

US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N

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

CASTLE PINES 19-5HZ

Plan A

Plan: Permit Rev-1

SHL Lat/Long: 40.117680/-104.814452

Survey Program: MWD+IFR+MSA

Standard Planning Report

19 January, 2018

Project: WELD-NAD83-UTMFT13N
Site: 2N-66W-19 CASTLE PINES 16-19HZ PAD
Well: CASTLE PINES 19-5HZ
Wellbore: Plan A
Design: Permit Rev-1

US ROCKIES WATTENBERG PLANNING

CASING DETAILS

TVD	MD	Size
1500.00	1519.24	9-5/8
7215.00	7722.96	5-1/2

WELL DETAILS: CASTLE PINES 19-5HZ

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	1183.33	14.00	240.00	1174.07	-56.73	-98.26	1.50	240.00	-56.06	
4	3933.33	14.00	240.00	3842.39	-389.37	-674.41	0.00	0.00	-384.77	
5	4633.33	0.00	0.00	4535.44	-431.92	-748.11	2.00	180.00	-426.82	
6	6596.70	0.00	0.00	6498.81	-431.92	-748.11	0.00	0.00	-426.82	
7	7722.96	90.10	359.61	7215.00	285.52	-753.04	8.00	359.61	290.64	
8	17388.48	90.10	359.61	7198.00	9950.79	-819.50	0.00	0.00	9956.14	CASTLE PINES 19-5HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
CASTLE PINES 19-5HZ_SHL	0.00	0.00	0.00	40.117680	-104.814452
CASTLE PINES 19-5HZ_BHL	7198.00	9950.79	-819.50	40.145006	-104.817384

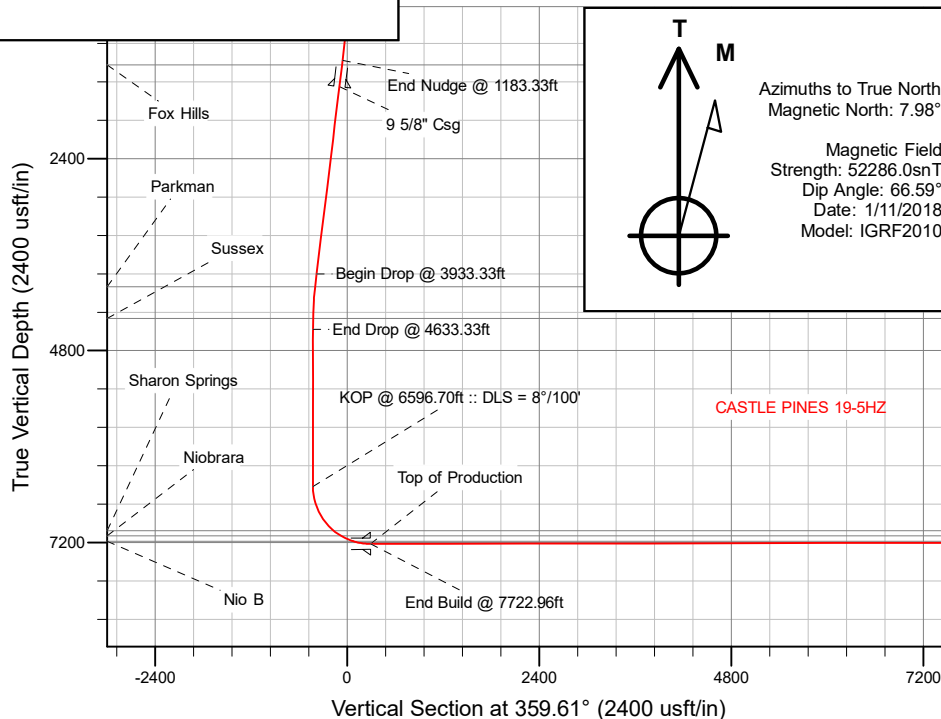
FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1226.00	1236.85	Fox Hills
4002.00	4096.76	Parkman
4398.00	4495.84	Sussex
7050.00	7225.68	Sharon Springs
7115.00	7338.67	Niobrara
7182.00	7503.42	Nio B

