

US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N

1N-67W-07 RANGER 18-7HZ PAD

RANGER 7-13HZ

Plan A

Plan: Permit Rev-2

SHL Lat/Long: 40.070790/-104.937032

Survey Program: MWD+IFR+MSA

Standard Planning Report

17 May, 2018

Project: WELD-NAD83-UTMFT13N
Site: 1N-67W-07 RANGER 18-7HZ PAD
Well: RANGER 7-13HZ
Wellbore: Plan A
Design: Permit Rev-2

US ROCKIES WATTENBERG PLANNING

CASING DETAILS

TVD	MD	Size
1500.00	1514.81	9-5/8
7699.00	8171.84	5-1/2

WELL DETAILS: RANGER 7-13HZ

GL = 5112.00

RKB = 17" @ 5129.00usft (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	230.00	0.00	0.00	230.00	0.00	0.00	0.00	0.00	0.00	
3	970.00	11.10	270.50	965.38	0.62	-71.45	1.50	270.50	0.42	
4	3770.00	11.10	270.50	3713.00	5.33	-610.50	0.00	0.00	3.62	
5	4325.00	0.00	0.00	4264.53	5.80	-664.09	2.00	180.00	3.94	
6	7043.28	0.00	0.00	6982.81	5.80	-664.09	0.00	0.00	3.94	
7	8171.84	90.28	0.93	7699.00	725.45	-652.35	8.00	0.93	723.63	
8	16901.25	90.28	0.93	7655.66	9453.60	-510.00	0.00	0.00	9452.14	RANGER 7-13HZ_target
9	17231.87	90.28	355.98	7654.02	9783.99	-518.91	1.50	-90.00	9782.50	
10	18852.00	90.28	355.98	7646.00	11400.10	-632.63	0.00	0.00	11398.29	RANGER 7-13HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
RANGER 7-13HZ_SHL	0.00	0.00	0.00	40.070790	-104.937032
RANGER 7-13HZ_BHL	7646.00	11400.10	-632.63	40.102096	-104.939294

