

US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N

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

CASTLE PINES 19-6HZ

Plan A

Plan: Permit Rev-2

SHL Lat/Long: 40.117680/-104.814398

Survey Program: MWD+IFR+MSA

Standard Planning Report

21 February, 2018

Project: WELD-NAD83-UTMFT13N
Site: 2N-66W-19 CASTLE PINES 16-19HZ PAD
Well: CASTLE PINES 19-6HZ
Wellbore: Plan A
Design: Permit Rev-2

US ROCKIES WATTENBERG PLANNING

CASING DETAILS

TVD	MD	Size
1500.00	1523.23	9-5/8
7216.00	7793.37	5-1/2

WELL DETAILS: CASTLE PINES 19-6HZ

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	1450.00	18.00	311.20	1430.36	123.14	-140.66	1.50	311.20	-123.93	
4	4260.00	18.00	311.20	4102.83	695.11	-794.01	0.00	0.00	-699.53	
5	5160.00	0.00	0.00	4988.10	787.46	-899.51	2.00	180.00	-792.48	
6	6671.72	0.00	0.00	6499.82	787.46	-899.51	0.00	0.00	-792.48	
7	7793.37	89.73	179.96	7216.00	74.62	-898.96	8.00	179.96	-79.64	
8	14679.78	89.73	179.96	7248.21	-6811.72	-893.57	0.00	0.00	6806.62	CASTLE PINES 19-6HZ_tgt
9	14885.37	89.73	176.87	7249.17	-7017.20	-887.88	1.50	-89.99	7012.13	
10	17283.46	89.73	176.87	7260.34	-9411.69	-757.00	0.00	0.00	9407.32	CASTLE PINES 19-6HZ_tgt2
11	17789.90	89.73	184.47	7262.70	-9917.72	-762.92	1.50	90.01	9913.31	
12	18715.19	89.73	184.47	7267.00	-10840.19	-835.00	0.00	0.00	10835.36	CASTLE PINES 19-6HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
CASTLE PINES 19-6HZ_SHL	0.00	0.00	0.00	40.117680	-104.814398
CASTLE PINES 19-6HZ_BHL	7267.00	-10840.19	-835.00	40.087911	-104.817383

