

Wellbore: OH
Design: OH

PROJECT DETAILS: US Rockies Wattenberg Planning UTM83

WELL DETAILS: Marrs 28N-10HZ

Geodetic System: Universal Transverse Mercator (US Survey Feet)
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: Zone 13N (108 W to 102 W)

GL 4981' & KB 17' @ 4998.00ft (Xtreme 24) 4981.00
 Northing 14540574.19 Easting 1674275.67 Latitude 40.0379460 Longitude -104.8790300

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	Annotation
125.99	126.00	1.23	349.90	1.33	-0.24	First Total MWD Survey
1793.17	1836.00	11.21	126.92	-204.77	262.63	Last Total MWD Survey
1853.06	1897.00	10.68	125.95	-211.65	271.95	First SDI MWD Survey
6496.62	6562.00	2.66	3.37	-423.27	300.57	Curve KOP
6517.59	6583.00	3.18	4.26	-422.21	300.65	First SDI MWD Curve Survey
7205.86	7390.70	52.72	357.49	-41.73	327.48	Enter Land Box : 7390.70' MD & 7205.86' TVD
7336.08	8007.00	85.23	0.63	550.26	310.15	Last SDI MWD Curve Survey
7341.02	8067.00	85.32	0.31	610.06	310.63	Landing Point : 1526' FNL 2325' FWL Sec 22
7343.38	8096.00	85.36	0.15	638.96	310.75	First SDI MWD Lateral Survey
7366.66	8603.69	90.41	0.25	1145.82	314.65	Exit 460' Circle : 8603.69' MD & 7366.66' TVD 993' FNL 2329' FWL
7416.74	14453.81	90.77	1.10	6993.01	406.18	Enter 460' Circle : 14453.81' MD & 7416.74' TVD 409' FNL 2446' FWL
7405.02	15603.00	93.12	358.95	8141.55	430.71	Last SDI MWD Survey
7401.75	15663.00	93.12	358.95	8201.45	429.61	Projection to TD : 799' FSL 2470' FWL Sec 10

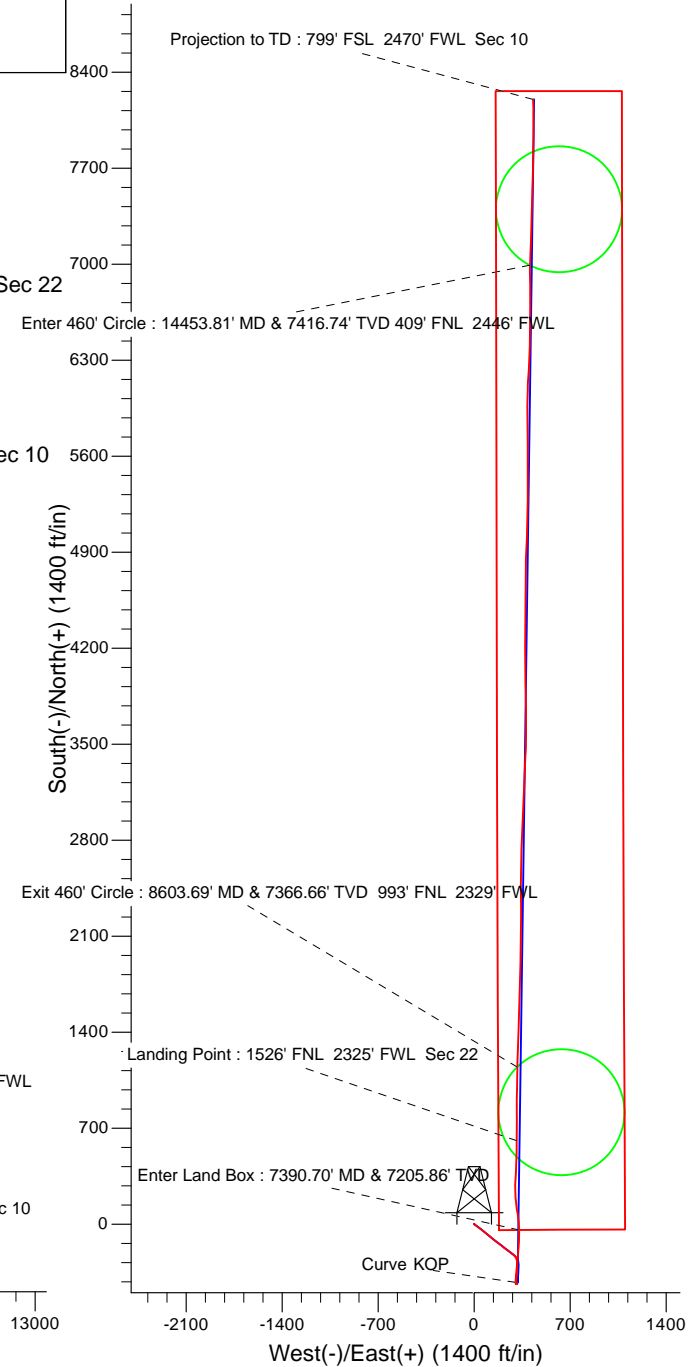
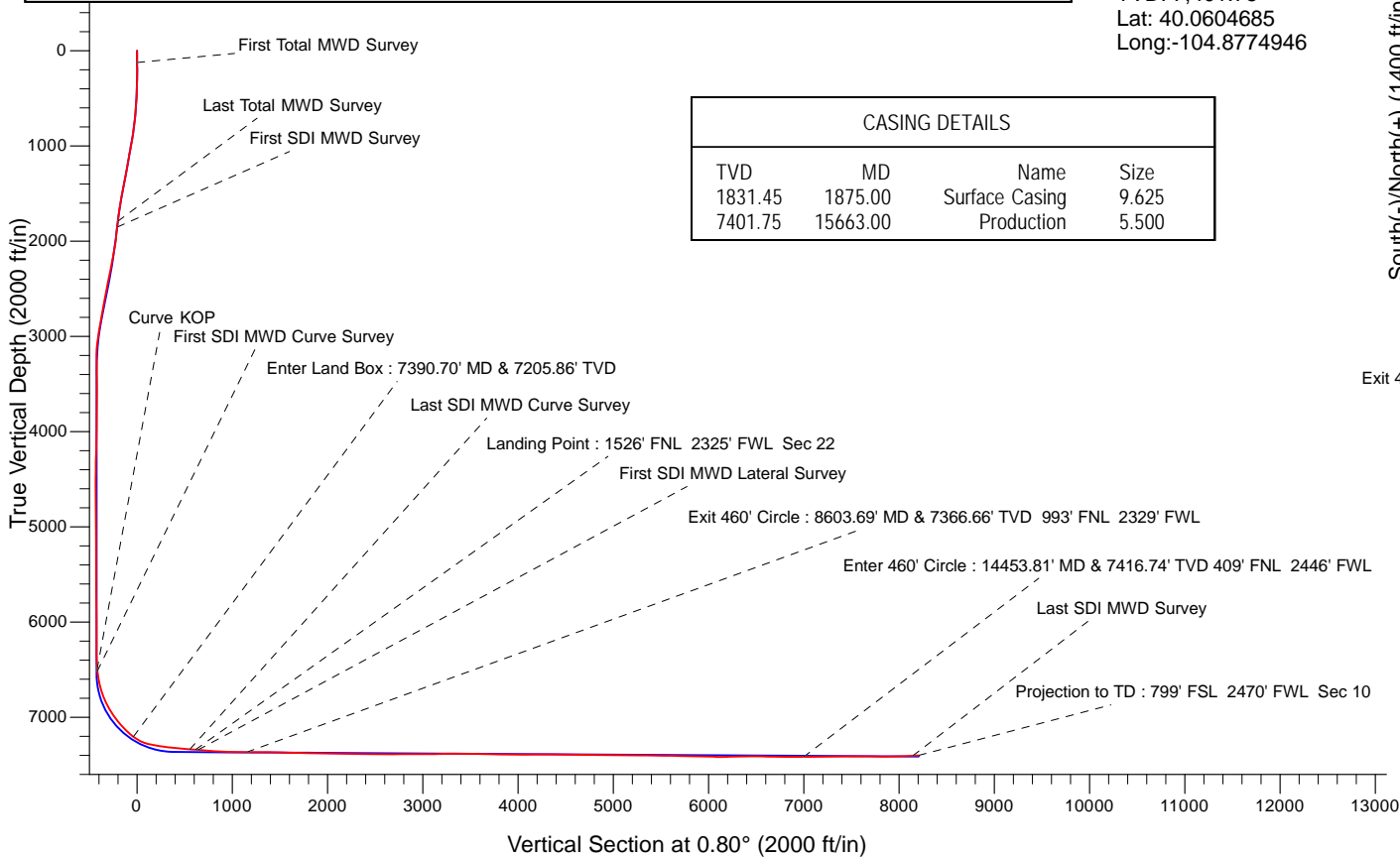
Surface Location:
 2135' FNL 2010' FWL
 Sec 22 T1N R67W

