

US ROCKIES WATTENBERG PLANNING

**WELD-NAD83-UTMFT13N
1N-68W-03 MC 13-3HZ PAD
MC 3-2HZ**

Plan A

Plan: Permit Rev-1

SHL Lat/Long: 40.076948/-104.997879
Survey Program: MWD+IFR+MSA

Standard Planning Report

29 July, 2018

Project: WELD-NAD83-UTMFT13N
Site: 1N-68W-03 MC 13-3HZ PAD
Well: MC 3-2HZ
Wellbore: Plan A
Design: Permit Rev-1

US ROCKIES WATTENBERG PLANNING

CASING DETAILS

TVD	MD	Size
1500.00	1524.95	9-5/8
7691.00	8499.31	5-1/2

WELL DETAILS: MC 3-2HZ

GL = 5044.00
RKB = 17' @ 5061.00usft (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	225.00	0.00	0.00	225.00	0.00	0.00	0.00	0.00	0.00	
3	1520.33	19.43	272.60	1495.65	9.87	-217.31	1.50	272.60	-8.12	
4	4820.34	19.43	272.60	4607.71	59.67	-1313.95	0.00	0.00	-49.12	
5	5033.01	19.43	263.00	4808.33	56.96	-1384.41	1.50	-94.53	-45.84	
6	7404.65	19.43	263.00	7044.90	-39.19	-2167.47	0.00	0.00	56.59	
7	8499.31	90.11	180.62	7691.00	-753.46	-2401.56	8.00	-82.77	772.71	
8	13794.36	90.11	180.62	7681.10	-6048.19	-2458.92	0.00	0.00	6067.74	MC 3-2HZ_target
9	14043.34	90.11	176.89	7680.63	-6297.06	-2453.50	1.50	-89.96	6316.56	
10	15396.42	90.11	176.89	7678.05	-7648.15	-2380.00	0.00	0.00	7667.01	MC 3-2HZ_target 2
11	15714.41	90.11	181.66	7677.45	-7966.02	-2375.95	1.50	90.03	7984.84	
12	19730.56	90.11	181.66	7670.00	-11980.48	-2492.00	0.00	0.00	12000.11	MC 3-2HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
MC 3-2HZ_SHL	0.00	0.00	0.00	40.076948	-104.997879
MC 3-2HZ_BHL	7670.00	-11980.48	-2492.00	40.044047	-105.006783

