

# **US ROCKIES WATTENBERG PLANNING**

**WELD-NAD83-UTMFT13N**

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

**RAINBOW 9-1HZ**

**Plan B**

**Plan: Permit Rev-1**

## **Standard Planning Report**

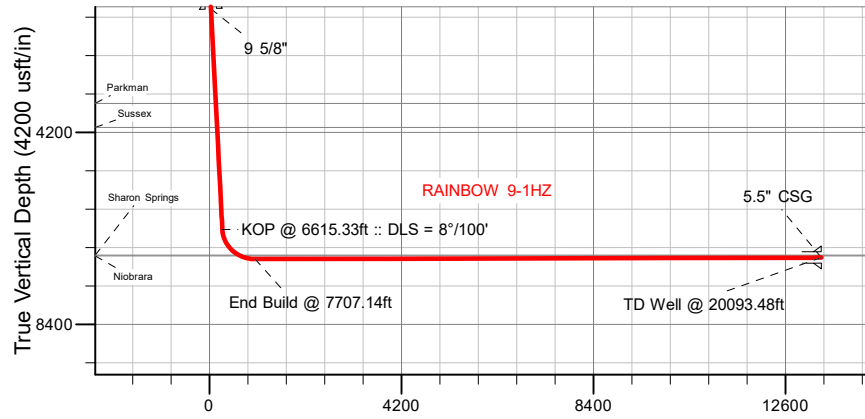
**15 March, 2023**

Project: WELD-NAD83-UTMFT13N  
Site: 5N-67W-09 RAINBOW 24-9HZ PAD  
Well: RAINBOW 9-1HZ  
Wellbore: Plan B  
Design: Permit Rev-1

# US ROCKIES WATTENBERG PLANNING

## CASING DETAILS

TVD	MD	Name	Size
1500.00	1526.06	9 5/8"	9-5/8
6939.00	20093.48	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	
201.50	0.00	0.00	201.50	0.00	0.00	0.00	0.00	0.00	
1438.83	18.56	351.23	1417.31	196.34	-30.29	1.50	351.23	30.46	
6615.33	18.56	351.23	6324.58	1824.74	-281.51	0.00	0.00	283.10	
7707.14	90.15	270.05	6971.00	2040.37	-998.44	8.00	-81.59	1000.22	
20093.48	90.15	270.05	6939.00	2050.13	-13384.74	0.00	0.00	13386.52	RAINBOW 9-1HZ_BHL

## WELLBORE TARGET DETAILS (LAT/LONG)

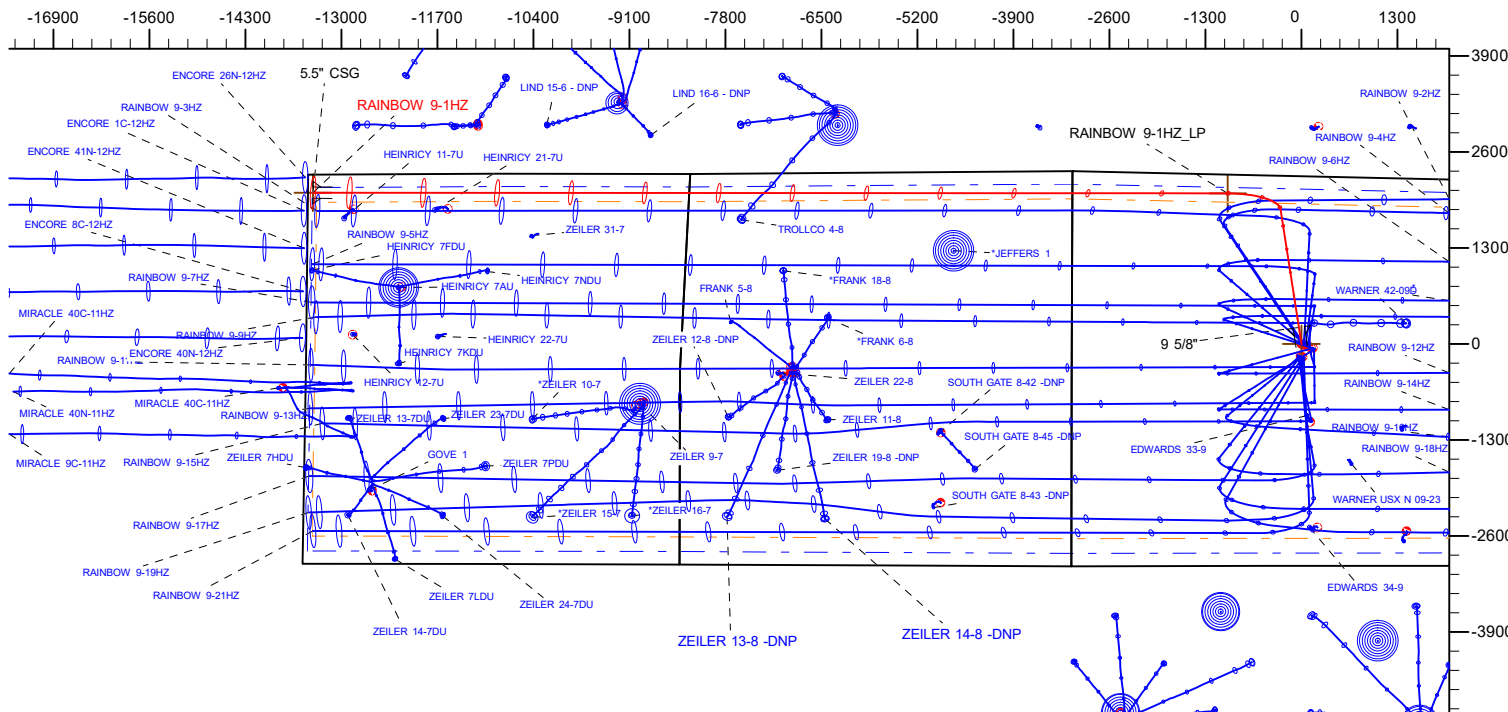
Name	TVD	Northing	Easting	Latitude	Longitude
RAINBOW 9-1HZ_SHL	0.00	14677926.62	1669365.14	40.415144	-104.895999
RAINBOW 9-1HZ_LP	6971.00	14679965.81	1668364.30	40.420747	-104.899586
RAINBOW 9-1HZ_BHL	6939.00	14679961.00	1655978.00	40.420764	-104.944089

