

US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N

5N-67W-09 RAINBOW 24-9HZ PAD

RAINBOW 9-22HZ

Plan A

Plan: Permit Rev-2

Standard Planning Report

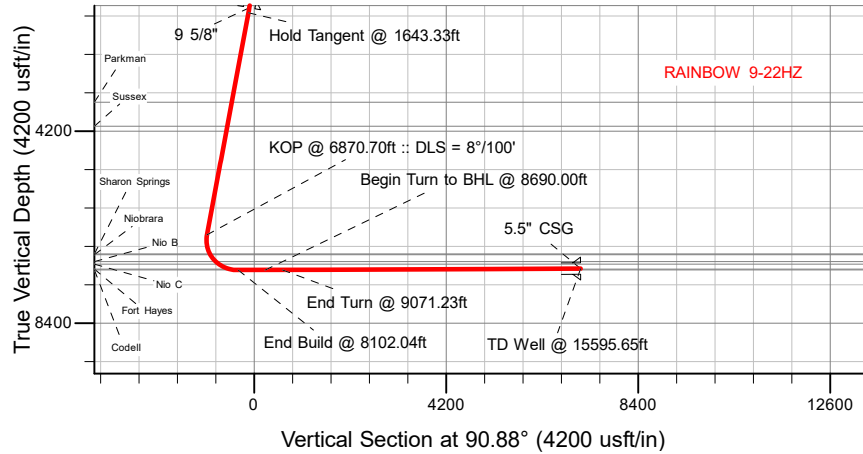
30 August, 2022

Project: WELD-NAD83-UTMFT13N
Site: 5N-67W-09 RAINBOW 24-9HZ PAD
Well: RAINBOW 9-22HZ
Wellbore: Plan A
Design: Permit Rev-2

US ROCKIES WATTENBERG PLANNING

CASING DETAILS

TVD	MD	Name	Size
1500.00	1526.50	9 5/8"	9-5/8
7206.00	15595.65	5.5" CSG	5-1/2



SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
0.00	0.00	0.00	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	
1643.33	21.65	208.98	1609.23	-235.72	-130.56	1.50	208.98	-126.92	
6870.70	21.65	208.98	6467.83	-1922.81	-1064.95	0.00	0.00	-1035.30	
8102.04	90.24	96.00	7237.00	-2277.99	-386.82	8.00	-111.43	-351.79	
8690.00	90.24	96.00	7234.53	-2339.45	197.92	0.00	0.00	233.83	
9071.23	90.24	90.28	7232.95	-2360.33	578.41	1.50	-90.02	614.60	
15595.65	90.24	90.28	7206.00	-2392.38	7102.70	0.00	0.00	7138.61	RAINBOW 9-22HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

