

US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N

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

CASTLE PINES 19-12HZ

Plan A

Plan: Permit Rev-1

SHL Lat/Long: 40.117678/-104.814076

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 19-12HZ
Wellbore: Plan A
Design: Permit Rev-1

US ROCKIES WATTENBERG PLANNING

CASING DETAILS

TVD	MD	Size
1500.00	1518.17	9-5/8
7286.00	7786.62	5-1/2

WELL DETAILS: CASTLE PINES 19-12HZ

GL = 4876'

RKB = 17' @ 4893.00usft (Drilling Rig)

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	V Sect	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	1136.67	13.30	351.00	1128.73	101.19	-16.03	1.50	351.00	-101.28	
4	3936.67	13.30	351.00	3853.63	737.40	-116.79	0.00	0.00	-738.04	
5	4601.67	0.00	0.00	4512.67	813.29	-128.81	2.00	180.00	-813.99	
6	6658.80	0.00	0.00	6569.80	813.29	-128.81	0.00	0.00	-813.99	
7	7786.62	90.23	179.68	7286.00	94.29	-124.75	8.00	179.68	-94.98	
8	18720.62	90.23	179.68	7243.00	-10839.46	-63.05	0.00	0.00	10838.94	CASTLE PINES 19-12HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
CASTLE PINES 19-12HZ_SHL	0.00	0.00	0.00	40.117678	-104.814076
CASTLE PINES 19-12HZ_BHL	7243.00	-10839.46	-63.05	40.087911	-104.814301

