

US ROCKIES WATTENBERG PLANNING

**WELD-NAD83-UTMFT13N
3N-66W-21 SARCHET 35-21HZ PAD
SARCHET 21-5HZ**

Plan A

Plan: Permit Rev-1

SHL Lat/Long: 40.204744/-104.790394
Survey Program: MWD+IFR

Standard Planning Report

11 September, 2018

Project: WELD-NAD83-UTMFT13N
 Site: 3N-66W-21 SARCHET 35-21HZ PAD
 Well: SARCHET 21-5HZ
 Wellbore: Plan A
 Design: Permit Rev-1

US ROCKIES WATTENBERG PLANNING

CASING DETAILS		
TVD	MD	Size
1500.00	1521.21	9-5/8
7305.00	8040.21	5-1/2

WELL DETAILS: SARCHET 21-5HZ
 GL = 4983.00
 RKB = 17' @ 5000.00usft (Drilling Rig)

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	V Sect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	290.00	0.00	0.00	290.00	0.00	0.00	0.00	0.00	0.00	
3	1905.33	24.23	135.00	1857.61	-237.94	237.94	1.50	135.00	-237.52	
4	4705.33	24.23	135.00	4410.95	-1050.49	1050.49	0.00	0.00	-1048.66	
5	5916.83	0.00	0.00	5586.66	-1228.95	1228.95	2.00	-180.00	-1226.80	
6	6918.99	0.00	0.00	6588.82	-1228.95	1228.95	0.00	0.00	-1226.80	
7	8040.21	89.70	0.10	7305.00	-516.53	1230.17	8.00	0.10	-514.38	
8	18470.52	89.70	0.10	7360.00	9913.62	1248.06	0.00	0.00	9915.78	SARCHET 21-5HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
SARCHET 21-5HZ_SHL	0.00	0.00	0.00	40.204744	-104.790394
SARCHET 21-5HZ_BHL	7360.00	9913.62	1248.06	40.231967	-104.785922

