

US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N

1N-66W-09 Highlands 27-9HZ Pad

HIGHLANDS 37N-W16HZ

Plan A

Plan: Permit Rev-3

Standard Planning Report

16 June, 2016



Azimuths to True North
Magnetic North: 8.32°

Magnetic Field
Strength: 52544.9snT
Dip Angle: 66.65°
Date: 5/12/2015
Model: IGRF2010

SITE: 1N-66W-09 Highlands 27-9HZ Pad

Well: HIGHLANDS 37N-W16HZ
Wellbore: Plan A
Design: Permit Rev-3

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1468.00	1472.95	Fox Hills
4203.00	4238.06	Parkman
4599.00	4634.06	Sussex
7144.00	7253.01	Sharon Springs
7185.00	7323.96	Niobrara
7268.00	7544.90	Nio B

WELL DETAILS: HIGHLANDS 37N-W16HZ

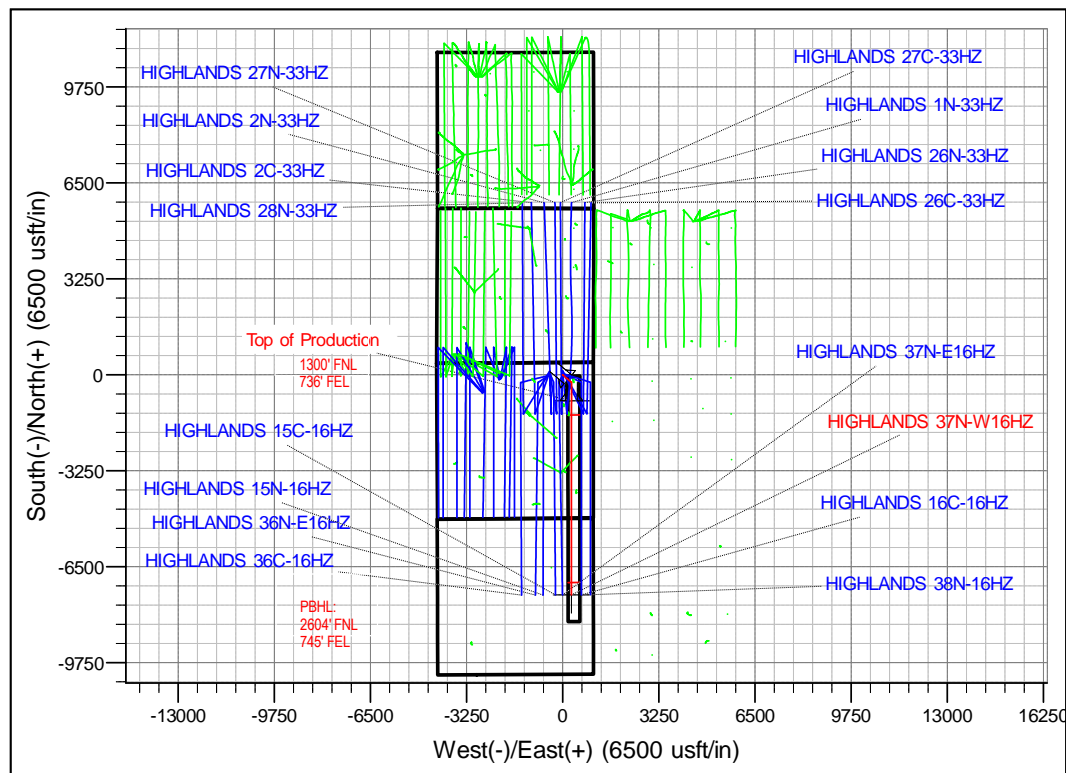
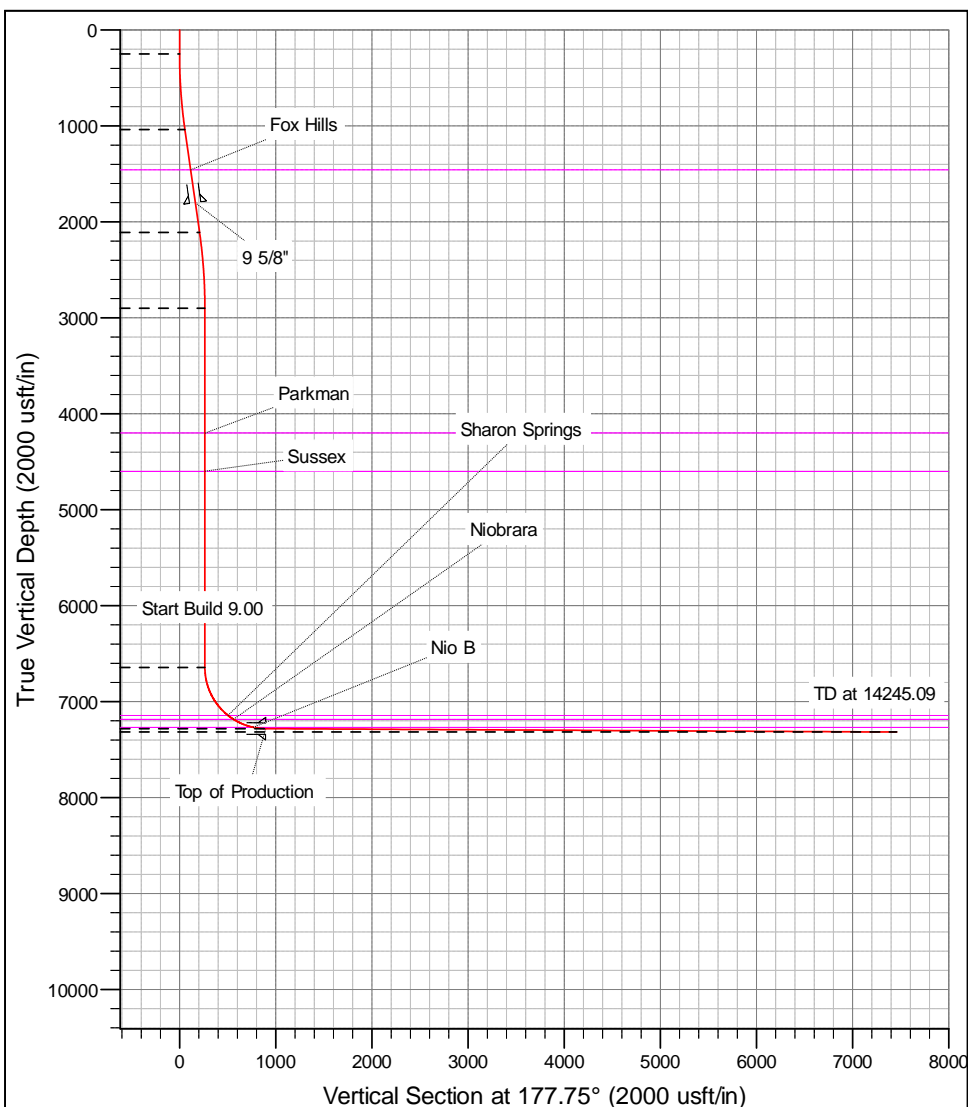
+N/-S	+E/-W	GL: 5001.00	RKB @ 5018.00usft (D Rig)	Longitude	Slot
0.00	0.00	Northing 14552982.94	Easting 1702953.32	Latitude 40.071870	-104.776461

