

US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N

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

CASTLE PINES 19-8HZ

Plan A

Plan: Permit Rev-2

SHL Lat/Long: 40.117679/-104.814291

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 19-8HZ
Wellbore: Plan A
Design: Permit Rev-2

US ROCKIES WATTENBERG PLANNING

CASING DETAILS

TVD	MD	Size
1500.00	1521.65	9-5/8
7280.00	7819.35	5-1/2

WELL DETAILS: CASTLE PINES 19-8HZ

GL = 4876'

RKB = 17' @ 4893.00usft (Drilling Rig)

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	250.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	
3	1310.00	15.90	321.20	1296.45	113.89	-91.57	1.50	321.20	-114.40	
4	4150.00	15.90	321.20	4027.79	720.25	-579.10	0.00	0.00	-723.47	
5	4945.00	0.00	0.00	4812.62	805.67	-647.77	2.00	180.00	-809.27	
6	6696.18	0.00	0.00	6563.81	805.67	-647.77	0.00	0.00	-809.27	
7	7819.35	89.85	179.37	7280.00	91.35	-639.95	8.00	179.37	-94.92	
8	17402.70	89.85	179.37	7304.55	-9491.40	-535.00	0.00	0.00	9488.26	CASTLE PINES 19-8HZ_tgt
9	17593.75	89.85	182.24	7305.04	-9682.42	-537.69	1.50	90.00	9679.26	
10	18751.84	89.85	182.24	7308.00	-10839.61	-582.92	0.00	0.00	10836.19	CASTLE PINES 19-8HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
CASTLE PINES 19-8HZ_SHL	0.00	0.00	0.00	40.117679	-104.814291
CASTLE PINES 19-8HZ_BHL	7308.00	-10839.61	-582.92	40.087912	-104.816375

