



# Directional Survey Report

**Calpine**

Well ID: Tocher-3

Well Name: Tocher 3 CTI

Field: Geysers

Sect: 27 Town: 11N Rng: 8W County: Lake 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: 45</b>					
** Tieln	0.0	0.00	0	0.0	0.0	0.0		0.0	
MSS	343.0	0.75	105	343.0	-0.6	2.2	2.2	-0.6	0.219
MSS	463.0	1.50	141	463.0	-2.0	3.9	4.4	-2.0	0.830
MSS	618.0	2.25	159	617.9	-6.4	6.3	9.0	-6.4	0.610
MSS	746.0	2.75	163	745.8	-11.7	8.1	14.2	-11.7	0.413
MSS	900.0	2.50	184	899.6	-18.6	8.9	20.6	-18.6	0.641
MSS	1,057.0	3.50	178	1,056.4	-26.8	8.9	28.2	-26.8	0.667
MSS	1,181.0	4.50	185	1,180.1	-35.4	8.6	36.4	-35.4	0.896
MSS	1,324.0	4.00	193	1,322.7	-45.9	7.0	46.4	-45.9	0.542
MSS	1,482.0	3.00	210	1,480.4	-54.8	3.6	54.9	-54.8	0.906
MSS	1,639.0	2.50	223	1,637.2	-60.9	-0.7	60.9	-60.9	0.507
MSS	1,762.0	3.00	224	1,760.1	-65.2	-4.8	65.3	-65.2	0.408
MSS	1,919.0	3.25	222	1,916.8	-71.4	-10.6	72.2	-71.4	0.174
MSS	2,044.0	3.25	214	2,041.6	-77.0	-15.0	78.4	-77.0	0.363
MSS	2,159.0	3.75	204	2,156.4	-83.1	-18.3	85.1	-83.1	0.685
MSS	2,196.0	3.75	212	2,193.4	-85.3	-19.5	87.5	-74.1	1.413
MSS	2,227.0	2.25	208	2,224.3	-86.7	-20.3	89.0	-75.6	4.883
MSS	2,258.0	1.25	176	2,255.3	-87.5	-20.6	89.9	-76.4	4.393
MSS	2,289.0	1.75	114	2,286.3	-88.1	-20.1	90.3	-76.5	5.172
MSS	2,322.0	3.00	100	2,319.3	-88.4	-18.8	90.4	-75.8	4.149
MSS	2,409.0	5.00	85	2,406.0	-88.5	-12.8	89.4	-71.6	2.576
MSS	2,472.0	5.75	85	2,468.8	-88.0	-6.9	88.2	-67.1	1.190
MSS	2,567.0	5.50	93	2,563.3	-87.8	2.4	87.8	-60.4	0.866
MSS	2,661.0	6.00	97	2,656.8	-88.6	11.8	89.4	-54.4	0.681
MSS	2,753.0	7.00	94	2,748.2	-89.6	22.1	92.3	-47.7	1.148
MSS	2,846.0	7.75	94	2,840.5	-90.4	34.0	96.6	-39.9	0.806
MSS	2,877.0	8.25	94	2,871.2	-90.7	38.3	98.5	-37.1	1.613
MSS	2,962.0	8.75	97	2,955.2	-92.0	50.8	105.1	-29.1	0.786
MSS	3,087.0	7.75	95	3,078.9	-93.8	68.7	116.3	-17.8	0.832
MSS	3,180.0	7.50	96	3,171.1	-95.0	81.0	124.8	-9.9	0.304
MSS	3,273.0	7.75	97	3,263.3	-96.4	93.2	134.1	-2.3	0.304
MSS	3,395.0	7.75	103	3,384.2	-99.3	109.4	147.7	7.2	0.663
MSS	3,487.0	7.50	115	3,475.4	-103.2	120.9	159.0	12.5	1.749
MSS	3,534.0	7.00	91	3,522.0	-104.6	126.5	164.1	15.5	6.482
MSS	3,566.0	6.75	84	3,553.8	-104.4	130.3	167.0	18.4	2.731
MSS	3,658.0	8.50	83	3,645.0	-103.0	142.5	175.8	27.9	1.908
MSS	3,753.0	9.00	83	3,738.9	-101.2	156.8	186.7	39.3	0.526
MSS	4,005.0	8.25	84	3,988.0	-96.9	194.4	217.2	68.9	0.303
MSS	4,129.0	7.00	87	4,110.9	-95.6	210.8	231.4	81.4	1.058
MSS	4,209.0	7.25	86	4,190.3	-95.0	220.7	240.3	88.8	0.349
MSS	4,301.0	8.25	87	4,281.5	-94.3	233.0	251.4	98.1	1.097
MSS	4,395.0	7.75	85	4,374.5	-93.4	246.1	263.2	108.0	0.609
MSS	4,467.0	8.75	87	4,445.8	-92.7	256.4	272.6	115.8	1.445
MSS	4,561.0	9.00	83	4,538.7	-91.4	270.8	285.8	126.9	0.708



