	0.00
3,500.00	12.10	90.00	3,439.69	0.00	597.22	4.07	0.00	0.00	0.00
3,600.00	12.10	90.00	3,537.47	0.00	618.19	4.21	0.00	0.00	0.00
3,700.00	12.10	90.00	3,635.25	0.00	639.16	4.35	0.00	0.00	0.00
3,800.00	12.10	90.00	3,733.02	0.00	660.13	4.49	0.00	0.00	0.00
3,827.59	12.10	90.00	3,760.00	0.00	665.92	4.53	0.00	0.00	0.00
Parkman									
3,900.00	12.10	90.00	3,830.80	0.00	681.10	4.64	0.00	0.00	0.00
4,000.00	12.10	90.00	3,928.58	0.00	702.07	4.78	0.00	0.00	0.00
4,100.00	12.10	90.00	4,026.35	0.00	723.04	4.92	0.00	0.00	0.00
4,200.00	12.10	90.00	4,124.13	0.00	744.01	5.06	0.00	0.00	0.00
4,276.59	12.10	90.00	4,199.01	0.00	760.07	5.17	0.00	0.00	0.00
4,300.00	11.75	90.00	4,221.92	0.00	764.91	5.21	1.50	-1.50	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well KEOWN STATE 19N2-34HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4889.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4889.00usft (D Rig)
Site:	2N-68W-15 Keown Pad	North Reference:	True
Well:	KEOWN STATE 19N2-34HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	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)
4,400.00	10.25	90.00	4,320.08	0.00	784.00	5.34	1.50	-1.50	0.00
4,500.00	8.75	90.00	4,418.70	0.00	800.51	5.45	1.50	-1.50	0.00
4,579.10	7.57	90.00	4,497.00	0.00	811.74	5.53	1.50	-1.50	0.00
Sussex									
4,600.00	7.25	90.00	4,517.73	0.00	814.43	5.54	1.50	-1.50	0.00
4,700.00	5.75	90.00	4,617.08	0.00	825.76	5.62	1.50	-1.50	0.00
4,800.00	4.25	90.00	4,716.70	0.00	834.48	5.68	1.50	-1.50	0.00
4,900.00	2.75	90.00	4,816.51	0.00	840.59	5.72	1.50	-1.50	0.00
5,000.00	1.25	90.00	4,916.44	0.00	844.09	5.75	1.50	-1.50	0.00
5,083.56	0.00	0.00	5,000.00	0.00	845.00	5.75	1.50	-1.50	0.00
5,100.00	0.00	0.00	5,016.44	0.00	845.00	5.75	0.00	0.00	0.00
5,200.00	0.00	0.00	5,116.44	0.00	845.00	5.75	0.00	0.00	0.00
5,300.00	0.00	0.00	5,216.44	0.00	845.00	5.75	0.00	0.00	0.00
5,400.00	0.00	0.00	5,316.44	0.00	845.00	5.75	0.00	0.00	0.00
5,500.00	0.00	0.00	5,416.44	0.00	845.00	5.75	0.00	0.00	0.00
5,600.00	0.00	0.00	5,516.44	0.00	845.00	5.75	0.00	0.00	0.00
5,700.00	0.00	0.00	5,616.44	0.00	845.00	5.75	0.00	0.00	0.00
5,800.00	0.00	0.00	5,716.44	0.00	845.00	5.75	0.00	0.00	0.00
5,900.00	0.00	0.00	5,816.44	0.00	845.00	5.75	0.00	0.00	0.00
6,000.00	0.00	0.00	5,916.44	0.00	845.00	5.75	0.00	0.00	0.00
6,100.00	0.00	0.00	6,016.44	0.00	845.00	5.75	0.00	0.00	0.00
6,200.00	0.00	0.00	6,116.44	0.00	845.00	5.75	0.00	0.00	0.00
6,300.00	0.00	0.00	6,216.44	0.00	845.00	5.75	0.00	0.00	0.00
6,400.00	0.00	0.00	6,316.44	0.00	845.00	5.75	0.00	0.00	0.00
6,500.00	0.00	0.00	6,416.44	0.00	845.00	5.75	0.00	0.00	0.00
