

US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N

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

HIGHLANDS 28N-33HZ

Plan A

Plan: Permit Rev-3

Standard Planning Report

16 June, 2016



Azimuths to True North
Magnetic North: 8.32°

Magnetic Field
Strength: 52544.4snT
Dip Angle: 66.65°
Date: 5/14/2015
Model: IGRF2010

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

Well: HIGHLANDS 28N-33HZ
Wellbore: Plan A
Design: Permit Rev-3

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1468.00	1479.10	Fox Hills
4203.00	4402.91	Parkman
4599.00	4824.80	Sussex
7116.00	7456.94	Sharon Springs
7157.00	7522.92	Niobrara
7265.00	7803.25	Nio B

WELL DETAILS: HIGHLANDS 28N-33HZ

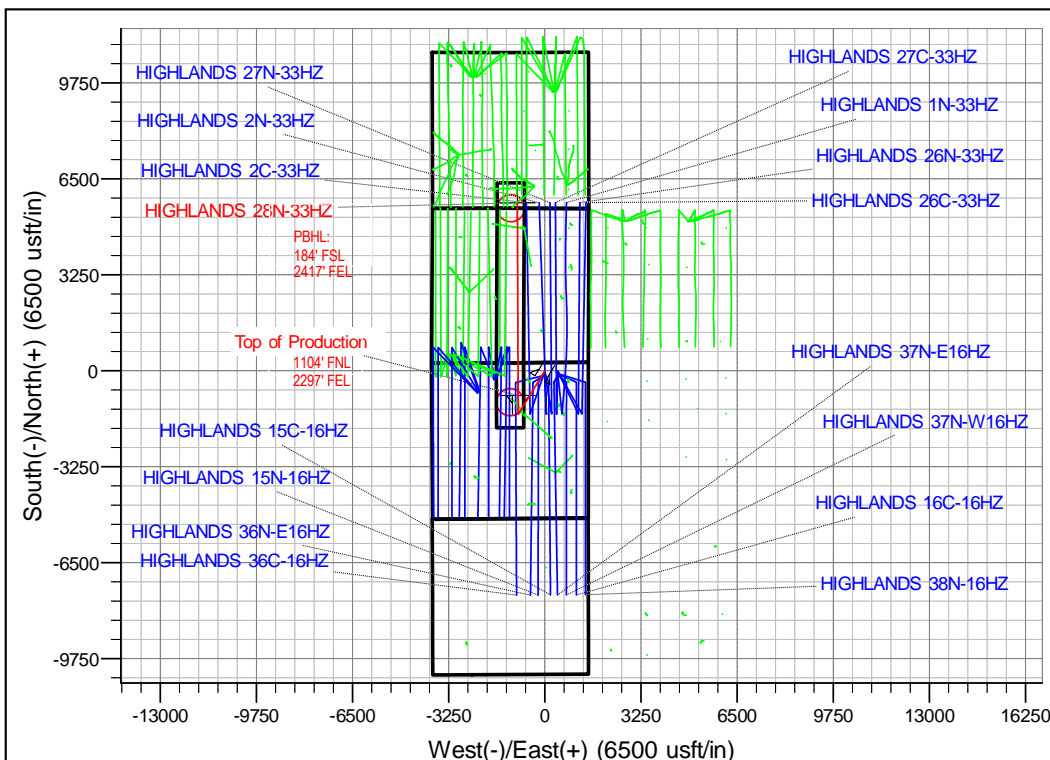
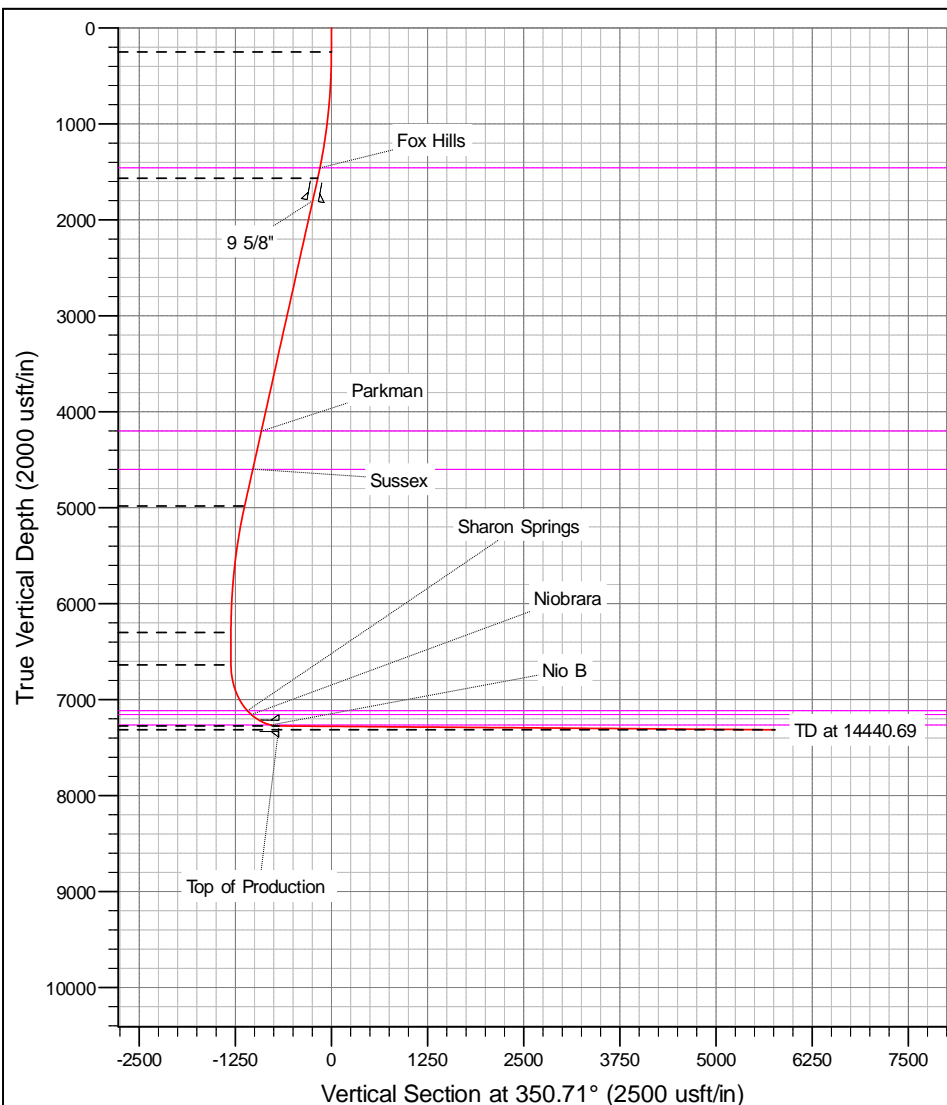
+N/-S	+E/-W	GL: 5001.00	RKB @ 5018.00usft (D Rig)	Longitude	Slot
0.00	0.00	Northing 14553120.24	Easting 1702521.87	Latitude 40.072250	-104.778002

