

# **US ROCKIES WATTENBERG PLANNING**

**WELD-NAD83-UTMFT13N**

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

**HERGENREDER 32N-4HZ**

**Plan A**

**Plan: Permit Rev-2**

## **Standard Planning Report**

**27 June, 2017**

Project: WELD-NAD83-UTMFT13N  
Site: 3N-68W-33 Hergenreder 4-33HZ Pad  
Well: HERGENREDER 32N-4HZ  
Wellbore: Plan A  
Design: Permit Rev-2

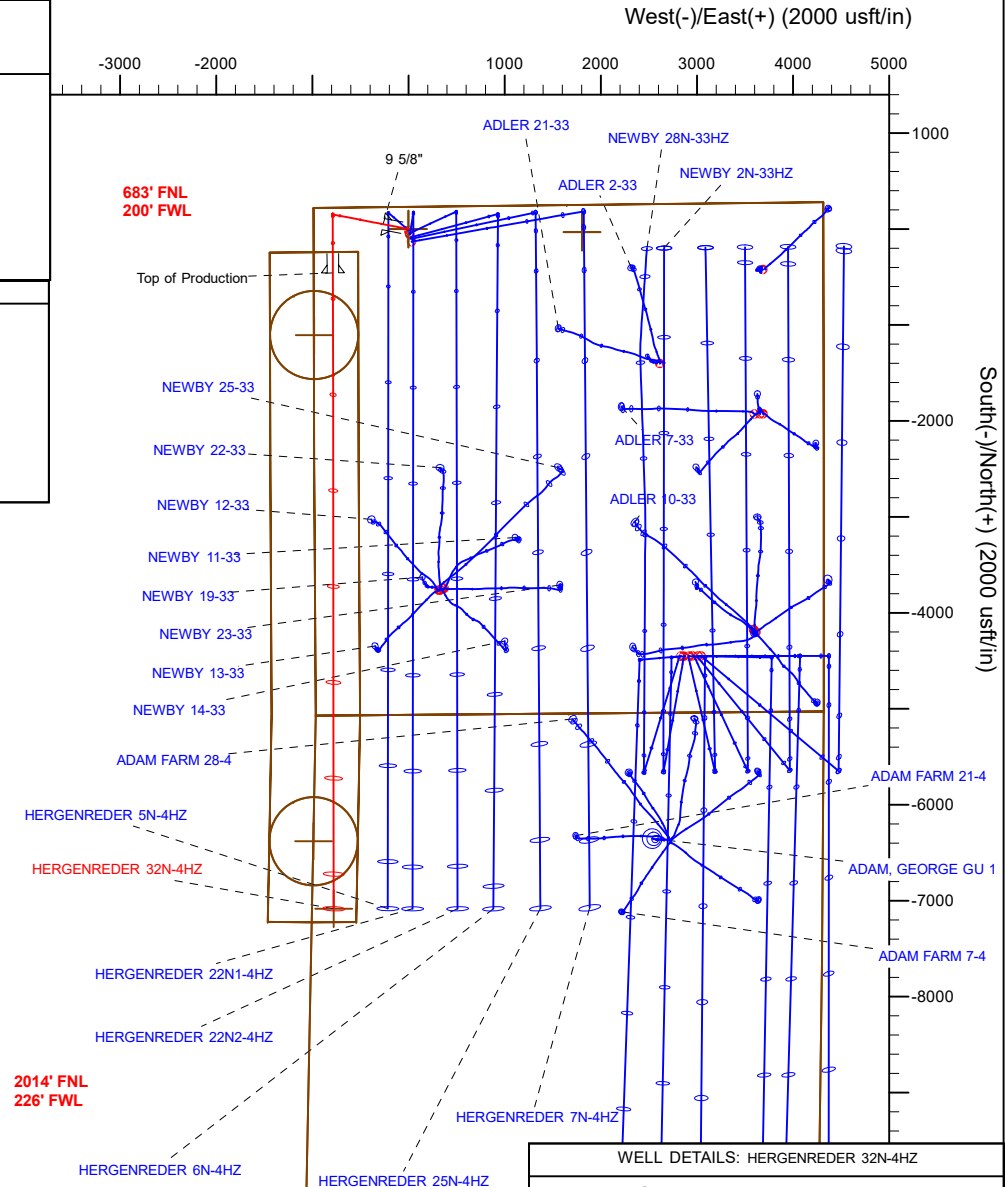
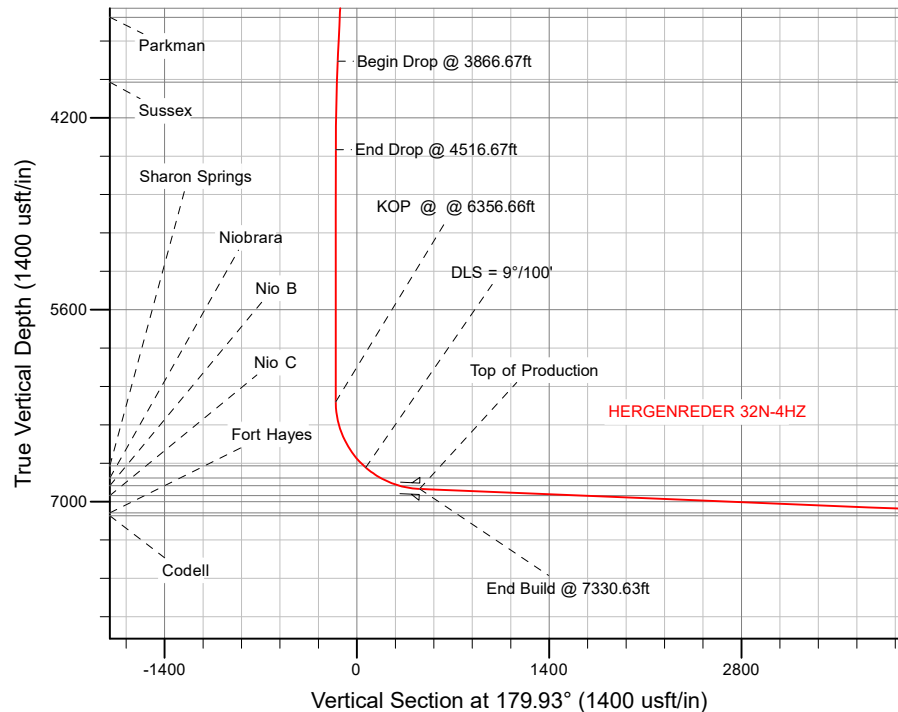
# US ROCKIES WATTENBERG PLANNING

