



# Directional Survey Report

Calpine

Well ID: Lesperance 1

Well Name: Lesperance 1

Field: Geysers

Sect: 6 Town: 11N Rng: 8W County: Sonoma State: CA

Survey Type	Meas. Depth	Inc.	Azimuth	TVD	Coordinates		Closure	Vertical Section	Dog Leg Severity
					N-S	E-W			
<b>Well Bore: Original Well Bore</b>				<b>Plane of Vertical Section: 0</b>					
MSS	234.0	1.25	208	234.0	-2.3	-1.2	2.6	-2.3	0.534
MSS	376.0	2.00	194	375.9	-6.0	-2.5	6.5	-6.0	0.594
MSS	527.0	2.25	197	526.8	-11.4	-4.0	12.1	-11.4	0.181
MSS	681.0	2.50	193	680.7	-17.6	-5.7	18.5	-17.6	0.195
MSS	837.0	2.75	204	836.5	-24.3	-8.0	25.6	-24.3	0.360
MSS	1,025.0	3.00	210	1,024.3	-32.7	-12.3	34.9	-32.7	0.208
MSS	1,211.0	3.25	215	1,210.0	-41.2	-17.7	44.9	-41.2	0.199
MSS	1,257.0	3.00	217	1,255.9	-43.3	-19.2	47.3	-43.3	0.593
MSS	1,288.0	1.75	202	1,286.9	-44.3	-19.8	48.6	-44.3	4.470
MSS	1,319.0	1.25	142	1,317.9	-45.1	-19.8	49.2	-45.1	5.036
MSS	1,400.0	1.75	121	1,398.9	-46.4	-18.2	49.8	-46.4	0.908
MSS	1,491.0	2.25	96	1,489.8	-47.3	-15.2	49.7	-47.3	1.092
MSS	1,616.0	2.00	117	1,614.7	-48.5	-10.9	49.7	-48.5	0.650
MSS	1,741.0	2.25	111	1,739.7	-50.4	-6.6	50.8	-50.4	0.267
MSS	1,983.0	3.25	92	1,981.4	-52.3	4.7	52.6	-52.3	0.554
MSS	2,077.0	3.75	100	2,075.2	-53.0	10.4	54.0	-53.0	0.742
MSS	2,113.0	3.25	102	2,111.1	-53.4	12.5	54.8	-53.4	1.429
MSS	2,145.0	2.25	85	2,143.1	-53.5	14.0	55.3	-53.5	4.000
MSS	2,176.0	1.25	60	2,174.1	-53.3	14.9	55.4	-53.3	3.986
MSS	2,246.0	1.00	305	2,244.1	-52.6	15.1	54.7	-52.6	2.718
MSS	2,341.0	1.25	280	2,339.1	-51.9	13.4	53.6	-51.9	0.573
MSS	2,466.0	1.00	293	2,464.0	-51.2	11.0	52.4	-51.2	0.285
MSS	2,590.0	1.25	282	2,588.0	-50.5	8.7	51.3	-50.5	0.266
MSS	2,716.0	2.00	250	2,714.0	-51.0	5.3	51.3	-51.0	0.913
MSS	2,846.0	1.75	243	2,843.9	-52.7	1.4	52.7	-52.7	0.260
MSS	3,067.0	2.00	218	3,064.8	-57.3	-4.0	57.4	-57.3	0.383
MSS	3,254.0	2.25	204	3,251.7	-63.2	-7.5	63.6	-63.2	0.307
MSS	3,407.0	2.00	198	3,404.5	-68.5	-9.5	69.1	-68.5	0.219
MSS	3,431.0	2.25	180	3,428.5	-69.3	-9.6	70.0	-69.3	2.955
MSS	3,462.0	2.25	162	3,459.5	-70.5	-9.5	71.2	-70.5	2.270
MSS	3,493.0	2.75	148	3,490.5	-71.7	-8.9	72.3	-71.7	2.535
MSS	3,524.0	3.75	135	3,521.4	-73.1	-7.8	73.5	-73.1	3.988
MSS	3,582.0	4.25	121	3,579.3	-75.5	-4.6	75.7	-75.5	1.885
MSS	3,674.0	5.50	113	3,671.0	-79.0	2.4	79.0	-79.0	1.543
MSS	3,799.0	7.25	108	3,795.2	-83.8	15.4	85.2	-83.8	1.467
MSS	3,923.0	8.75	103	3,918.0	-88.3	32.0	94.0	-88.3	1.332
MSS	3,995.0	8.50	116	3,989.2	-91.9	42.2	101.1	-91.9	2.724
MSS	4,026.0	9.25	119	4,019.8	-94.1	46.4	104.9	-94.1	2.842
MSS	4,057.0	10.50	122	4,050.3	-96.8	51.0	109.4	-96.8	4.359
MSS	4,117.0	11.25	134	4,109.3	-103.8	59.8	119.8	-103.8	3.967
MSS	4,209.0	10.75	134	4,199.6	-116.0	72.5	136.7	-116.0	0.543
MSS	4,334.0	10.25	138	4,322.5	-132.3	88.3	159.1	-132.3	0.707
MSS	4,428.0	9.75	137	4,415.0	-144.4	99.3	175.2	-144.4	0.563
MSS	4,557.0	9.75	139	4,542.2	-160.6	113.9	196.9	-160.6	0.263



