

US ROCKIES WATTENBERG PLANNING

**WELD-NAD83-UTMFT13N
1N-68W-15 CLELAND 11-15HZ PAD
CLELAND 15-4HZ**

Plan A

Plan: Permit Rev-1

SHL Lat/Long: 40.048756/-104.992012
Survey Program: MWD+IFR

Standard Planning Report

08 March, 2019

Project: WELD-NAD83-UTMFT13N
Site: 1N-68W-15 CLELAND 11-15HZ PAD
Well: CLELAND 15-4HZ
Wellbore: Plan A
Design: Permit Rev-1

US ROCKIES WATTENBERG PLANNING

CASING DETAILS

TVD	MD	Size
1500.00	1512.85	9-5/8
7899.00	8379.72	5-1/2

WELL DETAILS: CLELAND 15-4HZ

GL = 5151'

RKB = 17' @ 5168.00usft (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	420.00	0.00	0.00	420.00	0.00	0.00	0.00	0.00	0.00	
3	1260.67	12.61	204.70	1253.90	-83.71	-38.50	1.50	204.70	83.72	
4	4060.67	12.61	204.70	3986.36	-639.06	-293.93	0.00	0.00	639.16	
5	4691.17	0.00	0.00	4611.78	-701.84	-322.81	2.00	180.00	701.95	
6	7262.23	0.00	0.00	7182.84	-701.84	-322.81	0.00	0.00	701.95	
7	8379.72	89.40	180.02	7899.00	-1410.53	-323.08	8.00	180.02	1410.64	
8	19251.44	89.40	180.02	8013.00	-12281.65	-327.22	0.00	0.00	12281.76	CLELAND 15-4HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
CLELAND 15-4HZ_SHL	0.00	0.00	0.00	40.048756	-104.992012
CLELAND 15-4HZ_BHL	8013.00	-12281.65	-327.22	40.015028	-104.993181