SHL  
2273' FNL  
2096' FEL

LP  
254' FNL  
2103' FWL

BHL  
245' FNL  
70' FWL

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



## WELL DETAILS: RAINBOW 9-1HZ

GL = 4949'

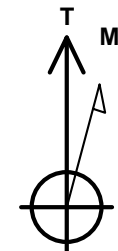
RKB = 17' @ 4966.00usft (RIG)

Plan: Permit Rev-1 (RAINBOW 9-1HZ/Plan B)

Date: 3/15/2023

## FORMATION TOP DETAILS

TVDPath	MDPath	Formation
807.00	809.56	Fox Hills
3564.00	3703.30	Parkman
4091.00	4259.21	Sussex
6881.00	7332.44	Sharon Springs
6899.00	7372.56	Niobrara



Azimuths to True North  
Magnetic North: 7.74°

Magnetic Field  
Strength: 51762.8nT  
Dip Angle: 66.57°  
Date: 3/15/2023  
Model: IGRF2020

## Planning Report

<b>Database:</b>	EDM 5000.16 Single User Db	<b>Local Co-ordinate Reference:</b>	Well RAINBOW 9-1HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 4966.00usft (RIG)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 4966.00usft (RIG)
<b>Site:</b>	5N-67W-09 RAINBOW 24-9HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	RAINBOW 9-1HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan B		
<b>Design:</b>	Permit Rev-1		

<b>Project</b>	WELD-NAD83-UTMFT13N		
<b>Map System:</b>	Universal Transverse Mercator (US Survey Feet)	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Zone 13N (108 W to 102 W)		

Site		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 9-1HZ				
Well Position	+N/-S	0.00 usft	Northing:	14,677,926.62 usft	Latitude:	40.415144
	+E/-W	0.00 usft	Easting:	1,669,365.14 usft	Longitude:	-104.895999
Position Uncertainty		3.28 usft	Wellhead Elevation:	usft	Ground Level:	4,949.00 usft
Grid Convergence:		0.07 °				

<b>Wellbore</b>	Plan B				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF202013	3/15/2023	7.74	66.57	51,762.80765744

<b>Design</b>	Permit Rev-1				
<b>Audit Notes:</b>					
<b>Version:</b>		<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	270.05	

<b>Plan Survey Tool Program</b>		<b>Date</b>	3/15/2023		
<b>Depth From (usft)</b>	<b>Depth To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Remarks</b>	
1	0.00	1,500.00	Permit Rev-1 (Plan B)	APC_ISCWSA REV 2 MWD+I Fixed:v2:crustal field declinatio	
2	1,500.00	20,093.48	Permit Rev-1 (Plan B)	APC_ISCWSA REV 2 MWD+I Fixed:v2:Rockies, crustal dec +	

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well RAINBOW 9-1HZ
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 9-1HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan B		
Design:	Permit Rev-1		

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	
201.50	0.00	0.00	201.50	0.00	0.00	0.00	0.00	0.00	0.00	
1,438.83	18.56	351.23	1,417.31	196.34	-30.29	1.50	1.50	0.00	351.23	
6,615.33	18.56	351.23	6,324.58	1,824.74	-281.51	0.00	0.00	0.00	0.00	
7,707.14	90.15	270.05	6,971.00	2,040.37	-998.44	8.00	6.56	-7.44	-81.59	
20,093.48	90.15	270.05	6,939.00	2,050.13	-13,384.74	0.00	0.00	0.00	0.00	RAINBOW 9-1HZ_BH

