

# **US ROCKIES WATTENBERG PLANNING**

**WELD-NAD83-UTMFT13N**

**2N-66W-19 CASTLE PINES 16-19HZ PAD**

**CASTLE PINES 19-9HZ**

**Plan A**

**Plan: Permit Rev-2**

SHL Lat/Long: 40.117679/-104.814237

Survey Program: MWD+IFR+MSA

## **Standard Planning Report**

**21 February, 2018**

Project: WELD-NAD83-UTMFT13N  
Site: 2N-66W-19 CASTLE PINES 16-19HZ PAD  
Well: CASTLE PINES 19-9HZ  
Wellbore: Plan A  
Design: Permit Rev-2

## US ROCKIES WATTENBERG PLANNING

### CASING DETAILS

TVD	MD	Size
1500.00	1510.78	9-5/8
7422.00	7871.56	5-1/2

WELL DETAILS: CASTLE PINES 19-9HZ

GL = 4876'

RKB = 17' @ 4893.00usft (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	250.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	
3	856.67	9.10	213.00	854.12	-40.32	-26.18	1.50	213.00	-40.14	
4	3556.67	9.10	213.00	3520.14	-398.45	-258.76	0.00	0.00	-396.64	
5	4011.67	0.00	0.00	3973.23	-428.69	-278.40	2.00	180.00	-426.74	
6	6744.25	0.00	0.00	6705.81	-428.69	-278.40	0.00	0.00	-426.74	
7	7871.56	90.18	359.52	7422.00	289.79	-284.40	8.00	359.52	291.76	
8	13689.02	90.18	359.52	7403.26	6107.01	-333.00	0.00	0.00	6109.19	CASTLE PINES 19-9HZ_tgt
9	13760.01	90.18	358.46	7403.03	6177.99	-334.25	1.50	-90.16	6180.17	
10	16200.86	90.18	358.46	7395.30	8617.94	-400.00	0.00	0.00	8620.52	CASTLE PINES 19-9HZ_tgt2
11	16469.53	90.18	2.49	7394.45	8886.54	-397.79	1.50	90.00	8889.10	
12	17558.84	90.18	2.49	7391.00	9974.83	-350.53	0.00	0.00	9977.04	CASTLE PINES 19-9HZ_BHL

### WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
CASTLE PINES 19-9HZ_SHL	0.00	0.00	0.00	40.117679	-104.814237
CASTLE PINES 19-9HZ_BHL	7391.00	9974.83	-350.53	40.145071	-104.815491

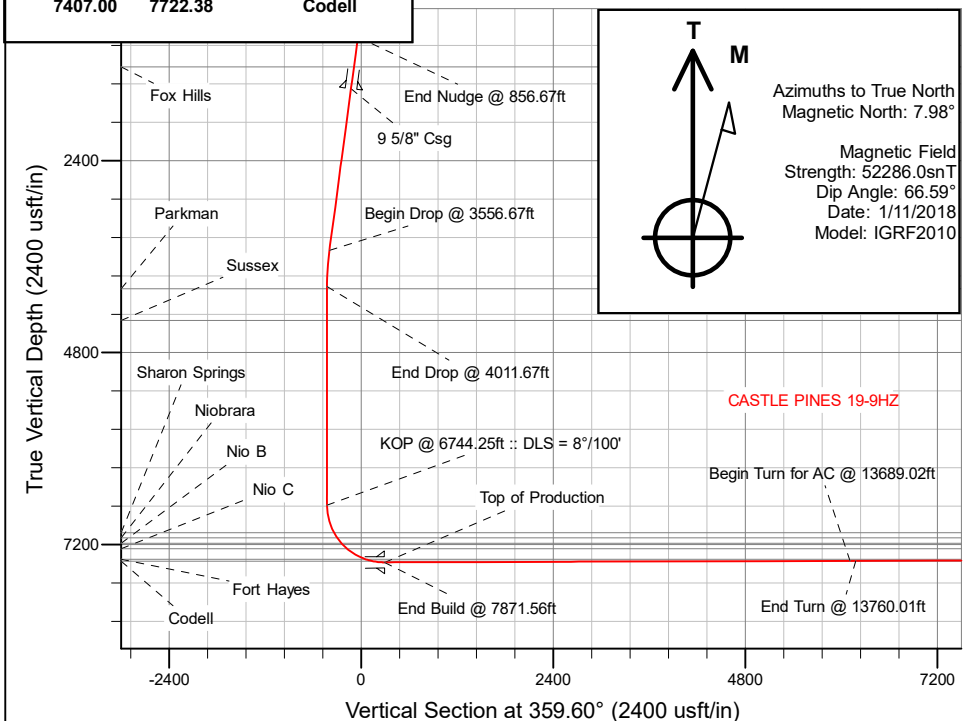
### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1226.00	1233.29	Fox Hills
4002.00	4040.44	Parkman
4398.00	4436.44	Sussex
7050.00	7103.29	Sharon Springs
7115.00	7179.79	Niobrara
7182.00	7265.17	Nio B
7249.00	7360.83	Nio C
7385.00	7638.01	Fort Hayes
7407.00	7722.38	Codell

