

US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N

3N-66W-20 BARCLAY FARMS 35-20HZ PAD

BARCLAY 20-8HZ

Plan A

Plan: Permit Rev-1

SHL Lat/Long: 40.205024/-104.802723

Survey Program: MWD+IFR+MSA

Standard Planning Report

04 October, 2018

Project: WELD-NAD83-UTMFT13N
Site: 3N-66W-20 BARCLAY FARMS 35-20HZ PAD
Well: BARCLAY 20-8HZ
Wellbore: Plan A
Design: Permit Rev-1

US ROCKIES WATTENBERG PLANNING

CASING DETAILS

TVD	MD	Size
1500.00	1523.46	9-5/8
7204.00	7834.99	5-1/2

WELL DETAILS: BARCLAY 20-8HZ

GL = 4917'

RKB = 17' @ 4934.00usft (Drilling Rig)

SECTION DETAILS

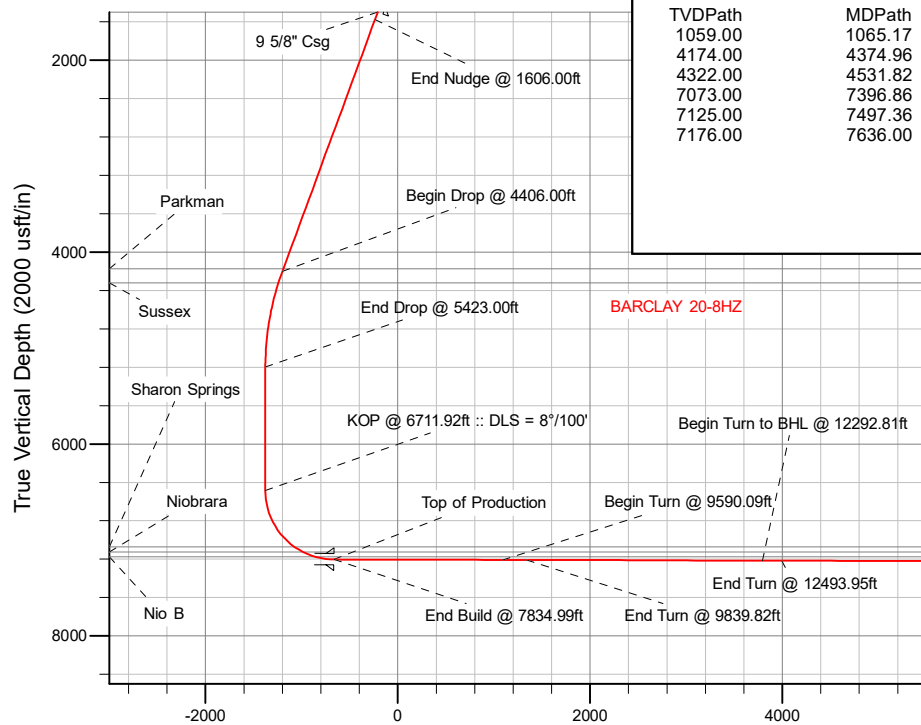
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	250.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	
3	1606.00	20.34	187.80	1577.70	-235.97	-32.32	1.50	187.80	-235.85	
4	4406.00	20.34	187.80	4203.11	-1200.22	-164.41	0.00	0.00	-1199.61	
5	5423.00	0.00	0.00	5198.88	-1377.19	-188.65	2.00	180.00	-1376.49	
6	6711.92	0.00	0.00	6487.80	-1377.19	-188.65	0.00	0.00	-1376.49	
7	7834.99	89.85	1.08	7204.00	-663.05	-175.24	8.00	1.08	-662.40	
8	9590.09	89.85	1.08	7208.72	1091.73	-142.27	0.00	0.00	1092.24	BARCLAY 20-8HZ_target 1
9	9839.82	89.85	357.33	7209.39	1341.39	-145.74	1.50	-89.99	1341.92	
10	12292.81	89.85	357.33	7215.95	3791.71	-260.00	0.00	0.00	3792.64	BARCLAY 20-8HZ_target 2
11	12493.95	89.85	0.35	7216.49	3992.78	-264.08	1.50	90.01	3993.72	
12	18287.29	89.85	0.35	7232.00	9786.00	-228.96	0.00	0.00	9786.77	BARCLAY 20-8HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
BARCLAY 20-8HZ_SHL	0.00	0.00	0.00	40.205024	-104.802723
BARCLAY 20-8HZ_BHL	7232.00	9786.00	-228.96	40.231897	-104.803543

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1059.00	1065.17	Fox Hills
4174.00	4374.96	Parkman
4322.00	4531.82	Sussex
7073.00	7396.86	Sharon Springs
7125.00	7497.36	Niobrara
7176.00	7636.00	Nio B

