

US ROCKIES WATTENBERG PLANNING

**WELD-NAD83-UTMFT13N
1N-67W-22 Marrs 6-22HZ Pad
MARRS 28C-10HZ**

Plan A

Plan: Permit Rev-1

Standard Survey Report

15 March, 2016

Project: WELD-NAD83-UTMFT13N
Site: 1N-67W-22 Marrs 6-22HZ Pad
Well: MARRS 28C-10HZ
Wellbore: Plan A
Design: Permit Rev-1

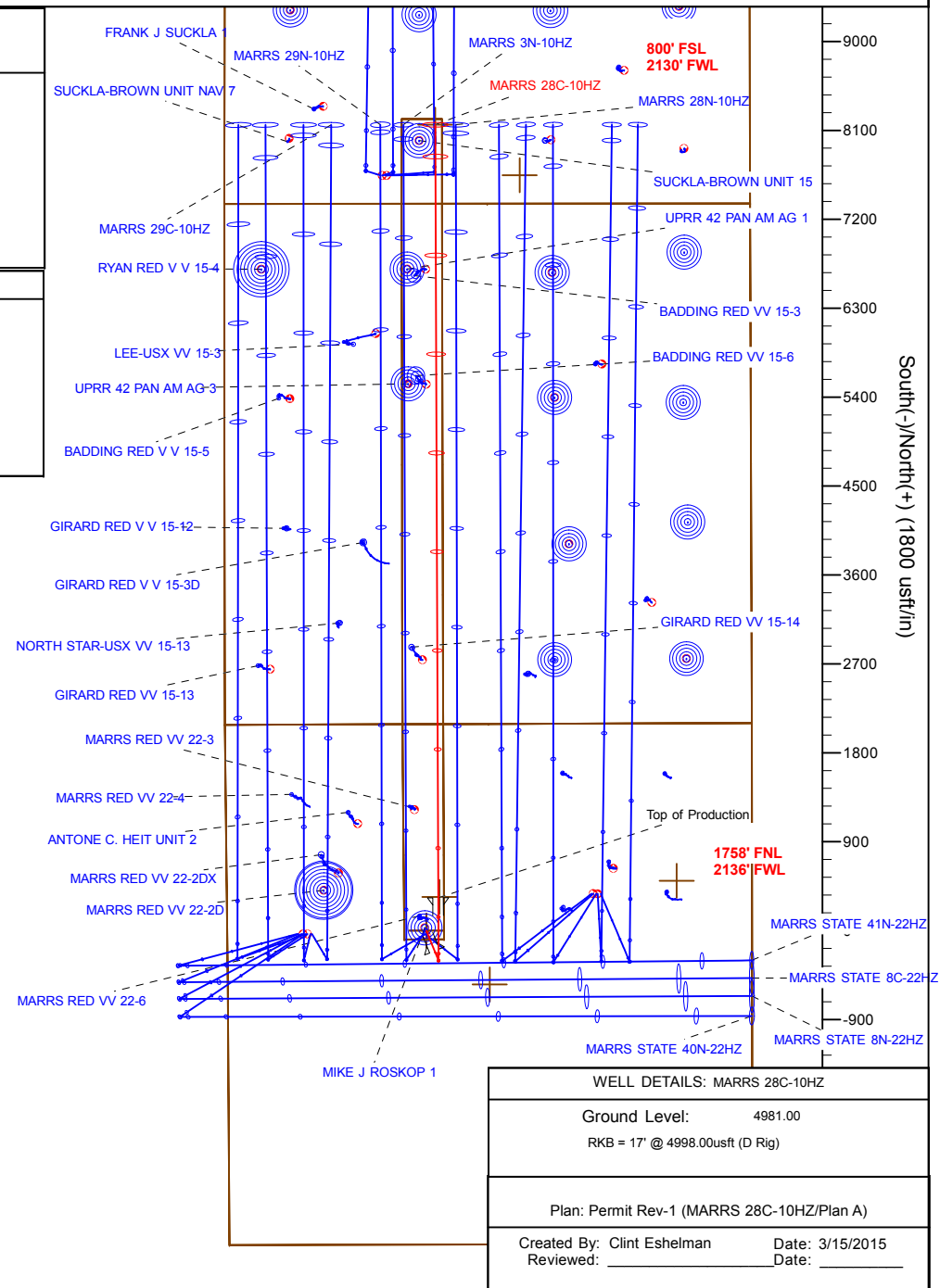
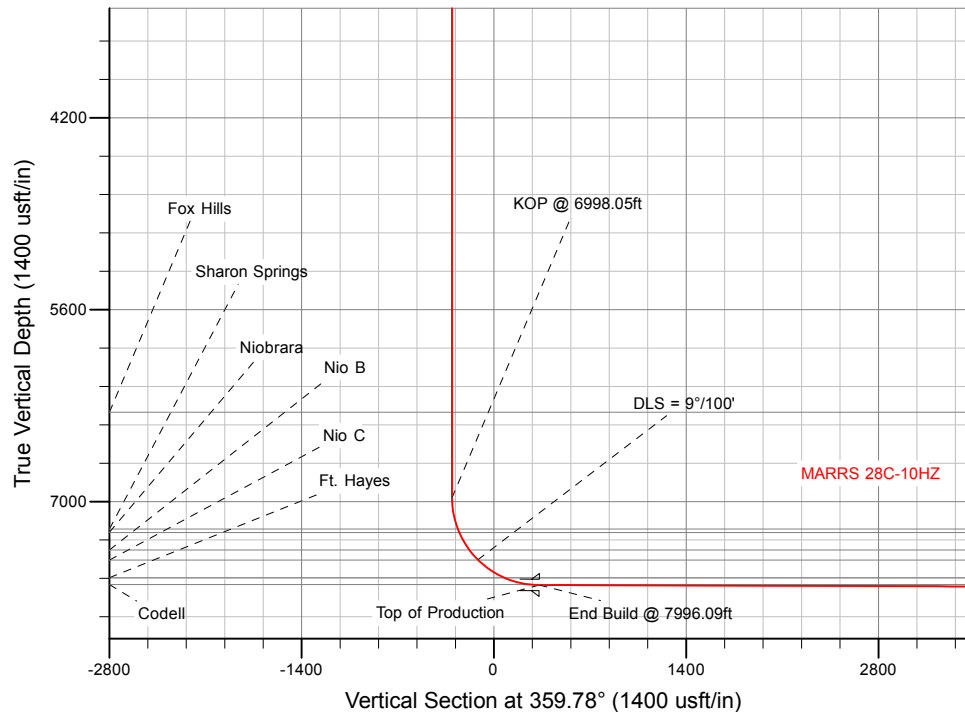
US ROCKIES WATTENBERG PLANNING

