

US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N

3N-68W-33 Hergenreder 4-33HZ Pad

HERGENREDER 6N-4HZ

Plan B

Plan: Permit Rev-1

Standard Planning Report

27 June, 2017

Project: WELD-NAD83-UTMFT13N
Site: 3N-68W-33 Hergenreder 4-33HZ Pad
Well: HERGENREDER 6N-4HZ
Wellbore: Plan B
Design: Permit Rev-1

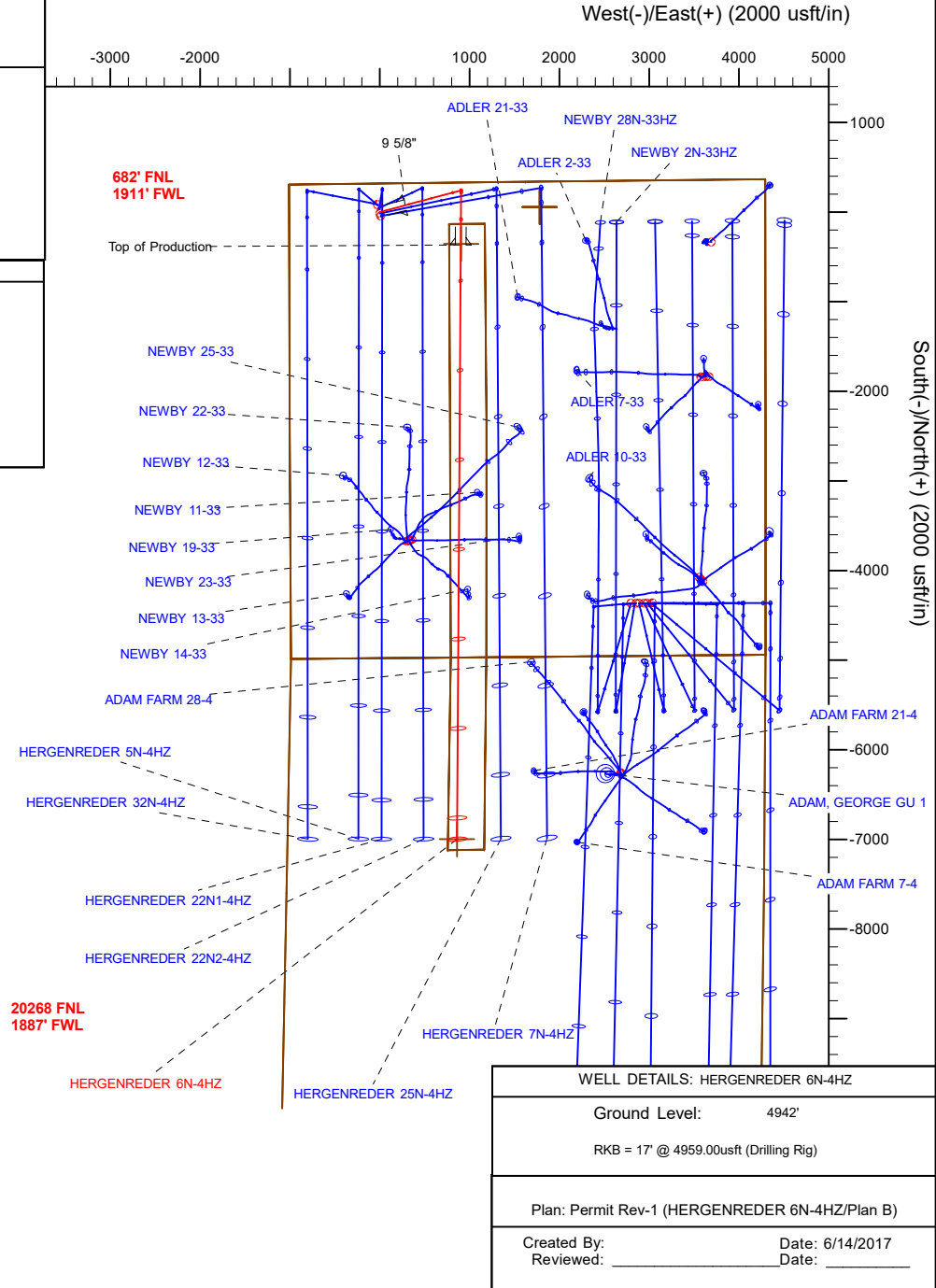
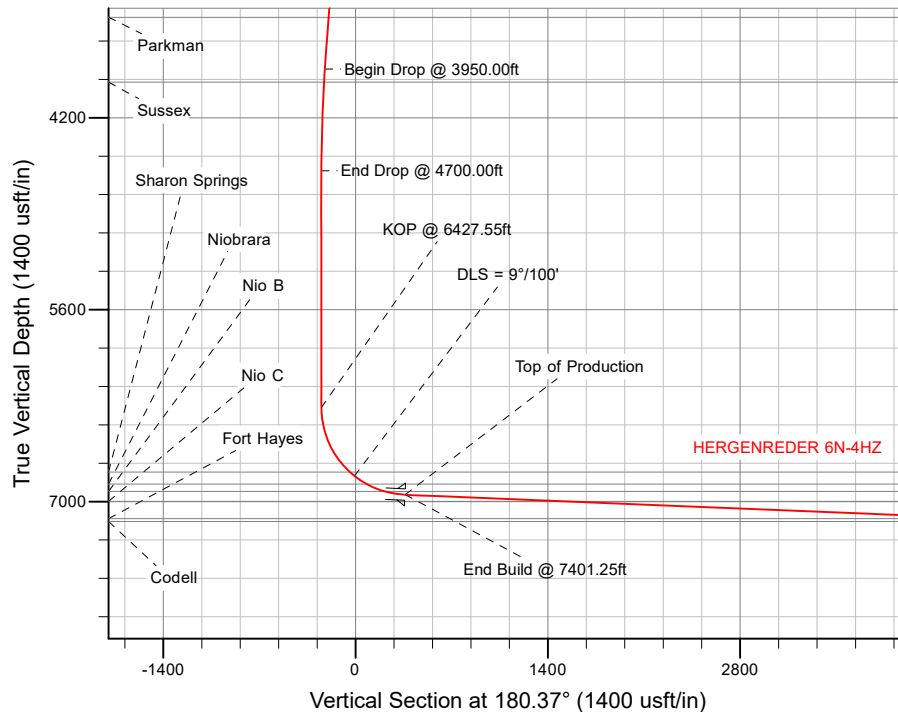
US ROCKIES WATTENBERG PLANNING

