US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N
4N-68W-13 SBJ 22-13HZ PAD
SBJ 13-11HZ

Plan C

Plan: PERMIT REV-2

Standard Planning Report

04 May, 2021

Project: WELD-NAD83-UTMFT13N
Site: 4N-68W-13 SBJ 22-13HZ PAD
Well: SBJ 13-11HZ
Wellbore: Plan C
Design: PERMIT REV-2

ELEVATION

GROUND ELEVATION: 4859.00
RKB = 17' @ 4876ft

CASING DETAILS

TVD	MD	Name	Size
1500.00	1514.35	9 5/8" Csg	9-5/8
6245.00	18651.14	5 1/2" Csg	5-1/2

SURFACE HOLE LOCATION: SBJ 13-11HZ

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	14641357.83	1652459.41	40.314764	-104.956799

DESIGN TARGET DETAILS

Name	TVD	Northing	Easting	Latitude	Longitude
SBJ 13-11HZ BHL	6245.00	14640001.00	1640925.00	40.311046	-104.998177
SBJ 13-11HZ LP	6833.00	14640098.00	1652139.00	40.311305	-104.957951

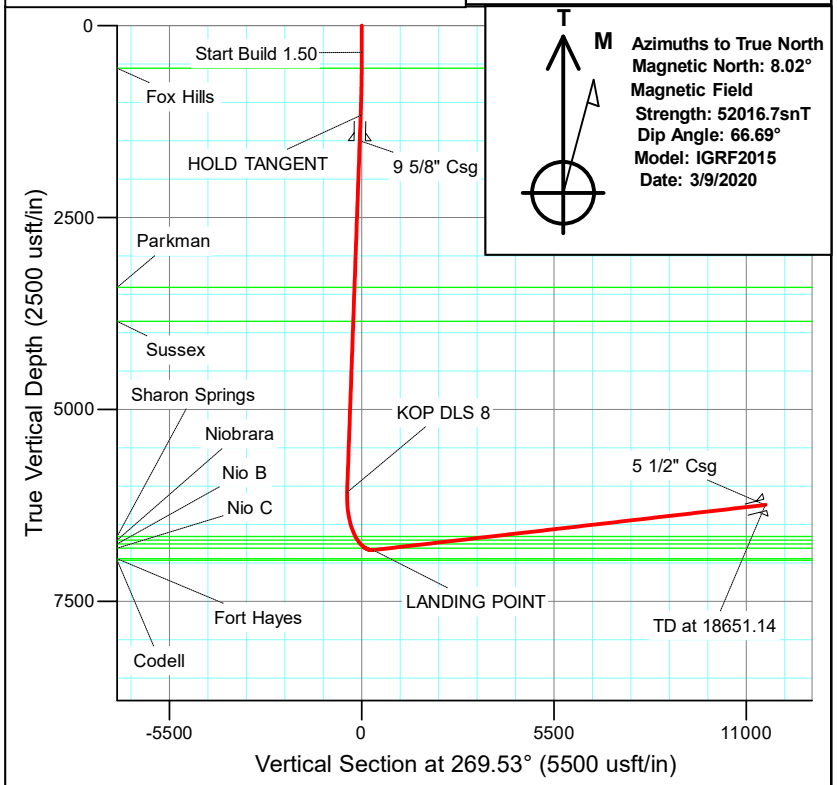
SECTION DETAILS

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	1178.46	12.43	158.54	1171.98	-83.29	32.74	1.50	158.54	-32.05	
4	6204.31	12.43	158.54	6080.08	-1089.87	428.36	0.00	0.00	-419.41	
5	7421.32	93.00	269.53	6833.00	-1259.67	-321.03	8.00	109.93	331.35	SBJ 13-11HZ LP
6	18651.14	93.00	269.53	6245.00	-1351.20	-11535.07	0.00	0.00	11545.77	SBJ 13-11HZ BHL

