

US ROCKIES WATTENBERG PLANNING

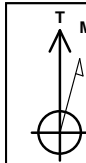
**WELD-NAD83-UTMFT13N
1N-66W-13 AZUL 13-13HZ
AZUL 13-11HZ**

Plan A

Plan: Permit Rev-1

Standard Planning Report

12 June, 2017



Azimuths to True North
Magnetic North: 8.01°

Magnetic Field
Strength: 52318.0snT
Dip Angle: 66.56°
Date: 6/8/2017
Model: IGRF2010

SITE: 1N-66W-13 AZUL 13-13HZ

Well: AZUL 13-11HZ
Wellbore: Plan A
Design: Permit Rev-1

FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
1619.00	1633.38	Fox Hills
4260.00	4315.53	Parkman
4624.00	4683.50	Sussex
7124.00	7235.71	Sharon Springs
7150.00	7274.03	Niobrara
7278.00	7539.33	Nio B

WELL DETAILS: AZUL 13-11HZ

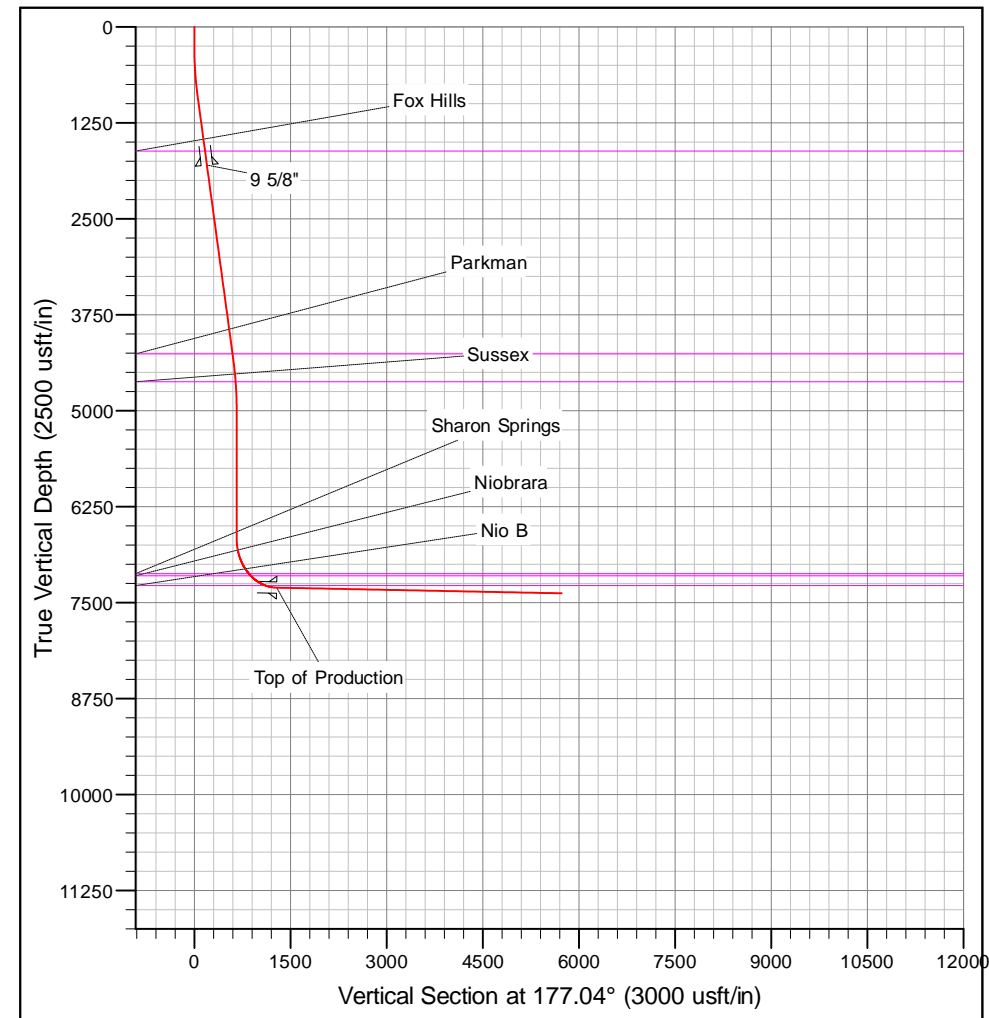
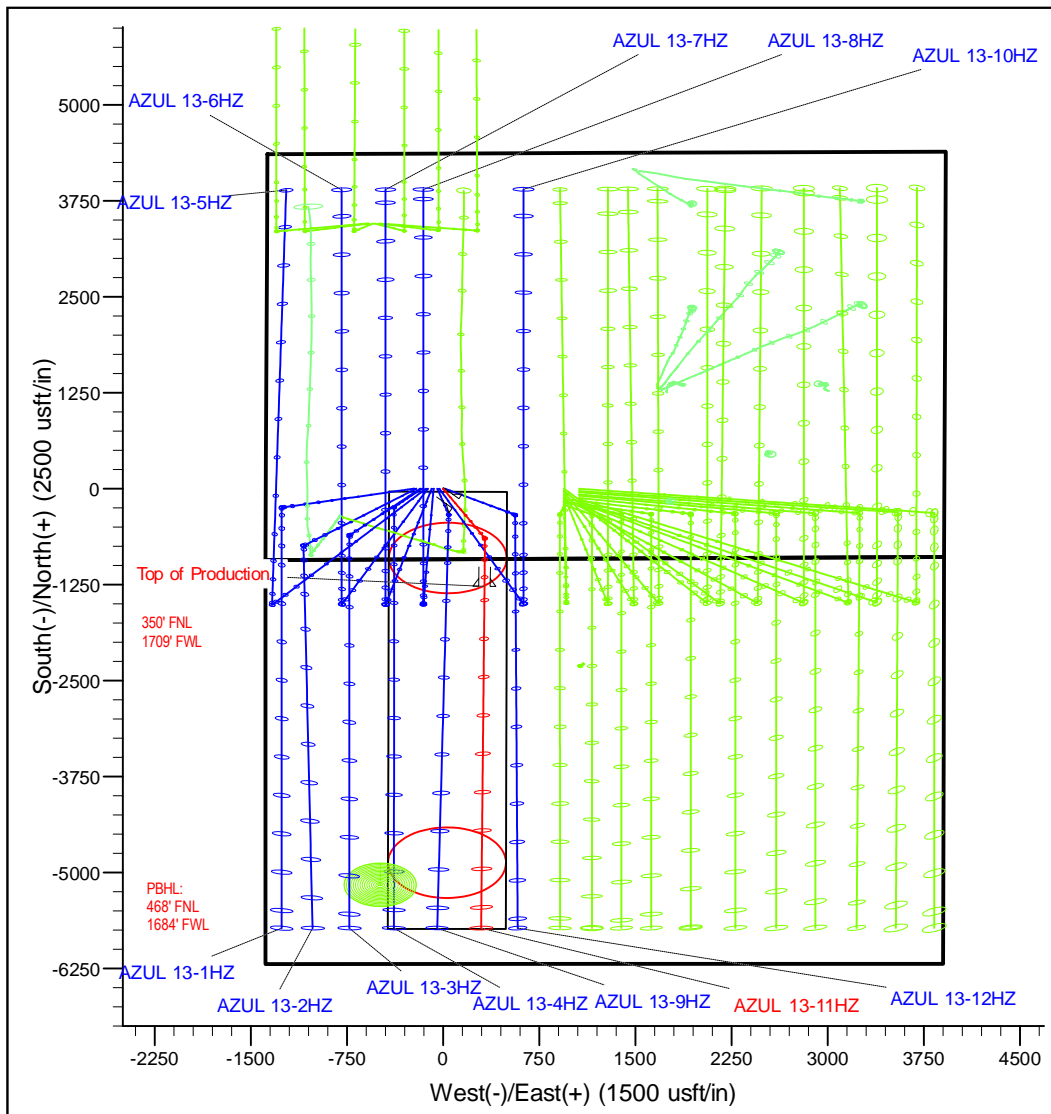
+N/-S	+E/-W	GL: 5071.00 Northing	RKB @ 5088.00usft (Original Well Elev) Easting	Latitude	Longitude	Slot
0.00	0.00	14543793.73	1715977.44	40.046536	-104.730006	