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	200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	
3	1200.00	15.00	75.00	1188.62	33.69	125.72	1.50	75.00	-34.50	
4	3950.00	15.00	75.00	3844.91	217.90	813.22	0.00	0.00	-223.15	
5	4700.00	0.00	0.00	4586.37	243.17	907.51	2.00	180.00	-249.02	
6	6427.55	0.00	0.00	6313.92	243.17	907.51	0.00	0.00	-249.02	
7	7401.25	87.63	180.37	6950.00	-367.15	903.59	9.00	180.37	361.31	
8	14036.61	87.63	180.37	7224.00	-6996.71	861.04	0.00	0.00	6991.00	HERGENREDER 6N-4HZ_TOE

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
HERGENREDER 6N-4HZ_SHL	0.00	0.00	0.00	40.188559	-105.013734
HERGENREDER 6N-4HZ_TOE	7224.00	-6996.71	861.04	40.169345	-105.010652



Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well HERGENREDER 6N-4HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4959.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4959.00usft (Drilling Rig)
Site:	3N-68W-33 Hergenreder 4-33HZ Pad	North Reference:	True
Well:	HERGENREDER 6N-4HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan B		
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		3N-68W-33 Hergenreder 4-33HZ Pad			
Site Position:		Northing:	14,595,483.88 usft	Latitude:	40.188798
From:	Lat/Long	Easting:	1,636,558.44 usft	Longitude:	-105.013815
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.01 °

Well	HERGENREDER 6N-4HZ					
Well Position	+N/-S	-87.03 usft	Northing:	14,595,396.84 usft	Latitude:	40.188559
	+E/-W	22.62 usft	Easting:	1,636,581.04 usft	Longitude:	-105.013734
Position Uncertainty		3.28 usft	Wellhead Elevation:	0.00 usft	Ground Level:	4,942.00 usft

Wellbore	Plan B				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	9/15/2015	8.41	66.69	52,545.65378215

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	180.37	

Plan Survey Tool Program	Date	6/27/2017			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	1,000.00	Permit Rev-1 (Plan B)	APC_ISCWSA REV 2 MWD+II Fixed:v2:crustal field declination	
2	1,000.00	14,036.61	Permit Rev-1 (Plan B)	APC_ISCWSA REV 2 MWD+II Fixed:v2:crustal field declination	