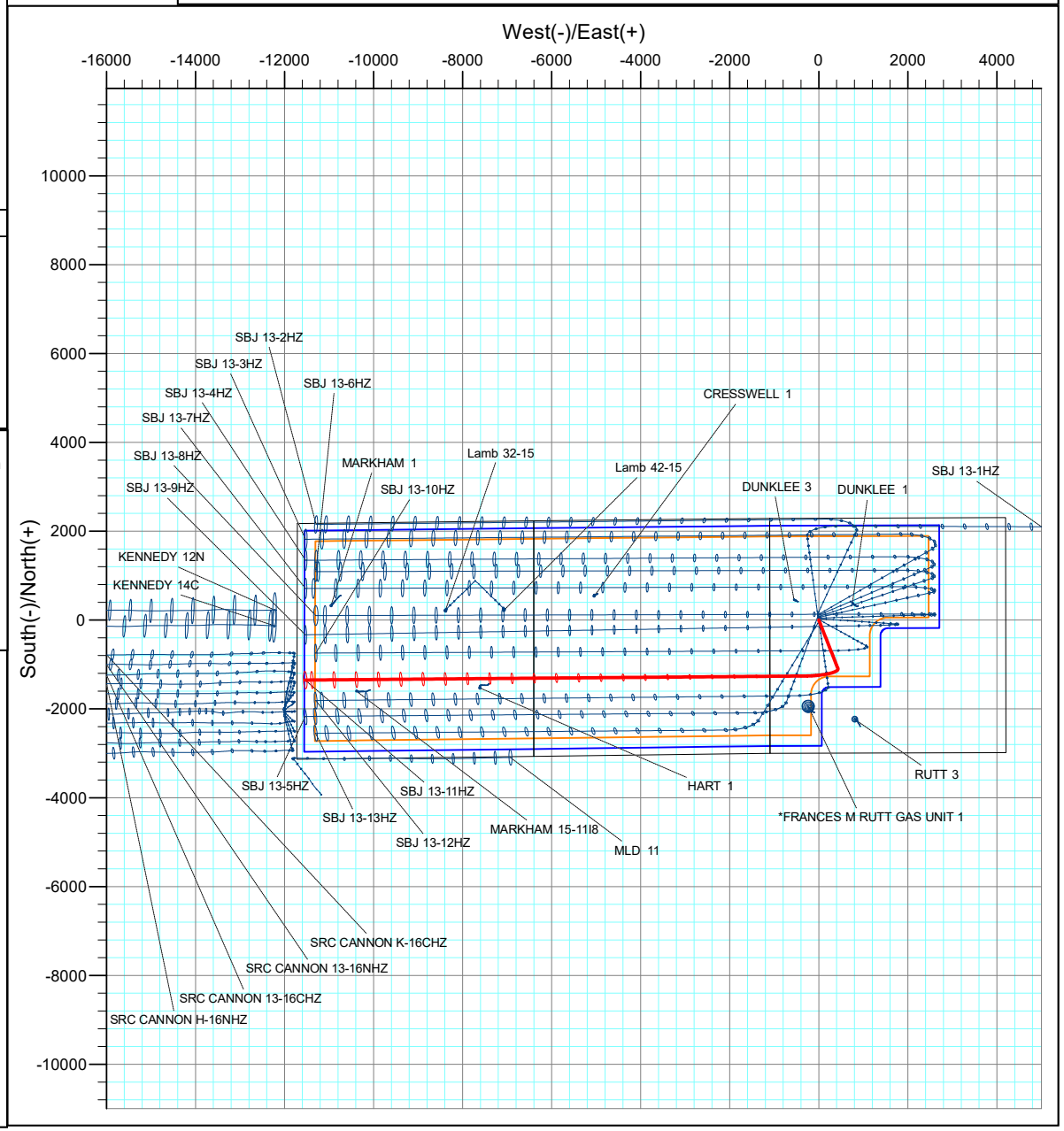
SHL	HEEL	TOE
2291' FNL	1740' FSL	1780' FSL
1094' FWL	772' FWL	185' FWL
Section 13	Section 13	Section 15
SWNW	NWSW	NWSW

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
556.00	556.10	Fox Hills
3411.00	3471.20	Parkman
3854.00	3924.82	Sussex
6656.00	6861.30	Sharon Springs
6703.00	6938.16	Niobrara
6755.00	7039.80	Nio B
6808.00	7187.38	Nio C



Azimuths to True North
Magnetic North: 8.02°
Magnetic Field
Strength: 52016.7snT
Dip Angle: 66.69°
Model: IGRF2015
Date: 3/9/2020



Database:	PLANNING	**Local Co-ordinate Reference:**	Well SBJ 13-11HZ
Company:	US ROCKIES WATTENBERG PLANNING	**TVD Reference:**	RKB = 17' @ 4876.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	**MD Reference:**	RKB = 17' @ 4876.00usft (Drilling Rig)
Site:	4N-68W-13 SBJ 22-13HZ PAD	**North Reference:**	True
Well:	SBJ 13-11HZ	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Plan C		
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 4N-68W-13 SBJ 22-13HZ PAD

Site Position:		**Northing:**	14,641,145.55 usft	**Latitude:**	40.314181
From:	Lat/Long	**Easting:**	1,652,517.50 usft	**Longitude:**	-104.956591
Position Uncertainty:	0.00 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.03 °

Well SBJ 13-11HZ

Well Position	**+N/-S**	212.31 usft	**Northing:**	14,641,357.83 usft	**Latitude:**	40.314764
	+E/-W	-57.98 usft	**Easting:**	1,652,459.41 usft	**Longitude:**	-104.956799
Position Uncertainty		3.28 usft	**Wellhead Elevation:**		**Ground Level:**	4,859.00 usft

