

# **US ROCKIES WATTENBERG PLANNING**

**WELD-NAD83-UTMFT13N**

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

**CASTLE PINES 19-15HZ**

**Plan A**

**Plan: Permit Rev-2**

SHL Lat/Long: 40.117677/-104.813915

Survey Program: MWD+IFR+MSA

## **Standard Planning Report**

**23 January, 2018**

Project: WELD-NAD83-UTMFT13N  
Site: 2N-66W-19 CASTLE PINES 16-19HZ PAD  
Well: CASTLE PINES 19-15HZ  
Wellbore: Plan A  
Design: Permit Rev-2

## US ROCKIES WATTENBERG PLANNING

### CASING DETAILS

TVD	MD	Size
1500.00	1512.43	9-5/8
7421.00	7878.78	5-1/2

WELL DETAILS: CASTLE PINES 19-15HZ

GL = 4876'

RKB = 17' @ 4893.00usft (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	250.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	
3	916.67	10.00	137.00	913.29	-42.44	39.58	1.50	137.00	-42.39	
4	3746.66	10.00	137.00	3700.29	-401.84	374.73	0.00	0.00	-401.39	
5	4246.66	0.00	0.00	4197.75	-433.68	404.41	2.00	180.00	-433.18	
6	6753.71	0.00	0.00	6704.80	-433.68	404.41	0.00	0.00	-433.18	
7	7878.78	90.01	0.27	7421.00	282.59	407.75	8.00	0.27	283.09	
8	14500.08	90.01	0.27	7420.32	6903.81	438.64	0.00	0.00	6904.34	CASTLE PINES 19-15HZ_tgt
9	14533.11	90.01	359.61	7420.32	6936.84	438.60	2.00	-90.00	6937.37	
10	17601.24	90.01	359.61	7420.00	10004.90	417.54	0.00	0.00	10005.40	CASTLE PINES 19-15HZ_BHL

### WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
CASTLE PINES 19-15HZ_SHL	0.00	0.00	0.00	40.117677	-104.813915
CASTLE PINES 19-15HZ_BHL	7420.00	10004.90	417.54	40.145152	-104.812421

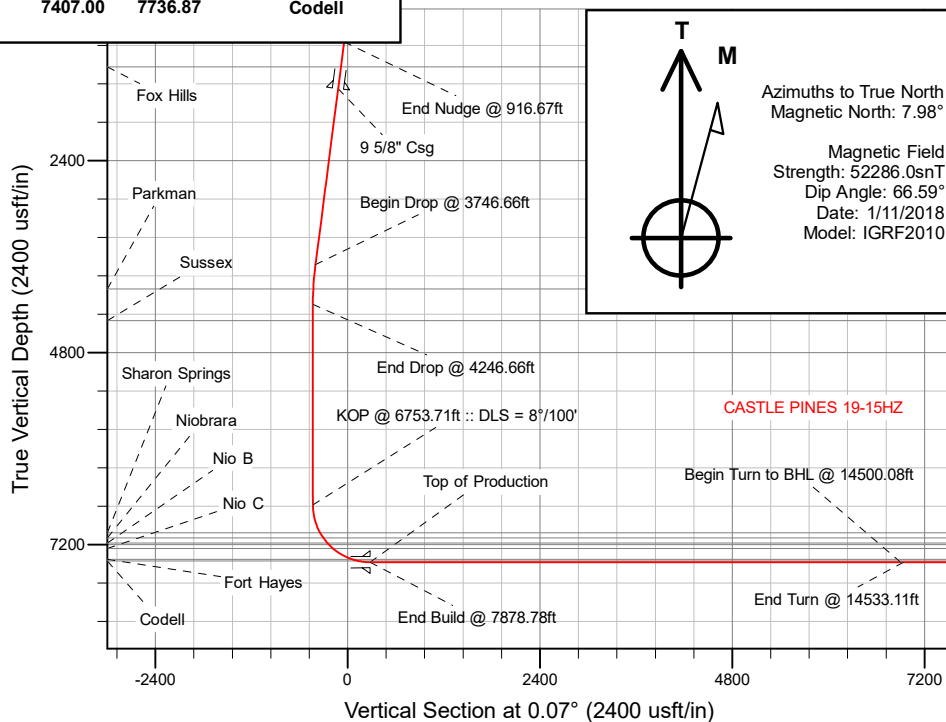
### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1226.00	1234.20	Fox Hills
4002.00	4050.76	Parkman
4398.00	4446.91	Sussex
7050.00	7113.90	Sharon Springs
7115.00	7190.48	Niobrara
7182.00	7275.98	Nio B
7249.00	7371.84	Nio C
7385.00	7650.67	Fort Hayes
7407.00	7736.87	Codell