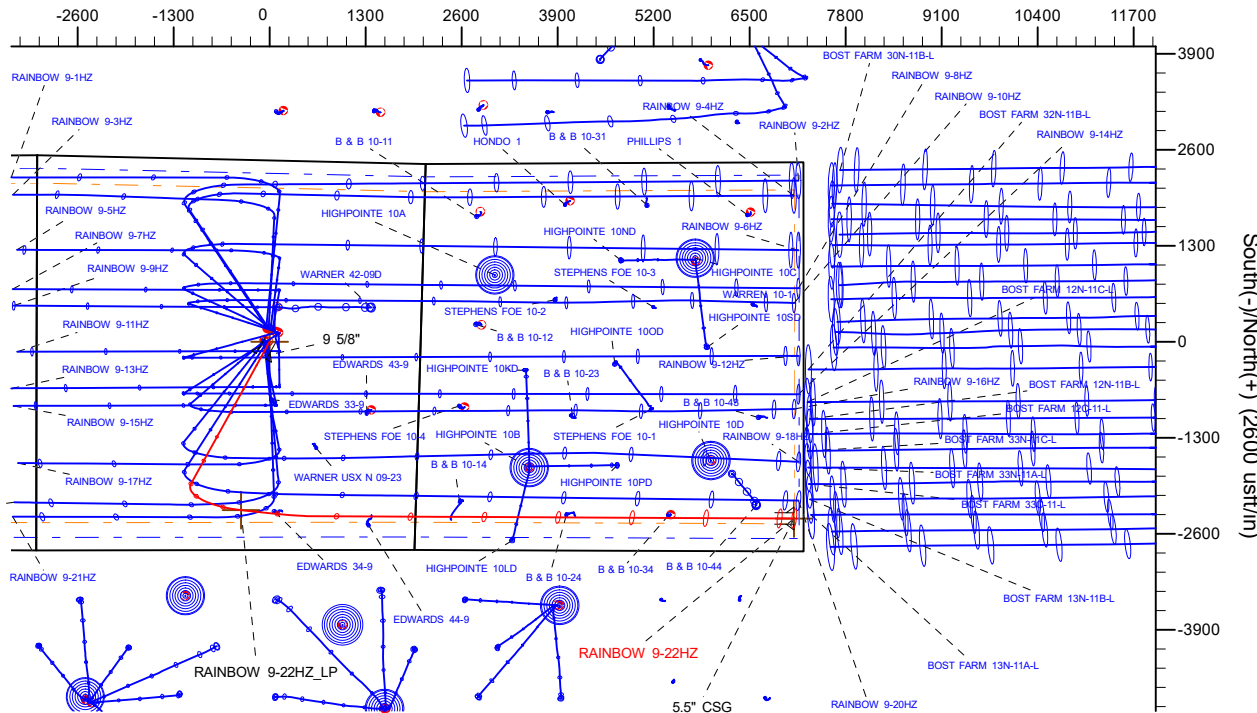
Name	TVD	Northing	Easting	Latitude	Longitude
RAINBOW 9-22HZ_SHL	0.00	14677741.01	1669411.48	40.414634	-104.895833
RAINBOW 9-22HZ_LP	7237.00	14675462.57	1669027.35	40.408379	-104.897223
RAINBOW 9-22HZ_BHL	7206.00	14675357.00	1676517.00	40.408062	-104.870318

SHL
2458' FNL
2044' FEL

LP
542' FSL
2361' FEL

BHL
445' FSL
130' FEL

West(-)/East(+) (2600 usft/in)



Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well RAINBOW 9-22HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4966.00usft (RIG)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4966.00usft (RIG)
Site:	5N-67W-09 RAINBOW 24-9HZ PAD	North Reference:	True
Well:	RAINBOW 9-22HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-2		

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		5N-67W-09 RAINBOW 24-9HZ PAD			
Site Position:		Northing:	14,677,926.65 usft	Latitude:	40.415144
From:	Lat/Long	Easting:	1,669,365.10 usft	Longitude:	-104.895999
Position Uncertainty:		0.00 usft	Slot Radius:	13-3/16 "	

Well		RAINBOW 9-22HZ				
Well Position	+N/-S	0.00 usft	Northing:	14,677,741.01 usft	Latitude:	40.414634
	+E/-W	0.00 usft	Easting:	1,669,411.48 usft	Longitude:	-104.895833
Position Uncertainty		3.28 usft	Wellhead Elevation:	usft	Ground Level:	4,949.00 usft
Grid Convergence:		0.07 °				

Wellbore	Plan A				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF202013	8/28/2022	7.80	66.60	51,820.01652829

Design	Permit Rev-2				
Audit Notes:					
Version:		Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	90.88	

Plan Survey Tool Program		Date	8/30/2022		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	1,500.00	Permit Rev-2 (Plan A)	APC_ISCWSA REV 2 MWD+I Fixed:v2:crustal field declinatio	
2	1,500.00	15,595.65	Permit Rev-2 (Plan A)	APC_ISCWSA REV 2 MWD+I Fixed:v2:Rockies, crustal dec +	

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Wellbore:	Plan A		
Design:	Permit Rev-2		

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,643.33	21.65	208.98	1,609.23	-235.72	-130.56	1.50	1.50	0.00	208.98	
6,870.70	21.65	208.98	6,467.83	-1,922.81	-1,064.95	0.00	0.00	0.00	0.00	
8,102.04	90.24	96.00	7,237.00	-2,277.99	-386.82	8.00	5.57	-9.18	-111.43	
8,690.00	90.24	96.00	7,234.53	-2,339.45	197.92	0.00	0.00	0.00	0.00	
9,071.23	90.24	90.28	7,232.95	-2,360.33	578.41	1.50	0.00	-1.50	-90.02	
15,595.65	90.24	90.28	7,206.00	-2,392.38	7,102.71	0.00	0.00	0.00	0.00	RAINBOW 9-22HZ_B

