



# Precision Drilling Corporation

## Survey Report

<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>Local Co-ordinate Reference:</b>	Well #29N-26HZ
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>TVD Reference:</b>	4890'GL+20'KB @ 4910.00usft (PD460)
<b>Site:</b>	GE Powers Pad	<b>MD Reference:</b>	4890'GL+20'KB @ 4910.00usft (PD460)
<b>Well:</b>	#29N-26HZ	<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>	Compass_US

<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)		

Site	GE Powers Pad				
Site Position:		Northing:	14,574,369.28 usft	Latitude:	40.130243°N
From:	Lat/Long	Easting:	1,742,212.01 usft	Longitude:	104.635819°W
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	0.23 °

Well	#29N-26HZ					
Well Position	+N-S	0.00 usft	Northing:	14,574,369.46 usft	Latitude:	40.130244°N
	+E-W	0.00 usft	Easting:	1,742,182.04 usft	Longitude:	104.635926°W
Position Uncertainty		3.28 usft	Wellhead Elevation:	0.00 usft	Ground Level:	4,890.00 usft

<b>Wellbore</b>	Original Hole				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	09/01/15	8.31	66.70	52,469

<b>Design</b>	Original Hole				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N-S (usft)</b>	<b>+E-W (usft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	180.12	

<b>Survey Program</b>	<b>Date</b>	11/02/15			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
117.00	1,784.00	Survey #1 (Original Hole)	APC_ISCWSA REV 2 MV Fixed:v2:standard declination		
1,869.00	12,145.00	Survey #4 (Original Hole)	APC_ISCWSA REV 2 MV Fixed:v2:crustal field declination		
12,210.00	12,210.00	Survey #5 (Original Hole)	APC_BLIND	OWSG BLIND	

<b>Survey</b>										
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N-S (usft)</b>	<b>+E-W (usft)</b>	<b>Vertical Section (usft)</b>	<b>Dogleg Rate (°/100usft)</b>	<b>Build Rate (°/100usft)</b>	<b>Turn Rate (°/100usft)</b>	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
<b>Surface #29-N-26HZ</b>										
117.00	0.21	15.48	117.00	0.21	0.06	-0.21	0.18	0.18	0.00	
206.00	0.91	5.80	205.99	1.07	0.17	-1.07	0.79	0.79	-10.88	
297.00	1.46	322.12	296.98	2.70	-0.47	-2.70	1.12	0.60	-48.00	
375.00	2.65	320.13	374.93	4.87	-2.23	-4.86	1.53	1.53	-2.55	
465.00	4.32	314.83	464.76	8.86	-5.97	-8.84	1.89	1.86	-5.89	
555.00	5.49	315.48	554.42	14.32	-11.39	-14.29	1.30	1.30	0.72	
645.00	5.96	303.89	643.98	19.99	-18.29	-19.95	1.38	0.52	-12.88	

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<b>Site:</b>	GE Powers Pad	<b>MD Reference:</b>	4890'GL+20'KB @ 4910.00usft (PD460)
<b>Well:</b>	#29N-26HZ	<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>	Compass_US