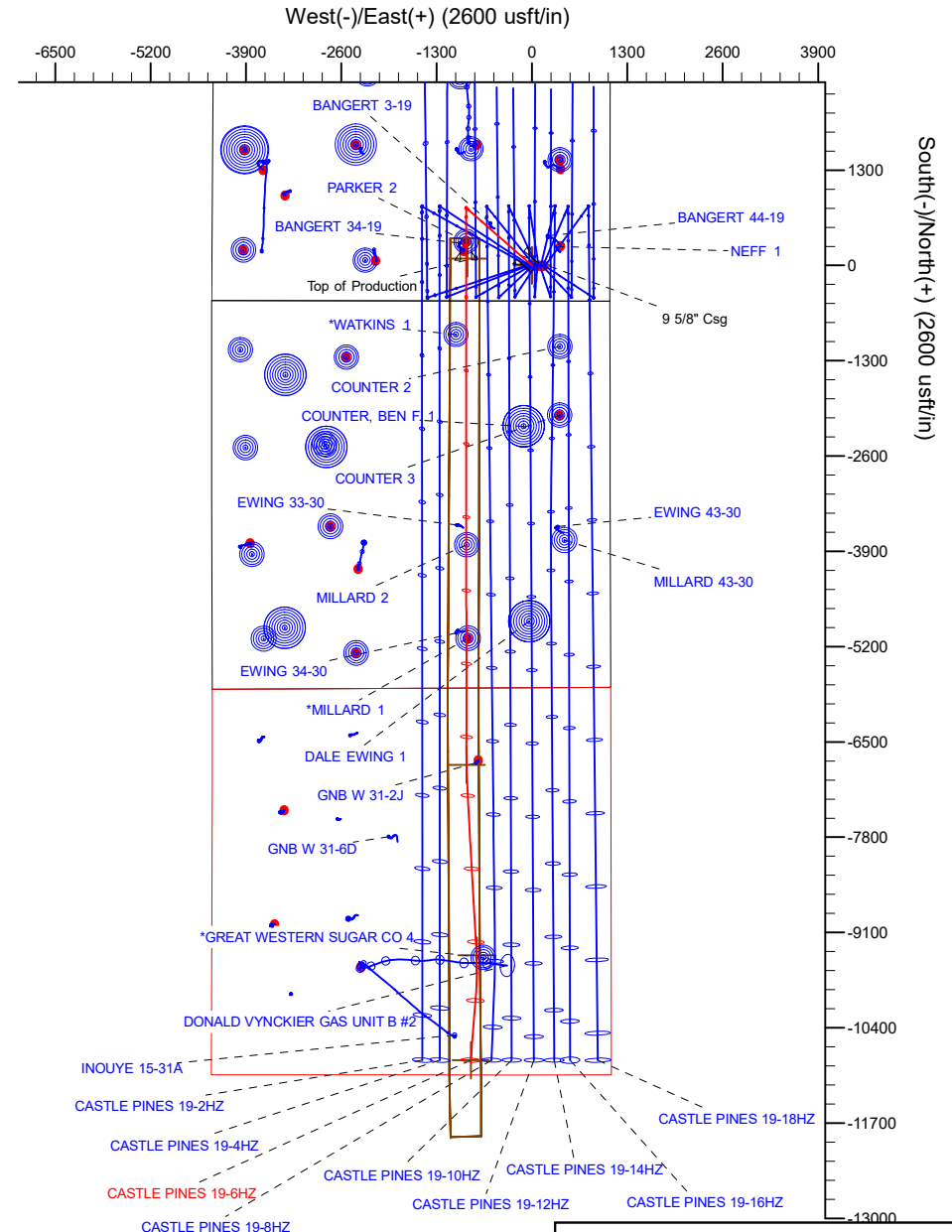
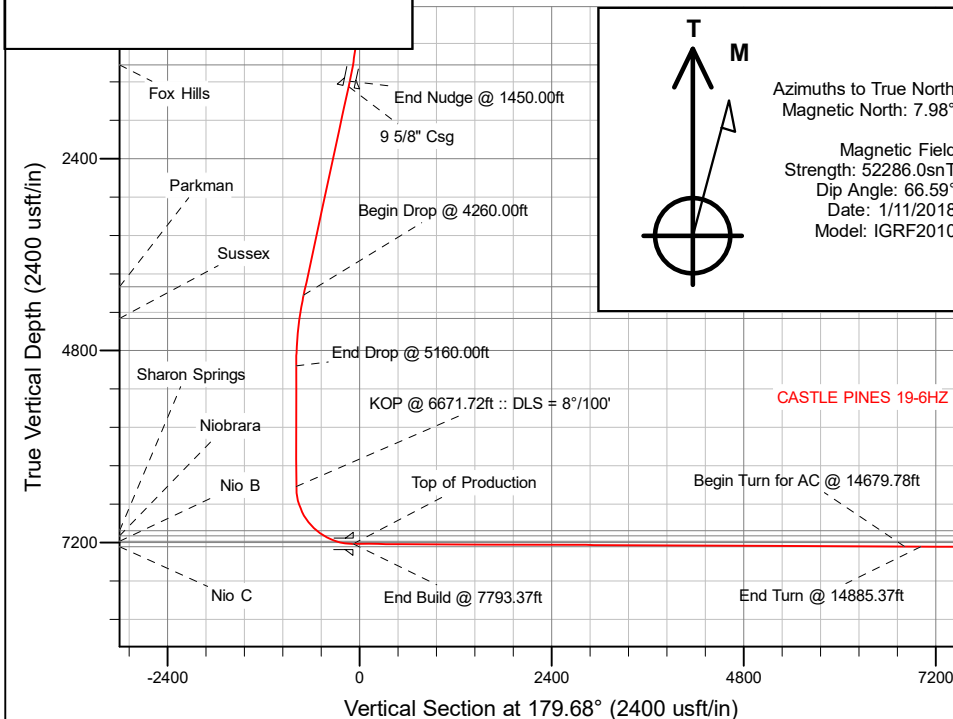
FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1226.00	1236.94	Fox Hills
4002.00	4153.98	Parkman
4398.00	4565.65	Sussex
7050.00	7299.13	Sharon Springs
7115.00	7411.72	Niobrara
7182.00	7575.11	Nio B
7249.00	14848.94	Nio C

SHL
484' FSL
1063' FEL

HEEL
558' FSL
1968' FEL

TOE
202' FSL
1917' FEL



Plan: Permit Rev-2 (CASTLE PINES 19-6HZ/Plan A)

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

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well CASTLE PINES 19-6HZ
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 19-6HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-2		

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 19-6HZ					
Well Position	+N/-S	-0.73 usft	Northing:	14,569,640.10 usft	Latitude:	40.117680
	+E/-W	74.92 usft	Easting:	1,692,305.36 usft	Longitude:	-104.814398
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	52,285.98375983

Design	Permit Rev-2				
Audit Notes:					
Version:		Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	7,267.00	0.00	0.00	179.68	

Plan Survey Tool Program		Date	2/21/2018		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	1,500.00	Permit Rev-2 (Plan A)	APC_ISCWSA REV 2 MWD+II Fixed:v2:crustal field declinatio	
2	1,500.00	18,715.19	Permit Rev-2 (Plan A)	APC_ISCWSA REV 2 MWD+II Fixed:v2:Rockies, crustal dec +	