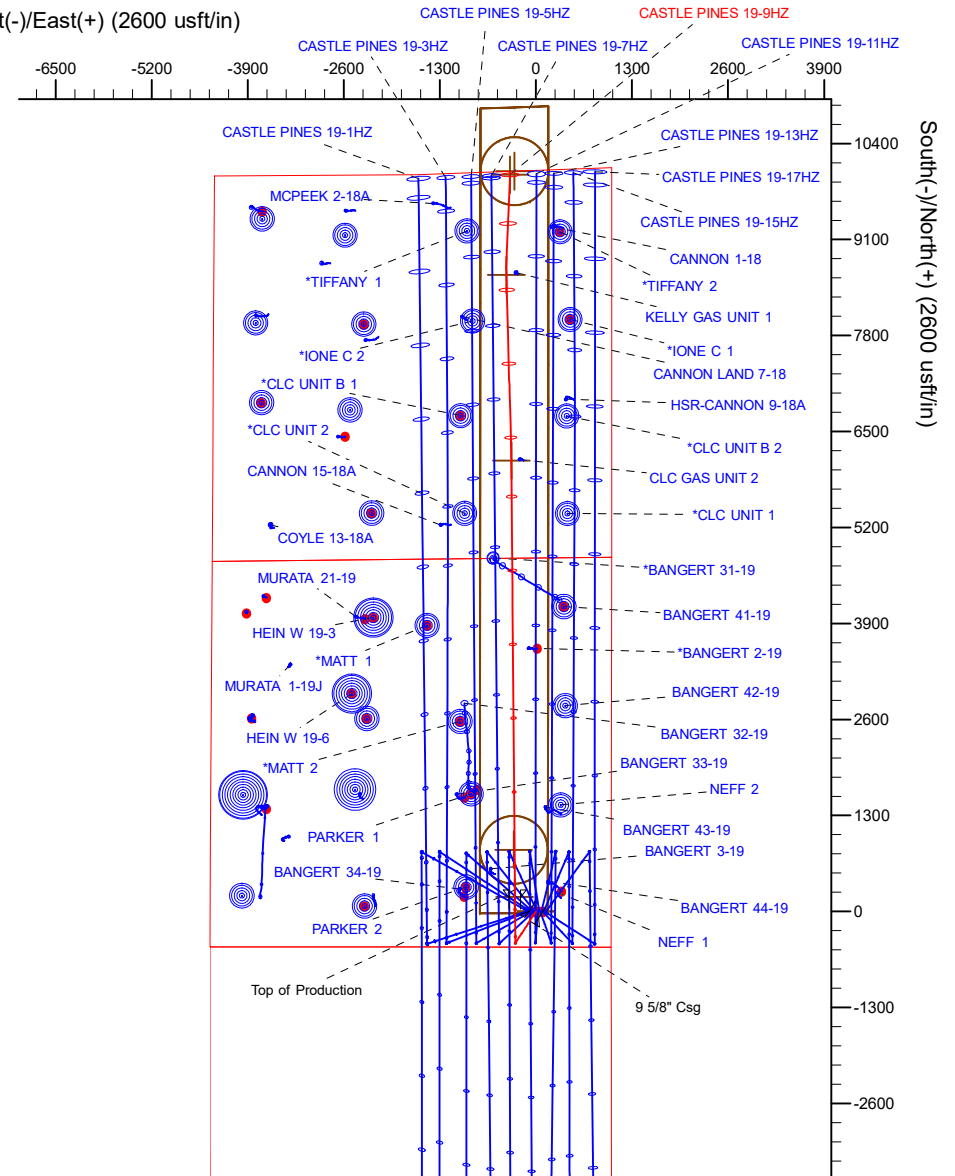
**SHL**  
**484' FSL**  
**1018' FEL**

**HEEL**  
**778' FSL**  
**1305' FEL**

**TOE**  
**49' FNL**  
**1379' FEL**



West(-)/East(+) (2600 usft/in)



Plan: Permit Rev-2 (CASTLE PINES 19-9HZ/Plan A)

Created By: \_\_\_\_\_ Date: 2/21/2018  
Reviewed: \_\_\_\_\_ Date: \_\_\_\_\_

## Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well CASTLE PINES 19-9HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 4893.00usft (Drilling Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 4893.00usft (Drilling Rig)
<b>Site:</b>	2N-66W-19 CASTLE PINES 16-19HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	CASTLE PINES 19-9HZ	<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-66W-19 CASTLE PINES 16-19HZ PAD			
Site Position:		Northing:	14,569,640.68 usft	Latitude:	40.117682
From:	Lat/Long	Easting:	1,692,230.43 usft	Longitude:	-104.814666
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.12 °

