

US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N

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

CASTLE PINES 19-1HZ

Plan A

Plan: Permit Rev-1

SHL Lat/Long: 40.117682/-104.814666

Survey Program: MWD+IFR

Standard Planning Report

19 January, 2018

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

US ROCKIES WATTENBERG PLANNING

CASING DETAILS

TVD	MD	Size
1500.00	1523.46	9-5/8
7271.00	7911.27	5-1/2

WELL DETAILS: CASTLE PINES 19-1HZ

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	1616.67	20.50	252.00	1587.69	-74.75	-230.06	1.50	252.00	-72.13	
4	4470.00	20.50	252.00	4260.33	-383.54	-1180.41	0.00	0.00	-370.12	
5	5495.00	0.00	0.00	5263.60	-439.60	-1352.95	2.00	180.00	-424.22	
6	6786.20	0.00	0.00	6554.80	-439.60	-1352.95	0.00	0.00	-424.22	
7	7911.27	90.01	359.35	7271.00	276.63	-1361.09	8.00	359.35	292.05	
8	17558.68	90.01	359.35	7270.00	9923.41	-1470.75	0.00	0.00	9939.45	CASTLE PINES 19-1HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
CASTLE PINES 19-1HZ_SHL	0.00	0.00	0.00	40.117682	-104.814666
CASTLE PINES 19-1HZ_BHL	7270.00	9923.41	-1470.75	40.144933	-104.819929

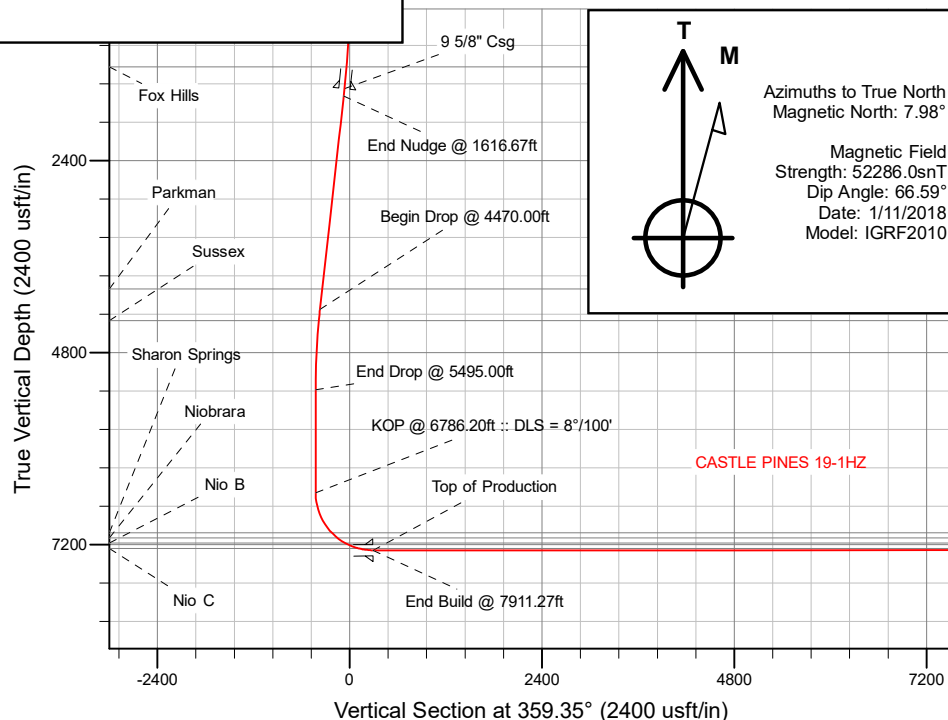
FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1226.00	1236.94	Fox Hills
4002.00	4194.20	Parkman
4398.00	4615.65	Sussex
7050.00	7332.99	Sharon Springs
7115.00	7429.46	Niobrara
7182.00	7550.35	Nio B
7249.00	7733.23	Nio C