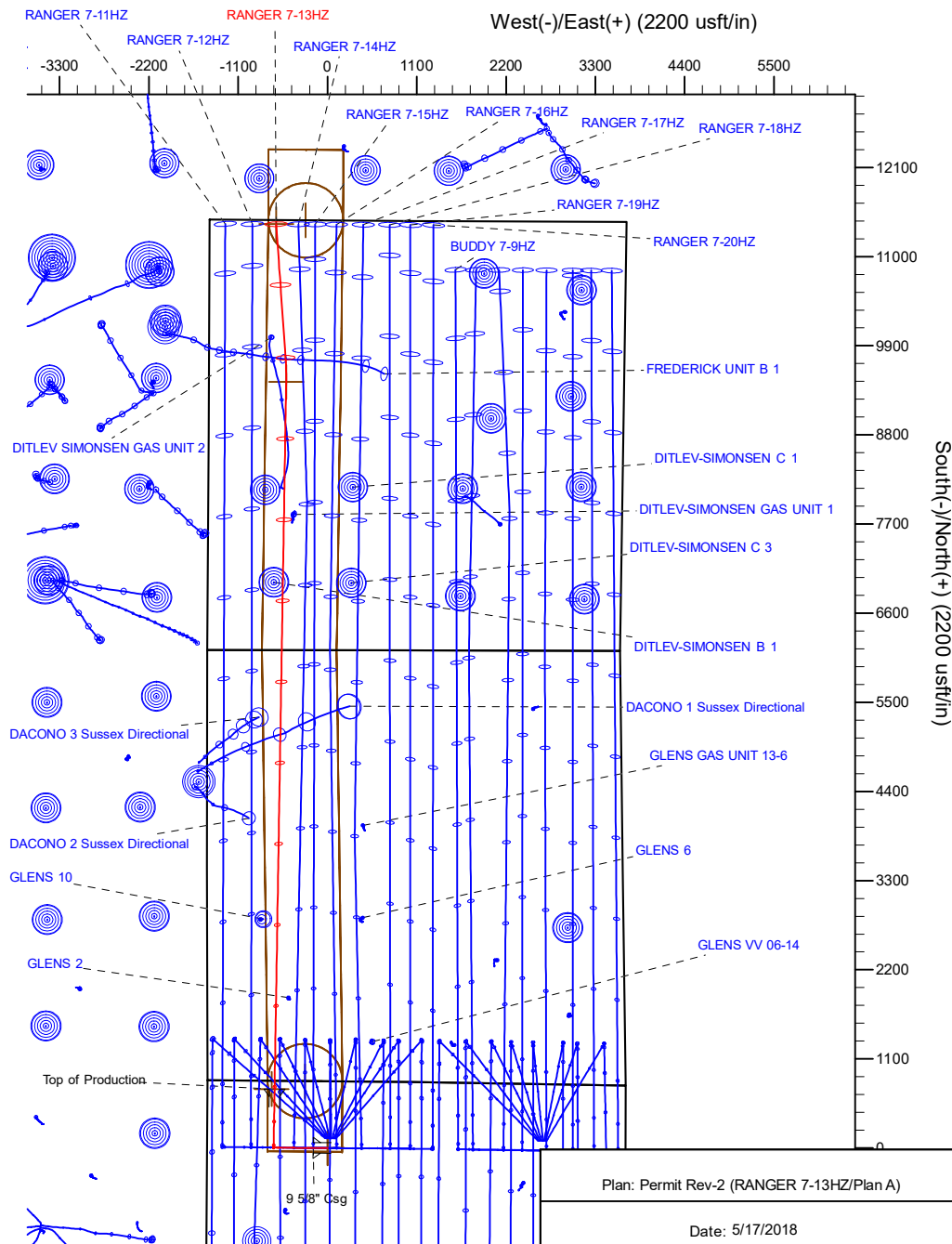
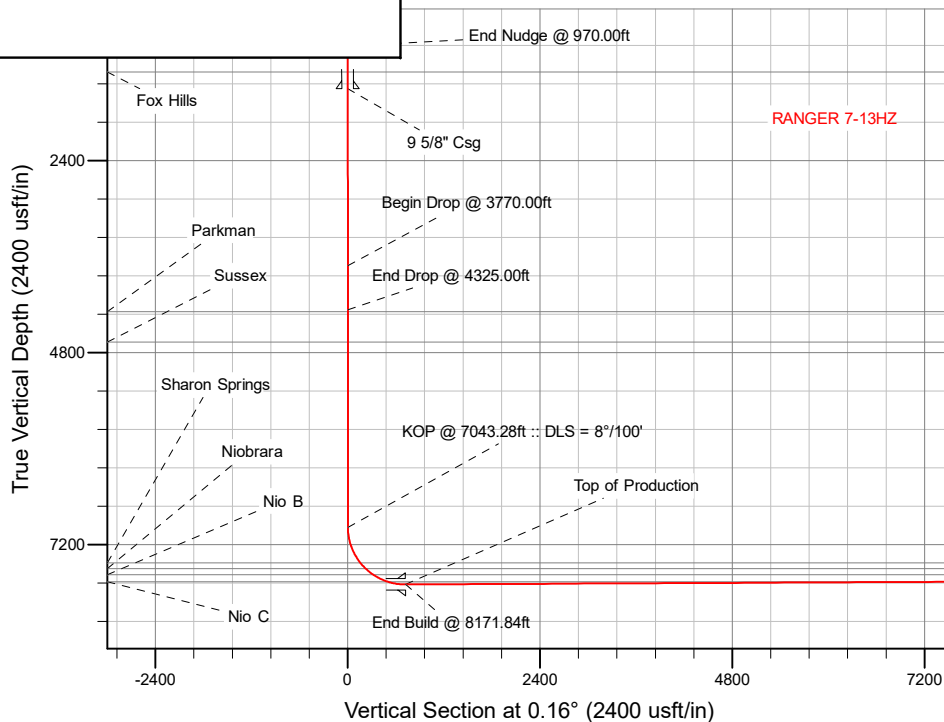
FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1292.00	1302.85	Fox Hills
4288.00	4348.47	Parkman
4667.00	4727.47	Sussex
7427.00	7522.41	Sharon Springs
7502.00	7624.06	Niobrara
7578.00	7745.85	Nio B
7664.00	7943.42	Nio C

SHL
825' FNL
1484' FWL

HEEL
100' FNL
822' FWL

TOE
50' FNL
820' FWL



Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well RANGER 7-13HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5129.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5129.00usft (Drilling Rig)
Site:	1N-67W-07 RANGER 18-7HZ PAD	North Reference:	True
Well:	RANGER 7-13HZ	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		1N-67W-07 RANGER 18-7HZ PAD			
Site Position:		Northing:	14,552,637.51 usft	Latitude:	40.071120
From:	Lat/Long	Easting:	1,658,003.51 usft	Longitude:	-104.937136
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.04 °

Well		RANGER 7-13HZ				
Well Position	+N/-S	-120.17 usft	Northing:	14,552,517.36 usft	Latitude:	40.070790
	+E/-W	29.10 usft	Easting:	1,658,032.69 usft	Longitude:	-104.937032
Position Uncertainty		3.28 usft	Wellhead Elevation:		Ground Level:	5,112.00 usft

Wellbore	Plan A				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	5/3/2018	8.18	66.54	52,100.43012183