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Well:	HERGENREDER 6N-4HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan B		
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	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,200.00	15.00	75.00	1,188.62	33.69	125.72	1.50	1.50	0.00	75.00	
3,950.00	15.00	75.00	3,844.91	217.90	813.22	0.00	0.00	0.00	0.00	
4,700.00	0.00	0.00	4,586.37	243.17	907.51	2.00	-2.00	0.00	180.00	
6,427.55	0.00	0.00	6,313.92	243.17	907.51	0.00	0.00	0.00	0.00	
7,401.25	87.63	180.37	6,950.00	-367.15	903.59	9.00	9.00	-18.45	180.37	
14,036.61	87.63	180.37	7,224.00	-6,996.71	861.04	0.00	0.00	0.00	0.00	HERGENREDER 6N-

Corporate
Planning Report

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Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4959.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4959.00usft (Drilling Rig)
Site:	3N-68W-33 Hergenreder 4-33HZ Pad	North Reference:	True
Well:	HERGENREDER 6N-4HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan B		
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
30.00	0.00	0.00	30.00	0.00	0.00	0.00	0.00	0.00	0.00
3N-R68W-Sec. 33_Section Lines - 2N-R68W-Sec. 4_Section Lines - HERGENREDER 6N-4HZ_SHL - HERGENREDER 6N-4HZ_Hardline Bo									
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
Begin Nudge @ 200.00ft									
300.00	1.50	75.00	299.99	0.34	1.26	-0.35	1.50	1.50	0.00
400.00	3.00	75.00	399.91	1.35	5.06	-1.39	1.50	1.50	0.00
419.12	3.29	75.00	419.00	1.63	6.07	-1.67	1.50	1.50	0.00
Fox Hills									
500.00	4.50	75.00	499.69	3.05	11.37	-3.12	1.50	1.50	0.00
600.00	6.00	75.00	599.27	5.42	20.21	-5.55	1.50	1.50	0.00
700.00	7.50	75.00	698.57	8.46	31.56	-8.66	1.50	1.50	0.00
800.00	9.00	75.00	797.54	12.17	45.42	-12.46	1.50	1.50	0.00
900.00	10.50	75.00	896.09	16.55	61.78	-16.95	1.50	1.50	0.00
1,000.00	12.00	75.00	994.16	21.60	80.63	-22.12	1.50	1.50	0.00
1,005.97	12.09	75.00	1,000.00	21.93	81.83	-22.45	1.50	1.50	0.00
9 5/8"									
1,100.00	13.50	75.00	1,091.70	27.32	101.94	-27.97	1.50	1.50	0.00
1,200.00	15.00	75.00	1,188.62	33.69	125.72	-34.50	1.50	1.50	0.00
End Nudge @ 1200.00ft									
1,300.00	15.00	75.00	1,285.21	40.39	150.72	-41.36	0.00	0.00	0.00
1,400.00	15.00	75.00	1,381.80	47.08	175.72	-48.22	0.00	0.00	0.00
1,500.00	15.00	75.00	1,478.39	53.78	200.72	-55.08	0.00	0.00	0.00
1,600.00	15.00	75.00	1,574.99	60.48	225.72	-61.94	0.00	0.00	0.00
1,700.00	15.00	75.00	1,671.58	67.18	250.72	-68.80	0.00	0.00	0.00
1,800.00	15.00	75.00	1,768.17	73.88	275.72	-75.66	0.00	0.00	0.00
1,900.00	15.00	75.00	1,864.76	80.58	300.72	-82.52	0.00	0.00	0.00
2,000.00	15.00	75.00	1,961.36	87.28	325.72	-89.38	0.00	0.00	0.00
2,100.00	15.00	75.00	2,057.95	93.97	350.72	-96.24	0.00	0.00	0.00
2,200.00	15.00	75.00	2,154.54	100.67	375.72	-103.10	0.00	0.00	0.00
2,300.00	15.00	75.00	2,251.13	107.37	400.72	-109.96	0.00	0.00	0.00
2,400.00	15.00	75.00	2,347.73	114.07	425.72	-116.82	0.00	0.00	0.00
2,500.00	15.00	75.00	2,444.32	120.77	450.72	-123.68	0.00	0.00	0.00
2,600.00	15.00	75.00	2,540.91	127.47	475.72	-130.54	0.00	0.00	0.00
2,700.00	15.00	75.00	2,637.50	134.17	500.72	-137.40	0.00	0.00	0.00
2,800.00	15.00	75.00	2,734.10	140.87	525.72	-144.26	0.00	0.00	0.00
2,900.00	15.00	75.00	2,830.69	147.56	550.72	-151.12	0.00	0.00	0.00
3,000.00	15.00	75.00	2,927.28	154.26	575.72	-157.98	0.00	0.00	0.00
3,100.00	15.00	75.00	3,023.88	160.96	600.72	-164.84	0.00	0.00	0.00
3,200.00	15.00	75.00	3,120.47	167.66	625.72	-171.70	0.00	0.00	0.00
3,300.00	15.00	75.00	3,217.06	174.36	650.72	-178.56	0.00	0.00	0.00
3,400.00	15.00	75.00	3,313.65	181.06	675.72	-185.42	0.00	0.00	0.00
3,500.00	15.00	75.00	3,410.25	187.76	700.72	-192.28	0.00	0.00	0.00
3,559.79	15.00	75.00	3,468.00	191.76	715.67	-196.38	0.00	0.00	0.00
Parkman									
3,600.00	15.00	75.00	3,506.84	194.46	725.72	-199.14	0.00	0.00	0.00
3,700.00	15.00	75.00	3,603.43	201.15	750.72	-206.00	0.00	0.00	0.00
3,800.00	15.00	75.00	3,700.02	207.85	775.72	-212.86	0.00	0.00	0.00
3,900.00	15.00	75.00	3,796.62	214.55	800.72	-219.72	0.00	0.00	0.00
3,950.00	15.00	75.00	3,844.91	217.90	813.22	-223.15	0.00	0.00	0.00
Begin Drop @ 3950.00ft									
4,000.00	14.00	75.00	3,893.32	221.14	825.31	-226.47	2.00	-2.00	0.00