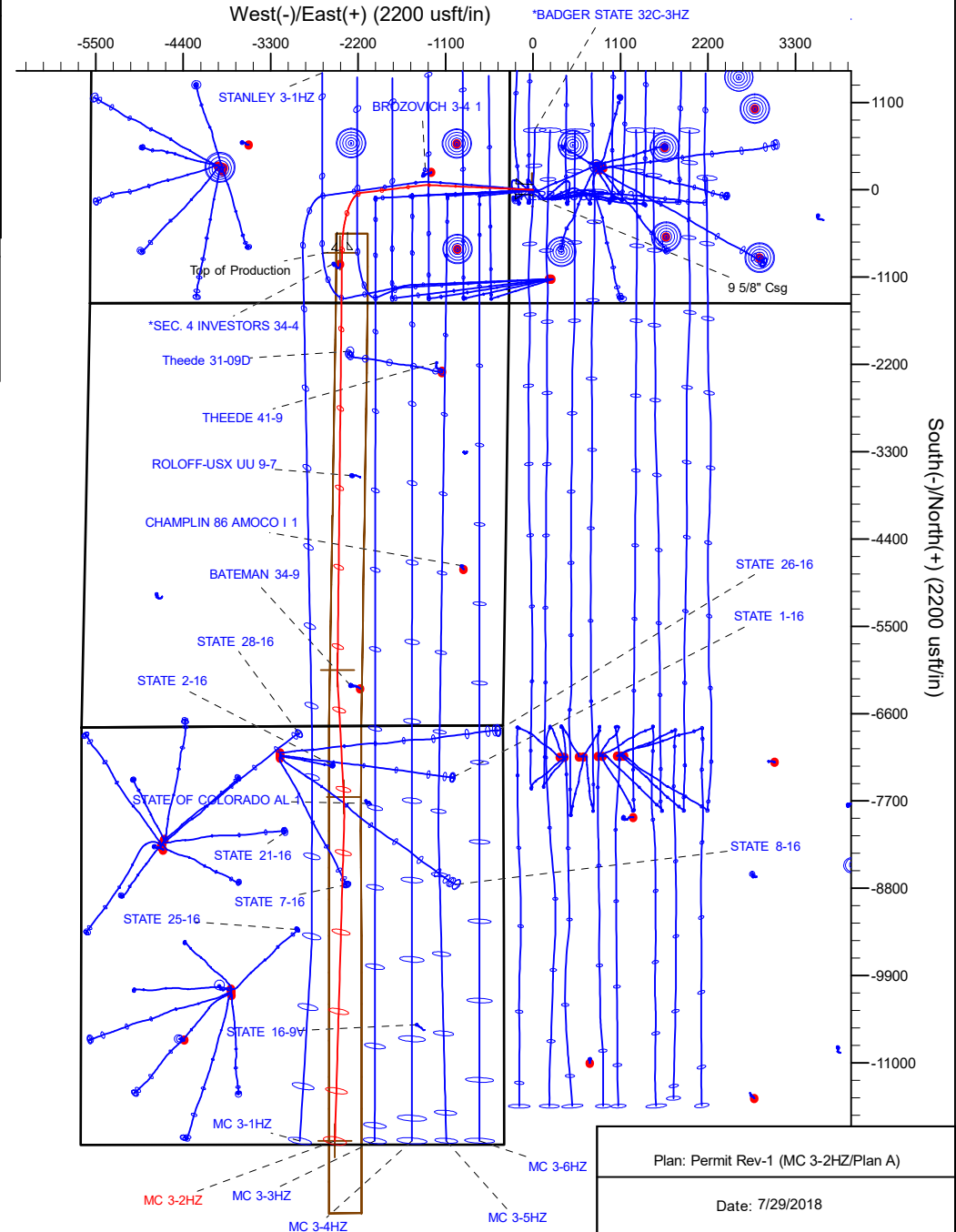
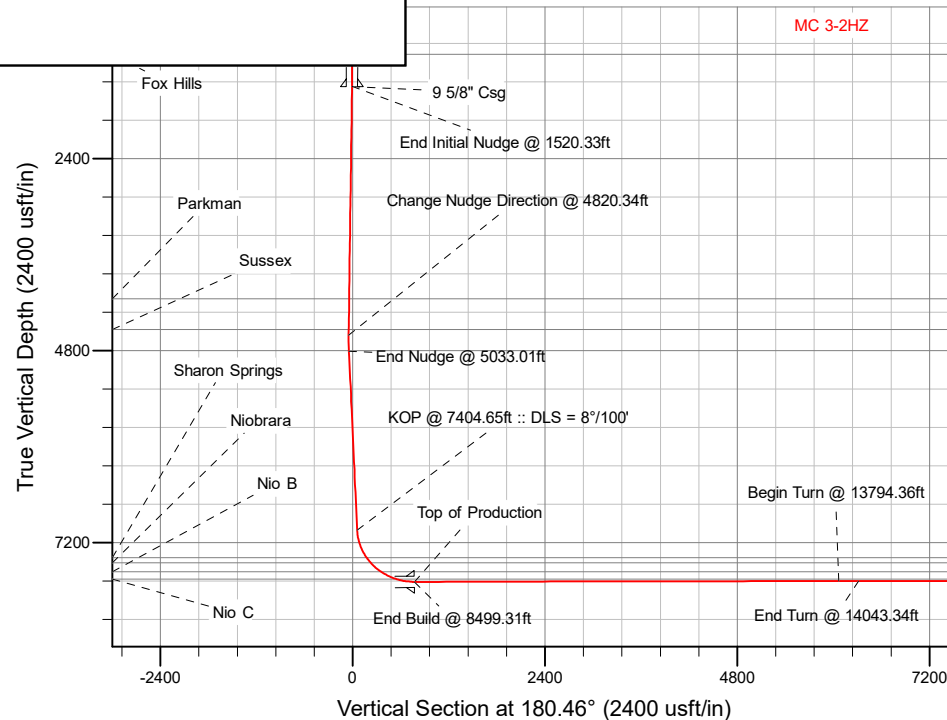
FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1093.00	1100.65	Fox Hills
4152.00	4337.10	Parkman
4536.00	4744.29	Sussex
7390.00	7794.09	Sharon Springs
7451.00	7874.97	Niobrara
7566.00	8055.37	Nio B
7658.00	8273.20	Nio C

SHL
1427' FSL
297' FWL

HEEL
673' FSL
2102' FEL

TOE
50' FSL
2127' FEL



Plan: Permit Rev-1 (MC 3-2HZ/Plan A)

Date: 7/29/2018

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well MC 3-2HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5061.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5061.00usft (Drilling Rig)
Site:	1N-68W-03 MC 13-3HZ PAD	North Reference:	True
Well:	MC 3-2HZ	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		1N-68W-03 MC 13-3HZ PAD			
Site Position:		Northing:	14,554,753.54 usft	Latitude:	40.076948
From:	Lat/Long	Easting:	1,640,995.16 usft	Longitude:	-104.997932
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.00 °

Well	MC 3-2HZ					
Well Position	+N-S	0.00 usft	Northing:	14,554,753.54 usft	Latitude:	40.076948
	+E-W	14.83 usft	Easting:	1,641,009.98 usft	Longitude:	-104.997879
Position Uncertainty		3.28 usft	Wellhead Elevation:		Ground Level:	5,044.00 usft

Wellbore	Plan A				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	7/25/2018	8.19	66.53	52,071.86529096

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	180.46

Plan Survey Tool Program		Date	7/28/2018		
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	19,730.56	Permit Rev-1 (Plan A)	APC_ISCWSA REV 2 MWD+I Fixed:v2:Rockies, crustal dec +	

