



# US ROCKIES WATTENBERG PLANNING

Project: WELD-NAD83-UTMFT13N  
 Site: 1N-67W-10 JZM 35-10HZ Pad  
 Well: JZM 3N-W3HZ  
 Wellbore: Original Hole  
 Design: Original Hole



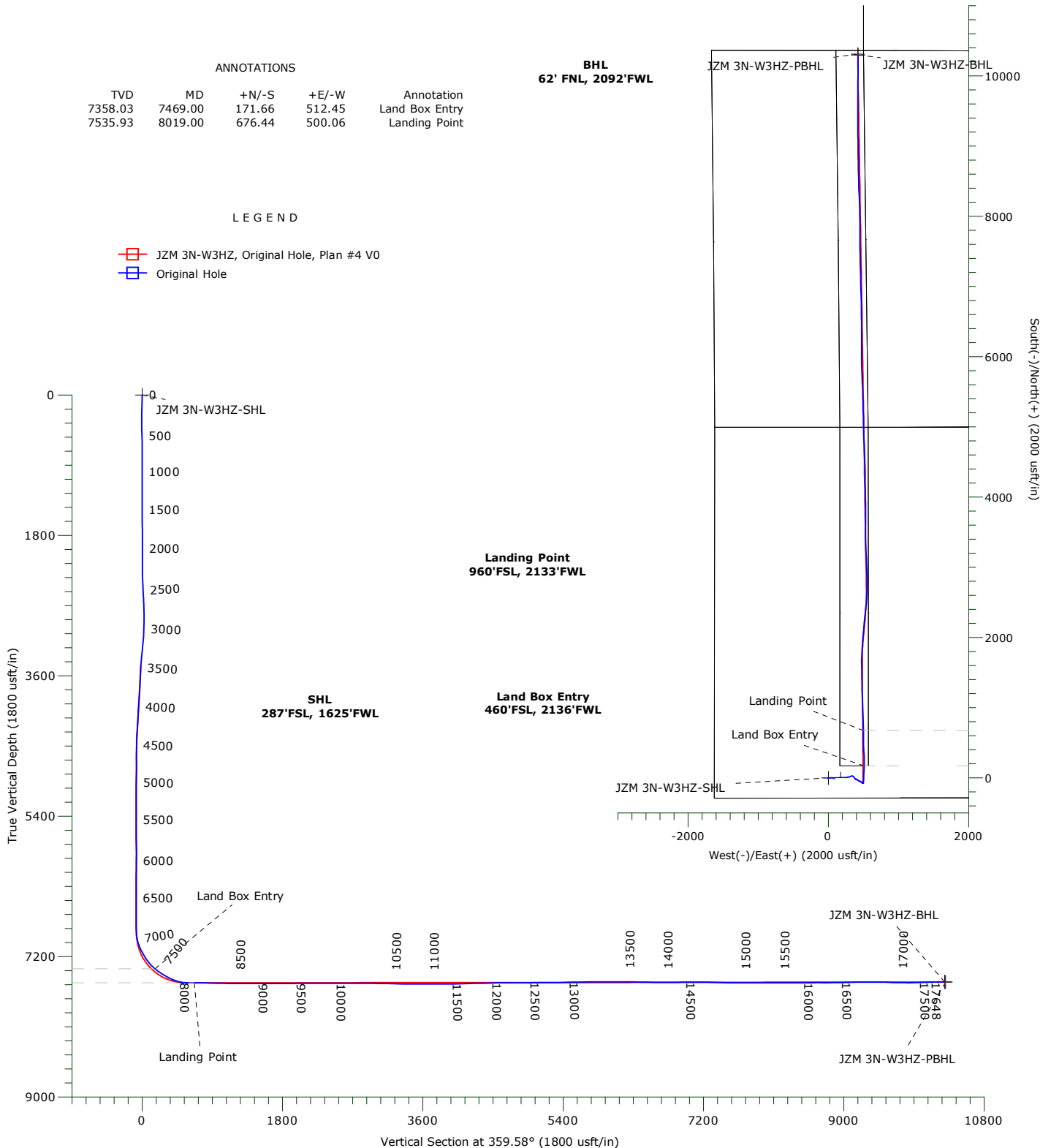
### ANNOTATIONS

TVD	MD	+N/-S	+E/-W	Annotation
7358.03	7469.00	171.66	512.45	Land Box Entry
7535.93	8019.00	676.44	500.06	Landing Point

