

US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N

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

CASTLE PINES 19-7HZ

Plan A

Plan: Permit Rev-1

SHL Lat/Long: 40.117680/-104.814344

Survey Program: MWD+IFR+MSA

Standard Planning Report

19 January, 2018

Project: WELD-NAD83-UTMFT13N
Site: 2N-66W-19 CASTLE PINES 16-19HZ PAD
Well: CASTLE PINES 19-7HZ
Wellbore: Plan A
Design: Permit Rev-1

US ROCKIES WATTENBERG PLANNING

CASING DETAILS

TVD	MD	Size
1500.00	1514.25	9-5/8
7279.00	7747.06	5-1/2

WELL DETAILS: CASTLE PINES 19-7HZ

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	983.33	11.00	227.00	978.84	-47.86	-51.33	1.50	227.00	-47.35	
4	3703.33	11.00	227.00	3648.86	-401.82	-430.90	0.00	0.00	-397.51	
5	4253.33	0.00	0.00	4195.49	-437.72	-469.39	2.00	180.00	-433.02	
6	6620.65	0.00	0.00	6562.81	-437.72	-469.39	0.00	0.00	-433.02	
7	7747.06	90.11	359.43	7279.00	279.85	-476.59	8.00	359.43	284.58	
8	17430.81	90.11	359.43	7260.00	9963.10	-573.66	0.00	0.00	9968.31	CASTLE PINES 19-7HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
CASTLE PINES 19-7HZ_SHL	0.00	0.00	0.00	40.117680	-104.814344
CASTLE PINES 19-7HZ_BHL	7260.00	9963.10	-573.66	40.145040	-104.816397

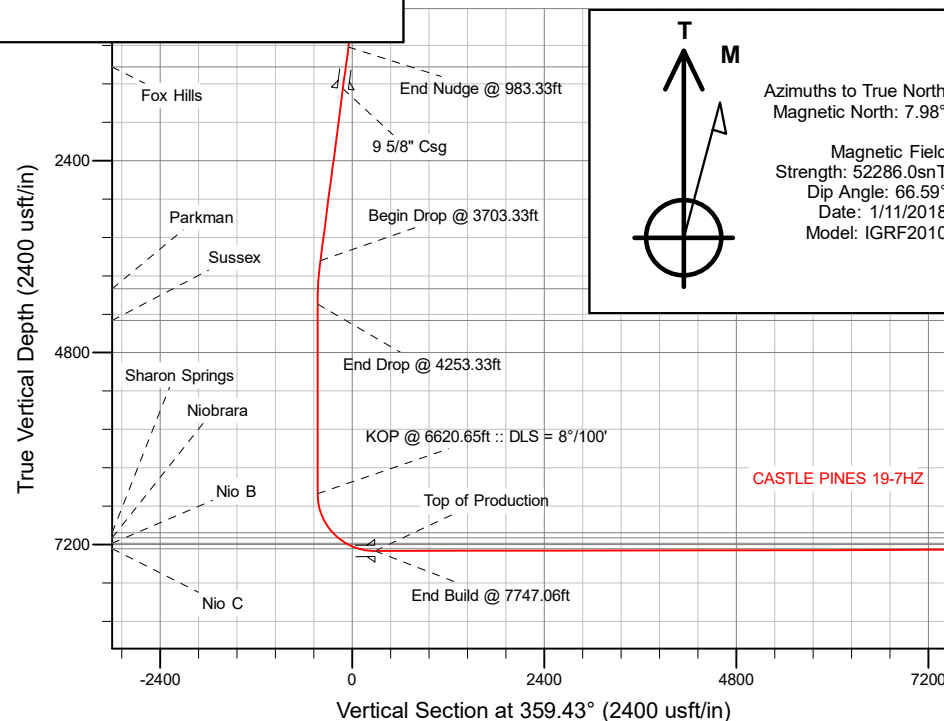
FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1226.00	1235.12	Fox Hills
4002.00	4059.70	Parkman
4398.00	4455.84	Sussex
7050.00	7156.44	Sharon Springs
7115.00	7251.21	Niobrara
7182.00	7368.55	Nio B
7249.00	7537.61	Nio C