Corporate Planning Report

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Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5061.00usft (Drilling Rig)
Site:	1N-68W-03 MC 13-3HZ PAD	North Reference:	True
Well:	MC 3-2HZ	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	
225.00	0.00	0.00	225.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,520.33	19.43	272.60	1,495.65	9.87	-217.31	1.50	1.50	0.00	272.60	
4,820.34	19.43	272.60	4,607.71	59.67	-1,313.95	0.00	0.00	0.00	0.00	
5,033.01	19.43	263.00	4,808.33	56.96	-1,384.41	1.50	0.00	-4.51	-94.53	
7,404.65	19.43	263.00	7,044.90	-39.19	-2,167.47	0.00	0.00	0.00	0.00	
8,499.31	90.11	180.62	7,691.00	-753.46	-2,401.56	8.00	6.46	-7.53	-82.77	
13,794.36	90.11	180.62	7,681.10	-6,048.19	-2,458.92	0.00	0.00	0.00	0.00	MC 3-2HZ_target
14,043.34	90.11	176.89	7,680.63	-6,297.06	-2,453.50	1.50	0.00	-1.50	-89.96	
15,396.42	90.11	176.89	7,678.05	-7,648.15	-2,380.00	0.00	0.00	0.00	0.00	MC 3-2HZ_target 2
15,714.41	90.11	181.66	7,677.45	-7,966.02	-2,375.95	1.50	0.00	1.50	90.03	
19,730.56	90.11	181.66	7,670.00	-11,980.49	-2,492.00	0.00	0.00	0.00	0.00	MC 3-2HZ_BHL

Planning Report

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Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5061.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5061.00usft (Drilling Rig)
Site:	1N-68W-03 MC 13-3HZ PAD	North Reference:	True
Well:	MC 3-2HZ	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
225.00	0.00	0.00	225.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge @ 225.00ft									
300.00	1.13	272.60	300.00	0.03	-0.74	-0.03	1.50	1.50	0.00
400.00	2.63	272.60	399.94	0.18	-4.00	-0.15	1.50	1.50	0.00
500.00	4.13	272.60	499.76	0.45	-9.88	-0.37	1.50	1.50	0.00
600.00	5.63	272.60	599.40	0.83	-18.37	-0.69	1.50	1.50	0.00
700.00	7.13	272.60	698.78	1.34	-29.47	-1.10	1.50	1.50	0.00
800.00	8.63	272.60	797.83	1.96	-43.15	-1.61	1.50	1.50	0.00
900.00	10.13	272.60	896.49	2.70	-59.42	-2.22	1.50	1.50	0.00
1,000.00	11.63	272.60	994.69	3.55	-78.27	-2.93	1.50	1.50	0.00
1,100.00	13.13	272.60	1,092.37	4.53	-99.68	-3.73	1.50	1.50	0.00
1,100.65	13.13	272.60	1,093.00	4.53	-99.83	-3.73	1.50	1.50	0.00
Fox Hills									
1,200.00	14.63	272.60	1,189.45	5.61	-123.63	-4.62	1.50	1.50	0.00
1,300.00	16.13	272.60	1,285.87	6.82	-150.12	-5.61	1.50	1.50	0.00
1,400.00	17.63	272.60	1,381.56	8.13	-179.12	-6.70	1.50	1.50	0.00
1,500.00	19.13	272.60	1,476.46	9.56	-210.61	-7.87	1.50	1.50	0.00
1,520.33	19.43	272.60	1,495.65	9.87	-217.31	-8.12	1.50	1.50	0.00
End Initial Nudge @ 1520.33ft									
1,524.95	19.43	272.60	1,500.00	9.94	-218.85	-8.18	0.00	0.00	0.00
9 5/8" Csg									
1,600.00	19.43	272.60	1,570.78	11.07	-243.79	-9.11	0.00	0.00	0.00
1,700.00	19.43	272.60	1,665.08	12.58	-277.02	-10.35	0.00	0.00	0.00
1,800.00	19.43	272.60	1,759.39	14.09	-310.25	-11.60	0.00	0.00	0.00
1,900.00	19.43	272.60	1,853.69	15.60	-343.48	-12.84	0.00	0.00	0.00
2,000.00	19.43	272.60	1,948.00	17.11	-376.71	-14.08	0.00	0.00	0.00
2,100.00	19.43	272.60	2,042.30	18.62	-409.94	-15.32	0.00	0.00	0.00
2,200.00	19.43	272.60	2,136.61	20.12	-443.18	-16.57	0.00	0.00	0.00
2,300.00	19.43	272.60	2,230.91	21.63	-476.41	-17.81	0.00	0.00	0.00
2,400.00	19.43	272.60	2,325.22	23.14	-509.64	-19.05	0.00	0.00	0.00
2,500.00	19.43	272.60	2,419.52	24.65	-542.87	-20.29	0.00	0.00	0.00
2,600.00	19.43	272.60	2,513.83	26.16	-576.10	-21.53	0.00	0.00	0.00
2,700.00	19.43	272.60	2,608.13	27.67	-609.33	-22.78	0.00	0.00	0.00
2,800.00	19.43	272.60	2,702.44	29.18	-642.56	-24.02	0.00	0.00	0.00
2,900.00	19.43	272.60	2,796.74	30.69	-675.79	-25.26	0.00	0.00	0.00
3,000.00	19.43	272.60	2,891.05	32.20	-709.03	-26.50	0.00	0.00	0.00
3,100.00	19.43	272.60	2,985.35	33.71	-742.26	-27.75	0.00	0.00	0.00
3,200.00	19.43	272.60	3,079.66	35.21	-775.49	-28.99	0.00	0.00	0.00
3,300.00	19.43	272.60	3,173.96	36.72	-808.72	-30.23	0.00	0.00	0.00
3,400.00	19.43	272.60	3,268.27	38.23	-841.95	-31.47	0.00	0.00	0.00
3,500.00	19.43	272.60	3,362.57	39.74	-875.18	-32.71	0.00	0.00	0.00
3,600.00	19.43	272.60	3,456.88	41.25	-908.41	-33.96	0.00	0.00	0.00
3,700.00	19.43	272.60	3,551.18	42.76	-941.64	-35.20	0.00	0.00	0.00
3,800.00	19.43	272.60	3,645.48	44.27	-974.88	-36.44	0.00	0.00	0.00
3,900.00	19.43	272.60	3,739.79	45.78	-1,008.11	-37.68	0.00	0.00	0.00
4,000.00	19.43	272.60	3,834.09	47.29	-1,041.34	-38.93	0.00	0.00	0.00
4,100.00	19.43	272.60	3,928.40	48.80	-1,074.57	-40.17	0.00	0.00	0.00
4,200.00	19.43	272.60	4,022.70	50.30	-1,107.80	-41.41	0.00	0.00	0.00
4,300.00	19.43	272.60	4,117.01	51.81	-1,141.03	-42.65	0.00	0.00	0.00
4,337.10	19.43	272.60	4,152.00	52.37	-1,153.36	-43.11	0.00	0.00	0.00
Parkman									