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
AZUL 13-11HZ_PBHL	7380.00	-5722.65	296.21	14538072.00	1716291.00	40.030821	-104.728948

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	V Sct
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
250.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00
920.00	10.05	153.18	916.57	-52.30	26.45	1.50	53.60
4390.11	10.05	153.18	4333.43	-592.70	299.71	0.00	607.40
5060.11	0.00	0.00	5000.00	-645.00	326.16	1.50	661.00
6729.76	0.00	0.00	6669.65	-645.00	326.16	0.00	661.00
7719.20	89.05	180.34	7306.18	-1271.05	322.47	9.00	286.02
12171.49	89.05	180.34	7380.00	-5722.65	296.21	0.00	730.31



Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well AZUL 13-11HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB @ 5088.00usft (Original Well Elev)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB @ 5088.00usft (Original Well Elev)
Site:	1N-66W-13 AZUL 13-13HZ	North Reference:	True
Well:	AZUL 13-11HZ	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		1N-66W-13 AZUL 13-13HZ			
Site Position:		Northing:	14,543,795.23 usft	Latitude:	40.046542
From:	Lat/Long	Easting:	1,715,752.42 usft	Longitude:	-104.730810
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.17

Well	AZUL 13-11HZ					
Well Position	+N/-S	-2.18 usft	Northing:	14,543,793.72 usft	Latitude:	40.046536
	+E/-W	225.01 usft	Easting:	1,715,977.44 usft	Longitude:	-104.730006
Position Uncertainty		3.28 usft	Wellhead Elevation:		Ground Level:	5,071.00 usft

Wellbore	Plan A				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	6/8/2017	8.01	66.56	52,317.98470186

Design	Permit Rev-1			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	177.04

Plan Survey Tool Program	Date	6/12/2017		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	12,171.49	Permit Rev-1 (Plan A)	APC_ISCWSA REV 2 MWI Fixed:v2:crustal field declinat

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	
250.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	0.00	
920.00	10.05	153.18	916.57	-52.30	26.45	1.50	1.50	0.00	153.18	
4,390.11	10.05	153.18	4,333.44	-592.70	299.71	0.00	0.00	0.00	0.00	
5,060.11	0.00	0.00	5,000.00	-645.00	326.16	1.50	-1.50	0.00	180.00	
6,729.76	0.00	0.00	6,669.65	-645.00	326.16	0.00	0.00	0.00	0.00	
7,719.20	89.05	180.34	7,306.18	-1,271.05	322.47	9.00	9.00	0.00	180.34	
12,171.49	89.05	180.34	7,380.00	-5,722.65	296.21	0.00	0.00	0.00	0.00	AZUL 13-11HZ_PBI

