



Directional Survey Report

Calpine Corp

Well ID: GDC 72-30

Well Name: GDC 72-30

Field: Geysers

Sect: 30 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			
Well Bore: Side track				Plane of Vertical Section: 0					
** MSS	3,334.0	7.00	331	3,325.3	173.4	-111.0	205.9	173.4	
MSS	3,448.0	6.00	338	3,438.6	185.0	-116.6	218.7	185.0	1.118
MSS	3,515.0	6.30	9	3,505.2	191.9	-117.3	224.9	191.9	4.916
MSS	3,574.0	7.00	33	3,563.8	198.1	-114.9	229.0	198.1	4.819
MSS	3,665.0	9.30	43	3,653.9	208.1	-106.8	233.9	208.1	2.960
MSS	3,722.0	9.45	43	3,710.1	214.9	-100.5	237.2	214.9	0.263
MSS	3,821.0	10.00	39	3,807.7	227.5	-89.6	244.5	227.5	0.880
MSS	4,068.0	11.00	33	4,050.6	264.0	-63.2	271.4	264.0	0.599
MSS	4,268.0	10.45	34	4,247.1	295.0	-42.7	298.1	295.0	0.290
MSS	4,425.0	10.45	33	4,401.5	318.7	-27.0	319.9	318.7	0.116
MSS	4,550.0	10.15	28	4,524.5	338.0	-15.6	338.3	338.0	0.754
MSS	4,645.0	10.30	33	4,617.9	352.5	-7.1	352.6	352.5	0.947
MSS	4,733.0	10.00	34	4,704.6	365.4	1.5	365.4	365.4	0.395
MSS	4,864.0	9.15	35	4,833.7	383.4	13.8	383.6	383.4	0.661
MSS	4,990.0	10.15	38	4,958.0	400.3	26.4	401.2	400.3	0.888
MSS	5,060.0	11.00	42	5,026.8	410.2	34.7	411.6	410.2	1.604
MSS	5,178.0	13.45	42	5,142.1	428.7	51.4	431.8	428.7	2.076
MSS	5,304.0	15.45	41	5,264.1	452.3	72.2	458.0	452.3	1.600
MSS	5,364.0	17.15	40	5,321.7	465.1	83.1	472.5	465.1	2.872
MSS	5,495.0	17.45	40	5,446.8	494.9	108.2	506.6	494.9	0.229
MSS	5,643.0	18.30	46	5,587.6	528.1	139.2	546.1	528.1	1.370
MSS	5,750.0	19.15	48	5,689.0	551.5	164.3	575.4	551.5	0.995
MSS	5,844.0	19.30	46	5,777.7	572.6	186.9	602.3	572.6	0.719
MSS	5,949.0	21.00	48	5,876.3	597.2	213.4	634.2	597.2	1.747
MSS	6,012.0	21.00	48	5,935.1	612.4	230.2	654.2	612.4	0.000
MSS	6,183.0	20.00	47	6,095.3	652.8	274.3	708.1	652.8	0.620
MSS	6,264.0	19.15	48	6,171.6	671.1	294.3	732.8	671.1	1.128
MSS	6,319.0	19.00	50	6,223.6	682.9	307.9	749.1	682.9	1.219
MSS	6,442.0	18.45	50	6,340.1	708.3	338.1	784.9	708.3	0.447
MSS	6,626.0	16.30	48	6,515.7	744.3	379.6	835.5	744.3	1.213
MSS	6,766.0	16.00	50	6,650.1	769.9	409.0	871.8	769.9	0.451
DIGITA	7,208.0	21.00	44.3	7,069.2	865.8	511.1	1,005.3	865.8	1.202
DIGITA	7,499.0	27.30	39	7,334.6	955.0	589.6	1,122.4	955.0	2.288
DIGITA	7,778.0	32.00	34.4	7,577.1	1,065.8	671.7	1,259.8	1,065.8	1.871