## Planning Report

<b>Database:</b>	EDM 5000.16 Single User Db	<b>Local Co-ordinate Reference:</b>	Well RAINBOW 9-1HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 4966.00usft (RIG)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 4966.00usft (RIG)
<b>Site:</b>	5N-67W-09 RAINBOW 24-9HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	RAINBOW 9-1HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan B		
<b>Design:</b>	Permit Rev-1		

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
201.50	0.00	0.00	201.50	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge @ 201.50ft									
300.00	1.48	351.23	299.99	1.26	-0.19	0.19	1.50	1.50	0.00
400.00	2.98	351.23	399.91	5.10	-0.79	0.79	1.50	1.50	0.00
500.00	4.48	351.23	499.70	11.52	-1.78	1.79	1.50	1.50	0.00
600.00	5.98	351.23	599.28	20.53	-3.17	3.18	1.50	1.50	0.00
700.00	7.48	351.23	698.59	32.10	-4.95	4.98	1.50	1.50	0.00
800.00	8.98	351.23	797.55	46.25	-7.13	7.17	1.50	1.50	0.00
809.57	9.12	351.23	807.00	47.73	-7.36	7.41	1.50	1.50	0.00
Fox Hills									
900.00	10.48	351.23	896.11	62.94	-9.71	9.77	1.50	1.50	0.00
1,000.00	11.98	351.23	994.20	82.19	-12.68	12.75	1.50	1.50	0.00
1,100.00	13.48	351.23	1,091.74	103.96	-16.04	16.13	1.50	1.50	0.00
1,200.00	14.98	351.23	1,188.67	128.25	-19.79	19.90	1.50	1.50	0.00
1,300.00	16.48	351.23	1,284.92	155.04	-23.92	24.05	1.50	1.50	0.00
1,400.00	17.98	351.23	1,380.43	184.31	-28.43	28.59	1.50	1.50	0.00
1,438.83	18.56	351.23	1,417.31	196.34	-30.29	30.46	1.50	1.50	0.00
Hold Tangent @ 1438.83ft									
1,500.00	18.56	351.23	1,475.29	215.58	-33.26	33.45	0.00	0.00	0.00
1,526.06	18.56	351.23	1,500.00	223.78	-34.52	34.72	0.00	0.00	0.00
9 5/8"									
1,600.00	18.56	351.23	1,570.09	247.04	-38.11	38.33	0.00	0.00	0.00
1,700.00	18.56	351.23	1,664.89	278.49	-42.96	43.21	0.00	0.00	0.00
1,800.00	18.56	351.23	1,759.69	309.95	-47.82	48.09	0.00	0.00	0.00
1,900.00	18.56	351.23	1,854.49	341.41	-52.67	52.97	0.00	0.00	0.00
2,000.00	18.56	351.23	1,949.29	372.87	-57.52	57.85	0.00	0.00	0.00
2,100.00	18.56	351.23	2,044.09	404.32	-62.38	62.73	0.00	0.00	0.00
2,200.00	18.56	351.23	2,138.89	435.78	-67.23	67.61	0.00	0.00	0.00
2,300.00	18.56	351.23	2,233.69	467.24	-72.08	72.49	0.00	0.00	0.00
2,400.00	18.56	351.23	2,328.48	498.70	-76.94	77.37	0.00	0.00	0.00
2,500.00	18.56	351.23	2,423.28	530.16	-81.79	82.25	0.00	0.00	0.00
2,600.00	18.56	351.23	2,518.08	561.61	-86.64	87.13	0.00	0.00	0.00
2,700.00	18.56	351.23	2,612.88	593.07	-91.49	92.01	0.00	0.00	0.00
2,800.00	18.56	351.23	2,707.68	624.53	-96.35	96.89	0.00	0.00	0.00
2,900.00	18.56	351.23	2,802.48	655.99	-101.20	101.77	0.00	0.00	0.00
3,000.00	18.56	351.23	2,897.28	687.44	-106.05	106.65	0.00	0.00	0.00
3,100.00	18.56	351.23	2,992.08	718.90	-110.91	111.53	0.00	0.00	0.00
3,200.00	18.56	351.23	3,086.88	750.36	-115.76	116.41	0.00	0.00	0.00
3,300.00	18.56	351.23	3,181.68	781.82	-120.61	121.29	0.00	0.00	0.00
3,400.00	18.56	351.23	3,276.48	813.27	-125.47	126.18	0.00	0.00	0.00
3,500.00	18.56	351.23	3,371.27	844.73	-130.32	131.06	0.00	0.00	0.00
3,600.00	18.56	351.23	3,466.07	876.19	-135.17	135.94	0.00	0.00	0.00
3,700.00	18.56	351.23	3,560.87	907.65	-140.02	140.82	0.00	0.00	0.00
3,703.30	18.56	351.23	3,564.00	908.68	-140.18	140.98	0.00	0.00	0.00
Parkman									
3,800.00	18.56	351.23	3,655.67	939.10	-144.88	145.70	0.00	0.00	0.00
3,900.00	18.56	351.23	3,750.47	970.56	-149.73	150.58	0.00	0.00	0.00
4,000.00	18.56	351.23	3,845.27	1,002.02	-154.58	155.46	0.00	0.00	0.00
4,100.00	18.56	351.23	3,940.07	1,033.48	-159.44	160.34	0.00	0.00	0.00
4,200.00	18.56	351.23	4,034.87	1,064.93	-164.29	165.22	0.00	0.00	0.00
4,259.21	18.56	351.23	4,091.00	1,083.56	-167.16	168.11	0.00	0.00	0.00