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
1595.03	20.18	211.48	1567.40	-199.89	-122.38	1.50	-177.51
5233.47	20.18	211.48	4982.60	-1270.11	-777.62	0.00	1127.94
6578.50	0.00	0.00	6300.00	-1470.00	-900.00	1.50	1305.45
6917.02	0.00	0.00	6638.52	-1470.00	-900.00	0.00	1305.45
7913.13	89.65	359.75	7275.13	-837.27	-902.71	9.00	-680.58
14440.69	89.65	359.75	7315.00	5690.10	-930.68	0.005765.71	

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
HIGHLANDS 28N-33HZ, PHL	7275.13	-837.27	-902.71	14552280.72	1701621.25	40.069951	-104.781229
HIGHLANDS 28N-33HZ, PBHL	7315.00	5690.10	-930.68	14558808.00	1701577.00	40.087876	-104.781329



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Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well HIGHLANDS 28N-33HZ
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 28N-33HZ	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 28N-33HZ					
Well Position	+N/-S	0.00 usft	Northing:	14,553,120.23 usft	Latitude:	40.072250
	+E/-W	0.00 usft	Easting:	1,702,521.87 usft	Longitude:	-104.778002
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	5/14/2015	8.32	66.65	52,544

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	350.71

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	
1,595.03	20.18	211.48	1,567.40	-199.89	-122.38	1.50	1.50	0.00	211.48	
5,233.47	20.18	211.48	4,982.60	-1,270.11	-777.62	0.00	0.00	0.00	0.00	
6,578.50	0.00	0.00	6,300.00	-1,470.00	-900.00	1.50	-1.50	0.00	180.00	
6,917.02	0.00	0.00	6,638.52	-1,470.00	-900.00	0.00	0.00	0.00	0.00	
7,913.13	89.65	359.75	7,275.13	-837.27	-902.71	9.00	9.00	0.00	359.75	
14,440.69	89.65	359.75	7,315.00	5,690.10	-930.68	0.00	0.00	0.00	0.00	HIGHLANDS 28N-3

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Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well HIGHLANDS 28N-33HZ
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 28N-33HZ	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	211.48	300.00	-0.28	-0.17	-0.25	1.50	1.50	0.00
400.00	2.25	211.48	399.96	-2.51	-1.54	-2.23	1.50	1.50	0.00
500.00	3.75	211.48	499.82	-6.97	-4.27	-6.19	1.50	1.50	0.00
600.00	5.25	211.48	599.51	-13.67	-8.37	-12.14	1.50	1.50	0.00
700.00	6.75	211.48	698.96	-22.58	-13.82	-20.05	1.50	1.50	0.00
800.00	8.25	211.48	798.10	-33.71	-20.64	-29.94	1.50	1.50	0.00
900.00	9.75	211.48	896.87	-47.05	-28.81	-41.79	1.50	1.50	0.00
1,000.00	11.25	211.48	995.19	-62.59	-38.32	-55.59	1.50	1.50	0.00
1,100.00	12.75	211.48	1,093.00	-80.33	-49.18	-71.33	1.50	1.50	0.00
1,200.00	14.25	211.48	1,190.24	-100.23	-61.37	-89.01	1.50	1.50	0.00