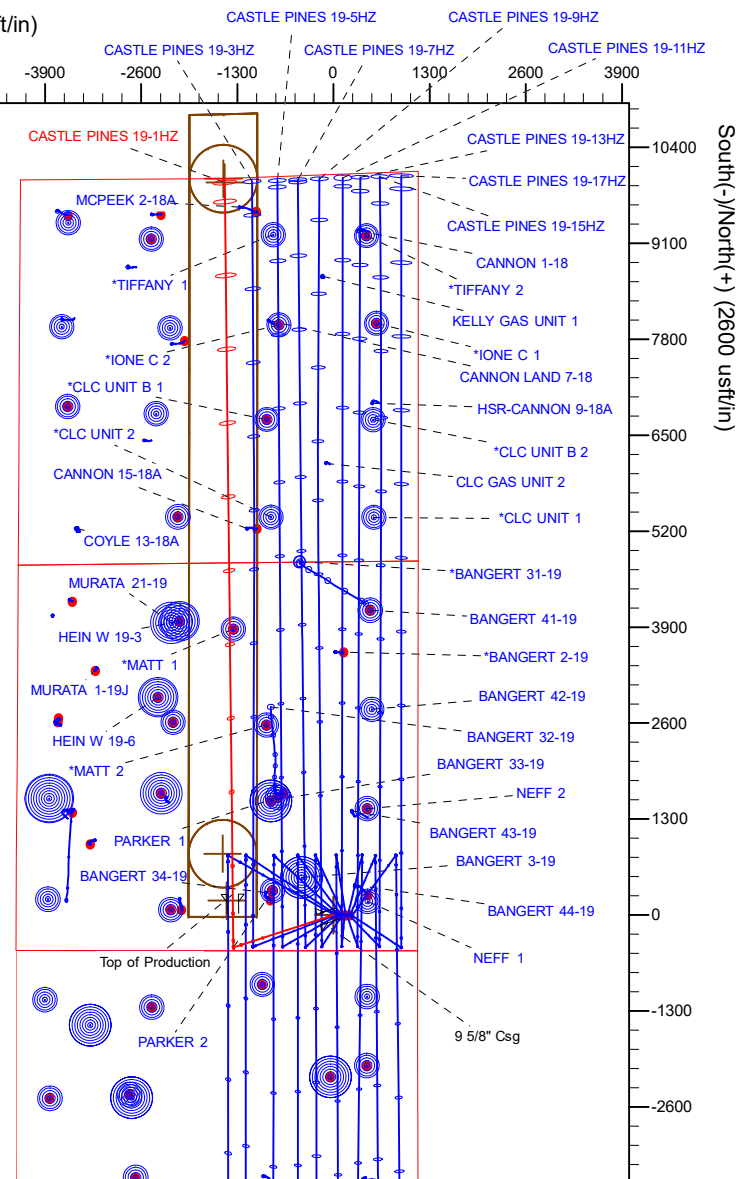
SHL
485' FSL
1138' FEL

HEEL
763' FSL
2498' FEL

TOE
52' FNL
2619' FEL



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



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

Created By: _____ Date: 1/19/2018
Reviewed: _____ Date: _____

Corporate Planning Report

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

Project	WELD-NAD83-UTMFT13N		
Map System:	Universal Transverse Mercator (US Survey Feet)	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	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 19-1HZ					
Well Position	+N/-S	0.00 usft	Northing:	14,569,640.68 usft	Latitude:	40.117682
	+E/-W	0.00 usft	Easting:	1,692,230.43 usft	Longitude:	-104.814666
Position Uncertainty		3.28 usft	Wellhead Elevation:		Ground Level:	4,876.00 usft

Wellbore	Plan A				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	1/11/2018	7.98	66.59	52,285.95760093

Design	Permit Rev-1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	359.35

Plan Survey Tool Program	Date	1/19/2018		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	1,500.00	Permit Rev-1 (Plan A)	APC_ISCWSA REV 2 MWD+II Fixed:v2:crustal field declinatio
2	1,500.00	17,558.68	Permit Rev-1 (Plan A)	APC_ISCWSA REV 2 MWD+II Fixed:v2:crustal field declinatio

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Well:	CASTLE PINES 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	
250.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,616.67	20.50	252.00	1,587.69	-74.75	-230.06	1.50	1.50	0.00	252.00	
4,470.00	20.50	252.00	4,260.33	-383.54	-1,180.41	0.00	0.00	0.00	0.00	
5,495.00	0.00	0.00	5,263.60	-439.60	-1,352.95	2.00	-2.00	0.00	180.00	
6,786.20	0.00	0.00	6,554.80	-439.60	-1,352.95	0.00	0.00	0.00	0.00	
7,911.27	90.01	359.35	7,271.00	276.63	-1,361.09	8.00	8.00	-0.06	359.35	
17,558.68	90.01	359.35	7,270.00	9,923.41	-1,470.75	0.00	0.00	0.00	0.00	CASTLE PINES 19-1I