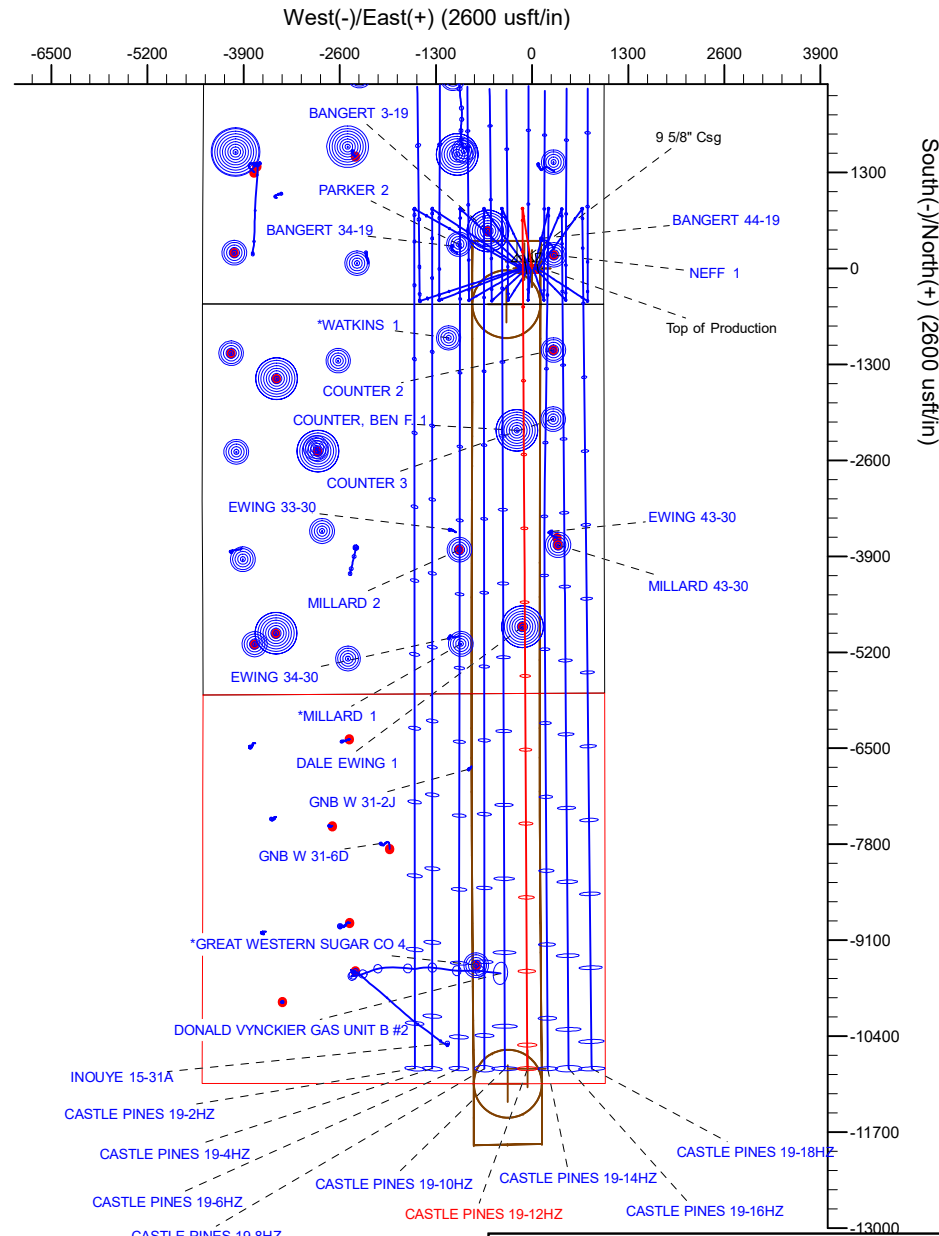
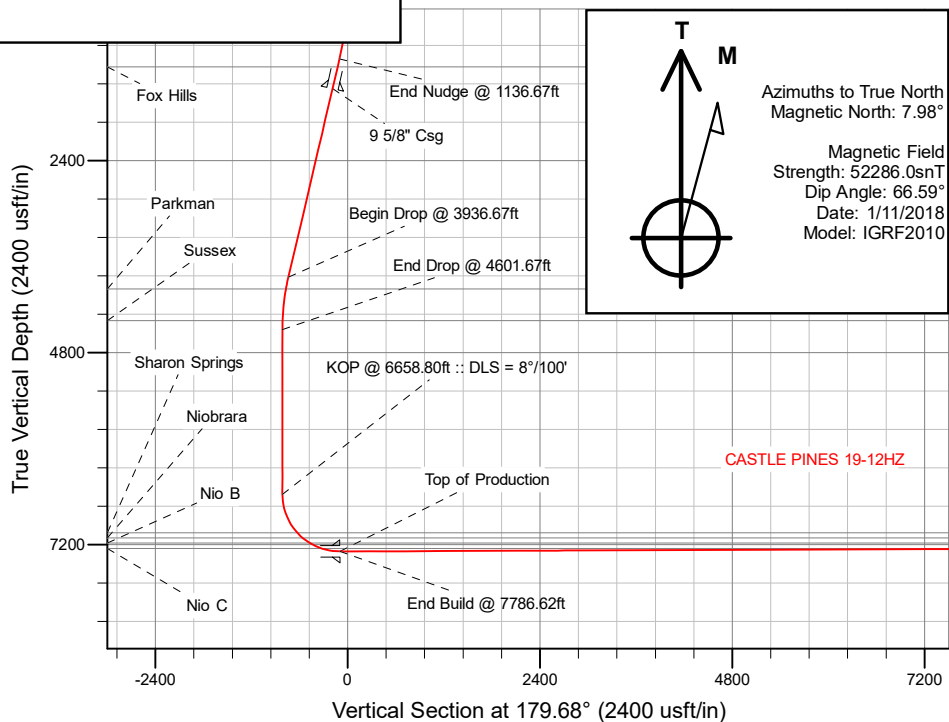
FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1226.00	1236.62	Fox Hills
4002.00	4088.25	Parkman
4398.00	4486.97	Sussex
7050.00	7185.10	Sharon Springs
7115.00	7278.47	Niobrara
7182.00	7393.00	Nio B
7249.00	7552.58	Nio C

SHL
484' FSL
973' FEL

HEEL
577' FSL
1098' FEL

TOE
203' FSL
1055' FEL



Plan: Permit Rev-1 (CASTLE PINES 19-12HZ/Plan A)

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

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well CASTLE PINES 19-12HZ
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 19-12HZ	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 19-12HZ					
Well Position	+N/-S	-1.46 usft	Northing:	14,569,639.56 usft	Latitude:	40.117678
	+E/-W	164.95 usft	Easting:	1,692,395.38 usft	Longitude:	-104.814076
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	52,286.01540047