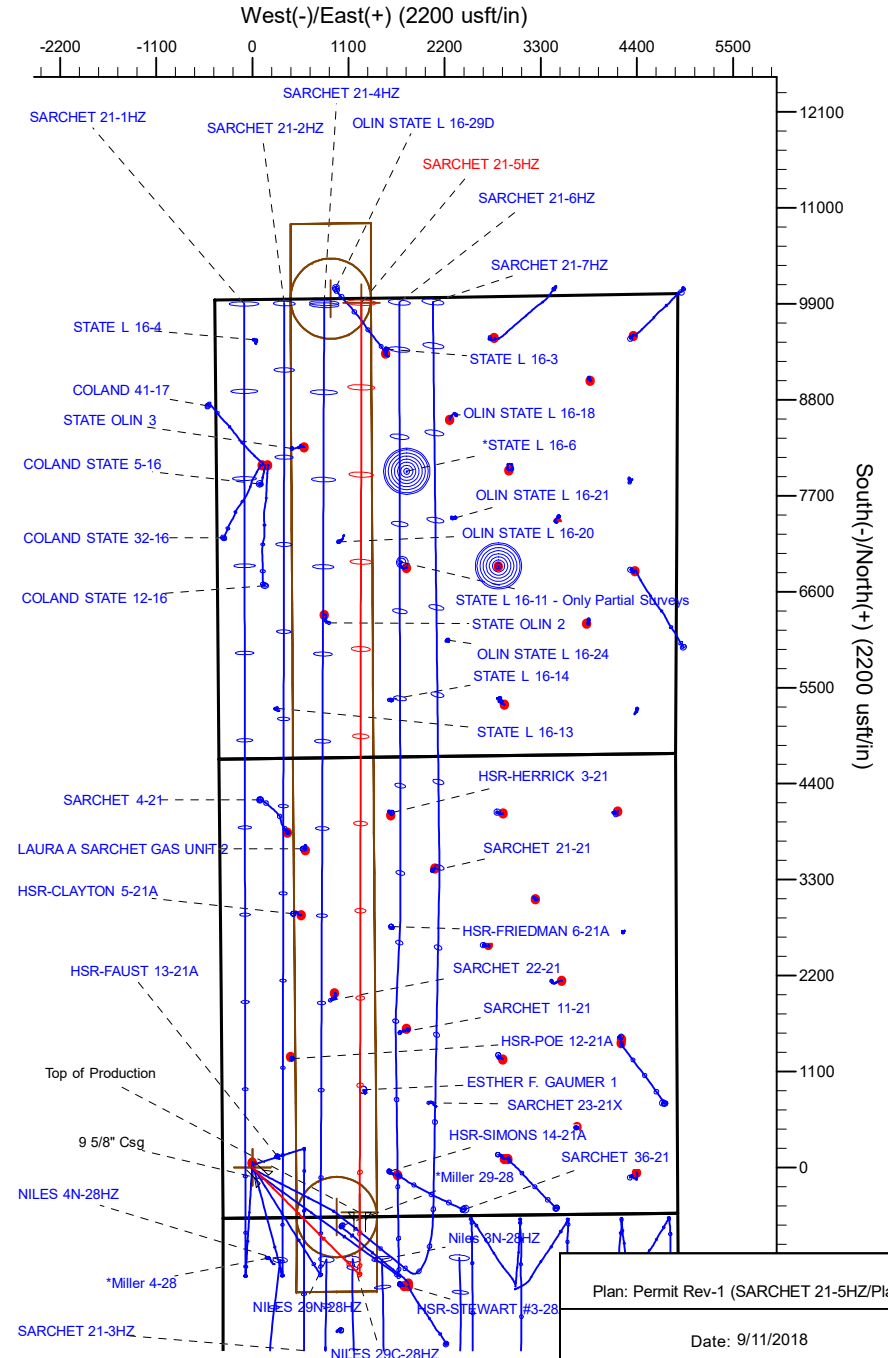
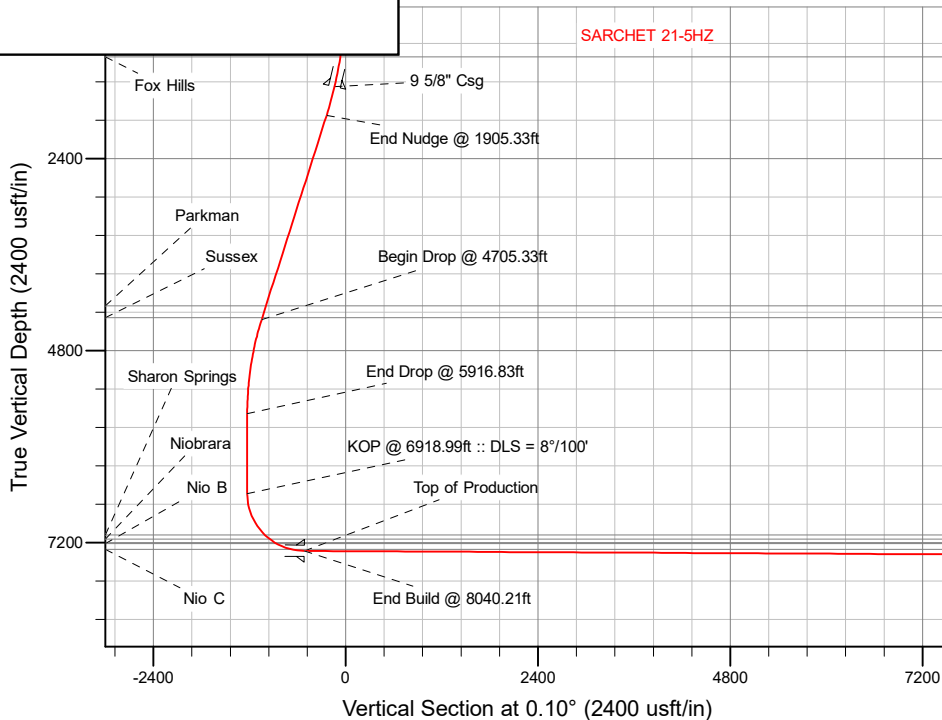
FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1125.00	1131.80	Fox Hills
4240.00	4517.87	Parkman
4388.00	4680.17	Sussex
7107.00	7498.31	Sharon Springs
7159.00	7578.51	Niobrara
7211.00	7672.88	Nio B
7283.00	7865.96	Nio C

SHL
580' FSL
340' FWL

HEEL
50' FSL
1565' FWL

TOE
50' FNL
1677' FWL



Plan: Permit Rev-1 (SARCHET 21-5HZ/Plan A)
 Date: 9/11/2018

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well SARCHET 21-5HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5000.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5000.00usft (Drilling Rig)
Site:	3N-66W-21 SARCHET 35-21HZ PAD	North Reference:	True
Well:	SARCHET 21-5HZ	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-66W-21 SARCHET 35-21HZ PAD			
Site Position:		Northing:	14,601,419.55 usft
From:	Lat/Long	Easting:	1,698,941.77 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	40.204909
		Longitude:	-104.790392
		Grid Convergence:	0.14 °

Well SARCHET 21-5HZ			
Well Position	+N-S	-60.09 usft	Northing: 14,601,359.46 usft
	+E-W	-0.56 usft	Easting: 1,698,941.35 usft
Position Uncertainty		3.28 usft	Wellhead Elevation:
			Latitude: 40.204744
			Longitude: -104.790394
			Ground Level: 4,983.00 usft