6,600.00	0.00	0.00	6,516.44	0.00	845.00	5.75	0.00	0.00	0.00
6,700.00	0.00	0.00	6,616.44	0.00	845.00	5.75	0.00	0.00	0.00
6,764.53	0.00	0.00	6,680.96	0.00	845.00	5.75	0.00	0.00	0.00
6,800.00	3.19	0.33	6,716.42	0.99	845.01	6.74	9.00	9.00	0.00
6,900.00	12.19	0.33	6,815.42	14.36	845.08	20.11	9.00	9.00	0.00
7,000.00	21.19	0.33	6,911.10	43.05	845.24	48.81	9.00	9.00	0.00
7,100.00	30.19	0.33	7,001.12	86.36	845.49	92.12	9.00	9.00	0.00
7,161.86	35.76	0.33	7,053.00	120.02	845.68	125.77	9.00	9.00	0.00
Sharon Springs									
7,200.00	39.19	0.33	7,083.26	143.22	845.81	148.98	9.00	9.00	0.00
7,284.47	46.80	0.33	7,145.00	200.78	846.14	206.54	9.00	9.00	0.00
Niobrara									
7,300.00	48.19	0.33	7,155.49	212.23	846.20	217.98	9.00	9.00	0.00
7,389.00	56.20	0.33	7,210.00	282.49	846.60	288.25	9.00	9.00	0.00
Nio B									
7,400.00	57.19	0.33	7,216.04	291.69	846.65	297.44	9.00	9.00	0.00
7,500.00	66.19	0.33	7,263.41	379.63	847.15	385.39	9.00	9.00	0.00
7,547.66	70.48	0.33	7,281.00	423.92	847.40	429.68	9.00	9.00	0.00
Nio C									
7,600.00	75.19	0.33	7,296.44	473.91	847.69	479.67	9.00	9.00	0.00
7,700.00	84.19	0.33	7,314.31	572.20	848.25	577.96	9.00	9.00	0.00
7,771.30	90.61	0.33	7,317.55	643.38	848.65	649.15	9.00	9.00	0.00
Top of Production - KEOWN STATE 19N2-34HZ_PHL									
7,800.00	90.61	0.33	7,317.24	672.08	848.81	677.84	0.00	0.00	0.00
7,900.00	90.61	0.33	7,316.18	772.07	849.38	777.84	0.00	0.00	0.00
8,000.00	90.61	0.33	7,315.11	872.07	849.95	877.83	0.00	0.00	0.00
8,100.00	90.61	0.33	7,314.05	972.06	850.51	977.83	0.00	0.00	0.00
8,200.00	90.61	0.33	7,312.98	1,072.05	851.08	1,077.82	0.00	0.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well KEOWN STATE 19N2-34HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4889.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4889.00usft (D Rig)
Site:	2N-68W-15 Keown Pad	North Reference:	True
Well:	KEOWN STATE 19N2-34HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	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)
8,300.00	90.61	0.33	7,311.92	1,172.05	851.65	1,177.82	0.00	0.00	0.00
8,400.00	90.61	0.33	7,310.85	1,272.04	852.22	1,277.81	0.00	0.00	0.00
8,500.00	90.61	0.33	7,309.79	1,372.03	852.78	1,377.80	0.00	0.00	0.00
8,600.00	90.61	0.33	7,308.72	1,472.02	853.35	1,477.80	0.00	0.00	0.00
8,700.00	90.61	0.33	7,307.66	1,572.02	853.92	1,577.79	0.00	0.00	0.00
8,800.00	90.61	0.33	7,306.59	1,672.01	854.48	1,677.79	0.00	0.00	0.00
8,900.00	90.61	0.33	7,305.53	1,772.00	855.05	1,777.78	0.00	0.00	0.00
9,000.00	90.61	0.33	7,304.46	1,871.99	855.62	1,877.78	0.00	0.00	0.00
9,100.00	90.61	0.33	7,303.40	1,971.99	856.19	1,977.77	0.00	0.00	0.00