1,300.00	15.75	211.48	1,286.83	-122.31	-74.88	-108.62	1.50	1.50	0.00
1,400.00	17.25	211.48	1,382.71	-146.53	-89.71	-130.13	1.50	1.50	0.00
1,479.10	18.44	211.48	1,458.00	-167.20	-102.37	-148.48	1.50	1.50	0.00
Fox Hills									
1,500.00	18.75	211.48	1,477.81	-172.88	-105.85	-153.53	1.50	1.50	0.00
1,595.03	20.18	211.48	1,567.40	-199.89	-122.38	-177.51	1.50	1.50	0.00
1,600.00	20.18	211.48	1,572.07	-201.35	-123.27	-178.81	0.00	0.00	0.00
1,700.00	20.18	211.48	1,665.94	-230.76	-141.28	-204.93	0.00	0.00	0.00
1,800.00	20.18	211.48	1,759.80	-260.18	-159.29	-231.05	0.00	0.00	0.00
1,842.83	20.18	211.48	1,800.00	-272.78	-167.01	-242.24	0.00	0.00	0.00
9 5/8"									
1,900.00	20.18	211.48	1,853.66	-289.59	-177.30	-257.18	0.00	0.00	0.00
2,000.00	20.18	211.48	1,947.53	-319.01	-195.31	-283.30	0.00	0.00	0.00
2,100.00	20.18	211.48	2,041.39	-348.42	-213.32	-309.42	0.00	0.00	0.00
2,200.00	20.18	211.48	2,135.26	-377.84	-231.33	-335.54	0.00	0.00	0.00
2,300.00	20.18	211.48	2,229.12	-407.25	-249.34	-361.66	0.00	0.00	0.00
2,400.00	20.18	211.48	2,322.98	-436.66	-267.35	-387.78	0.00	0.00	0.00
2,500.00	20.18	211.48	2,416.85	-466.08	-285.35	-413.91	0.00	0.00	0.00
2,600.00	20.18	211.48	2,510.71	-495.49	-303.36	-440.03	0.00	0.00	0.00
2,700.00	20.18	211.48	2,604.58	-524.91	-321.37	-466.15	0.00	0.00	0.00
2,800.00	20.18	211.48	2,698.44	-554.32	-339.38	-492.27	0.00	0.00	0.00
2,900.00	20.18	211.48	2,792.30	-583.74	-357.39	-518.39	0.00	0.00	0.00
3,000.00	20.18	211.48	2,886.17	-613.15	-375.40	-544.51	0.00	0.00	0.00
3,100.00	20.18	211.48	2,980.03	-642.57	-393.41	-570.64	0.00	0.00	0.00
3,200.00	20.18	211.48	3,073.90	-671.98	-411.42	-596.76	0.00	0.00	0.00
3,300.00	20.18	211.48	3,167.76	-701.39	-429.43	-622.88	0.00	0.00	0.00
3,400.00	20.18	211.48	3,261.62	-730.81	-447.43	-649.00	0.00	0.00	0.00
3,500.00	20.18	211.48	3,355.49	-760.22	-465.44	-675.12	0.00	0.00	0.00
3,600.00	20.18	211.48	3,449.35	-789.64	-483.45	-701.25	0.00	0.00	0.00
3,700.00	20.18	211.48	3,543.22	-819.05	-501.46	-727.37	0.00	0.00	0.00
3,800.00	20.18	211.48	3,637.08	-848.47	-519.47	-753.49	0.00	0.00	0.00
3,900.00	20.18	211.48	3,730.95	-877.88	-537.48	-779.61	0.00	0.00	0.00
4,000.00	20.18	211.48	3,824.81	-907.30	-555.49	-805.73	0.00	0.00	0.00
4,100.00	20.18	211.48	3,918.67	-936.71	-573.50	-831.85	0.00	0.00	0.00
4,200.00	20.18	211.48	4,012.54	-966.12	-591.50	-857.98	0.00	0.00	0.00
4,300.00	20.18	211.48	4,106.40	-995.54	-609.51	-884.10	0.00	0.00	0.00
4,400.00	20.18	211.48	4,200.27	-1,024.95	-627.52	-910.22	0.00	0.00	0.00
4,402.91	20.18	211.48	4,203.00	-1,025.81	-628.05	-910.98	0.00	0.00	0.00
Parkman									

