

US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N

3N-65W-07 WARDELL FED 13-7HZ PAD

WARDELL 7-8HZ

Plan A

Plan: Permit Rev-2

Standard Planning Report

21 January, 2023

US ROCKIES WATTENBERG PLANNING

CASING DETAILS			
TVD	MD	Name	Size
1796.00	1822.61	9 5/8"	9-5/8
7298.00	20585.82	5.5" CSG	5-1/2

LP
427' FNL
2204' FEL

BHL
2461' FNL
2292' FEL



Azimuths to True North
Magnetic North: 7.64°

Magnetic Field
Strength: 51701.7nT
Dip Angle: 66.46°
Date: 1/21/2023
Model: IGRF2020

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VScet	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	470.00	0.00	0.00	470.00	0.00	0.00	0.00	0.00	0.00	
3	1633.33	17.45	89.80	1615.43	0.61	175.79	1.50	89.80	-1.53	
4	6844.73	17.45	89.80	6587.00	6.07	1738.54	0.00	0.00	-15.17	
5	7989.79	90.05	185.00	7289.00	-726.90	1895.21	8.00	94.95	716.97	
6	6189.78	90.05	185.00	7288.63	-926.14	1877.78	0.00	0.00	916.30	
7	8512.45	89.96	186.16	7288.81	-1248.40	1853.26	-91.11	0.00	1239.63	
8	20585.82	89.96	180.16	7298.00	-13321.70	1829.40	0.00	0.00	13311.94	WARDELL 7-SH2_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	Northing	Easting	Latitude	Longitude
WARDELL 7-8HZ_SHL	0.00	14611880.68	1720933.28	40.233466	-104.711508
WARDELL 7-8HZ_LP	7289.00	14611159.95	1722830.84	40.231470	-104.704718
WARDELL 7-8HZ_BHL	7298.00	14598565.00	1722806.00	40.196884	-104.704957

WELL DETAILS: WARDELL 7-8HZ

GL = 5015'

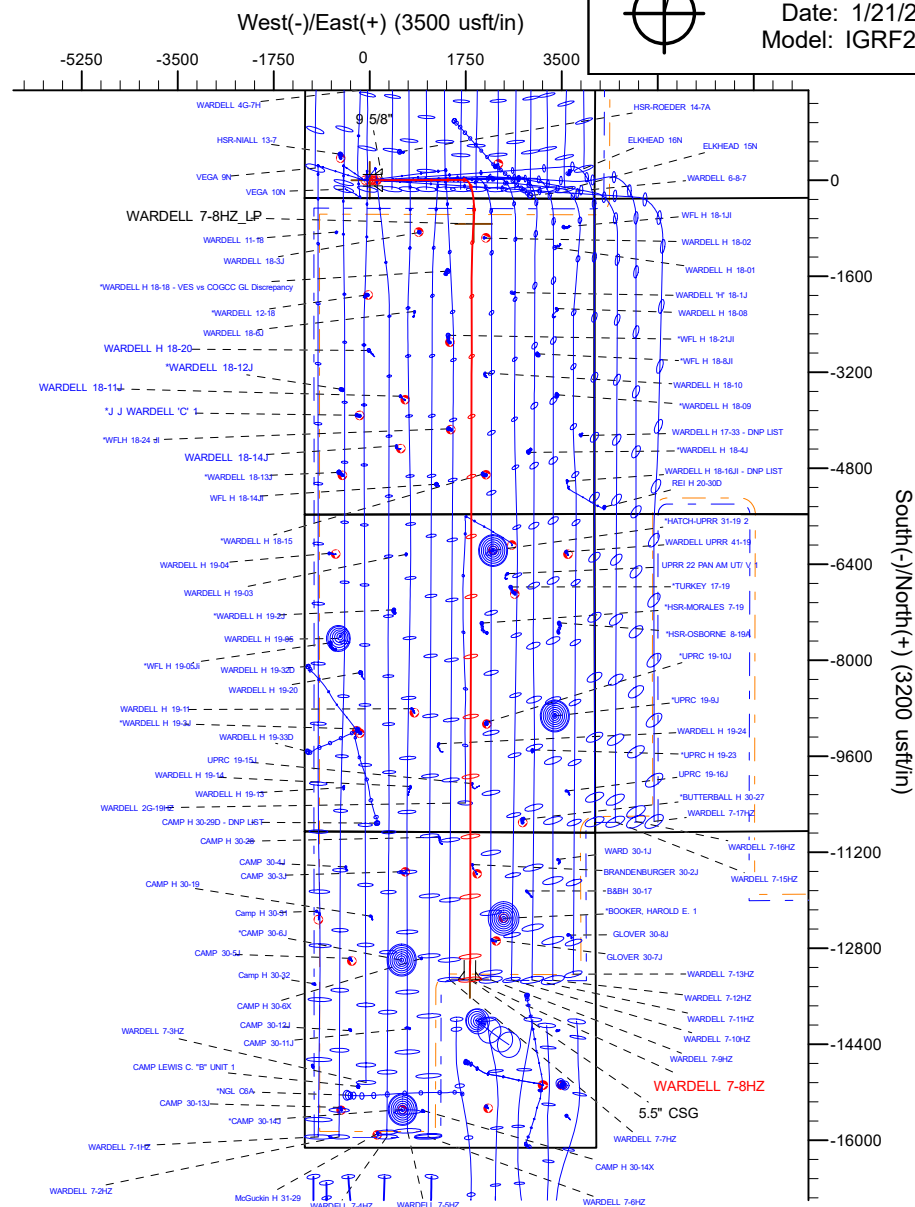
RKB = 17' @ 5032.00usft (RIG)