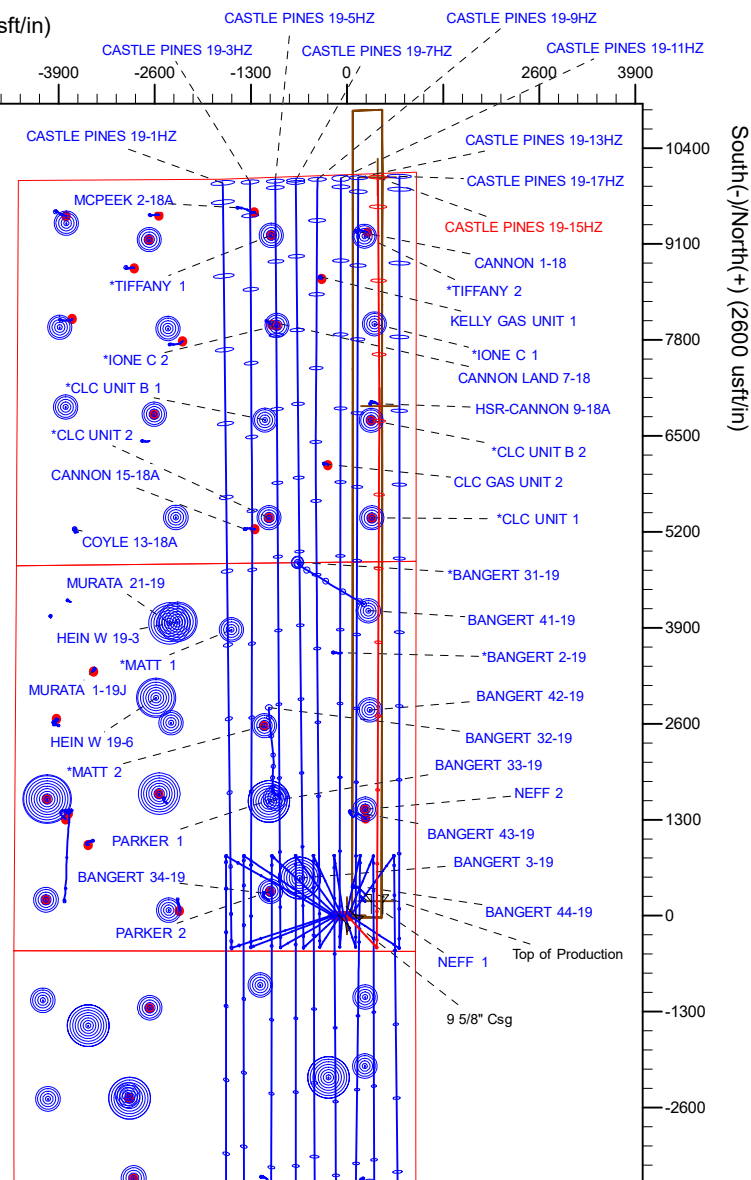
**SHL**  
**483' FSL**  
**928' FEL**

**HEEL**  
**768' FSL**  
**526' FEL**

**TOE**  
**51' FNL**  
**521' FEL**



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



Plan: Permit Rev-2 (CASTLE PINES 19-15HZ/Plan A)

Created By: \_\_\_\_\_ Date: 1/23/2018  
Reviewed: \_\_\_\_\_ Date: \_\_\_\_\_

# Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well CASTLE PINES 19-15HZ
<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 19-15HZ	<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 19-15HZ				
Well Position	+N/-S	-1.82 usft	Northing:	14,569,639.29 usft	Latitude:	40.117677
	+E/-W	209.96 usft	Easting:	1,692,440.39 usft	Longitude:	-104.813915
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	52,286.03122052

<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>
	7,420.00	0.00	0.00	0.07

<b>Plan Survey Tool Program</b>	<b>Date</b>	1/23/2018		
<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+I Fixed:v2:crustal field declinatio
2	1,500.00	17,601.24	Permit Rev-2 (Plan A)	APC_ISCWSA REV 2 MWD+I Fixed:v2:Rockies, crustal dec +