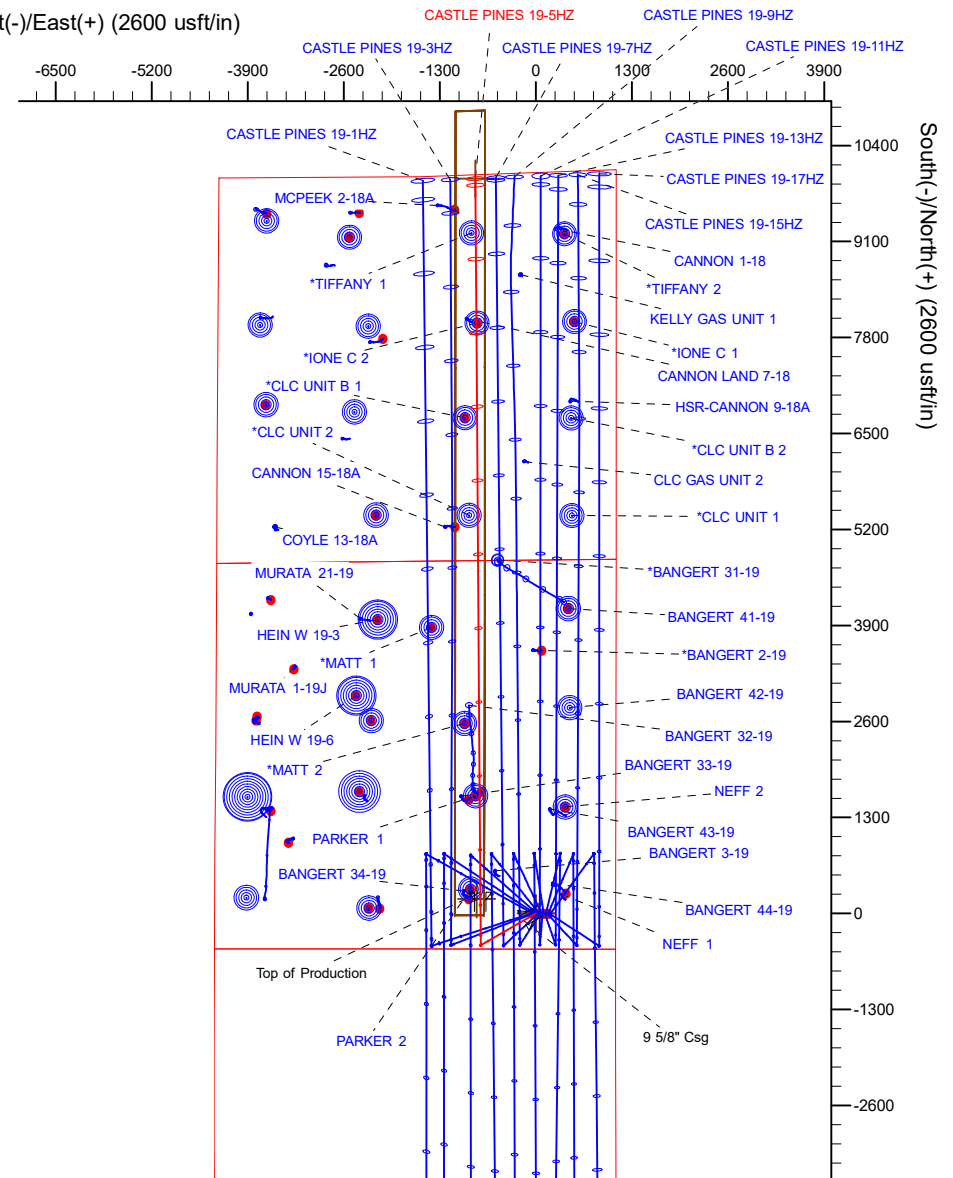
SHL
484' FSL
1078' FEL

HEEL
768' FSL
1827' FEL

TOE
52' FNL
1908' FEL



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



Plan: Permit Rev-1 (CASTLE PINES 19-5HZ/Plan A)

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

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well CASTLE PINES 19-5HZ
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 19-5HZ	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 19-5HZ					
Well Position	+N/-S	-0.73 usft	Northing:	14,569,640.07 usft	Latitude:	40.117680
	+E/-W	59.83 usft	Easting:	1,692,290.26 usft	Longitude:	-104.814452
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	52,285.97827749