## Planning Report

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<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 4966.00usft (RIG)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 4966.00usft (RIG)
<b>Site:</b>	5N-67W-09 RAINBOW 24-9HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	RAINBOW 9-1HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan B		
<b>Design:</b>	Permit Rev-1		

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)
<b>Sussex</b>									
4,300.00	18.56	351.23	4,129.67	1,096.39	-169.14	170.10	0.00	0.00	0.00
4,400.00	18.56	351.23	4,224.47	1,127.85	-174.00	174.98	0.00	0.00	0.00
4,500.00	18.56	351.23	4,319.27	1,159.31	-178.85	179.86	0.00	0.00	0.00
4,600.00	18.56	351.23	4,414.06	1,190.77	-183.70	184.74	0.00	0.00	0.00
4,700.00	18.56	351.23	4,508.86	1,222.22	-188.55	189.62	0.00	0.00	0.00
4,800.00	18.56	351.23	4,603.66	1,253.68	-193.41	194.50	0.00	0.00	0.00
4,900.00	18.56	351.23	4,698.46	1,285.14	-198.26	199.38	0.00	0.00	0.00
5,000.00	18.56	351.23	4,793.26	1,316.60	-203.11	204.26	0.00	0.00	0.00
5,100.00	18.56	351.23	4,888.06	1,348.05	-207.97	209.14	0.00	0.00	0.00
5,200.00	18.56	351.23	4,982.86	1,379.51	-212.82	214.02	0.00	0.00	0.00
5,300.00	18.56	351.23	5,077.66	1,410.97	-217.67	218.90	0.00	0.00	0.00
5,400.00	18.56	351.23	5,172.46	1,442.43	-222.53	223.78	0.00	0.00	0.00
5,500.00	18.56	351.23	5,267.26	1,473.88	-227.38	228.67	0.00	0.00	0.00
5,600.00	18.56	351.23	5,362.06	1,505.34	-232.23	233.55	0.00	0.00	0.00
5,700.00	18.56	351.23	5,456.85	1,536.80	-237.09	238.43	0.00	0.00	0.00
5,800.00	18.56	351.23	5,551.65	1,568.26	-241.94	243.31	0.00	0.00	0.00
5,900.00	18.56	351.23	5,646.45	1,599.71	-246.79	248.19	0.00	0.00	0.00
6,000.00	18.56	351.23	5,741.25	1,631.17	-251.64	253.07	0.00	0.00	0.00
6,100.00	18.56	351.23	5,836.05	1,662.63	-256.50	257.95	0.00	0.00	0.00
6,200.00	18.56	351.23	5,930.85	1,694.09	-261.35	262.83	0.00	0.00	0.00
6,300.00	18.56	351.23	6,025.65	1,725.54	-266.20	267.71	0.00	0.00	0.00
6,400.00	18.56	351.23	6,120.45	1,757.00	-271.06	272.59	0.00	0.00	0.00
6,500.00	18.56	351.23	6,215.25	1,788.46	-275.91	277.47	0.00	0.00	0.00
6,600.00	18.56	351.23	6,310.05	1,819.92	-280.76	282.35	0.00	0.00	0.00
6,615.33	18.56	351.23	6,324.58	1,824.74	-281.51	283.10	0.00	0.00	0.00
<b>KOP @ 6615.33ft :: DLS = 8°/100'</b>									
6,650.00	19.16	342.84	6,357.39	1,835.63	-284.03	285.63	8.00	1.72	-24.19
6,700.00	20.63	331.89	6,404.43	1,851.24	-290.60	292.21	8.00	2.95	-21.90
6,750.00	22.69	322.59	6,450.91	1,866.68	-300.61	302.24	8.00	4.13	-18.60
6,800.00	25.21	314.91	6,496.61	1,881.86	-314.02	315.66	8.00	5.02	-15.36
6,850.00	28.05	308.61	6,541.31	1,896.72	-330.75	332.41	8.00	5.68	-12.60
6,900.00	31.12	303.42	6,584.79	1,911.18	-350.73	352.40	8.00	6.15	-10.37
6,950.00	34.37	299.11	6,626.85	1,925.17	-373.85	375.53	8.00	6.50	-8.63
7,000.00	37.75	295.46	6,667.27	1,938.62	-400.01	401.71	8.00	6.76	-7.29
7,050.00	41.22	292.34	6,705.85	1,951.47	-429.08	430.79	8.00	6.95	-6.24
7,100.00	44.77	289.63	6,742.42	1,963.65	-460.92	462.63	8.00	7.09	-5.43
7,150.00	48.38	287.24	6,776.79	1,975.11	-495.36	497.09	8.00	7.21	-4.78
7,200.00	52.02	285.10	6,808.79	1,985.79	-532.25	533.98	8.00	7.30	-4.27
7,250.00	55.71	283.17	6,838.27	1,995.63	-571.40	573.15	8.00	7.37	-3.87
7,300.00	59.42	281.40	6,865.09	2,004.60	-612.63	614.38	8.00	7.42	-3.54
7,332.44	61.84	280.32	6,881.00	2,009.92	-640.39	642.15	8.00	7.46	-3.32
<b>Sharon Springs</b>									
7,350.00	63.15	279.76	6,889.11	2,012.64	-655.73	657.48	8.00	7.48	-3.20
7,372.56	64.84	279.06	6,899.00	2,015.95	-675.73	677.49	8.00	7.49	-3.12
<b>Niobrara</b>									
7,400.00	66.90	278.23	6,910.22	2,019.71	-700.49	702.25	8.00	7.51	-3.02
7,450.00	70.67	276.78	6,928.31	2,025.79	-746.69	748.46	8.00	7.53	-2.90
7,500.00	74.44	275.39	6,943.30	2,030.84	-794.11	795.88	8.00	7.55	-2.77
7,550.00	78.23	274.06	6,955.11	2,034.84	-842.52	844.30	8.00	7.57	-2.67
7,600.00	82.02	272.76	6,963.69	2,037.77	-891.68	893.46	8.00	7.58	-2.60
7,650.00	85.81	271.49	6,968.99	2,039.61	-941.36	943.14	8.00	7.59	-2.55
7,700.00	89.61	270.22	6,970.99	2,040.35	-991.30	993.08	8.00	7.59	-2.52