Planning Report

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Site:	5N-67W-09 RAINBOW 24-9HZ PAD	North Reference:	True
Well:	RAINBOW 9-22HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-2		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge @ 200.00ft									
300.00	1.50	208.98	299.99	-1.15	-0.63	-0.62	1.50	1.50	0.00
400.00	3.00	208.98	399.91	-4.58	-2.54	-2.47	1.50	1.50	0.00
500.00	4.50	208.98	499.69	-10.30	-5.70	-5.55	1.50	1.50	0.00
600.00	6.00	208.98	599.27	-18.30	-10.14	-9.86	1.50	1.50	0.00
700.00	7.50	208.98	698.57	-28.59	-15.83	-15.39	1.50	1.50	0.00
800.00	9.00	208.98	797.54	-41.14	-22.78	-22.15	1.50	1.50	0.00
809.58	9.14	208.98	807.00	-42.46	-23.52	-22.86	1.50	1.50	0.00
Fox Hills									
900.00	10.50	208.98	896.09	-55.95	-30.99	-30.13	1.50	1.50	0.00
1,000.00	12.00	208.98	994.16	-73.02	-40.44	-39.32	1.50	1.50	0.00
1,100.00	13.50	208.98	1,091.70	-92.32	-51.13	-49.71	1.50	1.50	0.00
1,200.00	15.00	208.98	1,188.62	-113.86	-63.06	-61.30	1.50	1.50	0.00
1,300.00	16.50	208.98	1,284.86	-137.60	-76.21	-74.09	1.50	1.50	0.00
1,400.00	18.00	208.98	1,380.36	-163.54	-90.58	-88.06	1.50	1.50	0.00
1,500.00	19.50	208.98	1,475.05	-191.66	-106.15	-103.20	1.50	1.50	0.00
1,526.50	19.90	208.98	1,500.00	-199.48	-110.48	-107.40	1.50	1.50	0.00
9 5/8"									
1,600.00	21.00	208.98	1,568.86	-221.94	-122.92	-119.50	1.50	1.50	0.00
1,643.33	21.65	208.98	1,609.23	-235.72	-130.56	-126.92	1.50	1.50	0.00
Hold Tangent @ 1643.33ft									
1,700.00	21.65	208.98	1,661.90	-254.01	-140.68	-136.77	0.00	0.00	0.00
1,800.00	21.65	208.98	1,754.85	-286.29	-158.56	-154.14	0.00	0.00	0.00
1,900.00	21.65	208.98	1,847.79	-318.56	-176.44	-171.52	0.00	0.00	0.00
2,000.00	21.65	208.98	1,940.74	-350.83	-194.31	-188.90	0.00	0.00	0.00
2,100.00	21.65	208.98	2,033.68	-383.11	-212.19	-206.28	0.00	0.00	0.00
2,200.00	21.65	208.98	2,126.63	-415.38	-230.06	-223.65	0.00	0.00	0.00
2,300.00	21.65	208.98	2,219.57	-447.66	-247.94	-241.03	0.00	0.00	0.00
2,400.00	21.65	208.98	2,312.52	-479.93	-265.81	-258.41	0.00	0.00	0.00
2,500.00	21.65	208.98	2,405.46	-512.20	-283.69	-275.79	0.00	0.00	0.00
2,600.00	21.65	208.98	2,498.41	-544.48	-301.56	-293.16	0.00	0.00	0.00
2,700.00	21.65	208.98	2,591.35	-576.75	-319.44	-310.54	0.00	0.00	0.00
2,800.00	21.65	208.98	2,684.30	-609.03	-337.31	-327.92	0.00	0.00	0.00
2,900.00	21.65	208.98	2,777.25	-641.30	-355.19	-345.29	0.00	0.00	0.00
3,000.00	21.65	208.98	2,870.19	-673.57	-373.06	-362.67	0.00	0.00	0.00
3,100.00	21.65	208.98	2,963.14	-705.85	-390.94	-380.05	0.00	0.00	0.00
3,200.00	21.65	208.98	3,056.08	-738.12	-408.81	-397.43	0.00	0.00	0.00
3,300.00	21.65	208.98	3,149.03	-770.40	-426.69	-414.80	0.00	0.00	0.00
3,400.00	21.65	208.98	3,241.97	-802.67	-444.56	-432.18	0.00	0.00	0.00
3,500.00	21.65	208.98	3,334.92	-834.95	-462.44	-449.56	0.00	0.00	0.00
3,600.00	21.65	208.98	3,427.86	-867.22	-480.31	-466.94	0.00	0.00	0.00
3,700.00	21.65	208.98	3,520.81	-899.49	-498.19	-484.31	0.00	0.00	0.00
3,746.47	21.65	208.98	3,564.00	-914.49	-506.49	-492.39	0.00	0.00	0.00
Parkman									
3,800.00	21.65	208.98	3,613.76	-931.77	-516.06	-501.69	0.00	0.00	0.00
3,900.00	21.65	208.98	3,706.70	-964.04	-533.94	-519.07	0.00	0.00	0.00
4,000.00	21.65	208.98	3,799.65	-996.32	-551.81	-536.45	0.00	0.00	0.00
4,100.00	21.65	208.98	3,892.59	-1,028.59	-569.69	-553.82	0.00	0.00	0.00
4,200.00	21.65	208.98	3,985.54	-1,060.86	-587.56	-571.20	0.00	0.00	0.00
4,300.00	21.65	208.98	4,078.48	-1,093.14	-605.44	-588.58	0.00	0.00	0.00
4,313.47	21.65	208.98	4,091.00	-1,097.48	-607.84	-590.92	0.00	0.00	0.00