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	0.16

Plan Survey Tool Program		Date	5/17/2018		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	1,500.00	Permit Rev-2 (Plan A)	APC_ISCWSA REV 2 MWD+I Fixed:v2:crustal field declinatio	
2	1,500.00	18,852.00	Permit Rev-2 (Plan A)	APC_ISCWSA REV 2 MWD+I Fixed:v2:Rockies, crustal dec +	

Corporate
Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well RANGER 7-13HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5129.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5129.00usft (Drilling Rig)
Site:	1N-67W-07 RANGER 18-7HZ PAD	North Reference:	True
Well:	RANGER 7-13HZ	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	
230.00	0.00	0.00	230.00	0.00	0.00	0.00	0.00	0.00	0.00	
970.00	11.10	270.50	965.38	0.62	-71.45	1.50	1.50	0.00	270.50	
3,770.00	11.10	270.50	3,713.00	5.33	-610.50	0.00	0.00	0.00	0.00	
4,325.00	0.00	0.00	4,264.53	5.80	-664.09	2.00	-2.00	0.00	180.00	
7,043.28	0.00	0.00	6,982.81	5.80	-664.09	0.00	0.00	0.00	0.00	
8,171.84	90.28	0.93	7,699.00	725.45	-652.35	8.00	8.00	0.08	0.93	
16,901.25	90.28	0.93	7,655.66	9,453.60	-510.00	0.00	0.00	0.00	0.00	RANGER 7-13HZ_tar
17,231.87	90.28	355.98	7,654.02	9,783.99	-518.91	1.50	0.00	-1.50	-90.00	
18,852.00	90.28	355.98	7,646.00	11,400.10	-632.63	0.00	0.00	0.00	0.00	RANGER 7-13HZ_BH