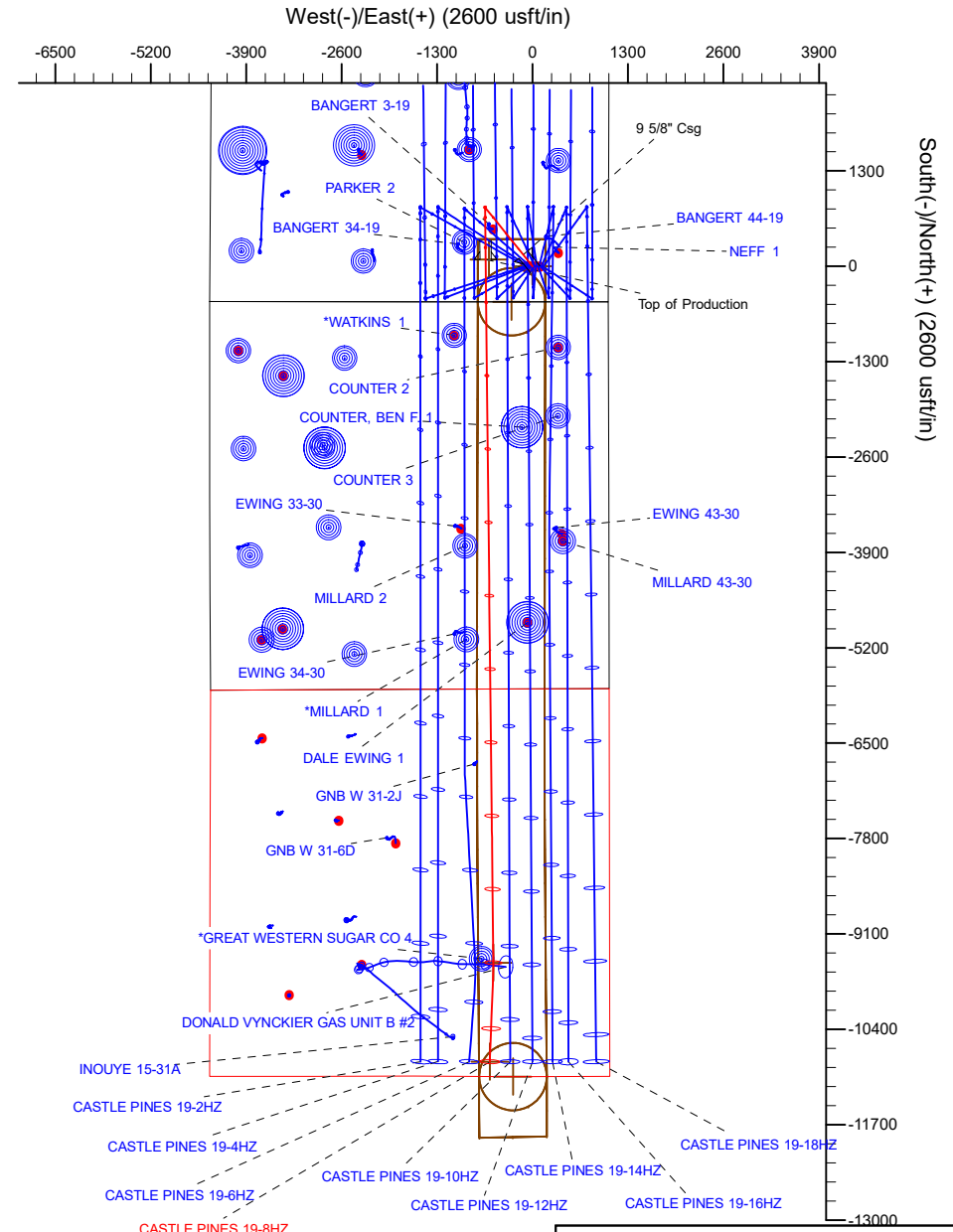
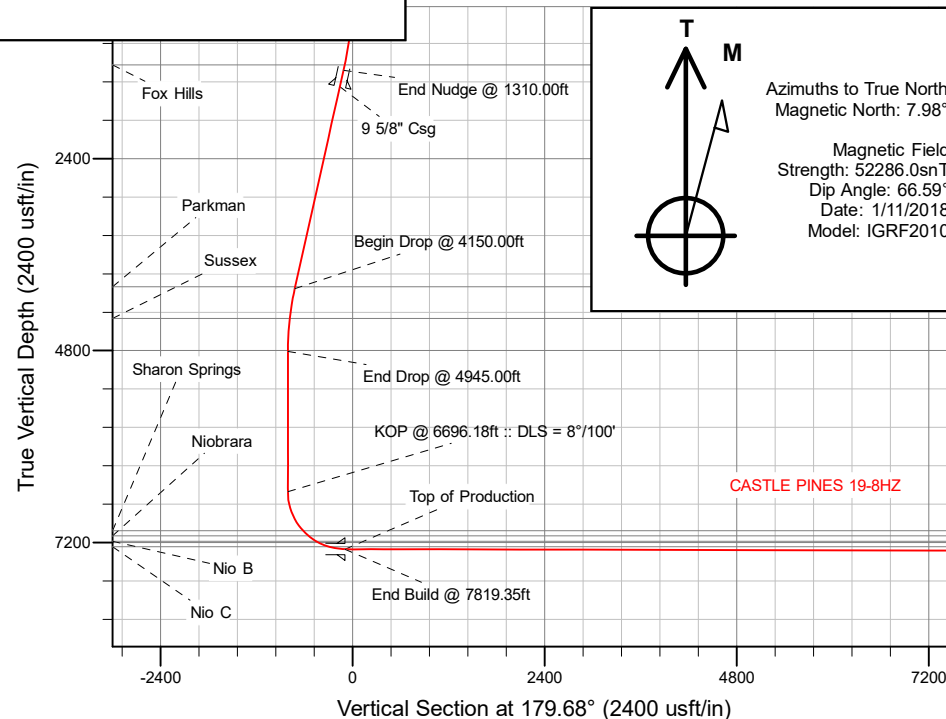
FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1226.00	1236.94	Fox Hills
4002.00	4123.18	Parkman
4398.00	4528.91	Sussex
7050.00	7230.61	Sharon Springs
7115.00	7325.17	Niobrara
7182.00	7442.09	Nio B
7249.00	7609.67	Nio C

SHL
484' FSL
1033' FEL

HEEL
578' FSL
1674' FEL

TOE
203' FSL
1635' FEL



Plan: Permit Rev-2 (CASTLE PINES 19-8HZ/Plan A)

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

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well CASTLE PINES 19-8HZ
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 19-8HZ	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 19-8HZ					
Well Position	+N-S	-1.09 usft	Northing:	14,569,639.80 usft	Latitude:	40.117679
	+E-W	104.84 usft	Easting:	1,692,335.27 usft	Longitude:	-104.814291
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	52,285.99409796

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 (°)	
	0.00	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	18,751.84	Permit Rev-2 (Plan A)	APC_ISCWSA REV 2 MWD+II Fixed:v2:Rockies, crustal dec +	