Wellbore Plan C

Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2015	3/9/2020	8.02	66.69	52,016.70129735

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	269.53

Plan Survey Tool Program **Date** 5/4/2021

	Depth From (usft)	**Depth To (usft)**	**Survey (Wellbore)**	**Tool Name**	**Remarks**
1	0.00	2,000.00	PERMIT REV-2 (Plan C)	APC_ISCWSA REV 2 MWD Fixed:v2:standard declination	
2	2,000.00	18,651.14	PERMIT REV-2 (Plan C)	APC_ISCWSA REV 2 MWD+I Fixed:v2:Rockies, crustal dec +	

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	
1,178.46	12.43	158.54	1,171.98	-83.29	32.74	1.50	1.50	0.00	158.54	
6,204.31	12.43	158.54	6,080.08	-1,089.87	428.36	0.00	0.00	0.00	0.00	
7,421.32	93.00	269.53	6,833.00	-1,259.67	-321.03	8.00	6.62	9.12	109.93	SBJ 13-11HZ LP
18,651.14	93.00	269.53	6,245.00	-1,351.20	-11,535.07	0.00	0.00	0.00	0.00	SBJ 13-11HZ BHL

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Site:	4N-68W-13 SBJ 22-13HZ PAD	**North Reference:**	True
Well:	SBJ 13-11HZ	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Plan C		
Design:	PERMIT REV-2		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
350.00	0.00	0.00	350.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 1.50									
400.00	0.75	158.54	400.00	-0.30	0.12	-0.12	1.50	1.50	0.00
500.00	2.25	158.54	499.96	-2.74	1.08	-1.05	1.50	1.50	0.00
556.10	3.09	158.54	556.00	-5.17	2.03	-1.99	1.50	1.50	0.00
Fox Hills									
600.00	3.75	158.54	599.82	-7.61	2.99	-2.93	1.50	1.50	0.00
700.00	5.25	158.54	699.51	-14.91	5.86	-5.74	1.50	1.50	0.00
800.00	6.75	158.54	798.96	-24.64	9.69	-9.48	1.50	1.50	0.00
900.00	8.25	158.54	898.10	-36.79	14.46	-14.16	1.50	1.50	0.00
1,000.00	9.75	158.54	996.87	-51.35	20.18	-19.76	1.50	1.50	0.00
1,100.00	11.25	158.54	1,095.19	-68.31	26.85	-26.29	1.50	1.50	0.00
1,178.46	12.43	158.54	1,171.98	-83.29	32.74	-32.05	1.50	1.50	0.00
HOLD TANGENT									
1,200.00	12.43	158.54	1,193.02	-87.60	34.43	-33.71	0.00	0.00	0.00
1,300.00	12.43	158.54	1,290.67	-107.63	42.30	-41.42	0.00	0.00	0.00
1,400.00	12.43	158.54	1,388.33	-127.66	50.17	-49.13	0.00	0.00	0.00
1,500.00	12.43	158.54	1,485.99	-147.69	58.05	-56.83	0.00	0.00	0.00
1,514.35	12.43	158.54	1,500.00	-150.56	59.18	-57.94	0.00	0.00	0.00
9 5/8" Csg									
1,600.00	12.43	158.54	1,583.64	-167.72	65.92	-64.54	0.00	0.00	0.00
1,700.00	12.43	158.54	1,681.30	-187.74	73.79	-72.25	0.00	0.00	0.00
1,800.00	12.43	158.54	1,778.96	-207.77	81.66	-79.95	0.00	0.00	0.00
1,900.00	12.43	158.54	1,876.62	-227.80	89.53	-87.66	0.00	0.00	0.00
2,000.00	12.43	158.54	1,974.27	-247.83	97.41	-95.37	0.00	0.00	0.00
2,100.00	12.43	158.54	2,071.93	-267.86	105.28	-103.08	0.00	0.00	0.00
2,200.00	12.43	158.54	2,169.59	-287.88	113.15	-110.78	0.00	0.00	0.00
2,300.00	12.43	158.54	2,267.24	-307.91	121.02	-118.49	0.00	0.00	0.00
2,400.00	12.43	158.54	2,364.90	-327.94	128.89	-126.20	0.00	0.00	0.00
2,500.00	12.43	158.54	2,462.56	-347.97	136.76	-133.91	0.00	0.00	0.00
2,600.00	12.43	158.54	2,560.21	-368.00	144.64	-141.61	0.00	0.00	0.00
2,700.00	12.43	158.54	2,657.87	-388.02	152.51	-149.32	0.00	0.00	0.00
2,800.00	12.43	158.54	2,755.53	-408.05	160.38	-157.03	0.00	0.00	0.00
2,900.00	12.43	158.54	2,853.19	-428.08	168.25	-164.73	0.00	0.00	0.00
3,000.00	12.43	158.54	2,950.84	-448.11	176.12	-172.44	0.00	0.00	0.00
3,100.00	12.43	158.54	3,048.50	-468.14	184.00	-180.15	0.00	0.00	0.00
3,200.00	12.43	158.54	3,146.16	-488.16	191.87	-187.86	0.00	0.00	0.00
3,300.00	12.43	158.54	3,243.81	-508.19	199.74	-195.56	0.00	0.00	0.00
3,400.00	12.43	158.54	3,341.47	-528.22	207.61	-203.27	0.00	0.00	0.00
3,471.20	12.43	158.54	3,411.00	-542.48	213.21	-208.76	0.00	0.00	0.00
Parkman									
3,500.00	12.43	158.54	3,439.13	-548.25	215.48	-210.98	0.00	0.00	0.00
3,600.00	12.43	158.54	3,536.79	-568.28	223.35	-218.68	0.00	0.00	0.00
3,700.00	12.43	158.54	3,634.44	-588.30	231.23	-226.39	0.00	0.00	0.00
3,800.00	12.43	158.54	3,732.10	-608.33	239.10	-234.10	0.00	0.00	0.00
3,900.00	12.43	158.54	3,829.76	-628.36	246.97	-241.81	0.00	0.00	0.00
3,924.82	12.43	158.54	3,854.00	-633.33	248.92	-243.72	0.00	0.00	0.00
Sussex									
4,000.00	12.43	158.54	3,927.41	-648.39	254.84	-249.51	0.00	0.00	0.00

