

US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N

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

CASTLE PINES 19-4HZ

Plan A

Plan: Permit Rev-1

SHL Lat/Long: 40.117681/-104.814505

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 19-4HZ
Wellbore: Plan A
Design: Permit Rev-1

US ROCKIES WATTENBERG PLANNING

CASING DETAILS

TVD	MD	Size
1500.00	1523.46	9-5/8
7421.00	8076.98	5-1/2

WELL DETAILS: CASTLE PINES 19-4HZ

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	1676.67	21.40	303.30	1643.73	144.58	-220.11	1.50	303.30	-144.62	
4	4446.67	21.40	303.30	4222.75	699.49	-1064.87	0.00	0.00	-699.67	
5	5516.67	0.00	0.00	5268.05	807.92	-1229.95	2.00	180.00	-808.14	
6	6953.42	0.00	0.00	6704.80	807.92	-1229.95	0.00	0.00	-808.14	
7	8076.98	89.88	179.99	7421.00	93.17	-1229.83	8.00	179.99	-93.38	
8	19010.04	89.88	179.99	7443.00	-10839.87	-1228.06	0.00	0.00	10839.66	CASTLE PINES 19-4HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
CASTLE PINES 19-4HZ_SHL	0.00	0.00	0.00	40.117681	-104.814505
CASTLE PINES 19-4HZ_BHL	7443.00	-10839.87	-1228.06	40.087913	-104.818896