Wellbore Plan A					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	9/5/2018	8.08	66.66	52,147.90831066

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	0.10

Plan Survey Tool Program		Date	9/9/2018		
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+II Fixed:v2:crustal field declinatio	
2	1,500.00	18,470.52	Permit Rev-1 (Plan A)	APC_ISCWSA REV 2 MWD+II Fixed:v2:crustal field declinatio	

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Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5000.00usft (Drilling Rig)
Site:	3N-66W-21 SARCHET 35-21HZ PAD	North Reference:	True
Well:	SARCHET 21-5HZ	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	
290.00	0.00	0.00	290.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,905.33	24.23	135.00	1,857.61	-237.94	237.94	1.50	1.50	0.00	135.00	
4,705.33	24.23	135.00	4,410.95	-1,050.49	1,050.49	0.00	0.00	0.00	0.00	
5,916.83	0.00	0.00	5,586.66	-1,228.95	1,228.95	2.00	-2.00	-11.14	-180.00	
6,918.99	0.00	0.00	6,588.82	-1,228.95	1,228.95	0.00	0.00	0.00	0.00	
8,040.21	89.70	0.10	7,305.00	-516.53	1,230.17	8.00	8.00	0.01	0.10	
18,470.52	89.70	0.10	7,360.00	9,913.62	1,248.06	0.00	0.00	0.00	0.00	SARCHET 21-5HZ_B

Corporate Planning Report

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Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5000.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5000.00usft (Drilling Rig)
Site:	3N-66W-21 SARCHET 35-21HZ PAD	North Reference:	True
Well:	SARCHET 21-5HZ	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	0.00
100.00	0.00	0.00	100.00	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	0.00
290.00	0.00	0.00	290.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge @ 290.00ft										
300.00	0.15	135.00	300.00	-0.01	0.01	-0.01	1.50	1.50	0.00	
400.00	1.65	135.00	399.98	-1.12	1.12	-1.12	1.50	1.50	0.00	
500.00	3.15	135.00	499.89	-4.08	4.08	-4.07	1.50	1.50	0.00	
600.00	4.65	135.00	599.66	-8.89	8.89	-8.87	1.50	1.50	0.00	
700.00	6.15	135.00	699.21	-15.54	15.54	-15.52	1.50	1.50	0.00	
800.00	7.65	135.00	798.49	-24.04	24.04	-24.00	1.50	1.50	0.00	
900.00	9.15	135.00	897.41	-34.37	34.37	-34.31	1.50	1.50	0.00	
1,000.00	10.65	135.00	995.92	-46.53	46.53	-46.44	1.50	1.50	0.00	
1,100.00	12.15	135.00	1,093.94	-60.50	60.50	-60.40	1.50	1.50	0.00	
1,131.80	12.63	135.00	1,125.00	-65.33	65.33	-65.21	1.50	1.50	0.00	
Fox Hills										
1,200.00	13.65	135.00	1,191.42	-76.29	76.29	-76.15	1.50	1.50	0.00	
1,300.00	15.15	135.00	1,288.27	-93.87	93.87	-93.71	1.50	1.50	0.00	
1,400.00	16.65	135.00	1,384.44	-113.24	113.24	-113.05	1.50	1.50	0.00	
1,500.00	18.15	135.00	1,479.86	-134.39	134.39	-134.15	1.50	1.50	0.00	
1,521.21	18.47	135.00	1,500.00	-139.10	139.10	-138.86	1.50	1.50	0.00	
9 5/8" Csg										
1,600.00	19.65	135.00	1,574.47	-157.29	157.29	-157.02	1.50	1.50	0.00	
1,700.00	21.15	135.00	1,668.20	-181.94	181.94	-181.62	1.50	1.50	0.00	
1,800.00	22.65	135.00	1,760.98	-208.31	208.31	-207.95	1.50	1.50	0.00	
1,900.00	24.15	135.00	1,852.75	-236.39	236.39	-235.98	1.50	1.50	0.00	
1,905.33	24.23	135.00	1,857.61	-237.94	237.94	-237.52	1.50	1.50	0.00	
End Nudge @ 1905.33ft										
2,000.00	24.23	135.00	1,943.94	-265.41	265.41	-264.95	0.00	0.00	0.00	
2,100.00	24.23	135.00	2,035.13	-294.43	294.43	-293.92	0.00	0.00	0.00	
2,200.00	24.23	135.00	2,126.32	-323.45	323.45	-322.89	0.00	0.00	0.00	
2,300.00	24.23	135.00	2,217.51	-352.47	352.47	-351.85	0.00	0.00	0.00	
2,400.00	24.23	135.00	2,308.70	-381.49	381.49	-380.82	0.00	0.00	0.00	
2,500.00	24.23	135.00	2,399.89	-410.51	410.51	-409.79	0.00	0.00	0.00	
2,600.00	24.23	135.00	2,491.08	-439.53	439.53	-438.76	0.00	0.00	0.00	
2,700.00	24.23	135.00	2,582.28	-468.55	468.55	-467.73	0.00	0.00	0.00	
2,800.00	24.23	135.00	2,673.47	-497.57	497.57	-496.70	0.00	0.00	0.00	
2,900.00	24.23	135.00	2,764.66	-526.59	526.59	-525.67	0.00	0.00	0.00	
3,000.00	24.23	135.00	2,855.85	-555.61	555.61	-554.64	0.00	0.00	0.00	
3,100.00	24.23	135.00	2,947.04	-584.63	584.63	-583.61	0.00	0.00	0.00	
3,200.00	24.23	135.00	3,038.23	-613.65	613.65	-612.58	0.00	0.00	0.00	
3,300.00	24.23	135.00	3,129.42	-642.67	642.67	-641.54	0.00	0.00	0.00	
3,400.00	24.23	135.00	3,220.61	-671.69	671.69	-670.51	0.00	0.00	0.00	
3,500.00	24.23	135.00	3,311.80	-700.71	700.71	-699.48	0.00	0.00	0.00	
3,600.00	24.23	135.00	3,402.99	-729.73	729.73	-728.45	0.00	0.00	0.00	
3,700.00	24.23	135.00	3,494.18	-758.75	758.75	-757.42	0.00	0.00	0.00	
3,800.00	24.23	135.00	3,585.37	-787.77	787.77	-786.39	0.00	0.00	0.00	
3,900.00	24.23	135.00	3,676.56	-816.79	816.79	-815.36	0.00	0.00	0.00	
4,000.00	24.23	135.00	3,767.75	-845.81	845.81	-844.33	0.00	0.00	0.00	
4,100.00	24.23	135.00	3,858.94	-874.82	874.82	-873.30	0.00	0.00	0.00	
4,200.00	24.23	135.00	3,950.13	-903.84	903.84	-902.27	0.00	0.00	0.00	
4,300.00	24.23	135.00	4,041.32	-932.86	932.86	-931.23	0.00	0.00	0.00	
4,400.00	24.23	135.00	4,132.51	-961.88	961.88	-960.20	0.00	0.00	0.00	
4,500.00	24.23	135.00	4,223.71	-990.90	990.90	-989.17	0.00	0.00	0.00	

