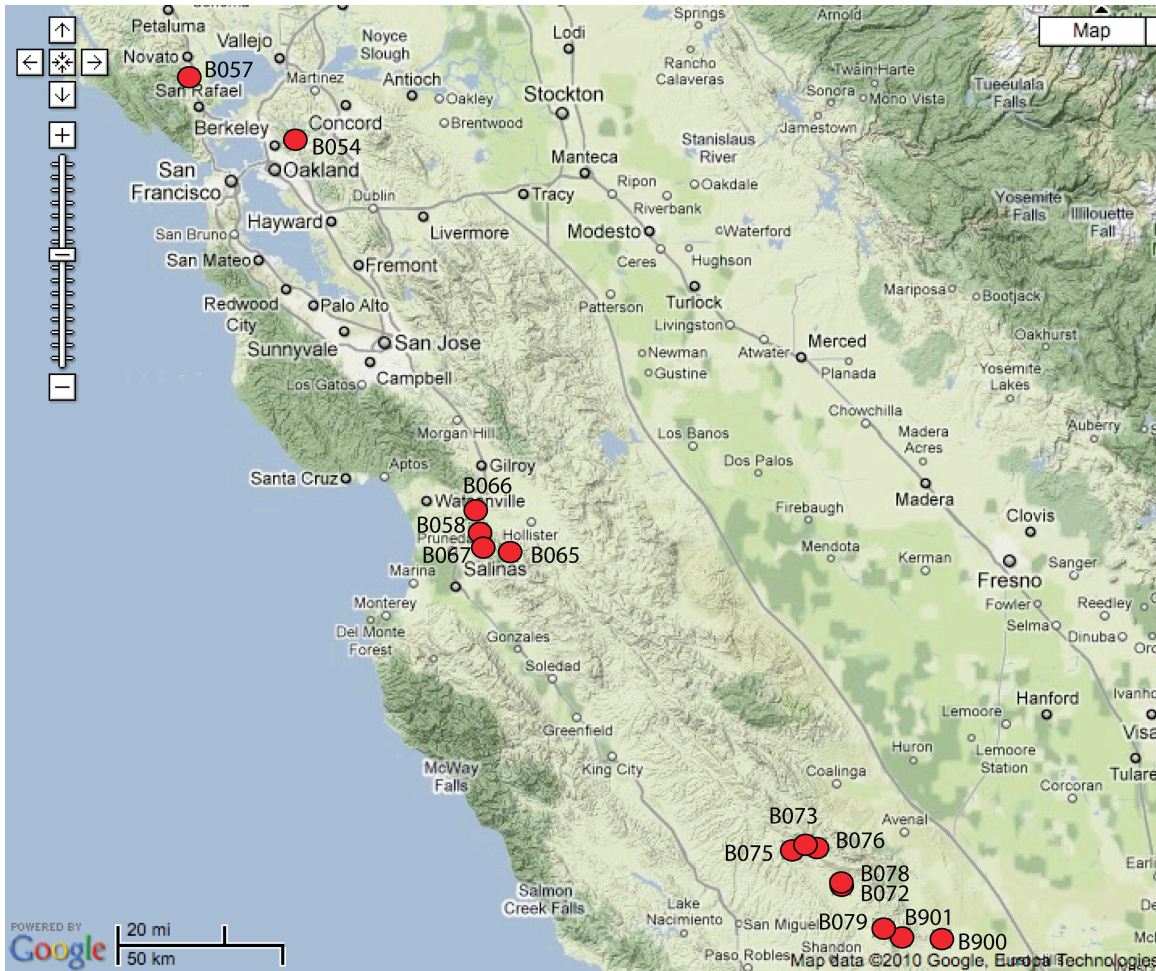


Station Notes for B066, rockrd066bcn2007

Latitude:	36.857333 (WGS 84)
Longitude:	-121.592167 (WGS 84)
Elevation:	67 m / 220 ft
Install Depth:	236.2 m / 775 ft
Orientations:	CH0=331.5, CH1=271.5, CH2=211.5, CH3=181.5
Install Date:	June 7, 2007
GTSM Technologies #:	US38
Executive Process Software:	Version 1.14
Logger Software:	Version 2.02.2
Home Page:	www.unavco.org/instrumentation/networks/status/nota/overview/B066
Notes Last Updated:	January 21, 2020