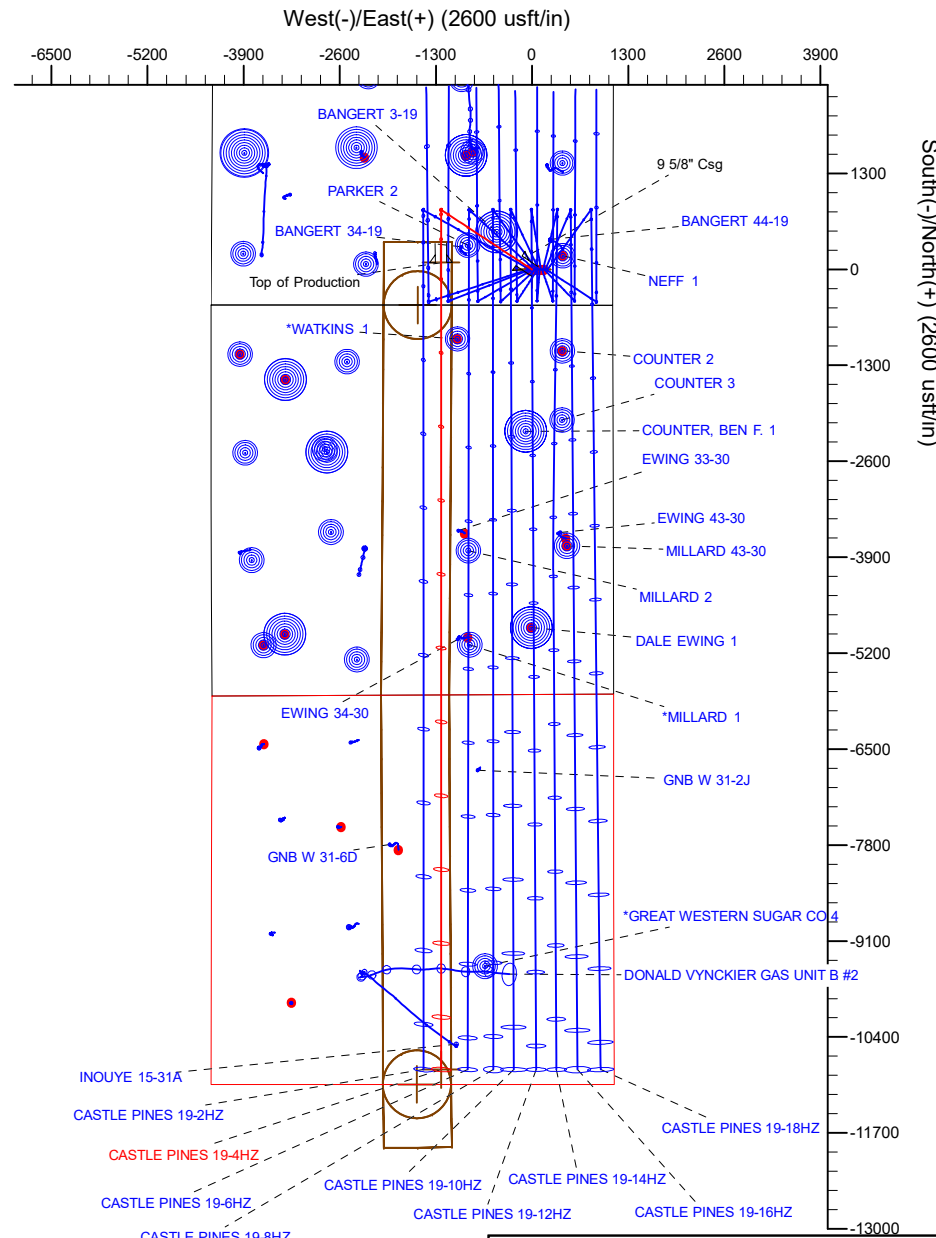
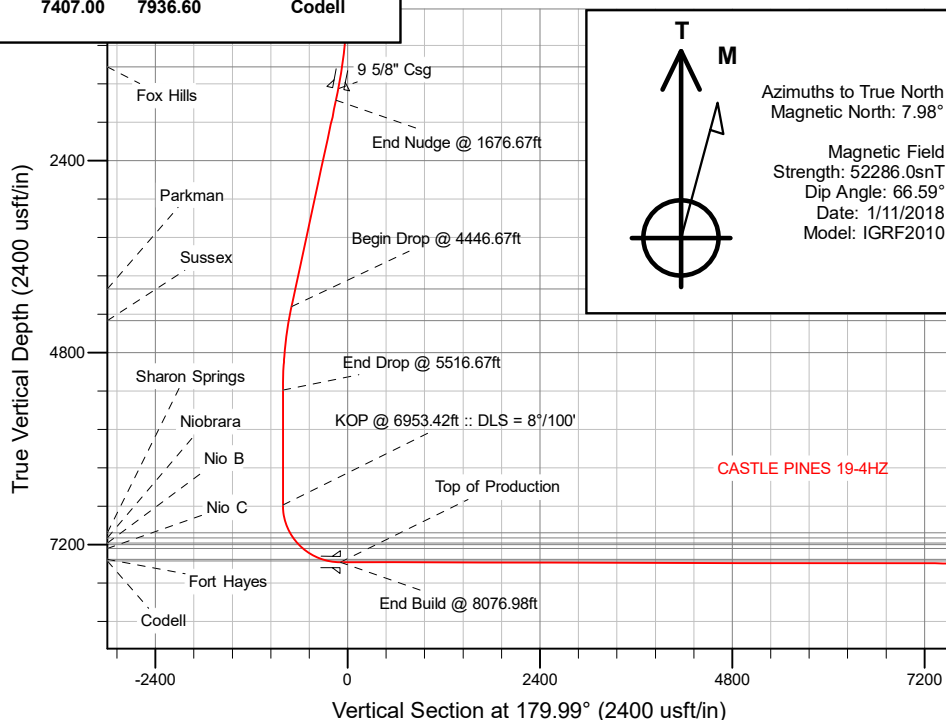
FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1226.00	1236.94	Fox Hills
4002.00	4209.57	Parkman
4398.00	4632.66	Sussex
7050.00	7313.61	Sharon Springs
7115.00	7390.20	Niobrara
7182.00	7475.69	Nio B
7249.00	7571.55	Nio C
7385.00	7850.39	Fort Hayes
7407.00	7936.60	Codell