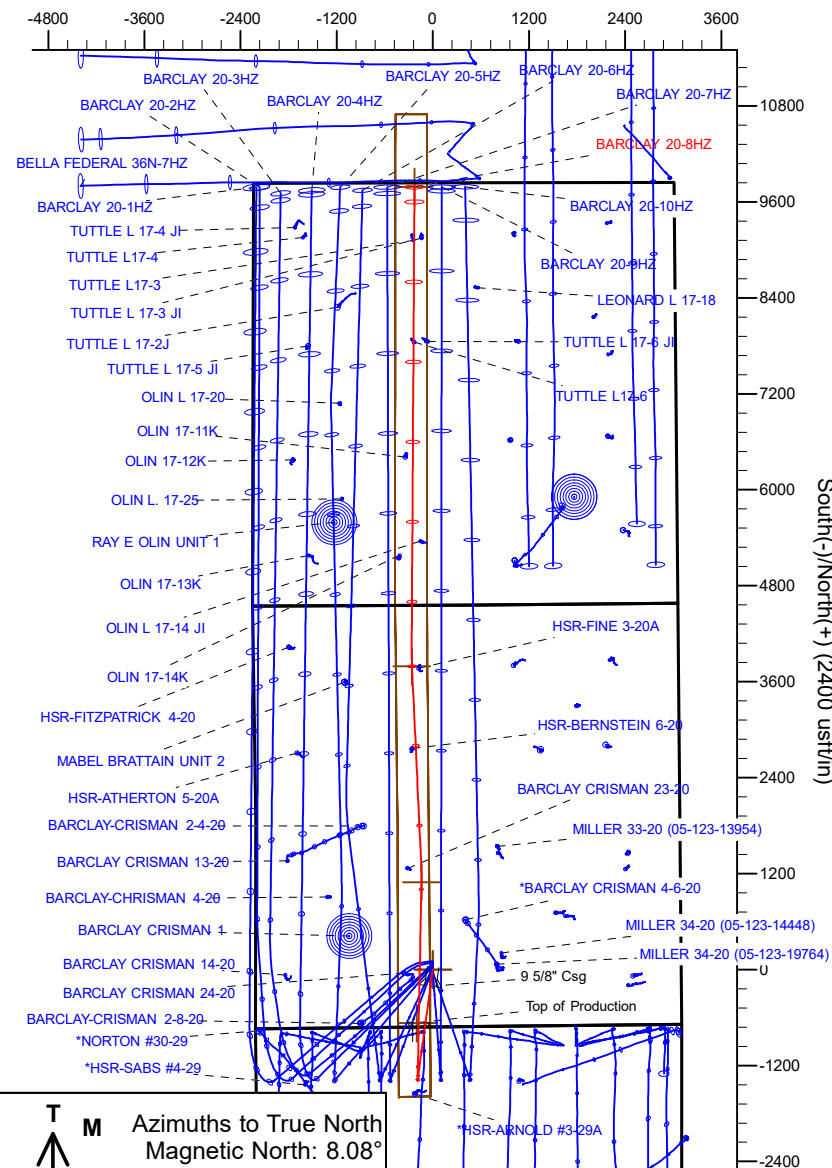


SHL
719' FSL
2214' FWL

HEEL
50' FSL
2036' FWL

BHL
50' FNL
2010' FWL

West(-)/East(+) (2400 usft/in)



Mag Azimuths to True North
Magnetic North: 8.08°

Magnetic Field
Strength: 52138.6snT
Dip Angle: 66.66°
Date: 10/3/2018
Model: IGRF2015

Plan: Permit Rev-1 (BARCLAY 20-8HZ/Plan A)

Date: 10/04/2016

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well BARCLAY 20-8HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4934.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4934.00usft (Drilling Rig)
Site:	3N-66W-20 BARCLAY FARMS 35-20HZ PAD	North Reference:	True
Well:	BARCLAY 20-8HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
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-66W-20 BARCLAY FARMS 35-20HZ PAD			
Site Position:		Northing:	14,601,558.41 usft	Latitude: 40.205312
From:	Lat/Long	Easting:	1,695,499.31 usft	Longitude: -104.802720
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence: 0.13 °

Well	BARCLAY 20-8HZ			
Well Position	+N/-S	-104.88 usft	Northing:	14,601,453.53 usft
	+E/-W	-0.84 usft	Easting:	1,695,498.71 usft
Position Uncertainty	3.28 usft	Wellhead Elevation:		Ground Level: 4,917.00 usft

Wellbore	Plan A				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	10/3/2018	8.08	66.66	52,138.55686811

