

US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N

3N-67W-30 RADEMACHER 14-30HZ PAD

RADEMACHER SOUTH 30-16HZ

Plan A

Plan: Permit Rev-1

Standard Planning Report

27 April, 2023

Project: WELD-NAD83-UTMFT13N

Site: 3N-67W-30 RADEMACHER 14-30HZ PAD

Well: RADEMACHER SOUTH 30-16HZ

Wellbore: Plan A

Design: Permit Rev-1

US ROCKIES WATTENBERG PLANNING

CASING DETAILS

TVD	MD	Name	Size
1500.00	1510.28	9 5/8"	9-5/8
7191.16	24321.00	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	350.00	0.00	0.00	350.00	0.00	0.00	0.00	0.00	0.00	
3	990.00	9.60	174.74	987.01	-53.27	4.90	1.50	174.74	53.12	
4	6553.56	9.60	174.74	6472.66	-977.19	89.96	0.00	0.00	974.50	
5	7554.14	89.59	180.94	7070.00	-1678.43	89.29	8.00	6.29	1675.52	
6	7854.14	89.59	180.94	7072.14	-1978.38	84.37	0.00	0.00	1975.49	
7	8120.87	89.50	184.94	7074.26	-2244.69	70.69	1.50	91.30	2242.07	
8	10720.87	89.50	184.94	7096.95	-4834.94	-153.19	0.00	0.00	4837.29	
9	11016.86	89.50	180.50	7099.54	-5130.51	-167.23	1.50	-90.02	5133.13	
10	16400.00	89.50	180.50	7146.51	-10513.24	-214.21	0.00	0.00	10515.24	
11	16633.64	89.68	184.00	7148.19	-10746.65	-223.38	1.50	87.07	10748.82	
12	18980.10	89.68	184.00	7161.29	-13087.37	-387.06	0.00	0.00	13093.01	
13	19313.43	89.68	179.00	7163.15	-13420.47	-395.78	1.50	-90.01	13426.23	
14	23113.43	89.68	179.00	7184.38	-17219.83	-329.46	0.00	0.00	17222.55	
15	23246.76	89.68	181.00	7185.12	-17353.15	-329.46	1.50	90.06	17355.83	
16	24321.00	89.68	181.00	7191.16	-18427.21	-348.21	0.00	0.00	18430.01	RADEMACHER SOUTH 30-16HZ BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	Northing	Easting	Latitude	Longitude
RADEMACHER SOUTH 30-16HZ SHL	0.00	14596405.50	1658687.33	40.191311	-104.934577
RADEMACHER SOUTH 30-16HZ LP	7070.00	14594727.14	1658777.86	40.186702	-104.934257
RADEMACHER SOUTH 30-16HZ BHL	7191.16	14577978.04	1658352.70	40.140708	-104.935822

WELL DETAILS: RADEMACHER SOUTH 30-16HZ

GL = 4819'

RKB = 17' @ 4836.00usft (RIG)

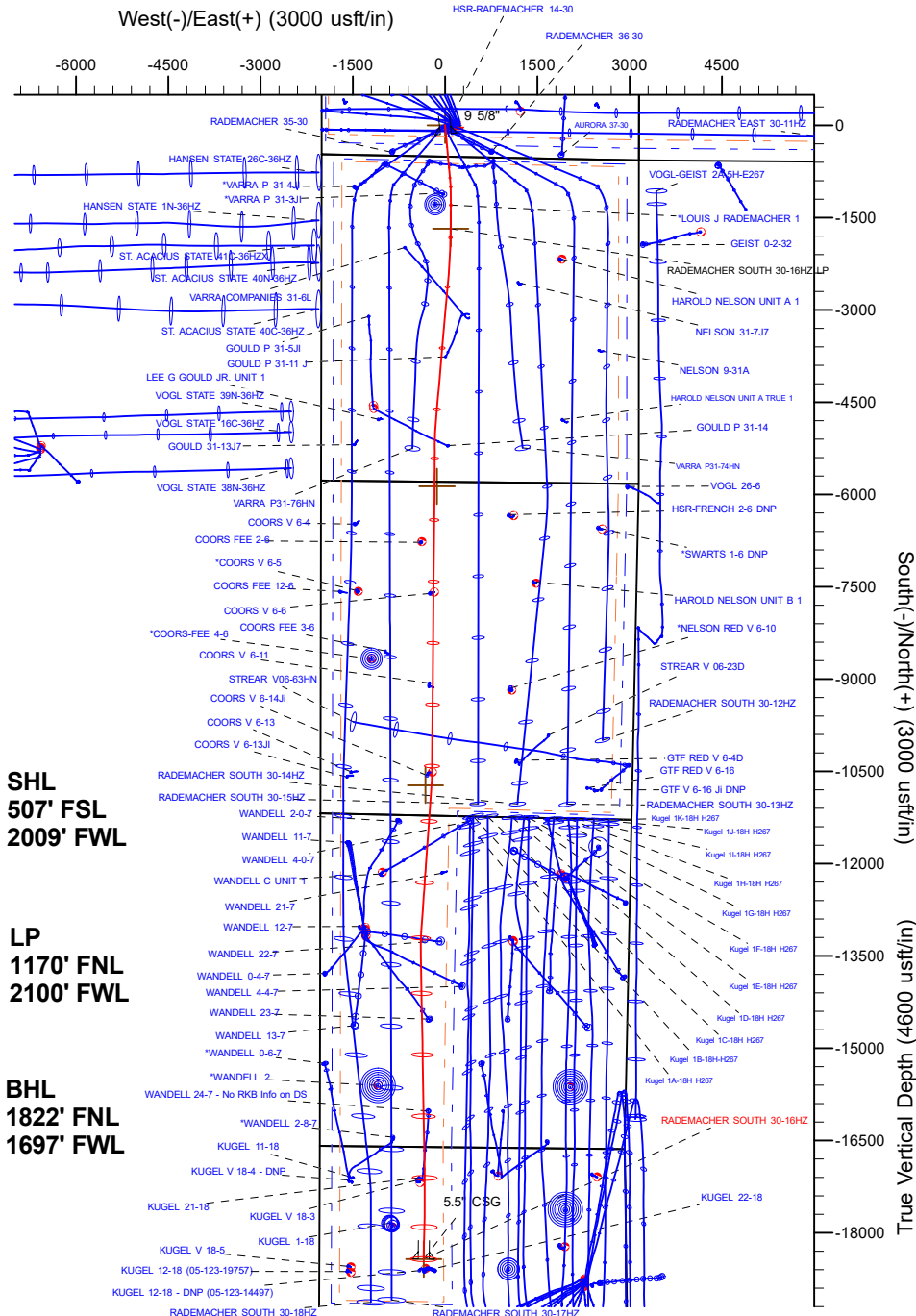
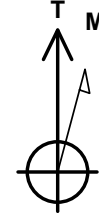
Plan: Permit Rev-1 (RADEMACHER SOUTH 30-16HZ/Plan A)

