

# **US ROCKIES WATTENBERG PLANNING**

**WELD-NAD83-UTMFT13N**

**5N-67W-19 CUMMINGS 18-19HZ PAD**

**CUMMINGS 19-13HZ**

## **Plan A**

### **Plan: Permit Rev-1**

SHL Lat/Long: 40.388720/-104.940718

Survey Program: MWD+IFR+MSA

## **Standard Planning Report**

**07 April, 2019**

Project: WELD-NAD83-UTMFT13N  
Site: 5N-67W-19 CUMMINGS 18-19HZ PAD  
Well: CUMMINGS 19-13HZ  
Wellbore: Plan A  
Design: Permit Rev-1

## US ROCKIES WATTENBERG PLANNING

### CASING DETAILS

TVD	MD	Size
1500.00	1526.50	9-5/8
7113.00	7996.26	5-1/2

WELL DETAILS: CUMMINGS 19-13HZ

GL = 4856.00

RKB = 17' @ 4873.00usft (Drilling Rig)

### 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	200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	
3	2096.00	28.44	238.28	2019.10	-242.37	-392.12	1.50	238.28	-391.14	
4	4896.00	28.44	238.28	4481.18	-943.46	-1526.40	0.00	0.00	-1522.60	
5	6318.00	0.00	0.00	5845.50	-1125.24	-1820.49	2.00	180.00	-1815.96	
6	6869.30	0.00	0.00	6396.80	-1125.24	-1820.49	0.00	0.00	-1815.96	
7	7996.26	90.16	90.23	7113.00	-1128.08	-1102.34	8.00	90.23	-1097.80	
8	18212.82	90.16	90.23	7085.00	-1168.54	9114.09	0.00	0.00	9118.71	CUMMINGS 19-13HZ_BHL

**SHL**  
**1355' FNL**  
**1165' FWL**

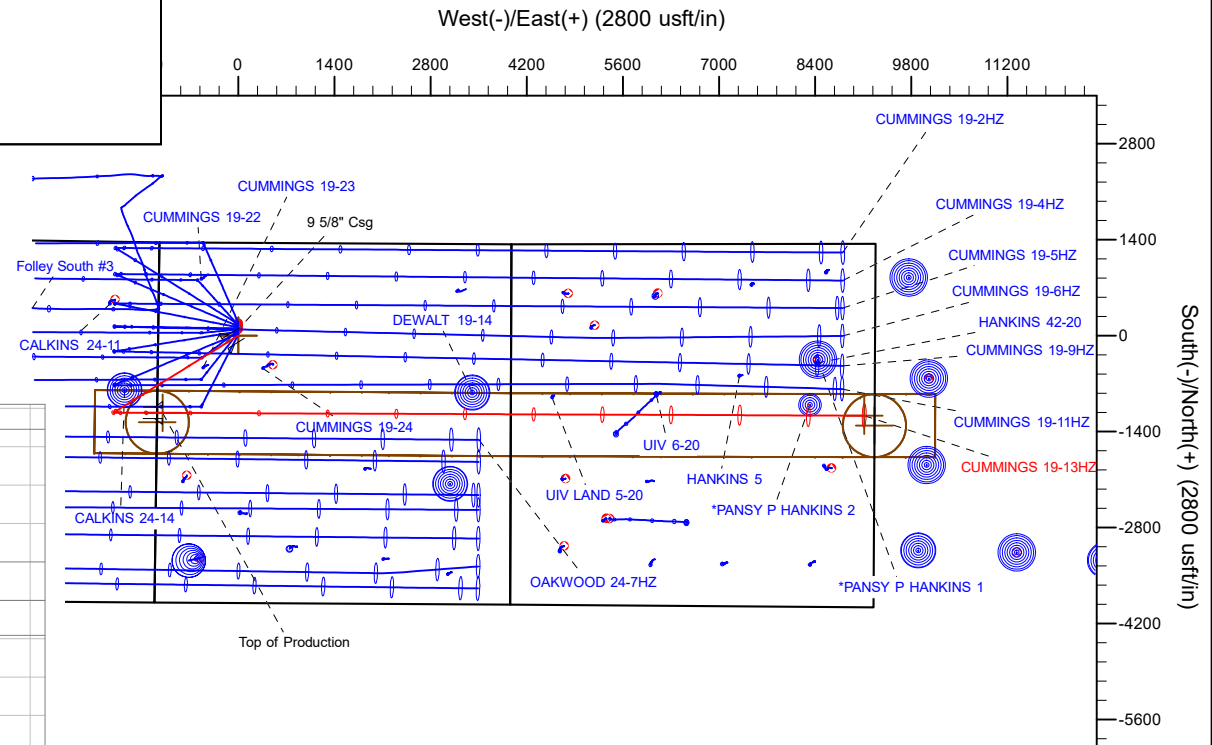
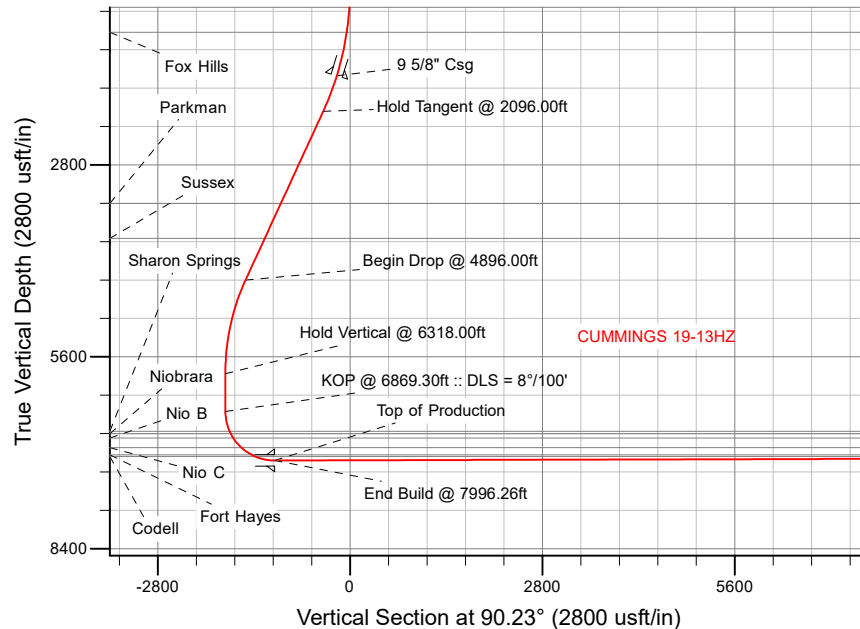
**HEEL**  
**2486' FNL**  
**75' FWL**

