

# **US ROCKIES WATTENBERG PLANNING**

**WELD-NAD83-UTMFT13N**

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

**CASTLE PINES 19-14HZ**

**Plan A**

**Plan: Permit Rev-1**

SHL Lat/Long: 40.117677/-104.813969

Survey Program: MWD+IFR+MSA

## **Standard Planning Report**

**17 January, 2018**

Project: WELD-NAD83-UTMFT13N  
Site: 2N-66W-19 CASTLE PINES 16-19HZ PAD  
Well: CASTLE PINES 19-14HZ  
Wellbore: Plan A  
Design: Permit Rev-1

## US ROCKIES WATTENBERG PLANNING

### CASING DETAILS

TVD	MD	Size
1500.00	1518.94	9-5/8
7342.00	7846.98	5-1/2

WELL DETAILS: CASTLE PINES 19-14HZ

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	1170.00	13.80	13.40	1161.13	107.26	25.55	1.50	13.40	-107.28	
4	3870.67	13.80	13.40	3783.84	733.92	174.84	0.00	0.00	-734.10	
5	4560.67	0.00	0.00	4467.19	814.36	194.01	2.00	180.00	-814.57	
6	6719.29	0.00	0.00	6625.81	814.36	194.01	0.00	0.00	-814.57	
7	7846.98	90.21	180.77	7342.00	95.54	184.30	8.00	180.77	-95.74	
8	11497.50	90.21	180.77	7328.31	-3554.62	135.00	0.00	0.00	3554.48	CASTLE PINES 19-14HZ_tgt
9	11574.14	90.21	179.62	7328.02	-3631.26	134.73	1.50	-90.01	3631.12	
10	18782.76	90.21	179.62	7301.00	-10839.67	182.02	0.00	0.00	10839.48	CASTLE PINES 19-14HZ_BHL

### WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
CASTLE PINES 19-14HZ_SHL	0.00	0.00	0.00	40.117677	-104.813969
CASTLE PINES 19-14HZ_BHL	7301.00	-10839.67	182.02	40.087910	-104.813318