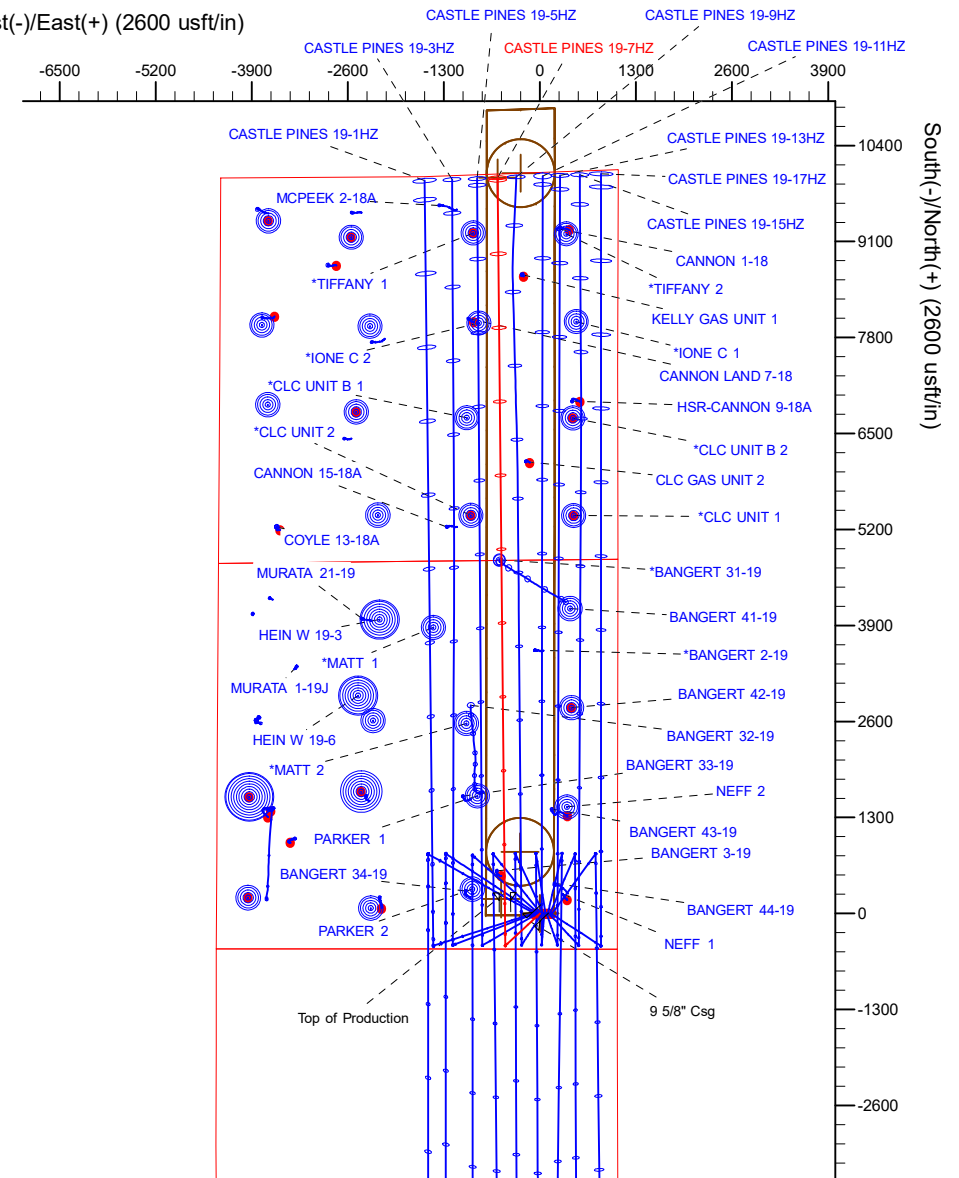
SHL
484' FSL
1048' FEL

HEEL
766' FSL
1524' FEL

TOE
50' FNL
1632' FEL



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



Plan: Permit Rev-1 (CASTLE PINES 19-7HZ/Plan A)

Created By: _____ Date: 2/21/2018
Reviewed: _____ Date: _____

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well CASTLE PINES 19-7HZ
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 19-7HZ	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 19-7HZ					
Well Position	+N/-S	-0.73 usft	Northing:	14,569,640.14 usft	Latitude:	40.117680
	+E/-W	90.02 usft	Easting:	1,692,320.46 usft	Longitude:	-104.814344
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	52,285.98924215