Corporate Planning Report

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Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5000.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5000.00usft (Drilling Rig)
Site:	3N-66W-21 SARCHET 35-21HZ PAD	North Reference:	True
Well:	SARCHET 21-5HZ	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)
4,517.87	24.23	135.00	4,240.00	-996.09	996.09	-994.35	0.00	0.00	0.00
Parkman									
4,600.00	24.23	135.00	4,314.90	-1,019.92	1,019.92	-1,018.14	0.00	0.00	0.00
4,680.17	24.23	135.00	4,388.00	-1,043.19	1,043.19	-1,041.37	0.00	0.00	0.00
Sussex									
4,700.00	24.23	135.00	4,406.09	-1,048.94	1,048.94	-1,047.11	0.00	0.00	0.00
4,705.33	24.23	135.00	4,410.95	-1,050.49	1,050.49	-1,048.66	0.00	0.00	0.00
Begin Drop @ 4705.33ft									
4,800.00	22.34	135.00	4,497.90	-1,076.95	1,076.95	-1,075.07	2.00	-2.00	0.00
4,900.00	20.34	135.00	4,591.04	-1,102.68	1,102.68	-1,100.75	2.00	-2.00	0.00
5,000.00	18.34	135.00	4,685.40	-1,126.09	1,126.09	-1,124.12	2.00	-2.00	0.00
5,100.00	16.34	135.00	4,780.85	-1,147.16	1,147.16	-1,145.15	2.00	-2.00	0.00
5,200.00	14.34	135.00	4,877.28	-1,165.86	1,165.86	-1,163.82	2.00	-2.00	0.00
5,300.00	12.34	135.00	4,974.58	-1,182.17	1,182.17	-1,180.10	2.00	-2.00	0.00
5,400.00	10.34	135.00	5,072.63	-1,196.07	1,196.07	-1,193.98	2.00	-2.00	0.00
5,500.00	8.34	135.00	5,171.30	-1,207.54	1,207.54	-1,205.43	2.00	-2.00	0.00
5,600.00	6.34	135.00	5,270.47	-1,216.57	1,216.57	-1,214.44	2.00	-2.00	0.00
5,700.00	4.34	135.00	5,370.03	-1,223.15	1,223.15	-1,221.01	2.00	-2.00	0.00
5,800.00	2.34	135.00	5,469.86	-1,227.26	1,227.26	-1,225.12	2.00	-2.00	0.00
5,900.00	0.34	135.00	5,569.83	-1,228.91	1,228.91	-1,226.76	2.00	-2.00	0.00
5,916.83	0.00	0.00	5,586.66	-1,228.95	1,228.95	-1,226.80	2.00	-2.00	-801.98
End Drop @ 5916.83ft									
6,000.00	0.00	0.00	5,669.83	-1,228.95	1,228.95	-1,226.80	0.00	0.00	0.00
6,100.00	0.00	0.00	5,769.83	-1,228.95	1,228.95	-1,226.80	0.00	0.00	0.00
6,200.00	0.00	0.00	5,869.83	-1,228.95	1,228.95	-1,226.80	0.00	0.00	0.00
6,300.00	0.00	0.00	5,969.83	-1,228.95	1,228.95	-1,226.80	0.00	0.00	0.00
6,400.00	0.00	0.00	6,069.83	-1,228.95	1,228.95	-1,226.80	0.00	0.00	0.00
6,500.00	0.00	0.00	6,169.83	-1,228.95	1,228.95	-1,226.80	0.00	0.00	0.00
6,600.00	0.00	0.00	6,269.83	-1,228.95	1,228.95	-1,226.80	0.00	0.00	0.00
6,700.00	0.00	0.00	6,369.83	-1,228.95	1,228.95	-1,226.80	0.00	0.00	0.00
6,800.00	0.00	0.00	6,469.83	-1,228.95	1,228.95	-1,226.80	0.00	0.00	0.00
6,900.00	0.00	0.00	6,569.83	-1,228.95	1,228.95	-1,226.80	0.00	0.00	0.00
6,918.99	0.00	0.00	6,588.82	-1,228.95	1,228.95	-1,226.80	0.00	0.00	0.00
KOP @ 6918.99ft :: DLS = 8°/100'									
