

US ROCKIES WATTENBERG PLANNING

**WELD-NAD83-UTMFT13N
1N-66W-15 JDB 16-15HZ PAD
JDB 15-8HZ**

Plan A

Plan: Permit Rev-1

SHL Lat/Long: 40.045445/-104.757728
Survey Program: MWD+IFR

Standard Planning Report

22 July, 2018

Project: WELD-NAD83-UTMFT13N
Site: 1N-66W-15 JDB 16-15HZ PAD
Well: JDB 15-8HZ
Wellbore: Plan A
Design: Permit Rev-1

US ROCKIES WATTENBERG PLANNING

CASING DETAILS

TVD	MD	Size
1500.00	1524.01	9-5/8
7659.00	8585.43	5-1/2

WELL DETAILS: JDB 15-8HZ

GL = 5152.00

RKB = 17" @ 5169.00usft (Drilling Rig)

SECTION DETAILS

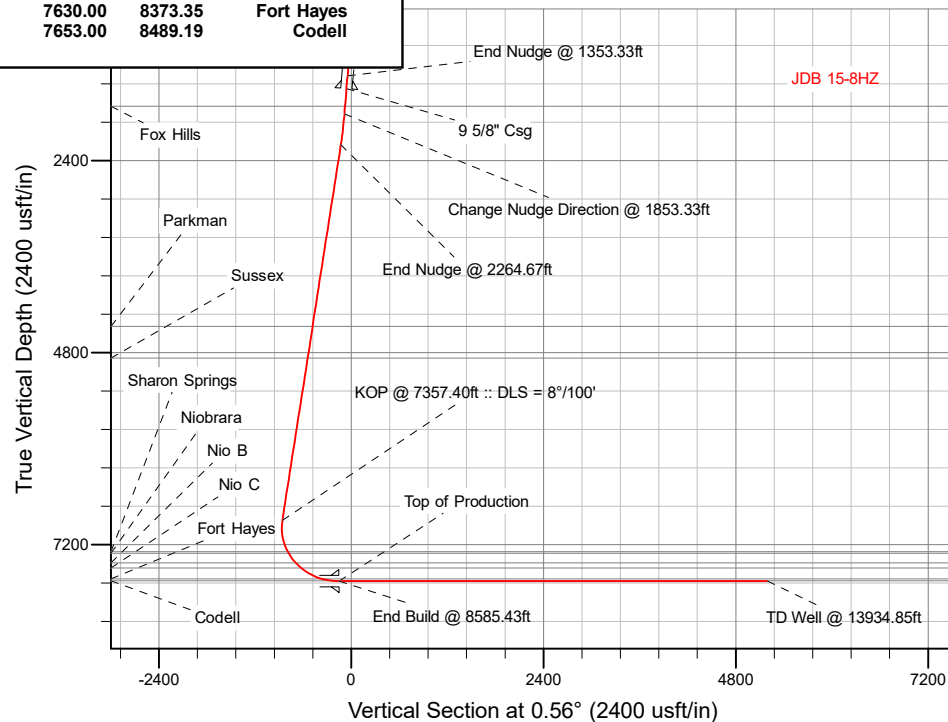
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	220.00	0.00	0.00	220.00	0.00	0.00	0.00	0.00	0.00	
3	1353.33	17.00	106.00	1336.78	-46.00	160.44	1.50	106.00	-44.43	
4	1853.33	17.00	106.00	1814.93	-86.30	300.96	0.00	0.00	-83.35	
5	2264.67	22.80	112.25	2201.58	-133.10	432.66	1.50	23.11	-128.86	
6	7357.40	22.80	112.25	6896.38	-880.36	2259.22	0.00	0.00	-858.24	
7	8585.43	90.01	0.56	7659.00	-174.40	2564.14	8.00	-110.13	-149.33	
8	13934.85	90.01	0.56	7658.00	5174.77	2616.88	0.00	0.00	5200.10	JDB 15-8HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
JDB 15-8HZ_SHL	0.00	0.00	0.00	40.045445	-104.757728
JDB 15-8HZ_BHL	7658.00	5174.77	2616.88	40.059655	-104.748376

