

US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N

5N-67W-18 DAMORE 5-18HZ PAD

DAMORE 18-4HZ

Plan A

Plan: Permit Rev-3

SHL Lat/Long: 40.400917°/-104.942246°

Survey Program: MWD+IFR+MSA

Standard Planning Report

31 December, 2018

Project: WELD-NAD83-UTMFT13N
Site: 5N-67W-18 DAMORE 5-18HZ PAD
Well: DAMORE 18-4HZ
Wellbore: Plan A
Design: Permit Rev-3

US ROCKIES WATTENBERG PLANNING

CASING DETAILS

TVD	MD	Size
1500.00	1526.50	9-5/8
7051.00	7694.51	5-1/2

WELL DETAILS: DAMORE 18-4HZ

GL = 4922.00

RKB = 17' @ 4939.00usft (Drilling Rig)

SECTION DETAILS

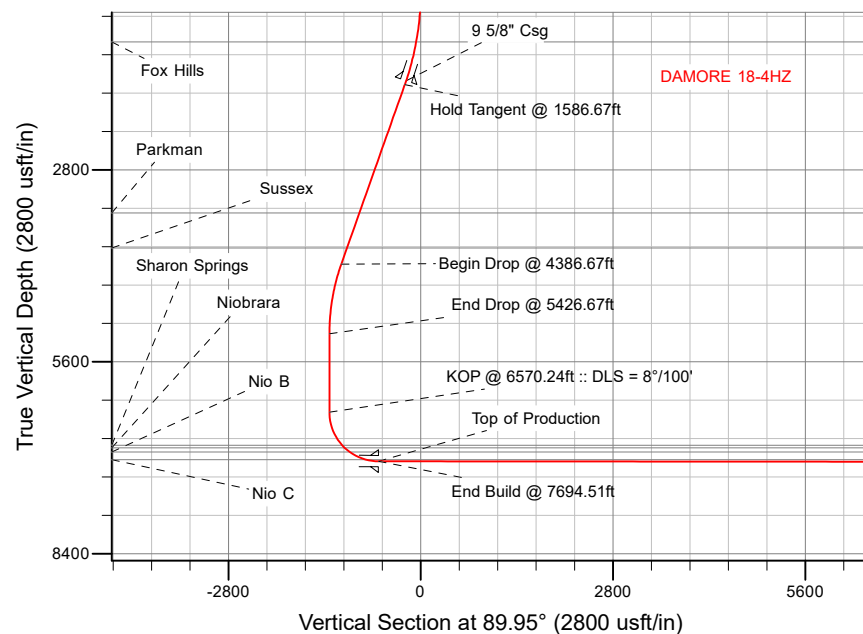
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	
3	1586.67	20.80	248.40	1556.41	-91.64	-231.47	1.50	248.40	-231.55	
4	4386.67	20.80	248.40	4173.92	-457.67	-1155.94	0.00	0.00	-1156.34	
5	5426.67	0.00	0.00	5191.23	-526.40	-1329.54	2.00	180.00	-1330.00	
6	6570.24	0.00	0.00	6334.80	-526.40	-1329.54	0.00	0.00	-1330.00	
7	7694.51	89.94	89.95	7051.00	-525.76	-614.07	8.00	89.95	-614.53	
8	17569.52	89.94	89.95	7061.00	-516.93	9260.92	0.00	0.00	9260.47	DAMORE 18-4HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
DAMORE 18-4HZ_SHL	0.00	0.00	0.00	40.400917	-104.942246
DAMORE 18-4HZ_BHL	7061.00	-516.93	9260.92	40.399493	-104.908983

FORMATION TOP DETAILS

TVDPATH	MDPATH	Formation
932.00	936.56	Fox Hills
3428.00	3588.74	Parkman
3939.00	4135.37	Sussex
6818.00	7100.60	Sharon Springs
6854.00	7151.04	Niobrara
6916.00	7248.28	Nio B
7027.00	7509.32	Nio C