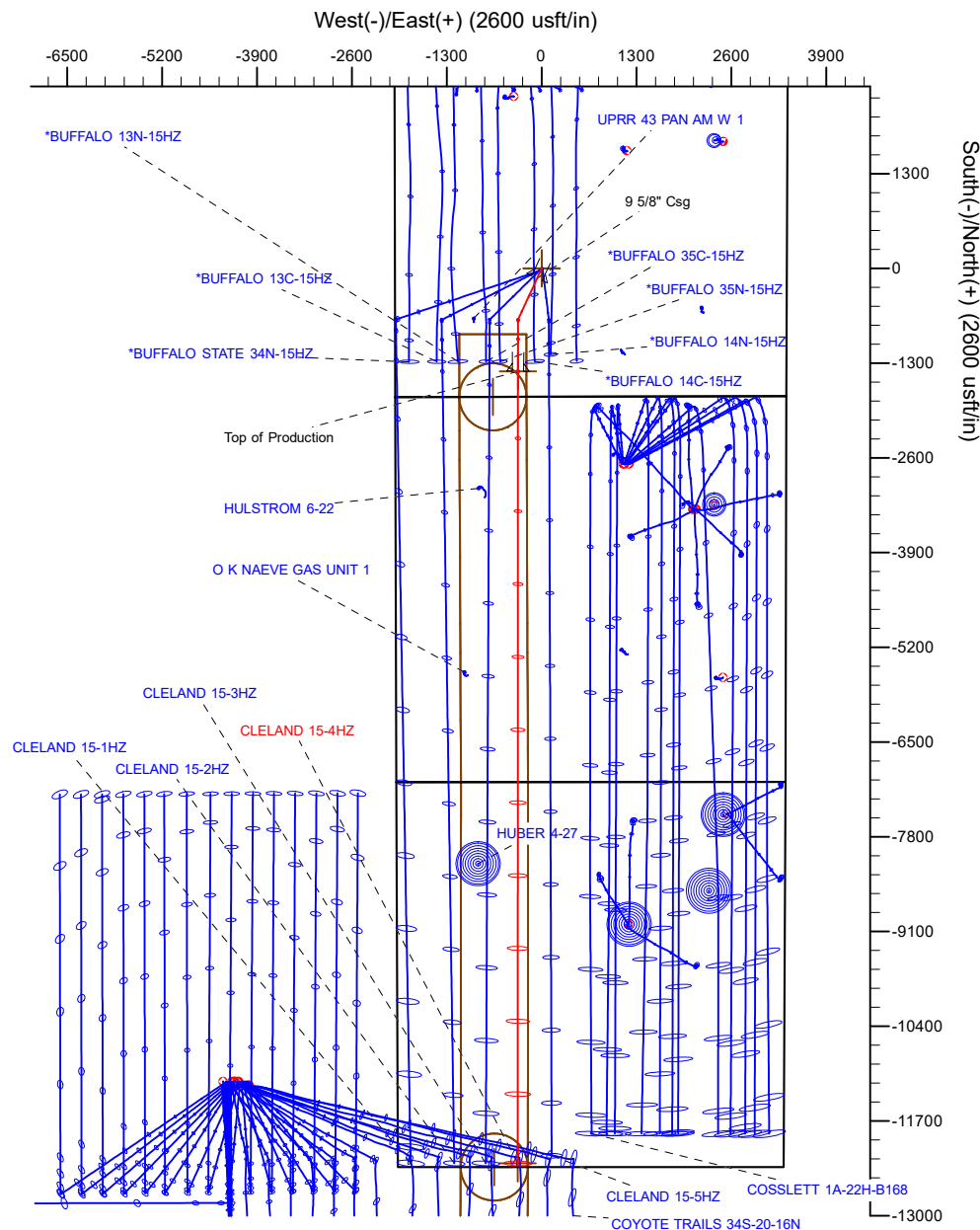
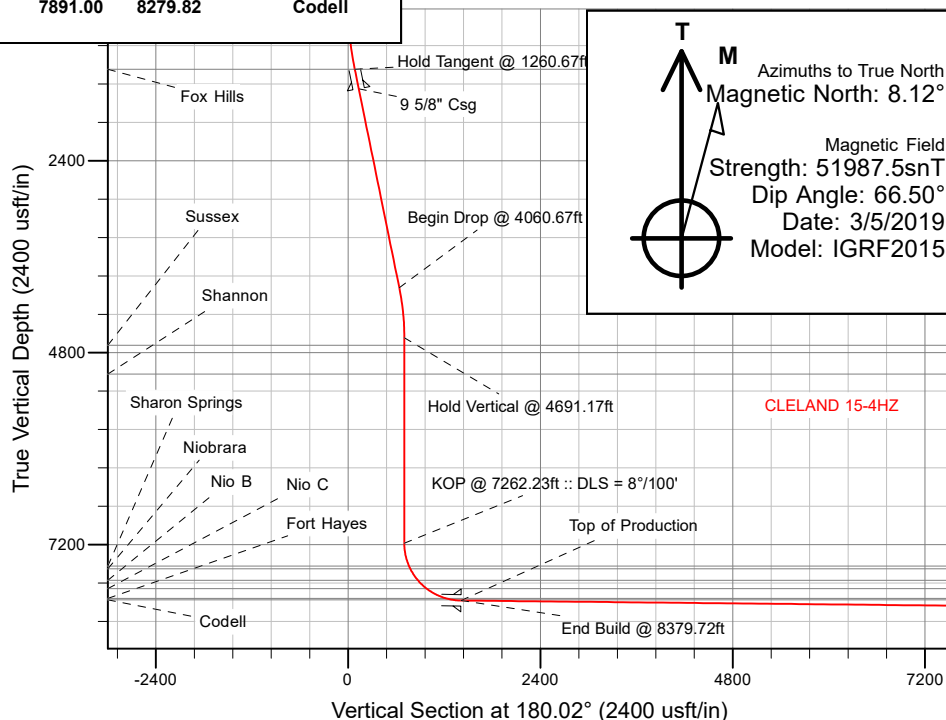
FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1254.00	1260.77	Fox Hills
4707.00	4786.39	Sussex
5066.00	5145.39	Shannon
7468.00	7555.52	Sharon Springs
7502.00	7593.02	Niobrara
7645.00	7764.58	Nio B
7749.00	7915.14	Nio C
7872.00	8189.80	Fort Hayes
7891.00	8279.82	Codell

SHL
1760' FSL
2010' FWL

HEEL
350' FSL
1684' FWL

TOE
50' FSL
1644' FWL



Plan: Permit Rev-1 (CLELAND 15-4HZ/Plan A)

Created By: _____ Date: 3/8/2019
Reviewed: _____ Date: _____

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well CLELAND 15-4HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5168.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5168.00usft (Drilling Rig)
Site:	1N-68W-15 CLELAND 11-15HZ PAD	North Reference:	True
Well:	CLELAND 15-4HZ	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		1N-68W-15 CLELAND 11-15HZ PAD			
Site Position:		Northing:	14,544,455.99 usft	Latitude:	40.048669
From:	Lat/Long	Easting:	1,642,620.22 usft	Longitude:	-104.992126
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.01 °

Well	CLELAND 15-4HZ					
Well Position	+N/-S	31.68 usft	Northing:	14,544,487.67 usft	Latitude:	40.048756
	+E/-W	31.90 usft	Easting:	1,642,652.12 usft	Longitude:	-104.992012
Position Uncertainty		3.28 usft	Wellhead Elevation:		Ground Level:	5,151.00 usft

Wellbore	Plan A				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	3/5/2019	8.12	66.50	51,987.52445773