Corporate Planning Report

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Well:	CASTLE PINES 19-1HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	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
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	252.00	300.00	-0.10	-0.31	-0.10	1.50	1.50	0.00
400.00	2.25	252.00	399.96	-0.91	-2.80	-0.88	1.50	1.50	0.00
500.00	3.75	252.00	499.82	-2.53	-7.78	-2.44	1.50	1.50	0.00
600.00	5.25	252.00	599.51	-4.95	-15.24	-4.78	1.50	1.50	0.00
700.00	6.75	252.00	698.96	-8.18	-25.18	-7.90	1.50	1.50	0.00
800.00	8.25	252.00	798.10	-12.22	-37.59	-11.79	1.50	1.50	0.00
900.00	9.75	252.00	896.87	-17.05	-52.47	-16.45	1.50	1.50	0.00
1,000.00	11.25	252.00	995.19	-22.68	-69.80	-21.89	1.50	1.50	0.00
1,100.00	12.75	252.00	1,093.00	-29.10	-89.58	-28.09	1.50	1.50	0.00
1,200.00	14.25	252.00	1,190.24	-36.32	-111.78	-35.05	1.50	1.50	0.00
1,236.95	14.80	252.00	1,226.00	-39.18	-120.59	-37.81	1.50	1.50	0.00
Fox Hills									
1,300.00	15.75	252.00	1,286.83	-44.32	-136.39	-42.77	1.50	1.50	0.00
1,400.00	17.25	252.00	1,382.71	-53.09	-163.40	-51.24	1.50	1.50	0.00
1,500.00	18.75	252.00	1,477.81	-62.64	-192.79	-60.45	1.50	1.50	0.00
1,523.46	19.10	252.00	1,500.00	-64.99	-200.03	-62.72	1.50	1.50	0.00
9 5/8" Csg									
1,600.00	20.25	252.00	1,572.07	-72.96	-224.54	-70.40	1.50	1.50	0.00
1,616.67	20.50	252.00	1,587.69	-74.75	-230.06	-72.13	1.50	1.50	0.00
End Nudge @ 1616.67ft									
1,700.00	20.50	252.00	1,665.75	-83.77	-257.81	-80.84	0.00	0.00	0.00
1,800.00	20.50	252.00	1,759.42	-94.59	-291.12	-91.28	0.00	0.00	0.00
1,900.00	20.50	252.00	1,853.08	-105.41	-324.42	-101.72	0.00	0.00	0.00
2,000.00	20.50	252.00	1,946.75	-116.23	-357.73	-112.17	0.00	0.00	0.00
2,100.00	20.50	252.00	2,040.42	-127.06	-391.04	-122.61	0.00	0.00	0.00
2,200.00	20.50	252.00	2,134.09	-137.88	-424.34	-133.06	0.00	0.00	0.00
2,300.00	20.50	252.00	2,227.75	-148.70	-457.65	-143.50	0.00	0.00	0.00
2,400.00	20.50	252.00	2,321.42	-159.52	-490.96	-153.94	0.00	0.00	0.00
2,500.00	20.50	252.00	2,415.09	-170.34	-524.26	-164.39	0.00	0.00	0.00
2,600.00	20.50	252.00	2,508.75	-181.17	-557.57	-174.83	0.00	0.00	0.00
2,700.00	20.50	252.00	2,602.42	-191.99	-590.88	-185.27	0.00	0.00	0.00
2,800.00	20.50	252.00	2,696.09	-202.81	-624.18	-195.72	0.00	0.00	0.00
2,900.00	20.50	252.00	2,789.76	-213.63	-657.49	-206.16	0.00	0.00	0.00
3,000.00	20.50	252.00	2,883.42	-224.45	-690.80	-216.60	0.00	0.00	0.00
3,100.00	20.50	252.00	2,977.09	-235.28	-724.10	-227.05	0.00	0.00	0.00
3,200.00	20.50	252.00	3,070.76	-246.10	-757.41	-237.49	0.00	0.00	0.00
3,300.00	20.50	252.00	3,164.43	-256.92	-790.72	-247.93	0.00	0.00	0.00
3,400.00	20.50	252.00	3,258.09	-267.74	-824.02	-258.38	0.00	0.00	0.00
3,500.00	20.50	252.00	3,351.76	-278.56	-857.33	-268.82	0.00	0.00	0.00
3,600.00	20.50	252.00	3,445.43	-289.39	-890.64	-279.26	0.00	0.00	0.00
3,700.00	20.50	252.00	3,539.09	-300.21	-923.94	-289.71	0.00	0.00	0.00
3,800.00	20.50	252.00	3,632.76	-311.03	-957.25	-300.15	0.00	0.00	0.00
3,900.00	20.50	252.00	3,726.43	-321.85	-990.56	-310.59	0.00	0.00	0.00
4,000.00	20.50	252.00	3,820.10	-332.67	-1,023.86	-321.04	0.00	0.00	0.00
4,100.00	20.50	252.00	3,913.76	-343.50	-1,057.17	-331.48	0.00	0.00	0.00
4,194.20	20.50	252.00	4,002.00	-353.69	-1,088.55	-341.32	0.00	0.00	0.00
Parkman									
4,200.00	20.50	252.00	4,007.43	-354.32	-1,090.48	-341.92	0.00	0.00	0.00
4,300.00	20.50	252.00	4,101.10	-365.14	-1,123.79	-352.37	0.00	0.00	0.00