## 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	1066.67	13.00	281.00	1059.25	18.68	-96.10	1.50	281.00	-18.80	
4	3866.67	13.00	281.00	3787.49	138.86	-714.39	0.00	0.00	-139.74	
5	4516.67	0.00	0.00	4431.92	152.87	-786.47	2.00	180.00	-153.83	
6	6356.66	0.00	0.00	6271.91	152.87	-786.47	0.00	0.00	-153.83	
7	7330.63	87.66	179.93	6908.00	-457.73	-785.70	9.00	179.93	456.77	
8	13961.45	87.66	179.93	7179.00	-7083.00	-777.34	0.00	0.00	7082.05	HERGENREDER 32N-4HZ_BHL

## WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
HERGENREDER 32N-4HZ_SHL	0.00	0.00	0.00	40.188798	-105.013815
HERGENREDER 32N-4HZ_BHL	7179.00	-7083.00	-777.34	40.169347	-105.016598



## WELL DETAILS: HERGENREDER 32N-4HZ

Ground Level: 4942'

RKB = 17' @ 4959.00usft (D Rig)

Plan: Permit Rev-2 (HERGENREDER 32N-4HZ/Plan A)

Created By: \_\_\_\_\_ Date: 6/14/2017  
Reviewed: \_\_\_\_\_ Date: \_\_\_\_\_

# Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well HERGENREDER 32N-4HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 4959.00usft (D Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 4959.00usft (D Rig)
<b>Site:</b>	3N-68W-33 Hergenreder 4-33HZ Pad	<b>North Reference:</b>	True
<b>Well:</b>	HERGENREDER 32N-4HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan A		
<b>Design:</b>	Permit Rev-2		

<b>Project</b>	WELD-NAD83-UTMFT13N		
<b>Map System:</b>	Universal Transverse Mercator (US Survey Feet)	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	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 32N-4HZ					
Well Position	+N/-S	0.00 usft	Northing:	14,595,483.88 usft	Latitude:	40.188798
	+E/-W	0.00 usft	Easting:	1,636,558.44 usft	Longitude:	-105.013815
Position Uncertainty		3.28 usft	Wellhead Elevation:	0.00 usft	Ground Level:	4,942.00 usft