Well	CASTLE PINES 19-9HZ					
Well Position	+N/-S	-1.09 usft	Northing:	14,569,639.83 usft	Latitude:	40.117679
	+E/-W	119.94 usft	Easting:	1,692,350.37 usft	Longitude:	-104.814237
Position Uncertainty		3.28 usft	Wellhead Elevation:		Ground Level:	4,876.00 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	1/11/2018	7.98	66.59	52,285.99958024

<b>Design</b>	Permit Rev-2				
<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	359.60	

<b>Plan Survey Tool Program</b>		<b>Date</b>	1/24/2018		
<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-2 (Plan A)	APC_ISCWSA REV 2 MWD+II Fixed:v2:crustal field declinatio	
2	1,500.00	17,558.84	Permit Rev-2 (Plan A)	APC_ISCWSA REV 2 MWD+II Fixed:v2:Rockies, crustal dec +	

## Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well CASTLE PINES 19-9HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 4893.00usft (Drilling Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 4893.00usft (Drilling Rig)
<b>Site:</b>	2N-66W-19 CASTLE PINES 16-19HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	CASTLE PINES 19-9HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan A		
<b>Design:</b>	Permit Rev-2		

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	
856.67	9.10	213.00	854.12	-40.32	-26.18	1.50	1.50	0.00	213.00	
3,556.67	9.10	213.00	3,520.14	-398.45	-258.76	0.00	0.00	0.00	0.00	
4,011.67	0.00	0.00	3,973.23	-428.69	-278.40	2.00	-2.00	0.00	180.00	
6,744.25	0.00	0.00	6,705.81	-428.69	-278.40	0.00	0.00	0.00	0.00	
7,871.56	90.18	359.52	7,422.00	289.79	-284.40	8.00	8.00	-0.04	359.52	
13,689.02	90.18	359.52	7,403.26	6,107.01	-333.00	0.00	0.00	0.00	0.00	CASTLE PINES 19-9I
13,760.01	90.18	358.46	7,403.03	6,177.99	-334.25	1.50	0.00	-1.50	-90.16	
16,200.86	90.18	358.46	7,395.30	8,617.94	-400.00	0.00	0.00	0.00	0.00	CASTLE PINES 19-9I
16,469.53	90.18	2.49	7,394.45	8,886.54	-397.79	1.50	0.00	1.50	90.00	
17,558.84	90.18	2.49	7,391.00	9,974.83	-350.53	0.00	0.00	0.00	0.00	CASTLE PINES 19-9I

## Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well CASTLE PINES 19-9HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 4893.00usft (Drilling Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 4893.00usft (Drilling Rig)
<b>Site:</b>	2N-66W-19 CASTLE PINES 16-19HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	CASTLE PINES 19-9HZ	<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
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
Begin Nudge @ 250.00ft									
300.00	0.75	213.00	300.00	-0.27	-0.18	-0.27	1.50	1.50	0.00
400.00	2.25	213.00	399.96	-2.47	-1.60	-2.46	1.50	1.50	0.00
500.00	3.75	213.00	499.82	-6.86	-4.45	-6.83	1.50	1.50	0.00
600.00	5.25	213.00	599.51	-13.44	-8.73	-13.38	1.50	1.50	0.00
700.00	6.75	213.00	698.96	-22.21	-14.42	-22.10	1.50	1.50	0.00
800.00	8.25	213.00	798.10	-33.15	-21.53	-33.00	1.50	1.50	0.00
856.67	9.10	213.00	854.12	-40.32	-26.18	-40.14	1.50	1.50	0.00
End Nudge @ 856.67ft									
900.00	9.10	213.00	896.91	-46.07	-29.92	-45.86	0.00	0.00	0.00
1,000.00	9.10	213.00	995.65	-59.33	-38.53	-59.06	0.00	0.00	0.00
1,100.00	9.10	213.00	1,094.39	-72.60	-47.14	-72.27	0.00	0.00	0.00
1,200.00	9.10	213.00	1,193.13	-85.86	-55.76	-85.47	0.00	0.00	0.00
1,233.29	9.10	213.00	1,226.00	-90.28	-58.63	-89.86	0.00	0.00	0.00
Fox Hills									
1,300.00	9.10	213.00	1,291.87	-99.12	-64.37	-98.67	0.00	0.00	0.00
1,400.00	9.10	213.00	1,390.61	-112.39	-72.99	-111.88	0.00	0.00	0.00
1,500.00	9.10	213.00	1,489.36	-125.65	-81.60	-125.08	0.00	0.00	0.00
1,510.78	9.10	213.00	1,500.00	-127.08	-82.53	-126.50	0.00	0.00	0.00
9 5/8" Csg									
1,600.00	9.10	213.00	1,588.10	-138.92	-90.21	-138.28	0.00	0.00	0.00
1,700.00	9.10	213.00	1,686.84	-152.18	-98.83	-151.49	0.00	0.00	0.00
1,800.00	9.10	213.00	1,785.58	-165.45	-107.44	-164.69	0.00	0.00	0.00
1,900.00	9.10	213.00	1,884.32	-178.71	-116.06	-177.90	0.00	0.00	0.00
2,000.00	9.10	213.00	1,983.06	-191.97	-124.67	-191.10	0.00	0.00	0.00
2,100.00	9.10	213.00	2,081.80	-205.24	-133.28	-204.30	0.00	0.00	0.00
2,200.00	9.10	213.00	2,180.55	-218.50	-141.90	-217.51	0.00	0.00	0.00
2,300.00	9.10	213.00	2,279.29	-231.77	-150.51	-230.71	0.00	0.00	0.00
2,400.00	9.10	213.00	2,378.03	-245.03	-159.13	-243.91	0.00	0.00	0.00
2,500.00	9.10	213.00	2,476.77	-258.30	-167.74	-257.12	0.00	0.00	0.00
2,600.00	9.10	213.00	2,575.51	-271.56	-176.35	-270.32	0.00	0.00	0.00
2,700.00	9.10	213.00	2,674.25	-284.82	-184.97	-283.53	0.00	0.00	0.00
2,800.00	9.10	213.00	2,772.99	-298.09	-193.58	-296.73	0.00	0.00	0.00
2,900.00	9.10	213.00	2,871.73	-311.35	-202.19	-309.93	0.00	0.00	0.00
3,000.00	9.10	213.00	2,970.48	-324.62	-210.81	-323.14	0.00	0.00	0.00
3,100.00	9.10	213.00	3,069.22	-337.88	-219.42	-336.34	0.00	0.00	0.00
3,200.00	9.10	213.00	3,167.96	-351.15	-228.04	-349.54	0.00	0.00	0.00
3,300.00	9.10	213.00	3,266.70	-364.41	-236.65	-362.75	0.00	0.00	0.00
3,400.00	9.10	213.00	3,365.44	-377.67	-245.26	-375.95	0.00	0.00	0.00
3,500.00	9.10	213.00	3,464.18	-390.94	-253.88	-389.16	0.00	0.00	0.00
3,556.67	9.10	213.00	3,520.14	-398.45	-258.76	-396.64	0.00	0.00	0.00
Begin Drop @ 3556.67ft									
3,600.00	8.23	213.00	3,562.97	-403.93	-262.32	-402.09	2.00	-2.00	0.00
3,700.00	6.23	213.00	3,662.17	-414.49	-269.17	-412.60	2.00	-2.00	0.00
3,800.00	4.23	213.00	3,761.75	-422.14	-274.14	-420.22	2.00	-2.00	0.00
3,900.00	2.23	213.00	3,861.59	-426.87	-277.21	-424.92	2.00	-2.00	0.00
4,000.00	0.23	213.00	3,961.56	-428.67	-278.38	-426.72	2.00	-2.00	0.00
4,011.67	0.00	0.00	3,973.23	-428.69	-278.40	-426.74	2.00	-2.00	0.00
End Drop @ 4011.67ft									

## Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well CASTLE PINES 19-9HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 4893.00usft (Drilling Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 4893.00usft (Drilling Rig)
<b>Site:</b>	2N-66W-19 CASTLE PINES 16-19HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	CASTLE PINES 19-9HZ	<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)
4,040.44	0.00	0.00	4,002.00	-428.69	-278.40	-426.74	0.00	0.00	0.00
<b>Parkman</b>									
4,100.00	0.00	0.00	4,061.56	-428.69	-278.40	-426.74	0.00	0.00	0.00
4,200.00	0.00	0.00	4,161.56	-428.69	-278.40	-426.74	0.00	0.00	0.00
4,300.00	0.00	0.00	4,261.56	-428.69	-278.40	-426.74	0.00	0.00	0.00
4,400.00	0.00	0.00	4,361.56	-428.69	-278.40	-426.74	0.00	0.00	0.00
4,436.44	0.00	0.00	4,398.00	-428.69	-278.40	-426.74	0.00	0.00	0.00
<b>Sussex</b>									
4,500.00	0.00	0.00	4,461.56	-428.69	-278.40	-426.74	0.00	0.00	0.00
4,600.00	0.00	0.00	4,561.56	-428.69	-278.40	-426.74	0.00	0.00	0.00
4,700.00	0.00	0.00	4,661.56	-428.69	-278.40	-426.74	0.00	0.00	0.00
4,800.00	0.00	0.00	4,761.56	-428.69	-278.40	-426.74	0.00	0.00	0.00
4,900.00	0.00	0.00	4,861.56	-428.69	-278.40	-426.74	0.00	0.00	0.00
5,000.00	0.00	0.00	4,961.56	-428.69	-278.40	-426.74	0.00	0.00	0.00
5,100.00	0.00	0.00	5,061.56	-428.69	-278.40	-426.74	0.00	0.00	0.00
5,200.00	0.00	0.00	5,161.56	-428.69	-278.40	-426.74	0.00	0.00	0.00
5,300.00	0.00	0.00	5,261.56	-428.69	-278.40	-426.74	0.00	0.00	0.00
5,400.00	0.00	0.00	5,361.56	-428.69	-278.40	-426.74	0.00	0.00	0.00
5,500.00	0.00	0.00	5,461.56	-428.69	-278.40	-426.74	0.00	0.00	0.00
5,600.00	0.00	0.00	5,561.56	-428.69	-278.40	-426.74	0.00	0.00	0.00
5,700.00	0.00	0.00	5,661.56	-428.69	-278.40	-426.74	0.00	0.00	0.00
5,800.00	0.00	0.00	5,761.56	-428.69	-278.40	-426.74	0.00	0.00	0.00
5,900.00	0.00	0.00	5,861.56	-428.69	-278.40	-426.74	0.00	0.00	0.00
6,000.00	0.00	0.00	5,961.56	-428.69	-278.40	-426.74	0.00	0.00	0.00
6,100.00	0.00	0.00	6,061.56	-428.69	-278.40	-426.74	0.00	0.00	0.00
6,200.00	0.00	0.00	6,161.56	-428.69	-278.40	-426.74	0.00	0.00	0.00
6,300.00	0.00	0.00	6,261.56	-428.69	-278.40	-426.74	0.00	0.00	0.00
6,400.00	0.00	0.00	6,361.56	-428.69	-278.40	-426.74	0.00	0.00	0.00
6,500.00	0.00	0.00	6,461.56	-428.69	-278.40	-426.74	0.00	0.00	0.00
6,600.00	0.00	0.00	6,561.56	-428.69	-278.40	-426.74	0.00	0.00	0.00
6,700.00	0.00	0.00	6,661.56	-428.69	-278.40	-426.74	0.00	0.00	0.00
6,744.25	0.00	0.00	6,705.81	-428.69	-278.40	-426.74	0.00	0.00	0.00
<b>KOP @ 6744.25ft :: DLS = 8°/100'</b>									
6,800.00	4.46	359.52	6,761.50	-426.53	-278.42	-424.57	8.00	8.00	0.00
6,900.00	12.46	359.52	6,860.33	-411.83	-278.54	-409.87	8.00	8.00	0.00
7,000.00	20.46	359.52	6,956.16	-383.52	-278.77	-381.56	8.00	8.00	0.00
7,100.00	28.46	359.52	7,047.11	-342.14	-279.12	-340.19	8.00	8.00	0.00
7,103.29	28.72	359.52	7,050.00	-340.57	-279.13	-338.61	8.00	8.00	0.00
<b>Sharon Springs</b>									
7,179.79	34.84	359.52	7,115.00	-300.30	-279.47	-298.34	8.00	8.00	0.00
<b>Niobrara</b>									
7,200.00	36.46	359.52	7,131.42	-288.52	-279.57	-286.56	8.00	8.00	0.00
7,265.17	41.67	359.52	7,182.00	-247.46	-279.91	-245.50	8.00	8.00	0.00
<b>Nio B</b>									
7,300.00	44.46	359.52	7,207.44	-223.68	-280.11	-221.72	8.00	8.00	0.00
7,360.83	49.33	359.52	7,249.00	-179.28	-280.48	-177.32	8.00	8.00	0.00
<b>Nio C</b>									
7,400.00	52.46	359.52	7,273.70	-148.90	-280.73	-146.93	8.00	8.00	0.00
7,500.00	60.46	359.52	7,328.91	-65.62	-281.43	-63.65	8.00	8.00	0.00
7,600.00	68.46	359.52	7,371.99	24.53	-282.18	26.50	8.00	8.00	0.00
7,638.01	71.50	359.52	7,385.00	60.24	-282.48	62.22	8.00	8.00	0.00
<b>Fort Hayes</b>									
7,700.00	76.46	359.52	7,402.10	119.80	-282.98	121.78	8.00	8.00	0.00

# Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well CASTLE PINES 19-9HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 4893.00usft (Drilling Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 4893.00usft (Drilling Rig)
<b>Site:</b>	2N-66W-19 CASTLE PINES 16-19HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	CASTLE PINES 19-9HZ	<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)
7,722.38	78.25	359.52	7,407.00	141.64	-283.16	143.61	8.00	8.00	0.00
<b>Codell</b>									
7,800.00	84.46	359.52	7,418.66	218.34	-283.80	220.31	8.00	8.00	0.00
7,871.56	90.18	359.52	7,422.00	289.79	-284.40	291.77	8.00	8.00	0.00
<b>End Build @ 7871.56ft - Top of Production</b>									
7,900.00	90.18	359.52	7,421.91	318.23	-284.64	320.21	0.00	0.00	0.00
8,000.00	90.18	359.52	7,421.59	418.22	-285.47	420.21	0.00	0.00	0.00
8,100.00	90.18	359.52	7,421.27	518.22	-286.31	520.20	0.00	0.00	0.00
8,200.00	90.18	359.52	7,420.94	618.21	-287.14	620.20	0.00	0.00	0.00
8,300.00	90.18	359.52	7,420.62	718.21	-287.98	720.20	0.00	0.00	0.00
8,400.00	90.18	359.52	7,420.30	818.21	-288.81	820.20	0.00	0.00	0.00
8,500.00	90.18	359.52	7,419.98	918.20	-289.65	920.20	0.00	0.00	0.00
8,600.00	90.18	359.52	7,419.66	1,018.20	-290.49	1,020.20	0.00	0.00	0.00
8,700.00	90.18	359.52	7,419.33	1,118.19	-291.32	1,120.20	0.00	0.00	0.00
8,800.00	90.18	359.52	7,419.01	1,218.19	-292.16	1,220.20	0.00	0.00	0.00
8,900.00	90.18	359.52	7,418.69	1,318.19	-292.99	1,320.20	0.00	0.00	0.00
9,000.00	90.18	359.52	7,418.37	1,418.18	-293.83	1,420.20	0.00	0.00	0.00
9,100.00	90.18	359.52	7,418.05	1,518.18	-294.66	1,520.20	0.00	0.00	0.00
9,200.00	90.18	359.52	7,417.72	1,618.17	-295.50	1,620.20	0.00	0.00	0.00
9,300.00	90.18	359.52	7,417.40	1,718.17	-296.33	1,720.20	0.00	0.00	0.00
9,400.00	90.18	359.52	7,417.08	1,818.17	-297.17	1,820.20	0.00	0.00	0.00
9,500.00	90.18	359.52	7,416.76	1,918.16	-298.00	1,920.20	0.00	0.00	0.00
9,600.00	90.18	359.52	7,416.43	2,018.16	-298.84	2,020.20	0.00	0.00	0.00
9,700.00	90.18	359.52	7,416.11	2,118.15	-299.68	2,120.20	0.00	0.00	0.00
9,800.00	90.18	359.52	7,415.79	2,218.15	-300.51	2,220.19	0.00	0.00	0.00
9,900.00	90.18	359.52	7,415.47	2,318.15	-301.35	2,320.19	0.00	0.00	0.00
10,000.00	90.18	359.52	7,415.15	2,418.14	-302.18	2,420.19	0.00	0.00	0.00
10,100.00	90.18	359.52	7,414.82	2,518.14	-303.02	2,520.19	0.00	0.00	0.00
10,200.00	90.18	359.52	7,414.50	2,618.13	-303.85	2,620.19	0.00	0.00	0.00
10,300.00	90.18	359.52	7,414.18	2,718.13	-304.69	2,720.19	0.00	0.00	0.00
10,400.00	90.18	359.52	7,413.86	2,818.13	-305.52	2,820.19	0.00	0.00	0.00
10,500.00	90.18	359.52	7,413.53	2,918.12	-306.36	2,920.19	0.00	0.00	0.00
10,600.00	90.18	359.52	7,413.21	3,018.12	-307.19	3,020.19	0.00	0.00	0.00
10,700.00	90.18	359.52	7,412.89	3,118.11	-308.03	3,120.19	0.00	0.00	0.00
10,800.00	90.18	359.52	7,412.57	3,218.11	-308.86	3,220.19	0.00	0.00	0.00
10,900.00	90.18	359.52	7,412.25	3,318.11	-309.70	3,320.19	0.00	0.00	0.00
11,000.00	90.18	359.52	7,411.92	3,418.10	-310.54	3,420.19	0.00	0.00	0.00
11,100.00	90.18	359.52	7,411.60	3,518.10	-311.37	3,520.19	0.00	0.00	0.00
11,200.00	90.18	359.52	7,411.28	3,618.09	-312.21	3,620.19	0.00	0.00	0.00
11,300.00	90.18	359.52	7,410.96	3,718.09	-313.04	3,720.19	0.00	0.00	0.00
11,400.00	90.18	359.52	7,410.64	3,818.09	-313.88	3,820.18	0.00	0.00	0.00
11,500.00	90.18	359.52	7,410.31	3,918.08	-314.71	3,920.18	0.00	0.00	0.00
11,600.00	90.18	359.52	7,409.99	4,018.08	-315.55	4,020.18	0.00	0.00	0.00
11,700.00	90.18	359.52	7,409.67	4,118.07	-316.38	4,120.18	0.00	0.00	0.00
11,800.00	90.18	359.52	7,409.35	4,218.07	-317.22	4,220.18	0.00	0.00	0.00
11,900.00	90.18	359.52	7,409.02	4,318.07	-318.05	4,320.18	0.00	0.00	0.00
12,000.00	90.18	359.52	7,408.70	4,418.06	-318.89	4,420.18	0.00	0.00	0.00
12,100.00	90.18	359.52	7,408.38	4,518.06	-319.73	4,520.18	0.00	0.00	0.00
12,200.00	90.18	359.52	7,408.06	4,618.05	-320.56	4,620.18	0.00	0.00	0.00
12,300.00	90.18	359.52	7,407.74	4,718.05	-321.40	4,720.18	0.00	0.00	0.00
12,400.00	90.18	359.52	7,407.41	4,818.05	-322.23	4,820.18	0.00	0.00	0.00
12,500.00	90.18	359.52	7,407.09	4,918.04	-323.07	4,920.18	0.00	0.00	0.00
12,600.00	90.18	359.52	7,406.77	5,018.04	-323.90	5,020.18	0.00	0.00	0.00
12,700.00	90.18	359.52	7,406.45	5,118.03	-324.74	5,120.18	0.00	0.00	0.00

## Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well CASTLE PINES 19-9HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 4893.00usft (Drilling Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 4893.00usft (Drilling Rig)
<b>Site:</b>	2N-66W-19 CASTLE PINES 16-19HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	CASTLE PINES 19-9HZ	<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)
12,800.00	90.18	359.52	7,406.12	5,218.03	-325.57	5,220.18	0.00	0.00	0.00
12,900.00	90.18	359.52	7,405.80	5,318.03	-326.41	5,320.18	0.00	0.00	0.00
13,000.00	90.18	359.52	7,405.48	5,418.02	-327.24	5,420.17	0.00	0.00	0.00
13,100.00	90.18	359.52	7,405.16	5,518.02	-328.08	5,520.17	0.00	0.00	0.00
13,200.00	90.18	359.52	7,404.84	5,618.01	-328.91	5,620.17	0.00	0.00	0.00
13,300.00	90.18	359.52	7,404.51	5,718.01	-329.75	5,720.17	0.00	0.00	0.00
13,400.00	90.18	359.52	7,404.19	5,818.01	-330.59	5,820.17	0.00	0.00	0.00
13,500.00	90.18	359.52	7,403.87	5,918.00	-331.42	5,920.17	0.00	0.00	0.00
13,600.00	90.18	359.52	7,403.55	6,018.00	-332.26	6,020.17	0.00	0.00	0.00
13,689.02	90.18	359.52	7,403.26	6,107.01	-333.00	6,109.19	0.00	0.00	0.00
Begin Turn for AC @ 13689.02ft									
13,700.00	90.18	359.36	7,403.22	6,117.99	-333.11	6,120.17	1.50	0.00	-1.50
13,760.01	90.18	358.46	7,403.03	6,177.99	-334.25	6,180.17	1.50	0.00	-1.50
End Turn @ 13760.01ft									
13,800.00	90.18	358.46	7,402.91	6,217.97	-335.33	6,220.16	0.00	0.00	0.00
13,900.00	90.18	358.46	7,402.59	6,317.93	-338.02	6,320.14	0.00	0.00	0.00
14,000.00	90.18	358.46	7,402.27	6,417.89	-340.72	6,420.12	0.00	0.00	0.00
14,100.00	90.18	358.46	7,401.96	6,517.86	-343.41	6,520.10	0.00	0.00	0.00
14,200.00	90.18	358.46	7,401.64	6,617.82	-346.10	6,620.08	0.00	0.00	0.00
14,300.00	90.18	358.46	7,401.32	6,717.78	-348.80	6,720.06	0.00	0.00	0.00
14,400.00	90.18	358.46	7,401.01	6,817.75	-351.49	6,820.03	0.00	0.00	0.00
14,500.00	90.18	358.46	7,400.69	6,917.71	-354.19	6,920.01	0.00	0.00	0.00
14,600.00	90.18	358.46	7,400.37	7,017.67	-356.88	7,019.99	0.00	0.00	0.00
14,700.00	90.18	358.46	7,400.06	7,117.64	-359.57	7,119.97	0.00	0.00	0.00
14,800.00	90.18	358.46	7,399.74	7,217.60	-362.27	7,219.95	0.00	0.00	0.00
14,900.00	90.18	358.46	7,399.42	7,317.56	-364.96	7,319.93	0.00	0.00	0.00
15,000.00	90.18	358.46	7,399.10	7,417.53	-367.65	7,419.91	0.00	0.00	0.00
15,100.00	90.18	358.46	7,398.79	7,517.49	-370.35	7,519.89	0.00	0.00	0.00
15,200.00	90.18	358.46	7,398.47	7,617.45	-373.04	7,619.87	0.00	0.00	0.00
15,300.00	90.18	358.46	7,398.15	7,717.42	-375.73	7,719.85	0.00	0.00	0.00
15,400.00	90.18	358.46	7,397.84	7,817.38	-378.43	7,819.83	0.00	0.00	0.00
15,500.00	90.18	358.46	7,397.52	7,917.34	-381.12	7,919.81	0.00	0.00	0.00
15,600.00	90.18	358.46	7,397.20	8,017.31	-383.82	8,019.79	0.00	0.00	0.00
15,700.00	90.18	358.46	7,396.89	8,117.27	-386.51	8,119.77	0.00	0.00	0.00
15,800.00	90.18	358.46	7,396.57	8,217.23	-389.20	8,219.75	0.00	0.00	0.00
15,900.00	90.18	358.46	7,396.25	8,317.20	-391.90	8,319.73	0.00	0.00	0.00
16,000.00	90.18	358.46	7,395.94	8,417.16	-394.59	8,419.71	0.00	0.00	0.00
16,100.00	90.18	358.46	7,395.62	8,517.12	-397.28	8,519.69	0.00	0.00	0.00
16,200.00	90.18	358.46	7,395.30	8,617.08	-399.98	8,619.67	0.00	0.00	0.00
16,200.86	90.18	358.46	7,395.30	8,617.94	-400.00	8,620.52	0.00	0.00	0.00
Begin Turn to BHL @ 16200.86ft									
16,300.00	90.18	359.94	7,394.99	8,717.07	-401.38	8,719.66	1.50	0.00	1.50
16,400.00	90.18	1.44	7,394.67	8,817.06	-400.17	8,819.64	1.50	0.00	1.50
16,469.53	90.18	2.49	7,394.45	8,886.54	-397.79	8,889.10	1.50	0.00	1.50
End Turn @ 16469.53ft									
16,500.00	90.18	2.49	7,394.35	8,916.99	-396.47	8,919.54	0.00	0.00	0.00
16,600.00	90.18	2.49	7,394.04	9,016.90	-392.13	9,019.41	0.00	0.00	0.00
16,700.00	90.18	2.49	7,393.72	9,116.80	-387.79	9,119.29	0.00	0.00	0.00
16,800.00	90.18	2.49	7,393.40	9,216.71	-383.45	9,219.16	0.00	0.00	0.00
16,900.00	90.18	2.49	7,393.09	9,316.61	-379.11	9,319.03	0.00	0.00	0.00
17,000.00	90.18	2.49	7,392.77	9,416.52	-374.78	9,418.90	0.00	0.00	0.00
17,100.00	90.18	2.49	7,392.45	9,516.42	-370.44	9,518.78	0.00	0.00	0.00
17,200.00	90.18	2.49	7,392.14	9,616.33	-366.10	9,618.65	0.00	0.00	0.00



## Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well CASTLE PINES 19-9HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 4893.00usft (Drilling Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 4893.00usft (Drilling Rig)
<b>Site:</b>	2N-66W-19 CASTLE PINES 16-19HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	CASTLE PINES 19-9HZ	<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)
17,300.00	90.18	2.49	7,391.82	9,716.23	-361.76	9,718.52	0.00	0.00	0.00
17,400.00	90.18	2.49	7,391.50	9,816.14	-357.42	9,818.39	0.00	0.00	0.00
17,500.00	90.18	2.49	7,391.19	9,916.04	-353.08	9,918.27	0.00	0.00	0.00
17,558.84	90.18	2.49	7,391.00	9,974.83	-350.53	9,977.04	0.00	0.00	0.00
TD Well @ 17558.84ft									

Casing Points				
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,510.78	1,500.00	9 5/8" Csg	9-5/8	13-1/2
7,871.56	7,422.00	Top of Production	5-1/2	7-7/8

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,233.29	1,226.00	Fox Hills			
4,040.44	4,002.00	Parkman			
4,436.44	4,398.00	Sussex			
7,103.29	7,050.00	Sharon Springs			
7,179.79	7,115.00	Niobrara			
7,265.17	7,182.00	Nio B			
7,360.83	7,249.00	Nio C			
7,638.01	7,385.00	Fort Hayes			
7,722.38	7,407.00	Codell			

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
250.00	250.00	0.00	0.00	Begin Nudge @ 250.00ft
856.67	854.12	-40.32	-26.18	End Nudge @ 856.67ft
3,556.67	3,520.14	-398.45	-258.76	Begin Drop @ 3556.67ft
4,011.67	3,973.23	-428.69	-278.40	End Drop @ 4011.67ft
6,744.25	6,705.81	-428.69	-278.40	KOP @ 6744.25ft :: DLS = 8°/100'
7,871.56	7,422.00	289.79	-284.40	End Build @ 7871.56ft
13,689.02	7,403.26	6,107.01	-333.00	Begin Turn for AC @ 13689.02ft
13,760.01	7,403.03	6,177.99	-334.25	End Turn @ 13760.01ft
16,200.86	7,395.30	8,617.94	-400.00	Begin Turn to BHL @ 16200.86ft
16,469.53	7,394.45	8,886.54	-397.79	End Turn @ 16469.53ft
17,558.84	7,391.00	9,974.83	-350.53	TD Well @ 17558.84ft