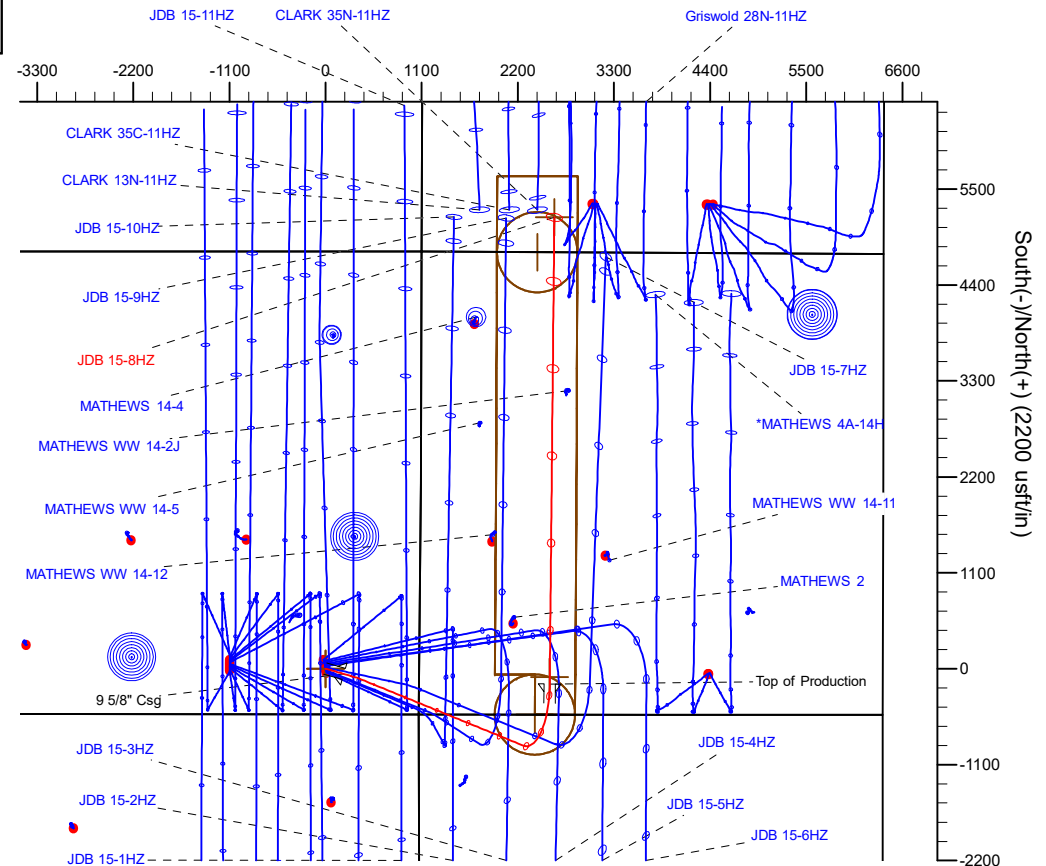
FORMATION TOP DETAILS

TVDPPath	MDPath	Formation
1719.00	1753.02	Fox Hills
4472.00	4727.53	Parkman
4868.00	5157.09	Sussex
7288.00	7789.68	Sharon Springs
7308.00	7813.85	Niobrara
7429.00	7972.00	Nio B
7495.00	8072.20	Nio C
7630.00	8373.35	Fort Hayes
7653.00	8489.19	Codell



SHL 523' FSL 1072' FEL
HEEL 355' FSL 1492' FWL
TOE 400' FSL 1517' FWL

West(-)/East(+) (2200 usft/in)



Plan: Permit Rev-1 (JDB 15-8HZ/Plan A)

