

US ROCKIES WATTENBERG PLANNING

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

Plan A

Plan: Permit Rev-1

SHL Lat/Long: 40.045725/-104.757817
Survey Program: MWD+IFR

Standard Planning Report

22 July, 2018

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

US ROCKIES WATTENBERG PLANNING

CASING DETAILS

TVD	MD	Size
1500.00	1523.00	9-5/8
7650.00	8216.08	5-1/2

WELL DETAILS: JDB 15-1HZ

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	250.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	
3	1420.00	17.55	50.65	1401.79	112.73	137.48	1.50	50.65	-112.71	
4	4220.00	17.55	50.65	4071.46	648.07	790.38	0.00	0.00	-647.93	
5	5097.50	0.00	0.00	4935.30	732.62	893.49	2.00	180.00	-732.46	
6	7096.02	0.00	0.00	6933.82	732.62	893.49	0.00	0.00	-732.46	
7	8216.08	89.60	179.99	7650.00	21.36	893.57	8.00	179.99	-21.20	
8	18948.19	89.60	179.99	7724.00	-10710.50	894.85	0.00	0.00	10710.65	JDB 15-1HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
JDB 15-1HZ_SHL	0.00	0.00	0.00	40.045725	-104.757817
JDB 15-1HZ_BHL	7724.00	-10710.50	894.85	40.016312	-104.754621