### LEGEND

- ▣ JZM 3N-W3HZ, Original Hole, Plan #4 V0
- ▣ Original Hole

**BHL**  
62' FNL, 2092'FWL



### WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
JZM 3N-W3HZ-SHL	0.00	0.00	0.00	14548262.52	1673850.27	40.059061°N	104.880513°W	Point
JZM 3N-W3HZ-BHL	7524.48	10298.83	425.62	14558561.91	1674262.07	40.087343°N	104.878991°W	Point
JZM 3N-W3HZ-PBHL	7527.00	10311.51	420.08	14558574.59	1674256.51	40.087378°N	104.879011°W	Point

# **US ROCKIES WATTENBERG PLANNING**

**WELD-NAD83-UTMFT13N  
1N-67W-10 JZM 35-10HZ Pad  
JZM 3N-W3HZ**

**Original Hole**

**Design: Original Hole**

## **Standard Survey Report**

**01 February, 2017**

# Precision Drilling Corporation

## Survey Report

<b>Company:</b> US ROCKIES WATTENBERG PLANNING	<b>Local Co-ordinate Reference:</b> Well JZM 3N-W3HZ
<b>Project:</b> WELD-NAD83-UTMFT13N	<b>TVD Reference:</b> 5077'GL+30'KB @ 5107.00usft (SD 105)
<b>Site:</b> 1N-67W-10 JZM 35-10HZ Pad	<b>MD Reference:</b> 5077'GL+30'KB @ 5107.00usft (SD 105)
<b>Well:</b> JZM 3N-W3HZ	<b>North Reference:</b> True
<b>Wellbore:</b> Original Hole	<b>Survey Calculation Method:</b> Minimum Curvature
<b>Design:</b> Original Hole	<b>Database:</b> Local2

<b>Project</b> WELD-NAD83-UTMFT13N	
<b>Map System:</b> Universal Transverse Mercator (US Survey Feet)	<b>System Datum:</b> Mean Sea Level
<b>Geo Datum:</b> North American Datum 1983	
<b>Map Zone:</b> Zone 13N (108 W to 102 W)	

<b>Site</b> 1N-67W-10 JZM 35-10HZ Pad		
<b>Site Position:</b>	<b>Northing:</b> 14,548,251.76 usft	<b>Latitude:</b> 40.059031°N
<b>From:</b> Lat/Long	<b>Easting:</b> 1,673,980.11 usft	<b>Longitude:</b> 104.880049°W
<b>Position Uncertainty:</b> 0.00 usft	<b>Slot Radius:</b> 13.20 in	<b>Grid Convergence:</b> 0.08 °

<b>Well</b> JZM 3N-W3HZ			
<b>Well Position</b> +N/-S	0.00 usft	<b>Northing:</b> 14,548,262.51 usft	<b>Latitude:</b> 40.059061°N
+E/-W	0.00 usft	<b>Easting:</b> 1,673,850.27 usft	<b>Longitude:</b> 104.880513°W
<b>Position Uncertainty</b>	3.28 usft	<b>Wellhead Elevation:</b> 0.00 usft	<b>Ground Level:</b> 5,077.00 usft

<b>Wellbore</b> Original Hole					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	9/10/2015	8.33	66.61	52,492

<b>Survey Program</b>		<b>Date</b> 2/1/2017		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
142.00	2,207.00	Survey #1 (Original Hole)	APC_ISCWSA REV 2 MW Fixed:v2:Rockies, crustal dec + 3-axis correction	
2,358.00	17,577.00	Survey #2 (Original Hole)	APC_ISCWSA REV 2 MW Fixed:v2:Rockies, crustal dec + 3-axis correction	
17,648.00	17,648.00	Survey #3 (Original Hole)	APC_BLIND	OWSG BLIND