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	
3	866.67	10.00	158.00	863.29	-53.80	21.74	1.50	158.00	-53.89	
4	2166.67	10.00	158.00	2143.54	-263.11	106.30	0.00	0.00	-263.52	
5	2666.67	0.00	0.00	2641.00	-303.46	122.61	2.00	180.00	-303.93	
6	6998.05	0.00	0.00	6972.38	-303.46	122.61	0.00	0.00	-303.93	
7	7996.09	89.82	359.78	7609.00	331.20	120.13	9.00	359.78	330.74	
8	15822.55	89.82	359.78	7633.00	8157.55	89.54	0.00	0.00	8157.15	MARRS 28C-10HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
MARRS 28C-10HZ_SHL	0.00	0.00	0.00	40.038070	-104.879028	Point
MARRS 28C-10HZ_BHL	7633.00	8157.55	89.54	40.060472	-104.878708	Point



WELL DETAILS: MARRS 28C-10HZ

Ground Level: 4981.00
RKB = 17' @ 4998.00usft (D Rig)

Plan: Permit Rev-1 (MARRS 28C-10HZ/Plan A)

Created By: Clint Eshelman Date: 3/15/2015
Reviewed: _____ Date: _____

Anadarko

Survey Report

Company:	US ROCKIES WATTENBERG PLANNING	Local Co-ordinate Reference:	Well MARRS 28C-10HZ
Project:	WELD-NAD83-UTMFT13N	TVD Reference:	RKB = 17' @ 4998.00usft (D Rig)
Site:	1N-67W-22 Marrs 6-22HZ Pad	MD Reference:	RKB = 17' @ 4998.00usft (D Rig)
Well:	MARRS 28C-10HZ	North Reference:	True
Wellbore:	Plan A	Survey Calculation Method:	Minimum Curvature
Design:	Permit Rev-1	Database:	PLANNING

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-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 28C-10HZ				
Well Position	+N/-S	0.00 usft	Northing:	14,540,619.34 usft	Latitude:	40.038070
	+E/-W	0.00 usft	Easting:	1,674,276.17 usft	Longitude:	-104.879028
Position Uncertainty		3.28 usft	Wellhead Elevation:	0.00 usft	Ground Level:	4,981.00 usft

Wellbore	Plan A				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	3/10/2016	8.26	66.58	52,429

Design	Permit Rev-1				
Audit Notes:					
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00	
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	359.78	

Survey Tool Program	Date	3/15/2016			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	1,800.00	Permit Rev-1 (Plan A)	APC_ISCWSA REV 2 MWD	Fixed:v2:standard declination	
1,800.00	15,822.55	Permit Rev-1 (Plan A)	APC_ISCWSA REV 2 MWD+	Fixed:v2:crustal field declination	