Landing Point:
 1526' FNL 2325' FWL Sec 22
 MD: 8,067.00
 TVD: 7,341.02
 Lat: 40.0396213
 Long: -104.8779201

BHL:
 799' FSL 2470' FWL Sec 10
 MD: 15,663.00
 TVD: 7,401.75
 Lat: 40.0604685
 Long: -104.8774946

CASING DETAILS

TVD	MD	Name	Size
1831.45	1875.00	Surface Casing	9.625
7401.75	15663.00	Production	5.500





US ROCKIES REGION PLANNING

US Rockies Wattenberg Planning UTM83

1N-67W-22 Marris 6-22HZ Pad

Marris 28N-10HZ

OH

Design: OH

Survey Report - Geographic

07 March, 2018



Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well Marrs 28N-10HZ
Project:	US Rockies Wattenberg Planning UTM83	TVD Reference:	GL 4981' & KB 17' @ 4998.00ft (Xtreme 24)
Site:	1N-67W-22 Marrs 6-22HZ Pad	MD Reference:	GL 4981' & KB 17' @ 4998.00ft (Xtreme 24)
Well:	Marrs 28N-10HZ	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Denver Sales Office

Project	US Rockies Wattenberg Planning UTM83		
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 Center : Marrs 3N-10HZ				
Site Position:	Northing:	14,540,634.27 usft	Latitude:	40.0381110	
From:	Lat/Long	Easting:	1,674,276.15 usft	Longitude:	-104.8790280
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	0.08 °

Well	Marrs 28N-10HZ, 2135' FNL 2010' FWL Sec 22 T1N R67W					
Well Position	+N/-S	0.00 ft	Northing:	14,540,574.18 usft	Latitude:	40.0379460
	+E/-W	0.00 ft	Easting:	1,674,275.67 usft	Longitude:	-104.8790300
Position Uncertainty	0.00 ft	Wellhead Elevation:	0.00 ft	Ground Level:	4,981.00 ft	

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2016	2/20/2018	8.35	66.56	52,117

Design	OH				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	0.80	

Survey Program	Date	3/7/2018			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
126.00	1,836.00	Survey #1 - Surface (OH)	APC_ISCWSA REV 2 MWD+	Fixed:v2:crustal field declination	
1,897.00	15,663.00	Survey #2 - Production (OH)	APC_ISCWSA REV 2 MWD+	Fixed:v2:Rockies, crustal dec + 3-axis correction	