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	180.02

Plan Survey Tool Program	Date	3/8/2019		
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	19,251.44	Permit Rev-1 (Plan A)	APC_ISCWSA REV 2 MWD+I Fixed:v2:crustal field declinatio

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Planning Report

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Site:	1N-68W-15 CLELAND 11-15HZ PAD	North Reference:	True
Well:	CLELAND 15-4HZ	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	
420.00	0.00	0.00	420.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,260.67	12.61	204.70	1,253.90	-83.71	-38.50	1.50	1.50	0.00	204.70	
4,060.67	12.61	204.70	3,986.36	-639.06	-293.93	0.00	0.00	0.00	0.00	
4,691.17	0.00	0.00	4,611.78	-701.84	-322.81	2.00	-2.00	0.00	180.00	
7,262.23	0.00	0.00	7,182.84	-701.84	-322.81	0.00	0.00	0.00	0.00	
8,379.72	89.40	180.02	7,899.00	-1,410.53	-323.08	8.00	8.00	-16.11	180.02	
19,251.44	89.40	180.02	8,013.00	-12,281.65	-327.22	0.00	0.00	0.00	0.00	CLELAND 15-4HZ_BI

Corporate Planning Report

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Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5168.00usft (Drilling Rig)
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Site:	1N-68W-15 CLELAND 11-15HZ PAD	North Reference:	True
Well:	CLELAND 15-4HZ	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
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
420.00	0.00	0.00	420.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge @ 420.00ft									
500.00	1.20	204.70	499.99	-0.76	-0.35	0.76	1.50	1.50	0.00
600.00	2.70	204.70	599.93	-3.85	-1.77	3.85	1.50	1.50	0.00
700.00	4.20	204.70	699.75	-9.32	-4.29	9.32	1.50	1.50	0.00
800.00	5.70	204.70	799.37	-17.16	-7.89	17.16	1.50	1.50	0.00
900.00	7.20	204.70	898.74	-27.36	-12.59	27.37	1.50	1.50	0.00
1,000.00	8.70	204.70	997.77	-39.93	-18.37	39.94	1.50	1.50	0.00
1,100.00	10.20	204.70	1,096.41	-54.85	-25.23	54.85	1.50	1.50	0.00
1,200.00	11.70	204.70	1,194.59	-72.10	-33.16	72.11	1.50	1.50	0.00
1,260.67	12.61	204.70	1,253.90	-83.71	-38.50	83.72	1.50	1.50	0.00
Hold Tangent @ 1260.67ft									
1,260.77	12.61	204.70	1,254.00	-83.73	-38.51	83.74	0.00	0.00	0.00
Fox Hills									
1,300.00	12.61	204.70	1,292.28	-91.51	-42.09	91.52	0.00	0.00	0.00
1,400.00	12.61	204.70	1,389.87	-111.34	-51.21	111.36	0.00	0.00	0.00
1,500.00	12.61	204.70	1,487.46	-131.18	-60.33	131.20	0.00	0.00	0.00
1,512.85	12.61	204.70	1,500.00	-133.73	-61.51	133.75	0.00	0.00	0.00
9 5/8" Csg									
1,600.00	12.61	204.70	1,585.04	-151.01	-69.46	151.03	0.00	0.00	0.00
1,700.00	12.61	204.70	1,682.63	-170.84	-78.58	170.87	0.00	0.00	0.00
1,800.00	12.61	204.70	1,780.22	-190.68	-87.70	190.71	0.00	0.00	0.00
1,900.00	12.61	204.70	1,877.81	-210.51	-96.82	210.55	0.00	0.00	0.00
2,000.00	12.61	204.70	1,975.40	-230.35	-105.95	230.38	0.00	0.00	0.00
2,100.00	12.61	204.70	2,072.98	-250.18	-115.07	250.22	0.00	0.00	0.00
2,200.00	12.61	204.70	2,170.57	-270.01	-124.19	270.06	0.00	0.00	0.00
2,300.00	12.61	204.70	2,268.16	-289.85	-133.32	289.89	0.00	0.00	0.00
2,400.00	12.61	204.70	2,365.75	-309.68	-142.44	309.73	0.00	0.00	0.00
2,500.00	12.61	204.70	2,463.34	-329.52	-151.56	329.57	0.00	0.00	0.00
2,600.00	12.61	204.70	2,560.92	-349.35	-160.68	349.41	0.00	0.00	0.00
2,700.00	12.61	204.70	2,658.51	-369.18	-169.81	369.24	0.00	0.00	0.00
2,800.00	12.61	204.70	2,756.10	-389.02	-178.93	389.08	0.00	0.00	0.00
2,900.00	12.61	204.70	2,853.69	-408.85	-188.05	408.92	0.00	0.00	0.00
3,000.00	12.61	204.70	2,951.27	-428.69	-197.17	428.75	0.00	0.00	0.00
3,100.00	12.61	204.70	3,048.86	-448.52	-206.30	448.59	0.00	0.00	0.00
3,200.00	12.61	204.70	3,146.45	-468.35	-215.42	468.43	0.00	0.00	0.00
3,300.00	12.61	204.70	3,244.04	-488.19	-224.54	488.27	0.00	0.00	0.00
3,400.00	12.61	204.70	3,341.63	-508.02	-233.66	508.10	0.00	0.00	0.00
3,500.00	12.61	204.70	3,439.21	-527.86	-242.79	527.94	0.00	0.00	0.00
3,600.00	12.61	204.70	3,536.80	-547.69	-251.91	547.78	0.00	0.00	0.00
3,700.00	12.61	204.70	3,634.39	-567.52	-261.03	567.61	0.00	0.00	0.00