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Well:	CASTLE PINES 19-8HZ	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	
1,310.00	15.90	321.20	1,296.45	113.89	-91.57	1.50	1.50	0.00	321.20	
4,150.00	15.90	321.20	4,027.79	720.25	-579.10	0.00	0.00	0.00	0.00	
4,945.00	0.00	0.00	4,812.62	805.67	-647.77	2.00	-2.00	4.88	180.00	
6,696.18	0.00	0.00	6,563.81	805.67	-647.77	0.00	0.00	0.00	0.00	
7,819.35	89.85	179.37	7,280.00	91.35	-639.95	8.00	8.00	15.97	179.37	
17,402.70	89.85	179.37	7,304.55	-9,491.40	-535.00	0.00	0.00	0.00	0.00	CASTLE PINES 19-8I
17,593.75	89.85	182.24	7,305.04	-9,682.42	-537.69	1.50	0.00	1.50	90.00	
18,751.84	89.85	182.24	7,308.00	-10,839.61	-582.92	0.00	0.00	0.00	0.00	CASTLE PINES 19-8I

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 19-8HZ	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	321.20	300.00	0.26	-0.21	-0.26	1.50	1.50	0.00
400.00	2.25	321.20	399.96	2.30	-1.85	-2.31	1.50	1.50	0.00
500.00	3.75	321.20	499.82	6.37	-5.12	-6.40	1.50	1.50	0.00
600.00	5.25	321.20	599.51	12.49	-10.04	-12.54	1.50	1.50	0.00
700.00	6.75	321.20	698.96	20.63	-16.59	-20.73	1.50	1.50	0.00
800.00	8.25	321.20	798.10	30.81	-24.77	-30.94	1.50	1.50	0.00
900.00	9.75	321.20	896.87	43.00	-34.57	-43.19	1.50	1.50	0.00
1,000.00	11.25	321.20	995.19	57.20	-45.99	-57.46	1.50	1.50	0.00
1,100.00	12.75	321.20	1,093.00	73.40	-59.02	-73.73	1.50	1.50	0.00
1,200.00	14.25	321.20	1,190.24	91.60	-73.64	-92.00	1.50	1.50	0.00
1,236.95	14.80	321.20	1,226.00	98.82	-79.45	-99.26	1.50	1.50	0.00
Fox Hills									
1,300.00	15.75	321.20	1,286.83	111.77	-89.86	-112.27	1.50	1.50	0.00
1,310.00	15.90	321.20	1,296.45	113.89	-91.57	-114.40	1.50	1.50	0.00
End Nudge @ 1310.00ft									
1,400.00	15.90	321.20	1,383.00	133.11	-107.02	-133.70	0.00	0.00	0.00
1,500.00	15.90	321.20	1,479.18	154.46	-124.19	-155.15	0.00	0.00	0.00
1,521.65	15.90	321.20	1,500.00	159.08	-127.90	-159.79	0.00	0.00	0.00
9 5/8" Csg									
1,600.00	15.90	321.20	1,575.35	175.81	-141.35	-176.59	0.00	0.00	0.00
1,700.00	15.90	321.20	1,671.53	197.16	-158.52	-198.04	0.00	0.00	0.00
1,800.00	15.90	321.20	1,767.70	218.51	-175.69	-219.49	0.00	0.00	0.00
1,900.00	15.90	321.20	1,863.87	239.86	-192.85	-240.93	0.00	0.00	0.00
2,000.00	15.90	321.20	1,960.05	261.21	-210.02	-262.38	0.00	0.00	0.00
2,100.00	15.90	321.20	2,056.22	282.56	-227.18	-283.83	0.00	0.00	0.00
2,200.00	15.90	321.20	2,152.40	303.91	-244.35	-305.27	0.00	0.00	0.00