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	14,540,574.18	1,674,275.67	40.0379460	-104.8790300
126.00	1.23	349.90	125.99	1.33	-0.24	14,540,575.51	1,674,275.43	40.0379497	-104.8790308
First Total MWD Survey									
158.00	1.05	346.47	157.98	1.95	-0.37	14,540,576.14	1,674,275.30	40.0379514	-104.8790313
190.00	0.35	337.68	189.98	2.33	-0.47	14,540,576.51	1,674,275.20	40.0379524	-104.8790317
222.00	0.40	284.51	221.98	2.45	-0.62	14,540,576.63	1,674,275.05	40.0379528	-104.8790322
253.00	0.31	181.50	252.98	2.39	-0.72	14,540,576.57	1,674,274.94	40.0379526	-104.8790326
285.00	1.05	148.28	284.98	2.06	-0.57	14,540,576.24	1,674,275.10	40.0379517	-104.8790320
316.00	1.58	143.53	315.97	1.47	-0.17	14,540,575.65	1,674,275.50	40.0379501	-104.8790306
348.00	2.15	134.04	347.95	0.70	0.53	14,540,574.88	1,674,276.20	40.0379480	-104.8790281
379.00	2.42	137.91	378.93	-0.19	1.38	14,540,573.99	1,674,277.05	40.0379455	-104.8790250

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well Marrs 28N-10HZ
Project:	US Rockies Wattenberg Planning UTM83	TVD Reference:	GL 4981' & KB 17' @ 4998.00ft (Xtreme 24)
Site:	1N-67W-22 Marrs 6-22HZ Pad	MD Reference:	GL 4981' & KB 17' @ 4998.00ft (Xtreme 24)
Well:	Marrs 28N-10HZ	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Denver Sales Office

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
411.00	3.03	126.92	410.89	-1.20	2.51	14,540,572.98	1,674,278.18	40.0379427	-104.8790210	
442.00	3.74	127.45	441.84	-2.31	3.97	14,540,571.88	1,674,279.64	40.0379397	-104.8790158	
474.00	4.17	125.34	473.76	-3.62	5.75	14,540,570.57	1,674,281.42	40.0379361	-104.8790094	
505.00	4.92	122.44	504.66	-4.98	7.79	14,540,569.21	1,674,283.47	40.0379324	-104.8790022	
537.00	5.76	121.56	536.52	-6.56	10.31	14,540,567.64	1,674,285.99	40.0379280	-104.8789931	
569.00	6.64	121.56	568.34	-8.37	13.26	14,540,565.83	1,674,288.94	40.0379231	-104.8789826	
601.00	7.29	122.00	600.10	-10.41	16.56	14,540,563.79	1,674,292.24	40.0379174	-104.8789708	
633.00	8.57	125.69	631.79	-12.88	20.22	14,540,561.33	1,674,295.90	40.0379107	-104.8789578	
664.00	9.05	125.95	662.43	-15.66	24.07	14,540,558.56	1,674,299.76	40.0379030	-104.8789440	
696.00	9.89	127.10	693.99	-18.79	28.29	14,540,555.43	1,674,303.99	40.0378944	-104.8789289	
728.00	10.41	128.15	725.49	-22.23	32.76	14,540,551.99	1,674,308.46	40.0378850	-104.8789129	
760.00	10.94	129.56	756.94	-25.95	37.37	14,540,548.28	1,674,313.08	40.0378748	-104.8788964	
791.00	11.65	128.77	787.34	-29.79	42.08	14,540,544.45	1,674,317.79	40.0378642	-104.8788796	
823.00	12.30	130.70	818.64	-34.03	47.19	14,540,540.21	1,674,322.90	40.0378526	-104.8788614	
855.00	13.36	130.44	849.84	-38.65	52.58	14,540,535.60	1,674,328.31	40.0378399	-104.8788421	
887.00	13.80	130.70	880.95	-43.54	58.29	14,540,530.72	1,674,334.02	40.0378265	-104.8788217	
918.00	14.59	131.31	911.00	-48.53	64.03	14,540,525.74	1,674,339.76	40.0378128	-104.8788012	
950.00	15.07	132.11	941.93	-53.98	70.14	14,540,520.30	1,674,345.89	40.0377978	-104.8787794	
982.00	15.64	132.11	972.79	-59.66	76.43	14,540,514.62	1,674,352.18	40.0377822	-104.8787569	
1,014.00	15.73	129.73	1,003.60	-65.33	82.96	14,540,508.97	1,674,358.72	40.0377666	-104.8787336	
1,045.00	16.04	128.06	1,033.42	-70.65	89.57	14,540,503.65	1,674,365.33	40.0377520	-104.8787100	
1,077.00	16.61	127.80	1,064.13	-76.18	96.66	14,540,498.13	1,674,372.44	40.0377368	-104.8786846	