Planning Report

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Site:	5N-67W-09 RAINBOW 24-9HZ PAD	North Reference:	True
Well:	RAINBOW 9-22HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-2		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
Sussex									
4,400.00	21.65	208.98	4,171.43	-1,125.41	-623.31	-605.95	0.00	0.00	0.00
4,500.00	21.65	208.98	4,264.37	-1,157.69	-641.19	-623.33	0.00	0.00	0.00
4,600.00	21.65	208.98	4,357.32	-1,189.96	-659.06	-640.71	0.00	0.00	0.00
4,700.00	21.65	208.98	4,450.26	-1,222.23	-676.94	-658.09	0.00	0.00	0.00
4,800.00	21.65	208.98	4,543.21	-1,254.51	-694.81	-675.46	0.00	0.00	0.00
4,900.00	21.65	208.98	4,636.16	-1,286.78	-712.69	-692.84	0.00	0.00	0.00
5,000.00	21.65	208.98	4,729.10	-1,319.06	-730.56	-710.22	0.00	0.00	0.00
5,100.00	21.65	208.98	4,822.05	-1,351.33	-748.44	-727.60	0.00	0.00	0.00
5,200.00	21.65	208.98	4,914.99	-1,383.60	-766.31	-744.97	0.00	0.00	0.00
5,300.00	21.65	208.98	5,007.94	-1,415.88	-784.19	-762.35	0.00	0.00	0.00
5,400.00	21.65	208.98	5,100.88	-1,448.15	-802.06	-779.73	0.00	0.00	0.00
5,500.00	21.65	208.98	5,193.83	-1,480.43	-819.94	-797.11	0.00	0.00	0.00
5,600.00	21.65	208.98	5,286.77	-1,512.70	-837.81	-814.48	0.00	0.00	0.00
5,700.00	21.65	208.98	5,379.72	-1,544.98	-855.69	-831.86	0.00	0.00	0.00
5,800.00	21.65	208.98	5,472.67	-1,577.25	-873.56	-849.24	0.00	0.00	0.00
5,900.00	21.65	208.98	5,565.61	-1,609.52	-891.44	-866.61	0.00	0.00	0.00
6,000.00	21.65	208.98	5,658.56	-1,641.80	-909.31	-883.99	0.00	0.00	0.00
6,100.00	21.65	208.98	5,751.50	-1,674.07	-927.19	-901.37	0.00	0.00	0.00
6,200.00	21.65	208.98	5,844.45	-1,706.35	-945.06	-918.75	0.00	0.00	0.00
6,300.00	21.65	208.98	5,937.39	-1,738.62	-962.94	-936.12	0.00	0.00	0.00
6,400.00	21.65	208.98	6,030.34	-1,770.89	-980.81	-953.50	0.00	0.00	0.00
6,500.00	21.65	208.98	6,123.28	-1,803.17	-998.69	-970.88	0.00	0.00	0.00
6,600.00	21.65	208.98	6,216.23	-1,835.44	-1,016.56	-988.26	0.00	0.00	0.00
6,700.00	21.65	208.98	6,309.17	-1,867.72	-1,034.44	-1,005.63	0.00	0.00	0.00
6,800.00	21.65	208.98	6,402.12	-1,899.99	-1,052.31	-1,023.01	0.00	0.00	0.00
6,870.70	21.65	208.98	6,467.83	-1,922.81	-1,064.95	-1,035.30	0.00	0.00	0.00
KOP @ 6870.70ft :: DLS = 8°/100'									
6,900.00	20.90	202.85	6,495.14	-1,932.35	-1,069.60	-1,039.80	8.00	-2.55	-20.91
6,950.00	20.17	191.63	6,541.98	-1,949.02	-1,074.81	-1,044.75	8.00	-1.46	-22.46
7,000.00	20.19	180.01	6,588.93	-1,966.10	-1,076.55	-1,046.22	8.00	0.04	-23.22
7,050.00	20.95	168.82	6,635.76	-1,983.51	-1,074.81	-1,044.22	8.00	1.53	-22.38
7,100.00	22.39	158.69	6,682.24	-2,001.16	-1,069.62	-1,038.76	8.00	2.86	-20.26
7,150.00	24.37	149.92	6,728.15	-2,018.96	-1,060.99	-1,029.85	8.00	3.97	-17.54
7,200.00	26.78	142.52	6,773.26	-2,036.83	-1,048.96	-1,017.55	8.00	4.82	-14.81
7,250.00	29.52	136.32	6,817.35	-2,054.69	-1,033.59	-1,001.91	8.00	5.47	-12.39
7,300.00	32.49	131.13	6,860.21	-2,072.44	-1,014.96	-983.01	8.00	5.95	-10.39
7,324.87	34.04	128.86	6,881.00	-2,081.20	-1,004.51	-972.43	8.00	6.24	-9.14
Sharon Springs									
7,346.77	35.44	127.00	6,899.00	-2,088.87	-994.66	-962.46	8.00	6.38	-8.46
Niobrara									
7,350.00	35.65	126.74	6,901.63	-2,089.99	-993.16	-960.94	8.00	6.45	-8.13
7,400.00	38.94	122.99	6,941.40	-2,107.27	-968.29	-935.81	8.00	6.59	-7.50
7,450.00	42.34	119.75	6,979.34	-2,124.19	-940.48	-907.75	8.00	6.80	-6.49
7,500.00	45.82	116.90	7,015.26	-2,140.66	-909.86	-876.88	8.00	6.96	-5.69
7,550.00	49.36	114.38	7,048.98	-2,156.61	-876.58	-843.36	8.00	7.08	-5.05
7,553.12	49.58	114.23	7,051.00	-2,157.59	-874.42	-841.18	8.00	7.14	-4.76
Nio B									
7,600.00	52.95	112.11	7,080.33	-2,171.96	-840.80	-807.35	8.00	7.18	-4.52
7,644.26	56.16	110.28	7,106.00	-2,184.98	-807.19	-773.54	8.00	7.25	-4.14
Nio C									
7,650.00	56.58	110.05	7,109.18	-2,186.63	-802.70	-769.02	8.00	7.29	-3.96
7,700.00	60.24	108.16	7,135.37	-2,200.56	-762.46	-728.58	8.00	7.32	-3.79