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Planning Report

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Well:	HERGENREDER 6N-4HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan B		
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)
4,046.99	13.06	75.00	3,939.00	223.99	835.93	-229.38	2.00	-2.00	0.00
Sussex									
4,100.00	12.00	75.00	3,990.75	226.96	847.04	-232.43	2.00	-2.00	0.00
4,200.00	10.00	75.00	4,088.91	231.90	865.47	-237.49	2.00	-2.00	0.00
4,300.00	8.00	75.00	4,187.67	235.95	880.58	-241.63	2.00	-2.00	0.00
4,400.00	6.00	75.00	4,286.92	239.10	892.35	-244.86	2.00	-2.00	0.00
4,500.00	4.00	75.00	4,386.54	241.36	900.77	-247.17	2.00	-2.00	0.00
4,600.00	2.00	75.00	4,486.39	242.71	905.82	-248.56	2.00	-2.00	0.00
4,700.00	0.00	0.00	4,586.37	243.17	907.51	-249.02	2.00	-2.00	0.00
End Drop @ 4700.00ft									
4,800.00	0.00	0.00	4,686.37	243.17	907.51	-249.02	0.00	0.00	0.00
4,900.00	0.00	0.00	4,786.37	243.17	907.51	-249.02	0.00	0.00	0.00
5,000.00	0.00	0.00	4,886.37	243.17	907.51	-249.02	0.00	0.00	0.00
5,100.00	0.00	0.00	4,986.37	243.17	907.51	-249.02	0.00	0.00	0.00
5,200.00	0.00	0.00	5,086.37	243.17	907.51	-249.02	0.00	0.00	0.00
5,300.00	0.00	0.00	5,186.37	243.17	907.51	-249.02	0.00	0.00	0.00
5,400.00	0.00	0.00	5,286.37	243.17	907.51	-249.02	0.00	0.00	0.00
5,500.00	0.00	0.00	5,386.37	243.17	907.51	-249.02	0.00	0.00	0.00
5,600.00	0.00	0.00	5,486.37	243.17	907.51	-249.02	0.00	0.00	0.00
5,700.00	0.00	0.00	5,586.37	243.17	907.51	-249.02	0.00	0.00	0.00
5,800.00	0.00	0.00	5,686.37	243.17	907.51	-249.02	0.00	0.00	0.00
5,900.00	0.00	0.00	5,786.37	243.17	907.51	-249.02	0.00	0.00	0.00
6,000.00	0.00	0.00	5,886.37	243.17	907.51	-249.02	0.00	0.00	0.00
6,100.00	0.00	0.00	5,986.37	243.17	907.51	-249.02	0.00	0.00	0.00
6,200.00	0.00	0.00	6,086.37	243.17	907.51	-249.02	0.00	0.00	0.00
6,300.00	0.00	0.00	6,186.37	243.17	907.51	-249.02	0.00	0.00	0.00
6,400.00	0.00	0.00	6,286.37	243.17	907.51	-249.02	0.00	0.00	0.00
6,427.55	0.00	0.00	6,313.92	243.17	907.51	-249.02	0.00	0.00	0.00
KOP @ 6427.55ft									
6,500.00	6.52	180.37	6,386.22	239.05	907.48	-244.90	9.00	9.00	0.00
6,600.00	15.52	180.37	6,484.27	219.95	907.36	-225.81	9.00	9.00	0.00
6,700.00	24.52	180.37	6,578.13	185.75	907.14	-191.61	9.00	9.00	0.00
6,800.00	33.52	180.37	6,665.49	137.29	906.83	-143.14	9.00	9.00	0.00
6,900.00	42.52	180.37	6,744.19	75.76	906.43	-81.61	9.00	9.00	0.00
6,956.38	47.59	180.37	6,784.00	35.87	906.18	-41.72	9.00	9.00	0.00
Sharon Springs									
7,000.00	51.52	180.37	6,812.29	2.68	905.96	-8.53	9.00	9.00	0.00
DLS = 9°/100'									
7,100.00	60.52	180.37	6,868.12	-80.16	905.43	74.31	9.00	9.00	0.00
7,107.97	61.24	180.37	6,872.00	-87.12	905.39	81.27	9.00	9.00	0.00
Niobrara									
7,200.00	69.52	180.37	6,910.31	-170.71	904.85	164.86	9.00	9.00	0.00
7,250.20	74.02	180.37	6,926.00	-218.38	904.55	212.53	8.96	8.96	0.00
Nio B									
7,300.00	78.52	180.37	6,937.81	-266.74	904.23	260.90	9.04	9.04	0.00
7,400.00	87.52	180.37	6,949.95	-365.90	903.60	360.06	9.00	9.00	0.00
7,401.24	87.63	180.37	6,950.00	-367.14	903.59	361.29	9.00	9.00	0.00
Top of Production									
7,401.25	87.63	180.37	6,950.00	-367.15	903.59	361.31	9.00	9.00	0.00
End Build @ 7401.25ft									
7,500.00	87.63	180.37	6,954.08	-465.81	902.96	459.97	0.00	0.00	0.00
7,600.00	87.63	180.37	6,958.21	-565.73	902.32	559.89	0.00	0.00	0.00
7,700.00	87.63	180.37	6,962.34	-665.64	901.67	659.80	0.00	0.00	0.00