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well MC 3-2HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5061.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5061.00usft (Drilling Rig)
Site:	1N-68W-03 MC 13-3HZ PAD	North Reference:	True
Well:	MC 3-2HZ	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)
4,400.00	19.43	272.60	4,211.31	53.32	-1,174.26	-43.89	0.00	0.00	0.00
4,500.00	19.43	272.60	4,305.62	54.83	-1,207.49	-45.14	0.00	0.00	0.00
4,600.00	19.43	272.60	4,399.92	56.34	-1,240.73	-46.38	0.00	0.00	0.00
4,700.00	19.43	272.60	4,494.23	57.85	-1,273.96	-47.62	0.00	0.00	0.00
4,744.29	19.43	272.60	4,536.00	58.52	-1,288.68	-48.17	0.00	0.00	0.00
Sussex									
4,800.00	19.43	272.60	4,588.53	59.36	-1,307.19	-48.86	0.00	0.00	0.00
4,820.34	19.43	272.60	4,607.71	59.67	-1,313.95	-49.12	0.00	0.00	0.00
Change Nudge Direction @ 4820.34ft									
4,900.00	19.37	269.01	4,682.85	60.04	-1,340.39	-49.27	1.50	-0.07	-4.51
5,000.00	19.40	264.49	4,777.19	58.15	-1,373.51	-47.13	1.50	0.03	-4.52
5,033.01	19.43	263.00	4,808.33	56.96	-1,384.41	-45.84	1.50	0.10	-4.50
End Nudge @ 5033.01ft									
5,100.00	19.43	263.00	4,871.50	54.24	-1,406.53	-42.95	0.00	0.00	0.00
5,200.00	19.43	263.00	4,965.80	50.19	-1,439.55	-38.63	0.00	0.00	0.00
5,300.00	19.43	263.00	5,060.11	46.14	-1,472.57	-34.31	0.00	0.00	0.00
5,400.00	19.43	263.00	5,154.41	42.08	-1,505.58	-29.99	0.00	0.00	0.00
5,500.00	19.43	263.00	5,248.72	38.03	-1,538.60	-25.67	0.00	0.00	0.00
5,600.00	19.43	263.00	5,343.02	33.97	-1,571.62	-21.35	0.00	0.00	0.00
5,700.00	19.43	263.00	5,437.33	29.92	-1,604.64	-17.04	0.00	0.00	0.00
5,800.00	19.43	263.00	5,531.63	25.86	-1,637.65	-12.72	0.00	0.00	0.00
5,900.00	19.43	263.00	5,625.94	21.81	-1,670.67	-8.40	0.00	0.00	0.00
6,000.00	19.43	263.00	5,720.24	17.76	-1,703.69	-4.08	0.00	0.00	0.00
6,100.00	19.43	263.00	5,814.55	13.70	-1,736.71	0.24	0.00	0.00	0.00
6,200.00	19.43	263.00	5,908.85	9.65	-1,769.72	4.56	0.00	0.00	0.00
6,300.00	19.43	263.00	6,003.16	5.59	-1,802.74	8.88	0.00	0.00	0.00
6,400.00	19.43	263.00	6,097.46	1.54	-1,835.76	13.20	0.00	0.00	0.00
6,500.00	19.43	263.00	6,191.77	-2.51	-1,868.78	17.52	0.00	0.00	0.00
6,600.00	19.43	263.00	6,286.07	-6.57	-1,901.79	21.84	0.00	0.00	0.00
6,700.00	19.43	263.00	6,380.38	-10.62	-1,934.81	26.15	0.00	0.00	0.00
6,800.00	19.43	263.00	6,474.68	-14.68	-1,967.83	30.47	0.00	0.00	0.00
6,900.00	19.43	263.00	6,568.99	-18.73	-2,000.85	34.79	0.00	0.00	0.00
7,000.00	19.43	263.00	6,663.29	-22.78	-2,033.86	39.11	0.00	0.00	0.00
7,100.00	19.43	263.00	6,757.60	-26.84	-2,066.88	43.43	0.00	0.00	0.00
7,200.00	19.43	263.00	6,851.90	-30.89	-2,099.90	47.75	0.00	0.00	0.00
7,300.00	19.43	263.00	6,946.21	-34.95	-2,132.92	52.07	0.00	0.00	0.00
7,400.00	19.43	263.00	7,040.51	-39.00	-2,165.93	56.39	0.00	0.00	0.00
7,404.65	19.43	263.00	7,044.90	-39.19	-2,167.47	56.59	0.00	0.00	0.00
KOP @ 7404.65ft :: DLS = 8°/100'									
7,500.00	21.70	242.13	7,134.29	-49.37	-2,198.84	67.03	8.00	2.38	-21.88
7,600.00	26.24	225.82	7,225.74	-73.46	-2,231.09	91.37	8.00	4.55	-16.32
7,700.00	32.09	214.54	7,313.09	-110.81	-2,262.06	128.97	8.00	5.84	-11.27
7,794.09	38.24	206.99	7,390.00	-157.41	-2,289.48	175.79	8.00	6.54	-8.03
Sharon Springs									
7,800.00	38.64	206.59	7,394.63	-160.70	-2,291.14	179.09	8.00	6.78	-6.83
7,874.97	43.83	202.01	7,451.00	-205.74	-2,311.36	224.29	8.00	6.92	-6.10
Niobrara									
7,900.00	45.60	200.68	7,468.79	-222.14	-2,317.77	240.74	8.00	7.07	-5.33
8,000.00	52.80	196.05	7,534.11	-293.96	-2,341.43	312.74	8.00	7.20	-4.63
8,055.37	56.85	193.86	7,566.00	-337.67	-2,353.09	356.55	8.00	7.32	-3.96
Nio B									
8,100.00	60.14	192.24	7,589.32	-374.74	-2,361.67	393.69	8.00	7.38	-3.63
8,200.00	67.58	188.95	7,633.36	-462.92	-2,378.07	481.99	8.00	7.44	-3.28