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	359.79

Plan Survey Tool Program	Date	10/4/2018		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	1,500.00	Permit Rev-1 (Plan A)	APC_ISCWSA REV 2 MWD+I Fixed:v2:crustal field declinatio
2	1,500.00	18,287.29	Permit Rev-1 (Plan A)	APC_ISCWSA REV 2 MWD+I Fixed:v2:Rockies, crustal dec +

Corporate Planning Report

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Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4934.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4934.00usft (Drilling Rig)
Site:	3N-66W-20 BARCLAY FARMS 35-20HZ PAD	North Reference:	True
Well:	BARCLAY 20-8HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
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	
250.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,606.00	20.34	187.80	1,577.70	-235.97	-32.32	1.50	1.50	0.00	187.80	
4,406.00	20.34	187.80	4,203.11	-1,200.22	-164.41	0.00	0.00	0.00	0.00	
5,423.00	0.00	0.00	5,198.88	-1,377.19	-188.65	2.00	-2.00	0.00	180.00	
6,711.92	0.00	0.00	6,487.80	-1,377.19	-188.65	0.00	0.00	0.00	0.00	
7,834.99	89.85	1.08	7,204.00	-663.05	-175.24	8.00	8.00	0.10	1.08	
9,590.09	89.85	1.08	7,208.72	1,091.73	-142.27	0.00	0.00	0.00	0.00	BARCLAY 20-8HZ_ta
9,839.82	89.85	357.33	7,209.39	1,341.39	-145.74	1.50	0.00	-1.50	-89.99	
12,292.81	89.85	357.33	7,215.95	3,791.71	-260.00	0.00	0.00	0.00	0.00	BARCLAY 20-8HZ_ta
12,493.95	89.85	0.35	7,216.49	3,992.78	-264.08	1.50	0.00	1.50	90.01	
18,287.29	89.85	0.35	7,232.00	9,786.00	-228.96	0.00	0.00	0.00	0.00	BARCLAY 20-8HZ_BI

Planning Report

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Site:	3N-66W-20 BARCLAY FARMS 35-20HZ PAD	North Reference:	True
Well:	BARCLAY 20-8HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
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
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
Begin Nudge @ 250.00ft									
300.00	0.75	187.80	300.00	-0.32	-0.04	-0.32	1.50	1.50	0.00
400.00	2.25	187.80	399.96	-2.92	-0.40	-2.92	1.50	1.50	0.00
500.00	3.75	187.80	499.82	-8.10	-1.11	-8.10	1.50	1.50	0.00
600.00	5.25	187.80	599.51	-15.88	-2.17	-15.87	1.50	1.50	0.00
700.00	6.75	187.80	698.96	-26.23	-3.59	-26.22	1.50	1.50	0.00
800.00	8.25	187.80	798.10	-39.16	-5.36	-39.14	1.50	1.50	0.00
900.00	9.75	187.80	896.87	-54.66	-7.49	-54.63	1.50	1.50	0.00
1,000.00	11.25	187.80	995.19	-72.72	-9.96	-72.68	1.50	1.50	0.00
1,065.17	12.23	187.80	1,059.00	-85.85	-11.76	-85.81	1.50	1.50	0.00
Fox Hills									
1,100.00	12.75	187.80	1,093.00	-93.31	-12.78	-93.27	1.50	1.50	0.00
1,200.00	14.25	187.80	1,190.24	-116.44	-15.95	-116.38	1.50	1.50	0.00
1,300.00	15.75	187.80	1,286.83	-142.08	-19.46	-142.01	1.50	1.50	0.00
1,400.00	17.25	187.80	1,382.71	-170.22	-23.32	-170.13	1.50	1.50	0.00
1,500.00	18.75	187.80	1,477.81	-200.84	-27.51	-200.73	1.50	1.50	0.00
1,523.46	19.10	187.80	1,500.00	-208.38	-28.54	-208.27	1.50	1.50	0.00
9 5/8" Csg									
1,600.00	20.25	187.80	1,572.07	-233.91	-32.04	-233.79	1.50	1.50	0.00
1,606.00	20.34	187.80	1,577.70	-235.97	-32.32	-235.85	1.50	1.50	0.00
End Nudge @ 1606.00ft									
1,700.00	20.34	187.80	1,665.84	-268.34	-36.76	-268.20	0.00	0.00	0.00
1,800.00	20.34	187.80	1,759.60	-302.78	-41.48	-302.62	0.00	0.00	0.00
1,900.00	20.34	187.80	1,853.37	-337.22	-46.19	-337.04	0.00	0.00	0.00
2,000.00	20.34	187.80	1,947.13	-371.65	-50.91	-371.46	0.00	0.00	0.00
2,100.00	20.34	187.80	2,040.89	-406.09	-55.63	-405.88	0.00	0.00	0.00
2,200.00	20.34	187.80	2,134.66	-440.53	-60.34	-440.30	0.00	0.00	0.00
2,300.00	20.34	187.80	2,228.42	-474.97	-65.06	-474.72	0.00	0.00	0.00
2,400.00	20.34	187.80	2,322.19	-509.40	-69.78	-509.14	0.00	0.00	0.00
2,500.00	20.34	187.80	2,415.95	-543.84	-74.50	-543.56	0.00	0.00	0.00
2,600.00	20.34	187.80	2,509.72	-578.28	-79.21	-577.98	0.00	0.00	0.00
2,700.00	20.34	187.80	2,603.48	-612.71	-83.93	-612.40	0.00	0.00	0.00
2,800.00	20.34	187.80	2,697.25	-647.15	-88.65	-646.82	0.00	0.00	0.00
2,900.00	20.34	187.80	2,791.01	-681.59	-93.37	-681.24	0.00	0.00	0.00
3,000.00	20.34	187.80	2,884.78	-716.03	-98.08	-715.66	0.00	0.00	0.00
3,100.00	20.34	187.80	2,978.54	-750.46	-102.80	-750.08	0.00	0.00	0.00