<b>Survey</b>										
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
<b>JZM 3N-W3HZ-SHL</b>										
142.00	0.88	214.09	141.99	-0.90	-0.61	-0.90	0.62	0.62	0.00	
235.00	0.98	211.67	234.98	-2.17	-1.43	-2.16	0.12	0.11	-2.60	
327.00	0.13	117.39	326.98	-2.89	-1.75	-2.88	1.08	-0.92	-102.48	
420.00	0.74	34.74	419.97	-2.44	-1.31	-2.43	0.79	0.66	-88.87	
513.00	1.54	43.45	512.96	-1.04	-0.11	-1.04	0.88	0.86	9.37	
605.00	2.14	51.84	604.91	0.92	2.09	0.90	0.71	0.65	9.12	
698.00	3.28	75.00	697.81	2.68	6.02	2.63	1.68	1.23	24.90	
793.00	3.82	97.85	792.63	2.95	11.78	2.86	1.58	0.57	24.05	
889.00	6.38	94.63	888.24	2.08	20.27	1.93	2.68	2.67	-3.35	
984.00	7.96	91.02	982.49	1.54	32.11	1.30	1.73	1.66	-3.80	
1,080.00	9.29	88.59	1,077.41	1.61	46.50	1.27	1.44	1.39	-2.53	
1,175.00	10.48	85.75	1,171.00	2.44	62.78	1.98	1.35	1.25	-2.99	
1,271.00	10.96	91.31	1,265.32	2.88	80.62	2.29	1.19	0.50	5.79	
1,366.00	9.45	94.33	1,358.82	2.08	97.42	1.37	1.69	-1.59	3.18	

# Precision Drilling Corporation

## Survey Report

<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>Local Co-ordinate Reference:</b>	Well JZM 3N-W3HZ
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>TVD Reference:</b>	5077'GL+30'KB @ 5107.00usft (SD 105)
<b>Site:</b>	1N-67W-10 JZM 35-10HZ Pad	<b>MD Reference:</b>	5077'GL+30'KB @ 5107.00usft (SD 105)
<b>Well:</b>	JZM 3N-W3HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	Original Hole	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Original Hole	<b>Database:</b>	Local2

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)
1,462.00	8.91	88.93	1,453.59	1.63	112.71	0.80	1.06	-0.56	-5.63
1,557.00	9.84	86.83	1,547.32	2.21	128.18	1.27	1.04	0.98	-2.21
1,653.00	11.59	84.84	1,641.64	3.53	145.97	2.46	1.86	1.82	-2.07
1,748.00	11.37	84.30	1,734.74	5.32	164.79	4.11	0.26	-0.23	-0.57
1,844.00	10.00	88.58	1,829.08	6.47	182.54	5.13	1.65	-1.43	4.46
1,939.00	9.19	88.81	1,922.75	6.83	198.37	5.38	0.85	-0.85	0.24
2,035.00	9.65	88.00	2,017.45	7.27	214.08	5.70	0.50	0.48	-0.84
2,130.00	9.61	89.45	2,111.11	7.62	229.97	5.94	0.26	-0.04	1.53
2,207.00	10.17	89.79	2,186.97	7.71	243.19	5.93	0.73	0.73	0.44
2,358.00	10.38	84.53	2,335.55	9.06	270.06	7.08	0.64	0.14	-3.48
