

US ROCKIES WATTENBERG PLANNING

**WELD-NAD83-UTMFT13N
1N-67W-22 MARRS 5-22HZ
MARRS STATE 30N-10HZ**

Plan A

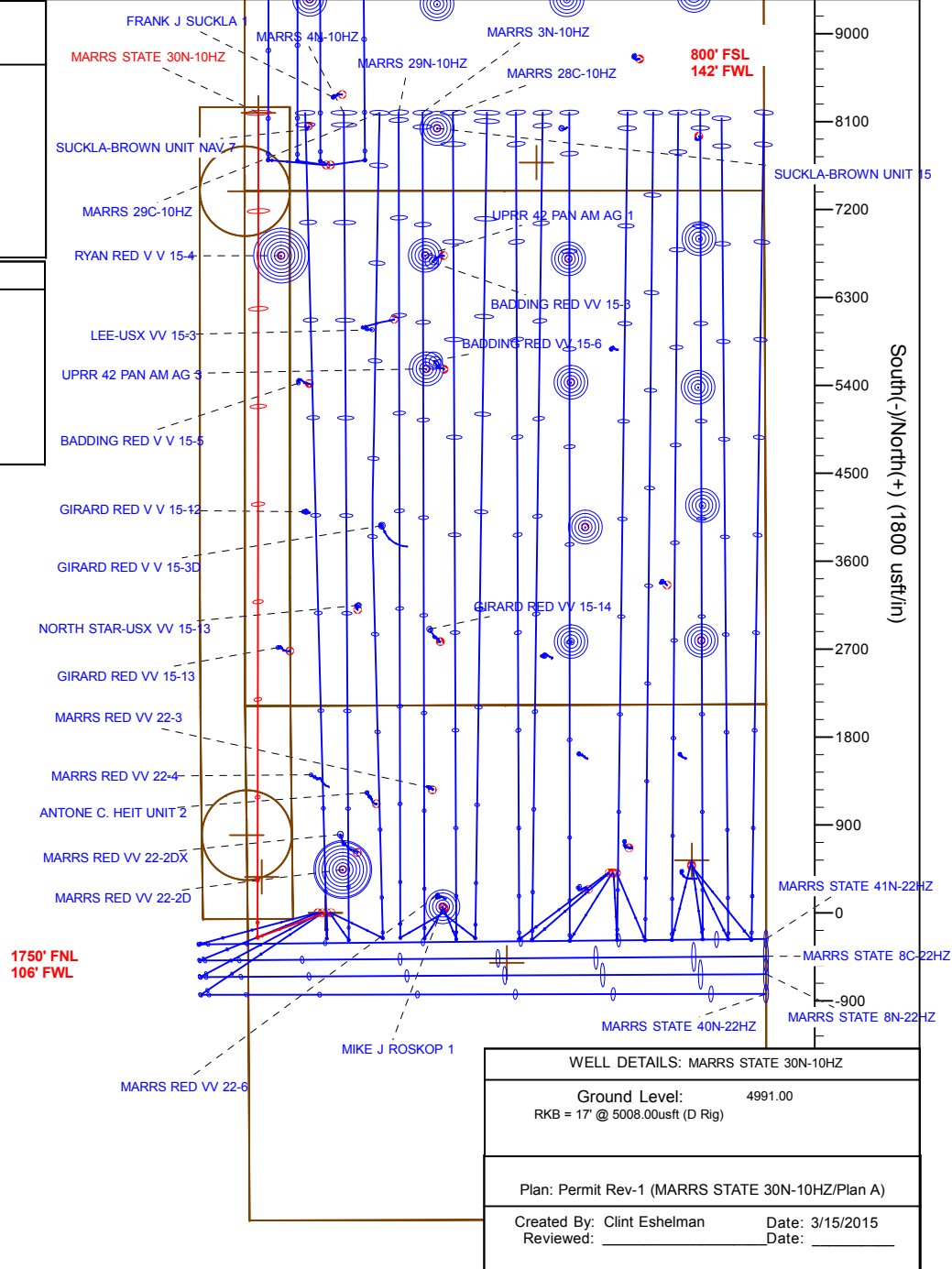
Plan: Permit Rev-1

Standard Survey Report

15 March, 2016

US ROCKIES WATTENBERG PLANNING

WELLBORE TARGET DETAILS (LAT/LONG)						
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
MARRS STATE 30N-10HZ_SHL	0.00	0.00	0.00	40.037976	-104.883370	Point
MARRS STATE 30N-10HZ_BHL	7504.00	8189.61	-682.72	40.060466	-104.885810	Point



