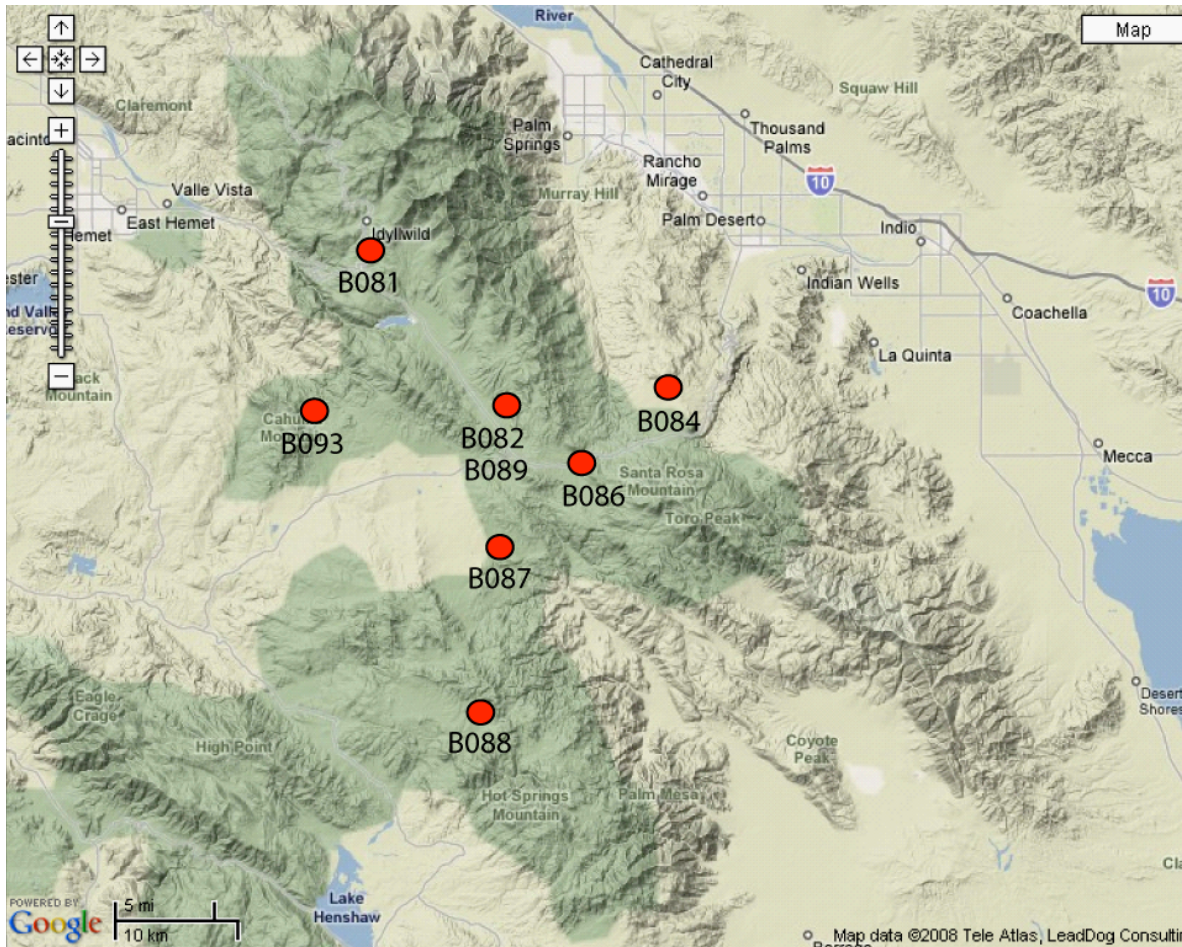


Station Notes for B093, trippf093bcs2007

Latitude:	33.5937 (WGS 84)
Longitude:	-116.7638 (WGS 84)
Elevation:	1244 m / 4082 ft
Install Depth: ¹	144.78 m / 475 ft
Orientations: ²	CH0=339, CH1=279, CH2=219, CH3=189
Install Date:	September 20, 2007
GTSM Technologies #:	US34
Executive Process Software:	Version 1.14
Logger Software:	Version 2.02.2
Home Page:	http://pbo.unavco.org/station/overview/B093
Notes Last Updated:	September 14, 2018