Corporate Planning Report

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Site:	2N-66W-19 CASTLE PINES 16-19HZ PAD	North Reference:	True
Well:	CASTLE PINES 19-6HZ	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	
1,450.00	18.00	311.20	1,430.36	123.14	-140.66	1.50	1.50	0.00	311.20	
4,260.00	18.00	311.20	4,102.83	695.11	-794.01	0.00	0.00	0.00	0.00	
5,160.00	0.00	0.00	4,988.10	787.46	-899.51	2.00	-2.00	0.00	180.00	
6,671.72	0.00	0.00	6,499.82	787.46	-899.51	0.00	0.00	0.00	0.00	
7,793.37	89.73	179.96	7,216.00	74.62	-898.96	8.00	8.00	16.04	179.96	
14,679.78	89.73	179.96	7,248.21	-6,811.72	-893.57	0.00	0.00	0.00	0.00	CASTLE PINES 19-6I
14,885.37	89.73	176.87	7,249.17	-7,017.20	-887.88	1.50	0.00	-1.50	-89.99	
17,283.46	89.73	176.87	7,260.34	-9,411.69	-757.00	0.00	0.00	0.00	0.00	CASTLE PINES 19-6I
17,789.90	89.73	184.47	7,262.70	-9,917.72	-762.92	1.50	0.00	1.50	90.01	
18,715.19	89.73	184.47	7,267.00	-10,840.19	-835.00	0.00	0.00	0.00	0.00	CASTLE PINES 19-6I