Date: 7/22/2018

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well JDB 15-8HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5169.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5169.00usft (Drilling Rig)
Site:	1N-66W-15 JDB 16-15HZ PAD	North Reference:	True
Well:	JDB 15-8HZ	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-15 JDB 16-15HZ PAD			
Site Position:		Northing:	14,543,476.02 usft	Latitude: 40.045725
From:	Lat/Long	Easting:	1,708,195.02 usft	Longitude: -104.757817
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence: 0.16 °

Well	JDB 15-8HZ			
Well Position	+N/-S	-101.96 usft	Northing:	14,543,374.13 usft
	+E/-W	24.91 usft	Easting:	1,708,220.20 usft
Position Uncertainty		3.28 usft	Wellhead Elevation:	Latitude: 40.045445
				Longitude: -104.757728
				Ground Level: 5,152.00 usft

Wellbore	Plan A				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	7/10/2018	8.06	66.55	52,084.70293949

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	0.56

Plan Survey Tool Program	Date	7/22/2018		
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+I Fixed:v2:crustal field declinatio
2	1,500.00	13,934.85	Permit Rev-1 (Plan A)	APC_ISCWSA REV 2 MWD+I Fixed:v2:crustal field declinatio

Corporate
Planning Report

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Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5169.00usft (Drilling Rig)
Site:	1N-66W-15 JDB 16-15HZ PAD	North Reference:	True
Well:	JDB 15-8HZ	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	
220.00	0.00	0.00	220.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,353.33	17.00	106.00	1,336.78	-46.00	160.44	1.50	1.50	0.00	106.00	
1,853.33	17.00	106.00	1,814.93	-86.30	300.96	0.00	0.00	0.00	0.00	
2,264.67	22.80	112.25	2,201.58	-133.10	432.66	1.50	1.41	1.52	23.11	
7,357.40	22.80	112.25	6,896.38	-880.36	2,259.22	0.00	0.00	0.00	0.00	
8,585.43	90.01	0.56	7,659.00	-174.40	2,564.14	8.00	5.47	-9.09	-110.13	
13,934.85	90.01	0.56	7,658.00	5,174.77	2,616.88	0.00	0.00	0.00	0.00	JDB 15-8HZ_BHL