Corporate Planning Report

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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 19-1HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	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)
4,400.00	20.50	252.00	4,194.76	-375.96	-1,157.09	-362.81	0.00	0.00	0.00
4,470.00	20.50	252.00	4,260.33	-383.54	-1,180.41	-370.12	0.00	0.00	0.00
Begin Drop @ 4470.00ft									
4,500.00	19.90	252.00	4,288.49	-386.74	-1,190.26	-373.21	2.00	-2.00	0.00
4,600.00	17.90	252.00	4,383.09	-396.75	-1,221.06	-382.87	2.00	-2.00	0.00
4,615.65	17.59	252.00	4,398.00	-398.22	-1,225.60	-384.29	2.00	-2.00	0.00
Sussex									
4,700.00	15.90	252.00	4,478.77	-405.73	-1,248.71	-391.54	2.00	-2.00	0.00
4,800.00	13.90	252.00	4,575.40	-413.68	-1,273.16	-399.21	2.00	-2.00	0.00
4,900.00	11.90	252.00	4,672.87	-420.57	-1,294.39	-405.86	2.00	-2.00	0.00
5,000.00	9.90	252.00	4,771.06	-426.42	-1,312.38	-411.50	2.00	-2.00	0.00
5,100.00	7.90	252.00	4,869.85	-431.20	-1,327.09	-416.11	2.00	-2.00	0.00
5,200.00	5.90	252.00	4,969.12	-434.91	-1,338.52	-419.70	2.00	-2.00	0.00
5,300.00	3.90	252.00	5,068.75	-437.55	-1,346.64	-422.24	2.00	-2.00	0.00
5,400.00	1.90	252.00	5,168.62	-439.11	-1,351.45	-423.75	2.00	-2.00	0.00
5,495.00	0.00	0.00	5,263.60	-439.60	-1,352.95	-424.22	2.00	-2.00	0.00
End Drop @ 5495.00ft									
5,500.00	0.00	0.00	5,268.60	-439.60	-1,352.95	-424.22	0.00	0.00	0.00
5,600.00	0.00	0.00	5,368.60	-439.60	-1,352.95	-424.22	0.00	0.00	0.00
5,700.00	0.00	0.00	5,468.60	-439.60	-1,352.95	-424.22	0.00	0.00	0.00
5,800.00	0.00	0.00	5,568.60	-439.60	-1,352.95	-424.22	0.00	0.00	0.00
5,900.00	0.00	0.00	5,668.60	-439.60	-1,352.95	-424.22	0.00	0.00	0.00
6,000.00	0.00	0.00	5,768.60	-439.60	-1,352.95	-424.22	0.00	0.00	0.00
6,100.00	0.00	0.00	5,868.60	-439.60	-1,352.95	-424.22	0.00	0.00	0.00
6,200.00	0.00	0.00	5,968.60	-439.60	-1,352.95	-424.22	0.00	0.00	0.00
6,300.00	0.00	0.00	6,068.60	-439.60	-1,352.95	-424.22	0.00	0.00	0.00
6,400.00	0.00	0.00	6,168.60	-439.60	-1,352.95	-424.22	0.00	0.00	0.00
6,500.00	0.00	0.00	6,268.60	-439.60	-1,352.95	-424.22	0.00	0.00	0.00
6,600.00	0.00	0.00	6,368.60	-439.60	-1,352.95	-424.22	0.00	0.00	0.00
6,700.00	0.00	0.00	6,468.60	-439.60	-1,352.95	-424.22	0.00	0.00	0.00
6,786.20	0.00	0.00	6,554.80	-439.60	-1,352.95	-424.22	0.00	0.00	0.00
KOP @ 6786.20ft :: DLS = 8°/100'									
6,800.00	1.10	359.35	6,568.60	-439.47	-1,352.95	-424.09	8.00	8.00	0.00
6,900.00	9.10	359.35	6,668.12	-430.58	-1,353.05	-415.20	8.00	8.00	0.00
7,000.00	17.10	359.35	6,765.44	-407.93	-1,353.31	-392.55	8.00	8.00	0.00
7,100.00	25.10	359.35	6,858.66	-371.95	-1,353.72	-356.57	8.00	8.00	0.00
7,200.00	33.10	359.35	6,945.96	-323.35	-1,354.27	-307.97	8.00	8.00	0.00
7,300.00	41.10	359.35	7,025.65	-263.08	-1,354.95	-247.69	8.00	8.00	0.00
7,332.99	43.74	359.35	7,050.00	-240.83	-1,355.21	-225.44	8.00	8.00	0.00
Sharon Springs									
7,400.00	49.10	359.35	7,096.17	-192.30	-1,355.76	-176.91	8.00	8.00	0.00
7,429.46	51.46	359.35	7,115.00	-169.64	-1,356.02	-154.25	8.00	8.00	0.00
Niobrara									
7,500.00	57.10	359.35	7,156.16	-112.40	-1,356.67	-97.00	8.00	8.00	0.00
7,550.35	61.13	359.35	7,182.00	-69.20	-1,357.16	-53.80	8.00	8.00	0.00
Nio B									
7,600.00	65.10	359.35	7,204.45	-24.93	-1,357.66	-9.52	8.00	8.00	0.00
7,700.00	73.10	359.35	7,240.08	68.41	-1,358.72	83.82	8.00	8.00	0.00
7,733.23	75.76	359.35	7,249.00	100.42	-1,359.09	115.83	8.00	8.00	0.00
Nio C									
7,800.00	81.10	359.35	7,262.38	165.80	-1,359.83	181.22	8.00	8.00	0.00
7,900.00	89.10	359.35	7,270.91	265.35	-1,360.96	280.77	8.00	8.00	0.00
7,911.27	90.01	359.35	7,271.00	276.62	-1,361.09	292.04	8.00	8.00	0.00