Corporate Planning Report

Database: PLANNING
Company: US ROCKIES WATTENBERG PLANNING
Project: WELD-NAD83-UTMFT13N
Site: 3N-66W-20 BARCLAY FARMS 35-20HZ PAD
Well: BARCLAY 20-8HZ
Wellbore: Plan A
Design: Permit Rev-1

Local Co-ordinate Reference: Well BARCLAY 20-8HZ
TVD Reference: RKB = 17' @ 4934.00usft (Drilling Rig)
MD Reference: RKB = 17' @ 4934.00usft (Drilling 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)
4,400.00	20.34	187.80	4,197.48	-1,198.15	-164.13	-1,197.54	0.00	0.00	0.00
4,406.00	20.34	187.80	4,203.11	-1,200.22	-164.41	-1,199.61	0.00	0.00	0.00
Begin Drop @ 4406.00ft									
4,500.00	18.46	187.80	4,291.77	-1,231.15	-168.65	-1,230.52	2.00	-2.00	0.00
4,531.82	17.82	187.80	4,322.00	-1,240.97	-169.99	-1,240.33	2.00	-2.00	0.00
Sussex									
4,600.00	16.46	187.80	4,387.15	-1,260.88	-172.72	-1,260.23	2.00	-2.00	0.00
4,700.00	14.46	187.80	4,483.53	-1,287.28	-176.34	-1,286.63	2.00	-2.00	0.00
4,800.00	12.46	187.80	4,580.78	-1,310.34	-179.49	-1,309.68	2.00	-2.00	0.00
4,900.00	10.46	187.80	4,678.78	-1,330.03	-182.19	-1,329.35	2.00	-2.00	0.00
5,000.00	8.46	187.80	4,777.42	-1,346.31	-184.42	-1,345.63	2.00	-2.00	0.00
5,100.00	6.46	187.80	4,876.56	-1,359.17	-186.18	-1,358.48	2.00	-2.00	0.00
5,200.00	4.46	187.80	4,976.11	-1,368.60	-187.47	-1,367.90	2.00	-2.00	0.00
5,300.00	2.46	187.80	5,075.92	-1,374.58	-188.29	-1,373.88	2.00	-2.00	0.00
5,400.00	0.46	187.80	5,175.88	-1,377.10	-188.64	-1,376.40	2.00	-2.00	0.00
5,423.00	0.00	0.00	5,198.88	-1,377.19	-188.65	-1,376.49	2.00	-2.00	0.00
End Drop @ 5423.00ft									
5,500.00	0.00	0.00	5,275.88	-1,377.19	-188.65	-1,376.49	0.00	0.00	0.00
5,600.00	0.00	0.00	5,375.88	-1,377.19	-188.65	-1,376.49	0.00	0.00	0.00
5,700.00	0.00	0.00	5,475.88	-1,377.19	-188.65	-1,376.49	0.00	0.00	0.00
5,800.00	0.00	0.00	5,575.88	-1,377.19	-188.65	-1,376.49	0.00	0.00	0.00
5,900.00	0.00	0.00	5,675.88	-1,377.19	-188.65	-1,376.49	0.00	0.00	0.00
6,000.00	0.00	0.00	5,775.88	-1,377.19	-188.65	-1,376.49	0.00	0.00	0.00
6,100.00	0.00	0.00	5,875.88	-1,377.19	-188.65	-1,376.49	0.00	0.00	0.00
6,200.00	0.00	0.00	5,975.88	-1,377.19	-188.65	-1,376.49	0.00	0.00	0.00
6,300.00	0.00	0.00	6,075.88	-1,377.19	-188.65	-1,376.49	0.00	0.00	0.00
6,400.00	0.00	0.00	6,175.88	-1,377.19	-188.65	-1,376.49	0.00	0.00	0.00
6,500.00	0.00	0.00	6,275.88	-1,377.19	-188.65	-1,376.49	0.00	0.00	0.00
6,600.00	0.00	0.00	6,375.88	-1,377.19	-188.65	-1,376.49	0.00	0.00	0.00
6,700.00	0.00	0.00	6,475.88	-1,377.19	-188.65	-1,376.49	0.00	0.00	0.00
6,711.92	0.00	0.00	6,487.80	-1,377.19	-188.65	-1,376.49	0.00	0.00	0.00
KOP @ 6711.92ft :: DLS = 8°/100'									
6,800.00	7.05	1.08	6,575.66	-1,371.79	-188.55	-1,371.09	8.00	8.00	0.00
6,900.00	15.05	1.08	6,673.73	-1,352.64	-188.19	-1,351.95	8.00	8.00	0.00
7,000.00	23.05	1.08	6,768.17	-1,320.04	-187.58	-1,319.35	8.00	8.00	0.00
7,100.00	31.05	1.08	6,857.17	-1,274.62	-186.73	-1,273.92	8.00	8.00	0.00
7,200.00	39.05	1.08	6,938.97	-1,217.25	-185.65	-1,216.56	8.00	8.00	0.00
7,300.00	47.05	1.08	7,011.99	-1,149.06	-184.37	-1,148.37	8.00	8.00	0.00
7,396.86	54.79	1.08	7,073.00	-1,073.94	-182.96	-1,073.27	8.00	8.00	0.00
Sharon Springs									
7,400.00	55.05	1.08	7,074.81	-1,071.37	-182.91	-1,070.69	8.00	8.00	0.00
7,497.36	62.84	1.08	7,125.00	-988.04	-181.34	-987.37	8.00	8.00	0.00
Niobrara									
7,500.00	63.05	1.08	7,126.20	-985.70	-181.30	-985.02	8.00	8.00	0.00
7,600.00	71.05	1.08	7,165.17	-893.71	-179.57	-893.04	8.00	8.00	0.00
7,636.00	73.93	1.08	7,176.00	-859.38	-178.92	-858.72	8.00	8.00	0.00
Nio B									
7,700.00	79.05	1.08	7,190.95	-797.19	-177.76	-796.53	8.00	8.00	0.00
7,800.00	87.05	1.08	7,203.05	-698.02	-175.89	-697.37	8.00	8.00	0.00
7,834.99	89.85	1.08	7,204.00	-663.05	-175.24	-662.41	8.00	8.00	0.00
End Build @ 7834.99ft - Top of Production									
7,900.00	89.85	1.08	7,204.17	-598.05	-174.01	-597.41	0.00	0.00	0.00
8,000.00	89.85	1.08	7,204.44	-498.07	-172.14	-497.44	0.00	0.00	0.00

