

US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N

3N-65W-05 HETHCOCK FED 6-5HZ PAD

HETHCOCK 5-7HZ

Plan A

Plan: Permit Rev-2

Standard Planning Report

21 January, 2023

Project: WELD-NAD83-UTMFT13N

Site: 3N-65W-05 HETHCOCK FED 6-5HZ PAD

Well: HETHCOCK 5-7HZ

Wellbore: Plan A

Design: Permit Rev-2

US ROCKIES WATTENBERG PLANNING

CASING DETAILS

TVD	MD	Name	Size
1692.00	1717.38	9 5/8"	9-5/8
7148.00	22760.10	5.5" CSG	5-1/2

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	410.00	0.00	0.00	410.00	0.00	0.00	0.00	0.00	0.00	
3	1946.00	23.04	3.37	1904.94	304.17	17.91	1.50	3.37	-304.23	
4	4746.35	23.04	3.37	4481.91	1398.25	82.34	0.00	0.00	-1398.53	
5	5898.35	0.00	0.00	5603.11	1626.38	95.77	2.00	180.00	-1626.70	
6	6751.04	0.00	0.00	6455.80	1626.38	95.77	0.00	0.00	-1626.70	
7	7877.17	90.09	180.20	7172.00	909.06	93.27	8.00	180.20	-909.38	
8	15427.16	90.09	180.20	7160.14	-6640.88	66.91	0.00	0.00	6640.61	
9	15593.83	90.09	182.70	7159.88	-6807.48	62.69	1.50	90.00	6807.22	
10	17613.83	90.09	182.70	7156.70	-8825.24	-32.46	0.00	0.00	8825.30	
11	17853.94	90.10	179.10	7156.31	-9065.28	-36.23	1.50	-89.88	9065.35	
12	22760.10	90.10	179.10	7148.00	-13970.82	40.98	0.00	0.00	13970.59	HETHCOCK 5-7HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	Northing	Easting	Latitude	Longitude
HETHCOCK 5-7HZ_SHL	0.00	14620486.59	1727437.87	40.257038	-104.688094
HETHCOCK 5-7HZ_LP	7172.00	14621395.97	1727527.94	40.259534	-104.687760
HETHCOCK 5-7HZ_BHL	7148.00	14606516.00	1727528.00	40.218673	-104.687947

WELL DETAILS: HETHCOCK 5-7HZ

GL = 4903'

RKB = 17' @ 4920.00usft (RIG)

FORMATION TOP DETAILS

Plan: Permit Rev-2 (HETHCOCK 5-7HZ/Plan A)

Date: 1/21/2023

TVDPath	MDPath	Formation
1124.00	1128.22	Fox Hills
3888.00	4100.96	Parkman
4316.00	4566.06	Sussex
6940.00	7282.75	Sharon Springs
6965.00	7317.47	Niobrara
7053.00	7457.24	Nio B
7128.00	7623.69	Nio C

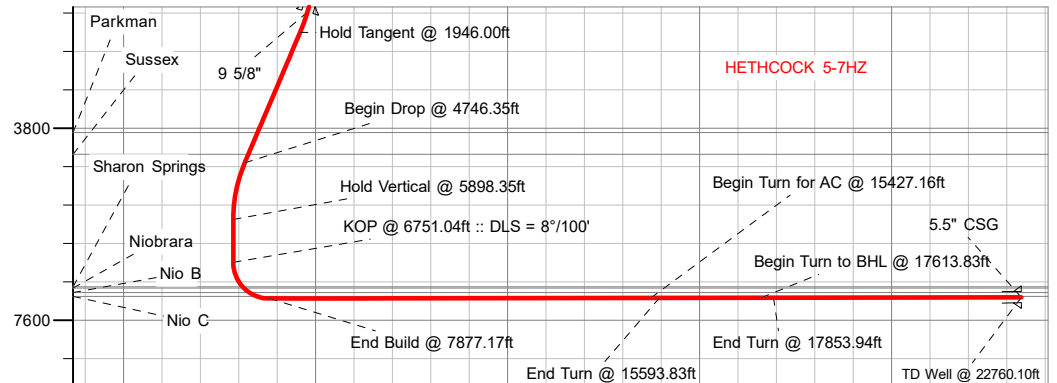
SHL
1689' FNL
2396' FWL

LP
780' FNL
2488' FWL

BHL
180' FSL
2480' FWL

South(-)/North(+) (2800 usft/in)

True Vertical Depth (3800 usft/in)



Vertical Section at 180.20° (3800 usft/in)

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well HETHCOCK 5-7HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4920.00usft (RIG)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4920.00usft (RIG)
Site:	3N-65W-05 HETHCOCK FED 6-5HZ PAD	North Reference:	True
Well:	HETHCOCK 5-7HZ	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-05 HETHCOCK FED 6-5HZ PAD			
Site Position:		Northing:	14,620,487.10 usft	Latitude:	40.257040
From:	Map	Easting:	1,727,347.90 usft	Longitude:	-104.688417
Position Uncertainty:		0.00 usft	Slot Radius:	13-3/16 "	

