

# **US ROCKIES WATTENBERG PLANNING**

**WELD-NAD83-UTMFT13N**

**1N-66W-15 MAB 15-15HZ PAD**

**MAB 15-12HZ**

**Plan A**

**Plan: Permit Rev-2**

SHL Lat/Long: 40.045805/-104.761649

Survey Program: MWD+IFR

## **Standard Planning Report**

**12 July, 2018**

Project: WELD-NAD83-UTMFT13N  
Site: 1N-66W-15 MAB 15-15HZ PAD  
Well: MAB 15-12HZ  
Wellbore: Plan A  
Design: Permit Rev-2

## US ROCKIES WATTENBERG PLANNING

### CASING DETAILS

TVD	MD	Size
1500.00	1517.47	9-5/8
7618.00	8104.10	5-1/2

WELL DETAILS: MAB 15-12HZ

GL = 5112.00

RKB = 17' @ 5129.00usft (Drilling Rig)

### 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	250.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	
3	1107.33	12.86	23.08	1100.15	88.14	37.56	1.50	23.08	-88.23	
4	3907.33	12.86	23.08	3829.92	661.46	281.86	0.00	0.00	-662.14	
5	4550.33	0.00	0.00	4467.53	727.56	310.03	2.00	-180.00	-728.32	
6	6984.62	0.00	0.00	6901.82	727.56	310.03	0.00	0.00	-728.32	
7	8104.10	89.56	180.14	7618.00	16.89	308.28	8.00	180.14	-17.64	
8	18873.39	89.56	180.14	7701.00	-10752.06	281.72	0.00	0.00	10751.34	MAB 15-12HZ_BHL

### WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
MAB 15-12HZ_SHL	0.00	0.00	0.00	40.045805	-104.761649
MAB 15-12HZ_BHL	7701.00	-10752.06	281.72	40.016278	-104.760643