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well JDB 15-8HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5169.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5169.00usft (Drilling Rig)
Site:	1N-66W-15 JDB 16-15HZ PAD	North Reference:	True
Well:	JDB 15-8HZ	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
220.00	0.00	0.00	220.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge @ 220.00ft									
300.00	1.20	106.00	299.99	-0.23	0.81	-0.22	1.50	1.50	0.00
400.00	2.70	106.00	399.93	-1.17	4.08	-1.13	1.50	1.50	0.00
500.00	4.20	106.00	499.75	-2.83	9.86	-2.73	1.50	1.50	0.00
600.00	5.70	106.00	599.37	-5.21	18.15	-5.03	1.50	1.50	0.00
700.00	7.20	106.00	698.74	-8.30	28.95	-8.02	1.50	1.50	0.00
800.00	8.70	106.00	797.77	-12.11	42.25	-11.70	1.50	1.50	0.00
900.00	10.20	106.00	896.41	-16.64	58.03	-16.07	1.50	1.50	0.00
1,000.00	11.70	106.00	994.59	-21.88	76.29	-21.13	1.50	1.50	0.00
1,100.00	13.20	106.00	1,092.24	-27.82	97.01	-26.87	1.50	1.50	0.00
1,200.00	14.70	106.00	1,189.28	-34.46	120.18	-33.29	1.50	1.50	0.00
1,300.00	16.20	106.00	1,285.67	-41.81	145.79	-40.38	1.50	1.50	0.00
1,353.33	17.00	106.00	1,336.78	-46.00	160.44	-44.43	1.50	1.50	0.00
End Nudge @ 1353.33ft									
1,400.00	17.00	106.00	1,381.41	-49.77	173.55	-48.07	0.00	0.00	0.00
1,500.00	17.00	106.00	1,477.04	-57.82	201.66	-55.85	0.00	0.00	0.00
1,524.01	17.00	106.00	1,500.00	-59.76	208.41	-57.72	0.00	0.00	0.00
9 5/8" Csg									
1,600.00	17.00	106.00	1,572.67	-65.88	229.76	-63.63	0.00	0.00	0.00
1,700.00	17.00	106.00	1,668.30	-73.94	257.87	-71.42	0.00	0.00	0.00
1,753.02	17.00	106.00	1,719.00	-78.22	272.77	-75.55	0.00	0.00	0.00
Fox Hills									
1,800.00	17.00	106.00	1,763.93	-82.00	285.97	-79.20	0.00	0.00	0.00
1,853.33	17.00	106.00	1,814.93	-86.30	300.96	-83.35	0.00	0.00	0.00
Change Nudge Direction @ 1853.33ft									
1,900.00	17.65	106.91	1,859.48	-90.24	314.29	-87.16	1.50	1.38	1.94
2,000.00	19.04	108.65	1,954.40	-99.86	344.25	-96.49	1.50	1.40	1.74
2,100.00	20.45	110.16	2,048.51	-111.10	376.11	-107.42	1.50	1.41	1.51
2,200.00	21.88	111.48	2,141.77	-123.94	409.85	-119.93	1.50	1.42	1.32
2,264.67	22.80	112.25	2,201.58	-133.10	432.66	-128.86	1.50	1.43	1.19
End Nudge @ 2264.67ft									
2,300.00	22.80	112.25	2,234.15	-138.28	445.33	-133.92	0.00	0.00	0.00
2,400.00	22.80	112.25	2,326.34	-152.95	481.19	-148.24	0.00	0.00	0.00
2,500.00	22.80	112.25	2,418.53	-167.63	517.06	-162.57	0.00	0.00	0.00
2,600.00	22.80	112.25	2,510.71	-182.30	552.93	-176.89	0.00	0.00	0.00
2,700.00	22.80	112.25	2,602.90	-196.97	588.79	-191.21	0.00	0.00	0.00
2,800.00	22.80	112.25	2,695.08	-211.65	624.66	-205.53	0.00	0.00	0.00
2,900.00	22.80	112.25	2,787.27	-226.32	660.52	-219.85	0.00	0.00	0.00
3,000.00	22.80	112.25	2,879.46	-240.99	696.39	-234.18	0.00	0.00	0.00
3,100.00	22.80	112.25	2,971.64	-255.67	732.26	-248.50	0.00	0.00	0.00
3,200.00	22.80	112.25	3,063.83	-270.34	768.12	-262.82	0.00	0.00	0.00
3,300.00	22.80	112.25	3,156.02	-285.01	803.99	-277.14	0.00	0.00	0.00
3,400.00	22.80	112.25	3,248.20	-299.69	839.85	-291.46	0.00	0.00	0.00
3,500.00	22.80	112.25	3,340.39	-314.36	875.72	-305.79	0.00	0.00	0.00
3,600.00	22.80	112.25	3,432.58	-329.03	911.59	-320.11	0.00	0.00	0.00
3,700.00	22.80	112.25	3,524.76	-343.71	947.45	-334.43	0.00	0.00	0.00
3,800.00	22.80	112.25	3,616.95	-358.38	983.32	-348.75	0.00	0.00	0.00
3,900.00	22.80	112.25	3,709.13	-373.05	1,019.19	-363.07	0.00	0.00	0.00
4,000.00	22.80	112.25	3,801.32	-387.73	1,055.05	-377.40	0.00	0.00	0.00