### 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)
735.00	6.82	305.87	733.42	25.73	-26.50	-25.67	0.99	0.96	2.20
825.00	8.02	297.11	822.67	31.72	-36.42	-31.64	1.83	1.33	-9.73
915.00	7.42	288.66	911.85	36.44	-47.51	-36.34	1.42	-0.67	-9.39
1,006.00	8.63	283.39	1,001.96	39.90	-59.72	-39.78	1.55	1.33	-5.79
1,186.00	11.17	277.70	1,179.27	45.37	-90.15	-45.18	1.51	1.41	-3.16
1,276.00	11.45	286.09	1,267.53	49.01	-107.37	-48.79	1.85	0.31	9.32
1,366.00	10.46	284.12	1,355.89	53.48	-123.88	-53.22	1.18	-1.10	-2.19
1,456.00	10.64	283.54	1,444.37	57.42	-139.88	-57.12	0.23	0.20	-0.64
1,546.00	10.66	285.17	1,532.82	61.54	-155.99	-61.21	0.34	0.02	1.81
1,636.00	11.12	287.81	1,621.20	66.37	-172.28	-66.01	0.75	0.51	2.93
1,726.00	11.52	287.82	1,709.45	71.78	-189.10	-71.38	0.44	0.44	0.01
1,784.00	11.43	287.51	1,766.29	75.28	-200.10	-74.86	0.19	-0.16	-0.53
1,869.00	11.61	286.32	1,849.57	80.22	-216.34	-79.76	0.35	0.21	-1.40
1,965.00	10.82	284.03	1,943.74	85.12	-234.35	-84.63	0.94	-0.82	-2.39
2,058.00	10.29	284.21	2,035.17	89.27	-250.87	-88.75	0.57	-0.57	0.19
2,153.00	10.46	289.48	2,128.62	94.23	-267.23	-93.67	1.01	0.18	5.55
2,248.00	9.15	283.33	2,222.23	98.85	-282.71	-98.26	1.76	-1.38	-6.47
2,344.00	10.02	298.80	2,316.90	104.63	-297.46	-104.01	2.82	0.91	16.11
2,439.00	9.15	294.05	2,410.58	111.69	-311.60	-111.04	1.24	-0.92	-5.00
2,534.00	8.97	289.66	2,504.39	117.26	-325.47	-116.58	0.75	-0.19	-4.62
2,627.00	8.18	285.26	2,596.35	121.44	-338.68	-120.73	1.10	-0.85	-4.73
2,721.00	5.36	290.01	2,689.69	124.71	-349.26	-123.98	3.06	-3.00	5.05
2,816.00	5.45	286.84	2,784.27	127.53	-357.75	-126.78	0.33	0.09	-3.34
2,911.00	2.29	315.67	2,879.05	130.20	-363.39	-129.44	3.81	-3.33	30.35
3,006.00	2.20	305.30	2,973.97	132.61	-366.21	-131.84	0.44	-0.09	-10.92
3,101.00	0.79	270.32	3,068.94	133.67	-368.35	-132.89	1.70	-1.48	-36.82
3,196.00	0.62	299.32	3,163.93	133.92	-369.45	-133.15	0.41	-0.18	30.53
3,291.00	0.53	20.18	3,258.93	134.59	-369.75	-133.81	0.79	-0.09	85.12
3,481.00	0.53	34.60	3,448.92	136.13	-368.95	-135.36	0.07	0.00	7.59
3,576.00	0.88	6.47	3,543.92	137.22	-368.62	-136.45	0.51	0.37	-29.61
3,671.00	1.23	32.66	3,638.90	138.80	-367.98	-138.03	0.62	0.37	27.57
3,766.00	0.18	277.53	3,733.89	139.68	-367.58	-138.91	1.39	-1.11	-121.19
3,956.00	0.44	348.54	3,923.89	140.44	-368.02	-139.67	0.22	0.14	37.37
4,051.00	0.35	40.22	4,018.89	141.02	-367.91	-140.24	0.37	-0.09	54.40
4,147.00	0.62	12.45	4,114.88	141.75	-367.61	-140.98	0.37	0.28	-28.93
4,241.00	0.70	353.29	4,208.88	142.81	-367.56	-142.04	0.25	0.09	-20.38
4,337.00	1.14	355.57	4,304.87	144.35	-367.71	-143.58	0.46	0.46	2.38
4,432.00	1.23	349.42	4,399.85	146.29	-367.97	-145.52	0.16	0.09	-6.47
4,527.00	1.23	198.25	4,494.84	146.33	-368.47	-145.55	2.51	0.00	-159.13
4,622.00	0.70	211.43	4,589.82	144.86	-369.10	-144.09	0.60	-0.56	13.87
4,717.00	0.70	218.99	4,684.82	143.92	-369.76	-143.14	0.10	0.00	7.96
4,812.00	0.18	70.28	4,779.81	143.52	-369.99	-142.74	0.90	-0.55	-156.54
4,908.00	0.62	56.57	4,875.81	143.85	-369.41	-143.08	0.47	0.46	-14.28