Date: 4/27/2023

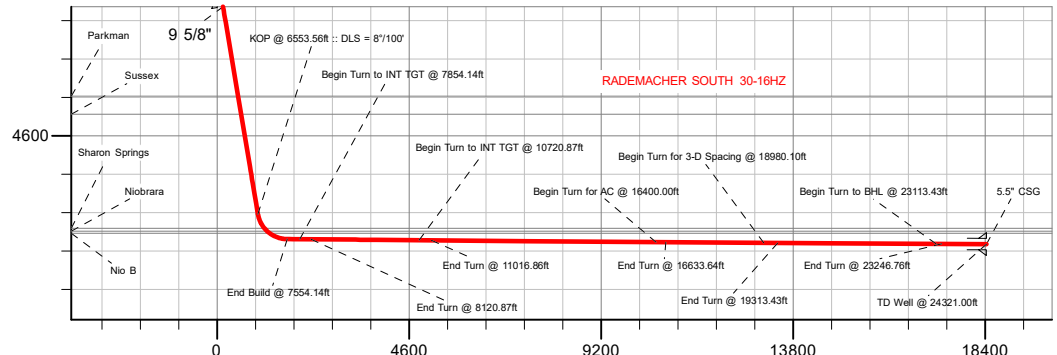
FORMATION TOP DETAILS

TVDPath	MDPath	Formation
36.00	36.00	Fox Hills
3644.00	3684.73	Parkman
4079.00	4125.91	Sussex
6812.00	6931.37	Sharon Springs
6879.00	7023.76	Niobrara
6932.00	7107.13	Nio B

Azimuths to True North
Magnetic North: 7.73°
Magnetic Field
Strength: 51632.3nT
Dip Angle: 66.39°
Date: 4/20/2023
Model: IGRF2020



True Vertical Depth (4600 usft/in)



Vertical Section at 181.50° (4600 usft/in)

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well RADEMACHER SOUTH 30-16HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4836.00usft (RIG)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4836.00usft (RIG)
Site:	3N-67W-30 RADEMACHER 14-30HZ PAD	North Reference:	True
Well:	RADEMACHER SOUTH 30-16HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-1		

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-67W-30 RADEMACHER 14-30HZ PAD			
Site Position:		Northing:	14,596,404.12 usft	Latitude:	40.191307
From:	Map	Easting:	1,658,931.24 usft	Longitude:	-104.933703
Position Uncertainty:		0.00 usft	Slot Radius:	13-3/16 "	

Well		RADEMACHER SOUTH 30-16HZ				
Well Position	+N/-S	0.00 usft	Northing:	14,596,405.50 usft	Latitude:	40.191311
	+E/-W	0.00 usft	Easting:	1,658,687.33 usft	Longitude:	-104.934577
Position Uncertainty		3.28 usft	Wellhead Elevation:	usft	Ground Level:	4,819.00 usft
Grid Convergence:		0.04 °				

Wellbore	Plan A				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF202013	4/20/2023	7.73	66.39	51,632.26539321

Design	Permit Rev-1				
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	181.50	

Plan Survey Tool Program		Date	4/24/2023		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	1,500.00	Permit Rev-1 (Plan A)	APC_ISCWSA REV 2 MWD+I Fixed:v2:crustal field declinatio	
2	1,500.00	24,321.00	Permit Rev-1 (Plan A)	APC_ISCWSA REV 2 MWD+I Fixed:v2:Rockies, crustal dec +	

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Site:	3N-67W-30 RADEMACHER 14-30HZ PAD	North Reference:	True
Well:	RADEMACHER SOUTH 30-16HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
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	
350.00	0.00	0.00	350.00	0.00	0.00	0.00	0.00	0.00	0.00	
990.00	9.60	174.74	987.01	-53.27	4.90	1.50	1.50	0.00	174.74	
6,553.56	9.60	174.74	6,472.66	-977.19	89.96	0.00	0.00	0.00	0.00	
7,554.14	89.59	180.94	7,070.00	-1,678.43	89.29	8.00	7.99	0.62	6.29	
7,854.14	89.59	180.94	7,072.14	-1,978.38	84.37	0.00	0.00	0.00	0.00	
8,120.87	89.50	184.94	7,074.26	-2,244.69	70.69	1.50	-0.03	1.50	91.30	
10,720.87	89.50	184.94	7,096.95	-4,834.94	-153.19	0.00	0.00	0.00	0.00	
11,016.86	89.50	180.50	7,099.54	-5,130.51	-167.23	1.50	0.00	-1.50	-90.02	
16,400.00	89.50	180.50	7,146.51	-10,513.24	-214.21	0.00	0.00	0.00	0.00	
16,633.64	89.68	184.00	7,148.19	-10,746.65	-223.38	1.50	0.08	1.50	87.07	
18,980.10	89.68	184.00	7,161.29	-13,087.37	-387.06	0.00	0.00	0.00	0.00	
19,313.43	89.68	179.00	7,163.15	-13,420.47	-395.78	1.50	0.00	-1.50	-90.01	
23,113.43	89.68	179.00	7,184.38	-17,219.83	-329.46	0.00	0.00	0.00	0.00	
23,246.76	89.68	181.00	7,185.12	-17,353.15	-329.46	1.50	0.00	1.50	90.06	
24,321.00	89.68	181.00	7,191.16	-18,427.21	-348.21	0.00	0.00	0.00	0.00	RADEMACHER SOU

