

# **US ROCKIES WATTENBERG PLANNING**

**WELD-NAD83-UTMFT13N  
1N-67W-22 Marrs 6-22HZ Pad  
MARRS 29N-10HZ**

**Plan A**

**Plan: Permit Rev-1**

## **Standard Survey Report**

**15 March, 2016**

# US ROCKIES WATTENBERG PLANNING

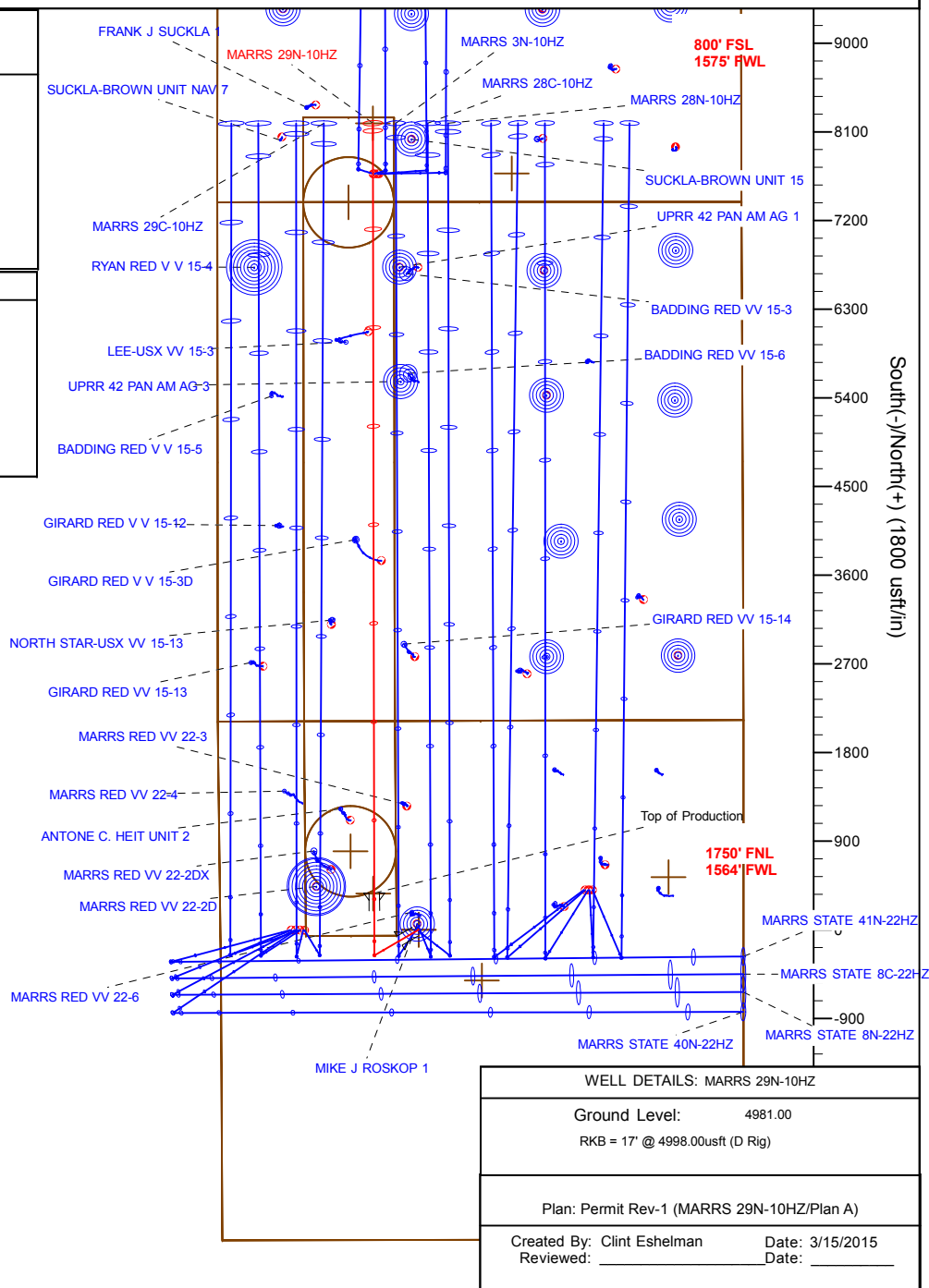
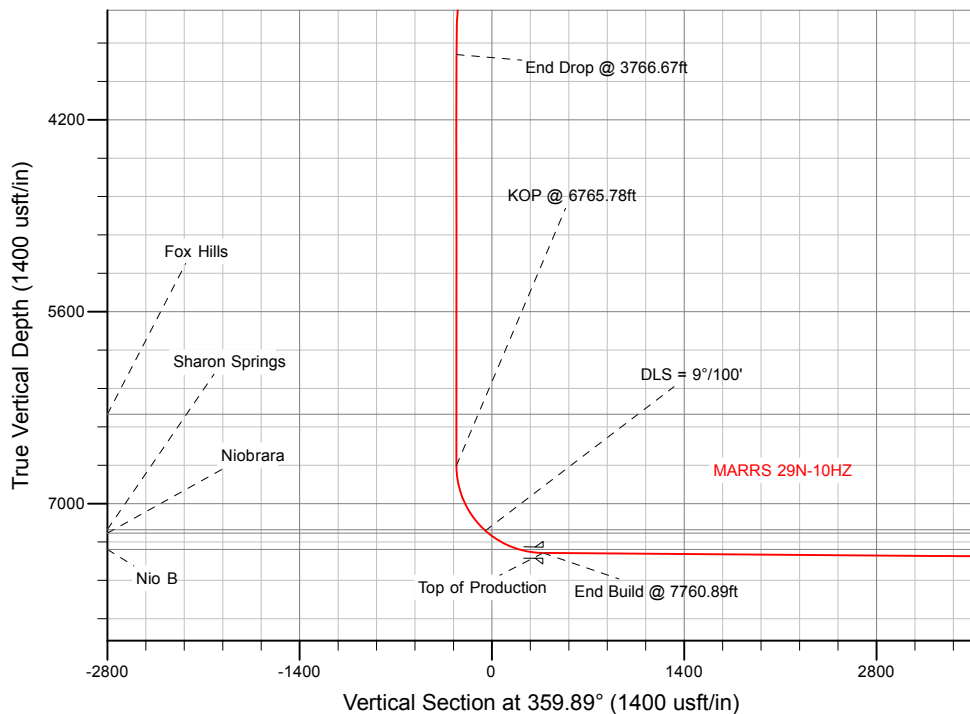
Project: WELD-NAD83-UTMFT13N  
Site: 1N-67W-22 Marrs 6-22HZ Pad  
Well: MARRS 29N-10HZ  
Wellbore: Plan A  
Design: Permit Rev-1