1,109.00	16.57	127.97	1,094.79	-81.79	103.87	14,540,492.53	1,674,379.66	40.0377214	-104.8786589	
1,140.00	16.13	127.27	1,124.54	-87.12	110.78	14,540,487.21	1,674,386.57	40.0377068	-104.8786342	
1,172.00	15.78	128.06	1,155.31	-92.49	117.75	14,540,481.85	1,674,393.54	40.0376920	-104.8786093	
1,204.00	15.95	127.18	1,186.09	-97.83	124.68	14,540,476.52	1,674,400.48	40.0376774	-104.8785845	
1,236.00	16.26	127.27	1,216.83	-103.20	131.74	14,540,471.16	1,674,407.56	40.0376626	-104.8785593	
1,268.00	16.70	126.92	1,247.52	-108.68	138.99	14,540,465.69	1,674,414.80	40.0376476	-104.8785334	
1,299.00	17.23	127.36	1,277.17	-114.14	146.20	14,540,460.24	1,674,422.02	40.0376326	-104.8785077	
1,331.00	17.84	127.71	1,307.68	-120.01	153.84	14,540,454.38	1,674,429.68	40.0376165	-104.8784803	
1,363.00	17.31	127.71	1,338.19	-125.93	161.49	14,540,448.48	1,674,437.33	40.0376002	-104.8784530	
1,394.00	17.31	127.71	1,367.78	-131.57	168.78	14,540,442.84	1,674,444.63	40.0375847	-104.8784270	
1,426.00	17.93	128.06	1,398.28	-137.52	176.43	14,540,436.91	1,674,452.28	40.0375684	-104.8783996	
1,458.00	18.68	128.41	1,428.66	-143.74	184.32	14,540,430.70	1,674,460.19	40.0375513	-104.8783714	
1,490.00	17.97	127.97	1,459.04	-149.96	192.23	14,540,424.49	1,674,468.10	40.0375342	-104.8783432	
1,521.00	17.53	128.06	1,488.56	-155.78	199.67	14,540,418.68	1,674,475.56	40.0375182	-104.8783166	
1,553.00	16.70	129.12	1,519.15	-161.65	207.04	14,540,412.81	1,674,482.93	40.0375021	-104.8782903	
1,584.00	15.50	130.35	1,548.93	-167.14	213.65	14,540,407.33	1,674,489.55	40.0374870	-104.8782667	
1,616.00	15.34	128.94	1,579.78	-172.57	220.20	14,540,401.91	1,674,496.10	40.0374721	-104.8782433	
1,648.00	15.34	127.54	1,610.64	-177.81	226.85	14,540,396.68	1,674,502.76	40.0374577	-104.8782195	
1,680.00	15.25	126.57	1,641.51	-182.90	233.58	14,540,391.60	1,674,509.50	40.0374438	-104.8781954	
1,711.00	14.68	127.54	1,671.45	-187.72	239.97	14,540,386.79	1,674,515.90	40.0374305	-104.8781726	
1,743.00	13.97	127.18	1,702.46	-192.52	246.27	14,540,381.99	1,674,522.20	40.0374173	-104.8781501	
1,775.00	13.45	126.22	1,733.55	-197.06	252.35	14,540,377.47	1,674,528.28	40.0374049	-104.8781284	
1,807.00	11.95	127.18	1,764.76	-201.26	257.99	14,540,373.27	1,674,533.93	40.0373933	-104.8781083	
1,836.00	11.21	126.92	1,793.17	-204.77	262.63	14,540,369.77	1,674,538.58	40.0373837	-104.8780917	
Last Total MWD Survey										
1,897.00	10.68	125.95	1,853.06	-211.65	271.95	14,540,362.90	1,674,547.91	40.0373648	-104.8780584	
First SDI MWD Survey										
1,986.00	10.50	125.63	1,940.55	-221.21	285.22	14,540,353.36	1,674,561.19	40.0373385	-104.8780110	
2,074.00	10.32	141.53	2,027.12	-232.06	296.64	14,540,342.53	1,674,572.63	40.0373088	-104.8779702	
2,163.00	11.26	155.41	2,114.56	-246.20	305.22	14,540,328.39	1,674,581.22	40.0372699	-104.8779395	
2,297.00	10.98	171.30	2,246.07	-270.72	312.59	14,540,303.89	1,674,588.63	40.0372026	-104.8779132	
2,385.00	11.43	182.19	2,332.40	-287.72	313.53	14,540,286.89	1,674,589.59	40.0371559	-104.8779098	
2,474.00	11.22	181.84	2,419.67	-305.18	312.91	14,540,269.42	1,674,589.00	40.0371079	-104.8779120	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well Marrs 28N-10HZ
Project:	US Rockies Wattenberg Planning UTM83	TVD Reference:	GL 4981' & KB 17' @ 4998.00ft (Xtreme 24)
Site:	1N-67W-22 Marrs 6-22HZ Pad	MD Reference:	GL 4981' & KB 17' @ 4998.00ft (Xtreme 24)
Well:	Marrs 28N-10HZ	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Denver Sales Office