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Wellbore:	Plan A		
Design:	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 @ 7911.27ft - Top of Production									
8,000.00	90.01	359.35	7,270.99	365.35	-1,362.10	380.77	0.00	0.00	0.00
8,100.00	90.01	359.35	7,270.98	465.34	-1,363.24	480.77	0.00	0.00	0.00
8,200.00	90.01	359.35	7,270.97	565.33	-1,364.37	580.77	0.00	0.00	0.00
8,300.00	90.01	359.35	7,270.96	665.33	-1,365.51	680.77	0.00	0.00	0.00
8,400.00	90.01	359.35	7,270.95	765.32	-1,366.65	780.77	0.00	0.00	0.00
8,500.00	90.01	359.35	7,270.94	865.31	-1,367.78	880.77	0.00	0.00	0.00
8,600.00	90.01	359.35	7,270.93	965.31	-1,368.92	980.77	0.00	0.00	0.00
8,700.00	90.01	359.35	7,270.92	1,065.30	-1,370.06	1,080.77	0.00	0.00	0.00
8,800.00	90.01	359.35	7,270.91	1,165.29	-1,371.19	1,180.77	0.00	0.00	0.00
8,900.00	90.01	359.35	7,270.90	1,265.29	-1,372.33	1,280.77	0.00	0.00	0.00
9,000.00	90.01	359.35	7,270.89	1,365.28	-1,373.47	1,380.77	0.00	0.00	0.00
9,100.00	90.01	359.35	7,270.88	1,465.27	-1,374.60	1,480.77	0.00	0.00	0.00
9,200.00	90.01	359.35	7,270.87	1,565.27	-1,375.74	1,580.77	0.00	0.00	0.00
9,300.00	90.01	359.35	7,270.86	1,665.26	-1,376.88	1,680.77	0.00	0.00	0.00
9,400.00	90.01	359.35	7,270.85	1,765.26	-1,378.01	1,780.77	0.00	0.00	0.00
9,500.00	90.01	359.35	7,270.83	1,865.25	-1,379.15	1,880.77	0.00	0.00	0.00
9,600.00	90.01	359.35	7,270.82	1,965.24	-1,380.29	1,980.77	0.00	0.00	0.00
9,700.00	90.01	359.35	7,270.81	2,065.24	-1,381.42	2,080.77	0.00	0.00	0.00
9,800.00	90.01	359.35	7,270.80	2,165.23	-1,382.56	2,180.77	0.00	0.00	0.00
9,900.00	90.01	359.35	7,270.79	2,265.22	-1,383.70	2,280.77	0.00	0.00	0.00
10,000.00	90.01	359.35	7,270.78	2,365.22	-1,384.83	2,380.77	0.00	0.00	0.00
10,100.00	90.01	359.35	7,270.77	2,465.21	-1,385.97	2,480.77	0.00	0.00	0.00
10,200.00	90.01	359.35	7,270.76	2,565.20	-1,387.11	2,580.77	0.00	0.00	0.00
10,300.00	90.01	359.35	7,270.75	2,665.20	-1,388.24	2,680.77	0.00	0.00	0.00
10,400.00	90.01	359.35	7,270.74	2,765.19	-1,389.38	2,780.77	0.00	0.00	0.00