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well RANGER 7-13HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5129.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5129.00usft (Drilling Rig)
Site:	1N-67W-07 RANGER 18-7HZ PAD	North Reference:	True
Well:	RANGER 7-13HZ	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
230.00	0.00	0.00	230.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge @ 230.00ft									
300.00	1.05	270.50	300.00	0.01	-0.64	0.00	1.50	1.50	0.00
400.00	2.55	270.50	399.94	0.03	-3.78	0.02	1.50	1.50	0.00
500.00	4.05	270.50	499.78	0.08	-9.54	0.06	1.50	1.50	0.00
600.00	5.55	270.50	599.42	0.16	-17.91	0.11	1.50	1.50	0.00
700.00	7.05	270.50	698.81	0.25	-28.88	0.17	1.50	1.50	0.00
800.00	8.55	270.50	797.89	0.37	-42.45	0.25	1.50	1.50	0.00
900.00	10.05	270.50	896.57	0.51	-58.61	0.35	1.50	1.50	0.00
970.00	11.10	270.50	965.38	0.62	-71.45	0.42	1.50	1.50	0.00
End Nudge @ 970.00ft									
1,000.00	11.10	270.50	994.82	0.67	-77.23	0.46	0.00	0.00	0.00
1,100.00	11.10	270.50	1,092.95	0.84	-96.48	0.57	0.00	0.00	0.00
1,200.00	11.10	270.50	1,191.08	1.01	-115.73	0.69	0.00	0.00	0.00
1,300.00	11.10	270.50	1,289.21	1.18	-134.98	0.80	0.00	0.00	0.00
1,302.85	11.10	270.50	1,292.00	1.18	-135.53	0.80	0.00	0.00	0.00
Fox Hills									
1,400.00	11.10	270.50	1,387.34	1.35	-154.24	0.92	0.00	0.00	0.00
1,500.00	11.10	270.50	1,485.46	1.51	-173.49	1.03	0.00	0.00	0.00
1,514.81	11.10	270.50	1,500.00	1.54	-176.34	1.05	0.00	0.00	0.00
9 5/8" Csg									
1,600.00	11.10	270.50	1,583.59	1.68	-192.74	1.14	0.00	0.00	0.00
1,700.00	11.10	270.50	1,681.72	1.85	-211.99	1.26	0.00	0.00	0.00
1,800.00	11.10	270.50	1,779.85	2.02	-231.24	1.37	0.00	0.00	0.00
1,900.00	11.10	270.50	1,877.98	2.19	-250.49	1.49	0.00	0.00	0.00
2,000.00	11.10	270.50	1,976.11	2.35	-269.74	1.60	0.00	0.00	0.00
2,100.00	11.10	270.50	2,074.24	2.52	-289.00	1.71	0.00	0.00	0.00
2,200.00	11.10	270.50	2,172.37	2.69	-308.25	1.83	0.00	0.00	0.00
2,300.00	11.10	270.50	2,270.50	2.86	-327.50	1.94	0.00	0.00	0.00
2,400.00	11.10	270.50	2,368.63	3.03	-346.75	2.06	0.00	0.00	0.00
2,500.00	11.10	270.50	2,466.76	3.19	-366.00	2.17	0.00	0.00	0.00
2,600.00	11.10	270.50	2,564.89	3.36	-385.25	2.29	0.00	0.00	0.00
2,700.00	11.10	270.50	2,663.02	3.53	-404.50	2.40	0.00	0.00	0.00
2,800.00	11.10	270.50	2,761.15	3.70	-423.76	2.51	0.00	0.00	0.00
2,900.00	11.10	270.50	2,859.27	3.87	-443.01	2.63	0.00	0.00	0.00
3,000.00	11.10	270.50	2,957.40	4.03	-462.26	2.74	0.00	0.00	0.00
3,100.00	11.10	270.50	3,055.53	4.20	-481.51	2.86	0.00	0.00	0.00
3,200.00	11.10	270.50	3,153.66	4.37	-500.76	2.97	0.00	0.00	0.00
3,300.00	11.10	270.50	3,251.79	4.54	-520.01	3.09	0.00	0.00	0.00
3,400.00	11.10	270.50	3,349.92	4.71	-539.26	3.20	0.00	0.00	0.00
3,500.00	11.10	270.50	3,448.05	4.87	-558.52	3.31	0.00	0.00	0.00
3,600.00	11.10	270.50	3,546.18	5.04	-577.77	3.43	0.00	0.00	0.00
3,700.00	11.10	270.50	3,644.31	5.21	-597.02	3.54	0.00	0.00	0.00
3,770.00	11.10	270.50	3,713.00	5.33	-610.50	3.62	0.00	0.00	0.00
Begin Drop @ 3770.00ft									
3,800.00	10.50	270.50	3,742.47	5.38	-616.12	3.66	2.00	-2.00	0.00
3,900.00	8.50	270.50	3,841.09	5.52	-632.62	3.75	2.00	-2.00	0.00
4,000.00	6.50	270.50	3,940.23	5.63	-645.67	3.83	2.00	-2.00	0.00
4,100.00	4.50	270.50	4,039.77	5.72	-655.25	3.89	2.00	-2.00	0.00
4,200.00	2.50	270.50	4,139.57	5.77	-661.36	3.92	2.00	-2.00	0.00