Plan: Permit Rev-2 (WARDELL 7-8HZ/Plan A)

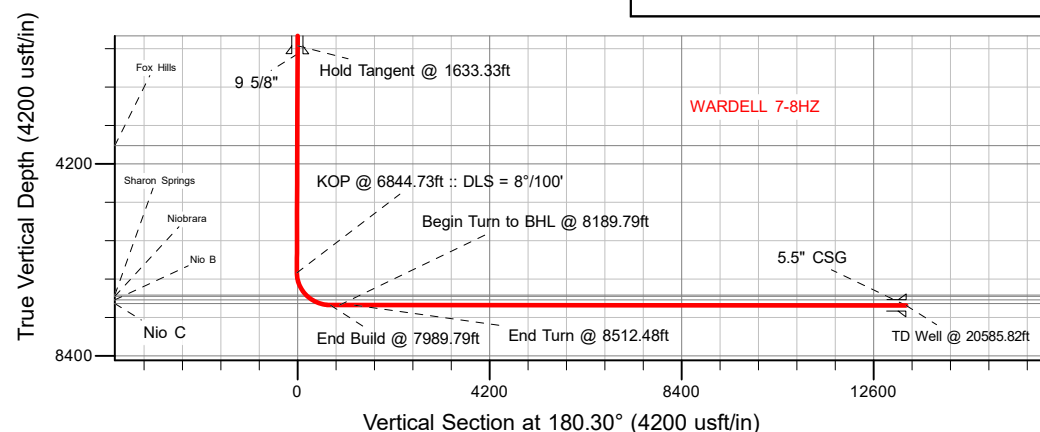
Date: 1/21/2023

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
664.00	664.08	Sussex
992.00	993.64	Parkman
3799.00	3922.24	Fox Hills
7071.00	7400.70	Sharon Springs
7097.00	7438.87	Niobrara
7176.00	7571.40	Nio B
7257.00	7769.10	Nio C



South(-)/North(+) (3200 usft/in)



Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well WARDELL 7-8HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5032.00usft (RIG)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5032.00usft (RIG)
Site:	3N-65W-07 WARDELL FED 13-7HZ PAD	North Reference:	True
Well:	WARDELL 7-8HZ	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		3N-65W-07 WARDELL FED 13-7HZ PAD			
Site Position:		Northing:	14,611,881.27 usft	Latitude:	40.233469
From:	Map	Easting:	1,720,828.32 usft	Longitude:	-104.711885
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "		

Well		WARDELL 7-8HZ				
Well Position	+N/-S	0.00 usft	Northing:	14,611,880.68 usft	Latitude:	40.233467
	+E/-W	0.00 usft	Easting:	1,720,933.28 usft	Longitude:	-104.711509
Position Uncertainty		3.28 usft	Wellhead Elevation:	usft	Ground Level:	5,015.00 usft
Grid Convergence:		0.19 °				

Wellbore	Plan A				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF202013	1/21/2023	7.64	66.46	51,701.68350385

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	180.30	

Plan Survey Tool Program		Date	1/21/2023		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	1,796.00	Permit Rev-2 (Plan A)	APC_ISCWSA REV 2 MWD+I Fixed:v2:crustal field declinatio	
2	1,796.00	20,585.82	Permit Rev-2 (Plan A)	APC_ISCWSA REV 2 MWD+I Fixed:v2:crustal field declinatio	

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well WARDELL 7-8HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5032.00usft (RIG)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5032.00usft (RIG)
Site:	3N-65W-07 WARDELL FED 13-7HZ PAD	North Reference:	True
Well:	WARDELL 7-8HZ	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	
470.00	0.00	0.00	470.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,633.33	17.45	89.80	1,615.43	0.61	175.79	1.50	1.50	0.00	89.80	
6,844.73	17.45	89.80	6,587.00	6.07	1,738.54	0.00	0.00	0.00	0.00	
7,989.79	90.05	185.00	7,289.00	-726.90	1,895.21	8.00	6.34	8.31	94.95	
8,189.79	90.05	185.00	7,288.83	-926.14	1,877.78	0.00	0.00	0.00	0.00	
8,512.48	89.96	180.16	7,288.81	-1,248.40	1,863.26	1.50	-0.03	-1.50	-91.11	
20,585.83	89.96	180.16	7,298.00	-13,321.70	1,829.40	0.00	0.00	0.00	0.00	WARDELL 7-8HZ_BH