2,454.00	9.54	76.76	2,430.11	11.70	286.42	9.60	1.65	-0.88	-8.09
2,550.00	9.01	72.27	2,524.85	15.81	301.32	13.60	0.93	-0.55	-4.68
2,645.00	8.21	65.45	2,618.78	20.90	314.58	18.59	1.36	-0.84	-7.18
2,741.00	6.27	69.87	2,714.01	25.55	325.74	23.16	2.10	-2.02	4.60
2,836.00	5.66	76.45	2,808.50	28.43	335.16	25.98	0.96	-0.64	6.93
2,932.00	4.99	90.29	2,904.09	29.52	343.94	27.00	1.50	-0.70	14.42
3,027.00	5.55	115.70	2,998.70	27.51	352.21	24.93	2.50	0.59	26.75
3,123.00	5.81	137.98	3,094.24	21.88	359.65	19.25	2.30	0.27	23.21
3,218.00	6.19	151.09	3,188.73	13.83	365.34	11.15	1.49	0.40	13.80
3,314.00	6.85	156.39	3,284.10	4.05	370.14	1.34	0.93	0.69	5.52
3,409.00	7.32	137.11	3,378.39	-5.57	376.53	-8.33	2.54	0.49	-20.29
3,505.00	6.78	118.06	3,473.68	-12.72	385.69	-15.55	2.49	-0.56	-19.84
3,600.00	6.38	106.24	3,568.06	-16.84	395.71	-19.74	1.48	-0.42	-12.44
3,696.00	6.12	117.13	3,663.49	-20.66	405.38	-23.63	1.26	-0.27	11.34
3,791.00	6.36	120.05	3,757.93	-25.61	414.45	-28.64	0.42	0.25	3.07
3,886.00	7.05	121.66	3,852.28	-31.30	423.96	-34.41	0.75	0.73	1.69
3,982.00	6.24	117.16	3,947.63	-36.77	433.62	-39.95	1.00	-0.84	-4.69
4,077.00	6.71	123.50	4,042.03	-42.20	442.84	-45.44	0.90	0.49	6.67
4,172.00	7.70	120.83	4,136.28	-48.52	452.94	-51.84	1.10	1.04	-2.81
4,268.00	7.26	120.00	4,231.46	-54.85	463.71	-58.25	0.47	-0.46	-0.86
4,364.00	6.35	120.50	4,326.78	-60.58	473.54	-64.05	0.95	-0.95	0.52
4,459.00	4.27	124.74	4,421.37	-65.26	480.97	-68.78	2.23	-2.19	4.46
4,555.00	2.13	117.09	4,517.21	-68.11	485.50	-71.67	2.27	-2.23	-7.97
4,650.00	0.56	345.56	4,612.19	-68.46	486.95	-72.03	2.67	-1.65	-138.45
4,746.00	0.69	305.04	4,708.19	-67.68	486.36	-71.24	0.47	0.14	-42.21
4,841.00	0.81	120.34	4,803.19	-67.69	486.48	-71.25	1.58	0.13	184.53
4,937.00	1.49	124.93	4,899.17	-68.74	488.08	-72.32	0.71	0.71	4.78
5,056.00	1.04	133.46	5,018.14	-70.37	490.14	-73.96	0.41	-0.38	7.17
5,151.00	1.16	145.91	5,113.12	-71.76	491.30	-75.36	0.28	0.13	13.11
5,247.00	0.71	79.71	5,209.11	-72.46	492.43	-76.07	1.13	-0.47	-68.96
5,343.00	0.84	63.60	5,305.10	-72.04	493.65	-75.66	0.26	0.14	-16.78
5,438.00	0.53	16.68	5,400.09	-71.31	494.40	-74.93	0.65	-0.33	-49.39
5,534.00	0.41	35.73	5,496.09	-70.61	494.72	-74.23	0.20	-0.13	19.84