4,300.00	0.50	270.50	4,239.53	5.79	-663.98	3.94	2.00	-2.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well RANGER 7-13HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5129.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5129.00usft (Drilling Rig)
Site:	1N-67W-07 RANGER 18-7HZ PAD	North Reference:	True
Well:	RANGER 7-13HZ	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)	
4,325.00	0.00	0.00	4,264.53	5.80	-664.09	3.94	2.00	-2.00	0.00	
End Drop @ 4325.00ft										
4,348.47	0.00	0.00	4,288.00	5.80	-664.09	3.94	0.00	0.00	0.00	
Parkman										
4,400.00	0.00	0.00	4,339.53	5.80	-664.09	3.94	0.00	0.00	0.00	
4,500.00	0.00	0.00	4,439.53	5.80	-664.09	3.94	0.00	0.00	0.00	
4,600.00	0.00	0.00	4,539.53	5.80	-664.09	3.94	0.00	0.00	0.00	
4,700.00	0.00	0.00	4,639.53	5.80	-664.09	3.94	0.00	0.00	0.00	
4,727.47	0.00	0.00	4,667.00	5.80	-664.09	3.94	0.00	0.00	0.00	
Sussex										
4,800.00	0.00	0.00	4,739.53	5.80	-664.09	3.94	0.00	0.00	0.00	
4,900.00	0.00	0.00	4,839.53	5.80	-664.09	3.94	0.00	0.00	0.00	
5,000.00	0.00	0.00	4,939.53	5.80	-664.09	3.94	0.00	0.00	0.00	
5,100.00	0.00	0.00	5,039.53	5.80	-664.09	3.94	0.00	0.00	0.00	
5,200.00	0.00	0.00	5,139.53	5.80	-664.09	3.94	0.00	0.00	0.00	
5,300.00	0.00	0.00	5,239.53	5.80	-664.09	3.94	0.00	0.00	0.00	
5,400.00	0.00	0.00	5,339.53	5.80	-664.09	3.94	0.00	0.00	0.00	
5,500.00	0.00	0.00	5,439.53	5.80	-664.09	3.94	0.00	0.00	0.00	
5,600.00	0.00	0.00	5,539.53	5.80	-664.09	3.94	0.00	0.00	0.00	
5,700.00	0.00	0.00	5,639.53	5.80	-664.09	3.94	0.00	0.00	0.00	
5,800.00	0.00	0.00	5,739.53	5.80	-664.09	3.94	0.00	0.00	0.00	
5,900.00	0.00	0.00	5,839.53	5.80	-664.09	3.94	0.00	0.00	0.00	
6,000.00	0.00	0.00	5,939.53	5.80	-664.09	3.94	0.00	0.00	0.00	
6,100.00	0.00	0.00	6,039.53	5.80	-664.09	3.94	0.00	0.00	0.00	
6,200.00	0.00	0.00	6,139.53	5.80	-664.09	3.94	0.00	0.00	0.00	
6,300.00	0.00	0.00	6,239.53	5.80	-664.09	3.94	0.00	0.00	0.00	
6,400.00	0.00	0.00	6,339.53	5.80	-664.09	3.94	0.00	0.00	0.00	
6,500.00	0.00	0.00	6,439.53	5.80	-664.09	3.94	0.00	0.00	0.00	
6,600.00	0.00	0.00	6,539.53	5.80	-664.09	3.94	0.00	0.00	0.00	
6,700.00	0.00	0.00	6,639.53	5.80	-664.09	3.94	0.00	0.00	0.00	
6,800.00	0.00	0.00	6,739.53	5.80	-664.09	3.94	0.00	0.00	0.00	
6,900.00	0.00	0.00	6,839.53	5.80	-664.09	3.94	0.00	0.00	0.00	
7,000.00	0.00	0.00	6,939.53	5.80	-664.09	3.94	0.00	0.00	0.00	
7,043.28	0.00	0.00	6,982.81	5.80	-664.09	3.94	0.00	0.00	0.00	
KOP @ 7043.28ft :: DLS = 8°/100'										
7,100.00	4.54	0.93	7,039.47	8.04	-664.05	6.19	8.00	8.00	0.00	
7,200.00	12.54	0.93	7,138.29	22.87	-663.81	21.02	8.00	8.00	0.00	
7,300.00	20.54	0.93	7,234.07	51.31	-663.34	49.46	8.00	8.00	0.00	
7,400.00	28.54	0.93	7,324.97	92.80	-662.67	90.95	8.00	8.00	0.00	
7,500.00	36.54	0.93	7,409.20	146.53	-661.79	144.68	8.00	8.00	0.00	
7,522.42	38.33	0.93	7,427.00	160.16	-661.57	158.31	8.00	8.00	0.00	
Sharon Springs										
7,600.00	44.54	0.93	7,485.14	211.47	-660.73	209.62	8.00	8.00	0.00	
7,624.06	46.46	0.93	7,502.00	228.62	-660.45	226.78	8.00	8.00	0.00	
Niobrara										
7,700.00	52.54	0.93	7,551.30	286.34	-659.51	284.49	8.00	8.00	0.00	
7,745.85	56.21	0.93	7,578.00	323.59	-658.90	321.75	8.00	8.00	0.00	
Nio B										
7,800.00	60.54	0.93	7,606.39	369.68	-658.15	367.84	8.00	8.00	0.00	
7,900.00	68.54	0.93	7,649.35	459.88	-656.68	458.05	8.00	8.00	0.00	
7,943.42	72.01	0.93	7,664.00	500.74	-656.01	498.90	8.00	8.00	0.00	
Nio C										
8,000.00	76.54	0.93	7,679.33	555.18	-655.13	553.35	8.00	8.00	0.00	