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well WARDELL 7-8HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5032.00usft (RIG)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5032.00usft (RIG)
Site:	3N-65W-07 WARDELL FED 13-7HZ PAD	North Reference:	True
Well:	WARDELL 7-8HZ	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
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
470.00	0.00	0.00	470.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge @ 470.00ft									
500.00	0.45	89.80	500.00	0.00	0.12	0.00	1.50	1.50	0.00
600.00	1.95	89.80	599.97	0.01	2.21	-0.02	1.50	1.50	0.00
664.08	2.91	89.80	664.00	0.02	4.93	-0.04	1.50	1.50	0.00
Sussex									
700.00	3.45	89.80	699.86	0.02	6.92	-0.06	1.50	1.50	0.00
800.00	4.95	89.80	799.59	0.05	14.25	-0.12	1.50	1.50	0.00
900.00	6.45	89.80	899.09	0.08	24.18	-0.21	1.50	1.50	0.00
993.64	7.85	89.80	992.00	0.13	35.84	-0.31	1.50	1.50	0.00
Parkman									
1,000.00	7.95	89.80	998.30	0.13	36.71	-0.32	1.50	1.50	0.00
1,100.00	9.45	89.80	1,097.15	0.18	51.84	-0.45	1.50	1.50	0.00
1,200.00	10.95	89.80	1,195.56	0.24	69.54	-0.61	1.50	1.50	0.00
1,300.00	12.45	89.80	1,293.48	0.31	89.82	-0.78	1.50	1.50	0.00
1,400.00	13.95	89.80	1,390.84	0.39	112.66	-0.98	1.50	1.50	0.00
1,500.00	15.45	89.80	1,487.56	0.48	138.03	-1.20	1.50	1.50	0.00
1,600.00	16.95	89.80	1,583.59	0.58	165.93	-1.45	1.50	1.50	0.00
1,633.33	17.45	89.80	1,615.43	0.61	175.79	-1.53	1.50	1.50	0.00
Hold Tangent @ 1633.33ft									
1,700.00	17.45	89.80	1,679.03	0.68	195.78	-1.71	0.00	0.00	0.00
1,800.00	17.45	89.80	1,774.43	0.79	225.76	-1.97	0.00	0.00	0.00
1,822.61	17.45	89.80	1,796.00	0.81	232.55	-2.03	0.00	0.00	0.00
9 5/8"									
1,900.00	17.45	89.80	1,869.83	0.89	255.75	-2.23	0.00	0.00	0.00
2,000.00	17.45	89.80	1,965.22	1.00	285.74	-2.49	0.00	0.00	0.00
2,100.00	17.45	89.80	2,060.62	1.10	315.73	-2.76	0.00	0.00	0.00
2,200.00	17.45	89.80	2,156.02	1.21	345.71	-3.02	0.00	0.00	0.00
2,300.00	17.45	89.80	2,251.42	1.31	375.70	-3.28	0.00	0.00	0.00
2,400.00	17.45	89.80	2,346.82	1.42	405.69	-3.54	0.00	0.00	0.00
2,500.00	17.45	89.80	2,442.21	1.52	435.67	-3.80	0.00	0.00	0.00
2,600.00	17.45	89.80	2,537.61	1.63	465.66	-4.06	0.00	0.00	0.00
2,700.00	17.45	89.80	2,633.01	1.73	495.65	-4.33	0.00	0.00	0.00
2,800.00	17.45	89.80	2,728.41	1.83	525.64	-4.59	0.00	0.00	0.00
2,900.00	17.45	89.80	2,823.81	1.94	555.62	-4.85	0.00	0.00	0.00
3,000.00	17.45	89.80	2,919.20	2.04	585.61	-5.11	0.00	0.00	0.00
3,100.00	17.45	89.80	3,014.60	2.15	615.60	-5.37	0.00	0.00	0.00
3,200.00	17.45	89.80	3,110.00	2.25	645.59	-5.63	0.00	0.00	0.00
3,300.00	17.45	89.80	3,205.40	2.36	675.57	-5.90	0.00	0.00	0.00
3,400.00	17.45	89.80	3,300.80	2.46	705.56	-6.16	0.00	0.00	0.00
3,500.00	17.45	89.80	3,396.19	2.57	735.55	-6.42	0.00	0.00	0.00
3,600.00	17.45	89.80	3,491.59	2.67	765.53	-6.68	0.00	0.00	0.00
3,700.00	17.45	89.80	3,586.99	2.78	795.52	-6.94	0.00	0.00	0.00
3,800.00	17.45	89.80	3,682.39	2.88	825.51	-7.20	0.00	0.00	0.00
3,900.00	17.45	89.80	3,777.78	2.99	855.50	-7.47	0.00	0.00	0.00
3,922.24	17.45	89.80	3,799.00	3.01	862.16	-7.52	0.00	0.00	0.00
Fox Hills									
4,000.00	17.45	89.80	3,873.18	3.09	885.48	-7.73	0.00	0.00	0.00