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Well:	SBJ 13-11HZ	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Plan C		
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)
4,100.00	12.43	158.54	4,025.07	-668.42	262.71	-257.22	0.00	0.00	0.00
4,200.00	12.43	158.54	4,122.73	-688.45	270.58	-264.93	0.00	0.00	0.00
4,300.00	12.43	158.54	4,220.39	-708.47	278.46	-272.64	0.00	0.00	0.00
4,400.00	12.43	158.54	4,318.04	-728.50	286.33	-280.34	0.00	0.00	0.00
4,500.00	12.43	158.54	4,415.70	-748.53	294.20	-288.05	0.00	0.00	0.00
4,600.00	12.43	158.54	4,513.36	-768.56	302.07	-295.76	0.00	0.00	0.00
4,700.00	12.43	158.54	4,611.01	-788.59	309.94	-303.46	0.00	0.00	0.00
4,800.00	12.43	158.54	4,708.67	-808.61	317.82	-311.17	0.00	0.00	0.00
4,900.00	12.43	158.54	4,806.33	-828.64	325.69	-318.88	0.00	0.00	0.00
5,000.00	12.43	158.54	4,903.99	-848.67	333.56	-326.59	0.00	0.00	0.00
5,100.00	12.43	158.54	5,001.64	-868.70	341.43	-334.29	0.00	0.00	0.00
5,200.00	12.43	158.54	5,099.30	-888.73	349.30	-342.00	0.00	0.00	0.00
5,300.00	12.43	158.54	5,196.96	-908.75	357.17	-349.71	0.00	0.00	0.00
5,400.00	12.43	158.54	5,294.61	-928.78	365.05	-357.42	0.00	0.00	0.00
5,500.00	12.43	158.54	5,392.27	-948.81	372.92	-365.12	0.00	0.00	0.00
5,600.00	12.43	158.54	5,489.93	-968.84	380.79	-372.83	0.00	0.00	0.00
5,700.00	12.43	158.54	5,587.59	-988.87	388.66	-380.54	0.00	0.00	0.00
5,800.00	12.43	158.54	5,685.24	-1,008.89	396.53	-388.24	0.00	0.00	0.00
5,900.00	12.43	158.54	5,782.90	-1,028.92	404.41	-395.95	0.00	0.00	0.00
6,000.00	12.43	158.54	5,880.56	-1,048.95	412.28	-403.66	0.00	0.00	0.00
6,100.00	12.43	158.54	5,978.21	-1,068.98	420.15	-411.37	0.00	0.00	0.00
6,200.00	12.43	158.54	6,075.87	-1,089.01	428.02	-419.07	0.00	0.00	0.00
6,204.31	12.43	158.54	6,080.08	-1,089.87	428.36	-419.41	0.00	0.00	0.00
KOP DLS 8									
6,300.00	12.14	195.09	6,173.72	-1,109.20	429.51	-420.39	8.00	-0.30	38.20
6,400.00	16.23	223.71	6,270.76	-1,129.48	417.09	-407.81	8.00	4.09	28.62
6,500.00	22.49	238.98	6,365.12	-1,149.47	391.00	-381.56	8.00	6.26	15.27
6,600.00	29.57	247.56	6,454.95	-1,168.78	351.74	-342.14	8.00	7.08	8.58
6,700.00	37.00	253.00	6,538.51	-1,187.03	300.08	-290.33	8.00	7.43	5.44
6,800.00	44.60	256.82	6,614.17	-1,203.86	237.02	-227.14	8.00	7.60	3.82
6,861.30	49.31	258.68	6,656.00	-1,213.33	193.25	-183.30	8.00	7.69	3.04
Sharon Springs									
6,900.00	52.30	259.72	6,680.46	-1,218.94	163.79	-153.79	8.00	7.72	2.70
6,938.16	55.26	260.67	6,703.00	-1,224.18	133.46	-123.42	8.00	7.74	2.49
Niobrara									
7,000.00	60.06	262.08	6,736.08	-1,231.99	81.82	-71.71	8.00	7.77	2.27
7,039.80	63.16	262.91	6,755.00	-1,236.56	47.11	-36.97	8.00	7.79	2.09
Nio B									
7,100.00	67.85	264.09	6,779.95	-1,242.75	-7.30	17.50	8.00	7.80	1.96
7,187.38	74.68	265.67	6,808.00	-1,250.11	-89.67	99.92	8.00	7.82	1.81
Nio C									
7,200.00	75.67	265.89	6,811.23	-1,251.01	-101.84	112.10	8.00	7.82	1.73
7,300.00	83.50	267.56	6,829.30	-1,256.61	-199.95	210.25	8.00	7.83	1.68
7,400.00	91.33	269.19	6,833.81	-1,259.43	-299.73	310.05	8.00	7.83	1.62
7,421.32	93.00	269.53	6,833.00	-1,259.67	-321.03	331.35	8.00	7.83	1.62
LANDING POINT									
7,500.00	93.00	269.53	6,828.88	-1,260.31	-399.60	409.93	0.00	0.00	0.00
7,600.00	93.00	269.53	6,823.64	-1,261.13	-499.46	509.79	0.00	0.00	0.00
7,700.00	93.00	269.53	6,818.41	-1,261.94	-599.32	609.65	0.00	0.00	0.00
7,800.00	93.00	269.53	6,813.17	-1,262.76	-699.18	709.51	0.00	0.00	0.00
7,900.00	93.00	269.53	6,807.94	-1,263.57	-799.04	809.38	0.00	0.00	0.00
8,000.00	93.00	269.53	6,802.70	-1,264.39	-898.90	909.24	0.00	0.00	0.00
8,100.00	93.00	269.53	6,797.46	-1,265.20	-998.76	1,009.10	0.00	0.00	0.00