7,000.00	6.48	0.10	6,669.65	-1,224.37	1,228.95	-1,222.22	8.00	8.00	0.12
7,100.00	14.48	0.10	6,767.91	-1,206.19	1,228.98	-1,204.05	8.00	8.00	0.00
7,200.00	22.48	0.10	6,862.67	-1,174.52	1,229.04	-1,172.37	8.00	8.00	0.00
7,300.00	30.48	0.10	6,952.11	-1,129.97	1,229.12	-1,127.82	8.00	8.00	0.00
7,400.00	38.48	0.10	7,034.47	-1,073.40	1,229.21	-1,071.25	8.00	8.00	0.00
7,498.31	46.35	0.10	7,107.00	-1,007.14	1,229.33	-1,004.99	8.00	8.00	0.00
Sharon Springs									
7,500.00	46.48	0.10	7,108.16	-1,005.92	1,229.33	-1,003.77	8.00	8.00	0.00
7,578.51	52.76	0.10	7,159.00	-946.14	1,229.43	-943.99	8.00	8.00	0.00
Niobrara									
7,600.00	54.48	0.10	7,171.75	-928.84	1,229.46	-926.69	8.00	8.00	0.00
7,672.88	60.31	0.10	7,211.00	-867.47	1,229.57	-865.32	8.00	8.00	0.00
Nio B									
7,700.00	62.48	0.10	7,223.98	-843.66	1,229.61	-841.52	8.00	8.00	0.00
7,800.00	70.48	0.10	7,263.85	-752.05	1,229.76	-749.90	8.00	8.00	0.00
7,865.96	75.76	0.10	7,283.00	-688.96	1,229.87	-686.81	8.00	8.00	0.00
Nio C									
7,900.00	78.48	0.10	7,290.59	-655.77	1,229.93	-653.62	8.00	8.00	0.00
8,000.00	86.48	0.10	7,303.66	-556.71	1,230.10	-554.56	8.00	8.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well SARCHET 21-5HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5000.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5000.00usft (Drilling Rig)
Site:	3N-66W-21 SARCHET 35-21HZ PAD	North Reference:	True
Well:	SARCHET 21-5HZ	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)	
8,040.21	89.70	0.10	7,305.00	-516.53	1,230.17	-514.38	8.00	8.00	0.00	
End Build @ 8040.21ft - Top of Production										
8,100.00	89.70	0.10	7,305.32	-456.74	1,230.27	-454.59	0.00	0.00	0.00	
8,200.00	89.70	0.10	7,305.85	-356.74	1,230.44	-354.59	0.00	0.00	0.00	
8,300.00	89.70	0.10	7,306.37	-256.74	1,230.61	-254.59	0.00	0.00	0.00	
8,400.00	89.70	0.10	7,306.90	-156.74	1,230.78	-154.60	0.00	0.00	0.00	
8,500.00	89.70	0.10	7,307.43	-56.75	1,230.96	-54.60	0.00	0.00	0.00	
8,600.00	89.70	0.10	7,307.96	43.25	1,231.13	45.40	0.00	0.00	0.00	
8,700.00	89.70	0.10	7,308.48	143.25	1,231.30	145.40	0.00	0.00	0.00	
8,800.00	89.70	0.10	7,309.01	243.25	1,231.47	245.40	0.00	0.00	0.00	
8,900.00	89.70	0.10	7,309.54	343.25	1,231.64	345.40	0.00	0.00	0.00	
9,000.00	89.70	0.10	7,310.07	443.25	1,231.81	445.40	0.00	0.00	0.00	
9,100.00	89.70	0.10	7,310.59	543.24	1,231.99	545.39	0.00	0.00	0.00	
9,200.00	89.70	0.10	7,311.12	643.24	1,232.16	645.39	0.00	0.00	0.00	
9,300.00	89.70	0.10	7,311.65	743.24	1,232.33	745.39	0.00	0.00	0.00	
9,400.00	89.70	0.10	7,312.17	843.24	1,232.50	845.39	0.00	0.00	0.00	
9,500.00	89.70	0.10	7,312.70	943.24	1,232.67	945.39	0.00	0.00	0.00	