SHL
484' FSL
1093' FEL

HEEL
577' FSL
2324' FEL

TOE
201' FSL
2340' FEL



Plan: Permit Rev-1 (CASTLE PINES 19-4HZ/Plan A)

Created By: _____ Date: 1/17/2018
Reviewed: _____ Date: _____

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well CASTLE PINES 19-4HZ
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 19-4HZ	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 19-4HZ				
Well Position	+N/-S	-0.36 usft	Northing:	14,569,640.41 usft	Latitude:	40.117681
	+E/-W	45.01 usft	Easting:	1,692,275.44 usft	Longitude:	-104.814505
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	52,285.97342163

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	179.99	

Plan Survey Tool Program	Date	1/17/2018			
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+I Fixed:v2:crustal field declinatio	
2	1,500.00	19,010.04	Permit Rev-1 (Plan A)	APC_ISCWSA REV 2 MWD+I Fixed:v2:Rockies, crustal dec +	

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 19-4HZ	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	
1,676.67	21.40	303.30	1,643.73	144.58	-220.11	1.50	1.50	0.00	303.30	
4,446.67	21.40	303.30	4,222.75	699.49	-1,064.87	0.00	0.00	0.00	0.00	
5,516.67	0.00	0.00	5,268.05	807.92	-1,229.95	2.00	-2.00	0.00	180.00	
6,953.42	0.00	0.00	6,704.80	807.92	-1,229.95	0.00	0.00	0.00	0.00	
8,076.98	89.88	179.99	7,421.00	93.17	-1,229.83	8.00	8.00	16.02	179.99	
19,010.04	89.88	179.99	7,443.00	-10,839.87	-1,228.06	0.00	0.00	0.00	0.00	CASTLE PINES 19-4I