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	Vsect
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
1044.50	11.92	130.13	1038.78	-53.06	62.95	1.50	55.49
2140.56	11.92	130.13	2111.22	-198.94	236.01	0.00	208.05
2935.06	0.00	0.00	2900.00	-252.00	298.96	1.50	263.55
6680.91	0.00	0.00	6645.86	-252.00	298.96	0.00	263.55
7677.47	89.69	180.05	7282.47	-885.18	298.43	9.00	896.21
14245.09	89.69	180.05	7318.00	-7452.70	292.96	0.007458.46	

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
HIGHLANDS 37N-W16HZ_PHL	7282.47	-885.18	298.43	14552098.52	1703253.98	40.069439	-104.775394
HIGHLANDS 37N-W16HZ_PBHL	7318.00	-7452.70	292.96	14545531.00	1703265.00	40.051404	-104.775414



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Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well HIGHLANDS 37N-W16HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB @ 5018.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB @ 5018.00usft (D Rig)
Site:	1N-66W-09 Highlands 27-9HZ Pad	North Reference:	True
Well:	HIGHLANDS 37N-W16HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-3		

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-66W-09 Highlands 27-9HZ Pad				
Site Position:		Northing:	14,553,120.23 usft	Latitude:	40.072250	
From:	Lat/Long	Easting:	1,702,521.87 usft	Longitude:	-104.778002	
Position Uncertainty:		0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.14 °