2,300.00	15.90	321.20	2,248.57	325.26	-261.52	-326.72	0.00	0.00	0.00
2,400.00	15.90	321.20	2,344.75	346.61	-278.68	-348.16	0.00	0.00	0.00
2,500.00	15.90	321.20	2,440.92	367.96	-295.85	-369.61	0.00	0.00	0.00
2,600.00	15.90	321.20	2,537.09	389.31	-313.02	-391.06	0.00	0.00	0.00
2,700.00	15.90	321.20	2,633.27	410.66	-330.18	-412.50	0.00	0.00	0.00
2,800.00	15.90	321.20	2,729.44	432.02	-347.35	-433.95	0.00	0.00	0.00
2,900.00	15.90	321.20	2,825.62	453.37	-364.52	-455.40	0.00	0.00	0.00
3,000.00	15.90	321.20	2,921.79	474.72	-381.68	-476.84	0.00	0.00	0.00
3,100.00	15.90	321.20	3,017.96	496.07	-398.85	-498.29	0.00	0.00	0.00
3,200.00	15.90	321.20	3,114.14	517.42	-416.02	-519.73	0.00	0.00	0.00
3,300.00	15.90	321.20	3,210.31	538.77	-433.18	-541.18	0.00	0.00	0.00
3,400.00	15.90	321.20	3,306.49	560.12	-450.35	-562.63	0.00	0.00	0.00
3,500.00	15.90	321.20	3,402.66	581.47	-467.51	-584.07	0.00	0.00	0.00
3,600.00	15.90	321.20	3,498.83	602.82	-484.68	-605.52	0.00	0.00	0.00
3,700.00	15.90	321.20	3,595.01	624.17	-501.85	-626.96	0.00	0.00	0.00
3,800.00	15.90	321.20	3,691.18	645.52	-519.01	-648.41	0.00	0.00	0.00
3,900.00	15.90	321.20	3,787.36	666.87	-536.18	-669.86	0.00	0.00	0.00
4,000.00	15.90	321.20	3,883.53	688.22	-553.35	-691.30	0.00	0.00	0.00
4,100.00	15.90	321.20	3,979.71	709.57	-570.51	-712.75	0.00	0.00	0.00
4,123.18	15.90	321.20	4,002.00	714.52	-574.49	-717.72	0.00	0.00	0.00
Parkman									
4,150.00	15.90	321.20	4,027.79	720.25	-579.10	-723.47	0.00	0.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well CASTLE PINES 19-8HZ
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 19-8HZ	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 @ 4150.00ft									
4,200.00	14.90	321.20	4,076.00	730.60	-587.42	-733.87	2.00	-2.00	0.00
4,300.00	12.90	321.20	4,173.06	749.32	-602.47	-752.67	2.00	-2.00	0.00
4,400.00	10.90	321.20	4,270.91	765.39	-615.39	-768.81	2.00	-2.00	0.00
4,500.00	8.90	321.20	4,369.42	778.79	-626.16	-782.27	2.00	-2.00	0.00
4,528.91	8.32	321.20	4,398.00	782.16	-628.87	-785.66	2.00	-2.00	0.00
Sussex									
4,600.00	6.90	321.20	4,468.46	789.50	-634.77	-793.03	2.00	-2.00	0.00
4,700.00	4.90	321.20	4,567.93	797.51	-641.21	-801.08	2.00	-2.00	0.00
4,800.00	2.90	321.20	4,667.69	802.81	-645.47	-806.40	2.00	-2.00	0.00
4,900.00	0.90	321.20	4,767.63	805.39	-647.55	-809.00	2.00	-2.00	0.00
4,945.00	0.00	0.00	4,812.62	805.67	-647.77	-809.27	2.00	-2.00	86.23
End Drop @ 4945.00ft									
5,000.00	0.00	0.00	4,867.63	805.67	-647.77	-809.27	0.00	0.00	0.00
