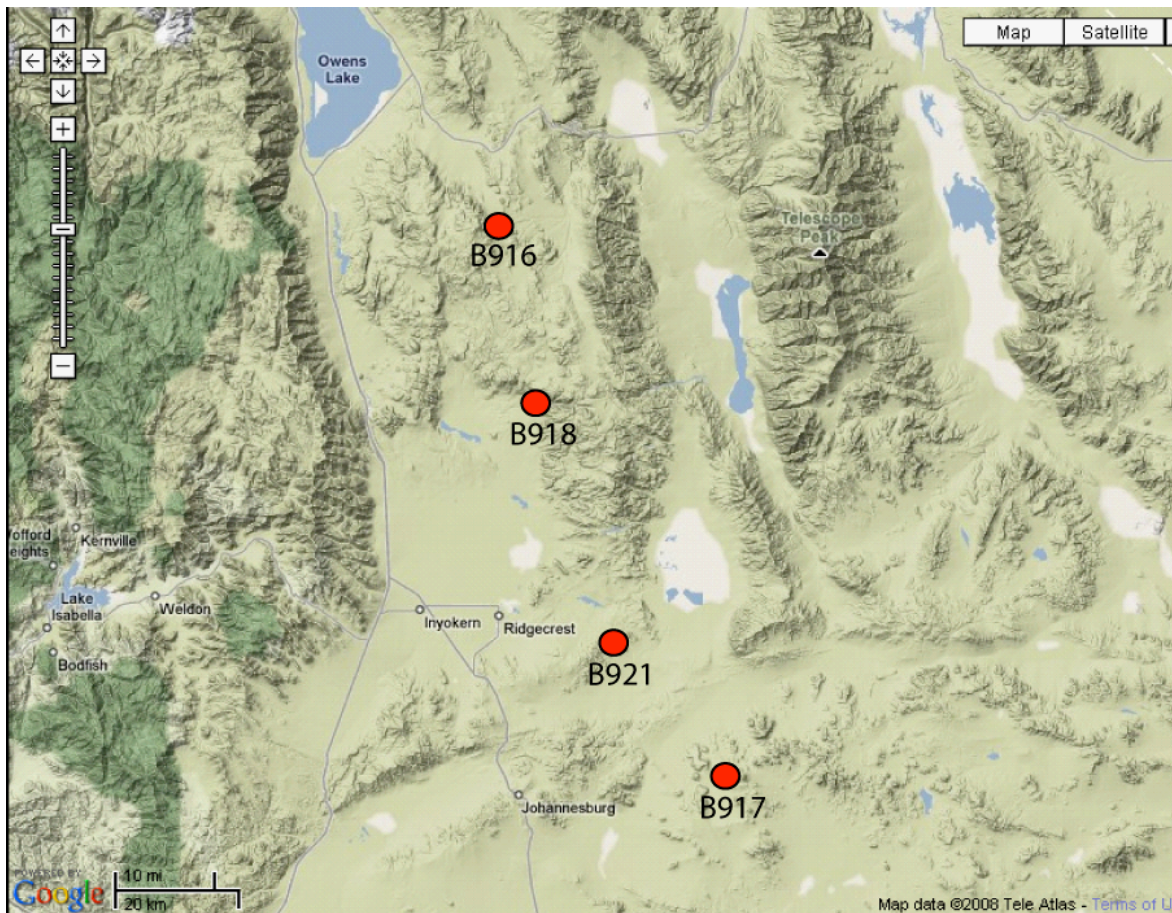


Station Notes for B918, mtsprn918bcs2008

Latitude:	35.9357 (WGS 84)
Longitude:	-117.6017 (WGS 84)
Elevation:	1042.6 m / 3421 ft
Install Depth: ¹	196.7 m / 645.5 ft
Orientations: ²	CH0=288.9, CH1=228.9, CH2=168.9, CH3=138.9
Install Date:	June 21, 2008
GTSM Technologies #:	US68
Executive Process Software:	Version 1.14
Logger Software:	Version 2.02.2
Home Page:	http://pboweb.unavco.org/stations/?checkkey=B918
Notes Last Updated:	March 26, 2018

¹Install depth is from the top of the casing to the bottom of the strainmeter.

²Orientations are in degrees East of North.