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	179.68

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+II Fixed:v2:crustal field declinatio
2	1,500.00	18,720.62	Permit Rev-1 (Plan A)	APC_ISCWSA REV 2 MWD+II 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 19-12HZ	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	
1,136.67	13.30	351.00	1,128.73	101.19	-16.03	1.50	1.50	0.00	351.00	
3,936.67	13.30	351.00	3,853.63	737.40	-116.79	0.00	0.00	0.00	0.00	
4,601.67	0.00	0.00	4,512.67	813.29	-128.81	2.00	-2.00	0.00	180.00	
6,658.80	0.00	0.00	6,569.80	813.29	-128.81	0.00	0.00	0.00	0.00	
7,786.62	90.23	179.68	7,286.00	94.29	-124.75	8.00	8.00	15.93	179.68	
18,720.62	90.23	179.68	7,243.00	-10,839.46	-63.05	0.00	0.00	0.00	0.00	CASTLE PINES 19-12

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 19-12HZ	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	351.00	300.00	0.32	-0.05	-0.32	1.50	1.50	0.00
400.00	2.25	351.00	399.96	2.91	-0.46	-2.91	1.50	1.50	0.00
500.00	3.75	351.00	499.82	8.08	-1.28	-8.08	1.50	1.50	0.00
600.00	5.25	351.00	599.51	15.83	-2.51	-15.84	1.50	1.50	0.00
700.00	6.75	351.00	698.96	26.15	-4.14	-26.17	1.50	1.50	0.00
800.00	8.25	351.00	798.10	39.04	-6.18	-39.08	1.50	1.50	0.00
900.00	9.75	351.00	896.87	54.49	-8.63	-54.54	1.50	1.50	0.00
1,000.00	11.25	351.00	995.19	72.49	-11.48	-72.55	1.50	1.50	0.00
1,100.00	12.75	351.00	1,093.00	93.03	-14.73	-93.11	1.50	1.50	0.00
1,136.67	13.30	351.00	1,128.73	101.19	-16.03	-101.28	1.50	1.50	0.00
End Nudge @ 1136.67ft									
1,200.00	13.30	351.00	1,190.36	115.58	-18.31	-115.68	0.00	0.00	0.00
1,236.62	13.30	351.00	1,226.00	123.90	-19.62	-124.01	0.00	0.00	0.00
Fox Hills									
1,300.00	13.30	351.00	1,287.68	138.30	-21.90	-138.42	0.00	0.00	0.00
1,400.00	13.30	351.00	1,385.00	161.02	-25.50	-161.16	0.00	0.00	0.00
1,500.00	13.30	351.00	1,482.31	183.74	-29.10	-183.90	0.00	0.00	0.00
1,518.17	13.30	351.00	1,500.00	187.87	-29.76	-188.04	0.00	0.00	0.00
9 5/8" Csg									
1,600.00	13.30	351.00	1,579.63	206.47	-32.70	-206.64	0.00	0.00	0.00
1,700.00	13.30	351.00	1,676.95	229.19	-36.30	-229.39	0.00	0.00	0.00
1,800.00	13.30	351.00	1,774.27	251.91	-39.90	-252.13	0.00	0.00	0.00
1,900.00	13.30	351.00	1,871.59	274.63	-43.50	-274.87	0.00	0.00	0.00
2,000.00	13.30	351.00	1,968.90	297.35	-47.10	-297.61	0.00	0.00	0.00
2,100.00	13.30	351.00	2,066.22	320.07	-50.69	-320.35	0.00	0.00	0.00
2,200.00	13.30	351.00	2,163.54	342.80	-54.29	-343.09	0.00	0.00	0.00
2,300.00	13.30	351.00	2,260.86	365.52	-57.89	-365.84	0.00	0.00	0.00
2,400.00	13.30	351.00	2,358.17	388.24	-61.49	-388.58	0.00	0.00	0.00
2,500.00	13.30	351.00	2,455.49	410.96	-65.09	-411.32	0.00	0.00	0.00
2,600.00	13.30	351.00	2,552.81	433.68	-68.69	-434.06	0.00	0.00	0.00
2,700.00	13.30	351.00	2,650.13	456.40	-72.29	-456.80	0.00	0.00	0.00
2,800.00	13.30	351.00	2,747.45	479.13	-75.89	-479.54	0.00	0.00	0.00
2,900.00	13.30	351.00	2,844.76	501.85	-79.48	-502.28	0.00	0.00	0.00
3,000.00	13.30	351.00	2,942.08	524.57	-83.08	-525.03	0.00	0.00	0.00
3,100.00	13.30	351.00	3,039.40	547.29	-86.68	-547.77	0.00	0.00	0.00
3,200.00	13.30	351.00	3,136.72	570.01	-90.28	-570.51	0.00	0.00	0.00
3,300.00	13.30	351.00	3,234.04	592.73	-93.88	-593.25	0.00	0.00	0.00
3,400.00	13.30	351.00	3,331.35	615.46	-97.48	-615.99	0.00	0.00	0.00
3,500.00	13.30	351.00	3,428.67	638.18	-101.08	-638.73	0.00	0.00	0.00
3,600.00	13.30	351.00	3,525.99	660.90	-104.68	-661.47	0.00	0.00	0.00
3,700.00	13.30	351.00	3,623.31	683.62	-108.28	-684.22	0.00	0.00	0.00
3,800.00	13.30	351.00	3,720.63	706.34	-111.87	-706.96	0.00	0.00	0.00
3,900.00	13.30	351.00	3,817.94	729.07	-115.47	-729.70	0.00	0.00	0.00
3,936.67	13.30	351.00	3,853.63	737.40	-116.79	-738.04	0.00	0.00	0.00
Begin Drop @ 3936.67ft									
4,000.00	12.03	351.00	3,915.42	751.11	-118.96	-751.77	2.00	-2.00	0.00
4,088.25	10.27	351.00	4,002.00	767.97	-121.63	-768.64	2.00	-2.00	0.00
Parkman									

Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well CASTLE PINES 19-12HZ
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 19-12HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-1		

Planned Survey

Measured			Vertical			Vertical	Dogleg	Build	Turn
Depth	Inclination	Azimuth	Depth	+N/-S	+E/-W	Section	Rate	Rate	Rate
(usft)	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(°/100usft)	(°/100usft)	(°/100usft)
4,100.00	10.03	351.00	4,013.56	770.01	-121.96	-770.68	2.00	-2.00	0.00
4,200.00	8.03	351.00	4,112.32	785.52	-124.41	-786.20	2.00	-2.00	0.00
4,300.00	6.03	351.00	4,211.56	797.61	-126.33	-798.31	2.00	-2.00	0.00
4,400.00	4.03	351.00	4,311.17	806.28	-127.70	-806.98	2.00	-2.00	0.00
4,486.97	2.29	351.00	4,398.00	811.02	-128.45	-811.72	2.00	-2.00	0.00
Sussex									
4,500.00	2.03	351.00	4,411.02	811.51	-128.53	-812.21	2.00	-2.00	0.00
4,600.00	0.03	351.00	4,511.00	813.29	-128.81	-813.99	2.00	-2.00	0.00
4,601.67	0.00	0.00	4,512.67	813.29	-128.81	-813.99	2.00	-2.00	0.00
End Drop @ 4601.67ft									
4,700.00	0.00	0.00	4,611.00	813.29	-128.81	-813.99	0.00	0.00	0.00
4,800.00	0.00	0.00	4,711.00	813.29	-128.81	-813.99	0.00	0.00	0.00
4,900.00	0.00	0.00	4,811.00	813.29	-128.81	-813.99	0.00	0.00	0.00
5,000.00	0.00	0.00	4,911.00	813.29	-128.81	-813.99	0.00	0.00	0.00
5,100.00	0.00	0.00	5,011.00	813.29	-128.81	-813.99	0.00	0.00	0.00
5,200.00	0.00	0.00	5,111.00	813.29	-128.81	-813.99	0.00	0.00	0.00
5,300.00	0.00	0.00	5,211.00	813.29	-128.81	-813.99	0.00	0.00	0.00
5,400.00	0.00	0.00	5,311.00	813.29	-128.81	-813.99	0.00	0.00	0.00
5,500.00	0.00	0.00	5,411.00	813.29	-128.81	-813.99	0.00	0.00	0.00
5,600.00	0.00	0.00	5,511.00	813.29	-128.81	-813.99	0.00	0.00	0.00
5,700.00	0.00	0.00	5,611.00	813.29	-128.81	-813.99	0.00	0.00	0.00
5,800.00	0.00	0.00	5,711.00	813.29	-128.81	-813.99	0.00	0.00	0.00
5,900.00	0.00	0.00	5,811.00	813.29	-128.81	-813.99	0.00	0.00	0.00
6,000.00	0.00	0.00	5,911.00	813.29	-128.81	-813.99	0.00	0.00	0.00
6,100.00	0.00	0.00	6,011.00	813.29	-128.81	-813.99	0.00	0.00	0.00
6,200.00	0.00	0.00	6,111.00	813.29	-128.81	-813.99	0.00	0.00	0.00
6,300.00	0.00	0.00	6,211.00	813.29	-128.81	-813.99	0.00	0.00	0.00
6,400.00	0.00	0.00	6,311.00	813.29	-128.81	-813.99	0.00	0.00	0.00
6,500.00	0.00	0.00	6,411.00	813.29	-128.81	-813.99	0.00	0.00	0.00
6,600.00	0.00	0.00	6,511.00	813.29	-128.81	-813.99	0.00	0.00	0.00
6,658.80	0.00	0.00	6,569.80	813.29	-128.81	-813.99	0.00	0.00	0.00
KOP @ 6658.80ft :: DLS = 8°/100'									
6,700.00	3.30	179.68	6,610.98	812.10	-128.81	-812.81	8.00	8.00	0.00
6,800.00	11.30	179.68	6,710.09	799.41	-128.73	-800.12	8.00	8.00	0.00
6,900.00	19.30	179.68	6,806.47	773.06	-128.59	-773.76	8.00	8.00	0.00
7,000.00	27.30	179.68	6,898.24	733.54	-128.36	-734.25	8.00	8.00	0.00
7,100.00	35.30	179.68	6,983.62	681.64	-128.07	-682.34	8.00	8.00	0.00
7,185.10	42.10	179.68	7,050.00	628.46	-127.77	-629.16	8.00	8.00	0

