

US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N

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

HERGENREDER 25N-4HZ

Plan B

Plan: Permit Rev-1

Standard Planning Report

27 June, 2017

US ROCKIES WATTENBERG PLANNING

West(-)/East(+) (2000 usft/in)

South(-)/North(+) (2000 usft/in)

683' FNL
2312' FWL

Top of Production

9 5/8"

ADLER 21-33
NEWBY 28N-33HZ
ADLER 2-33
NEWBY 2N-33HZ

NEWBY 25-33
NEWBY 22-33
NEWBY 12-33
NEWBY 11-33
NEWBY 19-33
NEWBY 23-33
NEWBY 13-33
NEWBY 14-33

ADLER 7-33
ADLER 10-33

ADAM FARM 28-1
HERGENREDER 5N-4HZ
HERGENREDER 32N-4HZ
HERGENREDER 22N1-4HZ
HERGENREDER 22N2-4HZ
HERGENREDER 6N-4HZ

ADAM FARM 21-4
ADAM, GEORGE GU 1
ADAM FARM 7-4
HERGENREDER 7N-4HZ
HERGENREDER 25N-4HZ

2027' FNL
2376' FWL

WELL DETAILS: HERGENREDER 25N-4HZ	
Ground Level:	4942'
RKB = 17' @ 4959.00usft (Drilling Rig)	
Plan: Permit Rev-1 (HERGENREDER 25N-4HZ/Plan B)	
Created By:	Date: 6/14/2017
Reviewed:	Date:

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well HERGENREDER 25N-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 25N-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 25N-4HZ				
Well Position	+N/-S	-101.60 usft	Northing:	14,595,382.27 usft	Latitude:	40.188519
	+E/-W	26.25 usft	Easting:	1,636,584.67 usft	Longitude:	-105.013721
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	52,545.87750850

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	179.61	

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	14,213.91	Permit Rev-1 (Plan B)	APC_ISCWSA REV 2 MWD+II Fixed:v2:crustal field declination	

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 25N-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	
1,533.33	20.00	78.00	1,506.42	47.89	225.32	1.50	1.50	0.00	78.00	
4,233.33	20.00	78.00	4,043.59	239.89	1,128.60	0.00	0.00	0.00	0.00	
5,233.33	0.00	0.00	5,023.41	275.81	1,297.59	2.00	-2.00	-7.80	-180.00	
6,591.84	0.00	0.00	6,381.92	275.81	1,297.59	0.00	0.00	0.00	0.00	
7,565.60	87.64	179.61	7,018.00	-334.56	1,301.70	9.00	9.00	18.45	179.61	
14,213.91	87.64	179.61	7,292.00	-6,977.07	1,346.40	0.00	0.00	0.00	0.00	HERGENREDER 25N