<b>Wellbore</b>	Plan A				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	9/15/2015	8.41	66.69	52,545.77090233

<b>Design</b>	Permit Rev-2			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	179.93

<b>Plan Survey Tool Program</b>	<b>Date</b>	6/27/2017		
<b>Depth From (usft)</b>	<b>Depth To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Remarks</b>
1	0.00	1,000.00	Permit Rev-2 (Plan A)	APC_ISCWSA REV 2 MWD+II Fixed:v2:crustal field declination
2	1,000.00	13,961.45	Permit Rev-2 (Plan A)	APC_ISCWSA REV 2 MWD+II Fixed:v2:crustal field declination

# Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well HERGENREDER 32N-4HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 4959.00usft (D Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 4959.00usft (D Rig)
<b>Site:</b>	3N-68W-33 Hergenreder 4-33HZ Pad	<b>North Reference:</b>	True
<b>Well:</b>	HERGENREDER 32N-4HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan A		
<b>Design:</b>	Permit Rev-2		

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	
1,066.67	13.00	281.00	1,059.25	18.68	-96.10	1.50	1.50	0.00	281.00	
3,866.67	13.00	281.00	3,787.49	138.86	-714.39	0.00	0.00	0.00	0.00	
4,516.67	0.00	0.00	4,431.92	152.87	-786.47	2.00	-2.00	12.15	180.00	
6,356.66	0.00	0.00	6,271.91	152.87	-786.47	0.00	0.00	0.00	0.00	
7,330.63	87.66	179.93	6,908.00	-457.73	-785.70	9.00	9.00	18.47	179.93	
13,961.45	87.66	179.93	7,179.00	-7,083.00	-777.34	0.00	0.00	0.00	0.00	HERGENREDER 32N

**Corporate**  
Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well HERGENREDER 32N-4HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 4959.00usft (D Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 4959.00usft (D Rig)
<b>Site:</b>	3N-68W-33 Hergenreder 4-33HZ Pad	<b>North Reference:</b>	True
<b>Well:</b>	HERGENREDER 32N-4HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan A		
<b>Design:</b>	Permit Rev-2		