# Precision Drilling Corporation

## Survey Report

<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>Local Co-ordinate Reference:</b>	Well JZM 3N-W3HZ
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>TVD Reference:</b>	5077'GL+30'KB @ 5107.00usft (SD 105)
<b>Site:</b>	1N-67W-10 JZM 35-10HZ Pad	<b>MD Reference:</b>	5077'GL+30'KB @ 5107.00usft (SD 105)
<b>Well:</b>	JZM 3N-W3HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	Original Hole	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Original Hole	<b>Database:</b>	Local2

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)	
5,630.00	0.55	264.20	5,592.09	-70.38	494.47	-74.00	0.91	0.15	-137.01	
5,725.00	0.80	279.69	5,687.08	-70.31	493.36	-73.92	0.32	0.26	16.31	
5,821.00	1.36	339.55	5,783.07	-69.13	492.30	-72.74	1.23	0.58	62.35	
5,917.00	0.33	209.55	5,879.06	-68.30	491.77	-71.91	1.66	-1.07	-135.42	
6,012.00	0.74	221.26	5,974.06	-69.00	491.23	-72.60	0.44	0.43	12.33	
6,108.00	1.26	129.98	6,070.05	-70.15	491.63	-73.75	1.54	0.54	-95.08	
6,204.00	0.71	129.53	6,166.03	-71.20	492.89	-74.81	0.57	-0.57	-0.47	
6,299.00	0.69	146.11	6,261.02	-72.05	493.67	-75.67	0.21	-0.02	17.45	
6,395.00	0.10	144.62	6,357.02	-72.60	494.04	-76.22	0.61	-0.61	-1.55	
6,491.00	0.87	291.59	6,453.02	-72.40	493.41	-76.02	1.00	0.80	153.09	
6,587.00	0.60	206.96	6,549.01	-72.58	492.50	-76.19	1.05	-0.28	-88.16	
6,682.00	0.81	85.78	6,644.01	-72.97	492.95	-76.59	1.30	0.22	-127.56	
6,778.00	1.31	98.72	6,739.99	-73.09	494.71	-76.72	0.57	0.52	13.48	
6,874.00	1.67	86.20	6,835.96	-73.16	497.19	-76.81	0.50	0.38	-13.04	
6,969.00	6.86	19.02	6,930.70	-67.70	500.42	-71.37	6.74	5.46	-70.72	
7,065.00	18.52	4.32	7,024.21	-47.00	503.45	-50.69	12.51	12.15	-15.31	
7,160.00	26.20	0.31	7,112.01	-10.93	504.70	-14.63	8.24	8.08	-4.22	
7,256.00	30.54	3.42	7,196.46	34.63	506.27	30.92	4.77	4.52	3.24	
7,351.00	39.18	2.89	7,274.34	88.80	509.23	85.06	9.10	9.09	-0.56	
7,447.00	48.28	1.94	7,343.64	155.03	511.98	151.27	9.50	9.48	-0.99	
7,469.00	50.00	1.32	7,358.03	171.66	512.45	167.90	8.09	7.81	-2.80	
<b>Land Box Entry</b>										
7,542.00	55.72	359.48	7,402.09	229.83	512.83	226.06	8.09	7.84	-2.53	
7,638.00	60.61	356.83	7,452.72	311.30	510.15	307.56	5.61	5.09	-2.76	
7,734.00	66.74	357.14	7,495.27	397.19	505.63	393.47	6.39	6.39	0.32	
7,829.00	77.06	358.69	7,524.75	487.30	502.39	483.61	10.97	10.86	1.63	
7,924.00	89.33	359.65	7,535.98	581.44	501.03	577.75	12.95	12.92	1.01	
8,019.00	90.73	359.17	7,535.93	676.44	500.06	672.75	1.56	1.47	-0.51	
<b>Landing Point</b>										
8,115.00	88.73	358.50	7,536.39	772.41	498.10	768.74	2.20	-2.08	-0.70	
8,211.00	88.74	358.27	7,538.51	868.35	495.40	864.69	0.24	0.01	-0.24	
8,306.00	88.72	357.89	7,540.61	963.27	492.22	959.64	0.40	-0.02	-0.40	
8,402.00	88.55	357.42	7,542.90	1,059.16	488.29	1,055.56	0.52	-0.18	-0.49	
8,498.00	89.66	359.03	7,544.40	1,155.10	485.32	1,151.51	2.04	1.16	1.68	
8,593.00	89.41	358.73	7,545.17	1,250.08	483.46	1,246.50	0.41	-0.26	-0.32	
8,689.00	89.30	357.79	7,546.25	1,346.03	480.55	1,342.47	0.99	-0.11	-0.98	
8,784.00	90.34	0.31	7,546.55	1,441.01	478.97	1,437.46	2.87	1.09	2.65	
8,880.00	90.20	359.68	7,546.10	1,537.00	478.96	1,533.45	0.67	-0.15	-0.66	
8,975.00	89.91	358.98	7,546.00	1,632.00	477.85	1,628.45	0.80	-0.31	-0.74	
9,071.00	90.40	1.40	7,545.74	1,727.99	478.17	1,724.44	2.57	0.51	2.52	
9,166.00	89.98	3.40	7,545.43	1,822.90	482.15	1,819.32	2.15	-0.44	2.11	
9,262.00	90.68	5.11	7,544.88	1,918.63	489.27	1,914.99	1.92	0.73	1.78	
9,357.00	90.67	4.79	7,543.76	2,013.27	497.47	2,009.57	0.34	-0.01	-0.34	
9,453.00	90.68	4.31	7,542.63	2,108.96	505.08	2,105.20	0.50	0.01	-0.50	

# Precision Drilling Corporation

## Survey Report

<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>Local Co-ordinate Reference:</b>	Well JZM 3N-W3HZ
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<b>Site:</b>	1N-67W-10 JZM 35-10HZ Pad	<b>MD Reference:</b>	5077'GL+30'KB @ 5107.00usft (SD 105)
<b>Well:</b>	JZM 3N-W3HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	Original Hole	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Original Hole	<b>Database:</b>	Local2