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well WARDELL 7-8HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5032.00usft (RIG)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5032.00usft (RIG)
Site:	3N-65W-07 WARDELL FED 13-7HZ PAD	North Reference:	True
Well:	WARDELL 7-8HZ	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)	
4,100.00	17.45	89.80	3,968.58	3.20	915.47	-7.99	0.00	0.00	0.00	
4,200.00	17.45	89.80	4,063.98	3.30	945.46	-8.25	0.00	0.00	0.00	
4,300.00	17.45	89.80	4,159.38	3.40	975.44	-8.51	0.00	0.00	0.00	
4,400.00	17.45	89.80	4,254.77	3.51	1,005.43	-8.77	0.00	0.00	0.00	
4,500.00	17.45	89.80	4,350.17	3.61	1,035.42	-9.04	0.00	0.00	0.00	
4,600.00	17.45	89.80	4,445.57	3.72	1,065.41	-9.30	0.00	0.00	0.00	
4,700.00	17.45	89.80	4,540.97	3.82	1,095.39	-9.56	0.00	0.00	0.00	
4,800.00	17.45	89.80	4,636.37	3.93	1,125.38	-9.82	0.00	0.00	0.00	
4,900.00	17.45	89.80	4,731.76	4.03	1,155.37	-10.08	0.00	0.00	0.00	
5,000.00	17.45	89.80	4,827.16	4.14	1,185.35	-10.34	0.00	0.00	0.00	
5,100.00	17.45	89.80	4,922.56	4.24	1,215.34	-10.61	0.00	0.00	0.00	
5,200.00	17.45	89.80	5,017.96	4.35	1,245.33	-10.87	0.00	0.00	0.00	
5,300.00	17.45	89.80	5,113.36	4.45	1,275.32	-11.13	0.00	0.00	0.00	
5,400.00	17.45	89.80	5,208.75	4.56	1,305.30	-11.39	0.00	0.00	0.00	
5,500.00	17.45	89.80	5,304.15	4.66	1,335.29	-11.65	0.00	0.00	0.00	
5,600.00	17.45	89.80	5,399.55	4.77	1,365.28	-11.91	0.00	0.00	0.00	
5,700.00	17.45	89.80	5,494.95	4.87	1,395.26	-12.18	0.00	0.00	0.00	
5,800.00	17.45	89.80	5,590.34	4.98	1,425.25	-12.44	0.00	0.00	0.00	
5,900.00	17.45	89.80	5,685.74	5.08	1,455.24	-12.70	0.00	0.00	0.00	
6,000.00	17.45	89.80	5,781.14	5.18	1,485.23	-12.96	0.00	0.00	0.00	
6,100.00	17.45	89.80	5,876.54	5.29	1,515.21	-13.22	0.00	0.00	0.00	
6,200.00	17.45	89.80	5,971.94	5.39	1,545.20	-13.48	0.00	0.00	0.00	
6,300.00	17.45	89.80	6,067.33	5.50	1,575.19	-13.75	0.00	0.00	0.00	
6,400.00	17.45	89.80	6,162.73	5.60	1,605.17	-14.01	0.00	0.00	0.00	
6,500.00	17.45	89.80	6,258.13	5.71	1,635.16	-14.27	0.00	0.00	0.00	
6,600.00	17.45	89.80	6,353.53	5.81	1,665.15	-14.53	0.00	0.00	0.00	
6,700.00	17.45	89.80	6,448.93	5.92	1,695.14	-14.79	0.00	0.00	0.00	
6,800.00	17.45	89.80	6,544.32	6.02	1,725.12	-15.05	0.00	0.00	0.00	
6,844.73	17.45	89.80	6,587.00	6.07	1,738.54	-15.17	0.00	0.00	0.00	
KOP @ 6844.73ft :: DLS = 8°/100'										
6,850.00	17.42	91.20	6,592.02	6.05	1,740.11	-15.17	8.00	-0.60	26.63	
6,900.00	17.61	104.51	6,639.72	4.00	1,754.93	-13.19	8.00	0.38	26.61	
6,950.00	18.65	116.94	6,687.26	-1.52	1,769.38	-7.75	8.00	2.08	24.88	
7,000.00	20.41	127.71	6,734.40	-10.48	1,783.41	1.14	8.00	3.52	21.54	
7,050.00	22.72	136.61	6,780.90	-22.83	1,796.95	13.43	8.00	4.62	17.80	
7,100.00	25.44	143.83	6,826.56	-38.53	1,809.93	29.05	8.00	5.43	14.43	
7,150.00	28.44	149.67	6,871.14	-57.48	1,822.28	47.94	8.00	6.00	11.69	
7,200.00	31.65	154.46	6,914.42	-79.60	1,833.95	70.00	8.00	6.41	9.57	
7,250.00	35.00	158.43	6,956.20	-104.78	1,844.89	95.12	8.00	6.71	7.94	
7,300.00	38.46	161.78	6,996.27	-132.90	1,855.03	123.18	8.00	6.93	6.70	
7,350.00	42.01	164.65	7,034.43	-163.82	1,864.32	154.05	8.00	7.09	5.74	
7,400.00	45.62	167.14	7,070.51	-197.38	1,872.73	187.58	8.00	7.22	4.99	
7,400.70	45.67	167.18	7,071.00	-197.88	1,872.84	188.07	8.00	7.27	4.68	
Sharon Springs										
7,438.87	48.46	168.88	7,097.00	-225.21	1,878.63	215.37	8.00	7.30	4.46	
Niobrara										
7,450.00	49.27	169.35	7,104.32	-233.44	1,880.21	223.59	8.00	7.34	4.21	
7,500.00	52.97	171.32	7,135.70	-271.80	1,886.73	261.92	8.00	7.39	3.95	
7,550.00	56.69	173.11	7,164.50	-312.29	1,892.25	302.38	8.00	7.45	3.58	
7,571.40	58.29	173.83	7,176.00	-330.22	1,894.30	320.30	8.00	7.48	3.36	
Nio B										
7,600.00	60.44	174.76	7,190.57	-354.70	1,896.74	344.77	8.00	7.50	3.23	
7,650.00	64.20	176.28	7,213.80	-398.84	1,900.19	388.88	8.00	7.53	3.05	