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
2,607.00	10.95	180.17	2,550.19	-330.75	312.46	14,540,243.87	1,674,588.58	40.0370377	-104.8779136	
2,696.00	10.47	178.97	2,637.64	-347.29	312.58	14,540,227.33	1,674,588.72	40.0369923	-104.8779132	
2,785.00	10.84	186.80	2,725.11	-363.68	311.73	14,540,210.93	1,674,587.90	40.0369473	-104.8779162	
2,874.00	10.39	190.73	2,812.59	-379.88	309.25	14,540,194.73	1,674,585.44	40.0369028	-104.8779251	
2,963.00	9.89	192.02	2,900.20	-395.24	306.16	14,540,179.37	1,674,582.37	40.0368606	-104.8779361	
3,052.00	8.38	180.17	2,988.07	-409.20	304.55	14,540,165.40	1,674,580.78	40.0368223	-104.8779419	
3,141.00	6.32	176.71	3,076.34	-420.58	304.81	14,540,154.03	1,674,581.06	40.0367910	-104.8779410	
3,229.00	3.37	153.35	3,164.02	-427.73	306.25	14,540,146.88	1,674,582.50	40.0367714	-104.8779358	
3,318.00	0.63	23.39	3,252.98	-429.62	307.62	14,540,144.99	1,674,583.87	40.0367662	-104.8779309	
3,407.00	2.04	350.89	3,341.95	-427.61	307.56	14,540,147.00	1,674,583.82	40.0367718	-104.8779311	
3,496.00	0.77	10.81	3,430.92	-425.45	307.43	14,540,149.16	1,674,583.67	40.0367777	-104.8779316	
3,629.00	0.34	60.90	3,563.92	-424.38	307.94	14,540,150.23	1,674,584.19	40.0367806	-104.8779298	
3,718.00	0.35	19.28	3,652.91	-424.00	308.26	14,540,150.61	1,674,584.51	40.0367817	-104.8779287	
3,851.00	1.39	161.88	3,785.90	-425.15	308.89	14,540,149.46	1,674,585.14	40.0367785	-104.8779264	
3,940.00	1.11	166.84	3,874.88	-427.01	309.43	14,540,147.60	1,674,585.68	40.0367734	-104.8779245	
4,029.00	1.10	171.07	3,963.87	-428.70	309.76	14,540,145.92	1,674,586.01	40.0367688	-104.8779233	
4,118.00	1.07	178.25	4,052.85	-430.37	309.91	14,540,144.24	1,674,586.17	40.0367642	-104.8779228	
4,207.00	1.05	183.63	4,141.83	-432.02	309.89	14,540,142.60	1,674,586.14	40.0367596	-104.8779228	
4,296.00	0.96	183.82	4,230.82	-433.57	309.79	14,540,141.04	1,674,586.05	40.0367554	-104.8779232	
4,385.00	0.72	164.15	4,319.81	-434.86	309.89	14,540,139.76	1,674,586.15	40.0367518	-104.8779228	
4,474.00	0.90	126.79	4,408.80	-435.81	310.60	14,540,138.80	1,674,586.86	40.0367492	-104.8779203	
4,563.00	0.47	153.17	4,497.80	-436.56	311.33	14,540,138.06	1,674,587.59	40.0367472	-104.8779177	
4,651.00	0.09	111.62	4,585.79	-436.90	311.55	14,540,137.71	1,674,587.82	40.0367462	-104.8779169	
4,740.00	0.12	311.97	4,674.79	-436.87	311.55	14,540,137.75	1,674,587.81	40.0367463	-104.8779169	
4,828.00	0.33	352.13	4,762.79	-436.56	311.45	14,540,138.06	1,674,587.71	40.0367472	-104.8779173	
4,917.00	0.47	342.18	4,851.79	-435.95	311.30	14,540,138.66	1,674,587.56	40.0367488	-104.8779178	
4,984.00	0.66	322.30	4,918.79	-435.39	310.98	14,540,139.23	1,674,587.24	40.0367504	-104.8779189	
5,072.00	0.76	303.63	5,006.78	-434.66	310.18	14,540,139.95	1,674,586.44	40.0367524	-104.8779218	
5,161.00	0.95	274.58	5,095.77	-434.28	308.96	14,540,140.33	1,674,585.22	40.0367534	-104.8779262	
5,250.00	1.03	272.58	5,184.76	-434.18	307.42	14,540,140.43	1,674,583.68	40.0367537	-104.8779317	
5,339.00	1.29	280.20	5,273.74	-433.97	305.64	14,540,140.64	1,674,581.90	40.0367543	-104.8779380	
5,428.00	0.48	277.50	5,362.73	-433.74	304.28	14,540,140.86	1,674,580.54	40.0367549	-104.8779429	
5,517.00	0.60	69.62	5,451.73	-433.53	304.35	14,540,141.07	1,674,580.61	40.0367555	-104.8779426	
5,606.00	0.36	30.39	5,540.73	-433.13	304.93	14,540,141.48	1,674,581.18	40.0367566	-104.8779406	
5,695.00	0.26	333.42	5,629.72	-432.71	304.98	14,540,141.90	1,674,581.24	40.0367577	-104.8779404	
5,783.00	0.60	300.38	5,717.72	-432.29	304.49	14,540,142.31	1,674,580.75	40.0367589	-104.8779421	
5,872.00	0.82	303.79	5,806.71	-431.71	303.56	14,540,142.90	1,674,579.82	40.0367605	-104.8779455	
6,049.00	1.14	310.00	5,983.69	-429.87	301.16	14,540,144.73	1,674,577.41	40.0367655	-104.8779540	
6,138.00	0.55	330.31	6,072.68	-428.93	300.27	14,540,145.67	1,674,576.52	40.0367681	-104.8779572	
6,227.00	0.29	88.29	6,161.68	-428.55	300.28	14,540,146.05	1,674,576.53	40.0367692	-104.8779572	
6,316.00	0.60	9.80	6,250.68	-428.08	300.59	14,540,146.52	1,674,576.84	40.0367704	-104.8779561	
6,405.00	0.94	358.43	6,339.67	-426.90	300.64	14,540,147.70	1,674,576.90	40.0367737	-104.8779559	
6,494.00	0.97	353.85	6,428.65	-425.42	300.54	14,540,149.18	1,674,576.79	40.0367778	-104.8779562	
6,562.00	2.66	3.37	6,496.62	-423.27	300.57	14,540,151.33	1,674,576.82	40.0367837	-104.8779561	
Curve KOP										
6,583.00	3.18	4.26	6,517.59	-422.21	300.65	14,540,152.39	1,674,576.89	40.0367866	-104.8779559	
First SDI MWD Curve Survey										
6,672.00	12.76	8.73	6,605.63	-410.00	302.33	14,540,164.60	1,674,578.55	40.0368201	-104.8779499	
6,761.00	18.71	3.24	6,691.26	-386.01	304.63	14,540,188.59	1,674,580.82	40.0368860	-104.8779416	
6,850.00	20.30	6.20	6,775.15	-356.41	307.10	14,540,218.20	1,674,583.26	40.0369673	-104.8779328	
6,938.00	25.21	3.01	6,856.28	-322.50	309.74	14,540,252.12	1,674,585.84	40.0370604	-104.8779234	
7,027.00	30.77	4.97	6,934.84	-280.85	312.71	14,540,293.75	1,674,588.76	40.0371748	-104.8779128	
7,116.00	37.49	6.97	7,008.47	-231.23	317.97	14,540,343.38	1,674,593.96	40.0373110	-104.8778940	
7,205.00	41.37	5.88	7,077.20	-175.07	324.27	14,540,399.55	1,674,600.18	40.0374653	-104.8778714	
7,293.00	45.01	1.64	7,141.37	-115.00	328.14	14,540,459.62	1,674,603.97	40.0376302	-104.8778576	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well Marrs 28N-10HZ
Project:	US Rockies Wattenberg Planning UTM83	TVD Reference:	GL 4981' & KB 17' @ 4998.00ft (Xtreme 24)
Site:	1N-67W-22 Marrs 6-22HZ Pad	MD Reference:	GL 4981' & KB 17' @ 4998.00ft (Xtreme 24)
Well:	Marrs 28N-10HZ	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Denver Sales Office