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Sect: 6 Town: 11N Rng: 8W County: Sonoma State: CA

Survey Type	Meas. Depth	Inc.	Azimuth	TVD	Coordinates		Closure	Vertical Section	Dog Leg Severity
					N-S	E-W			
MSS	4,680.0	9.25	140	4,663.5	-176.0	127.1	217.1	-176.0	0.428
MSS	4,701.0	9.75	135	4,684.2	-178.6	129.5	220.6	-178.6	4.593
MSS	4,732.0	10.50	130	4,714.7	-182.3	133.5	225.9	-182.3	3.725
MSS	4,804.0	11.25	128	4,785.4	-190.8	144.0	239.1	-190.8	1.166
MSS	4,928.0	11.75	130	4,906.9	-206.4	163.2	263.1	-206.4	0.516
MSS	5,021.0	12.75	133	4,997.8	-219.4	178.0	282.6	-219.4	1.274
MSS	5,151.0	12.00	131	5,124.8	-238.1	198.7	310.1	-238.1	0.664
MSS	5,275.0	11.75	134	5,246.2	-255.3	217.5	335.4	-255.3	0.537
MSS	5,399.0	10.75	139	5,367.8	-272.8	234.2	359.5	-272.8	1.126
MSS	5,416.0	11.25	136	5,384.5	-275.2	236.4	362.8	-275.2	4.470
MSS	5,445.0	11.00	128	5,412.9	-278.9	240.5	368.3	-278.9	5.388
MSS	5,518.0	10.75	122	5,484.6	-286.8	251.8	381.7	-286.8	1.587
MSS	5,549.0	10.75	120	5,515.1	-289.8	256.7	387.2	-289.8	1.203
MSS	5,647.0	11.00	123	5,611.3	-299.5	272.5	404.9	-299.5	0.631
MSS	5,720.0	11.25	125	5,682.9	-307.4	284.2	418.6	-307.4	0.630
MSS	5,890.0	12.00	129	5,849.4	-328.0	311.5	452.3	-328.0	0.647
MSS	5,982.0	12.25	131	5,939.4	-340.4	326.3	471.5	-340.4	0.531
MSS	6,162.0	11.25	133	6,115.6	-364.9	353.5	508.1	-364.9	0.600
MSS	6,255.0	10.50	134	6,207.0	-377.0	366.3	525.6	-377.0	0.832
MSS	6,403.0	12.75	136	6,351.9	-398.1	387.3	555.4	-398.1	1.544
MSS	6,495.0	14.25	137	6,441.4	-413.7	402.1	576.9	-413.7	1.650
MSS	6,603.0	12.75	135	6,546.4	-431.8	419.6	602.1	-431.8	1.454
MSS	6,726.0	11.25	138	6,666.7	-450.4	437.2	627.7	-450.4	1.320
MSS	6,843.0	11.75	143	6,781.3	-468.4	452.0	650.9	-468.4	0.953
MSS	6,935.0	11.75	143	6,871.4	-483.3	463.3	669.5	-483.3	0.000
MSS	7,121.0	13.25	148	7,053.0	-516.5	486.0	709.2	-516.5	0.994
MSS	7,323.0	14.00	138	7,249.3	-554.3	514.6	756.4	-554.3	1.222
MSS	7,608.0	16.00	138	7,524.6	-609.1	564.0	830.1	-609.1	0.702
MSS	7,733.0	17.00	136	7,644.5	-635.1	588.2	865.6	-635.1	0.920
MSS	7,840.0	17.00	136	7,746.8	-657.6	609.9	896.9	-657.6	0.000
MSS	8,029.0	16.00	133	7,928.0	-695.2	648.2	950.5	-695.2	0.695
MSS	8,155.0	16.00	132	8,049.1	-718.7	673.8	985.1	-718.7	0.219
MSS	8,310.0	16.00	129	8,198.1	-746.4	706.2	1,027.6	-746.4	0.533
MSS	8,552.0	15.75	130	8,430.9	-788.5	757.3	1,093.3	-788.5	0.153
MSS	8,803.0	15.50	129	8,672.6	-831.5	809.5	1,160.5	-831.5	0.146
MSS	8,990.0	15.00	128	8,853.0	-862.2	848.0	1,209.3	-862.2	0.302
MSS	9,272.0	15.75	132	9,125.0	-910.2	905.2	1,283.7	-910.2	0.460
MSS	9,585.0	11.25	133	9,429.2	-959.5	959.1	1,356.7	-959.5	1.440
MSS	9,832.0	13.00	138	9,670.7	-996.6	995.3	1,408.5	-996.6	0.826
MSS	9,957.0	14.00	141	9,792.3	-1,018.8	1,014.2	1,437.6	-1,018.8	0.976
MSS	10,130.0	19.00	147	9,958.1	-1,058.7	1,042.8	1,486.0	-1,058.7	3.050
MSS	10,328.0	21.75	160	10,143.8	-1,120.2	1,072.9	1,551.1	-1,120.2	2.667
MSS	10,439.0	21.25	158	10,247.1	-1,158.2	1,087.4	1,588.7	-1,158.2	0.799
MSS	10,644.0	21.00	159	10,438.3	-1,227.0	1,114.5	1,657.6	-1,227.0	0.214
MSS	11,110.0	19.00	177	10,876.6	-1,380.8	1,148.5	1,796.0	-1,380.8	1.383
MSS	11,297.0	19.00	180	11,053.4	-1,441.7	1,150.1	1,844.2	-1,441.7	0.522