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)
9,548.00	90.07	5.91	7,542.00	2,203.58	513.54	2,199.75	1.80	-0.64	1.68
9,644.00	89.82	5.21	7,542.10	2,299.12	522.84	2,295.23	0.77	-0.26	-0.73
9,739.00	90.12	5.55	7,542.15	2,393.70	531.75	2,389.74	0.48	0.32	0.36
9,835.00	90.32	5.59	7,541.78	2,489.25	541.07	2,485.22	0.21	0.21	0.04
9,931.00	89.60	2.36	7,541.85	2,585.01	547.72	2,580.92	3.45	-0.75	-3.36
10,026.00	90.48	2.37	7,541.78	2,679.92	551.64	2,675.81	0.93	0.93	0.01
10,121.00	90.10	0.88	7,541.30	2,774.88	554.34	2,770.74	1.62	-0.40	-1.57
10,217.00	89.43	357.86	7,541.69	2,870.86	553.28	2,866.73	3.22	-0.70	-3.15
10,313.00	89.31	357.79	7,542.75	2,966.79	549.64	2,962.68	0.14	-0.13	-0.07
10,408.00	89.08	357.43	7,544.08	3,061.70	545.68	3,057.61	0.45	-0.24	-0.38
10,504.00	88.88	357.22	7,545.79	3,157.58	541.20	3,153.52	0.30	-0.21	-0.22
10,599.00	88.62	357.16	7,547.86	3,252.44	536.54	3,248.42	0.28	-0.27	-0.06
10,692.00	88.67	357.30	7,550.06	3,345.30	532.05	3,341.31	0.16	0.05	0.15
10,785.00	90.23	359.66	7,550.96	3,438.26	529.58	3,434.28	3.04	1.68	2.54
10,877.00	90.22	0.42	7,550.59	3,530.26	529.65	3,526.28	0.83	-0.01	0.83
10,970.00	90.04	0.26	7,550.38	3,623.25	530.20	3,619.27	0.26	-0.19	-0.17
11,062.00	89.86	0.27	7,550.46	3,715.25	530.62	3,711.26	0.20	-0.20	0.01
11,155.00	89.85	359.91	7,550.70	3,808.25	530.77	3,804.26	0.39	-0.01	-0.39
11,251.00	90.54	359.78	7,550.37	3,904.25	530.51	3,900.26	0.73	0.72	-0.14
11,346.00	90.67	359.40	7,549.37	3,999.24	529.83	3,995.25	0.42	0.14	-0.40
11,442.00	91.30	359.24	7,547.72	4,095.22	528.69	4,091.24	0.68	0.66	-0.17
11,537.00	91.43	359.33	7,545.46	4,190.19	527.51	4,186.21	0.17	0.14	0.09
11,633.00	91.19	359.03	7,543.26	4,286.15	526.13	4,282.18	0.40	-0.25	-0.31
11,728.00	91.05	358.84	7,541.40	4,381.12	524.37	4,377.16	0.25	-0.15	-0.20
11,824.00	91.26	358.53	7,539.47	4,477.07	522.17	4,473.13	0.39	0.22	-0.32
11,920.00	90.44	357.87	7,538.04	4,573.01	519.15	4,569.09	1.10	-0.85	-0.69
12,015.00	90.08	357.92	7,537.61	4,667.95	515.66	4,664.04	0.38	-0.38	0.05
12,111.00	89.78	357.18	7,537.73	4,763.86	511.56	4,759.98	0.83	-0.31	-0.77
12,206.00	90.17	358.07	7,537.77	4,858.78	507.62	4,854.93	1.02	0.41	0.94
12,302.00	91.43	358.85	7,536.43	4,954.73	505.04	4,950.90	1.54	1.31	0.81
12,398.00	91.18	358.90	7,534.25	5,050.69	503.16	5,046.86	0.27	-0.26	0.05
12,493.00	90.62	358.39	7,532.75	5,145.65	500.91	5,141.84	0.80	-0.59	-0.54
12,589.00	89.89	357.67	7,532.33	5,241.59	497.61	5,237.80	1.07	-0.76	-0.75
12,684.00	91.04	359.70	7,531.55	5,336.55	495.43	5,332.78	2.46	1.21	2.14
12,780.00	90.20	358.24	7,530.52	5,432.53	493.70	5,428.77	1.75	-0.88	-1.52
12,875.00	91.43	358.05	7,529.16	5,527.47	490.63	5,523.72	1.31	1.29	-0.20
12,971.00	91.67	357.48	7,526.57	5,623.36	486.89	5,619.64	0.64	0.25	-0.59
13,066.00	91.33	356.84	7,524.08	5,718.21	482.18	5,714.52	0.76	-0.36	-0.67
13,162.00	90.39	358.56	7,522.64	5,814.12	478.33	5,810.46	2.04	-0.98	1.79
13,257.00	89.80	359.48	7,522.48	5,909.10	476.70	5,905.45	1.15	-0.62	0.97
13,352.00	89.20	358.77	7,523.31	6,004.09	475.25	6,000.44	0.98	-0.63	-0.75
13,448.00	89.68	0.08	7,524.25	6,100.07	474.29	6,096.43	1.45	0.50	1.36
13,544.00	89.60	0.14	7,524.85	6,196.07	474.48	6,192.43	0.10	-0.08	0.06

