

# **US ROCKIES WATTENBERG PLANNING**

**WELD-NAD83-UTMFT13N**

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

**CUMMINGS 19-1HZ**

## **Plan A**

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

SHL Lat/Long: 40.389215/-104.940714

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 19-1HZ  
Wellbore: Plan A  
Design: Permit Rev-1

## US ROCKIES WATTENBERG PLANNING

### CASING DETAILS

TVD	MD	Size
1500.00	1526.36	9-5/8
6976.00	7574.09	5-1/2

WELL DETAILS: CUMMINGS 19-1HZ

GL = 4856.00

RKB = 17' @ 4873.00usft (Drilling Rig)

### SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	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	1470.00	19.05	336.40	1446.73	191.69	-83.75	1.50	336.40	83.18	
4	4270.00	19.05	336.40	4093.39	1029.16	-449.63	0.00	0.00	446.57	
5	5222.50	0.00	0.00	5028.43	1172.93	-512.44	2.00	180.00	508.96	
6	6453.89	0.00	0.00	6259.82	1172.93	-512.44	0.00	0.00	508.96	
7	7574.09	89.62	269.83	6976.00	1170.87	-1223.84	8.00	269.83	1220.36	
8	20406.99	89.62	269.83	7062.00	1133.73	-14056.39	0.00	0.00	14052.96	CUMMINGS 19-1HZ_BHL

### WELLBORE TARGET DETAILS (LAT/LONG)

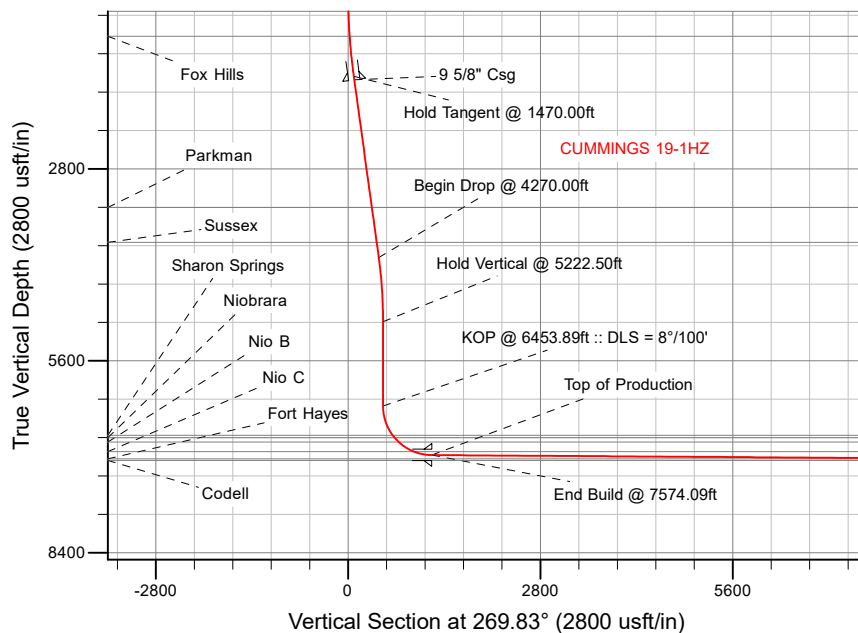
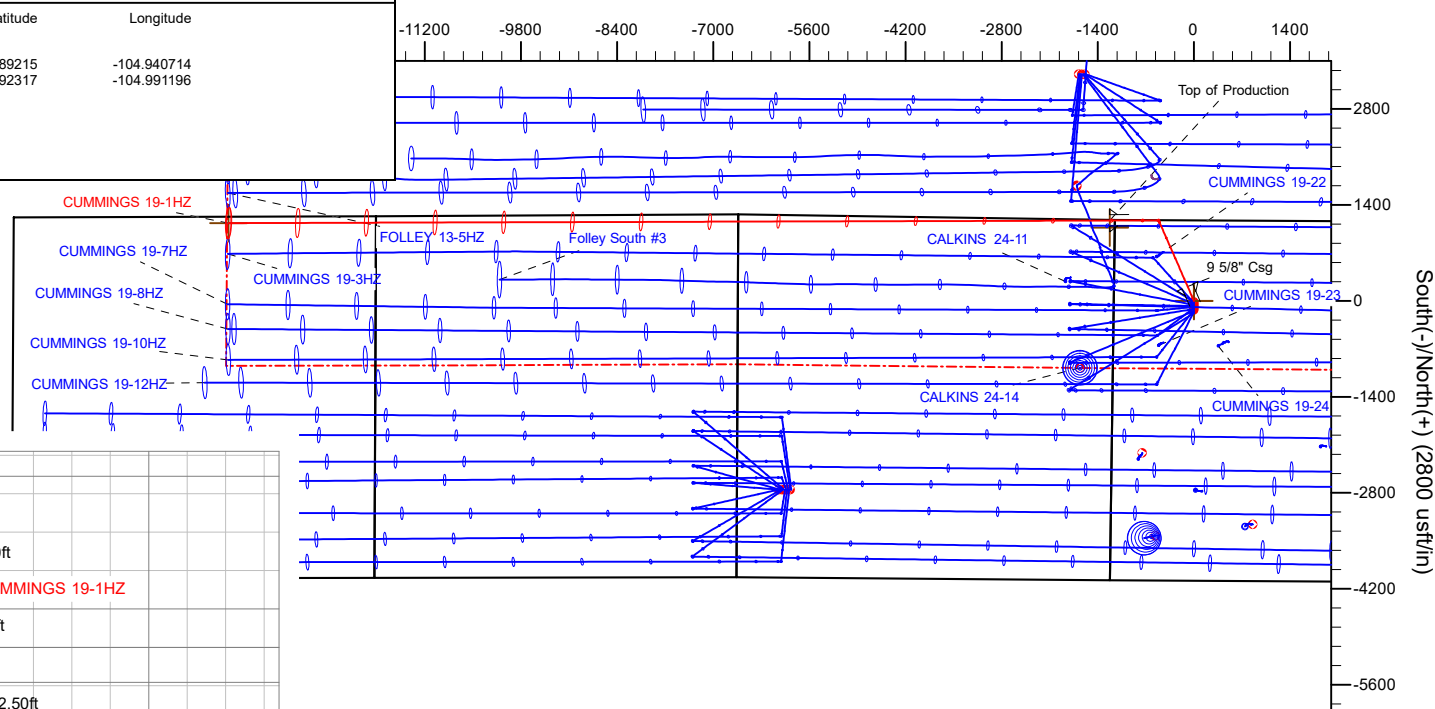
Name	TVD	+N/-S	+E/-W	Latitude	Longitude
CUMMINGS 19-1HZ_SHL	0.00	0.00	0.00	40.389215	-104.940714
CUMMINGS 19-1HZ_BHL	7062.00	1133.73	-14056.39	40.392317	-104.991196