Well		HETHCOCK 5-7HZ				
Well Position	+N/-S	0.00 usft	Northing:	14,620,486.59 usft	Latitude:	40.257038
	+E/-W	0.00 usft	Easting:	1,727,437.87 usft	Longitude:	-104.688094
Position Uncertainty		3.28 usft	Wellhead Elevation:	usft	Ground Level:	4,903.00 usft
Grid Convergence:		0.20 °				

Wellbore	Plan A				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF202013	1/21/2023	7.63	66.48	51,717.33100914

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	180.20	

Plan Survey Tool Program	Date	1/21/2023			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	1,692.00	Permit Rev-2 (Plan A)	APC_ISCWSA REV 2 MWD+II	
				Fixed:v2:crustal field declination	
2	1,692.00	22,760.10	Permit Rev-2 (Plan A)	APC_ISCWSA REV 2 MWD+II	
				Fixed:v2:Rockies, crustal dec +	

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Site:	3N-65W-05 HETHCOCK FED 6-5HZ PAD	North Reference:	True
Well:	HETHCOCK 5-7HZ	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	
410.00	0.00	0.00	410.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,946.00	23.04	3.37	1,904.94	304.17	17.91	1.50	1.50	0.00	3.37	
4,746.35	23.04	3.37	4,481.91	1,398.25	82.34	0.00	0.00	0.00	0.00	
5,898.35	0.00	0.00	5,603.11	1,626.38	95.77	2.00	-2.00	0.00	180.00	
6,751.04	0.00	0.00	6,455.80	1,626.38	95.77	0.00	0.00	0.00	0.00	
7,877.17	90.09	180.20	7,172.00	909.06	93.27	8.00	8.00	0.00	180.20	
15,427.16	90.09	180.20	7,160.14	-6,640.88	66.91	0.00	0.00	0.00	0.00	
15,593.83	90.09	182.70	7,159.88	-6,807.48	62.69	1.50	0.00	1.50	90.00	
17,613.83	90.09	182.70	7,156.70	-8,825.24	-32.46	0.00	0.00	0.00	0.00	
17,853.94	90.10	179.10	7,156.31	-9,065.28	-36.23	1.50	0.00	-1.50	-89.88	
22,760.10	90.10	179.10	7,148.00	-13,970.82	40.98	0.00	0.00	0.00	0.00	HETHCOCK 5-7HZ_E

Planning Report

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Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4920.00usft (RIG)
Site:	3N-65W-05 HETHCOCK FED 6-5HZ PAD	North Reference:	True
Well:	HETHCOCK 5-7HZ	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
410.00	0.00	0.00	410.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge @ 410.00ft									
500.00	1.35	3.37	499.99	1.06	0.06	-1.06	1.50	1.50	0.00
600.00	2.85	3.37	599.92	4.72	0.28	-4.72	1.50	1.50	0.00
700.00	4.35	3.37	699.72	10.98	0.65	-10.99	1.50	1.50	0.00
800.00	5.85	3.37	799.32	19.86	1.17	-19.86	1.50	1.50	0.00
900.00	7.35	3.37	898.66	31.33	1.84	-31.34	1.50	1.50	0.00
1,000.00	8.85	3.37	997.66	45.40	2.67	-45.41	1.50	1.50	0.00
1,100.00	10.35	3.37	1,096.25	62.04	3.65	-62.06	1.50	1.50	0.00
1,128.22	10.77	3.37	1,124.00	67.21	3.96	-67.22	1.50	1.50	0.00
Fox Hills									
1,200.00	11.85	3.37	1,194.38	81.26	4.79	-81.28	1.50	1.50	0.00
1,300.00	13.35	3.37	1,291.97	103.04	6.07	-103.06	1.50	1.50	0.00
1,400.00	14.85	3.37	1,388.95	127.36	7.50	-127.38	1.50	1.50	0.00
1,500.00	16.35	3.37	1,485.27	154.20	9.08	-154.23	1.50	1.50	0.00
1,600.00	17.85	3.37	1,580.84	183.55	10.81	-183.59	1.50	1.50	0.00
1,700.00	19.35	3.37	1,675.62	215.39	12.68	-215.44	1.50	1.50	0.00
1,717.38	19.61	3.37	1,692.00	221.18	13.02	-221.22	1.50	1.50	0.00
9 5/8"									
1,800.00	20.85	3.37	1,769.52	249.70	14.70	-249.75	1.50	1.50	0.00
1,900.00	22.35	3.37	1,862.50	286.45	16.87	-286.50	1.50	1.50	0.00
1,946.00	23.04	3.37	1,904.94	304.17	17.91	-304.23	1.50	1.50	0.00
Hold Tangent @ 1946.00ft									
2,000.00	23.04	3.37	1,954.63	325.26	19.15	-325.33	0.00	0.00	0.00
2,100.00	23.04	3.37	2,046.65	364.33	21.45	-364.41	0.00	0.00	0.00
2,200.00	23.04	3.37	2,138.68	403.40	23.75	-403.48	0.00	0.00	0.00
2,300.00	23.04	3.37	2,230.70	442.47	26.06	-442.56	0.00	0.00	0.00
2,400.00	23.04	3.37	2,322.72	481.54	28.36	-481.64	0.00	0.00	0.00
2,500.00	23.04	3.37	2,414.75	520.61	30.66	-520.71	0.00	0.00	0.00
2,600.00	23.04	3.37	2,506.77	559.68	32.96	-559.79	0.00	0.00	0.00
2,700.00	23.04	3.37	2,598.79	598.75	35.26	-598.87	0.00	0.00	0.00
2,800.00	23.04	3.37	2,690.82	637.82	37.56	-637.95	0.00	0.00	0.00
2,900.00	23.04	3.37	2,782.84	676.89	39.86	-677.02	0.00	0.00	0.00
3,000.00	23.04	3.37	2,874.86	715.96	42.16	-716.10	0.00	0.00	0.00
3,100.00	23.04	3.37	2,966.88	755.03	44.46	-755.18	0.00	0.00	0.00
3,200.00	23.04	3.37	3,058.91	794.10	46.76	-794.26	0.00	0.00	0.00
3,300.00	23.04	3.37	3,150.93	833.17	49.06	-833.33	0.00	0.00	0.00
3,400.00	23.04	3.37	3,242.95	872.24	51.36	-872.41	0.00	0.00	0.00
3,500.00	23.04	3.37	3,334.98	911.31	53.66	-911.49	0.00	0.00	0.00
3,600.00	23.04	3.37	3,427.00	950.38	55.96	-950.57	0.00	0.00	0.00
3,700.00	23.04	3.37	3,519.02	989.45	58.26	-989.64	0.00	0.00	0.00
3,800.00	23.04	3.37	3,611.05	1,028.52	60.56	-1,028.72	0.00	0.00	0.00
3,900.00	23.04	3.37	3,703.07	1,067.59	62.87	-1,067.80	0.00	0.00	0.00
4,000.00	23.04	3.37	3,795.09	1,106.66	65.17	-1,106.88	0.00	0.00	0.00
4,100.00	23.04	3.37	3,887.12	1,145.73	67.47	-1,145.95	0.00	0.00	0.00
4,100.96	23.04	3.37	3,888.00	1,146.10	67.49	-1,146.33	0.00	0.00	0.00
Parkman									
4,200.00	23.04	3.37	3,979.14	1,184.80	69.77	-1,185.03	0.00	0.00	0.00
4,300.00	23.04	3.37	4,071.16	1,223.87	72.07	-1,224.11	0.00	0.00	0.00