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	
Begin Nudge @ 200.00ft										
300.00	1.50	158.00	299.99	-1.21	0.49	-1.22	1.50	1.50	0.00	
400.00	3.00	158.00	399.91	-4.85	1.96	-4.86	1.50	1.50	0.00	
500.00	4.50	158.00	499.69	-10.92	4.41	-10.93	1.50	1.50	0.00	
600.00	6.00	158.00	599.27	-19.40	7.84	-19.43	1.50	1.50	0.00	
700.00	7.50	158.00	698.57	-30.30	12.24	-30.35	1.50	1.50	0.00	
800.00	9.00	158.00	797.54	-43.60	17.62	-43.67	1.50	1.50	0.00	

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Survey Report

Company:	US ROCKIES WATTENBERG PLANNING	Local Co-ordinate Reference:	Well MARRS 28C-10HZ
Project:	WELD-NAD83-UTMFT13N	TVD Reference:	RKB = 17' @ 4998.00usft (D Rig)
Site:	1N-67W-22 Marrs 6-22HZ Pad	MD Reference:	RKB = 17' @ 4998.00usft (D Rig)
Well:	MARRS 28C-10HZ	North Reference:	True
Wellbore:	Plan A	Survey Calculation Method:	Minimum Curvature
Design:	Permit Rev-1	Database:	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	158.00	863.29	-53.81	21.74	-53.89	1.50	1.50	0.00
End Nudge @ 866.67ft									
900.00	10.00	158.00	896.11	-59.17	23.91	-59.26	0.00	0.00	0.00
1,000.00	10.00	158.00	994.59	-75.27	30.41	-75.39	0.00	0.00	0.00
1,100.00	10.00	158.00	1,093.08	-91.37	36.92	-91.51	0.00	0.00	0.00
1,200.00	10.00	158.00	1,191.56	-107.47	43.42	-107.64	0.00	0.00	0.00
1,300.00	10.00	158.00	1,290.04	-123.57	49.93	-123.76	0.00	0.00	0.00
1,400.00	10.00	158.00	1,388.52	-139.67	56.43	-139.89	0.00	0.00	0.00
1,500.00	10.00	158.00	1,487.00	-155.77	62.94	-156.01	0.00	0.00	0.00
1,600.00	10.00	158.00	1,585.48	-171.87	69.44	-172.14	0.00	0.00	0.00
1,700.00	10.00	158.00	1,683.96	-187.97	75.95	-188.26	0.00	0.00	0.00
1,800.00	10.00	158.00	1,782.44	-204.07	82.45	-204.39	0.00	0.00	0.00
1,817.83	10.00	158.00	1,800.00	-206.95	83.61	-207.26	0.00	0.00	0.00
9 5/8"									
1,900.00	10.00	158.00	1,880.92	-220.18	88.96	-220.52	0.00	0.00	0.00
2,000.00	10.00	158.00	1,979.40	-236.28	95.46	-236.64	0.00	0.00	0.00
2,100.00	10.00	158.00	2,077.88	-252.38	101.97	-252.77	0.00	0.00	0.00
2,166.67	10.00	158.00	2,143.54	-263.11	106.30	-263.52	0.00	0.00	0.00
Begin Drop @ 2166.67ft									
2,200.00	9.33	158.00	2,176.40	-268.30	108.40	-268.71	2.00	-2.00	0.00
2,300.00	7.33	158.00	2,275.34	-281.74	113.83	-282.17	2.00	-2.00	0.00
2,400.00	5.33	158.00	2,374.72	-291.96	117.96	-292.41	2.00	-2.00	0.00
2,500.00	3.33	158.00	2,474.43	-298.97	120.79	-299.43	2.00	-2.00	0.00
2,600.00	1.33	158.00	2,574.34	-302.74	122.32	-303.21	2.00	-2.00	0.00
2,666.67	0.00	0.00	2,641.01	-303.46	122.61	-303.93	2.00	-2.00	0.00
End Drop @ 2666.67ft									
2,700.00	0.00	0.00	2,674.34	-303.46	122.61	-303.93	0.00	0.00	0.00
2,800.00	0.00	0.00	2,774.34	-303.46	122.61	-303.93	0.00	0.00	0.00
2,900.00	0.00	0.00	2,874.34	-303.46	122.61	-303.93	0.00	0.00	0.00
3,000.00	0.00	0.00	2,974.34	-303.46	122.61	-303.93	0.00	0.00	0.00
3,100.00	0.00	0.00	3,074.34	-303.46	122.61	-303.93	0.00	0.00	0.00
3,200.00	0.00	0.00	3,174.34	-303.46	122.61	-303.93	0.00	0.00	0.00
3,300.00	0.00	0.00	3,274.34	-303.46	122.61	-303.93	0.00	0.00	0.00
3,400.00	0.00	0.00	3,374.34	-303.46	122.61	-303.93	0.00	0.00	0.00
3,500.00	0.00	0.00	3,474.34	-303.46	122.61	-303.93	0.00	0.00	0.00
3,600.00	0.00	0.00	3,574.34	-303.46	122.61	-303.93	0.00	0.00	0.00
3,700.00	0.00	0.00	3,674.34	-303.46	122.61	-303.93	0.00	0.00	0.00
3,800.00	0.00	0.00	3,774.34	-303.46	122.61	-303.93	0.00	0.00	0.00
3,900.00	0.00	0.00	3,874.34	-303.46	122.61	-303.93	0.00	0.00	0.00
4,000.00	0.00	0.00	3,974.34	-303.46	122.61	-303.93	0.00	0.00	0.00
4,100.00	0.00	0.00	4,074.34	-303.46	122.61	-303.93	0.00	0.00	0.00
4,200.00	0.00	0.00	4,174.34	-303.46	122.61	-303.93	0.00	0.00	0.00
4,300.00	0.00	0.00	4,274.34	-303.46	122.61	-303.93	0.00	0.00	0.00
4,400.00	0.00	0.00	4,374.34	-303.46	122.61	-303.93	0.00	0.00	0.00