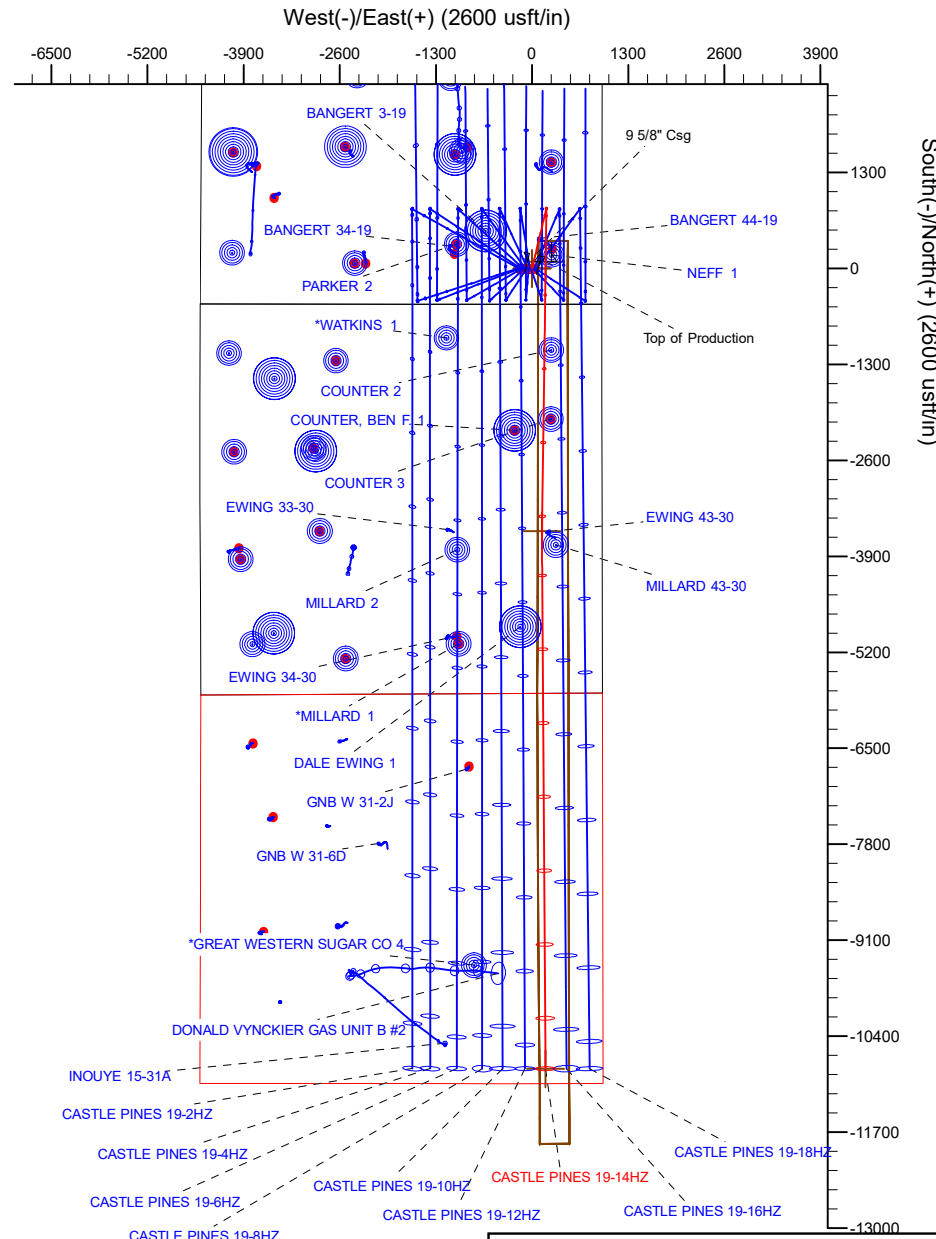
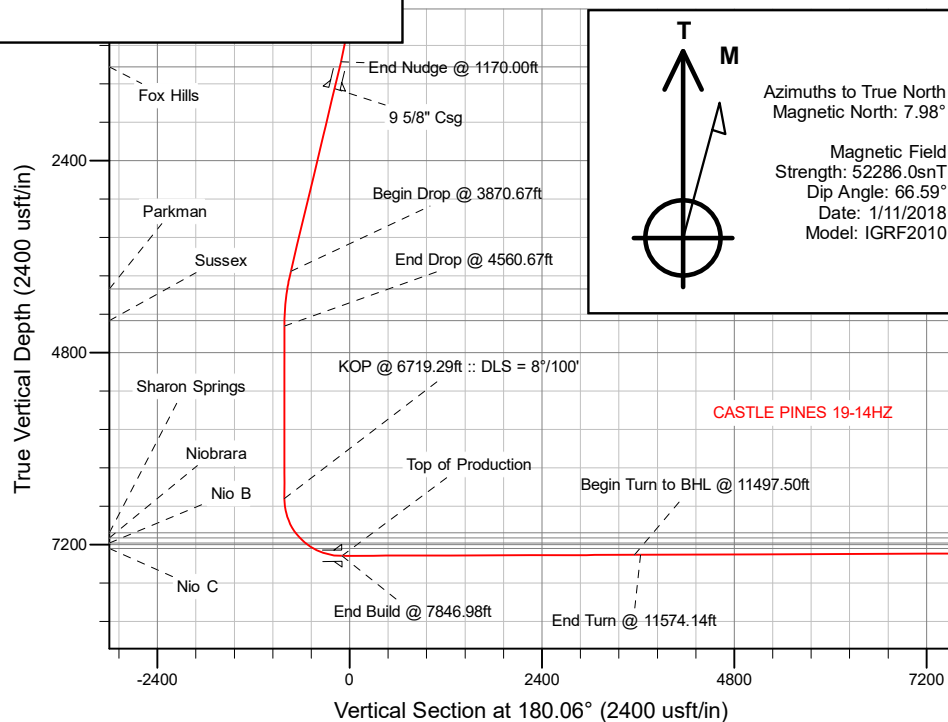
### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1226.00	1236.80	Fox Hills
4002.00	4093.41	Parkman
4398.00	4491.47	Sussex
7050.00	7173.28	Sharon Springs
7115.00	7257.81	Niobrara
7182.00	7356.15	Nio B
7249.00	7475.22	Nio C

**SHL**  
**483' FSL**  
**943' FEL**

**HEEL**  
**578' FSL**  
**755' FEL**

**TOE**  
**202' FSL**  
**780' FEL**



Plan: Permit Rev-1 (CASTLE PINES 19-14HZ/Plan A)

Created By: \_\_\_\_\_ Date: 1/17/2018  
Reviewed: \_\_\_\_\_ Date: \_\_\_\_\_

# Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well CASTLE PINES 19-14HZ
<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 19-14HZ	<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		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 19-14HZ					
Well Position	+N/-S	-1.82 usft	Northing:	14,569,639.26 usft	Latitude:	40.117677
	+E/-W	194.86 usft	Easting:	1,692,425.30 usft	Longitude:	-104.813969
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	52,286.02573836