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well CASTLE PINES 19-4HZ
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 19-4HZ	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	303.30	300.00	0.18	-0.27	-0.18	1.50	1.50	0.00
400.00	2.25	303.30	399.96	1.62	-2.46	-1.62	1.50	1.50	0.00
500.00	3.75	303.30	499.82	4.49	-6.84	-4.49	1.50	1.50	0.00
600.00	5.25	303.30	599.51	8.80	-13.39	-8.80	1.50	1.50	0.00
700.00	6.75	303.30	698.96	14.54	-22.13	-14.54	1.50	1.50	0.00
800.00	8.25	303.30	798.10	21.70	-33.04	-21.71	1.50	1.50	0.00
900.00	9.75	303.30	896.87	30.29	-46.11	-30.30	1.50	1.50	0.00
1,000.00	11.25	303.30	995.19	40.30	-61.34	-40.31	1.50	1.50	0.00
1,100.00	12.75	303.30	1,093.00	51.71	-78.72	-51.72	1.50	1.50	0.00
1,200.00	14.25	303.30	1,190.24	64.53	-98.23	-64.54	1.50	1.50	0.00
1,236.95	14.80	303.30	1,226.00	69.61	-105.98	-69.63	1.50	1.50	0.00
Fox Hills									
1,300.00	15.75	303.30	1,286.83	78.74	-119.86	-78.76	1.50	1.50	0.00
1,400.00	17.25	303.30	1,382.71	94.33	-143.60	-94.35	1.50	1.50	0.00
1,500.00	18.75	303.30	1,477.81	111.29	-169.43	-111.32	1.50	1.50	0.00
1,523.46	19.10	303.30	1,500.00	115.47	-175.79	-115.50	1.50	1.50	0.00
9 5/8" Csg									
1,600.00	20.25	303.30	1,572.07	129.62	-197.33	-129.65	1.50	1.50	0.00
1,676.67	21.40	303.30	1,643.73	144.58	-220.11	-144.62	1.50	1.50	0.00
End Nudge @ 1676.67ft									
1,700.00	21.40	303.30	1,665.45	149.26	-227.22	-149.30	0.00	0.00	0.00
1,800.00	21.40	303.30	1,758.56	169.29	-257.72	-169.34	0.00	0.00	0.00
1,900.00	21.40	303.30	1,851.66	189.32	-288.22	-189.37	0.00	0.00	0.00
2,000.00	21.40	303.30	1,944.77	209.36	-318.71	-209.41	0.00	0.00	0.00
2,100.00	21.40	303.30	2,037.87	229.39	-349.21	-229.45	0.00	0.00	0.00
2,200.00	21.40	303.30	2,130.98	249.42	-379.71	-249.49	0.00	0.00	0.00
2,300.00	21.40	303.30	2,224.08	269.45	-410.20	-269.52	0.00	0.00	0.00
2,400.00	21.40	303.30	2,317.19	289.49	-440.70	-289.56	0.00	0.00	0.00
2,500.00	21.40	303.30	2,410.30	309.52	-471.20	-309.60	0.00	0.00	0.00
2,600.00	21.40	303.30	2,503.40	329.55	-501.69	-329.64	0.00	0.00	0.00
2,700.00	21.40	303.30	2,596.51	349.58	-532.19	-349.68	0.00	0.00	0.00
2,800.00	21.40	303.30	2,689.61	369.62	-562.69	-369.71	0.00	0.00	0.00
2,900.00	21.40	303.30	2,782.72	389.65	-593.18	-389.75	0.00	0.00	0.00
3,000.00	21.40	303.30	2,875.82	409.68	-623.68	-409.79	0.00	0.00	0.00
3,100.00	21.40	303.30	2,968.93	429.71	-654.18	-429.83	0.00	0.00	0.00
3,200.00	21.40	303.30	3,062.04	449.75	-684.67	-449.87	0.00	0.00	0.00
3,300.00	21.40	303.30	3,155.14	469.78	-715.17	-469.90	0.00	0.00	0.00
3,400.00	21.40	303.30	3,248.25	489.81	-745.67	-489.94	0.00	0.00	0.00
3,500.00	21.40	303.30	3,341.35	509.84	-776.16	-509.98	0.00	0.00	0.00
3,600.00	21.40	303.30	3,434.46	529.88	-806.66	-530.02	0.00	0.00	0.00