Corporate Planning Report

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Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4934.00usft (Drilling Rig)
Site:	3N-66W-20 BARCLAY FARMS 35-20HZ PAD	North Reference:	True
Well:	BARCLAY 20-8HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
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)	
8,100.00	89.85	1.08	7,204.71	-398.09	-170.26	-397.46	0.00	0.00	0.00	
8,200.00	89.85	1.08	7,204.98	-298.11	-168.38	-297.49	0.00	0.00	0.00	
8,300.00	89.85	1.08	7,205.25	-198.13	-166.50	-197.52	0.00	0.00	0.00	
8,400.00	89.85	1.08	7,205.52	-98.14	-164.62	-97.54	0.00	0.00	0.00	
8,500.00	89.85	1.08	7,205.79	1.84	-162.75	2.43	0.00	0.00	0.00	
8,600.00	89.85	1.08	7,206.05	101.82	-160.87	102.41	0.00	0.00	0.00	
8,700.00	89.85	1.08	7,206.32	201.80	-158.99	202.38	0.00	0.00	0.00	
8,800.00	89.85	1.08	7,206.59	301.78	-157.11	302.36	0.00	0.00	0.00	
8,900.00	89.85	1.08	7,206.86	401.77	-155.23	402.33	0.00	0.00	0.00	
9,000.00	89.85	1.08	7,207.13	501.75	-153.35	502.31	0.00	0.00	0.00	
9,100.00	89.85	1.08	7,207.40	601.73	-151.48	602.28	0.00	0.00	0.00	
9,200.00	89.85	1.08	7,207.67	701.71	-149.60	702.25	0.00	0.00	0.00	
9,300.00	89.85	1.08	7,207.94	801.69	-147.72	802.23	0.00	0.00	0.00	
9,400.00	89.85	1.08	7,208.21	901.68	-145.84	902.20	0.00	0.00	0.00	
9,500.00	89.85	1.08	7,208.48	1,001.66	-143.96	1,002.18	0.00	0.00	0.00	
9,590.09	89.85	1.08	7,208.72	1,091.73	-142.27	1,092.24	0.00	0.00	0.00	
Begin Turn @ 9590.09ft										
9,600.00	89.85	0.93	7,208.75	1,101.64	-142.10	1,102.15	1.50	0.00	-1.50	
9,700.00	89.85	359.43	7,209.02	1,201.64	-141.79	1,202.15	1.50	0.00	-1.50	
9,800.00	89.85	357.93	7,209.28	1,301.61	-144.09	1,302.13	1.50	0.00	-1.50	
9,839.82	89.85	357.33	7,209.39	1,341.39	-145.74	1,341.92	1.50	0.00	-1.50	
End Turn @ 9839.82ft										
9,900.00	89.85	357.33	7,209.55	1,401.51	-148.55	1,402.04	0.00	0.00	0.00	
10,000.00	89.85	357.33	7,209.82	1,501.40	-153.20	1,501.95	0.00	0.00	0.00	
10,100.00	89.85	357.33	7,210.09	1,601.29	-157.86	1,601.86	0.00	0.00	0.00	
10,200.00	89.85	357.33	7,210.35	1,701.18	-162.52	1,701.76	0.00	0.00	0.00	
10,300.00	89.85	357.33	7,210.62	1,801.07	-167.18	1,801.67	0.00	0.00	0.00	
10,400.00	89.85	357.33	7,210.89	1,900.96	-171.83	1,901.58	0.00	0.00	0.00	
10,500.00	89.85	357.33	7,211.16	2,000.85	-176.49	2,001.49	0.00	0.00	0.00	
10,600.00	89.85	357.33	7,211.42	2,100.74	-181.15	2,101.39	0.00	0.00	0.00	
10,700.00	89.85	357.33	7,211.69	2,200.63	-185.81	2,201.30	0.00	0.00	0.00	
10,800.00	89.85	357.33	7,211.96	2,300.53	-190.47	2,301.21	0.00	0.00	0.00	
10,900.00	89.85	357.33	7,212.23	2,400.42	-195.12	2,401.12	0.00	0.00	0.00	
11,000.00	89.85	357.33	7,212.49	2,500.31	-199.78	2,501.02	0.00	0.00	0.00	
11,100.00	89.85	357.33	7,212.76	2,600.20	-204.44	2,600.93	0.00	0.00	0.00	
11,200.00	89.85	357.33	7,213.03	2,700.09	-209.10	2,700.84	0.00	0.00	0.00	
11,300.00	89.85	357.33	7,213.30	2,799.98	-213.76	2,800.75	0.00	0.00	0.00	
11,400.00	89.85	357.33	7,213.56	2,899.87	-218.41	2,900.65	0.00	0.00	0.00	
11,500.00	89.85	357.33	7,213.83	2,999.76	-223.07	3,000.56	0.00	0.00	0.00	
11,600.00	89.85	357.33	7,214.10	3,099.65	-227.73	3,100.47	0.00	0.00	0.00	
11,700.00	89.85	357.33	7,214.36	3,199.55	-232.39	3,200.38	0.00	0.00	0.00	
11,800.00	89.85	357.33	7,214.63	3,299.44	-237.05	3,300.28	0.00	0.00	0.00	
11,900.00	89.85	357.33	7,214.90	3,399.33	-241.70	3,400.19	0.00	0.00	0.00	
12,000.00	89.85	357.33	7,215.17	3,499.22	-246.36	3,500.10	0.00	0.00	0.00	
12,100.00	89.85	357.33	7,215.43	3,599.11	-251.02	3,600.01	0.00	0.00	0.00	
12,200.00	89.85	357.33	7,215.70	3,699.00	-255.68	3,699.91	0.00	0.00	0.00	
12,292.81	89.85	357.33	7,215.95	3,791.71	-260.00	3,792.64	0.00	0.00	0.00	
Begin Turn to BHL @ 12292.81ft										
12,300.00	89.85	357.44	7,215.97	3,798.89	-260.33	3,799.82	1.50	0.00	1.50	
12,400.00	89.85	358.94	7,216.24	3,898.84	-263.49	3,899.78	1.50	0.00	1.50	
12,493.95	89.85	0.35	7,216.49	3,992.78	-264.08	3,993.72	1.50	0.00	1.50	
End Turn @ 12493.95ft										
12,500.00	89.85	0.35	7,216.50	3,998.83	-264.04	3,999.78	0.00	0.00	0.00	