3,800.00	12.61	204.70	3,731.98	-587.36	-270.15	587.45	0.00	0.00	0.00
3,900.00	12.61	204.70	3,829.57	-607.19	-279.28	607.29	0.00	0.00	0.00
4,000.00	12.61	204.70	3,927.15	-627.03	-288.40	627.13	0.00	0.00	0.00
4,060.67	12.61	204.70	3,986.36	-639.06	-293.93	639.16	0.00	0.00	0.00
Begin Drop @ 4060.67ft									
4,100.00	11.82	204.70	4,024.80	-646.62	-297.41	646.72	2.00	-2.00	0.00
4,200.00	9.82	204.70	4,123.02	-663.68	-305.26	663.79	2.00	-2.00	0.00
4,300.00	7.82	204.70	4,221.83	-677.61	-311.67	677.72	2.00	-2.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well CLELAND 15-4HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5168.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5168.00usft (Drilling Rig)
Site:	1N-68W-15 CLELAND 11-15HZ PAD	North Reference:	True
Well:	CLELAND 15-4HZ	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)
4,400.00	5.82	204.70	4,321.11	-688.41	-316.63	688.52	2.00	-2.00	0.00
4,500.00	3.82	204.70	4,420.75	-696.05	-320.15	696.16	2.00	-2.00	0.00
4,600.00	1.82	204.70	4,520.63	-700.52	-322.20	700.63	2.00	-2.00	0.00
4,691.17	0.00	0.00	4,611.78	-701.84	-322.81	701.95	2.00	-2.00	0.00
Hold Vertical @ 4691.17ft									
4,700.00	0.00	0.00	4,620.61	-701.84	-322.81	701.95	0.00	0.00	0.00
4,786.39	0.00	0.00	4,707.00	-701.84	-322.81	701.95	0.00	0.00	0.00
Sussex									
4,800.00	0.00	0.00	4,720.61	-701.84	-322.81	701.95	0.00	0.00	0.00
4,900.00	0.00	0.00	4,820.61	-701.84	-322.81	701.95	0.00	0.00	0.00
5,000.00	0.00	0.00	4,920.61	-701.84	-322.81	701.95	0.00	0.00	0.00
5,100.00	0.00	0.00	5,020.61	-701.84	-322.81	701.95	0.00	0.00	0.00
5,145.39	0.00	0.00	5,066.00	-701.84	-322.81	701.95	0.00	0.00	0.00
Shannon									
5,200.00	0.00	0.00	5,120.61	-701.84	-322.81	701.95	0.00	0.00	0.00
5,300.00	0.00	0.00	5,220.61	-701.84	-322.81	701.95	0.00	0.00	0.00
5,400.00	0.00	0.00	5,320.61	-701.84	-322.81	701.95	0.00	0.00	0.00
5,500.00	0.00	0.00	5,420.61	-701.84	-322.81	701.95	0.00	0.00	0.00
5,600.00	0.00	0.00	5,520.61	-701.84	-322.81	701.95	0.00	0.00	0.00
5,700.00	0.00	0.00	5,620.61	-701.84	-322.81	701.95	0.00	0.00	0.00
5,800.00	0.00	0.00	5,720.61	-701.84	-322.81	701.95	0.00	0.00	0.00
5,900.00	0.00	0.00	5,820.61	-701.84	-322.81	701.95	0.00	0.00	0.00
6,000.00	0.00	0.00	5,920.61	-701.84	-322.81	701.95	0.00	0.00	0.00
6,100.00	0.00	0.00	6,020.61	-701.84	-322.81	701.95	0.00	0.00	0.00
6,200.00	0.00	0.00	6,120.61	-701.84	-322.81	701.95	0.00	0.00	0.00
6,300.00	0.00	0.00	6,220.61	-701.84	-322.81	701.95	0.00	0.00	0.00
6,400.00	0.00	0.00	6,320.61	-701.84	-322.81	701.95	0.00	0.00	0.00
6,500.00	0.00	0.00	6,420.61	-701.84	-322.81	701.95	0.00	0.00	0.00
6,600.00	0.00	0.00	6,520.61	-701.84	-322.81	701.95	0.00	0.00	0.00
6,700.00	0.00	0.00	6,620.61	-701.84	-322.81	701.95	0.00	0.00	0.00
6,800.00	0.00	0.00	6,720.61	-701.84	-322.81	701.95	0.00	0.00	0.00
6,900.00	0.00	0.00	6,820.61	-701.84	-322.81	701.95	0.00	0.00	0.00
7,000.00	0.00	0.00	6,920.61	-701.84	-322.81	701.95	0.00	0.00	0.00
7,100.00	0.00	0.00	7,020.61	-701.84	-322.81	701.95	0.00	0.00	0.00
7,200.00	0.00	0.00	7,120.61	-701.84	-322.81	701.95	0.00	0.00	0.00
7,262.23	0.00	0.00	7,182.84	-701.84	-322.81	701.95	0.00	0.00	0.00
KOP @ 7262.23ft :: DLS = 8°/100'									
7,300.00	3.02	180.02	7,220.59	-702.83	-322.81	702.95	8.00	8.00	0.00
7,400.00	11.02	180.02	7,319.76	-715.05	-322.81	715.16	8.00	8.00	0.00
7,500.00	19.02	180.02	7,416.27	-740.95	-322.82	741.06	8.00	8.00	0.00
7,555.52	23.46	180.02	7,468.00	-761.05	-322.83	761.17	8.00	8.00	0.00
Sharon Springs									
7,593.02	26.46	180.02	7,502.00	-776.88	-322.84	777.00	8.00	8.00	0.00
Niobrara									
7,600.00	27.02	180.02	7,508.23	-780.02	-322.84	780.13	8.00	8.00	0.00
7,700.00	35.02	180.02	7,593.86	-831.52	-322.86	831.63	8.00	8.00	0.00
7,764.58	40.19	180.02	7,645.00	-870.91	-322.87	871.02	8.00	8.00	0.00
Nio B									
7,800.00	43.02	180.02	7,671.49	-894.43	-322.88	894.54	8.00	8.00	0.00
7,900.00	51.02	180.02	7,739.60	-967.53	-322.91	967.64	8.00	8.00	0.00
7,915.14	52.23	180.02	7,749.00	-979.40	-322.92	979.51	8.00	8.00	0.00
Nio C									
8,000.00	59.02	180.02	7,796.88	-1,049.40	-322.94	1,049.51	8.00	8.00	0.00