**TOE**  
**2506' FNL**  
**150' FEL**

CUMMINGS 19-13HZ_SHL	0.00	0.00	0.00	40.388720	-104.940718
CUMMINGS 19-13HZ_BHL	7085.00	-1168.54	9114.09	40.385507	-104.907989

### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
866.00	869.42	Fox Hills
3362.00	3623.21	Parkman
3873.00	4204.35	Sussex
6687.00	7168.09	Sharon Springs
6723.00	7207.98	Niobrara
6785.00	7279.57	Nio B
6924.00	7461.81	Nio C
7030.00	7646.08	Fort Hayes
7052.00	7696.56	Codell



Plan: Permit Rev-1 (CUMMINGS 19-13HZ/Plan A)

Date: 4/7/2019

# Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well CUMMINGS 19-13HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 4873.00usft (Drilling Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 4873.00usft (Drilling Rig)
<b>Site:</b>	5N-67W-19 CUMMINGS 18-19HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	CUMMINGS 19-13HZ	<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)		

Site		5N-67W-19 CUMMINGS 18-19HZ PAD			
Site Position:		Northing:	14,668,472.69 usft	Latitude:	40.389215
From:	Lat/Long	Easting:	1,656,925.11 usft	Longitude:	-104.940714
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.04 °

Well	CUMMINGS 19-13HZ					
Well Position	+N/-S	-180.26 usft	Northing:	14,668,292.43 usft	Latitude:	40.388720
	+E/-W	-1.11 usft	Easting:	1,656,924.12 usft	Longitude:	-104.940718
Position Uncertainty		3.28 usft	Wellhead Elevation:		Ground Level:	4,856.00 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>
	IGRF2015	3/27/2019	8.12	66.77	52,165.22647833

<b>Design</b>	Permit Rev-1			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<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	90.23

<b>Plan Survey Tool Program</b>	<b>Date</b>	4/7/2019		
<b>Depth From (usft)</b>	<b>Depth To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Remarks</b>
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	18,212.82	Permit Rev-1 (Plan A)	APC_ISCWSA REV 2 MWD+I Fixed:v2:Rockies, crustal dec +

Corporate  
Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well CUMMINGS 19-13HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4873.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4873.00usft (Drilling Rig)
Site:	5N-67W-19 CUMMINGS 18-19HZ PAD	North Reference:	True
Well:	CUMMINGS 19-13HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	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	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,096.00	28.44	238.28	2,019.10	-242.37	-392.12	1.50	1.50	0.00	238.28	
4,896.00	28.44	238.28	4,481.18	-943.46	-1,526.40	0.00	0.00	0.00	0.00	
6,318.00	0.00	0.00	5,845.50	-1,125.24	-1,820.49	2.00	-2.00	8.56	180.00	
6,869.30	0.00	0.00	6,396.80	-1,125.24	-1,820.49	0.00	0.00	0.00	0.00	
7,996.26	90.16	90.23	7,113.00	-1,128.08	-1,102.34	8.00	8.00	8.01	90.23	
18,212.82	90.16	90.23	7,085.00	-1,168.54	9,114.09	0.00	0.00	0.00	0.00	CUMMINGS 19-13HZ

# Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well CUMMINGS 19-13HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 4873.00usft (Drilling Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 4873.00usft (Drilling Rig)
<b>Site:</b>	5N-67W-19 CUMMINGS 18-19HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	CUMMINGS 19-13HZ	<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
Begin Nudge @ 200.00ft									
300.00	1.50	238.28	299.99	-0.69	-1.11	-1.11	1.50	1.50	0.00
400.00	3.00	238.28	399.91	-2.75	-4.45	-4.44	1.50	1.50	0.00
500.00	4.50	238.28	499.69	-6.19	-10.02	-9.99	1.50	1.50	0.00
600.00	6.00	238.28	599.27	-11.00	-17.80	-17.75	1.50	1.50	0.00
700.00	7.50	238.28	698.57	-17.18	-27.80	-27.73	1.50	1.50	0.00
800.00	9.00	238.28	797.54	-24.73	-40.00	-39.90	1.50	1.50	0.00
869.42	10.04	238.28	866.00	-30.76	-49.77	-49.65	1.50	1.50	0.00
Fox Hills									
900.00	10.50	238.28	896.09	-33.63	-54.41	-54.27	1.50	1.50	0.00
1,000.00	12.00	238.28	994.16	-43.89	-71.00	-70.83	1.50	1.50	0.00
1,100.00	13.50	238.28	1,091.70	-55.49	-89.77	-89.55	1.50	1.50	0.00
1,200.00	15.00	238.28	1,188.62	-68.43	-110.71	-110.44	1.50	1.50	0.00
1,300.00	16.50	238.28	1,284.86	-82.70	-133.80	-133.47	1.50	1.50	0.00
1,400.00	18.00	238.28	1,380.36	-98.29	-159.03	-158.63	1.50	1.50	0.00
1,500.00	19.50	238.28	1,475.05	-115.19	-186.37	-185.90	1.50	1.50	0.00
1,526.50	19.90	238.28	1,500.00	-119.89	-193.97	-193.48	1.50	1.50	0.00
9 5/8" Csg									
1,600.00	21.00	238.28	1,568.86	-133.39	-215.81	-215.27	1.50	1.50	0.00
1,700.00	22.50	238.28	1,661.74	-152.87	-247.33	-246.71	1.50	1.50	0.00
1,800.00	24.00	238.28	1,753.62	-173.63	-280.90	-280.21	1.50	1.50	0.00
1,900.00	25.50	238.28	1,844.43	-195.64	-316.52	-315.73	1.50	1.50	0.00
2,000.00	27.00	238.28	1,934.12	-218.89	-354.14	-353.26	1.50	1.50	0.00
2,096.00	28.44	238.28	2,019.10	-242.37	-392.12	-391.14	1.50	1.50	0.00
Hold Tangent @ 2096.00ft									
2,100.00	28.44	238.28	2,022.61	-243.37	-393.74	-392.76	0.00	0.00	0.00
2,200.00	28.44	238.28	2,110.54	-268.41	-434.25	-433.17	0.00	0.00	0.00
2,300.00	28.44	238.28	2,198.48	-293.45	-474.76	-473.58	0.00	0.00	0.00
2,400.00	28.44	238.28	2,286.41	-318.49	-515.27	-513.99	0.00	0.00	0.00
2,500.00	28.44	238.28	2,374.34	-343.53	-555.78	-554.40	0.00	0.00	0.00
2,600.00	28.44	238.28	2,462.27	-368.56	-596.29	-594.81	0.00	0.00	0.00
2,700.00	28.44	238.28	2,550.20	-393.60	-636.80	-635.22	0.00	0.00	0.00
2,800.00	28.44	238.28	2,638.13	-418.64	-677.31	-675.63	0.00	0.00	0.00
2,900.00	28.44	238.28	2,726.07	-443.68	-717.82	-716.04	0.00	0.00	0.00
3,000.00	28.44	238.28	2,814.00	-468.72	-758.33	-756.44	0.00	0.00	0.00
3,100.00	28.44	238.28	2,901.93	-493.76	-798.84	-796.85	0.00	0.00	0.00
3,200.00	28.44	238.28	2,989.86	-518.80	-839.35	-837.26	0.00	0.00	0.00
3,300.00	28.44	238.28	3,077.79	-543.84	-879.86	-877.67	0.00	0.00	0.00
3,400.00	28.44	238.28	3,165.72	-568.88	-920.37	-918.08	0.00	0.00	0.00
3,500.00	28.44	238.28	3,253.66	-593.92	-960.88	-958.49	0.00	0.00	0.00
3,600.00	28.44	238.28	3,341.59	-618.96	-1,001.39	-998.90	0.00	0.00	0.00
3,623.21	28.44	238.28	3,362.00	-624.77	-1,010.80	-1,008.28	0.00	0.00	0.00
Parkman									
3,700.00	28.44	238.28	3,429.52	-643.99	-1,041.90	-1,039.31	0.00	0.00	0.00
3,800.00	28.44	238.28	3,517.45	-669.03	-1,082.41	-1,079.72	0.00	0.00	0.00
3,900.00	28.44	238.28	3,605.38	-694.07	-1,122.92	-1,120.13	0.00	0.00	0.00
4,000.00	28.44	238.28	3,693.31	-719.11	-1,163.43	-1,160.54	0.00	0.00	0.00
4,100.00	28.44	238.28	3,781.25	-744.15	-1,203.94	-1,200.95	0.00	0.00	0.00
4,200.00	28.44	238.28	3,869.18	-769.19	-1,244.45	-1,241.36	0.00	0.00	0.00
4,204.35	28.44	238.28	3,873.00	-770.28	-1,246.21	-1,243.11	0.00	0.00	0.00