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	359.43

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	17,430.81	Permit Rev-1 (Plan A)	APC_ISCWSA REV 2 MWD+II Fixed:v2:Rockies, crustal dec +

Corporate
Planning Report

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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 19-7HZ	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	
983.33	11.00	227.00	978.84	-47.86	-51.33	1.50	1.50	0.00	227.00	
3,703.33	11.00	227.00	3,648.86	-401.82	-430.90	0.00	0.00	0.00	0.00	
4,253.33	0.00	0.00	4,195.49	-437.72	-469.39	2.00	-2.00	0.00	180.00	
6,620.65	0.00	0.00	6,562.81	-437.72	-469.39	0.00	0.00	0.00	0.00	
7,747.06	90.11	359.43	7,279.00	279.85	-476.59	8.00	8.00	-0.05	359.43	
17,430.81	90.11	359.43	7,260.00	9,963.10	-573.66	0.00	0.00	0.00	0.00	CASTLE PINES 19-7I

Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well CASTLE PINES 19-7HZ
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 19-7HZ	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	227.00	300.00	-0.22	-0.24	-0.22	1.50	1.50	0.00
400.00	2.25	227.00	399.96	-2.01	-2.15	-1.99	1.50	1.50	0.00
500.00	3.75	227.00	499.82	-5.58	-5.98	-5.52	1.50	1.50	0.00
600.00	5.25	227.00	599.51	-10.93	-11.72	-10.81	1.50	1.50	0.00
700.00	6.75	227.00	698.96	-18.06	-19.36	-17.86	1.50	1.50	0.00
800.00	8.25	227.00	798.10	-26.96	-28.91	-26.67	1.50	1.50	0.00
900.00	9.75	227.00	896.87	-37.63	-40.35	-37.22	1.50	1.50	0.00
983.33	11.00	227.00	978.84	-47.86	-51.33	-47.35	1.50	1.50	0.00
End Nudge @ 983.33ft									
1,000.00	11.00	227.00	995.20	-50.03	-53.65	-49.49	0.00	0.00	0.00
1,100.00	11.00	227.00	1,093.36	-63.04	-67.61	-62.37	0.00	0.00	0.00
1,200.00	11.00	227.00	1,191.52	-76.06	-81.56	-75.24	0.00	0.00	0.00
1,235.12	11.00	227.00	1,226.00	-80.63	-86.46	-79.76	0.00	0.00	0.00
Fox Hills									
1,300.00	11.00	227.00	1,289.69	-89.07	-95.52	-88.12	0.00	0.00	0.00
1,400.00	11.00	227.00	1,387.85	-102.08	-109.47	-100.99	0.00	0.00	0.00
1,500.00	11.00	227.00	1,486.01	-115.10	-123.43	-113.86	0.00	0.00	0.00
1,514.25	11.00	227.00	1,500.00	-116.95	-125.41	-115.70	0.00	0.00	0.00
9 5/8" Csg									
1,600.00	11.00	227.00	1,584.17	-128.11	-137.38	-126.74	0.00	0.00	0.00
1,700.00	11.00	227.00	1,682.34	-141.12	-151.34	-139.61	0.00	0.00	0.00
1,800.00	11.00	227.00	1,780.50	-154.14	-165.29	-152.48	0.00	0.00	0.00
1,900.00	11.00	227.00	1,878.66	-167.15	-179.25	-165.36	0.00	0.00	0.00
2,000.00	11.00	227.00	1,976.82	-180.16	-193.20	-178.23	0.00	0.00	0.00
2,100.00	11.00	227.00	2,074.99	-193.18	-207.16	-191.10	0.00	0.00	0.00
2,200.00	11.00	227.00	2,173.15	-206.19	-221.11	-203.98	0.00	0.00	0.00
2,300.00	11.00	227.00	2,271.31	-219.20	-235.07	-216.85	0.00	0.00	0.00
2,400.00	11.00	227.00	2,369.48	-232.21	-249.02	-229.73	0.00	0.00	0.00
2,500.00	11.00	227.00	2,467.64	-245.23	-262.97	-242.60	0.00	0.00	0.00
2,600.00	11.00	227.00	2,565.80	-258.24	-276.93	-255.47	0.00	0.00	0.00
2,700.00	11.00	227.00	2,663.96	-271.25	-290.88	-268.35	0.00	0.00	0.00
2,800.00	11.00	227.00	2,762.13	-284.27	-304.84	-281.22	0.00	0.00	0.00
2,900.00	11.00	227.00	2,860.29	-297.28	-318.79	-294.09	0.00	0.00	0.00
3,000.00	11.00	227.00	2,958.45	-310.29	-332.75	-306.97	0.00	0.00	0.00
3,100.00	11.00	227.00	3,056.61	-323.31	-346.70	-319.84	0.00	0.00	0.00
3,200.00	11.00	227.00	3,154.78	-336.32	-360.66	-332.72	0.00	0.00	0.00
3,300.00	11.00	227.00	3,252.94	-349.33	-374.61	-345.59	0.00	0.00	0.00
3,400.00	11.00	227.00	3,351.10	-362.35	-388.57	-358.46	0.00	0.00	0.00
3,500.00	11.00	227.00	3,449.27	-375.36	-402.52	-371.34	0.00	0.00	0.00
3,600.00	11.00	227.00	3,547.43	-388.37	-416.48	-384.21	0.00	0.00	0.00
3,700.00	11.00	227.00	3,645.59	-401.39	-430.43	-397.08	0.00	0.00	0.00
3,703.33	11.00	227.00	3,648.86	-401.82	-430.90	-397.51	0.00	0.00	0.00
Begin Drop @ 3703.33ft									
3,800.00	9.07	227.00	3,744.05	-413.30	-443.22	-408.88	2.00	-2.00	0.00
3,900.00	7.07	227.00	3,843.05	-422.87	-453.48	-418.34	2.00	-2.00	0.00
4,000.00	5.07	227.00	3,942.49	-430.08	-461.21	-425.47	2.00	-2.00	0.00
4,059.70	3.87	227.00	4,002.00	-433.25	-464.61	-428.61	2.00	-2.00	0.00
Parkman									

Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well CASTLE PINES 19-7HZ
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 19-7HZ	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)
4,100.00	3.07	227.00	4,042.23	-434.92	-466.39	-430.26	2.00	-2.00	0.00
4,200.00	1.07	227.00	4,142.16	-437.38	-469.03	-432.69	2.00	-2.00	0.00
4,253.33	0.00	0.00	4,195.49	-437.72	-469.39	-433.02	2.00	-2.00	0.00
End Drop @ 4253.33ft									
4,300.00	0.00	0.00	4,242.16	-437.72	-469.39	-433.02	0.00	0.00	0.00
4,400.00	0.00	0.00	4,342.16	-437.72	-469.39	-433.02	0.00	0.00	0.00
4,455.84	0.00	0.00	4,398.00	-437.72	-469.39	-433.02	0.00	0.00	0.00
Sussex									
4,500.00	0.00	0.00	4,442.16	-437.72	-469.39	-433.02	0.00	0.00	0.00
4,600.00	0.00	0.00	4,542.16	-437.72	-469.39	-433.02	0.00	0.00	0.00
4,700.00	0.00	0.00	4,642.16	-437.72	-469.39	-433.02	0.00	0.00	0.00
4,800.00	0.00	0.00	4,742.16	-437.72	-469.39	-433.02	0.00	0.00	0.00
4,900.00	0.00	0.00	4,842.16	-437.72	-469.39	-433.02	0.00	0.00	0.00
5,000.00	0.00	0.00	4,942.16	-437.72	-469.39	-433.02	0.00	0.00	0.00
5,100.00	0.00	0.00	5,042.16	-437.72	-469.39	-433.02	0.00	0.00	0.00
5,200.00	0.00	0.00	5,142.16	-437.72	-469.39	-433.02	0.00	0.00	0.00
5,300.00	0.00	0.00	5,242.16	-437.72	-469.39	-433.02	0.00	0.00	0.00
5,400.00	0.00	0.00	5,342.16	-437.72	-469.39	-433.02	0.00	0.00	0.00
5,500.00	0.00	0.00	5,442.16	-437.72	-469.39	-433.02	0.00	0.00	0.00
5,600.00	0.00	0.00	5,542.16	-437.72	-469.39	-433.02	0.00	0.00	0.00
5,700.00	0.00	0.00	5,642.16	-437.72	-469.39	-433.02	0.00	0.00	0.00
5,800.00	0.00	0.00	5,742.16	-437.72	-469.39	-433.02	0.00	0.00	0.00
5,900.00	0.00	0.00	5,842.16	-437.72	-469.39	-433.02	0.00	0.00	0.00
6,000.00	0.00	0.00	5,942.16	-437.72	-469.39	-433.02	0.00	0.00	0.00
6,100.00	0.00	0.00	6,042.16	-437.72	-469.39	-433.02	0.00	0.00	0.00
6,200.00	0.00	0.00	6,142.16	-437.72	-469.39	-433.02	0.00	0.00	0.00
6,300.00	0.00	0.00	6,242.16	-437.72	-469.39	-433.02	0.00	0.00	0.00
6,400.00	0.00	0.00	6,342.16	-437.72	-469.39	-433.02	0.00	0.00	0.00
6,500.00	0.00	0.00	6,442.16	-437.72	-469.39	-433.02	0.00	0.00	0.00
6,600.00	0.00	0.00	6,542.16	-437.72	-469.39	-433.02	0.00	0.00	0.00
6,620.65	0.00	0.00	6,562.81	-437.72	-469.39	-433.02	0.00	0.00	0.00
KOP @ 6620.65ft :: DLS = 8°/100'									
6,700.00	6.35	359.43	6,641.99	-433.32	-469.44	-428.63	8.00	8.00	0.00
6,800.00	14.35	359.43	6,740.29	-415.38	-469.62	-410.69	8.00	8.00	0.00
6,900.00	22.35	359.43	6,835.13	-383.93	-469.93	-379.23	8.00	8.00	0.00
7,000.00	30.35	359.43	6,924.67	-339.58	-470.38	-334.89	8.00	8.00	0.00
7,100.00	38.35	359.43	7,007.16	-283.21	-470.94	-278.51	8.00	8.00	0.00
7,156.44	42.86	359.43	7,050.00	-246.49	-471.31	-241.79	8.00	8.00	0.00
Sharon Springs									
7,200.00	46.35	359.43	7,081.01	-215.90	-471.62	-211.20	8.00	8.00	0.00
7,251.21	50.44	359.43	7,115.00	-177.63	-472.00	-172.92	8.00	8.00	0.00
Niobrara									
7,300.00	54.35	359.43	7,144.77	-138.98	-472.39	-134.27	8.00	8.00	0.00
7,368.55	59.83	359.43	7,182.00	-81.45	-472.96	-76.74	8.00	8.00	0.00
Nio B									
7,400.00	62.35	359.43	7,197.20	-53.93	-473.24	-49.21	8.00	8.00	0.00
7,500.00	70.35	359.43	7,237.29	37.60	-474.16	42.31	8.00	8.00	0.00
7,537.61	73.36	359.43	7,249.00	73.33	-474.52	78.04	8.00	8.00	0.00
Nio C									
7,600.00	78.35	359.43	7,264.25	133.80	-475.12	138.52	8.00	8.00	0.00
7,700.00	86.35	359.43	7,277.55	232.83	-476.11	237.55	8.00	8.00	0.00
7,747.06	90.11	359.43	7,279.00	279.86	-476.59	284.58	8.00	8.00	0.00
End Build @ 7747.06ft - Top of Production									