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well WARDELL 7-8HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5032.00usft (RIG)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5032.00usft (RIG)
Site:	3N-65W-07 WARDELL FED 13-7HZ PAD	North Reference:	True
Well:	WARDELL 7-8HZ	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)	
7,700.00	67.98	177.71	7,234.06	-444.47	1,902.58	434.51	8.00	7.56	2.86	
7,750.00	71.77	179.07	7,251.26	-491.39	1,903.89	481.42	8.00	7.58	2.71	
7,769.11	73.23	179.57	7,257.00	-509.61	1,904.11	499.64	8.00	7.60	2.63	
Nio C										
7,800.00	75.58	180.37	7,265.31	-539.37	1,904.12	529.39	8.00	7.61	2.58	
7,850.00	79.38	181.62	7,276.15	-588.16	1,903.27	578.19	8.00	7.62	2.51	
7,900.00	83.20	182.84	7,283.72	-637.54	1,901.34	627.57	8.00	7.63	2.45	
7,950.00	87.01	184.05	7,287.98	-687.25	1,898.35	677.30	8.00	7.63	2.41	
7,989.79	90.05	185.00	7,289.00	-726.90	1,895.21	716.97	8.00	7.63	2.39	
End Build @ 7989.79ft										
8,000.00	90.05	185.00	7,288.99	-737.07	1,894.32	727.14	0.00	0.00	0.00	
8,100.00	90.05	185.00	7,288.91	-836.69	1,885.61	826.81	0.00	0.00	0.00	
8,189.79	90.05	185.00	7,288.83	-926.14	1,877.78	916.30	0.00	0.00	0.00	
Begin Turn to BHL @ 8189.79ft										
8,200.00	90.05	184.85	7,288.82	-936.31	1,876.90	926.47	1.50	-0.03	-1.50	
8,300.00	90.02	183.35	7,288.76	-1,036.05	1,869.76	1,026.25	1.50	-0.03	-1.50	
8,400.00	89.99	181.85	7,288.76	-1,135.95	1,865.23	1,126.17	1.50	-0.03	-1.50	
8,500.00	89.96	180.35	7,288.80	-1,235.93	1,863.31	1,226.15	1.50	-0.03	-1.50	
8,512.48	89.96	180.16	7,288.81	-1,248.40	1,863.26	1,238.63	1.50	-0.03	-1.50	
End Turn @ 8512.48ft										
8,600.00	89.96	180.16	7,288.88	-1,335.93	1,863.01	1,326.15	0.00	0.00	0.00	
8,700.00	89.96	180.16	7,288.95	-1,435.93	1,862.73	1,426.15	0.00	0.00	0.00	
8,800.00	89.96	180.16	7,289.03	-1,535.93	1,862.45	1,526.15	0.00	0.00	0.00	
8,900.00	89.96	180.16	7,289.11	-1,635.93	1,862.17	1,626.15	0.00	0.00	0.00	
9,000.00	89.96	180.16	7,289.18	-1,735.92	1,861.89	1,726.15	0.00	0.00	0.00	
9,100.00	89.96	180.16	7,289.26	-1,835.92	1,861.61	1,826.15	0.00	0.00	0.00	
9,200.00	89.96	180.16	7,289.33	-1,935.92	1,861.33	1,926.15	0.00	0.00	0.00	
9,300.00	89.96	180.16	7,289.41	-2,035.92	1,861.05	2,026.15	0.00	0.00	0.00	
9,400.00	89.96	180.16	7,289.49	-2,135.92	1,860.77	2,126.15	0.00	0.00	0.00	
9,500.00	89.96	180.16	7,289.56	-2,235.92	1,860.49	2,226.15	0.00	0.00	0.00	
9,600.00	89.96	180.16	7,289.64	-2,335.92	1,860.21	2,326.15	0.00	0.00	0.00	
9,700.00	89.96	180.16	7,289.71	-2,435.92	1,859.93	2,426.15	0.00	0.00	0.00	
9,800.00	89.96	180.16	7,289.79	-2,535.92	1,859.65	2,526.15	0.00	0.00	0.00	
9,900.00	89.96	180.16	7,289.87	-2,635.92	1,859.37	2,626.15	0.00	0.00	0.00	
10,000.00	89.96	180.16	7,289.94	-2,735.92	1,859.09	2,726.15	0.00	0.00	0.00	
10,100.00	89.96	180.16	7,290.02	-2,835.92	1,858.81	2,826.15	0.00	0.00	0.00	
10,200.00	89.96	180.16	7,290.10	-2,935.92	1,858.53	2,926.15	0.00	0.00	0.00	
10,300.00	89.96	180.16	7,290.17	-3,035.92	1,858.24	3,026.15	0.00	0.00	0.00	
10,400.00	89.96	180.16	7,290.25	-3,135.92	1,857.96	3,126.15	0.00	0.00	0.00	
10,500.00	89.96	180.16	7,290.32	-3,235.92	1,857.68	3,226.15	0.00	0.00	0.00	
10,600.00	89.96	180.16	7,290.40	-3,335.92	1,857.40	3,326.15	0.00	0.00	0.00	
10,700.00	89.96	180.16	7,290.48	-3,435.92	1,857.12	3,426.15	0.00	0.00	0.00	
10,800.00	89.96	180.16	7,290.55	-3,535.92	1,856.84	3,526.15	0.00	0.00	0.00	
10,900.00	89.96	180.16	7,290.63	-3,635.92	1,856.56	3,626.15	0.00	0.00	0.00	
11,000.00	89.96	180.16	7,290.70	-3,735.92	1,856.28	3,726.15	0.00	0.00	0.00	
11,100.00	89.96	180.16	7,290.78	-3,835.92	1,856.00	3,826.15	0.00	0.00	0.00	
11,200.00	89.96	180.16	7,290.86	-3,935.92	1,855.72	3,926.15	0.00	0.00	0.00	
11,300.00	89.96	180.16	7,290.93	-4,035.92	1,855.44	4,026.14	0.00	0.00	0.00	
11,400.00	89.96	180.16	7,291.01	-4,135.91	1,855.16	4,126.14	0.00	0.00	0.00	
11,500.00	89.96	180.16	7,291.08	-4,235.91	1,854.88	4,226.14	0.00	0.00	0.00	
11,600.00	89.96	180.16	7,291.16	-4,335.91	1,854.60	4,326.14	0.00	0.00	0.00	
11,700.00	89.96	180.16	7,291.24	-4,435.91	1,854.32	4,426.14	0.00	0.00	0.00	
11,800.00	89.96	180.16	7,291.31	-4,535.91	1,854.04	4,526.14	0.00	0.00	0.00	