Design	Permit Rev-1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	359.61

Plan Survey Tool Program	Date	1/19/2018		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	1,500.00	Permit Rev-1 (Plan A)	APC_ISCWSA REV 2 MWD+II Fixed:v2:crustal field declinatio
2	1,500.00	17,388.48	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 19-5HZ	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	
1,183.33	14.00	240.00	1,174.07	-56.73	-98.26	1.50	1.50	0.00	240.00	
3,933.33	14.00	240.00	3,842.39	-389.37	-674.41	0.00	0.00	0.00	0.00	
4,633.33	0.00	0.00	4,535.44	-431.92	-748.11	2.00	-2.00	0.00	180.00	
6,596.70	0.00	0.00	6,498.81	-431.92	-748.11	0.00	0.00	0.00	0.00	
7,722.96	90.10	359.61	7,215.00	285.52	-753.04	8.00	8.00	-0.03	359.61	
17,388.48	90.10	359.61	7,198.00	9,950.79	-819.50	0.00	0.00	0.00	0.00	CASTLE PINES 19-5I

Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well CASTLE PINES 19-5HZ
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 19-5HZ	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)
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	240.00	300.00	-0.16	-0.28	-0.16	1.50	1.50	0.00
400.00	2.25	240.00	399.96	-1.47	-2.55	-1.46	1.50	1.50	0.00
500.00	3.75	240.00	499.82	-4.09	-7.08	-4.04	1.50	1.50	0.00
600.00	5.25	240.00	599.51	-8.01	-13.88	-7.92	1.50	1.50	0.00
700.00	6.75	240.00	698.96	-13.24	-22.93	-13.08	1.50	1.50	0.00
800.00	8.25	240.00	798.10	-19.76	-34.23	-19.53	1.50	1.50	0.00
900.00	9.75	240.00	896.87	-27.59	-47.78	-27.26	1.50	1.50	0.00
1,000.00	11.25	240.00	995.19	-36.70	-63.56	-36.26	1.50	1.50	0.00
1,100.00	12.75	240.00	1,093.00	-47.09	-81.57	-46.54	1.50	1.50	0.00
1,183.33	14.00	240.00	1,174.07	-56.73	-98.26	-56.06	1.50	1.50	0.00
End Nudge @ 1183.33ft									
1,200.00	14.00	240.00	1,190.25	-58.75	-101.75	-58.05	0.00	0.00	0.00
1,236.85	14.00	240.00	1,226.00	-63.20	-109.47	-62.46	0.00	0.00	0.00
Fox Hills									
1,300.00	14.00	240.00	1,287.27	-70.84	-122.70	-70.01	0.00	0.00	0.00
1,400.00	14.00	240.00	1,384.30	-82.94	-143.65	-81.96	0.00	0.00	0.00
1,500.00	14.00	240.00	1,481.33	-95.04	-164.61	-93.91	0.00	0.00	0.00
1,519.24	14.00	240.00	1,500.00	-97.36	-168.64	-96.21	0.00	0.00	0.00
9 5/8" Csg									
1,600.00	14.00	240.00	1,578.36	-107.13	-185.56	-105.87	0.00	0.00	0.00
1,700.00	14.00	240.00	1,675.39	-119.23	-206.51	-117.82	0.00	0.00	0.00
1,800.00	14.00	240.00	1,772.42	-131.32	-227.46	-129.77	0.00	0.00	0.00
1,900.00	14.00	240.00	1,869.45	-143.42	-248.41	-141.73	0.00	0.00	0.00
2,000.00	14.00	240.00	1,966.48	-155.52	-269.36	-153.68	0.00	0.00	0.00
2,100.00	14.00	240.00	2,063.51	-167.61	-290.31	-165.63	0.00	0.00	0.00
2,200.00	14.00	240.00	2,160.54	-179.71	-311.26	-177.59	0.00	0.00	0.00
2,300.00	14.00	240.00	2,257.57	-191.80	-332.21	-189.54	0.00	0.00	0.00
2,400.00	14.00	240.00	2,354.60	-203.90	-353.17	-201.49	0.00	0.00	0.00
2,500.00	14.00	240.00	2,451.63	-216.00	-374.12	-213.44	0.00	0.00	0.00
2,600.00	14.00	240.00	2,548.66	-228.09	-395.07	-225.40	0.00	0.00	0.00
2,700.00	14.00	240.00	2,645.69	-240.19	-416.02	-237.35	0.00	0.00	0.00
2,800.00	14.00	240.00	2,742.72	-252.28	-436.97	-249.30	0.00	0.00	0.00
2,900.00	14.00	240.00	2,839.75	-264.38	-457.92	-261.26	0.00	0.00	0.00
3,000.00	14.00	240.00	2,936.78	-276.48	-478.87	-273.21	0.00	0.00	0.00
3,100.00	14.00	240.00	3,033.81	-288.57	-499.82	-285.16	0.00	0.00	0.00
3,200.00	14.00	240.00	3,130.84	-300.67	-520.77	-297.12	0.00	0.00	0.00
3,300.00	14.00	240.00	3,227.87	-312.76	-541.72	-309.07	0.00	0.00	0.00
3,400.00	14.00	240.00	3,324.90	-324.86	-562.68	-321.02	0.00	0.00	0.00
3,500.00	14.00	240.00	3,421.93	-336.96	-583.63	-332.98	0.00	0.00	0.00
3,600.00	14.00	240.00	3,518.95	-349.05	-604.58	-344.93	0.00	0.00	0.00
3,700.00	14.00	240.00	3,615.98	-361.15	-625.53	-356.88	0.00	0.00	0.00
3,800.00	14.00	240.00	3,713.01	-373.25	-646.48	-368.84	0.00	0.00	0.00
3,900.00	14.00	240.00	3,810.04	-385.34	-667.43	-380.79	0.00	0.00	0.00
3,933.33	14.00	240.00	3,842.39	-389.37	-674.41	-384.77	0.00	0.00	0.00
Begin Drop @ 3933.33ft									
4,000.00	12.67	240.00	3,907.26	-397.06	-687.73	-392.37	2.00	-2.00	0.00
4,096.76	10.73	240.00	4,002.00	-406.87	-704.72	-402.06	2.00	-2.00	0.00
Parkman									