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well CASTLE PINES 19-7HZ
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 19-7HZ	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)
7,800.00	90.11	359.43	7,278.90	332.79	-477.12	337.52	0.00	0.00	0.00
7,900.00	90.11	359.43	7,278.70	432.79	-478.12	437.52	0.00	0.00	0.00
8,000.00	90.11	359.43	7,278.51	532.78	-479.12	537.52	0.00	0.00	0.00
8,100.00	90.11	359.43	7,278.31	632.78	-480.12	637.52	0.00	0.00	0.00
8,200.00	90.11	359.43	7,278.11	732.77	-481.13	737.52	0.00	0.00	0.00
8,300.00	90.11	359.43	7,277.92	832.77	-482.13	837.52	0.00	0.00	0.00
8,400.00	90.11	359.43	7,277.72	932.76	-483.13	937.52	0.00	0.00	0.00
8,500.00	90.11	359.43	7,277.53	1,032.76	-484.13	1,037.52	0.00	0.00	0.00
8,600.00	90.11	359.43	7,277.33	1,132.75	-485.14	1,137.52	0.00	0.00	0.00
8,700.00	90.11	359.43	7,277.13	1,232.75	-486.14	1,237.52	0.00	0.00	0.00
8,800.00	90.11	359.43	7,276.94	1,332.74	-487.14	1,337.52	0.00	0.00	0.00
8,900.00	90.11	359.43	7,276.74	1,432.74	-488.14	1,437.52	0.00	0.00	0.00
9,000.00	90.11	359.43	7,276.54	1,532.73	-489.15	1,537.52	0.00	0.00	0.00
9,100.00	90.11	359.43	7,276.35	1,632.72	-490.15	1,637.52	0.00	0.00	0.00
9,200.00	90.11	359.43	7,276.15	1,732.72	-491.15	1,737.52	0.00	0.00	0.00
9,300.00	90.11	359.43	7,275.96	1,832.71	-492.15	1,837.52	0.00	0.00	0.00
9,400.00	90.11	359.43	7,275.76	1,932.71	-493.16	1,937.52	0.00	0.00	0.00
9,500.00	90.11	359.43	7,275.56	2,032.70	-494.16	2,037.52	0.00	0.00	0.00
9,600.00	90.11	359.43	7,275.37	2,132.70	-495.16	2,137.52	0.00	0.00	0.00
9,700.00	90.11	359.43	7,275.17	2,232.69	-496.16	2,237.52	0.00	0.00	0.00
9,800.00	90.11	359.43	7,274.97	2,332.69	-497.17	2,337.52	0.00	0.00	0.00
9,900.00	90.11	359.43	7,274.78	2,432.68	-498.17	2,437.52	0.00	0.00	0.00
10,000.00	90.11	359.43	7,274.58	2,532.68	-499.17	2,537.52	0.00	0.00	0.00
10,100.00	90.11	359.43	7,274.39	2,632.67	-500.17	2,637.52	0.00	0.00	0.00
10,200.00	90.11	359.43	7,274.19	2,732.67	-501.18	2,737.52	0.00	0.00	0.00
10,300.00	90.11	359.43	7,273.99	2,832.66	-502.18	2,837.52	0.00	0.00	0.00