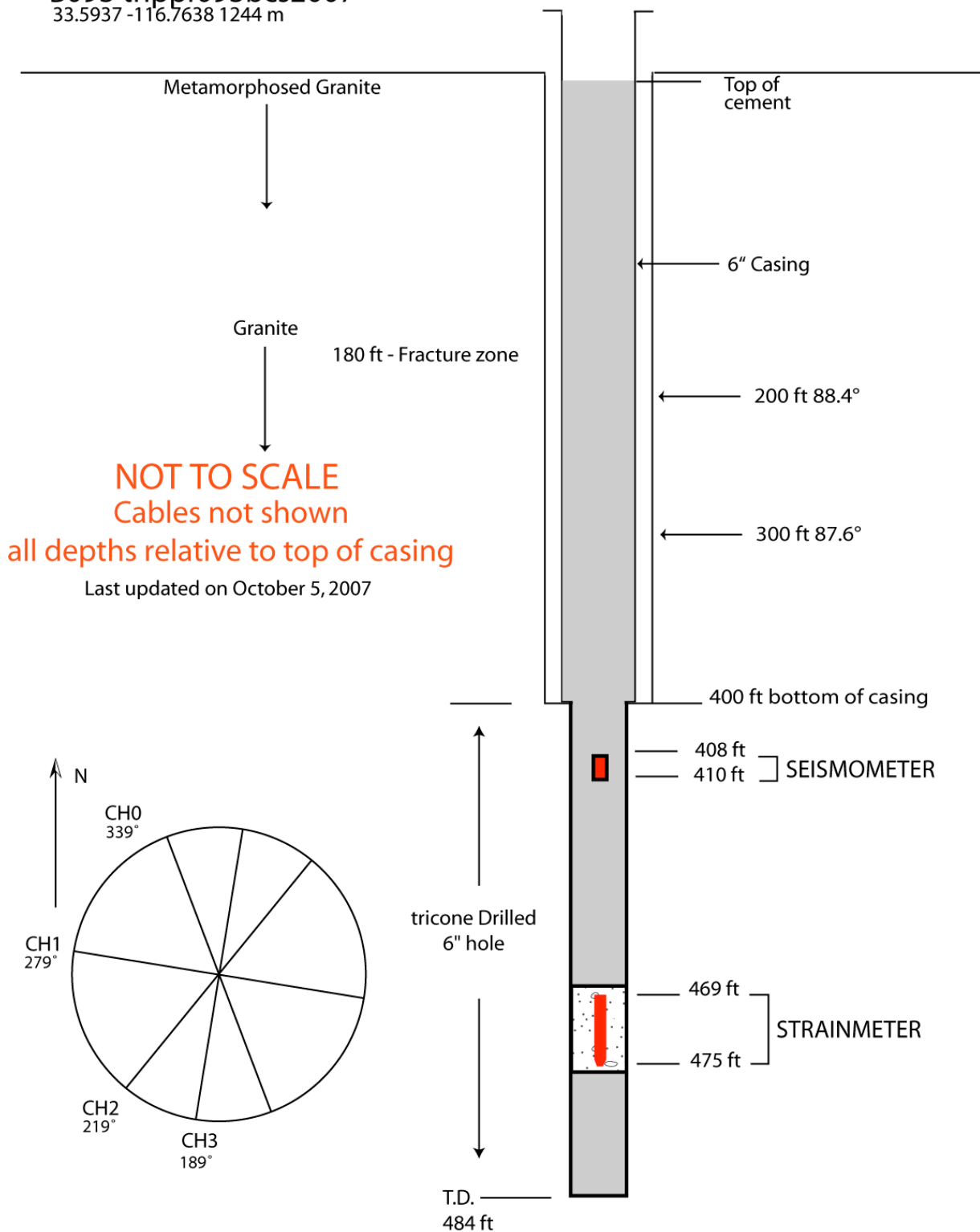
¹Install depth is from the top of the casing to the bottom of the strainmeter.

²Orientations are in degrees East of North.



Anza PBO strainmeter network, February 2008.

B093 trippf093bcs2007
33.5937 -116.7638 1244 m



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	None Installed	

1. Installation notes

September 18, 2007

Shot video of the borehole. Put US34 on test at 5pm PST. They were not able to raise the bottom of the hole because the previous water source was dry. The nearest site that gave them the necessary 1000 gal is past Aguanga, ~60 minutes away.