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well WARDELL 7-8HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5032.00usft (RIG)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5032.00usft (RIG)
Site:	3N-65W-07 WARDELL FED 13-7HZ PAD	North Reference:	True
Well:	WARDELL 7-8HZ	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	89.96	180.16	7,291.39	-4,635.91	1,853.76	4,626.14	0.00	0.00	0.00
12,000.00	89.96	180.16	7,291.47	-4,735.91	1,853.48	4,726.14	0.00	0.00	0.00
12,100.00	89.96	180.16	7,291.54	-4,835.91	1,853.20	4,826.14	0.00	0.00	0.00
12,200.00	89.96	180.16	7,291.62	-4,935.91	1,852.92	4,926.14	0.00	0.00	0.00
12,300.00	89.96	180.16	7,291.69	-5,035.91	1,852.64	5,026.14	0.00	0.00	0.00
12,400.00	89.96	180.16	7,291.77	-5,135.91	1,852.36	5,126.14	0.00	0.00	0.00
12,500.00	89.96	180.16	7,291.85	-5,235.91	1,852.08	5,226.14	0.00	0.00	0.00
12,600.00	89.96	180.16	7,291.92	-5,335.91	1,851.80	5,326.14	0.00	0.00	0.00
12,700.00	89.96	180.16	7,292.00	-5,435.91	1,851.51	5,426.14	0.00	0.00	0.00
12,800.00	89.96	180.16	7,292.07	-5,535.91	1,851.23	5,526.14	0.00	0.00	0.00
12,900.00	89.96	180.16	7,292.15	-5,635.91	1,850.95	5,626.14	0.00	0.00	0.00
13,000.00	89.96	180.16	7,292.23	-5,735.91	1,850.67	5,726.14	0.00	0.00	0.00
13,100.00	89.96	180.16	7,292.30	-5,835.91	1,850.39	5,826.14	0.00	0.00	0.00
13,200.00	89.96	180.16	7,292.38	-5,935.91	1,850.11	5,926.14	0.00	0.00	0.00
13,300.00	89.96	180.16	7,292.45	-6,035.91	1,849.83	6,026.14	0.00	0.00	0.00
13,400.00	89.96	180.16	7,292.53	-6,135.91	1,849.55	6,126.14	0.00	0.00	0.00
13,500.00	89.96	180.16	7,292.61	-6,235.91	1,849.27	6,226.14	0.00	0.00	0.00
13,600.00	89.96	180.16	7,292.68	-6,335.91	1,848.99	6,326.14	0.00	0.00	0.00
13,700.00	89.96	180.16	7,292.76	-6,435.90	1,848.71	6,426.14	0.00	0.00	0.00
13,800.00	89.96	180.16	7,292.84	-6,535.90	1,848.43	6,526.14	0.00	0.00	0.00
13,900.00	89.96	180.16	7,292.91	-6,635.90	1,848.15	6,626.14	0.00	0.00	0.00
14,000.00	89.96	180.16	7,292.99	-6,735.90	1,847.87	6,726.14	0.00	0.00	0.00
14,100.00	89.96	180.16	7,293.06	-6,835.90	1,847.59	6,826.14	0.00	0.00	0.00
14,200.00	89.96	180.16	7,293.14	-6,935.90	1,847.31	6,926.14	0.00	0.00	0.00
14,300.00	89.96	180.16	7,293.22	-7,035.90	1,847.03	7,026.14	0.00	0.00	0.00