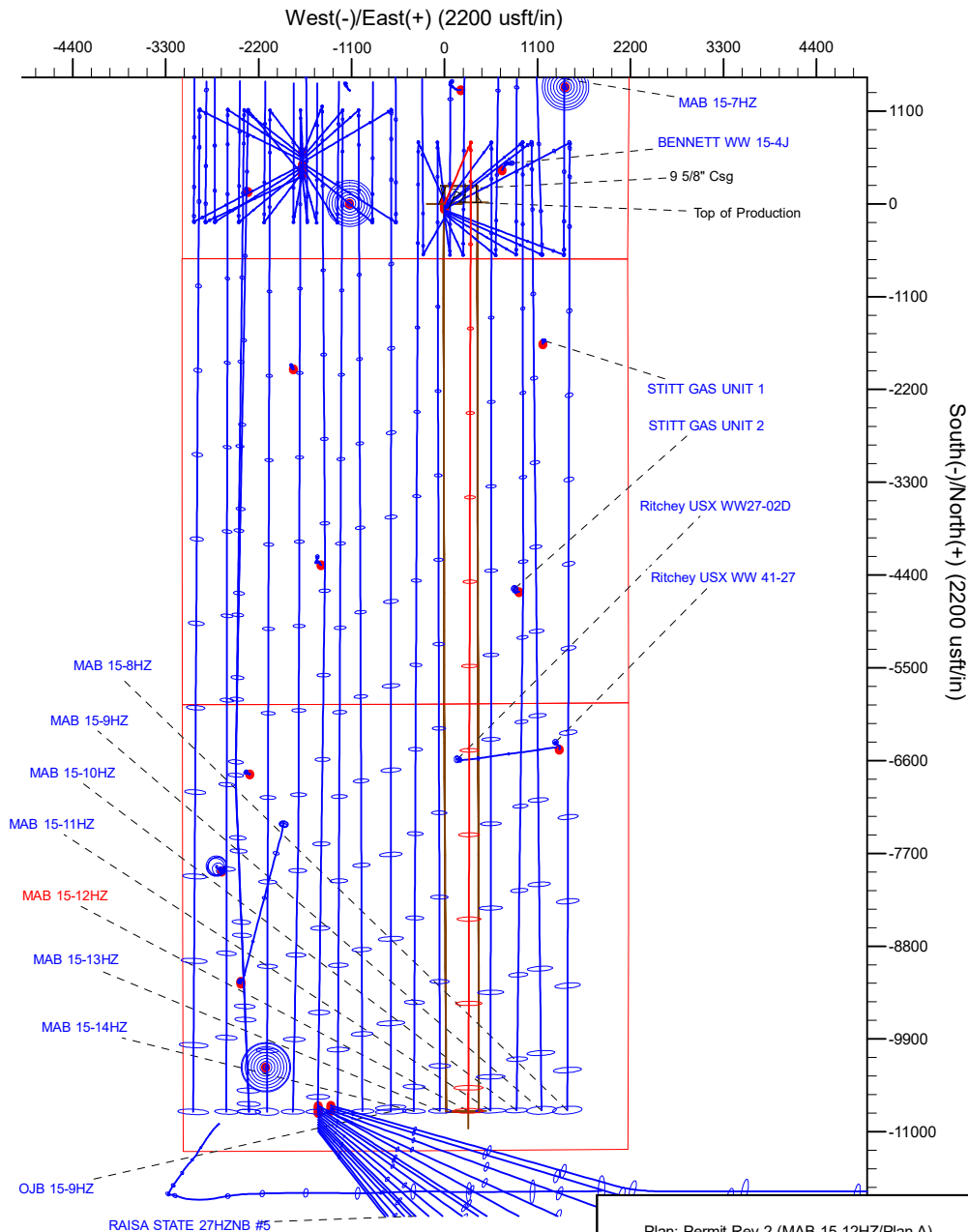
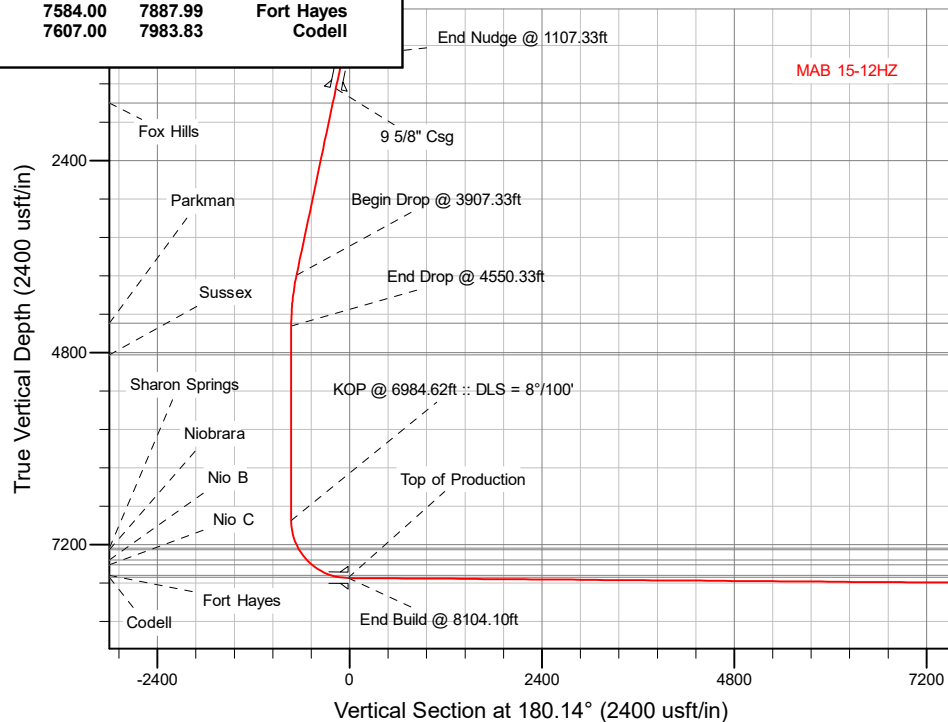
### FORMATION TOP DETAILS

TVDPATH	MDPATH	Formation
1679.00	1701.07	Fox Hills
4432.00	4514.80	Parkman
4828.00	4910.80	Sussex
7246.00	7343.65	Sharon Springs
7266.00	7366.66	Niobrara
7394.00	7527.24	Nio B
7453.00	7613.58	Nio C
7584.00	7887.99	Fort Hayes
7607.00	7983.83	Codell

**SHL**  
**653' FSL**  
**2171' FEL**

**HEEL**  
**670' FSL**  
**1863' FEL**

**TOE**  
**470' FSL**  
**1890' FEL**



Plan: Permit Rev-2 (MAB 15-12HZ/Plan A)

Date: 7/12/2018

# Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well MAB 15-12HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 5129.00usft (Drilling Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 5129.00usft (Drilling Rig)
<b>Site:</b>	1N-66W-15 MAB 15-15HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	MAB 15-12HZ	<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		1N-66W-15 MAB 15-15HZ PAD			
Site Position:		Northing:	14,543,337.30 usft	Latitude:	40.045352
From:	Lat/Long	Easting:	1,707,121.54 usft	Longitude:	-104.761654
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.15 °

Well		MAB 15-12HZ				
Well Position	+N-S	164.96 usft	Northing:	14,543,502.26 usft	Latitude:	40.045805
	+E-W	1.40 usft	Easting:	1,707,122.50 usft	Longitude:	-104.761649
Position Uncertainty		3.28 usft	Wellhead Elevation:		Ground Level:	5,112.00 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>
	IGRF2015	7/2/2018	8.07	66.55	52,087.28834377