5,100.00	0.00	0.00	4,967.63	805.67	-647.77	-809.27	0.00	0.00	0.00
5,200.00	0.00	0.00	5,067.63	805.67	-647.77	-809.27	0.00	0.00	0.00
5,300.00	0.00	0.00	5,167.63	805.67	-647.77	-809.27	0.00	0.00	0.00
5,400.00	0.00	0.00	5,267.63	805.67	-647.77	-809.27	0.00	0.00	0.00
5,500.00	0.00	0.00	5,367.63	805.67	-647.77	-809.27	0.00	0.00	0.00
5,600.00	0.00	0.00	5,467.63	805.67	-647.77	-809.27	0.00	0.00	0.00
5,700.00	0.00	0.00	5,567.63	805.67	-647.77	-809.27	0.00	0.00	0.00
5,800.00	0.00	0.00	5,667.63	805.67	-647.77	-809.27	0.00	0.00	0.00
5,900.00	0.00	0.00	5,767.63	805.67	-647.77	-809.27	0.00	0.00	0.00
6,000.00	0.00	0.00	5,867.63	805.67	-647.77	-809.27	0.00	0.00	0.00
6,100.00	0.00	0.00	5,967.63	805.67	-647.77	-809.27	0.00	0.00	0.00
6,200.00	0.00	0.00	6,067.63	805.67	-647.77	-809.27	0.00	0.00	0.00
6,300.00	0.00	0.00	6,167.63	805.67	-647.77	-809.27	0.00	0.00	0.00
6,400.00	0.00	0.00	6,267.63	805.67	-647.77	-809.27	0.00	0.00	0.00
6,500.00	0.00	0.00	6,367.63	805.67	-647.77	-809.27	0.00	0.00	0.00
6,600.00	0.00	0.00	6,467.63	805.67	-647.77	-809.27	0.00	0.00	0.00
6,696.18	0.00	0.00	6,563.81	805.67	-647.77	-809.27	0.00	0.00	0.00
KOP @ 6696.18ft :: DLS = 8°/100'									
6,700.00	0.31	179.37	6,567.63	805.66	-647.77	-809.26	8.00	8.00	4,695.55
6,800.00	8.31	179.37	6,667.26	798.16	-647.69	-801.76	8.00	8.00	0.00
6,900.00	16.31	179.37	6,764.89	776.86	-647.46	-780.47	8.00	8.00	0.00
7,000.00	24.31	179.37	6,858.60	742.19	-647.08	-745.79	8.00	8.00	0.00
7,100.00	32.31	179.37	6,946.57	694.81	-646.56	-698.41	8.00	8.00	0.00
7,200.00	40.31	179.37	7,027.09	635.66	-645.91	-639.25	8.00	8.00	0.00
7,230.61	42.75	179.37	7,050.00	615.37	-645.69	-618.96	8.00	8.00	0.00
Sharon Springs									
7,300.00	48.31	179.37	7,098.59	565.87	-645.15	-569.46	8.00	8.00	0.00
7,325.17	50.32	179.37	7,115.00	546.79	-644.94	-550.38	8.00	8.00	0.00
Niobrara									
7,400.00	56.31	179.37	7,159.69	486.81	-644.28	-490.40	8.00	8.00	0.00
7,442.09	59.67	179.37	7,182.00	451.12	-643.89	-454.71	8.00	8.00	0.00
Nio B									
7,500.00	64.31	179.37	7,209.19	400.02	-643.33	-403.60	8.00	8.00	0.00
7,600.00	72.31	179.37	7,246.12	307.18	-642.31	-310.76	8.00	8.00	0.00
7,609.67	73.08	179.37	7,249.00	297.95	-642.21	-301.53	8.00	8.00	0.00
Nio C									
7,700.00	80.31	179.37	7,269.78	210.11	-641.25	-213.69	8.00	8.00	0.00
7,800.00	88.31	179.37	7,279.69	110.69	-640.16	-114.26	8.00	8.00	0.00
7,819.35	89.85	179.37	7,280.00	91.34	-639.95	-94.92	8.00	8.00	0.00