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Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4959.00usft (Drilling Rig)
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Well:	HERGENREDER 6N-4HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan B		
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)
7,800.00	87.63	180.37	6,966.47	-765.55	901.03	759.72	0.00	0.00	0.00
7,900.00	87.63	180.37	6,970.60	-865.46	900.39	859.63	0.00	0.00	0.00
8,000.00	87.63	180.37	6,974.73	-965.38	899.75	959.55	0.00	0.00	0.00
8,100.00	87.63	180.37	6,978.85	-1,065.29	899.11	1,059.46	0.00	0.00	0.00
8,200.00	87.63	180.37	6,982.98	-1,165.20	898.47	1,159.37	0.00	0.00	0.00
8,300.00	87.63	180.37	6,987.11	-1,265.11	897.83	1,259.29	0.00	0.00	0.00
8,400.00	87.63	180.37	6,991.24	-1,365.03	897.19	1,359.20	0.00	0.00	0.00
8,500.00	87.63	180.37	6,995.37	-1,464.94	896.54	1,459.12	0.00	0.00	0.00
8,587.86	87.63	180.37	6,999.00	-1,552.72	895.98	1,546.90	0.00	0.00	0.00
Nio C									
8,600.00	87.63	180.37	6,999.50	-1,564.85	895.90	1,559.03	0.00	0.00	0.00
8,700.00	87.63	180.37	7,003.63	-1,664.76	895.26	1,658.95	0.00	0.00	0.00
8,800.00	87.63	180.37	7,007.76	-1,764.68	894.62	1,758.86	0.00	0.00	0.00
8,900.00	87.63	180.37	7,011.89	-1,864.59	893.98	1,858.78	0.00	0.00	0.00
9,000.00	87.63	180.37	7,016.02	-1,964.50	893.34	1,958.69	0.00	0.00	0.00
9,100.00	87.63	180.37	7,020.15	-2,064.41	892.70	2,058.61	0.00	0.00	0.00
9,200.00	87.63	180.37	7,024.28	-2,164.33	892.05	2,158.52	0.00	0.00	0.00
9,300.00	87.63	180.37	7,028.41	-2,264.24	891.41	2,258.44	0.00	0.00	0.00
9,400.00	87.63	180.37	7,032.54	-2,364.15	890.77	2,358.35	0.00	0.00	0.00
9,500.00	87.63	180.37	7,036.67	-2,464.07	890.13	2,458.27	0.00	0.00	0.00
9,600.00	87.63	180.37	7,040.80	-2,563.98	889.49	2,558.18	0.00	0.00	0.00
9,700.00	87.63	180.37	7,044.92	-2,663.89	888.85	2,658.10	0.00	0.00	0.00
9,800.00	87.63	180.37	7,049.05	-2,763.80	888.21	2,758.01	0.00	0.00	0.00
9,900.00	87.63	180.37	7,053.18	-2,863.72	887.56	2,857.92	0.00	0.00	0.00
10,000.00	87.63	180.37	7,057.31	-2,963.63	886.92	2,957.84	0.00	0.00	0.00
10,100.00	87.63	180.37	7,061.44	-3,063.54	886.28	3,057.75	0.00	0.00	0.00
10,200.00	87.63	180.37	7,065.57	-3,163.45	885.64	3,157.67	0.00	0.00	0.00
10,300.00	87.63	180.37	7,069.70	-3,263.37	885.00	3,257.58	0.00	0.00	0.00
10,400.00	87.63	180.37	7,073.83	-3,363.28	884.36	3,357.50	0.00	0.00	0.00
10,500.00	87.63	180.37	7,077.96	-3,463.19	883.72	3,457.41	0.00	0.00	0.00
10,600.00	87.63	180.37	7,082.09	-3,563.10	883.08	3,557.33	0.00	0.00	0.00
10,700.00	87.63	180.37	7,086.22	-3,663.02	882.43	3,657.24	0.00	0.00	0.00
10,800.00	87.63	180.37	7,090.35	-3,762.93	881.79	3,757.16	0.00	0.00	0.00
10,900.00	87.63	180.37	7,094.48	-3,862.84	881.15	3,857.07	0.00	0.00	0.00
11,000.00	87.63	180.37	7,098.61	-3,962.76	880.51	3,956.99	0.00	0.00	0.00
11,100.00	87.63	180.37	7,102.74	-4,062.67	879.87	4,056.90	0.00	0.00	0.00