3,700.00	21.40	303.30	3,527.56	549.91	-837.16	-550.06	0.00	0.00	0.00
3,800.00	21.40	303.30	3,620.67	569.94	-867.65	-570.09	0.00	0.00	0.00
3,900.00	21.40	303.30	3,713.77	589.97	-898.15	-590.13	0.00	0.00	0.00
4,000.00	21.40	303.30	3,806.88	610.01	-928.65	-610.17	0.00	0.00	0.00
4,100.00	21.40	303.30	3,899.99	630.04	-959.14	-630.21	0.00	0.00	0.00
4,200.00	21.40	303.30	3,993.09	650.07	-989.64	-650.24	0.00	0.00	0.00
4,209.57	21.40	303.30	4,002.00	651.99	-992.56	-652.16	0.00	0.00	0.00
Parkman									
4,300.00	21.40	303.30	4,086.20	670.10	-1,020.14	-670.28	0.00	0.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well CASTLE PINES 19-4HZ
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 19-4HZ	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)
7,900.00	75.73	179.99	7,398.89	268.31	-1,229.86	-268.52	8.00	8.00	0.00
7,936.60	78.65	179.99	7,407.00	232.63	-1,229.85	-232.84	8.00	8.00	0.00
Codell									
8,000.00	83.73	179.99	7,416.71	169.99	-1,229.84	-170.21	8.00	8.00	0.00
8,076.98	89.88	179.99	7,421.00	93.17	-1,229.83	-93.38	8.00	8.00	0.00
End Build @ 8076.98ft - Top of Production									
8,100.00	89.88	179.99	7,421.04	70.15	-1,229.83	-70.36	0.00	0.00	0.00
8,200.00	89.88	179.99	7,421.24	-29.85	-1,229.81	29.64	0.00	0.00	0.00
8,300.00	89.88	179.99	7,421.44	-129.85	-1,229.80	129.64	0.00	0.00	0.00
8,400.00	89.88	179.99	7,421.65	-229.85	-1,229.78	229.64	0.00	0.00	0.00
8,500.00	89.88	179.99	7,421.85	-329.85	-1,229.76	329.64	0.00	0.00	0.00
8,600.00	89.88	179.99	7,422.05	-429.85	-1,229.75	429.64	0.00	0.00	0.00
8,700.00	89.88	179.99	7,422.25	-529.85	-1,229.73	529.64	0.00	0.00	0.00
8,800.00	89.88	179.99	7,422.45	-629.85	-1,229.71	629.64	0.00	0.00	0.00
8,900.00	89.88	179.99	7,422.65	-729.85	-1,229.70	729.64	0.00	0.00	0.00
9,000.00	89.88	179.99	7,422.85	-829.85	-1,229.68	829.64	0.00	0.00	0.00
9,100.00	89.88	179.99	7,423.05	-929.85	-1,229.67	929.64	0.00	0.00	0.00
9,200.00	89.88	179.99	7,423.26	-1,029.85	-1,229.65	1,029.64	0.00	0.00	0.00
9,300.00	89.88	179.99	7,423.46	-1,129.85	-1,229.63	1,129.64	0.00	0.00	0.00
9,400.00	89.88	179.99	7,423.66	-1,229.85	-1,229.62	1,229.64	0.00	0.00	0.00
9,500.00	89.88	179.99	7,423.86	-1,329.85	-1,229.60	1,329.64	0.00	0.00	0.00
9,600.00	89.88	179.99	7,424.06	-1,429.85	-1,229.59	1,429.64	0.00	0.00	0.00
9,700.00	89.88	179.99	7,424.26	-1,529.85	-1,229.57	1,529.64	0.00	0.00	0.00
9,800.00	89.88	179.99	7,424.46	-1,629.85	-1,229.55	1,629.63	0.00	0.00	0.00
9,900.00	89.88	179.99	7,424.66	-1,729.85	-1,229.54	1,729.63	0.00	0.00	0.00
10,000.00	89.88	179.99	7,424.87	-1,829.85	-1,229.52	1,829.63	0.00	0.00	0.00
10,100.00	89.88	179.99	7,425.07	-1,929.85	-1,229.50	1,929.63	0.00	0.00	0.00