<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	180.06

<b>Plan Survey Tool Program</b>	<b>Date</b>	1/17/2018		
<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-1 (Plan A)	APC_ISCWSA REV 2 MWD+I Fixed:v2:crustal field declinatio
2	1,500.00	18,782.76	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 CASTLE PINES 19-14HZ
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 19-14HZ	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	
250.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,170.00	13.80	13.40	1,161.13	107.26	25.55	1.50	1.50	0.00	13.40	
3,870.67	13.80	13.40	3,783.84	733.92	174.84	0.00	0.00	0.00	0.00	
4,560.67	0.00	0.00	4,467.19	814.36	194.01	2.00	-2.00	0.00	180.00	
6,719.29	0.00	0.00	6,625.81	814.36	194.01	0.00	0.00	0.00	0.00	
7,846.98	90.21	180.77	7,342.00	95.54	184.30	8.00	8.00	-15.89	180.77	
11,497.50	90.21	180.77	7,328.31	-3,554.62	135.00	0.00	0.00	0.00	0.00	CASTLE PINES 19-14
11,574.14	90.21	179.62	7,328.02	-3,631.26	134.73	1.50	0.00	-1.50	-90.01	
18,782.76	90.21	179.62	7,301.00	-10,839.67	182.02	0.00	0.00	0.00	0.00	CASTLE PINES 19-14

## Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well CASTLE PINES 19-14HZ
<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 19-14HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan A		
<b>Design:</b>	Permit Rev-1		

## Planned Survey

Measured			Vertical			Vertical	Dogleg	Build	Turn
Depth	Inclination	Azimuth	Depth	+N/-S	+E/-W	Section	Rate	Rate	Rate
(usft)	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(°/100usft)	(°/100usft)	(°/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	13.40	300.00	0.32	0.08	-0.32	1.50	1.50	0.00
400.00	2.25	13.40	399.96	2.86	0.68	-2.87	1.50	1.50	0.00
500.00	3.75	13.40	499.82	7.96	1.90	-7.96	1.50	1.50	0.00
600.00	5.25	13.40	599.51	15.59	3.71	-15.59	1.50	1.50	0.00
700.00	6.75	13.40	698.96	25.76	6.14	-25.76	1.50	1.50	0.00
800.00	8.25	13.40	798.10	38.45	9.16	-38.46	1.50	1.50	0.00
900.00	9.75	13.40	896.87	53.67	12.79	-53.68	1.50	1.50	0.00
1,000.00	11.25	13.40	995.19	71.40	17.01	-71.41	1.50	1.50	0.00
1,100.00	12.75	13.40	1,093.00	91.62	21.83	-91.64	1.50	1.50	0.00
1,170.00	13.80	13.40	1,161.13	107.26	25.55	-107.28	1.50	1.50	0.00
End Nudge @ 1170.00ft									
1,200.00	13.80	13.40	1,190.26	114.22	27.21	-114.25	0.00	0.00	0.00
1,236.80	13.80	13.40	1,226.00	122.76	29.24	-122.79	0.00	0.00	0.00
Fox Hills									
1,300.00	13.80	13.40	1,287.38	137.42	32.74	-137.46	0.00	0.00	0.00
1,400.00	13.80	13.40	1,384.49	160.63	38.27	-160.67	0.00	0.00	0.00
1,500.00	13.80	13.40	1,481.61	183.83	43.79	-183.88	0.00	0.00	0.00
1,518.94	13.80	13.40	1,500.00	188.23	44.84	-188.27	0.00	0.00	0.00
9 5/8" Csg									
1,600.00	13.80	13.40	1,578.72	207.03	49.32	-207.09	0.00	0.00	0.00
1,700.00	13.80	13.40	1,675.83	230.24	54.85	-230.30	0.00	0.00	0.00
1,800.00	13.80	13.40	1,772.95	253.44	60.38	-253.51	0.00	0.00	0.00
1,900.00	13.80	13.40	1,870.06	276.65	65.91	-276.72	0.00	0.00	0.00
2,000.00	13.80	13.40	1,967.17	299.85	71.43	-299.92	0.00	0.00	0.00
2,100.00	13.80	13.40	2,064.29	323.05	76.96	-323.13	0.00	0.00	0.00
2,200.00	13.80	13.40	2,161.40	346.26	82.49	-346.34	0.00	0.00	0.00
2,300.00	13.80	13.40	2,258.51	369.46	88.02	-369.55	0.00	0.00	0.00
2,400.00	13.80	13.40	2,355.63	392.67	93.55	-392.76	0.00	0.00	0.00
2,500.00	13.80	13.40	2,452.74	415.87	99.07	-415.97	0.00	0.00	0.00
2,600.00	13.80	13.40	2,549.85	439.07	104.60	-439.18	0.00	0.00	0.00
2,700.00	13.80	13.40	2,646.97	462.28	110.13	-462.39	0.00	0.00	0.00
2,800.00	13.80	13.40	2,744.08	485.48	115.66	-485.60	0.00	0.00	0.00
2,900.00	13.80	13.40	2,841.19	508.69	121.19	-508.81	0.00	0.00	0.00
3,000.00	13.80	13.40	2,938.31	531.89	126.71	-532.02	0.00	0.00	0.00
3,100.00	13.80	13.40	3,035.42	555.09	132.24	-555.23	0.00	0.00	0.00
3,200.00	13.80	13.40	3,132.53	578.30	137.77	-578.44	0.00	0.00	0.00
3,300.00	13.80	13.40	3,229.65	601.50	143.30	-601.65	0.00	0.00	0.00
3,400.00	13.80	13.40	3,326.76	624.71	148.83	-624.86	0.00	0.00	0.00
3,500.00	13.80	13.40	3,423.87	647.91	154.35	-648.07	0.00	0.00	0.00
3,600.00	13.80	13.40	3,520.99	671.11	159.88	-671.28	0.00	0.00	0.00
3,700.00	13.80	13.40	3,618.10	694.32	165.41	-694.49	0.00	0.00	0.00
3,800.00	13.80	13.40	3,715.21	717.52	170.94	-717.70	0.00	0.00	0.00
3,870.67	13.80	13.40	3,783.84	733.92	174.84	-734.10	0.00	0.00	0.00
Begin Drop @ 3870.67ft									
3,900.00	13.21	13.40	3,812.36	740.58	176.43	-740.77	2.00	-2.00	0.00
4,000.00	11.21	13.40	3,910.09	761.16	181.33	-761.35	2.00	-2.00	0.00
4,093.41	9.35	13.40	4,002.00	777.38	185.20	-777.57	2.00	-2.00	0.00
Parkman									