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well CASTLE PINES 19-5HZ
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 19-5HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,100.00	10.67	240.00	4,005.18	-407.17	-705.24	-402.36	2.00	-2.00	0.00
4,200.00	8.67	240.00	4,103.76	-415.57	-719.78	-410.66	2.00	-2.00	0.00
4,300.00	6.67	240.00	4,202.86	-422.24	-731.34	-417.25	2.00	-2.00	0.00
4,400.00	4.67	240.00	4,302.37	-427.17	-739.89	-422.13	2.00	-2.00	0.00
4,495.84	2.75	240.00	4,398.00	-430.27	-745.25	-425.19	2.00	-2.00	0.00
Sussex									
4,500.00	2.67	240.00	4,402.16	-430.37	-745.42	-425.29	2.00	-2.00	0.00
4,600.00	0.67	240.00	4,502.11	-431.82	-747.94	-426.72	2.00	-2.00	0.00
4,633.33	0.00	0.00	4,535.44	-431.92	-748.11	-426.82	2.00	-2.00	0.00
End Drop @ 4633.33ft									
4,700.00	0.00	0.00	4,602.11	-431.92	-748.11	-426.82	0.00	0.00	0.00
4,800.00	0.00	0.00	4,702.11	-431.92	-748.11	-426.82	0.00	0.00	0.00
4,900.00	0.00	0.00	4,802.11	-431.92	-748.11	-426.82	0.00	0.00	0.00
5,000.00	0.00	0.00	4,902.11	-431.92	-748.11	-426.82	0.00	0.00	0.00
5,100.00	0.00	0.00	5,002.11	-431.92	-748.11	-426.82	0.00	0.00	0.00
5,200.00	0.00	0.00	5,102.11	-431.92	-748.11	-426.82	0.00	0.00	0.00
5,300.00	0.00	0.00	5,202.11	-431.92	-748.11	-426.82	0.00	0.00	0.00
5,400.00	0.00	0.00	5,302.11	-431.92	-748.11	-426.82	0.00	0.00	0.00
5,500.00	0.00	0.00	5,402.11	-431.92	-748.11	-426.82	0.00	0.00	0.00
5,600.00	0.00	0.00	5,502.11	-431.92	-748.11	-426.82	0.00	0.00	0.00
5,700.00	0.00	0.00	5,602.11	-431.92	-748.11	-426.82	0.00	0.00	0.00
5,800.00	0.00	0.00	5,702.11	-431.92	-748.11	-426.82	0.00	0.00	0.00
5,900.00	0.00	0.00	5,802.11	-431.92	-748.11	-426.82	0.00	0.00	0.00
6,000.00	0.00	0.00	5,902.11	-431.92	-748.11	-426.82	0.00	0.00	0.00
6,100.00	0.00	0.00	6,002.11	-431.92	-748.11	-426.82	0.00	0.00	0.00
6,200.00	0.00	0.00	6,102.11	-431.92	-748.11	-426.82	0.00	0.00	0.00
6,300.00	0.00	0.00	6,202.11	-431.92	-748.11	-426.82	0.00	0.00	0.00
6,400.00	0.00	0.00	6,302.11	-431.92	-748.11	-426.82	0.00	0.00	0.00
6,500.00	0.00	0.00	6,402.11	-431.92	-748.11	-426.82	0.00	0.00	0.00
6,596.70	0.00	0.00	6,498.81	-431.92	-748.11	-426.82	0.00	0.00	0.00
KOP @ 6596.70ft :: DLS = 8°/100'									
6,600.00	0.26	359.61	6,502.11	-431.91	-748.11	-426.81	8.00	8.00	0.00
6,700.00	8.26	359.61	6,601.75	-424.49	-748.16	-419.38	8.00	8.00	0.00
6,800.00	16.26	359.61	6,699.39	-403.26	-748.31	-398.16	8.00	8.00	0.00
6,900.00	24.26	359.61	6,793.12	-368.66	-748.55	-363.55	8.00	8.00	0.00
7,000.00	32.26	359.61	6,881.13	-321.34	-748.87	-316.24	8.00	8.00	0.00
7,100.00	40.26	359.61	6,961.69	-262.24	-749.28	-257.13	8.00	8.00	0.00
7,200.00	48.26	359.61	7,033.25	-192.50	-749.76	-187.39	8.00	8.00	0.00
7,225.68	50.32	359.61	7,050.00	-173.03	-749.89	-167.93	8.00	8.00	0.00
Sharon Springs									
7,300.00	56.26	359.61	7,094.40	-113.48	-750.30	-108.37	8.00	8.00	0.00
7,338.67	59.36	359.61	7,115.00	-80.76	-750.53	-75.65	8.00	8.00	0.00
Niobrara									
7,400.00	64.26	359.61	7,143.96	-26.73	-750.90	-21.61	8.00	8.00	0.00
7,500.00	72.26	359.61	7,180.97	66.09	-751.53	71.20	8.00	8.00	0.00
7,503.42	72.54	359.61	7,182.00	69.35	-751.56	74.46	8.00	8.00	0.00
Nio B									
7,600.00	80.26	359.61	7,204.69	163.15	-752.20	168.26	8.00	8.00	0.00
7,700.00	88.26	359.61	7,214.68	262.56	-752.89	267.68	8.00	8.00	0.00
7,722.96	90.10	359.61	7,215.00	285.52	-753.04	290.64	8.00	8.00	0.00
End Build @ 7722.96ft - Top of Production									
7,800.00	90.10	359.61	7,214.87	362.56	-753.57	367.68	0.00	0.00	0.00
7,900.00	90.10	359.61	7,214.69	462.55	-754.26	467.68	0.00	0.00	0.00