Corporate Planning Report

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Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5169.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5169.00usft (Drilling Rig)
Site:	1N-66W-15 JDB 16-15HZ PAD	North Reference:	True
Well:	JDB 15-8HZ	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)
4,100.00	22.80	112.25	3,893.51	-402.40	1,090.92	-391.72	0.00	0.00	0.00
4,200.00	22.80	112.25	3,985.69	-417.07	1,126.78	-406.04	0.00	0.00	0.00
4,300.00	22.80	112.25	4,077.88	-431.75	1,162.65	-420.36	0.00	0.00	0.00
4,400.00	22.80	112.25	4,170.07	-446.42	1,198.52	-434.68	0.00	0.00	0.00
4,500.00	22.80	112.25	4,262.25	-461.09	1,234.38	-449.01	0.00	0.00	0.00
4,600.00	22.80	112.25	4,354.44	-475.77	1,270.25	-463.33	0.00	0.00	0.00
4,700.00	22.80	112.25	4,446.62	-490.44	1,306.11	-477.65	0.00	0.00	0.00
4,727.53	22.80	112.25	4,472.00	-494.48	1,315.99	-481.59	0.00	0.00	0.00
Parkman									
4,800.00	22.80	112.25	4,538.81	-505.11	1,341.98	-491.97	0.00	0.00	0.00
4,900.00	22.80	112.25	4,631.00	-519.78	1,377.85	-506.29	0.00	0.00	0.00
5,000.00	22.80	112.25	4,723.18	-534.46	1,413.71	-520.62	0.00	0.00	0.00
5,100.00	22.80	112.25	4,815.37	-549.13	1,449.58	-534.94	0.00	0.00	0.00
5,157.09	22.80	112.25	4,868.00	-557.51	1,470.06	-543.11	0.00	0.00	0.00
Sussex									
5,200.00	22.80	112.25	4,907.56	-563.80	1,485.45	-549.26	0.00	0.00	0.00
5,300.00	22.80	112.25	4,999.74	-578.48	1,521.31	-563.58	0.00	0.00	0.00
5,400.00	22.80	112.25	5,091.93	-593.15	1,557.18	-577.90	0.00	0.00	0.00
5,500.00	22.80	112.25	5,184.12	-607.82	1,593.04	-592.23	0.00	0.00	0.00
5,600.00	22.80	112.25	5,276.30	-622.50	1,628.91	-606.55	0.00	0.00	0.00
5,700.00	22.80	112.25	5,368.49	-637.17	1,664.78	-620.87	0.00	0.00	0.00
5,800.00	22.80	112.25	5,460.67	-651.84	1,700.64	-635.19	0.00	0.00	0.00
5,900.00	22.80	112.25	5,552.86	-666.52	1,736.51	-649.51	0.00	0.00	0.00
6,000.00	22.80	112.25	5,645.05	-681.19	1,772.37	-663.84	0.00	0.00	0.00