10,500.00	90.01	359.35	7,270.73	2,865.18	-1,390.52	2,880.77	0.00	0.00	0.00
10,600.00	90.01	359.35	7,270.72	2,965.18	-1,391.65	2,980.77	0.00	0.00	0.00
10,700.00	90.01	359.35	7,270.71	3,065.17	-1,392.79	3,080.77	0.00	0.00	0.00
10,800.00	90.01	359.35	7,270.70	3,165.16	-1,393.93	3,180.77	0.00	0.00	0.00
10,900.00	90.01	359.35	7,270.69	3,265.16	-1,395.06	3,280.77	0.00	0.00	0.00
11,000.00	90.01	359.35	7,270.68	3,365.15	-1,396.20	3,380.77	0.00	0.00	0.00
11,100.00	90.01	359.35	7,270.67	3,465.15	-1,397.34	3,480.77	0.00	0.00	0.00
11,200.00	90.01	359.35	7,270.66	3,565.14	-1,398.47	3,580.77	0.00	0.00	0.00
11,300.00	90.01	359.35	7,270.65	3,665.13	-1,399.61	3,680.77	0.00	0.00	0.00
11,400.00	90.01	359.35	7,270.64	3,765.13	-1,400.75	3,780.77	0.00	0.00	0.00
11,500.00	90.01	359.35	7,270.63	3,865.12	-1,401.88	3,880.77	0.00	0.00	0.00
11,600.00	90.01	359.35	7,270.62	3,965.11	-1,403.02	3,980.77	0.00	0.00	0.00
11,700.00	90.01	359.35	7,270.61	4,065.11	-1,404.16	4,080.77	0.00	0.00	0.00
11,800.00	90.01	359.35	7,270.60	4,165.10	-1,405.29	4,180.77	0.00	0.00	0.00
11,900.00	90.01	359.35	7,270.59	4,265.09	-1,406.43	4,280.77	0.00	0.00	0.00
12,000.00	90.01	359.35	7,270.58	4,365.09	-1,407.57	4,380.77	0.00	0.00	0.00
12,100.00	90.01	359.35	7,270.57	4,465.08	-1,408.70	4,480.77	0.00	0.00	0.00
12,200.00	90.01	359.35	7,270.56	4,565.07	-1,409.84	4,580.77	0.00	0.00	0.00
12,300.00	90.01	359.35	7,270.54	4,665.07	-1,410.98	4,680.77	0.00	0.00	0.00
12,400.00	90.01	359.35	7,270.53	4,765.06	-1,412.11	4,780.77	0.00	0.00	0.00
12,500.00	90.01	359.35	7,270.52	4,865.06	-1,413.25	4,880.77	0.00	0.00	0.00
12,600.00	90.01	359.35	7,270.51	4,965.05	-1,414.39	4,980.77	0.00	0.00	0.00
12,700.00	90.01	359.35	7,270.50	5,065.04	-1,415.52	5,080.77	0.00	0.00	0.00
12,800.00	90.01	359.35	7,270.49	5,165.04	-1,416.66	5,180.77	0.00	0.00	0.00
12,900.00	90.01	359.35	7,270.48	5,265.03	-1,417.80	5,280.77	0.00	0.00	0.00
13,000.00	90.01	359.35	7,270.47	5,365.02	-1,418.93	5,380.77	0.00	0.00	0.00
13,100.00	90.01	359.35	7,270.46	5,465.02	-1,420.07	5,480.77	0.00	0.00	0.00