Planning Report

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Site:	5N-67W-09 RAINBOW 24-9HZ PAD	North Reference:	True
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Wellbore:	Plan A		
Design:	Permit Rev-2		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
7,750.00	63.92	106.40	7,158.78	-2,213.66	-720.28	-686.20	8.00	7.37	-3.52
7,800.00	67.63	104.74	7,179.29	-2,225.89	-676.37	-642.10	8.00	7.41	-3.31
7,850.00	71.35	103.18	7,196.81	-2,237.18	-630.93	-596.49	8.00	7.44	-3.13
7,900.00	75.08	101.68	7,211.24	-2,247.47	-584.19	-549.60	8.00	7.47	-3.00
7,911.00	75.91	101.36	7,214.00	-2,249.60	-573.75	-539.13	8.00	7.48	-2.93
Fort Hayes									
7,950.00	78.83	100.23	7,222.53	-2,256.72	-536.37	-501.65	8.00	7.49	-2.89
8,000.00	82.58	98.82	7,230.61	-2,264.88	-487.72	-452.88	8.00	7.50	-2.82
8,020.67	84.13	98.24	7,233.00	-2,267.93	-467.41	-432.53	8.00	7.51	-2.78
Codell									
8,050.00	86.33	97.43	7,235.44	-2,271.91	-438.46	-403.52	8.00	7.51	-2.77
8,102.04	90.24	96.00	7,237.00	-2,277.99	-386.82	-351.79	8.00	7.51	-2.75
End Build @ 8102.04ft									
8,200.00	90.24	96.00	7,236.59	-2,288.23	-289.39	-254.21	0.00	0.00	0.00
8,300.00	90.24	96.00	7,236.17	-2,298.68	-189.94	-154.61	0.00	0.00	0.00
8,400.00	90.24	96.00	7,235.75	-2,309.14	-90.49	-55.01	0.00	0.00	0.00
8,500.00	90.24	96.00	7,235.33	-2,319.59	8.96	44.59	0.00	0.00	0.00
8,600.00	90.24	96.00	7,234.91	-2,330.04	108.41	144.19	0.00	0.00	0.00
8,690.00	90.24	96.00	7,234.53	-2,339.45	197.92	233.83	0.00	0.00	0.00
Begin Turn to BHL @ 8690.00ft									
8,700.00	90.24	95.85	7,234.49	-2,340.48	207.87	243.79	1.50	0.00	-1.50
8,800.00	90.24	94.35	7,234.07	-2,349.37	307.47	343.51	1.50	0.00	-1.50
8,900.00	90.24	92.85	7,233.66	-2,355.65	407.27	443.40	1.50	0.00	-1.50
9,000.00	90.24	91.35	7,233.24	-2,359.31	507.19	543.37	1.50	0.00	-1.50
9,071.23	90.24	90.28	7,232.95	-2,360.33	578.41	614.60	1.50	0.00	-1.50
End Turn @ 9071.23ft									
9,100.00	90.24	90.28	7,232.83	-2,360.47	607.18	643.37	0.00	0.00	0.00