SHL  
1175' FNL  
1164' FWL

HEEL  
12' FNL  
75' FEL

TOE  
93' FNL  
2146' FEL

West(-)/East(+) (2800 usft/in)



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

Date: 4/7/2019

# Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well CUMMINGS 19-1HZ
<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 19-1HZ	<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 19-1HZ				
Well Position	+N/-S	0.00 usft	Northing:	14,668,472.69 usft	Latitude:	40.389215
	+E/-W	0.00 usft	Easting:	1,656,925.11 usft	Longitude:	-104.940714
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	52,165.48311750

<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	269.83

<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	20,406.99	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 19-1HZ
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 19-1HZ	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	
1,470.00	19.05	336.40	1,446.73	191.69	-83.75	1.50	1.50	0.00	336.40	
4,270.00	19.05	336.40	4,093.39	1,029.16	-449.63	0.00	0.00	0.00	0.00	
5,222.50	0.00	0.00	5,028.43	1,172.93	-512.44	2.00	-2.00	2.48	180.00	
6,453.89	0.00	0.00	6,259.82	1,172.93	-512.44	0.00	0.00	0.00	0.00	
7,574.09	89.62	269.83	6,976.00	1,170.87	-1,223.84	8.00	8.00	-8.05	269.83	
20,406.99	89.62	269.83	7,062.00	1,133.73	-14,056.39	0.00	0.00	0.00	0.00	CUMMINGS 19-1HZ_

# Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well CUMMINGS 19-1HZ
<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 19-1HZ	<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	336.40	299.99	1.20	-0.52	0.52	1.50	1.50	0.00
400.00	3.00	336.40	399.91	4.80	-2.10	2.08	1.50	1.50	0.00
500.00	4.50	336.40	499.69	10.79	-4.71	4.68	1.50	1.50	0.00
600.00	6.00	336.40	599.27	19.17	-8.38	8.32	1.50	1.50	0.00
700.00	7.50	336.40	698.57	29.95	-13.08	12.99	1.50	1.50	0.00
800.00	9.00	336.40	797.54	43.09	-18.83	18.70	1.50	1.50	0.00
869.42	10.04	336.40	866.00	53.62	-23.42	23.27	1.50	1.50	0.00
Fox Hills									
900.00	10.50	336.40	896.09	58.61	-25.61	25.43	1.50	1.50	0.00
1,000.00	12.00	336.40	994.16	76.49	-33.42	33.19	1.50	1.50	0.00
1,100.00	13.50	336.40	1,091.70	96.71	-42.25	41.97	1.50	1.50	0.00
1,200.00	15.00	336.40	1,188.62	119.27	-52.11	51.75	1.50	1.50	0.00
1,300.00	16.50	336.40	1,284.86	144.14	-62.97	62.55	1.50	1.50	0.00
1,400.00	18.00	336.40	1,380.36	171.31	-74.85	74.34	1.50	1.50	0.00
1,470.00	19.05	336.40	1,446.73	191.69	-83.75	83.18	1.50	1.50	0.00
Hold Tangent @ 1470.00ft									
1,500.00	19.05	336.40	1,475.09	200.67	-87.67	87.07	0.00	0.00	0.00
1,526.36	19.05	336.40	1,500.00	208.55	-91.11	90.49	0.00	0.00	0.00
9 5/8" Csg									
1,600.00	19.05	336.40	1,569.61	230.58	-100.74	100.05	0.00	0.00	0.00
1,700.00	19.05	336.40	1,664.13	260.49	-113.80	113.03	0.00	0.00	0.00
1,800.00	19.05	336.40	1,758.66	290.40	-126.87	126.01	0.00	0.00	0.00
1,900.00	19.05	336.40	1,853.18	320.30	-139.94	138.99	0.00	0.00	0.00
2,000.00	19.05	336.40	1,947.70	350.21	-153.00	151.97	0.00	0.00	0.00
2,100.00	19.05	336.40	2,042.23	380.12	-166.07	164.94	0.00	0.00	0.00
2,200.00	19.05	336.40	2,136.75	410.03	-179.14	177.92	0.00	0.00	0.00
2,300.00	19.05	336.40	2,231.27	439.94	-192.21	190.90	0.00	0.00	0.00
2,400.00	19.05	336.40	2,325.80	469.85	-205.27	203.88	0.00	0.00	0.00
2,500.00	19.05	336.40	2,420.32	499.76	-218.34	216.86	0.00	0.00	0.00
2,600.00	19.05	336.40	2,514.84	529.67	-231.41	229.83	0.00	0.00	0.00
2,700.00	19.05	336.40	2,609.37	559.58	-244.47	242.81	0.00	0.00	0.00
2,800.00	19.05	336.40	2,703.89	589.49	-257.54	255.79	0.00	0.00	0.00
2,900.00	19.05	336.40	2,798.41	619.40	-270.61	268.77	0.00	0.00	0.00
3,000.00	19.05	336.40	2,892.94	649.31	-283.68	281.75	0.00	0.00	0.00
3,100.00	19.05	336.40	2,987.46	679.22	-296.74	294.73	0.00	0.00	0.00
3,200.00	19.05	336.40	3,081.99	709.13	-309.81	307.70	0.00	0.00	0.00
3,300.00	19.05	336.40	3,176.51	739.04	-322.88	320.68	0.00	0.00	0.00
3,400.00	19.05	336.40	3,271.03	768.95	-335.94	333.66	0.00	0.00	0.00
3,496.24	19.05	336.40	3,362.00	797.73	-348.52	346.15	0.00	0.00	0.00
Parkman									
3,500.00	19.05	336.40	3,365.56	798.86	-349.01	346.64	0.00	0.00	0.00
3,600.00	19.05	336.40	3,460.08	828.77	-362.08	359.62	0.00	0.00	0.00
3,700.00	19.05	336.40	3,554.60	858.68	-375.15	372.60	0.00	0.00	0.00
3,800.00	19.05	336.40	3,649.13	888.58	-388.21	385.57	0.00	0.00	0.00
3,900.00	19.05	336.40	3,743.65	918.49	-401.28	398.55	0.00	0.00	0.00
4,000.00	19.05	336.40	3,838.17	948.40	-414.35	411.53	0.00	0.00	0.00
4,036.85	19.05	336.40	3,873.00	959.42	-419.16	416.31	0.00	0.00	0.00
Sussex									
4,100.00	19.05	336.40	3,932.70	978.31	-427.41	424.51	0.00	0.00	0.00