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well RADEMACHER SOUTH 30-16HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4836.00usft (RIG)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4836.00usft (RIG)
Site:	3N-67W-30 RADEMACHER 14-30HZ PAD	North Reference:	True
Well:	RADEMACHER SOUTH 30-16HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	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
36.00	0.00	0.00	36.00	0.00	0.00	0.00	0.00	0.00	0.00
Fox Hills									
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
350.00	0.00	0.00	350.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge @ 350.00ft									
400.00	0.75	174.74	400.00	-0.33	0.03	0.32	1.50	1.50	0.00
500.00	2.25	174.74	499.96	-2.93	0.27	2.92	1.50	1.50	0.00
600.00	3.75	174.74	599.82	-8.14	0.75	8.12	1.50	1.50	0.00
700.00	5.25	174.74	699.51	-15.96	1.47	15.91	1.50	1.50	0.00
800.00	6.75	174.74	798.96	-26.37	2.43	26.29	1.50	1.50	0.00
900.00	8.25	174.74	898.10	-39.36	3.62	39.25	1.50	1.50	0.00
990.00	9.60	174.74	987.01	-53.27	4.90	53.12	1.50	1.50	0.00
Hold Tangent @ 990.00ft									
1,000.00	9.60	174.74	996.87	-54.93	5.06	54.78	0.00	0.00	0.00
1,100.00	9.60	174.74	1,095.47	-71.53	6.59	71.34	0.00	0.00	0.00
1,200.00	9.60	174.74	1,194.07	-88.14	8.11	87.90	0.00	0.00	0.00
1,300.00	9.60	174.74	1,292.67	-104.75	9.64	104.46	0.00	0.00	0.00
1,400.00	9.60	174.74	1,391.27	-121.35	11.17	121.02	0.00	0.00	0.00
1,500.00	9.60	174.74	1,489.87	-137.96	12.70	137.58	0.00	0.00	0.00
1,510.28	9.60	174.74	1,500.00	-139.67	12.86	139.28	0.00	0.00	0.00
9 5/8"									
1,600.00	9.60	174.74	1,588.47	-154.57	14.23	154.14	0.00	0.00	0.00
1,700.00	9.60	174.74	1,687.07	-171.17	15.76	170.70	0.00	0.00	0.00
1,800.00	9.60	174.74	1,785.67	-187.78	17.29	187.26	0.00	0.00	0.00
1,900.00	9.60	174.74	1,884.27	-204.39	18.82	203.82	0.00	0.00	0.00
2,000.00	9.60	174.74	1,982.87	-220.99	20.35	220.38	0.00	0.00	0.00
2,100.00	9.60	174.74	2,081.47	-237.60	21.87	236.95	0.00	0.00	0.00
2,200.00	9.60	174.74	2,180.06	-254.21	23.40	253.51	0.00	0.00	0.00
2,300.00	9.60	174.74	2,278.66	-270.81	24.93	270.07	0.00	0.00	0.00
2,400.00	9.60	174.74	2,377.26	-287.42	26.46	286.63	0.00	0.00	0.00
2,500.00	9.60	174.74	2,475.86	-304.03	27.99	303.19	0.00	0.00	0.00
2,600.00	9.60	174.74	2,574.46	-320.63	29.52	319.75	0.00	0.00	0.00
2,700.00	9.60	174.74	2,673.06	-337.24	31.05	336.31	0.00	0.00	0.00
2,800.00	9.60	174.74	2,771.66	-353.85	32.58	352.87	0.00	0.00	0.00
2,900.00	9.60	174.74	2,870.26	-370.45	34.11	369.43	0.00	0.00	0.00
3,000.00	9.60	174.74	2,968.86	-387.06	35.63	385.99	0.00	0.00	0.00
3,100.00	9.60	174.74	3,067.46	-403.67	37.16	402.56	0.00	0.00	0.00
3,200.00	9.60	174.74	3,166.06	-420.27	38.69	419.12	0.00	0.00	0.00
3,300.00	9.60	174.74	3,264.66	-436.88	40.22	435.68	0.00	0.00	0.00
3,400.00	9.60	174.74	3,363.26	-453.49	41.75	452.24	0.00	0.00	0.00
3,500.00	9.60	174.74	3,461.86	-470.09	43.28	468.80	0.00	0.00	0.00
3,600.00	9.60	174.74	3,560.46	-486.70	44.81	485.36	0.00	0.00	0.00
3,684.73	9.60	174.74	3,644.00	-500.77	46.10	499.39	0.00	0.00	0.00
Parkman									
3,700.00	9.60	174.74	3,659.06	-503.31	46.34	501.92	0.00	0.00	0.00
3,800.00	9.60	174.74	3,757.66	-519.91	47.86	518.48	0.00	0.00	0.00
3,900.00	9.60	174.74	3,856.26	-536.52	49.39	535.04	0.00	0.00	0.00
4,000.00	9.60	174.74	3,954.86	-553.13	50.92	551.60	0.00	0.00	0.00
4,100.00	9.60	174.74	4,053.46	-569.73	52.45	568.16	0.00	0.00	0.00
4,125.91	9.60	174.74	4,079.00	-574.03	52.85	572.45	0.00	0.00	0.00