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well AZUL 13-11HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB @ 5088.00usft (Original Well Elev)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB @ 5088.00usft (Original Well Elev)
Site:	1N-66W-13 AZUL 13-13HZ	North Reference:	True
Well:	AZUL 13-11HZ	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
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
250.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.75	153.18	300.00	-0.29	0.15	0.30	1.50	1.50	0.00
400.00	2.25	153.18	399.96	-2.63	1.33	2.69	1.50	1.50	0.00
500.00	3.75	153.18	499.82	-7.30	3.69	7.48	1.50	1.50	0.00
600.00	5.25	153.18	599.51	-14.30	7.23	14.65	1.50	1.50	0.00
700.00	6.75	153.18	698.96	-23.63	11.95	24.21	1.50	1.50	0.00
800.00	8.25	153.18	798.10	-35.28	17.84	36.15	1.50	1.50	0.00
900.00	9.75	153.18	896.87	-49.23	24.90	50.46	1.50	1.50	0.00
920.00	10.05	153.18	916.57	-52.30	26.45	53.60	1.50	1.50	0.00
1,000.00	10.05	153.18	995.34	-64.76	32.75	66.37	0.00	0.00	0.00
1,100.00	10.05	153.18	1,093.81	-80.33	40.62	82.33	0.00	0.00	0.00
1,200.00	10.05	153.18	1,192.27	-95.91	48.50	98.29	0.00	0.00	0.00
1,300.00	10.05	153.18	1,290.74	-111.48	56.37	114.25	0.00	0.00	0.00
1,400.00	10.05	153.18	1,389.20	-127.05	64.25	130.20	0.00	0.00	0.00
1,500.00	10.05	153.18	1,487.67	-142.63	72.12	146.16	0.00	0.00	0.00
1,600.00	10.05	153.18	1,586.14	-158.20	80.00	162.12	0.00	0.00	0.00
1,633.38	10.05	153.18	1,619.00	-163.40	82.63	167.45	0.00	0.00	0.00
Fox Hills									
1,700.00	10.05	153.18	1,684.60	-173.77	87.87	178.08	0.00	0.00	0.00
1,800.00	10.05	153.18	1,783.07	-189.34	95.75	194.04	0.00	0.00	0.00
1,817.20	10.05	153.18	1,800.00	-192.02	97.10	196.78	0.00	0.00	0.00
9 5/8"									
1,900.00	10.05	153.18	1,881.53	-204.92	103.62	210.00	0.00	0.00	0.00
2,000.00	10.05	153.18	1,980.00	-220.49	111.50	225.96	0.00	0.00	0.00
2,100.00	10.05	153.18	2,078.46	-236.06	119.37	241.92	0.00	0.00	0.00
2,200.00	10.05	153.18	2,176.93	-251.64	127.25	257.88	0.00	0.00	0.00
2,300.00	10.05	153.18	2,275.40	-267.21	135.12	273.84	0.00	0.00	0.00
2,400.00	10.05	153.18	2,373.86	-282.78	143.00	289.79	0.00	0.00	0.00
2,500.00	10.05	153.18	2,472.33	-298.35	150.87	305.75	0.00	0.00	0.00
2,600.00	10.05	153.18	2,570.79	-313.93	158.74	321.71	0.00	0.00	0.00
2,700.00	10.05	153.18	2,669.26	-329.50	166.62	337.67	0.00	0.00	0.00
2,800.00	10.05	153.18	2,767.72	-345.07	174.49	353.63	0.00	0.00	0.00
2,900.00	10.05	153.18	2,866.19	-360.65	182.37	369.59	0.00	0.00	0.00
3,000.00	10.05	153.18	2,964.65	-376.22	190.24	385.55	0.00	0.00	0.00
3,100.00	10.05	153.18	3,063.12	-391.79	198.12	401.51	0.00	0.00	0.00
3,200.00	10.05	153.18	3,161.59	-407.36	205.99	417.47	0.00	0.00	0.00
3,300.00	10.05	153.18	3,260.05	-422.94	213.87	433.43	0.00	0.00	0.00
3,400.00	10.05	153.18	3,358.52	-438.51	221.74	449.39	0.00	0.00	0.00
3,500.00	10.05	153.18	3,456.98	-454.08	229.62	465.34	0.00	0.00	0.00
3,600.00	10.05	153.18	3,555.45	-469.65	237.49	481.30	0.00	0.00	0.00
3,700.00	10.05	153.18	3,653.91	-485.23	245.37	497.26	0.00	0.00	0.00
3,800.00	10.05	153.18	3,752.38	-500.80	253.24	513.22	0.00	0.00	0.00
3,900.00	10.05	153.18	3,850.84	-516.37	261.12	529.18	0.00	0.00	0.00
4,000.00	10.05	153.18	3,949.31	-531.95	268.99	545.14	0.00	0.00	0.00
4,100.00	10.05	153.18	4,047.78	-547.52	276.87	561.10	0.00	0.00	0.00
4,200.00	10.05	153.18	4,146.24	-563.09	284.74	577.06	0.00	0.00	0.00
4,300.00	10.05	153.18	4,244.71	-578.66	292.62	593.02	0.00	0.00	0.00
4,315.53	10.05	153.18	4,260.00	-581.08	293.84	595.50	0.00	0.00	0.00
Parkman									
4,390.11	10.05	153.18	4,333.44	-592.70	299.71	607.40	0.00	0.00	0.00