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well MC 3-2HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5061.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5061.00usft (Drilling Rig)
Site:	1N-68W-03 MC 13-3HZ PAD	North Reference:	True
Well:	MC 3-2HZ	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)
8,273.20	73.06	186.77	7,658.00	-531.16	-2,387.47	550.31	8.00	7.49	-2.98
Nio C									
8,300.00	75.08	186.00	7,665.36	-556.77	-2,390.34	575.95	8.00	7.51	-2.86
8,400.00	82.61	183.26	7,684.69	-654.49	-2,398.22	673.72	8.00	7.53	-2.75
8,499.31	90.11	180.62	7,691.00	-753.46	-2,401.56	772.72	8.00	7.55	-2.65
End Build @ 8499.31ft - Top of Production									
8,500.00	90.11	180.62	7,691.00	-754.15	-2,401.57	773.41	0.00	0.00	0.00
8,600.00	90.11	180.62	7,690.81	-854.14	-2,402.65	873.41	0.00	0.00	0.00
8,700.00	90.11	180.62	7,690.62	-954.14	-2,403.74	973.40	0.00	0.00	0.00
8,800.00	90.11	180.62	7,690.44	-1,054.13	-2,404.82	1,073.40	0.00	0.00	0.00
8,900.00	90.11	180.62	7,690.25	-1,154.13	-2,405.90	1,173.40	0.00	0.00	0.00
9,000.00	90.11	180.62	7,690.06	-1,254.12	-2,406.99	1,273.40	0.00	0.00	0.00
9,100.00	90.11	180.62	7,689.88	-1,354.11	-2,408.07	1,373.40	0.00	0.00	0.00
9,200.00	90.11	180.62	7,689.69	-1,454.11	-2,409.15	1,473.40	0.00	0.00	0.00
9,300.00	90.11	180.62	7,689.50	-1,554.10	-2,410.24	1,573.40	0.00	0.00	0.00
9,400.00	90.11	180.62	7,689.32	-1,654.09	-2,411.32	1,673.40	0.00	0.00	0.00
9,500.00	90.11	180.62	7,689.13	-1,754.09	-2,412.40	1,773.40	0.00	0.00	0.00
9,600.00	90.11	180.62	7,688.94	-1,854.08	-2,413.49	1,873.40	0.00	0.00	0.00
9,700.00	90.11	180.62	7,688.75	-1,954.08	-2,414.57	1,973.40	0.00	0.00	0.00
9,800.00	90.11	180.62	7,688.57	-2,054.07	-2,415.65	2,073.40	0.00	0.00	0.00
9,900.00	90.11	180.62	7,688.38	-2,154.06	-2,416.74	2,173.40	0.00	0.00	0.00
10,000.00	90.11	180.62	7,688.19	-2,254.06	-2,417.82	2,273.40	0.00	0.00	0.00
10,100.00	90.11	180.62	7,688.01	-2,354.05	-2,418.90	2,373.40	0.00	0.00	0.00
10,200.00	90.11	180.62	7,687.82	-2,454.05	-2,419.99	2,473.40	0.00	0.00	0.00
10,300.00	90.11	180.62	7,687.63	-2,554.04	-2,421.07	2,573.40	0.00	0.00	0.00
10,400.00	90.11	180.62	7,687.45	-2,654.03	-2,422.15	2,673.40	0.00	0.00	0.00
10,500.00	90.11	180.62	7,687.26	-2,754.03	-2,423.24	2,773.39	0.00	0.00	0.00
10,600.00	90.11	180.62	7,687.07	-2,854.02	-2,424.32	2,873.39	0.00	0.00	0.00
10,700.00	90.11	180.62	7,686.88	-2,954.02	-2,425.40	2,973.39	0.00	0.00	0.00
10,800.00	90.11	180.62	7,686.70	-3,054.01	-2,426.49	3,073.39	0.00	0.00	0.00
10,900.00	90.11	180.62	7,686.51	-3,154.00	-2,427.57	3,173.39	0.00	0.00	0.00
11,000.00	90.11	180.62	7,686.32	-3,254.00	-2,428.65	3,273.39	0.00	0.00	0.00
11,100.00	90.11	180.62	7,686.14	-3,353.99	-2,429.73	3,373.39	0.00	0.00	0.00
11,200.00	90.11	180.62	7,685.95	-3,453.99	-2,430.82	3,473.39	0.00	0.00	0.00
11,300.00	90.11	180.62	7,685.76	-3,553.98	-2,431.90	3,573.39	0.00	0.00	0.00
11,400.00	90.11	180.62	7,685.58	-3,653.97	-2,432.98	3,673.39	0.00	0.00	0.00
11,500.00	90.11	180.62	7,685.39	-3,753.97	-2,434.07	3,773.39	0.00	0.00	0.00
11,600.00	90.11	180.62	7,685.20	-3,853.96	-2,435.15	3,873.39	0.00	0.00	0.00
11,700.00	90.11	180.62	7,685.02	-3,953.96	-2,436.23	3,973.39	0.00	0.00	0.00
11,800.00	90.11	180.62	7,684.83	-4,053.95	-2,437.32	4,073.39	0.00	0.00	0.00
11,900.00	90.11	180.62	7,684.64	-4,153.94	-2,438.40	4,173.39	0.00	0.00	0.00
12,000.00	90.11	180.62	7,684.45	-4,253.94	-2,439.48	4,273.39	0.00	0.00	0.00
12,100.00	90.11	180.62	7,684.27	-4,353.93	-2,440.57	4,373.39	0.00	0.00	0.00