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 19-12HZ	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	90.23	179.68	7,285.94	80.90	-124.68	-81.60	0.00	0.00	0.00
7,900.00	90.23	179.68	7,285.55	-19.10	-124.11	18.40	0.00	0.00	0.00
8,000.00	90.23	179.68	7,285.16	-119.09	-123.55	118.40	0.00	0.00	0.00
8,100.00	90.23	179.68	7,284.76	-219.09	-122.99	218.40	0.00	0.00	0.00
8,200.00	90.23	179.68	7,284.37	-319.09	-122.42	318.40	0.00	0.00	0.00
8,300.00	90.23	179.68	7,283.98	-419.09	-121.86	418.40	0.00	0.00	0.00
8,400.00	90.23	179.68	7,283.58	-519.08	-121.29	518.40	0.00	0.00	0.00
8,500.00	90.23	179.68	7,283.19	-619.08	-120.73	618.40	0.00	0.00	0.00
8,600.00	90.23	179.68	7,282.80	-719.08	-120.16	718.40	0.00	0.00	0.00
8,700.00	90.23	179.68	7,282.40	-819.08	-119.60	818.40	0.00	0.00	0.00
8,800.00	90.23	179.68	7,282.01	-919.07	-119.04	918.40	0.00	0.00	0.00
8,900.00	90.23	179.68	7,281.62	-1,019.07	-118.47	1,018.39	0.00	0.00	0.00
9,000.00	90.23	179.68	7,281.22	-1,119.07	-117.91	1,118.39	0.00	0.00	0.00
9,100.00	90.23	179.68	7,280.83	-1,219.07	-117.34	1,218.39	0.00	0.00	0.00
9,200.00	90.23	179.68	7,280.44	-1,319.06	-116.78	1,318.39	0.00	0.00	0.00
9,300.00	90.23	179.68	7,280.04	-1,419.06	-116.21	1,418.39	0.00	0.00	0.00
9,400.00	90.23	179.68	7,279.65	-1,519.06	-115.65	1,518.39	0.00	0.00	0.00
9,500.00	90.23	179.68	7,279.26	-1,619.06	-115.09	1,618.39	0.00	0.00	0.00
9,600.00	90.23	179.68	7,278.86	-1,719.06	-114.52	1,718.39	0.00	0.00	0.00
9,700.00	90.23	179.68	7,278.47	-1,819.05	-113.96	1,818.39	0.00	0.00	0.00
9,800.00	90.23	179.68	7,278.08	-1,919.05	-113.39	1,918.39	0.00	0.00	0.00
9,900.00	90.23	179.68	7,277.68	-2,019.05	-112.83	2,018.39	0.00	0.00	0.00
10,000.00	90.23	179.68	7,277.29	-2,119.05	-112.26	2,118.39	0.00	0.00	0.00
10,100.00	90.23	179.68	7,276.90	-2,219.04	-111.70	2,218.39	0.00	0.00	0.00
10,200.00	90.23	179.68	7,276.51	-2,319.04	-111.13	2,318.38	0.00	0.00	0.00
10,300.00	90.23	179.68	7,276.11	-2,419.04	-110.57	2,418.38	0.00	0.00	0.00
10,400.00	90.23	179.68	7,275.72	-2,519.04	-110.01	2,518.38	0.00	0.00	0.00
10,500.00	90.23	179.68	7,275.33	-2,619.03	-109.44	2,618.38	0.00	0.00	0.00
10,600.00	90.23	179.68	7,274.93	-2,719.03	-108.88	2,718.38	0.00	0.00	0.00
10,700.00	90.23	179.68	7,274.54	-2,819.03	-108.31	2,818.38	0.00	0.00	0.00
10,800.00	90.23	179.68	7,274.15	-2,919.03	-107.75	2,918.38	0.00	0.00	0.00
10,900.00	90.23	179.68	7,273.75	-3,019.02	-107.18	3,018.38	0.00	0.00	0.00
11,000.00	90.23	179.68	7,273.36	-3,119.02	-106.62	3,118.38	0.00	0.00	0.00
11,100.00	90.23	179.68	7,272.97	-3,219.02	-106.06	3,218.38	0.00	0.00	0.00
11,200.00	90.23	179.68	7,272.57	-3,319.02	-105.49	3,318.38	0.00	0.00	0.00
11,300.00	90.23	179.68	7,272.18	-3,419.02	-104.93	3,418.38	0.00	0.00	0.00
11,400.00	90.23	179.68	7,271.79	-3,519.01	-104.36	3,518.38	0.00	0.00	0.00
11,500.00	90.23	179.68	7,271.39	-3,619.01	-103.80	3,618.37	0.00	0.00	0.00
11,600.00	90.23	179.68	7,271.00	-3,719.01	-103.23	3,718.37	0.00	0.00	0.00
11,700.00	90.23	179.68	7,270.61	-3,819.01	-102.67	3,818.37	0.00	0.00	0.00
11,800.00	90.23	179.68	7,270.21	-3,919.00	-102.11	3,918.37	0.00	0.00	0.00
11,900.00	90.23	179.68	7,269.82	-4,019.00	-101.54	4,018.37	0.00	0.00	0.00