**Corporate**  
Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well CUMMINGS 19-1HZ
<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 19-1HZ	<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)	
4,200.00	19.05	336.40	4,027.22	1,008.22	-440.48	437.49	0.00	0.00	0.00	
4,270.00	19.05	336.40	4,093.39	1,029.16	-449.63	446.57	0.00	0.00	0.00	
<b>Begin Drop @ 4270.00ft</b>										
4,300.00	18.45	336.40	4,121.79	1,038.00	-453.49	450.41	2.00	-2.00	0.00	
4,400.00	16.45	336.40	4,217.19	1,065.47	-465.49	462.33	2.00	-2.00	0.00	
4,500.00	14.45	336.40	4,313.57	1,089.88	-476.16	472.92	2.00	-2.00	0.00	
4,600.00	12.45	336.40	4,410.82	1,111.20	-485.47	482.17	2.00	-2.00	0.00	
4,700.00	10.45	336.40	4,508.83	1,129.39	-493.42	490.06	2.00	-2.00	0.00	
4,800.00	8.45	336.40	4,607.46	1,144.43	-499.99	496.59	2.00	-2.00	0.00	
4,900.00	6.45	336.40	4,706.61	1,156.31	-505.18	501.75	2.00	-2.00	0.00	
5,000.00	4.45	336.40	4,806.16	1,165.02	-508.98	505.52	2.00	-2.00	0.00	
5,100.00	2.45	336.40	4,905.97	1,170.53	-511.39	507.92	2.00	-2.00	0.00	
5,200.00	0.45	336.40	5,005.93	1,172.85	-512.40	508.92	2.00	-2.00	0.00	
5,222.50	0.00	0.00	5,028.43	1,172.93	-512.44	508.96	2.00	-2.00	104.89	
<b>Hold Vertical @ 5222.50ft</b>										
5,300.00	0.00	0.00	5,105.93	1,172.93	-512.44	508.96	0.00	0.00	0.00	
5,400.00	0.00	0.00	5,205.93	1,172.93	-512.44	508.96	0.00	0.00	0.00	
5,500.00	0.00	0.00	5,305.93	1,172.93	-512.44	508.96	0.00	0.00	0.00	
5,600.00	0.00	0.00	5,405.93	1,172.93	-512.44	508.96	0.00	0.00	0.00	
5,700.00	0.00	0.00	5,505.93	1,172.93	-512.44	508.96	0.00	0.00	0.00	
5,800.00	0.00	0.00	5,605.93	1,172.93	-512.44	508.96	0.00	0.00	0.00	
5,900.00	0.00	0.00	5,705.93	1,172.93	-512.44	508.96	0.00	0.00	0.00	
6,000.00	0.00	0.00	5,805.93	1,172.93	-512.44	508.96	0.00	0.00	0.00	
6,100.00	0.00	0.00	5,905.93	1,172.93	-512.44	508.96	0.00	0.00	0.00	
6,200.00	0.00	0.00	6,005.93	1,172.93	-512.44	508.96	0.00	0.00	0.00	
6,300.00	0.00	0.00	6,105.93	1,172.93	-512.44	508.96	0.00	0.00	0.00	
6,400.00	0.00	0.00	6,205.93	1,172.93	-512.44	508.96	0.00	0.00	0.00	
6,453.89	0.00	0.00	6,259.82	1,172.93	-512.44	508.96	0.00	0.00	0.00	
<b>KOP @ 6453.89ft :: DLS = 8°/100'</b>										
6,500.00	3.69	269.83	6,305.90	1,172.93	-513.92	510.44	8.00	8.00	-195.55	
6,600.00	11.69	269.83	6,404.92	1,172.89	-527.29	523.81	8.00	8.00	0.00	
6,700.00	19.69	269.83	6,501.12	1,172.81	-554.31	550.83	8.00	8.00	0.00	
6,800.00	27.69	269.83	6,592.62	1,172.69	-594.46	590.97	8.00	8.00	0.00	
6,900.00	35.69	269.83	6,677.64	1,172.54	-646.94	643.46	8.00	8.00	0.00	
6,911.59	36.62	269.83	6,687.00	1,172.52	-653.78	650.30	8.00	8.00	0.00	
<b>Sharon Springs</b>										
6,957.57	40.29	269.83	6,723.00	1,172.44	-682.37	678.89	8.00	8.00	0.00	
<b>Niobrara</b>										
7,000.00	43.69	269.83	6,754.53	1,172.36	-710.75	707.27	8.00	8.00	0.00	
7,043.42	47.16	269.83	6,785.00	1,172.27	-741.68	738.20	8.00	8.00	0.00	
<b>Nio B</b>										
7,100.00	51.69	269.83	6,821.79	1,172.14	-784.64	781.16	8.00	8.00	0.00	
7,200.00	59.69	269.83	6,878.11	1,171.90	-867.17	863.69	8.00	8.00	0.00	
7,300.00	67.69	269.83	6,922.40	1,171.64	-956.74	953.26	8.00	8.00	0.00	
7,304.24	68.03	269.83	6,924.00	1,171.63	-960.67	957.19	8.00	8.00	0.00	
<b>Nio C</b>										
7,400.00	75.69	269.83	6,953.79	1,171.37	-1,051.60	1,048.12	8.00	8.00	0.00	
7,500.00	83.69	269.83	6,971.68	1,171.08	-1,149.90	1,146.42	8.00	8.00	0.00	
7,574.09	89.62	269.83	6,976.00	1,170.87	-1,223.83	1,220.36	8.00	8.00	0.00	
<b>End Build @ 7574.09ft - Top of Production</b>										
7,600.00	89.62	269.83	6,976.18	1,170.80	-1,249.74	1,246.26	0.00	0.00	0.00	
7,700.00	89.62	269.83	6,976.85	1,170.51	-1,349.74	1,346.26	0.00	0.00	0.00	
7,800.00	89.62	269.83	6,977.52	1,170.22	-1,449.74	1,446.26	0.00	0.00	0.00	

# Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well CUMMINGS 19-1HZ
<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 19-1HZ	<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)	
7,900.00	89.62	269.83	6,978.19	1,169.93	-1,549.74	1,546.26	0.00	0.00	0.00	
8,000.00	89.62	269.83	6,978.86	1,169.64	-1,649.73	1,646.26	0.00	0.00	0.00	
8,100.00	89.62	269.83	6,979.53	1,169.35	-1,749.73	1,746.25	0.00	0.00	0.00	
8,200.00	89.62	269.83	6,980.20	1,169.06	-1,849.73	1,846.25	0.00	0.00	0.00	
8,300.00	89.62	269.83	6,980.87	1,168.77	-1,949.73	1,946.25	0.00	0.00	0.00	
8,400.00	89.62	269.83	6,981.54	1,168.48	-2,049.72	2,046.25	0.00	0.00	0.00	
8,500.00	89.62	269.83	6,982.21	1,168.19	-2,149.72	2,146.24	0.00	0.00	0.00	
8,600.00	89.62	269.83	6,982.88	1,167.90	-2,249.72	2,246.24	0.00	0.00	0.00	
8,700.00	89.62	269.83	6,983.55	1,167.61	-2,349.71	2,346.24	0.00	0.00	0.00	
8,800.00	89.62	269.83	6,984.22	1,167.32	-2,449.71	2,446.24	0.00	0.00	0.00	
8,900.00	89.62	269.83	6,984.89	1,167.03	-2,549.71	2,546.24	0.00	0.00	0.00	
9,000.00	89.62	269.83	6,985.56	1,166.74	-2,649.71	2,646.23	0.00	0.00	0.00	
9,100.00	89.62	269.83	6,986.23	1,166.45	-2,749.70	2,746.23	0.00	0.00	0.00	
9,200.00	89.62	269.83	6,986.90	1,166.16	-2,849.70	2,846.23	0.00	0.00	0.00	
9,300.00	89.62	269.83	6,987.57	1,165.88	-2,949.70	2,946.23	0.00	0.00	0.00	
9,400.00	89.62	269.83	6,988.24	1,165.59	-3,049.70	3,046.22	0.00	0.00	0.00	
9,500.00	89.62	269.83	6,988.91	1,165.30	-3,149.69	3,146.22	0.00	0.00	0.00	
9,600.00	89.62	269.83	6,989.58	1,165.01	-3,249.69	3,246.22	0.00	0.00	0.00	
9,700.00	89.62	269.83	6,990.25	1,164.72	-3,349.69	3,346.22	0.00	0.00	0.00	
9,800.00	89.62	269.83	6,990.92	1,164.43	-3,449.69	3,446.22	0.00	0.00	0.00	
9,900.00	89.62	269.83	6,991.59	1,164.14	-3,549.68	3,546.21	0.00	0.00	0.00	
10,000.00	89.62	269.83	6,992.26	1,163.85	-3,649.68	3,646.21	0.00	0.00	0.00	
10,100.00	89.62	269.83	6,992.93	1,163.56	-3,749.68	3,746.21	0.00	0.00	0.00	
10,200.00	89.62	269.83	6,993.60	1,163.27	-3,849.67	3,846.21	0.00	0.00	0.00	
10,300.00	89.62	269.83	6,994.27	1,162.98	-3,949.67	3,946.20	0.00	0.00	0.00	
10,400.00	89.62	269.83	6,994.94	1,162.69	-4,049.67	4,046.20	0.00	0.00	0.00	