Corporate Planning Report

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Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB @ 5088.00usft (Original Well Elev)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB @ 5088.00usft (Original Well Elev)
Site:	1N-66W-13 AZUL 13-13HZ	North Reference:	True
Well:	AZUL 13-11HZ	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)
4,400.00	9.90	153.18	4,343.18	-594.23	300.48	608.96	1.50	-1.50	0.00
4,500.00	8.40	153.18	4,441.90	-608.42	307.66	623.51	1.50	-1.50	0.00
4,600.00	6.90	153.18	4,541.01	-620.30	313.67	635.69	1.50	-1.50	0.00
4,683.50	5.65	153.18	4,624.00	-628.45	317.79	644.03	1.50	-1.50	0.00
Sussex									
4,700.00	5.40	153.18	4,640.43	-629.86	318.51	645.49	1.50	-1.50	0.00
4,800.00	3.90	153.18	4,740.10	-637.10	322.17	652.90	1.50	-1.50	0.00
4,900.00	2.40	153.18	4,839.94	-642.01	324.65	657.93	1.50	-1.50	0.00
5,000.00	0.90	153.18	4,939.90	-644.58	325.95	660.57	1.50	-1.50	0.00
5,060.11	0.00	0.00	5,000.00	-645.00	326.16	661.00	1.50	-1.50	0.00
5,100.00	0.00	0.00	5,039.89	-645.00	326.16	661.00	0.00	0.00	0.00
5,200.00	0.00	0.00	5,139.89	-645.00	326.16	661.00	0.00	0.00	0.00
5,300.00	0.00	0.00	5,239.89	-645.00	326.16	661.00	0.00	0.00	0.00
5,400.00	0.00	0.00	5,339.89	-645.00	326.16	661.00	0.00	0.00	0.00
5,500.00	0.00	0.00	5,439.89	-645.00	326.16	661.00	0.00	0.00	0.00
5,600.00	0.00	0.00	5,539.89	-645.00	326.16	661.00	0.00	0.00	0.00
5,700.00	0.00	0.00	5,639.89	-645.00	326.16	661.00	0.00	0.00	0.00
5,800.00	0.00	0.00	5,739.89	-645.00	326.16	661.00	0.00	0.00	0.00
5,900.00	0.00	0.00	5,839.89	-645.00	326.16	661.00	0.00	0.00	0.00
6,000.00	0.00	0.00	5,939.89	-645.00	326.16	661.00	0.00	0.00	0.00
6,100.00	0.00	0.00	6,039.89	-645.00	326.16	661.00	0.00	0.00	0.00
6,200.00	0.00	0.00	6,139.89	-645.00	326.16	661.00	0.00	0.00	0.00
6,300.00	0.00	0.00	6,239.89	-645.00	326.16	661.00	0.00	0.00	0.00
6,400.00	0.00	0.00	6,339.89	-645.00	326.16	661.00	0.00	0.00	0.00
