

US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N

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

RAINBOW 9-1HZ

Plan A

Plan: Permit Rev-2

Standard Planning Report

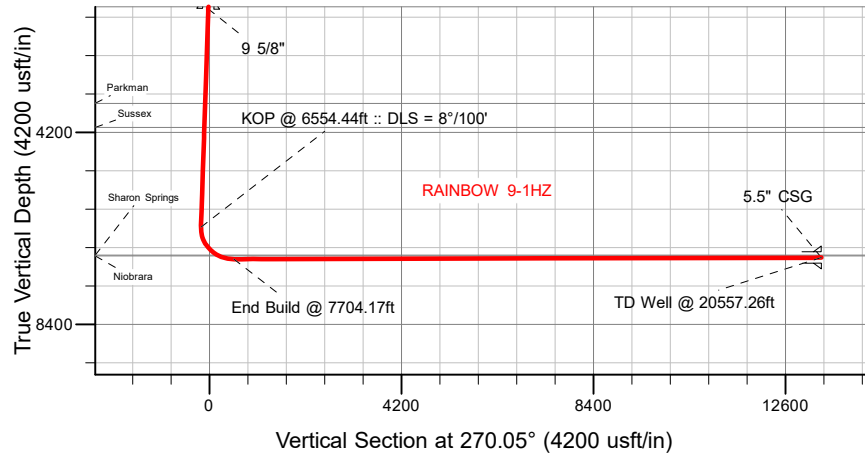
30 August, 2022

Project: WELD-NAD83-UTMFT13N
Site: 5N-67W-09 RAINBOW 24-9HZ PAD
Well: RAINBOW 9-1HZ
Wellbore: Plan A
Design: Permit Rev-2

US ROCKIES WATTENBERG PLANNING

CASING DETAILS

TVD	MD	Name	Size
1500.00	1525.97	9 5/8"	9-5/8
6939.00	20557.26	5.5" CSG	5-1/2



SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSeet	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
202.00	0.00	0.00	202.00	0.00	0.00	0.00	0.00	0.00	
1430.67	18.43	5.87	1409.59	194.88	20.04	1.50	5.87	-19.87	
6554.44	18.43	5.87	6270.57	1806.25	185.70	0.00	0.00	-184.13	
7704.17	90.15	270.05	6972.00	2039.98	-531.69	8.00	-95.48	533.47	
20557.26	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)

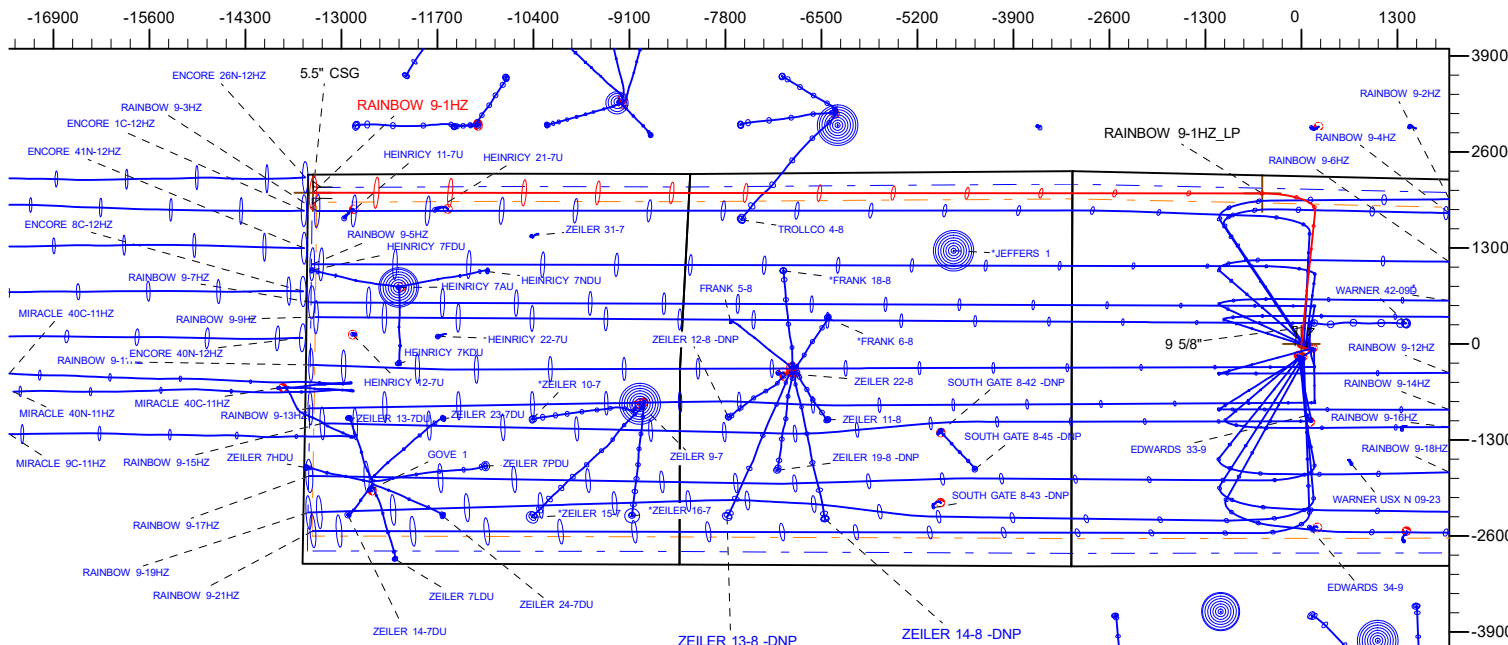
Name	TVD	Northing	Easting	Latitude	Longitude
RAINBOW 9-1HZ_SHL	0.00	14677926.62	1669365.14	40.415144	-104.895999
RAINBOW 9-1HZ_LP	6972.00	14679965.97	1668831.05	40.420746	-104.897909
RAINBOW 9-1HZ_BHL	6939.00	14679961.00	1655978.00	40.420764	-104.944089