Anadarko

Survey Report

Company:	US ROCKIES WATTENBERG PLANNING	Local Co-ordinate Reference:	Well MARRS STATE 30N-10HZ
Project:	WELD-NAD83-UTMFT13N	TVD Reference:	RKB = 17' @ 5008.00usft (D Rig)
Site:	1N-67W-22 MARRS 5-22HZ	MD Reference:	RKB = 17' @ 5008.00usft (D Rig)
Well:	MARRS STATE 30N-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 5-22HZ						
Site Position:		Northing:	14,540,583.73	usft	Latitude:	40.037977		
From:	Lat/Long	Easting:	1,672,971.06	usft	Longitude:	-104.883691		
Position Uncertainty:	0.00	usft	Slot Radius:	13-3/16	"	Grid Convergence:	0.07	°

Well		MARRS STATE 30N-10HZ				
Well Position	+N/-S	0.00 usft	Northing:	14,540,583.48 usft	Latitude:	40.037976
	+E/-W	0.00 usft	Easting:	1,673,060.91 usft	Longitude:	-104.883370
Position Uncertainty		3.28 usft	Wellhead Elevation:	0.00 usft	Ground Level:	4,991.00 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		0.06

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	15,705.66	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	250.00	299.99	-0.45	-1.23	-0.45	1.50	1.50	0.00	
400.00	3.00	250.00	399.91	-1.79	-4.92	-1.80	1.50	1.50	0.00	
500.00	4.50	250.00	499.69	-4.03	-11.06	-4.04	1.50	1.50	0.00	
600.00	6.00	250.00	599.27	-7.16	-19.66	-7.18	1.50	1.50	0.00	
700.00	7.50	250.00	698.57	-11.18	-30.71	-11.21	1.50	1.50	0.00	
800.00	9.00	250.00	797.54	-16.08	-44.19	-16.13	1.50	1.50	0.00	