# Precision Drilling Corporation

## Survey Report

<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>Local Co-ordinate Reference:</b>	Well JZM 3N-W3HZ
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>TVD Reference:</b>	5077'GL+30'KB @ 5107.00usft (SD 105)
<b>Site:</b>	1N-67W-10 JZM 35-10HZ Pad	<b>MD Reference:</b>	5077'GL+30'KB @ 5107.00usft (SD 105)
<b>Well:</b>	JZM 3N-W3HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	Original Hole	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Original Hole	<b>Database:</b>	Local2

### 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)
13,639.00	89.34	0.05	7,525.73	6,291.07	474.63	6,287.42	0.29	-0.27	-0.09
13,735.00	89.59	0.13	7,526.63	6,387.06	474.78	6,383.41	0.27	0.26	0.08
13,830.00	89.07	359.80	7,527.74	6,482.06	474.73	6,478.40	0.65	-0.55	-0.35
13,926.00	88.56	359.17	7,529.72	6,578.03	473.86	6,574.38	0.84	-0.53	-0.66
14,021.00	90.34	359.50	7,530.64	6,673.02	472.76	6,669.37	1.91	1.87	0.35
14,135.00	90.45	358.52	7,529.85	6,787.00	470.79	6,783.36	0.87	0.10	-0.86
14,213.00	90.07	358.09	7,529.50	6,864.96	468.48	6,861.34	0.74	-0.49	-0.55
14,308.00	90.28	358.87	7,529.21	6,959.93	465.96	6,956.32	0.85	0.22	0.82
14,404.00	90.37	358.73	7,528.66	7,055.90	463.95	7,052.31	0.17	0.09	-0.15
14,499.00	90.35	357.75	7,528.07	7,150.86	461.04	7,147.28	1.03	-0.02	-1.03
14,595.00	89.28	358.85	7,528.38	7,246.81	458.19	7,243.26	1.60	-1.11	1.15
14,690.00	88.79	358.80	7,529.97	7,341.78	456.24	7,338.23	0.52	-0.52	-0.05
14,786.00	88.36	358.72	7,532.36	7,437.72	454.16	7,434.19	0.46	-0.45	-0.08
14,881.00	88.05	358.61	7,535.34	7,532.65	451.95	7,529.14	0.35	-0.33	-0.12
14,977.00	89.47	359.64	7,537.42	7,628.61	450.49	7,625.11	1.83	1.48	1.07
15,072.00	90.44	0.26	7,537.49	7,723.61	450.40	7,720.10	1.21	1.02	0.65
15,168.00	90.17	0.04	7,536.98	7,819.61	450.65	7,816.10	0.36	-0.28	-0.23
15,263.00	90.11	359.85	7,536.75	7,914.61	450.56	7,911.09	0.21	-0.06	-0.20
15,359.00	90.11	359.36	7,536.56	8,010.61	449.90	8,007.09	0.51	0.00	-0.51
15,454.00	89.94	358.62	7,536.52	8,105.59	448.23	8,102.09	0.80	-0.18	-0.78
15,550.00	89.88	358.36	7,536.67	8,201.56	445.70	8,198.07	0.28	-0.06	-0.27
15,645.00	89.41	357.18	7,537.26	8,296.48	442.00	8,293.02	1.34	-0.49	-1.24
15,741.00	90.61	357.87	7,537.24	8,392.39	437.85	8,388.96	1.44	1.25	0.72
15,836.00	90.78	358.30	7,536.09	8,487.33	434.68	8,483.92	0.49	0.18	0.45
15,932.00	90.55	358.20	7,534.98	8,583.28	431.75	8,579.88	0.26	-0.24	-0.10
16,027.00	90.05	359.57	7,534.48	8,678.26	429.90	8,674.87	1.54	-0.53	1.44
16,123.00	89.32	359.21	7,535.01	8,774.25	428.88	8,770.87	0.85	-0.76	-0.38
16,219.00	91.29	359.50	7,534.50	8,870.24	427.80	8,866.86	2.07	2.05	0.30