9,200.00	90.24	90.28	7,232.41	-2,360.96	707.18	743.36	0.00	0.00	0.00
9,300.00	90.24	90.28	7,232.00	-2,361.45	807.18	843.35	0.00	0.00	0.00
9,400.00	90.24	90.28	7,231.59	-2,361.94	907.18	943.35	0.00	0.00	0.00
9,500.00	90.24	90.28	7,231.18	-2,362.43	1,007.18	1,043.34	0.00	0.00	0.00
9,600.00	90.24	90.28	7,230.76	-2,362.93	1,107.17	1,143.33	0.00	0.00	0.00
9,700.00	90.24	90.28	7,230.35	-2,363.42	1,207.17	1,243.33	0.00	0.00	0.00
9,800.00	90.24	90.28	7,229.94	-2,363.91	1,307.17	1,343.32	0.00	0.00	0.00
9,900.00	90.24	90.28	7,229.52	-2,364.40	1,407.17	1,443.32	0.00	0.00	0.00
10,000.00	90.24	90.28	7,229.11	-2,364.89	1,507.17	1,543.31	0.00	0.00	0.00
10,100.00	90.24	90.28	7,228.70	-2,365.38	1,607.16	1,643.30	0.00	0.00	0.00
10,200.00	90.24	90.28	7,228.28	-2,365.87	1,707.16	1,743.30	0.00	0.00	0.00
10,300.00	90.24	90.28	7,227.87	-2,366.37	1,807.16	1,843.29	0.00	0.00	0.00
10,400.00	90.24	90.28	7,227.46	-2,366.86	1,907.16	1,943.28	0.00	0.00	0.00
10,500.00	90.24	90.28	7,227.05	-2,367.35	2,007.16	2,043.28	0.00	0.00	0.00
10,600.00	90.24	90.28	7,226.63	-2,367.84	2,107.15	2,143.27	0.00	0.00	0.00
10,700.00	90.24	90.28	7,226.22	-2,368.33	2,207.15	2,243.27	0.00	0.00	0.00
10,800.00	90.24	90.28	7,225.81	-2,368.82	2,307.15	2,343.26	0.00	0.00	0.00
10,900.00	90.24	90.28	7,225.39	-2,369.31	2,407.15	2,443.25	0.00	0.00	0.00
11,000.00	90.24	90.28	7,224.98	-2,369.80	2,507.15	2,543.25	0.00	0.00	0.00
11,100.00	90.24	90.28	7,224.57	-2,370.30	2,607.14	2,643.24	0.00	0.00	0.00
11,200.00	90.24	90.28	7,224.15	-2,370.79	2,707.14	2,743.23	0.00	0.00	0.00
11,300.00	90.24	90.28	7,223.74	-2,371.28	2,807.14	2,843.23	0.00	0.00	0.00
11,400.00	90.24	90.28	7,223.33	-2,371.77	2,907.14	2,943.22	0.00	0.00	0.00
11,500.00	90.24	90.28	7,222.92	-2,372.26	3,007.14	3,043.21	0.00	0.00	0.00
11,600.00	90.24	90.28	7,222.50	-2,372.75	3,107.13	3,143.21	0.00	0.00	0.00
11,700.00	90.24	90.28	7,222.09	-2,373.24	3,207.13	3,243.20	0.00	0.00	0.00
11,800.00	90.24	90.28	7,221.68	-2,373.74	3,307.13	3,343.20	0.00	0.00	0.00