Planning Report

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Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4836.00usft (RIG)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4836.00usft (RIG)
Site:	3N-67W-30 RADEMACHER 14-30HZ PAD	North Reference:	True
Well:	RADEMACHER SOUTH 30-16HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	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)
Sussex									
4,200.00	9.60	174.74	4,152.06	-586.34	53.98	584.73	0.00	0.00	0.00
4,300.00	9.60	174.74	4,250.66	-602.95	55.51	601.29	0.00	0.00	0.00
4,400.00	9.60	174.74	4,349.26	-619.55	57.04	617.85	0.00	0.00	0.00
4,500.00	9.60	174.74	4,447.86	-636.16	58.57	634.41	0.00	0.00	0.00
4,600.00	9.60	174.74	4,546.46	-652.77	60.10	650.97	0.00	0.00	0.00
4,700.00	9.60	174.74	4,645.06	-669.37	61.62	667.53	0.00	0.00	0.00
4,800.00	9.60	174.74	4,743.65	-685.98	63.15	684.09	0.00	0.00	0.00
4,900.00	9.60	174.74	4,842.25	-702.59	64.68	700.65	0.00	0.00	0.00
5,000.00	9.60	174.74	4,940.85	-719.19	66.21	717.21	0.00	0.00	0.00
5,100.00	9.60	174.74	5,039.45	-735.80	67.74	733.77	0.00	0.00	0.00
5,200.00	9.60	174.74	5,138.05	-752.41	69.27	750.33	0.00	0.00	0.00
5,300.00	9.60	174.74	5,236.65	-769.01	70.80	766.90	0.00	0.00	0.00
5,400.00	9.60	174.74	5,335.25	-785.62	72.33	783.46	0.00	0.00	0.00
5,500.00	9.60	174.74	5,433.85	-802.23	73.86	800.02	0.00	0.00	0.00
5,600.00	9.60	174.74	5,532.45	-818.83	75.38	816.58	0.00	0.00	0.00
5,700.00	9.60	174.74	5,631.05	-835.44	76.91	833.14	0.00	0.00	0.00
5,800.00	9.60	174.74	5,729.65	-852.05	78.44	849.70	0.00	0.00	0.00
5,900.00	9.60	174.74	5,828.25	-868.65	79.97	866.26	0.00	0.00	0.00
6,000.00	9.60	174.74	5,926.85	-885.26	81.50	882.82	0.00	0.00	0.00
6,100.00	9.60	174.74	6,025.45	-901.87	83.03	899.38	0.00	0.00	0.00
6,200.00	9.60	174.74	6,124.05	-918.47	84.56	915.94	0.00	0.00	0.00
6,300.00	9.60	174.74	6,222.65	-935.08	86.09	932.51	0.00	0.00	0.00
6,400.00	9.60	174.74	6,321.25	-951.69	87.62	949.07	0.00	0.00	0.00
6,500.00	9.60	174.74	6,419.85	-968.29	89.14	965.63	0.00	0.00	0.00
6,553.56	9.60	174.74	6,472.66	-977.19	89.96	974.50	0.00	0.00	0.00
KOP @ 6553.56ft :: DLS = 8°/100'									
6,600.00	13.30	176.51	6,518.17	-986.38	90.64	983.67	8.00	7.97	3.81
6,650.00	17.29	177.58	6,566.39	-999.55	91.31	996.81	8.00	7.98	2.14
6,700.00	21.28	178.26	6,613.57	-1,016.05	91.90	1,013.29	8.00	7.99	1.36
6,750.00	25.28	178.73	6,659.49	-1,035.80	92.41	1,033.02	8.00	7.99	0.94
6,800.00	29.28	179.08	6,703.92	-1,058.70	92.84	1,055.91	8.00	7.99	0.70
6,850.00	33.27	179.35	6,746.65	-1,084.65	93.20	1,081.84	8.00	8.00	0.54
6,900.00	37.27	179.57	6,787.46	-1,113.52	93.47	1,110.69	8.00	8.00	0.44
6,931.37	39.78	179.69	6,812.00	-1,133.06	93.59	1,130.22	8.00	8.00	0.38
Sharon Springs									
6,950.00	41.27	179.75	6,826.16	-1,145.16	93.65	1,142.32	8.00	8.00	0.35
7,000.00	45.27	179.91	6,862.56	-1,179.42	93.75	1,176.57	8.00	8.00	0.31
7,023.76	47.17	179.98	6,879.00	-1,196.58	93.77	1,193.71	8.00	8.00	0.28
Niobrara									
7,050.00	49.27	180.05	6,896.48	-1,216.14	93.76	1,213.27	8.00	8.00	0.26
7,100.00	53.27	180.17	6,927.76	-1,255.14	93.69	1,252.26	8.00	8.00	0.24
7,107.13	53.84	180.18	6,932.00	-1,260.88	93.67	1,257.99	8.00	8.00	0.23
Nio B									
7,150.00	57.26	180.27	6,956.24	-1,296.22	93.53	1,293.33	8.00	8.00	0.22
7,200.00	61.26	180.37	6,981.79	-1,339.19	93.29	1,336.29	8.00	8.00	0.20
7,250.00	65.26	180.46	7,004.28	-1,383.83	92.96	1,380.92	8.00	8.00	0.18
7,300.00	69.26	180.55	7,023.61	-1,429.93	92.55	1,427.02	8.00	8.00	0.17
7,350.00	73.26	180.63	7,039.66	-1,477.27	92.06	1,474.35	8.00	8.00	0.16
7,400.00	77.26	180.71	7,052.38	-1,525.61	91.50	1,522.69	8.00	8.00	0.16
7,450.00	81.26	180.79	7,061.70	-1,574.72	90.85	1,571.80	8.00	8.00	0.15
7,500.00	85.26	180.86	7,067.57	-1,624.36	90.14	1,621.45	8.00	8.00	0.15
7,554.14	89.59	180.94	7,070.00	-1,678.43	89.29	1,675.52	8.00	8.00	0.15