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well HETHCOCK 5-7HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4920.00usft (RIG)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4920.00usft (RIG)
Site:	3N-65W-05 HETHCOCK FED 6-5HZ PAD	North Reference:	True
Well:	HETHCOCK 5-7HZ	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)
4,400.00	23.04	3.37	4,163.19	1,262.94	74.37	-1,263.19	0.00	0.00	0.00
4,500.00	23.04	3.37	4,255.21	1,302.00	76.67	-1,302.26	0.00	0.00	0.00
4,566.06	23.04	3.37	4,316.00	1,327.81	78.19	-1,328.08	0.00	0.00	0.00
Sussex									
4,600.00	23.04	3.37	4,347.23	1,341.07	78.97	-1,341.34	0.00	0.00	0.00
4,700.00	23.04	3.37	4,439.26	1,380.14	81.27	-1,380.42	0.00	0.00	0.00
4,746.35	23.04	3.37	4,481.91	1,398.25	82.34	-1,398.53	0.00	0.00	0.00
Begin Drop @ 4746.35ft									
4,800.00	21.97	3.37	4,531.47	1,418.75	83.54	-1,419.03	2.00	-2.00	0.00
4,900.00	19.97	3.37	4,624.85	1,454.47	85.65	-1,454.76	2.00	-2.00	0.00
5,000.00	17.97	3.37	4,719.41	1,486.92	87.56	-1,487.21	2.00	-2.00	0.00
5,100.00	15.97	3.37	4,815.05	1,516.05	89.27	-1,516.35	2.00	-2.00	0.00
5,200.00	13.97	3.37	4,911.66	1,541.83	90.79	-1,542.13	2.00	-2.00	0.00
5,300.00	11.97	3.37	5,009.10	1,564.22	92.11	-1,564.54	2.00	-2.00	0.00
5,400.00	9.97	3.37	5,107.27	1,583.22	93.23	-1,583.53	2.00	-2.00	0.00
5,500.00	7.97	3.37	5,206.04	1,598.77	94.14	-1,599.09	2.00	-2.00	0.00
5,600.00	5.97	3.37	5,305.30	1,610.88	94.86	-1,611.20	2.00	-2.00	0.00
5,700.00	3.97	3.37	5,404.92	1,619.52	95.37	-1,619.85	2.00	-2.00	0.00
5,800.00	1.97	3.37	5,504.78	1,624.69	95.67	-1,625.02	2.00	-2.00	0.00
5,898.35	0.00	0.00	5,603.11	1,626.38	95.77	-1,626.70	2.00	-2.00	0.00
Hold Vertical @ 5898.35ft									
5,900.00	0.00	0.00	5,604.76	1,626.38	95.77	-1,626.70	0.00	0.00	0.00
6,000.00	0.00	0.00	5,704.76	1,626.38	95.77	-1,626.70	0.00	0.00	0.00
6,100.00	0.00	0.00	5,804.76	1,626.38	95.77	-1,626.70	0.00	0.00	0.00
6,200.00	0.00	0.00	5,904.76	1,626.38	95.77	-1,626.70	0.00	0.00	0.00
6,300.00	0.00	0.00	6,004.76	1,626.38	95.77	-1,626.70	0.00	0.00	0.00
6,400.00	0.00	0.00	6,104.76	1,626.38	95.77	-1,626.70	0.00	0.00	0.00
6,500.00	0.00	0.00	6,204.76	1,626.38	95.77	-1,626.70	0.00	0.00	0.00
6,600.00	0.00	0.00	6,304.76	1,626.38	95.77	-1,626.70	0.00	0.00	0.00
6,700.00	0.00	0.00	6,404.76	1,626.38	95.77	-1,626.70	0.00	0.00	0.00
6,751.04	0.00	0.00	6,455.80	1,626.38	95.77	-1,626.70	0.00	0.00	0.00
KOP @ 6751.04ft :: DLS = 8°/100'									
6,800.00	3.92	180.20	6,504.72	1,624.70	95.76	-1,625.03	8.00	8.00	0.00
6,850.00	7.92	180.20	6,554.45	1,619.55	95.75	-1,619.88	8.00	8.00	0.00
6,900.00	11.92	180.20	6,603.69	1,610.94	95.72	-1,611.27	8.00	8.00	0.00
6,950.00	15.92	180.20	6,652.21	1,598.92	95.67	-1,599.24	8.00	8.00	0.00
7,000.00	19.92	180.20	6,699.78	1,583.54	95.62	-1,583.86	8.00	8.00	0.00
7,050.00	23.92	180.20	6,746.15	1,564.88	95.56	-1,565.21	8.00	8.00	0.00
7,100.00	27.92	180.20	6,791.12	1,543.03	95.48	-1,543.36	8.00	8.00	0.00
7,150.00	31.92	180.20	6,834.45	1,518.10	95.39	-1,518.42	8.00	8.00	0.00
7,200.00	35.92	180.20	6,875.93	1,490.21	95.29	-1,490.53	8.00	8.00	0.00
7,250.00	39.92	180.20	6,915.37	1,459.49	95.19	-1,459.81	8.00	8.00	0.00
7,282.76	42.54	180.20	6,940.00	1,437.90	95.11	-1,438.23	8.00	8.00	0.00
Sharon Springs									
7,300.00	43.92	180.20	6,952.57	1,426.09	95.07	-1,426.42	8.00	8.00	0.00
7,317.47	45.31	180.20	6,965.00	1,413.82	95.03	-1,414.15	8.00	8.00	0.00
Niobrara									
7,350.00	47.92	180.20	6,987.34	1,390.18	94.95	-1,390.51	8.00	8.00	0.00
7,400.00	51.92	180.20	7,019.53	1,351.94	94.81	-1,352.26	8.00	8.00	0.00
7,450.00	55.92	180.20	7,048.97	1,311.54	94.67	-1,311.86	8.00	8.00	0.00
7,457.24	56.50	180.20	7,053.00	1,305.52	94.65	-1,305.84	8.00	8.00	0.00
Nio B									
7,500.00	59.92	180.20	7,075.53	1,269.18	94.52	-1,269.50	8.00	8.00	0.00