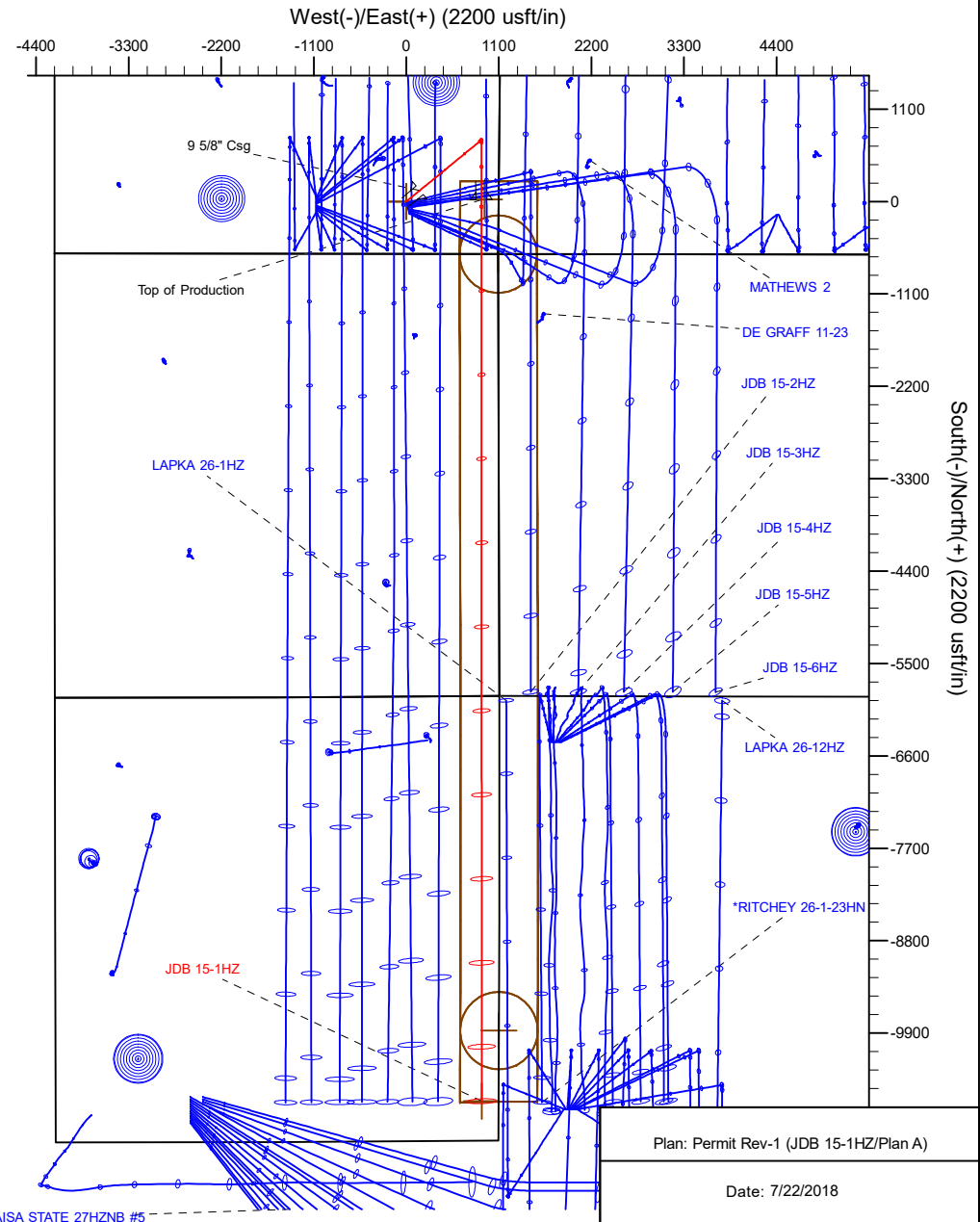
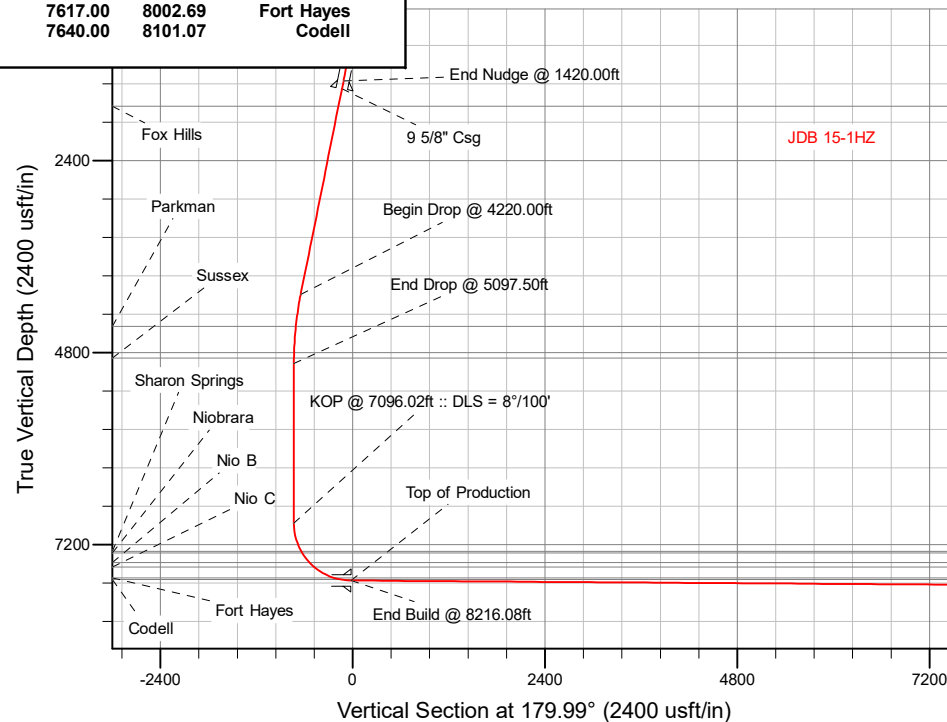
FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1719.00	1752.70	Fox Hills
4472.00	4632.15	Parkman
4868.00	5030.19	Sussex
7285.00	7463.05	Sharon Springs
7305.00	7486.21	Niobrara
7424.00	7635.89	Nio B
7481.00	7718.75	Nio C
7617.00	8002.69	Fort Hayes
7640.00	8101.07	Codell

SHL
625' FSL
1098' FEL

HEEL
650' FSL
202' FEL

TOE
470' FSL
203' FEL



Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well JDB 15-1HZ
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 15-1HZ	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 15-1HZ				
Well Position	+N-S	0.00 usft	Northing:	14,543,476.02 usft	Latitude:	40.045725
	+E-W	0.00 usft	Easting:	1,708,195.02 usft	Longitude:	-104.757817
Position Uncertainty		3.28 usft	Wellhead Elevation:		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	52,084.83984434

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	179.99

Plan Survey Tool Program	Date	7/16/2018		
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	18,948.19	Permit Rev-1 (Plan A)	APC_ISCWSA REV 2 MWD+II Fixed:v2:crustal field declinatio