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 19-6HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	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	311.20	300.00	0.22	-0.25	-0.22	1.50	1.50	0.00
400.00	2.25	311.20	399.96	1.94	-2.22	-1.95	1.50	1.50	0.00
500.00	3.75	311.20	499.82	5.39	-6.15	-5.42	1.50	1.50	0.00
600.00	5.25	311.20	599.51	10.55	-12.06	-10.62	1.50	1.50	0.00
700.00	6.75	311.20	698.96	17.44	-19.92	-17.55	1.50	1.50	0.00
800.00	8.25	311.20	798.10	26.04	-29.74	-26.20	1.50	1.50	0.00
900.00	9.75	311.20	896.87	36.34	-41.51	-36.57	1.50	1.50	0.00
1,000.00	11.25	311.20	995.19	48.34	-55.22	-48.65	1.50	1.50	0.00
1,100.00	12.75	311.20	1,093.00	62.04	-70.87	-62.43	1.50	1.50	0.00
1,200.00	14.25	311.20	1,190.24	77.42	-88.43	-77.91	1.50	1.50	0.00
1,236.95	14.80	311.20	1,226.00	83.52	-95.40	-84.05	1.50	1.50	0.00
Fox Hills									
1,300.00	15.75	311.20	1,286.83	94.46	-107.90	-95.06	1.50	1.50	0.00
1,400.00	17.25	311.20	1,382.71	113.17	-129.27	-113.89	1.50	1.50	0.00
1,450.00	18.00	311.20	1,430.36	123.14	-140.66	-123.93	1.50	1.50	0.00
End Nudge @ 1450.00ft									
1,500.00	18.00	311.20	1,477.91	133.32	-152.29	-134.17	0.00	0.00	0.00
1,523.23	18.00	311.20	1,500.00	138.05	-157.69	-138.93	0.00	0.00	0.00
9 5/8" Csg									
1,600.00	18.00	311.20	1,573.02	153.67	-175.54	-154.65	0.00	0.00	0.00
1,700.00	18.00	311.20	1,668.12	174.03	-198.79	-175.14	0.00	0.00	0.00
1,800.00	18.00	311.20	1,763.23	194.38	-222.04	-195.62	0.00	0.00	0.00
1,900.00	18.00	311.20	1,858.33	214.74	-245.29	-216.10	0.00	0.00	0.00
2,000.00	18.00	311.20	1,953.44	235.09	-268.54	-236.59	0.00	0.00	0.00
2,100.00	18.00	311.20	2,048.54	255.45	-291.80	-257.07	0.00	0.00	0.00
2,200.00	18.00	311.20	2,143.65	275.80	-315.05	-277.56	0.00	0.00	0.00
2,300.00	18.00	311.20	2,238.76	296.16	-338.30	-298.04	0.00	0.00	0.00
2,400.00	18.00	311.20	2,333.86	316.51	-361.55	-318.53	0.00	0.00	0.00
2,500.00	18.00	311.20	2,428.97	336.87	-384.80	-339.01	0.00	0.00	0.00
2,600.00	18.00	311.20	2,524.07	357.22	-408.05	-359.49	0.00	0.00	0.00
2,700.00	18.00	311.20	2,619.18	377.58	-431.30	-379.98	0.00	0.00	0.00
2,800.00	18.00	311.20	2,714.28	397.93	-454.55	-400.46	0.00	0.00	0.00
2,900.00	18.00	311.20	2,809.39	418.28	-477.80	-420.95	0.00	0.00	0.00
3,000.00	18.00	311.20	2,904.50	438.64	-501.05	-441.43	0.00	0.00	0.00
3,100.00	18.00	311.20	2,999.60	458.99	-524.30	-461.91	0.00	0.00	0.00
3,200.00	18.00	311.20	3,094.71	479.35	-547.55	-482.40	0.00	0.00	0.00
3,300.00	18.00	311.20	3,189.81	499.70	-570.81	-502.88	0.00	0.00	0.00
3,400.00	18.00	311.20	3,284.92	520.06	-594.06	-523.37	0.00	0.00	0.00
3,500.00	18.00	311.20	3,380.02	540.41	-617.31	-543.85	0.00	0.00	0.00
3,600.00	18.00	311.20	3,475.13	560.77	-640.56	-564.34	0.00	0.00	0.00
3,700.00	18.00	311.20	3,570.24	581.12	-663.81	-584.82	0.00	0.00	0.00
3,800.00	18.00	311.20	3,665.34	601.48	-687.06	-605.30	0.00	0.00	0.00
3,900.00	18.00	311.20	3,760.45	621.83	-710.31	-625.79	0.00	0.00	0.00
4,000.00	18.00	311.20	3,855.55	642.19	-733.56	-646.27	0.00	0.00	0.00
4,100.00	18.00	311.20	3,950.66	662.54	-756.81	-666.76	0.00	0.00	0.00
4,153.98	18.00	311.20	4,002.00	673.53	-769.36	-677.81	0.00	0.00	0.00
Parkman									
4,200.00	18.00	311.20	4,045.76	682.89	-780.06	-687.24	0.00	0.00	0.00
4,260.00	18.00	311.20	4,102.83	695.11	-794.01	-699.53	0.00	0.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well CASTLE PINES 19-6HZ
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 19-6HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	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)
Begin Drop @ 4260.00ft									
4,300.00	17.20	311.20	4,140.95	703.07	-803.11	-707.55	2.00	-2.00	0.00
4,400.00	15.20	311.20	4,236.98	721.45	-824.11	-726.04	2.00	-2.00	0.00
4,500.00	13.20	311.20	4,333.92	737.61	-842.56	-742.30	2.00	-2.00	0.00