# Directional Survey Report

Calpine

Well ID: Tocher-3

Well Name: Tocher 3 CTI

Field: Geysers

Sect: 27 Town: 11N Rng: 8W County: Lake State: CA

Survey Type	Meas. Depth	Inc.	Azimuth	TVD	Coordinates		Closure	Vertical Section	Dog Leg Severity
					N-S	E-W			
MSS	4,683.0	10.25	85	4,658.9	-89.3	291.1	304.5	142.7	1.060
MSS	4,782.0	11.25	87	4,756.2	-88.0	309.5	321.8	156.7	1.078
MSS	4,882.0	10.50	86	4,854.4	-86.9	328.4	339.7	170.8	0.773
MSS	4,977.0	10.00	86	4,947.9	-85.7	345.2	355.7	183.5	0.526
MSS	5,071.0	9.75	86	5,040.5	-84.5	361.3	371.1	195.7	0.266
MSS	5,164.0	9.75	88	5,132.2	-83.7	377.0	386.2	207.4	0.364
MSS	5,230.0	10.00	88	5,197.2	-83.3	388.4	397.2	215.7	0.379
MSS	5,257.0	10.25	70	5,223.8	-82.4	393.0	401.5	219.6	11.709
MSS	5,290.0	10.25	70	5,256.2	-80.4	398.5	406.5	224.9	0.000
MSS	5,455.0	15.25	43	5,417.3	-59.5	427.1	431.2	259.9	4.638
MSS	5,581.0	16.50	43	5,538.5	-34.3	450.6	451.9	294.4	0.992
MSS	5,832.0	17.00	44	5,778.8	18.2	500.4	500.7	366.7	0.230
MSS	6,082.0	17.25	44	6,017.7	71.1	551.6	556.1	440.3	0.100
MSS	6,224.0	16.50	47	6,153.6	100.0	580.9	589.5	481.5	0.809
MSS	6,422.0	16.25	48	6,343.6	137.7	622.1	637.1	537.3	0.190
MSS	6,613.0	16.00	47	6,527.1	173.6	661.2	683.6	590.3	0.196
MSS	6,761.0	15.25	47	6,669.6	200.8	690.3	718.9	630.1	0.507
MSS	6,854.0	15.00	47	6,759.4	217.3	708.1	740.7	654.4	0.269
MSS	6,955.0	14.75	47	6,857.0	235.0	727.1	764.1	680.3	0.248
MSS	7,080.0	13.75	47	6,978.1	256.0	749.6	792.1	711.0	0.800
MSS	7,205.0	13.50	45	7,099.6	276.4	770.7	818.8	740.5	0.427
MSS	7,269.0	13.00	42	7,161.9	287.1	780.8	831.9	755.1	1.328
MSS	7,420.0	14.75	43	7,308.5	313.7	805.3	864.3	791.3	1.170
MSS	7,547.0	16.25	41	7,430.9	339.0	828.0	894.7	825.2	1.254
MSS	7,671.0	17.00	42	7,549.7	365.5	851.5	926.7	860.6	0.647
MSS	7,890.0	18.00	48	7,758.6	412.0	898.1	988.1	926.4	0.941
MSS	8,099.0	17.00	49	7,957.9	453.6	945.1	1,048.4	989.1	0.500
MSS	8,192.0	16.00	50	8,047.1	470.8	965.2	1,073.9	1,015.4	1.118
MSS	8,434.0	16.50	60	8,279.4	509.4	1,020.5	1,140.6	1,081.8	1.173
MSS	8,505.0	16.50	57	8,347.5	520.0	1,037.7	1,160.7	1,101.4	1.200
MSS	8,794.0	16.75	62	8,624.5	561.9	1,108.9	1,243.1	1,181.4	0.502
MSS	9,199.0	13.50	55	9,015.4	616.4	1,199.2	1,348.3	1,283.8	0.919
MSS	9,412.0	12.25	52	9,223.1	644.6	1,237.4	1,395.2	1,330.7	0.665