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 19-5HZ	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)	
8,000.00	90.10	359.61	7,214.52	562.55	-754.95	567.68	0.00	0.00	0.00	
8,100.00	90.10	359.61	7,214.34	662.55	-755.64	667.68	0.00	0.00	0.00	
8,200.00	90.10	359.61	7,214.17	762.55	-756.32	767.68	0.00	0.00	0.00	
8,300.00	90.10	359.61	7,213.99	862.54	-757.01	867.68	0.00	0.00	0.00	
8,400.00	90.10	359.61	7,213.81	962.54	-757.70	967.68	0.00	0.00	0.00	
8,500.00	90.10	359.61	7,213.64	1,062.54	-758.39	1,067.68	0.00	0.00	0.00	
8,600.00	90.10	359.61	7,213.46	1,162.54	-759.07	1,167.68	0.00	0.00	0.00	
8,700.00	90.10	359.61	7,213.29	1,262.53	-759.76	1,267.68	0.00	0.00	0.00	
8,800.00	90.10	359.61	7,213.11	1,362.53	-760.45	1,367.68	0.00	0.00	0.00	
8,900.00	90.10	359.61	7,212.93	1,462.53	-761.14	1,467.68	0.00	0.00	0.00	
9,000.00	90.10	359.61	7,212.76	1,562.53	-761.82	1,567.68	0.00	0.00	0.00	
9,100.00	90.10	359.61	7,212.58	1,662.52	-762.51	1,667.68	0.00	0.00	0.00	
9,200.00	90.10	359.61	7,212.41	1,762.52	-763.20	1,767.68	0.00	0.00	0.00	
9,300.00	90.10	359.61	7,212.23	1,862.52	-763.89	1,867.68	0.00	0.00	0.00	
9,400.00	90.10	359.61	7,212.05	1,962.52	-764.57	1,967.68	0.00	0.00	0.00	
9,500.00	90.10	359.61	7,211.88	2,062.51	-765.26	2,067.67	0.00	0.00	0.00	
9,600.00	90.10	359.61	7,211.70	2,162.51	-765.95	2,167.67	0.00	0.00	0.00	
9,700.00	90.10	359.61	7,211.53	2,262.51	-766.64	2,267.67	0.00	0.00	0.00	
9,800.00	90.10	359.61	7,211.35	2,362.51	-767.32	2,367.67	0.00	0.00	0.00	
9,900.00	90.10	359.61	7,211.17	2,462.50	-768.01	2,467.67	0.00	0.00	0.00	
10,000.00	90.10	359.61	7,211.00	2,562.50	-768.70	2,567.67	0.00	0.00	0.00	
10,100.00	90.10	359.61	7,210.82	2,662.50	-769.39	2,667.67	0.00	0.00	0.00	
10,200.00	90.10	359.61	7,210.65	2,762.50	-770.07	2,767.67	0.00	0.00	0.00	
10,300.00	90.10	359.61	7,210.47	2,862.49	-770.76	2,867.67	0.00	0.00	0.00	
10,400.00	90.10	359.61	7,210.30	2,962.49	-771.45	2,967.67	0.00	0.00	0.00	
10,500.00	90.10	359.61	7,210.12	3,062.49	-772.14	3,067.67	0.00	0.00	0.00	