12,200.00	90.11	180.62	7,684.08	-4,453.93	-2,441.65	4,473.38	0.00	0.00	0.00
12,300.00	90.11	180.62	7,683.89	-4,553.92	-2,442.73	4,573.38	0.00	0.00	0.00
12,400.00	90.11	180.62	7,683.71	-4,653.91	-2,443.82	4,673.38	0.00	0.00	0.00
12,500.00	90.11	180.62	7,683.52	-4,753.91	-2,444.90	4,773.38	0.00	0.00	0.00
12,600.00	90.11	180.62	7,683.33	-4,853.90	-2,445.98	4,873.38	0.00	0.00	0.00
12,700.00	90.11	180.62	7,683.15	-4,953.90	-2,447.07	4,973.38	0.00	0.00	0.00
12,800.00	90.11	180.62	7,682.96	-5,053.89	-2,448.15	5,073.38	0.00	0.00	0.00
12,900.00	90.11	180.62	7,682.77	-5,153.88	-2,449.23	5,173.38	0.00	0.00	0.00
13,000.00	90.11	180.62	7,682.59	-5,253.88	-2,450.32	5,273.38	0.00	0.00	0.00
13,100.00	90.11	180.62	7,682.40	-5,353.87	-2,451.40	5,373.38	0.00	0.00	0.00
13,200.00	90.11	180.62	7,682.21	-5,453.87	-2,452.48	5,473.38	0.00	0.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well MC 3-2HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5061.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5061.00usft (Drilling Rig)
Site:	1N-68W-03 MC 13-3HZ PAD	North Reference:	True
Well:	MC 3-2HZ	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)
13,300.00	90.11	180.62	7,682.02	-5,553.86	-2,453.57	5,573.38	0.00	0.00	0.00
13,400.00	90.11	180.62	7,681.84	-5,653.85	-2,454.65	5,673.38	0.00	0.00	0.00
13,500.00	90.11	180.62	7,681.65	-5,753.85	-2,455.73	5,773.38	0.00	0.00	0.00
13,600.00	90.11	180.62	7,681.46	-5,853.84	-2,456.81	5,873.38	0.00	0.00	0.00
13,700.00	90.11	180.62	7,681.28	-5,953.84	-2,457.90	5,973.38	0.00	0.00	0.00
13,794.36	90.11	180.62	7,681.10	-6,048.19	-2,458.92	6,067.74	0.00	0.00	0.00
Begin Turn @ 13794.36ft									
13,800.00	90.11	180.54	7,681.09	-6,053.83	-2,458.98	6,073.38	1.50	0.00	-1.50
13,900.00	90.11	179.04	7,680.90	-6,153.83	-2,458.60	6,173.37	1.50	0.00	-1.50
14,000.00	90.11	177.54	7,680.71	-6,253.78	-2,455.61	6,273.29	1.50	0.00	-1.50
14,043.34	90.11	176.89	7,680.63	-6,297.06	-2,453.50	6,316.56	1.50	0.00	-1.50
End Turn @ 14043.34ft									
14,100.00	90.11	176.89	7,680.52	-6,353.64	-2,450.43	6,373.11	0.00	0.00	0.00
14,200.00	90.11	176.89	7,680.33	-6,453.49	-2,444.99	6,472.92	0.00	0.00	0.00
14,300.00	90.11	176.89	7,680.14	-6,553.35	-2,439.56	6,572.72	0.00	0.00	0.00
14,400.00	90.11	176.89	7,679.95	-6,653.20	-2,434.13	6,672.53	0.00	0.00	0.00
14,500.00	90.11	176.89	7,679.76	-6,753.05	-2,428.70	6,772.33	0.00	0.00	0.00
14,600.00	90.11	176.89	7,679.57	-6,852.90	-2,423.26	6,872.14	0.00	0.00	0.00
14,700.00	90.11	176.89	7,679.38	-6,952.76	-2,417.83	6,971.94	0.00	0.00	0.00
14,800.00	90.11	176.89	7,679.19	-7,052.61	-2,412.40	7,071.75	0.00	0.00	0.00
14,900.00	90.11	176.89	7,679.00	-7,152.46	-2,406.97	7,171.55	0.00	0.00	0.00
15,000.00	90.11	176.89	7,678.81	-7,252.31	-2,401.54	7,271.36	0.00	0.00	0.00
15,100.00	90.11	176.89	7,678.62	-7,352.16	-2,396.10	7,371.16	0.00	0.00	0.00
15,200.00	90.11	176.89	7,678.42	-7,452.02	-2,390.67	7,470.97	0.00	0.00	0.00
15,300.00	90.11	176.89	7,678.23	-7,551.87	-2,385.24	7,570.77	0.00	0.00	0.00
15,396.42	90.11	176.89	7,678.05	-7,648.15	-2,380.00	7,667.01	0.00	0.00	0.00
Begin Turn to BHL @ 15396.42ft									
15,400.00	90.11	176.94	7,678.04	-7,651.72	-2,379.81	7,670.58	1.50	0.00	1.50
15,500.00	90.11	178.44	7,677.85	-7,751.64	-2,375.78	7,770.46	1.50	0.00	1.50
15,600.00	90.11	179.94	7,677.67	-7,851.62	-2,374.36	7,870.43	1.50	0.00	1.50
15,700.00	90.11	181.44	7,677.48	-7,951.61	-2,375.57	7,970.43	1.50	0.00	1.50
15,714.41	90.11	181.66	7,677.45	-7,966.02	-2,375.95	7,984.84	1.50	0.00	1.50
End Turn @ 15714.41ft									