6,500.00	0.00	0.00	6,439.89	-645.00	326.16	661.00	0.00	0.00	0.00
6,600.00	0.00	0.00	6,539.89	-645.00	326.16	661.00	0.00	0.00	0.00
6,700.00	0.00	0.00	6,639.89	-645.00	326.16	661.00	0.00	0.00	0.00
6,729.76	0.00	0.00	6,669.65	-645.00	326.16	661.00	0.00	0.00	0.00
6,800.00	6.32	180.34	6,739.75	-648.87	326.14	664.86	9.00	9.00	0.00
6,900.00	15.32	180.34	6,837.87	-667.63	326.03	683.59	9.00	9.00	0.00
7,000.00	24.32	180.34	6,931.85	-701.50	325.83	717.41	9.00	9.00	0.00
7,100.00	33.32	180.34	7,019.37	-749.66	325.54	765.49	9.00	9.00	0.00
7,200.00	42.32	180.34	7,098.28	-810.92	325.18	826.64	9.00	9.00	0.00
7,235.71	45.54	180.34	7,124.00	-835.69	325.04	851.37	9.00	9.00	0.00
Sharon Springs									
7,274.03	48.98	180.34	7,150.00	-863.83	324.87	879.46	9.00	9.00	0.00
Niobrara									
7,300.00	51.32	180.34	7,166.64	-883.76	324.75	899.37	9.00	9.00	0.00
7,400.00	60.32	180.34	7,222.76	-966.41	324.26	981.88	9.00	9.00	0.00
7,500.00	69.32	180.34	7,265.26	-1,056.81	323.73	1,072.13	9.00	9.00	0.00
7,539.33	72.86	180.34	7,278.00	-1,094.01	323.51	1,109.27	9.00	9.00	0.00
Nio B									
7,600.00	78.32	180.34	7,293.09	-1,152.75	323.17	1,167.92	9.00	9.00	0.00
7,700.00	87.32	180.34	7,305.57	-1,251.86	322.58	1,266.87	9.00	9.00	0.00
7,719.20	89.05	180.34	7,306.18	-1,271.05	322.47	1,286.02	9.00	9.00	0.00
Top of Production - AZUL 13-11HZ_PHL									
7,800.00	89.05	180.34	7,307.52	-1,351.84	321.99	1,366.68	0.00	0.00	0.00
7,900.00	89.05	180.34	7,309.18	-1,451.83	321.40	1,466.50	0.00	0.00	0.00
8,000.00	89.05	180.34	7,310.84	-1,551.81	320.81	1,566.32	0.00	0.00	0.00
8,100.00	89.05	180.34	7,312.50	-1,651.80	320.22	1,666.14	0.00	0.00	0.00
8,200.00	89.05	180.34	7,314.15	-1,751.78	319.63	1,765.96	0.00	0.00	0.00
8,300.00	89.05	180.34	7,315.81	-1,851.76	319.04	1,865.78	0.00	0.00	0.00
8,400.00	89.05	180.34	7,317.47	-1,951.75	318.45	1,965.60	0.00	0.00	0.00
8,500.00	89.05	180.34	7,319.13	-2,051.73	317.86	2,065.42	0.00	0.00	0.00