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
<b>HERGENREDER 32N-4HZ_SHL - HERGENREDER 32N-4HZ_460 Polygon 4 - HERGENREDER 32N-4HZ_460 Polygon 2 - HERGENREDER 3</b>									
30.00	0.00	0.00	30.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>3N-R68W-Sec. 33_Section Lines - 2N-R68W-Sec. 4_Section Lines</b>									
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
<b>Begin Nudge @ 200.00ft</b>									
300.00	1.50	281.00	299.99	0.25	-1.28	-0.25	1.50	1.50	0.00
400.00	3.00	281.00	399.91	1.00	-5.14	-1.01	1.50	1.50	0.00
419.12	3.29	281.00	419.00	1.20	-6.17	-1.21	1.50	1.50	0.00
<b>Fox Hills</b>									
500.00	4.50	281.00	499.69	2.25	-11.56	-2.26	1.50	1.50	0.00
600.00	6.00	281.00	599.27	3.99	-20.54	-4.02	1.50	1.50	0.00
700.00	7.50	281.00	698.57	6.24	-32.08	-6.27	1.50	1.50	0.00
800.00	9.00	281.00	797.54	8.97	-46.16	-9.03	1.50	1.50	0.00
900.00	10.50	281.00	896.09	12.20	-62.79	-12.28	1.50	1.50	0.00
1,000.00	12.00	281.00	994.16	15.93	-81.94	-16.03	1.50	1.50	0.00
1,005.97	12.09	281.00	1,000.00	16.16	-83.16	-16.27	1.50	1.50	0.00
<b>9 5/8"</b>									
1,066.67	13.00	281.00	1,059.25	18.68	-96.10	-18.80	1.50	1.50	0.00
<b>End Nudge @ 1066.67ft</b>									
1,100.00	13.00	281.00	1,091.73	20.11	-103.46	-20.24	0.00	0.00	0.00
1,200.00	13.00	281.00	1,189.17	24.40	-125.54	-24.56	0.00	0.00	0.00
1,300.00	13.00	281.00	1,286.60	28.70	-147.62	-28.88	0.00	0.00	0.00
1,400.00	13.00	281.00	1,384.04	32.99	-169.71	-33.19	0.00	0.00	0.00
1,500.00	13.00	281.00	1,481.48	37.28	-191.79	-37.51	0.00	0.00	0.00
1,600.00	13.00	281.00	1,578.91	41.57	-213.87	-41.83	0.00	0.00	0.00
1,700.00	13.00	281.00	1,676.35	45.86	-235.95	-46.15	0.00	0.00	0.00
1,800.00	13.00	281.00	1,773.79	50.16	-258.03	-50.47	0.00	0.00	0.00
1,900.00	13.00	281.00	1,871.22	54.45	-280.12	-54.79	0.00	0.00	0.00
2,000.00	13.00	281.00	1,968.66	58.74	-302.20	-59.11	0.00	0.00	0.00
2,100.00	13.00	281.00	2,066.10	63.03	-324.28	-63.43	0.00	0.00	0.00
2,200.00	13.00	281.00	2,163.54	67.33	-346.36	-67.75	0.00	0.00	0.00
2,300.00	13.00	281.00	2,260.97	71.62	-368.44	-72.07	0.00	0.00	0.00
2,400.00	13.00	281.00	2,358.41	75.91	-390.52	-76.39	0.00	0.00	0.00
2,500.00	13.00	281.00	2,455.85	80.20	-412.61	-80.71	0.00	0.00	0.00
2,600.00	13.00	281.00	2,553.28	84.49	-434.69	-85.03	0.00	0.00	0.00
2,700.00	13.00	281.00	2,650.72	88.79	-456.77	-89.35	0.00	0.00	0.00
2,800.00	13.00	281.00	2,748.16	93.08	-478.85	-93.66	0.00	0.00	0.00
2,900.00	13.00	281.00	2,845.59	97.37	-500.93	-97.98	0.00	0.00	0.00
3,000.00	13.00	281.00	2,943.03	101.66	-523.02	-102.30	0.00	0.00	0.00
3,100.00	13.00	281.00	3,040.47	105.96	-545.10	-106.62	0.00	0.00	0.00
3,200.00	13.00	281.00	3,137.91	110.25	-567.18	-110.94	0.00	0.00	0.00
3,300.00	13.00	281.00	3,235.34	114.54	-589.26	-115.26	0.00	0.00	0.00
3,400.00	13.00	281.00	3,332.78	118.83	-611.34	-119.58	0.00	0.00	0.00
3,500.00	13.00	281.00	3,430.22	123.13	-633.42	-123.90	0.00	0.00	0.00
3,538.78	13.00	281.00	3,468.00	124.79	-641.99	-125.57	0.00	0.00	0.00
<b>Parkman</b>									
3,600.00	13.00	281.00	3,527.65	127.42	-655.51	-128.22	0.00	0.00	0.00
3,700.00	13.00	281.00	3,625.09	131.71	-677.59	-132.54	0.00	0.00	0.00
3,800.00	13.00	281.00	3,722.53	136.00	-699.67	-136.86	0.00	0.00	0.00
3,866.67	13.00	281.00	3,787.49	138.86	-714.39	-139.74	0.00	0.00	0.00
<b>Begin Drop @ 3866.67ft</b>									

**Corporate**  
Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well HERGENREDER 32N-4HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 4959.00usft (D Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 4959.00usft (D Rig)
<b>Site:</b>	3N-68W-33 Hergenreder 4-33HZ Pad	<b>North Reference:</b>	True
<b>Well:</b>	HERGENREDER 32N-4HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan A		
<b>Design:</b>	Permit Rev-2		