12,000.00	90.23	179.68	7,269.43	-4,119.00	-100.98	4,118.37	0.00	0.00	0.00
12,100.00	90.23	179.68	7,269.03	-4,219.00	-100.41	4,218.37	0.00	0.00	0.00
12,200.00	90.23	179.68	7,268.64	-4,318.99	-99.85	4,318.37	0.00	0.00	0.00
12,300.00	90.23	179.68	7,268.25	-4,418.99	-99.28	4,418.37	0.00	0.00	0.00
12,400.00	90.23	179.68	7,267.85	-4,518.99	-98.72	4,518.37	0.00	0.00	0.00
12,500.00	90.23	179.68	7,267.46	-4,618.99	-98.15	4,618.37	0.00	0.00	0.00
12,600.00	90.23	179.68	7,267.07	-4,718.98	-97.59	4,718.37	0.00	0.00	0.00
12,700.00	90.23	179.68	7,266.67	-4,818.98	-97.03	4,818.37	0.00	0.00	0.00
12,800.00	90.23	179.68	7,266.28	-4,918.98	-96.46	4,918.36	0.00	0.00	0.00
12,900.00	90.23	179.68	7,265.89	-5,018.98	-95.90	5,018.36	0.00	0.00	0.00
13,000.00	90.23	179.68	7,265.50	-5,118.98	-95.33	5,118.36	0.00	0.00	0.00
13,100.00	90.23	179.68	7,265.10	-5,218.97	-94.77	5,218.36	0.00	0.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well CASTLE PINES 19-12HZ
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 19-12HZ	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	90.23	179.68	7,264.71	-5,318.97	-94.20	5,318.36	0.00	0.00	0.00
13,300.00	90.23	179.68	7,264.32	-5,418.97	-93.64	5,418.36	0.00	0.00	0.00
13,400.00	90.23	179.68	7,263.92	-5,518.97	-93.08	5,518.36	0.00	0.00	0.00
13,500.00	90.23	179.68	7,263.53	-5,618.96	-92.51	5,618.36	0.00	0.00	0.00
13,600.00	90.23	179.68	7,263.14	-5,718.96	-91.95	5,718.36	0.00	0.00	0.00
13,700.00	90.23	179.68	7,262.74	-5,818.96	-91.38	5,818.36	0.00	0.00	0.00
13,800.00	90.23	179.68	7,262.35	-5,918.96	-90.82	5,918.36	0.00	0.00	0.00
13,900.00	90.23	179.68	7,261.96	-6,018.95	-90.25	6,018.36	0.00	0.00	0.00
14,000.00	90.23	179.68	7,261.56	-6,118.95	-89.69	6,118.36	0.00	0.00	0.00
14,100.00	90.23	179.68	7,261.17	-6,218.95	-89.13	6,218.35	0.00	0.00	0.00
14,200.00	90.23	179.68	7,260.78	-6,318.95	-88.56	6,318.35	0.00	0.00	0.00
14,300.00	90.23	179.68	7,260.38	-6,418.94	-88.00	6,418.35	0.00	0.00	0.00
14,400.00	90.23	179.68	7,259.99	-6,518.94	-87.43	6,518.35	0.00	0.00	0.00
14,500.00	90.23	179.68	7,259.60	-6,618.94	-86.87	6,618.35	0.00	0.00	0.00
14,600.00	90.23	179.68	7,259.20	-6,718.94	-86.30	6,718.35	0.00	0.00	0.00
14,700.00	90.23	179.68	7,258.81	-6,818.93	-85.74	6,818.35	0.00	0.00	0.00
14,800.00	90.23	179.68	7,258.42	-6,918.93	-85.18	6,918.35	0.00	0.00	0.00
14,900.00	90.23	179.68	7,258.02	-7,018.93	-84.61	7,018.35	0.00	0.00	0.00
15,000.00	90.23	179.68	7,257.63	-7,118.93	-84.05	7,118.35	0.00	0.00	0.00
15,100.00	90.23	179.68	7,257.24	-7,218.93	-83.48	7,218.35	0.00	0.00	0.00
15,200.00	90.23	179.68	7,256.84	-7,318.92	-82.92	7,318.35	0.00	0.00	0.00
15,300.00	90.23	179.68	7,256.45	-7,418.92	-82.35	7,418.35	0.00	0.00	0.00
15,400.00	90.23	179.68	7,256.06	-7,518.92	-81.79	7,518.34	0.00	0.00	0.00
15,500.00	90.23	179.68	7,255.66	-7,618.92	-81.22	7,618.34	0.00	0.00	0.00
15,600.00	90.23	179.68	7,255.27	-7,718.91	-80.66	7,718.34	0.00	0.00	0.00
15,700.00	90.23	179.68	7,254.88	-7,818.91	-80.10	7,818.34	0.00	0.00	0.00
15,800.00	90.23	179.68	7,254.48	-7,918.91	-79.53	7,918.34	0.00	0.00	0.00
15,900.00	90.23	179.68	7,254.09	-8,018.91	-78.97	8,018.34	0.00	0.00	0.00
16,000.00	90.23	179.68	7,253.70	-8,118.90	-78.40	8,118.34	0.00	0.00	0.00