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well RADEMACHER SOUTH 30-16HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4836.00usft (RIG)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4836.00usft (RIG)
Site:	3N-67W-30 RADEMACHER 14-30HZ PAD	North Reference:	True
Well:	RADEMACHER SOUTH 30-16HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	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)
End Build @ 7554.14ft									
7,600.00	89.59	180.94	7,070.33	-1,724.28	88.54	1,721.37	0.00	0.00	0.00
7,700.00	89.59	180.94	7,071.04	-1,824.26	86.90	1,821.36	0.00	0.00	0.00
7,800.00	89.59	180.94	7,071.76	-1,924.25	85.26	1,921.36	0.00	0.00	0.00
7,854.14	89.59	180.94	7,072.14	-1,978.38	84.37	1,975.49	0.00	0.00	0.00
Begin Turn to INT TGT @ 7854.14ft									
7,900.00	89.57	181.63	7,072.48	-2,024.23	83.34	2,021.35	1.50	-0.03	1.50
8,000.00	89.54	183.13	7,073.25	-2,124.13	79.19	2,121.33	1.50	-0.03	1.50
8,100.00	89.51	184.63	7,074.08	-2,223.90	72.43	2,221.24	1.50	-0.03	1.50
8,120.87	89.50	184.94	7,074.26	-2,244.69	70.69	2,242.07	1.50	-0.03	1.50
End Turn @ 8120.87ft									
8,200.00	89.50	184.94	7,074.95	-2,323.53	63.88	2,321.06	0.00	0.00	0.00
8,300.00	89.50	184.94	7,075.83	-2,423.15	55.27	2,420.88	0.00	0.00	0.00
8,400.00	89.50	184.94	7,076.70	-2,522.78	46.66	2,520.69	0.00	0.00	0.00
8,500.00	89.50	184.94	7,077.57	-2,622.40	38.05	2,620.51	0.00	0.00	0.00
8,600.00	89.50	184.94	7,078.44	-2,722.03	29.43	2,720.32	0.00	0.00	0.00
8,700.00	89.50	184.94	7,079.32	-2,821.65	20.82	2,820.14	0.00	0.00	0.00
8,800.00	89.50	184.94	7,080.19	-2,921.28	12.21	2,919.96	0.00	0.00	0.00
8,900.00	89.50	184.94	7,081.06	-3,020.90	3.60	3,019.77	0.00	0.00	0.00
9,000.00	89.50	184.94	7,081.94	-3,120.53	-5.01	3,119.59	0.00	0.00	0.00
9,100.00	89.50	184.94	7,082.81	-3,220.15	-13.62	3,219.40	0.00	0.00	0.00
9,200.00	89.50	184.94	7,083.68	-3,319.78	-22.23	3,319.22	0.00	0.00	0.00
9,300.00	89.50	184.94	7,084.55	-3,419.40	-30.84	3,419.04	0.00	0.00	0.00
9,400.00	89.50	184.94	7,085.43	-3,519.03	-39.45	3,518.85	0.00	0.00	0.00
9,500.00	89.50	184.94	7,086.30	-3,618.65	-48.06	3,618.67	0.00	0.00	0.00
9,600.00	89.50	184.94	7,087.17	-3,718.28	-56.67	3,718.48	0.00	0.00	0.00
9,700.00	89.50	184.94	7,088.04	-3,817.90	-65.29	3,818.30	0.00	0.00	0.00
9,800.00	89.50	184.94	7,088.92	-3,917.52	-73.90	3,918.12	0.00	0.00	0.00
9,900.00	89.50	184.94	7,089.79	-4,017.15	-82.51	4,017.93	0.00	0.00	0.00
10,000.00	89.50	184.94	7,090.66	-4,116.77	-91.12	4,117.75	0.00	0.00	0.00
10,100.00	89.50	184.94	7,091.53	-4,216.40	-99.73	4,217.56	0.00	0.00	0.00
10,200.00	89.50	184.94	7,092.41	-4,316.02	-108.34	4,317.38	0.00	0.00	0.00
10,300.00	89.50	184.94	7,093.28	-4,415.65	-116.95	4,417.20	0.00	0.00	0.00
10,400.00	89.50	184.94	7,094.15	-4,515.27	-125.56	4,517.01	0.00	0.00	0.00
10,500.00	89.50	184.94	7,095.03	-4,614.90	-134.17	4,616.83	0.00	0.00	0.00
10,600.00	89.50	184.94	7,095.90	-4,714.52	-142.78	4,716.64	0.00	0.00	0.00
10,700.00	89.50	184.94	7,096.77	-4,814.15	-151.39	4,816.46	0.00	0.00	0.00
10,720.87	89.50	184.94	7,096.95	-4,834.94	-153.19	4,837.29	0.00	0.00	0.00
Begin Turn to INT TGT @ 10720.87ft									
10,800.00	89.50	183.75	7,097.64	-4,913.84	-159.19	4,916.32	1.50	0.00	-1.50
10,900.00	89.50	182.25	7,098.52	-5,013.69	-164.43	5,016.28	1.50	0.00	-1.50
11,000.00	89.50	180.75	7,099.39	-5,113.65	-167.05	5,116.27	1.50	0.00	-1.50
11,016.86	89.50	180.50	7,099.54	-5,130.51	-167.23	5,133.13	1.50	0.00	-1.50
End Turn @ 11016.86ft									
11,100.00	89.50	180.50	7,100.26	-5,213.64	-167.96	5,216.25	0.00	0.00	0.00
11,200.00	89.50	180.50	7,101.14	-5,313.64	-168.83	5,316.24	0.00	0.00	0.00
11,300.00	89.50	180.50	7,102.01	-5,413.63	-169.70	5,416.22	0.00	0.00	0.00
11,400.00	89.50	180.50	7,102.88	-5,513.62	-170.58	5,516.20	0.00	0.00	0.00
11,500.00	89.50	180.50	7,103.75	-5,613.61	-171.45	5,616.18	0.00	0.00	0.00
11,600.00	89.50	180.50	7,104.63	-5,713.61	-172.32	5,716.16	0.00	0.00	0.00
11,700.00	89.50	180.50	7,105.50	-5,813.60	-173.19	5,816.14	0.00	0.00	0.00
11,800.00	89.50	180.50	7,106.37	-5,913.59	-174.07	5,916.12	0.00	0.00	0.00
11,900.00	89.50	180.50	7,107.24	-6,013.58	-174.94	6,016.10	0.00	0.00	0.00
12,000.00	89.50	180.50	7,108.12	-6,113.58	-175.81	6,116.08	0.00	0.00	0.00