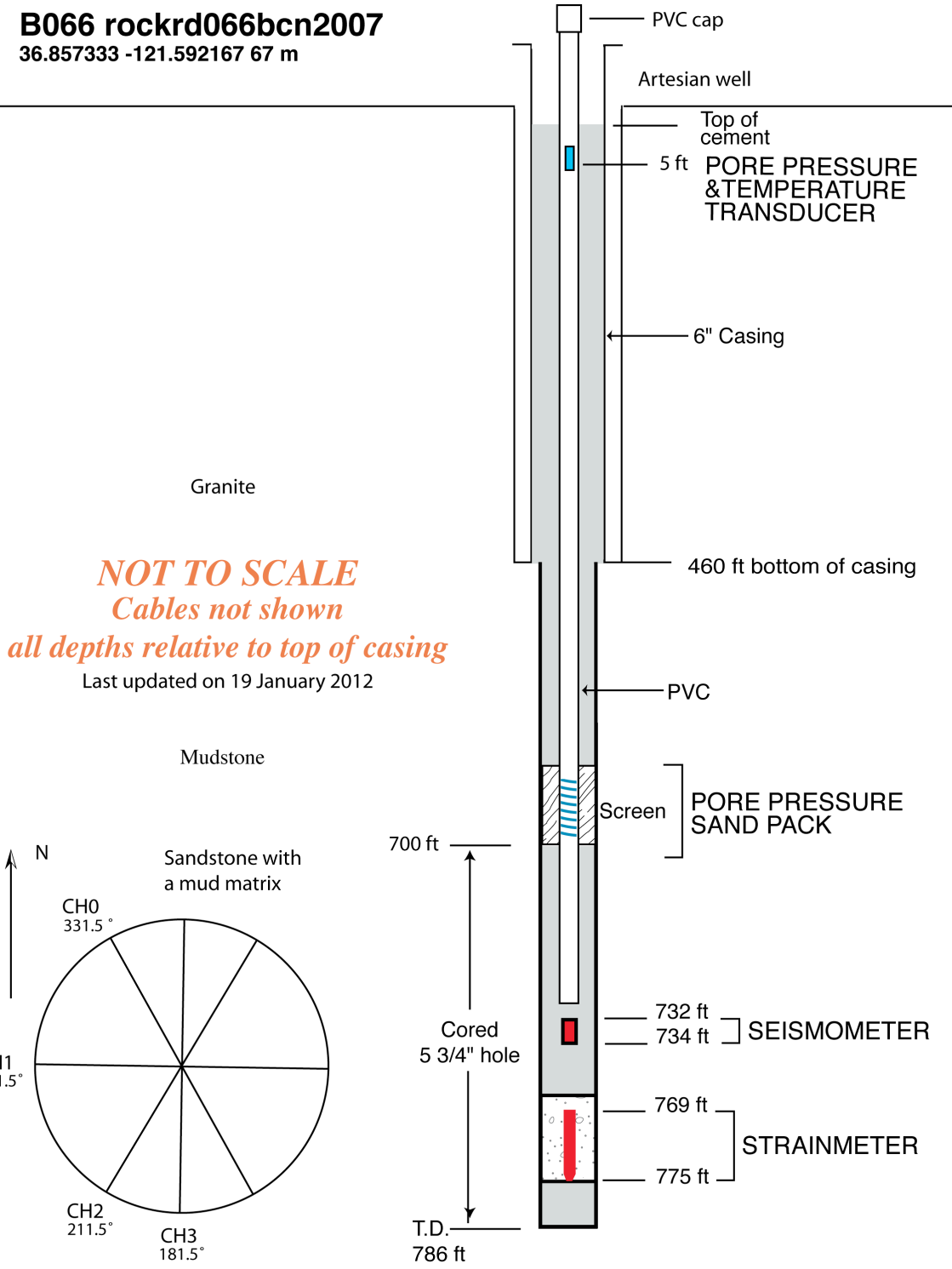
• Install depth is from the top of the casing to the bottom of the strainmeter.