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
7,382.00	51.63	357.89	7,200.53	-48.59	327.76	14,540,526.03	1,674,603.50	40.0378126	-104.8778590	
7,390.70	52.72	357.49	7,205.86	-41.73	327.48	14,540,532.90	1,674,603.21	40.0378314	-104.8778600	
Enter Land Box : 7390.70' MD & 7205.86' TVD										
7,471.00	62.84	354.21	7,248.63	25.92	322.46	14,540,600.54	1,674,598.10	40.0380172	-104.8778779	
7,563.00	76.96	351.15	7,280.17	111.37	311.38	14,540,685.97	1,674,586.90	40.0382519	-104.8779175	
7,652.00	80.14	354.70	7,297.84	197.91	300.66	14,540,772.50	1,674,576.06	40.0384895	-104.8779558	
7,741.00	82.83	1.57	7,311.04	285.82	297.81	14,540,860.40	1,674,573.09	40.0387309	-104.8779660	
7,830.00	84.58	5.07	7,320.80	374.12	302.94	14,540,948.71	1,674,578.10	40.0389734	-104.8779476	
7,918.00	85.19	1.85	7,328.64	461.59	308.23	14,541,036.19	1,674,583.27	40.0392136	-104.8779287	
8,007.00	85.23	0.63	7,336.08	550.26	310.15	14,541,124.86	1,674,585.07	40.0394571	-104.8779219	
Last SDI MWD Curve Survey										
8,067.00	85.32	0.31	7,341.02	610.06	310.63	14,541,184.66	1,674,585.48	40.0396213	-104.8779201	
Landing Point : 1526' FNL 2325' FWL Sec 22										
8,096.00	85.36	0.15	7,343.38	638.96	310.75	14,541,213.56	1,674,585.55	40.0397007	-104.8779197	
First SDI MWD Lateral Survey										
8,185.00	85.36	0.13	7,350.58	727.67	310.97	14,541,302.27	1,674,585.65	40.0399443	-104.8779189	
8,274.00	85.50	358.95	7,357.67	816.38	310.25	14,541,390.98	1,674,584.82	40.0401879	-104.8779215	
8,363.00	87.85	0.99	7,362.83	905.22	310.21	14,541,479.82	1,674,584.65	40.0404319	-104.8779216	
8,452.00	89.03	1.50	7,365.25	994.16	312.14	14,541,568.77	1,674,586.46	40.0406762	-104.8779147	
8,540.00	89.33	0.92	7,366.51	1,082.13	314.00	14,541,656.74	1,674,588.20	40.0409177	-104.8779081	
8,603.69	90.41	0.25	7,366.66	1,145.82	314.65	14,541,720.42	1,674,588.77	40.0410926	-104.8779057	
Exit 460' Circle : 8603.69' MD & 7366.66' TVD 993' FNL 2329' FWL										
8,629.00	90.84	359.99	7,366.38	1,171.13	314.71	14,541,745.73	1,674,588.79	40.0411621	-104.8779056	
8,718.00	89.36	2.16	7,366.23	1,260.10	316.38	14,541,834.71	1,674,590.34	40.0414065	-104.8778996	
8,807.00	89.70	2.82	7,366.96	1,349.02	320.24	14,541,923.63	1,674,594.08	40.0416506	-104.8778858	
8,895.00	88.02	2.28	7,368.71	1,436.91	324.16	14,542,011.53	1,674,597.88	40.0418920	-104.8778718	
8,984.00	88.22	2.12	7,371.63	1,525.80	327.57	14,542,100.42	1,674,601.17	40.0421361	-104.8778596	
9,073.00	88.56	1.50	7,374.13	1,614.71	330.38	14,542,189.34	1,674,603.86	40.0423803	-104.8778495	
9,162.00	88.83	1.14	7,376.15	1,703.67	332.43	14,542,278.30	1,674,605.79	40.0426246	-104.8778422	
9,251.00	89.06	1.19	7,377.79	1,792.63	334.24	14,542,367.26	1,674,607.48	40.0428689	-104.8778357	
9,339.00	89.93	0.83	7,378.57	1,880.62	335.79	14,542,455.25	1,674,608.91	40.0431105	-104.8778302	
9,428.00	89.43	0.89	7,379.06	1,969.60	337.13	14,542,544.24	1,674,610.12	40.0433549	-104.8778254	
9,517.00	88.69	0.91	7,380.53	2,058.58	338.53	14,542,633.22	1,674,611.40	40.0435992	-104.8778204	
9,606.00	88.69	0.81	7,382.56	2,147.55	339.86	14,542,722.18	1,674,612.61	40.0438435	-104.8778156	
9,695.00	88.82	0.41	7,384.49	2,236.52	340.81	14,542,811.16	1,674,613.44	40.0440879	-104.8778122	
9,783.00	89.06	0.36	7,386.12	2,324.50	341.40	14,542,899.14	1,674,613.91	40.0443295	-104.8778101	
9,872.00	89.50	0.22	7,387.24	2,413.50	341.85	14,542,988.13	1,674,614.24	40.0445739	-104.8778085	
9,960.00	89.26	359.72	7,388.19	2,501.49	341.80	14,543,076.13	1,674,614.08	40.0448155	-104.8778087	
10,049.00	89.56	359.75	7,389.11	2,590.48	341.39	14,543,165.12	1,674,613.54	40.0450599	-104.8778101	
10,137.00	90.47	1.48	7,389.09	2,678.48	342.34	14,543,253.11	1,674,614.37	40.0453016	-104.8778068	
10,227.00	91.01	2.09	7,387.92	2,768.42	345.14	14,543,343.07	1,674,617.05	40.0455486	-104.8777967	
10,315.00	90.57	2.49	7,386.71	2,856.34	348.66	14,543,430.99	1,674,620.45	40.0457900	-104.8777842	
10,404.00	89.66	3.00	7,386.53	2,945.24	352.92	14,543,519.89	1,674,624.59	40.0460341	-104.8777689	
10,493.00	89.97	2.63	7,386.82	3,034.13	357.29	14,543,608.79	1,674,628.84	40.0462783	-104.8777533	
10,582.00	90.54	2.91	7,386.42	3,123.03	361.59	14,543,697.69	1,674,633.02	40.0465224	-104.8777379	
10,671.00	90.81	2.35	7,385.37	3,211.93	365.67	14,543,786.60	1,674,636.98	40.0467665	-104.8777233	
10,760.00	90.10	1.91	7,384.67	3,300.86	368.98	14,543,875.53	1,674,640.17	40.0470107	-104.8777115	
10,848.00	90.67	2.86	7,384.08	3,388.78	372.64	14,543,963.46	1,674,643.71	40.0472522	-104.8776984	
10,937.00	89.26	1.38	7,384.13	3,477.72	375.94	14,544,052.40	1,674,646.88	40.0474964	-104.8776867	
11,026.00	88.69	0.79	7,385.72	3,566.69	377.62	14,544,141.37	1,674,648.45	40.0477407	-104.8776806	
11,115.00	88.76	359.89	7,387.70	3,655.66	378.15	14,544,230.35	1,674,648.85	40.0479851	-104.8776787	
11,204.00	88.99	359.43	7,389.45	3,744.64	377.62	14,544,319.33	1,674,648.20	40.0482294	-104.8776806	
11,292.00	88.83	359.10	7,391.12	3,832.62	376.49	14,544,407.30	1,674,646.96	40.0484710	-104.8776847	
11,381.00	89.90	359.26	7,392.11	3,921.60	375.22	14,544,496.28	1,674,645.56	40.0487154	-104.8776892	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well Marrs 28N-10HZ
Project:	US Rockies Wattenberg Planning UTM83	TVD Reference:	GL 4981' & KB 17' @ 4998.00ft (Xtreme 24)
Site:	1N-67W-22 Marrs 6-22HZ Pad	MD Reference:	GL 4981' & KB 17' @ 4998.00ft (Xtreme 24)
Well:	Marrs 28N-10HZ	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Denver Sales Office