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Well:	CLELAND 15-4HZ	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)	
8,100.00	67.02	180.02	7,842.21	-1,138.44	-322.98	1,138.56	8.00	8.00	0.00	
8,189.80	74.21	180.02	7,872.00	-1,223.10	-323.01	1,223.21	8.00	8.00	0.00	
Fort Hayes										
8,200.00	75.02	180.02	7,874.71	-1,232.93	-323.01	1,233.04	8.00	8.00	0.00	
8,279.82	81.41	180.02	7,891.00	-1,311.03	-323.04	1,311.14	8.00	8.00	0.00	
Codell										
8,300.00	83.02	180.02	7,893.73	-1,331.02	-323.05	1,331.13	8.00	8.00	0.00	
8,379.72	89.40	180.02	7,899.00	-1,410.53	-323.08	1,410.64	8.00	8.00	0.00	
End Build @ 8379.72ft - Top of Production										
8,400.00	89.40	180.02	7,899.21	-1,430.80	-323.09	1,430.92	0.00	0.00	0.00	
8,500.00	89.40	180.02	7,900.26	-1,530.80	-323.13	1,530.91	0.00	0.00	0.00	
8,600.00	89.40	180.02	7,901.31	-1,630.79	-323.16	1,630.91	0.00	0.00	0.00	
8,700.00	89.40	180.02	7,902.36	-1,730.79	-323.20	1,730.90	0.00	0.00	0.00	
8,800.00	89.40	180.02	7,903.41	-1,830.78	-323.24	1,830.90	0.00	0.00	0.00	
8,900.00	89.40	180.02	7,904.46	-1,930.78	-323.28	1,930.89	0.00	0.00	0.00	
9,000.00	89.40	180.02	7,905.50	-2,030.77	-323.32	2,030.88	0.00	0.00	0.00	
9,100.00	89.40	180.02	7,906.55	-2,130.77	-323.35	2,130.88	0.00	0.00	0.00	
9,200.00	89.40	180.02	7,907.60	-2,230.76	-323.39	2,230.87	0.00	0.00	0.00	
9,300.00	89.40	180.02	7,908.65	-2,330.75	-323.43	2,330.87	0.00	0.00	0.00	
9,400.00	89.40	180.02	7,909.70	-2,430.75	-323.47	2,430.86	0.00	0.00	0.00	
9,500.00	89.40	180.02	7,910.75	-2,530.74	-323.51	2,530.86	0.00	0.00	0.00	
9,600.00	89.40	180.02	7,911.80	-2,630.74	-323.54	2,630.85	0.00	0.00	0.00	
9,700.00	89.40	180.02	7,912.84	-2,730.73	-323.58	2,730.85	0.00	0.00	0.00	
9,800.00	89.40	180.02	7,913.89	-2,830.73	-323.62	2,830.84	0.00	0.00	0.00	
9,900.00	89.40	180.02	7,914.94	-2,930.72	-323.66	2,930.83	0.00	0.00	0.00	
10,000.00	89.40	180.02	7,915.99	-3,030.72	-323.70	3,030.83	0.00	0.00	0.00	
10,100.00	89.40	180.02	7,917.04	-3,130.71	-323.74	3,130.82	0.00	0.00	0.00	
10,200.00	89.40	180.02	7,918.09	-3,230.71	-323.77	3,230.82	0.00	0.00	0.00	
10,300.00	89.40	180.02	7,919.14	-3,330.70	-323.81	3,330.81	0.00	0.00	0.00	
10,400.00	89.40	180.02	7,920.18	-3,430.69	-323.85	3,430.81	0.00	0.00	0.00	
10,500.00	89.40	180.02	7,921.23	-3,530.69	-323.89	3,530.80	0.00	0.00	0.00	
10,600.00	89.40	180.02	7,922.28	-3,630.68	-323.93	3,630.80	0.00	0.00	0.00	
10,700.00	89.40	180.02	7,923.33	-3,730.68	-323.96	3,730.79	0.00	0.00	0.00	
10,800.00	89.40	180.02	7,924.38	-3,830.67	-324.00	3,830.79	0.00	0.00	0.00	
10,900.00	89.40	180.02	7,925.43	-3,930.67	-324.04	3,930.78	0.00	0.00	0.00	
11,000.00	89.40	180.02	7,926.48	-4,030.66	-324.08	4,030.77	0.00	0.00	0.00	
11,100.00	89.40	180.02	7,927.52	-4,130.66	-324.12	4,130.77	0.00	0.00	0.00	
11,200.00	89.40	180.02	7,928.57	-4,230.65	-324.15	4,230.76	0.00	0.00	0.00	
11,300.00	89.40	180.02	7,929.62	-4,330.64	-324.19	4,330.76	0.00	0.00	0.00	
11,400.00	89.40	180.02	7,930.67	-4,430.64	-324.23	4,430.75	0.00	0.00	0.00	
11,500.00	89.40	180.02	7,931.72	-4,530.63	-324.27	4,530.75	0.00	0.00	0.00	
11,600.00	89.40	180.02	7,932.77	-4,630.63	-324.31	4,630.74	0.00	0.00	0.00	
11,700.00	89.40	180.02	7,933.82	-4,730.62	-324.35	4,730.74	0.00	0.00	0.00	
11,800.00	89.40	180.02	7,934.87	-4,830.62	-324.38	4,830.73	0.00	0.00	0.00	
11,900.00	89.40	180.02	7,935.91	-4,930.61	-324.42	4,930.72	0.00	0.00	0.00	
12,000.00	89.40	180.02	7,936.96	-5,030.61	-324.46	5,030.72	0.00	0.00	0.00	
12,100.00	89.40	180.02	7,938.01	-5,130.60	-324.50	5,130.71	0.00	0.00	0.00	
12,200.00	89.40	180.02	7,939.06	-5,230.60	-324.54	5,230.71	0.00	0.00	0.00	
12,300.00	89.40	180.02	7,940.11	-5,330.59	-324.57	5,330.70	0.00	0.00	0.00	
12,400.00	89.40	180.02	7,941.16	-5,430.58	-324.61	5,430.70	0.00	0.00	0.00	
12,500.00	89.40	180.02	7,942.21	-5,530.58	-324.65	5,530.69	0.00	0.00	0.00	
12,600.00	89.40	180.02	7,943.25	-5,630.57	-324.69	5,630.69	0.00	0.00	0.00	
12,700.00	89.40	180.02	7,944.30	-5,730.57	-324.73	5,730.68	0.00	0.00	0.00	