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Survey Report

Company:	US ROCKIES WATTENBERG PLANNING	Local Co-ordinate Reference:	Well MARRS 28C-10HZ
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Wellbore:	Plan A	Survey Calculation Method:	Minimum Curvature
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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	4,474.34	-303.46	122.61	-303.93	0.00	0.00	0.00
4,600.00	0.00	0.00	4,574.34	-303.46	122.61	-303.93	0.00	0.00	0.00
4,700.00	0.00	0.00	4,674.34	-303.46	122.61	-303.93	0.00	0.00	0.00
4,800.00	0.00	0.00	4,774.34	-303.46	122.61	-303.93	0.00	0.00	0.00
4,900.00	0.00	0.00	4,874.34	-303.46	122.61	-303.93	0.00	0.00	0.00
5,000.00	0.00	0.00	4,974.34	-303.46	122.61	-303.93	0.00	0.00	0.00
5,100.00	0.00	0.00	5,074.34	-303.46	122.61	-303.93	0.00	0.00	0.00
5,200.00	0.00	0.00	5,174.34	-303.46	122.61	-303.93	0.00	0.00	0.00
5,300.00	0.00	0.00	5,274.34	-303.46	122.61	-303.93	0.00	0.00	0.00
5,400.00	0.00	0.00	5,374.34	-303.46	122.61	-303.93	0.00	0.00	0.00
5,500.00	0.00	0.00	5,474.34	-303.46	122.61	-303.93	0.00	0.00	0.00
5,600.00	0.00	0.00	5,574.34	-303.46	122.61	-303.93	0.00	0.00	0.00
5,700.00	0.00	0.00	5,674.34	-303.46	122.61	-303.93	0.00	0.00	0.00
5,800.00	0.00	0.00	5,774.34	-303.46	122.61	-303.93	0.00	0.00	0.00
5,900.00	0.00	0.00	5,874.34	-303.46	122.61	-303.93	0.00	0.00	0.00
6,000.00	0.00	0.00	5,974.34	-303.46	122.61	-303.93	0.00	0.00	0.00
6,100.00	0.00	0.00	6,074.34	-303.46	122.61	-303.93	0.00	0.00	0.00
6,200.00	0.00	0.00	6,174.34	-303.46	122.61	-303.93	0.00	0.00	0.00
6,300.00	0.00	0.00	6,274.34	-303.46	122.61	-303.93	0.00	0.00	0.00
6,373.66	0.00	0.00	6,348.00	-303.46	122.61	-303.93	0.00	0.00	0.00
Fox Hills									
6,400.00	0.00	0.00	6,374.34	-303.46	122.61	-303.93	0.00	0.00	0.00
6,500.00	0.00	0.00	6,474.34	-303.46	122.61	-303.93	0.00	0.00	0.00
6,600.00	0.00	0.00	6,574.34	-303.46	122.61	-303.93	0.00	0.00	0.00
6,700.00	0.00	0.00	6,674.34	-303.46	122.61	-303.93	0.00	0.00	0.00
6,800.00	0.00	0.00	6,774.34	-303.46	122.61	-303.93	0.00	0.00	0.00
6,900.00	0.00	0.00	6,874.34	-303.46	122.61	-303.93	0.00	0.00	0.00
6,998.05	0.00	0.00	6,972.39	-303.46	122.61	-303.93	0.00	0.00	0.00
KOP @ 6998.05ft									
7,000.00	0.18	359.78	6,974.34	-303.46	122.61	-303.93	9.02	9.02	0.00
7,100.00	9.18	359.78	7,073.90	-295.32	122.58	-295.79	9.00	9.00	0.00
7,200.00	18.18	359.78	7,170.97	-271.70	122.48	-272.17	9.00	9.00	0.00
7,230.82	20.95	359.78	7,200.00	-261.38	122.44	-261.85	9.00	9.00	0.00
Sharon Springs									
7,257.81	23.38	359.78	7,225.00	-251.20	122.40	-251.67	9.00	9.00	0.00
Niobrara									
7,300.00	27.18	359.78	7,263.14	-233.19	122.33	-233.65	9.00	9.00	0.00
7,400.00	36.18	359.78	7,348.16	-180.73	122.13	-181.20	9.00	9.00	0.00
7,406.02	36.72	359.78	7,353.00	-177.15	122.11	-177.62	9.00	9.00	0.00
Nio B									
7,500.00	45.18	359.78	7,423.92	-115.62	121.87	-116.09	9.00	9.00	0.00
DLS = 9°/100'									
7,504.38	45.57	359.78	7,427.00	-112.50	121.86	-112.97	9.00	9.00	0.00
Nio C									