Calculations using Minimum Curvature Method

**Operations Activity Detail****Calpine Corp**

Well ID: GDC 72-30

Well Name: GDC 72-30

Field: Geysers

Sect: 30 Town: 11N Rng: 8W County: Sonoma State: CA

Rpt. No.	Date	Time	To	Hrs	End MD	Ops Code	Activity Description	Non-Prod.
1	18-Nov-09	00:00	06:00	6		OTHER	Rig idle waiting on daylight.	
		06:00	18:00	12		RIGD	Rig down and load out the rig off of Lesperance #1.	
		18:00	00:00	6		OTHER	Rig idle waiting on daylight.	
2	19-Nov-09	00:00	06:00	6		OTHER	Waited on daylight.	
		06:00	18:00	12		RIGD	Rigged down and loaded out the rig and finished with the cranes on the Lesperance # 1 location.	
		18:00	00:00	6		OTHER	Waited on daylight.	
3	20-Nov-09	00:00	06:00	6		OTHER	Waited on daylight.	
		06:00	18:00	12		RIGU	Started rigging up. Had to rig down the cranes and move them to Big Sulphur Creek road and pick up a rolled truck and fuel tank.	
		18:00	00:00	6		OTHER	Waited on daylight.	
4	21-Nov-09	00:00	06:00	6		OTHER	Rig idle waited on daylight.	
		06:00	18:00	12		RIGU	Rigged up. One crane broke down at 15:00 hrs. Had 21 KV line on location de-energized, grounded and locked out.	
		18:00	00:00	6		OTHER	Rig idle waited on daylight.	
5	22-Nov-09	00:00	06:00	6		OTHER	Rig idle waited on daylight.	
		06:00	16:00	10		RIGU	Rigged up with cranes.	
		16:00	00:00	8		OTHER	Rig idle waited on daylight.	
6	23-Nov-09	00:00	06:00	6		OTHER	Rig idle waited on daylight.	
		06:00	18:00	12		RIGU	Rigged up and set the derrick. Stung the drilling line and prepared the derrick to raise.	
		18:00	00:00	6		OTHER	Rig idle waited on daylight.	
7	24-Nov-09	00:00	06:00	6		OTHER	Rig idle. Wait on daylight.	
		06:00	19:00	13		RIGU	Raise derrick at 09:00 hours. Rig up floor. Spot crane and rig up shakers, catch tank, muffler and blooie line. Start rig on day rate at 14:00 hours.	
		19:00	00:00	5		RIGU	Continue rigging up floor. Pick up kelly and set back in rat hole. Transport water from 14 pond and fill mud pit and water tank to kill well to turn 10" master valve.	
8	25-Nov-09	00:00	05:00	5		OTHER	Fill pits with water to kill well.	
		05:00	08:00	3		OTHER	Kill well. Unbolt and turn 10" master valve 180 degrees. Function test master valve with good results. Tighten bolts.	
		08:00	09:00	1		OTHER	Install air manifold.	
9	26-Nov-09	09:00	00:00	15		BOPNU	Install and nipple up 13-5/8" BOPE. Function test BOPE with good results.	
		00:00	03:30	3.5		OTHER	Rig up circulating system from muffler to mud pits.	
		03:30	04:00	0.5		BOPT	Function test BOPE with good results. Witnessed by Ali Khan with DOGG.	
		04:00	06:00	2		OTHER	Set in chemical units. Tighten turnbuckles on BOPE stack. Unload drill collars and drilling jar.	
		06:00	08:00	2		BHAOP	Measure and pick up 3 x 6" OD drill collars, bit sub and 8-1/2" bit #5170358. Install RBOP rubber. Held safety meeting with rig crew. Open well.	
		08:00	11:00	3		BHAOP	Pick up clean out BHA: 8-1/2" bit, bit sub, 10 x 6" OD drill collars, drilling jar, 2 x 6" OD drill collars. Pick up kelly and tighten top thread connection.	
		11:00	12:00	1		TRPO	Trip out of hole with BHA to unplug muffler.	
		12:00	14:00	2		OTHER	Close master valve and blooie line valve. Remove flange and unplug muffler.	
		14:00	16:00	2		TRPI	Trip in hole with BHA to 405'. Pick up kelly and clear BHA with air. Rig up kelly spinner.	