



## Directional Survey Report

Well ID: NWG 55-29

Field: Newberry

## NORTHWEST GEOTHERMAL

Well Name: Northwest Geothermal 55-29

Sect: 29 Town: 21S Rng: 12E County: Deschutes State: OR

Survey Type	Meas. Depth	Inc.	Azimuth	TVD	Coordinates N-S	E-W	Closure	Vertical Section	Dog Leg Severity
<b>Well Bore: Original Well Bore</b>				<b>Plane of Vertical Section: 0.0</b>					
** Tieln	0.0	0.00	0.0	0.0	0.0	0.0		0.0	
MWD	219.0	0.10	12.5	219.0	0.2	0.0	0.2	0.2	0.046
MWD	425.0	1.20	131.5	425.0	-1.1	1.7	2.0	-1.1	0.608
MWD	925.0	2.60	85.8	924.7	-3.7	16.9	17.3	-3.7	0.392
MWD	1,000.0	2.50	85.0	999.6	-3.4	20.3	20.5	-3.4	0.142
MWD	1,218.0	2.83	76.4	1,217.4	-1.8	30.2	30.3	-1.8	0.237
MWD	1,390.0	2.90	72.9	1,389.2	0.5	38.5	38.5	0.5	0.110
MWD	1,484.0	2.88	73.9	1,483.1	1.9	43.0	43.1	1.9	0.056
MWD	1,579.0	2.77	87.5	1,578.0	2.6	47.6	47.7	2.6	0.713
MWD	1,642.0	2.91	83.5	1,640.9	2.9	50.7	50.8	2.9	0.382
MWD	1,770.0	2.83	77.5	1,768.7	3.9	57.1	57.2	3.9	0.244
MWD	1,864.0	2.40	89.3	1,862.6	4.5	61.3	61.5	4.5	0.731
MWD	1,960.0	2.33	81.1	1,958.5	4.8	65.2	65.4	4.8	0.358
MWD	2,050.0	3.45	93.9	2,048.4	4.9	69.7	69.9	4.9	1.430
MWD	2,241.0	4.93	88.1	2,238.9	4.8	83.7	83.8	4.8	0.805
MWD	2,334.0	6.13	99.6	2,331.5	4.1	92.6	92.7	4.1	1.752
MWD	2,429.0	6.14	105.1	2,425.9	1.9	102.5	102.5	1.9	0.614
MWD	2,523.0	6.95	107.0	2,519.3	-1.1	112.8	112.8	-1.1	0.893
MWD	2,617.0	7.83	99.4	2,612.5	-3.8	124.5	124.6	-3.8	1.406
MWD	2,710.0	8.98	97.8	2,704.5	-5.8	138.0	138.1	-5.8	1.259
MWD	2,803.0	10.18	92.0	2,796.3	-7.1	153.4	153.5	-7.1	1.661
MWD	2,898.0	10.86	93.1	2,889.7	-7.9	170.7	170.9	-7.9	0.749
MWD	2,992.0	11.04	90.8	2,981.9	-8.5	188.5	188.7	-8.5	0.516
MWD	3,124.0	11.54	88.5	3,111.4	-8.3	214.4	214.5	-8.3	0.504
MWD	3,178.0	12.26	89.9	3,164.2	-8.1	225.5	225.7	-8.1	1.439
MWD	3,271.0	12.05	93.0	3,255.1	-8.6	245.1	245.2	-8.6	0.735
MWD	3,366.0	12.27	89.5	3,348.0	-9.1	265.1	265.2	-9.1	0.820
MWD	3,460.0	12.86	87.8	3,439.8	-8.6	285.5	285.6	-8.6	0.739
MWD	3,553.0	13.14	90.1	3,530.4	-8.2	306.4	306.5	-8.2	0.641
MWD	3,649.0	13.44	97.2	3,623.8	-9.6	328.4	328.5	-9.6	1.720
MWD	3,743.0	13.21	90.8	3,715.3	-11.2	350.0	350.2	-11.2	1.578
MWD	3,838.0	13.43	88.2	3,807.7	-11.0	371.9	372.0	-11.0	0.683
MWD	3,932.0	12.90	83.4	3,899.3	-9.4	393.2	393.3	-9.4	1.299
MWD	4,082.0	12.43	85.6	4,045.6	-6.2	425.9	426.0	-6.2	0.448
MWD	4,123.0	11.04	84.7	4,085.8	-5.5	434.2	434.3	-5.5	3.419
MWD	4,218.0	10.22	83.7	4,179.1	-3.7	451.7	451.7	-3.7	0.884
MWD	4,314.0	10.23	83.3	4,273.6	-1.8	468.6	468.6	-1.8	0.075
MWD	4,517.0	9.65	74.3	4,473.6	4.9	502.9	502.9	4.9	0.814
MWD	4,611.0	10.07	84.5	4,566.2	7.8	518.6	518.7	7.8	1.908
MWD	4,707.0	10.34	84.0	4,660.7	9.5	535.6	535.7	9.5	0.297
MWD	4,798.0	10.67	86.8	4,750.1	10.9	552.1	552.2	10.9	0.668
MWD	4,892.0	10.91	86.0	4,842.5	12.0	569.7	569.8	12.0	0.304
MWD	4,989.0	10.76	85.7	4,937.8	13.3	587.9	588.0	13.3	0.165
MWD	5,084.0	11.50	85.2	5,031.0	14.8	606.1	606.3	14.8	0.784