September 19, 2007

Raise bottom of the hole from 484' to 476' using 12 gals of Masterflow 1341, mixed to standard install specs.

September 20 2007, UTC

15:10 - Crew on site, began install setup.

15:36 - Hole TD = 477'4" (7'1" plug of 1341 on bottom of hole).

15:40 - Add GTSM centralizers and record RT numbers.

16:19 - Shutdown GTSM.

16:45 - Compass test - xmin 2.856, xmax 3.846, ymin 3.105, ymax 4.031.

17:15 - Start mixing Masterflow 1341, batch 161597333R7.

17:19 - Last grout added.

17:22 - Last water added (15.5 gal of distilled water total).

17:29 - Stop mixing.

17:36 - Trip on bottom.

17:46 - Lowering GTSM.**

18:07 - GTSM hung at target depth of 475', 2.3' above TD.

18:14 - GTSM powered up, and final diagnostics taken.

**Followed usual installation practices with one exception. When they first started lowering the instrument, 20 feet down it was having a difficult time lowering. There was a fair bit of resistance. They were able to get it down another 10' over the span of 10 minutes or so, a pace which would have them entering the grout hours later. They raised the instrument back to surface, confirmed that the centralizers had "play" in them still so they should not be having any problems, and at that point they made the decision to remove the centralizers entirely. The rest of the install was seamless.

September 21 2007, UTC

15:30 - Crew on site. Clean up install setup.

15:39 - Lay out seismic tensile line (coated 3/32" cable).

16:14 - Lower MEMs seismometer #218 to 410'.

16:35 - Tripping in 1.5" tremi.

17:10 - Tag bottom, top of grout at 457'7", and pull back tremi to 451'.

18:20 - Start pumping neat cement.
19:04 - Cement to surface and stop pumping (~4 yds).
19:40 - Start digging cable pit.
20:25 - Shutdown GTSM and bury cable.
23:30 - Pour pad.
23:48 - Startup GTSM.
23:59 - Off site.

September 22 2007, UTC

15:40 - On site.
15:50 - Shutdown GTSM.
16:15 - Anchor enclosure and racks to pad.
16:16 - Begin pointing VSAT.
17:21 - Restart GTSM, channel 3 is at G2/meas max, so adjust quad and reset channel and channel 3 goes to gain 3 and looks good.
17:43 - Final compass bearing $x=3.654V$ $y=3.840V$. Install MEMs/geophone cable.
17:26 - Tag cement in casing at 34.5'.
17:35 - Start grading out area around enclosure.
18:04 - Shutdown GTSM.
19:10 - Adjust DH temp to 1.25V.
19:13 - Restart GTSM.
19:31 - Program Q330 #1371.
19:25 - Begin charging batteries with the generator.
21:57 - Confirm VSAT is pointed and all instruments are pinging.
22:10 - Take off of AC charging, and take all electronics off of batteries other than the GTSM.
22:16 - Turn solar input on with a 3 panel mount to keep the GTSM running.
23:00 - Finished cleaning up site and pack up.

Hope to have AC within 2-3 weeks, at which point another site visit will be made to make station fully operational.

2. General Information

- This station has an accelerometer installed in the hole.
- Sensitivities for all EH channels corrected on March 4, 2010.
- April 4, 2010 - Magnitude 7.2 - BAJA CALIFORNIA, MEXICO

3. Strainmeter Maintenance

- November 13, 2007
Tyson and Tim Dittmann visited the site to switch power from DC to AC. The only back plate onsite was DC, so they improvise with Ioda. They disconnected the solar panels, turned off the back panel, hooked up the Ioda to the back panel, then finally plugged into the power after turning on main breaker at meter. They then connected the Cisco, V-sat, Q-330, & white fiber modem to the back panel under the guidance of Warren G. They then turned the back

panel back on and waited for Warren to give them the ok that all was running. The Marmot had no cables so they didn't connect it to the panel.