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well BARCLAY 20-8HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4934.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4934.00usft (Drilling Rig)
Site:	3N-66W-20 BARCLAY FARMS 35-20HZ PAD	North Reference:	True
Well:	BARCLAY 20-8HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
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)
12,600.00	89.85	0.35	7,216.77	4,098.83	-263.43	4,099.77	0.00	0.00	0.00
12,700.00	89.85	0.35	7,217.04	4,198.83	-262.83	4,199.77	0.00	0.00	0.00
12,800.00	89.85	0.35	7,217.31	4,298.83	-262.22	4,299.76	0.00	0.00	0.00
12,900.00	89.85	0.35	7,217.58	4,398.83	-261.61	4,399.76	0.00	0.00	0.00
13,000.00	89.85	0.35	7,217.84	4,498.82	-261.01	4,499.75	0.00	0.00	0.00
13,100.00	89.85	0.35	7,218.11	4,598.82	-260.40	4,599.75	0.00	0.00	0.00
13,200.00	89.85	0.35	7,218.38	4,698.82	-259.80	4,699.74	0.00	0.00	0.00
13,300.00	89.85	0.35	7,218.65	4,798.82	-259.19	4,799.74	0.00	0.00	0.00
13,400.00	89.85	0.35	7,218.91	4,898.82	-258.58	4,899.73	0.00	0.00	0.00
13,500.00	89.85	0.35	7,219.18	4,998.81	-257.98	4,999.72	0.00	0.00	0.00
13,600.00	89.85	0.35	7,219.45	5,098.81	-257.37	5,099.72	0.00	0.00	0.00
13,700.00	89.85	0.35	7,219.72	5,198.81	-256.76	5,199.71	0.00	0.00	0.00
13,800.00	89.85	0.35	7,219.99	5,298.81	-256.16	5,299.71	0.00	0.00	0.00
13,900.00	89.85	0.35	7,220.25	5,398.80	-255.55	5,399.70	0.00	0.00	0.00
14,000.00	89.85	0.35	7,220.52	5,498.80	-254.95	5,499.70	0.00	0.00	0.00
14,100.00	89.85	0.35	7,220.79	5,598.80	-254.34	5,599.69	0.00	0.00	0.00
14,200.00	89.85	0.35	7,221.06	5,698.80	-253.73	5,699.69	0.00	0.00	0.00
14,300.00	89.85	0.35	7,221.32	5,798.80	-253.13	5,799.68	0.00	0.00	0.00
14,400.00	89.85	0.35	7,221.59	5,898.79	-252.52	5,899.68	0.00	0.00	0.00
14,500.00	89.85	0.35	7,221.86	5,998.79	-251.92	5,999.67	0.00	0.00	0.00
14,600.00	89.85	0.35	7,222.13	6,098.79	-251.31	6,099.67	0.00	0.00	0.00
14,700.00	89.85	0.35	7,222.40	6,198.79	-250.70	6,199.66	0.00	0.00	0.00
14,800.00	89.85	0.35	7,222.66	6,298.78	-250.10	6,299.66	0.00	0.00	0.00
14,900.00	89.85	0.35	7,222.93	6,398.78	-249.49	6,399.65	0.00	0.00	0.00
15,000.00	89.85	0.35	7,223.20	6,498.78	-248.88	6,499.65	0.00	0.00	0.00
15,100.00	89.85	0.35	7,223.47	6,598.78	-248.28	6,599.64	0.00	0.00	0.00
15,200.00	89.85	0.35	7,223.73	6,698.78	-247.67	6,699.64	0.00	0.00	0.00
15,300.00	89.85	0.35	7,224.00	6,798.77	-247.07	6,799.63	0.00	0.00	0.00
15,400.00	89.85	0.35	7,224.27	6,898.77	-246.46	6,899.63	0.00	0.00	0.00