Corporate Planning Report

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Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4893.00usft (Drilling Rig)
Site:	2N-66W-19 CASTLE PINES 16-19HZ PAD	North Reference:	True
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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)
End Build @ 7819.35ft - Top of Production									
7,900.00	89.85	179.37	7,280.21	10.70	-639.07	-14.27	0.00	0.00	0.00
8,000.00	89.85	179.37	7,280.47	-89.30	-637.97	85.73	0.00	0.00	0.00
8,100.00	89.85	179.37	7,280.72	-189.29	-636.88	185.73	0.00	0.00	0.00
8,200.00	89.85	179.37	7,280.98	-289.28	-635.78	285.73	0.00	0.00	0.00
8,300.00	89.85	179.37	7,281.23	-389.28	-634.69	385.73	0.00	0.00	0.00
8,400.00	89.85	179.37	7,281.49	-489.27	-633.59	485.72	0.00	0.00	0.00
8,500.00	89.85	179.37	7,281.75	-589.26	-632.50	585.72	0.00	0.00	0.00
8,600.00	89.85	179.37	7,282.00	-689.26	-631.40	685.72	0.00	0.00	0.00
8,700.00	89.85	179.37	7,282.26	-789.25	-630.31	785.72	0.00	0.00	0.00
8,800.00	89.85	179.37	7,282.51	-889.25	-629.21	885.72	0.00	0.00	0.00
8,900.00	89.85	179.37	7,282.77	-989.24	-628.12	985.72	0.00	0.00	0.00
9,000.00	89.85	179.37	7,283.03	-1,089.23	-627.02	1,085.71	0.00	0.00	0.00
9,100.00	89.85	179.37	7,283.28	-1,189.23	-625.92	1,185.71	0.00	0.00	0.00
9,200.00	89.85	179.37	7,283.54	-1,289.22	-624.83	1,285.71	0.00	0.00	0.00
9,300.00	89.85	179.37	7,283.80	-1,389.21	-623.73	1,385.71	0.00	0.00	0.00
9,400.00	89.85	179.37	7,284.05	-1,489.21	-622.64	1,485.71	0.00	0.00	0.00
9,500.00	89.85	179.37	7,284.31	-1,589.20	-621.54	1,585.71	0.00	0.00	0.00
9,600.00	89.85	179.37	7,284.56	-1,689.19	-620.45	1,685.70	0.00	0.00	0.00
9,700.00	89.85	179.37	7,284.82	-1,789.19	-619.35	1,785.70	0.00	0.00	0.00
9,800.00	89.85	179.37	7,285.08	-1,889.18	-618.26	1,885.70	0.00	0.00	0.00
9,900.00	89.85	179.37	7,285.33	-1,989.18	-617.16	1,985.70	0.00	0.00	0.00
10,000.00	89.85	179.37	7,285.59	-2,089.17	-616.07	2,085.70	0.00	0.00	0.00
10,100.00	89.85	179.37	7,285.84	-2,189.16	-614.97	2,185.69	0.00	0.00	0.00
10,200.00	89.85	179.37	7,286.10	-2,289.16	-613.88	2,285.69	0.00	0.00	0.00
10,300.00	89.85	179.37	7,286.36	-2,389.15	-612.78	2,385.69	0.00	0.00	0.00
10,400.00	89.85	179.37	7,286.61	-2,489.14	-611.69	2,485.69	0.00	0.00	0.00
10,500.00	89.85	179.37	7,286.87	-2,589.14	-610.59	2,585.69	0.00	0.00	0.00
10,600.00	89.85	179.37	7,287.13	-2,689.13	-609.50	2,685.69	0.00	0.00	0.00
10,700.00	89.85	179.37	7,287.38	-2,789.13	-608.40	2,785.68	0.00	0.00	0.00
10,800.00	89.85	179.37	7,287.64	-2,889.12	-607.31	2,885.68	0.00	0.00	0.00
10,900.00	89.85	179.37	7,287.89	-2,989.11	-606.21	2,985.68	0.00	0.00	0.00
11,000.00	89.85	179.37	7,288.15	-3,089.11	-605.12	3,085.68	0.00	0.00	0.00
11,100.00	89.85	179.37	7,288.41	-3,189.10	-604.02	3,185.68	0.00	0.00	0.00
11,200.00	89.85	179.37	7,288.66	-3,289.09	-602.93	3,285.68	0.00	0.00	0.00
11,300.00	89.85	179.37	7,288.92	-3,389.09	-601.83	3,385.67	0.00	0.00	0.00
11,400.00	89.85	179.37	7,289.17	-3,489.08	-600.74	3,485.67	0.00	0.00	0.00
11,500.00	89.85	179.37	7,289.43	-3,589.07	-599.64	3,585.67	0.00	0.00	0.00
11,600.00	89.85	179.37	7,289.69	-3,689.07	-598.55	3,685.67	0.00	0.00	0.00
11,700.00	89.85	179.37	7,289.94	-3,789.06	-597.45	3,785.67	0.00	0.00	0.00
11,800.00	89.85	179.37	7,290.20	-3,889.06	-596.36	3,885.66	0.00	0.00	0.00
11,900.00	89.85	179.37	7,290.46	-3,989.05	-595.26	3,985.66	0.00	0.00	0.00