10,600.00	90.10	359.61	7,209.94	3,162.49	-772.82	3,167.67	0.00	0.00	0.00	
10,700.00	90.10	359.61	7,209.77	3,262.48	-773.51	3,267.67	0.00	0.00	0.00	
10,800.00	90.10	359.61	7,209.59	3,362.48	-774.20	3,367.67	0.00	0.00	0.00	
10,900.00	90.10	359.61	7,209.42	3,462.48	-774.89	3,467.67	0.00	0.00	0.00	
11,000.00	90.10	359.61	7,209.24	3,562.48	-775.58	3,567.67	0.00	0.00	0.00	
11,100.00	90.10	359.61	7,209.06	3,662.47	-776.26	3,667.67	0.00	0.00	0.00	
11,200.00	90.10	359.61	7,208.89	3,762.47	-776.95	3,767.67	0.00	0.00	0.00	
11,300.00	90.10	359.61	7,208.71	3,862.47	-777.64	3,867.67	0.00	0.00	0.00	
11,400.00	90.10	359.61	7,208.54	3,962.47	-778.33	3,967.67	0.00	0.00	0.00	
11,500.00	90.10	359.61	7,208.36	4,062.46	-779.01	4,067.67	0.00	0.00	0.00	
11,600.00	90.10	359.61	7,208.18	4,162.46	-779.70	4,167.67	0.00	0.00	0.00	
11,700.00	90.10	359.61	7,208.01	4,262.46	-780.39	4,267.67	0.00	0.00	0.00	
11,800.00	90.10	359.61	7,207.83	4,362.46	-781.08	4,367.67	0.00	0.00	0.00	
11,900.00	90.10	359.61	7,207.66	4,462.45	-781.76	4,467.67	0.00	0.00	0.00	
12,000.00	90.10	359.61	7,207.48	4,562.45	-782.45	4,567.67	0.00	0.00	0.00	
12,100.00	90.10	359.61	7,207.30	4,662.45	-783.14	4,667.67	0.00	0.00	0.00	
12,200.00	90.10	359.61	7,207.13	4,762.45	-783.83	4,767.67	0.00	0.00	0.00	
12,300.00	90.10	359.61	7,206.95	4,862.44	-784.51	4,867.67	0.00	0.00	0.00	
12,400.00	90.10	359.61	7,206.78	4,962.44	-785.20	4,967.67	0.00	0.00	0.00	
12,500.00	90.10	359.61	7,206.60	5,062.44	-785.89	5,067.67	0.00	0.00	0.00	
12,600.00	90.10	359.61	7,206.42	5,162.44	-786.58	5,167.67	0.00	0.00	0.00	
12,700.00	90.10	359.61	7,206.25	5,262.43	-787.26	5,267.67	0.00	0.00	0.00	
12,800.00	90.10	359.61	7,206.07	5,362.43	-787.95	5,367.67	0.00	0.00	0.00	
12,900.00	90.10	359.61	7,205.90	5,462.43	-788.64	5,467.67	0.00	0.00	0.00	
13,000.00	90.10	359.61	7,205.72	5,562.43	-789.33	5,567.67	0.00	0.00	0.00	
13,100.00	90.10	359.61	7,205.54	5,662.42	-790.01	5,667.67	0.00	0.00	0.00	
13,200.00	90.10	359.61	7,205.37	5,762.42	-790.70	5,767.67	0.00	0.00	0.00	
13,300.00	90.10	359.61	7,205.19	5,862.42	-791.39	5,867.67	0.00	0.00	0.00	