## 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	200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	
3	866.67	10.00	240.00	863.29	-29.02	-50.26	1.50	240.00	-28.92	
4	3266.67	10.00	240.00	3226.83	-237.39	-411.18	0.00	0.00	-236.60	
5	3766.67	0.00	0.00	3724.29	-259.15	-448.87	2.00	180.00	-258.29	
6	6765.78	0.00	0.00	6723.40	-259.15	-448.87	0.00	0.00	-258.29	
7	7760.89	89.56	359.89	7360.00	372.58	-450.06	9.00	359.89	373.44	
8	15575.61	89.56	359.89	7420.00	8187.05	-464.77	0.00	0.00	8187.93	MARRS 29N-10HZ_TOE

## WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
MARRS 29N-10HZ_SHL	0.00	0.00	0.00	40.037987	-104.879029	Point
MARRS 29N-10HZ_TOE	7420.00	8187.05	-464.77	40.060470	-104.880690	Point



# Anadarko

## Survey Report

<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>Local Co-ordinate Reference:</b>	Well MARRS 29N-10HZ
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>TVD Reference:</b>	RKB = 17' @ 4998.00usft (D Rig)
<b>Site:</b>	1N-67W-22 Marrs 6-22HZ Pad	<b>MD Reference:</b>	RKB = 17' @ 4998.00usft (D Rig)
<b>Well:</b>	MARRS 29N-10HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	Plan A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Permit Rev-1	<b>Database:</b>	PLANNING

<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-67W-22 Marrs 6-22HZ Pad			
Site Position:		Northing:	14,540,634.27 usft	Latitude:	40.038111
From:	Lat/Long	Easting:	1,674,276.15 usft	Longitude:	-104.879028
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.08 °

Well		MARRS 29N-10HZ				
Well Position	+N/-S	0.00 usft	Northing:	14,540,589.11 usft	Latitude:	40.037987
	+E/-W	0.00 usft	Easting:	1,674,275.93 usft	Longitude:	-104.879029
Position Uncertainty		3.28 usft	Wellhead Elevation:	0.00 usft	Ground Level:	4,981.00 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	3/10/2016	8.26	66.58	52,429

<b>Design</b>	Permit Rev-1				
<b>Audit Notes:</b>					
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<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	359.89	

<b>Survey Tool Program</b>	<b>Date</b>	3/15/2016			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
0.00	1,800.00	Permit Rev-1 (Plan A)	APC_ISCWSA REV 2 MWD	Fixed:v2:standard declination	
1,800.00	15,575.61	Permit Rev-1 (Plan A)	APC_ISCWSA REV 2 MWD+	Fixed:v2:Rockies, crustal dec + 3-axis correction	

<b>Planned Survey</b>										
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Vertical Section (usft)</b>	<b>Dogleg Rate (°/100usft)</b>	<b>Build Rate (°/100usft)</b>	<b>Turn Rate (°/100usft)</b>	
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	
<b>Begin Nudge @ 200.00ft</b>										
300.00	1.50	240.00	299.99	-0.65	-1.13	-0.65	1.50	1.50	0.00	
400.00	3.00	240.00	399.91	-2.62	-4.53	-2.61	1.50	1.50	0.00	
500.00	4.50	240.00	499.69	-5.89	-10.20	-5.87	1.50	1.50	0.00	
600.00	6.00	240.00	599.27	-10.46	-18.12	-10.43	1.50	1.50	0.00	
700.00	7.50	240.00	698.57	-16.34	-28.30	-16.28	1.50	1.50	0.00	
800.00	9.00	240.00	797.54	-23.51	-40.73	-23.44	1.50	1.50	0.00	