4,565.65	11.89	311.20	4,398.00	747.00	-853.29	-751.75	2.00	-2.00	0.00
Sussex									
4,600.00	11.20	311.20	4,431.65	751.53	-858.46	-756.31	2.00	-2.00	0.00
4,700.00	9.20	311.20	4,530.07	763.19	-871.78	-768.05	2.00	-2.00	0.00
4,800.00	7.20	311.20	4,629.04	772.58	-882.52	-777.50	2.00	-2.00	0.00
4,900.00	5.20	311.20	4,728.45	779.70	-890.64	-784.66	2.00	-2.00	0.00
5,000.00	3.20	311.20	4,828.18	784.52	-896.15	-789.51	2.00	-2.00	0.00
5,100.00	1.20	311.20	4,928.10	787.05	-899.04	-792.06	2.00	-2.00	0.00
5,160.00	0.00	0.00	4,988.10	787.46	-899.51	-792.48	2.00	-2.00	0.00
End Drop @ 5160.00ft									
5,200.00	0.00	0.00	5,028.10	787.46	-899.51	-792.48	0.00	0.00	0.00
5,300.00	0.00	0.00	5,128.10	787.46	-899.51	-792.48	0.00	0.00	0.00
5,400.00	0.00	0.00	5,228.10	787.46	-899.51	-792.48	0.00	0.00	0.00
5,500.00	0.00	0.00	5,328.10	787.46	-899.51	-792.48	0.00	0.00	0.00
5,600.00	0.00	0.00	5,428.10	787.46	-899.51	-792.48	0.00	0.00	0.00
5,700.00	0.00	0.00	5,528.10	787.46	-899.51	-792.48	0.00	0.00	0.00
5,800.00	0.00	0.00	5,628.10	787.46	-899.51	-792.48	0.00	0.00	0.00
5,900.00	0.00	0.00	5,728.10	787.46	-899.51	-792.48	0.00	0.00	0.00
6,000.00	0.00	0.00	5,828.10	787.46	-899.51	-792.48	0.00	0.00	0.00
6,100.00	0.00	0.00	5,928.10	787.46	-899.51	-792.48	0.00	0.00	0.00
6,200.00	0.00	0.00	6,028.10	787.46	-899.51	-792.48	0.00	0.00	0.00
6,300.00	0.00	0.00	6,128.10	787.46	-899.51	-792.48	0.00	0.00	0.00
6,400.00	0.00	0.00	6,228.10	787.46	-899.51	-792.48	0.00	0.00	0.00
6,500.00	0.00	0.00	6,328.10	787.46	-899.51	-792.48	0.00	0.00	0.00
6,600.00	0.00	0.00	6,428.10	787.46	-899.51	-792.48	0.00	0.00	0.00
6,671.72	0.00	0.00	6,499.82	787.46	-899.51	-792.48	0.00	0.00	0.00
KOP @ 6671.72ft :: DLS = 8°/100'									
6,700.00	2.26	179.96	6,528.09	786.91	-899.51	-791.92	8.00	8.00	0.00
6,800.00	10.26	179.96	6,627.41	776.01	-899.50	-781.02	8.00	8.00	0.00
6,900.00	18.26	179.96	6,724.25	751.39	-899.48	-756.40	8.00	8.00	0.00
7,000.00	26.26	179.96	6,816.72	713.54	-899.45	-718.55	8.00	8.00	0.00
7,100.00	34.26	179.96	6,903.02	663.18	-899.42	-668.19	8.00	8.00	0.00
7,200.00	42.26	179.96	6,981.48	601.30	-899.37	-606.32	8.00	8.00	0.00
7,299.13	50.19	179.96	7,050.00	529.78	-899.31	-534.80	8.00	8.00	0.00
Sharon Springs									
7,300.00	50.26	179.96	7,050.56	529.11	-899.31	-534.13	8.00	8.00	0.00
7,400.00	58.26	179.96	7,108.92	448.01	-899.25	-453.02	8.00	8.00	0.00
7,411.72	59.20	179.96	7,115.00	437.99	-899.24	-443.01	8.00	8.00	0.00
Niobrara									
7,500.00	66.26	179.96	7,155.42	359.57	-899.18	-364.59	8.00	8.00	0.00
7,575.11	72.27	179.96	7,182.00	289.35	-899.12	-294.37	8.00	8.00	0.00
Nio B									
7,600.00	74.26	179.96	7,189.17	265.52	-899.10	-270.54	8.00	8.00	0.00
7,700.00	82.26	179.96	7,209.49	167.69	-899.03	-172.71	8.00	8.00	0.00
7,793.37	89.73	179.96	7,216.00	74.62	-898.96	-79.64	8.00	8.00	0.00
End Build @ 7793.37ft - Top of Production									
7,800.00	89.73	179.96	7,216.04	67.99	-898.95	-73.01	0.00	0.00	0.00
7,900.00	89.73	179.96	7,216.50	-32.01	-898.87	26.99	0.00	0.00	0.00
8,000.00	89.73	179.96	7,216.97	-132.01	-898.79	126.99	0.00	0.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well CASTLE PINES 19-6HZ
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 19-6HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	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)
8,100.00	89.73	179.96	7,217.44	-232.01	-898.72	226.99	0.00	0.00	0.00
8,200.00	89.73	179.96	7,217.91	-332.01	-898.64	326.98	0.00	0.00	0.00
8,300.00	89.73	179.96	7,218.37	-432.01	-898.56	426.98	0.00	0.00	0.00
8,400.00	89.73	179.96	7,218.84	-532.01	-898.48	526.98	0.00	0.00	0.00
8,500.00	89.73	179.96	7,219.31	-632.01	-898.40	626.98	0.00	0.00	0.00
8,600.00	89.73	179.96	7,219.78	-732.00	-898.32	726.98	0.00	0.00	0.00
8,700.00	89.73	179.96	7,220.24	-832.00	-898.25	826.97	0.00	0.00	0.00