12,000.00	89.85	179.37	7,290.71	-4,089.04	-594.17	4,085.66	0.00	0.00	0.00
12,100.00	89.85	179.37	7,290.97	-4,189.04	-593.07	4,185.66	0.00	0.00	0.00
12,200.00	89.85	179.37	7,291.22	-4,289.03	-591.98	4,285.66	0.00	0.00	0.00
12,300.00	89.85	179.37	7,291.48	-4,389.02	-590.88	4,385.66	0.00	0.00	0.00
12,400.00	89.85	179.37	7,291.74	-4,489.02	-589.79	4,485.65	0.00	0.00	0.00
12,500.00	89.85	179.37	7,291.99	-4,589.01	-588.69	4,585.65	0.00	0.00	0.00
12,600.00	89.85	179.37	7,292.25	-4,689.01	-587.60	4,685.65	0.00	0.00	0.00
12,700.00	89.85	179.37	7,292.50	-4,789.00	-586.50	4,785.65	0.00	0.00	0.00
12,800.00	89.85	179.37	7,292.76	-4,888.99	-585.41	4,885.65	0.00	0.00	0.00
12,900.00	89.85	179.37	7,293.02	-4,988.99	-584.31	4,985.65	0.00	0.00	0.00
13,000.00	89.85	179.37	7,293.27	-5,088.98	-583.22	5,085.64	0.00	0.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well CASTLE PINES 19-8HZ
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 19-8HZ	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)
13,100.00	89.85	179.37	7,293.53	-5,188.97	-582.12	5,185.64	0.00	0.00	0.00
13,200.00	89.85	179.37	7,293.79	-5,288.97	-581.02	5,285.64	0.00	0.00	0.00
13,300.00	89.85	179.37	7,294.04	-5,388.96	-579.93	5,385.64	0.00	0.00	0.00
13,400.00	89.85	179.37	7,294.30	-5,488.95	-578.83	5,485.64	0.00	0.00	0.00
13,500.00	89.85	179.37	7,294.55	-5,588.95	-577.74	5,585.63	0.00	0.00	0.00
13,600.00	89.85	179.37	7,294.81	-5,688.94	-576.64	5,685.63	0.00	0.00	0.00
13,700.00	89.85	179.37	7,295.07	-5,788.94	-575.55	5,785.63	0.00	0.00	0.00
13,800.00	89.85	179.37	7,295.32	-5,888.93	-574.45	5,885.63	0.00	0.00	0.00
13,900.00	89.85	179.37	7,295.58	-5,988.92	-573.36	5,985.63	0.00	0.00	0.00
14,000.00	89.85	179.37	7,295.83	-6,088.92	-572.26	6,085.63	0.00	0.00	0.00
14,100.00	89.85	179.37	7,296.09	-6,188.91	-571.17	6,185.62	0.00	0.00	0.00
14,200.00	89.85	179.37	7,296.35	-6,288.90	-570.07	6,285.62	0.00	0.00	0.00
14,300.00	89.85	179.37	7,296.60	-6,388.90	-568.98	6,385.62	0.00	0.00	0.00
14,400.00	89.85	179.37	7,296.86	-6,488.89	-567.88	6,485.62	0.00	0.00	0.00
14,500.00	89.85	179.37	7,297.12	-6,588.89	-566.79	6,585.62	0.00	0.00	0.00
14,600.00	89.85	179.37	7,297.37	-6,688.88	-565.69	6,685.62	0.00	0.00	0.00
14,700.00	89.85	179.37	7,297.63	-6,788.87	-564.60	6,785.61	0.00	0.00	0.00
14,800.00	89.85	179.37	7,297.88	-6,888.87	-563.50	6,885.61	0.00	0.00	0.00
14,900.00	89.85	179.37	7,298.14	-6,988.86	-562.41	6,985.61	0.00	0.00	0.00
15,000.00	89.85	179.37	7,298.40	-7,088.85	-561.31	7,085.61	0.00	0.00	0.00
15,100.00	89.85	179.37	7,298.65	-7,188.85	-560.22	7,185.61	0.00	0.00	0.00
15,200.00	89.85	179.37	7,298.91	-7,288.84	-559.12	7,285.60	0.00	0.00	0.00
15,300.00	89.85	179.37	7,299.16	-7,388.83	-558.03	7,385.60	0.00	0.00	0.00
15,400.00	89.85	179.37	7,299.42	-7,488.83	-556.93	7,485.60	0.00	0.00	0.00
15,500.00	89.85	179.37	7,299.68	-7,588.82	-555.84	7,585.60	0.00	0.00	0.00
15,600.00	89.85	179.37	7,299.93	-7,688.82	-554.74	7,685.60	0.00	0.00	0.00
15,700.00	89.85	179.37	7,300.19	-7,788.81	-553.65	7,785.60	0.00	0.00	0.00
15,800.00	89.85	179.37	7,300.44	-7,888.80	-552.55	7,885.59	0.00	0.00	0.00
15,900.00	89.85	179.37	7,300.70	-7,988.80	-551.46	7,985.59	0.00	0.00	0.00
16,000.00	89.85	179.37	7,300.96	-8,088.79	-550.36	8,085.59	0.00	0.00	0.00
16,100.00	89.85	179.37	7,301.21	-8,188.78	-549.27	8,185.59	0.00	0.00	0.00