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well RANGER 7-13HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5129.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5129.00usft (Drilling Rig)
Site:	1N-67W-07 RANGER 18-7HZ PAD	North Reference:	True
Well:	RANGER 7-13HZ	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)
8,100.00	84.54	0.93	7,695.76	653.73	-653.52	651.90	8.00	8.00	0.00
8,171.84	90.28	0.93	7,699.00	725.46	-652.35	723.63	8.00	8.00	0.00
End Build @ 8171.84ft - Top of Production									
8,200.00	90.28	0.93	7,698.86	753.61	-651.89	751.79	0.00	0.00	0.00
8,300.00	90.28	0.93	7,698.37	853.60	-650.26	851.78	0.00	0.00	0.00
8,400.00	90.28	0.93	7,697.87	953.58	-648.63	951.77	0.00	0.00	0.00
8,500.00	90.28	0.93	7,697.37	1,053.57	-647.00	1,051.76	0.00	0.00	0.00
8,600.00	90.28	0.93	7,696.88	1,153.55	-645.37	1,151.75	0.00	0.00	0.00
8,700.00	90.28	0.93	7,696.38	1,253.54	-643.74	1,251.74	0.00	0.00	0.00
8,800.00	90.28	0.93	7,695.88	1,353.53	-642.11	1,351.73	0.00	0.00	0.00
8,900.00	90.28	0.93	7,695.39	1,453.51	-640.47	1,451.72	0.00	0.00	0.00
9,000.00	90.28	0.93	7,694.89	1,553.50	-638.84	1,551.71	0.00	0.00	0.00
9,100.00	90.28	0.93	7,694.39	1,653.48	-637.21	1,651.70	0.00	0.00	0.00
9,200.00	90.28	0.93	7,693.90	1,753.47	-635.58	1,751.69	0.00	0.00	0.00
9,300.00	90.28	0.93	7,693.40	1,853.45	-633.95	1,851.68	0.00	0.00	0.00
9,400.00	90.28	0.93	7,692.90	1,953.44	-632.32	1,951.67	0.00	0.00	0.00
9,500.00	90.28	0.93	7,692.41	2,053.42	-630.69	2,051.65	0.00	0.00	0.00
9,600.00	90.28	0.93	7,691.91	2,153.41	-629.06	2,151.64	0.00	0.00	0.00
9,700.00	90.28	0.93	7,691.42	2,253.39	-627.43	2,251.63	0.00	0.00	0.00
9,800.00	90.28	0.93	7,690.92	2,353.38	-625.80	2,351.62	0.00	0.00	0.00
9,900.00	90.28	0.93	7,690.42	2,453.37	-624.17	2,451.61	0.00	0.00	0.00
10,000.00	90.28	0.93	7,689.93	2,553.35	-622.54	2,551.60	0.00	0.00	0.00
10,100.00	90.28	0.93	7,689.43	2,653.34	-620.91	2,651.59	0.00	0.00	0.00
10,200.00	90.28	0.93	7,688.93	2,753.32	-619.28	2,751.58	0.00	0.00	0.00
10,300.00	90.28	0.93	7,688.44	2,853.31	-617.65	2,851.57	0.00	0.00	0.00
10,400.00	90.28	0.93	7,687.94	2,953.29	-616.01	2,951.56	0.00	0.00	0.00
10,500.00	90.28	0.93	7,687.44	3,053.28	-614.38	3,051.55	0.00	0.00	0.00
10,600.00	90.28	0.93	7,686.95	3,153.26	-612.75	3,151.54	0.00	0.00	0.00
10,700.00	90.28	0.93	7,686.45	3,253.25	-611.12	3,251.53	0.00	0.00	0.00
10,800.00	90.28	0.93	7,685.95	3,353.24	-609.49	3,351.52	0.00	0.00	0.00
10,900.00	90.28	0.93	7,685.46	3,453.22	-607.86	3,451.51	0.00	0.00	0.00
11,000.00	90.28	0.93	7,684.96	3,553.21	-606.23	3,551.50	0.00	0.00	0.00
11,100.00	90.28	0.93	7,684.46	3,653.19	-604.60	3,651.49	0.00	0.00	0.00
11,200.00	90.28	0.93	7,683.97	3,753.18	-602.97	3,751.48	0.00	0.00	0.00
11,300.00	90.28	0.93	7,683.47	3,853.16	-601.34	3,851.47	0.00	0.00	0.00
11,400.00	90.28	0.93	7,682.97	3,953.15	-599.71	3,951.46	0.00	0.00	0.00
11,500.00	90.28	0.93	7,682.48	4,053.13	-598.08	4,051.45	0.00	0.00	0.00
11,600.00	90.28	0.93	7,681.98	4,153.12	-596.45	4,151.44	0.00	0.00	0.00
11,700.00	90.28	0.93	7,681.48	4,253.10	-594.82	4,251.43	0.00	0.00	0.00
11,800.00	90.28	0.93	7,680.99	4,353.09	-593.18	4,351.42	0.00	0.00	0.00
11,900.00	90.28	0.93	7,680.49	4,453.08	-591.55	4,451.41	0.00	0.00	0.00
12,000.00	90.28	0.93	7,680.00	4,553.06	-589.92	4,551.40	0.00	0.00	0.00
12,100.00	90.28	0.93	7,679.50	4,653.05	-588.29	4,651.39	0.00	0.00	0.00
12,200.00	90.28	0.93	7,679.00	4,753.03	-586.66	4,751.37	0.00	0.00	0.00
12,300.00	90.28	0.93	7,678.51	4,853.02	-585.03	4,851.36	0.00	0.00	0.00
12,400.00	90.28	0.93	7,678.01	4,953.00	-583.40	4,951.35	0.00	0.00	0.00
12,500.00	90.28	0.93	7,677.51	5,052.99	-581.77	5,051.34	0.00	0.00	0.00
12,600.00	90.28	0.93	7,677.02	5,152.97	-580.14	5,151.33	0.00	0.00	0.00
12,700.00	90.28	0.93	7,676.52	5,252.96	-578.51	5,251.32	0.00	0.00	0.00
12,800.00	90.28	0.93	7,676.02	5,352.94	-576.88	5,351.31	0.00	0.00	0.00
12,900.00	90.28	0.93	7,675.53	5,452.93	-575.25	5,451.30	0.00	0.00	0.00
13,000.00	90.28	0.93	7,675.03	5,552.92	-573.62	5,551.29	0.00	0.00	0.00
13,100.00	90.28	0.93	7,674.53	5,652.90	-571.99	5,651.28	0.00	0.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well RANGER 7-13HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5129.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5129.00usft (Drilling Rig)
Site:	1N-67W-07 RANGER 18-7HZ PAD	North Reference:	True
Well:	RANGER 7-13HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-2		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
13,200.00	90.28	0.93	7,674.04	5,752.89	-570.36	5,751.27	0.00	0.00	0.00
13,300.00	90.28	0.93	7,673.54	5,852.87	-568.72	5,851.26	0.00	0.00	0.00
13,400.00	90.28	0.93	7,673.04	5,952.86	-567.09	5,951.25	0.00	0.00	0.00