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Survey Report

Company:	US ROCKIES WATTENBERG PLANNING	Local Co-ordinate Reference:	Well MARRS STATE 30N-10HZ
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Site:	1N-67W-22 MARRS 5-22HZ	MD Reference:	RKB = 17' @ 5008.00usft (D Rig)
Well:	MARRS STATE 30N-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)
900.00	10.50	250.00	896.09	-21.88	-60.10	-21.94	1.50	1.50	0.00
1,000.00	12.00	250.00	994.16	-28.55	-78.44	-28.63	1.50	1.50	0.00
End Nudge @ 1000.00ft									
1,100.00	12.00	250.00	1,091.98	-35.66	-97.97	-35.76	0.00	0.00	0.00
1,200.00	12.00	250.00	1,189.79	-42.77	-117.51	-42.89	0.00	0.00	0.00
1,300.00	12.00	250.00	1,287.61	-49.88	-137.05	-50.02	0.00	0.00	0.00
1,400.00	12.00	250.00	1,385.42	-56.99	-156.59	-57.16	0.00	0.00	0.00
1,500.00	12.00	250.00	1,483.24	-64.10	-176.12	-64.29	0.00	0.00	0.00
1,600.00	12.00	250.00	1,581.05	-71.21	-195.66	-71.42	0.00	0.00	0.00
1,700.00	12.00	250.00	1,678.87	-78.33	-215.20	-78.55	0.00	0.00	0.00
1,800.00	12.00	250.00	1,776.68	-85.44	-234.73	-85.68	0.00	0.00	0.00
1,823.84	12.00	250.00	1,800.00	-87.13	-239.39	-87.38	0.00	0.00	0.00
9 5/8"									
1,900.00	12.00	250.00	1,874.50	-92.55	-254.27	-92.81	0.00	0.00	0.00
2,000.00	12.00	250.00	1,972.31	-99.66	-273.81	-99.95	0.00	0.00	0.00
2,100.00	12.00	250.00	2,070.13	-106.77	-293.35	-107.08	0.00	0.00	0.00
2,200.00	12.00	250.00	2,167.94	-113.88	-312.88	-114.21	0.00	0.00	0.00
2,300.00	12.00	250.00	2,265.76	-120.99	-332.42	-121.34	0.00	0.00	0.00
2,400.00	12.00	250.00	2,363.57	-128.10	-351.96	-128.47	0.00	0.00	0.00
2,500.00	12.00	250.00	2,461.39	-135.21	-371.50	-135.60	0.00	0.00	0.00
2,600.00	12.00	250.00	2,559.20	-142.32	-391.03	-142.73	0.00	0.00	0.00
2,700.00	12.00	250.00	2,657.02	-149.44	-410.57	-149.87	0.00	0.00	0.00
2,800.00	12.00	250.00	2,754.83	-156.55	-430.11	-157.00	0.00	0.00	0.00
2,900.00	12.00	250.00	2,852.64	-163.66	-449.65	-164.13	0.00	0.00	0.00
3,000.00	12.00	250.00	2,950.46	-170.77	-469.18	-171.26	0.00	0.00	0.00
3,100.00	12.00	250.00	3,048.27	-177.88	-488.72	-178.39	0.00	0.00	0.00
3,200.00	12.00	250.00	3,146.09	-184.99	-508.26	-185.52	0.00	0.00	0.00
3,300.00	12.00	250.00	3,243.90	-192.10	-527.79	-192.65	0.00	0.00	0.00
3,400.00	12.00	250.00	3,341.72	-199.21	-547.33	-199.79	0.00	0.00	0.00
3,500.00	12.00	250.00	3,439.53	-206.32	-566.87	-206.92	0.00	0.00	0.00
3,600.00	12.00	250.00	3,537.35	-213.43	-586.41	-214.05	0.00	0.00	0.00
3,700.00	12.00	250.00	3,635.16	-220.55	-605.94	-221.18	0.00	0.00	0.00
3,800.00	12.00	250.00	3,732.98	-227.66	-625.48	-228.31	0.00	0.00	0.00
3,840.00	12.00	250.00	3,772.10	-230.50	-633.30	-231.16	0.00	0.00	0.00
Begin Drop @ 3840.00ft									
3,900.00	10.80	250.00	3,830.92	-234.56	-644.44	-235.23	2.00	-2.00	0.00
4,000.00	8.80	250.00	3,929.45	-240.38	-660.43	-241.07	2.00	-2.00	0.00
4,100.00	6.80	250.00	4,028.52	-245.02	-673.19	-245.72	2.00	-2.00	0.00
4,200.00	4.80	250.00	4,128.01	-248.48	-682.68	-249.19	2.00	-2.00	0.00
4,300.00	2.80	250.00	4,227.78	-250.74	-688.91	-251.46	2.00	-2.00	0.00
4,400.00	0.80	250.00	4,327.73	-251.82	-691.86	-252.54	2.00	-2.00	0.00
4,440.00	0.00	0.00	4,367.73	-251.91	-692.12	-252.64	2.00	-2.00	0.00
End Drop @ 4440.00ft									
4,500.00	0.00	0.00	4,427.73	-251.91	-692.12	-252.64	0.00	0.00	0.00