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 25N-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
HERGENREDER 25N-4HZ_SHL - 3N-R68W-Sec. 33_Section Lines - 2N-R68W-Sec. 4_Section Lines - HERGENREDER 25N-4HZ_460' Polyg									
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	78.00	299.99	0.27	1.28	-0.26	1.50	1.50	0.00
400.00	3.00	78.00	399.91	1.09	5.12	-1.05	1.50	1.50	0.00
419.12	3.29	78.00	419.00	1.31	6.15	-1.26	1.50	1.50	0.00
Fox Hills									
500.00	4.50	78.00	499.69	2.45	11.52	-2.37	1.50	1.50	0.00
600.00	6.00	78.00	599.27	4.35	20.47	-4.21	1.50	1.50	0.00
700.00	7.50	78.00	698.57	6.79	31.96	-6.58	1.50	1.50	0.00
800.00	9.00	78.00	797.54	9.78	46.00	-9.46	1.50	1.50	0.00
900.00	10.50	78.00	896.09	13.30	62.56	-12.87	1.50	1.50	0.00
1,000.00	12.00	78.00	994.16	17.35	81.65	-16.80	1.50	1.50	0.00
1,005.97	12.09	78.00	1,000.00	17.61	82.86	-17.05	1.50	1.50	0.00
9 5/8"									
1,100.00	13.50	78.00	1,091.70	21.94	103.23	-21.24	1.50	1.50	0.00
1,200.00	15.00	78.00	1,188.62	27.06	127.31	-26.19	1.50	1.50	0.00
1,300.00	16.50	78.00	1,284.86	32.70	153.86	-31.66	1.50	1.50	0.00
1,400.00	18.00	78.00	1,380.36	38.87	182.87	-37.62	1.50	1.50	0.00
1,500.00	19.50	78.00	1,475.05	45.55	214.31	-44.09	1.50	1.50	0.00
1,533.33	20.00	78.00	1,506.42	47.89	225.32	-46.36	1.50	1.50	0.00
End Nudge @ 1533.33ft									
1,600.00	20.00	78.00	1,569.07	52.63	247.63	-50.95	0.00	0.00	0.00
1,700.00	20.00	78.00	1,663.04	59.75	281.08	-57.83	0.00	0.00	0.00
1,800.00	20.00	78.00	1,757.01	66.86	314.54	-64.71	0.00	0.00	0.00
1,900.00	20.00	78.00	1,850.97	73.97	347.99	-71.60	0.00	0.00	0.00
2,000.00	20.00	78.00	1,944.94	81.08	381.44	-78.48	0.00	0.00	0.00
2,100.00	20.00	78.00	2,038.91	88.19	414.90	-85.36	0.00	0.00	0.00
2,200.00	20.00	78.00	2,132.88	95.30	448.35	-92.25	0.00	0.00	0.00
2,300.00	20.00	78.00	2,226.85	102.41	481.81	-99.13	0.00	0.00	0.00
2,400.00	20.00	78.00	2,320.82	109.52	515.26	-106.01	0.00	0.00	0.00
2,500.00	20.00	78.00	2,414.79	116.63	548.72	-112.90	0.00	0.00	0.00
2,600.00	20.00	78.00	2,508.76	123.74	582.17	-119.78	0.00	0.00	0.00
2,700.00	20.00	78.00	2,602.73	130.86	615.63	-126.66	0.00	0.00	0.00
2,800.00	20.00	78.00	2,696.70	137.97	649.08	-133.55	0.00	0.00	0.00
2,900.00	20.00	78.00	2,790.67	145.08	682.54	-140.43	0.00	0.00	0.00
3,000.00	20.00	78.00	2,884.64	152.19	715.99	-147.31	0.00	0.00	0.00
3,100.00	20.00	78.00	2,978.61	159.30	749.45	-154.19	0.00	0.00	0.00
3,200.00	20.00	78.00	3,072.58	166.41	782.90	-161.08	0.00	0.00	0.00
3,300.00	20.00	78.00	3,166.54	173.52	816.35	-167.96	0.00	0.00	0.00
3,400.00	20.00	78.00	3,260.51	180.63	849.81	-174.84	0.00	0.00	0.00
3,500.00	20.00	78.00	3,354.48	187.74	883.26	-181.73	0.00	0.00	0.00
3,600.00	20.00	78.00	3,448.45	194.85	916.72	-188.61	0.00	0.00	0.00
3,620.80	20.00	78.00	3,468.00	196.33	923.68	-190.04	0.00	0.00	0.00
Parkman									
3,700.00	20.00	78.00	3,542.42	201.97	950.17	-195.49	0.00	0.00	0.00
3,800.00	20.00	78.00	3,636.39	209.08	983.63	-202.38	0.00	0.00	0.00
3,900.00	20.00	78.00	3,730.36	216.19	1,017.08	-209.26	0.00	0.00	0.00
4,000.00	20.00	78.00	3,824.33	223.30	1,050.54	-216.14	0.00	0.00	0.00
4,100.00	20.00	78.00	3,918.30	230.41	1,083.99	-223.03	0.00	0.00	0.00