9,200.00	90.61	0.33	7,302.34	2,071.98	856.75	2,077.76	0.00	0.00	0.00
9,300.00	90.61	0.33	7,301.27	2,171.97	857.32	2,177.76	0.00	0.00	0.00
9,400.00	90.61	0.33	7,300.21	2,271.97	857.89	2,277.75	0.00	0.00	0.00
9,500.00	90.61	0.33	7,299.14	2,371.96	858.46	2,377.75	0.00	0.00	0.00
9,600.00	90.61	0.33	7,298.08	2,471.95	859.02	2,477.74	0.00	0.00	0.00
9,700.00	90.61	0.33	7,297.01	2,571.94	859.59	2,577.74	0.00	0.00	0.00
9,800.00	90.61	0.33	7,295.95	2,671.94	860.16	2,677.73	0.00	0.00	0.00
9,900.00	90.61	0.33	7,294.88	2,771.93	860.72	2,777.72	0.00	0.00	0.00
10,000.00	90.61	0.33	7,293.82	2,871.92	861.29	2,877.72	0.00	0.00	0.00
10,100.00	90.61	0.33	7,292.75	2,971.91	861.86	2,977.71	0.00	0.00	0.00
10,200.00	90.61	0.33	7,291.69	3,071.91	862.43	3,077.71	0.00	0.00	0.00
10,300.00	90.61	0.33	7,290.62	3,171.90	862.99	3,177.70	0.00	0.00	0.00
10,400.00	90.61	0.33	7,289.56	3,271.89	863.56	3,277.70	0.00	0.00	0.00
10,500.00	90.61	0.33	7,288.49	3,371.89	864.13	3,377.69	0.00	0.00	0.00
10,600.00	90.61	0.33	7,287.43	3,471.88	864.70	3,477.68	0.00	0.00	0.00
10,700.00	90.61	0.33	7,286.37	3,571.87	865.26	3,577.68	0.00	0.00	0.00
10,800.00	90.61	0.33	7,285.30	3,671.86	865.83	3,677.67	0.00	0.00	0.00
10,900.00	90.61	0.33	7,284.24	3,771.86	866.40	3,777.67	0.00	0.00	0.00
11,000.00	90.61	0.33	7,283.17	3,871.85	866.96	3,877.66	0.00	0.00	0.00
11,100.00	90.61	0.33	7,282.11	3,971.84	867.53	3,977.66	0.00	0.00	0.00
11,200.00	90.61	0.33	7,281.04	4,071.83	868.10	4,077.65	0.00	0.00	0.00
11,300.00	90.61	0.33	7,279.98	4,171.83	868.67	4,177.64	0.00	0.00	0.00
11,400.00	90.61	0.33	7,278.91	4,271.82	869.23	4,277.64	0.00	0.00	0.00
11,500.00	90.61	0.33	7,277.85	4,371.81	869.80	4,377.63	0.00	0.00	0.00
11,600.00	90.61	0.33	7,276.78	4,471.81	870.37	4,477.63	0.00	0.00	0.00
11,700.00	90.61	0.33	7,275.72	4,571.80	870.93	4,577.62	0.00	0.00	0.00
11,800.00	90.61	0.33	7,274.65	4,671.79	871.50	4,677.61	0.00	0.00	0.00
11,900.00	90.61	0.33	7,273.59	4,771.78	872.07	4,777.61	0.00	0.00	0.00
12,000.00	90.61	0.33	7,272.53	4,871.78	872.64	4,877.60	0.00	0.00	0.00
12,100.00	90.61	0.33	7,271.46	4,971.77	873.20	4,977.60	0.00	0.00	0.00
12,200.00	90.61	0.33	7,270.40	5,071.76	873.77	5,077.59	0.00	0.00	0.00
12,300.00	90.61	0.33	7,269.33	5,171.75	874.34	5,177.59	0.00	0.00	0.00
12,400.00	90.61	0.33	7,268.27	5,271.75	874.91	5,277.58	0.00	0.00	0.00
12,500.00	90.61	0.33	7,267.20	5,371.74	875.47	5,377.57	0.00	0.00	0.00
12,600.00	90.61	0.33	7,266.14	5,471.73	876.04	5,477.57	0.00	0.00	0.00
12,700.00	90.61	0.33	7,265.07	5,571.73	876.61	5,577.56	0.00	0.00	0.00
12,800.00	90.61	0.33	7,264.01	5,671.72	877.17	5,677.56	0.00	0.00	0.00