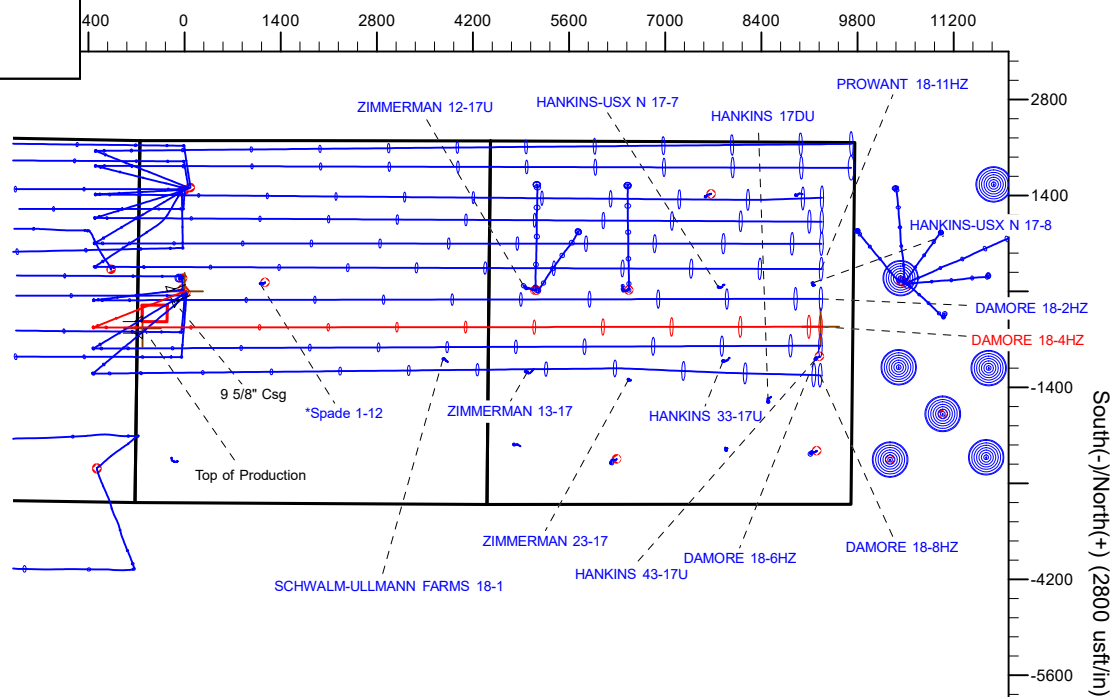


SHL
2201' FNL
681' FWL

HEEL
2559' FSL
75' FWL

TOE
2590' FSL
470' FEL

West(-)/East(+) (2800 usft/in)



Plan: Permit Rev-3 (DAMORE 18-4HZ/Plan A)

Date: 12/31/2018

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well DAMORE 18-4HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4939.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4939.00usft (Drilling Rig)
Site:	5N-67W-18 DAMORE 5-18HZ PAD	North Reference:	True
Well:	DAMORE 18-4HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-3		

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-18 DAMORE 5-18HZ PAD			
Site Position:		Northing:	14,672,768.45 usft	Latitude: 40.401012
From:	Lat/Long	Easting:	1,656,467.04 usft	Longitude: -104.942349
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence: 0.04 °

Well	DAMORE 18-4HZ			
Well Position	+N/-S	-34.60 usft	Northing:	14,672,733.87 usft
	+E/-W	28.68 usft	Easting:	1,656,495.74 usft
Position Uncertainty		3.28 usft	Wellhead Elevation:	Ground Level: 4,922.00 usft

Wellbore	Plan A				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	9/21/2018	8.17	66.80	52,229.24185705

Design	Permit Rev-3			
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	89.95

Plan Survey Tool Program	Date	12/30/2018		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	1,500.00	Permit Rev-3 (Plan A)	APC_ISCWSA REV 2 MWD+I Fixed:v2:crustal field declinatio
2	1,500.00	17,569.52	Permit Rev-3 (Plan A)	APC_ISCWSA REV 2 MWD+I Fixed:v2:Rockies, crustal dec +

Corporate
Planning Report

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Well:	DAMORE 18-4HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-3		

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	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,586.67	20.80	248.40	1,556.41	-91.64	-231.47	1.50	1.50	0.00	248.40	
4,386.67	20.80	248.40	4,173.92	-457.67	-1,155.94	0.00	0.00	0.00	0.00	
5,426.67	0.00	0.00	5,191.23	-526.40	-1,329.54	2.00	-2.00	10.73	180.00	
6,570.24	0.00	0.00	6,334.80	-526.40	-1,329.54	0.00	0.00	0.00	0.00	
7,694.51	89.94	89.95	7,051.00	-525.76	-614.07	8.00	8.00	8.00	89.95	
17,569.52	89.94	89.95	7,061.00	-516.93	9,260.92	0.00	0.00	0.00	0.00	DAMORE 18-4HZ_B+