SHL
2273' FNL
2096' FEL

LP
245' FNL
2570' FWL

BHL
245' FNL
70' FWL

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



WELL DETAILS: RAINBOW 9-1HZ

GL = 4949'

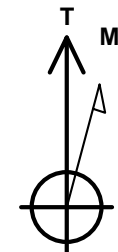
RKB = 17" @ 4966.00usft (RIG)

Plan: Permit Rev-2 (RAINBOW 9-1HZ/Plan A)

Date: 8/31/2022

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
807.00	809.56	Fox Hills
3564.00	3701.55	Parkman
4091.00	4257.04	Sussex
6881.00	7327.39	Sharon Springs
6899.00	7367.27	Niobrara



Azimuths to True North
Magnetic North: 7.80°

Magnetic Field
Strength: 51820.3nT
Dip Angle: 66.60°
Date: 8/28/2022
Model: IGRF2020

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 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 9-1HZ				
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 °				

Wellbore	Plan A				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF202013	8/28/2022	7.80	66.60	51,820.26537139

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	270.05	

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	20,557.26	Permit Rev-2 (Plan A)	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 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	
202.00	0.00	0.00	202.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,430.67	18.43	5.87	1,409.59	194.88	20.04	1.50	1.50	0.00	5.87	
6,554.44	18.43	5.87	6,270.57	1,806.25	185.70	0.00	0.00	0.00	0.00	
7,704.17	90.15	270.05	6,972.00	2,039.98	-531.69	8.00	6.24	-8.33	-95.48	
20,557.26	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