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Wellbore:	Plan C		
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)
8,200.00	93.00	269.53	6,792.23	-1,266.02	-1,098.62	1,108.97	0.00	0.00	0.00
8,300.00	93.00	269.53	6,786.99	-1,266.83	-1,198.48	1,208.83	0.00	0.00	0.00
8,400.00	93.00	269.53	6,781.76	-1,267.65	-1,298.34	1,308.69	0.00	0.00	0.00
8,500.00	93.00	269.53	6,776.52	-1,268.46	-1,398.20	1,408.55	0.00	0.00	0.00
8,600.00	93.00	269.53	6,771.28	-1,269.28	-1,498.06	1,508.42	0.00	0.00	0.00
8,700.00	93.00	269.53	6,766.05	-1,270.09	-1,597.92	1,608.28	0.00	0.00	0.00
8,800.00	93.00	269.53	6,760.81	-1,270.91	-1,697.78	1,708.14	0.00	0.00	0.00
8,900.00	93.00	269.53	6,755.58	-1,271.72	-1,797.63	1,808.01	0.00	0.00	0.00
9,000.00	93.00	269.53	6,750.34	-1,272.54	-1,897.49	1,907.87	0.00	0.00	0.00
9,100.00	93.00	269.53	6,745.10	-1,273.35	-1,997.35	2,007.73	0.00	0.00	0.00
9,200.00	93.00	269.53	6,739.87	-1,274.17	-2,097.21	2,107.59	0.00	0.00	0.00
9,300.00	93.00	269.53	6,734.63	-1,274.98	-2,197.07	2,207.46	0.00	0.00	0.00
9,400.00	93.00	269.53	6,729.40	-1,275.80	-2,296.93	2,307.32	0.00	0.00	0.00
9,500.00	93.00	269.53	6,724.16	-1,276.61	-2,396.79	2,407.18	0.00	0.00	0.00
9,600.00	93.00	269.53	6,718.92	-1,277.43	-2,496.65	2,507.05	0.00	0.00	0.00
9,700.00	93.00	269.53	6,713.69	-1,278.24	-2,596.51	2,606.91	0.00	0.00	0.00
9,800.00	93.00	269.53	6,708.45	-1,279.06	-2,696.37	2,706.77	0.00	0.00	0.00
9,900.00	93.00	269.53	6,703.21	-1,279.87	-2,796.23	2,806.63	0.00	0.00	0.00
10,000.00	93.00	269.53	6,697.98	-1,280.69	-2,896.09	2,906.50	0.00	0.00	0.00
10,100.00	93.00	269.53	6,692.74	-1,281.50	-2,995.95	3,006.36	0.00	0.00	0.00
10,200.00	93.00	269.53	6,687.51	-1,282.32	-3,095.81	3,106.22	0.00	0.00	0.00
10,300.00	93.00	269.53	6,682.27	-1,283.13	-3,195.67	3,206.09	0.00	0.00	0.00
10,400.00	93.00	269.53	6,677.03	-1,283.95	-3,295.53	3,305.95	0.00	0.00	0.00
10,500.00	93.00	269.53	6,671.80	-1,284.76	-3,395.39	3,405.81	0.00	0.00	0.00
10,600.00	93.00	269.53	6,666.56	-1,285.58	-3,495.25	3,505.67	0.00	0.00	0.00
10,700.00	93.00	269.53	6,661.33	-1,286.39	-3,595.11	3,605.54	0.00	0.00	0.00
10,800.00	93.00	269.53	6,656.09	-1,287.21	-3,694.97	3,705.40	0.00	0.00	0.00
10,900.00	93.00	269.53	6,650.85	-1,288.02	-3,794.82	3,805.26	0.00	0.00	0.00
11,000.00	93.00	269.53	6,645.62	-1,288.84	-3,894.68	3,905.13	0.00	0.00	0.00
11,100.00	93.00	269.53	6,640.38	-1,289.65	-3,994.54	4,004.99	0.00	0.00	0.00
11,200.00	93.00	269.53	6,635.15	-1,290.47	-4,094.40	4,104.85	0.00	0.00	0.00
11,300.00	93.00	269.53	6,629.91	-1,291.29	-4,194.26	4,204.71	0.00	0.00	0.00
11,400.00	93.00	269.53	6,624.67	-1,292.10	-4,294.12	4,304.58	0.00	0.00	0.00
11,500.00	93.00	269.53	6,619.44	-1,292.92	-4,393.98	4,404.44	0.00	0.00	0.00
11,600.00	93.00	269.53	6,614.20	-1,293.73	-4,493.84	4,504.30	0.00	0.00	0.00
11,700.00	93.00	269.53	6,608.97	-1,294.55	-4,593.70	4,604.17	0.00	0.00	0.00
11,800.00	93.00	269.53	6,603.73	-1,295.36	-4,693.56	4,704.03	0.00	0.00	0.00
11,900.00	93.00	269.53	6,598.49	-1,296.18	-4,793.42	4,803.89	0.00	0.00	0.00
12,000.00	93.00	269.53	6,593.26	-1,296.99	-4,893.28	4,903.75	0.00	0.00	0.00
12,100.00	93.00	269.53	6,588.02	-1,297.81	-4,993.14	5,003.62	0.00	0.00	0.00
12,200.00	93.00	269.53	6,582.79	-1,298.62	-5,093.00	5,103.48	0.00	0.00	0.00
12,300.00	93.00	269.53	6,577.55	-1,299.44	-5,192.86	5,203.34	0.00	0.00	0.00
12,400.00	93.00	269.53	6,572.31	-1,300.25	-5,292.72	5,303.20	0.00	0.00	0.00
12,500.00	93.00	269.53	6,567.08	-1,301.07	-5,392.58	5,403.07	0.00	0.00	0.00
12,600.00	93.00	269.53	6,561.84	-1,301.88	-5,492.44	5,502.93	0.00	0.00	0.00
12,700.00	93.00	269.53	6,556.61	-1,302.70	-5,592.30	5,602.79	0.00	0.00	0.00
12,800.00	93.00	269.53	6,551.37	-1,303.51	-5,692.16	5,702.66	0.00	0.00	0.00
12,900.00	93.00	269.53	6,546.13	-1,304.33	-5,792.01	5,802.52	0.00	0.00	0.00
13,000.00	93.00	269.53	6,540.90	-1,305.14	-5,891.87	5,902.38	0.00	0.00	0.00
13,100.00	93.00	269.53	6,535.66	-1,305.96	-5,991.73	6,002.24	0.00	0.00	0.00
13,200.00	93.00	269.53	6,530.42	-1,306.77	-6,091.59	6,102.11	0.00	0.00	0.00
13,300.00	93.00	269.53	6,525.19	-1,307.59	-6,191.45	6,201.97	0.00	0.00	0.00
13,400.00	93.00	269.53	6,519.95	-1,308.40	-6,291.31	6,301.83	0.00	0.00	0.00
13,500.00	93.00	269.53	6,514.72	-1,309.22	-6,391.17	6,401.70	0.00	0.00	0.00