# Anadarko

## Survey Report

<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>Local Co-ordinate Reference:</b>	Well MARRS 29N-10HZ
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>TVD Reference:</b>	RKB = 17' @ 4998.00usft (D Rig)
<b>Site:</b>	1N-67W-22 Marrs 6-22HZ Pad	<b>MD Reference:</b>	RKB = 17' @ 4998.00usft (D Rig)
<b>Well:</b>	MARRS 29N-10HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	Plan A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Permit Rev-1	<b>Database:</b>	PLANNING

### 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)
866.67	10.00	240.00	863.29	-29.02	-50.26	-28.92	1.50	1.50	0.00
<b>End Nudge @ 866.67ft</b>									
900.00	10.00	240.00	896.11	-31.91	-55.27	-31.80	0.00	0.00	0.00
1,000.00	10.00	240.00	994.59	-40.59	-70.31	-40.46	0.00	0.00	0.00
1,100.00	10.00	240.00	1,093.08	-49.27	-85.35	-49.11	0.00	0.00	0.00
1,200.00	10.00	240.00	1,191.56	-57.96	-100.38	-57.76	0.00	0.00	0.00
1,300.00	10.00	240.00	1,290.04	-66.64	-115.42	-66.42	0.00	0.00	0.00
1,400.00	10.00	240.00	1,388.52	-75.32	-130.46	-75.07	0.00	0.00	0.00
1,500.00	10.00	240.00	1,487.00	-84.00	-145.50	-83.72	0.00	0.00	0.00
1,600.00	10.00	240.00	1,585.48	-92.69	-160.54	-92.38	0.00	0.00	0.00
1,700.00	10.00	240.00	1,683.96	-101.37	-175.58	-101.03	0.00	0.00	0.00
1,800.00	10.00	240.00	1,782.44	-110.05	-190.61	-109.68	0.00	0.00	0.00
1,817.83	10.00	240.00	1,800.00	-111.60	-193.30	-111.23	0.00	0.00	0.00
<b>9 5/8"</b>									
1,900.00	10.00	240.00	1,880.92	-118.73	-205.65	-118.34	0.00	0.00	0.00
2,000.00	10.00	240.00	1,979.40	-127.42	-220.69	-126.99	0.00	0.00	0.00
2,100.00	10.00	240.00	2,077.88	-136.10	-235.73	-135.65	0.00	0.00	0.00
2,200.00	10.00	240.00	2,176.36	-144.78	-250.77	-144.30	0.00	0.00	0.00
2,300.00	10.00	240.00	2,274.85	-153.46	-265.81	-152.95	0.00	0.00	0.00
2,400.00	10.00	240.00	2,373.33	-162.15	-280.84	-161.61	0.00	0.00	0.00
2,500.00	10.00	240.00	2,471.81	-170.83	-295.88	-170.26	0.00	0.00	0.00
2,600.00	10.00	240.00	2,570.29	-179.51	-310.92	-178.91	0.00	0.00	0.00
2,700.00	10.00	240.00	2,668.77	-188.19	-325.96	-187.57	0.00	0.00	0.00
2,800.00	10.00	240.00	2,767.25	-196.87	-341.00	-196.22	0.00	0.00	0.00
2,900.00	10.00	240.00	2,865.73	-205.56	-356.04	-204.87	0.00	0.00	0.00
3,000.00	10.00	240.00	2,964.21	-214.24	-371.07	-213.53	0.00	0.00	0.00
3,100.00	10.00	240.00	3,062.69	-222.92	-386.11	-222.18	0.00	0.00	0.00
3,200.00	10.00	240.00	3,161.17	-231.60	-401.15	-230.83	0.00	0.00	0.00
3,266.67	10.00	240.00	3,226.83	-237.39	-411.18	-236.60	0.00	0.00	0.00
<b>Begin Drop @ 3266.67ft</b>									
3,300.00	9.33	240.00	3,259.69	-240.19	-416.02	-239.39	2.00	-2.00	0.00
3,400.00	7.33	240.00	3,358.62	-247.44	-428.57	-246.61	2.00	-2.00	0.00
3,500.00	5.33	240.00	3,458.01	-252.95	-438.13	-252.11	2.00	-2.00	0.00
3,600.00	3.33	240.00	3,557.72	-256.73	-444.67	-255.88	2.00	-2.00	0.00
3,700.00	1.33	240.00	3,657.63	-258.77	-448.20	-257.91	2.00	-2.00	0.00
3,766.67	0.00	0.00	3,724.29	-259.15	-448.87	-258.29	2.00	-2.00	0.00
<b>End Drop @ 3766.67ft</b>									
3,800.00	0.00	0.00	3,757.62	-259.15	-448.87	-258.29	0.00	0.00	0.00
3,900.00	0.00	0.00	3,857.62	-259.15	-448.87	-258.29	0.00	0.00	0.00
4,000.00	0.00	0.00	3,957.62	-259.15	-448.87	-258.29	0.00	0.00	0.00
4,100.00	0.00	0.00	4,057.62	-259.15	-448.87	-258.29	0.00	0.00	0.00
4,200.00	0.00	0.00	4,157.62	-259.15	-448.87	-258.29	0.00	0.00	0.00
4,300.00	0.00	0.00	4,257.62	-259.15	-448.87	-258.29	0.00	0.00	0.00
4,400.00	0.00	0.00	4,357.62	-259.15	-448.87	-258.29	0.00	0.00	0.00