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)
3,900.00	12.33	281.00	3,820.01	140.26	-721.57	-141.14	2.00	-2.00	0.00
4,000.00	10.33	281.00	3,918.05	144.01	-740.86	-144.91	2.00	-2.00	0.00
4,021.28	9.91	281.00	3,939.00	144.72	-744.53	-145.63	2.00	-2.00	0.00
<b>Sussex</b>									
4,100.00	8.33	281.00	4,016.72	147.10	-756.77	-148.03	2.00	-2.00	0.00
4,200.00	6.33	281.00	4,115.90	149.54	-769.30	-150.48	2.00	-2.00	0.00
4,300.00	4.33	281.00	4,215.46	151.31	-778.43	-152.26	2.00	-2.00	0.00
4,400.00	2.33	281.00	4,315.29	152.42	-784.13	-153.38	2.00	-2.00	0.00
4,500.00	0.33	281.00	4,415.26	152.86	-786.42	-153.83	2.00	-2.00	0.00
4,516.67	0.00	0.00	4,431.93	152.87	-786.47	-153.83	2.00	-2.00	473.90
<b>End Drop @ 4516.67ft</b>									
4,600.00	0.00	0.00	4,515.26	152.87	-786.47	-153.83	0.00	0.00	0.00
4,700.00	0.00	0.00	4,615.26	152.87	-786.47	-153.83	0.00	0.00	0.00
4,800.00	0.00	0.00	4,715.26	152.87	-786.47	-153.83	0.00	0.00	0.00
4,900.00	0.00	0.00	4,815.26	152.87	-786.47	-153.83	0.00	0.00	0.00
5,000.00	0.00	0.00	4,915.26	152.87	-786.47	-153.83	0.00	0.00	0.00
5,100.00	0.00	0.00	5,015.26	152.87	-786.47	-153.83	0.00	0.00	0.00
5,200.00	0.00	0.00	5,115.26	152.87	-786.47	-153.83	0.00	0.00	0.00
5,300.00	0.00	0.00	5,215.26	152.87	-786.47	-153.83	0.00	0.00	0.00
5,400.00	0.00	0.00	5,315.26	152.87	-786.47	-153.83	0.00	0.00	0.00
5,500.00	0.00	0.00	5,415.26	152.87	-786.47	-153.83	0.00	0.00	0.00
5,600.00	0.00	0.00	5,515.26	152.87	-786.47	-153.83	0.00	0.00	0.00
5,700.00	0.00	0.00	5,615.26	152.87	-786.47	-153.83	0.00	0.00	0.00
5,800.00	0.00	0.00	5,715.26	152.87	-786.47	-153.83	0.00	0.00	0.00
5,900.00	0.00	0.00	5,815.26	152.87	-786.47	-153.83	0.00	0.00	0.00
6,000.00	0.00	0.00	5,915.26	152.87	-786.47	-153.83	0.00	0.00	0.00
6,100.00	0.00	0.00	6,015.26	152.87	-786.47	-153.83	0.00	0.00	0.00
6,200.00	0.00	0.00	6,115.26	152.87	-786.47	-153.83	0.00	0.00	0.00
6,300.00	0.00	0.00	6,215.26	152.87	-786.47	-153.83	0.00	0.00	0.00
6,356.66	0.00	0.00	6,271.92	152.87	-786.47	-153.83	0.00	0.00	0.00
<b>KOP @ @ 6356.66ft</b>									
6,400.00	3.90	179.93	6,315.22	151.40	-786.46	-152.36	9.00	9.00	415.15
6,500.00	12.90	179.93	6,414.05	136.80	-786.45	-137.76	9.00	9.00	0.00
6,600.00	21.90	179.93	6,509.37	106.93	-786.41	-107.89	9.00	9.00	0.00
6,700.00	30.90	179.93	6,598.85	62.51	-786.35	-63.47	9.00	9.00	0.00
6,800.00	39.90	179.93	6,680.28	4.64	-786.28	-5.60	9.00	9.00	0.00
6,882.55	47.33	179.93	6,740.00	-52.26	-786.21	51.30	9.00	9.00	0.00
<b>Sharon Springs</b>									
6,900.00	48.90	179.93	6,751.65	-65.26	-786.19	64.29	9.00	9.00	0.00
<b>DLS = 9°/100'</b>									
7,000.00	57.90	179.93	6,811.21	-145.46	-786.09	144.50	9.00	9.00	0.00
7,032.97	60.87	179.93	6,828.00	-173.82	-786.05	172.86	9.00	9.00	0.00
<b>Niobrara</b>									
7,100.00	66.90	179.93	6,857.49	-233.99	-785.98	233.03	9.00	9.00	0.00
7,179.35	74.04	179.93	6,884.00	-308.72	-785.88	307.76	9.00	9.00	0.00
<b>Nio B</b>									
7,200.00	75.90	179.93	6,889.36	-328.67	-785.86	327.71	9.00	9.00	0.00
7,300.00	84.90	179.93	6,906.01	-427.16	-785.73	426.20	9.00	9.00	0.00
7,330.63	87.66	179.93	6,908.00	-457.73	-785.70	456.77	9.00	9.00	0.00
<b>End Build @ 7330.63ft - Top of Production</b>									
7,400.00	87.66	179.93	6,910.84	-527.04	-785.61	526.08	0.00	0.00	0.00
7,500.00	87.66	179.93	6,914.92	-626.95	-785.48	625.99	0.00	0.00	0.00
7,600.00	87.66	179.93	6,919.01	-726.87	-785.36	725.91	0.00	0.00	0.00