Corporate  
Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well CASTLE PINES 19-15HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4893.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4893.00usft (Drilling Rig)
Site:	2N-66W-19 CASTLE PINES 16-19HZ PAD	North Reference:	True
Well:	CASTLE PINES 19-15HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	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	
916.67	10.00	137.00	913.29	-42.44	39.58	1.50	1.50	0.00	137.00	
3,746.66	10.00	137.00	3,700.29	-401.84	374.73	0.00	0.00	0.00	0.00	
4,246.66	0.00	0.00	4,197.75	-433.68	404.41	2.00	-2.00	0.00	180.00	
6,753.71	0.00	0.00	6,704.80	-433.68	404.41	0.00	0.00	0.00	0.00	
7,878.78	90.01	0.27	7,421.00	282.59	407.75	8.00	8.00	0.02	0.27	
14,500.08	90.01	0.27	7,420.32	6,903.81	438.64	0.00	0.00	0.00	0.00	CASTLE PINES 19-15
14,533.11	90.01	359.61	7,420.32	6,936.84	438.60	2.00	0.00	-2.00	-90.00	
17,601.24	90.01	359.61	7,420.00	10,004.90	417.54	0.00	0.00	0.00	0.00	CASTLE PINES 19-15

## Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well CASTLE PINES 19-15HZ
<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 19-15HZ	<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	137.00	300.00	-0.24	0.22	-0.24	1.50	1.50	0.00
400.00	2.25	137.00	399.96	-2.15	2.01	-2.15	1.50	1.50	0.00
500.00	3.75	137.00	499.82	-5.98	5.58	-5.97	1.50	1.50	0.00
600.00	5.25	137.00	599.51	-11.72	10.93	-11.71	1.50	1.50	0.00
700.00	6.75	137.00	698.96	-19.36	18.06	-19.34	1.50	1.50	0.00
800.00	8.25	137.00	798.10	-28.91	26.96	-28.88	1.50	1.50	0.00
900.00	9.75	137.00	896.87	-40.35	37.63	-40.30	1.50	1.50	0.00
916.67	10.00	137.00	913.29	-42.44	39.58	-42.39	1.50	1.50	0.00
End Nudge @ 916.67ft									
1,000.00	10.00	137.00	995.35	-53.02	49.45	-52.96	0.00	0.00	0.00
1,100.00	10.00	137.00	1,093.84	-65.72	61.29	-65.65	0.00	0.00	0.00
1,200.00	10.00	137.00	1,192.32	-78.42	73.13	-78.33	0.00	0.00	0.00
1,234.20	10.00	137.00	1,226.00	-82.77	77.18	-82.67	0.00	0.00	0.00
Fox Hills									
1,300.00	10.00	137.00	1,290.80	-91.12	84.97	-91.02	0.00	0.00	0.00
1,400.00	10.00	137.00	1,389.28	-103.82	96.82	-103.70	0.00	0.00	0.00
1,500.00	10.00	137.00	1,487.76	-116.52	108.66	-116.39	0.00	0.00	0.00
1,512.43	10.00	137.00	1,500.00	-118.10	110.13	-117.97	0.00	0.00	0.00
9 5/8" Csg									
1,600.00	10.00	137.00	1,586.24	-129.22	120.50	-129.08	0.00	0.00	0.00
1,700.00	10.00	137.00	1,684.72	-141.92	132.34	-141.76	0.00	0.00	0.00
1,800.00	10.00	137.00	1,783.20	-154.62	144.19	-154.45	0.00	0.00	0.00
1,900.00	10.00	137.00	1,881.68	-167.32	156.03	-167.13	0.00	0.00	0.00
2,000.00	10.00	137.00	1,980.16	-180.02	167.87	-179.82	0.00	0.00	0.00
2,100.00	10.00	137.00	2,078.64	-192.72	179.72	-192.50	0.00	0.00	0.00
2,200.00	10.00	137.00	2,177.12	-205.42	191.56	-205.19	0.00	0.00	0.00
2,300.00	10.00	137.00	2,275.60	-218.12	203.40	-217.87	0.00	0.00	0.00
2,400.00	10.00	137.00	2,374.09	-230.82	215.24	-230.56	0.00	0.00	0.00
2,500.00	10.00	137.00	2,472.57	-243.52	227.09	-243.24	0.00	0.00	0.00
2,600.00	10.00	137.00	2,571.05	-256.22	238.93	-255.93	0.00	0.00	0.00
2,700.00	10.00	137.00	2,669.53	-268.92	250.77	-268.61	0.00	0.00	0.00
2,800.00	10.00	137.00	2,768.01	-281.62	262.62	-281.30	0.00	0.00	0.00
2,900.00	10.00	137.00	2,866.49	-294.32	274.46	-293.98	0.00	0.00	0.00
3,000.00	10.00	137.00	2,964.97	-307.02	286.30	-306.67	0.00	0.00	0.00
3,100.00	10.00	137.00	3,063.45	-319.72	298.14	-319.36	0.00	0.00	0.00
3,200.00	10.00	137.00	3,161.93	-332.42	309.99	-332.04	0.00	0.00	0.00
3,300.00	10.00	137.00	3,260.41	-345.12	321.83	-344.73	0.00	0.00	0.00
3,400.00	10.00	137.00	3,358.89	-357.82	333.67	-357.41	0.00	0.00	0.00
3,500.00	10.00	137.00	3,457.37	-370.52	345.51	-370.10	0.00	0.00	0.00
3,600.00	10.00	137.00	3,555.85	-383.22	357.36	-382.78	0.00	0.00	0.00
3,700.00	10.00	137.00	3,654.34	-395.92	369.20	-395.47	0.00	0.00	0.00
3,746.66	10.00	137.00	3,700.29	-401.84	374.73	-401.39	0.00	0.00	0.00
Begin Drop @ 3746.66ft									
3,800.00	8.93	137.00	3,752.90	-408.26	380.71	-407.80	2.00	-2.00	0.00
3,900.00	6.93	137.00	3,851.94	-418.35	390.12	-417.88	2.00	-2.00	0.00
4,000.00	4.93	137.00	3,951.40	-425.91	397.17	-425.43	2.00	-2.00	0.00
4,050.76	3.92	137.00	4,002.00	-428.78	399.84	-428.29	2.00	-2.00	0.00
Parkman									

# Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well CASTLE PINES 19-15HZ
<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 19-15HZ	<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)
4,100.00	2.93	137.00	4,051.16	-430.93	401.85	-430.44	2.00	-2.00	0.00
4,200.00	0.93	137.00	4,151.09	-433.40	404.15	-432.90	2.00	-2.00	0.00
4,246.66	0.00	0.00	4,197.75	-433.68	404.41	-433.18	2.00	-2.00	0.00
<b>End Drop @ 4246.66ft</b>									
4,300.00	0.00	0.00	4,251.09	-433.68	404.41	-433.18	0.00	0.00	0.00
4,400.00	0.00	0.00	4,351.09	-433.68	404.41	-433.18	0.00	0.00	0.00
4,446.91	0.00	0.00	4,398.00	-433.68	404.41	-433.18	0.00	0.00	0.00
<b>Sussex</b>									
4,500.00	0.00	0.00	4,451.09	-433.68	404.41	-433.18	0.00	0.00	0.00
4,600.00	0.00	0.00	4,551.09	-433.68	404.41	-433.18	0.00	0.00	0.00
4,700.00	0.00	0.00	4,651.09	-433.68	404.41	-433.18	0.00	0.00	0.00
4,800.00	0.00	0.00	4,751.09	-433.68	404.41	-433.18	0.00	0.00	0.00
4,900.00	0.00	0.00	4,851.09	-433.68	404.41	-433.18	0.00	0.00	0.00
5,000.00	0.00	0.00	4,951.09	-433.68	404.41	-433.18	0.00	0.00	0.00
5,100.00	0.00	0.00	5,051.09	-433.68	404.41	-433.18	0.00	0.00	0.00
5,200.00	0.00	0.00	5,151.09	-433.68	404.41	-433.18	0.00	0.00	0.00
5,300.00	0.00	0.00	5,251.09	-433.68	404.41	-433.18	0.00	0.00	0.00
5,400.00	0.00	0.00	5,351.09	-433.68	404.41	-433.18	0.00	0.00	0.00
5,500.00	0.00	0.00	5,451.09	-433.68	404.41	-433.18	0.00	0.00	0.00
5,600.00	0.00	0.00	5,551.09	-433.68	404.41	-433.18	0.00	0.00	0.00
5,700.00	0.00	0.00	5,651.09	-433.68	404.41	-433.18	0.00	0.00	0.00
5,800.00	0.00	0.00	5,751.09	-433.68	404.41	-433.18	0.00	0.00	0.00
5,900.00	0.00	0.00	5,851.09	-433.68	404.41	-433.18	0.00	0.00	0.00
6,000.00	0.00	0.00	5,951.09	-433.68	404.41	-433.18	0.00	0.00	0.00
6,100.00	0.00	0.00	6,051.09	-433.68	404.41	-433.18	0.00	0.00	0.00
6,200.00	0.00	0.00	6,151.09	-433.68	404.41	-433.18	0.00	0.00	0.00
6,300.00	0.00	0.00	6,251.09	-433.68	404.41	-433.18	0.00	0.00	0.00
6,400.00	0.00	0.00	6,351.09	-433.68	404.41	-433.18	0.00	0.00	0.00
6,500.00	0.00	0.00	6,451.09	-433.68	404.41	-433.18	0.00	0.00	0.00
6,600.00	0.00	0.00	6,551.09	-433.68	404.41	-433.18	0.00	0.00	0.00
6,700.00	0.00	0.00	6,651.09	-433.68	404.41	-433.18	0.00	0.00	0.00
6,753.71	0.00	0.00	6,704.80	-433.68	404.41	-433.18	0.00	0.00	0.00
<b>KOP @ 6753.71ft :: DLS = 8°/100'</b>									
6,800.00	3.70	0.27	6,751.06	-432.18	404.42	-431.69	8.00	8.00	0.00
6,900.00	11.70	0.27	6,850.08	-418.79	404.48	-418.29	8.00	8.00	0.00
7,000.00	19.70	0.27	6,946.27	-391.74	404.60	-391.25	8.00	8.00	0.00
7,100.00	27.70	0.27	7,037.76	-351.58	404.79	-351.08	8.00	8.00	0.00
7,113.90	28.82	0.27	7,050.00	-345.00	404.82	-344.50	8.00	8.00	0.00
<b>Sharon Springs</b>									
7,190.48	34.94	0.27	7,115.00	-304.57	405.01	-304.08	8.00	8.00	0.00
<b>Niobrara</b>									
7,200.00	35.70	0.27	7,122.77	-299.07	405.04	-298.57	8.00	8.00	0.00
7,275.98	41.78	0.27	7,182.00	-251.54	405.26	-251.04	8.00	8.00	0.00
<b>Nio B</b>									
7,300.00	43.70	0.27	7,199.64	-235.24	405.33	-234.74	8.00	8.00	0.00
7,371.84	49.45	0.27	7,249.00	-183.08	405.58	-182.59	8.00	8.00	0.00
<b>Nio C</b>									
7,400.00	51.70	0.27	7,266.88	-161.33	405.68	-160.84	8.00	8.00	0.00
7,500.00	59.70	0.27	7,323.18	-78.79	406.06	-78.29	8.00	8.00	0.00
7,600.00	67.70	0.27	7,367.45	10.79	406.48	11.29	8.00	8.00	0.00
7,650.67	71.76	0.27	7,385.00	58.31	406.70	58.81	8.00	8.00	0.00
<b>Fort Hayes</b>									
7,700.00	75.70	0.27	7,398.82	105.66	406.92	106.15	8.00	8.00	0.00

# Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well CASTLE PINES 19-15HZ
<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 19-15HZ	<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)
7,736.87	78.65	0.27	7,407.00	141.60	407.09	142.10	8.00	8.00	0.00
<b>Codell</b>									
7,800.00	83.70	0.27	7,416.68	203.96	407.38	204.46	8.00	8.00	0.00
7,878.78	90.01	0.27	7,421.00	282.58	407.75	283.08	8.00	8.00	0.00
<b>End Build @ 7878.78ft - Top of Production</b>									
7,900.00	90.01	0.27	7,421.00	303.80	407.85	304.30	0.00	0.00	0.00
8,000.00	90.01	0.27	7,420.99	403.80	408.32	404.30	0.00	0.00	0.00
8,100.00	90.01	0.27	7,420.98	503.80	408.78	504.30	0.00	0.00	0.00
8,200.00	90.01	0.27	7,420.97	603.80	409.25	604.30	0.00	0.00	0.00
8,300.00	90.01	0.27	7,420.96	703.80	409.72	704.30	0.00	0.00	0.00
8,400.00	90.01	0.27	7,420.95	803.80	410.18	804.30	0.00	0.00	0.00
8,500.00	90.01	0.27	7,420.94	903.80	410.65	904.30	0.00	0.00	0.00
8,600.00	90.01	0.27	7,420.93	1,003.80	411.11	1,004.30	0.00	0.00	0.00
8,700.00	90.01	0.27	7,420.92	1,103.80	411.58	1,104.30	0.00	0.00	0.00
8,800.00	90.01	0.27	7,420.90	1,203.79	412.05	1,204.30	0.00	0.00	0.00
8,900.00	90.01	0.27	7,420.89	1,303.79	412.51	1,304.30	0.00	0.00	0.00
9,000.00	90.01	0.27	7,420.88	1,403.79	412.98	1,404.30	0.00	0.00	0.00
9,100.00	90.01	0.27	7,420.87	1,503.79	413.45	1,504.30	0.00	0.00	0.00
9,200.00	90.01	0.27	7,420.86	1,603.79	413.91	1,604.29	0.00	0.00	0.00
9,300.00	90.01	0.27	7,420.85	1,703.79	414.38	1,704.29	0.00	0.00	0.00
9,400.00	90.01	0.27	7,420.84	1,803.79	414.85	1,804.29	0.00	0.00	0.00
9,500.00	90.01	0.27	7,420.83	1,903.79	415.31	1,904.29	0.00	0.00	0.00
9,600.00	90.01	0.27	7,420.82	2,003.79	415.78	2,004.29	0.00	0.00	0.00
9,700.00	90.01	0.27	7,420.81	2,103.78	416.25	2,104.29	0.00	0.00	0.00
9,800.00	90.01	0.27	7,420.80	2,203.78	416.71	2,204.29	0.00	0.00	0.00
9,900.00	90.01	0.27	7,420.79	2,303.78	417.18	2,304.29	0.00	0.00	0.00