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Survey Type	Meas. Depth	Inc.	Azimuth	TVD	Coordinates N-S	E-W	Closure	Vertical Section	Dog Leg Severity
MWD	5,179.0	11.97	87.5	5,124.0	16.0	625.4	625.6	16.0	0.689
MWD	5,306.0	12.78	87.4	5,248.0	17.2	652.6	652.8	17.2	0.638
MWD	5,433.0	13.14	90.2	5,371.8	17.8	681.1	681.3	17.8	0.556
MWD	5,559.0	13.61	92.9	5,494.4	17.0	710.2	710.4	17.0	0.625
MWD	5,636.0	14.30	92.6	5,569.1	16.1	728.7	728.9	16.1	0.900
MWD	5,731.0	14.25	94.5	5,661.2	14.7	752.1	752.3	14.7	0.501
MWD	5,826.0	14.07	87.6	5,753.3	14.2	775.3	775.4	14.2	1.786
MWD	5,921.0	13.60	91.8	5,845.5	14.4	798.0	798.1	14.4	1.156
MWD	6,016.0	13.56	92.4	5,937.9	13.6	820.3	820.4	13.6	0.157
MWD	6,112.0	13.54	85.4	6,031.2	14.0	842.8	842.9	14.0	1.703
MWD	6,208.0	13.26	88.1	6,124.6	15.3	865.0	865.1	15.3	0.703
MWD	6,303.0	13.19	88.9	6,217.1	15.9	886.7	886.8	15.9	0.227
MWD	6,395.0	12.73	87.3	6,306.7	16.5	907.3	907.5	16.5	0.645
MWD	6,583.0	11.78	90.1	6,490.5	17.5	947.2	947.3	17.5	0.600
MWD	6,676.0	11.86	87.2	6,581.5	17.9	966.2	966.4	17.9	0.647
MWD	6,770.0	11.81	88.4	6,673.5	18.7	985.5	985.7	18.7	0.259
MWD	6,863.0	11.77	89.6	6,764.5	19.0	1,004.5	1,004.7	19.0	0.271
MWD	6,957.0	12.60	85.9	6,856.4	19.8	1,024.3	1,024.5	19.8	1.220
MWD	6,988.0	13.23	82.7	6,886.6	20.5	1,031.2	1,031.4	20.5	3.036
MWD	7,051.0	13.15	82.7	6,948.0	22.3	1,045.5	1,045.7	22.3	0.127
MWD	7,175.0	12.40	90.6	7,068.9	24.0	1,072.8	1,073.0	24.0	1.530
MWD	7,269.0	12.18	91.6	7,160.7	23.6	1,092.8	1,093.0	23.6	0.327
MWD	7,363.0	12.45	87.1	7,252.6	23.8	1,112.8	1,113.1	23.8	1.069
MWD	7,459.0	12.57	90.6	7,346.3	24.2	1,133.6	1,133.8	24.2	0.811
MWD	7,648.0	12.19	96.2	7,530.9	21.9	1,174.0	1,174.2	21.9	0.660
MWD	7,742.0	12.28	96.1	7,622.8	19.7	1,193.8	1,194.0	19.7	0.099
MWD	7,838.0	12.66	92.9	7,716.5	18.1	1,214.4	1,214.6	18.1	0.817
MWD	7,932.0	12.52	89.3	7,808.3	17.7	1,234.9	1,235.1	17.7	0.846