**Corporate**  
**Planning Report**

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well CUMMINGS 19-13HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 4873.00usft (Drilling Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 4873.00usft (Drilling Rig)
<b>Site:</b>	5N-67W-19 CUMMINGS 18-19HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	CUMMINGS 19-13HZ	<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)
<b>Sussex</b>									
4,300.00	28.44	238.28	3,957.11	-794.23	-1,284.96	-1,281.77	0.00	0.00	0.00
4,400.00	28.44	238.28	4,045.04	-819.27	-1,325.47	-1,322.17	0.00	0.00	0.00
4,500.00	28.44	238.28	4,132.97	-844.31	-1,365.98	-1,362.58	0.00	0.00	0.00
4,600.00	28.44	238.28	4,220.90	-869.35	-1,406.49	-1,402.99	0.00	0.00	0.00
4,700.00	28.44	238.28	4,308.84	-894.39	-1,447.00	-1,443.40	0.00	0.00	0.00
4,800.00	28.44	238.28	4,396.77	-919.43	-1,487.51	-1,483.81	0.00	0.00	0.00
4,896.00	28.44	238.28	4,481.18	-943.46	-1,526.40	-1,522.60	0.00	0.00	0.00
<b>Begin Drop @ 4896.00ft</b>									
4,900.00	28.36	238.28	4,484.70	-944.46	-1,528.02	-1,524.22	2.00	-2.00	0.00
5,000.00	26.36	238.28	4,573.51	-968.63	-1,567.11	-1,563.21	2.00	-2.00	0.00
5,100.00	24.36	238.28	4,663.87	-991.14	-1,603.54	-1,599.55	2.00	-2.00	0.00
5,200.00	22.36	238.28	4,755.67	-1,011.99	-1,637.27	-1,633.20	2.00	-2.00	0.00
5,300.00	20.36	238.28	4,848.79	-1,031.14	-1,668.25	-1,664.10	2.00	-2.00	0.00
5,400.00	18.36	238.28	4,943.13	-1,048.57	-1,696.45	-1,692.23	2.00	-2.00	0.00
5,500.00	16.36	238.28	5,038.57	-1,064.25	-1,721.83	-1,717.54	2.00	-2.00	0.00
5,600.00	14.36	238.28	5,135.00	-1,078.18	-1,744.36	-1,740.02	2.00	-2.00	0.00
5,700.00	12.36	238.28	5,232.29	-1,090.33	-1,764.01	-1,759.62	2.00	-2.00	0.00
5,800.00	10.36	238.28	5,330.32	-1,100.68	-1,780.77	-1,776.33	2.00	-2.00	0.00
5,900.00	8.36	238.28	5,428.99	-1,109.23	-1,794.60	-1,790.13	2.00	-2.00	0.00
6,000.00	6.36	238.28	5,528.16	-1,115.97	-1,805.50	-1,801.00	2.00	-2.00	0.00
6,100.00	4.36	238.28	5,627.71	-1,120.88	-1,813.44	-1,808.93	2.00	-2.00	0.00
6,200.00	2.36	238.28	5,727.54	-1,123.96	-1,818.43	-1,813.90	2.00	-2.00	0.00
6,300.00	0.36	238.28	5,827.50	-1,125.21	-1,820.45	-1,815.91	2.00	-2.00	0.00
6,318.00	0.00	0.00	5,845.50	-1,125.24	-1,820.49	-1,815.96	2.00	-2.00	676.22
<b>Hold Vertical @ 6318.00ft</b>									
6,400.00	0.00	0.00	5,927.50	-1,125.24	-1,820.49	-1,815.96	0.00	0.00	0.00
6,500.00	0.00	0.00	6,027.50	-1,125.24	-1,820.49	-1,815.96	0.00	0.00	0.00
6,600.00	0.00	0.00	6,127.50	-1,125.24	-1,820.49	-1,815.96	0.00	0.00	0.00
6,700.00	0.00	0.00	6,227.50	-1,125.24	-1,820.49	-1,815.96	0.00	0.00	0.00
6,800.00	0.00	0.00	6,327.50	-1,125.24	-1,820.49	-1,815.96	0.00	0.00	0.00
6,869.30	0.00	0.00	6,396.80	-1,125.24	-1,820.49	-1,815.96	0.00	0.00	0.00
<b>KOP @ 6869.30ft :: DLS = 8°/100'</b>									
6,900.00	2.46	90.23	6,427.49	-1,125.24	-1,819.84	-1,815.31	8.00	8.00	293.90
7,000.00	10.46	90.23	6,526.78	-1,125.29	-1,808.60	-1,804.07	8.00	8.00	0.00
7,100.00	18.46	90.23	6,623.53	-1,125.38	-1,783.66	-1,779.13	8.00	8.00	0.00
7,168.09	23.90	90.23	6,687.00	-1,125.48	-1,759.07	-1,754.54	8.00	8.00	0.00
<b>Sharon Springs</b>									
7,200.00	26.46	90.23	6,715.88	-1,125.54	-1,745.49	-1,740.96	8.00	8.00	0.00
7,207.98	27.09	90.23	6,723.00	-1,125.55	-1,741.90	-1,737.37	8.00	8.00	0.00
<b>Niobrara</b>									
7,279.57	32.82	90.23	6,785.00	-1,125.69	-1,706.16	-1,701.63	8.00	8.00	0.00
<b>Nio B</b>									
7,300.00	34.46	90.23	6,802.01	-1,125.74	-1,694.85	-1,690.31	8.00	8.00	0.00
7,400.00	42.46	90.23	6,880.25	-1,125.98	-1,632.71	-1,628.17	8.00	8.00	0.00
7,461.81	47.40	90.23	6,924.00	-1,126.15	-1,589.07	-1,584.54	8.00	8.00	0.00
<b>Nio C</b>									
7,500.00	50.46	90.23	6,949.09	-1,126.27	-1,560.28	-1,555.75	8.00	8.00	0.00
7,600.00	58.46	90.23	7,007.17	-1,126.59	-1,478.98	-1,474.45	8.00	8.00	0.00
7,646.08	62.14	90.23	7,030.00	-1,126.75	-1,438.97	-1,434.43	8.00	8.00	0.00
<b>Fort Hayes</b>									
7,696.56	66.18	90.23	7,052.00	-1,126.93	-1,393.53	-1,389.00	8.00	8.00	0.00

# Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well CUMMINGS 19-13HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 4873.00usft (Drilling Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 4873.00usft (Drilling Rig)
<b>Site:</b>	5N-67W-19 CUMMINGS 18-19HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	CUMMINGS 19-13HZ	<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)
<b>Codell</b>									
7,700.00	66.46	90.23	7,053.38	-1,126.94	-1,390.39	-1,385.85	8.00	8.00	0.00
7,800.00	74.46	90.23	7,086.81	-1,127.31	-1,296.23	-1,291.69	8.00	8.00	0.00
7,900.00	82.46	90.23	7,106.80	-1,127.70	-1,198.33	-1,193.79	8.00	8.00	0.00
7,996.26	90.16	90.23	7,113.00	-1,128.08	-1,102.34	-1,097.81	8.00	8.00	0.00
<b>End Build @ 7996.26ft - Top of Production</b>									
8,000.00	90.16	90.23	7,112.99	-1,128.10	-1,098.60	-1,094.07	0.01	0.01	0.00
8,100.00	90.16	90.23	7,112.71	-1,128.49	-998.60	-994.07	0.00	0.00	0.00
8,200.00	90.16	90.23	7,112.44	-1,128.89	-898.61	-894.07	0.00	0.00	0.00
8,300.00	90.16	90.23	7,112.17	-1,129.29	-798.61	-794.07	0.00	0.00	0.00
8,400.00	90.16	90.23	7,111.89	-1,129.68	-698.61	-694.07	0.00	0.00	0.00
8,500.00	90.16	90.23	7,111.62	-1,130.08	-598.61	-594.07	0.00	0.00	0.00
8,600.00	90.16	90.23	7,111.34	-1,130.47	-498.61	-494.07	0.00	0.00	0.00
8,700.00	90.16	90.23	7,111.07	-1,130.87	-398.61	-394.07	0.00	0.00	0.00
8,800.00	90.16	90.23	7,110.80	-1,131.27	-298.61	-294.07	0.00	0.00	0.00
8,900.00	90.16	90.23	7,110.52	-1,131.66	-198.61	-194.07	0.00	0.00	0.00
9,000.00	90.16	90.23	7,110.25	-1,132.06	-98.61	-94.07	0.00	0.00	0.00
9,100.00	90.16	90.23	7,109.97	-1,132.45	1.38	5.93	0.00	0.00	0.00
9,200.00	90.16	90.23	7,109.70	-1,132.85	101.38	105.93	0.00	0.00	0.00
9,300.00	90.16	90.23	7,109.43	-1,133.25	201.38	205.93	0.00	0.00	0.00
9,400.00	90.16	90.23	7,109.15	-1,133.64	301.38	305.93	0.00	0.00	0.00
9,500.00	90.16	90.23	7,108.88	-1,134.04	401.38	405.93	0.00	0.00	0.00
9,600.00	90.16	90.23	7,108.60	-1,134.43	501.38	505.93	0.00	0.00	0.00
9,700.00	90.16	90.23	7,108.33	-1,134.83	601.38	605.93	0.00	0.00	0.00
9,800.00	90.16	90.23	7,108.06	-1,135.23	701.38	705.93	0.00	0.00	0.00
9,900.00	90.16	90.23	7,107.78	-1,135.62	801.37	805.93	0.00	0.00	0.00
10,000.00	90.16	90.23	7,107.51	-1,136.02	901.37	905.93	0.00	0.00	0.00
10,100.00	90.16	90.23	7,107.23	-1,136.41	1,001.37	1,005.93	0.00	0.00	0.00
10,200.00	90.16	90.23	7,106.96	-1,136.81	1,101.37	1,105.93	0.00	0.00	0.00
10,300.00	90.16	90.23	7,106.68	-1,137.21	1,201.37	1,205.93	0.00	0.00	0.00
10,400.00	90.16	90.23	7,106.41	-1,137.60	1,301.37	1,305.93	0.00	0.00	0.00
10,500.00	90.16	90.23	7,106.14	-1,138.00	1,401.37	1,405.92	0.00	0.00	0.00
10,600.00	90.16	90.23	7,105.86	-1,138.39	1,501.37	1,505.92	0.00	0.00	0.00
10,700.00	90.16	90.23	7,105.59	-1,138.79	1,601.37	1,605.92	0.00	0.00	0.00
10,800.00	90.16	90.23	7,105.31	-1,139.19	1,701.36	1,705.92	0.00	0.00	0.00
10,900.00	90.16	90.23	7,105.04	-1,139.58	1,801.36	1,805.92	0.00	0.00	0.00
11,000.00	90.16	90.23	7,104.77	-1,139.98	1,901.36	1,905.92	0.00	0.00	0.00
11,100.00	90.16	90.23	7,104.49	-1,140.37	2,001.36	2,005.92	0.00	0.00	0.00
11,200.00	90.16	90.23	7,104.22	-1,140.77	2,101.36	2,105.92	0.00	0.00	0.00
11,300.00	90.16	90.23	7,103.94	-1,141.17	2,201.36	2,205.92	0.00	0.00	0.00
11,400.00	90.16	90.23	7,103.67	-1,141.56	2,301.36	2,305.92	0.00	0.00	0.00
11,500.00	90.16	90.23	7,103.40	-1,141.96	2,401.36	2,405.92	0.00	0.00	0.00
11,600.00	90.16	90.23	7,103.12	-1,142.36	2,501.36	2,505.92	0.00	0.00	0.00
11,700.00	90.16	90.23	7,102.85	-1,142.75	2,601.35	2,605.92	0.00	0.00	0.00
11,800.00	90.16	90.23	7,102.57	-1,143.15	2,701.35	2,705.92	0.00	0.00	0.00
11,900.00	90.16	90.23	7,102.30	-1,143.54	2,801.35	2,805.92	0.00	0.00	0.00
12,000.00	90.16	90.23	7,102.03	-1,143.94	2,901.35	2,905.92	0.00	0.00	0.00
12,100.00	90.16	90.23	7,101.75	-1,144.34	3,001.35	3,005.92	0.00	0.00	0.00
12,200.00	90.16	90.23	7,101.48	-1,144.73	3,101.35	3,105.92	0.00	0.00	0.00
12,300.00	90.16	90.23	7,101.20	-1,145.13	3,201.35	3,205.92	0.00	0.00	0.00
12,400.00	90.16	90.23	7,100.93	-1,145.52	3,301.35	3,305.92	0.00	0.00	0.00
12,500.00	90.16	90.23	7,100.66	-1,145.92	3,401.34	3,405.92	0.00	0.00	0.00
12,600.00	90.16	90.23	7,100.38	-1,146.32	3,501.34	3,505.92	0.00	0.00	0.00
12,700.00	90.16	90.23	7,100.11	-1,146.71	3,601.34	3,605.92	0.00	0.00	0.00

# Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well CUMMINGS 19-13HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 4873.00usft (Drilling Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 4873.00usft (Drilling Rig)
<b>Site:</b>	5N-67W-19 CUMMINGS 18-19HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	CUMMINGS 19-13HZ	<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)	
12,800.00	90.16	90.23	7,099.83	-1,147.11	3,701.34	3,705.92	0.00	0.00	0.00	
12,900.00	90.16	90.23	7,099.56	-1,147.50	3,801.34	3,805.92	0.00	0.00	0.00	
13,000.00	90.16	90.23	7,099.29	-1,147.90	3,901.34	3,905.92	0.00	0.00	0.00	
13,100.00	90.16	90.23	7,099.01	-1,148.30	4,001.34	4,005.92	0.00	0.00	0.00	
13,200.00	90.16	90.23	7,098.74	-1,148.69	4,101.34	4,105.91	0.00	0.00	0.00	
13,300.00	90.16	90.23	7,098.46	-1,149.09	4,201.34	4,205.91	0.00	0.00	0.00	
13,400.00	90.16	90.23	7,098.19	-1,149.48	4,301.33	4,305.91	0.00	0.00	0.00	
13,500.00	90.16	90.23	7,097.92	-1,149.88	4,401.33	4,405.91	0.00	0.00	0.00	
13,600.00	90.16	90.23	7,097.64	-1,150.28	4,501.33	4,505.91	0.00	0.00	0.00	
13,700.00	90.16	90.23	7,097.37	-1,150.67	4,601.33	4,605.91	0.00	0.00	0.00	
13,800.00	90.16	90.23	7,097.09	-1,151.07	4,701.33	4,705.91	0.00	0.00	0.00	
13,900.00	90.16	90.23	7,096.82	-1,151.46	4,801.33	4,805.91	0.00	0.00	0.00	
14,000.00	90.16	90.23	7,096.55	-1,151.86	4,901.33	4,905.91	0.00	0.00	0.00	
14,100.00	90.16	90.23	7,096.27	-1,152.26	5,001.33	5,005.91	0.00	0.00	0.00	
14,200.00	90.16	90.23	7,096.00	-1,152.65	5,101.33	5,105.91	0.00	0.00	0.00	
14,300.00	90.16	90.23	7,095.72	-1,153.05	5,201.32	5,205.91	0.00	0.00	0.00	
14,400.00	90.16	90.23	7,095.45	-1,153.44	5,301.32	5,305.91	0.00	0.00	0.00	
14,500.00	90.16	90.23	7,095.18	-1,153.84	5,401.32	5,405.91	0.00	0.00	0.00	
14,600.00	90.16	90.23	7,094.90	-1,154.24	5,501.32	5,505.91	0.00	0.00	0.00	
14,700.00	90.16	90.23	7,094.63	-1,154.63	5,601.32	5,605.91	0.00	0.00	0.00	
14,800.00	90.16	90.23	7,094.35	-1,155.03	5,701.32	5,705.91	0.00	0.00	0.00	
14,900.00	90.16	90.23	7,094.08	-1,155.42	5,801.32	5,805.91	0.00	0.00	0.00	
15,000.00	90.16	90.23	7,093.80	-1,155.82	5,901.32	5,905.91	0.00	0.00	0.00	
15,100.00	90.16	90.23	7,093.53	-1,156.22	6,001.31	6,005.91	0.00	0.00	0.00	