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Survey Report

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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)
4,600.00	0.00	0.00	4,527.73	-251.91	-692.12	-252.64	0.00	0.00	0.00
4,700.00	0.00	0.00	4,627.73	-251.91	-692.12	-252.64	0.00	0.00	0.00
4,800.00	0.00	0.00	4,727.73	-251.91	-692.12	-252.64	0.00	0.00	0.00
4,900.00	0.00	0.00	4,827.73	-251.91	-692.12	-252.64	0.00	0.00	0.00
5,000.00	0.00	0.00	4,927.73	-251.91	-692.12	-252.64	0.00	0.00	0.00
5,100.00	0.00	0.00	5,027.73	-251.91	-692.12	-252.64	0.00	0.00	0.00
5,200.00	0.00	0.00	5,127.73	-251.91	-692.12	-252.64	0.00	0.00	0.00
5,300.00	0.00	0.00	5,227.73	-251.91	-692.12	-252.64	0.00	0.00	0.00
5,400.00	0.00	0.00	5,327.73	-251.91	-692.12	-252.64	0.00	0.00	0.00
5,500.00	0.00	0.00	5,427.73	-251.91	-692.12	-252.64	0.00	0.00	0.00
5,600.00	0.00	0.00	5,527.73	-251.91	-692.12	-252.64	0.00	0.00	0.00
5,700.00	0.00	0.00	5,627.73	-251.91	-692.12	-252.64	0.00	0.00	0.00
5,800.00	0.00	0.00	5,727.73	-251.91	-692.12	-252.64	0.00	0.00	0.00
5,900.00	0.00	0.00	5,827.73	-251.91	-692.12	-252.64	0.00	0.00	0.00
6,000.00	0.00	0.00	5,927.73	-251.91	-692.12	-252.64	0.00	0.00	0.00
6,100.00	0.00	0.00	6,027.73	-251.91	-692.12	-252.64	0.00	0.00	0.00
6,200.00	0.00	0.00	6,127.73	-251.91	-692.12	-252.64	0.00	0.00	0.00
6,300.00	0.00	0.00	6,227.73	-251.91	-692.12	-252.64	0.00	0.00	0.00
6,400.00	0.00	0.00	6,327.73	-251.91	-692.12	-252.64	0.00	0.00	0.00
6,430.27	0.00	0.00	6,358.00	-251.91	-692.12	-252.64	0.00	0.00	0.00
Fox Hills									
6,500.00	0.00	0.00	6,427.73	-251.91	-692.12	-252.64	0.00	0.00	0.00
6,600.00	0.00	0.00	6,527.73	-251.91	-692.12	-252.64	0.00	0.00	0.00
6,700.00	0.00	0.00	6,627.73	-251.91	-692.12	-252.64	0.00	0.00	0.00
6,800.00	0.00	0.00	6,727.73	-251.91	-692.12	-252.64	0.00	0.00	0.00
6,900.00	0.00	0.00	6,827.73	-251.91	-692.12	-252.64	0.00	0.00	0.00
6,900.66	0.00	0.00	6,828.39	-251.91	-692.12	-252.64	0.00	0.00	0.00
KOP @ 6900.66ft									
7,000.00	8.94	0.06	6,927.32	-244.18	-692.11	-244.90	9.00	9.00	0.06
7,100.00	17.94	0.06	7,024.49	-220.96	-692.09	-221.68	9.00	9.00	0.00
7,200.00	26.94	0.06	7,116.82	-182.82	-692.05	-183.55	9.00	9.00	0.00
7,300.00	35.94	0.06	7,202.05	-130.72	-691.99	-131.44	9.00	9.00	0.00
7,362.81	41.59	0.06	7,251.00	-91.40	-691.94	-92.13	9.00	9.00	0.00
Sharon Springs									
7,397.07	44.68	0.06	7,276.00	-67.98	-691.92	-68.71	9.00	9.00	0.00
Niobrara									
7,400.00	44.94	0.06	7,278.08	-65.92	-691.92	-66.64	9.00	9.00	0.00
DLS = 9°/100'									
7,500.00	53.94	0.06	7,343.03	9.98	-691.83	9.25	9.00	9.00	0.00
7,580.12	61.15	0.06	7,386.00	77.54	-691.76	76.82	9.00	9.00	0.00
Nio B									
7,600.00	62.94	0.06	7,395.32	95.10	-691.74	94.38	9.00	9.00	0.00
7,700.00	71.94	0.06	7,433.64	187.35	-691.63	186.63	9.00	9.00	0.00
7,776.83	78.85	0.06	7,453.00	261.65	-691.55	260.93	9.00	9.00	0.00