Database:	PLANNING	**Local Co-ordinate Reference:**	Well SBJ 13-11HZ
Company:	US ROCKIES WATTENBERG PLANNING	**TVD Reference:**	RKB = 17' @ 4876.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	**MD Reference:**	RKB = 17' @ 4876.00usft (Drilling Rig)
Site:	4N-68W-13 SBJ 22-13HZ PAD	**North Reference:**	True
Well:	SBJ 13-11HZ	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Plan C		
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)
13,600.00	93.00	269.53	6,509.48	-1,310.03	-6,491.03	6,501.56	0.00	0.00	0.00
13,700.00	93.00	269.53	6,504.24	-1,310.85	-6,590.89	6,601.42	0.00	0.00	0.00
13,800.00	93.00	269.53	6,499.01	-1,311.66	-6,690.75	6,701.28	0.00	0.00	0.00
13,900.00	93.00	269.53	6,493.77	-1,312.48	-6,790.61	6,801.15	0.00	0.00	0.00
14,000.00	93.00	269.53	6,488.54	-1,313.29	-6,890.47	6,901.01	0.00	0.00	0.00
14,100.00	93.00	269.53	6,483.30	-1,314.11	-6,990.33	7,000.87	0.00	0.00	0.00
14,200.00	93.00	269.53	6,478.06	-1,314.92	-7,090.19	7,100.74	0.00	0.00	0.00
14,300.00	93.00	269.53	6,472.83	-1,315.74	-7,190.05	7,200.60	0.00	0.00	0.00
14,400.00	93.00	269.53	6,467.59	-1,316.55	-7,289.91	7,300.46	0.00	0.00	0.00
14,500.00	93.00	269.53	6,462.36	-1,317.37	-7,389.77	7,400.32	0.00	0.00	0.00
14,600.00	93.00	269.53	6,457.12	-1,318.18	-7,489.63	7,500.19	0.00	0.00	0.00
14,700.00	93.00	269.53	6,451.88	-1,319.00	-7,589.49	7,600.05	0.00	0.00	0.00
14,800.00	93.00	269.53	6,446.65	-1,319.81	-7,689.35	7,699.91	0.00	0.00	0.00
14,900.00	93.00	269.53	6,441.41	-1,320.63	-7,789.20	7,799.78	0.00	0.00	0.00
15,000.00	93.00	269.53	6,436.18	-1,321.44	-7,889.06	7,899.64	0.00	0.00	0.00
15,100.00	93.00	269.53	6,430.94	-1,322.26	-7,988.92	7,999.50	0.00	0.00	0.00
15,200.00	93.00	269.53	6,425.70	-1,323.07	-8,088.78	8,099.36	0.00	0.00	0.00
15,300.00	93.00	269.53	6,420.47	-1,323.89	-8,188.64	8,199.23	0.00	0.00	0.00
15,400.00	93.00	269.53	6,415.23	-1,324.70	-8,288.50	8,299.09	0.00	0.00	0.00
15,500.00	93.00	269.53	6,410.00	-1,325.52	-8,388.36	8,398.95	0.00	0.00	0.00
15,600.00	93.00	269.53	6,404.76	-1,326.33	-8,488.22	8,498.82	0.00	0.00	0.00
15,700.00	93.00	269.53	6,399.52	-1,327.15	-8,588.08	8,598.68	0.00	0.00	0.00
15,800.00	93.00	269.53	6,394.29	-1,327.96	-8,687.94	8,698.54	0.00	0.00	0.00