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well HETHCOCK 5-7HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4920.00usft (RIG)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4920.00usft (RIG)
Site:	3N-65W-05 HETHCOCK FED 6-5HZ PAD	North Reference:	True
Well:	HETHCOCK 5-7HZ	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)
7,550.00	63.92	180.20	7,099.06	1,225.08	94.37	-1,225.40	8.00	8.00	0.00
7,600.00	67.92	180.20	7,119.46	1,179.44	94.21	-1,179.76	8.00	8.00	0.00
7,623.69	69.81	180.20	7,128.00	1,157.34	94.13	-1,157.66	8.00	8.00	0.00
Nio C									
7,650.00	71.92	180.20	7,136.62	1,132.49	94.05	-1,132.81	8.00	8.00	0.00
7,700.00	75.92	180.20	7,150.47	1,084.46	93.88	-1,084.78	8.00	8.00	0.00
7,750.00	79.92	180.20	7,160.94	1,035.57	93.71	-1,035.89	8.00	8.00	0.00
7,800.00	83.92	180.20	7,167.97	986.08	93.53	-986.40	8.00	8.00	0.00
7,850.00	87.92	180.20	7,171.53	936.22	93.36	-936.54	8.00	8.00	0.00
7,877.17	90.09	180.20	7,172.00	909.06	93.27	-909.38	8.00	8.00	0.00
End Build @ 7877.17ft									
7,900.00	90.09	180.20	7,171.96	886.22	93.19	-886.54	0.00	0.00	0.00
8,000.00	90.09	180.20	7,171.81	786.22	92.84	-786.54	0.00	0.00	0.00
8,100.00	90.09	180.20	7,171.65	686.23	92.49	-686.54	0.00	0.00	0.00
8,200.00	90.09	180.20	7,171.49	586.23	92.14	-586.54	0.00	0.00	0.00
8,300.00	90.09	180.20	7,171.33	486.23	91.79	-486.54	0.00	0.00	0.00
8,400.00	90.09	180.20	7,171.18	386.23	91.44	-386.54	0.00	0.00	0.00
8,500.00	90.09	180.20	7,171.02	286.23	91.09	-286.54	0.00	0.00	0.00
8,600.00	90.09	180.20	7,170.86	186.23	90.74	-186.54	0.00	0.00	0.00
8,700.00	90.09	180.20	7,170.71	86.23	90.39	-86.54	0.00	0.00	0.00
8,800.00	90.09	180.20	7,170.55	-13.77	90.04	13.45	0.00	0.00	0.00
8,900.00	90.09	180.20	7,170.39	-113.77	89.70	113.45	0.00	0.00	0.00
9,000.00	90.09	180.20	7,170.23	-213.77	89.35	213.45	0.00	0.00	0.00
9,100.00	90.09	180.20	7,170.08	-313.77	89.00	313.45	0.00	0.00	0.00
9,200.00	90.09	180.20	7,169.92	-413.77	88.65	413.45	0.00	0.00	0.00
9,300.00	90.09	180.20	7,169.76	-513.77	88.30	513.45	0.00	0.00	0.00
9,400.00	90.09	180.20	7,169.61	-613.76	87.95	613.45	0.00	0.00	0.00
9,500.00	90.09	180.20	7,169.45	-713.76	87.60	713.45	0.00	0.00	0.00
9,600.00	90.09	180.20	7,169.29	-813.76	87.25	813.45	0.00	0.00	0.00
9,700.00	90.09	180.20	7,169.13	-913.76	86.90	913.45	0.00	0.00	0.00
9,800.00	90.09	180.20	7,168.98	-1,013.76	86.55	1,013.45	0.00	0.00	0.00
9,900.00	90.09	180.20	7,168.82	-1,113.76	86.21	1,113.45	0.00	0.00	0.00
10,000.00	90.09	180.20	7,168.66	-1,213.76	85.86	1,213.45	0.00	0.00	0.00
10,100.00	90.09	180.20	7,168.51	-1,313.76	85.51	1,313.45	0.00	0.00	0.00
10,200.00	90.09	180.20	7,168.35	-1,413.76	85.16	1,413.45	0.00	0.00	0.00
10,300.00	90.09	180.20	7,168.19	-1,513.76	84.81	1,513.45	0.00	0.00	0.00
10,400.00	90.09	180.20	7,168.04	-1,613.76	84.46	1,613.45	0.00	0.00	0.00
10,500.00	90.09	180.20	7,167.88	-1,713.76	84.11	1,713.45	0.00	0.00	0.00
10,600.00	90.09	180.20	7,167.72	-1,813.76	83.76	1,813.45	0.00	0.00	0.00
10,700.00	90.09	180.20	7,167.56	-1,913.76	83.41	1,913.45	0.00	0.00	0.00
10,800.00	90.09	180.20	7,167.41	-2,013.75	83.06	2,013.45	0.00	0.00	0.00
10,900.00	90.09	180.20	7,167.25	-2,113.75	82.71	2,113.45	0.00	0.00	0.00
11,000.00	90.09	180.20	7,167.09	-2,213.75	82.37	2,213.45	0.00	0.00	0.00
11,100.00	90.09	180.20	7,166.94	-2,313.75	82.02	2,313.45	0.00	0.00	0.00
11,200.00	90.09	180.20	7,166.78	-2,413.75	81.67	2,413.45	0.00	0.00	0.00
11,300.00	90.09	180.20	7,166.62	-2,513.75	81.32	2,513.45	0.00	0.00	0.00
11,400.00	90.09	180.20	7,166.46	-2,613.75	80.97	2,613.45	0.00	0.00	0.00
11,500.00	90.09	180.20	7,166.31	-2,713.75	80.62	2,713.45	0.00	0.00	0.00
11,600.00	90.09	180.20	7,166.15	-2,813.75	80.27	2,813.45	0.00	0.00	0.00
11,700.00	90.09	180.20	7,165.99	-2,913.75	79.92	2,913.45	0.00	0.00	0.00
11,800.00	90.09	180.20	7,165.84	-3,013.75	79.57	3,013.45	0.00	0.00	0.00
11,900.00	90.09	180.20	7,165.68	-3,113.75	79.22	3,113.45	0.00	0.00	0.00
12,000.00	90.09	180.20	7,165.52	-3,213.75	78.87	3,213.45	0.00	0.00	0.00
12,100.00	90.09	180.20	7,165.36	-3,313.75	78.53	3,313.45	0.00	0.00	0.00