16,200.00	89.85	179.37	7,301.47	-8,288.78	-548.17	8,285.59	0.00	0.00	0.00
16,300.00	89.85	179.37	7,301.73	-8,388.77	-547.08	8,385.58	0.00	0.00	0.00
16,400.00	89.85	179.37	7,301.98	-8,488.76	-545.98	8,485.58	0.00	0.00	0.00
16,500.00	89.85	179.37	7,302.24	-8,588.76	-544.89	8,585.58	0.00	0.00	0.00
16,600.00	89.85	179.37	7,302.49	-8,688.75	-543.79	8,685.58	0.00	0.00	0.00
16,700.00	89.85	179.37	7,302.75	-8,788.75	-542.70	8,785.58	0.00	0.00	0.00
16,800.00	89.85	179.37	7,303.01	-8,888.74	-541.60	8,885.58	0.00	0.00	0.00
16,900.00	89.85	179.37	7,303.26	-8,988.73	-540.51	8,985.57	0.00	0.00	0.00
17,000.00	89.85	179.37	7,303.52	-9,088.73	-539.41	9,085.57	0.00	0.00	0.00
17,100.00	89.85	179.37	7,303.77	-9,188.72	-538.31	9,185.57	0.00	0.00	0.00
17,200.00	89.85	179.37	7,304.03	-9,288.71	-537.22	9,285.57	0.00	0.00	0.00
17,300.00	89.85	179.37	7,304.29	-9,388.71	-536.12	9,385.57	0.00	0.00	0.00
17,400.00	89.85	179.37	7,304.54	-9,488.70	-535.03	9,485.57	0.00	0.00	0.00
17,402.70	89.85	179.37	7,304.55	-9,491.40	-535.00	9,488.26	0.00	0.00	0.00
Begin Turn to BHL @ 17402.70ft									
17,500.00	89.85	180.83	7,304.80	-9,588.70	-535.17	9,585.56	1.50	0.00	1.50
17,593.75	89.85	182.24	7,305.04	-9,682.42	-537.69	9,679.26	1.50	0.00	1.50
End Turn @ 17593.75ft									
17,600.00	89.85	182.24	7,305.06	-9,688.66	-537.93	9,685.50	0.00	0.00	0.00
17,700.00	89.85	182.24	7,305.31	-9,788.58	-541.84	9,785.40	0.00	0.00	0.00
17,800.00	89.85	182.24	7,305.57	-9,888.50	-545.74	9,885.30	0.00	0.00	0.00
17,900.00	89.85	182.24	7,305.82	-9,988.43	-549.65	9,985.20	0.00	0.00	0.00
18,000.00	89.85	182.24	7,306.08	-10,088.35	-553.55	10,085.10	0.00	0.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well CASTLE PINES 19-8HZ
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 19-8HZ	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)
18,100.00	89.85	182.24	7,306.33	-10,188.27	-557.46	10,185.00	0.00	0.00	0.00
18,200.00	89.85	182.24	7,306.59	-10,288.20	-561.36	10,284.90	0.00	0.00	0.00
18,300.00	89.85	182.24	7,306.84	-10,388.12	-565.27	10,384.80	0.00	0.00	0.00
18,400.00	89.85	182.24	7,307.10	-10,488.04	-569.17	10,484.70	0.00	0.00	0.00
18,500.00	89.85	182.24	7,307.36	-10,587.97	-573.08	10,584.60	0.00	0.00	0.00
18,600.00	89.85	182.24	7,307.61	-10,687.89	-576.99	10,684.50	0.00	0.00	0.00
18,700.00	89.85	182.24	7,307.87	-10,787.81	-580.89	10,784.40	0.00	0.00	0.00
18,751.84	89.85	182.24	7,308.00	-10,839.61	-582.92	10,836.19	0.00	0.00	0.00
TD Well @ 18751.84ft									

Casing Points				
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,521.65	1,500.00	9 5/8" Csg	9-5/8	13-1/2
7,819.35	7,280.00	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			
4,123.18	4,002.00	Parkman			
4,528.91	4,398.00	Sussex			
7,230.61	7,050.00	Sharon Springs			
7,325.17	7,115.00	Niobrara			
7,442.09	7,182.00	Nio B			
7,609.67	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
1,310.00	1,296.45	113.89	-91.57	End Nudge @ 1310.00ft
4,150.00	4,027.79	720.25	-579.10	Begin Drop @ 4150.00ft
4,945.00	4,812.62	805.67	-647.77	End Drop @ 4945.00ft
6,696.18	6,563.81	805.67	-647.77	KOP @ 6696.18ft :: DLS = 8°/100'
7,819.35	7,280.00	91.35	-639.95	End Build @ 7819.35ft
17,402.70	7,304.55	-9,491.40	-535.00	Begin Turn to BHL @ 17402.70ft
17,593.75	7,305.04	-9,682.42	-537.69	End Turn @ 17593.75ft
18,751.84	7,308.00	-10,839.61	-582.92	TD Well @ 18751.84ft