• Orientations are in degrees East of North.



San Francisco, San Juan Bautista, and Parkfield strainmeter network as of September 24, 2010

B066 rockrd066bcn2007
 36.857333 -121.592167 67 m



Instrumentation at Strainmeter

Instrument	Units	Bottle/ASCII Scale Factor	SEED Scale Factor
Pore Pressure	Hecto Pascals	1.0	N/A
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 yet	

1. Installation notes

June 7, 2007. The strainmeter was installed at B066, Rocks Rd, San Juan Bautista, CA. Nine sacks of MasterFlow 1341 were mixed for 10 minutes at 1.7 gallons of water per sack. The dump bailer successfully tripped at 779 feet 11 minutes later. The strainmeter was hung at its target of depth of 775 feet, 35 minutes after mixing.

June 8, 2007

08:45 PST. Began installing seismometer (tripping in PVC).

11:00 PST. Poured cement to cover seismometer.

13:00 PST. Tripped out.

17:00-18:00 PS. Tripped in 1.5" pvc for backfilling borehole (stopped 75' off bottom).

June 9, 2007

08:00 PST. Sanded in screened PVC section

09:00 – 10:00 PST. Cemented the hole to the surface with 4 yards of cement.

2. General Information

- Sensitivities of all EH channels corrected on March 4, 2010.
- The pore pressure sensor was installed at 5 feet, and no packer was installed. The pipe was flowing artesian and is sealed at the surface using a pvc cap with a pass-through for the cable sealed with epoxy.

3. Strainmeter Maintenance

- June 14, 2007 – Wade Johnson noticed the pore pressure packer had failed. He found an 1/8 inch hole in the packer. The packer was replaced and the 2" PVC pipe, which was flowing, was sealed off. A step was recorded on CH3 when the new packer was inflated.
- June 16, 2007 – Wade Johnson witched over the VSAT power to the main LVD until AC power can be hooked up.
- December 15, 2007 – Mike Gottlieb visited the site to switch it over to AC power. When he arrived the rain gauge top was sitting on ground next to enclosure, so the rain gauge data since the last site visit is highly questionable. The GTSM was running, with all solar power

directed into power box.

Voltages were seen as follows:

GTSM (3 bats): 12.89V

Aux 1 (3 bats): 9.91V

Aux 2 (4 bats): 4.38V *(need to be replaced)*

The auxiliary banks had been disconnected from the backpanel by removing the negative lead from the battery side. Apparently an unknown short continued to draw down bank 2.

He swapped the GTSM to AC power before leaving for the day.