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well HETHCOCK 5-7HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4920.00usft (RIG)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4920.00usft (RIG)
Site:	3N-65W-05 HETHCOCK FED 6-5HZ PAD	North Reference:	True
Well:	HETHCOCK 5-7HZ	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)	
12,200.00	90.09	180.20	7,165.21	-3,413.74	78.18	3,413.45	0.00	0.00	0.00	
12,300.00	90.09	180.20	7,165.05	-3,513.74	77.83	3,513.45	0.00	0.00	0.00	
12,400.00	90.09	180.20	7,164.89	-3,613.74	77.48	3,613.45	0.00	0.00	0.00	
12,500.00	90.09	180.20	7,164.74	-3,713.74	77.13	3,713.45	0.00	0.00	0.00	
12,600.00	90.09	180.20	7,164.58	-3,813.74	76.78	3,813.45	0.00	0.00	0.00	
12,700.00	90.09	180.20	7,164.42	-3,913.74	76.43	3,913.45	0.00	0.00	0.00	
12,800.00	90.09	180.20	7,164.27	-4,013.74	76.08	4,013.45	0.00	0.00	0.00	
12,900.00	90.09	180.20	7,164.11	-4,113.74	75.73	4,113.45	0.00	0.00	0.00	
13,000.00	90.09	180.20	7,163.95	-4,213.74	75.38	4,213.45	0.00	0.00	0.00	
13,100.00	90.09	180.20	7,163.79	-4,313.74	75.04	4,313.45	0.00	0.00	0.00	
13,200.00	90.09	180.20	7,163.64	-4,413.74	74.69	4,413.45	0.00	0.00	0.00	
13,300.00	90.09	180.20	7,163.48	-4,513.74	74.34	4,513.45	0.00	0.00	0.00	
13,400.00	90.09	180.20	7,163.32	-4,613.74	73.99	4,613.45	0.00	0.00	0.00	
13,500.00	90.09	180.20	7,163.17	-4,713.73	73.64	4,713.45	0.00	0.00	0.00	
13,600.00	90.09	180.20	7,163.01	-4,813.73	73.29	4,813.45	0.00	0.00	0.00	
13,700.00	90.09	180.20	7,162.85	-4,913.73	72.94	4,913.45	0.00	0.00	0.00	
13,800.00	90.09	180.20	7,162.69	-5,013.73	72.59	5,013.45	0.00	0.00	0.00	
13,900.00	90.09	180.20	7,162.54	-5,113.73	72.24	5,113.45	0.00	0.00	0.00	
14,000.00	90.09	180.20	7,162.38	-5,213.73	71.89	5,213.45	0.00	0.00	0.00	
14,100.00	90.09	180.20	7,162.22	-5,313.73	71.54	5,313.45	0.00	0.00	0.00	
14,200.00	90.09	180.20	7,162.07	-5,413.73	71.20	5,413.45	0.00	0.00	0.00	
14,300.00	90.09	180.20	7,161.91	-5,513.73	70.85	5,513.45	0.00	0.00	0.00	
14,400.00	90.09	180.20	7,161.75	-5,613.73	70.50	5,613.45	0.00	0.00	0.00	
14,500.00	90.09	180.20	7,161.59	-5,713.73	70.15	5,713.45	0.00	0.00	0.00	
14,600.00	90.09	180.20	7,161.44	-5,813.73	69.80	5,813.45	0.00	0.00	0.00	
14,700.00	90.09	180.20	7,161.28	-5,913.73	69.45	5,913.45	0.00	0.00	0.00	
14,800.00	90.09	180.20	7,161.12	-6,013.73	69.10	6,013.45	0.00	0.00	0.00	
14,900.00	90.09	180.20	7,160.97	-6,113.72	68.75	6,113.45	0.00	0.00	0.00	
15,000.00	90.09	180.20	7,160.81	-6,213.72	68.40	6,213.45	0.00	0.00	0.00	
15,100.00	90.09	180.20	7,160.65	-6,313.72	68.05	6,313.45	0.00	0.00	0.00	
15,200.00	90.09	180.20	7,160.50	-6,413.72	67.70	6,413.45	0.00	0.00	0.00	
15,300.00	90.09	180.20	7,160.34	-6,513.72	67.36	6,513.45	0.00	0.00	0.00	
15,400.00	90.09	180.20	7,160.18	-6,613.72	67.01	6,613.45	0.00	0.00	0.00	
15,427.16	90.09	180.20	7,160.14	-6,640.88	66.91	6,640.61	0.00	0.00	0.00	
Begin Turn for AC @ 15427.16ft										
15,500.00	90.09	181.29	7,160.02	-6,713.71	65.96	6,713.44	1.50	0.00	1.50	
15,593.83	90.09	182.70	7,159.88	-6,807.48	62.69	6,807.22	1.50	0.00	1.50	
End Turn @ 15593.83ft										
15,600.00	90.09	182.70	7,159.87	-6,813.65	62.40	6,813.39	0.00	0.00	0.00	
15,700.00	90.09	182.70	7,159.71	-6,913.54	57.69	6,913.29	0.00	0.00	0.00	
15,800.00	90.09	182.70	7,159.55	-7,013.42	52.98	7,013.20	0.00	0.00	0.00	
15,900.00	90.09	182.70	7,159.40	-7,113.31	48.27	7,113.10	0.00	0.00	0.00	
16,000.00	90.09	182.70	7,159.24	-7,213.20	43.56	7,213.01	0.00	0.00	0.00	
16,100.00	90.09	182.70	7,159.08	-7,313.09	38.85	7,312.91	0.00	0.00	0.00	
16,200.00	90.09	182.70	7,158.92	-7,412.98	34.14	7,412.82	0.00	0.00	0.00	
16,300.00	90.09	182.70	7,158.77	-7,512.87	29.43	7,512.72	0.00	0.00	0.00	
16,400.00	90.09	182.70	7,158.61	-7,612.76	24.72	7,612.63	0.00	0.00	0.00	
16,500.00	90.09	182.70	7,158.45	-7,712.65	20.01	7,712.53	0.00	0.00	0.00	
16,600.00	90.09	182.70	7,158.30	-7,812.54	15.30	7,812.43	0.00	0.00	0.00	
16,700.00	90.09	182.70	7,158.14	-7,912.42	10.59	7,912.34	0.00	0.00	0.00	
16,800.00	90.09	182.70	7,157.98	-8,012.31	5.88	8,012.24	0.00	0.00	0.00	
16,900.00	90.09	182.70	7,157.82	-8,112.20	1.17	8,112.15	0.00	0.00	0.00	
17,000.00	90.09	182.70	7,157.67	-8,212.09	-3.55	8,212.05	0.00	0.00	0.00	
17,100.00	90.09	182.70	7,157.51	-8,311.98	-8.26	8,311.96	0.00	0.00	0.00	