10,500.00	89.62	269.83	6,995.61	1,162.40	-4,149.67	4,146.20	0.00	0.00	0.00	
10,600.00	89.62	269.83	6,996.28	1,162.11	-4,249.66	4,246.20	0.00	0.00	0.00	
10,700.00	89.62	269.83	6,996.95	1,161.82	-4,349.66	4,346.20	0.00	0.00	0.00	
10,800.00	89.62	269.83	6,997.62	1,161.53	-4,449.66	4,446.19	0.00	0.00	0.00	
10,900.00	89.62	269.83	6,998.29	1,161.24	-4,549.66	4,546.19	0.00	0.00	0.00	
11,000.00	89.62	269.83	6,998.96	1,160.96	-4,649.65	4,646.19	0.00	0.00	0.00	
11,100.00	89.62	269.83	6,999.63	1,160.67	-4,749.65	4,746.19	0.00	0.00	0.00	
11,200.00	89.62	269.83	7,000.30	1,160.38	-4,849.65	4,846.18	0.00	0.00	0.00	
11,300.00	89.62	269.83	7,000.97	1,160.09	-4,949.65	4,946.18	0.00	0.00	0.00	
11,400.00	89.62	269.83	7,001.64	1,159.80	-5,049.64	5,046.18	0.00	0.00	0.00	
11,500.00	89.62	269.83	7,002.31	1,159.51	-5,149.64	5,146.18	0.00	0.00	0.00	
11,600.00	89.62	269.83	7,002.98	1,159.22	-5,249.64	5,246.17	0.00	0.00	0.00	
11,700.00	89.62	269.83	7,003.65	1,158.93	-5,349.63	5,346.17	0.00	0.00	0.00	
11,800.00	89.62	269.83	7,004.32	1,158.64	-5,449.63	5,446.17	0.00	0.00	0.00	
11,900.00	89.62	269.83	7,004.99	1,158.35	-5,549.63	5,546.17	0.00	0.00	0.00	
12,000.00	89.62	269.83	7,005.66	1,158.06	-5,649.63	5,646.17	0.00	0.00	0.00	
12,100.00	89.62	269.83	7,006.33	1,157.77	-5,749.62	5,746.16	0.00	0.00	0.00	
12,200.00	89.62	269.83	7,007.00	1,157.48	-5,849.62	5,846.16	0.00	0.00	0.00	
12,300.00	89.62	269.83	7,007.67	1,157.19	-5,949.62	5,946.16	0.00	0.00	0.00	
12,400.00	89.62	269.83	7,008.34	1,156.90	-6,049.62	6,046.16	0.00	0.00	0.00	
12,500.00	89.62	269.83	7,009.01	1,156.61	-6,149.61	6,146.15	0.00	0.00	0.00	
12,600.00	89.62	269.83	7,009.68	1,156.32	-6,249.61	6,246.15	0.00	0.00	0.00	
12,700.00	89.62	269.83	7,010.35	1,156.04	-6,349.61	6,346.15	0.00	0.00	0.00	
12,800.00	89.62	269.83	7,011.02	1,155.75	-6,449.61	6,446.15	0.00	0.00	0.00	
12,900.00	89.62	269.83	7,011.69	1,155.46	-6,549.60	6,546.15	0.00	0.00	0.00	
13,000.00	89.62	269.83	7,012.36	1,155.17	-6,649.60	6,646.14	0.00	0.00	0.00	
13,100.00	89.62	269.83	7,013.03	1,154.88	-6,749.60	6,746.14	0.00	0.00	0.00	
13,200.00	89.62	269.83	7,013.70	1,154.59	-6,849.59	6,846.14	0.00	0.00	0.00	

# Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well CUMMINGS 19-1HZ
<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 19-1HZ	<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)
13,300.00	89.62	269.83	7,014.37	1,154.30	-6,949.59	6,946.14	0.00	0.00	0.00
13,400.00	89.62	269.83	7,015.04	1,154.01	-7,049.59	7,046.13	0.00	0.00	0.00
13,500.00	89.62	269.83	7,015.72	1,153.72	-7,149.59	7,146.13	0.00	0.00	0.00
13,600.00	89.62	269.83	7,016.39	1,153.43	-7,249.58	7,246.13	0.00	0.00	0.00
13,700.00	89.62	269.83	7,017.06	1,153.14	-7,349.58	7,346.13	0.00	0.00	0.00
13,800.00	89.62	269.83	7,017.73	1,152.85	-7,449.58	7,446.13	0.00	0.00	0.00
13,900.00	89.62	269.83	7,018.40	1,152.56	-7,549.58	7,546.12	0.00	0.00	0.00
14,000.00	89.62	269.83	7,019.07	1,152.27	-7,649.57	7,646.12	0.00	0.00	0.00
14,100.00	89.62	269.83	7,019.74	1,151.98	-7,749.57	7,746.12	0.00	0.00	0.00
14,200.00	89.62	269.83	7,020.41	1,151.69	-7,849.57	7,846.12	0.00	0.00	0.00
14,300.00	89.62	269.83	7,021.08	1,151.40	-7,949.57	7,946.11	0.00	0.00	0.00
14,400.00	89.62	269.83	7,021.75	1,151.12	-8,049.56	8,046.11	0.00	0.00	0.00
14,500.00	89.62	269.83	7,022.42	1,150.83	-8,149.56	8,146.11	0.00	0.00	0.00
14,600.00	89.62	269.83	7,023.09	1,150.54	-8,249.56	8,246.11	0.00	0.00	0.00
14,700.00	89.62	269.83	7,023.76	1,150.25	-8,349.55	8,346.11	0.00	0.00	0.00
14,800.00	89.62	269.83	7,024.43	1,149.96	-8,449.55	8,446.10	0.00	0.00	0.00
14,900.00	89.62	269.83	7,025.10	1,149.67	-8,549.55	8,546.10	0.00	0.00	0.00
15,000.00	89.62	269.83	7,025.77	1,149.38	-8,649.55	8,646.10	0.00	0.00	0.00
15,100.00	89.62	269.83	7,026.44	1,149.09	-8,749.54	8,746.10	0.00	0.00	0.00
15,200.00	89.62	269.83	7,027.11	1,148.80	-8,849.54	8,846.09	0.00	0.00	0.00
15,300.00	89.62	269.83	7,027.78	1,148.51	-8,949.54	8,946.09	0.00	0.00	0.00
15,400.00	89.62	269.83	7,028.45	1,148.22	-9,049.54	9,046.09	0.00	0.00	0.00
15,500.00	89.62	269.83	7,029.12	1,147.93	-9,149.53	9,146.09	0.00	0.00	0.00
15,600.00	89.62	269.83	7,029.79	1,147.64	-9,249.53	9,246.09	0.00	0.00	0.00
15,631.73	89.62	269.83	7,030.00	1,147.55	-9,281.26	9,277.81	0.00	0.00	0.00
Fort Hayes									
15,700.00	89.62	269.83	7,030.46	1,147.35	-9,349.53	9,346.08	0.00	0.00	0.00
15,800.00	89.62	269.83	7,031.13	1,147.06	-9,449.53	9,446.08	0.00	0.00	0.00
15,900.00	89.62	269.83	7,031.80	1,146.77	-9,549.52	9,546.08	0.00	0.00	0.00
16,000.00	89.62	269.83	7,032.47	1,146.48	-9,649.52	9,646.08	0.00	0.00	0.00
16,100.00	89.62	269.83	7,033.14	1,146.20	-9,749.52	9,746.07	0.00	0.00	0.00
16,200.00	89.62	269.83	7,033.81	1,145.91	-9,849.52	9,846.07	0.00	0.00	0.00
16,300.00	89.62	269.83	7,034.48	1,145.62	-9,949.51	9,946.07	0.00	0.00	0.00
16,400.00	89.62	269.83	7,035.15	1,145.33	-10,049.51	10,046.07	0.00	0.00	0.00
16,500.00	89.62	269.83	7,035.82	1,145.04	-10,149.51	10,146.06	0.00	0.00	0.00
16,600.00	89.62	269.83	7,036.49	1,144.75	-10,249.50	10,246.06	0.00	0.00	0.00
16,700.00	89.62	269.83	7,037.16	1,144.46	-10,349.50	10,346.06	0.00	0.00	0.00
16,800.00	89.62	269.83	7,037.83	1,144.17	-10,449.50	10,446.06	0.00	0.00	0.00
16,900.00	89.62	269.83	7,038.50	1,143.88	-10,549.50	10,546.06	0.00	0.00	0.00
17,000.00	89.62	269.83	7,039.17	1,143.59	-10,649.49	10,646.05	0.00	0.00	0.00
17,100.00	89.62	269.83	7,039.84	1,143.30	-10,749.49	10,746.05	0.00	0.00	0.00
17,200.00	89.62	269.83	7,040.51	1,143.01	-10,849.49	10,846.05	0.00	0.00	0.00
17,300.00	89.62	269.83	7,041.18	1,142.72	-10,949.49	10,946.05	0.00	0.00	0.00
17,400.00	89.62	269.83	7,041.85	1,142.43	-11,049.48	11,046.04	0.00	0.00	0.00
17,500.00	89.62	269.83	7,042.52	1,142.14	-11,149.48	11,146.04	0.00	0.00	0.00
17,600.00	89.62	269.83	7,043.19	1,141.85	-11,249.48	11,246.04	0.00	0.00	0.00
17,700.00	89.62	269.83	7,043.86	1,141.56	-11,349.48	11,346.04	0.00	0.00	0.00
17,800.00	89.62	269.83	7,044.53	1,141.28	-11,449.47	11,446.04	0.00	0.00	0.00
17,900.00	89.62	269.83	7,045.20	1,140.99	-11,549.47	11,546.03	0.00	0.00	0.00
18,000.00	89.62	269.83	7,045.87	1,140.70	-11,649.47	11,646.03	0.00	0.00	0.00
18,100.00	89.62	269.83	7,046.54	1,140.41	-11,749.46	11,746.03	0.00	0.00	0.00
18,200.00	89.62	269.83	7,047.21	1,140.12	-11,849.46	11,846.03	0.00	0.00	0.00
18,300.00	89.62	269.83	7,047.88	1,139.83	-11,949.46	11,946.02	0.00	0.00	0.00
18,400.00	89.62	269.83	7,048.55	1,139.54	-12,049.46	12,046.02	0.00	0.00	0.00



# Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well CUMMINGS 19-1HZ
<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 19-1HZ	<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)
18,500.00	89.62	269.83	7,049.22	1,139.25	-12,149.45	12,146.02	0.00	0.00	0.00
18,600.00	89.62	269.83	7,049.89	1,138.96	-12,249.45	12,246.02	0.00	0.00	0.00
18,700.00	89.62	269.83	7,050.56	1,138.67	-12,349.45	12,346.02	0.00	0.00	0.00
18,800.00	89.62	269.83	7,051.23	1,138.38	-12,449.45	12,446.01	0.00	0.00	0.00
18,900.00	89.62	269.83	7,051.90	1,138.09	-12,549.44	12,546.01	0.00	0.00	0.00
18,914.72	89.62	269.83	7,052.00	1,138.05	-12,564.16	12,560.73	0.00	0.00	0.00
Codell									
19,000.00	89.62	269.83	7,052.57	1,137.80	-12,649.44	12,646.01	0.00	0.00	0.00
19,100.00	89.62	269.83	7,053.24	1,137.51	-12,749.44	12,746.01	0.00	0.00	0.00
19,200.00	89.62	269.83	7,053.91	1,137.22	-12,849.44	12,846.00	0.00	0.00	0.00
19,300.00	89.62	269.83	7,054.58	1,136.93	-12,949.43	12,946.00	0.00	0.00	0.00
19,400.00	89.62	269.83	7,055.25	1,136.64	-13,049.43	13,046.00	0.00	0.00	0.00
19,500.00	89.62	269.83	7,055.92	1,136.36	-13,149.43	13,146.00	0.00	0.00	0.00
19,600.00	89.62	269.83	7,056.59	1,136.07	-13,249.42	13,246.00	0.00	0.00	0.00
19,700.00	89.62	269.83	7,057.26	1,135.78	-13,349.42	13,345.99	0.00	0.00	0.00
19,800.00	89.62	269.83	7,057.93	1,135.49	-13,449.42	13,445.99	0.00	0.00	0.00
19,900.00	89.62	269.83	7,058.60	1,135.20	-13,549.42	13,545.99	0.00	0.00	0.00
20,000.00	89.62	269.83	7,059.27	1,134.91	-13,649.41	13,645.99	0.00	0.00	0.00
20,100.00	89.62	269.83	7,059.94	1,134.62	-13,749.41	13,745.98	0.00	0.00	0.00
20,200.00	89.62	269.83	7,060.61	1,134.33	-13,849.41	13,845.98	0.00	0.00	0.00
20,300.00	89.62	269.83	7,061.28	1,134.04	-13,949.41	13,945.98	0.00	0.00	0.00
20,400.00	89.62	269.83	7,061.95	1,133.75	-14,049.40	14,045.98	0.00	0.00	0.00
20,406.99	89.62	269.83	7,062.00	1,133.73	-14,056.39	14,052.97	0.00	0.00	0.00
TD Well @ 20406.99ft									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,526.36	1,500.00	9 5/8" Csg	9-5/8	13-1/2	
7,574.09	6,976.00	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				
3,496.24	3,362.00	Parkman				
4,036.85	3,873.00	Sussex				
6,911.59	6,687.00	Sharon Springs				
6,957.57	6,723.00	Niobrara				
7,043.42	6,785.00	Nio B				
7,304.24	6,924.00	Nio C				
15,631.73	7,030.00	Fort Hayes				
18,914.72	7,052.00	Codell				

Corporate  
Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well CUMMINGS 19-1HZ
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 19-1HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-1		

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
1,470.00	1,446.73	191.69	-83.75	Hold Tangent @ 1470.00ft
4,270.00	4,093.39	1,029.16	-449.63	Begin Drop @ 4270.00ft
5,222.50	5,028.43	1,172.93	-512.44	Hold Vertical @ 5222.50ft
6,453.89	6,259.82	1,172.93	-512.44	KOP @ 6453.89ft :: DLS = 8°/100'
7,574.09	6,976.00	1,170.87	-1,223.84	End Build @ 7574.09ft
20,406.99	7,062.00	1,133.73	-14,056.39	TD Well @ 20406.99ft