8,800.00	89.73	179.96	7,220.71	-932.00	-898.17	926.97	0.00	0.00	0.00
8,900.00	89.73	179.96	7,221.18	-1,032.00	-898.09	1,026.97	0.00	0.00	0.00
9,000.00	89.73	179.96	7,221.65	-1,132.00	-898.01	1,126.97	0.00	0.00	0.00
9,100.00	89.73	179.96	7,222.12	-1,232.00	-897.93	1,226.96	0.00	0.00	0.00
9,200.00	89.73	179.96	7,222.58	-1,332.00	-897.86	1,326.96	0.00	0.00	0.00
9,300.00	89.73	179.96	7,223.05	-1,432.00	-897.78	1,426.96	0.00	0.00	0.00
9,400.00	89.73	179.96	7,223.52	-1,532.00	-897.70	1,526.96	0.00	0.00	0.00
9,500.00	89.73	179.96	7,223.99	-1,631.99	-897.62	1,626.96	0.00	0.00	0.00
9,600.00	89.73	179.96	7,224.45	-1,731.99	-897.54	1,726.95	0.00	0.00	0.00
9,700.00	89.73	179.96	7,224.92	-1,831.99	-897.46	1,826.95	0.00	0.00	0.00
9,800.00	89.73	179.96	7,225.39	-1,931.99	-897.39	1,926.95	0.00	0.00	0.00
9,900.00	89.73	179.96	7,225.86	-2,031.99	-897.31	2,026.95	0.00	0.00	0.00
10,000.00	89.73	179.96	7,226.32	-2,131.99	-897.23	2,126.94	0.00	0.00	0.00
10,100.00	89.73	179.96	7,226.79	-2,231.99	-897.15	2,226.94	0.00	0.00	0.00
10,200.00	89.73	179.96	7,227.26	-2,331.99	-897.07	2,326.94	0.00	0.00	0.00
10,300.00	89.73	179.96	7,227.73	-2,431.99	-897.00	2,426.94	0.00	0.00	0.00
10,400.00	89.73	179.96	7,228.20	-2,531.98	-896.92	2,526.94	0.00	0.00	0.00
10,500.00	89.73	179.96	7,228.66	-2,631.98	-896.84	2,626.93	0.00	0.00	0.00
10,600.00	89.73	179.96	7,229.13	-2,731.98	-896.76	2,726.93	0.00	0.00	0.00
10,700.00	89.73	179.96	7,229.60	-2,831.98	-896.68	2,826.93	0.00	0.00	0.00
10,800.00	89.73	179.96	7,230.07	-2,931.98	-896.60	2,926.93	0.00	0.00	0.00
10,900.00	89.73	179.96	7,230.53	-3,031.98	-896.53	3,026.92	0.00	0.00	0.00
11,000.00	89.73	179.96	7,231.00	-3,131.98	-896.45	3,126.92	0.00	0.00	0.00
11,100.00	89.73	179.96	7,231.47	-3,231.98	-896.37	3,226.92	0.00	0.00	0.00
11,200.00	89.73	179.96	7,231.94	-3,331.98	-896.29	3,326.92	0.00	0.00	0.00
11,300.00	89.73	179.96	7,232.40	-3,431.97	-896.21	3,426.91	0.00	0.00	0.00
11,400.00	89.73	179.96	7,232.87	-3,531.97	-896.13	3,526.91	0.00	0.00	0.00
11,500.00	89.73	179.96	7,233.34	-3,631.97	-896.06	3,626.91	0.00	0.00	0.00
11,600.00	89.73	179.96	7,233.81	-3,731.97	-895.98	3,726.91	0.00	0.00	0.00
11,700.00	89.73	179.96	7,234.27	-3,831.97	-895.90	3,826.91	0.00	0.00	0.00
11,800.00	89.73	179.96	7,234.74	-3,931.97	-895.82	3,926.90	0.00	0.00	0.00
11,900.00	89.73	179.96	7,235.21	-4,031.97	-895.74	4,026.90	0.00	0.00	0.00
12,000.00	89.73	179.96	7,235.68	-4,131.97	-895.67	4,126.90	0.00	0.00	0.00
12,100.00	89.73	179.96	7,236.15	-4,231.96	-895.59	4,226.90	0.00	0.00	0.00
12,200.00	89.73	179.96	7,236.61	-4,331.96	-895.51	4,326.89	0.00	0.00	0.00
12,300.00	89.73	179.96	7,237.08	-4,431.96	-895.43	4,426.89	0.00	0.00	0.00
12,400.00	89.73	179.96	7,237.55	-4,531.96	-895.35	4,526.89	0.00	0.00	0.00
12,500.00	89.73	179.96	7,238.02	-4,631.96	-895.27	4,626.89	0.00	0.00	0.00
12,600.00	89.73	179.96	7,238.48	-4,731.96	-895.20	4,726.89	0.00	0.00	0.00
12,700.00	89.73	179.96	7,238.95	-4,831.96	-895.12	4,826.88	0.00	0.00	0.00
12,800.00	89.73	179.96	7,239.42	-4,931.96	-895.04	4,926.88	0.00	0.00	0.00
12,900.00	89.73	179.96	7,239.89	-5,031.96	-894.96	5,026.88	0.00	0.00	0.00
13,000.00	89.73	179.96	7,240.35	-5,131.95	-894.88	5,126.88	0.00	0.00	0.00
13,100.00	89.73	179.96	7,240.82	-5,231.95	-894.81	5,226.87	0.00	0.00	0.00
13,200.00	89.73	179.96	7,241.29	-5,331.95	-894.73	5,326.87	0.00	0.00	0.00
13,300.00	89.73	179.96	7,241.76	-5,431.95	-894.65	5,426.87	0.00	0.00	0.00
13,400.00	89.73	179.96	7,242.23	-5,531.95	-894.57	5,526.87	0.00	0.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well CASTLE PINES 19-6HZ
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 19-6HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	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)	