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well HETHCOCK 5-7HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4920.00usft (RIG)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4920.00usft (RIG)
Site:	3N-65W-05 HETHCOCK FED 6-5HZ PAD	North Reference:	True
Well:	HETHCOCK 5-7HZ	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)
17,200.00	90.09	182.70	7,157.35	-8,411.87	-12.97	8,411.86	0.00	0.00	0.00
17,300.00	90.09	182.70	7,157.20	-8,511.76	-17.68	8,511.77	0.00	0.00	0.00
17,400.00	90.09	182.70	7,157.04	-8,611.65	-22.39	8,611.67	0.00	0.00	0.00
17,500.00	90.09	182.70	7,156.88	-8,711.54	-27.10	8,711.58	0.00	0.00	0.00
17,600.00	90.09	182.70	7,156.73	-8,811.42	-31.81	8,811.48	0.00	0.00	0.00
17,613.83	90.09	182.70	7,156.70	-8,825.24	-32.46	8,825.30	0.00	0.00	0.00
Begin Turn to BHL @ 17613.83ft									
17,700.00	90.09	181.41	7,156.57	-8,911.35	-35.55	8,911.42	1.50	0.00	-1.50
17,800.00	90.10	179.91	7,156.40	-9,011.34	-36.70	9,011.42	1.50	0.00	-1.50
17,853.94	90.10	179.10	7,156.31	-9,065.28	-36.23	9,065.35	1.50	0.00	-1.50
End Turn @ 17853.94ft									
17,900.00	90.10	179.10	7,156.23	-9,111.33	-35.50	9,111.40	0.00	0.00	0.00
18,000.00	90.10	179.10	7,156.06	-9,211.32	-33.93	9,211.38	0.00	0.00	0.00
18,100.00	90.10	179.10	7,155.89	-9,311.31	-32.36	9,311.37	0.00	0.00	0.00
18,200.00	90.10	179.10	7,155.73	-9,411.30	-30.78	9,411.35	0.00	0.00	0.00
18,300.00	90.10	179.10	7,155.56	-9,511.28	-29.21	9,511.33	0.00	0.00	0.00
18,400.00	90.10	179.10	7,155.39	-9,611.27	-27.63	9,611.31	0.00	0.00	0.00
18,500.00	90.10	179.10	7,155.22	-9,711.26	-26.06	9,711.29	0.00	0.00	0.00
18,600.00	90.10	179.10	7,155.05	-9,811.25	-24.49	9,811.27	0.00	0.00	0.00
18,700.00	90.10	179.10	7,154.88	-9,911.23	-22.91	9,911.25	0.00	0.00	0.00
18,800.00	90.10	179.10	7,154.71	-10,011.22	-21.34	10,011.23	0.00	0.00	0.00
18,900.00	90.10	179.10	7,154.54	-10,111.21	-19.77	10,111.22	0.00	0.00	0.00
19,000.00	90.10	179.10	7,154.37	-10,211.20	-18.19	10,211.20	0.00	0.00	0.00
19,100.00	90.10	179.10	7,154.20	-10,311.18	-16.62	10,311.18	0.00	0.00	0.00
19,200.00	90.10	179.10	7,154.03	-10,411.17	-15.05	10,411.16	0.00	0.00	0.00
19,300.00	90.10	179.10	7,153.86	-10,511.16	-13.47	10,511.14	0.00	0.00	0.00
19,400.00	90.10	179.10	7,153.69	-10,611.15	-11.90	10,611.12	0.00	0.00	0.00
19,500.00	90.10	179.10	7,153.52	-10,711.13	-10.32	10,711.10	0.00	0.00	0.00
19,600.00	90.10	179.10	7,153.35	-10,811.12	-8.75	10,811.09	0.00	0.00	0.00
19,700.00	90.10	179.10	7,153.18	-10,911.11	-7.18	10,911.07	0.00	0.00	0.00
19,800.00	90.10	179.10	7,153.01	-11,011.10	-5.60	11,011.05	0.00	0.00	0.00
19,900.00	90.10	179.10	7,152.85	-11,111.08	-4.03	11,111.03	0.00	0.00	0.00
20,000.00	90.10	179.10	7,152.68	-11,211.07	-2.46	11,211.01	0.00	0.00	0.00
20,100.00	90.10	179.10	7,152.51	-11,311.06	-0.88	11,310.99	0.00	0.00	0.00
20,200.00	90.10	179.10	7,152.34	-11,411.05	0.69	11,410.97	0.00	0.00	0.00
20,300.00	90.10	179.10	7,152.17	-11,511.03	2.27	11,510.96	0.00	0.00	0.00
20,400.00	90.10	179.10	7,152.00	-11,611.02	3.84	11,610.94	0.00	0.00	0.00
20,500.00	90.10	179.10	7,151.83	-11,711.01	5.41	11,710.92	0.00	0.00	0.00
20,600.00	90.10	179.10	7,151.66	-11,811.00	6.99	11,810.90	0.00	0.00	0.00
20,700.00	90.10	179.10	7,151.49	-11,910.98	8.56	11,910.88	0.00	0.00	0.00
20,800.00	90.10	179.10	7,151.32	-12,010.97	10.13	12,010.86	0.00	0.00	0.00
20,900.00	90.10	179.10	7,151.15	-12,110.96	11.71	12,110.84	0.00	0.00	0.00
21,000.00	90.10	179.10	7,150.98	-12,210.95	13.28	12,210.83	0.00	0.00	0.00
21,100.00	90.10	179.10	7,150.81	-12,310.93	14.85	12,310.81	0.00	0.00	0.00
21,200.00	90.10	179.10	7,150.64	-12,410.92	16.43	12,410.79	0.00	0.00	0.00
21,300.00	90.10	179.10	7,150.47	-12,510.91	18.00	12,510.77	0.00	0.00	0.00
21,400.00	90.10	179.10	7,150.30	-12,610.90	19.58	12,610.75	0.00	0.00	0.00
21,500.00	90.10	179.10	7,150.13	-12,710.88	21.15	12,710.73	0.00	0.00	0.00
21,600.00	90.10	179.10	7,149.97	-12,810.87	22.72	12,810.71	0.00	0.00	0.00
21,700.00	90.10	179.10	7,149.80	-12,910.86	24.30	12,910.69	0.00	0.00	0.00
21,800.00	90.10	179.10	7,149.63	-13,010.85	25.87	13,010.68	0.00	0.00	0.00
21,900.00	90.10	179.10	7,149.46	-13,110.83	27.44	13,110.66	0.00	0.00	0.00
22,000.00	90.10	179.10	7,149.29	-13,210.82	29.02	13,210.64	0.00	0.00	0.00