Anadarko

Survey Report

Company:	US ROCKIES WATTENBERG PLANNING	Local Co-ordinate Reference:	Well MARRS STATE 30N-10HZ
Project:	WELD-NAD83-UTMFT13N	TVD Reference:	RKB = 17' @ 5008.00usft (D Rig)
Site:	1N-67W-22 MARRS 5-22HZ	MD Reference:	RKB = 17' @ 5008.00usft (D Rig)
Well:	MARRS STATE 30N-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)
Nio C									
7,800.00	80.94	0.06	7,457.06	284.47	-691.53	283.74	9.00	9.00	0.00
7,897.48	89.71	0.06	7,465.00	381.53	-691.42	380.80	9.00	9.00	0.00
End Build @ 7897.48ft - Top of Production									
7,900.00	89.71	0.06	7,465.01	384.05	-691.41	383.32	0.00	0.00	0.00
8,000.00	89.71	0.06	7,465.51	484.05	-691.30	483.32	0.00	0.00	0.00
8,100.00	89.71	0.06	7,466.01	584.04	-691.19	583.32	0.00	0.00	0.00
8,200.00	89.71	0.06	7,466.51	684.04	-691.08	683.32	0.00	0.00	0.00
8,300.00	89.71	0.06	7,467.01	784.04	-690.97	783.32	0.00	0.00	0.00
8,400.00	89.71	0.06	7,467.51	884.04	-690.86	883.32	0.00	0.00	0.00
8,500.00	89.71	0.06	7,468.01	984.04	-690.75	983.32	0.00	0.00	0.00
8,600.00	89.71	0.06	7,468.51	1,084.04	-690.64	1,083.31	0.00	0.00	0.00
8,700.00	89.71	0.06	7,469.01	1,184.04	-690.52	1,183.31	0.00	0.00	0.00
8,800.00	89.71	0.06	7,469.51	1,284.04	-690.41	1,283.31	0.00	0.00	0.00
8,900.00	89.71	0.06	7,470.01	1,384.03	-690.30	1,383.31	0.00	0.00	0.00
9,000.00	89.71	0.06	7,470.51	1,484.03	-690.19	1,483.31	0.00	0.00	0.00
9,100.00	89.71	0.06	7,471.01	1,584.03	-690.08	1,583.31	0.00	0.00	0.00
9,200.00	89.71	0.06	7,471.50	1,684.03	-689.97	1,683.31	0.00	0.00	0.00
9,300.00	89.71	0.06	7,472.00	1,784.03	-689.86	1,783.31	0.00	0.00	0.00
9,400.00	89.71	0.06	7,472.50	1,884.03	-689.74	1,883.30	0.00	0.00	0.00
9,500.00	89.71	0.06	7,473.00	1,984.03	-689.63	1,983.30	0.00	0.00	0.00
9,600.00	89.71	0.06	7,473.50	2,084.03	-689.52	2,083.30	0.00	0.00	0.00
9,700.00	89.71	0.06	7,474.00	2,184.02	-689.41	2,183.30	0.00	0.00	0.00
9,800.00	89.71	0.06	7,474.50	2,284.02	-689.30	2,283.30	0.00	0.00	0.00
9,900.00	89.71	0.06	7,475.00	2,384.02	-689.19	2,383.30	0.00	0.00	0.00
10,000.00	89.71	0.06	7,475.50	2,484.02	-689.08	2,483.30	0.00	0.00	0.00
10,100.00	89.71	0.06	7,476.00	2,584.02	-688.97	2,583.30	0.00	0.00	0.00
10,200.00	89.71	0.06	7,476.50	2,684.02	-688.85	2,683.29	0.00	0.00	0.00
10,300.00	89.71	0.06	7,477.00	2,784.02	-688.74	2,783.29	0.00	0.00	0.00
10,400.00	89.71	0.06	7,477.50	2,884.01	-688.63	2,883.29	0.00	0.00	0.00
10,500.00	89.71	0.06	7,478.00	2,984.01	-688.52	2,983.29	0.00	0.00	0.00
10,600.00	89.71	0.06	7,478.50	3,084.01	-688.41	3,083.29	0.00	0.00	0.00
10,700.00	89.71	0.06	7,479.00	3,184.01	-688.30	3,183.29	0.00	0.00	0.00
10,800.00	89.71	0.06	7,479.50	3,284.01	-688.19	3,283.29	0.00	0.00	0.00
10,900.00	89.71	0.06	7,480.00	3,384.01	-688.07	3,383.29	0.00	0.00	0.00
11,000.00	89.71	0.06	7,480.50	3,484.01	-687.96	3,483.28	0.00	0.00	0.00
11,100.00	89.71	0.06	7,480.99	3,584.01	-687.85	3,583.28	0.00	0.00	0.00
11,200.00	89.71	0.06	7,481.49	3,684.00	-687.74	3,683.28	0.00	0.00	0.00
11,300.00	89.71	0.06	7,481.99	3,784.00	-687.63	3,783.28	0.00	0.00	0.00
11,400.00	89.71	0.06	7,482.49	3,884.00	-687.52	3,883.28	0.00	0.00	0.00
11,500.00	89.71	0.06	7,482.99	3,984.00	-687.41	3,983.28	0.00	0.00	0.00
11,600.00	89.71	0.06	7,483.49	4,084.00	-687.30	4,083.28	0.00	0.00	0.00
11,700.00	89.71	0.06	7,483.99	4,184.00	-687.18	4,183.28	0.00	0.00	0.00
11,800.00	89.71	0.06	7,484.49	4,284.00	-687.07	4,283.27	0.00	0.00	0.00