6,100.00	22.80	112.25	5,737.23	-695.86	1,808.24	-678.16	0.00	0.00	0.00
6,200.00	22.80	112.25	5,829.42	-710.54	1,844.11	-692.48	0.00	0.00	0.00
6,300.00	22.80	112.25	5,921.61	-725.21	1,879.97	-706.80	0.00	0.00	0.00
6,400.00	22.80	112.25	6,013.79	-739.88	1,915.84	-721.12	0.00	0.00	0.00
6,500.00	22.80	112.25	6,105.98	-754.56	1,951.70	-735.45	0.00	0.00	0.00
6,600.00	22.80	112.25	6,198.16	-769.23	1,987.57	-749.77	0.00	0.00	0.00
6,700.00	22.80	112.25	6,290.35	-783.90	2,023.44	-764.09	0.00	0.00	0.00
6,800.00	22.80	112.25	6,382.54	-798.58	2,059.30	-778.41	0.00	0.00	0.00
6,900.00	22.80	112.25	6,474.72	-813.25	2,095.17	-792.73	0.00	0.00	0.00
7,000.00	22.80	112.25	6,566.91	-827.92	2,131.04	-807.06	0.00	0.00	0.00
7,100.00	22.80	112.25	6,659.10	-842.60	2,166.90	-821.38	0.00	0.00	0.00
7,200.00	22.80	112.25	6,751.28	-857.27	2,202.77	-835.70	0.00	0.00	0.00
7,300.00	22.80	112.25	6,843.47	-871.94	2,238.63	-850.02	0.00	0.00	0.00
7,357.40	22.80	112.25	6,896.38	-880.36	2,259.22	-858.24	0.00	0.00	0.00
KOP @ 7357.40ft :: DLS = 8°/100'									
7,400.00	21.85	103.62	6,935.80	-885.36	2,274.57	-863.09	8.00	-2.23	-20.25
7,500.00	21.56	81.90	7,028.86	-887.16	2,310.91	-864.53	8.00	-0.29	-21.73
7,600.00	23.97	62.06	7,121.20	-875.03	2,347.10	-852.05	8.00	2.40	-19.83
7,700.00	28.39	46.86	7,211.03	-849.22	2,382.44	-825.90	8.00	4.42	-15.20
7,789.68	33.42	36.87	7,288.00	-814.84	2,412.85	-791.22	8.00	5.61	-11.14
Sharon Springs									
7,800.00	34.04	35.89	7,296.58	-810.23	2,416.25	-786.58	8.00	6.04	-9.44
7,813.85	34.89	34.63	7,308.00	-803.83	2,420.78	-780.13	8.00	6.13	-9.09
Niobrara									
7,900.00	40.42	27.87	7,376.21	-758.81	2,447.87	-734.85	8.00	6.41	-7.85
7,972.00	45.28	23.33	7,429.00	-714.65	2,468.93	-690.49	8.00	6.75	-6.31
Nio B									
8,000.00	47.21	21.76	7,448.36	-695.98	2,476.68	-671.74	8.00	6.91	-5.58
8,072.20	52.29	18.15	7,495.00	-644.19	2,495.41	-619.77	8.00	7.03	-5.01