13,500.00	89.73	179.96	7,242.69	-5,631.95	-894.49	5,626.87	0.00	0.00	0.00	
13,600.00	89.73	179.96	7,243.16	-5,731.95	-894.41	5,726.86	0.00	0.00	0.00	
13,700.00	89.73	179.96	7,243.63	-5,831.95	-894.34	5,826.86	0.00	0.00	0.00	
13,800.00	89.73	179.96	7,244.10	-5,931.95	-894.26	5,926.86	0.00	0.00	0.00	
13,900.00	89.73	179.96	7,244.56	-6,031.94	-894.18	6,026.86	0.00	0.00	0.00	
14,000.00	89.73	179.96	7,245.03	-6,131.94	-894.10	6,126.85	0.00	0.00	0.00	
14,100.00	89.73	179.96	7,245.50	-6,231.94	-894.02	6,226.85	0.00	0.00	0.00	
14,200.00	89.73	179.96	7,245.97	-6,331.94	-893.95	6,326.85	0.00	0.00	0.00	
14,300.00	89.73	179.96	7,246.43	-6,431.94	-893.87	6,426.85	0.00	0.00	0.00	
14,400.00	89.73	179.96	7,246.90	-6,531.94	-893.79	6,526.85	0.00	0.00	0.00	
14,500.00	89.73	179.96	7,247.37	-6,631.94	-893.71	6,626.84	0.00	0.00	0.00	
14,600.00	89.73	179.96	7,247.84	-6,731.94	-893.63	6,726.84	0.00	0.00	0.00	
14,679.78	89.73	179.96	7,248.21	-6,811.72	-893.57	6,806.62	0.00	0.00	0.00	
Begin Turn for AC @ 14679.78ft										
14,700.00	89.73	179.65	7,248.30	-6,831.94	-893.50	6,826.84	1.50	0.00	-1.50	
14,800.00	89.73	178.15	7,248.77	-6,931.91	-891.58	6,926.83	1.50	0.00	-1.50	
14,848.94	89.73	177.42	7,249.00	-6,980.82	-889.69	6,975.74	1.50	0.00	-1.50	
Nio C										
14,885.37	89.73	176.87	7,249.17	-7,017.20	-887.88	7,012.13	1.50	0.00	-1.50	
End Turn @ 14885.37ft										
14,900.00	89.73	176.87	7,249.24	-7,031.81	-887.08	7,026.74	0.00	0.00	0.00	
15,000.00	89.73	176.87	7,249.70	-7,131.66	-881.62	7,126.62	0.00	0.00	0.00	
15,100.00	89.73	176.87	7,250.17	-7,231.51	-876.16	7,226.50	0.00	0.00	0.00	
15,200.00	89.73	176.87	7,250.64	-7,331.36	-870.71	7,326.38	0.00	0.00	0.00	
15,300.00	89.73	176.87	7,251.10	-7,431.21	-865.25	7,426.26	0.00	0.00	0.00	
15,400.00	89.73	176.87	7,251.57	-7,531.06	-859.79	7,526.14	0.00	0.00	0.00	
15,500.00	89.73	176.87	7,252.03	-7,630.91	-854.33	7,626.02	0.00	0.00	0.00	
15,600.00	89.73	176.87	7,252.50	-7,730.76	-848.88	7,725.90	0.00	0.00	0.00	
15,700.00	89.73	176.87	7,252.96	-7,830.61	-843.42	7,825.77	0.00	0.00	0.00	
15,800.00	89.73	176.87	7,253.43	-7,930.46	-837.96	7,925.65	0.00	0.00	0.00	
15,900.00	89.73	176.87	7,253.90	-8,030.31	-832.50	8,025.53	0.00	0.00	0.00	
16,000.00	89.73	176.87	7,254.36	-8,130.16	-827.05	8,125.41	0.00	0.00	0.00	
16,100.00	89.73	176.87	7,254.83	-8,230.01	-821.59	8,225.29	0.00	0.00	0.00	
16,200.00	89.73	176.87	7,255.29	-8,329.86	-816.13	8,325.17	0.00	0.00	0.00	
16,300.00	89.73	176.87	7,255.76	-8,429.71	-810.67	8,425.05	0.00	0.00	0.00	
16,400.00	89.73	176.87	7,256.23	-8,529.56	-805.22	8,524.93	0.00	0.00	0.00	
16,500.00	89.73	176.87	7,256.69	-8,629.41	-799.76	8,624.80	0.00	0.00	0.00	
16,600.00	89.73	176.87	7,257.16	-8,729.26	-794.30	8,724.68	0.00	0.00	0.00	
16,700.00	89.73	176.87	7,257.62	-8,829.11	-788.84	8,824.56	0.00	0.00	0.00	
16,800.00	89.73	176.87	7,258.09	-8,928.96	-783.39	8,924.44	0.00	0.00	0.00	
16,900.00	89.73	176.87	7,258.55	-9,028.81	-777.93	9,024.32	0.00	0.00	0.00	
17,000.00	89.73	176.87	7,259.02	-9,128.66	-772.47	9,124.20	0.00	0.00	0.00	
17,100.00	89.73	176.87	7,259.49	-9,228.51	-767.01	9,224.08	0.00	0.00	0.00	
17,200.00	89.73	176.87	7,259.95	-9,328.36	-761.55	9,323.96	0.00	0.00	0.00	
17,283.46	89.73	176.87	7,260.34	-9,411.69	-757.00	9,407.32	0.00	0.00	0.00	
Begin Turn to BHL @ 17283.46ft										
17,300.00	89.73	177.12	7,260.42	-9,428.21	-756.13	9,423.84	1.50	0.00	1.50	
17,400.00	89.73	178.62	7,260.88	-9,528.13	-752.42	9,523.78	1.50	0.00	1.50	
17,500.00	89.73	180.12	7,261.35	-9,628.12	-751.32	9,623.78	1.50	0.00	1.50	
17,600.00	89.73	181.62	7,261.82	-9,728.11	-752.83	9,723.75	1.50	0.00	1.50	
17,700.00	89.73	183.12	7,262.28	-9,828.02	-756.97	9,823.64	1.50	0.00	1.50	
17,789.90	89.73	184.47	7,262.70	-9,917.72	-762.92	9,913.31	1.50	0.00	1.50	
End Turn @ 17789.90ft										