Anadarko

Survey Report

Company:	US ROCKIES WATTENBERG PLANNING	Local Co-ordinate Reference:	Well MARRS STATE 30N-10HZ
Project:	WELD-NAD83-UTMFT13N	TVD Reference:	RKB = 17' @ 5008.00usft (D Rig)
Site:	1N-67W-22 MARRS 5-22HZ	MD Reference:	RKB = 17' @ 5008.00usft (D Rig)
Well:	MARRS STATE 30N-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)
11,900.00	89.71	0.06	7,484.99	4,384.00	-686.96	4,383.27	0.00	0.00	0.00
12,000.00	89.71	0.06	7,485.49	4,483.99	-686.85	4,483.27	0.00	0.00	0.00
12,100.00	89.71	0.06	7,485.99	4,583.99	-686.74	4,583.27	0.00	0.00	0.00
12,200.00	89.71	0.06	7,486.49	4,683.99	-686.63	4,683.27	0.00	0.00	0.00
12,300.00	89.71	0.06	7,486.99	4,783.99	-686.52	4,783.27	0.00	0.00	0.00
12,400.00	89.71	0.06	7,487.49	4,883.99	-686.40	4,883.27	0.00	0.00	0.00
12,500.00	89.71	0.06	7,487.99	4,983.99	-686.29	4,983.27	0.00	0.00	0.00
12,600.00	89.71	0.06	7,488.49	5,083.99	-686.18	5,083.26	0.00	0.00	0.00
12,700.00	89.71	0.06	7,488.99	5,183.98	-686.07	5,183.26	0.00	0.00	0.00
12,800.00	89.71	0.06	7,489.49	5,283.98	-685.96	5,283.26	0.00	0.00	0.00
12,900.00	89.71	0.06	7,489.99	5,383.98	-685.85	5,383.26	0.00	0.00	0.00
13,000.00	89.71	0.06	7,490.49	5,483.98	-685.74	5,483.26	0.00	0.00	0.00
13,100.00	89.71	0.06	7,490.98	5,583.98	-685.63	5,583.26	0.00	0.00	0.00
13,200.00	89.71	0.06	7,491.48	5,683.98	-685.51	5,683.26	0.00	0.00	0.00
13,300.00	89.71	0.06	7,491.98	5,783.98	-685.40	5,783.26	0.00	0.00	0.00
13,400.00	89.71	0.06	7,492.48	5,883.98	-685.29	5,883.25	0.00	0.00	0.00
13,500.00	89.71	0.06	7,492.98	5,983.97	-685.18	5,983.25	0.00	0.00	0.00
13,600.00	89.71	0.06	7,493.48	6,083.97	-685.07	6,083.25	0.00	0.00	0.00
13,700.00	89.71	0.06	7,493.98	6,183.97	-684.96	6,183.25	0.00	0.00	0.00
13,800.00	89.71	0.06	7,494.48	6,283.97	-684.85	6,283.25	0.00	0.00	0.00
13,900.00	89.71	0.06	7,494.98	6,383.97	-684.73	6,383.25	0.00	0.00	0.00
14,000.00	89.71	0.06	7,495.48	6,483.97	-684.62	6,483.25	0.00	0.00	0.00
14,100.00	89.71	0.06	7,495.98	6,583.97	-684.51	6,583.25	0.00	0.00	0.00
14,200.00	89.71	0.06	7,496.48	6,683.96	-684.40	6,683.24	0.00	0.00	0.00
14,300.00	89.71	0.06	7,496.98	6,783.96	-684.29	6,783.24	0.00	0.00	0.00
14,400.00	89.71	0.06	7,497.48	6,883.96	-684.18	6,883.24	0.00	0.00	0.00
14,500.00	89.71	0.06	7,497.98	6,983.96	-684.07	6,983.24	0.00	0.00	0.00
14,600.00	89.71	0.06	7,498.48	7,083.96	-683.95	7,083.24	0.00	0.00	0.00
14,700.00	89.71	0.06	7,498.98	7,183.96	-683.84	7,183.24	0.00	0.00	0.00
14,800.00	89.71	0.06	7,499.48	7,283.96	-683.73	7,283.24	0.00	0.00	0.00
14,900.00	89.71	0.06	7,499.98	7,383.96	-683.62	7,383.24	0.00	0.00	0.00
15,000.00	89.71	0.06	7,500.48	7,483.95	-683.51	7,483.23	0.00	0.00	0.00
15,100.00	89.71	0.06	7,500.97	7,583.95	-683.40	7,583.23	0.00	0.00	0.00
15,200.00	89.71	0.06	7,501.47	7,683.95	-683.29	7,683.23	0.00	0.00	0.00
15,300.00	89.71	0.06	7,501.97	7,783.95	-683.18	7,783.23	0.00	0.00	0.00
15,400.00	89.71	0.06	7,502.47	7,883.95	-683.06	7,883.23	0.00	0.00	0.00
15,500.00	89.71	0.06	7,502.97	7,983.95	-682.95	7,983.23	0.00	0.00	0.00
15,600.00	89.71	0.06	7,503.47	8,083.95	-682.84	8,083.23	0.00	0.00	0.00
15,700.00	89.71	0.06	7,503.97	8,183.95	-682.73	8,183.23	0.00	0.00	0.00
15,705.66	89.71	0.06	7,504.00	8,189.61	-682.72	8,188.89	0.00	0.00	0.00