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well RADEMACHER SOUTH 30-16HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4836.00usft (RIG)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4836.00usft (RIG)
Site:	3N-67W-30 RADEMACHER 14-30HZ PAD	North Reference:	True
Well:	RADEMACHER SOUTH 30-16HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	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)
12,100.00	89.50	180.50	7,108.99	-6,213.57	-176.69	6,216.06	0.00	0.00	0.00
12,200.00	89.50	180.50	7,109.86	-6,313.56	-177.56	6,316.04	0.00	0.00	0.00
12,300.00	89.50	180.50	7,110.73	-6,413.55	-178.43	6,416.03	0.00	0.00	0.00
12,400.00	89.50	180.50	7,111.61	-6,513.55	-179.30	6,516.01	0.00	0.00	0.00
12,500.00	89.50	180.50	7,112.48	-6,613.54	-180.18	6,615.99	0.00	0.00	0.00
12,600.00	89.50	180.50	7,113.35	-6,713.53	-181.05	6,715.97	0.00	0.00	0.00
12,700.00	89.50	180.50	7,114.22	-6,813.52	-181.92	6,815.95	0.00	0.00	0.00
12,800.00	89.50	180.50	7,115.10	-6,913.51	-182.79	6,915.93	0.00	0.00	0.00
12,900.00	89.50	180.50	7,115.97	-7,013.51	-183.67	7,015.91	0.00	0.00	0.00
13,000.00	89.50	180.50	7,116.84	-7,113.50	-184.54	7,115.89	0.00	0.00	0.00
13,100.00	89.50	180.50	7,117.72	-7,213.49	-185.41	7,215.87	0.00	0.00	0.00
13,200.00	89.50	180.50	7,118.59	-7,313.48	-186.28	7,315.85	0.00	0.00	0.00
13,300.00	89.50	180.50	7,119.46	-7,413.48	-187.16	7,415.84	0.00	0.00	0.00
13,400.00	89.50	180.50	7,120.33	-7,513.47	-188.03	7,515.82	0.00	0.00	0.00
13,500.00	89.50	180.50	7,121.21	-7,613.46	-188.90	7,615.80	0.00	0.00	0.00
13,600.00	89.50	180.50	7,122.08	-7,713.45	-189.77	7,715.78	0.00	0.00	0.00
13,700.00	89.50	180.50	7,122.95	-7,813.45	-190.65	7,815.76	0.00	0.00	0.00
13,800.00	89.50	180.50	7,123.82	-7,913.44	-191.52	7,915.74	0.00	0.00	0.00
13,900.00	89.50	180.50	7,124.70	-8,013.43	-192.39	8,015.72	0.00	0.00	0.00
14,000.00	89.50	180.50	7,125.57	-8,113.42	-193.27	8,115.70	0.00	0.00	0.00
14,100.00	89.50	180.50	7,126.44	-8,213.42	-194.14	8,215.68	0.00	0.00	0.00
14,200.00	89.50	180.50	7,127.31	-8,313.41	-195.01	8,315.66	0.00	0.00	0.00
14,300.00	89.50	180.50	7,128.19	-8,413.40	-195.88	8,415.64	0.00	0.00	0.00
14,400.00	89.50	180.50	7,129.06	-8,513.39	-196.76	8,515.63	0.00	0.00	0.00
14,500.00	89.50	180.50	7,129.93	-8,613.39	-197.63	8,615.61	0.00	0.00	0.00
14,600.00	89.50	180.50	7,130.81	-8,713.38	-198.50	8,715.59	0.00	0.00	0.00
14,700.00	89.50	180.50	7,131.68	-8,813.37	-199.37	8,815.57	0.00	0.00	0.00
14,800.00	89.50	180.50	7,132.55	-8,913.36	-200.25	8,915.55	0.00	0.00	0.00
14,900.00	89.50	180.50	7,133.42	-9,013.35	-201.12	9,015.53	0.00	0.00	0.00
15,000.00	89.50	180.50	7,134.30	-9,113.35	-201.99	9,115.51	0.00	0.00	0.00
15,100.00	89.50	180.50	7,135.17	-9,213.34	-202.86	9,215.49	0.00	0.00	0.00
15,200.00	89.50	180.50	7,136.04	-9,313.33	-203.74	9,315.47	0.00	0.00	0.00
15,300.00	89.50	180.50	7,136.91	-9,413.32	-204.61	9,415.45	0.00	0.00	0.00
15,400.00	89.50	180.50	7,137.79	-9,513.32	-205.48	9,515.44	0.00	0.00	0.00
15,500.00	89.50	180.50	7,138.66	-9,613.31	-206.35	9,615.42	0.00	0.00	0.00
15,600.00	89.50	180.50	7,139.53	-9,713.30	-207.23	9,715.40	0.00	0.00	0.00
15,700.00	89.50	180.50	7,140.40	-9,813.29	-208.10	9,815.38	0.00	0.00	0.00
15,800.00	89.50	180.50	7,141.28	-9,913.29	-208.97	9,915.36	0.00	0.00	0.00
15,900.00	89.50	180.50	7,142.15	-10,013.28	-209.84	10,015.34	0.00	0.00	0.00
16,000.00	89.50	180.50	7,143.02	-10,113.27	-210.72	10,115.32	0.00	0.00	0.00
16,100.00	89.50	180.50	7,143.90	-10,213.26	-211.59	10,215.30	0.00	0.00	0.00
16,200.00	89.50	180.50	7,144.77	-10,313.26	-212.46	10,315.28	0.00	0.00	0.00
16,300.00	89.50	180.50	7,145.64	-10,413.25	-213.34	10,415.26	0.00	0.00	0.00
16,400.00	89.50	180.50	7,146.51	-10,513.24	-214.21	10,515.25	0.00	0.00	0.00
Begin Turn for AC @ 16400.00ft									
16,500.00	89.58	182.00	7,147.32	-10,613.21	-216.39	10,615.24	1.50	0.08	1.50
16,600.00	89.65	183.50	7,147.99	-10,713.09	-221.18	10,715.21	1.50	0.08	1.50
16,633.64	89.68	184.00	7,148.19	-10,746.65	-223.38	10,748.82	1.50	0.08	1.50
End Turn @ 16633.64ft									
16,700.00	89.68	184.00	7,148.56	-10,812.86	-228.01	10,815.12	0.00	0.00	0.00
16,800.00	89.68	184.00	7,149.11	-10,912.61	-234.98	10,915.02	0.00	0.00	0.00
16,900.00	89.68	184.00	7,149.67	-11,012.37	-241.96	11,014.93	0.00	0.00	0.00
17,000.00	89.68	184.00	7,150.23	-11,112.12	-248.93	11,114.83	0.00	0.00	0.00