15,800.00	90.11	181.66	7,677.29	-8,051.57	-2,378.43	8,070.41	0.00	0.00	0.00
15,900.00	90.11	181.66	7,677.11	-8,151.53	-2,381.32	8,170.39	0.00	0.00	0.00
16,000.00	90.11	181.66	7,676.92	-8,251.49	-2,384.21	8,270.36	0.00	0.00	0.00
16,100.00	90.11	181.66	7,676.74	-8,351.45	-2,387.10	8,370.34	0.00	0.00	0.00
16,200.00	90.11	181.66	7,676.55	-8,451.40	-2,389.99	8,470.32	0.00	0.00	0.00
16,300.00	90.11	181.66	7,676.37	-8,551.36	-2,392.88	8,570.30	0.00	0.00	0.00
16,400.00	90.11	181.66	7,676.18	-8,651.32	-2,395.76	8,670.28	0.00	0.00	0.00
16,500.00	90.11	181.66	7,675.99	-8,751.28	-2,398.65	8,770.25	0.00	0.00	0.00
16,600.00	90.11	181.66	7,675.81	-8,851.24	-2,401.54	8,870.23	0.00	0.00	0.00
16,700.00	90.11	181.66	7,675.62	-8,951.19	-2,404.43	8,970.21	0.00	0.00	0.00
16,800.00	90.11	181.66	7,675.44	-9,051.15	-2,407.32	9,070.19	0.00	0.00	0.00
16,900.00	90.11	181.66	7,675.25	-9,151.11	-2,410.21	9,170.17	0.00	0.00	0.00
17,000.00	90.11	181.66	7,675.07	-9,251.07	-2,413.10	9,270.14	0.00	0.00	0.00
17,100.00	90.11	181.66	7,674.88	-9,351.03	-2,415.99	9,370.12	0.00	0.00	0.00
17,200.00	90.11	181.66	7,674.70	-9,450.98	-2,418.88	9,470.10	0.00	0.00	0.00
17,300.00	90.11	181.66	7,674.51	-9,550.94	-2,421.77	9,570.08	0.00	0.00	0.00
17,400.00	90.11	181.66	7,674.32	-9,650.90	-2,424.66	9,670.06	0.00	0.00	0.00
17,500.00	90.11	181.66	7,674.14	-9,750.86	-2,427.55	9,770.03	0.00	0.00	0.00
17,600.00	90.11	181.66	7,673.95	-9,850.82	-2,430.44	9,870.01	0.00	0.00	0.00
17,700.00	90.11	181.66	7,673.77	-9,950.78	-2,433.33	9,969.99	0.00	0.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well MC 3-2HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5061.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5061.00usft (Drilling Rig)
Site:	1N-68W-03 MC 13-3HZ PAD	North Reference:	True
Well:	MC 3-2HZ	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)
17,800.00	90.11	181.66	7,673.58	-10,050.73	-2,436.22	10,069.97	0.00	0.00	0.00
17,900.00	90.11	181.66	7,673.40	-10,150.69	-2,439.11	10,169.95	0.00	0.00	0.00
18,000.00	90.11	181.66	7,673.21	-10,250.65	-2,442.00	10,269.92	0.00	0.00	0.00
18,100.00	90.11	181.66	7,673.03	-10,350.61	-2,444.89	10,369.90	0.00	0.00	0.00
18,200.00	90.11	181.66	7,672.84	-10,450.57	-2,447.78	10,469.88	0.00	0.00	0.00
18,300.00	90.11	181.66	7,672.65	-10,550.52	-2,450.66	10,569.86	0.00	0.00	0.00
18,400.00	90.11	181.66	7,672.47	-10,650.48	-2,453.55	10,669.84	0.00	0.00	0.00
18,500.00	90.11	181.66	7,672.28	-10,750.44	-2,456.44	10,769.81	0.00	0.00	0.00
18,600.00	90.11	181.66	7,672.10	-10,850.40	-2,459.33	10,869.79	0.00	0.00	0.00
18,700.00	90.11	181.66	7,671.91	-10,950.36	-2,462.22	10,969.77	0.00	0.00	0.00
18,800.00	90.11	181.66	7,671.73	-11,050.31	-2,465.11	11,069.75	0.00	0.00	0.00
18,900.00	90.11	181.66	7,671.54	-11,150.27	-2,468.00	11,169.73	0.00	0.00	0.00
19,000.00	90.11	181.66	7,671.36	-11,250.23	-2,470.89	11,269.70	0.00	0.00	0.00
19,100.00	90.11	181.66	7,671.17	-11,350.19	-2,473.78	11,369.68	0.00	0.00	0.00
19,200.00	90.11	181.66	7,670.98	-11,450.15	-2,476.67	11,469.66	0.00	0.00	0.00
19,300.00	90.11	181.66	7,670.80	-11,550.10	-2,479.56	11,569.64	0.00	0.00	0.00
19,400.00	90.11	181.66	7,670.61	-11,650.06	-2,482.45	11,669.62	0.00	0.00	0.00
19,500.00	90.11	181.66	7,670.43	-11,750.02	-2,485.34	11,769.60	0.00	0.00	0.00
19,600.00	90.11	181.66	7,670.24	-11,849.98	-2,488.23	11,869.57	0.00	0.00	0.00
19,700.00	90.11	181.66	7,670.06	-11,949.94	-2,491.12	11,969.55	0.00	0.00	0.00
19,730.56	90.11	181.66	7,670.00	-11,980.49	-2,492.00	12,000.11	0.00	0.00	0.00
TD Well @ 19730.56ft									