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Survey Report

Company:	US ROCKIES WATTENBERG PLANNING	Local Co-ordinate Reference:	Well MARRS 28C-10HZ
Project:	WELD-NAD83-UTMFT13N	TVD Reference:	RKB = 17' @ 4998.00usft (D Rig)
Site:	1N-67W-22 Marrs 6-22HZ Pad	MD Reference:	RKB = 17' @ 4998.00usft (D Rig)
Well:	MARRS 28C-10HZ	North Reference:	True
Wellbore:	Plan A	Survey Calculation Method:	Minimum Curvature
Design:	Permit Rev-1	Database:	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)
7,600.00	54.18	359.78	7,488.56	-39.46	121.58	-39.93	9.00	9.00	0.00
7,700.00	63.18	359.78	7,540.50	45.88	121.24	45.41	9.00	9.00	0.00
7,733.94	66.23	359.78	7,555.00	76.56	121.12	76.09	9.00	9.00	0.00
Ft. Hayes									
7,800.00	72.18	359.78	7,578.44	138.29	120.88	137.82	9.00	9.00	0.00
7,900.00	81.18	359.78	7,601.47	235.49	120.50	235.03	9.00	9.00	0.00
7,926.62	83.57	359.78	7,605.00	261.88	120.40	261.41	9.00	9.00	0.00
Codell									
7,996.09	89.82	359.78	7,609.00	331.20	120.13	330.73	9.00	9.00	0.00
End Build @ 7996.09ft - Top of Production									
8,000.00	89.82	359.78	7,609.01	335.11	120.11	334.64	0.01	0.01	0.00
8,100.00	89.82	359.78	7,609.32	435.10	119.72	434.64	0.00	0.00	0.00
8,200.00	89.82	359.78	7,609.62	535.10	119.33	534.64	0.00	0.00	0.00
8,300.00	89.82	359.78	7,609.93	635.10	118.94	634.64	0.00	0.00	0.00
8,400.00	89.82	359.78	7,610.24	735.10	118.55	734.64	0.00	0.00	0.00
8,500.00	89.82	359.78	7,610.54	835.10	118.16	834.64	0.00	0.00	0.00
8,600.00	89.82	359.78	7,610.85	935.10	117.77	934.64	0.00	0.00	0.00
8,700.00	89.82	359.78	7,611.16	1,035.10	117.37	1,034.64	0.00	0.00	0.00
8,800.00	89.82	359.78	7,611.46	1,135.10	116.98	1,134.64	0.00	0.00	0.00
8,900.00	89.82	359.78	7,611.77	1,235.09	116.59	1,234.64	0.00	0.00	0.00
9,000.00	89.82	359.78	7,612.08	1,335.09	116.20	1,334.64	0.00	0.00	0.00
9,100.00	89.82	359.78	7,612.38	1,435.09	115.81	1,434.64	0.00	0.00	0.00
9,200.00	89.82	359.78	7,612.69	1,535.09	115.42	1,534.64	0.00	0.00	0.00
9,300.00	89.82	359.78	7,613.00	1,635.09	115.03	1,634.64	0.00	0.00	0.00
9,400.00	89.82	359.78	7,613.30	1,735.09	114.64	1,734.64	0.00	0.00	0.00
9,500.00	89.82	359.78	7,613.61	1,835.09	114.25	1,834.63	0.00	0.00	0.00
9,600.00	89.82	359.78	7,613.92	1,935.09	113.86	1,934.63	0.00	0.00	0.00
9,700.00	89.82	359.78	7,614.22	2,035.08	113.47	2,034.63	0.00	0.00	0.00
9,800.00	89.82	359.78	7,614.53	2,135.08	113.08	2,134.63	0.00	0.00	0.00
9,900.00	89.82	359.78	7,614.84	2,235.08	112.68	2,234.63	0.00	0.00	0.00
10,000.00	89.82	359.78	7,615.14	2,335.08	112.29	2,334.63	0.00	0.00	0.00
10,100.00	89.82	359.78	7,615.45	2,435.08	111.90	2,434.63	0.00	0.00	0.00
10,200.00	89.82	359.78	7,615.76	2,535.08	111.51	2,534.63	0.00	0.00	0.00
10,300.00	89.82	359.78	7,616.06	2,635.08	111.12	2,634.63	0.00	0.00	0.00
10,400.00	89.82	359.78	7,616.37	2,735.08	110.73	2,734.63	0.00	0.00	0.00
10,500.00	89.82	359.78	7,616.68	2,835.07	110.34	2,834.63	0.00	0.00	0.00
10,600.00	89.82	359.78	7,616.98	2,935.07	109.95	2,934.63	0.00	0.00	0.00
10,700.00	89.82	359.78	7,617.29	3,035.07	109.56	3,034.63	0.00	0.00	0.00
10,800.00	89.82	359.78	7,617.60	3,135.07	109.17	3,134.63	0.00	0.00	0.00
10,900.00	89.82	359.78	7,617.90	3,235.07	108.78	3,234.63	0.00	0.00	0.00
11,000.00	89.82	359.78	7,618.21	3,335.07	108.39	3,334.63	0.00	0.00	0.00
11,100.00	89.82	359.78	7,618.52	3,435.07	107.99	3,434.63	0.00	0.00	0.00
11,200.00	89.82	359.78	7,618.82	3,535.07	107.60	3,534.63	0.00	0.00	0.00
11,300.00	89.82	359.78	7,619.13	3,635.06	107.21	3,634.63	0.00	0.00	0.00