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well JDB 15-8HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5169.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5169.00usft (Drilling Rig)
Site:	1N-66W-15 JDB 16-15HZ PAD	North Reference:	True
Well:	JDB 15-8HZ	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)
Nio C									
8,100.00	54.27	16.89	7,511.62	-622.94	2,502.12	-598.46	8.00	7.13	-4.53
8,200.00	61.49	12.82	7,564.77	-541.12	2,523.69	-516.43	8.00	7.22	-4.07
8,300.00	68.82	9.27	7,606.77	-452.12	2,540.98	-427.27	8.00	7.33	-3.54
8,373.35	74.24	6.90	7,630.00	-383.27	2,550.74	-358.32	8.00	7.39	-3.24
Fort Hayes									
8,400.00	76.21	6.07	7,636.80	-357.67	2,553.65	-332.69	8.00	7.41	-3.11
8,489.19	82.84	3.38	7,653.00	-270.32	2,560.85	-245.28	8.00	7.43	-3.01
Codell									
8,500.00	83.65	3.06	7,654.27	-259.60	2,561.45	-234.55	8.00	7.44	-2.95
8,585.43	90.01	0.56	7,659.00	-174.39	2,564.14	-149.33	8.00	7.45	-2.92
End Build @ 8585.43ft - Top of Production									
8,600.00	90.01	0.56	7,658.99	-159.83	2,564.29	-134.76	0.00	0.00	0.00
8,700.00	90.01	0.56	7,658.97	-59.83	2,565.27	-34.76	0.00	0.00	0.00
8,800.00	90.01	0.56	7,658.96	40.16	2,566.26	65.24	0.00	0.00	0.00
8,900.00	90.01	0.56	7,658.94	140.16	2,567.24	165.24	0.00	0.00	0.00
9,000.00	90.01	0.56	7,658.92	240.15	2,568.23	265.24	0.00	0.00	0.00
9,100.00	90.01	0.56	7,658.90	340.15	2,569.22	365.24	0.00	0.00	0.00
9,200.00	90.01	0.56	7,658.88	440.15	2,570.20	465.24	0.00	0.00	0.00
9,300.00	90.01	0.56	7,658.86	540.14	2,571.19	565.24	0.00	0.00	0.00
9,400.00	90.01	0.56	7,658.84	640.14	2,572.17	665.24	0.00	0.00	0.00
9,500.00	90.01	0.56	7,658.83	740.13	2,573.16	765.24	0.00	0.00	0.00
9,600.00	90.01	0.56	7,658.81	840.13	2,574.15	865.24	0.00	0.00	0.00
9,700.00	90.01	0.56	7,658.79	940.12	2,575.13	965.24	0.00	0.00	0.00
9,800.00	90.01	0.56	7,658.77	1,040.12	2,576.12	1,065.24	0.00	0.00	0.00
9,900.00	90.01	0.56	7,658.75	1,140.11	2,577.10	1,165.24	0.00	0.00	0.00
10,000.00	90.01	0.56	7,658.73	1,240.11	2,578.09	1,265.24	0.00	0.00	0.00
10,100.00	90.01	0.56	7,658.71	1,340.10	2,579.07	1,365.24	0.00	0.00	0.00
10,200.00	90.01	0.56	7,658.70	1,440.10	2,580.06	1,465.24	0.00	0.00	0.00
10,300.00	90.01	0.56	7,658.68	1,540.09	2,581.05	1,565.24	0.00	0.00	0.00
10,400.00	90.01	0.56	7,658.66	1,640.09	2,582.03	1,665.24	0.00	0.00	0.00
10,500.00	90.01	0.56	7,658.64	1,740.08	2,583.02	1,765.24	0.00	0.00	0.00
10,600.00	90.01	0.56	7,658.62	1,840.08	2,584.00	1,865.24	0.00	0.00	0.00
10,700.00	90.01	0.56	7,658.60	1,940.07	2,584.99	1,965.24	0.00	0.00	0.00
10,800.00	90.01	0.56	7,658.58	2,040.07	2,585.98	2,065.24	0.00	0.00	0.00
10,900.00	90.01	0.56	7,658.57	2,140.06	2,586.96	2,165.24	0.00	0.00	0.00
11,000.00	90.01	0.56	7,658.55	2,240.06	2,587.95	2,265.24	0.00	0.00	0.00
11,100.00	90.01	0.56	7,658.53	2,340.05	2,588.93	2,365.24	0.00	0.00	0.00
11,200.00	90.01	0.56	7,658.51	2,440.05	2,589.92	2,465.24	0.00	0.00	0.00
11,300.00	90.01	0.56	7,658.49	2,540.04	2,590.91	2,565.24	0.00	0.00	0.00
11,400.00	90.01	0.56	7,658.47	2,640.04	2,591.89	2,665.24	0.00	0.00	0.00
11,500.00	90.01	0.56	7,658.45	2,740.03	2,592.88	2,765.24	0.00	0.00	0.00