# Anadarko

## Survey Report

<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>Local Co-ordinate Reference:</b>	Well MARRS 29N-10HZ
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>TVD Reference:</b>	RKB = 17' @ 4998.00usft (D Rig)
<b>Site:</b>	1N-67W-22 Marrs 6-22HZ Pad	<b>MD Reference:</b>	RKB = 17' @ 4998.00usft (D Rig)
<b>Well:</b>	MARRS 29N-10HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	Plan A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Permit Rev-1	<b>Database:</b>	PLANNING

### 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)
4,500.00	0.00	0.00	4,457.62	-259.15	-448.87	-258.29	0.00	0.00	0.00
4,600.00	0.00	0.00	4,557.62	-259.15	-448.87	-258.29	0.00	0.00	0.00
4,700.00	0.00	0.00	4,657.62	-259.15	-448.87	-258.29	0.00	0.00	0.00
4,800.00	0.00	0.00	4,757.62	-259.15	-448.87	-258.29	0.00	0.00	0.00
4,900.00	0.00	0.00	4,857.62	-259.15	-448.87	-258.29	0.00	0.00	0.00
5,000.00	0.00	0.00	4,957.62	-259.15	-448.87	-258.29	0.00	0.00	0.00
5,100.00	0.00	0.00	5,057.62	-259.15	-448.87	-258.29	0.00	0.00	0.00
5,200.00	0.00	0.00	5,157.62	-259.15	-448.87	-258.29	0.00	0.00	0.00
5,300.00	0.00	0.00	5,257.62	-259.15	-448.87	-258.29	0.00	0.00	0.00
5,400.00	0.00	0.00	5,357.62	-259.15	-448.87	-258.29	0.00	0.00	0.00
5,500.00	0.00	0.00	5,457.62	-259.15	-448.87	-258.29	0.00	0.00	0.00
5,600.00	0.00	0.00	5,557.62	-259.15	-448.87	-258.29	0.00	0.00	0.00
5,700.00	0.00	0.00	5,657.62	-259.15	-448.87	-258.29	0.00	0.00	0.00
5,800.00	0.00	0.00	5,757.62	-259.15	-448.87	-258.29	0.00	0.00	0.00
5,900.00	0.00	0.00	5,857.62	-259.15	-448.87	-258.29	0.00	0.00	0.00
6,000.00	0.00	0.00	5,957.62	-259.15	-448.87	-258.29	0.00	0.00	0.00
6,100.00	0.00	0.00	6,057.62	-259.15	-448.87	-258.29	0.00	0.00	0.00
6,200.00	0.00	0.00	6,157.62	-259.15	-448.87	-258.29	0.00	0.00	0.00
6,300.00	0.00	0.00	6,257.62	-259.15	-448.87	-258.29	0.00	0.00	0.00
6,390.38	0.00	0.00	6,348.00	-259.15	-448.87	-258.29	0.00	0.00	0.00
<b>Fox Hills</b>									
6,400.00	0.00	0.00	6,357.62	-259.15	-448.87	-258.29	0.00	0.00	0.00
6,500.00	0.00	0.00	6,457.62	-259.15	-448.87	-258.29	0.00	0.00	0.00
6,600.00	0.00	0.00	6,557.62	-259.15	-448.87	-258.29	0.00	0.00	0.00
6,700.00	0.00	0.00	6,657.62	-259.15	-448.87	-258.29	0.00	0.00	0.00
6,765.78	0.00	0.00	6,723.40	-259.15	-448.87	-258.29	0.00	0.00	0.00
<b>KOP @ 6765.78ft</b>									
6,800.00	3.08	359.89	6,757.61	-258.23	-448.87	-257.37	9.00	9.00	0.00
6,900.00	12.08	359.89	6,856.63	-245.06	-448.89	-244.19	9.00	9.00	0.00
7,000.00	21.08	359.89	6,952.38	-216.55	-448.95	-215.69	9.00	9.00	0.00
7,100.00	30.08	359.89	7,042.48	-173.42	-449.03	-172.56	9.00	9.00	0.00
7,200.00	39.08	359.89	7,124.73	-116.72	-449.14	-115.86	9.00	9.00	0.00
7,290.95	47.27	359.89	7,191.00	-54.55	-449.25	-53.69	9.00	9.00	0.00
<b>Sharon Springs</b>									
7,300.00	48.08	359.89	7,197.10	-47.85	-449.27	-46.99	9.00	9.00	0.00
<b>DLS = 9°/100'</b>									
7,329.04	50.69	359.89	7,216.00	-25.81	-449.31	-24.95	9.00	9.00	0.00
<b>Niobrara</b>									
7,400.00	57.08	359.89	7,257.80	31.48	-449.42	32.35	9.00	9.00	0.00
7,500.00	66.08	359.89	7,305.34	119.34	-449.58	120.20	9.00	9.00	0.00
7,586.70	73.88	359.89	7,335.00	200.74	-449.73	201.60	9.00	9.00	0.00
<b>Nio B</b>									
7,600.00	75.08	359.89	7,338.56	213.56	-449.76	214.42	9.00	9.00	0.00
7,700.00	84.08	359.89	7,356.63	311.80	-449.94	312.67	9.00	9.00	0.00