11,200.00	87.63	180.37	7,106.87	-4,162.58	879.23	4,156.82	0.00	0.00	0.00
11,300.00	87.63	180.37	7,111.00	-4,262.49	878.59	4,256.73	0.00	0.00	0.00
11,400.00	87.63	180.37	7,115.12	-4,362.41	877.94	4,356.65	0.00	0.00	0.00
11,500.00	87.63	180.37	7,119.25	-4,462.32	877.30	4,456.56	0.00	0.00	0.00
11,600.00	87.63	180.37	7,123.38	-4,562.23	876.66	4,556.47	0.00	0.00	0.00
11,614.94	87.63	180.37	7,124.00	-4,577.16	876.57	4,571.40	0.00	0.00	0.00
Fort Hayes									
11,700.00	87.63	180.37	7,127.51	-4,662.14	876.02	4,656.39	0.00	0.00	0.00
11,800.00	87.63	180.37	7,131.64	-4,762.06	875.38	4,756.30	0.00	0.00	0.00
11,900.00	87.63	180.37	7,135.77	-4,861.97	874.74	4,856.22	0.00	0.00	0.00
12,000.00	87.63	180.37	7,139.90	-4,961.88	874.10	4,956.13	0.00	0.00	0.00
12,100.00	87.63	180.37	7,144.03	-5,061.79	873.46	5,056.05	0.00	0.00	0.00
12,123.49	87.63	180.37	7,145.00	-5,085.26	873.30	5,079.52	0.00	0.00	0.00
Codell									
12,200.00	87.63	180.37	7,148.16	-5,161.71	872.81	5,155.96	0.00	0.00	0.00
12,300.00	87.63	180.37	7,152.29	-5,261.62	872.17	5,255.88	0.00	0.00	0.00
12,400.00	87.63	180.37	7,156.42	-5,361.53	871.53	5,355.79	0.00	0.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well HERGENREDER 6N-4HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4959.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4959.00usft (Drilling Rig)
Site:	3N-68W-33 Hergenreder 4-33HZ Pad	North Reference:	True
Well:	HERGENREDER 6N-4HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan B		
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)
12,500.00	87.63	180.37	7,160.55	-5,461.44	870.89	5,455.71	0.00	0.00	0.00
12,600.00	87.63	180.37	7,164.68	-5,561.36	870.25	5,555.62	0.00	0.00	0.00
12,700.00	87.63	180.37	7,168.81	-5,661.27	869.61	5,655.54	0.00	0.00	0.00
12,800.00	87.63	180.37	7,172.94	-5,761.18	868.97	5,755.45	0.00	0.00	0.00
12,900.00	87.63	180.37	7,177.07	-5,861.10	868.32	5,855.37	0.00	0.00	0.00
13,000.00	87.63	180.37	7,181.19	-5,961.01	867.68	5,955.28	0.00	0.00	0.00
13,100.00	87.63	180.37	7,185.32	-6,060.92	867.04	6,055.20	0.00	0.00	0.00
13,200.00	87.63	180.37	7,189.45	-6,160.83	866.40	6,155.11	0.00	0.00	0.00
13,300.00	87.63	180.37	7,193.58	-6,260.75	865.76	6,255.02	0.00	0.00	0.00
13,400.00	87.63	180.37	7,197.71	-6,360.66	865.12	6,354.94	0.00	0.00	0.00
13,500.00	87.63	180.37	7,201.84	-6,460.57	864.48	6,454.85	0.00	0.00	0.00
13,600.00	87.63	180.37	7,205.97	-6,560.48	863.84	6,554.77	0.00	0.00	0.00
13,700.00	87.63	180.37	7,210.10	-6,660.40	863.19	6,654.68	0.00	0.00	0.00
13,800.00	87.63	180.37	7,214.23	-6,760.31	862.55	6,754.60	0.00	0.00	0.00
13,900.00	87.63	180.37	7,218.36	-6,860.22	861.91	6,854.51	0.00	0.00	0.00
14,000.00	87.63	180.37	7,222.49	-6,960.13	861.27	6,954.43	0.00	0.00	0.00
14,036.61	87.63	180.37	7,224.00	-6,996.71	861.04	6,991.00	0.00	0.00	0.00
TD Well @ 14036.61ft - HERGENREDER 6N-4HZ_TOE									