10,200.00	89.88	179.99	7,425.27	-2,029.85	-1,229.49	2,029.63	0.00	0.00	0.00
10,300.00	89.88	179.99	7,425.47	-2,129.85	-1,229.47	2,129.63	0.00	0.00	0.00
10,400.00	89.88	179.99	7,425.67	-2,229.85	-1,229.46	2,229.63	0.00	0.00	0.00
10,500.00	89.88	179.99	7,425.87	-2,329.85	-1,229.44	2,329.63	0.00	0.00	0.00
10,600.00	89.88	179.99	7,426.07	-2,429.85	-1,229.42	2,429.63	0.00	0.00	0.00
10,700.00	89.88	179.99	7,426.27	-2,529.85	-1,229.41	2,529.63	0.00	0.00	0.00
10,800.00	89.88	179.99	7,426.48	-2,629.85	-1,229.39	2,629.63	0.00	0.00	0.00
10,900.00	89.88	179.99	7,426.68	-2,729.85	-1,229.37	2,729.63	0.00	0.00	0.00
11,000.00	89.88	179.99	7,426.88	-2,829.85	-1,229.36	2,829.63	0.00	0.00	0.00
11,100.00	89.88	179.99	7,427.08	-2,929.85	-1,229.34	2,929.63	0.00	0.00	0.00
11,200.00	89.88	179.99	7,427.28	-3,029.85	-1,229.33	3,029.63	0.00	0.00	0.00
11,300.00	89.88	179.99	7,427.48	-3,129.85	-1,229.31	3,129.63	0.00	0.00	0.00
11,400.00	89.88	179.99	7,427.68	-3,229.85	-1,229.29	3,229.63	0.00	0.00	0.00
11,500.00	89.88	179.99	7,427.88	-3,329.85	-1,229.28	3,329.63	0.00	0.00	0.00
11,600.00	89.88	179.99	7,428.09	-3,429.85	-1,229.26	3,429.63	0.00	0.00	0.00
11,700.00	89.88	179.99	7,428.29	-3,529.85	-1,229.25	3,529.63	0.00	0.00	0.00
11,800.00	89.88	179.99	7,428.49	-3,629.85	-1,229.23	3,629.63	0.00	0.00	0.00
11,900.00	89.88	179.99	7,428.69	-3,729.85	-1,229.21	3,729.63	0.00	0.00	0.00
12,000.00	89.88	179.99	7,428.89	-3,829.85	-1,229.20	3,829.63	0.00	0.00	0.00
12,100.00	89.88	179.99	7,429.09	-3,929.84	-1,229.18	3,929.63	0.00	0.00	0.00
12,200.00	89.88	179.99	7,429.29	-4,029.84	-1,229.16	4,029.63	0.00	0.00	0.00
12,300.00	89.88	179.99	7,429.49	-4,129.84	-1,229.15	4,129.63	0.00	0.00	0.00
12,400.00	89.88	179.99	7,429.70	-4,229.84	-1,229.13	4,229.63	0.00	0.00	0.00
12,500.00	89.88	179.99	7,429.90	-4,329.84	-1,229.12	4,329.63	0.00	0.00	0.00
12,600.00	89.88	179.99	7,430.10	-4,429.84	-1,229.10	4,429.63	0.00	0.00	0.00
12,700.00	89.88	179.99	7,430.30	-4,529.84	-1,229.08	4,529.63	0.00	0.00	0.00
12,800.00	89.88	179.99	7,430.50	-4,629.84	-1,229.07	4,629.63	0.00	0.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well CASTLE PINES 19-4HZ
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 19-4HZ	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)
12,900.00	89.88	179.99	7,430.70	-4,729.84	-1,229.05	4,729.63	0.00	0.00	0.00
13,000.00	89.88	179.99	7,430.90	-4,829.84	-1,229.04	4,829.63	0.00	0.00	0.00
13,100.00	89.88	179.99	7,431.11	-4,929.84	-1,229.02	4,929.63	0.00	0.00	0.00
13,200.00	89.88	179.99	7,431.31	-5,029.84	-1,229.00	5,029.63	0.00	0.00	0.00
13,300.00	89.88	179.99	7,431.51	-5,129.84	-1,228.99	5,129.63	0.00	0.00	0.00
13,400.00	89.88	179.99	7,431.71	-5,229.84	-1,228.97	5,229.63	0.00	0.00	0.00