Well		HIGHLANDS 37N-W16HZ				
Well Position	+N-S	-138.37 usft	Northing:	14,552,982.94 usft	Latitude:	40.071870
	+E-W	431.11 usft	Easting:	1,702,953.32 usft	Longitude:	-104.776461
Position Uncertainty		3.28 usft	Wellhead Elevation:	0.00 usft	Ground Level:	5,001.00 usft

Wellbore	Plan A				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	5/12/2015	8.32	66.65	52,545

Design	Permit Rev-3			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	177.75

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	
1,044.50	11.92	130.13	1,038.78	-53.06	62.95	1.50	1.50	0.00	130.13	
2,140.56	11.92	130.13	2,111.22	-198.94	236.01	0.00	0.00	0.00	0.00	
2,935.06	0.00	0.00	2,900.00	-252.00	298.96	1.50	-1.50	0.00	180.00	
6,680.91	0.00	0.00	6,645.86	-252.00	298.96	0.00	0.00	0.00	0.00	
7,677.47	89.69	180.05	7,282.47	-885.18	298.43	9.00	9.00	0.00	180.05	
14,245.09	89.69	180.05	7,318.00	-7,452.70	292.96	0.00	0.00	0.00	0.00	HIGHLANDS 37N-V

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Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well HIGHLANDS 37N-W16HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB @ 5018.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB @ 5018.00usft (D Rig)
Site:	1N-66W-09 Highlands 27-9HZ Pad	North Reference:	True
Well:	HIGHLANDS 37N-W16HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-3		

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
300.00	0.75	130.13	300.00	-0.21	0.25	0.22	1.50	1.50	0.00
400.00	2.25	130.13	399.96	-1.90	2.25	1.98	1.50	1.50	0.00
500.00	3.75	130.13	499.82	-5.27	6.25	5.51	1.50	1.50	0.00
600.00	5.25	130.13	599.51	-10.33	12.25	10.80	1.50	1.50	0.00
700.00	6.75	130.13	698.96	-17.06	20.24	17.85	1.50	1.50	0.00
800.00	8.25	130.13	798.10	-25.48	30.22	26.64	1.50	1.50	0.00
900.00	9.75	130.13	896.87	-35.56	42.18	37.19	1.50	1.50	0.00
1,000.00	11.25	130.13	995.19	-47.30	56.12	49.47	1.50	1.50	0.00
1,044.50	11.92	130.13	1,038.78	-53.06	62.95	55.49	1.50	1.50	0.00
1,100.00	11.92	130.13	1,093.09	-60.45	71.71	63.22	0.00	0.00	0.00
1,200.00	11.92	130.13	1,190.93	-73.76	87.50	77.14	0.00	0.00	0.00
1,300.00	11.92	130.13	1,288.78	-87.07	103.29	91.06	0.00	0.00	0.00
1,400.00	11.92	130.13	1,386.62	-100.38	119.08	104.98	0.00	0.00	0.00
1,472.95	11.92	130.13	1,458.00	-110.09	130.60	115.13	0.00	0.00	0.00
Fox Hills									
1,500.00	11.92	130.13	1,484.47	-113.69	134.87	118.90	0.00	0.00	0.00
1,600.00	11.92	130.13	1,582.31	-126.99	150.66	132.81	0.00	0.00	0.00
1,700.00	11.92	130.13	1,680.15	-140.30	166.45	146.73	0.00	0.00	0.00
1,800.00	11.92	130.13	1,778.00	-153.61	182.24	160.65	0.00	0.00	0.00
1,822.49	11.92	130.13	1,800.00	-156.61	185.79	163.78	0.00	0.00	0.00
9 5/8"									
1,900.00	11.92	130.13	1,875.84	-166.92	198.03	174.57	0.00	0.00	0.00
2,000.00	11.92	130.13	1,973.69	-180.23	213.82	188.49	0.00	0.00	0.00
2,100.00	11.92	130.13	2,071.53	-193.54	229.61	202.41	0.00	0.00	0.00
2,140.56	11.92	130.13	2,111.22	-198.94	236.01	208.05	0.00	0.00	0.00
2,200.00	11.03	130.13	2,169.47	-206.56	245.05	216.02	1.50	-1.50	0.00
2,300.00	9.53	130.13	2,267.86	-218.05	258.69	228.05	1.50	-1.50	0.00
2,400.00	8.03	130.13	2,366.69	-227.89	270.35	238.33	1.50	-1.50	0.00
2,500.00	6.53	130.13	2,465.88	-236.05	280.04	246.87	1.50	-1.50	0.00
2,600.00	5.03	130.13	2,565.37	-242.53	287.73	253.65	1.50	-1.50	0.00
2,700.00	3.53	130.13	2,665.09	-247.34	293.43	258.67	1.50	-1.50	0.00
2,800.00	2.03	130.13	2,764.97	-250.46	297.13	261.94	1.50	-1.50	0.00
2,900.00	0.53	130.13	2,864.94	-251.90	298.84	263.44	1.50	-1.50	0.00
2,935.06	0.00	0.00	2,900.00	-252.00	298.96	263.55	1.50	-1.50	0.00
3,000.00	0.00	0.00	2,964.94	-252.00	298.96	263.55	0.00	0.00	0.00
3,100.00	0.00	0.00	3,064.94	-252.00	298.96	263.55	0.00	0.00	0.00
3,200.00	0.00	0.00	3,164.94	-252.00	298.96	263.55	0.00	0.00	0.00
3,300.00	0.00	0.00	3,264.94	-252.00	298.96	263.55	0.00	0.00	0.00
3,400.00	0.00	0.00	3,364.94	-252.00	298.96	263.55	0.00	0.00	0.00
3,500.00	0.00	0.00	3,464.94	-252.00	298.96	263.55	0.00	0.00	0.00
3,600.00	0.00	0.00	3,564.94	-252.00	298.96	263.55	0.00	0.00	0.00
3,700.00	0.00	0.00	3,664.94	-252.00	298.96	263.55	0.00	0.00	0.00
3,800.00	0.00	0.00	3,764.94	-252.00	298.96	263.55	0.00	0.00	0.00
3,900.00	0.00	0.00	3,864.94	-252.00	298.96	263.55	0.00	0.00	0.00
4,000.00	0.00	0.00	3,964.94	-252.00	298.96	263.55	0.00	0.00	0.00
4,100.00	0.00	0.00	4,064.94	-252.00	298.96	263.55	0.00	0.00	0.00
4,200.00	0.00	0.00	4,164.94	-252.00	298.96	263.55	0.00	0.00	0.00
4,238.06	0.00	0.00	4,203.00	-252.00	298.96	263.55	0.00	0.00	0.00
Parkman									