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
11,470.00	89.87	358.68	7,392.29	4,010.59	373.62	14,544,585.26	1,674,643.84	40.0489598	-104.8776949	
11,559.00	90.17	358.11	7,392.26	4,099.55	371.13	14,544,674.23	1,674,641.23	40.0492041	-104.8777038	
11,648.00	90.17	1.53	7,391.99	4,188.54	370.85	14,544,763.21	1,674,640.83	40.0494484	-104.8777048	
11,737.00	89.83	0.98	7,391.99	4,277.52	372.80	14,544,852.19	1,674,642.66	40.0496928	-104.8776978	
11,826.00	90.20	0.24	7,391.97	4,366.51	373.74	14,544,941.19	1,674,643.48	40.0499372	-104.8776945	
11,915.00	90.27	359.79	7,391.61	4,455.51	373.77	14,545,030.19	1,674,643.38	40.0501816	-104.8776944	
12,003.00	88.96	1.02	7,392.20	4,543.50	374.39	14,545,118.18	1,674,643.89	40.0504232	-104.8776921	
12,092.00	88.56	0.48	7,394.12	4,632.47	375.55	14,545,207.15	1,674,644.93	40.0506676	-104.8776880	
12,181.00	88.72	359.86	7,396.24	4,721.45	375.82	14,545,296.12	1,674,645.07	40.0509119	-104.8776870	
12,270.00	89.87	0.70	7,397.33	4,810.44	376.25	14,545,385.12	1,674,645.39	40.0511563	-104.8776855	
12,358.00	90.84	2.97	7,396.79	4,898.38	379.07	14,545,473.07	1,674,648.09	40.0513978	-104.8776754	
12,447.00	89.60	2.04	7,396.44	4,987.30	382.96	14,545,561.98	1,674,651.86	40.0516419	-104.8776615	
12,536.00	88.56	1.57	7,397.87	5,076.24	385.76	14,545,650.93	1,674,654.54	40.0518862	-104.8776515	
12,625.00	88.79	1.03	7,399.93	5,165.19	387.78	14,545,739.88	1,674,656.44	40.0521305	-104.8776442	
12,714.00	89.60	0.59	7,401.18	5,254.17	389.04	14,545,828.87	1,674,657.57	40.0523748	-104.8776397	
12,803.00	89.36	0.76	7,401.99	5,343.16	390.09	14,545,917.86	1,674,658.50	40.0526192	-104.8776360	
12,892.00	89.06	0.79	7,403.22	5,432.15	391.29	14,546,006.84	1,674,659.58	40.0528636	-104.8776317	
12,980.00	89.36	0.14	7,404.43	5,520.13	392.00	14,546,094.83	1,674,660.18	40.0531052	-104.8776291	
13,069.00	88.99	359.67	7,405.71	5,609.12	391.86	14,546,183.82	1,674,659.91	40.0533496	-104.8776297	
13,158.00	88.79	358.76	7,407.43	5,698.10	390.64	14,546,272.79	1,674,658.57	40.0535939	-104.8776340	
13,247.00	89.03	357.94	7,409.13	5,787.04	388.08	14,546,361.74	1,674,655.89	40.0538382	-104.8776432	
13,336.00	88.69	0.02	7,410.90	5,876.01	386.49	14,546,450.70	1,674,654.18	40.0540825	-104.8776488	
13,425.00	88.25	1.10	7,413.27	5,964.97	387.36	14,546,539.66	1,674,654.93	40.0543268	-104.8776457	
13,513.00	88.25	1.22	7,415.96	6,052.91	389.14	14,546,627.60	1,674,656.59	40.0545683	-104.8776393	
13,602.00	90.40	2.51	7,417.01	6,141.85	392.04	14,546,716.55	1,674,659.37	40.0548125	-104.8776290	
13,691.00	91.34	4.52	7,415.66	6,230.67	397.49	14,546,805.37	1,674,664.70	40.0550564	-104.8776095	
13,780.00	91.85	2.67	7,413.18	6,319.45	403.07	14,546,894.16	1,674,670.16	40.0553003	-104.8775895	
13,869.00	91.31	1.00	7,410.73	6,408.37	405.92	14,546,983.08	1,674,672.89	40.0555444	-104.8775793	
13,958.00	89.16	0.53	7,410.36	6,497.36	407.11	14,547,072.07	1,674,673.95	40.0557888	-104.8775751	
14,046.00	87.58	0.59	7,412.87	6,585.31	407.97	14,547,160.03	1,674,674.69	40.0560304	-104.8775720	
14,135.00	88.62	0.65	7,415.82	6,674.26	408.93	14,547,248.98	1,674,675.54	40.0562746	-104.8775686	
14,224.00	89.46	359.83	7,417.31	6,763.24	409.30	14,547,337.96	1,674,675.79	40.0565190	-104.8775672	
14,313.00	89.80	358.76	7,417.88	6,852.23	408.21	14,547,426.95	1,674,674.57	40.0567634	-104.8775711	
14,402.00	90.77	358.73	7,417.44	6,941.21	406.26	14,547,515.92	1,674,672.50	40.0570077	-104.8775781	
14,453.81	90.77	1.10	7,416.74	6,993.01	406.18	14,547,567.72	1,674,672.35	40.0571500	-104.8775784	
Enter 460' Circle : 14453.81' MD & 7416.74' TVD 409' FNL 2446' FWL										
14,491.00	90.77	2.80	7,416.24	7,030.18	407.45	14,547,604.89	1,674,673.57	40.0572520	-104.8775739	
14,580.00	91.28	2.55	7,414.65	7,119.06	411.60	14,547,693.78	1,674,677.60	40.0574961	-104.8775590	
14,668.00	90.27	2.32	7,413.46	7,206.98	415.34	14,547,781.70	1,674,681.22	40.0577375	-104.8775456	
14,757.00	89.66	1.75	7,413.52	7,295.92	418.50	14,547,870.65	1,674,684.26	40.0579818	-104.8775343	
14,846.00	90.23	1.12	7,413.60	7,384.89	420.73	14,547,959.62	1,674,686.37	40.0582261	-104.8775264	
14,935.00	91.18	0.82	7,412.51	7,473.87	422.23	14,548,048.60	1,674,687.75	40.0584705	-104.8775210	
15,024.00	89.56	1.68	7,411.93	7,562.84	424.18	14,548,137.58	1,674,689.57	40.0587148	-104.8775140	
15,113.00	89.09	1.90	7,412.98	7,651.79	426.96	14,548,226.53	1,674,692.23	40.0589591	-104.8775041	
15,202.00	89.36	1.54	7,414.18	7,740.74	429.63	14,548,315.49	1,674,694.78	40.0592034	-104.8774945	
15,291.00	90.47	0.63	7,414.32	7,829.73	431.31	14,548,404.47	1,674,696.35	40.0594477	-104.8774885	
15,379.00	91.11	0.18	7,413.10	7,917.71	431.93	14,548,492.46	1,674,696.85	40.0596893	-104.8774863	
15,468.00	92.01	359.87	7,410.68	8,006.68	431.97	14,548,581.42	1,674,696.77	40.0599337	-104.8774861	
15,557.00	92.42	359.37	7,407.24	8,095.61	431.38	14,548,670.35	1,674,696.06	40.0601779	-104.8774882	
15,603.00	93.12	358.95	7,405.02	8,141.55	430.71	14,548,716.29	1,674,695.32	40.0603040	-104.8774906	
Last SDI MWD Survey										
15,663.00	93.12	358.95	7,401.75	8,201.45	429.61	14,548,776.19	1,674,694.14	40.0604685	-104.8774946	
Projection to TD : 799' FSL 2470' FWL Sec 10										