13,500.00	90.28	0.93	7,672.55	6,052.84	-565.46	6,051.24	0.00	0.00	0.00
13,600.00	90.28	0.93	7,672.05	6,152.83	-563.83	6,151.23	0.00	0.00	0.00
13,700.00	90.28	0.93	7,671.55	6,252.81	-562.20	6,251.22	0.00	0.00	0.00
13,800.00	90.28	0.93	7,671.06	6,352.80	-560.57	6,351.21	0.00	0.00	0.00
13,900.00	90.28	0.93	7,670.56	6,452.78	-558.94	6,451.20	0.00	0.00	0.00
14,000.00	90.28	0.93	7,670.07	6,552.77	-557.31	6,551.19	0.00	0.00	0.00
14,100.00	90.28	0.93	7,669.57	6,652.76	-555.68	6,651.18	0.00	0.00	0.00
14,200.00	90.28	0.93	7,669.07	6,752.74	-554.05	6,751.17	0.00	0.00	0.00
14,300.00	90.28	0.93	7,668.58	6,852.73	-552.42	6,851.16	0.00	0.00	0.00
14,400.00	90.28	0.93	7,668.08	6,952.71	-550.79	6,951.15	0.00	0.00	0.00
14,500.00	90.28	0.93	7,667.58	7,052.70	-549.16	7,051.14	0.00	0.00	0.00
14,600.00	90.28	0.93	7,667.09	7,152.68	-547.53	7,151.13	0.00	0.00	0.00
14,700.00	90.28	0.93	7,666.59	7,252.67	-545.90	7,251.12	0.00	0.00	0.00
14,800.00	90.28	0.93	7,666.09	7,352.65	-544.26	7,351.11	0.00	0.00	0.00
14,900.00	90.28	0.93	7,665.60	7,452.64	-542.63	7,451.10	0.00	0.00	0.00
15,000.00	90.28	0.93	7,665.10	7,552.63	-541.00	7,551.08	0.00	0.00	0.00
15,100.00	90.28	0.93	7,664.60	7,652.61	-539.37	7,651.07	0.00	0.00	0.00
15,200.00	90.28	0.93	7,664.11	7,752.60	-537.74	7,751.06	0.00	0.00	0.00
15,300.00	90.28	0.93	7,663.61	7,852.58	-536.11	7,851.05	0.00	0.00	0.00
15,400.00	90.28	0.93	7,663.11	7,952.57	-534.48	7,951.04	0.00	0.00	0.00
15,500.00	90.28	0.93	7,662.62	8,052.55	-532.85	8,051.03	0.00	0.00	0.00
15,600.00	90.28	0.93	7,662.12	8,152.54	-531.22	8,151.02	0.00	0.00	0.00
15,700.00	90.28	0.93	7,661.62	8,252.52	-529.59	8,251.01	0.00	0.00	0.00
15,800.00	90.28	0.93	7,661.13	8,352.51	-527.96	8,351.00	0.00	0.00	0.00
15,900.00	90.28	0.93	7,660.63	8,452.49	-526.33	8,450.99	0.00	0.00	0.00
16,000.00	90.28	0.93	7,660.13	8,552.48	-524.70	8,550.98	0.00	0.00	0.00
16,100.00	90.28	0.93	7,659.64	8,652.47	-523.07	8,650.97	0.00	0.00	0.00
16,200.00	90.28	0.93	7,659.14	8,752.45	-521.44	8,750.96	0.00	0.00	0.00
16,300.00	90.28	0.93	7,658.65	8,852.44	-519.80	8,850.95	0.00	0.00	0.00
16,400.00	90.28	0.93	7,658.15	8,952.42	-518.17	8,950.94	0.00	0.00	0.00
16,500.00	90.28	0.93	7,657.65	9,052.41	-516.54	9,050.93	0.00	0.00	0.00
16,600.00	90.28	0.93	7,657.16	9,152.39	-514.91	9,150.92	0.00	0.00	0.00
16,700.00	90.28	0.93	7,656.66	9,252.38	-513.28	9,250.91	0.00	0.00	0.00
16,800.00	90.28	0.93	7,656.16	9,352.36	-511.65	9,350.90	0.00	0.00	0.00
16,900.00	90.28	0.93	7,655.67	9,452.35	-510.02	9,450.89	0.00	0.00	0.00
16,901.25	90.28	0.93	7,655.66	9,453.60	-510.00	9,452.14	0.00	0.00	0.00
Begin Turn to BHL @ 16901.25ft									
17,000.00	90.28	359.45	7,655.17	9,552.34	-509.67	9,550.88	1.50	0.00	-1.50
17,100.00	90.28	357.95	7,654.67	9,652.31	-511.93	9,650.85	1.50	0.00	-1.50
17,200.00	90.28	356.45	7,654.18	9,752.19	-516.81	9,750.71	1.50	0.00	-1.50
17,231.87	90.28	355.98	7,654.02	9,783.99	-518.91	9,782.50	1.50	0.00	-1.50
End Turn @ 17231.87ft									
17,300.00	90.28	355.98	7,653.68	9,851.95	-523.70	9,850.45	0.00	0.00	0.00
17,400.00	90.28	355.98	7,653.19	9,951.70	-530.71	9,950.18	0.00	0.00	0.00
17,500.00	90.28	355.98	7,652.69	10,051.46	-537.73	10,049.92	0.00	0.00	0.00
17,600.00	90.28	355.98	7,652.20	10,151.21	-544.75	10,149.65	0.00	0.00	0.00
17,700.00	90.28	355.98	7,651.70	10,250.96	-551.77	10,249.38	0.00	0.00	0.00
17,800.00	90.28	355.98	7,651.21	10,350.71	-558.79	10,349.11	0.00	0.00	0.00
17,900.00	90.28	355.98	7,650.71	10,450.47	-565.81	10,448.84	0.00	0.00	0.00
18,000.00	90.28	355.98	7,650.22	10,550.22	-572.83	10,548.58	0.00	0.00	0.00
18,100.00	90.28	355.98	7,649.72	10,649.97	-579.85	10,648.31	0.00	0.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well RANGER 7-13HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5129.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5129.00usft (Drilling Rig)
Site:	1N-67W-07 RANGER 18-7HZ PAD	North Reference:	True
Well:	RANGER 7-13HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-2		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
18,200.00	90.28	355.98	7,649.23	10,749.72	-586.87	10,748.04	0.00	0.00	0.00	
18,300.00	90.28	355.98	7,648.73	10,849.47	-593.89	10,847.77	0.00	0.00	0.00	
18,400.00	90.28	355.98	7,648.24	10,949.23	-600.90	10,947.51	0.00	0.00	0.00	
18,500.00	90.28	355.98	7,647.74	11,048.98	-607.92	11,047.24	0.00	0.00	0.00	
18,600.00	90.28	355.98	7,647.25	11,148.73	-614.94	11,146.97	0.00	0.00	0.00	
18,700.00	90.28	355.98	7,646.75	11,248.48	-621.96	11,246.70	0.00	0.00	0.00	
18,800.00	90.28	355.98	7,646.26	11,348.23	-628.98	11,346.43	0.00	0.00	0.00	
18,852.00	90.28	355.98	7,646.00	11,400.10	-632.63	11,398.29	0.00	0.00	0.00	
TD Well @ 18852.00ft										