### Well Bore: Sidetrack 1

### Plane of Vertical Section: 53

** Tieln	4,464.0	8.71	86.926	4,442.8	-92.8	255.9	338.6	280.9	
MWD	4,555.0	7.80	76.9	4,532.9	-91.0	268.8	283.8	159.9	1.866
MWD	4,650.0	5.60	71	4,627.2	-88.0	279.5	293.0	170.2	2.424
MWD	4,745.0	6.20	56.5	4,721.7	-83.7	288.2	300.1	179.8	1.686
MWD	4,843.0	7.50	49.3	4,819.0	-76.6	297.4	307.1	191.4	1.587
MSS	4,947.0	9.25	47	4,921.9	-66.5	308.7	315.8	206.5	1.713
MSS	5,041.0	10.25	51	5,014.6	-56.0	320.7	325.6	222.4	1.284
MSS	5,140.0	11.00	53	5,111.9	-44.8	335.1	338.1	240.6	0.844
MSS	5,236.0	13.00	54	5,205.8	-33.0	351.1	352.7	260.6	2.094
MSS	5,330.0	15.45	51	5,296.9	-18.9	369.4	369.9	283.7	2.721
MSS	5,460.0	18.50	52	5,421.2	4.7	399.1	399.2	321.6	2.357



# Directional Survey Report

**Calpine**

Well ID: Tocher-3

Well Name: Tocher 3 CTI

Field: Geysers

Sect: 27 Town: 11N Rng: 8W County: Lake State: CA

Survey Type	Meas. Depth	Inc.	Azimuth	TVD	Coordinates		Closure	Vertical Section	Dog Leg Severity
					N-S	E-W			
MSS	5,588.0	20.00	55	5,542.0	29.8	433.1	434.1	363.8	1.403
MSS	5,682.0	20.25	52	5,630.3	49.0	459.1	461.7	396.1	1.130
MSS	5,788.0	20.50	53	5,729.7	71.5	488.4	493.6	433.0	0.404
MSS	5,949.0	20.25	52	5,880.6	105.6	532.8	543.2	489.1	0.266
MSS	6,172.0	20.00	60	6,090.0	148.5	596.3	614.5	565.5	1.239
MSS	6,398.0	20.00	60	6,302.4	187.1	663.2	689.1	642.3	0.000
MSS	6,590.0	21.00	62	6,482.2	219.7	722.0	754.7	708.8	0.636
MSS	6,781.0	20.50	61	6,660.8	252.0	781.5	821.1	775.8	0.321
MSS	7,001.0	20.00	59	6,867.2	290.0	847.4	895.7	851.3	0.388
MSS	7,226.0	20.00	55	7,078.7	331.9	911.9	970.5	928.1	0.608
MSS	7,386.0	19.50	55	7,229.3	362.9	956.2	1,022.8	982.1	0.312
MSS	7,696.0	19.50	58	7,521.5	420.0	1,042.5	1,123.9	1,085.3	0.323
MSS	8,090.0	24.50	52	7,886.7	505.2	1,162.7	1,267.7	1,232.6	1.390
MSS	8,248.0	26.00	52	8,029.6	546.7	1,215.8	1,333.1	1,300.0	0.949
MSS	8,594.0	31.00	43	8,333.8	658.7	1,336.5	1,490.0	1,463.8	1.901
MSS	8,722.0	32.00	43	8,442.9	707.6	1,382.1	1,552.7	1,529.6	0.781
MSS	8,947.0	35.50	38	8,630.0	802.7	1,463.0	1,668.8	1,651.5	1.985
MSS	9,108.0	38.50	40	8,758.6	878.0	1,524.0	1,758.8	1,745.5	2.008
MSS	9,296.0	41.50	40	8,902.6	970.5	1,601.7	1,872.8	1,863.3	1.596
MSS	9,392.0	42.00	39	8,974.2	1,019.9	1,642.4	1,933.3	1,925.4	0.867
MSS	9,545.0	44.00	40	9,086.1	1,100.4	1,708.7	2,032.4	2,026.9	1.381
MSS	9,731.0	47.00	39	9,216.4	1,202.7	1,793.1	2,159.1	2,155.9	1.658
MSS	10,093.0	53.00	38	9,449.0	1,419.7	1,965.6	2,424.7	2,424.2	1.671
MSS	10,405.0	55.00	38	9,632.4	1,618.6	2,120.9	2,668.0	2,668.0	0.641

Calculations using Minimum Curvature Method