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Planning Report

Database: PLANNING
Company: US ROCKIES WATTENBERG PLANNING
Project: WELD-NAD83-UTMFT13N
Site: 1N-66W-09 Highlands 27-9HZ Pad
Well: HIGHLANDS 37N-W16HZ
Wellbore: Plan A
Design: Permit Rev-3

Local Co-ordinate Reference: Well HIGHLANDS 37N-W16HZ
TVD Reference: RKB @ 5018.00usft (D Rig)
MD Reference: RKB @ 5018.00usft (D Rig)
North Reference: True
Survey Calculation Method: Minimum Curvature

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)
4,300.00	0.00	0.00	4,264.94	-252.00	298.96	263.55	0.00	0.00	0.00
4,400.00	0.00	0.00	4,364.94	-252.00	298.96	263.55	0.00	0.00	0.00
4,500.00	0.00	0.00	4,464.94	-252.00	298.96	263.55	0.00	0.00	0.00
4,600.00	0.00	0.00	4,564.94	-252.00	298.96	263.55	0.00	0.00	0.00
4,634.06	0.00	0.00	4,599.00	-252.00	298.96	263.55	0.00	0.00	0.00
Sussex									
4,700.00	0.00	0.00	4,664.94	-252.00	298.96	263.55	0.00	0.00	0.00
4,800.00	0.00	0.00	4,764.94	-252.00	298.96	263.55	0.00	0.00	0.00
4,900.00	0.00	0.00	4,864.94	-252.00	298.96	263.55	0.00	0.00	0.00
5,000.00	0.00	0.00	4,964.94	-252.00	298.96	263.55	0.00	0.00	0.00
5,100.00	0.00	0.00	5,064.94	-252.00	298.96	263.55	0.00	0.00	0.00
5,200.00	0.00	0.00	5,164.94	-252.00	298.96	263.55	0.00	0.00	0.00
5,300.00	0.00	0.00	5,264.94	-252.00	298.96	263.55	0.00	0.00	0.00
5,400.00	0.00	0.00	5,364.94	-252.00	298.96	263.55	0.00	0.00	0.00
5,500.00	0.00	0.00	5,464.94	-252.00	298.96	263.55	0.00	0.00	0.00
5,600.00	0.00	0.00	5,564.94	-252.00	298.96	263.55	0.00	0.00	0.00
5,700.00	0.00	0.00	5,664.94	-252.00	298.96	263.55	0.00	0.00	0.00
5,800.00	0.00	0.00	5,764.94	-252.00	298.96	263.55	0.00	0.00	0.00
5,900.00	0.00	0.00	5,864.94	-252.00	298.96	263.55	0.00	0.00	0.00
6,000.00	0.00	0.00	5,964.94	-252.00	298.96	263.55	0.00	0.00	0.00
6,100.00	0.00	0.00	6,064.94	-252.00	298.96	263.55	0.00	0.00	0.00
6,200.00	0.00	0.00	6,164.94	-252.00	298.96	263.55	0.00	0.00	0.00
6,300.00	0.00	0.00	6,264.94	-252.00	298.96	263.55	0.00	0.00	0.00
6,400.00	0.00	0.00	6,364.94	-252.00	298.96	263.55	0.00	0.00	0.00
6,500.00	0.00	0.00	6,464.94	-252.00	298.96	263.55	0.00	0.00	0.00
6,600.00	0.00	0.00	6,564.94	-252.00	298.96	263.55	0.00	0.00	0.00
6,680.91	0.00	0.00	6,645.86	-252.00	298.96	263.55	0.00	0.00	0.00
6,700.00	1.72	180.05	6,664.94	-252.29	298.96	263.83	9.00	9.00	0.00
6,800.00	10.72	180.05	6,764.25	-263.11	298.95	274.65	9.00	9.00	0.00
6,900.00	19.72	180.05	6,860.64	-289.33	298.93	300.85	9.00	9.00	0.00
7,000.00	28.72	180.05	6,951.75	-330.31	298.89	341.79	9.00	9.00	0.00
7,100.00	37.72	180.05	7,035.32	-385.03	298.85	396.47	9.00	9.00	0.00
7,200.00	46.72	180.05	7,109.31	-452.16	298.79	463.55	9.00	9.00	0.00
7,253.01	51.49	180.05	7,144.00	-492.21	298.76	503.57	9.00	9.00	0.00
Sharon Springs									
7,300.00	55.72	180.05	7,171.88	-530.03	298.73	541.36	9.00	9.00	0.00
7,323.96	57.87	180.05	7,185.00	-550.08	298.71	561.39	9.00	9.00	0.00
Niobrara									
7,400.00	64.72	180.05	7,221.50	-616.73	298.66	627.99	9.00	9.00	0.00
7,500.00	73.72	180.05	7,256.94	-710.13	298.58	721.31	9.00	9.00	0.00
7,544.90	77.76	180.05	7,268.00	-753.63	298.54	764.78	9.00	9.00	0.00
Nio B									
7,600.00	82.72	180.05	7,277.34	-807.92	298.50	819.03	9.00	9.00	0.00
7,677.47	89.69	180.05	7,282.47	-885.18	298.43	896.22	9.00	9.00	0.00
Top of Production - HIGHLANDS 37N-W16HZ_PHL									
7,700.00	89.69	180.05	7,282.59	-907.71	298.41	918.73	0.00	0.00	0.00
7,800.00	89.69	180.05	7,283.13	-1,007.70	298.33	1,018.65	0.00	0.00	0.00
7,900.00	89.69	180.05	7,283.67	-1,107.70	298.25	1,118.56	0.00	0.00	0.00
8,000.00	89.69	180.05	7,284.21	-1,207.70	298.16	1,218.48	0.00	0.00	0.00
8,100.00	89.69	180.05	7,284.75	-1,307.70	298.08	1,318.40	0.00	0.00	0.00
8,200.00	89.69	180.05	7,285.29	-1,407.70	298.00	1,418.32	0.00	0.00	0.00
8,300.00	89.69	180.05	7,285.83	-1,507.70	297.91	1,518.24	0.00	0.00	0.00
8,400.00	89.69	180.05	7,286.38	-1,607.70	297.83	1,618.15	0.00	0.00	0.00
8,500.00	89.69	180.05	7,286.92	-1,707.69	297.75	1,718.07	0.00	0.00	0.00