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 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
202.00	0.00	0.00	202.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge @ 202.00ft									
300.00	1.47	5.87	299.99	1.25	0.13	-0.13	1.50	1.50	0.00
400.00	2.97	5.87	399.91	5.10	0.52	-0.52	1.50	1.50	0.00
500.00	4.47	5.87	499.70	11.56	1.19	-1.18	1.50	1.50	0.00
600.00	5.97	5.87	599.28	20.61	2.12	-2.10	1.50	1.50	0.00
700.00	7.47	5.87	698.59	32.25	3.32	-3.29	1.50	1.50	0.00
800.00	8.97	5.87	797.56	46.47	4.78	-4.74	1.50	1.50	0.00
809.56	9.11	5.87	807.00	47.96	4.93	-4.89	1.50	1.50	0.00
Fox Hills									
900.00	10.47	5.87	896.12	63.26	6.50	-6.45	1.50	1.50	0.00
1,000.00	11.97	5.87	994.21	82.62	8.49	-8.42	1.50	1.50	0.00
1,100.00	13.47	5.87	1,091.75	104.52	10.75	-10.65	1.50	1.50	0.00
1,200.00	14.97	5.87	1,188.68	128.96	13.26	-13.15	1.50	1.50	0.00
1,300.00	16.47	5.87	1,284.94	155.91	16.03	-15.89	1.50	1.50	0.00
1,400.00	17.97	5.87	1,380.46	185.36	19.06	-18.89	1.50	1.50	0.00
1,430.67	18.43	5.87	1,409.59	194.88	20.04	-19.87	1.50	1.50	0.00
Hold Tangent @ 1430.67ft									
1,500.00	18.43	5.87	1,475.37	216.69	22.28	-22.09	0.00	0.00	0.00
1,525.97	18.43	5.87	1,500.00	224.85	23.12	-22.92	0.00	0.00	0.00
9 5/8"									
1,600.00	18.43	5.87	1,570.24	248.14	25.51	-25.29	0.00	0.00	0.00
1,700.00	18.43	5.87	1,665.11	279.59	28.74	-28.50	0.00	0.00	0.00
1,800.00	18.43	5.87	1,759.98	311.03	31.98	-31.71	0.00	0.00	0.00
1,900.00	18.43	5.87	1,854.85	342.48	35.21	-34.91	0.00	0.00	0.00
2,000.00	18.43	5.87	1,949.72	373.93	38.44	-38.12	0.00	0.00	0.00
2,100.00	18.43	5.87	2,044.59	405.38	41.68	-41.32	0.00	0.00	0.00
2,200.00	18.43	5.87	2,139.46	436.83	44.91	-44.53	0.00	0.00	0.00
2,300.00	18.43	5.87	2,234.33	468.28	48.14	-47.74	0.00	0.00	0.00
2,400.00	18.43	5.87	2,329.20	499.73	51.38	-50.94	0.00	0.00	0.00
2,500.00	18.43	5.87	2,424.08	531.18	54.61	-54.15	0.00	0.00	0.00
2,600.00	18.43	5.87	2,518.95	562.63	57.84	-57.35	0.00	0.00	0.00
2,700.00	18.43	5.87	2,613.82	594.07	61.08	-60.56	0.00	0.00	0.00
2,800.00	18.43	5.87	2,708.69	625.52	64.31	-63.76	0.00	0.00	0.00
2,900.00	18.43	5.87	2,803.56	656.97	67.54	-66.97	0.00	0.00	0.00
3,000.00	18.43	5.87	2,898.43	688.42	70.78	-70.18	0.00	0.00	0.00
3,100.00	18.43	5.87	2,993.30	719.87	74.01	-73.38	0.00	0.00	0.00
3,200.00	18.43	5.87	3,088.17	751.32	77.24	-76.59	0.00	0.00	0.00
3,300.00	18.43	5.87	3,183.04	782.77	80.48	-79.79	0.00	0.00	0.00
3,400.00	18.43	5.87	3,277.92	814.22	83.71	-83.00	0.00	0.00	0.00
3,500.00	18.43	5.87	3,372.79	845.66	86.94	-86.21	0.00	0.00	0.00
3,600.00	18.43	5.87	3,467.66	877.11	90.18	-89.41	0.00	0.00	0.00
3,700.00	18.43	5.87	3,562.53	908.56	93.41	-92.62	0.00	0.00	0.00
3,701.55	18.43	5.87	3,564.00	909.05	93.46	-92.67	0.00	0.00	0.00
Parkman									
3,800.00	18.43	5.87	3,657.40	940.01	96.64	-95.82	0.00	0.00	0.00
3,900.00	18.43	5.87	3,752.27	971.46	99.88	-99.03	0.00	0.00	0.00
4,000.00	18.43	5.87	3,847.14	1,002.91	103.11	-102.23	0.00	0.00	0.00
4,100.00	18.43	5.87	3,942.01	1,034.36	106.34	-105.44	0.00	0.00	0.00
4,200.00	18.43	5.87	4,036.88	1,065.81	109.58	-108.65	0.00	0.00	0.00
4,257.04	18.43	5.87	4,091.00	1,083.75	111.42	-110.47	0.00	0.00	0.00