Planning Report

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Well:	DAMORE 18-4HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-3		

Planned Survey

Measured			Vertical			Vertical	Dogleg	Build	Turn
Depth	Inclination	Azimuth	Depth	+N/-S	+E/-W	Section	Rate	Rate	Rate
(usft)	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(°/100usft)	(°/100usft)	(°/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
Begin Nudge @ 200.00ft									
300.00	1.50	248.40	299.99	-0.48	-1.22	-1.22	1.50	1.50	0.00
400.00	3.00	248.40	399.91	-1.93	-4.87	-4.87	1.50	1.50	0.00
500.00	4.50	248.40	499.69	-4.33	-10.95	-10.95	1.50	1.50	0.00
600.00	6.00	248.40	599.27	-7.70	-19.46	-19.46	1.50	1.50	0.00
700.00	7.50	248.40	698.57	-12.03	-30.38	-30.39	1.50	1.50	0.00
800.00	9.00	248.40	797.54	-17.31	-43.72	-43.74	1.50	1.50	0.00
900.00	10.50	248.40	896.09	-23.55	-59.47	-59.49	1.50	1.50	0.00
936.56	11.05	248.40	932.00	-26.06	-65.82	-65.85	1.50	1.50	0.00
Fox Hills									
1,000.00	12.00	248.40	994.16	-30.73	-77.61	-77.64	1.50	1.50	0.00
1,100.00	13.50	248.40	1,091.70	-38.85	-98.13	-98.16	1.50	1.50	0.00
1,200.00	15.00	248.40	1,188.62	-47.91	-121.01	-121.06	1.50	1.50	0.00
1,300.00	16.50	248.40	1,284.86	-57.90	-146.25	-146.30	1.50	1.50	0.00
1,400.00	18.00	248.40	1,380.36	-68.82	-173.82	-173.88	1.50	1.50	0.00
1,500.00	19.50	248.40	1,475.05	-80.65	-203.71	-203.78	1.50	1.50	0.00
1,526.50	19.90	248.40	1,500.00	-83.94	-212.01	-212.09	1.50	1.50	0.00
9 5/8" Csg									
1,586.67	20.80	248.40	1,556.41	-91.64	-231.47	-231.55	1.50	1.50	0.00
Hold Tangent @ 1586.67ft									
1,600.00	20.80	248.40	1,568.87	-93.39	-235.87	-235.95	0.00	0.00	0.00
1,700.00	20.80	248.40	1,662.36	-106.46	-268.88	-268.98	0.00	0.00	0.00
1,800.00	20.80	248.40	1,755.84	-119.53	-301.90	-302.01	0.00	0.00	0.00
1,900.00	20.80	248.40	1,849.32	-132.60	-334.92	-335.03	0.00	0.00	0.00
2,000.00	20.80	248.40	1,942.80	-145.68	-367.94	-368.06	0.00	0.00	0.00
2,100.00	20.80	248.40	2,036.29	-158.75	-400.95	-401.09	0.00	0.00	0.00
2,200.00	20.80	248.40	2,129.77	-171.82	-433.97	-434.12	0.00	0.00	0.00
2,300.00	20.80	248.40	2,223.25	-184.89	-466.99	-467.15	0.00	0.00	0.00
2,400.00	20.80	248.40	2,316.73	-197.97	-500.00	-500.18	0.00	0.00	0.00
2,500.00	20.80	248.40	2,410.22	-211.04	-533.02	-533.20	0.00	0.00	0.00
2,600.00	20.80	248.40	2,503.70	-224.11	-566.04	-566.23	0.00	0.00	0.00
2,700.00	20.80	248.40	2,597.18	-237.18	-599.05	-599.26	0.00	0.00	0.00
2,800.00	20.80	248.40	2,690.66	-250.26	-632.07	-632.29	0.00	0.00	0.00
2,900.00	20.80	248.40	2,784.15	-263.33	-665.09	-665.32	0.00	0.00	0.00
3,000.00	20.80	248.40	2,877.63	-276.40	-698.11	-698.35	0.00	0.00	0.00
3,100.00	20.80	248.40	2,971.11	-289.47	-731.12	-731.38	0.00	0.00	0.00
3,200.00	20.80	248.40	3,064.59	-302.54	-764.14	-764.40	0.00	0.00	0.00
3,300.00	20.80	248.40	3,158.08	-315.62	-797.16	-797.43	0.00	0.00	0.00
3,400.00	20.80	248.40	3,251.56	-328.69	-830.17	-830.46	0.00	0.00	0.00
3,500.00	20.80	248.40	3,345.04	-341.76	-863.19	-863.49	0.00	0.00	0.00
3,588.74	20.80	248.40	3,428.00	-353.36	-892.49	-892.80	0.00	0.00	0.00
Parkman									
3,600.00	20.80	248.40	3,438.52	-354.83	-896.21	-896.52	0.00	0.00	0.00
3,700.00	20.80	248.40	3,532.01	-367.91	-929.23	-929.55	0.00	0.00	0.00
3,800.00	20.80	248.40	3,625.49	-380.98	-962.24	-962.57	0.00	0.00	0.00
3,900.00	20.80	248.40	3,718.97	-394.05	-995.26	-995.60	0.00	0.00	0.00
4,000.00	20.80	248.40	3,812.45	-407.12	-1,028.28	-1,028.63	0.00	0.00	0.00
4,100.00	20.80	248.40	3,905.94	-420.20	-1,061.29	-1,061.66	0.00	0.00	0.00
4,135.37	20.80	248.40	3,939.00	-424.82	-1,072.97	-1,073.34	0.00	0.00	0.00
Sussex									