15,900.00	93.00	269.53	6,389.05	-1,328.78	-8,787.80	8,798.40	0.00	0.00	0.00
16,000.00	93.00	269.53	6,383.82	-1,329.59	-8,887.66	8,898.27	0.00	0.00	0.00
16,100.00	93.00	269.53	6,378.58	-1,330.41	-8,987.52	8,998.13	0.00	0.00	0.00
16,200.00	93.00	269.53	6,373.34	-1,331.22	-9,087.38	9,097.99	0.00	0.00	0.00
16,300.00	93.00	269.53	6,368.11	-1,332.04	-9,187.24	9,197.86	0.00	0.00	0.00
16,400.00	93.00	269.53	6,362.87	-1,332.85	-9,287.10	9,297.72	0.00	0.00	0.00
16,500.00	93.00	269.53	6,357.64	-1,333.67	-9,386.96	9,397.58	0.00	0.00	0.00
16,600.00	93.00	269.53	6,352.40	-1,334.48	-9,486.82	9,497.44	0.00	0.00	0.00
16,700.00	93.00	269.53	6,347.16	-1,335.30	-9,586.68	9,597.31	0.00	0.00	0.00
16,800.00	93.00	269.53	6,341.93	-1,336.11	-9,686.54	9,697.17	0.00	0.00	0.00
16,900.00	93.00	269.53	6,336.69	-1,336.93	-9,786.39	9,797.03	0.00	0.00	0.00
17,000.00	93.00	269.53	6,331.45	-1,337.74	-9,886.25	9,896.89	0.00	0.00	0.00
17,100.00	93.00	269.53	6,326.22	-1,338.56	-9,986.11	9,996.76	0.00	0.00	0.00
17,200.00	93.00	269.53	6,320.98	-1,339.37	-10,085.97	10,096.62	0.00	0.00	0.00
17,300.00	93.00	269.53	6,315.75	-1,340.19	-10,185.83	10,196.48	0.00	0.00	0.00
17,400.00	93.00	269.53	6,310.51	-1,341.00	-10,285.69	10,296.35	0.00	0.00	0.00
17,500.00	93.00	269.53	6,305.27	-1,341.82	-10,385.55	10,396.21	0.00	0.00	0.00
17,600.00	93.00	269.53	6,300.04	-1,342.63	-10,485.41	10,496.07	0.00	0.00	0.00
17,700.00	93.00	269.53	6,294.80	-1,343.45	-10,585.27	10,595.93	0.00	0.00	0.00
17,800.00	93.00	269.53	6,289.57	-1,344.26	-10,685.13	10,695.80	0.00	0.00	0.00
17,900.00	93.00	269.53	6,284.33	-1,345.08	-10,784.99	10,795.66	0.00	0.00	0.00
18,000.00	93.00	269.53	6,279.09	-1,345.89	-10,884.85	10,895.52	0.00	0.00	0.00
18,100.00	93.00	269.53	6,273.86	-1,346.71	-10,984.71	10,995.39	0.00	0.00	0.00
18,200.00	93.00	269.53	6,268.62	-1,347.52	-11,084.57	11,095.25	0.00	0.00	0.00
18,300.00	93.00	269.53	6,263.39	-1,348.34	-11,184.43	11,195.11	0.00	0.00	0.00
18,400.00	93.00	269.53	6,258.15	-1,349.15	-11,284.29	11,294.97	0.00	0.00	0.00
18,500.00	93.00	269.53	6,252.91	-1,349.97	-11,384.15	11,394.84	0.00	0.00	0.00
18,600.00	93.00	269.53	6,247.68	-1,350.78	-11,484.01	11,494.70	0.00	0.00	0.00
18,651.14	93.00	269.53	6,245.00	-1,351.20	-11,535.07	11,545.77	0.00	0.00	0.00