# Anadarko

## Survey Report

<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>Local Co-ordinate Reference:</b>	Well MARRS 29N-10HZ
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>TVD Reference:</b>	RKB = 17' @ 4998.00usft (D Rig)
<b>Site:</b>	1N-67W-22 Marrs 6-22HZ Pad	<b>MD Reference:</b>	RKB = 17' @ 4998.00usft (D Rig)
<b>Well:</b>	MARRS 29N-10HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	Plan A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Permit Rev-1	<b>Database:</b>	PLANNING

### 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)
7,760.89	89.56	359.89	7,360.00	372.58	-450.06	373.44	9.00	9.00	0.00
<b>End Build @ 7760.89ft - Top of Production</b>									
7,800.00	89.56	359.89	7,360.30	411.69	-450.13	412.55	0.00	0.00	0.00
7,900.00	89.56	359.89	7,361.07	511.68	-450.32	512.55	0.00	0.00	0.00
8,000.00	89.56	359.89	7,361.84	611.68	-450.51	612.54	0.00	0.00	0.00
8,100.00	89.56	359.89	7,362.61	711.68	-450.70	712.54	0.00	0.00	0.00
8,200.00	89.56	359.89	7,363.37	811.67	-450.88	812.54	0.00	0.00	0.00
8,300.00	89.56	359.89	7,364.14	911.67	-451.07	912.54	0.00	0.00	0.00
8,400.00	89.56	359.89	7,364.91	1,011.67	-451.26	1,012.53	0.00	0.00	0.00
8,500.00	89.56	359.89	7,365.68	1,111.66	-451.45	1,112.53	0.00	0.00	0.00
8,600.00	89.56	359.89	7,366.44	1,211.66	-451.64	1,212.53	0.00	0.00	0.00
8,700.00	89.56	359.89	7,367.21	1,311.66	-451.83	1,312.52	0.00	0.00	0.00
8,800.00	89.56	359.89	7,367.98	1,411.66	-452.01	1,412.52	0.00	0.00	0.00
8,900.00	89.56	359.89	7,368.75	1,511.65	-452.20	1,512.52	0.00	0.00	0.00
9,000.00	89.56	359.89	7,369.52	1,611.65	-452.39	1,612.51	0.00	0.00	0.00
9,100.00	89.56	359.89	7,370.28	1,711.65	-452.58	1,712.51	0.00	0.00	0.00
9,200.00	89.56	359.89	7,371.05	1,811.64	-452.77	1,812.51	0.00	0.00	0.00
9,300.00	89.56	359.89	7,371.82	1,911.64	-452.96	1,912.51	0.00	0.00	0.00
9,400.00	89.56	359.89	7,372.59	2,011.64	-453.14	2,012.50	0.00	0.00	0.00
9,500.00	89.56	359.89	7,373.35	2,111.63	-453.33	2,112.50	0.00	0.00	0.00
9,600.00	89.56	359.89	7,374.12	2,211.63	-453.52	2,212.50	0.00	0.00	0.00
9,700.00	89.56	359.89	7,374.89	2,311.63	-453.71	2,312.49	0.00	0.00	0.00
9,800.00	89.56	359.89	7,375.66	2,411.62	-453.90	2,412.49	0.00	0.00	0.00
9,900.00	89.56	359.89	7,376.43	2,511.62	-454.08	2,512.49	0.00	0.00	0.00
10,000.00	89.56	359.89	7,377.19	2,611.62	-454.27	2,612.49	0.00	0.00	0.00
10,100.00	89.56	359.89	7,377.96	2,711.61	-454.46	2,712.48	0.00	0.00	0.00
10,200.00	89.56	359.89	7,378.73	2,811.61	-454.65	2,812.48	0.00	0.00	0.00
10,300.00	89.56	359.89	7,379.50	2,911.61	-454.84	2,912.48	0.00	0.00	0.00
10,400.00	89.56	359.89	7,380.26	3,011.61	-455.03	3,012.47	0.00	0.00	0.00
10,500.00	89.56	359.89	7,381.03	3,111.60	-455.21	3,112.47	0.00	0.00	0.00
10,600.00	89.56	359.89	7,381.80	3,211.60	-455.40	3,212.47	0.00	0.00	0.00
10,700.00	89.56	359.89	7,382.57	3,311.60	-455.59	3,312.46	0.00	0.00	0.00
10,800.00	89.56	359.89	7,383.34	3,411.59	-455.78	3,412.46	0.00	0.00	0.00
10,900.00	89.56	359.89	7,384.10	3,511.59	-455.97	3,512.46	0.00	0.00	0.00
11,000.00	89.56	359.89	7,384.87	3,611.59	-456.16	3,612.46	0.00	0.00	0.00
11,100.00	89.56	359.89	7,385.64	3,711.58	-456.34	3,712.45	0.00	0.00	0.00
11,200.00	89.56	359.89	7,386.41	3,811.58	-456.53	3,812.45	0.00	0.00	0.00
11,300.00	89.56	359.89	7,387.17	3,911.58	-456.72	3,912.45	0.00	0.00	0.00
11,400.00	89.56	359.89	7,387.94	4,011.57	-456.91	4,012.44	0.00	0.00	0.00
11,500.00	89.56	359.89	7,388.71	4,111.57	-457.10	4,112.44	0.00	0.00	0.00
11,600.00	89.56	359.89	7,389.48	4,211.57	-457.29	4,212.44	0.00	0.00	0.00
11,700.00	89.56	359.89	7,390.25	4,311.56	-457.47	4,312.44	0.00	0.00	0.00
11,800.00	89.56	359.89	7,391.01	4,411.56	-457.66	4,412.43	0.00	0.00	0.00
11,900.00	89.56	359.89	7,391.78	4,511.56	-457.85	4,512.43	0.00	0.00	0.00