- November 16, 2007 UTC
21:00 – Tim Dittmann and Tyson onsite.
21:05 – They turned off the breaker switches on DC back panel,(two on right then main breaker). They then disconnected, in order, from the back panel, Iota, batteries, GTSM from isolation box, v-sat, cisco, white fiber modem, power cable for Q-330, seismometer, and finally sensor A on the Q-330. During this process, taped up all exposed wire ends especially battery wires. Taped each set w/ different color tape to make sure to hook them back up the same way. Then they unscrewed the DC back panel from rack and replaced it with the AC back panel and screwed the back onto the rack. They then proceeded to hook all the wires back onto the AC back panel in reverse order from which they took them off. Before hooking batteries back up and plugging in Iota, Tim connected two cables for the Marmot (power & ethernet LAN), and confirmed light on Iota was on.
22:10 – Tim turned on Main breaker and tested battery voltages, 13.5 volts. Shut off main breaker, tested voltages, 13.35 volts. Turned main breaker back on. Then turned on far right breaker on panel. Powered on comms/equipment (Q-330, V-sat, Cisco, White fiber modem, Marmot). Tested voltage on isolation box for GTSM, 1.5 volts. Turned on middle breaker on panel for GTSM, tested voltages, 14.10 volts.
22:39 – Warren confirmed all equipment on and running and able to communicate. Test isolation box voltage, 16.08 volts. Then tested voltage on GTSM battery backups, 13.5 volts. Checked GTSM power box, float light on, boost not on. Wait about an hour for Warren to call back.
22:59 – Call Warren to confirm that site is up and running and able to communicate. Close enclosure and leave site.
- February 20, 2008 UTC. Tim Dittmann visited the site.
20:50 - On site.
21:00 - Configured marmot.
21:13 - Replaced fiber modems with Warren's new modems.
21:30 - Successfully pinged site.
21:46 - Adjusted GTSM quadratures, tightened battery lugs, broke down temporary solar mount, took photos.
21:49 - Off site.
- March 18, 2009. The logger was upgraded from version 1.15 to 2.02.2.
- April 20, 2009. Mike Gottlieb visited the site at 14:00 PST to fix CH0, which was stuck at 50000000 counts. He swapped out the RT board for CH0, which fixed the problem.
- June 25, 2009. Mike Gottlieb at site. While tuning quadrature he noticed a step in the signal from RT3. This did not go away when he tried a different RT board. Potentially a failure somewhere on the oscillator board? He replaced the board on channel 0 which seemed to solve the problem.
- October 15, 2009 – Mike Gottlieb tried swapping the oscillator. Did not have any effect on the scope reading. Will need to investigate the cause of this signal further. There still does not seem to be any visible effect on the low frequency data from this channel.

- March 17, 2010 – Mike Gottlieb adjusted the barometer, but was unable to adjust fully for the elevation (the dashpot maxed out during adjustment). The pressure reading went from 91.15 to 92.68 kpa. The powerbox should still be upgraded when more units are available. He also set quadrature/chop for RT1 and RT3. RT0 and RT2 were not adjusted.
- July 24, 2010 – Liz Van Boskirk visited the site to collect seismic metadata using a BirdDog.
- March 2, 2011 – Reset CH0, CH1, and CH2. Ch1 appears to have come back (had not returned data since Sept 30, 2010), although 1/2 the LCD had failed. Ch0 and CH2 were maxed out in G1 and G2, and the reset brought them back to G3. Also adjusted the quadrature on Ch1.
- September 8, 2011 – Found the IDU had a failed ethernet port, and was no longer communicating on the LAN side. Replaced the IDU with a new one, and reprogrammed the cisco to adjust for the new IP. The Logger board was replaced as well.
- October 10, 2011 – Ch0 and Ch1 were flat lined. Ch1-3 LCDs were black. Ch0 was also in G1. Manually restarted all boards. LCDs come back, but CH1 and Ch3 were flat lined. All channels were at G3. Reseating boards CH1 and CH3 does not help. Replaced RT boards for CH1 and CH3 and reset quads. GTSM appears to be working again.
- November 5, 2013 – Wade had to put in a new logger board. It looked like the station took a lightning strike. The RT boards for ch2 and 3 need to be replaced. It looks like the downhole equipment for channels 2 and 3 are ok. Wade used the ch1 board to diagnose.
- November 19, 2013 – RT2 and RT3 were replaced. Site appears to be operating normally again.
- June 24, 2014 – Replaced 10 batteries with 10 new ones. Adjusted the quadrature (CH1 only, the rest were good).
- January 21, 2015 – Added ahuber suhner lightning protector to the radio antenna cable. Adjusted quadrature, and also chop on CH3.
- July 26, 2018 – Visited to migrate site from HPWREN to RV50. Removed Afar radio and cisco and replaced them with an RV50 with Wilson directional antenna.