9,600.00	89.70	0.10	7,313.23	1,043.24	1,232.84	1,045.39	0.00	0.00	0.00	
9,700.00	89.70	0.10	7,313.76	1,143.24	1,233.02	1,145.39	0.00	0.00	0.00	
9,800.00	89.70	0.10	7,314.28	1,243.23	1,233.19	1,245.38	0.00	0.00	0.00	
9,900.00	89.70	0.10	7,314.81	1,343.23	1,233.36	1,345.38	0.00	0.00	0.00	
10,000.00	89.70	0.10	7,315.34	1,443.23	1,233.53	1,445.38	0.00	0.00	0.00	
10,100.00	89.70	0.10	7,315.87	1,543.23	1,233.70	1,545.38	0.00	0.00	0.00	
10,200.00	89.70	0.10	7,316.39	1,643.23	1,233.87	1,645.38	0.00	0.00	0.00	
10,300.00	89.70	0.10	7,316.92	1,743.23	1,234.04	1,745.38	0.00	0.00	0.00	
10,400.00	89.70	0.10	7,317.45	1,843.22	1,234.22	1,845.38	0.00	0.00	0.00	
10,500.00	89.70	0.10	7,317.97	1,943.22	1,234.39	1,945.37	0.00	0.00	0.00	
10,600.00	89.70	0.10	7,318.50	2,043.22	1,234.56	2,045.37	0.00	0.00	0.00	
10,700.00	89.70	0.10	7,319.03	2,143.22	1,234.73	2,145.37	0.00	0.00	0.00	
10,800.00	89.70	0.10	7,319.56	2,243.22	1,234.90	2,245.37	0.00	0.00	0.00	
10,900.00	89.70	0.10	7,320.08	2,343.22	1,235.07	2,345.37	0.00	0.00	0.00	
11,000.00	89.70	0.10	7,320.61	2,443.22	1,235.25	2,445.37	0.00	0.00	0.00	
11,100.00	89.70	0.10	7,321.14	2,543.21	1,235.42	2,545.37	0.00	0.00	0.00	
11,200.00	89.70	0.10	7,321.67	2,643.21	1,235.59	2,645.37	0.00	0.00	0.00	
11,300.00	89.70	0.10	7,322.19	2,743.21	1,235.76	2,745.36	0.00	0.00	0.00	
11,400.00	89.70	0.10	7,322.72	2,843.21	1,235.93	2,845.36	0.00	0.00	0.00	
11,500.00	89.70	0.10	7,323.25	2,943.21	1,236.10	2,945.36	0.00	0.00	0.00	
11,600.00	89.70	0.10	7,323.77	3,043.21	1,236.28	3,045.36	0.00	0.00	0.00	
11,700.00	89.70	0.10	7,324.30	3,143.20	1,236.45	3,145.36	0.00	0.00	0.00	
11,800.00	89.70	0.10	7,324.83	3,243.20	1,236.62	3,245.36	0.00	0.00	0.00	
11,900.00	89.70	0.10	7,325.36	3,343.20	1,236.79	3,345.36	0.00	0.00	0.00	
12,000.00	89.70	0.10	7,325.88	3,443.20	1,236.96	3,445.35	0.00	0.00	0.00	
12,100.00	89.70	0.10	7,326.41	3,543.20	1,237.13	3,545.35	0.00	0.00	0.00	
12,200.00	89.70	0.10	7,326.94	3,643.20	1,237.30	3,645.35	0.00	0.00	0.00	
12,300.00	89.70	0.10	7,327.47	3,743.20	1,237.48	3,745.35	0.00	0.00	0.00	
12,400.00	89.70	0.10	7,327.99	3,843.19	1,237.65	3,845.35	0.00	0.00	0.00	
12,500.00	89.70	0.10	7,328.52	3,943.19	1,237.82	3,945.35	0.00	0.00	0.00	
12,600.00	89.70	0.10	7,329.05	4,043.19	1,237.99	4,045.35	0.00	0.00	0.00	
12,700.00	89.70	0.10	7,329.57	4,143.19	1,238.16	4,145.34	0.00	0.00	0.00	
12,800.00	89.70	0.10	7,330.10	4,243.19	1,238.33	4,245.34	0.00	0.00	0.00	
12,900.00	89.70	0.10	7,330.63	4,343.19	1,238.51	4,345.34	0.00	0.00	0.00	
13,000.00	89.70	0.10	7,331.16	4,443.18	1,238.68	4,445.34	0.00	0.00	0.00	
13,100.00	89.70	0.10	7,331.68	4,543.18	1,238.85	4,545.34	0.00	0.00	0.00	