Corporate Planning Report

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Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4939.00usft (Drilling Rig)
Site:	5N-67W-18 DAMORE 5-18HZ PAD	North Reference:	True
Well:	DAMORE 18-4HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-3		

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)
4,200.00	20.80	248.40	3,999.42	-433.27	-1,094.31	-1,094.69	0.00	0.00	0.00
4,300.00	20.80	248.40	4,092.90	-446.34	-1,127.33	-1,127.72	0.00	0.00	0.00
4,386.67	20.80	248.40	4,173.92	-457.67	-1,155.94	-1,156.34	0.00	0.00	0.00
Begin Drop @ 4386.67ft									
4,400.00	20.53	248.40	4,186.40	-459.40	-1,160.32	-1,160.72	2.00	-2.00	0.00
4,500.00	18.53	248.40	4,280.64	-471.71	-1,191.40	-1,191.81	2.00	-2.00	0.00
4,600.00	16.53	248.40	4,375.99	-482.80	-1,219.41	-1,219.83	2.00	-2.00	0.00
4,700.00	14.53	248.40	4,472.33	-492.66	-1,244.31	-1,244.74	2.00	-2.00	0.00
4,800.00	12.53	248.40	4,569.55	-501.27	-1,266.07	-1,266.50	2.00	-2.00	0.00
4,900.00	10.53	248.40	4,667.52	-508.63	-1,284.66	-1,285.10	2.00	-2.00	0.00
5,000.00	8.53	248.40	4,766.14	-514.73	-1,300.05	-1,300.50	2.00	-2.00	0.00
5,100.00	6.53	248.40	4,865.27	-519.55	-1,312.24	-1,312.70	2.00	-2.00	0.00
5,200.00	4.53	248.40	4,964.80	-523.10	-1,321.21	-1,321.66	2.00	-2.00	0.00
5,300.00	2.53	248.40	5,064.60	-525.37	-1,326.94	-1,327.40	2.00	-2.00	0.00
5,400.00	0.53	248.40	5,164.56	-526.36	-1,329.43	-1,329.88	2.00	-2.00	0.00
5,426.67	0.00	0.00	5,191.23	-526.40	-1,329.54	-1,330.00	2.00	-2.00	418.50
End Drop @ 5426.67ft									
5,500.00	0.00	0.00	5,264.56	-526.40	-1,329.54	-1,330.00	0.00	0.00	0.00
5,600.00	0.00	0.00	5,364.56	-526.40	-1,329.54	-1,330.00	0.00	0.00	0.00
5,700.00	0.00	0.00	5,464.56	-526.40	-1,329.54	-1,330.00	0.00	0.00	0.00
5,800.00	0.00	0.00	5,564.56	-526.40	-1,329.54	-1,330.00	0.00	0.00	0.00
5,900.00	0.00	0.00	5,664.56	-526.40	-1,329.54	-1,330.00	0.00	0.00	0.00
6,000.00	0.00	0.00	5,764.56	-526.40	-1,329.54	-1,330.00	0.00	0.00	0.00
6,100.00	0.00	0.00	5,864.56	-526.40	-1,329.54	-1,330.00	0.00	0.00	0.00
6,200.00	0.00	0.00	5,964.56	-526.40	-1,329.54	-1,330.00	0.00	0.00	0.00
6,300.00	0.00	0.00	6,064.56	-526.40	-1,329.54	-1,330.00	0.00	0.00	0.00
6,400.00	0.00	0.00	6,164.56	-526.40	-1,329.54	-1,330.00	0.00	0.00	0.00
6,500.00	0.00	0.00	6,264.56	-526.40	-1,329.54	-1,330.00	0.00	0.00	0.00
6,570.24	0.00	0.00	6,334.80	-526.40	-1,329.54	-1,330.00	0.00	0.00	0.00
KOP @ 6570.24ft :: DLS = 8°/100'									
6,600.00	2.38	89.95	6,364.55	-526.40	-1,328.92	-1,329.38	8.00	8.00	302.25
6,700.00	10.38	89.95	6,463.85	-526.39	-1,317.82	-1,318.28	8.00	8.00	0.00
6,800.00	18.38	89.95	6,560.64	-526.37	-1,293.00	-1,293.46	8.00	8.00	0.00
6,900.00	26.38	89.95	6,653.03	-526.34	-1,254.96	-1,255.42	8.00	8.00	0.00
7,000.00	34.38	89.95	6,739.23	-526.29	-1,204.42	-1,204.88	8.00	8.00	0.00
7,100.00	42.38	89.95	6,817.56	-526.24	-1,142.39	-1,142.84	8.00	8.00	0.00
7,100.60	42.43	89.95	6,818.00	-526.23	-1,141.98	-1,142.44	8.00	8.00	0.00
Sharon Springs									
7,151.04	46.46	89.95	6,854.00	-526.20	-1,106.67	-1,107.13	8.00	8.00	0.00
Niobrara									
7,200.00	50.38	89.95	6,886.49	-526.17	-1,070.05	-1,070.51	8.00	8.00	0.00
7,248.28	54.24	89.95	6,916.00	-526.14	-1,031.85	-1,032.31	8.00	8.00	0.00
Nio B									
7,300.00	58.38	89.95	6,944.68	-526.10	-988.83	-989.28	8.00	8.00	0.00
7,400.00	66.38	89.95	6,991.00	-526.02	-900.29	-900.75	8.00	8.00	0.00
7,500.00	74.38	89.95	7,024.55	-525.93	-806.17	-806.63	8.00	8.00	0.00
7,509.32	75.13	89.95	7,027.00	-525.93	-797.19	-797.65	8.00	8.00	0.00
Nio C									
7,600.00	82.38	89.95	7,044.67	-525.85	-708.30	-708.76	8.00	8.00	0.00
7,694.51	89.94	89.95	7,051.00	-525.76	-614.07	-614.53	8.00	8.00	0.00
End Build @ 7694.51ft - Top of Production									
7,700.00	89.94	89.95	7,051.00	-525.76	-608.58	-609.04	0.01	0.01	0.00
7,800.00	89.94	89.95	7,051.10	-525.67	-508.58	-509.04	0.00	0.00	0.00

Corporate Planning Report

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Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4939.00usft (Drilling Rig)
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Wellbore:	Plan A		
Design:	Permit Rev-3		