**Corporate**  
Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well HERGENREDER 32N-4HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 4959.00usft (D Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 4959.00usft (D Rig)
<b>Site:</b>	3N-68W-33 Hergenreder 4-33HZ Pad	<b>North Reference:</b>	True
<b>Well:</b>	HERGENREDER 32N-4HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan A		
<b>Design:</b>	Permit Rev-2		

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)
7,700.00	87.66	179.93	6,923.10	-826.79	-785.23	825.83	0.00	0.00	0.00
7,800.00	87.66	179.93	6,927.18	-926.70	-785.10	925.74	0.00	0.00	0.00
7,900.00	87.66	179.93	6,931.27	-1,026.62	-784.98	1,025.66	0.00	0.00	0.00
8,000.00	87.66	179.93	6,935.36	-1,126.54	-784.85	1,125.58	0.00	0.00	0.00
8,100.00	87.66	179.93	6,939.45	-1,226.45	-784.73	1,225.49	0.00	0.00	0.00
8,200.00	87.66	179.93	6,943.53	-1,326.37	-784.60	1,325.41	0.00	0.00	0.00
8,300.00	87.66	179.93	6,947.62	-1,426.29	-784.47	1,425.33	0.00	0.00	0.00
8,400.00	87.66	179.93	6,951.71	-1,526.20	-784.35	1,525.24	0.00	0.00	0.00
8,500.00	87.66	179.93	6,955.79	-1,626.12	-784.22	1,625.16	0.00	0.00	0.00
8,529.54	87.66	179.93	6,957.00	-1,655.63	-784.18	1,654.67	0.00	0.00	0.00
Nio C									
8,600.00	87.66	179.93	6,959.88	-1,726.03	-784.10	1,725.08	0.00	0.00	0.00
8,700.00	87.66	179.93	6,963.97	-1,825.95	-783.97	1,824.99	0.00	0.00	0.00
8,800.00	87.66	179.93	6,968.05	-1,925.87	-783.84	1,924.91	0.00	0.00	0.00
8,900.00	87.66	179.93	6,972.14	-2,025.78	-783.72	2,024.82	0.00	0.00	0.00
9,000.00	87.66	179.93	6,976.23	-2,125.70	-783.59	2,124.74	0.00	0.00	0.00
9,100.00	87.66	179.93	6,980.31	-2,225.62	-783.47	2,224.66	0.00	0.00	0.00
9,200.00	87.66	179.93	6,984.40	-2,325.53	-783.34	2,324.57	0.00	0.00	0.00
9,300.00	87.66	179.93	6,988.49	-2,425.45	-783.21	2,424.49	0.00	0.00	0.00
9,400.00	87.66	179.93	6,992.58	-2,525.37	-783.09	2,524.41	0.00	0.00	0.00
9,500.00	87.66	179.93	6,996.66	-2,625.28	-782.96	2,624.32	0.00	0.00	0.00
9,600.00	87.66	179.93	7,000.75	-2,725.20	-782.84	2,724.24	0.00	0.00	0.00
9,700.00	87.66	179.93	7,004.84	-2,825.11	-782.71	2,824.16	0.00	0.00	0.00