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<b>Well:</b>	#29N-26HZ	<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>	Compass_US

### 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)
5,002.00	1.32	61.14	4,969.80	144.66	-368.04	-143.88	0.75	0.74	4.86
5,096.00	1.32	56.22	5,063.77	145.78	-366.19	-145.01	0.12	0.00	-5.23
5,191.00	0.79	232.70	5,158.77	145.99	-365.80	-145.23	2.22	-0.56	185.77
5,286.00	0.70	247.12	5,253.76	145.37	-366.86	-144.60	0.22	-0.09	15.18
5,381.00	0.44	277.88	5,348.75	145.19	-367.75	-144.42	0.41	-0.27	32.38
5,476.00	0.44	277.88	5,443.75	145.29	-368.48	-144.52	0.00	0.00	0.00
5,571.00	0.70	298.27	5,538.75	145.62	-369.35	-144.84	0.34	0.27	21.46
5,666.00	0.88	298.80	5,633.74	146.24	-370.50	-145.47	0.19	0.19	0.56
5,761.00	0.79	302.31	5,728.73	146.95	-371.69	-146.17	0.11	-0.09	3.69
5,856.00	2.02	155.53	5,823.71	145.77	-371.55	-144.99	2.86	1.29	-154.51
5,951.00	1.93	168.37	5,918.66	142.68	-370.54	-141.91	0.47	-0.09	13.52
6,046.00	1.41	159.58	6,013.61	140.02	-369.81	-139.24	0.61	-0.55	-9.25
6,141.00	1.14	176.10	6,108.59	137.98	-369.33	-137.21	0.48	-0.28	17.39
6,234.00	0.97	175.40	6,201.58	136.27	-369.21	-135.50	0.18	-0.18	-0.75
6,329.00	0.97	194.21	6,296.56	134.69	-369.34	-133.92	0.33	0.00	19.80
6,425.00	1.06	211.78	6,392.55	133.15	-370.01	-132.37	0.34	0.09	18.30
6,519.00	10.20	188.76	6,486.00	124.17	-371.74	-123.39	9.82	9.72	-24.49
6,614.00	19.26	189.99	6,577.78	100.37	-375.75	-99.58	9.54	9.54	1.29
6,710.00	26.38	195.44	6,666.22	64.17	-384.18	-63.37	7.73	7.42	5.68
6,805.00	33.33	188.76	6,748.58	17.96	-393.79	-17.14	8.10	7.32	-7.03
6,900.00	45.46	188.76	6,821.86	-41.52	-402.96	42.36	12.77	12.77	0.00
6,920.72	47.98	187.93	6,836.06	-56.44	-405.14	57.29	12.52	12.18	-4.00
<b>Land Box Entry #29-N-26HZ Rev2</b>									
6,995.00	57.07	185.42	6,881.21	-114.93	-411.91	115.79	12.52	12.23	-3.38
7,090.00	58.83	178.03	6,931.68	-195.33	-414.28	196.19	6.85	1.85	-7.78
7,183.00	65.16	175.40	6,975.33	-277.25	-409.52	278.10	7.25	6.81	-2.83
7,278.00	76.77	179.27	7,006.27	-366.79	-405.46	367.63	12.81	12.22	4.07
7,373.00	79.58	181.02	7,025.74	-459.76	-405.70	460.61	3.46	2.96	1.84
7,468.00	92.24	178.03	7,032.50	-554.31	-404.90	555.15	13.69	13.33	-3.15
7,533.00	91.58	177.79	7,030.33	-619.23	-402.53	620.07	1.08	-1.01	-0.37
<b>LP(final) #29-N-26HZ Rev2</b>									
7,563.00	91.28	177.68	7,029.58	-649.19	-401.35	650.03	1.08	-1.01	-0.37
7,659.00	92.24	178.03	7,026.63	-745.08	-397.76	745.91	1.06	1.00	0.36
7,754.00	91.63	178.91	7,023.43	-839.99	-395.22	840.82	1.13	-0.64	0.93
7,847.00	90.75	178.03	7,021.49	-932.94	-392.74	933.76	1.34	-0.95	-0.95
7,942.00	92.24	177.86	7,019.02	-1,027.84	-389.33	1,028.65	1.58	1.57	-0.18
8,035.00	90.40	179.09	7,016.87	-1,120.78	-386.86	1,121.59	2.38	-1.98	1.32
8,127.00	91.10	179.09	7,015.67	-1,212.76	-385.40	1,213.56	0.76	0.76	0.00
8,220.00	92.59	179.09	7,012.67	-1,305.69	-383.92	1,306.50	1.60	1.60	0.00
8,316.00	91.01	178.91	7,009.66	-1,401.63	-382.25	1,402.43	1.66	-1.65	-0.19
8,410.00	89.96	180.50	7,008.86	-1,495.62	-381.76	1,496.42	2.03	-1.12	1.69
8,504.00	92.15	181.90	7,007.13	-1,589.58	-383.73	1,590.38	2.76	2.33	1.49
8,598.00	91.28	179.79	7,004.32	-1,683.52	-385.12	1,684.32	2.43	-0.93	-2.24
8,690.00	92.68	179.62	7,001.14	-1,775.46	-384.64	1,776.26	1.53	1.52	-0.18