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 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									
4,300.00	18.43	5.87	4,131.76	1,097.26	112.81	-111.85	0.00	0.00	0.00
4,400.00	18.43	5.87	4,226.63	1,128.70	116.04	-115.06	0.00	0.00	0.00
4,500.00	18.43	5.87	4,321.50	1,160.15	119.28	-118.26	0.00	0.00	0.00
4,600.00	18.43	5.87	4,416.37	1,191.60	122.51	-121.47	0.00	0.00	0.00
4,700.00	18.43	5.87	4,511.24	1,223.05	125.74	-124.68	0.00	0.00	0.00
4,800.00	18.43	5.87	4,606.11	1,254.50	128.98	-127.88	0.00	0.00	0.00
4,900.00	18.43	5.87	4,700.98	1,285.95	132.21	-131.09	0.00	0.00	0.00
5,000.00	18.43	5.87	4,795.85	1,317.40	135.44	-134.29	0.00	0.00	0.00
5,100.00	18.43	5.87	4,890.72	1,348.85	138.68	-137.50	0.00	0.00	0.00
5,200.00	18.43	5.87	4,985.59	1,380.29	141.91	-140.70	0.00	0.00	0.00
5,300.00	18.43	5.87	5,080.47	1,411.74	145.14	-143.91	0.00	0.00	0.00
5,400.00	18.43	5.87	5,175.34	1,443.19	148.38	-147.12	0.00	0.00	0.00
5,500.00	18.43	5.87	5,270.21	1,474.64	151.61	-150.32	0.00	0.00	0.00
5,600.00	18.43	5.87	5,365.08	1,506.09	154.84	-153.53	0.00	0.00	0.00
5,700.00	18.43	5.87	5,459.95	1,537.54	158.08	-156.73	0.00	0.00	0.00
5,800.00	18.43	5.87	5,554.82	1,568.99	161.31	-159.94	0.00	0.00	0.00
5,900.00	18.43	5.87	5,649.69	1,600.44	164.54	-163.15	0.00	0.00	0.00
6,000.00	18.43	5.87	5,744.56	1,631.88	167.78	-166.35	0.00	0.00	0.00
6,100.00	18.43	5.87	5,839.43	1,663.33	171.01	-169.56	0.00	0.00	0.00
6,200.00	18.43	5.87	5,934.31	1,694.78	174.24	-172.76	0.00	0.00	0.00
6,300.00	18.43	5.87	6,029.18	1,726.23	177.48	-175.97	0.00	0.00	0.00
6,400.00	18.43	5.87	6,124.05	1,757.68	180.71	-179.17	0.00	0.00	0.00
6,500.00	18.43	5.87	6,218.92	1,789.13	183.94	-182.38	0.00	0.00	0.00
6,554.44	18.43	5.87	6,270.57	1,806.25	185.70	-184.13	0.00	0.00	0.00
KOP @ 6554.44ft :: DLS = 8°/100'									
6,600.00	18.43	354.32	6,313.80	1,820.58	185.73	-184.14	8.00	0.00	-25.34
6,650.00	19.21	342.14	6,361.15	1,836.29	182.42	-180.82	8.00	1.57	-24.36
6,700.00	20.73	331.28	6,408.16	1,851.88	175.64	-174.03	8.00	3.03	-21.73
6,750.00	22.82	322.08	6,454.60	1,867.30	165.43	-163.80	8.00	4.19	-18.40
6,800.00	25.36	314.48	6,500.25	1,882.46	151.82	-150.18	8.00	5.07	-15.19
6,850.00	28.22	308.26	6,544.89	1,897.28	134.90	-133.24	8.00	5.71	-12.45
6,900.00	31.30	303.13	6,588.30	1,911.71	114.73	-113.06	8.00	6.18	-10.25
6,950.00	34.56	298.86	6,630.26	1,925.66	91.42	-89.74	8.00	6.52	-8.54
7,000.00	37.95	295.25	6,670.58	1,939.07	65.08	-63.39	8.00	6.77	-7.22
7,050.00	41.43	292.16	6,709.06	1,951.88	35.85	-34.14	8.00	6.96	-6.19
7,100.00	44.98	289.47	6,745.50	1,964.01	3.85	-2.14	8.00	7.10	-5.38
7,150.00	48.59	287.10	6,779.74	1,975.42	-30.74	32.46	8.00	7.21	-4.75
7,200.00	52.24	284.98	6,811.60	1,986.04	-67.77	69.50	8.00	7.30	-4.24
7,250.00	55.92	283.05	6,840.92	1,995.83	-107.05	108.79	8.00	7.37	-3.84
7,300.00	59.64	281.29	6,867.58	2,004.74	-148.39	150.14	8.00	7.43	-3.52
7,327.39	61.68	280.39	6,881.00	2,009.22	-171.84	173.59	8.00	7.46	-3.31
Sharon Springs									
7,350.00	63.37	279.66	6,891.43	2,012.71	-191.59	193.35	8.00	7.48	-3.20
7,367.27	64.66	279.13	6,899.00	2,015.25	-206.91	208.67	8.00	7.49	-3.12
Niobrara									
7,400.00	67.12	278.14	6,912.37	2,019.73	-236.44	238.21	8.00	7.51	-3.02
7,450.00	70.89	276.69	6,930.28	2,025.74	-282.72	284.49	8.00	7.53	-2.89
7,500.00	74.66	275.31	6,945.08	2,030.73	-330.21	331.98	8.00	7.55	-2.76
7,550.00	78.45	273.98	6,956.70	2,034.66	-378.67	380.45	8.00	7.57	-2.66
7,600.00	82.24	272.68	6,965.09	2,037.52	-427.87	429.65	8.00	7.58	-2.59
7,650.00	86.03	271.41	6,970.20	2,039.30	-477.57	479.35	8.00	7.59	-2.55
7,704.17	90.15	270.05	6,972.00	2,039.98	-531.69	533.47	8.00	7.59	-2.52