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well HERGENREDER 6N-4HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4959.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4959.00usft (Drilling Rig)
Site:	3N-68W-33 Hergenreder 4-33HZ Pad	North Reference:	True
Well:	HERGENREDER 6N-4HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan B		
Design:	Permit Rev-1		

Design Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
2N-R68W-Sec. 4_Sectic	0.00	0.00	30.00	56.51	1,781.52	14,595,453.07	1,638,362.57	40.188714	-105.007355
- plan misses target center by 1782.41usft at 30.00usft MD (30.00 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1			30.00	-5,040.96	-2,769.50	14,590,412.54	1,635,592.29		
Point 2			30.00	-5,018.95	-136.58	14,590,434.14	1,638,225.21		
Point 3			30.00	-4,995.84	2,515.63	14,590,456.84	1,640,877.43		
Point 4			30.00	-7,591.82	2,497.44	14,587,860.87	1,640,858.84		
Point 5			30.00	-10,216.42	2,462.98	14,585,236.27	1,640,823.97		
Point 6			30.00	-10,271.92	-193.52	14,585,181.18	1,638,167.46		
Point 7			30.00	-10,321.42	-2,870.28	14,585,132.10	1,635,490.69		
Point 8			30.00	-7,652.28	-2,819.20	14,587,801.23	1,635,542.19		
3N-R68W-Sec. 33_Sectic	0.00	0.00	30.00	56.51	1,781.52	14,595,453.07	1,638,362.57	40.188714	-105.007355
- plan misses target center by 1782.41usft at 30.00usft MD (30.00 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1			30.00	251.45	-2,791.30	14,595,704.95	1,635,571.31		
Point 2			30.00	282.36	-157.69	14,595,735.46	1,638,204.92		
Point 3			30.00	310.96	2,511.36	14,595,763.64	1,640,873.98		
Point 4			30.00	-2,346.36	2,515.74	14,593,106.32	1,640,877.95		
Point 5			30.00	-4,995.84	2,515.63	14,590,456.84	1,640,877.43		
Point 6			30.00	-5,018.95	-136.58	14,590,434.14	1,638,225.21		
Point 7			30.00	-5,040.96	-2,769.50	14,590,412.54	1,635,592.29		
Point 8			30.00	-2,394.09	-2,784.98	14,593,059.41	1,635,577.22		
HERGENREDER 6N-4H	0.00	0.00	30.00	56.51	1,781.52	14,595,453.07	1,638,362.57	40.188714	-105.007355
- plan misses target center by 1782.41usft at 30.00usft MD (30.00 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1			30.00	-185.39	-611.01	14,595,267.78	1,637,751.53		
Point 2			30.00	-1,051.49	-603.75	14,594,401.68	1,637,758.66		
Point 3			30.00	-2,377.37	-592.64	14,593,075.79	1,637,769.56		
Point 4			30.00	-3,701.17	-593.29	14,591,751.99	1,637,768.71		
Point 5			30.00	-5,024.76	-594.00	14,590,428.40	1,637,767.79		
Point 6			30.00	-6,327.51	-607.90	14,589,125.66	1,637,753.69		
Point 7			30.00	-7,170.16	-616.90	14,588,283.01	1,637,744.56		
Point 8			30.00	-7,174.65	-1,022.05	14,588,278.58	1,637,339.41		
Point 9			30.00	-6,331.45	-1,009.54	14,589,121.78	1,637,352.05		
Point 10			30.00	-5,028.16	-990.31	14,590,425.07	1,637,371.48		
Point 11			30.00	-3,704.59	-993.90	14,591,748.64	1,637,368.10		
Point 12			30.00	-2,380.65	-999.25	14,593,072.58	1,637,362.95		
Point 13			30.00	-1,055.54	-1,004.60	14,594,397.69	1,637,357.81		
Point 14			30.00	-190.05	-1,009.23	14,595,263.18	1,637,353.31		
Point 15			30.00	-185.39	-611.01	14,595,267.78	1,637,751.53		
HERGENREDER 6N-4H	0.00	0.00	30.00	56.51	1,781.52	14,595,453.07	1,638,362.57	40.188714	-105.007355
- plan misses target center by 1782.41usft at 30.00usft MD (30.00 TVD, 0.00 N, 0.00 E)									
- Point									
HERGENREDER 6N-4H	0.00	0.00	7,224.00	-6,996.71	861.04	14,588,400.00	1,637,441.00	40.169345	-105.010652
- plan hits target center									
- Point									

Corporate
Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well HERGENREDER 6N-4HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4959.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4959.00usft (Drilling Rig)
Site:	3N-68W-33 Hergenreder 4-33HZ Pad	North Reference:	True
Well:	HERGENREDER 6N-4HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan B		
Design:	Permit Rev-1		

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,005.97	1,000.00	9 5/8"	9-5/8	13-1/2	
7,401.24	6,950.00	Top of Production	7	8-3/4	
14,036.61	7,224.00	4 1/2"	4-1/2	6-1/8	

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
419.12	419.00	Fox Hills			
3,559.79	3,468.00	Parkman			
4,046.99	3,939.00	Sussex			
6,956.38	6,784.00	Sharon Springs			
7,107.97	6,872.00	Niobrara			
7,250.20	6,926.00	Nio B			
8,587.86	6,999.00	Nio C			
11,614.94	7,124.00	Fort Hayes			
12,123.49	7,145.00	Codell			

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
200.00	200.00	0.00	0.00	Begin Nudge @ 200.00ft
1,200.00	1,188.62	33.69	125.72	End Nudge @ 1200.00ft
3,950.00	3,844.91	217.90	813.22	Begin Drop @ 3950.00ft
4,700.00	4,586.37	243.17	907.51	End Drop @ 4700.00ft
6,427.55	6,313.92	243.17	907.51	KOP @ 6427.55ft
7,000.00	6,812.29	2.68	905.96	DLS = 9°/100'
7,401.25	6,950.00	-367.15	903.59	End Build @ 7401.25ft
14,036.61	7,224.00	-6,996.71	861.04	TD Well @ 14036.61ft