# Anadarko

## Survey Report

<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>Local Co-ordinate Reference:</b>	Well MARRS 29N-10HZ
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>TVD Reference:</b>	RKB = 17' @ 4998.00usft (D Rig)
<b>Site:</b>	1N-67W-22 Marrs 6-22HZ Pad	<b>MD Reference:</b>	RKB = 17' @ 4998.00usft (D Rig)
<b>Well:</b>	MARRS 29N-10HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	Plan A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Permit Rev-1	<b>Database:</b>	PLANNING

### 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)
12,000.00	89.56	359.89	7,392.55	4,611.56	-458.04	4,612.43	0.00	0.00	0.00
12,100.00	89.56	359.89	7,393.32	4,711.55	-458.23	4,712.42	0.00	0.00	0.00
12,200.00	89.56	359.89	7,394.08	4,811.55	-458.41	4,812.42	0.00	0.00	0.00
12,300.00	89.56	359.89	7,394.85	4,911.55	-458.60	4,912.42	0.00	0.00	0.00
12,400.00	89.56	359.89	7,395.62	5,011.54	-458.79	5,012.41	0.00	0.00	0.00
12,500.00	89.56	359.89	7,396.39	5,111.54	-458.98	5,112.41	0.00	0.00	0.00
12,600.00	89.56	359.89	7,397.15	5,211.54	-459.17	5,212.41	0.00	0.00	0.00
12,700.00	89.56	359.89	7,397.92	5,311.53	-459.36	5,312.41	0.00	0.00	0.00
12,800.00	89.56	359.89	7,398.69	5,411.53	-459.54	5,412.40	0.00	0.00	0.00
12,900.00	89.56	359.89	7,399.46	5,511.53	-459.73	5,512.40	0.00	0.00	0.00
13,000.00	89.56	359.89	7,400.23	5,611.52	-459.92	5,612.40	0.00	0.00	0.00
13,100.00	89.56	359.89	7,400.99	5,711.52	-460.11	5,712.39	0.00	0.00	0.00
13,200.00	89.56	359.89	7,401.76	5,811.52	-460.30	5,812.39	0.00	0.00	0.00
13,300.00	89.56	359.89	7,402.53	5,911.51	-460.49	5,912.39	0.00	0.00	0.00
13,400.00	89.56	359.89	7,403.30	6,011.51	-460.67	6,012.39	0.00	0.00	0.00
13,500.00	89.56	359.89	7,404.06	6,111.51	-460.86	6,112.38	0.00	0.00	0.00
13,600.00	89.56	359.89	7,404.83	6,211.51	-461.05	6,212.38	0.00	0.00	0.00
13,700.00	89.56	359.89	7,405.60	6,311.50	-461.24	6,312.38	0.00	0.00	0.00
13,800.00	89.56	359.89	7,406.37	6,411.50	-461.43	6,412.37	0.00	0.00	0.00
13,900.00	89.56	359.89	7,407.14	6,511.50	-461.62	6,512.37	0.00	0.00	0.00
14,000.00	89.56	359.89	7,407.90	6,611.49	-461.80	6,612.37	0.00	0.00	0.00
14,100.00	89.56	359.89	7,408.67	6,711.49	-461.99	6,712.36	0.00	0.00	0.00
14,200.00	89.56	359.89	7,409.44	6,811.49	-462.18	6,812.36	0.00	0.00	0.00
14,300.00	89.56	359.89	7,410.21	6,911.48	-462.37	6,912.36	0.00	0.00	0.00
14,400.00	89.56	359.89	7,410.97	7,011.48	-462.56	7,012.36	0.00	0.00	0.00
14,500.00	89.56	359.89	7,411.74	7,111.48	-462.75	7,112.35	0.00	0.00	0.00
14,600.00	89.56	359.89	7,412.51	7,211.47	-462.93	7,212.35	0.00	0.00	0.00
14,700.00	89.56	359.89	7,413.28	7,311.47	-463.12	7,312.35	0.00	0.00	0.00
14,800.00	89.56	359.89	7,414.05	7,411.47	-463.31	7,412.34	0.00	0.00	0.00
14,900.00	89.56	359.89	7,414.81	7,511.46	-463.50	7,512.34	0.00	0.00	0.00
15,000.00	89.56	359.89	7,415.58	7,611.46	-463.69	7,612.34	0.00	0.00	0.00
15,100.00	89.56	359.89	7,416.35	7,711.46	-463.87	7,712.34	0.00	0.00	0.00
15,200.00	89.56	359.89	7,417.12	7,811.46	-464.06	7,812.33	0.00	0.00	0.00
15,300.00	89.56	359.89	7,417.88	7,911.45	-464.25	7,912.33	0.00	0.00	0.00
15,400.00	89.56	359.89	7,418.65	8,011.45	-464.44	8,012.33	0.00	0.00	0.00
15,500.00	89.56	359.89	7,419.42	8,111.45	-464.63	8,112.32	0.00	0.00	0.00
15,575.61	89.56	359.89	7,420.00	8,187.05	-464.77	8,187.93	0.00	0.00	0.00