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)
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Well:	JDB 15-1HZ	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	
250.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,420.00	17.55	50.65	1,401.79	112.73	137.48	1.50	1.50	0.00	50.65	
4,220.00	17.55	50.65	4,071.46	648.07	790.38	0.00	0.00	0.00	0.00	
5,097.50	0.00	0.00	4,935.30	732.62	893.49	2.00	-2.00	0.00	180.00	
7,096.02	0.00	0.00	6,933.82	732.62	893.49	0.00	0.00	0.00	0.00	
8,216.08	89.60	179.99	7,650.00	21.36	893.57	8.00	8.00	16.07	179.99	
18,948.19	89.60	179.99	7,724.00	-10,710.50	894.85	0.00	0.00	0.00	0.00	JDB 15-1HZ_BHL

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well JDB 15-1HZ
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 15-1HZ	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
Begin Nudge @ 250.00ft									
300.00	0.75	50.65	300.00	0.21	0.25	-0.21	1.50	1.50	0.00
400.00	2.25	50.65	399.96	1.87	2.28	-1.87	1.50	1.50	0.00
500.00	3.75	50.65	499.82	5.19	6.32	-5.18	1.50	1.50	0.00
600.00	5.25	50.65	599.51	10.16	12.39	-10.16	1.50	1.50	0.00
700.00	6.75	50.65	698.96	16.79	20.47	-16.78	1.50	1.50	0.00
800.00	8.25	50.65	798.10	25.06	30.57	-25.06	1.50	1.50	0.00
900.00	9.75	50.65	896.87	34.98	42.66	-34.97	1.50	1.50	0.00
1,000.00	11.25	50.65	995.19	46.54	56.76	-46.53	1.50	1.50	0.00
1,100.00	12.75	50.65	1,093.00	59.72	72.83	-59.71	1.50	1.50	0.00
1,200.00	14.25	50.65	1,190.24	74.52	90.88	-74.50	1.50	1.50	0.00
1,300.00	15.75	50.65	1,286.83	90.93	110.90	-90.91	1.50	1.50	0.00
1,400.00	17.25	50.65	1,382.71	108.94	132.86	-108.91	1.50	1.50	0.00
1,420.00	17.55	50.65	1,401.79	112.73	137.48	-112.71	1.50	1.50	0.00
End Nudge @ 1420.00ft									
1,500.00	17.55	50.65	1,478.07	128.03	156.14	-128.00	0.00	0.00	0.00
1,523.00	17.55	50.65	1,500.00	132.42	161.50	-132.40	0.00	0.00	0.00
9 5/8" Csg									
1,600.00	17.55	50.65	1,573.41	147.14	179.46	-147.11	0.00	0.00	0.00
1,700.00	17.55	50.65	1,668.76	166.26	202.77	-166.23	0.00	0.00	0.00
1,752.70	17.55	50.65	1,719.00	176.34	215.06	-176.30	0.00	0.00	0.00
Fox Hills									
1,800.00	17.55	50.65	1,764.10	185.38	226.09	-185.34	0.00	0.00	0.00
1,900.00	17.55	50.65	1,859.45	204.50	249.41	-204.46	0.00	0.00	0.00
2,000.00	17.55	50.65	1,954.79	223.62	272.73	-223.57	0.00	0.00	0.00
2,100.00	17.55	50.65	2,050.14	242.74	296.04	-242.69	0.00	0.00	0.00
2,200.00	17.55	50.65	2,145.48	261.86	319.36	-261.80	0.00	0.00	0.00
2,300.00	17.55	50.65	2,240.83	280.98	342.68	-280.92	0.00	0.00	0.00
2,400.00	17.55	50.65	2,336.18	300.10	366.00	-300.03	0.00	0.00	0.00
2,500.00	17.55	50.65	2,431.52	319.22	389.31	-319.15	0.00	0.00	0.00
2,600.00	17.55	50.65	2,526.87	338.34	412.63	-338.26	0.00	0.00	0.00
2,700.00	17.55	50.65	2,622.21	357.46	435.95	-357.38	0.00	0.00	0.00
2,800.00	17.55	50.65	2,717.56	376.57	459.27	-376.49	0.00	0.00	0.00
2,900.00	17.55	50.65	2,812.90	395.69	482.58	-395.61	0.00	0.00	0.00
3,000.00	17.55	50.65	2,908.25	414.81	505.90	-414.73	0.00	0.00	0.00
3,100.00	17.55	50.65	3,003.59	433.93	529.22	-433.84	0.00	0.00	0.00
3,200.00	17.55	50.65	3,098.94	453.05	552.54	-452.96	0.00	0.00	0.00
3,300.00	17.55	50.65	3,194.28	472.17	575.85	-472.07	0.00	0.00	0.00
3,400.00	17.55	50.65	3,289.63	491.29	599.17	-491.19	0.00	0.00	0.00
3,500.00	17.55	50.65	3,384.97	510.41	622.49	-510.30	0.00	0.00	0.00
3,600.00	17.55	50.65	3,480.32	529.53	645.81	-529.42	0.00	0.00	0.00
3,700.00	17.55	50.65	3,575.67	548.65	669.12	-548.53	0.00	0.00	0.00
3,800.00	17.55	50.65	3,671.01	567.77	692.44	-567.65	0.00	0.00	0.00
3,900.00	17.55	50.65	3,766.36	586.89	715.76	-586.76	0.00	0.00	0.00
4,000.00	17.55	50.65	3,861.70	606.01	739.08	-605.88	0.00	0.00	0.00
4,100.00	17.55	50.65	3,957.05	625.12	762.39	-624.99	0.00	0.00	0.00
4,200.00	17.55	50.65	4,052.39	644.24	785.71	-644.11	0.00	0.00	0.00
4,220.00	17.55	50.65	4,071.46	648.07	790.38	-647.93	0.00	0.00	0.00
Begin Drop @ 4220.00ft									
4,300.00	15.95	50.65	4,148.07	662.69	808.20	-662.54	2.00	-2.00	0.00