14,400.00	89.96	180.16	7,293.29	-7,135.90	1,846.75	7,126.13	0.00	0.00	0.00
14,500.00	89.96	180.16	7,293.37	-7,235.90	1,846.47	7,226.13	0.00	0.00	0.00
14,600.00	89.96	180.16	7,293.44	-7,335.90	1,846.19	7,326.13	0.00	0.00	0.00
14,700.00	89.96	180.16	7,293.52	-7,435.90	1,845.91	7,426.13	0.00	0.00	0.00
14,800.00	89.96	180.16	7,293.60	-7,535.90	1,845.63	7,526.13	0.00	0.00	0.00
14,900.00	89.96	180.16	7,293.67	-7,635.90	1,845.35	7,626.13	0.00	0.00	0.00
15,000.00	89.96	180.16	7,293.75	-7,735.90	1,845.07	7,726.13	0.00	0.00	0.00
15,100.00	89.96	180.16	7,293.82	-7,835.90	1,844.79	7,826.13	0.00	0.00	0.00
15,200.00	89.96	180.16	7,293.90	-7,935.90	1,844.50	7,926.13	0.00	0.00	0.00
15,300.00	89.96	180.16	7,293.98	-8,035.90	1,844.22	8,026.13	0.00	0.00	0.00
15,400.00	89.96	180.16	7,294.05	-8,135.90	1,843.94	8,126.13	0.00	0.00	0.00
15,500.00	89.96	180.16	7,294.13	-8,235.90	1,843.66	8,226.13	0.00	0.00	0.00
15,600.00	89.96	180.16	7,294.21	-8,335.90	1,843.38	8,326.13	0.00	0.00	0.00
15,700.00	89.96	180.16	7,294.28	-8,435.90	1,843.10	8,426.13	0.00	0.00	0.00
15,800.00	89.96	180.16	7,294.36	-8,535.90	1,842.82	8,526.13	0.00	0.00	0.00
15,900.00	89.96	180.16	7,294.43	-8,635.90	1,842.54	8,626.13	0.00	0.00	0.00
16,000.00	89.96	180.16	7,294.51	-8,735.90	1,842.26	8,726.13	0.00	0.00	0.00
16,100.00	89.96	180.16	7,294.59	-8,835.89	1,841.98	8,826.13	0.00	0.00	0.00
16,200.00	89.96	180.16	7,294.66	-8,935.89	1,841.70	8,926.13	0.00	0.00	0.00
16,300.00	89.96	180.16	7,294.74	-9,035.89	1,841.42	9,026.13	0.00	0.00	0.00
16,400.00	89.96	180.16	7,294.81	-9,135.89	1,841.14	9,126.13	0.00	0.00	0.00
16,500.00	89.96	180.16	7,294.89	-9,235.89	1,840.86	9,226.13	0.00	0.00	0.00
16,600.00	89.96	180.16	7,294.97	-9,335.89	1,840.58	9,326.13	0.00	0.00	0.00
16,700.00	89.96	180.16	7,295.04	-9,435.89	1,840.30	9,426.13	0.00	0.00	0.00
16,800.00	89.96	180.16	7,295.12	-9,535.89	1,840.02	9,526.13	0.00	0.00	0.00
16,900.00	89.96	180.16	7,295.19	-9,635.89	1,839.74	9,626.13	0.00	0.00	0.00
17,000.00	89.96	180.16	7,295.27	-9,735.89	1,839.46	9,726.13	0.00	0.00	0.00
17,100.00	89.96	180.16	7,295.35	-9,835.89	1,839.18	9,826.13	0.00	0.00	0.00
17,200.00	89.96	180.16	7,295.42	-9,935.89	1,838.90	9,926.13	0.00	0.00	0.00