TD Well @ 15575.61ft

# Anadarko

## Survey Report

<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>Local Co-ordinate Reference:</b>	Well MARRS 29N-10HZ
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>TVD Reference:</b>	RKB = 17' @ 4998.00usft (D Rig)
<b>Site:</b>	1N-67W-22 Marrs 6-22HZ Pad	<b>MD Reference:</b>	RKB = 17' @ 4998.00usft (D Rig)
<b>Well:</b>	MARRS 29N-10HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	Plan A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Permit Rev-1	<b>Database:</b>	PLANNING

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
- Shape									
MARRS 29N-10HZ_460	0.00	0.00	0.00	7,384.86	-710.40	14,547,973.00	1,673,555.50	40.058267	-104.881568
- plan misses target center by 7417.74usft at 14716.93usft MD (7413.41 TVD, 7328.40 N, -463.15 E)									
- Circle (radius 460.00)									
MARRS 29N-10HZ_SHL	0.00	0.00	0.00	0.00	0.00	14,540,589.11	1,674,275.93	40.037987	-104.879029
- plan hits target center									
- Point									
MARRS 29N-10HZ_Har	0.00	0.00	0.00	0.00	0.00	14,540,589.11	1,674,275.93	40.037987	-104.879029
- plan hits target center									
- Polygon									
Point 1		0.00	8,245.28	-1,170.04	14,548,832.80	1,673,094.70			
Point 2		0.00	8,245.76	-710.13	14,548,833.90	1,673,554.60			
Point 3		0.00	8,246.13	-250.13	14,548,834.90	1,674,014.60			
Point 4		0.00	7,385.23	-250.40	14,547,974.00	1,674,015.50			
Point 5		0.00	6,067.83	-247.79	14,546,656.60	1,674,019.90			
Point 6		0.00	4,750.42	-245.28	14,545,339.20	1,674,024.20			
Point 7		0.00	3,433.42	-243.67	14,544,022.20	1,674,027.60			
Point 8		0.00	2,115.31	-241.56	14,542,704.10	1,674,031.50			
Point 9		0.00	798.50	-230.45	14,541,387.30	1,674,044.40			
Point 10		0.00	-59.21	-223.21	14,540,529.60	1,674,052.80			
Point 11		0.00	-61.39	-683.22	14,540,526.80	1,673,592.80			
Point 12		0.00	-63.46	-1,143.22	14,540,524.10	1,673,132.80			
Point 13		0.00	794.75	-1,150.46	14,541,382.30	1,673,124.40			
Point 14		0.00	2,113.76	-1,161.56	14,542,701.30	1,673,111.50			
Point 15		0.00	3,430.77	-1,163.67	14,544,018.30	1,673,107.60			
Point 16		0.00	4,749.27	-1,165.28	14,545,336.80	1,673,104.20			
Point 17		0.00	6,066.38	-1,167.79	14,546,653.90	1,673,099.90			
Point 18		0.00	7,384.38	-1,170.40	14,547,971.90	1,673,095.50			
Point 19		0.00	8,245.28	-1,170.04	14,548,832.80	1,673,094.70			
MARRS 29N-10HZ_460	0.00	0.00	0.00	796.62	-690.45	14,541,384.80	1,673,584.40	40.040175	-104.881496
- plan misses target center by 1054.20usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Circle (radius 460.00)									
MARRS 29N-10HZ_Hee	0.00	0.00	0.00	368.15	-460.98	14,540,956.64	1,673,814.45	40.038998	-104.880676
- plan misses target center by 589.95usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Point									
1N-R67W-Sec. 22_Secti	0.00	0.00	13.00	-515.20	639.16	14,540,074.78	1,674,915.79	40.036572	-104.876746
- plan misses target center by 820.95usft at 13.00usft MD (13.00 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1		13.00	2,627.78	-2,674.22	14,542,698.93	1,672,238.00			
Point 2		13.00	2,636.63	-12.49	14,542,711.39	1,674,899.72			
Point 3		13.00	2,645.60	2,649.28	14,542,723.98	1,677,561.47			
Point 4		13.00	9.73	2,650.67	14,540,088.11	1,677,566.44			
Point 5		13.00	-2,626.39	2,652.38	14,537,452.00	1,677,571.73			
Point 6		13.00	-2,631.96	12.48	14,537,442.84	1,674,931.84			
Point 7		13.00	-2,637.68	-2,626.99	14,537,433.53	1,672,292.39			
Point 8		13.00	-9.70	-2,642.90	14,540,061.49	1,672,272.91			
1N-R67W-Sec. 15_Secti	0.00	0.00	13.00	534.69	2,528.81	14,541,127.24	1,676,804.01	40.039455	-104.869994
- plan misses target center by 2584.72usft at 13.00usft MD (13.00 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1		13.00	6,851.58	-4,568.26	14,547,972.61	1,672,226.45			
Point 2		13.00	6,853.93	-1,913.35	14,547,978.57	1,674,881.35			
Point 3		13.00	6,855.16	741.27	14,547,983.40	1,677,535.97			
Point 4		13.00	4,225.46	750.46	14,545,353.72	1,677,548.73			
Point 5		13.00	1,595.89	759.53	14,542,724.16	1,677,561.37			
Point 6		13.00	1,586.93	-1,902.25	14,542,711.59	1,674,899.61			
Point 7		13.00	1,578.07	-4,563.97	14,542,699.11	1,672,237.90			