Planning Report

Database: Company: Project: Site: Well: Wellbore: Design:	PLANNING US ROCKIES WATTENBERG PLANNING WELD-NAD83-UTMFT13N 2N-66W-19 CASTLE PINES 16-19HZ PAD CASTLE PINES 19-1HZ Plan A Permit Rev-1	Local Co-ordinate Reference: TVD Reference: MD Reference: North Reference: Survey Calculation Method:	Well CASTLE PINES 19-1HZ RKB = 17' @ 4893.00usft (Drilling Rig) RKB = 17' @ 4893.00usft (Drilling Rig) True Minimum Curvature
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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)
13,200.00	90.01	359.35	7,270.45	5,565.01	-1,421.21	5,580.77	0.00	0.00	0.00
13,300.00	90.01	359.35	7,270.44	5,665.00	-1,422.34	5,680.77	0.00	0.00	0.00
13,400.00	90.01	359.35	7,270.43	5,765.00	-1,423.48	5,780.77	0.00	0.00	0.00
13,500.00	90.01	359.35	7,270.42	5,864.99	-1,424.62	5,880.77	0.00	0.00	0.00
13,600.00	90.01	359.35	7,270.41	5,964.98	-1,425.75	5,980.77	0.00	0.00	0.00
13,700.00	90.01	359.35	7,270.40	6,064.98	-1,426.89	6,080.77	0.00	0.00	0.00
13,800.00	90.01	359.35	7,270.39	6,164.97	-1,428.03	6,180.77	0.00	0.00	0.00
13,900.00	90.01	359.35	7,270.38	6,264.96	-1,429.16	6,280.77	0.00	0.00	0.00
14,000.00	90.01	359.35	7,270.37	6,364.96	-1,430.30	6,380.77	0.00	0.00	0.00
14,100.00	90.01	359.35	7,270.36	6,464.95	-1,431.44	6,480.77	0.00	0.00	0.00
14,200.00	90.01	359.35	7,270.35	6,564.95	-1,432.57	6,580.77	0.00	0.00	0.00
14,300.00	90.01	359.35	7,270.34	6,664.94	-1,433.71	6,680.77	0.00	0.00	0.00
14,400.00	90.01	359.35	7,270.33	6,764.93	-1,434.85	6,780.77	0.00	0.00	0.00
14,500.00	90.01	359.35	7,270.32	6,864.93	-1,435.98	6,880.77	0.00	0.00	0.00
14,600.00	90.01	359.35	7,270.31	6,964.92	-1,437.12	6,980.77	0.00	0.00	0.00
14,700.00	90.01	359.35	7,270.30	7,064.91	-1,438.26	7,080.77	0.00	0.00	0.00
14,800.00	90.01	359.35	7,270.29	7,164.91	-1,439.39	7,180.77	0.00	0.00	0.00
14,900.00	90.01	359.35	7,270.28	7,264.90	-1,440.53	7,280.77	0.00	0.00	0.00
15,000.00	90.01	359.35	7,270.27	7,364.89	-1,441.67	7,380.77	0.00	0.00	0.00
15,100.00	90.01	359.35	7,270.25	7,464.89	-1,442.80	7,480.77	0.00	0.00	0.00
15,200.00	90.01	359.35	7,270.24	7,564.88	-1,443.94	7,580.77	0.00	0.00	0.00
15,300.00	90.01	359.35	7,270.23	7,664.87	-1,445.08	7,680.77	0.00	0.00	0.00
15,400.00	90.01	359.35	7,270.22	7,764.87	-1,446.21	7,780.77	0.00	0.00	0.00
15,500.00	90.01	359.35	7,270.21	7,864.86	-1,447.35	7,880.77	0.00	0.00	0.00
15,600.00	90.01	359.35	7,270.20	7,964.85	-1,448.49	7,980.77	0.00	0.00	0.00