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 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)
End Build @ 7704.17ft									
7,800.00	90.15	270.05	6,971.76	2,040.06	-627.52	629.30	0.00	0.00	0.00
7,900.00	90.15	270.05	6,971.50	2,040.14	-727.52	729.30	0.00	0.00	0.00
8,000.00	90.15	270.05	6,971.24	2,040.22	-827.52	829.30	0.00	0.00	0.00
8,100.00	90.15	270.05	6,970.98	2,040.30	-927.52	929.30	0.00	0.00	0.00
8,200.00	90.15	270.05	6,970.73	2,040.38	-1,027.52	1,029.30	0.00	0.00	0.00
8,300.00	90.15	270.05	6,970.47	2,040.46	-1,127.52	1,129.30	0.00	0.00	0.00
8,400.00	90.15	270.05	6,970.21	2,040.53	-1,227.52	1,229.30	0.00	0.00	0.00
8,500.00	90.15	270.05	6,969.96	2,040.61	-1,327.52	1,329.30	0.00	0.00	0.00
8,600.00	90.15	270.05	6,969.70	2,040.69	-1,427.52	1,429.30	0.00	0.00	0.00
8,700.00	90.15	270.05	6,969.44	2,040.77	-1,527.52	1,529.30	0.00	0.00	0.00
8,800.00	90.15	270.05	6,969.19	2,040.85	-1,627.52	1,629.30	0.00	0.00	0.00
8,900.00	90.15	270.05	6,968.93	2,040.93	-1,727.51	1,729.30	0.00	0.00	0.00
9,000.00	90.15	270.05	6,968.67	2,041.01	-1,827.51	1,829.30	0.00	0.00	0.00
9,100.00	90.15	270.05	6,968.42	2,041.09	-1,927.51	1,929.29	0.00	0.00	0.00
9,200.00	90.15	270.05	6,968.16	2,041.17	-2,027.51	2,029.29	0.00	0.00	0.00
9,300.00	90.15	270.05	6,967.90	2,041.24	-2,127.51	2,129.29	0.00	0.00	0.00
9,400.00	90.15	270.05	6,967.65	2,041.32	-2,227.51	2,229.29	0.00	0.00	0.00
9,500.00	90.15	270.05	6,967.39	2,041.40	-2,327.51	2,329.29	0.00	0.00	0.00
9,600.00	90.15	270.05	6,967.13	2,041.48	-2,427.51	2,429.29	0.00	0.00	0.00
9,700.00	90.15	270.05	6,966.88	2,041.56	-2,527.51	2,529.29	0.00	0.00	0.00
9,800.00	90.15	270.05	6,966.62	2,041.64	-2,627.51	2,629.29	0.00	0.00	0.00
9,900.00	90.15	270.05	6,966.36	2,041.72	-2,727.51	2,729.29	0.00	0.00	0.00
10,000.00	90.15	270.05	6,966.11	2,041.80	-2,827.51	2,829.29	0.00	0.00	0.00
10,100.00	90.15	270.05	6,965.85	2,041.88	-2,927.51	2,929.29	0.00	0.00	0.00
10,200.00	90.15	270.05	6,965.59	2,041.96	-3,027.51	3,029.29	0.00	0.00	0.00
10,300.00	90.15	270.05	6,965.34	2,042.03	-3,127.51	3,129.29	0.00	0.00	0.00
10,400.00	90.15	270.05	6,965.08	2,042.11	-3,227.51	3,229.29	0.00	0.00	0.00
10,500.00	90.15	270.05	6,964.82	2,042.19	-3,327.51	3,329.29	0.00	0.00	0.00
10,600.00	90.15	270.05	6,964.57	2,042.27	-3,427.51	3,429.29	0.00	0.00	0.00
10,700.00	90.15	270.05	6,964.31	2,042.35	-3,527.51	3,529.29	0.00	0.00	0.00
10,800.00	90.15	270.05	6,964.05	2,042.43	-3,627.51	3,629.29	0.00	0.00	0.00
10,900.00	90.15	270.05	6,963.80	2,042.51	-3,727.51	3,729.29	0.00	0.00	0.00
11,000.00	90.15	270.05	6,963.54	2,042.59	-3,827.51	3,829.29	0.00	0.00	0.00
11,100.00	90.15	270.05	6,963.28	2,042.67	-3,927.51	3,929.29	0.00	0.00	0.00
11,200.00	90.15	270.05	6,963.03	2,042.75	-4,027.51	4,029.29	0.00	0.00	0.00
11,300.00	90.15	270.05	6,962.77	2,042.82	-4,127.51	4,129.29	0.00	0.00	0.00
11,400.00	90.15	270.05	6,962.51	2,042.90	-4,227.51	4,229.29	0.00	0.00	0.00
11,500.00	90.15	270.05	6,962.26	2,042.98	-4,327.51	4,329.29	0.00	0.00	0.00
11,600.00	90.15	270.05	6,962.00	2,043.06	-4,427.51	4,429.29	0.00	0.00	0.00
11,700.00	90.15	270.05	6,961.74	2,043.14	-4,527.50	4,529.29	0.00	0.00	0.00
11,800.00	90.15	270.05	6,961.48	2,043.22	-4,627.50	4,629.29	0.00	0.00	0.00
11,900.00	90.15	270.05	6,961.23	2,043.30	-4,727.50	4,729.29	0.00	0.00	0.00
12,000.00	90.15	270.05	6,960.97	2,043.38	-4,827.50	4,829.29	0.00	0.00	0.00
12,100.00	90.15	270.05	6,960.71	2,043.46	-4,927.50	4,929.28	0.00	0.00	0.00
12,200.00	90.15	270.05	6,960.46	2,043.53	-5,027.50	5,029.28	0.00	0.00	0.00
12,300.00	90.15	270.05	6,960.20	2,043.61	-5,127.50	5,129.28	0.00	0.00	0.00
12,400.00	90.15	270.05	6,959.94	2,043.69	-5,227.50	5,229.28	0.00	0.00	0.00
12,500.00	90.15	270.05	6,959.69	2,043.77	-5,327.50	5,329.28	0.00	0.00	0.00
12,600.00	90.15	270.05	6,959.43	2,043.85	-5,427.50	5,429.28	0.00	0.00	0.00
12,700.00	90.15	270.05	6,959.17	2,043.93	-5,527.50	5,529.28	0.00	0.00	0.00
12,800.00	90.15	270.05	6,958.92	2,044.01	-5,627.50	5,629.28	0.00	0.00	0.00
12,900.00	90.15	270.05	6,958.66	2,044.09	-5,727.50	5,729.28	0.00	0.00	0.00
13,000.00	90.15	270.05	6,958.40	2,044.17	-5,827.50	5,829.28	0.00	0.00	0.00