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well SARCHET 21-5HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5000.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5000.00usft (Drilling Rig)
Site:	3N-66W-21 SARCHET 35-21HZ PAD	North Reference:	True
Well:	SARCHET 21-5HZ	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)
13,200.00	89.70	0.10	7,332.21	4,643.18	1,239.02	4,645.34	0.00	0.00	0.00
13,300.00	89.70	0.10	7,332.74	4,743.18	1,239.19	4,745.34	0.00	0.00	0.00
13,400.00	89.70	0.10	7,333.27	4,843.18	1,239.36	4,845.33	0.00	0.00	0.00
13,500.00	89.70	0.10	7,333.79	4,943.18	1,239.54	4,945.33	0.00	0.00	0.00
13,600.00	89.70	0.10	7,334.32	5,043.18	1,239.71	5,045.33	0.00	0.00	0.00
13,700.00	89.70	0.10	7,334.85	5,143.17	1,239.88	5,145.33	0.00	0.00	0.00
13,800.00	89.70	0.10	7,335.37	5,243.17	1,240.05	5,245.33	0.00	0.00	0.00
13,900.00	89.70	0.10	7,335.90	5,343.17	1,240.22	5,345.33	0.00	0.00	0.00
14,000.00	89.70	0.10	7,336.43	5,443.17	1,240.39	5,445.33	0.00	0.00	0.00
14,100.00	89.70	0.10	7,336.96	5,543.17	1,240.56	5,545.32	0.00	0.00	0.00
14,200.00	89.70	0.10	7,337.48	5,643.17	1,240.74	5,645.32	0.00	0.00	0.00
14,300.00	89.70	0.10	7,338.01	5,743.16	1,240.91	5,745.32	0.00	0.00	0.00
14,400.00	89.70	0.10	7,338.54	5,843.16	1,241.08	5,845.32	0.00	0.00	0.00
14,500.00	89.70	0.10	7,339.07	5,943.16	1,241.25	5,945.32	0.00	0.00	0.00
14,600.00	89.70	0.10	7,339.59	6,043.16	1,241.42	6,045.32	0.00	0.00	0.00
14,700.00	89.70	0.10	7,340.12	6,143.16	1,241.59	6,145.32	0.00	0.00	0.00
14,800.00	89.70	0.10	7,340.65	6,243.16	1,241.77	6,245.32	0.00	0.00	0.00
14,900.00	89.70	0.10	7,341.17	6,343.16	1,241.94	6,345.31	0.00	0.00	0.00
15,000.00	89.70	0.10	7,341.70	6,443.15	1,242.11	6,445.31	0.00	0.00	0.00
15,100.00	89.70	0.10	7,342.23	6,543.15	1,242.28	6,545.31	0.00	0.00	0.00
15,200.00	89.70	0.10	7,342.76	6,643.15	1,242.45	6,645.31	0.00	0.00	0.00
15,300.00	89.70	0.10	7,343.28	6,743.15	1,242.62	6,745.31	0.00	0.00	0.00
15,400.00	89.70	0.10	7,343.81	6,843.15	1,242.80	6,845.31	0.00	0.00	0.00
15,500.00	89.70	0.10	7,344.34	6,943.15	1,242.97	6,945.31	0.00	0.00	0.00
15,600.00	89.70	0.10	7,344.86	7,043.15	1,243.14	7,045.30	0.00	0.00	0.00
15,700.00	89.70	0.10	7,345.39	7,143.14	1,243.31	7,145.30	0.00	0.00	0.00
15,800.00	89.70	0.10	7,345.92	7,243.14	1,243.48	7,245.30	0.00	0.00	0.00
15,900.00	89.70	0.10	7,346.45	7,343.14	1,243.65	7,345.30	0.00	0.00	0.00
16,000.00	89.70	0.10	7,346.97	7,443.14	1,243.82	7,445.30	0.00	0.00	0.00
16,100.00	89.70	0.10	7,347.50	7,543.14	1,244.00	7,545.30	0.00	0.00	0.00
16,200.00	89.70	0.10	7,348.03	7,643.14	1,244.17	7,645.30	0.00	0.00	0.00
16,300.00	89.70	0.10	7,348.56	7,743.13	1,244.34	7,745.29	0.00	0.00	0.00
16,400.00	89.70	0.10	7,349.08	7,843.13	1,244.51	7,845.29	0.00	0.00	0.00