# Anadarko

## Survey Report

<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>Local Co-ordinate Reference:</b>	Well MARRS 29N-10HZ
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>TVD Reference:</b>	RKB = 17' @ 4998.00usft (D Rig)
<b>Site:</b>	1N-67W-22 MARRS 6-22HZ Pad	<b>MD Reference:</b>	RKB = 17' @ 4998.00usft (D Rig)
<b>Well:</b>	MARRS 29N-10HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	Plan A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Permit Rev-1	<b>Database:</b>	PLANNING

Point 8		13.00	4,213.91	-4,566.57	14,545,334.94	1,672,231.72		
1N-R67W-Sec. 10_Secti	0.00	0.00	-82.00	7,676.90	942.40	14,548,267.29	1,675,207.90	40.059069
- plan misses target center by 7628.57usft at 15005.23usft MD (7415.62 TVD, 7616.69 N, -463.70 E)								
- Polygon								
Point 1		-82.00	4,992.86	-2,976.12	14,553,256.10	1,672,225.00		
Point 2		-82.00	4,994.59	-331.69	14,553,261.42	1,674,869.43		
Point 3		-82.00	4,996.25	2,313.07	14,553,266.68	1,677,514.18		
Point 4		-82.00	2,354.63	2,320.05	14,550,625.07	1,677,524.75		
Point 5		-82.00	-287.06	2,326.97	14,547,983.39	1,677,535.26		
Point 6		-82.00	-288.46	-327.65	14,547,978.39	1,674,880.65		
Point 7		-82.00	-290.97	-2,982.55	14,547,972.27	1,672,225.75		
MARRS 29N-10HZ_TOE	0.00	0.00	7,420.00	8,187.05	-464.77	14,548,775.52	1,673,800.04	40.060470
- plan hits target center								
- Point								

Casing Points						
Measured Depth (usft)	Vertical Depth (usft)	Name			Casing Diameter (")	Hole Diameter (")
1,817.83	1,800.00	9 5/8"			9-5/8	13-1/2
7,760.89	7,360.00	Top of Production			5-1/2	7-7/8

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
6,390.38	6,348.00	Fox Hills				
7,290.95	7,191.00	Sharon Springs				
7,329.04	7,216.00	Niobrara				
7,586.70	7,335.00	Nio B				

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
200	200	0	0	Begin Nudge @ 200.00ft	
867	863	-29	-50	End Nudge @ 866.67ft	
3267	3227	-237	-411	Begin Drop @ 3266.67ft	
3767	3724	-259	-449	End Drop @ 3766.67ft	
6766	6723	-259	-449	KOP @ 6765.78ft	
7300	7197	-48	-449	DLS = 9°/100'	
7761	7360	373	-450	End Build @ 7760.89ft	
15,576	7420	8187	-465	TD Well @ 15575.61ft	

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_