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well Marrs 28N-10HZ
Project:	US Rockies Wattenberg Planning UTM83	TVD Reference:	GL 4981' & KB 17' @ 4998.00ft (Xtreme 24)
Site:	1N-67W-22 Marrs 6-22HZ Pad	MD Reference:	GL 4981' & KB 17' @ 4998.00ft (Xtreme 24)
Well:	Marrs 28N-10HZ	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Denver Sales Office

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,875.00	1,831.45	Surface Casing	9.625	12.250	
15,663.00	7,401.75	Production	5.500	8.500	

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
126.00	125.99	1.33	-0.24	First Total MWD Survey	
1,836.00	1,793.17	-204.77	262.63	Last Total MWD Survey	
1,897.00	1,853.06	-211.65	271.95	First SDI MWD Survey	
6,562.00	6,496.62	-423.27	300.57	Curve KOP	
6,583.00	6,517.59	-422.21	300.65	First SDI MWD Curve Survey	
7,390.70	7,205.86	-41.73	327.48	Enter Land Box : 7390.70' MD & 7205.86' TVD	
8,007.00	7,336.08	550.26	310.15	Last SDI MWD Curve Survey	
8,067.00	7,341.02	610.06	310.63	Landing Point : 1526' FNL 2325' FWL Sec 22	
8,096.00	7,343.38	638.96	310.75	First SDI MWD Lateral Survey	
8,603.69	7,366.66	1,145.82	314.65	Exit 460' Circle : 8603.69' MD & 7366.66' TVD 993' FNL 2329' FWL	
14,453.81	7,416.74	6,993.01	406.18	Enter 460' Circle : 14453.81' MD & 7416.74' TVD 409' FNL 2446' FWL	
15,603.00	7,405.02	8,141.55	430.71	Last SDI MWD Survey	
15,663.00	7,401.75	8,201.45	429.61	Projection to TD : 799' FSL 2470' FWL Sec 10	

Checked By: _____ Approved By: _____ Date: _____