15,500.00	89.85	0.35	7,224.54	6,998.77	-245.85	6,999.62	0.00	0.00	0.00
15,600.00	89.85	0.35	7,224.80	7,098.77	-245.25	7,099.62	0.00	0.00	0.00
15,700.00	89.85	0.35	7,225.07	7,198.76	-244.64	7,199.61	0.00	0.00	0.00
15,800.00	89.85	0.35	7,225.34	7,298.76	-244.03	7,299.61	0.00	0.00	0.00
15,900.00	89.85	0.35	7,225.61	7,398.76	-243.43	7,399.60	0.00	0.00	0.00
16,000.00	89.85	0.35	7,225.88	7,498.76	-242.82	7,499.60	0.00	0.00	0.00
16,100.00	89.85	0.35	7,226.14	7,598.76	-242.22	7,599.59	0.00	0.00	0.00
16,200.00	89.85	0.35	7,226.41	7,698.75	-241.61	7,699.59	0.00	0.00	0.00
16,300.00	89.85	0.35	7,226.68	7,798.75	-241.00	7,799.58	0.00	0.00	0.00
16,400.00	89.85	0.35	7,226.95	7,898.75	-240.40	7,899.58	0.00	0.00	0.00
16,500.00	89.85	0.35	7,227.21	7,998.75	-239.79	7,999.57	0.00	0.00	0.00
16,600.00	89.85	0.35	7,227.48	8,098.74	-239.19	8,099.57	0.00	0.00	0.00
16,700.00	89.85	0.35	7,227.75	8,198.74	-238.58	8,199.56	0.00	0.00	0.00
16,800.00	89.85	0.35	7,228.02	8,298.74	-237.97	8,299.56	0.00	0.00	0.00
16,900.00	89.85	0.35	7,228.29	8,398.74	-237.37	8,399.55	0.00	0.00	0.00
17,000.00	89.85	0.35	7,228.55	8,498.74	-236.76	8,499.55	0.00	0.00	0.00
17,100.00	89.85	0.35	7,228.82	8,598.73	-236.15	8,599.54	0.00	0.00	0.00
17,200.00	89.85	0.35	7,229.09	8,698.73	-235.55	8,699.54	0.00	0.00	0.00
17,300.00	89.85	0.35	7,229.36	8,798.73	-234.94	8,799.53	0.00	0.00	0.00
17,400.00	89.85	0.35	7,229.62	8,898.73	-234.34	8,899.53	0.00	0.00	0.00
17,500.00	89.85	0.35	7,229.89	8,998.73	-233.73	8,999.52	0.00	0.00	0.00
17,600.00	89.85	0.35	7,230.16	9,098.72	-233.12	9,099.52	0.00	0.00	0.00
17,700.00	89.85	0.35	7,230.43	9,198.72	-232.52	9,199.51	0.00	0.00	0.00
17,800.00	89.85	0.35	7,230.70	9,298.72	-231.91	9,299.51	0.00	0.00	0.00
17,900.00	89.85	0.35	7,230.96	9,398.72	-231.30	9,399.50	0.00	0.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well BARCLAY 20-8HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4934.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4934.00usft (Drilling Rig)
Site:	3N-66W-20 BARCLAY FARMS 35-20HZ PAD	North Reference:	True
Well:	BARCLAY 20-8HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
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)
18,000.00	89.85	0.35	7,231.23	9,498.71	-230.70	9,499.50	0.00	0.00	0.00
18,100.00	89.85	0.35	7,231.50	9,598.71	-230.09	9,599.49	0.00	0.00	0.00
18,200.00	89.85	0.35	7,231.77	9,698.71	-229.49	9,699.49	0.00	0.00	0.00
18,287.29	89.85	0.35	7,232.00	9,786.00	-228.96	9,786.77	0.00	0.00	0.00
TD Well @ 18287.29ft									