Mojave strainmeter network, July 31, 2008

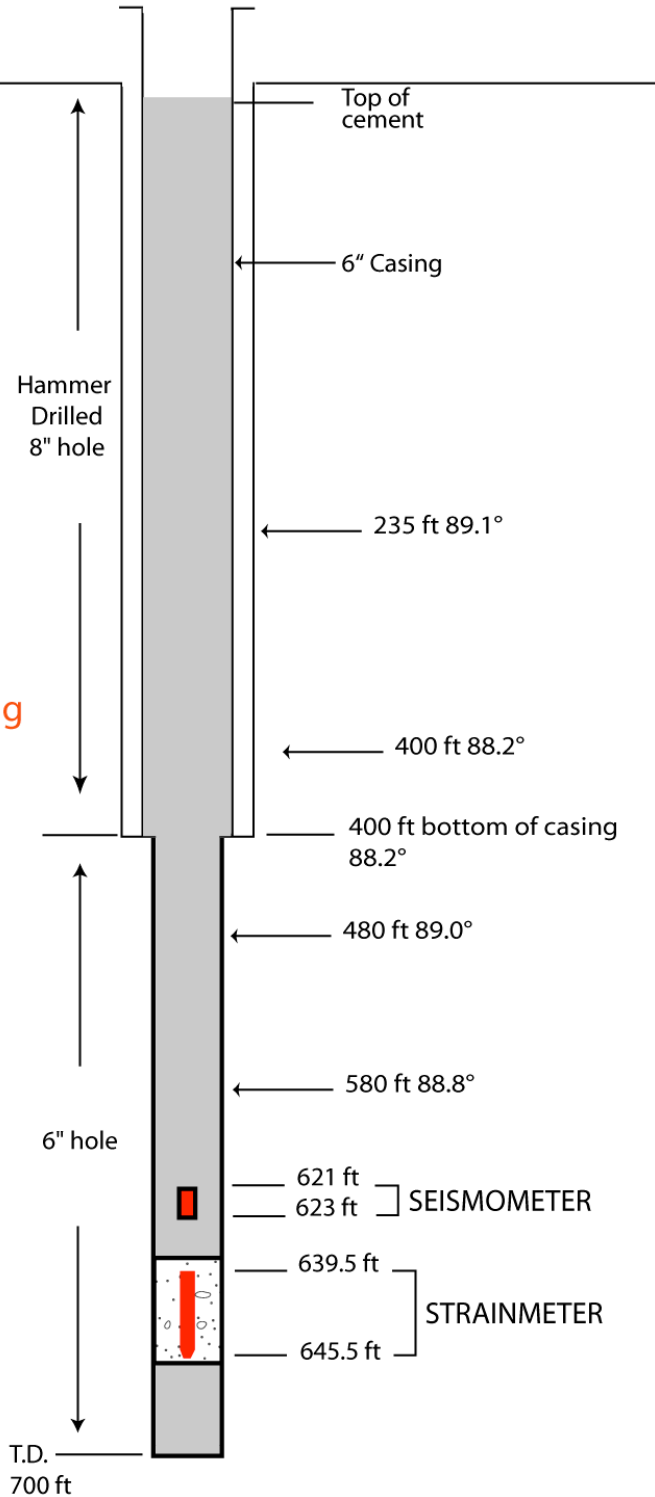
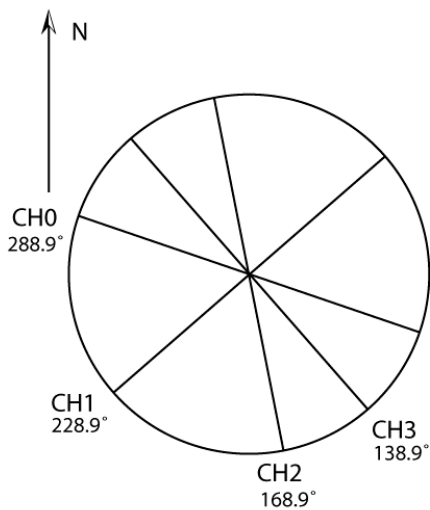
B918 mtsprn918bcs2008
35.9357 -117.6017 1042.6 m

30 ft sand/small boulders
fractured/heavily oxidized basalt.
65' ft - basalt becoming less fractured/oxidized
and more vesicular.
82 ft - Through bottom of Basalt flow and into
cinder material consisting of loosely
consolidated, highly oxidized basalt.
140ft - still in loose material
192 ft granite
228 ft - Hit a very small basalt dike.