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well CLELAND 15-4HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5168.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5168.00usft (Drilling Rig)
Site:	1N-68W-15 CLELAND 11-15HZ PAD	North Reference:	True
Well:	CLELAND 15-4HZ	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)
12,800.00	89.40	180.02	7,945.35	-5,830.56	-324.76	5,830.68	0.00	0.00	0.00
12,900.00	89.40	180.02	7,946.40	-5,930.56	-324.80	5,930.67	0.00	0.00	0.00
13,000.00	89.40	180.02	7,947.45	-6,030.55	-324.84	6,030.66	0.00	0.00	0.00
13,100.00	89.40	180.02	7,948.50	-6,130.55	-324.88	6,130.66	0.00	0.00	0.00
13,200.00	89.40	180.02	7,949.55	-6,230.54	-324.92	6,230.65	0.00	0.00	0.00
13,300.00	89.40	180.02	7,950.59	-6,330.53	-324.96	6,330.65	0.00	0.00	0.00
13,400.00	89.40	180.02	7,951.64	-6,430.53	-324.99	6,430.64	0.00	0.00	0.00
13,500.00	89.40	180.02	7,952.69	-6,530.52	-325.03	6,530.64	0.00	0.00	0.00
13,600.00	89.40	180.02	7,953.74	-6,630.52	-325.07	6,630.63	0.00	0.00	0.00
13,700.00	89.40	180.02	7,954.79	-6,730.51	-325.11	6,730.63	0.00	0.00	0.00
13,800.00	89.40	180.02	7,955.84	-6,830.51	-325.15	6,830.62	0.00	0.00	0.00
13,900.00	89.40	180.02	7,956.89	-6,930.50	-325.18	6,930.61	0.00	0.00	0.00
14,000.00	89.40	180.02	7,957.93	-7,030.50	-325.22	7,030.61	0.00	0.00	0.00
14,100.00	89.40	180.02	7,958.98	-7,130.49	-325.26	7,130.60	0.00	0.00	0.00
14,200.00	89.40	180.02	7,960.03	-7,230.49	-325.30	7,230.60	0.00	0.00	0.00
14,300.00	89.40	180.02	7,961.08	-7,330.48	-325.34	7,330.59	0.00	0.00	0.00
14,400.00	89.40	180.02	7,962.13	-7,430.47	-325.37	7,430.59	0.00	0.00	0.00
14,500.00	89.40	180.02	7,963.18	-7,530.47	-325.41	7,530.58	0.00	0.00	0.00
14,600.00	89.40	180.02	7,964.23	-7,630.46	-325.45	7,630.58	0.00	0.00	0.00
14,700.00	89.40	180.02	7,965.27	-7,730.46	-325.49	7,730.57	0.00	0.00	0.00
14,800.00	89.40	180.02	7,966.32	-7,830.45	-325.53	7,830.57	0.00	0.00	0.00
14,900.00	89.40	180.02	7,967.37	-7,930.45	-325.56	7,930.56	0.00	0.00	0.00
15,000.00	89.40	180.02	7,968.42	-8,030.44	-325.60	8,030.55	0.00	0.00	0.00
15,100.00	89.40	180.02	7,969.47	-8,130.44	-325.64	8,130.55	0.00	0.00	0.00
15,200.00	89.40	180.02	7,970.52	-8,230.43	-325.68	8,230.54	0.00	0.00	0.00
15,300.00	89.40	180.02	7,971.57	-8,330.42	-325.72	8,330.54	0.00	0.00	0.00
15,400.00	89.40	180.02	7,972.61	-8,430.42	-325.76	8,430.53	0.00	0.00	0.00
15,500.00	89.40	180.02	7,973.66	-8,530.41	-325.79	8,530.53	0.00	0.00	0.00
15,600.00	89.40	180.02	7,974.71	-8,630.41	-325.83	8,630.52	0.00	0.00	0.00
15,700.00	89.40	180.02	7,975.76	-8,730.40	-325.87	8,730.52	0.00	0.00	0.00
15,800.00	89.40	180.02	7,976.81	-8,830.40	-325.91	8,830.51	0.00	0.00	0.00
15,900.00	89.40	180.02	7,977.86	-8,930.39	-325.95	8,930.50	0.00	0.00	0.00
16,000.00	89.40	180.02	7,978.91	-9,030.39	-325.98	9,030.50	0.00	0.00	0.00
16,100.00	89.40	180.02	7,979.95	-9,130.38	-326.02	9,130.49	0.00	0.00	0.00