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)
7,900.00	89.94	89.95	7,051.21	-525.58	-408.58	-409.04	0.00	0.00	0.00
8,000.00	89.94	89.95	7,051.31	-525.49	-308.58	-309.04	0.00	0.00	0.00
8,100.00	89.94	89.95	7,051.41	-525.40	-208.58	-209.04	0.00	0.00	0.00
8,200.00	89.94	89.95	7,051.51	-525.31	-108.58	-109.04	0.00	0.00	0.00
8,300.00	89.94	89.95	7,051.61	-525.22	-8.58	-9.04	0.00	0.00	0.00
8,400.00	89.94	89.95	7,051.71	-525.13	91.42	90.96	0.00	0.00	0.00
8,500.00	89.94	89.95	7,051.81	-525.04	191.42	190.96	0.00	0.00	0.00
8,600.00	89.94	89.95	7,051.91	-524.95	291.42	290.96	0.00	0.00	0.00
8,700.00	89.94	89.95	7,052.02	-524.86	391.41	390.96	0.00	0.00	0.00
8,800.00	89.94	89.95	7,052.12	-524.77	491.41	490.96	0.00	0.00	0.00
8,900.00	89.94	89.95	7,052.22	-524.68	591.41	590.96	0.00	0.00	0.00
9,000.00	89.94	89.95	7,052.32	-524.59	691.41	690.96	0.00	0.00	0.00
9,100.00	89.94	89.95	7,052.42	-524.50	791.41	790.96	0.00	0.00	0.00
9,200.00	89.94	89.95	7,052.52	-524.42	891.41	890.96	0.00	0.00	0.00
9,300.00	89.94	89.95	7,052.62	-524.33	991.41	990.96	0.00	0.00	0.00
9,400.00	89.94	89.95	7,052.72	-524.24	1,091.41	1,090.96	0.00	0.00	0.00
9,500.00	89.94	89.95	7,052.83	-524.15	1,191.41	1,190.96	0.00	0.00	0.00
9,600.00	89.94	89.95	7,052.93	-524.06	1,291.41	1,290.96	0.00	0.00	0.00
9,700.00	89.94	89.95	7,053.03	-523.97	1,391.41	1,390.96	0.00	0.00	0.00
9,800.00	89.94	89.95	7,053.13	-523.88	1,491.41	1,490.96	0.00	0.00	0.00
9,900.00	89.94	89.95	7,053.23	-523.79	1,591.41	1,590.96	0.00	0.00	0.00
10,000.00	89.94	89.95	7,053.33	-523.70	1,691.41	1,690.96	0.00	0.00	0.00
10,100.00	89.94	89.95	7,053.43	-523.61	1,791.41	1,790.96	0.00	0.00	0.00
10,200.00	89.94	89.95	7,053.54	-523.52	1,891.41	1,890.96	0.00	0.00	0.00
10,300.00	89.94	89.95	7,053.64	-523.43	1,991.41	1,990.96	0.00	0.00	0.00
10,400.00	89.94	89.95	7,053.74	-523.34	2,091.41	2,090.96	0.00	0.00	0.00
10,500.00	89.94	89.95	7,053.84	-523.25	2,191.41	2,190.96	0.00	0.00	0.00