<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	180.14

<b>Plan Survey Tool Program</b>	<b>Date</b>	7/12/2018		
<b>Depth From (usft)</b>	<b>Depth To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Remarks</b>
1	0.00	1,500.00	Permit Rev-2 (Plan A)	APC_ISCWSA REV 2 MWD+II Fixed:v2:crustal field declinatio
2	1,500.00	18,873.40	Permit Rev-2 (Plan A)	APC_ISCWSA REV 2 MWD+II Fixed:v2:crustal field declinatio

Corporate  
Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well MAB 15-12HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5129.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5129.00usft (Drilling Rig)
Site:	1N-66W-15 MAB 15-15HZ PAD	North Reference:	True
Well:	MAB 15-12HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	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	
250.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,107.33	12.86	23.08	1,100.15	88.14	37.56	1.50	1.50	0.00	23.08	
3,907.33	12.86	23.08	3,829.92	661.46	281.86	0.00	0.00	0.00	0.00	
4,550.33	0.00	0.00	4,467.53	727.56	310.03	2.00	-2.00	-3.59	-180.00	
6,984.62	0.00	0.00	6,901.82	727.56	310.03	0.00	0.00	0.00	0.00	
8,104.10	89.56	180.14	7,618.00	16.89	308.28	8.00	8.00	-16.07	180.14	
18,873.40	89.56	180.14	7,701.00	-10,752.06	281.72	0.00	0.00	0.00	0.00	MAB 15-12HZ_BHL

# Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well MAB 15-12HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 5129.00usft (Drilling Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 5129.00usft (Drilling Rig)
<b>Site:</b>	1N-66W-15 MAB 15-15HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	MAB 15-12HZ	<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
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	23.08	300.00	0.30	0.13	-0.30	1.50	1.50	0.00
400.00	2.25	23.08	399.96	2.71	1.15	-2.71	1.50	1.50	0.00
500.00	3.75	23.08	499.82	7.52	3.21	-7.53	1.50	1.50	0.00
600.00	5.25	23.08	599.51	14.74	6.28	-14.76	1.50	1.50	0.00
700.00	6.75	23.08	698.96	24.36	10.38	-24.38	1.50	1.50	0.00
800.00	8.25	23.08	798.10	36.36	15.50	-36.40	1.50	1.50	0.00
900.00	9.75	23.08	896.87	50.76	21.63	-50.81	1.50	1.50	0.00
1,000.00	11.25	23.08	995.19	67.52	28.77	-67.59	1.50	1.50	0.00
1,100.00	12.75	23.08	1,093.00	86.65	36.92	-86.74	1.50	1.50	0.00
1,107.33	12.86	23.08	1,100.15	88.14	37.56	-88.23	1.50	1.50	0.00
End Nudge @ 1107.33ft									
1,200.00	12.86	23.08	1,190.50	107.12	45.64	-107.23	0.00	0.00	0.00
1,300.00	12.86	23.08	1,287.99	127.59	54.37	-127.72	0.00	0.00	0.00
1,400.00	12.86	23.08	1,385.48	148.07	63.09	-148.22	0.00	0.00	0.00
1,500.00	12.86	23.08	1,482.97	168.54	71.82	-168.72	0.00	0.00	0.00
1,517.47	12.86	23.08	1,500.00	172.12	73.34	-172.30	0.00	0.00	0.00
9 5/8" Csg									
1,600.00	12.86	23.08	1,580.46	189.02	80.54	-189.21	0.00	0.00	0.00
1,700.00	12.86	23.08	1,677.95	209.49	89.27	-209.71	0.00	0.00	0.00
1,701.07	12.86	23.08	1,679.00	209.71	89.36	-209.93	0.00	0.00	0.00
Fox Hills									
1,800.00	12.86	23.08	1,775.45	229.97	98.00	-230.21	0.00	0.00	0.00
1,900.00	12.86	23.08	1,872.94	250.44	106.72	-250.70	0.00	0.00	0.00
2,000.00	12.86	23.08	1,970.43	270.92	115.45	-271.20	0.00	0.00	0.00
2,100.00	12.86	23.08	2,067.92	291.40	124.17	-291.70	0.00	0.00	0.00
2,200.00	12.86	23.08	2,165.41	311.87	132.90	-312.19	0.00	0.00	0.00
2,300.00	12.86	23.08	2,262.90	332.35	141.62	-332.69	0.00	0.00	0.00
2,400.00	12.86	23.08	2,360.40	352.82	150.35	-353.19	0.00	0.00	0.00
2,500.00	12.86	23.08	2,457.89	373.30	159.07	-373.68	0.00	0.00	0.00
2,600.00	12.86	23.08	2,555.38	393.77	167.80	-394.18	0.00	0.00	0.00
2,700.00	12.86	23.08	2,652.87	414.25	176.52	-414.68	0.00	0.00	0.00
2,800.00	12.86	23.08	2,750.36	434.72	185.25	-435.17	0.00	0.00	0.00
2,900.00	12.86	23.08	2,847.85	455.20	193.97	-455.67	0.00	0.00	0.00
3,000.00	12.86	23.08	2,945.35	475.67	202.70	-476.17	0.00	0.00	0.00
3,100.00	12.86	23.08	3,042.84	496.15	211.42	-496.66	0.00	0.00	0.00
3,200.00	12.86	23.08	3,140.33	516.63	220.15	-517.16	0.00	0.00	0.00
3,300.00	12.86	23.08	3,237.82	537.10	228.87	-537.66	0.00	0.00	0.00
3,400.00	12.86	23.08	3,335.31	557.58	237.60	-558.16	0.00	0.00	0.00
3,500.00	12.86	23.08	3,432.80	578.05	246.32	-578.65	0.00	0.00	0.00
3,600.00	12.86	23.08	3,530.30	598.53	255.05	-599.15	0.00	0.00	0.00
3,700.00	12.86	23.08	3,627.79	619.00	263.77	-619.65	0.00	0.00	0.00
3,800.00	12.86	23.08	3,725.28	639.48	272.50	-640.14	0.00	0.00	0.00
3,900.00	12.86	23.08	3,822.77	659.95	281.22	-660.64	0.00	0.00	0.00
3,907.33	12.86	23.08	3,829.92	661.46	281.86	-662.14	0.00	0.00	0.00
Begin Drop @ 3907.33ft									
4,000.00	11.01	23.08	3,920.58	679.08	289.37	-679.79	2.00	-2.00	0.00
4,100.00	9.01	23.08	4,019.05	695.07	296.18	-695.79	2.00	-2.00	0.00
4,200.00	7.01	23.08	4,118.07	707.88	301.64	-708.61	2.00	-2.00	0.00
4,300.00	5.01	23.08	4,217.52	717.51	305.75	-718.25	2.00	-2.00	0.00

## Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well MAB 15-12HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 5129.00usft (Drilling Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 5129.00usft (Drilling Rig)
<b>Site:</b>	1N-66W-15 MAB 15-15HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	MAB 15-12HZ	<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)
4,400.00	3.01	23.08	4,317.27	723.93	308.49	-724.69	2.00	-2.00	0.00
4,500.00	1.01	23.08	4,417.20	727.15	309.86	-727.91	2.00	-2.00	0.00
4,514.80	0.71	23.08	4,432.00	727.36	309.94	-728.11	2.00	-2.00	0.00
Parkman									
4,550.33	0.00	0.00	4,467.53	727.56	310.03	-728.32	2.00	-2.00	-64.95
End Drop @ 4550.33ft									
4,600.00	0.00	0.00	4,517.20	727.56	310.03	-728.32	0.00	0.00	0.00
4,700.00	0.00	0.00	4,617.20	727.56	310.03	-728.32	0.00	0.00	0.00
4,800.00	0.00	0.00	4,717.20	727.56	310.03	-728.32	0.00	0.00	0.00
4,900.00	0.00	0.00	4,817.20	727.56	310.03	-728.32	0.00	0.00	0.00
4,910.80	0.00	0.00	4,828.00	727.56	310.03	-728.32	0.00	0.00	0.00
Sussex									
5,000.00	0.00	0.00	4,917.20	727.56	310.03	-728.32	0.00	0.00	0.00
5,100.00	0.00	0.00	5,017.20	727.56	310.03	-728.32	0.00	0.00	0.00
5,200.00	0.00	0.00	5,117.20	727.56	310.03	-728.32	0.00	0.00	0.00
5,300.00	0.00	0.00	5,217.20	727.56	310.03	-728.32	0.00	0.00	0.00
5,400.00	0.00	0.00	5,317.20	727.56	310.03	-728.32	0.00	0.00	0.00
5,500.00	0.00	0.00	5,417.20	727.56	310.03	-728.32	0.00	0.00	0.00
5,600.00	0.00	0.00	5,517.20	727.56	310.03	-728.32	0.00	0.00	0.00
5,700.00	0.00	0.00	5,617.20	727.56	310.03	-728.32	0.00	0.00	0.00
5,800.00	0.00	0.00	5,717.20	727.56	310.03	-728.32	0.00	0.00	0.00
5,900.00	0.00	0.00	5,817.20	727.56	310.03	-728.32	0.00	0.00	0.00
6,000.00	0.00	0.00	5,917.20	727.56	310.03	-728.32	0.00	0.00	0.00
6,100.00	0.00	0.00	6,017.20	727.56	310.03	-728.32	0.00	0.00	0.00
6,200.00	0.00	0.00	6,117.20	727.56	310.03	-728.32	0.00	0.00	0.00
6,300.00	0.00	0.00	6,217.20	727.56	310.03	-728.32	0.00	0.00	0.00
6,400.00	0.00	0.00	6,317.20	727.56	310.03	-728.32	0.00	0.00	0.00
6,500.00	0.00	0.00	6,417.20	727.56	310.03	-728.32	0.00	0.00	0.00
6,600.00	0.00	0.00	6,517.20	727.56	310.03	-728.32	0.00	0.00	0.00
6,700.00	0.00	0.00	6,617.20	727.56	310.03	-728.32	0.00	0.00	0.00
6,800.00	0.00	0.00	6,717.20	727.56	310.03	-728.32	0.00	0.00	0.00
6,900.00	0.00	0.00	6,817.20	727.56	310.03	-728.32	0.00	0.00	0.00
6,984.62	0.00	0.00	6,901.82	727.56	310.03	-728.32	0.00	0.00	0.00
KOP @ 6984.62ft :: DLS = 8°/100'									
7,000.00	1.23	180.14	6,917.20	727.40	310.03	-728.15	8.00	8.00	-1,169.43
7,100.00	9.23	180.14	7,016.70	718.29	310.01	-719.04	8.00	8.00	0.00
7,200.00	17.23	180.14	7,113.97	695.42	309.95	-696.17	8.00	8.00	0.00
7,300.00	25.23	180.14	7,207.11	659.24	309.86	-659.99	8.00	8.00	0.00
7,343.65	28.72	180.14	7,246.00	639.44	309.81	-640.20	8.00	8.00	0.00
Sharon Springs									
7,366.66	30.56	180.14	7,266.00	628.06	309.79	-628.81	8.00	8.00	0.00
Niobrara									
7,400.00	33.23	180.14	7,294.30	610.44	309.74	-611.20	8.00	8.00	0.00
7,500.00	41.23	180.14	7,373.86	549.99	309.59	-550.75	8.00	8.00	0.00
7,527.24	43.41	180.14	7,394.00	531.65	309.55	-532.41	8.00	8.00	0.00
Nio B									
7,600.00	49.23	180.14	7,444.23	479.06	309.42	-479.81	8.00	8.00	0.00
7,613.58	50.32	180.14	7,453.00	468.68	309.39	-469.44	8.00	8.00	0.00
Nio C									
7,700.00	57.23	180.14	7,504.04	399.02	309.22	-399.77	8.00	8.00	0.00
7,800.00	65.23	180.14	7,552.13	311.43	309.00	-312.19	8.00	8.00	0.00
7,887.99	72.27	180.14	7,584.00	229.47	308.80	-230.23	8.00	8.00	0.00
Fort Haves									

# Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well MAB 15-12HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 5129.00usft (Drilling Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 5129.00usft (Drilling Rig)
<b>Site:</b>	1N-66W-15 MAB 15-15HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	MAB 15-12HZ	<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)
7,900.00	73.23	180.14	7,587.56	218.01	308.77	-218.76	8.00	8.00	0.00
7,983.83	79.94	180.14	7,607.00	136.51	308.57	-137.27	8.00	8.00	0.00
Codell									
8,000.00	81.23	180.14	7,609.65	120.56	308.53	-121.31	8.00	8.00	0.00
8,100.00	89.23	180.14	7,617.95	20.99	308.29	-21.74	8.00	8.00	0.00
8,104.10	89.56	180.14	7,618.00	16.89	308.28	-17.64	8.00	8.00	0.00
End Build @ 8104.10ft - Top of Production									
8,200.00	89.56	180.14	7,618.74	-79.01	308.04	78.26	0.00	0.00	0.00
8,300.00	89.56	180.14	7,619.51	-179.01	307.80	178.25	0.00	0.00	0.00
8,400.00	89.56	180.14	7,620.28	-279.00	307.55	278.25	0.00	0.00	0.00
8,500.00	89.56	180.14	7,621.05	-379.00	307.30	378.25	0.00	0.00	0.00
8,600.00	89.56	180.14	7,621.82	-479.00	307.06	478.25	0.00	0.00	0.00
8,700.00	89.56	180.14	7,622.59	-578.99	306.81	578.24	0.00	0.00	0.00
8,800.00	89.56	180.14	7,623.36	-678.99	306.56	678.24	0.00	0.00	0.00
8,900.00	89.56	180.14	7,624.13	-778.99	306.32	778.24	0.00	0.00	0.00
9,000.00	89.56	180.14	7,624.90	-878.98	306.07	878.23	0.00	0.00	0.00
9,100.00	89.56	180.14	7,625.67	-978.98	305.82	978.23	0.00	0.00	0.00
9,200.00	89.56	180.14	7,626.44	-1,078.98	305.58	1,078.23	0.00	0.00	0.00
9,300.00	89.56	180.14	7,627.21	-1,178.97	305.33	1,178.22	0.00	0.00	0.00
9,400.00	89.56	180.14	7,627.99	-1,278.97	305.08	1,278.22	0.00	0.00	0.00
9,500.00	89.56	180.14	7,628.76	-1,378.97	304.84	1,378.22	0.00	0.00	0.00
9,600.00	89.56	180.14	7,629.53	-1,478.96	304.59	1,478.22	0.00	0.00	0.00
9,700.00	89.56	180.14	7,630.30	-1,578.96	304.34	1,578.21	0.00	0.00	0.00
9,800.00	89.56	180.14	7,631.07	-1,678.96	304.10	1,678.21	0.00	0.00	0.00
9,900.00	89.56	180.14	7,631.84	-1,778.95	303.85	1,778.21	0.00	0.00	0.00
10,000.00	89.56	180.14	7,632.61	-1,878.95	303.60	1,878.20	0.00	0.00	0.00
10,100.00	89.56	180.14	7,633.38	-1,978.95	303.36	1,978.20	0.00	0.00	0.00
10,200.00	89.56	180.14	7,634.15	-2,078.94	303.11	2,078.20	0.00	0.00	0.00
10,300.00	89.56	180.14	7,634.92	-2,178.94	302.86	2,178.20	0.00	0.00	0.00
10,400.00	89.56	180.14	7,635.69	-2,278.94	302.62	2,278.19	0.00	0.00	0.00
10,500.00	89.56	180.14	7,636.46	-2,378.94	302.37	2,378.19	0.00	0.00	0.00
10,600.00	89.56	180.14	7,637.23	-2,478.93	302.12	2,478.19	0.00	0.00	0.00
10,700.00	89.56	180.14	7,638.01	-2,578.93	301.88	2,578.18	0.00	0.00	0.00
10,800.00	89.56	180.14	7,638.78	-2,678.93	301.63	2,678.18	0.00	0.00	0.00
10,900.00	89.56	180.14	7,639.55	-2,778.92	301.38	2,778.18	0.00	0.00	0.00
11,000.00	89.56	180.14	7,640.32	-2,878.92	301.14	2,878.17	0.00	0.00	0.00
11,100.00	89.56	180.14	7,641.09	-2,978.92	300.89	2,978.17	0.00	0.00	0.00
11,200.00	89.56	180.14	7,641.86	-3,078.91	300.64	3,078.17	0.00	0.00	0.00
11,300.00	89.56	180.14	7,642.63	-3,178.91	300.40	3,178.17	0.00	0.00	0.00
11,400.00	89.56	180.14	7,643.40	-3,278.91	300.15	3,278.16	0.00	0.00	0.00
11,500.00	89.56	180.14	7,644.17	-3,378.90	299.90	3,378.16	0.00	0.00	0.00
11,600.00	89.56	180.14	7,644.94	-3,478.90	299.66	3,478.16	0.00	0.00	0.00
11,700.00	89.56	180.14	7,645.71	-3,578.90	299.41	3,578.15	0.00	0.00	0.00
11,800.00	89.56	180.14	7,646.48	-3,678.89	299.16	3,678.15	0.00	0.00	0.00
11,900.00	89.56	180.14	7,647.25	-3,778.89	298.92	3,778.15	0.00	0.00	0.00
12,000.00	89.56	180.14	7,648.02	-3,878.89	298.67	3,878.14	0.00	0.00	0.00
12,100.00	89.56	180.14	7,648.80	-3,978.88	298.42	3,978.14	0.00	0.00	0.00
12,200.00	89.56	180.14	7,649.57	-4,078.88	298.18	4,078.14	0.00	0.00	0.00
12,300.00	89.56	180.14	7,650.34	-4,178.88	297.93	4,178.14	0.00	0.00	0.00
12,400.00	89.56	180.14	7,651.11	-4,278.87	297.68	4,278.13	0.00	0.00	0.00
12,500.00	89.56	180.14	7,651.88	-4,378.87	297.44	4,378.13	0.00	0.00	0.00
12,600.00	89.56	180.14	7,652.65	-4,478.87	297.19	4,478.13	0.00	0.00	0.00
12,700.00	89.56	180.14	7,653.42	-4,578.86	296.94	4,578.12	0.00	0.00	0.00
12,800.00	89.56	180.14	7,654.19	-4,678.86	296.70	4,678.12	0.00	0.00	0.00

# Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well MAB 15-12HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 5129.00usft (Drilling Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 5129.00usft (Drilling Rig)
<b>Site:</b>	1N-66W-15 MAB 15-15HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	MAB 15-12HZ	<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)
12,900.00	89.56	180.14	7,654.96	-4,778.86	296.45	4,778.12	0.00	0.00	0.00
13,000.00	89.56	180.14	7,655.73	-4,878.85	296.20	4,878.12	0.00	0.00	0.00
13,100.00	89.56	180.14	7,656.50	-4,978.85	295.96	4,978.11	0.00	0.00	0.00
13,200.00	89.56	180.14	7,657.27	-5,078.85	295.71	5,078.11	0.00	0.00	0.00
13,300.00	89.56	180.14	7,658.04	-5,178.84	295.46	5,178.11	0.00	0.00	0.00
13,400.00	89.56	180.14	7,658.81	-5,278.84	295.22	5,278.10	0.00	0.00	0.00
13,500.00	89.56	180.14	7,659.59	-5,378.84	294.97	5,378.10	0.00	0.00	0.00
13,600.00	89.56	180.14	7,660.36	-5,478.83	294.72	5,478.10	0.00	0.00	0.00
13,700.00	89.56	180.14	7,661.13	-5,578.83	294.48	5,578.09	0.00	0.00	0.00
13,800.00	89.56	180.14	7,661.90	-5,678.83	294.23	5,678.09	0.00	0.00	0.00
13,900.00	89.56	180.14	7,662.67	-5,778.82	293.98	5,778.09	0.00	0.00	0.00
14,000.00	89.56	180.14	7,663.44	-5,878.82	293.74	5,878.09	0.00	0.00	0.00
14,100.00	89.56	180.14	7,664.21	-5,978.82	293.49	5,978.08	0.00	0.00	0.00
14,200.00	89.56	180.14	7,664.98	-6,078.81	293.25	6,078.08	0.00	0.00	0.00
14,300.00	89.56	180.14	7,665.75	-6,178.81	293.00	6,178.08	0.00	0.00	0.00
14,400.00	89.56	180.14	7,666.52	-6,278.81	292.75	6,278.07	0.00	0.00	0.00
14,500.00	89.56	180.14	7,667.29	-6,378.80	292.51	6,378.07	0.00	0.00	0.00
14,600.00	89.56	180.14	7,668.06	-6,478.80	292.26	6,478.07	0.00	0.00	0.00
14,700.00	89.56	180.14	7,668.83	-6,578.80	292.01	6,578.06	0.00	0.00	0.00
14,800.00	89.56	180.14	7,669.61	-6,678.79	291.77	6,678.06	0.00	0.00	0.00
14,900.00	89.56	180.14	7,670.38	-6,778.79	291.52	6,778.06	0.00	0.00	0.00
15,000.00	89.56	180.14	7,671.15	-6,878.79	291.27	6,878.06	0.00	0.00	0.00
15,100.00	89.56	180.14	7,671.92	-6,978.78	291.03	6,978.05	0.00	0.00	0.00
15,200.00	89.56	180.14	7,672.69	-7,078.78	290.78	7,078.05	0.00	0.00	0.00
15,300.00	89.56	180.14	7,673.46	-7,178.78	290.53	7,178.05	0.00	0.00	0.00
15,400.00	89.56	180.14	7,674.23	-7,278.77	290.29	7,278.04	0.00	0.00	0.00
15,500.00	89.56	180.14	7,675.00	-7,378.77	290.04	7,378.04	0.00	0.00	0.00
15,600.00	89.56	180.14	7,675.77	-7,478.77	289.79	7,478.04	0.00	0.00	0.00
15,700.00	89.56	180.14	7,676.54	-7,578.77	289.55	7,578.03	0.00	0.00	0.00
15,800.00	89.56	180.14	7,677.31	-7,678.76	289.30	7,678.03	0.00	0.00	0.00
15,900.00	89.56	180.14	7,678.08	-7,778.76	289.05	7,778.03	0.00	0.00	0.00
16,000.00	89.56	180.14	7,678.85	-7,878.76	288.81	7,878.03	0.00	0.00	0.00
16,100.00	89.56	180.14	7,679.62	-7,978.75	288.56	7,978.02	0.00	0.00	0.00
16,200.00	89.56	180.14	7,680.40	-8,078.75	288.31	8,078.02	0.00	0.00	0.00
16,300.00	89.56	180.14	7,681.17	-8,178.75	288.07	8,178.02	0.00	0.00	0.00
16,400.00	89.56	180.14	7,681.94	-8,278.74	287.82	8,278.01	0.00	0.00	0.00
16,500.00	89.56	180.14	7,682.71	-8,378.74	287.57	8,378.01	0.00	0.00	0.00
16,600.00	89.56	180.14	7,683.48	-8,478.74	287.33	8,478.01	0.00	0.00	0.00
16,700.00	89.56	180.14	7,684.25	-8,578.73	287.08	8,578.01	0.00	0.00	0.00
16,800.00	89.56	180.14	7,685.02	-8,678.73	286.83	8,678.00	0.00	0.00	0.00
16,900.00	89.56	180.14	7,685.79	-8,778.73	286.59	8,778.00	0.00	0.00	0.00
17,000.00	89.56	180.14	7,686.56	-8,878.72	286.34	8,878.00	0.00	0.00	0.00
17,100.00	89.56	180.14	7,687.33	-8,978.72	286.09	8,977.99	0.00	0.00	0.00
17,200.00	89.56	180.14	7,688.10	-9,078.72	285.85	9,077.99	0.00	0.00	0.00
17,300.00	89.56	180.14	7,688.87	-9,178.71	285.60	9,177.99	0.00	0.00	0.00
17,400.00	89.56	180.14	7,689.64	-9,278.71	285.35	9,277.98	0.00	0.00	0.00
17,500.00	89.56	180.14	7,690.41	-9,378.71	285.11	9,377.98	0.00	0.00	0.00
17,600.00	89.56	180.14	7,691.19	-9,478.70	284.86	9,477.98	0.00	0.00	0.00
17,700.00	89.56	180.14	7,691.96	-9,578.70	284.61	9,577.98	0.00	0.00	0.00
17,800.00	89.56	180.14	7,692.73	-9,678.70	284.37	9,677.97	0.00	0.00	0.00
17,900.00	89.56	180.14	7,693.50	-9,778.69	284.12	9,777.97	0.00	0.00	0.00
18,000.00	89.56	180.14	7,694.27	-9,878.69	283.87	9,877.97	0.00	0.00	0.00
18,100.00	89.56	180.14	7,695.04	-9,978.69	283.63	9,977.96	0.00	0.00	0.00
18,200.00	89.56	180.14	7,695.81	-10,078.68	283.38	10,077.96	0.00	0.00	0.00

# Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well MAB 15-12HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 5129.00usft (Drilling Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 5129.00usft (Drilling Rig)
<b>Site:</b>	1N-66W-15 MAB 15-15HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	MAB 15-12HZ	<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)
18,300.00	89.56	180.14	7,696.58	-10,178.68	283.13	10,177.96	0.00	0.00	0.00
18,400.00	89.56	180.14	7,697.35	-10,278.68	282.89	10,277.95	0.00	0.00	0.00
18,500.00	89.56	180.14	7,698.12	-10,378.67	282.64	10,377.95	0.00	0.00	0.00
18,600.00	89.56	180.14	7,698.89	-10,478.67	282.39	10,477.95	0.00	0.00	0.00
18,700.00	89.56	180.14	7,699.66	-10,578.67	282.15	10,577.95	0.00	0.00	0.00
18,800.00	89.56	180.14	7,700.43	-10,678.66	281.90	10,677.94	0.00	0.00	0.00
18,873.40	89.56	180.14	7,701.00	-10,752.06	281.72	10,751.34	0.00	0.00	0.00
TD Well @ 18873.39ft									

Casing Points						
Measured Depth (usft)	Vertical Depth (usft)	Name		Casing Diameter (")	Hole Diameter (")	
1,517.47	1,500.00	9 5/8" Csg		9-5/8	13-1/2	
8,104.10	7,618.00	Top of Production		5-1/2	7-7/8	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,701.07	1,679.00	Fox Hills				
4,514.80	4,432.00	Parkman				
4,910.80	4,828.00	Sussex				
7,343.65	7,246.00	Sharon Springs				
7,366.66	7,266.00	Niobrara				
7,527.24	7,394.00	Nio B				
7,613.58	7,453.00	Nio C				
7,887.99	7,584.00	Fort Hayes				
7,983.83	7,607.00	Codell				

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	
1,107.33	1,100.15	88.14	37.56	End Nudge @ 1107.33ft	
3,907.33	3,829.92	661.46	281.86	Begin Drop @ 3907.33ft	
4,550.33	4,467.53	727.56	310.03	End Drop @ 4550.33ft	
6,984.62	6,901.82	727.56	310.03	KOP @ 6984.62ft :: DLS = 8°/100'	
8,104.10	7,618.00	16.89	308.28	End Build @ 8104.10ft	
18,873.40	7,701.00	-10,752.06	281.72	TD Well @ 18873.39ft	