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8,783.00	90.57	178.56	6,998.50	-1,868.40	-383.17	1,869.20	2.54	-2.27	-1.14
8,877.00	90.75	178.74	6,997.42	-1,962.37	-380.95	1,963.16	0.27	0.19	0.19
8,969.00	92.33	179.44	6,994.95	-2,054.32	-379.49	2,055.11	1.88	1.72	0.76
9,064.00	93.30	180.85	6,990.28	-2,149.20	-379.73	2,149.99	1.80	1.02	1.48
9,158.00	90.84	179.62	6,986.89	-2,243.13	-380.11	2,243.92	2.93	-2.62	-1.31
9,254.00	91.98	179.79	6,984.53	-2,339.10	-379.62	2,339.89	1.20	1.19	0.18
9,349.00	89.69	179.09	6,983.14	-2,434.08	-378.69	2,434.87	2.52	-2.41	-0.74
9,444.00	90.40	178.91	6,983.07	-2,529.06	-377.03	2,529.85	0.77	0.75	-0.19
9,539.00	89.25	180.85	6,983.36	-2,624.06	-376.83	2,624.84	2.37	-1.21	2.04
9,634.00	89.16	180.85	6,984.67	-2,719.04	-378.24	2,719.82	0.09	-0.09	0.00
9,728.00	89.34	181.73	6,985.90	-2,813.01	-380.36	2,813.80	0.96	0.19	0.94
9,823.00	89.43	181.55	6,986.92	-2,907.96	-383.08	2,908.76	0.21	0.09	-0.19
9,916.00	90.48	181.90	6,987.00	-3,000.92	-385.88	3,001.72	1.19	1.13	0.38
10,009.00	91.80	182.43	6,985.15	-3,093.83	-389.39	3,094.64	1.53	1.42	0.57
10,101.00	90.84	180.32	6,983.03	-3,185.77	-391.60	3,186.59	2.52	-1.04	-2.29
10,194.00	92.59	179.79	6,980.24	-3,278.73	-391.69	3,279.54	1.97	1.88	-0.57
10,286.00	91.36	180.14	6,977.07	-3,370.67	-391.63	3,371.48	1.39	-1.34	0.38
10,378.00	90.04	178.21	6,975.95	-3,462.65	-390.31	3,463.46	2.54	-1.43	-2.10
10,472.00	91.45	178.56	6,974.73	-3,556.60	-387.66	3,557.40	1.55	1.50	0.37
10,564.00	88.81	179.62	6,974.52	-3,648.58	-386.20	3,649.38	3.09	-2.87	1.15
10,658.00	89.43	179.09	6,975.96	-3,742.56	-385.14	3,743.36	0.87	0.66	-0.56
10,752.00	90.48	178.91	6,976.04	-3,836.55	-383.50	3,837.34	1.13	1.12	-0.19
10,845.00	89.34	180.32	6,976.18	-3,929.54	-382.87	3,930.33	1.95	-1.23	1.52
10,938.00	90.13	179.62	6,976.61	-4,022.54	-382.82	4,023.33	1.13	0.85	-0.75
11,030.00	87.85	180.50	6,978.23	-4,114.52	-382.92	4,115.31	2.66	-2.48	0.96
11,123.00	88.46	179.62	6,981.23	-4,207.47	-383.02	4,208.26	1.15	0.66	-0.95
11,215.00	90.04	179.79	6,982.43	-4,299.45	-382.54	4,300.25	1.73	1.72	0.18
11,309.00	88.99	180.85	6,983.23	-4,393.45	-383.07	4,394.24	1.59	-1.12	1.13
11,401.00	89.60	180.14	6,984.36	-4,485.43	-383.86	4,486.23	1.02	0.66	-0.77
11,494.00	88.46	181.90	6,985.94	-4,578.40	-385.52	4,579.20	2.25	-1.23	1.89
11,586.00	88.72	181.55	6,988.20	-4,670.33	-388.29	4,671.13	0.47	0.28	-0.38
11,679.00	89.43	181.55	6,989.70	-4,763.29	-390.80	4,764.09	0.76	0.76	0.00
11,772.00	90.04	181.90	6,990.13	-4,856.24	-393.60	4,857.06	0.76	0.66	0.38
11,796.00	90.18	181.81	6,990.09	-4,880.23	-394.38	4,881.04	0.68	0.57	-0.38
<b>Section Line #29-N-26HZ Rev2</b>									
11,865.00	90.57	181.55	6,989.64	-4,949.20	-396.40	4,950.02	0.68	0.57	-0.38
11,959.00	91.45	181.73	6,987.98	-5,043.14	-399.09	5,043.97	0.96	0.94	0.19
12,051.00	92.86	182.08	6,984.52	-5,135.03	-402.15	5,135.86	1.58	1.53	0.38
12,145.00	93.65	181.90	6,979.18	-5,228.82	-405.41	5,229.65	0.86	0.84	-0.19
12,210.00	93.65	181.90	6,975.04	-5,293.65	-407.56	5,294.49	0.00	0.00	0.00
<b>BHL #29-N-26HZ Rev2</b>									