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 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)
13,100.00	90.15	270.05	6,958.15	2,044.25	-5,927.50	5,929.28	0.00	0.00	0.00
13,200.00	90.15	270.05	6,957.89	2,044.32	-6,027.50	6,029.28	0.00	0.00	0.00
13,300.00	90.15	270.05	6,957.63	2,044.40	-6,127.50	6,129.28	0.00	0.00	0.00
13,400.00	90.15	270.05	6,957.38	2,044.48	-6,227.50	6,229.28	0.00	0.00	0.00
13,500.00	90.15	270.05	6,957.12	2,044.56	-6,327.50	6,329.28	0.00	0.00	0.00
13,600.00	90.15	270.05	6,956.86	2,044.64	-6,427.50	6,429.28	0.00	0.00	0.00
13,700.00	90.15	270.05	6,956.61	2,044.72	-6,527.50	6,529.28	0.00	0.00	0.00
13,800.00	90.15	270.05	6,956.35	2,044.80	-6,627.50	6,629.28	0.00	0.00	0.00
13,900.00	90.15	270.05	6,956.09	2,044.88	-6,727.50	6,729.28	0.00	0.00	0.00
14,000.00	90.15	270.05	6,955.84	2,044.96	-6,827.50	6,829.28	0.00	0.00	0.00
14,100.00	90.15	270.05	6,955.58	2,045.03	-6,927.50	6,929.28	0.00	0.00	0.00
14,200.00	90.15	270.05	6,955.32	2,045.11	-7,027.50	7,029.28	0.00	0.00	0.00
14,300.00	90.15	270.05	6,955.07	2,045.19	-7,127.50	7,129.28	0.00	0.00	0.00
14,400.00	90.15	270.05	6,954.81	2,045.27	-7,227.50	7,229.28	0.00	0.00	0.00
14,500.00	90.15	270.05	6,954.55	2,045.35	-7,327.49	7,329.28	0.00	0.00	0.00
14,600.00	90.15	270.05	6,954.30	2,045.43	-7,427.49	7,429.28	0.00	0.00	0.00
14,700.00	90.15	270.05	6,954.04	2,045.51	-7,527.49	7,529.28	0.00	0.00	0.00
14,800.00	90.15	270.05	6,953.78	2,045.59	-7,627.49	7,629.28	0.00	0.00	0.00
14,900.00	90.15	270.05	6,953.53	2,045.67	-7,727.49	7,729.28	0.00	0.00	0.00
15,000.00	90.15	270.05	6,953.27	2,045.75	-7,827.49	7,829.28	0.00	0.00	0.00
15,100.00	90.15	270.05	6,953.01	2,045.82	-7,927.49	7,929.28	0.00	0.00	0.00
15,200.00	90.15	270.05	6,952.76	2,045.90	-8,027.49	8,029.27	0.00	0.00	0.00
15,300.00	90.15	270.05	6,952.50	2,045.98	-8,127.49	8,129.27	0.00	0.00	0.00
15,400.00	90.15	270.05	6,952.24	2,046.06	-8,227.49	8,229.27	0.00	0.00	0.00
15,500.00	90.15	270.05	6,951.98	2,046.14	-8,327.49	8,329.27	0.00	0.00	0.00
15,600.00	90.15	270.05	6,951.73	2,046.22	-8,427.49	8,429.27	0.00	0.00	0.00