TD Well @ 15705.66ft

Anadarko

Survey Report

Company:	US ROCKIES WATTENBERG PLANNING	Local Co-ordinate Reference:	Well MARRS STATE 30N-10HZ
Project:	WELD-NAD83-UTMFT13N	TVD Reference:	RKB = 17' @ 5008.00usft (D Rig)
Site:	1N-67W-22 MARRS 5-22HZ	MD Reference:	RKB = 17' @ 5008.00usft (D Rig)
Well:	MARRS STATE 30N-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 (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
MARRS STATE 30N-10H - hit/miss target - Shape	0.00	0.00	0.00	0.00	0.00	14,540,583.48	1,673,060.91	40.037976	-104.883370
- plan hits target center									
- Polygon									
Point 1		0.00	8,248.20	-1,281.71		14,548,830.00	1,671,768.40		
Point 2		0.00	8,248.39	-820.81		14,548,830.80	1,672,229.30		
Point 3		0.00	8,248.89	-361.71		14,548,831.90	1,672,688.40		
Point 4		0.00	7,387.89	-362.64		14,547,970.90	1,672,688.60		
Point 5		0.00	6,069.79	-361.26		14,546,652.80	1,672,691.70		
Point 6		0.00	4,753.19	-362.99		14,545,336.20	1,672,691.70		
Point 7		0.00	3,433.58	-358.82		14,544,016.60	1,672,697.60		
Point 8		0.00	2,115.48	-357.54		14,542,698.50	1,672,700.60		
Point 9		0.00	797.06	-341.67		14,541,380.10	1,672,718.20		
Point 10		0.00	-61.46	-331.29		14,540,521.60	1,672,729.70		
Point 11		0.00	-63.55	-791.30		14,540,518.90	1,672,269.70		
Point 12		0.00	-64.05	-1,251.30		14,540,517.80	1,671,809.70		
Point 13		0.00	794.66	-1,261.67		14,541,376.50	1,671,798.20		
Point 14		0.00	2,113.48	-1,277.54		14,542,695.30	1,671,780.60		
Point 15		0.00	3,431.99	-1,278.82		14,544,013.80	1,671,777.60		
Point 16		0.00	4,752.49	-1,282.99		14,545,334.30	1,671,771.70		
Point 17		0.00	6,068.89	-1,281.26		14,546,650.70	1,671,771.70		
Point 18		0.00	7,387.40	-1,282.64		14,547,969.20	1,671,768.60		
Point 19		0.00	8,248.20	-1,281.71		14,548,830.00	1,671,768.40		
MARRS STATE 30N-10H - plan hits target center	0.00	0.00	0.00	0.00	0.00	14,540,583.48	1,673,060.91	40.037976	-104.883370
- Point									
MARRS STATE 30N-10H - plan misses target center by 746.10usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)	0.00	0.00	0.00	367.43	-649.35	14,540,950.06	1,672,411.08	40.038985	-104.885690
- Point									
MARRS STATE 30N-10H - plan misses target center by 7433.16usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)	0.00	0.00	0.00	7,387.49	-822.64	14,547,969.90	1,672,228.60	40.058263	-104.886310
- Circle (radius 460.00)									
MARRS STATE 30N-10H - plan misses target center by 1129.14usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)	0.00	0.00	0.00	795.16	-801.67	14,541,377.60	1,672,258.20	40.040160	-104.886235
- Circle (radius 460.00)									
1N-R67W-Sec. 22_Secti - plan misses target center by 1923.37usft at 23.00usft MD (23.00 TVD, 0.00 N, 0.00 E)	0.00	0.00	23.00	-511.14	1,854.21	14,540,074.78	1,674,915.79	40.036572	-104.876746
- Polygon									
Point 1		23.00	2,627.78	-2,674.22		14,542,699.06	1,672,238.13		
Point 2		23.00	2,636.63	-12.49		14,542,711.39	1,674,899.85		
Point 3		23.00	2,645.60	2,649.28		14,542,723.85	1,677,561.60		
Point 4		23.00	9.73	2,650.67		14,540,087.98	1,677,566.44		
Point 5		23.00	-2,626.39	2,652.38		14,537,451.87	1,677,571.61		
Point 6		23.00	-2,631.96	12.48		14,537,442.84	1,674,931.72		
Point 7		23.00	-2,637.68	-2,626.99		14,537,433.66	1,672,292.26		
Point 8		23.00	-9.70	-2,642.90		14,540,061.62	1,672,272.90		
1N-R67W-Sec. 15_Secti - plan misses target center by 3782.39usft at 23.00usft MD (23.00 TVD, 0.00 N, 0.00 E)	0.00	0.00	23.00	538.85	3,743.81	14,541,127.24	1,676,804.01	40.039455	-104.869994
- Polygon									
Point 1		23.00	6,851.58	-4,568.26		14,547,972.83	1,672,226.78		
Point 2		23.00	6,853.93	-1,913.35		14,547,978.66	1,674,881.69		
Point 3		23.00	6,855.16	741.27		14,547,983.37	1,677,536.30		
Point 4		23.00	4,225.46	750.46		14,545,353.68	1,677,548.94		
Point 5		23.00	1,595.89	759.53		14,542,724.12	1,677,561.45		
Point 6		23.00	1,586.93	-1,902.25		14,542,711.68	1,674,899.69		
Point 7		23.00	1,578.07	-4,563.97		14,542,699.33	1,672,237.98		