NOT TO SCALE
Cables not shown
all depths relative to top of casing

Last updated on July 2, 2008

445 ft - Still in granite.
483 ft - Hit a fracture.



Instrumentation at Strainmeter

Instrument	Units	Bottle/ASCII Scale Factor	SEED Scale Factor
Pore Pressure	Hecto Pascals	None Installed	---
GTSM Barometer	Kilopascals	1.0	0.0001
Rain Gauge	Millimeters/hour	1.0	0.252
Down hole Temperature Sensor	Degrees Celsius	1.0	0.0001
Logger Temperature Sensor	Degrees Celsius	1.0	0.0001
Setra Barometer	Hecto Pascals	1.0	1.42925E-04

1. Installation notes

June 19, 2008 UTC

17:30 On site.

18:00 Sound hole, banger hits at 663'7" (same as yesterday) but then gets by and continues down to 676'1". Appears there is a ledge in this zone.

19:30-20:00 - Run borehole optical TV. Notes from camera are as follows, note that the depths below are taken from the depth counter and are ~10' off (determined by total depth measurement), so subtract 10' to obtain actual depth.

494' Static water level.

522'-524' Gaps in the wall indicate material loss.

541' Possibly a small blowout.

645' Mostly healed fracture.

663'-651' Healed fractures.

672' Blow-out.

673' The camera became held up on a ledge, in which the rock is a fallen obstruction with the size of roughly 1".

675' Large blow-out.

677' Chunk missing from wall.

684'6" Bottom.

The ledge in question is roughly 1" inside the borehole, over an arc of ~45 deg.

20:30 Test bailer, it stops again at ledge and trips. Decide to attempt lifting hole 28' (676'1" to 648') with 2 runs of the dump bailer tripping at the ledge (1st one slightly less than full).

21:00-22:15 Cement up bottom of hole. First run failed to trip, realized on the way out and sent it back down. Two successful trips after that.

22:45 Cleaned up and off site.

June 20, 2008 UTC

14:00 On site, tag cement at 645.5'.

14:30 Off site (road closure until 21:00).

22:00 On site, sound hole (same depth).

22:47 Strainmeter off, data looks good.

23:30 Testing bailer, hangs up ~10 feet off bottom. Steve is able to work it down and it trips.

23:55 Compass Test X max - 2.606 min 1.677 Y max - 2.431 min - 1.489

June 21, 2008 UTC

00:00 Test again, trips smoothly. Bottom is at 646.6'.

00:47 Start mixing grout batch AM805.

01:05 Stop mixing grout. Due to hot conditions added slightly more water (5.1 qts/bg) and 3

handfuls of ice.
01:12 Dumping grout on bottom, trips smoothly.
01:21 Strainmeter in hole.
01:30 Strainmeter on the bottom (25 minutes after finishing mixing). Strainmeter stops ~1.5 ft before expected mark on the cable.
01:36 Strainmeter on, initial compass test: x - 1.63, y - 1.908. Strainmeter is very hot (temperature pegged at 4.543V), takes ~20-30 minutes to start reaching G3s.
01:48 Rename US68 to B918.
02:00-02:05 Adjust downhole temperature.
02:10 Instrument stable at G3s.
03:00 Cleaned up and off site.

June 23, 2008 UTC

19:00 Test seismometer #99: Vertical = 2.545v, H1=2.561v, H2=2.546v.
19:52 Seismometer lowered to 623'.
20:30 Start tripping in 1.5" tremi.
21:16 Tag grout at 625'.
22:00 Off site.

June 24, 2008 UTC

13:10 On site.
13:35 Start pumping neat cement.
14:00 Tremi string snaps, trip in new pipe.
15:30 Finished pumping and start digging pit for cable.
18:00-20:00 Off site for range closure.
20:00 Back on site, finish pit.
21:25 Shut down GTSM to bury cable.
21:50 Off site for range closure.