10,600.00	89.94	89.95	7,053.94	-523.16	2,291.41	2,290.96	0.00	0.00	0.00
10,700.00	89.94	89.95	7,054.04	-523.07	2,391.41	2,390.96	0.00	0.00	0.00
10,800.00	89.94	89.95	7,054.14	-522.98	2,491.41	2,490.96	0.00	0.00	0.00
10,900.00	89.94	89.95	7,054.24	-522.89	2,591.41	2,590.96	0.00	0.00	0.00
11,000.00	89.94	89.95	7,054.35	-522.81	2,691.41	2,690.96	0.00	0.00	0.00
11,100.00	89.94	89.95	7,054.45	-522.72	2,791.41	2,790.96	0.00	0.00	0.00
11,200.00	89.94	89.95	7,054.55	-522.63	2,891.41	2,890.96	0.00	0.00	0.00
11,300.00	89.94	89.95	7,054.65	-522.54	2,991.41	2,990.96	0.00	0.00	0.00
11,400.00	89.94	89.95	7,054.75	-522.45	3,091.41	3,090.96	0.00	0.00	0.00
11,500.00	89.94	89.95	7,054.85	-522.36	3,191.41	3,190.96	0.00	0.00	0.00
11,600.00	89.94	89.95	7,054.95	-522.27	3,291.41	3,290.96	0.00	0.00	0.00
11,700.00	89.94	89.95	7,055.05	-522.18	3,391.41	3,390.96	0.00	0.00	0.00
11,800.00	89.94	89.95	7,055.16	-522.09	3,491.41	3,490.96	0.00	0.00	0.00
11,900.00	89.94	89.95	7,055.26	-522.00	3,591.41	3,590.96	0.00	0.00	0.00
12,000.00	89.94	89.95	7,055.36	-521.91	3,691.41	3,690.96	0.00	0.00	0.00
12,100.00	89.94	89.95	7,055.46	-521.82	3,791.41	3,790.96	0.00	0.00	0.00
12,200.00	89.94	89.95	7,055.56	-521.73	3,891.41	3,890.96	0.00	0.00	0.00
12,300.00	89.94	89.95	7,055.66	-521.64	3,991.41	3,990.96	0.00	0.00	0.00
12,400.00	89.94	89.95	7,055.76	-521.55	4,091.41	4,090.95	0.00	0.00	0.00
12,500.00	89.94	89.95	7,055.87	-521.46	4,191.41	4,190.95	0.00	0.00	0.00
12,600.00	89.94	89.95	7,055.97	-521.37	4,291.41	4,290.95	0.00	0.00	0.00
12,700.00	89.94	89.95	7,056.07	-521.28	4,391.41	4,390.95	0.00	0.00	0.00
12,800.00	89.94	89.95	7,056.17	-521.19	4,491.41	4,490.95	0.00	0.00	0.00
12,900.00	89.94	89.95	7,056.27	-521.11	4,591.41	4,590.95	0.00	0.00	0.00
13,000.00	89.94	89.95	7,056.37	-521.02	4,691.41	4,690.95	0.00	0.00	0.00
13,100.00	89.94	89.95	7,056.47	-520.93	4,791.41	4,790.95	0.00	0.00	0.00
13,200.00	89.94	89.95	7,056.57	-520.84	4,891.41	4,890.95	0.00	0.00	0.00

Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well DAMORE 18-4HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4939.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4939.00usft (Drilling Rig)
Site:	5N-67W-18 DAMORE 5-18HZ PAD	North Reference:	True
Well:	DAMORE 18-4HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-3		

Planned Survey

Measured			Vertical			Vertical	Dogleg	Build	Turn
Depth	Inclination	Azimuth	Depth	+N/-S	+E/-W	Section	Rate	Rate	Rate
(usft)	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(°/100usft)	(°/100usft)	(°/100usft)
13,300.00	89.94	89.95	7,056.68	-520.75	4,991.41	4,990.95	0.00	0.00	0.00
13,400.00	89.94	89.95	7,056.78	-520.66	5,091.41	5,090.95	0.00	0.00	0.00
13,500.00	89.94	89.95	7,056.88	-520.57	5,191.41	5,190.95	0.00	0.00	0.00
13,600.00	89.94	89.95	7,056.98	-520.48	5,291.41	5,290.95	0.00	0.00	0.00
13,700.00	89.94	89.95	7,057.08	-520.39	5,391.41	5,390.95	0.00	0.00	0.00
13,800.00	89.94	89.95	7,057.18	-520.30	5,491.41	5,490.95	0.00	0.00	0.00
13,900.00	89.94	89.95	7,057.28	-520.21	5,591.41	5,590.95	0.00	0.00	0.00
14,000.00	89.94	89.95	7,057.38	-520.12	5,691.41	5,690.95	0.00	0.00	0.00
14,100.00	89.94	89.95	7,057.49	-520.03	5,791.41	5,790.95	0.00	0.00	0.00
14,200.00	89.94	89.95	7,057.59	-519.94	5,891.41	5,890.95	0.00	0.00	0.00
14,300.00	89.94	89.95	7,057.69	-519.85	5,991.41	5,990.95	0.00	0.00	0.00
14,400.00	89.94	89.95	7,057.79	-519.76	6,091.41	6,090.95	0.00	0.00	0.00
14,500.00	89.94	89.95	7,057.89	-519.67	6,191.41	6,190.95	0.00	0.00	0.00
14,600.00	89.94	89.95	7,057.99	-519.58	6,291.41	6,290.95	0.00	0.00	0.00
14,700.00	89.94	89.95	7,058.09	-519.49	6,391.41	6,390.95	0.00	0.00	0.00
14,800.00	89.94	89.95	7,058.19	-519.41	6,491.41	6,490.95	0.00	0.00	0.00
14,900.00	89.94	89.95	7,058.30	-519.32	6,591.41	6,590.95	0.00	0.00	0.00
15,000.00	89.94	89.95	7,058.40	-519.23	6,691.41	6,690.95	0.00	0.00	0.00
15,100.00	89.94	89.95	7,058.50	-519.14	6,791.41	6,790.95	0.00	0.00	0.00
15,200.00	89.94	89.95	7,058.60	-519.05	6,891.41	6,890.95	0.00	0.00	0.00
15,300.00	89.94	89.95	7,058.70	-518.96	6,991.41	6,990.95	0.00	0.00	0.00
15,400.00	89.94	89.95	7,058.80	-518.87	7,091.41	7,090.95	0.00	0.00	0.00
15,500.00	89.94	89.95	7,058.90	-518.78	7,191.41	7,190.95	0.00	0.00	0.00
15,600.00	89.94	89.95	7,059.01	-518.69	7,291.41	7,290.95	0.00	0.00	0.00
15,700.00	89.94	89.95	7,059.11	-518.60	7,391.41	7,390.95	0.00	0.00	0.00
15,800.00	89.94	89.95	7,059.21	-518.51	7,491.41	7,490.95	0.00	0.00	0.00
15,900.00	89.94	89.95	7,059.31	-518.42	7,591.41	7,590.95	0.00	0.00	0.00