Anadarko

Survey Report

Company:	US ROCKIES WATTENBERG PLANNING	Local Co-ordinate Reference:	Well MARRS 28C-10HZ
Project:	WELD-NAD83-UTMFT13N	TVD Reference:	RKB = 17' @ 4998.00usft (D Rig)
Site:	1N-67W-22 Marrs 6-22HZ Pad	MD Reference:	RKB = 17' @ 4998.00usft (D Rig)
Well:	MARRS 28C-10HZ	North Reference:	True
Wellbore:	Plan A	Survey Calculation Method:	Minimum Curvature
Design:	Permit Rev-1	Database:	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)
11,400.00	89.82	359.78	7,619.44	3,735.06	106.82	3,734.63	0.00	0.00	0.00
11,500.00	89.82	359.78	7,619.74	3,835.06	106.43	3,834.63	0.00	0.00	0.00
11,600.00	89.82	359.78	7,620.05	3,935.06	106.04	3,934.62	0.00	0.00	0.00
11,700.00	89.82	359.78	7,620.36	4,035.06	105.65	4,034.62	0.00	0.00	0.00
11,800.00	89.82	359.78	7,620.66	4,135.06	105.26	4,134.62	0.00	0.00	0.00
11,900.00	89.82	359.78	7,620.97	4,235.06	104.87	4,234.62	0.00	0.00	0.00
12,000.00	89.82	359.78	7,621.28	4,335.06	104.48	4,334.62	0.00	0.00	0.00
12,100.00	89.82	359.78	7,621.58	4,435.05	104.09	4,434.62	0.00	0.00	0.00
12,200.00	89.82	359.78	7,621.89	4,535.05	103.69	4,534.62	0.00	0.00	0.00
12,300.00	89.82	359.78	7,622.20	4,635.05	103.30	4,634.62	0.00	0.00	0.00
12,400.00	89.82	359.78	7,622.50	4,735.05	102.91	4,734.62	0.00	0.00	0.00
12,500.00	89.82	359.78	7,622.81	4,835.05	102.52	4,834.62	0.00	0.00	0.00
12,600.00	89.82	359.78	7,623.12	4,935.05	102.13	4,934.62	0.00	0.00	0.00
12,700.00	89.82	359.78	7,623.42	5,035.05	101.74	5,034.62	0.00	0.00	0.00
12,800.00	89.82	359.78	7,623.73	5,135.05	101.35	5,134.62	0.00	0.00	0.00
12,900.00	89.82	359.78	7,624.04	5,235.04	100.96	5,234.62	0.00	0.00	0.00
13,000.00	89.82	359.78	7,624.34	5,335.04	100.57	5,334.62	0.00	0.00	0.00
13,100.00	89.82	359.78	7,624.65	5,435.04	100.18	5,434.62	0.00	0.00	0.00
13,200.00	89.82	359.78	7,624.96	5,535.04	99.79	5,534.62	0.00	0.00	0.00
13,300.00	89.82	359.78	7,625.26	5,635.04	99.40	5,634.62	0.00	0.00	0.00
13,400.00	89.82	359.78	7,625.57	5,735.04	99.00	5,734.62	0.00	0.00	0.00
13,500.00	89.82	359.78	7,625.88	5,835.04	98.61	5,834.62	0.00	0.00	0.00
13,600.00	89.82	359.78	7,626.18	5,935.04	98.22	5,934.62	0.00	0.00	0.00