# Precision Drilling Corporation

## Survey Report

<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>Local Co-ordinate Reference:</b>	Well #29N-26HZ
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>TVD Reference:</b>	4890'GL+20'KB @ 4910.00usft (PD460)
<b>Site:</b>	GE Powers Pad	<b>MD Reference:</b>	4890'GL+20'KB @ 4910.00usft (PD460)
<b>Well:</b>	#29N-26HZ	<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>	Compass_US

### 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
Surface #29-N-26HZ - actual wellpath hits target center - Point	0.00	0.00	0.00	0.00	0.00	14,574,369.46	1,742,182.04	40.130244°N	104.635926°W
Land Box Entry #29-N - actual wellpath hits target center - Point	0.00	0.00	6,836.09	-56.46	-405.15	14,574,311.34	1,741,777.13	40.130089°N	104.637376°W
BHL #29-N-26HZ Rev - actual wellpath hits target center - Point	0.00	0.00	6,975.04	-5,293.65	-407.56	14,569,074.19	1,741,796.17	40.115707°N	104.637384°W
Section Line #29-N-26 - actual wellpath hits target center - Point	0.00	0.00	6,990.09	-4,880.23	-394.38	14,569,487.66	1,741,807.66	40.116842°N	104.637337°W
LP(final) #29-N-26HZ - actual wellpath hits target center - Point	0.00	0.00	7,030.33	-619.23	-402.53	14,573,748.59	1,741,782.05	40.128544°N	104.637366°W

### Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
6,920.75	6,836.09	-56.46	-405.15	Land Box Entry Rev2
7,533.00	7,030.33	-619.23	-402.53	LP Rev2
11,796.00	6,990.09	-4,880.23	-394.38	Section Line Entry Rev2