June 25, 2008 UTC

17:10 On site.
17:25 Shutdown GTSM, make flex conduit leads for solar, and construct and pour form.
21:00 GTSM restarted. Afternoon spent installing VSAT post, loading up box truck, and laying out solar.
21:15 Off site.

June 26, 2008 UTC

14:00 On site, install solar posts and mounts.
17:30 Shutdown GTSM and anchor green hut and equipment racks.
18:50 Restart GTSM.
21:00 Off site.

June 27, 2008 UTC

14:10 On site, point VSAT, and start wiring solar panels.
15:23 Program Cisco router.
15:33 Program Q330.
15:45 Program marmot.
15:55 Set IP on GTSM.
16:30 Adjust quadratures on GTSM. Spend rest of the morning digging more post holes for solar mount legs and packing up. B918 is put online and downloads begin.
18:15 Leave site.

2. General Information

- Sensitivities of all EH channels corrected on March 4, 2010.

3. Strainmeter Maintenance

- December 2, 2008 Mike Gottlieb visited the site. RT3 data had been step free since late august, but quadrature on channel 3 was strange. The waveform appeared to have an additional signal slightly out of phase, giving it a double humped appearance. He replaced US68RT3 with SR403 and the waveform returned to normal. Adjusted PB charge voltage down .1V.
- December 2&4, 2008 at 8:00 PST. Mike replaced the power box and fixed the GPS timing problem. He did not have to replace the antenna. He adjusted the new power box charge voltage down .1V, and replaced 4 GTSM batteries with new ones.
- January 12, 2009 Mike Gottlieb moved this site back to the original power system. This has fixed the nightly shut-offs. Currently 9 panels are going into the power system, which is then charging the strainmeter. This allows all the batteries to charge the strainmeter, rather than just 4. There may be an increase in noise from the charge controller, but this was preferable to missing data. Mike installed a Setra barometer.
- April 22, 2009 – Logger upgraded to firmware version 2.02.2
- July 29, 2009 – RT board firmware upgraded to 1.20.
- November 7, 2009 – Mike Gottlieb visited the site and restarted the marmot. He was then able to pint it/log into it locally.
- November 9, 2009 – Mike Gottlieb visited the site to build a 5' x 8' roof over the electronics enclosure. He also moved the rain gage and adjusted the quadrature.
- March 18, 2010 – Mike Gottlieb swapped the RT3 board. This change did not improve the data quality of CH3. He will need to try swapping the whole environmental box.
- July 12, 2010 – Decided that batteries were ok, and instead adjusted LVD2 to keep coms on longer. This adjustment involved powering off everything but the GTSM. Swapped oscillator to try and fix step/noise problem on ch3. This swap did not affect the data at all. Adjusted quadrature, chop and delays after replacing oscillator board.
- January 26-7, 2011 – Replace mains battery jumpers with 4 gage wire. Deployed broadband seismometer for borehole seismometer calibration, ran birddog to get borehole seismometer metadata.
- April 5, 2012 – Power Charge Controller upgraded to morningstar mppt. set quads and chop on the GTSM.

- June 20, 2012 – Mike found the IDU with only power and LAN lights on. He could log on, but it showed 0 signal strength. He replaced the IDU, and immediately got 78 signal strength.
- April 28, 2017 – Visited site to diagnose lack GPS timing, noise on CH1 and CH3, and replace batteries and check out power system. Swapped 10 batteries. Replaced two bad solar panels. Replaced battery in VSAT timer and reset the timer. Rebooted charge controller. Vacuumed site. Set chops and quads. Tested site with dummy load cell. Issues on CH1 and CH3 went away with load cell indicating down hole problem. Also tried swapping RT and OS boards with out making a change. Left original boards in site. Turned off event mode due to noise on CH1 and CH3 causing triggering.
- January 23, 2018 – Setra was very noisy and returning bad data, it was replaced. New setra was reading 1140 hPa, which seemed too high. Need to look into why. Couldn't ping anything on the VPN side. A failed switch was causing the VPN tunnel to not connect (no equipment visible to cisco eth0). Replaced switch and site came back online. Set chops and quads, Ch3 was in G1, was able to get it back to G3. Ch1 was stuck in G1 due to downhole issues. Investigated input amp issue (status report shows solar amps at 13), measured 1.3 with current probe. Sensor in powerbox had failed, but not worth replacing because otherwise functional.