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Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well HIGHLANDS 28N-33HZ
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 28N-33HZ	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)
4,500.00	20.18	211.48	4,294.13	-1,054.37	-645.53	-936.34	0.00	0.00	0.00
4,600.00	20.18	211.48	4,387.99	-1,083.78	-663.54	-962.46	0.00	0.00	0.00
4,700.00	20.18	211.48	4,481.86	-1,113.20	-681.55	-988.59	0.00	0.00	0.00
4,800.00	20.18	211.48	4,575.72	-1,142.61	-699.56	-1,014.71	0.00	0.00	0.00
4,824.80	20.18	211.48	4,599.00	-1,149.91	-704.02	-1,021.19	0.00	0.00	0.00
Sussex									
4,900.00	20.18	211.48	4,669.59	-1,172.03	-717.57	-1,040.83	0.00	0.00	0.00
5,000.00	20.18	211.48	4,763.45	-1,201.44	-735.58	-1,066.95	0.00	0.00	0.00
5,100.00	20.18	211.48	4,857.31	-1,230.85	-753.58	-1,093.07	0.00	0.00	0.00
5,200.00	20.18	211.48	4,951.18	-1,260.27	-771.59	-1,119.19	0.00	0.00	0.00
5,233.47	20.18	211.48	4,982.60	-1,270.11	-777.62	-1,127.94	0.00	0.00	0.00
5,300.00	19.18	211.48	5,045.24	-1,289.22	-789.32	-1,144.90	1.50	-1.50	0.00
5,400.00	17.68	211.48	5,140.11	-1,316.18	-805.82	-1,168.84	1.50	-1.50	0.00
5,500.00	16.18	211.48	5,235.77	-1,341.01	-821.03	-1,190.90	1.50	-1.50	0.00
5,600.00	14.68	211.48	5,332.17	-1,363.69	-834.91	-1,211.04	1.50	-1.50	0.00
5,700.00	13.18	211.48	5,429.23	-1,384.22	-847.48	-1,229.27	1.50	-1.50	0.00
5,800.00	11.68	211.48	5,526.88	-1,402.57	-858.72	-1,245.57	1.50	-1.50	0.00
5,900.00	10.18	211.48	5,625.06	-1,418.74	-868.62	-1,259.93	1.50	-1.50	0.00
6,000.00	8.68	211.48	5,723.71	-1,432.71	-877.17	-1,272.33	1.50	-1.50	0.00
6,100.00	7.18	211.48	5,822.75	-1,444.47	-884.37	-1,282.78	1.50	-1.50	0.00
6,200.00	5.68	211.48	5,922.12	-1,454.02	-890.22	-1,291.26	1.50	-1.50	0.00
6,300.00	4.18	211.48	6,021.75	-1,461.35	-894.70	-1,297.76	1.50	-1.50	0.00
6,400.00	2.68	211.48	6,121.57	-1,466.44	-897.82	-1,302.29	1.50	-1.50	0.00
6,500.00	1.18	211.48	6,221.51	-1,469.31	-899.58	-1,304.84	1.50	-1.50	0.00
6,578.50	0.00	0.00	6,300.00	-1,470.00	-900.00	-1,305.45	1.50	-1.50	0.00
6,600.00	0.00	0.00	6,321.50	-1,470.00	-900.00	-1,305.45	0.00	0.00	0.00
6,700.00	0.00	0.00	6,421.50	-1,470.00	-900.00	-1,305.45	0.00	0.00	0.00
6,800.00	0.00	0.00	6,521.50	-1,470.00	-900.00	-1,305.45	0.00	0.00	0.00
6,900.00	0.00	0.00	6,621.50	-1,470.00	-900.00	-1,305.45	0.00	0.00	0.00
6,917.02	0.00	0.00	6,638.52	-1,470.00	-900.00	-1,305.45	0.00	0.00	0.00
7,000.00	7.47	359.75	6,721.27	-1,464.60	-900.02	-1,300.11	9.00	9.00	0.00
7,100.00	16.47	359.75	6,818.99	-1,443.88	-900.11	-1,279.66	9.00	9.00	0.00
7,200.00	25.47	359.75	6,912.27	-1,408.14	-900.27	-1,244.35	9.00	9.00	0.00
7,300.00	34.47	359.75	6,998.81	-1,358.23	-900.48	-1,195.07	9.00	9.00	0.00
7,400.00	43.47	359.75	7,076.48	-1,295.41	-900.75	-1,133.03	9.00	9.00	0.00
7,456.94	48.59	359.75	7,116.00	-1,254.45	-900.92	-1,092.57	9.00	9.00	0.00
Sharon Springs									
7,500.00	52.47	359.75	7,143.37	-1,221.21	-901.07	-1,059.75	9.00	9.00	0.00
7,522.92	54.53	359.75	7,157.00	-1,202.79	-901.14	-1,041.56	9.00	9.00	0.00
Niobrara									
7,600.00	61.47	359.75	7,197.82	-1,137.46	-901.42	-977.04	9.00	9.00	0.00
7,700.00	70.47	359.75	7,238.51	-1,046.22	-901.82	-886.93	9.00	9.00	0.00
7,800.00	79.47	359.75	7,264.41	-949.74	-902.23	-791.65	9.00	9.00	0.00
7,803.25	79.76	359.75	7,265.00	-946.54	-902.24	-788.49	9.00	9.00	0.00
Nio B									
7,900.00	88.47	359.75	7,274.91	-850.40	-902.65	-693.55	9.00	9.00	0.00
7,913.13	89.65	359.75	7,275.13	-837.27	-902.71	-680.58	9.00	9.00	0.00
Top of Production - HIGHLANDS 28N-33HZ_PHL									
8,000.00	89.65	359.75	7,275.66	-750.41	-903.08	-594.79	0.00	0.00	0.00
8,100.00	89.65	359.75	7,276.27	-650.41	-903.51	-496.04	0.00	0.00	0.00
8,200.00	89.65	359.75	7,276.88	-550.41	-903.94	-397.28	0.00	0.00	0.00
8,300.00	89.65	359.75	7,277.49	-450.41	-904.37	-298.53	0.00	0.00	0.00
8,400.00	89.65	359.75	7,278.10	-350.42	-904.80	-199.77	0.00	0.00	0.00
8,500.00	89.65	359.75	7,278.71	-250.42	-905.23	-101.02	0.00	0.00	0.00