Anadarko

Survey Report

Company:	US ROCKIES WATTENBERG PLANNING	Local Co-ordinate Reference:	Well MARRS STATE 30N-10HZ
Project:	WELD-NAD83-UTMFT13N	TVD Reference:	RKB = 17' @ 5008.00usft (D Rig)
Site:	1N-67W-22 MARRS 5-22HZ	MD Reference:	RKB = 17' @ 5008.00usft (D Rig)
Well:	MARRS STATE 30N-10HZ	North Reference:	True
Wellbore:	Plan A	Survey Calculation Method:	Minimum Curvature
Design:	Permit Rev-1	Database:	PLANNING

Point 8		23.00	4,213.91	-4,566.57	14,545,335.17	1,672,231.93		
1N-R67W-Sec. 10_Secti	0.00	0.00	-72.00	7,680.98	2,157.05	14,548,267.29	1,675,207.90	40.059069
- plan misses target center by 7978.44usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)								
- Polygon								
Point 1		-72.00	4,992.86	-2,976.12	14,553,256.25	1,672,225.25		
Point 2		-72.00	4,994.59	-331.69	14,553,261.44	1,674,869.67		
Point 3		-72.00	4,996.25	2,313.07	14,553,266.56	1,677,514.43		
Point 4		-72.00	2,354.63	2,320.05	14,550,624.96	1,677,524.87		
Point 5		-72.00	-287.06	2,326.97	14,547,983.28	1,677,535.25		
Point 6		-72.00	-288.46	-327.65	14,547,978.40	1,674,880.63		
Point 7		-72.00	-290.97	-2,982.55	14,547,972.41	1,672,225.74		
MARRS STATE 30N-10H	0.00	0.00	7,504.00	8,189.61	-682.72	14,548,772.19	1,672,367.46	40.060466
- plan hits target center								
- Point								

Casing Points							
Measured Depth (usft)	Vertical Depth (usft)	Name		Casing Diameter (")	Hole Diameter (")		
1,823.84	1,800.00	9 5/8"		9-5/8	13-1/2		
7,897.48	7,465.00	Top of Production		5-1/2	7-7/8		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
6,430.27	6,358.00	Fox Hills				
7,362.81	7,251.00	Sharon Springs				
7,397.07	7,276.00	Niobrara				
7,580.12	7,386.00	Nio B				
7,776.83	7,453.00	Nio C				

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	
1000	994	-29	-78	End Nudge @ 1000.00ft	
3840	3772	-231	-633	Begin Drop @ 3840.00ft	
4440	4368	-252	-692	End Drop @ 4440.00ft	
6901	6828	-252	-692	KOP @ 6900.66ft	
7400	7278	-66	-692	DLS = 9°/100'	
7897	7465	382	-691	End Build @ 7897.48ft	
15,706	7504	8190	-683	TD Well @ 15705.66ft	

Checked By: _____	Approved By: _____	Date: _____
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