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well CASTLE PINES 19-5HZ
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 19-5HZ	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)
13,400.00	90.10	359.61	7,205.02	5,962.42	-792.08	5,967.67	0.00	0.00	0.00
13,500.00	90.10	359.61	7,204.84	6,062.41	-792.76	6,067.67	0.00	0.00	0.00
13,600.00	90.10	359.61	7,204.67	6,162.41	-793.45	6,167.67	0.00	0.00	0.00
13,700.00	90.10	359.61	7,204.49	6,262.41	-794.14	6,267.67	0.00	0.00	0.00
13,800.00	90.10	359.61	7,204.31	6,362.41	-794.83	6,367.67	0.00	0.00	0.00
13,900.00	90.10	359.61	7,204.14	6,462.40	-795.51	6,467.67	0.00	0.00	0.00
14,000.00	90.10	359.61	7,203.96	6,562.40	-796.20	6,567.67	0.00	0.00	0.00
14,100.00	90.10	359.61	7,203.79	6,662.40	-796.89	6,667.67	0.00	0.00	0.00
14,200.00	90.10	359.61	7,203.61	6,762.40	-797.58	6,767.67	0.00	0.00	0.00
14,300.00	90.10	359.61	7,203.43	6,862.39	-798.26	6,867.67	0.00	0.00	0.00
14,400.00	90.10	359.61	7,203.26	6,962.39	-798.95	6,967.67	0.00	0.00	0.00
14,500.00	90.10	359.61	7,203.08	7,062.39	-799.64	7,067.67	0.00	0.00	0.00
14,600.00	90.10	359.61	7,202.91	7,162.39	-800.33	7,167.67	0.00	0.00	0.00
14,700.00	90.10	359.61	7,202.73	7,262.38	-801.02	7,267.67	0.00	0.00	0.00
14,800.00	90.10	359.61	7,202.55	7,362.38	-801.70	7,367.67	0.00	0.00	0.00
14,900.00	90.10	359.61	7,202.38	7,462.38	-802.39	7,467.67	0.00	0.00	0.00
15,000.00	90.10	359.61	7,202.20	7,562.38	-803.08	7,567.67	0.00	0.00	0.00
15,100.00	90.10	359.61	7,202.03	7,662.37	-803.77	7,667.67	0.00	0.00	0.00
15,200.00	90.10	359.61	7,201.85	7,762.37	-804.45	7,767.67	0.00	0.00	0.00
15,300.00	90.10	359.61	7,201.67	7,862.37	-805.14	7,867.67	0.00	0.00	0.00
15,400.00	90.10	359.61	7,201.50	7,962.37	-805.83	7,967.67	0.00	0.00	0.00
15,500.00	90.10	359.61	7,201.32	8,062.36	-806.52	8,067.67	0.00	0.00	0.00
15,600.00	90.10	359.61	7,201.15	8,162.36	-807.20	8,167.67	0.00	0.00	0.00
15,700.00	90.10	359.61	7,200.97	8,262.36	-807.89	8,267.67	0.00	0.00	0.00
15,800.00	90.10	359.61	7,200.79	8,362.36	-808.58	8,367.67	0.00	0.00	0.00
15,900.00	90.10	359.61	7,200.62	8,462.35	-809.27	8,467.67	0.00	0.00	0.00