15,700.00	90.01	359.35	7,270.19	8,064.85	-1,449.63	8,080.77	0.00	0.00	0.00
15,800.00	90.01	359.35	7,270.18	8,164.84	-1,450.76	8,180.77	0.00	0.00	0.00
15,900.00	90.01	359.35	7,270.17	8,264.84	-1,451.90	8,280.77	0.00	0.00	0.00
16,000.00	90.01	359.35	7,270.16	8,364.83	-1,453.04	8,380.77	0.00	0.00	0.00
16,100.00	90.01	359.35	7,270.15	8,464.82	-1,454.17	8,480.77	0.00	0.00	0.00
16,200.00	90.01	359.35	7,270.14	8,564.82	-1,455.31	8,580.77	0.00	0.00	0.00
16,300.00	90.01	359.35	7,270.13	8,664.81	-1,456.45	8,680.77	0.00	0.00	0.00
16,400.00	90.01	359.35	7,270.12	8,764.80	-1,457.58	8,780.77	0.00	0.00	0.00
16,500.00	90.01	359.35	7,270.11	8,864.80	-1,458.72	8,880.77	0.00	0.00	0.00
16,600.00	90.01	359.35	7,270.10	8,964.79	-1,459.86	8,980.77	0.00	0.00	0.00
16,700.00	90.01	359.35	7,270.09	9,064.78	-1,460.99	9,080.77	0.00	0.00	0.00
16,800.00	90.01	359.35	7,270.08	9,164.78	-1,462.13	9,180.77	0.00	0.00	0.00
16,900.00	90.01	359.35	7,270.07	9,264.77	-1,463.27	9,280.77	0.00	0.00	0.00
17,000.00	90.01	359.35	7,270.06	9,364.76	-1,464.40	9,380.77	0.00	0.00	0.00
17,100.00	90.01	359.35	7,270.05	9,464.76	-1,465.54	9,480.77	0.00	0.00	0.00
17,200.00	90.01	359.35	7,270.04	9,564.75	-1,466.68	9,580.77	0.00	0.00	0.00
17,300.00	90.01	359.35	7,270.03	9,664.75	-1,467.81	9,680.77	0.00	0.00	0.00
17,400.00	90.01	359.35	7,270.02	9,764.74	-1,468.95	9,780.77	0.00	0.00	0.00
17,500.00	90.01	359.35	7,270.01	9,864.73	-1,470.09	9,880.77	0.00	0.00	0.00
17,558.68	90.01	359.35	7,270.00	9,923.41	-1,470.75	9,939.45	0.00	0.00	0.00
TD Well @ 17558.68ft									

Corporate Planning Report

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

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,523.46	1,500.00	9 5/8" Csg	9-5/8	13-1/2	
7,911.27	7,271.00	Top of Production	5-1/2	7-7/8	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,236.95	1,226.00	Fox Hills				
4,194.20	4,002.00	Parkman				
4,615.65	4,398.00	Sussex				
7,332.99	7,050.00	Sharon Springs				
7,429.46	7,115.00	Niobrara				
7,550.35	7,182.00	Nio B				
7,733.23	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	
1,616.67	1,587.69	-74.75	-230.06	End Nudge @ 1616.67ft	
4,470.00	4,260.33	-383.54	-1,180.41	Begin Drop @ 4470.00ft	
5,495.00	5,263.60	-439.60	-1,352.95	End Drop @ 5495.00ft	
6,786.20	6,554.80	-439.60	-1,352.95	KOP @ 6786.20ft :: DLS = 8°/100'	
7,911.27	7,271.00	276.63	-1,361.09	End Build @ 7911.27ft	
17,558.68	7,270.00	9,923.41	-1,470.75	TD Well @ 17558.68ft	