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well RADEMACHER SOUTH 30-16HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4836.00usft (RIG)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4836.00usft (RIG)
Site:	3N-67W-30 RADEMACHER 14-30HZ PAD	North Reference:	True
Well:	RADEMACHER SOUTH 30-16HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	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)	
17,100.00	89.68	184.00	7,150.79	-11,211.87	-255.91	11,214.73	0.00	0.00	0.00	
17,200.00	89.68	184.00	7,151.35	-11,311.63	-262.89	11,314.63	0.00	0.00	0.00	
17,300.00	89.68	184.00	7,151.91	-11,411.38	-269.86	11,414.54	0.00	0.00	0.00	
17,400.00	89.68	184.00	7,152.47	-11,511.14	-276.84	11,514.44	0.00	0.00	0.00	
17,500.00	89.68	184.00	7,153.02	-11,610.89	-283.81	11,614.34	0.00	0.00	0.00	
17,600.00	89.68	184.00	7,153.58	-11,710.65	-290.79	11,714.25	0.00	0.00	0.00	
17,700.00	89.68	184.00	7,154.14	-11,810.40	-297.76	11,814.15	0.00	0.00	0.00	
17,800.00	89.68	184.00	7,154.70	-11,910.16	-304.74	11,914.05	0.00	0.00	0.00	
17,900.00	89.68	184.00	7,155.26	-12,009.91	-311.71	12,013.96	0.00	0.00	0.00	
18,000.00	89.68	184.00	7,155.82	-12,109.67	-318.69	12,113.86	0.00	0.00	0.00	
18,100.00	89.68	184.00	7,156.38	-12,209.42	-325.67	12,213.76	0.00	0.00	0.00	
18,200.00	89.68	184.00	7,156.93	-12,309.18	-332.64	12,313.67	0.00	0.00	0.00	
18,300.00	89.68	184.00	7,157.49	-12,408.93	-339.62	12,413.57	0.00	0.00	0.00	
18,400.00	89.68	184.00	7,158.05	-12,508.69	-346.59	12,513.47	0.00	0.00	0.00	
18,500.00	89.68	184.00	7,158.61	-12,608.44	-353.57	12,613.38	0.00	0.00	0.00	
18,600.00	89.68	184.00	7,159.17	-12,708.20	-360.54	12,713.28	0.00	0.00	0.00	
18,700.00	89.68	184.00	7,159.73	-12,807.95	-367.52	12,813.18	0.00	0.00	0.00	
18,800.00	89.68	184.00	7,160.28	-12,907.71	-374.49	12,913.09	0.00	0.00	0.00	
18,900.00	89.68	184.00	7,160.84	-13,007.46	-381.47	13,012.99	0.00	0.00	0.00	
18,980.10	89.68	184.00	7,161.29	-13,087.37	-387.06	13,093.01	0.00	0.00	0.00	
Begin Turn for 3-D Spacing @ 18980.10ft										
19,000.00	89.68	183.70	7,161.40	-13,107.22	-388.39	13,112.90	1.50	0.00	-1.50	
19,100.00	89.68	182.20	7,161.96	-13,207.08	-393.54	13,212.86	1.50	0.00	-1.50	
19,200.00	89.68	180.70	7,162.52	-13,307.05	-396.08	13,312.85	1.50	0.00	-1.50	
19,300.00	89.68	179.20	7,163.08	-13,407.04	-395.99	13,412.81	1.50	0.00	-1.50	
19,313.43	89.68	179.00	7,163.15	-13,420.47	-395.78	13,426.23	1.50	0.00	-1.50	
End Turn @ 19313.43ft										
19,400.00	89.68	179.00	7,163.64	-13,507.03	-394.27	13,512.72	0.00	0.00	0.00	
19,500.00	89.68	179.00	7,164.20	-13,607.01	-392.52	13,612.62	0.00	0.00	0.00	
19,600.00	89.68	179.00	7,164.75	-13,706.99	-390.78	13,712.52	0.00	0.00	0.00	
19,700.00	89.68	179.00	7,165.31	-13,806.98	-389.03	13,812.43	0.00	0.00	0.00	
19,800.00	89.68	179.00	7,165.87	-13,906.96	-387.29	13,912.33	0.00	0.00	0.00	
19,900.00	89.68	179.00	7,166.43	-14,006.94	-385.54	14,012.23	0.00	0.00	0.00	
20,000.00	89.68	179.00	7,166.99	-14,106.93	-383.80	14,112.14	0.00	0.00	0.00	
20,100.00	89.68	179.00	7,167.55	-14,206.91	-382.05	14,212.04	0.00	0.00	0.00	
20,200.00	89.68	179.00	7,168.10	-14,306.89	-380.31	14,311.94	0.00	0.00	0.00	
20,300.00	89.68	179.00	7,168.66	-14,406.87	-378.56	14,411.85	0.00	0.00	0.00	
20,400.00	89.68	179.00	7,169.22	-14,506.86	-376.82	14,511.75	0.00	0.00	0.00	
20,500.00	89.68	179.00	7,169.78	-14,606.84	-375.07	14,611.65	0.00	0.00	0.00	
20,600.00	89.68	179.00	7,170.34	-14,706.82	-373.33	14,711.56	0.00	0.00	0.00	
20,700.00	89.68	179.00	7,170.90	-14,806.81	-371.58	14,811.46	0.00	0.00	0.00	
20,800.00	89.68	179.00	7,171.46	-14,906.79	-369.84	14,911.36	0.00	0.00	0.00	
20,900.00	89.68	179.00	7,172.01	-15,006.77	-368.09	15,011.27	0.00	0.00	0.00	
21,000.00	89.68	179.00	7,172.57	-15,106.76	-366.35	15,111.17	0.00	0.00	0.00	
21,100.00	89.68	179.00	7,173.13	-15,206.74	-364.60	15,211.07	0.00	0.00	0.00	
21,200.00	89.68	179.00	7,173.69	-15,306.72	-362.86	15,310.98	0.00	0.00	0.00	
21,300.00	89.68	179.00	7,174.25	-15,406.71	-361.11	15,410.88	0.00	0.00	0.00	
21,400.00	89.68	179.00	7,174.81	-15,506.69	-359.36	15,510.78	0.00	0.00	0.00	
21,500.00	89.68	179.00	7,175.37	-15,606.67	-357.62	15,610.69	0.00	0.00	0.00	
21,600.00	89.68	179.00	7,175.92	-15,706.66	-355.87	15,710.59	0.00	0.00	0.00	
21,700.00	89.68	179.00	7,176.48	-15,806.64	-354.13	15,810.49	0.00	0.00	0.00	
21,800.00	89.68	179.00	7,177.04	-15,906.62	-352.38	15,910.40	0.00	0.00	0.00	
21,900.00	89.68	179.00	7,177.60	-16,006.61	-350.64	16,010.30	0.00	0.00	0.00	
22,000.00	89.68	179.00	7,178.16	-16,106.59	-348.89	16,110.20	0.00	0.00	0.00	