## Planning Report

<b>Database:</b>	EDM 5000.16 Single User Db	<b>Local Co-ordinate Reference:</b>	Well RAINBOW 9-1HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 4966.00usft (RIG)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 4966.00usft (RIG)
<b>Site:</b>	5N-67W-09 RAINBOW 24-9HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	RAINBOW 9-1HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan B		
<b>Design:</b>	Permit Rev-1		

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)
7,707.14	90.15	270.05	6,971.00	2,040.37	-998.44	1,000.22	8.00	7.59	-2.52
End Build @ 7707.14ft									
7,800.00	90.15	270.05	6,970.76	2,040.44	-1,091.30	1,093.08	0.00	0.00	0.00
7,900.00	90.15	270.05	6,970.50	2,040.52	-1,191.30	1,193.08	0.00	0.00	0.00
8,000.00	90.15	270.05	6,970.25	2,040.60	-1,291.30	1,293.08	0.00	0.00	0.00
8,100.00	90.15	270.05	6,969.99	2,040.68	-1,391.30	1,393.08	0.00	0.00	0.00
8,200.00	90.15	270.05	6,969.73	2,040.76	-1,491.30	1,493.08	0.00	0.00	0.00
8,300.00	90.15	270.05	6,969.47	2,040.84	-1,591.30	1,593.08	0.00	0.00	0.00
8,400.00	90.15	270.05	6,969.21	2,040.92	-1,691.30	1,693.08	0.00	0.00	0.00
8,500.00	90.15	270.05	6,968.95	2,041.00	-1,791.30	1,793.08	0.00	0.00	0.00
8,600.00	90.15	270.05	6,968.69	2,041.07	-1,891.30	1,893.08	0.00	0.00	0.00
8,700.00	90.15	270.05	6,968.44	2,041.15	-1,991.30	1,993.08	0.00	0.00	0.00
8,800.00	90.15	270.05	6,968.18	2,041.23	-2,091.30	2,093.08	0.00	0.00	0.00
8,900.00	90.15	270.05	6,967.92	2,041.31	-2,191.30	2,193.08	0.00	0.00	0.00
9,000.00	90.15	270.05	6,967.66	2,041.39	-2,291.30	2,293.08	0.00	0.00	0.00
9,100.00	90.15	270.05	6,967.40	2,041.47	-2,391.29	2,393.08	0.00	0.00	0.00
9,200.00	90.15	270.05	6,967.14	2,041.55	-2,491.29	2,493.08	0.00	0.00	0.00
9,300.00	90.15	270.05	6,966.89	2,041.63	-2,591.29	2,593.07	0.00	0.00	0.00
9,400.00	90.15	270.05	6,966.63	2,041.70	-2,691.29	2,693.07	0.00	0.00	0.00
9,500.00	90.15	270.05	6,966.37	2,041.78	-2,791.29	2,793.07	0.00	0.00	0.00
9,600.00	90.15	270.05	6,966.11	2,041.86	-2,891.29	2,893.07	0.00	0.00	0.00
9,700.00	90.15	270.05	6,965.85	2,041.94	-2,991.29	2,993.07	0.00	0.00	0.00
9,800.00	90.15	270.05	6,965.59	2,042.02	-3,091.29	3,093.07	0.00	0.00	0.00
9,900.00	90.15	270.05	6,965.34	2,042.10	-3,191.29	3,193.07	0.00	0.00	0.00
10,000.00	90.15	270.05	6,965.08	2,042.18	-3,291.29	3,293.07	0.00	0.00	0.00
10,100.00	90.15	270.05	6,964.82	2,042.26	-3,391.29	3,393.07	0.00	0.00	0.00
10,200.00	90.15	270.05	6,964.56	2,042.34	-3,491.29	3,493.07	0.00	0.00	0.00