# Directional Survey Report

**Calpine**

Well ID: Lesperance 1

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Field: Geysers

Sect: 6 Town: 11N Rng: 8W County: Sonoma State: CA

Survey Type	Meas. Depth	Inc.	Azimuth	TVD	Coordinates		Closure	Vertical Section	Dog Leg Severity
					N-S	E-W			
MSS	11,734.0	19.00	180	11,466.6	-1,583.9	1,150.1	1,957.4	-1,583.9	0.000
<b>Well Bore: ST 1</b>				<b>Plane of Vertical Section: 204.23</b>					
** Tieln	6,726.0	11.25	138	6,666.7	-450.4	437.2	627.7	231.3	
MWD	7,032.0	8.80	162	6,968.1	-494.8	464.4	678.6	260.6	1.566
MWD	7,094.0	8.10	165.1	7,029.4	-503.6	467.0	686.8	267.5	1.347
MWD	7,154.0	8.60	177.2	7,088.8	-512.1	468.3	694.0	274.8	3.038
MWD	7,215.0	9.10	189.4	7,149.1	-521.4	467.8	700.5	283.5	3.178
MWD	7,276.0	10.30	196.8	7,209.2	-531.4	465.4	706.4	293.6	2.833
MWD	7,337.0	10.70	206.1	7,269.2	-541.7	461.3	711.5	304.7	2.851
MWD	7,398.0	10.80	216	7,329.1	-551.4	455.5	715.2	315.9	3.028
MWD	7,460.0	11.30	225.5	7,390.0	-560.4	447.7	717.3	327.3	3.042
MWD	7,521.0	11.80	234	7,449.8	-568.3	438.4	717.7	338.3	2.905
MSS	7,608.0	12.00	239	7,534.9	-578.1	423.5	716.6	353.4	1.207
MSS	7,691.0	12.00	243	7,616.1	-586.5	408.4	714.7	367.2	1.002
MSS	7,786.0	14.50	245	7,708.6	-596.0	388.8	711.6	383.9	2.675
MSS	7,875.0	16.50	248	7,794.3	-605.5	367.0	708.0	401.5	2.420
MSS	8,121.0	17.00	251	8,029.9	-630.3	300.6	698.3	451.4	0.406
MSS	8,275.0	16.50	248	8,177.3	-645.8	259.0	695.8	482.6	0.648
MSS	8,468.0	16.50	249	8,362.4	-665.9	208.0	697.6	521.8	0.147
MSS	8,827.0	18.00	255	8,705.3	-698.5	106.8	706.6	593.1	0.648
MSS	9,069.0	19.75	245	8,934.3	-725.5	33.6	726.2	647.7	1.517
MSS	9,200.0	19.00	247	9,057.9	-743.1	-6.1	743.2	680.2	0.764
MSS	9,465.0	22.40	251	9,305.8	-776.5	-93.5	782.1	746.4	1.389
MSS	9,619.0	23.00	244	9,447.9	-799.2	-148.3	812.8	789.7	1.796
MSS	9,829.0	23.00	251	9,641.2	-830.5	-224.0	860.2	849.3	1.302
MSS	9,983.0	22.50	243	9,783.3	-853.7	-278.7	898.1	892.9	2.033
MSS	10,167.0	25.50	244	9,951.3	-887.1	-345.7	952.1	950.8	1.645
MSS	10,470.0	30.00	241	10,219.4	-952.4	-470.7	1,062.4	1,061.7	1.555
MSS	10,716.0	33.00	243	10,429.2	-1,012.7	-584.2	1,169.1	1,163.2	1.291
MSS	10,902.0	32.50	247	10,585.6	-1,055.2	-675.3	1,252.8	1,239.4	1.194
MSS	10,956.0	32.50	247	10,631.1	-1,066.5	-702.0	1,276.8	1,260.7	0.000

Calculations using Minimum Curvature Method