15,700.00	90.15	270.05	6,951.47	2,046.30	-8,527.49	8,529.27	0.00	0.00	0.00
15,800.00	90.15	270.05	6,951.21	2,046.38	-8,627.49	8,629.27	0.00	0.00	0.00
15,900.00	90.15	270.05	6,950.96	2,046.46	-8,727.49	8,729.27	0.00	0.00	0.00
16,000.00	90.15	270.05	6,950.70	2,046.54	-8,827.49	8,829.27	0.00	0.00	0.00
16,100.00	90.15	270.05	6,950.44	2,046.61	-8,927.49	8,929.27	0.00	0.00	0.00
16,200.00	90.15	270.05	6,950.19	2,046.69	-9,027.49	9,029.27	0.00	0.00	0.00
16,300.00	90.15	270.05	6,949.93	2,046.77	-9,127.49	9,129.27	0.00	0.00	0.00
16,400.00	90.15	270.05	6,949.67	2,046.85	-9,227.49	9,229.27	0.00	0.00	0.00
16,500.00	90.15	270.05	6,949.42	2,046.93	-9,327.49	9,329.27	0.00	0.00	0.00
16,600.00	90.15	270.05	6,949.16	2,047.01	-9,427.49	9,429.27	0.00	0.00	0.00
16,700.00	90.15	270.05	6,948.90	2,047.09	-9,527.49	9,529.27	0.00	0.00	0.00
16,800.00	90.15	270.05	6,948.65	2,047.17	-9,627.49	9,629.27	0.00	0.00	0.00
16,900.00	90.15	270.05	6,948.39	2,047.25	-9,727.49	9,729.27	0.00	0.00	0.00
17,000.00	90.15	270.05	6,948.13	2,047.32	-9,827.49	9,829.27	0.00	0.00	0.00
17,100.00	90.15	270.05	6,947.88	2,047.40	-9,927.49	9,929.27	0.00	0.00	0.00
17,200.00	90.15	270.05	6,947.62	2,047.48	-10,027.49	10,029.27	0.00	0.00	0.00
17,300.00	90.15	270.05	6,947.36	2,047.56	-10,127.48	10,129.27	0.00	0.00	0.00
17,400.00	90.15	270.05	6,947.11	2,047.64	-10,227.48	10,229.27	0.00	0.00	0.00
17,500.00	90.15	270.05	6,946.85	2,047.72	-10,327.48	10,329.27	0.00	0.00	0.00
17,600.00	90.15	270.05	6,946.59	2,047.80	-10,427.48	10,429.27	0.00	0.00	0.00
17,700.00	90.15	270.05	6,946.34	2,047.88	-10,527.48	10,529.27	0.00	0.00	0.00
17,800.00	90.15	270.05	6,946.08	2,047.96	-10,627.48	10,629.27	0.00	0.00	0.00
17,900.00	90.15	270.05	6,945.82	2,048.04	-10,727.48	10,729.27	0.00	0.00	0.00
18,000.00	90.15	270.05	6,945.57	2,048.11	-10,827.48	10,829.27	0.00	0.00	0.00
18,100.00	90.15	270.05	6,945.31	2,048.19	-10,927.48	10,929.27	0.00	0.00	0.00
18,200.00	90.15	270.05	6,945.05	2,048.27	-11,027.48	11,029.26	0.00	0.00	0.00
18,300.00	90.15	270.05	6,944.80	2,048.35	-11,127.48	11,129.26	0.00	0.00	0.00
18,400.00	90.15	270.05	6,944.54	2,048.43	-11,227.48	11,229.26	0.00	0.00	0.00