9,800.00	87.66	179.93	7,008.92	-2,925.03	-782.58	2,924.07	0.00	0.00	0.00
9,900.00	87.66	179.93	7,013.01	-3,024.95	-782.46	3,023.99	0.00	0.00	0.00
10,000.00	87.66	179.93	7,017.10	-3,124.86	-782.33	3,123.91	0.00	0.00	0.00
10,100.00	87.66	179.93	7,021.18	-3,224.78	-782.20	3,223.82	0.00	0.00	0.00
10,200.00	87.66	179.93	7,025.27	-3,324.70	-782.08	3,323.74	0.00	0.00	0.00
10,300.00	87.66	179.93	7,029.36	-3,424.61	-781.95	3,423.66	0.00	0.00	0.00
10,400.00	87.66	179.93	7,033.45	-3,524.53	-781.83	3,523.57	0.00	0.00	0.00
10,500.00	87.66	179.93	7,037.53	-3,624.45	-781.70	3,623.49	0.00	0.00	0.00
10,600.00	87.66	179.93	7,041.62	-3,724.36	-781.57	3,723.40	0.00	0.00	0.00
10,700.00	87.66	179.93	7,045.71	-3,824.28	-781.45	3,823.32	0.00	0.00	0.00
10,800.00	87.66	179.93	7,049.79	-3,924.19	-781.32	3,923.24	0.00	0.00	0.00
10,900.00	87.66	179.93	7,053.88	-4,024.11	-781.20	4,023.15	0.00	0.00	0.00
11,000.00	87.66	179.93	7,057.97	-4,124.03	-781.07	4,123.07	0.00	0.00	0.00
11,100.00	87.66	179.93	7,062.05	-4,223.94	-780.94	4,222.99	0.00	0.00	0.00
11,200.00	87.66	179.93	7,066.14	-4,323.86	-780.82	4,322.90	0.00	0.00	0.00
11,300.00	87.66	179.93	7,070.23	-4,423.78	-780.69	4,422.82	0.00	0.00	0.00
11,400.00	87.66	179.93	7,074.31	-4,523.69	-780.57	4,522.74	0.00	0.00	0.00
11,500.00	87.66	179.93	7,078.40	-4,623.61	-780.44	4,622.65	0.00	0.00	0.00
11,588.05	87.66	179.93	7,082.00	-4,711.58	-780.33	4,710.63	0.00	0.00	0.00
Fort Hayes									
11,600.00	87.66	179.93	7,082.49	-4,723.53	-780.31	4,722.57	0.00	0.00	0.00
11,700.00	87.66	179.93	7,086.58	-4,823.44	-780.19	4,822.49	0.00	0.00	0.00
11,800.00	87.66	179.93	7,090.66	-4,923.36	-780.06	4,922.40	0.00	0.00	0.00
11,900.00	87.66	179.93	7,094.75	-5,023.27	-779.94	5,022.32	0.00	0.00	0.00
12,000.00	87.66	179.93	7,098.84	-5,123.19	-779.81	5,122.23	0.00	0.00	0.00
12,100.00	87.66	179.93	7,102.92	-5,223.11	-779.68	5,222.15	0.00	0.00	0.00
12,101.88	87.66	179.93	7,103.00	-5,224.98	-779.68	5,224.03	0.00	0.00	0.00
Codell									
12,200.00	87.66	179.93	7,107.01	-5,323.02	-779.56	5,322.07	0.00	0.00	0.00
12,300.00	87.66	179.93	7,111.10	-5,422.94	-779.43	5,421.98	0.00	0.00	0.00