**Corporate**  
Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well CASTLE PINES 19-14HZ
<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 19-14HZ	<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)	
4,100.00	9.21	13.40	4,008.50	778.41	185.44	-778.60	2.00	-2.00	0.00	
4,200.00	7.21	13.40	4,107.47	792.31	188.75	-792.50	2.00	-2.00	0.00	
4,300.00	5.21	13.40	4,206.88	802.83	191.26	-803.03	2.00	-2.00	0.00	
4,400.00	3.21	13.40	4,306.61	809.98	192.96	-810.18	2.00	-2.00	0.00	
4,491.47	1.38	13.40	4,398.00	813.55	193.81	-813.75	2.00	-2.00	0.00	
<b>Sussex</b>										
4,500.00	1.21	13.40	4,406.53	813.74	193.86	-813.94	2.00	-2.00	0.00	
4,560.67	0.00	0.00	4,467.19	814.36	194.01	-814.57	2.00	-2.00	0.00	
<b>End Drop @ 4560.67ft</b>										
4,600.00	0.00	0.00	4,506.52	814.36	194.01	-814.57	0.00	0.00	0.00	
4,700.00	0.00	0.00	4,606.52	814.36	194.01	-814.57	0.00	0.00	0.00	
4,800.00	0.00	0.00	4,706.52	814.36	194.01	-814.57	0.00	0.00	0.00	
4,900.00	0.00	0.00	4,806.52	814.36	194.01	-814.57	0.00	0.00	0.00	
5,000.00	0.00	0.00	4,906.52	814.36	194.01	-814.57	0.00	0.00	0.00	
5,100.00	0.00	0.00	5,006.52	814.36	194.01	-814.57	0.00	0.00	0.00	
5,200.00	0.00	0.00	5,106.52	814.36	194.01	-814.57	0.00	0.00	0.00	
5,300.00	0.00	0.00	5,206.52	814.36	194.01	-814.57	0.00	0.00	0.00	
5,400.00	0.00	0.00	5,306.52	814.36	194.01	-814.57	0.00	0.00	0.00	
5,500.00	0.00	0.00	5,406.52	814.36	194.01	-814.57	0.00	0.00	0.00	
5,600.00	0.00	0.00	5,506.52	814.36	194.01	-814.57	0.00	0.00	0.00	
5,700.00	0.00	0.00	5,606.52	814.36	194.01	-814.57	0.00	0.00	0.00	
5,800.00	0.00	0.00	5,706.52	814.36	194.01	-814.57	0.00	0.00	0.00	
5,900.00	0.00	0.00	5,806.52	814.36	194.01	-814.57	0.00	0.00	0.00	
6,000.00	0.00	0.00	5,906.52	814.36	194.01	-814.57	0.00	0.00	0.00	
6,100.00	0.00	0.00	6,006.52	814.36	194.01	-814.57	0.00	0.00	0.00	
6,200.00	0.00	0.00	6,106.52	814.36	194.01	-814.57	0.00	0.00	0.00	
6,300.00	0.00	0.00	6,206.52	814.36	194.01	-814.57	0.00	0.00	0.00	
6,400.00	0.00	0.00	6,306.52	814.36	194.01	-814.57	0.00	0.00	0.00	
6,500.00	0.00	0.00	6,406.52	814.36	194.01	-814.57	0.00	0.00	0.00	
6,600.00	0.00	0.00	6,506.52	814.36	194.01	-814.57	0.00	0.00	0.00	
6,700.00	0.00	0.00	6,606.52	814.36	194.01	-814.57	0.00	0.00	0.00	
6,719.29	0.00	0.00	6,625.81	814.36	194.01	-814.57	0.00	0.00	0.00	
<b>KOP @ 6719.29ft :: DLS = 8°/100'</b>										
6,800.00	6.46	180.77	6,706.35	809.82	193.95	-810.02	8.00	8.00	0.00	
6,900.00	14.46	180.77	6,804.61	791.69	193.70	-791.89	8.00	8.00	0.00	
7,000.00	22.46	180.77	6,899.39	760.06	193.28	-760.26	8.00	8.00	0.00	
7,100.00	30.46	180.77	6,988.84	715.54	192.67	-715.75	8.00	8.00	0.00	
7,173.28	36.32	180.77	7,050.00	675.24	192.13	-675.44	8.00	8.00	0.00	
<b>Sharon Springs</b>										
7,200.00	38.46	180.77	7,071.23	659.02	191.91	-659.22	8.00	8.00	0.00	
7,257.81	43.08	180.77	7,115.00	621.28	191.40	-621.48	8.00	8.00	0.00	
<b>Niobrara</b>										
7,300.00	46.46	180.77	7,144.95	591.57	191.00	-591.77	8.00	8.00	0.00	
7,356.15	50.95	180.77	7,182.00	549.40	190.43	-549.60	8.00	8.00	0.00	
<b>Nio B</b>										
7,400.00	54.46	180.77	7,208.57	514.53	189.96	-514.73	8.00	8.00	0.00	
7,475.22	60.47	180.77	7,249.00	451.15	189.10	-451.35	8.00	8.00	0.00	
<b>Nio C</b>										
7,500.00	62.46	180.77	7,260.84	429.38	188.81	-429.58	8.00	8.00	0.00	
7,600.00	70.46	180.77	7,300.75	337.79	187.57	-337.99	8.00	8.00	0.00	
7,700.00	78.46	180.77	7,327.52	241.53	186.27	-241.73	8.00	8.00	0.00	
7,800.00	86.46	180.77	7,340.64	142.49	184.93	-142.68	8.00	8.00	0.00	
7,846.98	90.21	180.77	7,342.00	95.54	184.30	-95.73	8.00	8.00	0.00	

# Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well CASTLE PINES 19-14HZ
<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 19-14HZ	<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)
End Build @ 7846.98ft - Top of Production									
7,900.00	90.21	180.77	7,341.81	42.53	183.58	-42.72	0.00	0.00	0.00
8,000.00	90.21	180.77	7,341.43	-57.46	182.23	57.27	0.00	0.00	0.00
8,100.00	90.21	180.77	7,341.06	-157.45	180.88	157.26	0.00	0.00	0.00
8,200.00	90.21	180.77	7,340.68	-257.44	179.53	257.26	0.00	0.00	0.00
8,300.00	90.21	180.77	7,340.30	-357.43	178.18	357.25	0.00	0.00	0.00
8,400.00	90.21	180.77	7,339.93	-457.42	176.83	457.24	0.00	0.00	0.00
8,500.00	90.21	180.77	7,339.55	-557.42	175.48	557.23	0.00	0.00	0.00
8,600.00	90.21	180.77	7,339.18	-657.41	174.13	657.22	0.00	0.00	0.00
8,700.00	90.21	180.77	7,338.80	-757.40	172.78	757.21	0.00	0.00	0.00
8,800.00	90.21	180.77	7,338.43	-857.39	171.43	857.21	0.00	0.00	0.00
8,900.00	90.21	180.77	7,338.05	-957.38	170.08	957.20	0.00	0.00	0.00
9,000.00	90.21	180.77	7,337.68	-1,057.37	168.73	1,057.19	0.00	0.00	0.00
9,100.00	90.21	180.77	7,337.30	-1,157.36	167.38	1,157.18	0.00	0.00	0.00
9,200.00	90.21	180.77	7,336.93	-1,257.35	166.03	1,257.17	0.00	0.00	0.00
9,300.00	90.21	180.77	7,336.55	-1,357.34	164.68	1,357.16	0.00	0.00	0.00
9,400.00	90.21	180.77	7,336.18	-1,457.33	163.33	1,457.15	0.00	0.00	0.00
9,500.00	90.21	180.77	7,335.80	-1,557.32	161.98	1,557.15	0.00	0.00	0.00
9,600.00	90.21	180.77	7,335.43	-1,657.31	160.63	1,657.14	0.00	0.00	0.00
9,700.00	90.21	180.77	7,335.05	-1,757.30	159.28	1,757.13	0.00	0.00	0.00
9,800.00	90.21	180.77	7,334.68	-1,857.29	157.92	1,857.12	0.00	0.00	0.00
9,900.00	90.21	180.77	7,334.30	-1,957.28	156.57	1,957.11	0.00	0.00	0.00
10,000.00	90.21	180.77	7,333.93	-2,057.27	155.22	2,057.10	0.00	0.00	0.00
10,100.00	90.21	180.77	7,333.55	-2,157.26	153.87	2,157.10	0.00	0.00	0.00
10,200.00	90.21	180.77	7,333.18	-2,257.25	152.52	2,257.09	0.00	0.00	0.00
10,300.00	90.21	180.77	7,332.80	-2,357.24	151.17	2,357.08	0.00	0.00	0.00
10,400.00	90.21	180.77	7,332.43	-2,457.23	149.82	2,457.07	0.00	0.00	0.00
10,500.00	90.21	180.77	7,332.05	-2,557.22	148.47	2,557.06	0.00	0.00	0.00
10,600.00	90.21	180.77	7,331.68	-2,657.21	147.12	2,657.05	0.00	0.00	0.00
10,700.00	90.21	180.77	7,331.30	-2,757.20	145.77	2,757.04	0.00	0.00	0.00
10,800.00	90.21	180.77	7,330.93	-2,857.19	144.42	2,857.04	0.00	0.00	0.00
10,900.00	90.21	180.77	7,330.55	-2,957.18	143.07	2,957.03	0.00	0.00	0.00
11,000.00	90.21	180.77	7,330.18	-3,057.17	141.72	3,057.02	0.00	0.00	0.00
11,100.00	90.21	180.77	7,329.80	-3,157.16	140.37	3,157.01	0.00	0.00	0.00
11,200.00	90.21	180.77	7,329.43	-3,257.15	139.02	3,257.00	0.00	0.00	0.00
11,300.00	90.21	180.77	7,329.05	-3,357.14	137.67	3,356.99	0.00	0.00	0.00
11,400.00	90.21	180.77	7,328.68	-3,457.13	136.32	3,456.99	0.00	0.00	0.00
11,497.50	90.21	180.77	7,328.31	-3,554.62	135.00	3,554.48	0.00	0.00	0.00
Begin Turn to BHL @ 11497.50ft									
11,500.00	90.21	180.74	7,328.30	-3,557.12	134.97	3,556.98	1.50	0.00	-1.50
11,574.14	90.21	179.62	7,328.02	-3,631.26	134.73	3,631.12	1.50	0.00	-1.50
End Turn @ 11574.14ft									
11,600.00	90.21	179.62	7,327.93	-3,657.12	134.90	3,656.97	0.00	0.00	0.00
11,700.00	90.21	179.62	7,327.55	-3,757.11	135.56	3,756.97	0.00	0.00	0.00
11,800.00	90.21	179.62	7,327.18	-3,857.11	136.22	3,856.97	0.00	0.00	0.00
11,900.00	90.21	179.62	7,326.80	-3,957.11	136.87	3,956.96	0.00	0.00	0.00
12,000.00	90.21	179.62	7,326.43	-4,057.11	137.53	4,056.96	0.00	0.00	0.00
12,100.00	90.21	179.62	7,326.05	-4,157.10	138.18	4,156.96	0.00	0.00	0.00
12,200.00	90.21	179.62	7,325.68	-4,257.10	138.84	4,256.95	0.00	0.00	0.00
12,300.00	90.21	179.62	7,325.30	-4,357.10	139.50	4,356.95	0.00	0.00	0.00
12,400.00	90.21	179.62	7,324.93	-4,457.09	140.15	4,456.95	0.00	0.00	0.00
12,500.00	90.21	179.62	7,324.55	-4,557.09	140.81	4,556.94	0.00	0.00	0.00
12,600.00	90.21	179.62	7,324.18	-4,657.09	141.46	4,656.94	0.00	0.00	0.00

# Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well CASTLE PINES 19-14HZ
<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 19-14HZ	<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)
12,700.00	90.21	179.62	7,323.80	-4,757.09	142.12	4,756.93	0.00	0.00	0.00
12,800.00	90.21	179.62	7,323.43	-4,857.08	142.78	4,856.93	0.00	0.00	0.00
12,900.00	90.21	179.62	7,323.05	-4,957.08	143.43	4,956.93	0.00	0.00	0.00
13,000.00	90.21	179.62	7,322.68	-5,057.08	144.09	5,056.92	0.00	0.00	0.00
13,100.00	90.21	179.62	7,322.30	-5,157.07	144.74	5,156.92	0.00	0.00	0.00
13,200.00	90.21	179.62	7,321.93	-5,257.07	145.40	5,256.92	0.00	0.00	0.00
13,300.00	90.21	179.62	7,321.55	-5,357.07	146.06	5,356.91	0.00	0.00	0.00
13,400.00	90.21	179.62	7,321.18	-5,457.07	146.71	5,456.91	0.00	0.00	0.00
13,500.00	90.21	179.62	7,320.80	-5,557.06	147.37	5,556.91	0.00	0.00	0.00
13,600.00	90.21	179.62	7,320.43	-5,657.06	148.02	5,656.90	0.00	0.00	0.00
13,700.00	90.21	179.62	7,320.05	-5,757.06	148.68	5,756.90	0.00	0.00	0.00
13,800.00	90.21	179.62	7,319.68	-5,857.05	149.34	5,856.90	0.00	0.00	0.00
13,900.00	90.21	179.62	7,319.30	-5,957.05	149.99	5,956.89	0.00	0.00	0.00
14,000.00	90.21	179.62	7,318.93	-6,057.05	150.65	6,056.89	0.00	0.00	0.00
14,100.00	90.21	179.62	7,318.55	-6,157.05	151.30	6,156.88	0.00	0.00	0.00
14,200.00	90.21	179.62	7,318.18	-6,257.04	151.96	6,256.88	0.00	0.00	0.00
14,300.00	90.21	179.62	7,317.80	-6,357.04	152.62	6,356.88	0.00	0.00	0.00
14,400.00	90.21	179.62	7,317.43	-6,457.04	153.27	6,456.87	0.00	0.00	0.00
14,500.00	90.21	179.62	7,317.05	-6,557.03	153.93	6,556.87	0.00	0.00	0.00
14,600.00	90.21	179.62	7,316.68	-6,657.03	154.58	6,656.87	0.00	0.00	0.00
14,700.00	90.21	179.62	7,316.30	-6,757.03	155.24	6,756.86	0.00	0.00	0.00
14,800.00	90.21	179.62	7,315.93	-6,857.03	155.90	6,856.86	0.00	0.00	0.00
14,900.00	90.21	179.62	7,315.56	-6,957.02	156.55	6,956.86	0.00	0.00	0.00
15,000.00	90.21	179.62	7,315.18	-7,057.02	157.21	7,056.85	0.00	0.00	0.00
15,100.00	90.21	179.62	7,314.81	-7,157.02	157.86	7,156.85	0.00	0.00	0.00
15,200.00	90.21	179.62	7,314.43	-7,257.01	158.52	7,256.84	0.00	0.00	0.00
15,300.00	90.21	179.62	7,314.06	-7,357.01	159.18	7,356.84	0.00	0.00	0.00
15,400.00	90.21	179.62	7,313.68	-7,457.01	159.83	7,456.84	0.00	0.00	0.00
15,500.00	90.21	179.62	7,313.31	-7,557.01	160.49	7,556.83	0.00	0.00	0.00
15,600.00	90.21	179.62	7,312.93	-7,657.00	161.14	7,656.83	0.00	0.00	0.00
15,700.00	90.21	179.62	7,312.56	-7,757.00	161.80	7,756.83	0.00	0.00	0.00
15,800.00	90.21	179.62	7,312.18	-7,857.00	162.46	7,856.82	0.00	0.00	0.00
15,900.00	90.21	179.62	7,311.81	-7,956.99	163.11	7,956.82	0.00	0.00	0.00
16,000.00	90.21	179.62	7,311.43	-8,056.99	163.77	8,056.82	0.00	0.00	0.00
16,100.00	90.21	179.62	7,311.06	-8,156.99	164.42	8,156.81	0.00	0.00	0.00
16,200.00	90.21	179.62	7,310.68	-8,256.99	165.08	8,256.81	0.00	0.00	0.00
16,300.00	90.21	179.62	7,310.31	-8,356.98	165.74	8,356.81	0.00	0.00	0.00
16,400.00	90.21	179.62	7,309.93	-8,456.98	166.39	8,456.80	0.00	0.00	0.00
16,500.00	90.21	179.62	7,309.56	-8,556.98	167.05	8,556.80	0.00	0.00	0.00
16,600.00	90.21	179.62	7,309.18	-8,656.98	167.70	8,656.79	0.00	0.00	0.00
16,700.00	90.21	179.62	7,308.81	-8,756.97	168.36	8,756.79	0.00	0.00	0.00
16,800.00	90.21	179.62	7,308.43	-8,856.97	169.02	8,856.79	0.00	0.00	0.00
16,900.00	90.21	179.62	7,308.06	-8,956.97	169.67	8,956.78	0.00	0.00	0.00
17,000.00	90.21	179.62	7,307.68	-9,056.96	170.33	9,056.78	0.00	0.00	0.00
17,100.00	90.21	179.62	7,307.31	-9,156.96	170.98	9,156.78	0.00	0.00	0.00
17,200.00	90.21	179.62	7,306.93	-9,256.96	171.64	9,256.77	0.00	0.00	0.00
17,300.00	90.21	179.62	7,306.56	-9,356.96	172.30	9,356.77	0.00	0.00	0.00
17,400.00	90.21	179.62	7,306.18	-9,456.95	172.95	9,456.77	0.00	0.00	0.00
17,500.00	90.21	179.62	7,305.81	-9,556.95	173.61	9,556.76	0.00	0.00	0.00
17,600.00	90.21	179.62	7,305.43	-9,656.95	174.26	9,656.76	0.00	0.00	0.00
17,700.00	90.21	179.62	7,305.06	-9,756.94	174.92	9,756.76	0.00	0.00	0.00
17,800.00	90.21	179.62	7,304.68	-9,856.94	175.58	9,856.75	0.00	0.00	0.00
17,900.00	90.21	179.62	7,304.31	-9,956.94	176.23	9,956.75	0.00	0.00	0.00
18,000.00	90.21	179.62	7,303.93	-10,056.94	176.89	10,056.74	0.00	0.00	0.00



# Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well CASTLE PINES 19-14HZ
<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 19-14HZ	<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)	
18,100.00	90.21	179.62	7,303.56	-10,156.93	177.54	10,156.74	0.00	0.00	0.00	
18,200.00	90.21	179.62	7,303.18	-10,256.93	178.20	10,256.74	0.00	0.00	0.00	
18,300.00	90.21	179.62	7,302.81	-10,356.93	178.86	10,356.73	0.00	0.00	0.00	
18,400.00	90.21	179.62	7,302.43	-10,456.92	179.51	10,456.73	0.00	0.00	0.00	
18,500.00	90.21	179.62	7,302.06	-10,556.92	180.17	10,556.73	0.00	0.00	0.00	
18,600.00	90.21	179.62	7,301.69	-10,656.92	180.82	10,656.72	0.00	0.00	0.00	
18,700.00	90.21	179.62	7,301.31	-10,756.92	181.48	10,756.72	0.00	0.00	0.00	
18,782.76	90.21	179.62	7,301.00	-10,839.67	182.02	10,839.48	0.00	0.00	0.00	
TD Well @ 18782.76ft										

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,518.94	1,500.00	9 5/8" Csg	9-5/8	13-1/2	
7,846.98	7,342.00	Top of Production	5-1/2	7-7/8	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,236.80	1,226.00	Fox Hills				
4,093.41	4,002.00	Parkman				
4,491.47	4,398.00	Sussex				
7,173.28	7,050.00	Sharon Springs				
7,257.81	7,115.00	Niobrara				
7,356.15	7,182.00	Nio B				
7,475.22	7,249.00	Nio C				

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
250.00	250.00	0.00	0.00	Begin Nudge @ 250.00ft	
1,170.00	1,161.13	107.26	25.55	End Nudge @ 1170.00ft	
3,870.67	3,783.84	733.92	174.84	Begin Drop @ 3870.67ft	
4,560.67	4,467.19	814.36	194.01	End Drop @ 4560.67ft	
6,719.29	6,625.81	814.36	194.01	KOP @ 6719.29ft :: DLS = 8°/100'	
7,846.98	7,342.00	95.54	184.30	End Build @ 7846.98ft	
11,497.50	7,328.31	-3,554.62	135.00	Begin Turn to BHL @ 11497.50ft	
11,574.14	7,328.02	-3,631.26	134.73	End Turn @ 11574.14ft	
18,782.76	7,301.00	-10,839.67	182.02	TD Well @ 18782.76ft	