10,300.00	90.15	270.05	6,964.30	2,042.41	-3,591.29	3,593.07	0.00	0.00	0.00
10,400.00	90.15	270.05	6,964.04	2,042.49	-3,691.29	3,693.07	0.00	0.00	0.00
10,500.00	90.15	270.05	6,963.79	2,042.57	-3,791.29	3,793.07	0.00	0.00	0.00
10,600.00	90.15	270.05	6,963.53	2,042.65	-3,891.29	3,893.07	0.00	0.00	0.00
10,700.00	90.15	270.05	6,963.27	2,042.73	-3,991.29	3,993.07	0.00	0.00	0.00
10,800.00	90.15	270.05	6,963.01	2,042.81	-4,091.29	4,093.07	0.00	0.00	0.00
10,900.00	90.15	270.05	6,962.75	2,042.89	-4,191.29	4,193.07	0.00	0.00	0.00
11,000.00	90.15	270.05	6,962.49	2,042.97	-4,291.29	4,293.07	0.00	0.00	0.00
11,100.00	90.15	270.05	6,962.24	2,043.04	-4,391.29	4,393.07	0.00	0.00	0.00
11,200.00	90.15	270.05	6,961.98	2,043.12	-4,491.29	4,493.07	0.00	0.00	0.00
11,300.00	90.15	270.05	6,961.72	2,043.20	-4,591.29	4,593.07	0.00	0.00	0.00
11,400.00	90.15	270.05	6,961.46	2,043.28	-4,691.29	4,693.07	0.00	0.00	0.00
11,500.00	90.15	270.05	6,961.20	2,043.36	-4,791.29	4,793.07	0.00	0.00	0.00
11,600.00	90.15	270.05	6,960.94	2,043.44	-4,891.29	4,893.07	0.00	0.00	0.00
11,700.00	90.15	270.05	6,960.69	2,043.52	-4,991.29	4,993.07	0.00	0.00	0.00
11,800.00	90.15	270.05	6,960.43	2,043.60	-5,091.29	5,093.07	0.00	0.00	0.00
11,900.00	90.15	270.05	6,960.17	2,043.68	-5,191.28	5,193.07	0.00	0.00	0.00
12,000.00	90.15	270.05	6,959.91	2,043.75	-5,291.28	5,293.07	0.00	0.00	0.00
12,100.00	90.15	270.05	6,959.65	2,043.83	-5,391.28	5,393.07	0.00	0.00	0.00
12,200.00	90.15	270.05	6,959.39	2,043.91	-5,491.28	5,493.07	0.00	0.00	0.00
12,300.00	90.15	270.05	6,959.14	2,043.99	-5,591.28	5,593.06	0.00	0.00	0.00
12,400.00	90.15	270.05	6,958.88	2,044.07	-5,691.28	5,693.06	0.00	0.00	0.00
12,500.00	90.15	270.05	6,958.62	2,044.15	-5,791.28	5,793.06	0.00	0.00	0.00
12,600.00	90.15	270.05	6,958.36	2,044.23	-5,891.28	5,893.06	0.00	0.00	0.00
12,700.00	90.15	270.05	6,958.10	2,044.31	-5,991.28	5,993.06	0.00	0.00	0.00
12,800.00	90.15	270.05	6,957.84	2,044.38	-6,091.28	6,093.06	0.00	0.00	0.00
12,900.00	90.15	270.05	6,957.59	2,044.46	-6,191.28	6,193.06	0.00	0.00	0.00

## Planning Report

<b>Database:</b>	EDM 5000.16 Single User Db	<b>Local Co-ordinate Reference:</b>	Well RAINBOW 9-1HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 4966.00usft (RIG)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 4966.00usft (RIG)
<b>Site:</b>	5N-67W-09 RAINBOW 24-9HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	RAINBOW 9-1HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan B		
<b>Design:</b>	Permit Rev-1		