Corporate
Planning Report

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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 25N-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)	
4,122.03	20.00	78.00	3,939.00	231.98	1,091.36	-224.54	0.00	0.00	0.00	
Sussex										
4,200.00	20.00	78.00	4,012.27	237.52	1,117.45	-229.91	0.00	0.00	0.00	
4,233.33	20.00	78.00	4,043.59	239.89	1,128.60	-232.20	0.00	0.00	0.00	
Begin Drop @ 4233.33ft										
4,300.00	18.67	78.00	4,106.50	244.48	1,150.19	-236.64	2.00	-2.00	0.00	
4,400.00	16.67	78.00	4,201.78	250.79	1,179.87	-242.75	2.00	-2.00	0.00	
4,500.00	14.67	78.00	4,298.06	256.40	1,206.28	-248.19	2.00	-2.00	0.00	
4,600.00	12.67	78.00	4,395.22	261.32	1,229.39	-252.94	2.00	-2.00	0.00	
4,700.00	10.67	78.00	4,493.15	265.52	1,249.17	-257.01	2.00	-2.00	0.00	
4,800.00	8.67	78.00	4,591.72	269.01	1,265.59	-260.39	2.00	-2.00	0.00	
4,900.00	6.67	78.00	4,690.82	271.78	1,278.64	-263.07	2.00	-2.00	0.00	
5,000.00	4.67	78.00	4,790.33	273.84	1,288.30	-265.06	2.00	-2.00	0.00	
5,100.00	2.67	78.00	4,890.12	275.17	1,294.56	-266.35	2.00	-2.00	0.00	
5,200.00	0.67	78.00	4,990.07	275.77	1,297.40	-266.93	2.00	-2.00	0.00	
5,233.33	0.00	0.00	5,023.41	275.81	1,297.59	-266.97	2.00	-2.00	-234.00	
End Drop @ 5233.33ft										
5,300.00	0.00	0.00	5,090.07	275.81	1,297.59	-266.97	0.00	0.00	0.00	
5,400.00	0.00	0.00	5,190.07	275.81	1,297.59	-266.97	0.00	0.00	0.00	
5,500.00	0.00	0.00	5,290.07	275.81	1,297.59	-266.97	0.00	0.00	0.00	
5,600.00	0.00	0.00	5,390.07	275.81	1,297.59	-266.97	0.00	0.00	0.00	
5,700.00	0.00	0.00	5,490.07	275.81	1,297.59	-266.97	0.00	0.00	0.00	
5,800.00	0.00	0.00	5,590.07	275.81	1,297.59	-266.97	0.00	0.00	0.00	
5,900.00	0.00	0.00	5,690.07	275.81	1,297.59	-266.97	0.00	0.00	0.00	
6,000.00	0.00	0.00	5,790.07	275.81	1,297.59	-266.97	0.00	0.00	0.00	
6,100.00	0.00	0.00	5,890.07	275.81	1,297.59	-266.97	0.00	0.00	0.00	
6,200.00	0.00	0.00	5,990.07	275.81	1,297.59	-266.97	0.00	0.00	0.00	
6,300.00	0.00	0.00	6,090.07	275.81	1,297.59	-266.97	0.00	0.00	0.00	
6,400.00	0.00	0.00	6,190.07	275.81	1,297.59	-266.97	0.00	0.00	0.00	
6,500.00	0.00	0.00	6,290.07	275.81	1,297.59	-266.97	0.00	0.00	0.00	
6,591.84	0.00	0.00	6,381.92	275.81	1,297.59	-266.97	0.00	0.00	0.00	
KOP @ 6591.84ft										
6,600.00	0.73	179.61	6,390.07	275.76	1,297.59	-266.92	9.00	9.00	2,202.05	
6,700.00	9.73	179.61	6,489.55	266.65	1,297.65	-257.81	9.00	9.00	0.00	
6,800.00	18.73	179.61	6,586.38	242.08	1,297.82	-233.24	9.00	9.00	0.00	
6,900.00	27.73	179.61	6,678.18	202.68	1,298.08	-193.84	9.00	9.00	0.00	
7,000.00	36.73	179.61	6,762.68	149.39	1,298.44	-140.55	9.00	9.00	0.00	
7,043.99	40.69	179.61	6,797.00	121.89	1,298.63	-113.04	9.00	9.00	0.00	
Sharon Springs										
7,100.00	45.73	179.61	6,837.81	83.55	1,298.88	-74.71	9.00	9.00	0.00	
DLS = 9°/100'										
7,171.93	52.21	179.61	6,885.00	29.31	1,299.25	-20.47	9.00	9.00	0.00	
Niobrara										
7,200.00	54.73	179.61	6,901.70	6.76	1,299.40	2.08	9.00	9.00	0.00	
7,262.04	60.32	179.61	6,935.00	-45.55	1,299.75	54.40	9.00	9.00	0.00	
Nio B										
7,300.00	63.73	179.61	6,952.81	-79.07	1,299.98	87.92	9.00	9.00	0.00	
7,400.00	72.73	179.61	6,989.85	-171.85	1,300.60	180.69	9.00	9.00	0.00	
7,418.20	74.37	179.61	6,995.00	-189.30	1,300.72	198.14	9.00	9.00	0.00	
Nio C										
7,500.00	81.73	179.61	7,011.92	-269.27	1,301.26	278.12	9.00	9.00	0.00	
7,565.60	87.64	179.61	7,018.00	-334.56	1,301.70	343.41	9.00	9.00	0.00	
End Build @ 7565.60ft - Top of Production										