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 15-1HZ	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	13.95	50.65	4,244.68	679.04	828.15	-678.90	2.00	-2.00	0.00	
4,500.00	11.95	50.65	4,342.13	693.25	845.48	-693.10	2.00	-2.00	0.00	
4,600.00	9.95	50.65	4,440.30	705.29	860.17	-705.14	2.00	-2.00	0.00	
4,632.15	9.31	50.65	4,472.00	708.70	864.33	-708.55	2.00	-2.00	0.00	
Parkman										
4,700.00	7.95	50.65	4,539.08	715.16	872.20	-715.01	2.00	-2.00	0.00	
4,800.00	5.95	50.65	4,638.34	722.83	881.55	-722.68	2.00	-2.00	0.00	
4,900.00	3.95	50.65	4,737.96	728.30	888.23	-728.15	2.00	-2.00	0.00	
5,000.00	1.95	50.65	4,837.82	731.56	892.21	-731.41	2.00	-2.00	0.00	
5,030.19	1.35	50.65	4,868.00	732.11	892.88	-731.96	2.00	-2.00	0.00	
Sussex										
5,097.50	0.00	0.00	4,935.30	732.62	893.49	-732.46	2.00	-2.00	0.00	
End Drop @ 5097.50ft										
5,100.00	0.00	0.00	4,937.80	732.62	893.49	-732.46	0.00	0.00	0.00	
5,200.00	0.00	0.00	5,037.80	732.62	893.49	-732.46	0.00	0.00	0.00	
5,300.00	0.00	0.00	5,137.80	732.62	893.49	-732.46	0.00	0.00	0.00	
5,400.00	0.00	0.00	5,237.80	732.62	893.49	-732.46	0.00	0.00	0.00	
5,500.00	0.00	0.00	5,337.80	732.62	893.49	-732.46	0.00	0.00	0.00	
5,600.00	0.00	0.00	5,437.80	732.62	893.49	-732.46	0.00	0.00	0.00	
5,700.00	0.00	0.00	5,537.80	732.62	893.49	-732.46	0.00	0.00	0.00	
5,800.00	0.00	0.00	5,637.80	732.62	893.49	-732.46	0.00	0.00	0.00	
5,900.00	0.00	0.00	5,737.80	732.62	893.49	-732.46	0.00	0.00	0.00	
6,000.00	0.00	0.00	5,837.80	732.62	893.49	-732.46	0.00	0.00	0.00	
6,100.00	0.00	0.00	5,937.80	732.62	893.49	-732.46	0.00	0.00	0.00	
6,200.00	0.00	0.00	6,037.80	732.62	893.49	-732.46	0.00	0.00	0.00	
6,300.00	0.00	0.00	6,137.80	732.62	893.49	-732.46	0.00	0.00	0.00	
6,400.00	0.00	0.00	6,237.80	732.62	893.49	-732.46	0.00	0.00	0.00	
6,500.00	0.00	0.00	6,337.80	732.62	893.49	-732.46	0.00	0.00	0.00	
6,600.00	0.00	0.00	6,437.80	732.62	893.49	-732.46	0.00	0.00	0.00	
6,700.00	0.00	0.00	6,537.80	732.62	893.49	-732.46	0.00	0.00	0.00	
6,800.00	0.00	0.00	6,637.80	732.62	893.49	-732.46	0.00	0.00	0.00	
6,900.00	0.00	0.00	6,737.80	732.62	893.49	-732.46	0.00	0.00	0.00	
7,000.00	0.00	0.00	6,837.80	732.62	893.49	-732.46	0.00	0.00	0.00	
7,096.02	0.00	0.00	6,933.82	732.62	893.49	-732.46	0.00	0.00	0.00	
KOP @ 7096.02ft :: DLS = 8°/100'										
7,100.00	0.32	179.99	6,937.80	732.60	893.49	-732.45	8.00	8.00	0.00	
7,200.00	8.32	179.99	7,037.44	725.08	893.49	-724.92	8.00	8.00	0.00	
7,300.00	16.32	179.99	7,135.06	703.76	893.49	-703.61	8.00	8.00	0.00	
7,400.00	24.32	179.99	7,228.76	669.07	893.50	-668.91	8.00	8.00	0.00	
7,463.05	29.36	179.99	7,285.00	640.61	893.50	-640.45	8.00	8.00	0.00	
Sharon Springs										
7,486.21	31.22	179.99	7,305.00	628.93	893.50	-628.77	8.00	8.00	0.00	
Niobrara										
7,500.00	32.32	179.99	7,316.72	621.67	893.50	-621.51	8.00	8.00	0.00	
7,600.00	40.32	179.99	7,397.23	562.49	893.51	-562.33	8.00	8.00	0.00	
7,635.89	43.19	179.99	7,424.00	538.59	893.51	-538.44	8.00	8.00	0.00	
Nio B										
7,700.00	48.32	179.99	7,468.72	492.68	893.52	-492.53	8.00	8.00	0.00	
7,718.75	49.82	179.99	7,481.00	478.52	893.52	-478.36	8.00	8.00	0.00	
Nio C										
7,800.00	56.32	179.99	7,529.80	413.60	893.53	-413.45	8.00	8.00	0.00	
7,900.00	64.32	179.99	7,579.27	326.80	893.54	-326.64	8.00	8.00	0.00	
8,000.00	72.32	179.99	7,616.19	233.95	893.55	-233.79	8.00	8.00	0.00	