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Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well HIGHLANDS 37N-W16HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB @ 5018.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB @ 5018.00usft (D Rig)
Site:	1N-66W-09 Highlands 27-9HZ Pad	North Reference:	True
Well:	HIGHLANDS 37N-W16HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-3		

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)
8,600.00	89.69	180.05	7,287.46	-1,807.69	297.66	1,817.99	0.00	0.00	0.00
8,700.00	89.69	180.05	7,288.00	-1,907.69	297.58	1,917.91	0.00	0.00	0.00
8,800.00	89.69	180.05	7,288.54	-2,007.69	297.50	2,017.83	0.00	0.00	0.00
8,900.00	89.69	180.05	7,289.08	-2,107.69	297.41	2,117.74	0.00	0.00	0.00
9,000.00	89.69	180.05	7,289.62	-2,207.69	297.33	2,217.66	0.00	0.00	0.00
9,100.00	89.69	180.05	7,290.16	-2,307.69	297.25	2,317.58	0.00	0.00	0.00
9,200.00	89.69	180.05	7,290.70	-2,407.68	297.16	2,417.50	0.00	0.00	0.00
9,300.00	89.69	180.05	7,291.24	-2,507.68	297.08	2,517.42	0.00	0.00	0.00
9,400.00	89.69	180.05	7,291.79	-2,607.68	297.00	2,617.33	0.00	0.00	0.00
9,500.00	89.69	180.05	7,292.33	-2,707.68	296.91	2,717.25	0.00	0.00	0.00
9,600.00	89.69	180.05	7,292.87	-2,807.68	296.83	2,817.17	0.00	0.00	0.00
9,700.00	89.69	180.05	7,293.41	-2,907.68	296.75	2,917.09	0.00	0.00	0.00
9,800.00	89.69	180.05	7,293.95	-3,007.67	296.66	3,017.01	0.00	0.00	0.00
9,900.00	89.69	180.05	7,294.49	-3,107.67	296.58	3,116.92	0.00	0.00	0.00
10,000.00	89.69	180.05	7,295.03	-3,207.67	296.50	3,216.84	0.00	0.00	0.00
10,100.00	89.69	180.05	7,295.57	-3,307.67	296.41	3,316.76	0.00	0.00	0.00
10,200.00	89.69	180.05	7,296.11	-3,407.67	296.33	3,416.68	0.00	0.00	0.00
10,300.00	89.69	180.05	7,296.66	-3,507.67	296.25	3,516.60	0.00	0.00	0.00
10,400.00	89.69	180.05	7,297.20	-3,607.67	296.16	3,616.51	0.00	0.00	0.00
10,500.00	89.69	180.05	7,297.74	-3,707.66	296.08	3,716.43	0.00	0.00	0.00
10,600.00	89.69	180.05	7,298.28	-3,807.66	296.00	3,816.35	0.00	0.00	0.00
10,700.00	89.69	180.05	7,298.82	-3,907.66	295.91	3,916.27	0.00	0.00	0.00
10,800.00	89.69	180.05	7,299.36	-4,007.66	295.83	4,016.19	0.00	0.00	0.00
10,900.00	89.69	180.05	7,299.90	-4,107.66	295.75	4,116.11	0.00	0.00	0.00
11,000.00	89.69	180.05	7,300.44	-4,207.66	295.66	4,216.02	0.00	0.00	0.00
11,100.00	89.69	180.05	7,300.98	-4,307.66	295.58	4,315.94	0.00	0.00	0.00
11,200.00	89.69	180.05	7,301.52	-4,407.65	295.50	4,415.86	0.00	0.00	0.00
11,300.00	89.69	180.05	7,302.07	-4,507.65	295.41	4,515.78	0.00	0.00	0.00
11,400.00	89.69	180.05	7,302.61	-4,607.65	295.33	4,615.70	0.00	0.00	0.00
11,500.00	89.69	180.05	7,303.15	-4,707.65	295.25	4,715.61	0.00	0.00	0.00
11,600.00	89.69	180.05	7,303.69	-4,807.65	295.16	4,815.53	0.00	0.00	0.00
11,700.00	89.69	180.05	7,304.23	-4,907.65	295.08	4,915.45	0.00	0.00	0.00
11,800.00	89.69	180.05	7,304.77	-5,007.65	295.00	5,015.37	0.00	0.00	0.00
11,900.00	89.69	180.05	7,305.31	-5,107.64	294.91	5,115.29	0.00	0.00	0.00
12,000.00	89.69	180.05	7,305.85	-5,207.64	294.83	5,215.20	0.00	0.00	0.00
12,100.00	89.69	180.05	7,306.39	-5,307.64	294.75	5,315.12	0.00	0.00	0.00
12,200.00	89.69	180.05	7,306.94	-5,407.64	294.66	5,415.04	0.00	0.00	0.00
12,300.00	89.69	180.05	7,307.48	-5,507.64	294.58	5,514.96	0.00	0.00	0.00
12,400.00	89.69	180.05	7,308.02	-5,607.64	294.50	5,614.88	0.00	0.00	0.00
12,500.00	89.69	180.05	7,308.56	-5,707.63	294.41	5,714.79	0.00	0.00	0.00
12,600.00	89.69	180.05	7,309.10	-5,807.63	294.33	5,814.71	0.00	0.00	0.00
12,700.00	89.69	180.05	7,309.64	-5,907.63	294.25	5,914.63	0.00	0.00	0.00
12,800.00	89.69	180.05	7,310.18	-6,007.63	294.16	6,014.55	0.00	0.00	0.00
12,900.00	89.69	180.05	7,310.72	-6,107.63	294.08	6,114.47	0.00	0.00	0.00
13,000.00	89.69	180.05	7,311.26	-6,207.63	294.00	6,214.38	0.00	0.00	0.00
13,100.00	89.69	180.05	7,311.80	-6,307.63	293.91	6,314.30	0.00	0.00	0.00
13,200.00	89.69	180.05	7,312.35	-6,407.62	293.83	6,414.22	0.00	0.00	0.00
13,300.00	89.69	180.05	7,312.89	-6,507.62	293.75	6,514.14	0.00	0.00	0.00
13,400.00	89.69	180.05	7,313.43	-6,607.62	293.66	6,614.06	0.00	0.00	0.00
13,500.00	89.69	180.05	7,313.97	-6,707.62	293.58	6,713.97	0.00	0.00	0.00
13,600.00	89.69	180.05	7,314.51	-6,807.62	293.50	6,813.89	0.00	0.00	0.00
13,700.00	89.69	180.05	7,315.05	-6,907.62	293.41	6,913.81	0.00	0.00	0.00
13,800.00	89.69	180.05	7,315.59	-7,007.62	293.33	7,013.73	0.00	0.00	0.00
13,900.00	89.69	180.05	7,316.13	-7,107.61	293.25	7,113.65	0.00	0.00	0.00