15,200.00	90.16	90.23	7,093.26	-1,156.61	6,101.31	6,105.91	0.00	0.00	0.00	
15,300.00	90.16	90.23	7,092.98	-1,157.01	6,201.31	6,205.91	0.00	0.00	0.00	
15,400.00	90.16	90.23	7,092.71	-1,157.40	6,301.31	6,305.91	0.00	0.00	0.00	
15,500.00	90.16	90.23	7,092.43	-1,157.80	6,401.31	6,405.91	0.00	0.00	0.00	
15,600.00	90.16	90.23	7,092.16	-1,158.20	6,501.31	6,505.91	0.00	0.00	0.00	
15,700.00	90.16	90.23	7,091.89	-1,158.59	6,601.31	6,605.91	0.00	0.00	0.00	
15,800.00	90.16	90.23	7,091.61	-1,158.99	6,701.31	6,705.91	0.00	0.00	0.00	
15,900.00	90.16	90.23	7,091.34	-1,159.38	6,801.31	6,805.90	0.00	0.00	0.00	
16,000.00	90.16	90.23	7,091.06	-1,159.78	6,901.30	6,905.90	0.00	0.00	0.00	
16,100.00	90.16	90.23	7,090.79	-1,160.18	7,001.30	7,005.90	0.00	0.00	0.00	
16,200.00	90.16	90.23	7,090.52	-1,160.57	7,101.30	7,105.90	0.00	0.00	0.00	
16,300.00	90.16	90.23	7,090.24	-1,160.97	7,201.30	7,205.90	0.00	0.00	0.00	
16,400.00	90.16	90.23	7,089.97	-1,161.37	7,301.30	7,305.90	0.00	0.00	0.00	
16,500.00	90.16	90.23	7,089.69	-1,161.76	7,401.30	7,405.90	0.00	0.00	0.00	
16,600.00	90.16	90.23	7,089.42	-1,162.16	7,501.30	7,505.90	0.00	0.00	0.00	
16,700.00	90.16	90.23	7,089.15	-1,162.55	7,601.30	7,605.90	0.00	0.00	0.00	
16,800.00	90.16	90.23	7,088.87	-1,162.95	7,701.30	7,705.90	0.00	0.00	0.00	
16,900.00	90.16	90.23	7,088.60	-1,163.35	7,801.29	7,805.90	0.00	0.00	0.00	
17,000.00	90.16	90.23	7,088.32	-1,163.74	7,901.29	7,905.90	0.00	0.00	0.00	
17,100.00	90.16	90.23	7,088.05	-1,164.14	8,001.29	8,005.90	0.00	0.00	0.00	
17,200.00	90.16	90.23	7,087.78	-1,164.53	8,101.29	8,105.90	0.00	0.00	0.00	
17,300.00	90.16	90.23	7,087.50	-1,164.93	8,201.29	8,205.90	0.00	0.00	0.00	
17,400.00	90.16	90.23	7,087.23	-1,165.33	8,301.29	8,305.90	0.00	0.00	0.00	
17,500.00	90.16	90.23	7,086.95	-1,165.72	8,401.29	8,405.90	0.00	0.00	0.00	
17,600.00	90.16	90.23	7,086.68	-1,166.12	8,501.29	8,505.90	0.00	0.00	0.00	
17,700.00	90.16	90.23	7,086.41	-1,166.51	8,601.28	8,605.90	0.00	0.00	0.00	
17,800.00	90.16	90.23	7,086.13	-1,166.91	8,701.28	8,705.90	0.00	0.00	0.00	
17,900.00	90.16	90.23	7,085.86	-1,167.31	8,801.28	8,805.90	0.00	0.00	0.00	
18,000.00	90.16	90.23	7,085.58	-1,167.70	8,901.28	8,905.90	0.00	0.00	0.00	
18,100.00	90.16	90.23	7,085.31	-1,168.10	9,001.28	9,005.90	0.00	0.00	0.00	



# Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well CUMMINGS 19-13HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 4873.00usft (Drilling Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 4873.00usft (Drilling Rig)
<b>Site:</b>	5N-67W-19 CUMMINGS 18-19HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	CUMMINGS 19-13HZ	<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)
18,200.00	90.16	90.23	7,085.04	-1,168.49	9,101.28	9,105.90	0.00	0.00	0.00
18,212.82	90.16	90.23	7,085.00	-1,168.54	9,114.09	9,118.71	0.00	0.00	0.00
TD Well @ 18212.82ft									

Casing Points				
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,526.50	1,500.00	9 5/8" Csg	9-5/8	13-1/2
7,996.26	7,113.00	Top of Production	5-1/2	7-7/8

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
869.42	866.00	Fox Hills			
3,623.21	3,362.00	Parkman			
4,204.35	3,873.00	Sussex			
7,168.09	6,687.00	Sharon Springs			
7,207.98	6,723.00	Niobrara			
7,279.57	6,785.00	Nio B			
7,461.81	6,924.00	Nio C			
7,646.08	7,030.00	Fort Hayes			
7,696.56	7,052.00	Codell			

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
200.00	200.00	0.00	0.00	Begin Nudge @ 200.00ft
2,096.00	2,019.10	-242.37	-392.12	Hold Tangent @ 2096.00ft
4,896.00	4,481.18	-943.46	-1,526.40	Begin Drop @ 4896.00ft
6,318.00	5,845.50	-1,125.24	-1,820.49	Hold Vertical @ 6318.00ft
6,869.30	6,396.80	-1,125.24	-1,820.49	KOP @ 6869.30ft :: DLS = 8°/100'
7,996.26	7,113.00	-1,128.08	-1,102.34	End Build @ 7996.26ft
18,212.82	7,085.00	-1,168.54	9,114.09	TD Well @ 18212.82ft