13,500.00	89.88	179.99	7,431.91	-5,329.84	-1,228.95	5,329.63	0.00	0.00	0.00
13,600.00	89.88	179.99	7,432.11	-5,429.84	-1,228.94	5,429.63	0.00	0.00	0.00
13,700.00	89.88	179.99	7,432.31	-5,529.84	-1,228.92	5,529.63	0.00	0.00	0.00
13,800.00	89.88	179.99	7,432.51	-5,629.84	-1,228.91	5,629.63	0.00	0.00	0.00
13,900.00	89.88	179.99	7,432.72	-5,729.84	-1,228.89	5,729.63	0.00	0.00	0.00
14,000.00	89.88	179.99	7,432.92	-5,829.84	-1,228.87	5,829.63	0.00	0.00	0.00
14,100.00	89.88	179.99	7,433.12	-5,929.84	-1,228.86	5,929.63	0.00	0.00	0.00
14,200.00	89.88	179.99	7,433.32	-6,029.84	-1,228.84	6,029.63	0.00	0.00	0.00
14,300.00	89.88	179.99	7,433.52	-6,129.84	-1,228.82	6,129.63	0.00	0.00	0.00
14,400.00	89.88	179.99	7,433.72	-6,229.84	-1,228.81	6,229.63	0.00	0.00	0.00
14,500.00	89.88	179.99	7,433.92	-6,329.84	-1,228.79	6,329.63	0.00	0.00	0.00
14,600.00	89.88	179.99	7,434.12	-6,429.84	-1,228.78	6,429.63	0.00	0.00	0.00
14,700.00	89.88	179.99	7,434.33	-6,529.84	-1,228.76	6,529.63	0.00	0.00	0.00
14,800.00	89.88	179.99	7,434.53	-6,629.84	-1,228.74	6,629.62	0.00	0.00	0.00
14,900.00	89.88	179.99	7,434.73	-6,729.84	-1,228.73	6,729.62	0.00	0.00	0.00
15,000.00	89.88	179.99	7,434.93	-6,829.84	-1,228.71	6,829.62	0.00	0.00	0.00
15,100.00	89.88	179.99	7,435.13	-6,929.84	-1,228.70	6,929.62	0.00	0.00	0.00
15,200.00	89.88	179.99	7,435.33	-7,029.84	-1,228.68	7,029.62	0.00	0.00	0.00
15,300.00	89.88	179.99	7,435.53	-7,129.84	-1,228.66	7,129.62	0.00	0.00	0.00
15,400.00	89.88	179.99	7,435.73	-7,229.84	-1,228.65	7,229.62	0.00	0.00	0.00
15,500.00	89.88	179.99	7,435.94	-7,329.84	-1,228.63	7,329.62	0.00	0.00	0.00
15,600.00	89.88	179.99	7,436.14	-7,429.84	-1,228.61	7,429.62	0.00	0.00	0.00
15,700.00	89.88	179.99	7,436.34	-7,529.84	-1,228.60	7,529.62	0.00	0.00	0.00
15,800.00	89.88	179.99	7,436.54	-7,629.84	-1,228.58	7,629.62	0.00	0.00	0.00
15,900.00	89.88	179.99	7,436.74	-7,729.84	-1,228.57	7,729.62	0.00	0.00	0.00
16,000.00	89.88	179.99	7,436.94	-7,829.84	-1,228.55	7,829.62	0.00	0.00	0.00
16,100.00	89.88	179.99	7,437.14	-7,929.84	-1,228.53	7,929.62	0.00	0.00	0.00
16,200.00	89.88	179.99	7,437.34	-8,029.84	-1,228.52	8,029.62	0.00	0.00	0.00
16,300.00	89.88	179.99	7,437.55	-8,129.84	-1,228.50	8,129.62	0.00	0.00	0.00
16,400.00	89.88	179.99	7,437.75	-8,229.84	-1,228.49	8,229.62	0.00	0.00	0.00
16,500.00	89.88	179.99	7,437.95	-8,329.84	-1,228.47	8,329.62	0.00	0.00	0.00
16,600.00	89.88	179.99	7,438.15	-8,429.84	-1,228.45	8,429.62	0.00	0.00	0.00
16,700.00	89.88	179.99	7,438.35	-8,529.84	-1,228.44	8,529.62	0.00	0.00	0.00
16,800.00	89.88	179.99	7,438.55	-8,629.84	-1,228.42	8,629.62	0.00	0.00	0.00
16,900.00	89.88	179.99	7,438.75	-8,729.84	-1,228.40	8,729.62	0.00	0.00	0.00
17,000.00	89.88	179.99	7,438.95	-8,829.83	-1,228.39	8,829.62	0.00	0.00	0.00