Anadarko

Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well HIGHLANDS 37N-W16HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB @ 5018.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB @ 5018.00usft (D Rig)
Site:	1N-66W-09 Highlands 27-9HZ Pad	North Reference:	True
Well:	HIGHLANDS 37N-W16HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-3		

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)	
14,000.00	89.69	180.05	7,316.67	-7,207.61	293.16	7,213.57	0.00	0.00	0.00	
14,100.00	89.69	180.05	7,317.22	-7,307.61	293.08	7,313.48	0.00	0.00	0.00	
14,200.00	89.69	180.05	7,317.76	-7,407.61	293.00	7,413.40	0.00	0.00	0.00	
14,245.09	89.69	180.05	7,318.00	-7,452.70	292.96	7,458.46	0.00	0.00	0.00	
HIGHLANDS 37N-W16HZ_PBHL										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
- hit/miss target										
- Shape										
HIGHLANDS 37N-W1	0.00	0.00	7,282.47	-885.18	298.43	14,552,098.51	1,703,253.97	40.069439	-104.775395	
- plan hits target center										
- Point										
HIGHLANDS 37N-W1	0.00	0.00	7,318.00	-7,452.70	292.96	14,545,531.00	1,703,265.00	40.051404	-104.775414	
- plan hits target center										
- Point										

Casing Points									
Measured Depth (usft)	Vertical Depth (usft)	Name		Casing Diameter (")	Hole Diameter (")				
1,822.49	1,800.00	9 5/8"		9-5/8	13-1/2				
7,677.47	7,282.47	Top of Production		5-1/2	8-1/2				

Formations									
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)				
1,472.95	1,458.00	Fox Hills							
4,238.06	4,203.00	Parkman							
4,634.06	4,599.00	Sussex							
7,253.01	7,144.00	Sharon Springs							
7,323.96	7,185.00	Niobrara							
7,544.90	7,268.00	Nio B							