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Well:	JDB 15-1HZ	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)
8,002.69	72.53	179.99	7,617.00	231.38	893.55	-231.23	8.00	8.00	0.00
Fort Hayes									
8,100.00	80.32	179.99	7,639.82	136.86	893.56	-136.71	8.00	8.00	0.00
8,101.07	80.40	179.99	7,640.00	135.81	893.56	-135.65	8.00	8.00	0.00
Codell									
8,200.00	88.32	179.99	7,649.71	37.43	893.57	-37.28	8.00	8.00	0.00
8,216.08	89.60	179.99	7,650.00	21.36	893.57	-21.20	8.00	8.00	0.00
End Build @ 8216.08ft - Top of Production									
8,300.00	89.60	179.99	7,650.58	-62.56	893.58	62.72	0.00	0.00	0.00
8,400.00	89.60	179.99	7,651.27	-162.56	893.60	162.71	0.00	0.00	0.00
8,500.00	89.60	179.99	7,651.96	-262.56	893.61	262.71	0.00	0.00	0.00
8,600.00	89.60	179.99	7,652.65	-362.55	893.62	362.71	0.00	0.00	0.00
8,700.00	89.60	179.99	7,653.34	-462.55	893.63	462.71	0.00	0.00	0.00
8,800.00	89.60	179.99	7,654.03	-562.55	893.64	562.70	0.00	0.00	0.00
8,900.00	89.60	179.99	7,654.72	-662.55	893.66	662.70	0.00	0.00	0.00
9,000.00	89.60	179.99	7,655.41	-762.54	893.67	762.70	0.00	0.00	0.00
9,100.00	89.60	179.99	7,656.10	-862.54	893.68	862.70	0.00	0.00	0.00
9,200.00	89.60	179.99	7,656.79	-962.54	893.69	962.69	0.00	0.00	0.00
9,300.00	89.60	179.99	7,657.48	-1,062.54	893.70	1,062.69	0.00	0.00	0.00
9,400.00	89.60	179.99	7,658.17	-1,162.53	893.71	1,162.69	0.00	0.00	0.00
9,500.00	89.60	179.99	7,658.86	-1,262.53	893.73	1,262.69	0.00	0.00	0.00
9,600.00	89.60	179.99	7,659.55	-1,362.53	893.74	1,362.69	0.00	0.00	0.00
9,700.00	89.60	179.99	7,660.24	-1,462.53	893.75	1,462.68	0.00	0.00	0.00
9,800.00	89.60	179.99	7,660.93	-1,562.52	893.76	1,562.68	0.00	0.00	0.00
9,900.00	89.60	179.99	7,661.62	-1,662.52	893.77	1,662.68	0.00	0.00	0.00
10,000.00	89.60	179.99	7,662.30	-1,762.52	893.79	1,762.68	0.00	0.00	0.00
10,100.00	89.60	179.99	7,662.99	-1,862.52	893.80	1,862.67	0.00	0.00	0.00
10,200.00	89.60	179.99	7,663.68	-1,962.52	893.81	1,962.67	0.00	0.00	0.00
10,300.00	89.60	179.99	7,664.37	-2,062.51	893.82	2,062.67	0.00	0.00	0.00
10,400.00	89.60	179.99	7,665.06	-2,162.51	893.83	2,162.67	0.00	0.00	0.00
10,500.00	89.60	179.99	7,665.75	-2,262.51	893.85	2,262.66	0.00	0.00	0.00
10,600.00	89.60	179.99	7,666.44	-2,362.51	893.86	2,362.66	0.00	0.00	0.00
10,700.00	89.60	179.99	7,667.13	-2,462.50	893.87	2,462.66	0.00	0.00	0.00
10,800.00	89.60	179.99	7,667.82	-2,562.50	893.88	2,562.66	0.00	0.00	0.00
10,900.00	89.60	179.99	7,668.51	-2,662.50	893.89	2,662.65	0.00	0.00	0.00
11,000.00	89.60	179.99	7,669.20	-2,762.50	893.91	2,762.65	0.00	0.00	0.00
11,100.00	89.60	179.99	7,669.89	-2,862.49	893.92	2,862.65	0.00	0.00	0.00
11,200.00	89.60	179.99	7,670.58	-2,962.49	893.93	2,962.65	0.00	0.00	0.00
11,300.00	89.60	179.99	7,671.27	-3,062.49	893.94	3,062.64	0.00	0.00	0.00
11,400.00	89.60	179.99	7,671.96	-3,162.49	893.95	3,162.64	0.00	0.00	0.00
11,500.00	89.60	179.99	7,672.65	-3,262.48	893.97	3,262.64	0.00	0.00	0.00
11,600.00	89.60	179.99	7,673.34	-3,362.48	893.98	3,362.64	0.00	0.00	0.00
11,700.00	89.60	179.99	7,674.03	-3,462.48	893.99	3,462.64	0.00	0.00	0.00
11,800.00	89.60	179.99	7,674.72	-3,562.48	894.00	3,562.63	0.00	0.00	0.00
11,900.00	89.60	179.99	7,675.40	-3,662.47	894.01	3,662.63	0.00	0.00	0.00
12,000.00	89.60	179.99	7,676.09	-3,762.47	894.02	3,762.63	0.00	0.00	0.00