TD at 18651.14 - 5 1/2" Csg

Database:	PLANNING	**Local Co-ordinate Reference:**	Well SBJ 13-11HZ
Company:	US ROCKIES WATTENBERG PLANNING	**TVD Reference:**	RKB = 17' @ 4876.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	**MD Reference:**	RKB = 17' @ 4876.00usft (Drilling Rig)
Site:	4N-68W-13 SBJ 22-13HZ PAD	**North Reference:**	True
Well:	SBJ 13-11HZ	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Plan C		
Design:	PERMIT REV-2		

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
SBJ 13-11HZ BHL - plan hits target center - Point	0.00	0.00	6,245.00	-1,351.20	-11,535.07	14,640,001.00	1,640,925.00	40.311046	-104.998177
SBJ 13-11HZ LP - plan hits target center - Point	0.00	0.00	6,833.00	-1,259.67	-321.03	14,640,098.00	1,652,139.00	40.311305	-104.957951

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,514.35	1,500.00	9 5/8" Csg	9-5/8	13-1/2
18,651.14	6,245.00	5 1/2" Csg	5-1/2	7-7/8

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
556.10	556.00	Fox Hills			
3,471.20	3,411.00	Parkman			
3,924.82	3,854.00	Sussex			
6,861.30	6,656.00	Sharon Springs			
6,938.16	6,703.00	Niobrara			
7,039.80	6,755.00	Nio B			
7,187.38	6,808.00	Nio C			

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
350.00	350.00	0.00	0.00	Start Build 1.50
1,178.46	1,171.98	-83.29	32.74	HOLD TANGENT
6,204.31	6,080.08	-1,089.87	428.36	KOP DLS 8
7,421.32	6,833.00	-1,259.67	-321.03	LANDING POINT
18,651.14	6,245.00	-1,351.20	-11,535.07	TD at 18651.14