- December 16, 2007 UTC
17:20 UTC – Mike Gottlieb arrived on site. The GTSM batteries were fully charged (14.2 V). He connected auxiliary bank 1 to AC and it came up to 13.5V. He left bank 2 disconnected.
18:05 All components swapped to new back panel, IDU downloading software updates.
19:15 Site online, all components accessible remotely.
19:20 Replaced chain on fence with longer section wrapped multiple times.
19:30 Off site.
Further work needed: replace 4 dead batteries, potentially replace GTSM GPS antenna and/or power box (SM lost satellites overnight, Mike played with loose connection and reestablished link, but has low confidence in the connection).
- September 19, 2008 - Warren Gallaher upgraded the GTSM logger software from version 1.15 to 2.02.2. The site was offline from about 22:00 until about 22:30 UTC.
- March 18, 2009 – The logger software was upgraded from 2.02.2 to the correct version of 2.02.2 that matches the compact flash size.
- May 6, 2009 – Pore pressure was moved over to the Q330, and the NetRS was removed from the site.
- July 29, 2009 – 4-port and 1-port modems were replaced.
- July 31, 2009 – All RT board firmware was upgraded to version 1.20. The quadratures were also checked and adjusted.
- August 3, 2009 – Connected to pore pressure serial port at site to obtain serial number for metadata.
- March 12, 2010 from 16:30 – 17:00 local time. The quadrature for the RT boards was checked. Chan 3 (in a system of Chan 1-4) did not have a steady sine wave. There is a peak along the edge of the wave. Liz did not have a spare board for this site with her. The quadrature signal image will be placed on DIMS and passed on to Warren for discussion.
- June 16, 2010 - The site was visited to test channel 3 data quality. The RT board was first turned off, pulled out of the environmental box, and returned. The quadrature was still displaying a sine wave with a straight line on the left of each curve (see DIMS for image). The RT board was replaced, but after checking the quadrature again, there was no change in the sine wave form. The GTSM was turned off and both cable connectors from the environmental box to the GTSM borehole cable were removed and checked for corrosion. Both ends show no corrosion. However the end attached to the GTSM cable is detached from

the connector exposing the wires. It looks like it was duck-taped but the tape have come lose (photo in DIMS). I readjusted the cabling to the point of the least amount of stress on the wires/cable and sealed it with electrical tape. The moving of these wires lessened the displacement on the sine wave, but is still present. The original RT board was left in the environmental box as the RT board does not appear to be the issue.

- July 18, 2010 – Tests were applied to find the source of the offset quadrature. The extender board was replaced, but there was no change in signal. On the quad box, the pins for adjusting quadrature were switched. A small change was observed, but did not resolve the issue. The quadrature was readjusted, but there was no change in the quadrature signal. The GTSM downhole cable connection was repaired and hung so that no tension is on the cable.
- December 18, 2010 – A broadband seismometer, marmot and Q330 were temporarily deployed at the site. The seismometer will be used to orient the borehole seismometer.
- March 1, 2011 – All batteries at the site were replaced. Currently there are six batteries feeding to the main battery bank and four to the GTSM. All electronics were lifted from the enclosure floor, which is wet with a developing flow stone.
- February 13, 2012 – Chad was onsite to trouble shoot loss of communications. All battery voltages were a 11.8 and no current was flowing through the IOTA charge controller.
- February 16, 2012 – Replaced IOTA charge controller, but no current to the back panel. Checked all connections. Checked AC power drop coming into site. Tested GFI. Reset button didn't pop. Reset GFI. 17.5A going into back panel. Uphole electronics online, but LVD 2 still offline. Batteries charging.
- March 13, 2012 – Onsite to trouble shoot loss of communications. LV2 faulted. All battery voltages at 11.8. No current flow through IOTA charge controller.
- March 16, 2012 – Uphole electronics offline. Battery voltages at 11.6V. Replaced IOTA charge controller. No current to back panel, checked all connections. Checked AC power drop coming into site. Tested GFI, reset button didn't pop. Reset GFI, now 17.5A going into back panel. Uphole electronics online, but LVD 2 still offline. Batteries charging.
- March 20, 2012 – Swapped GFI outlet to non-GFI outlet.
- May 13, 2013 – The flex cable was swapped. During quadrature/chop adjustment a strange signal was noted on CH2. The CH2 RT board was swapped, but the signal was still not sinusoidal. The flex cable adjustment had no effect on data quality at the site. The environmental box should be swapped.
- June 13, 2013 – Chad swapped out the environmental box in an attempt to rule out the back panel as a source of noise in the strainmeter data. He adjusted quad/chop after and saw a significant change in the trace for CH2/RT2.
- June 18, 2013 – The data quality did not improve after the back panel swap the previous week. However CH0 was worse then the others so Chad tried swapping the CH0 RT board out it see if it had any effect. There was no change in data quality.