10,400.00	90.11	359.43	7,273.80	2,932.66	-503.18	2,937.52	0.00	0.00	0.00
10,500.00	90.11	359.43	7,273.60	3,032.65	-504.18	3,037.52	0.00	0.00	0.00
10,600.00	90.11	359.43	7,273.40	3,132.65	-505.19	3,137.52	0.00	0.00	0.00
10,700.00	90.11	359.43	7,273.21	3,232.64	-506.19	3,237.52	0.00	0.00	0.00
10,800.00	90.11	359.43	7,273.01	3,332.64	-507.19	3,337.52	0.00	0.00	0.00
10,900.00	90.11	359.43	7,272.82	3,432.63	-508.19	3,437.52	0.00	0.00	0.00
11,000.00	90.11	359.43	7,272.62	3,532.63	-509.20	3,537.52	0.00	0.00	0.00
11,100.00	90.11	359.43	7,272.42	3,632.62	-510.20	3,637.52	0.00	0.00	0.00
11,200.00	90.11	359.43	7,272.23	3,732.62	-511.20	3,737.52	0.00	0.00	0.00
11,300.00	90.11	359.43	7,272.03	3,832.61	-512.20	3,837.52	0.00	0.00	0.00
11,400.00	90.11	359.43	7,271.83	3,932.60	-513.20	3,937.52	0.00	0.00	0.00
11,500.00	90.11	359.43	7,271.64	4,032.60	-514.21	4,037.52	0.00	0.00	0.00
11,600.00	90.11	359.43	7,271.44	4,132.59	-515.21	4,137.52	0.00	0.00	0.00
11,700.00	90.11	359.43	7,271.25	4,232.59	-516.21	4,237.52	0.00	0.00	0.00
11,800.00	90.11	359.43	7,271.05	4,332.58	-517.21	4,337.51	0.00	0.00	0.00
11,900.00	90.11	359.43	7,270.85	4,432.58	-518.22	4,437.51	0.00	0.00	0.00
12,000.00	90.11	359.43	7,270.66	4,532.57	-519.22	4,537.51	0.00	0.00	0.00
12,100.00	90.11	359.43	7,270.46	4,632.57	-520.22	4,637.51	0.00	0.00	0.00
12,200.00	90.11	359.43	7,270.26	4,732.56	-521.22	4,737.51	0.00	0.00	0.00
12,300.00	90.11	359.43	7,270.07	4,832.56	-522.23	4,837.51	0.00	0.00	0.00
12,400.00	90.11	359.43	7,269.87	4,932.55	-523.23	4,937.51	0.00	0.00	0.00
12,500.00	90.11	359.43	7,269.68	5,032.55	-524.23	5,037.51	0.00	0.00	0.00
12,600.00	90.11	359.43	7,269.48	5,132.54	-525.23	5,137.51	0.00	0.00	0.00
12,700.00	90.11	359.43	7,269.28	5,232.54	-526.24	5,237.51	0.00	0.00	0.00
12,800.00	90.11	359.43	7,269.09	5,332.53	-527.24	5,337.51	0.00	0.00	0.00
12,900.00	90.11	359.43	7,268.89	5,432.53	-528.24	5,437.51	0.00	0.00	0.00
13,000.00	90.11	359.43	7,268.69	5,532.52	-529.24	5,537.51	0.00	0.00	0.00
13,100.00	90.11	359.43	7,268.50	5,632.52	-530.25	5,637.51	0.00	0.00	0.00

Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well CASTLE PINES 19-7HZ
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 19-7HZ	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)	
13,200.00	90.11	359.43	7,268.30	5,732.51	-531.25	5,737.51	0.00	0.00	0.00	
13,300.00	90.11	359.43	7,268.11	5,832.51	-532.25	5,837.51	0.00	0.00	0.00	
13,400.00	90.11	359.43	7,267.91	5,932.50	-533.25	5,937.51	0.00	0.00	0.00	
13,500.00	90.11	359.43	7,267.71	6,032.50	-534.26	6,037.51	0.00	0.00	0.00	
13,600.00	90.11	359.43	7,267.52	6,132.49	-535.26	6,137.51	0.00	0.00	0.00	
13,700.00	90.11	359.43	7,267.32	6,232.48	-536.26	6,237.51	0.00	0.00	0.00	
13,800.00	90.11	359.43	7,267.12	6,332.48	-537.26	6,337.51	0.00	0.00	0.00	
13,900.00	90.11	359.43	7,266.93	6,432.47	-538.27	6,437.51	0.00	0.00	0.00	
14,000.00	90.11	359.43	7,266.73	6,532.47	-539.27	6,537.51	0.00	0.00	0.00	
14,100.00	90.11	359.43	7,266.54	6,632.46	-540.27	6,637.51	0.00	0.00	0.00	
14,200.00	90.11	359.43	7,266.34	6,732.46	-541.27	6,737.51	0.00	0.00	0.00	
14,300.00	90.11	359.43	7,266.14	6,832.45	-542.28	6,837.51	0.00	0.00	0.00	
14,400.00	90.11	359.43	7,265.95	6,932.45	-543.28	6,937.51	0.00	0.00	0.00	
14,500.00	90.11	359.43	7,265.75	7,032.44	-544.28	7,037.51	0.00	0.00	0.00	
14,600.00	90.11	359.43	7,265.56	7,132.44	-545.28	7,137.51	0.00	0.00	0.00	
14,700.00	90.11	359.43	7,265.36	7,232.43	-546.29	7,237.51	0.00	0.00	0.00	
14,800.00	90.11	359.43	7,265.16	7,332.43	-547.29	7,337.51	0.00	0.00	0.00	
14,900.00	90.11	359.43	7,264.97	7,432.42	-548.29	7,437.51	0.00	0.00	0.00	
15,000.00	90.11	359.43	7,264.77	7,532.42	-549.29	7,537.51	0.00	0.00	0.00	
15,100.00	90.11	359.43	7,264.57	7,632.41	-550.30	7,637.51	0.00	0.00	0.00	
15,200.00	90.11	359.43	7,264.38	7,732.41	-551.30	7,737.51	0.00	0.00	0.00	
15,300.00	90.11	359.43	7,264.18	7,832.40	-552.30	7,837.51	0.00	0.00	0.00	
15,400.00	90.11	359.43	7,263.99	7,932.40	-553.30	7,937.51	0.00	0.00	0.00	
15,500.00	90.11	359.43	7,263.79	8,032.39	-554.30	8,037.51	0.00	0.00	0.00	
15,600.00	90.11	359.43	7,263.59	8,132.39	-555.31	8,137.51	0.00	0.00	0.00	
15,700.00	90.11	359.43	7,263.40	8,232.38	-556.31	8,237.51	0.00	0.00	0.00	
15,800.00	90.11	359.43	7,263.20	8,332.38	-557.31	8,337.51	0.00	0.00	0.00	