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,514.81	1,500.00	9 5/8" Csg	9-5/8	13-1/2	
8,171.84	7,699.00	Top of Production	5-1/2	7-7/8	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,302.85	1,292.00	Fox Hills				
4,348.47	4,288.00	Parkman				
4,727.47	4,667.00	Sussex				
7,522.42	7,427.00	Sharon Springs				
7,624.06	7,502.00	Niobrara				
7,745.85	7,578.00	Nio B				
7,943.42	7,664.00	Nio C				

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
230.00	230.00	0.00	0.00	Begin Nudge @ 230.00ft	
970.00	965.38	0.62	-71.45	End Nudge @ 970.00ft	
3,770.00	3,713.00	5.33	-610.50	Begin Drop @ 3770.00ft	
4,325.00	4,264.53	5.80	-664.09	End Drop @ 4325.00ft	
7,043.28	6,982.81	5.80	-664.09	KOP @ 7043.28ft :: DLS = 8°/100'	
8,171.84	7,699.00	725.45	-652.35	End Build @ 8171.84ft	
16,901.25	7,655.66	9,453.60	-510.00	Begin Turn to BHL @ 16901.25ft	
17,231.87	7,654.02	9,783.99	-518.91	End Turn @ 17231.87ft	
18,852.00	7,646.00	11,400.10	-632.63	TD Well @ 18852.00ft	