12,100.00	89.60	179.99	7,676.78	-3,862.47	894.04	3,862.63	0.00	0.00	0.00
12,200.00	89.60	179.99	7,677.47	-3,962.47	894.05	3,962.62	0.00	0.00	0.00
12,300.00	89.60	179.99	7,678.16	-4,062.47	894.06	4,062.62	0.00	0.00	0.00
12,400.00	89.60	179.99	7,678.85	-4,162.46	894.07	4,162.62	0.00	0.00	0.00
12,500.00	89.60	179.99	7,679.54	-4,262.46	894.08	4,262.62	0.00	0.00	0.00
12,600.00	89.60	179.99	7,680.23	-4,362.46	894.10	4,362.61	0.00	0.00	0.00
12,700.00	89.60	179.99	7,680.92	-4,462.46	894.11	4,462.61	0.00	0.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well JDB 15-1HZ
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 15-1HZ	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)
12,800.00	89.60	179.99	7,681.61	-4,562.45	894.12	4,562.61	0.00	0.00	0.00
12,900.00	89.60	179.99	7,682.30	-4,662.45	894.13	4,662.61	0.00	0.00	0.00
13,000.00	89.60	179.99	7,682.99	-4,762.45	894.14	4,762.60	0.00	0.00	0.00
13,100.00	89.60	179.99	7,683.68	-4,862.45	894.16	4,862.60	0.00	0.00	0.00
13,200.00	89.60	179.99	7,684.37	-4,962.44	894.17	4,962.60	0.00	0.00	0.00
13,300.00	89.60	179.99	7,685.06	-5,062.44	894.18	5,062.60	0.00	0.00	0.00
13,400.00	89.60	179.99	7,685.75	-5,162.44	894.19	5,162.60	0.00	0.00	0.00
13,500.00	89.60	179.99	7,686.44	-5,262.44	894.20	5,262.59	0.00	0.00	0.00
13,600.00	89.60	179.99	7,687.13	-5,362.43	894.22	5,362.59	0.00	0.00	0.00
13,700.00	89.60	179.99	7,687.82	-5,462.43	894.23	5,462.59	0.00	0.00	0.00
13,800.00	89.60	179.99	7,688.50	-5,562.43	894.24	5,562.59	0.00	0.00	0.00
13,900.00	89.60	179.99	7,689.19	-5,662.43	894.25	5,662.58	0.00	0.00	0.00
14,000.00	89.60	179.99	7,689.88	-5,762.42	894.26	5,762.58	0.00	0.00	0.00
14,100.00	89.60	179.99	7,690.57	-5,862.42	894.28	5,862.58	0.00	0.00	0.00
14,200.00	89.60	179.99	7,691.26	-5,962.42	894.29	5,962.58	0.00	0.00	0.00
14,300.00	89.60	179.99	7,691.95	-6,062.42	894.30	6,062.57	0.00	0.00	0.00
14,400.00	89.60	179.99	7,692.64	-6,162.42	894.31	6,162.57	0.00	0.00	0.00
14,500.00	89.60	179.99	7,693.33	-6,262.41	894.32	6,262.57	0.00	0.00	0.00
14,600.00	89.60	179.99	7,694.02	-6,362.41	894.34	6,362.57	0.00	0.00	0.00
14,700.00	89.60	179.99	7,694.71	-6,462.41	894.35	6,462.56	0.00	0.00	0.00
14,800.00	89.60	179.99	7,695.40	-6,562.41	894.36	6,562.56	0.00	0.00	0.00
14,900.00	89.60	179.99	7,696.09	-6,662.40	894.37	6,662.56	0.00	0.00	0.00
15,000.00	89.60	179.99	7,696.78	-6,762.40	894.38	6,762.56	0.00	0.00	0.00
15,100.00	89.60	179.99	7,697.47	-6,862.40	894.39	6,862.55	0.00	0.00	0.00
15,200.00	89.60	179.99	7,698.16	-6,962.40	894.41	6,962.55	0.00	0.00	0.00
15,300.00	89.60	179.99	7,698.85	-7,062.39	894.42	7,062.55	0.00	0.00	0.00
15,400.00	89.60	179.99	7,699.54	-7,162.39	894.43	7,162.55	0.00	0.00	0.00
15,500.00	89.60	179.99	7,700.23	-7,262.39	894.44	7,262.55	0.00	0.00	0.00
15,600.00	89.60	179.99	7,700.92	-7,362.39	894.45	7,362.54	0.00	0.00	0.00
15,700.00	89.60	179.99	7,701.60	-7,462.38	894.47	7,462.54	0.00	0.00	0.00
15,800.00	89.60	179.99	7,702.29	-7,562.38	894.48	7,562.54	0.00	0.00	0.00
15,900.00	89.60	179.99	7,702.98	-7,662.38	894.49	7,662.54	0.00	0.00	0.00
16,000.00	89.60	179.99	7,703.67	-7,762.38	894.50	7,762.53	0.00	0.00	0.00
16,100.00	89.60	179.99	7,704.36	-7,862.38	894.51	7,862.53	0.00	0.00	0.00