Casing Points				
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,524.95	1,500.00	9 5/8" Csg	9-5/8	13-1/2
8,499.31	7,691.00	Top of Production	5-1/2	7-7/8

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,100.65	1,093.00	Fox Hills				
4,337.10	4,152.00	Parkman				
4,744.29	4,536.00	Sussex				
7,794.09	7,390.00	Sharon Springs				
7,874.97	7,451.00	Niobrara				
8,055.37	7,566.00	Nio B				
8,273.20	7,658.00	Nio C				

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well MC 3-2HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5061.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5061.00usft (Drilling Rig)
Site:	1N-68W-03 MC 13-3HZ PAD	North Reference:	True
Well:	MC 3-2HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-1		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
225.00	225.00	0.00	0.00	Begin Nudge @ 225.00ft
1,520.33	1,495.65	9.87	-217.31	End Initial Nudge @ 1520.33ft
4,820.34	4,607.71	59.67	-1,313.95	Change Nudge Direction @ 4820.34ft
5,033.01	4,808.33	56.96	-1,384.41	End Nudge @ 5033.01ft
7,404.65	7,044.90	-39.19	-2,167.47	KOP @ 7404.65ft :: DLS = 8°/100'
8,499.31	7,691.00	-753.46	-2,401.56	End Build @ 8499.31ft
13,794.36	7,681.10	-6,048.19	-2,458.92	Begin Turn @ 13794.36ft
14,043.34	7,680.63	-6,297.06	-2,453.50	End Turn @ 14043.34ft
15,396.42	7,678.05	-7,648.15	-2,380.00	Begin Turn to BHL @ 15396.42ft
15,714.41	7,677.45	-7,966.02	-2,375.95	End Turn @ 15714.41ft
19,730.56	7,670.00	-11,980.49	-2,492.00	TD Well @ 19730.56ft