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well HETHCOCK 5-7HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4920.00usft (RIG)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4920.00usft (RIG)
Site:	3N-65W-05 HETHCOCK FED 6-5HZ PAD	North Reference:	True
Well:	HETHCOCK 5-7HZ	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)	
22,100.00	90.10	179.10	7,149.12	-13,310.81	30.59	13,310.62	0.00	0.00	0.00	
22,200.00	90.10	179.10	7,148.95	-13,410.80	32.17	13,410.60	0.00	0.00	0.00	
22,300.00	90.10	179.10	7,148.78	-13,510.78	33.74	13,510.58	0.00	0.00	0.00	
22,400.00	90.10	179.10	7,148.61	-13,610.77	35.31	13,610.56	0.00	0.00	0.00	
22,500.00	90.10	179.10	7,148.44	-13,710.76	36.89	13,710.55	0.00	0.00	0.00	
22,600.00	90.10	179.10	7,148.27	-13,810.75	38.46	13,810.53	0.00	0.00	0.00	
22,700.00	90.10	179.10	7,148.10	-13,910.73	40.03	13,910.51	0.00	0.00	0.00	
22,760.10	90.10	179.10	7,148.00	-13,970.82	40.98	13,970.59	0.00	0.00	0.00	
TD Well @ 22760.10ft										