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well RAINBOW 9-22HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4966.00usft (RIG)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4966.00usft (RIG)
Site:	5N-67W-09 RAINBOW 24-9HZ PAD	North Reference:	True
Well:	RAINBOW 9-22HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-2		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,900.00	90.24	90.28	7,221.26	-2,374.23	3,407.13	3,443.19	0.00	0.00	0.00
12,000.00	90.24	90.28	7,220.85	-2,374.72	3,507.13	3,543.18	0.00	0.00	0.00
12,100.00	90.24	90.28	7,220.44	-2,375.21	3,607.12	3,643.18	0.00	0.00	0.00
12,200.00	90.24	90.28	7,220.02	-2,375.70	3,707.12	3,743.17	0.00	0.00	0.00
12,300.00	90.24	90.28	7,219.61	-2,376.19	3,807.12	3,843.16	0.00	0.00	0.00
12,400.00	90.24	90.28	7,219.20	-2,376.68	3,907.12	3,943.16	0.00	0.00	0.00
12,500.00	90.24	90.28	7,218.79	-2,377.17	4,007.11	4,043.15	0.00	0.00	0.00
12,600.00	90.24	90.28	7,218.37	-2,377.67	4,107.11	4,143.15	0.00	0.00	0.00
12,700.00	90.24	90.28	7,217.96	-2,378.16	4,207.11	4,243.14	0.00	0.00	0.00
12,800.00	90.24	90.28	7,217.55	-2,378.65	4,307.11	4,343.13	0.00	0.00	0.00
12,900.00	90.24	90.28	7,217.13	-2,379.14	4,407.11	4,443.13	0.00	0.00	0.00
13,000.00	90.24	90.28	7,216.72	-2,379.63	4,507.10	4,543.12	0.00	0.00	0.00
13,100.00	90.24	90.28	7,216.31	-2,380.12	4,607.10	4,643.11	0.00	0.00	0.00
13,200.00	90.24	90.28	7,215.89	-2,380.61	4,707.10	4,743.11	0.00	0.00	0.00
13,300.00	90.24	90.28	7,215.48	-2,381.11	4,807.10	4,843.10	0.00	0.00	0.00
13,400.00	90.24	90.28	7,215.07	-2,381.60	4,907.10	4,943.09	0.00	0.00	0.00
13,500.00	90.24	90.28	7,214.66	-2,382.09	5,007.09	5,043.09	0.00	0.00	0.00
13,600.00	90.24	90.28	7,214.24	-2,382.58	5,107.09	5,143.08	0.00	0.00	0.00
13,700.00	90.24	90.28	7,213.83	-2,383.07	5,207.09	5,243.08	0.00	0.00	0.00
13,800.00	90.24	90.28	7,213.42	-2,383.56	5,307.09	5,343.07	0.00	0.00	0.00
13,900.00	90.24	90.28	7,213.00	-2,384.05	5,407.09	5,443.06	0.00	0.00	0.00
14,000.00	90.24	90.28	7,212.59	-2,384.54	5,507.08	5,543.06	0.00	0.00	0.00
14,100.00	90.24	90.28	7,212.18	-2,385.04	5,607.08	5,643.05	0.00	0.00	0.00
14,200.00	90.24	90.28	7,211.76	-2,385.53	5,707.08	5,743.04	0.00	0.00	0.00
14,300.00	90.24	90.28	7,211.35	-2,386.02	5,807.08	5,843.04	0.00	0.00	0.00
14,400.00	90.24	90.28	7,210.94	-2,386.51	5,907.08	5,943.03	0.00	0.00	0.00
14,500.00	90.24	90.28	7,210.53	-2,387.00	6,007.07	6,043.03	0.00	0.00	0.00
14,600.00	90.24	90.28	7,210.11	-2,387.49	6,107.07	6,143.02	0.00	0.00	0.00
14,700.00	90.24	90.28	7,209.70	-2,387.98	6,207.07	6,243.01	0.00	0.00	0.00
14,800.00	90.24	90.28	7,209.29	-2,388.47	6,307.07	6,343.01	0.00	0.00	0.00
14,900.00	90.24	90.28	7,208.87	-2,388.97	6,407.07	6,443.00	0.00	0.00	0.00
15,000.00	90.24	90.28	7,208.46	-2,389.46	6,507.06	6,542.99	0.00	0.00	0.00
15,100.00	90.24	90.28	7,208.05	-2,389.95	6,607.06	6,642.99	0.00	0.00	0.00
15,200.00	90.24	90.28	7,207.63	-2,390.44	6,707.06	6,742.98	0.00	0.00	0.00
15,300.00	90.24	90.28	7,207.22	-2,390.93	6,807.06	6,842.97	0.00	0.00	0.00
15,400.00	90.24	90.28	7,206.81	-2,391.42	6,907.06	6,942.97	0.00	0.00	0.00
15,500.00	90.24	90.28	7,206.40	-2,391.91	7,007.05	7,042.96	0.00	0.00	0.00
15,595.65	90.24	90.28	7,206.00	-2,392.38	7,102.70	7,138.61	0.00	0.00	0.00
TD Well @ 15595.65ft - 5.5" CSG									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,526.50	1,500.00	9 5/8"	9-5/8	13-1/2	
15,595.65	7,206.00	5.5" CSG	5-1/2	7-7/8	