12,900.00	90.61	0.33	7,262.94	5,771.71	877.74	5,777.55	0.00	0.00	0.00
13,000.00	90.61	0.33	7,261.88	5,871.70	878.31	5,877.55	0.00	0.00	0.00
13,100.00	90.61	0.33	7,260.81	5,971.70	878.88	5,977.54	0.00	0.00	0.00
13,200.00	90.61	0.33	7,259.75	6,071.69	879.44	6,077.53	0.00	0.00	0.00
13,300.00	90.61	0.33	7,258.69	6,171.68	880.01	6,177.53	0.00	0.00	0.00
13,400.00	90.61	0.33	7,257.62	6,271.67	880.58	6,277.52	0.00	0.00	0.00
13,500.00	90.61	0.33	7,256.56	6,371.67	881.15	6,377.52	0.00	0.00	0.00
13,600.00	90.61	0.33	7,255.49	6,471.66	881.71	6,477.51	0.00	0.00	0.00

Corporate Planning Report

Database: PLANNING
Company: US ROCKIES WATTENBERG PLANNING
Project: WELD-NAD83-UTMFT13N
Site: 2N-68W-15 Keown Pad
Well: KEOWN STATE 19N2-34HZ
Wellbore: Plan A
Design: Permit Rev-2

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:

Well KEOWN STATE 19N2-34HZ
 RKB = 17' @ 4889.00usft (D Rig)
 RKB = 17' @ 4889.00usft (D Rig)
 True
 Minimum Curvature

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)
13,700.00	90.61	0.33	7,254.43	6,571.65	882.28	6,577.51	0.00	0.00	0.00
13,800.00	90.61	0.33	7,253.36	6,671.65	882.85	6,677.50	0.00	0.00	0.00
13,900.00	90.61	0.33	7,252.30	6,771.64	883.41	6,777.49	0.00	0.00	0.00
14,000.00	90.61	0.33	7,251.23	6,871.63	883.98	6,877.49	0.00	0.00	0.00
14,100.00	90.61	0.33	7,250.17	6,971.62	884.55	6,977.48	0.00	0.00	0.00
14,200.00	90.61	0.33	7,249.10	7,071.62	885.12	7,077.48	0.00	0.00	0.00
14,300.00	90.61	0.33	7,248.04	7,171.61	885.68	7,177.47	0.00	0.00	0.00
14,400.00	90.61	0.33	7,246.97	7,271.60	886.25	7,277.47	0.00	0.00	0.00
14,500.00	90.61	0.33	7,245.91	7,371.59	886.82	7,377.46	0.00	0.00	0.00
14,600.00	90.61	0.33	7,244.85	7,471.59	887.38	7,477.45	0.00	0.00	0.00
14,700.00	90.61	0.33	7,243.78	7,571.58	887.95	7,577.45	0.00	0.00	0.00
14,800.00	90.61	0.33	7,242.72	7,671.57	888.52	7,677.44	0.00	0.00	0.00
14,900.00	90.61	0.33	7,241.65	7,771.57	889.09	7,777.44	0.00	0.00	0.00
15,000.00	90.61	0.33	7,240.59	7,871.56	889.65	7,877.43	0.00	0.00	0.00
15,100.00	90.61	0.33	7,239.52	7,971.55	890.22	7,977.43	0.00	0.00	0.00
15,200.00	90.61	0.33	7,238.46	8,071.54	890.79	8,077.42	0.00	0.00	0.00
15,300.00	90.61	0.33	7,237.39	8,171.54	891.36	8,177.41	0.00	0.00	0.00
15,400.00	90.61	0.33	7,236.33	8,271.53	891.92	8,277.41	0.00	0.00	0.00
15,500.00	90.61	0.33	7,235.26	8,371.52	892.49	8,377.40	0.00	0.00	0.00
15,600.00	90.61	0.33	7,234.20	8,471.51	893.06	8,477.40	0.00	0.00	0.00
15,700.00	90.61	0.33	7,233.13	8,571.51	893.62	8,577.39	0.00	0.00	0.00
15,800.00	90.61	0.33	7,232.07	8,671.50	894.19	8,677.39	0.00	0.00	0.00
15,900.00	90.61	0.33	7,231.00	8,771.49	894.76	8,777.38	0.00	0.00	0.00