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Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well HIGHLANDS 28N-33HZ
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 28N-33HZ	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	89.65	359.75	7,279.32	-150.42	-905.65	-2.26	0.00	0.00	0.00
8,700.00	89.65	359.75	7,279.93	-50.42	-906.08	96.49	0.00	0.00	0.00
8,800.00	89.65	359.75	7,280.54	49.57	-906.51	195.25	0.00	0.00	0.00
8,900.00	89.65	359.75	7,281.15	149.57	-906.94	294.00	0.00	0.00	0.00
9,000.00	89.65	359.75	7,281.77	249.57	-907.37	392.76	0.00	0.00	0.00
9,100.00	89.65	359.75	7,282.38	349.56	-907.80	491.51	0.00	0.00	0.00
9,200.00	89.65	359.75	7,282.99	449.56	-908.22	590.27	0.00	0.00	0.00
9,300.00	89.65	359.75	7,283.60	549.56	-908.65	689.02	0.00	0.00	0.00
9,400.00	89.65	359.75	7,284.21	649.56	-909.08	787.78	0.00	0.00	0.00
9,500.00	89.65	359.75	7,284.82	749.55	-909.51	886.53	0.00	0.00	0.00
9,600.00	89.65	359.75	7,285.43	849.55	-909.94	985.29	0.00	0.00	0.00
9,700.00	89.65	359.75	7,286.04	949.55	-910.37	1,084.04	0.00	0.00	0.00
9,800.00	89.65	359.75	7,286.65	1,049.54	-910.80	1,182.80	0.00	0.00	0.00
9,900.00	89.65	359.75	7,287.26	1,149.54	-911.22	1,281.55	0.00	0.00	0.00
10,000.00	89.65	359.75	7,287.87	1,249.54	-911.65	1,380.31	0.00	0.00	0.00
10,100.00	89.65	359.75	7,288.48	1,349.54	-912.08	1,479.06	0.00	0.00	0.00
10,200.00	89.65	359.75	7,289.10	1,449.53	-912.51	1,577.82	0.00	0.00	0.00
10,300.00	89.65	359.75	7,289.71	1,549.53	-912.94	1,676.57	0.00	0.00	0.00
10,400.00	89.65	359.75	7,290.32	1,649.53	-913.37	1,775.33	0.00	0.00	0.00
10,500.00	89.65	359.75	7,290.93	1,749.53	-913.79	1,874.08	0.00	0.00	0.00
10,600.00	89.65	359.75	7,291.54	1,849.52	-914.22	1,972.84	0.00	0.00	0.00
10,700.00	89.65	359.75	7,292.15	1,949.52	-914.65	2,071.59	0.00	0.00	0.00
10,800.00	89.65	359.75	7,292.76	2,049.52	-915.08	2,170.35	0.00	0.00	0.00
10,900.00	89.65	359.75	7,293.37	2,149.51	-915.51	2,269.10	0.00	0.00	0.00
11,000.00	89.65	359.75	7,293.98	2,249.51	-915.94	2,367.86	0.00	0.00	0.00
11,100.00	89.65	359.75	7,294.59	2,349.51	-916.37	2,466.61	0.00	0.00	0.00
11,200.00	89.65	359.75	7,295.20	2,449.51	-916.79	2,565.37	0.00	0.00	0.00
11,300.00	89.65	359.75	7,295.81	2,549.50	-917.22	2,664.12	0.00	0.00	0.00
11,400.00	89.65	359.75	7,296.43	2,649.50	-917.65	2,762.88	0.00	0.00	0.00
11,500.00	89.65	359.75	7,297.04	2,749.50	-918.08	2,861.63	0.00	0.00	0.00
11,600.00	89.65	359.75	7,297.65	2,849.49	-918.51	2,960.39	0.00	0.00	0.00
11,700.00	89.65	359.75	7,298.26	2,949.49	-918.94	3,059.14	0.00	0.00	0.00
11,800.00	89.65	359.75	7,298.87	3,049.49	-919.36	3,157.90	0.00	0.00	0.00
11,900.00	89.65	359.75	7,299.48	3,149.49	-919.79	3,256.66	0.00	0.00	0.00
12,000.00	89.65	359.75	7,300.09	3,249.48	-920.22	3,355.41	0.00	0.00	0.00
12,100.00	89.65	359.75	7,300.70	3,349.48	-920.65	3,454.17	0.00	0.00	0.00
12,200.00	89.65	359.75	7,301.31	3,449.48	-921.08	3,552.92	0.00	0.00	0.00
12,300.00	89.65	359.75	7,301.92	3,549.48	-921.51	3,651.68	0.00	0.00	0.00
12,400.00	89.65	359.75	7,302.53	3,649.47	-921.94	3,750.43	0.00	0.00	0.00
12,500.00	89.65	359.75	7,303.15	3,749.47	-922.36	3,849.19	0.00	0.00	0.00
12,600.00	89.65	359.75	7,303.76	3,849.47	-922.79	3,947.94	0.00	0.00	0.00
12,700.00	89.65	359.75	7,304.37	3,949.46	-923.22	4,046.70	0.00	0.00	0.00
12,800.00	89.65	359.75	7,304.98	4,049.46	-923.65	4,145.45	0.00	0.00	0.00
12,900.00	89.65	359.75	7,305.59	4,149.46	-924.08	4,244.21	0.00	0.00	0.00
13,000.00	89.65	359.75	7,306.20	4,249.46	-924.51	4,342.96	0.00	0.00	0.00
13,100.00	89.65	359.75	7,306.81	4,349.45	-924.94	4,441.72	0.00	0.00	0.00
13,200.00	89.65	359.75	7,307.42	4,449.45	-925.36	4,540.47	0.00	0.00	0.00
13,300.00	89.65	359.75	7,308.03	4,549.45	-925.79	4,639.23	0.00	0.00	0.00
13,400.00	89.65	359.75	7,308.64	4,649.44	-926.22	4,737.98	0.00	0.00	0.00
13,500.00	89.65	359.75	7,309.25	4,749.44	-926.65	4,836.74	0.00	0.00	0.00
13,600.00	89.65	359.75	7,309.86	4,849.44	-927.08	4,935.49	0.00	0.00	0.00
13,700.00	89.65	359.75	7,310.48	4,949.44	-927.51	5,034.25	0.00	0.00	0.00
13,800.00	89.65	359.75	7,311.09	5,049.43	-927.93	5,133.00	0.00	0.00	0.00
13,900.00	89.65	359.75	7,311.70	5,149.43	-928.36	5,231.76	0.00	0.00	0.00