16,500.00	89.70	0.10	7,349.61	7,943.13	1,244.68	7,945.29	0.00	0.00	0.00
16,600.00	89.70	0.10	7,350.14	8,043.13	1,244.85	8,045.29	0.00	0.00	0.00
16,700.00	89.70	0.10	7,350.66	8,143.13	1,245.03	8,145.29	0.00	0.00	0.00
16,800.00	89.70	0.10	7,351.19	8,243.13	1,245.20	8,245.29	0.00	0.00	0.00
16,900.00	89.70	0.10	7,351.72	8,343.13	1,245.37	8,345.29	0.00	0.00	0.00
17,000.00	89.70	0.10	7,352.25	8,443.12	1,245.54	8,445.28	0.00	0.00	0.00
17,100.00	89.70	0.10	7,352.77	8,543.12	1,245.71	8,545.28	0.00	0.00	0.00
17,200.00	89.70	0.10	7,353.30	8,643.12	1,245.88	8,645.28	0.00	0.00	0.00
17,300.00	89.70	0.10	7,353.83	8,743.12	1,246.06	8,745.28	0.00	0.00	0.00
17,400.00	89.70	0.10	7,354.36	8,843.12	1,246.23	8,845.28	0.00	0.00	0.00
17,500.00	89.70	0.10	7,354.88	8,943.12	1,246.40	8,945.28	0.00	0.00	0.00
17,600.00	89.70	0.10	7,355.41	9,043.11	1,246.57	9,045.28	0.00	0.00	0.00
17,700.00	89.70	0.10	7,355.94	9,143.11	1,246.74	9,145.27	0.00	0.00	0.00
17,800.00	89.70	0.10	7,356.46	9,243.11	1,246.91	9,245.27	0.00	0.00	0.00
17,900.00	89.70	0.10	7,356.99	9,343.11	1,247.08	9,345.27	0.00	0.00	0.00
18,000.00	89.70	0.10	7,357.52	9,443.11	1,247.26	9,445.27	0.00	0.00	0.00
18,100.00	89.70	0.10	7,358.05	9,543.11	1,247.43	9,545.27	0.00	0.00	0.00
18,200.00	89.70	0.10	7,358.57	9,643.11	1,247.60	9,645.27	0.00	0.00	0.00
18,300.00	89.70	0.10	7,359.10	9,743.10	1,247.77	9,745.27	0.00	0.00	0.00
18,400.00	89.70	0.10	7,359.63	9,843.10	1,247.94	9,845.27	0.00	0.00	0.00
18,470.52	89.70	0.10	7,360.00	9,913.62	1,248.06	9,915.78	0.00	0.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well SARCHET 21-5HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5000.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5000.00usft (Drilling Rig)
Site:	3N-66W-21 SARCHET 35-21HZ PAD	North Reference:	True
Well:	SARCHET 21-5HZ	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)
TD Well @ 18470.52ft									

Casing Points						
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")		
1,521.21	1,500.00	9 5/8" Csg	9-5/8	13-1/2		
8,040.21	7,305.00	Top of Production	5-1/2	7-7/8		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,131.80	1,125.00	Fox Hills				
4,517.87	4,240.00	Parkman				
4,680.17	4,388.00	Sussex				
7,498.31	7,107.00	Sharon Springs				
7,578.51	7,159.00	Niobrara				
7,672.88	7,211.00	Nio B				
7,865.96	7,283.00	Nio C				

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
290.00	290.00	0.00	0.00	Begin Nudge @ 290.00ft	
1,905.33	1,857.61	-237.94	237.94	End Nudge @ 1905.33ft	
4,705.33	4,410.95	-1,050.49	1,050.49	Begin Drop @ 4705.33ft	
5,916.83	5,586.66	-1,228.95	1,228.95	End Drop @ 5916.83ft	
6,918.99	6,588.82	-1,228.95	1,228.95	KOP @ 6918.99ft :: DLS = 8"/100'	
8,040.21	7,305.00	-516.53	1,230.17	End Build @ 8040.21ft	
18,470.52	7,360.00	9,913.62	1,248.06	TD Well @ 18470.52ft	