16,000.00	90.61	0.33	7,229.94	8,871.49	895.33	8,877.37	0.00	0.00	0.00
16,100.00	90.61	0.33	7,228.88	8,971.48	895.89	8,977.37	0.00	0.00	0.00
16,200.00	90.61	0.33	7,227.81	9,071.47	896.46	9,077.36	0.00	0.00	0.00
16,300.00	90.61	0.33	7,226.75	9,171.46	897.03	9,177.36	0.00	0.00	0.00
16,400.00	90.61	0.33	7,225.68	9,271.46	897.60	9,277.35	0.00	0.00	0.00
16,500.00	90.61	0.33	7,224.62	9,371.45	898.16	9,377.35	0.00	0.00	0.00
16,600.00	90.61	0.33	7,223.55	9,471.44	898.73	9,477.34	0.00	0.00	0.00
16,700.00	90.61	0.33	7,222.49	9,571.43	899.30	9,577.33	0.00	0.00	0.00
16,800.00	90.61	0.33	7,221.42	9,671.43	899.86	9,677.33	0.00	0.00	0.00
16,900.00	90.61	0.33	7,220.36	9,771.42	900.43	9,777.32	0.00	0.00	0.00
17,000.00	90.61	0.33	7,219.29	9,871.41	901.00	9,877.32	0.00	0.00	0.00
17,100.00	90.61	0.33	7,218.23	9,971.41	901.57	9,977.31	0.00	0.00	0.00
17,200.00	90.61	0.33	7,217.16	10,071.40	902.13	10,077.31	0.00	0.00	0.00
17,300.00	90.61	0.33	7,216.10	10,171.39	902.70	10,177.30	0.00	0.00	0.00
17,400.00	90.61	0.33	7,215.04	10,271.38	903.27	10,277.29	0.00	0.00	0.00
17,500.00	90.61	0.33	7,213.97	10,371.38	903.83	10,377.29	0.00	0.00	0.00
17,600.00	90.61	0.33	7,212.91	10,471.37	904.40	10,477.28	0.00	0.00	0.00
17,700.00	90.61	0.33	7,211.84	10,571.36	904.97	10,577.28	0.00	0.00	0.00
17,800.00	90.61	0.33	7,210.78	10,671.35	905.54	10,677.27	0.00	0.00	0.00
17,900.00	90.61	0.33	7,209.71	10,771.35	906.10	10,777.27	0.00	0.00	0.00
18,000.00	90.61	0.33	7,208.65	10,871.34	906.67	10,877.26	0.00	0.00	0.00
18,100.00	90.61	0.33	7,207.58	10,971.33	907.24	10,977.25	0.00	0.00	0.00
18,200.00	90.61	0.33	7,206.52	11,071.33	907.81	11,077.25	0.00	0.00	0.00
18,300.00	90.61	0.33	7,205.45	11,171.32	908.37	11,177.24	0.00	0.00	0.00
18,400.00	90.61	0.33	7,204.39	11,271.31	908.94	11,277.24	0.00	0.00	0.00
18,500.00	90.61	0.33	7,203.32	11,371.30	909.51	11,377.23	0.00	0.00	0.00
18,600.00	90.61	0.33	7,202.26	11,471.30	910.07	11,477.23	0.00	0.00	0.00
18,700.00	90.61	0.33	7,201.20	11,571.29	910.64	11,577.22	0.00	0.00	0.00
18,800.00	90.61	0.33	7,200.13	11,671.28	911.21	11,677.21	0.00	0.00	0.00
18,900.00	90.61	0.33	7,199.07	11,771.27	911.78	11,777.21	0.00	0.00	0.00
19,000.00	90.61	0.33	7,198.00	11,871.27	912.34	11,877.20	0.00	0.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well KEOWN STATE 19N2-34HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4889.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4889.00usft (D Rig)
Site:	2N-68W-15 Keown Pad	North Reference:	True
Well:	KEOWN STATE 19N2-34HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	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)