Corporate
Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well HERGENREDER 25N-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 25N-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)
7,600.00	87.64	179.61	7,019.41	-368.93	1,301.93	377.78	0.00	0.00	0.00
7,700.00	87.64	179.61	7,023.53	-468.84	1,302.60	477.70	0.00	0.00	0.00
7,800.00	87.64	179.61	7,027.66	-568.75	1,303.27	577.61	0.00	0.00	0.00
7,900.00	87.64	179.61	7,031.78	-668.67	1,303.95	677.53	0.00	0.00	0.00
8,000.00	87.64	179.61	7,035.90	-768.58	1,304.62	777.44	0.00	0.00	0.00
8,100.00	87.64	179.61	7,040.02	-868.49	1,305.29	877.36	0.00	0.00	0.00
8,200.00	87.64	179.61	7,044.14	-968.41	1,305.96	977.27	0.00	0.00	0.00
8,300.00	87.64	179.61	7,048.26	-1,068.32	1,306.64	1,077.19	0.00	0.00	0.00
8,400.00	87.64	179.61	7,052.38	-1,168.23	1,307.31	1,177.10	0.00	0.00	0.00
8,500.00	87.64	179.61	7,056.51	-1,268.14	1,307.98	1,277.02	0.00	0.00	0.00
8,600.00	87.64	179.61	7,060.63	-1,368.06	1,308.65	1,376.93	0.00	0.00	0.00
8,700.00	87.64	179.61	7,064.75	-1,467.97	1,309.33	1,476.85	0.00	0.00	0.00
8,800.00	87.64	179.61	7,068.87	-1,567.88	1,310.00	1,576.76	0.00	0.00	0.00
8,900.00	87.64	179.61	7,072.99	-1,667.79	1,310.67	1,676.68	0.00	0.00	0.00
9,000.00	87.64	179.61	7,077.11	-1,767.71	1,311.34	1,776.59	0.00	0.00	0.00
9,100.00	87.64	179.61	7,081.23	-1,867.62	1,312.02	1,876.51	0.00	0.00	0.00
9,200.00	87.64	179.61	7,085.36	-1,967.53	1,312.69	1,976.42	0.00	0.00	0.00
9,300.00	87.64	179.61	7,089.48	-2,067.45	1,313.36	2,076.34	0.00	0.00	0.00
9,400.00	87.64	179.61	7,093.60	-2,167.36	1,314.03	2,176.25	0.00	0.00	0.00
9,500.00	87.64	179.61	7,097.72	-2,267.27	1,314.71	2,276.17	0.00	0.00	0.00
9,600.00	87.64	179.61	7,101.84	-2,367.18	1,315.38	2,376.08	0.00	0.00	0.00
9,700.00	87.64	179.61	7,105.96	-2,467.10	1,316.05	2,476.00	0.00	0.00	0.00
9,800.00	87.64	179.61	7,110.08	-2,567.01	1,316.72	2,575.91	0.00	0.00	0.00
9,900.00	87.64	179.61	7,114.21	-2,666.92	1,317.40	2,675.83	0.00	0.00	0.00
10,000.00	87.64	179.61	7,118.33	-2,766.84	1,318.07	2,775.74	0.00	0.00	0.00
10,040.59	87.64	179.61	7,120.00	-2,807.39	1,318.34	2,816.30	0.00	0.00	0.00
Fort Hayes									
10,100.00	87.64	179.61	7,122.45	-2,866.75	1,318.74	2,875.66	0.00	0.00	0.00
10,200.00	87.64	179.61	7,126.57	-2,966.66	1,319.41	2,975.57	0.00	0.00	0.00
10,300.00	87.64	179.61	7,130.69	-3,066.57	1,320.09	3,075.49	0.00	0.00	0.00
10,400.00	87.64	179.61	7,134.81	-3,166.49	1,320.76	3,175.40	0.00	0.00	0.00
10,500.00	87.64	179.61	7,138.93	-3,266.40	1,321.43	3,275.32	0.00	0.00	0.00
10,550.12	87.64	179.61	7,141.00	-3,316.48	1,321.77	3,325.40	0.00	0.00	0.00
Codell									
10,600.00	87.64	179.61	7,143.06	-3,366.31	1,322.10	3,375.23	0.00	0.00	0.00
10,700.00	87.64	179.61	7,147.18	-3,466.22	1,322.77	3,475.15	0.00	0.00	0.00
10,800.00	87.64	179.61	7,151.30	-3,566.14	1,323.45	3,575.06	0.00	0.00	0.00