16,100.00	90.23	179.68	7,253.31	-8,218.90	-77.84	8,218.34	0.00	0.00	0.00
16,200.00	90.23	179.68	7,252.91	-8,318.90	-77.27	8,318.34	0.00	0.00	0.00
16,300.00	90.23	179.68	7,252.52	-8,418.90	-76.71	8,418.34	0.00	0.00	0.00
16,400.00	90.23	179.68	7,252.13	-8,518.89	-76.15	8,518.34	0.00	0.00	0.00
16,500.00	90.23	179.68	7,251.73	-8,618.89	-75.58	8,618.34	0.00	0.00	0.00
16,600.00	90.23	179.68	7,251.34	-8,718.89	-75.02	8,718.33	0.00	0.00	0.00
16,700.00	90.23	179.68	7,250.95	-8,818.89	-74.45	8,818.33	0.00	0.00	0.00
16,800.00	90.23	179.68	7,250.55	-8,918.89	-73.89	8,918.33	0.00	0.00	0.00
16,900.00	90.23	179.68	7,250.16	-9,018.88	-73.32	9,018.33	0.00	0.00	0.00
17,000.00	90.23	179.68	7,249.77	-9,118.88	-72.76	9,118.33	0.00	0.00	0.00
17,100.00	90.23	179.68	7,249.37	-9,218.88	-72.20	9,218.33	0.00	0.00	0.00
17,200.00	90.23	179.68	7,248.98	-9,318.88	-71.63	9,318.33	0.00	0.00	0.00
17,300.00	90.23	179.68	7,248.59	-9,418.87	-71.07	9,418.33	0.00	0.00	0.00
17,400.00	90.23	179.68	7,248.19	-9,518.87	-70.50	9,518.33	0.00	0.00	0.00
17,500.00	90.23	179.68	7,247.80	-9,618.87	-69.94	9,618.33	0.00	0.00	0.00
17,600.00	90.23	179.68	7,247.41	-9,718.87	-69.37	9,718.33	0.00	0.00	0.00
17,700.00	90.23	179.68	7,247.01	-9,818.86	-68.81	9,818.33	0.00	0.00	0.00
17,800.00	90.23	179.68	7,246.62	-9,918.86	-68.25	9,918.33	0.00	0.00	0.00
17,900.00	90.23	179.68	7,246.23	-10,018.86	-67.68	10,018.32	0.00	0.00	0.00
18,000.00	90.23	179.68	7,245.83	-10,118.86	-67.12	10,118.32	0.00	0.00	0.00
18,100.00	90.23	179.68	7,245.44	-10,218.85	-66.55	10,218.32	0.00	0.00	0.00
18,200.00	90.23	179.68	7,245.05	-10,318.85	-65.99	10,318.32	0.00	0.00	0.00
18,300.00	90.23	179.68	7,244.65	-10,418.85	-65.42	10,418.32	0.00	0.00	0.00
18,400.00	90.23	179.68	7,244.26	-10,518.85	-64.86	10,518.32	0.00	0.00	0.00
18,500.00	90.23	179.68	7,243.87	-10,618.85	-64.29	10,618.32	0.00	0.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well CASTLE PINES 19-12HZ
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 19-12HZ	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)
18,600.00	90.23	179.68	7,243.47	-10,718.84	-63.73	10,718.32	0.00	0.00	0.00
18,700.00	90.23	179.68	7,243.08	-10,818.84	-63.17	10,818.32	0.00	0.00	0.00
18,720.62	90.23	179.68	7,243.00	-10,839.46	-63.05	10,838.94	0.00	0.00	0.00
TD Well @ 18720.62ft									

Casing Points				
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,518.17	1,500.00	9 5/8" Csg	9-5/8	13-1/2
7,786.62	7,286.00	Top of Production	5-1/2	7-7/8

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,236.62	1,226.00	Fox Hills			
4,088.25	4,002.00	Parkman			
4,486.97	4,398.00	Sussex			
7,185.10	7,050.00	Sharon Springs			
7,278.47	7,115.00	Niobrara			
7,393.00	7,182.00	Nio B			
7,552.58	7,249.00	Nio C			

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
250.00	250.00	0.00	0.00	Begin Nudge @ 250.00ft
1,136.67	1,128.73	101.19	-16.03	End Nudge @ 1136.67ft
3,936.67	3,853.63	737.40	-116.79	Begin Drop @ 3936.67ft
4,601.67	4,512.67	813.29	-128.81	End Drop @ 4601.67ft
6,658.80	6,569.80	813.29	-128.81	KOP @ 6658.80ft :: DLS = 8°/100'
7,786.62	7,286.00	94.29	-124.75	End Build @ 7786.62ft
18,720.62	7,243.00	-10,839.46	-63.05	TD Well @ 18720.62ft