16,200.00	89.40	180.02	7,981.00	-9,230.38	-326.06	9,230.49	0.00	0.00	0.00
16,300.00	89.40	180.02	7,982.05	-9,330.37	-326.10	9,330.48	0.00	0.00	0.00
16,400.00	89.40	180.02	7,983.10	-9,430.36	-326.14	9,430.48	0.00	0.00	0.00
16,500.00	89.40	180.02	7,984.15	-9,530.36	-326.17	9,530.47	0.00	0.00	0.00
16,600.00	89.40	180.02	7,985.20	-9,630.35	-326.21	9,630.47	0.00	0.00	0.00
16,700.00	89.40	180.02	7,986.25	-9,730.35	-326.25	9,730.46	0.00	0.00	0.00
16,800.00	89.40	180.02	7,987.29	-9,830.34	-326.29	9,830.46	0.00	0.00	0.00
16,900.00	89.40	180.02	7,988.34	-9,930.34	-326.33	9,930.45	0.00	0.00	0.00
17,000.00	89.40	180.02	7,989.39	-10,030.33	-326.37	10,030.44	0.00	0.00	0.00
17,100.00	89.40	180.02	7,990.44	-10,130.33	-326.40	10,130.44	0.00	0.00	0.00
17,200.00	89.40	180.02	7,991.49	-10,230.32	-326.44	10,230.43	0.00	0.00	0.00
17,300.00	89.40	180.02	7,992.54	-10,330.31	-326.48	10,330.43	0.00	0.00	0.00
17,400.00	89.40	180.02	7,993.59	-10,430.31	-326.52	10,430.42	0.00	0.00	0.00
17,500.00	89.40	180.02	7,994.63	-10,530.30	-326.56	10,530.42	0.00	0.00	0.00
17,600.00	89.40	180.02	7,995.68	-10,630.30	-326.59	10,630.41	0.00	0.00	0.00
17,700.00	89.40	180.02	7,996.73	-10,730.29	-326.63	10,730.41	0.00	0.00	0.00
17,800.00	89.40	180.02	7,997.78	-10,830.29	-326.67	10,830.40	0.00	0.00	0.00
17,900.00	89.40	180.02	7,998.83	-10,930.28	-326.71	10,930.40	0.00	0.00	0.00
18,000.00	89.40	180.02	7,999.88	-11,030.28	-326.75	11,030.39	0.00	0.00	0.00
18,100.00	89.40	180.02	8,000.93	-11,130.27	-326.78	11,130.38	0.00	0.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well CLELAND 15-4HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5168.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5168.00usft (Drilling Rig)
Site:	1N-68W-15 CLELAND 11-15HZ PAD	North Reference:	True
Well:	CLELAND 15-4HZ	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)	
18,200.00	89.40	180.02	8,001.97	-11,230.27	-326.82	11,230.38	0.00	0.00	0.00	
18,300.00	89.40	180.02	8,003.02	-11,330.26	-326.86	11,330.37	0.00	0.00	0.00	
18,400.00	89.40	180.02	8,004.07	-11,430.25	-326.90	11,430.37	0.00	0.00	0.00	
18,500.00	89.40	180.02	8,005.12	-11,530.25	-326.94	11,530.36	0.00	0.00	0.00	
18,600.00	89.40	180.02	8,006.17	-11,630.24	-326.98	11,630.36	0.00	0.00	0.00	
18,700.00	89.40	180.02	8,007.22	-11,730.24	-327.01	11,730.35	0.00	0.00	0.00	
18,800.00	89.40	180.02	8,008.27	-11,830.23	-327.05	11,830.35	0.00	0.00	0.00	
18,900.00	89.40	180.02	8,009.31	-11,930.23	-327.09	11,930.34	0.00	0.00	0.00	
19,000.00	89.40	180.02	8,010.36	-12,030.22	-327.13	12,030.33	0.00	0.00	0.00	
19,100.00	89.40	180.02	8,011.41	-12,130.22	-327.17	12,130.33	0.00	0.00	0.00	
19,200.00	89.40	180.02	8,012.46	-12,230.21	-327.20	12,230.32	0.00	0.00	0.00	
19,251.44	89.40	180.02	8,013.00	-12,281.65	-327.22	12,281.76	0.00	0.00	0.00	
TD Well @ 19251.44ft										