17,100.00	89.88	179.99	7,439.16	-8,929.83	-1,228.37	8,929.62	0.00	0.00	0.00
17,200.00	89.88	179.99	7,439.36	-9,029.83	-1,228.36	9,029.62	0.00	0.00	0.00
17,300.00	89.88	179.99	7,439.56	-9,129.83	-1,228.34	9,129.62	0.00	0.00	0.00
17,400.00	89.88	179.99	7,439.76	-9,229.83	-1,228.32	9,229.62	0.00	0.00	0.00
17,500.00	89.88	179.99	7,439.96	-9,329.83	-1,228.31	9,329.62	0.00	0.00	0.00
17,600.00	89.88	179.99	7,440.16	-9,429.83	-1,228.29	9,429.62	0.00	0.00	0.00
17,700.00	89.88	179.99	7,440.36	-9,529.83	-1,228.27	9,529.62	0.00	0.00	0.00
17,800.00	89.88	179.99	7,440.56	-9,629.83	-1,228.26	9,629.62	0.00	0.00	0.00
17,900.00	89.88	179.99	7,440.77	-9,729.83	-1,228.24	9,729.62	0.00	0.00	0.00
18,000.00	89.88	179.99	7,440.97	-9,829.83	-1,228.23	9,829.62	0.00	0.00	0.00
18,100.00	89.88	179.99	7,441.17	-9,929.83	-1,228.21	9,929.62	0.00	0.00	0.00
18,200.00	89.88	179.99	7,441.37	-10,029.83	-1,228.19	10,029.62	0.00	0.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well CASTLE PINES 19-4HZ
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 19-4HZ	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)	
18,300.00	89.88	179.99	7,441.57	-10,129.83	-1,228.18	10,129.62	0.00	0.00	0.00	
18,400.00	89.88	179.99	7,441.77	-10,229.83	-1,228.16	10,229.62	0.00	0.00	0.00	
18,500.00	89.88	179.99	7,441.97	-10,329.83	-1,228.15	10,329.62	0.00	0.00	0.00	
18,600.00	89.88	179.99	7,442.17	-10,429.83	-1,228.13	10,429.62	0.00	0.00	0.00	
18,700.00	89.88	179.99	7,442.38	-10,529.83	-1,228.11	10,529.62	0.00	0.00	0.00	
18,800.00	89.88	179.99	7,442.58	-10,629.83	-1,228.10	10,629.62	0.00	0.00	0.00	
18,900.00	89.88	179.99	7,442.78	-10,729.83	-1,228.08	10,729.62	0.00	0.00	0.00	
19,000.00	89.88	179.99	7,442.98	-10,829.83	-1,228.06	10,829.62	0.00	0.00	0.00	
19,010.04	89.88	179.99	7,443.00	-10,839.87	-1,228.06	10,839.66	0.00	0.00	0.00	
TD Well @ 19010.04ft										

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	
8,076.98	7,421.00	Top of Production	5-1/2	7-7/8	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,236.95	1,226.00	Fox Hills				
4,209.57	4,002.00	Parkman				
4,632.66	4,398.00	Sussex				
7,313.61	7,050.00	Sharon Springs				
7,390.20	7,115.00	Niobrara				
7,475.69	7,182.00	Nio B				
7,571.55	7,249.00	Nio C				
7,850.39	7,385.00	Fort Hayes				
7,936.60	7,407.00	Codell				

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	
1,676.67	1,643.73	144.58	-220.11	End Nudge @ 1676.67ft	
4,446.67	4,222.75	699.49	-1,064.87	Begin Drop @ 4446.67ft	
5,516.67	5,268.05	807.92	-1,229.95	End Drop @ 5516.67ft	
6,953.42	6,704.80	807.92	-1,229.95	KOP @ 6953.42ft :: DLS = 8°/100'	
8,076.98	7,421.00	93.17	-1,229.83	End Build @ 8076.98ft	
19,010.04	7,443.00	-10,839.87	-1,228.06	TD Well @ 19010.04ft	