11,600.00	90.01	0.56	7,658.43	2,840.03	2,593.86	2,865.24	0.00	0.00	0.00
11,700.00	90.01	0.56	7,658.42	2,940.02	2,594.85	2,965.24	0.00	0.00	0.00
11,800.00	90.01	0.56	7,658.40	3,040.02	2,595.84	3,065.24	0.00	0.00	0.00
11,900.00	90.01	0.56	7,658.38	3,140.01	2,596.82	3,165.24	0.00	0.00	0.00
12,000.00	90.01	0.56	7,658.36	3,240.01	2,597.81	3,265.24	0.00	0.00	0.00
12,100.00	90.01	0.56	7,658.34	3,340.00	2,598.79	3,365.24	0.00	0.00	0.00
12,200.00	90.01	0.56	7,658.32	3,440.00	2,599.78	3,465.24	0.00	0.00	0.00
12,300.00	90.01	0.56	7,658.30	3,539.99	2,600.77	3,565.24	0.00	0.00	0.00
12,400.00	90.01	0.56	7,658.29	3,639.99	2,601.75	3,665.24	0.00	0.00	0.00
12,500.00	90.01	0.56	7,658.27	3,739.98	2,602.74	3,765.24	0.00	0.00	0.00
12,600.00	90.01	0.56	7,658.25	3,839.98	2,603.72	3,865.24	0.00	0.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well JDB 15-8HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5169.00usft (Drilling Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5169.00usft (Drilling Rig)
Site:	1N-66W-15 JDB 16-15HZ PAD	North Reference:	True
Well:	JDB 15-8HZ	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)	
12,700.00	90.01	0.56	7,658.23	3,939.98	2,604.71	3,965.24	0.00	0.00	0.00	
12,800.00	90.01	0.56	7,658.21	4,039.97	2,605.69	4,065.24	0.00	0.00	0.00	
12,900.00	90.01	0.56	7,658.19	4,139.97	2,606.68	4,165.24	0.00	0.00	0.00	
13,000.00	90.01	0.56	7,658.17	4,239.96	2,607.67	4,265.24	0.00	0.00	0.00	
13,100.00	90.01	0.56	7,658.16	4,339.96	2,608.65	4,365.24	0.00	0.00	0.00	
13,200.00	90.01	0.56	7,658.14	4,439.95	2,609.64	4,465.24	0.00	0.00	0.00	
13,300.00	90.01	0.56	7,658.12	4,539.95	2,610.62	4,565.24	0.00	0.00	0.00	
13,400.00	90.01	0.56	7,658.10	4,639.94	2,611.61	4,665.24	0.00	0.00	0.00	
13,500.00	90.01	0.56	7,658.08	4,739.94	2,612.60	4,765.24	0.00	0.00	0.00	
13,600.00	90.01	0.56	7,658.06	4,839.93	2,613.58	4,865.24	0.00	0.00	0.00	
13,700.00	90.01	0.56	7,658.04	4,939.93	2,614.57	4,965.24	0.00	0.00	0.00	
13,800.00	90.01	0.56	7,658.03	5,039.92	2,615.55	5,065.24	0.00	0.00	0.00	
13,900.00	90.01	0.56	7,658.01	5,139.92	2,616.54	5,165.24	0.00	0.00	0.00	
13,934.85	90.01	0.56	7,658.00	5,174.77	2,616.88	5,200.10	0.00	0.00	0.00	
TD Well @ 13934.85ft										

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,524.01	1,500.00	9 5/8" Csg	9-5/8	13-1/2	
8,585.43	7,659.00	Top of Production	5-1/2	7-7/8	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,753.02	1,719.00	Fox Hills				
4,727.53	4,472.00	Parkman				
5,157.09	4,868.00	Sussex				
7,789.68	7,288.00	Sharon Springs				
7,813.85	7,308.00	Niobrara				
7,972.00	7,429.00	Nio B				
8,072.20	7,495.00	Nio C				
8,373.35	7,630.00	Fort Hayes				
8,489.19	7,653.00	Codell				

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
220.00	220.00	0.00	0.00	Begin Nudge @ 220.00ft	
1,353.33	1,336.78	-46.00	160.44	End Nudge @ 1353.33ft	
1,853.33	1,814.93	-86.30	300.96	Change Nudge Direction @ 1853.33ft	
2,264.67	2,201.58	-133.10	432.66	End Nudge @ 2264.67ft	
7,357.40	6,896.38	-880.36	2,259.22	KOP @ 7357.40ft :: DLS = 8°/100'	
8,585.43	7,659.00	-174.40	2,564.14	End Build @ 8585.43ft	
13,934.85	7,658.00	5,174.77	2,616.88	TD Well @ 13934.85ft	