**Corporate**  
Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well HERGENREDER 32N-4HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 4959.00usft (D Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 4959.00usft (D Rig)
<b>Site:</b>	3N-68W-33 Hergenreder 4-33HZ Pad	<b>North Reference:</b>	True
<b>Well:</b>	HERGENREDER 32N-4HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan A		
<b>Design:</b>	Permit Rev-2		

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)	
12,400.00	87.66	179.93	7,115.18	-5,522.86	-779.31	5,521.90	0.00	0.00	0.00	
12,500.00	87.66	179.93	7,119.27	-5,622.77	-779.18	5,621.82	0.00	0.00	0.00	
12,600.00	87.66	179.93	7,123.36	-5,722.69	-779.05	5,721.73	0.00	0.00	0.00	
12,700.00	87.66	179.93	7,127.45	-5,822.61	-778.93	5,821.65	0.00	0.00	0.00	
12,800.00	87.66	179.93	7,131.53	-5,922.52	-778.80	5,921.57	0.00	0.00	0.00	
12,900.00	87.66	179.93	7,135.62	-6,022.44	-778.68	6,021.48	0.00	0.00	0.00	
13,000.00	87.66	179.93	7,139.71	-6,122.36	-778.55	6,121.40	0.00	0.00	0.00	
13,100.00	87.66	179.93	7,143.79	-6,222.27	-778.42	6,221.32	0.00	0.00	0.00	
13,200.00	87.66	179.93	7,147.88	-6,322.19	-778.30	6,321.23	0.00	0.00	0.00	
13,300.00	87.66	179.93	7,151.97	-6,422.10	-778.17	6,421.15	0.00	0.00	0.00	
13,400.00	87.66	179.93	7,156.05	-6,522.02	-778.04	6,521.07	0.00	0.00	0.00	
13,500.00	87.66	179.93	7,160.14	-6,621.94	-777.92	6,620.98	0.00	0.00	0.00	
13,600.00	87.66	179.93	7,164.23	-6,721.85	-777.79	6,720.90	0.00	0.00	0.00	
13,700.00	87.66	179.93	7,168.31	-6,821.77	-777.67	6,820.81	0.00	0.00	0.00	
13,800.00	87.66	179.93	7,172.40	-6,921.69	-777.54	6,920.73	0.00	0.00	0.00	
13,900.00	87.66	179.93	7,176.49	-7,021.60	-777.41	7,020.65	0.00	0.00	0.00	
13,961.45	87.66	179.93	7,179.00	-7,083.00	-777.34	7,082.05	0.00	0.00	0.00	
TD Well @ 13961.45ft - HERGENREDER 32N-4HZ_BHL										

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
2N-R68W-Sec. 4_Sectic	0.00	0.00	30.00	-30.52	1,804.14	14,595,453.07	1,638,362.57	40.188714	-105.007355
- hit/miss target									
- Shape									
- plan misses target center by 1804.40usft 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	1,640,877.42		
Point 4			30.00	-7,591.82	2,497.44	14,587,860.86	1,640,858.83		
Point 5			30.00	-10,216.42	2,462.98	14,585,236.27	1,640,823.96		
Point 6			30.00	-10,271.92	-193.52	14,585,181.18	1,638,167.45		
Point 7			30.00	-10,321.42	-2,870.28	14,585,132.10	1,635,490.68		
Point 8			30.00	-7,652.28	-2,819.20	14,587,801.23	1,635,542.18		
3N-R68W-Sec. 33_Sect	0.00	0.00	30.00	-30.52	1,804.14	14,595,453.07	1,638,362.57	40.188714	-105.007355
- plan misses target center by 1804.40usft at 30.00usft MD (30.00 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1			30.00	251.45	-2,791.30	14,595,704.96	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	1,640,877.94		
Point 5			30.00	-4,995.84	2,515.63	14,590,456.84	1,640,877.42		
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	14,593,059.42	1,635,577.22		
HERGENREDER 32N-4	0.00	0.00	7,179.00	-7,083.00	-777.34	14,588,401.00	1,635,780.00	40.169347	-105.016598
- plan hits target center									
- Point									
HERGENREDER 32N-4	0.00	0.00	0.00	0.00	0.00	14,595,483.88	1,636,558.44	40.188798	-105.013815
- plan hits target center									
- Point									

**Corporate**  
Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well HERGENREDER 32N-4HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 4959.00usft (D Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 4959.00usft (D Rig)
<b>Site:</b>	3N-68W-33 Hergenreder 4-33HZ Pad	<b>North Reference:</b>	True
<b>Well:</b>	HERGENREDER 32N-4HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan A		
<b>Design:</b>	Permit Rev-2		

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	
7,330.63	6,908.00	Top of Production	7	8-3/4	
13,961.45	7,179.00	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			
3,538.78	3,468.00	Parkman			
4,021.28	3,939.00	Sussex			
6,882.55	6,740.00	Sharon Springs			
7,032.97	6,828.00	Niobrara			
7,179.35	6,884.00	Nio B			
8,529.54	6,957.00	Nio C			
11,588.05	7,082.00	Fort Hayes			
12,101.88	7,103.00	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
1,066.67	1,059.25	18.68	-96.10	End Nudge @ 1066.67ft
3,866.67	3,787.49	138.86	-714.39	Begin Drop @ 3866.67ft
4,516.67	4,431.93	152.87	-786.47	End Drop @ 4516.67ft
6,356.66	6,271.92	152.87	-786.47	KOP @ @ 6356.66ft
6,900.00	6,751.65	-65.26	-786.19	DLS = 9°/100'
7,330.63	6,908.00	-457.73	-785.70	End Build @ 7330.63ft
13,961.45	7,179.00	-7,083.00	-777.34	TD Well @ 13961.45ft