19,100.00	90.61	0.33	7,196.94	11,971.26	912.91	11,977.20	0.00	0.00	0.00
19,200.00	90.61	0.33	7,195.87	12,071.25	913.48	12,077.19	0.00	0.00	0.00
19,300.00	90.61	0.33	7,194.81	12,171.25	914.05	12,177.19	0.00	0.00	0.00
19,400.00	90.61	0.33	7,193.74	12,271.24	914.61	12,277.18	0.00	0.00	0.00
19,500.00	90.61	0.33	7,192.68	12,371.23	915.18	12,377.17	0.00	0.00	0.00
19,600.00	90.61	0.33	7,191.61	12,471.22	915.75	12,477.17	0.00	0.00	0.00
19,700.00	90.61	0.33	7,190.55	12,571.22	916.31	12,577.16	0.00	0.00	0.00
19,800.00	90.61	0.33	7,189.48	12,671.21	916.88	12,677.16	0.00	0.00	0.00
19,900.00	90.61	0.33	7,188.42	12,771.20	917.45	12,777.15	0.00	0.00	0.00
20,000.00	90.61	0.33	7,187.36	12,871.19	918.02	12,877.15	0.00	0.00	0.00
20,100.00	90.61	0.33	7,186.29	12,971.19	918.58	12,977.14	0.00	0.00	0.00
20,200.00	90.61	0.33	7,185.23	13,071.18	919.15	13,077.13	0.00	0.00	0.00
20,300.00	90.61	0.33	7,184.16	13,171.17	919.72	13,177.13	0.00	0.00	0.00
20,400.00	90.61	0.33	7,183.10	13,271.17	920.28	13,277.12	0.00	0.00	0.00
20,500.00	90.61	0.33	7,182.03	13,371.16	920.85	13,377.12	0.00	0.00	0.00
20,600.00	90.61	0.33	7,180.97	13,471.15	921.42	13,477.11	0.00	0.00	0.00
20,700.00	90.61	0.33	7,179.90	13,571.14	921.99	13,577.11	0.00	0.00	0.00
20,800.00	90.61	0.33	7,178.84	13,671.14	922.55	13,677.10	0.00	0.00	0.00
20,878.70	90.61	0.33	7,178.00	13,749.83	923.00	13,755.79	0.00	0.00	0.00
KEOWN STATE 19N2-34HZ_PBHL									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
KEOWN STATE 19N2	0.00	0.00	7,178.00	13,749.83	923.00	14,591,909.00	1,642,538.22	40.178982	-104.992405
- plan hits target center									
- Point									
KEOWN STATE 19N2	0.00	0.00	7,317.55	643.38	848.65	14,578,802.55	1,642,464.50	40.142990	-104.992673
- plan hits target center									
- Point									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,516.20	1,500.00	9 5/8"	9-5/8	13-1/2	
7,771.30	7,317.55	Top of Production	5-1/2	8-1/2	

Corporate Planning Report

Database: PLANNING
Company: US ROCKIES WATTENBERG PLANNING
Project: WELD-NAD83-UTMFT13N
Site: 2N-68W-15 Keown Pad
Well: KEOWN STATE 19N2-34HZ
Wellbore: Plan A
Design: Permit Rev-2

Local Co-ordinate Reference: Well KEOWN STATE 19N2-34HZ
TVD Reference: RKB = 17' @ 4889.00usft (D Rig)
MD Reference: RKB = 17' @ 4889.00usft (D Rig)
North Reference: True
Survey Calculation Method: Minimum Curvature

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
746.40	745.00	Fox Hills Mkr				
3,827.59	3,760.00	Parkman				
4,579.10	4,497.00	Sussex				
7,161.86	7,053.00	Sharon Springs				
7,284.47	7,145.00	Niobrara				
7,389.00	7,210.00	Nio B				
7,547.66	7,281.00	Nio C				