16,200.00	89.60	179.99	7,705.05	-7,962.37	894.53	7,962.53	0.00	0.00	0.00
16,300.00	89.60	179.99	7,705.74	-8,062.37	894.54	8,062.53	0.00	0.00	0.00
16,400.00	89.60	179.99	7,706.43	-8,162.37	894.55	8,162.52	0.00	0.00	0.00
16,500.00	89.60	179.99	7,707.12	-8,262.37	894.56	8,262.52	0.00	0.00	0.00
16,600.00	89.60	179.99	7,707.81	-8,362.36	894.57	8,362.52	0.00	0.00	0.00
16,700.00	89.60	179.99	7,708.50	-8,462.36	894.59	8,462.52	0.00	0.00	0.00
16,800.00	89.60	179.99	7,709.19	-8,562.36	894.60	8,562.51	0.00	0.00	0.00
16,900.00	89.60	179.99	7,709.88	-8,662.36	894.61	8,662.51	0.00	0.00	0.00
17,000.00	89.60	179.99	7,710.57	-8,762.35	894.62	8,762.51	0.00	0.00	0.00
17,100.00	89.60	179.99	7,711.26	-8,862.35	894.63	8,862.51	0.00	0.00	0.00
17,200.00	89.60	179.99	7,711.95	-8,962.35	894.65	8,962.50	0.00	0.00	0.00
17,300.00	89.60	179.99	7,712.64	-9,062.35	894.66	9,062.50	0.00	0.00	0.00
17,400.00	89.60	179.99	7,713.33	-9,162.34	894.67	9,162.50	0.00	0.00	0.00
17,500.00	89.60	179.99	7,714.02	-9,262.34	894.68	9,262.50	0.00	0.00	0.00
17,600.00	89.60	179.99	7,714.70	-9,362.34	894.69	9,362.50	0.00	0.00	0.00
17,700.00	89.60	179.99	7,715.39	-9,462.34	894.70	9,462.49	0.00	0.00	0.00
17,800.00	89.60	179.99	7,716.08	-9,562.33	894.72	9,562.49	0.00	0.00	0.00
17,900.00	89.60	179.99	7,716.77	-9,662.33	894.73	9,662.49	0.00	0.00	0.00
18,000.00	89.60	179.99	7,717.46	-9,762.33	894.74	9,762.49	0.00	0.00	0.00
18,100.00	89.60	179.99	7,718.15	-9,862.33	894.75	9,862.48	0.00	0.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well JDB 15-1HZ
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 15-1HZ	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)	
18,200.00	89.60	179.99	7,718.84	-9,962.33	894.76	9,962.48	0.00	0.00	0.00	
18,300.00	89.60	179.99	7,719.53	-10,062.32	894.78	10,062.48	0.00	0.00	0.00	
18,400.00	89.60	179.99	7,720.22	-10,162.32	894.79	10,162.48	0.00	0.00	0.00	
18,500.00	89.60	179.99	7,720.91	-10,262.32	894.80	10,262.47	0.00	0.00	0.00	
18,600.00	89.60	179.99	7,721.60	-10,362.32	894.81	10,362.47	0.00	0.00	0.00	
18,700.00	89.60	179.99	7,722.29	-10,462.31	894.82	10,462.47	0.00	0.00	0.00	
18,800.00	89.60	179.99	7,722.98	-10,562.31	894.84	10,562.47	0.00	0.00	0.00	
18,900.00	89.60	179.99	7,723.67	-10,662.31	894.85	10,662.46	0.00	0.00	0.00	
18,948.19	89.60	179.99	7,724.00	-10,710.50	894.85	10,710.66	0.00	0.00	0.00	
TD Well @ 18948.19ft										

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,523.00	1,500.00	9 5/8" Csg	9-5/8	13-1/2	
8,216.08	7,650.00	Top of Production	5-1/2	7-7/8	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,752.70	1,719.00	Fox Hills				
4,632.15	4,472.00	Parkman				
5,030.19	4,868.00	Sussex				
7,463.05	7,285.00	Sharon Springs				
7,486.21	7,305.00	Niobrara				
7,635.89	7,424.00	Nio B				
7,718.75	7,481.00	Nio C				
8,002.69	7,617.00	Fort Hayes				
8,101.07	7,640.00	Codell				

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
250.00	250.00	0.00	0.00	Begin Nudge @ 250.00ft	
1,420.00	1,401.79	112.73	137.48	End Nudge @ 1420.00ft	
4,220.00	4,071.46	648.07	790.38	Begin Drop @ 4220.00ft	
5,097.50	4,935.30	732.62	893.49	End Drop @ 5097.50ft	
7,096.02	6,933.82	732.62	893.49	KOP @ 7096.02ft :: DLS = 8°/100'	
8,216.08	7,650.00	21.36	893.57	End Build @ 8216.08ft	
18,948.19	7,724.00	-10,710.50	894.85	TD Well @ 18948.19ft	