Casing Points				
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,523.46	1,500.00	9 5/8" Csg	9-5/8	13-1/2
7,834.99	7,204.00	Top of Production	5-1/2	7-7/8

Formations				
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)
1,065.17	1,059.00	Fox Hills		
4,374.96	4,174.00	Parkman		
4,531.82	4,322.00	Sussex		
7,396.86	7,073.00	Sharon Springs		
7,497.36	7,125.00	Niobrara		
7,636.00	7,176.00	Nio B		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
250.00	250.00	0.00	0.00	Begin Nudge @ 250.00ft
1,606.00	1,577.70	-235.97	-32.32	End Nudge @ 1606.00ft
4,406.00	4,203.11	-1,200.22	-164.41	Begin Drop @ 4406.00ft
5,423.00	5,198.88	-1,377.19	-188.65	End Drop @ 5423.00ft
6,711.92	6,487.80	-1,377.19	-188.65	KOP @ 6711.92ft :: DLS = 8°/100'
7,834.99	7,204.00	-663.05	-175.24	End Build @ 7834.99ft
9,590.09	7,208.72	1,091.73	-142.27	Begin Turn @ 9590.09ft
9,839.82	7,209.39	1,341.39	-145.74	End Turn @ 9839.82ft
12,292.81	7,215.95	3,791.71	-260.00	Begin Turn to BHL @ 12292.81ft
12,493.95	7,216.49	3,992.78	-264.08	End Turn @ 12493.95ft
18,287.29	7,232.00	9,786.00	-228.96	TD Well @ 18287.29ft