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well RADEMACHER SOUTH 30-16HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4836.00usft (RIG)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4836.00usft (RIG)
Site:	3N-67W-30 RADEMACHER 14-30HZ PAD	North Reference:	True
Well:	RADEMACHER SOUTH 30-16HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	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)
22,100.00	89.68	179.00	7,178.72	-16,206.57	-347.15	16,210.11	0.00	0.00	0.00
22,200.00	89.68	179.00	7,179.27	-16,306.56	-345.40	16,310.01	0.00	0.00	0.00
22,300.00	89.68	179.00	7,179.83	-16,406.54	-343.66	16,409.91	0.00	0.00	0.00
22,400.00	89.68	179.00	7,180.39	-16,506.52	-341.91	16,509.82	0.00	0.00	0.00
22,500.00	89.68	179.00	7,180.95	-16,606.51	-340.17	16,609.72	0.00	0.00	0.00
22,600.00	89.68	179.00	7,181.51	-16,706.49	-338.42	16,709.62	0.00	0.00	0.00
22,700.00	89.68	179.00	7,182.07	-16,806.47	-336.68	16,809.53	0.00	0.00	0.00
22,800.00	89.68	179.00	7,182.63	-16,906.46	-334.93	16,909.43	0.00	0.00	0.00
22,900.00	89.68	179.00	7,183.18	-17,006.44	-333.19	17,009.33	0.00	0.00	0.00
23,000.00	89.68	179.00	7,183.74	-17,106.42	-331.44	17,109.24	0.00	0.00	0.00
23,100.00	89.68	179.00	7,184.30	-17,206.40	-329.70	17,209.14	0.00	0.00	0.00
23,113.43	89.68	179.00	7,184.38	-17,219.83	-329.46	17,222.55	0.00	0.00	0.00
Begin Turn to BHL @ 23113.43ft									
23,200.00	89.68	180.30	7,184.86	-17,306.40	-328.93	17,309.08	1.50	0.00	1.50
23,246.76	89.68	181.00	7,185.12	-17,353.15	-329.46	17,355.83	1.50	0.00	1.50
End Turn @ 23246.76ft									
23,300.00	89.68	181.00	7,185.42	-17,406.38	-330.39	17,409.07	0.00	0.00	0.00
23,400.00	89.68	181.00	7,185.98	-17,506.37	-332.14	17,509.06	0.00	0.00	0.00
23,500.00	89.68	181.00	7,186.55	-17,606.35	-333.88	17,609.06	0.00	0.00	0.00
23,600.00	89.68	181.00	7,187.11	-17,706.33	-335.63	17,709.05	0.00	0.00	0.00
23,700.00	89.68	181.00	7,187.67	-17,806.32	-337.37	17,809.05	0.00	0.00	0.00
23,800.00	89.68	181.00	7,188.23	-17,906.30	-339.12	17,909.04	0.00	0.00	0.00
23,900.00	89.68	181.00	7,188.79	-18,006.28	-340.86	18,009.04	0.00	0.00	0.00
24,000.00	89.68	181.00	7,189.36	-18,106.27	-342.61	18,109.03	0.00	0.00	0.00
24,100.00	89.68	181.00	7,189.92	-18,206.25	-344.35	18,209.03	0.00	0.00	0.00
24,200.00	89.68	181.00	7,190.48	-18,306.23	-346.10	18,309.02	0.00	0.00	0.00
24,300.00	89.68	181.00	7,191.04	-18,406.22	-347.84	18,409.01	0.00	0.00	0.00
24,321.00	89.68	181.00	7,191.16	-18,427.21	-348.21	18,430.01	0.00	0.00	0.00
TD Well @ 24321.00ft									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,510.28	1,500.00	9 5/8"	9-5/8	13-1/2	
24,321.00	7,191.16	5.5" CSG	5-1/2	7-7/8	

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
36.00	36.00	Fox Hills			
3,684.73	3,644.00	Parkman			
4,125.91	4,079.00	Sussex			
6,931.37	6,812.00	Sharon Springs			
7,023.76	6,879.00	Niobrara			
7,107.13	6,932.00	Nio B			

Planning Report

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Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4836.00usft (RIG)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4836.00usft (RIG)
Site:	3N-67W-30 RADEMACHER 14-30HZ PAD	North Reference:	True
Well:	RADEMACHER SOUTH 30-16HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-1		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
350.00	350.00	0.00	0.00	Begin Nudge @ 350.00ft
990.00	987.01	-53.27	4.90	Hold Tangent @ 990.00ft
6,553.56	6,472.66	-977.19	89.96	KOP @ 6553.56ft :: DLS = 8"/100'
7,554.14	7,070.00	-1,678.43	89.29	End Build @ 7554.14ft
7,854.14	7,072.14	-1,978.38	84.37	Begin Turn to INT TGT @ 7854.14ft
8,120.87	7,074.26	-2,244.69	70.69	End Turn @ 8120.87ft
10,720.87	7,096.95	-4,834.94	-153.19	Begin Turn to INT TGT @ 10720.87ft
11,016.86	7,099.54	-5,130.51	-167.23	End Turn @ 11016.86ft
16,400.00	7,146.51	-10,513.24	-214.21	Begin Turn for AC @ 16400.00ft
16,633.64	7,148.19	-10,746.65	-223.38	End Turn @ 16633.64ft
18,980.10	7,161.29	-13,087.37	-387.06	Begin Turn for 3-D Spacing @ 18980.10ft
19,313.43	7,163.15	-13,420.47	-395.78	End Turn @ 19313.43ft
23,113.43	7,184.38	-17,219.83	-329.46	Begin Turn to BHL @ 23113.43ft
23,246.76	7,185.12	-17,353.15	-329.46	End Turn @ 23246.76ft
24,321.00	7,191.16	-18,427.21	-348.21	TD Well @ 24321.00ft