10,900.00	87.64	179.61	7,155.42	-3,666.05	1,324.12	3,674.98	0.00	0.00	0.00
11,000.00	87.64	179.61	7,159.54	-3,765.96	1,324.79	3,774.89	0.00	0.00	0.00
11,100.00	87.64	179.61	7,163.66	-3,865.88	1,325.46	3,874.81	0.00	0.00	0.00
11,200.00	87.64	179.61	7,167.78	-3,965.79	1,326.14	3,974.72	0.00	0.00	0.00
11,300.00	87.64	179.61	7,171.91	-4,065.70	1,326.81	4,074.64	0.00	0.00	0.00
11,400.00	87.64	179.61	7,176.03	-4,165.61	1,327.48	4,174.55	0.00	0.00	0.00
11,500.00	87.64	179.61	7,180.15	-4,265.53	1,328.15	4,274.47	0.00	0.00	0.00
11,600.00	87.64	179.61	7,184.27	-4,365.44	1,328.83	4,374.38	0.00	0.00	0.00
11,700.00	87.64	179.61	7,188.39	-4,465.35	1,329.50	4,474.30	0.00	0.00	0.00
11,800.00	87.64	179.61	7,192.51	-4,565.27	1,330.17	4,574.21	0.00	0.00	0.00
11,900.00	87.64	179.61	7,196.63	-4,665.18	1,330.84	4,674.13	0.00	0.00	0.00
12,000.00	87.64	179.61	7,200.76	-4,765.09	1,331.52	4,774.04	0.00	0.00	0.00
12,100.00	87.64	179.61	7,204.88	-4,865.00	1,332.19	4,873.96	0.00	0.00	0.00
12,200.00	87.64	179.61	7,209.00	-4,964.92	1,332.86	4,973.87	0.00	0.00	0.00
12,300.00	87.64	179.61	7,213.12	-5,064.83	1,333.53	5,073.79	0.00	0.00	0.00
12,400.00	87.64	179.61	7,217.24	-5,164.74	1,334.21	5,173.70	0.00	0.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well HERGENREDER 25N-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 25N-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	87.64	179.61	7,221.36	-5,264.65	1,334.88	5,273.62	0.00	0.00	0.00
12,600.00	87.64	179.61	7,225.48	-5,364.57	1,335.55	5,373.53	0.00	0.00	0.00
12,700.00	87.64	179.61	7,229.61	-5,464.48	1,336.22	5,473.45	0.00	0.00	0.00
12,800.00	87.64	179.61	7,233.73	-5,564.39	1,336.90	5,573.36	0.00	0.00	0.00
12,900.00	87.64	179.61	7,237.85	-5,664.31	1,337.57	5,673.28	0.00	0.00	0.00
13,000.00	87.64	179.61	7,241.97	-5,764.22	1,338.24	5,773.19	0.00	0.00	0.00
13,100.00	87.64	179.61	7,246.09	-5,864.13	1,338.91	5,873.11	0.00	0.00	0.00
13,200.00	87.64	179.61	7,250.21	-5,964.04	1,339.59	5,973.02	0.00	0.00	0.00
13,300.00	87.64	179.61	7,254.33	-6,063.96	1,340.26	6,072.94	0.00	0.00	0.00
13,400.00	87.64	179.61	7,258.46	-6,163.87	1,340.93	6,172.85	0.00	0.00	0.00
13,500.00	87.64	179.61	7,262.58	-6,263.78	1,341.60	6,272.77	0.00	0.00	0.00
13,600.00	87.64	179.61	7,266.70	-6,363.69	1,342.27	6,372.68	0.00	0.00	0.00
13,700.00	87.64	179.61	7,270.82	-6,463.61	1,342.95	6,472.60	0.00	0.00	0.00
13,800.00	87.64	179.61	7,274.94	-6,563.52	1,343.62	6,572.51	0.00	0.00	0.00
13,900.00	87.64	179.61	7,279.06	-6,663.43	1,344.29	6,672.43	0.00	0.00	0.00
14,000.00	87.64	179.61	7,283.18	-6,763.35	1,344.96	6,772.34	0.00	0.00	0.00
14,100.00	87.64	179.61	7,287.31	-6,863.26	1,345.64	6,872.26	0.00	0.00	0.00
14,200.00	87.64	179.61	7,291.43	-6,963.17	1,346.31	6,972.17	0.00	0.00	0.00
14,213.91	87.64	179.61	7,292.00	-6,977.07	1,346.40	6,986.07	0.00	0.00	0.00
TD Well @ 14213.91ft - HERGENREDER 25N-4HZ_Bottom Hole									