15,900.00	90.11	359.43	7,263.00	8,432.37	-558.31	8,437.51	0.00	0.00	0.00	
16,000.00	90.11	359.43	7,262.81	8,532.36	-559.32	8,537.51	0.00	0.00	0.00	
16,100.00	90.11	359.43	7,262.61	8,632.36	-560.32	8,637.51	0.00	0.00	0.00	
16,200.00	90.11	359.43	7,262.42	8,732.35	-561.32	8,737.51	0.00	0.00	0.00	
16,300.00	90.11	359.43	7,262.22	8,832.35	-562.32	8,837.51	0.00	0.00	0.00	
16,400.00	90.11	359.43	7,262.02	8,932.34	-563.33	8,937.51	0.00	0.00	0.00	
16,500.00	90.11	359.43	7,261.83	9,032.34	-564.33	9,037.51	0.00	0.00	0.00	
16,600.00	90.11	359.43	7,261.63	9,132.33	-565.33	9,137.51	0.00	0.00	0.00	
16,700.00	90.11	359.43	7,261.43	9,232.33	-566.33	9,237.51	0.00	0.00	0.00	
16,800.00	90.11	359.43	7,261.24	9,332.32	-567.34	9,337.51	0.00	0.00	0.00	
16,900.00	90.11	359.43	7,261.04	9,432.32	-568.34	9,437.51	0.00	0.00	0.00	
17,000.00	90.11	359.43	7,260.85	9,532.31	-569.34	9,537.51	0.00	0.00	0.00	
17,100.00	90.11	359.43	7,260.65	9,632.31	-570.34	9,637.50	0.00	0.00	0.00	
17,200.00	90.11	359.43	7,260.45	9,732.30	-571.35	9,737.50	0.00	0.00	0.00	
17,300.00	90.11	359.43	7,260.26	9,832.30	-572.35	9,837.50	0.00	0.00	0.00	
17,400.00	90.11	359.43	7,260.06	9,932.29	-573.35	9,937.50	0.00	0.00	0.00	
17,430.81	90.11	359.43	7,260.00	9,963.10	-573.66	9,968.31	0.00	0.00	0.00	
TD Well @ 17430.81ft										

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well CASTLE PINES 19-7HZ
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 19-7HZ	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 (")	
1,514.25	1,500.00	9 5/8" Csg	9-5/8	13-1/2	
7,747.06	7,279.00	Top of Production	5-1/2	7-7/8	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,235.12	1,226.00	Fox Hills				
4,059.70	4,002.00	Parkman				
4,455.84	4,398.00	Sussex				
7,156.44	7,050.00	Sharon Springs				
7,251.21	7,115.00	Niobrara				
7,368.55	7,182.00	Nio B				
7,537.61	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	
983.33	978.84	-47.86	-51.33	End Nudge @ 983.33ft	
3,703.33	3,648.86	-401.82	-430.90	Begin Drop @ 3703.33ft	
4,253.33	4,195.49	-437.72	-469.39	End Drop @ 4253.33ft	
6,620.65	6,562.81	-437.72	-469.39	KOP @ 6620.65ft :: DLS = 8°/100'	
7,747.06	7,279.00	279.85	-476.59	End Build @ 7747.06ft	
17,430.81	7,260.00	9,963.10	-573.66	TD Well @ 17430.81ft	