Anadarko

Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well HIGHLANDS 28N-33HZ
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 28N-33HZ	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	89.65	359.75	7,312.31	5,249.43	-928.79	5,330.51	0.00	0.00	0.00	
14,100.00	89.65	359.75	7,312.92	5,349.43	-929.22	5,429.27	0.00	0.00	0.00	
14,200.00	89.65	359.75	7,313.53	5,449.42	-929.65	5,528.02	0.00	0.00	0.00	
14,300.00	89.65	359.75	7,314.14	5,549.42	-930.08	5,626.78	0.00	0.00	0.00	
14,400.00	89.65	359.75	7,314.75	5,649.42	-930.51	5,725.53	0.00	0.00	0.00	
14,440.69	89.65	359.75	7,315.00	5,690.10	-930.68	5,765.71	0.00	0.00	0.00	
HIGHLANDS 28N-33HZ_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 28N-33H - plan hits target center - Point	0.00	0.00	7,275.13	-837.27	-902.71	14,552,280.71	1,701,621.25	40.069951	-104.781229	
HIGHLANDS 28N-33H - plan hits target center - Point	0.00	0.00	7,315.00	5,690.10	-930.68	14,558,808.00	1,701,577.00	40.087876	-104.781330	

Casing Points						
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")		
1,842.83	1,800.00	9 5/8"	9-5/8	13-1/2		
7,913.13	7,275.13	Top of Production	5-1/2	8-1/2		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,479.10	1,458.00	Fox Hills				
4,402.91	4,203.00	Parkman				
4,824.80	4,599.00	Sussex				
7,456.94	7,116.00	Sharon Springs				
7,522.92	7,157.00	Niobrara				
7,803.25	7,265.00	Nio B				