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well HERGENREDER 25N-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 25N-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	71.07	1,777.89	14,595,453.07	1,638,362.57	40.188714	-105.007355
- plan misses target center by 1779.31usft 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_Secti	0.00	0.00	30.00	71.07	1,777.89	14,595,453.07	1,638,362.57	40.188714	-105.007355
- plan misses target center by 1779.31usft 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 25N-4	0.00	0.00	30.00	-6,251.93	1,630.51	14,589,130.10	1,638,214.22	40.171350	-105.007884
- plan misses target center by 6461.05usft at 30.00usft MD (30.00 TVD, 0.00 N, 0.00 E)									
- Circle (radius 460.00)									
HERGENREDER 25N-4	0.00	0.00	30.00	-975.82	1,634.20	14,594,406.20	1,638,218.72	40.185839	-105.007870
- plan misses target center by 1903.37usft at 30.00usft MD (30.00 TVD, 0.00 N, 0.00 E)									
- Circle (radius 460.00)									
HERGENREDER 25N-4	0.00	0.00	7,292.00	-6,977.07	1,346.40	14,588,405.00	1,637,930.00	40.169359	-105.008902
- plan hits target center									
- Point									
HERGENREDER 25N-4	0.00	0.00	30.00	71.08	1,808.05	14,595,453.07	1,638,392.73	40.188714	-105.007247
- plan misses target center by 1809.45usft at 30.00usft MD (30.00 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1			30.00	-175.08	278.78	14,595,277.95	1,638,671.48		
Point 2			30.00	-1,042.43	286.05	14,594,410.60	1,638,678.62		
Point 3			30.00	-2,369.77	297.19	14,593,083.25	1,638,689.56		
Point 4			30.00	-3,693.17	296.56	14,591,759.85	1,638,688.72		
Point 5			30.00	-5,016.56	295.90	14,590,436.46	1,638,687.86		
Point 6			30.00	-6,318.18	282.08	14,589,134.85	1,638,673.84		
Point 7			30.00	-7,159.71	273.10	14,588,293.32	1,638,664.73		
Point 8			30.00	-7,165.06	-186.98	14,588,288.04	1,638,204.64		
Point 9			30.00	-7,170.16	-647.07	14,588,283.01	1,637,744.55		
Point 10			30.00	-6,327.51	-638.07	14,589,125.66	1,637,753.68		
Point 11			30.00	-5,024.76	-624.17	14,590,428.41	1,637,767.79		
Point 12			30.00	-3,701.17	-623.45	14,591,752.00	1,637,768.71		
Point 13			30.00	-2,377.37	-622.80	14,593,075.80	1,637,769.56		
Point 14			30.00	-1,051.49	-633.91	14,594,401.68	1,637,758.66		
Point 15			30.00	-185.39	-641.17	14,595,267.78	1,637,751.53		
Point 16			30.00	-180.01	-181.20	14,595,273.09	1,638,211.50		
Point 17			30.00	-175.08	278.78	14,595,277.95	1,638,671.48		
HERGENREDER 25N-4	0.00	0.00	30.00	0.00	0.00	14,595,382.27	1,636,584.67	40.188519	-105.013721
- plan hits target center									
- Point									

Corporate
Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well HERGENREDER 25N-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 25N-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	
7,565.60	7,018.00	Top of Production	7	8-3/4	
14,213.91	7,292.00	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			
3,620.80	3,468.00	Parkman			
4,122.03	3,939.00	Sussex			
7,043.99	6,797.00	Sharon Springs			
7,171.93	6,885.00	Niobrara			
7,262.04	6,935.00	Nio B			
7,418.20	6,995.00	Nio C			
10,040.59	7,120.00	Fort Hayes			
10,550.12	7,141.00	Codell			

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
200.00	200.00	0.00	0.00	Begin Nudge @ 200.00ft	
1,533.33	1,506.42	47.89	225.32	End Nudge @ 1533.33ft	
4,233.33	4,043.59	239.89	1,128.60	Begin Drop @ 4233.33ft	
5,233.33	5,023.41	275.81	1,297.59	End Drop @ 5233.33ft	
6,591.84	6,381.92	275.81	1,297.59	KOP @ 6591.84ft	
7,100.00	6,837.81	83.55	1,298.88	DLS = 9°/100'	
7,565.60	7,018.00	-334.56	1,301.70	End Build @ 7565.60ft	
14,213.91	7,292.00	-6,977.07	1,346.40	TD Well @ 14213.91ft	