16,000.00	90.10	359.61	7,200.44	8,562.35	-809.95	8,567.66	0.00	0.00	0.00
16,100.00	90.10	359.61	7,200.27	8,662.35	-810.64	8,667.66	0.00	0.00	0.00
16,200.00	90.10	359.61	7,200.09	8,762.35	-811.33	8,767.66	0.00	0.00	0.00
16,300.00	90.10	359.61	7,199.92	8,862.34	-812.02	8,867.66	0.00	0.00	0.00
16,400.00	90.10	359.61	7,199.74	8,962.34	-812.70	8,967.66	0.00	0.00	0.00
16,500.00	90.10	359.61	7,199.56	9,062.34	-813.39	9,067.66	0.00	0.00	0.00
16,600.00	90.10	359.61	7,199.39	9,162.34	-814.08	9,167.66	0.00	0.00	0.00
16,700.00	90.10	359.61	7,199.21	9,262.33	-814.77	9,267.66	0.00	0.00	0.00
16,800.00	90.10	359.61	7,199.04	9,362.33	-815.45	9,367.66	0.00	0.00	0.00
16,900.00	90.10	359.61	7,198.86	9,462.33	-816.14	9,467.66	0.00	0.00	0.00
17,000.00	90.10	359.61	7,198.68	9,562.33	-816.83	9,567.66	0.00	0.00	0.00
17,100.00	90.10	359.61	7,198.51	9,662.32	-817.52	9,667.66	0.00	0.00	0.00
17,200.00	90.10	359.61	7,198.33	9,762.32	-818.20	9,767.66	0.00	0.00	0.00
17,300.00	90.10	359.61	7,198.16	9,862.32	-818.89	9,867.66	0.00	0.00	0.00
17,388.48	90.10	359.61	7,198.00	9,950.79	-819.50	9,956.14	0.00	0.00	0.00
TD Well @ 17388.48ft									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,519.24	1,500.00	9 5/8" Csg	9-5/8	13-1/2	
7,722.96	7,215.00	Top of Production	5-1/2	7-7/8	

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well CASTLE PINES 19-5HZ
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 19-5HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-1		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,236.85	1,226.00	Fox Hills				
4,096.76	4,002.00	Parkman				
4,495.84	4,398.00	Sussex				
7,225.68	7,050.00	Sharon Springs				
7,338.67	7,115.00	Niobrara				
7,503.42	7,182.00	Nio B				

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	
1,183.33	1,174.07	-56.73	-98.26	End Nudge @ 1183.33ft	
3,933.33	3,842.39	-389.37	-674.41	Begin Drop @ 3933.33ft	
4,633.33	4,535.44	-431.92	-748.11	End Drop @ 4633.33ft	
6,596.70	6,498.81	-431.92	-748.11	KOP @ 6596.70ft :: DLS = 8°/100'	
7,722.96	7,215.00	285.52	-753.04	End Build @ 7722.96ft	
17,388.48	7,198.00	9,950.79	-819.50	TD Well @ 17388.48ft	