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well CASTLE PINES 19-6HZ
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 19-6HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	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)
17,800.00	89.73	184.47	7,262.75	-9,927.79	-763.70	9,923.37	0.00	0.00	0.00
17,900.00	89.73	184.47	7,263.21	-10,027.48	-771.49	10,023.02	0.00	0.00	0.00
18,000.00	89.73	184.47	7,263.68	-10,127.18	-779.28	10,122.67	0.00	0.00	0.00
18,100.00	89.73	184.47	7,264.14	-10,226.87	-787.07	10,222.32	0.00	0.00	0.00
18,200.00	89.73	184.47	7,264.61	-10,326.57	-794.86	10,321.97	0.00	0.00	0.00
18,300.00	89.73	184.47	7,265.07	-10,426.26	-802.65	10,421.62	0.00	0.00	0.00
18,400.00	89.73	184.47	7,265.54	-10,525.96	-810.45	10,521.27	0.00	0.00	0.00
18,500.00	89.73	184.47	7,266.00	-10,625.65	-818.24	10,620.92	0.00	0.00	0.00
18,600.00	89.73	184.47	7,266.46	-10,725.35	-826.03	10,720.57	0.00	0.00	0.00
18,700.00	89.73	184.47	7,266.93	-10,825.04	-833.82	10,820.22	0.00	0.00	0.00
18,715.19	89.73	184.47	7,267.00	-10,840.19	-835.00	10,835.36	0.00	0.00	0.00
TD Well @ 18715.19ft									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name		Casing Diameter (")	Hole Diameter (")
1,523.23	1,500.00	9 5/8" Csg		9-5/8	13-1/2
7,793.37	7,216.00	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			
4,153.98	4,002.00	Parkman			
4,565.65	4,398.00	Sussex			
7,299.13	7,050.00	Sharon Springs			
7,411.72	7,115.00	Niobrara			
7,575.11	7,182.00	Nio B			
14,848.94	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	
1,450.00	1,430.36	123.14	-140.66	End Nudge @ 1450.00ft	
4,260.00	4,102.83	695.11	-794.01	Begin Drop @ 4260.00ft	
5,160.00	4,988.10	787.46	-899.51	End Drop @ 5160.00ft	
6,671.72	6,499.82	787.46	-899.51	KOP @ 6671.72ft :: DLS = 8°/100'	
7,793.37	7,216.00	74.62	-898.96	End Build @ 7793.37ft	
14,679.78	7,248.21	-6,811.72	-893.57	Begin Turn for AC @ 14679.78ft	
14,885.37	7,249.17	-7,017.20	-887.88	End Turn @ 14885.37ft	
17,283.46	7,260.34	-9,411.69	-757.00	Begin Turn to BHL @ 17283.46ft	
17,789.90	7,262.70	-9,917.72	-762.92	End Turn @ 17789.90ft	
18,715.19	7,267.00	-10,840.19	-835.00	TD Well @ 18715.19ft	