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,717.38	1,692.00	9 5/8"	9-5/8	13-1/2	
22,760.10	7,148.00	5.5" CSG	5-1/2	7-7/8	

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,128.22	1,124.00	Fox Hills			
4,100.96	3,888.00	Parkman			
4,566.06	4,316.00	Sussex			
7,282.76	6,940.00	Sharon Springs			
7,317.47	6,965.00	Niobrara			
7,457.24	7,053.00	Nio B			
7,623.69	7,128.00	Nio C			

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
410.00	410.00	0.00	0.00	Begin Nudge @ 410.00ft	
1,946.00	1,904.94	304.17	17.91	Hold Tangent @ 1946.00ft	
4,746.35	4,481.91	1,398.25	82.34	Begin Drop @ 4746.35ft	
5,898.35	5,603.11	1,626.38	95.77	Hold Vertical @ 5898.35ft	
6,751.04	6,455.80	1,626.38	95.77	KOP @ 6751.04ft :: DLS = 8°/100'	
7,877.17	7,172.00	909.06	93.27	End Build @ 7877.17ft	
15,427.16	7,160.14	-6,640.88	66.91	Begin Turn for AC @ 15427.16ft	
15,593.83	7,159.88	-6,807.48	62.69	End Turn @ 15593.83ft	
17,613.83	7,156.70	-8,825.24	-32.46	Begin Turn to BHL @ 17613.83ft	
17,853.94	7,156.31	-9,065.28	-36.23	End Turn @ 17853.94ft	
22,760.10	7,148.00	-13,970.82	40.98	TD Well @ 22760.10ft	