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well WARDELL 7-8HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5032.00usft (RIG)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5032.00usft (RIG)
Site:	3N-65W-07 WARDELL FED 13-7HZ PAD	North Reference:	True
Well:	WARDELL 7-8HZ	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)
17,300.00	89.96	180.16	7,295.50	-10,035.89	1,838.62	10,026.13	0.00	0.00	0.00
17,400.00	89.96	180.16	7,295.58	-10,135.89	1,838.34	10,126.13	0.00	0.00	0.00
17,500.00	89.96	180.16	7,295.65	-10,235.89	1,838.06	10,226.12	0.00	0.00	0.00
17,600.00	89.96	180.16	7,295.73	-10,335.89	1,837.77	10,326.12	0.00	0.00	0.00
17,700.00	89.96	180.16	7,295.80	-10,435.89	1,837.49	10,426.12	0.00	0.00	0.00
17,800.00	89.96	180.16	7,295.88	-10,535.89	1,837.21	10,526.12	0.00	0.00	0.00
17,900.00	89.96	180.16	7,295.96	-10,635.89	1,836.93	10,626.12	0.00	0.00	0.00
18,000.00	89.96	180.16	7,296.03	-10,735.89	1,836.65	10,726.12	0.00	0.00	0.00
18,100.00	89.96	180.16	7,296.11	-10,835.89	1,836.37	10,826.12	0.00	0.00	0.00
18,200.00	89.96	180.16	7,296.18	-10,935.89	1,836.09	10,926.12	0.00	0.00	0.00
18,300.00	89.96	180.16	7,296.26	-11,035.89	1,835.81	11,026.12	0.00	0.00	0.00
18,400.00	89.96	180.16	7,296.34	-11,135.89	1,835.53	11,126.12	0.00	0.00	0.00
18,500.00	89.96	180.16	7,296.41	-11,235.88	1,835.25	11,226.12	0.00	0.00	0.00
18,600.00	89.96	180.16	7,296.49	-11,335.88	1,834.97	11,326.12	0.00	0.00	0.00
18,700.00	89.96	180.16	7,296.56	-11,435.88	1,834.69	11,426.12	0.00	0.00	0.00
18,800.00	89.96	180.16	7,296.64	-11,535.88	1,834.41	11,526.12	0.00	0.00	0.00
18,900.00	89.96	180.16	7,296.72	-11,635.88	1,834.13	11,626.12	0.00	0.00	0.00
19,000.00	89.96	180.16	7,296.79	-11,735.88	1,833.85	11,726.12	0.00	0.00	0.00
19,100.00	89.96	180.16	7,296.87	-11,835.88	1,833.57	11,826.12	0.00	0.00	0.00
19,200.00	89.96	180.16	7,296.95	-11,935.88	1,833.29	11,926.12	0.00	0.00	0.00
19,300.00	89.96	180.16	7,297.02	-12,035.88	1,833.01	12,026.12	0.00	0.00	0.00
19,400.00	89.96	180.16	7,297.10	-12,135.88	1,832.73	12,126.12	0.00	0.00	0.00
19,500.00	89.96	180.16	7,297.17	-12,235.88	1,832.45	12,226.12	0.00	0.00	0.00
19,600.00	89.96	180.16	7,297.25	-12,335.88	1,832.17	12,326.12	0.00	0.00	0.00
19,700.00	89.96	180.16	7,297.33	-12,435.88	1,831.89	12,426.12	0.00	0.00	0.00
19,800.00	89.96	180.16	7,297.40	-12,535.88	1,831.61	12,526.12	0.00	0.00	0.00
19,900.00	89.96	180.16	7,297.48	-12,635.88	1,831.33	12,626.12	0.00	0.00	0.00
20,000.00	89.96	180.16	7,297.55	-12,735.88	1,831.04	12,726.12	0.00	0.00	0.00
20,100.00	89.96	180.16	7,297.63	-12,835.88	1,830.76	12,826.12	0.00	0.00	0.00
20,200.00	89.96	180.16	7,297.71	-12,935.88	1,830.48	12,926.12	0.00	0.00	0.00
20,300.00	89.96	180.16	7,297.78	-13,035.88	1,830.20	13,026.12	0.00	0.00	0.00
20,400.00	89.96	180.16	7,297.86	-13,135.88	1,829.92	13,126.12	0.00	0.00	0.00
20,500.00	89.96	180.16	7,297.93	-13,235.88	1,829.64	13,226.12	0.00	0.00	0.00
20,585.82	89.96	180.16	7,298.00	-13,321.70	1,829.40	13,311.93	0.00	0.00	0.00
TD Well @ 20585.82ft - 5.5" CSG									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,822.61	1,796.00	9 5/8"	9-5/8	13-1/2	
20,585.82	7,298.00	5.5" CSG	5-1/2	7-7/8	

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well WARDELL 7-8HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5032.00usft (RIG)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5032.00usft (RIG)
Site:	3N-65W-07 WARDELL FED 13-7HZ PAD	North Reference:	True
Well:	WARDELL 7-8HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-2		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
664.08	664.00	Sussex				
993.64	992.00	Parkman				
3,922.24	3,799.00	Fox Hills				
7,400.70	7,071.00	Sharon Springs				
7,438.87	7,097.00	Niobrara				
7,571.40	7,176.00	Nio B				
7,769.11	7,257.00	Nio C				

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
470.00	470.00	0.00	0.00	Begin Nudge @ 470.00ft	
1,633.33	1,615.43	0.61	175.79	Hold Tangent @ 1633.33ft	
6,844.73	6,587.00	6.07	1,738.54	KOP @ 6844.73ft :: DLS = 8"/100'	
7,989.79	7,289.00	-726.90	1,895.21	End Build @ 7989.79ft	
8,189.79	7,288.83	-926.14	1,877.78	Begin Turn to BHL @ 8189.79ft	
8,512.48	7,288.81	-1,248.40	1,863.26	End Turn @ 8512.48ft	
20,585.82	7,298.00	-13,321.70	1,829.40	TD Well @ 20585.82ft	