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well RAINBOW 9-22HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4966.00usft (RIG)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4966.00usft (RIG)
Site:	5N-67W-09 RAINBOW 24-9HZ PAD	North Reference:	True
Well:	RAINBOW 9-22HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-2		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
809.58	807.00	Fox Hills				
3,746.47	3,564.00	Parkman				
4,313.47	4,091.00	Sussex				
7,324.87	6,881.00	Sharon Springs				
7,346.77	6,899.00	Niobrara				
7,553.12	7,051.00	Nio B				
7,644.26	7,106.00	Nio C				
7,911.00	7,214.00	Fort Hayes				
8,020.67	7,233.00	Codell				

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
200.00	200.00	0.00	0.00	Begin Nudge @ 200.00ft	
1,643.33	1,609.23	-235.72	-130.56	Hold Tangent @ 1643.33ft	
6,870.70	6,467.83	-1,922.81	-1,064.95	KOP @ 6870.70ft :: DLS = 8°/100'	
8,102.04	7,237.00	-2,277.99	-386.82	End Build @ 8102.04ft	
8,690.00	7,234.53	-2,339.45	197.92	Begin Turn to BHL @ 8690.00ft	
9,071.23	7,232.95	-2,360.33	578.41	End Turn @ 9071.23ft	
15,595.65	7,206.00	-2,392.38	7,102.71	TD Well @ 15595.65ft	