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,512.85	1,500.00	9 5/8" Csg	9-5/8	13-1/2	
8,379.72	7,899.00	Top of Production	5-1/2	7-7/8	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,260.77	1,254.00	Fox Hills				
4,786.39	4,707.00	Sussex				
5,145.39	5,066.00	Shannon				
7,555.52	7,468.00	Sharon Springs				
7,593.02	7,502.00	Niobrara				
7,764.58	7,645.00	Nio B				
7,915.14	7,749.00	Nio C				
8,189.80	7,872.00	Fort Hayes				
8,279.82	7,891.00	Codell				

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
420.00	420.00	0.00	0.00	Begin Nudge @ 420.00ft	
1,260.67	1,253.90	-83.71	-38.50	Hold Tangent @ 1260.67ft	
4,060.67	3,986.36	-639.06	-293.93	Begin Drop @ 4060.67ft	
4,691.17	4,611.78	-701.84	-322.81	Hold Vertical @ 4691.17ft	
7,262.23	7,182.84	-701.84	-322.81	KOP @ 7262.23ft :: DLS = 8°/100'	
8,379.72	7,899.00	-1,410.53	-323.08	End Build @ 8379.72ft	
19,251.44	8,013.00	-12,281.65	-327.22	TD Well @ 19251.44ft	