13,700.00	89.82	359.78	7,626.49	6,035.04	97.83	6,034.61	0.00	0.00	0.00
13,800.00	89.82	359.78	7,626.80	6,135.03	97.44	6,134.61	0.00	0.00	0.00
13,900.00	89.82	359.78	7,627.10	6,235.03	97.05	6,234.61	0.00	0.00	0.00
14,000.00	89.82	359.78	7,627.41	6,335.03	96.66	6,334.61	0.00	0.00	0.00
14,100.00	89.82	359.78	7,627.72	6,435.03	96.27	6,434.61	0.00	0.00	0.00
14,200.00	89.82	359.78	7,628.02	6,535.03	95.88	6,534.61	0.00	0.00	0.00
14,300.00	89.82	359.78	7,628.33	6,635.03	95.49	6,634.61	0.00	0.00	0.00
14,400.00	89.82	359.78	7,628.64	6,735.03	95.10	6,734.61	0.00	0.00	0.00
14,500.00	89.82	359.78	7,628.94	6,835.03	94.70	6,834.61	0.00	0.00	0.00
14,600.00	89.82	359.78	7,629.25	6,935.02	94.31	6,934.61	0.00	0.00	0.00
14,700.00	89.82	359.78	7,629.56	7,035.02	93.92	7,034.61	0.00	0.00	0.00
14,800.00	89.82	359.78	7,629.86	7,135.02	93.53	7,134.61	0.00	0.00	0.00
14,900.00	89.82	359.78	7,630.17	7,235.02	93.14	7,234.61	0.00	0.00	0.00
15,000.00	89.82	359.78	7,630.48	7,335.02	92.75	7,334.61	0.00	0.00	0.00
15,100.00	89.82	359.78	7,630.78	7,435.02	92.36	7,434.61	0.00	0.00	0.00
15,200.00	89.82	359.78	7,631.09	7,535.02	91.97	7,534.61	0.00	0.00	0.00
15,300.00	89.82	359.78	7,631.40	7,635.02	91.58	7,634.61	0.00	0.00	0.00
15,400.00	89.82	359.78	7,631.70	7,735.01	91.19	7,734.61	0.00	0.00	0.00
15,500.00	89.82	359.78	7,632.01	7,835.01	90.80	7,834.61	0.00	0.00	0.00
15,600.00	89.82	359.78	7,632.32	7,935.01	90.41	7,934.61	0.00	0.00	0.00

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Survey Report

Company:	US ROCKIES WATTENBERG PLANNING	Local Co-ordinate Reference:	Well MARRS 28C-10HZ
Project:	WELD-NAD83-UTMFT13N	TVD Reference:	RKB = 17' @ 4998.00usft (D Rig)
Site:	1N-67W-22 Marrs 6-22HZ Pad	MD Reference:	RKB = 17' @ 4998.00usft (D Rig)
Well:	MARRS 28C-10HZ	North Reference:	True
Wellbore:	Plan A	Survey Calculation Method:	Minimum Curvature
Design:	Permit Rev-1	Database:	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)
15,700.00	89.82	359.78	7,632.62	8,035.01	90.01	8,034.61	0.00	0.00	0.00
15,800.00	89.82	359.78	7,632.93	8,135.01	89.62	8,134.61	0.00	0.00	0.00
15,822.55	89.82	359.78	7,633.00	8,157.55	89.54	8,157.15	0.00	0.00	0.00
TD Well @ 15822.55ft									