Corporate Planning Report

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Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB @ 5088.00usft (Original Well Elev)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB @ 5088.00usft (Original Well Elev)
Site:	1N-66W-13 AZUL 13-13HZ	North Reference:	True
Well:	AZUL 13-11HZ	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)
8,600.00	89.05	180.34	7,320.79	-2,151.72	317.27	2,165.24	0.00	0.00	0.00
8,700.00	89.05	180.34	7,322.44	-2,251.70	316.68	2,265.06	0.00	0.00	0.00
8,800.00	89.05	180.34	7,324.10	-2,351.69	316.09	2,364.88	0.00	0.00	0.00
8,900.00	89.05	180.34	7,325.76	-2,451.67	315.50	2,464.70	0.00	0.00	0.00
9,000.00	89.05	180.34	7,327.42	-2,551.66	314.91	2,564.52	0.00	0.00	0.00
9,100.00	89.05	180.34	7,329.08	-2,651.64	314.32	2,664.34	0.00	0.00	0.00
9,200.00	89.05	180.34	7,330.73	-2,751.62	313.74	2,764.16	0.00	0.00	0.00
9,300.00	89.05	180.34	7,332.39	-2,851.61	313.15	2,863.98	0.00	0.00	0.00
9,400.00	89.05	180.34	7,334.05	-2,951.59	312.56	2,963.80	0.00	0.00	0.00
9,500.00	89.05	180.34	7,335.71	-3,051.58	311.97	3,063.62	0.00	0.00	0.00
9,600.00	89.05	180.34	7,337.37	-3,151.56	311.38	3,163.45	0.00	0.00	0.00
9,700.00	89.05	180.34	7,339.02	-3,251.55	310.79	3,263.27	0.00	0.00	0.00
9,800.00	89.05	180.34	7,340.68	-3,351.53	310.20	3,363.09	0.00	0.00	0.00
9,900.00	89.05	180.34	7,342.34	-3,451.52	309.61	3,462.91	0.00	0.00	0.00
10,000.00	89.05	180.34	7,344.00	-3,551.50	309.02	3,562.73	0.00	0.00	0.00
10,100.00	89.05	180.34	7,345.66	-3,651.49	308.43	3,662.55	0.00	0.00	0.00
10,200.00	89.05	180.34	7,347.31	-3,751.47	307.84	3,762.37	0.00	0.00	0.00
10,300.00	89.05	180.34	7,348.97	-3,851.45	307.25	3,862.19	0.00	0.00	0.00
10,400.00	89.05	180.34	7,350.63	-3,951.44	306.66	3,962.01	0.00	0.00	0.00
10,500.00	89.05	180.34	7,352.29	-4,051.42	306.07	4,061.83	0.00	0.00	0.00
10,600.00	89.05	180.34	7,353.95	-4,151.41	305.48	4,161.65	0.00	0.00	0.00
10,700.00	89.05	180.34	7,355.60	-4,251.39	304.89	4,261.47	0.00	0.00	0.00
10,800.00	89.05	180.34	7,357.26	-4,351.38	304.30	4,361.29	0.00	0.00	0.00
10,900.00	89.05	180.34	7,358.92	-4,451.36	303.71	4,461.11	0.00	0.00	0.00
11,000.00	89.05	180.34	7,360.58	-4,551.35	303.12	4,560.93	0.00	0.00	0.00
11,100.00	89.05	180.34	7,362.24	-4,651.33	302.53	4,660.75	0.00	0.00	0.00
11,200.00	89.05	180.34	7,363.89	-4,751.32	301.94	4,760.57	0.00	0.00	0.00
11,300.00	89.05	180.34	7,365.55	-4,851.30	301.35	4,860.39	0.00	0.00	0.00
11,400.00	89.05	180.34	7,367.21	-4,951.28	300.76	4,960.21	0.00	0.00	0.00
11,500.00	89.05	180.34	7,368.87	-5,051.27	300.17	5,060.03	0.00	0.00	0.00
11,600.00	89.05	180.34	7,370.52	-5,151.25	299.58	5,159.85	0.00	0.00	0.00
11,700.00	89.05	180.34	7,372.18	-5,251.24	298.99	5,259.67	0.00	0.00	0.00
11,800.00	89.05	180.34	7,373.84	-5,351.22	298.40	5,359.49	0.00	0.00	0.00
11,900.00	89.05	180.34	7,375.50	-5,451.21	297.81	5,459.31	0.00	0.00	0.00
12,000.00	89.05	180.34	7,377.16	-5,551.19	297.22	5,559.13	0.00	0.00	0.00
12,100.00	89.05	180.34	7,378.81	-5,651.18	296.63	5,658.95	0.00	0.00	0.00
12,171.49	89.05	180.34	7,380.00	-5,722.65	296.21	5,730.31	0.00	0.00	0.00
AZUL 13-11HZ_PBHL									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
AZUL 13-11HZ_PHL	0.00	0.00	7,306.18	-1,271.05	322.47	14,542,523.65	1,716,303.76	40.043046	-104.728854
- plan hits target center									
- Point									
AZUL 13-11HZ_PBHL	0.00	0.00	7,380.00	-5,722.65	296.21	14,538,072.00	1,716,291.00	40.030821	-104.728948
- plan hits target center									
- Point									

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well AZUL 13-11HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB @ 5088.00usft (Original Well Elev)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB @ 5088.00usft (Original Well Elev)
Site:	1N-66W-13 AZUL 13-13HZ	North Reference:	True
Well:	AZUL 13-11HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-1		

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,817.20	1,800.00	9 5/8"	9-5/8	13-1/2	
7,719.20	7,306.18	Top of Production	5-1/2	7-7/8	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,633.38	1,619.00	Fox Hills				
4,315.53	4,260.00	Parkman				
4,683.50	4,624.00	Sussex				
7,235.71	7,124.00	Sharon Springs				
7,274.03	7,150.00	Niobrara				
7,539.33	7,278.00	Nio B				