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)
13,000.00	90.15	270.05	6,957.33	2,044.54	-6,291.28	6,293.06	0.00	0.00	0.00
13,100.00	90.15	270.05	6,957.07	2,044.62	-6,391.28	6,393.06	0.00	0.00	0.00
13,200.00	90.15	270.05	6,956.81	2,044.70	-6,491.28	6,493.06	0.00	0.00	0.00
13,300.00	90.15	270.05	6,956.55	2,044.78	-6,591.28	6,593.06	0.00	0.00	0.00
13,400.00	90.15	270.05	6,956.29	2,044.86	-6,691.28	6,693.06	0.00	0.00	0.00
13,500.00	90.15	270.05	6,956.04	2,044.94	-6,791.28	6,793.06	0.00	0.00	0.00
13,600.00	90.15	270.05	6,955.78	2,045.02	-6,891.28	6,893.06	0.00	0.00	0.00
13,700.00	90.15	270.05	6,955.52	2,045.09	-6,991.28	6,993.06	0.00	0.00	0.00
13,800.00	90.15	270.05	6,955.26	2,045.17	-7,091.28	7,093.06	0.00	0.00	0.00
13,900.00	90.15	270.05	6,955.00	2,045.25	-7,191.28	7,193.06	0.00	0.00	0.00
14,000.00	90.15	270.05	6,954.74	2,045.33	-7,291.28	7,293.06	0.00	0.00	0.00
14,100.00	90.15	270.05	6,954.49	2,045.41	-7,391.28	7,393.06	0.00	0.00	0.00
14,200.00	90.15	270.05	6,954.23	2,045.49	-7,491.28	7,493.06	0.00	0.00	0.00
14,300.00	90.15	270.05	6,953.97	2,045.57	-7,591.28	7,593.06	0.00	0.00	0.00
14,400.00	90.15	270.05	6,953.71	2,045.65	-7,691.28	7,693.06	0.00	0.00	0.00
14,500.00	90.15	270.05	6,953.45	2,045.72	-7,791.28	7,793.06	0.00	0.00	0.00
14,600.00	90.15	270.05	6,953.19	2,045.80	-7,891.27	7,893.06	0.00	0.00	0.00
14,700.00	90.15	270.05	6,952.93	2,045.88	-7,991.27	7,993.06	0.00	0.00	0.00
14,800.00	90.15	270.05	6,952.68	2,045.96	-8,091.27	8,093.06	0.00	0.00	0.00
14,900.00	90.15	270.05	6,952.42	2,046.04	-8,191.27	8,193.06	0.00	0.00	0.00
15,000.00	90.15	270.05	6,952.16	2,046.12	-8,291.27	8,293.06	0.00	0.00	0.00
15,100.00	90.15	270.05	6,951.90	2,046.20	-8,391.27	8,393.06	0.00	0.00	0.00
15,200.00	90.15	270.05	6,951.64	2,046.28	-8,491.27	8,493.06	0.00	0.00	0.00
15,300.00	90.15	270.05	6,951.38	2,046.36	-8,591.27	8,593.05	0.00	0.00	0.00
15,400.00	90.15	270.05	6,951.13	2,046.43	-8,691.27	8,693.05	0.00	0.00	0.00
15,500.00	90.15	270.05	6,950.87	2,046.51	-8,791.27	8,793.05	0.00	0.00	0.00
15,600.00	90.15	270.05	6,950.61	2,046.59	-8,891.27	8,893.05	0.00	0.00	0.00
15,700.00	90.15	270.05	6,950.35	2,046.67	-8,991.27	8,993.05	0.00	0.00	0.00
15,800.00	90.15	270.05	6,950.09	2,046.75	-9,091.27	9,093.05	0.00	0.00	0.00
15,900.00	90.15	270.05	6,949.83	2,046.83	-9,191.27	9,193.05	0.00	0.00	0.00
16,000.00	90.15	270.05	6,949.58	2,046.91	-9,291.27	9,293.05	0.00	0.00	0.00
16,100.00	90.15	270.05	6,949.32	2,046.99	-9,391.27	9,393.05	0.00	0.00	0.00
16,200.00	90.15	270.05	6,949.06	2,047.06	-9,491.27	9,493.05	0.00	0.00	0.00
16,300.00	90.15	270.05	6,948.80	2,047.14	-9,591.27	9,593.05	0.00	0.00	0.00
16,400.00	90.15	270.05	6,948.54	2,047.22	-9,691.27	9,693.05	0.00	0.00	0.00
16,500.00	90.15	270.05	6,948.28	2,047.30	-9,791.27	9,793.05	0.00	0.00	0.00
16,600.00	90.15	270.05	6,948.03	2,047.38	-9,891.27	9,893.05	0.00	0.00	0.00
16,700.00	90.15	270.05	6,947.77	2,047.46	-9,991.27	9,993.05	0.00	0.00	0.00
16,800.00	90.15	270.05	6,947.51	2,047.54	-10,091.27	10,093.05	0.00	0.00	0.00
16,900.00	90.15	270.05	6,947.25	2,047.62	-10,191.27	10,193.05	0.00	0.00	0.00
17,000.00	90.15	270.05	6,946.99	2,047.70	-10,291.27	10,293.05	0.00	0.00	0.00
17,100.00	90.15	270.05	6,946.73	2,047.77	-10,391.27	10,393.05	0.00	0.00	0.00
17,200.00	90.15	270.05	6,946.48	2,047.85	-10,491.27	10,493.05	0.00	0.00	0.00
17,300.00	90.15	270.05	6,946.22	2,047.93	-10,591.27	10,593.05	0.00	0.00	0.00
17,400.00	90.15	270.05	6,945.96	2,048.01	-10,691.26	10,693.05	0.00	0.00	0.00
17,500.00	90.15	270.05	6,945.70	2,048.09	-10,791.26	10,793.05	0.00	0.00	0.00
17,600.00	90.15	270.05	6,945.44	2,048.17	-10,891.26	10,893.05	0.00	0.00	0.00
17,700.00	90.15	270.05	6,945.18	2,048.25	-10,991.26	10,993.05	0.00	0.00	0.00
17,800.00	90.15	270.05	6,944.93	2,048.33	-11,091.26	11,093.05	0.00	0.00	0.00
17,900.00	90.15	270.05	6,944.67	2,048.40	-11,191.26	11,193.05	0.00	0.00	0.00
18,000.00	90.15	270.05	6,944.41	2,048.48	-11,291.26	11,293.05	0.00	0.00	0.00
18,100.00	90.15	270.05	6,944.15	2,048.56	-11,391.26	11,393.05	0.00	0.00	0.00
18,200.00	90.15	270.05	6,943.89	2,048.64	-11,491.26	11,493.05	0.00	0.00	0.00
18,300.00	90.15	270.05	6,943.63	2,048.72	-11,591.26	11,593.04	0.00	0.00	0.00