10,000.00	90.01	0.27	7,420.78	2,403.78	417.65	2,404.29	0.00	0.00	0.00
10,100.00	90.01	0.27	7,420.77	2,503.78	418.11	2,504.29	0.00	0.00	0.00
10,200.00	90.01	0.27	7,420.76	2,603.78	418.58	2,604.29	0.00	0.00	0.00
10,300.00	90.01	0.27	7,420.75	2,703.78	419.05	2,704.29	0.00	0.00	0.00
10,400.00	90.01	0.27	7,420.74	2,803.78	419.51	2,804.29	0.00	0.00	0.00
10,500.00	90.01	0.27	7,420.73	2,903.78	419.98	2,904.29	0.00	0.00	0.00
10,600.00	90.01	0.27	7,420.72	3,003.77	420.45	3,004.29	0.00	0.00	0.00
10,700.00	90.01	0.27	7,420.71	3,103.77	420.91	3,104.29	0.00	0.00	0.00
10,800.00	90.01	0.27	7,420.70	3,203.77	421.38	3,204.29	0.00	0.00	0.00
10,900.00	90.01	0.27	7,420.69	3,303.77	421.84	3,304.28	0.00	0.00	0.00
11,000.00	90.01	0.27	7,420.68	3,403.77	422.31	3,404.28	0.00	0.00	0.00
11,100.00	90.01	0.27	7,420.67	3,503.77	422.78	3,504.28	0.00	0.00	0.00
11,200.00	90.01	0.27	7,420.66	3,603.77	423.24	3,604.28	0.00	0.00	0.00
11,300.00	90.01	0.27	7,420.65	3,703.77	423.71	3,704.28	0.00	0.00	0.00
11,400.00	90.01	0.27	7,420.64	3,803.77	424.18	3,804.28	0.00	0.00	0.00
11,500.00	90.01	0.27	7,420.63	3,903.77	424.64	3,904.28	0.00	0.00	0.00
11,600.00	90.01	0.27	7,420.62	4,003.76	425.11	4,004.28	0.00	0.00	0.00
11,700.00	90.01	0.27	7,420.61	4,103.76	425.58	4,104.28	0.00	0.00	0.00
11,800.00	90.01	0.27	7,420.60	4,203.76	426.04	4,204.28	0.00	0.00	0.00
11,900.00	90.01	0.27	7,420.59	4,303.76	426.51	4,304.28	0.00	0.00	0.00
12,000.00	90.01	0.27	7,420.58	4,403.76	426.98	4,404.28	0.00	0.00	0.00
12,100.00	90.01	0.27	7,420.57	4,503.76	427.44	4,504.28	0.00	0.00	0.00
12,200.00	90.01	0.27	7,420.56	4,603.76	427.91	4,604.28	0.00	0.00	0.00
12,300.00	90.01	0.27	7,420.55	4,703.76	428.38	4,704.28	0.00	0.00	0.00
12,400.00	90.01	0.27	7,420.54	4,803.76	428.84	4,804.28	0.00	0.00	0.00
12,500.00	90.01	0.27	7,420.53	4,903.75	429.31	4,904.27	0.00	0.00	0.00
12,600.00	90.01	0.27	7,420.52	5,003.75	429.78	5,004.27	0.00	0.00	0.00
12,700.00	90.01	0.27	7,420.50	5,103.75	430.24	5,104.27	0.00	0.00	0.00

# Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well CASTLE PINES 19-15HZ
<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 19-15HZ	<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	90.01	0.27	7,420.49	5,203.75	430.71	5,204.27	0.00	0.00	0.00
12,900.00	90.01	0.27	7,420.48	5,303.75	431.18	5,304.27	0.00	0.00	0.00
13,000.00	90.01	0.27	7,420.47	5,403.75	431.64	5,404.27	0.00	0.00	0.00
13,100.00	90.01	0.27	7,420.46	5,503.75	432.11	5,504.27	0.00	0.00	0.00
13,200.00	90.01	0.27	7,420.45	5,603.75	432.57	5,604.27	0.00	0.00	0.00
13,300.00	90.01	0.27	7,420.44	5,703.75	433.04	5,704.27	0.00	0.00	0.00
13,400.00	90.01	0.27	7,420.43	5,803.74	433.51	5,804.27	0.00	0.00	0.00
13,500.00	90.01	0.27	7,420.42	5,903.74	433.97	5,904.27	0.00	0.00	0.00
13,600.00	90.01	0.27	7,420.41	6,003.74	434.44	6,004.27	0.00	0.00	0.00
13,700.00	90.01	0.27	7,420.40	6,103.74	434.91	6,104.27	0.00	0.00	0.00
13,800.00	90.01	0.27	7,420.39	6,203.74	435.37	6,204.27	0.00	0.00	0.00
13,900.00	90.01	0.27	7,420.38	6,303.74	435.84	6,304.27	0.00	0.00	0.00
14,000.00	90.01	0.27	7,420.37	6,403.74	436.31	6,404.27	0.00	0.00	0.00
14,100.00	90.01	0.27	7,420.36	6,503.74	436.77	6,504.27	0.00	0.00	0.00
14,200.00	90.01	0.27	7,420.35	6,603.74	437.24	6,604.26	0.00	0.00	0.00
14,300.00	90.01	0.27	7,420.34	6,703.73	437.71	6,704.26	0.00	0.00	0.00
14,400.00	90.01	0.27	7,420.33	6,803.73	438.17	6,804.26	0.00	0.00	0.00
14,500.00	90.01	0.27	7,420.32	6,903.73	438.64	6,904.26	0.00	0.00	0.00
14,500.08	90.01	0.27	7,420.32	6,903.81	438.64	6,904.34	0.00	0.00	0.00
Begin Turn to BHL @ 14500.08ft									
14,533.11	90.01	359.61	7,420.32	6,936.84	438.60	6,937.37	2.00	0.00	-2.00
End Turn @ 14533.11ft									
14,600.00	90.01	359.61	7,420.31	7,003.73	438.14	7,004.26	0.00	0.00	0.00
14,700.00	90.01	359.61	7,420.30	7,103.73	437.46	7,104.26	0.00	0.00	0.00
14,800.00	90.01	359.61	7,420.29	7,203.73	436.77	7,204.25	0.00	0.00	0.00
14,900.00	90.01	359.61	7,420.28	7,303.72	436.08	7,304.25	0.00	0.00	0.00
15,000.00	90.01	359.61	7,420.27	7,403.72	435.40	7,404.25	0.00	0.00	0.00
15,100.00	90.01	359.61	7,420.26	7,503.72	434.71	7,504.24	0.00	0.00	0.00
15,200.00	90.01	359.61	7,420.25	7,603.72	434.03	7,604.24	0.00	0.00	0.00
15,300.00	90.01	359.61	7,420.24	7,703.71	433.34	7,704.24	0.00	0.00	0.00
15,400.00	90.01	359.61	7,420.23	7,803.71	432.65	7,804.23	0.00	0.00	0.00
15,500.00	90.01	359.61	7,420.22	7,903.71	431.97	7,904.23	0.00	0.00	0.00
15,600.00	90.01	359.61	7,420.21	8,003.71	431.28	8,004.23	0.00	0.00	0.00
15,700.00	90.01	359.61	7,420.20	8,103.70	430.59	8,104.22	0.00	0.00	0.00
15,800.00	90.01	359.61	7,420.19	8,203.70	429.91	8,204.22	0.00	0.00	0.00
15,900.00	90.01	359.61	7,420.18	8,303.70	429.22	8,304.22	0.00	0.00	0.00
16,000.00	90.01	359.61	7,420.17	8,403.70	428.53	8,404.21	0.00	0.00	0.00
16,100.00	90.01	359.61	7,420.16	8,503.70	427.85	8,504.21	0.00	0.00	0.00
16,200.00	90.01	359.61	7,420.14	8,603.69	427.16	8,604.21	0.00	0.00	0.00
16,300.00	90.01	359.61	7,420.13	8,703.69	426.47	8,704.21	0.00	0.00	0.00
16,400.00	90.01	359.61	7,420.12	8,803.69	425.79	8,804.20	0.00	0.00	0.00
16,500.00	90.01	359.61	7,420.11	8,903.69	425.10	8,904.20	0.00	0.00	0.00
16,600.00	90.01	359.61	7,420.10	9,003.68	424.41	9,004.20	0.00	0.00	0.00
16,700.00	90.01	359.61	7,420.09	9,103.68	423.73	9,104.19	0.00	0.00	0.00
16,800.00	90.01	359.61	7,420.08	9,203.68	423.04	9,204.19	0.00	0.00	0.00
16,900.00	90.01	359.61	7,420.07	9,303.68	422.35	9,304.19	0.00	0.00	0.00
17,000.00	90.01	359.61	7,420.06	9,403.67	421.67	9,404.18	0.00	0.00	0.00
17,100.00	90.01	359.61	7,420.05	9,503.67	420.98	9,504.18	0.00	0.00	0.00
17,200.00	90.01	359.61	7,420.04	9,603.67	420.29	9,604.18	0.00	0.00	0.00
17,300.00	90.01	359.61	7,420.03	9,703.67	419.61	9,704.17	0.00	0.00	0.00
17,400.00	90.01	359.61	7,420.02	9,803.66	418.92	9,804.17	0.00	0.00	0.00
17,500.00	90.01	359.61	7,420.01	9,903.66	418.24	9,904.17	0.00	0.00	0.00
17,600.00	90.01	359.61	7,420.00	10,003.66	417.55	10,004.16	0.00	0.00	0.00



# Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well CASTLE PINES 19-15HZ
<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 19-15HZ	<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)
17,601.24	90.01	359.61	7,420.00	10,004.90	417.54	10,005.40	0.00	0.00	0.00
TD Well @ 17601.24ft									

Casing Points				
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,512.43	1,500.00	9 5/8" Csg	9-5/8	13-1/2
7,878.78	7,421.00	Top of Production	5-1/2	7-7/8

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,234.20	1,226.00	Fox Hills			
4,050.76	4,002.00	Parkman			
4,446.91	4,398.00	Sussex			
7,113.90	7,050.00	Sharon Springs			
7,190.48	7,115.00	Niobrara			
7,275.98	7,182.00	Nio B			
7,371.84	7,249.00	Nio C			
7,650.67	7,385.00	Fort Hayes			
7,736.87	7,407.00	Codell		0.00	

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
916.67	913.29	-42.44	39.58	End Nudge @ 916.67ft
3,746.66	3,700.29	-401.84	374.73	Begin Drop @ 3746.66ft
4,246.66	4,197.75	-433.68	404.41	End Drop @ 4246.66ft
6,753.71	6,704.80	-433.68	404.41	KOP @ 6753.71ft :: DLS = 8°/100'
7,878.78	7,421.00	282.59	407.75	End Build @ 7878.78ft
14,500.08	7,420.32	6,903.81	438.64	Begin Turn to BHL @ 14500.08ft
14,533.11	7,420.32	6,936.84	438.60	End Turn @ 14533.11ft
17,601.24	7,420.00	10,004.90	417.54	TD Well @ 17601.24ft