16,314.00	91.55	359.40	7,532.14	8,965.20	426.89	8,961.83	0.29	0.27	-0.11
16,410.00	91.34	359.18	7,529.72	9,061.17	425.70	9,057.80	0.32	-0.22	-0.23
16,505.00	90.95	358.00	7,527.82	9,156.12	423.36	9,152.77	1.31	-0.41	-1.24
16,601.00	90.10	359.83	7,526.94	9,252.09	421.54	9,248.75	2.10	-0.89	1.91
16,696.00	89.98	0.08	7,526.88	9,347.09	421.47	9,343.75	0.29	-0.13	0.26
16,792.00	89.53	359.74	7,527.29	9,443.09	421.32	9,439.75	0.59	-0.47	-0.35
16,887.00	88.54	359.37	7,528.89	9,538.07	420.58	9,534.73	1.11	-1.04	-0.39
16,983.00	88.61	0.43	7,531.28	9,634.04	420.41	9,630.70	1.11	0.07	1.10
17,079.00	88.40	0.54	7,533.78	9,730.00	421.22	9,726.65	0.25	-0.22	0.11
17,174.00	90.12	0.43	7,535.01	9,824.99	422.03	9,821.63	1.81	1.81	-0.12
17,270.00	91.94	1.17	7,533.28	9,920.96	423.37	9,917.59	2.05	1.90	0.77
17,365.00	91.78	0.66	7,530.20	10,015.90	424.88	10,012.51	0.56	-0.17	-0.54
17,461.00	91.30	0.39	7,527.62	10,111.86	425.76	10,108.46	0.57	-0.50	-0.28
17,577.00	90.81	359.76	7,525.48	10,227.84	425.92	10,224.44	0.69	-0.42	-0.54
17,648.00	90.81	359.76	7,524.48	10,298.83	425.62	10,295.43	0.00	0.00	0.00

# Precision Drilling Corporation

## Survey Report

<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>Local Co-ordinate Reference:</b>	Well JZM 3N-W3HZ
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>TVD Reference:</b>	5077'GL+30'KB @ 5107.00usft (SD 105)
<b>Site:</b>	1N-67W-10 JZM 35-10HZ Pad	<b>MD Reference:</b>	5077'GL+30'KB @ 5107.00usft (SD 105)
<b>Well:</b>	JZM 3N-W3HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	Original Hole	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Original Hole	<b>Database:</b>	Local2

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)
JZM 3N-W3HZ-PBHL									

Design Targets										
Target Name	- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
JZM 3N-W3HZ-SHL		0.00	0.00	0.00	0.00	0.00	14,548,262.51	1,673,850.27	40.059061°N	104.880513°W
- actual wellpath hits target center										
- Point										
JZM 3N-W3HZ-BHL		0.00	0.00	7,524.48	10,298.83	425.62	14,558,561.91	1,674,262.06	40.087343°N	104.878992°W
- actual wellpath hits target center										
- Point										
JZM 3N-W3HZ-PBHL		0.00	0.00	7,527.00	10,311.51	420.08	14,558,574.58	1,674,256.51	40.087378°N	104.879011°W
- actual wellpath misses target center by 14.07usft at 17648.00usft MD (7524.48 TVD, 10298.83 N, 425.62 E)										
- Point										

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
7,469.00	7,358.03	171.66	512.45	Land Box Entry	
8,019.00	7,535.93	676.44	500.06	Landing Point	

Checked By: _____	Approved By: _____	Date: _____
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