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Survey Report

Company:	US ROCKIES WATTENBERG PLANNING	Local Co-ordinate Reference:	Well MARRS 28C-10HZ
Project:	WELD-NAD83-UTMFT13N	TVD Reference:	RKB = 17' @ 4998.00usft (D Rig)
Site:	1N-67W-22 Marrs 6-22HZ Pad	MD Reference:	RKB = 17' @ 4998.00usft (D Rig)
Well:	MARRS 28C-10HZ	North Reference:	True
Wellbore:	Plan A	Survey Calculation Method:	Minimum Curvature
Design:	Permit Rev-1	Database:	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 28C-10HZ_Hee	0.00	0.00	0.00	340.11	132.67	14,540,959.63	1,674,408.38	40.039004	-104.878554
- plan misses target center by 365.07usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Point									
MARRS 28C-10HZ_SHL	0.00	0.00	0.00	0.00	0.00	14,540,619.34	1,674,276.17	40.038070	-104.879028
- plan hits target center									
- Point									
MARRS 28C-10HZ_Har	0.00	0.00	0.00	0.00	0.00	14,540,619.34	1,674,276.17	40.038070	-104.879028
- plan hits target center									
- Polygon									
Point 1		0.00	-89.44	-223.49		14,540,529.60	1,674,052.80		
Point 2		0.00	768.27	-230.73		14,541,387.30	1,674,044.40		
Point 3		0.00	2,085.09	-241.84		14,542,704.10	1,674,031.50		
Point 4		0.00	3,403.19	-243.95		14,544,022.20	1,674,027.60		
Point 5		0.00	4,720.20	-245.56		14,545,339.20	1,674,024.20		
Point 6		0.00	6,037.60	-248.07		14,546,656.60	1,674,019.90		
Point 7		0.00	7,355.01	-250.68		14,547,974.00	1,674,015.50		
Point 8		0.00	8,215.91	-250.41		14,548,834.90	1,674,014.60		
Point 9		0.00	8,216.15	156.59		14,548,835.70	1,674,421.60		
Point 10		0.00	7,355.45	157.32		14,547,975.00	1,674,423.50		
Point 11		0.00	6,038.25	160.43		14,546,657.80	1,674,428.40		
Point 12		0.00	4,721.14	163.04		14,545,340.70	1,674,432.80		
Point 13		0.00	3,404.34	166.05		14,544,023.90	1,674,437.60		
Point 14		0.00	2,086.63	169.06		14,542,706.20	1,674,442.40		
Point 15		0.00	769.92	175.37		14,541,389.50	1,674,450.50		
Point 16		0.00	-87.58	179.51		14,540,532.00	1,674,455.80		
Point 17		0.00	-89.44	-223.49		14,540,529.60	1,674,052.80		
1N-R67W-Sec. 22_Secti	0.00	0.00	13.00	-545.43	638.88	14,540,074.78	1,674,915.79	40.036572	-104.876746
- plan misses target center by 840.03usft 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	1,677,571.74		
Point 6		13.00	-2,631.96	12.48		14,537,442.84	1,674,931.85		
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	504.47	2,528.53	14,541,127.24	1,676,804.01	40.039455	-104.869994
- plan misses target center by 2578.36usft 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		
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	7,646.68	942.12	14,548,267.29	1,675,207.90	40.059069	-104.875661
- plan misses target center by 7704.93usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 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		

Anadarko

Survey Report

Company:	US ROCKIES WATTENBERG PLANNING	Local Co-ordinate Reference:	Well MARRS 28C-10HZ
Project:	WELD-NAD83-UTMFT13N	TVD Reference:	RKB = 17' @ 4998.00usft (D Rig)
Site:	1N-67W-22 Marrs 6-22HZ Pad	MD Reference:	RKB = 17' @ 4998.00usft (D Rig)
Well:	MARRS 28C-10HZ	North Reference:	True
Wellbore:	Plan A	Survey Calculation Method:	Minimum Curvature
Design:	Permit Rev-1	Database:	PLANNING

Point 6										
Point 7										
		-82.00	-288.46	-327.65	14,547,978.39	1,674,880.65				
		-82.00	-290.97	-2,982.55	14,547,972.27	1,672,225.75				
MARRS 28C-10HZ_BHL	0.00	0.00	7,633.00	8,157.55	89.54	14,548,777.00	1,674,354.62	40.060472	-104.878708	
- 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
7,996.09	7,609.00	Top of Production		5-1/2	7-7/8

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,373.66	6,348.00	Fox Hills			
7,230.82	7,200.00	Sharon Springs			
7,257.81	7,225.00	Niobrara			
7,406.02	7,353.00	Nio B			
7,504.38	7,427.00	Nio C			
7,733.94	7,555.00	Ft. Hayes			
7,926.62	7,605.00	Codell			

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
200	200	0	0	Begin Nudge @ 200.00ft
867	863	-54	22	End Nudge @ 866.67ft
2167	2144	-263	106	Begin Drop @ 2166.67ft
2667	2641	-303	123	End Drop @ 2666.67ft
6998	6972	-303	123	KOP @ 6998.05ft
7500	7424	-116	122	DLS = 9°/100'
7996	7609	331	120	End Build @ 7996.09ft
15,823	7633	8158	90	TD Well @ 15822.55ft

Checked By: _____ Approved By: _____ Date: _____