16,000.00	89.94	89.95	7,059.41	-518.33	7,691.41	7,690.95	0.00	0.00	0.00
16,100.00	89.94	89.95	7,059.51	-518.24	7,791.41	7,790.95	0.00	0.00	0.00
16,200.00	89.94	89.95	7,059.61	-518.15	7,891.41	7,890.95	0.00	0.00	0.00
16,300.00	89.94	89.95	7,059.71	-518.06	7,991.41	7,990.95	0.00	0.00	0.00
16,400.00	89.94	89.95	7,059.82	-517.97	8,091.41	8,090.95	0.00	0.00	0.00
16,500.00	89.94	89.95	7,059.92	-517.88	8,191.41	8,190.95	0.00	0.00	0.00
16,600.00	89.94	89.95	7,060.02	-517.80	8,291.41	8,290.95	0.00	0.00	0.00
16,700.00	89.94	89.95	7,060.12	-517.71	8,391.41	8,390.95	0.00	0.00	0.00
16,800.00	89.94	89.95	7,060.22	-517.62	8,491.41	8,490.95	0.00	0.00	0.00
16,900.00	89.94	89.95	7,060.32	-517.53	8,591.41	8,590.95	0.00	0.00	0.00
17,000.00	89.94	89.95	7,060.42	-517.44	8,691.41	8,690.95	0.00	0.00	0.00
17,100.00	89.94	89.95	7,060.52	-517.35	8,791.41	8,790.95	0.00	0.00	0.00
17,200.00	89.94	89.95	7,060.63	-517.26	8,891.41	8,890.95	0.00	0.00	0.00
17,300.00	89.94	89.95	7,060.73	-517.17	8,991.41	8,990.95	0.00	0.00	0.00
17,400.00	89.94	89.95	7,060.83	-517.08	9,091.41	9,090.95	0.00	0.00	0.00
17,500.00	89.94	89.95	7,060.93	-516.99	9,191.41	9,190.95	0.00	0.00	0.00
17,569.52	89.94	89.95	7,061.00	-516.93	9,260.92	9,260.47	0.00	0.00	0.00

TD Well @ 17569.52ft

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well DAMORE 18-4HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4939.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4939.00usft (Drilling Rig)
Site:	5N-67W-18 DAMORE 5-18HZ PAD	North Reference:	True
Well:	DAMORE 18-4HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-3		

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,526.50	1,500.00	9 5/8" Csg	9-5/8	13-1/2	
7,694.51	7,051.00	Top of Production	5-1/2	7-7/8	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
936.56	932.00	Fox Hills				
3,588.74	3,428.00	Parkman				
4,135.37	3,939.00	Sussex				
7,100.60	6,818.00	Sharon Springs				
7,151.04	6,854.00	Niobrara				
7,248.28	6,916.00	Nio B				
7,509.32	7,027.00	Nio C				

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
200.00	200.00	0.00	0.00	Begin Nudge @ 200.00ft	
1,586.67	1,556.41	-91.64	-231.47	Hold Tangent @ 1586.67ft	
4,386.67	4,173.92	-457.67	-1,155.94	Begin Drop @ 4386.67ft	
5,426.67	5,191.23	-526.40	-1,329.54	End Drop @ 5426.67ft	
6,570.24	6,334.80	-526.40	-1,329.54	KOP @ 6570.24ft :: DLS = 8°/100'	
7,694.51	7,051.00	-525.76	-614.07	End Build @ 7694.51ft	
17,569.52	7,061.00	-516.93	9,260.92	TD Well @ 17569.52ft	