MWD	8,027.0	12.45	89.8	7,901.0	17.9	1,255.5	1,255.6	17.9	0.141
MWD	8,121.0	12.41	90.0	7,992.8	17.9	1,275.7	1,275.8	17.9	0.052
MWD	8,216.0	12.17	89.3	8,085.6	18.1	1,295.9	1,296.0	18.1	0.289
MWD	8,329.0	12.90	84.4	8,195.9	19.4	1,320.4	1,320.5	19.4	1.146
MWD	8,457.0	12.58	81.8	8,320.8	22.8	1,348.4	1,348.6	22.8	0.508
MWD	8,552.0	11.82	81.9	8,413.6	25.7	1,368.3	1,368.5	25.7	0.800
MWD	8,647.0	11.27	86.7	8,506.7	27.6	1,387.2	1,387.4	27.6	1.178
MWD	8,743.0	11.36	87.3	8,600.9	28.6	1,406.0	1,406.3	28.6	0.145
MWD	8,838.0	11.29	90.3	8,694.0	29.0	1,424.6	1,424.9	29.0	0.624
MWD	8,933.0	11.18	91.7	8,787.2	28.6	1,443.1	1,443.4	28.6	0.315
MWD	9,029.0	10.69	95.5	8,881.4	27.5	1,461.3	1,461.6	27.5	0.903
MWD	9,035.0	10.38	91.8	8,887.3	27.4	1,462.4	1,462.6	27.4	12.261
MWD	9,109.0	10.95	93.5	8,960.1	26.8	1,476.1	1,476.3	26.8	0.882
MWD	9,244.0	14.02	106.2	9,091.9	21.4	1,504.6	1,504.7	21.4	3.036
MWD	9,340.0	14.43	106.1	9,184.9	14.9	1,527.2	1,527.3	14.9	0.429
MWD	9,434.0	17.18	113.5	9,275.4	6.1	1,551.2	1,551.2	6.1	3.634
MWD	9,624.0	18.17	108.2	9,456.4	-14.4	1,605.1	1,605.2	-14.4	0.995
MWD	9,638.0	16.95	106.9	9,469.8	-15.6	1,609.1	1,609.2	-15.6	9.160



## Directional Survey Report

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Well ID: NWG 55-29

Well Name: Northwest Geothermal 55-29

Field: Newberry

Sect: 29 Town: 21S Rng: 12E County: Deschutes State: OR

Survey Type	Meas. Depth	Inc.	Azimuth	TVD	Coordinates		Closure	Vertical Section	Dog Leg Severity
					N-S	E-W			
MWD	9,697.0	17.23	104.5	9,526.2	-20.3	1,625.8	1,625.9	-20.3	1.309
MWD	9,761.0	17.44	106.1	9,587.3	-25.4	1,644.2	1,644.4	-25.4	0.827
MWD	9,828.0	18.14	106.1	9,651.1	-31.0	1,663.9	1,664.2	-31.0	1.045
MWD	9,889.0	19.17	109.4	9,708.9	-37.0	1,682.5	1,682.9	-37.0	2.428
MWD	9,950.0	19.96	108.4	9,766.3	-43.6	1,701.8	1,702.3	-43.6	1.420
MWD	10,060.0	19.96	108.4	9,869.7	-55.4	1,737.4	1,738.3	-55.4	0.000

Calculations using Minimum Curvature Method