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 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)
18,500.00	90.15	270.05	6,944.28	2,048.51	-11,327.48	11,329.26	0.00	0.00	0.00
18,600.00	90.15	270.05	6,944.03	2,048.59	-11,427.48	11,429.26	0.00	0.00	0.00
18,700.00	90.15	270.05	6,943.77	2,048.67	-11,527.48	11,529.26	0.00	0.00	0.00
18,800.00	90.15	270.05	6,943.51	2,048.75	-11,627.48	11,629.26	0.00	0.00	0.00
18,900.00	90.15	270.05	6,943.26	2,048.83	-11,727.48	11,729.26	0.00	0.00	0.00
19,000.00	90.15	270.05	6,943.00	2,048.90	-11,827.48	11,829.26	0.00	0.00	0.00
19,100.00	90.15	270.05	6,942.74	2,048.98	-11,927.48	11,929.26	0.00	0.00	0.00
19,200.00	90.15	270.05	6,942.49	2,049.06	-12,027.48	12,029.26	0.00	0.00	0.00
19,300.00	90.15	270.05	6,942.23	2,049.14	-12,127.48	12,129.26	0.00	0.00	0.00
19,400.00	90.15	270.05	6,941.97	2,049.22	-12,227.48	12,229.26	0.00	0.00	0.00
19,500.00	90.15	270.05	6,941.71	2,049.30	-12,327.48	12,329.26	0.00	0.00	0.00
19,600.00	90.15	270.05	6,941.46	2,049.38	-12,427.48	12,429.26	0.00	0.00	0.00
19,700.00	90.15	270.05	6,941.20	2,049.46	-12,527.48	12,529.26	0.00	0.00	0.00
19,800.00	90.15	270.05	6,940.94	2,049.54	-12,627.48	12,629.26	0.00	0.00	0.00
19,900.00	90.15	270.05	6,940.69	2,049.61	-12,727.48	12,729.26	0.00	0.00	0.00
20,000.00	90.15	270.05	6,940.43	2,049.69	-12,827.48	12,829.26	0.00	0.00	0.00
20,100.00	90.15	270.05	6,940.17	2,049.77	-12,927.47	12,929.26	0.00	0.00	0.00
20,200.00	90.15	270.05	6,939.92	2,049.85	-13,027.47	13,029.26	0.00	0.00	0.00
20,300.00	90.15	270.05	6,939.66	2,049.93	-13,127.47	13,129.26	0.00	0.00	0.00
20,400.00	90.15	270.05	6,939.40	2,050.01	-13,227.47	13,229.26	0.00	0.00	0.00
20,500.00	90.15	270.05	6,939.15	2,050.09	-13,327.47	13,329.26	0.00	0.00	0.00
20,557.26	90.15	270.05	6,939.00	2,050.13	-13,384.73	13,386.52	0.00	0.00	0.00
TD Well @ 20557.26ft - 5.5" CSG									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,525.97	1,500.00	9 5/8"	9-5/8	13-1/2	
20,557.26	6,939.00	5.5" CSG	5-1/2	7-7/8	

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
809.56	807.00	Fox Hills			
3,701.55	3,564.00	Parkman			
4,257.04	4,091.00	Sussex			
7,327.39	6,881.00	Sharon Springs			
7,367.27	6,899.00	Niobrara			

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 A		
Design:	Permit Rev-2		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
202.00	202.00	0.00	0.00	Begin Nudge @ 202.00ft
1,430.67	1,409.59	194.88	20.04	Hold Tangent @ 1430.67ft
6,554.44	6,270.57	1,806.25	185.70	KOP @ 6554.44ft :: DLS = 8"/100'
7,704.17	6,972.00	2,039.98	-531.69	End Build @ 7704.17ft
20,557.26	6,939.00	2,050.13	-13,384.74	TD Well @ 20557.26ft