## Planning Report

<b>Database:</b>	EDM 5000.16 Single User Db	<b>Local Co-ordinate Reference:</b>	Well RAINBOW 9-1HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 4966.00usft (RIG)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 4966.00usft (RIG)
<b>Site:</b>	5N-67W-09 RAINBOW 24-9HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	RAINBOW 9-1HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan B		
<b>Design:</b>	Permit Rev-1		

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)	
18,400.00	90.15	270.05	6,943.38	2,048.80	-11,691.26	11,693.04	0.00	0.00	0.00	
18,500.00	90.15	270.05	6,943.12	2,048.88	-11,791.26	11,793.04	0.00	0.00	0.00	
18,600.00	90.15	270.05	6,942.86	2,048.96	-11,891.26	11,893.04	0.00	0.00	0.00	
18,700.00	90.15	270.05	6,942.60	2,049.04	-11,991.26	11,993.04	0.00	0.00	0.00	
18,800.00	90.15	270.05	6,942.34	2,049.11	-12,091.26	12,093.04	0.00	0.00	0.00	
18,900.00	90.15	270.05	6,942.08	2,049.19	-12,191.26	12,193.04	0.00	0.00	0.00	
19,000.00	90.15	270.05	6,941.83	2,049.27	-12,291.26	12,293.04	0.00	0.00	0.00	
19,100.00	90.15	270.05	6,941.57	2,049.35	-12,391.26	12,393.04	0.00	0.00	0.00	
19,200.00	90.15	270.05	6,941.31	2,049.43	-12,491.26	12,493.04	0.00	0.00	0.00	
19,300.00	90.15	270.05	6,941.05	2,049.51	-12,591.26	12,593.04	0.00	0.00	0.00	
19,400.00	90.15	270.05	6,940.79	2,049.59	-12,691.26	12,693.04	0.00	0.00	0.00	
19,500.00	90.15	270.05	6,940.53	2,049.67	-12,791.26	12,793.04	0.00	0.00	0.00	
19,600.00	90.15	270.05	6,940.28	2,049.74	-12,891.26	12,893.04	0.00	0.00	0.00	
19,700.00	90.15	270.05	6,940.02	2,049.82	-12,991.26	12,993.04	0.00	0.00	0.00	
19,800.00	90.15	270.05	6,939.76	2,049.90	-13,091.26	13,093.04	0.00	0.00	0.00	
19,900.00	90.15	270.05	6,939.50	2,049.98	-13,191.26	13,193.04	0.00	0.00	0.00	
20,000.00	90.15	270.05	6,939.24	2,050.06	-13,291.26	13,293.04	0.00	0.00	0.00	
20,093.48	90.15	270.05	6,939.00	2,050.13	-13,384.73	13,386.52	0.00	0.00	0.00	
TD Well @ 20093.48ft - 5.5" CSG										

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,526.06	1,500.00	9 5/8"	9-5/8	13-1/2	
20,093.48	6,939.00	5.5" CSG	5-1/2	7-7/8	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
809.57	807.00	Fox Hills				
3,703.30	3,564.00	Parkman				
4,259.21	4,091.00	Sussex				
7,332.44	6,881.00	Sharon Springs				
7,372.56	6,899.00	Niobrara				

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
201.50	201.50	0.00	0.00	Begin Nudge @ 201.50ft	
1,438.83	1,417.31	196.34	-30.29	Hold Tangent @ 1438.83ft	
6,615.33	6,324.58	1,824.74	-281.51	KOP @ 6615.33ft :: DLS = 8"/100'	
7,707.14	6,971.00	2,040.37	-998.44	End Build @ 7707.14ft	
20,093.48	6,939.00	2,050.13	-13,384.74	TD Well @ 20093.48ft	