- March 4, 2014 – Swapped out test environmental box for original.
- March 11, 2014 – When Chad arrived onsite, all RT boards were functioning, but at 50000 counts on LEDs (flatlined), and all channels were invalid in the status report. The logger was swapped and configured, but CH2 was still invalid. The counts on the other RTs showed no change (still flatlined). CH2 RT board was swapped and showed believable counts. The good RT board was swapped into the other 3 slots, and each time showed “normal” counts. After discussion with Mike G., it looks like the site may have suffered a power surge or nearby lightning strike during the recent storm. All RT boards will be swapped tomorrow.
- March 12, 2014 – Chad replaced the power box and the RT boards for CH0, CH1 and CH3, adjusted quadrature/chop and checked the site in. He spoke with the landowners, and they indicated that there was an ~8 hour power outage over the weekend. Power was restored on 3/9/2014.
- October 8, 2014 – Fiber modem had failed and was replaced.
- January 5, 2015 – Station had lost GPS time. Chad sent the GSP coldstart command, but this did not fix the problem. There is probably a bad power box, failed GTSM GPS antenna, or a bad logger board.
- February 24, 2015 – The GTSM power box was replaced to fix the GPS timing issue.
- March 5, 2015 – The atmospheric pressure was maxed after the new power box was installed. Chad tried adding a pressure offset, but the pressure remained flat lined. The power box will need to be swapped.
- March 16, 2015 – Replaced high altitude power box with low altitude power box, and configured strain-logger.conf. Barometric pressure readings are correct again.
- July 21, 2015 – Adjusted quads and chop. IDU failed and was replaced with LS300, also removed dish and ODU
- June 20, 2017 – During data review, it was noted that seismic channels CH1 and CH2 were flatlined and not recording earthquakes. Tested resistance between signal wires on each channel. CH1 and CH2 appear to be damaged down-hole. Q330 needs to be checked out for lightning damage.
- October 30, 2017 – Replaced fiber modem and power cycled GTSM logger.
- March 14, 2018 – Added Setra barometric sensor and configured Q330.
- April 9, 2018 – Found logger ethernet port had hung. Could not connect directly to logger, computer did not see a link. Rebooted logger, ethernet function was restored. CH0 was in G2. Adjusted quads, rebooted RT0. All channels returned to G3. Logs showed G2 problem had existed for a long time. All channels adjusted quadrature well. Chops were good, didn't change delays.

- November 6, 2018 – GTSM barometer offset adjusted to match setra data, subtracted 0.85 kpa.
- January 2, 2019 – Worked on cleaning inside of hut, which was a mess from artesianing well. Found two corroded ring terminals (one on a battery lead, the other on the 1 port F/O lead) and replaced them. Batteries were from 2010, could be replaced. All wiring should be replaced at the same time. Set chops and quads. RT2 had an unusual display, a reset fixed it. Amp o/p on Ch2 was irregular, not a true sine wave. Does not appear related to RT or OSC, left all original boards in place.
- July 14, 2019 – LS300 to verizon RV50 with 4G red bull antenna. CH0 was in G2 and had steps in data. Looked better on scope after swapping RT board. Ethernet was failing on logger, only worked after many reboots. Replaced logger. Replaced 10 batteries from 2010. Cleaned out hut which was very dirty from artesian well, lots of corrosion from artesian well. Site was very overgrown, cleared lots of brush from inside fence.
- December 19, 2019 – Upgraded 256MB compact flash card to a 4 GB card, adjusted settings, and update clock speed from 100 to 400 mhz.
- April 9, 2020 – Reformatted compact flash card to 1GB due to errors with 4GB partitions.